

What an AI boom would do to yields

If investors came to believe Anthropic's substantial AI scenario, ten-year Treasury yields would rise by roughly one to five percentage points, depending on how fully markets price it and how the Fed responds. Today's yields mostly reflect policy and risk premia, not an AI boom.

AS OF
30 September 2026

SCOPE
AI growth, Treasury yields and federal financing

KEY POINTS

- **Faster expected growth raises real interest rates.** People who expect to be richer need a higher return to save, and across countries higher expected growth goes with higher long-term real rates.
- **How much depends on belief and on the Fed.** If investors fully believed Anthropic's substantial scenario today (GDP 56.9% higher after ten years), the ten-year real yield would rise by 463 bp; with a 50% chance by 205 bp; in the Fed's FRB/US model, where policy and prices respond, by 123 bp.
- **Today's yields do not show an AI boom priced in.** The rise since 2021 mostly reflects expected Fed policy and risk premia, and surveyed economists still expect modest growth.
- **The budget gets worse before it gets better.** About 35% of Treasury debt matures or resets within a year, so higher yields raise interest costs before extra tax revenue arrives: −\$288bn a year after three years in the substantial scenario, even as the debt ratio falls to 89% by 2036.

Why consumption growth can raise real rates

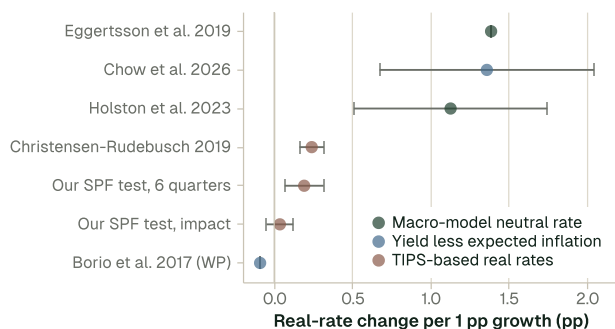
If people expect to be much richer in the future, an extra dollar then matters less to them than an extra dollar today. They need a higher real return to make saving attractive. The Ramsey rule captures this idea:

$$r = \rho + \frac{g^c}{\psi}$$

Here r is the real rate, ρ measures impatience and g^c consumption growth per person. The Elasticity of Intertemporal Substitution or EIS (ψ) measures how strongly real rates affect when people spend. Chow and coauthors cite typical EIS assumptions of 0.2–2. We use 0.735: one extra point of consumption growth raises real rates by 1.36 points, other things equal.

Estimates differ by horizon and rate measure

Real-rate change per 1 pp of growth



Rate and growth horizons differ; six quarters is a response lag. Bars show available 95% intervals. TIPS are inflation-protected Treasuries.

What the empirical evidence supports

[Chow, Halperin and Mazlish \(2026\)](#) compare expected GDP growth and real forward interest rates five to ten years ahead across 59 countries. They estimate 1.36 points higher rates for each extra point of expected GDP growth. We use the implied EIS of 0.735; applying it to US consumption and to other maturities is our assumption.

Intuitively, better AI models should lead to higher growth expectations. However, [Christensen and Rudebusch \(2026\)](#) examined 26 AI model releases between November 2022 and September 2025 and found that estimates of the neutral real rate, r^* , fell by a cumulative 23 bp to 35 bp across three-day windows around the releases. Their analysis did not measure whether those releases changed growth expectations.

More generally, better AI models only translate into enterprise productivity gains through useful applications and adoption, often requiring new workflows and systems. AI capabilities are often measured using benchmark scores, many of which are not aligned with economically valuable work. Many companies are still catching up with capabilities already available at the frontier, leaving a large gap between what AI can do and how widely it is used.

From GDP growth to consumption growth

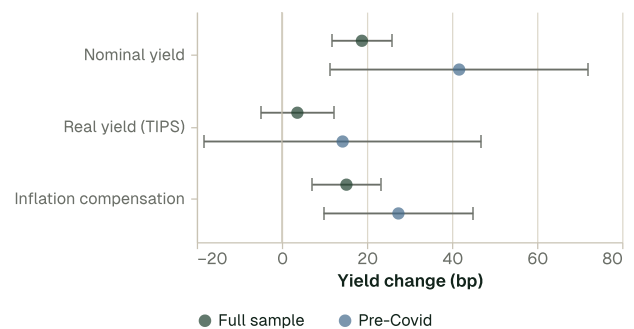
AI could raise GDP in three ways: by doing tasks people do today, by making workers more productive, and by speeding up new discoveries. If that happens, incomes rise and the economy grows faster.

Today, most of AI's effect on the economy comes through spending on data centers, chips and power. That spending counts as investment, not as what households buy: the [St. Louis Fed](#) estimates that AI-related investment added 1.0 percentage point to US GDP growth in the first nine months of 2025, 39% of the total, before netting out imported equipment.

Consumption can follow later in two ways. Once the new capacity is in use, it can raise output and wages. And as AI companies' shares rise, the households that own them feel richer and spend more.

How yields move with growth-forecast revisions

Ten-year yields; bp per 1 pp year-ahead GDP revision



Same survey interval; dots and 95% intervals. Full sample has 97 revisions (1999–2023); pre-Covid has 71 (1999–2016). Associations, not announcement effects.

Nominal yields show the clearer relationship

For a shorter horizon, we compare how professional forecasters revised next year's US growth forecast with how Treasury yields moved at the same time (1999–2023). A one-point upward revision coincides with a +19 bp change in nominal ten-year yields. Of this, +4 bp is in real yields and +15 bp in inflation compensation. Pre-Covid estimates are larger; real-yield estimates are statistically indistinguishable from zero in both samples.

Chow and colleagues explicitly distinguish short-run monetary effects from the long-run growth relationship. Higher real rates can restrain near-term growth, while persistently faster expected consumption growth can raise equilibrium real rates. Revisions to next year's growth forecast can reflect demand, an economic rebound or productivity news without implying lasting consumption gains. Their long-run finding and our noisy shorter-horizon result can therefore coexist.

The gap between ordinary Treasury yields and yields on inflation-protected Treasuries (TIPS) is not just expected inflation. It also includes extra pay for the risk that inflation surprises, and for TIPS being harder to buy and sell.

Start with Anthropic’s GDP scenarios

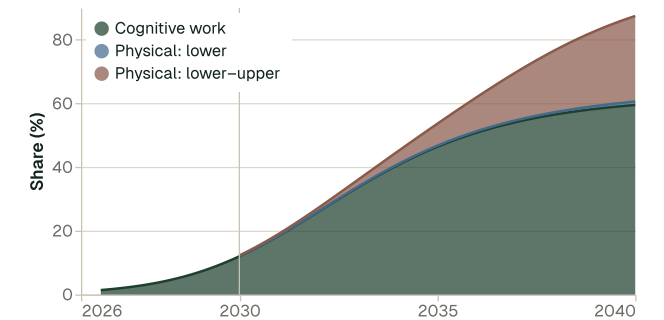
In a recent economic paper, Anthropic laid out three scenarios for GDP growth: modest, substantial and extreme, with GDP 1.6%, 8.3% and 32.4% above its no-AI path at the start of 2030. The paper lays out additional GDP and does not assign probabilities to the scenarios.

In this note, we illustrate how different GDP scenarios would affect the bond market. We do not predict GDP growth ourselves; we use third-party forecasts. In a future note, we will examine GDP growth projections and why we think current methods fail to fully recognise AI’s contribution.

We extend each scenario past 2030, as our own assumption rather than Anthropic’s, by letting its adoption curves keep running: how much work AI can reach, how fast firms take it up, and how much each task gains. We count only gains still to come after our 18 September 2026 valuation date; for the substantial scenario that is 7.2% by 2030. The AI-use chart shows how much work uses AI in the substantial scenario, with a range for physical work. These paths do not tell us how much growth investors already expect.

AI use in cognitive and physical work

Substantial scenario; stacked shares of all work, weighted by labour cost



Physical work is stacked above the same cognitive-use path. Only physical adoption varies across the band; it is not a confidence interval. Our extension starts in 2030.

Translate GDP into consumption and yields

Our calibrated capital model determines investment and consumption along each scenario, shown in the same colours in the yield-effects chart. Extra consumption then trails by 2 years: the gains go mostly to owners of capital, who spend little of new wealth at first, and the build-out comes before the output it supports, so what households do not spend is invested. For a consumption path treated as certain and unchanged time preference, the Ramsey relationship gives:

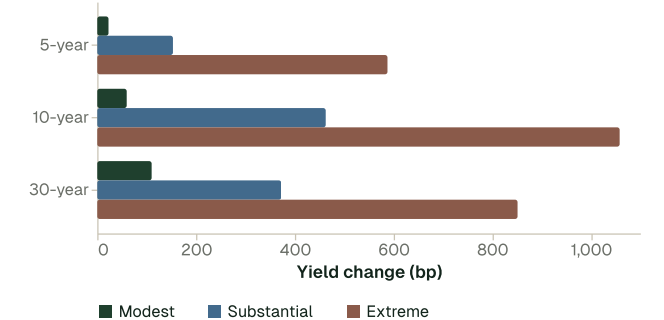
Δy_T^R = 1/ψT log (C_T^AI/C_0^AI / C_T^ref/C_0^ref)

C is real consumption, T the maturity and ψ the EIS; with expected inflation and premia unchanged, nominal and real yield changes are equal.

After ten years, the substantial scenario adds 56.9% to GDP and 40.5% to consumption. The calculated yield increase is 463 bp, against 60 bp for modest and 1058 bp for extreme. Without the consumption delay, substantial would give 596 bp; other EIS values are in the appendix. Each figure is the rise in today’s yield if investors fully believed the scenario on 18 September 2026; the ten-year figure reflects consumption growth to 2036. Repriced at once, a ten-year zero-coupon Treasury would change in price by -37%, a five-year by -7% and a thirty-year by -67%, so holders of long bonds carry most of the risk; coupons and a gradual repricing would soften the loss. With a 50% chance of the scenario the ten-year rise is 205 bp; the Fed’s FRB/US model, where policy and prices respond, gives 123 bp (see the appendix).

Yield effects of the three scenarios

Rise in today’s zero-coupon yields if fully priced now (bp)



Same scenarios and colours; EIS 0.735; inflation and premia fixed, so nominal equals real. Extreme is beyond what this calculation handles well. 30-year uses GDP to 2056.

Each scenario keeps its own path

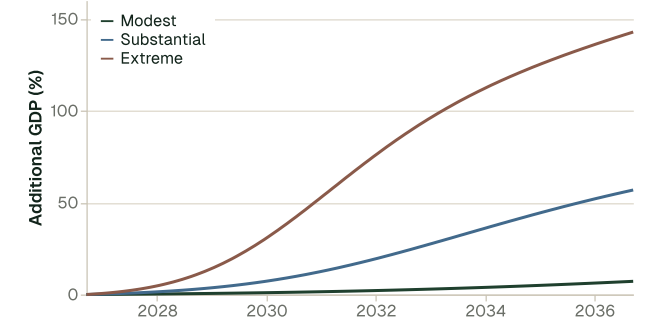
Anthropic’s scenarios end in 2030 at very different points, so one shared rule after 2030 would blur them. The scenario chart instead runs each scenario forward on its own assumptions. How long the extra growth lasts still matters. If, in the substantial scenario, extra growth halved every three years after 2030, GDP would be 23.5% higher at ten years rather than 56.9%, and the ten-year yield would rise 250 bp rather than 463 bp.

The same model serves every maturity and the financing calculation that follows; thirty-year yields need GDP paths to 2056. The two-model chart sets our result beside the Fed’s FRB/US model, where a policy rule sets rates and prices and demand respond; its much smaller rise marks the other end of the range.

Because consumption trails GDP, short bonds rise least: until the delay has passed, consumption is no higher than without AI. A three-year delay, also our assumption, would lower the substantial ten-year rise to 381 bp.

Anthropic's three scenarios, extended past 2030

Additional GDP remaining after valuation (%)



Anthropic’s paths to 2030, then each scenario’s own adoption curves. Robots after 2030 are our assumption and follow the same slow pace in all three.

Adoption, investment and uncertainty

Reach measures work AI can perform or assist with, weighted by pre-AI labour cost. **Use** measures deployment within reach; their product is the share of work using AI. Anthropic uses Claude activity as a proxy for starting reach. In the substantial case, 14% reach multiplied by an assumed 10% use gives 1.4% deployment. In 2030, 30% reach and 40% use give 12%.

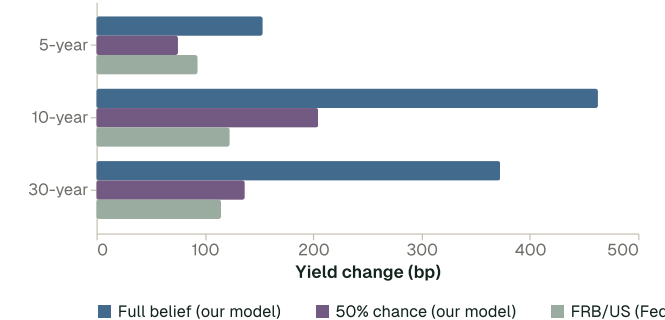
Beyond 2030, physical work adds to the 62.4% cognitive ceiling. Anthropic leaves it out, so these assumptions are ours. In all three scenarios, robots gain capability five years after office AI; use starts at 1% within reach in 2030 and spreads at a quarter of office-work speed. In our faster case, robot use follows office use five years later. [Morgan Stanley](#), [Bank of America](#) and [Goldman Sachs](#) support using a range, but do not determine its endpoints. Task efficiency rises 2.9% a year in our extension; applied to the substantial scenario, that faster case raises its ten-year GDP gain to 81.2%.

The investment calculation uses 2024 expenditure shares and estimates capital adjustment from 1990–2024 data. The 2010–2024 sample gives no stable estimate. We assign no probabilities to the three scenarios.

Our calculation assumes the extra output reaches household spending, whether owners spend it or policy redistributes it. With wages up only 0.5% in Anthropic’s extreme case, that is a strong assumption. We think such a shift would likely bring large tax and transfer changes, which we do not model. If owners instead saved most of their gains, the yield rise would be much smaller and could even reverse.

How much would yields rise? Two models

Substantial scenario: rise in today’s real yields (bp)



Ours: full foresight, inflation and premia fixed. FRB/US: Fed rule, prices and demand respond; slightly larger GDP path; real yield is nominal less expected inflation.

Higher yields need an explanation

Long-term US yields have risen sharply since the pandemic, while published long-run GDP growth forecasts remain modest. Yields reflect expectations for growth and monetary policy, as well as the compensation investors require to hold bonds. A higher yield alone cannot tell us which changed.

The ten-year real yield rose 322 bp from its 2021 average of -0.9% to 2.3% in August 2026. The Fed's D'Amico–Kim–Wei model attributes 160 bp to higher expected real short rates; term and liquidity premia account for the rest. The real-yield chart shows both yield and expected-rate histories. Expected rates include policy expectations and cannot be read as a direct measure of expected productivity growth.

Government debt is another possible influence, but its level alone cannot explain the timing of a repricing. Even an anticipated debt path can affect yields if demand or investors' willingness to bear risk changes. We need evidence of those changes before assigning the rise to fiscal pressures or an AI boom.

Real yields rose alongside expected real rates



The gap contains real term and TIPS liquidity premia. Expected real short rates also reflect policy expectations; neither line isolates AI growth. Data through August 2026.

Forecasters still expect modest growth

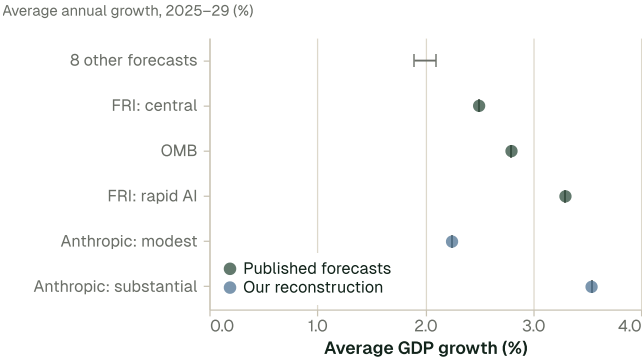
In a recent Forecasting Research Institute paper, economists' median forecast is 2.5% annual GDP growth over 2025–29, rising to 3.3% conditional on rapid AI progress. Eight of nine official and private forecasts compared by FRI range from 1.9% to 2.1%; OMB is 2.8%. Our reconstruction of Anthropic's substantial scenario averages 3.5%. The growth-forecast chart compares these averages, not our model projections. The sources cover different periods and use either real or potential GDP.

Philadelphia Fed forecasters lowered ten-year GDP growth from 2.3% in 2021 to 2.1% in 2026. Their productivity forecast rose to 1.82% from 1.56% in 2024–25 (productivity chart).

More recent realised data show nonfarm business productivity rising 2.2% over the year to the second quarter of 2026, although this does not establish an AI-driven acceleration.

Our view is that surveyed economists' central forecasts understate AI's likely contribution to GDP growth. FRI's review finds repeated underestimation of progress on AI benchmarks, although the evidence on adoption and economic impacts is less conclusive. We expect productivity gains to strengthen as firms integrate rapidly improving AI capabilities into their workflows. How quickly and how far adoption catches up remains uncertain.

GDP growth forecasts and scenarios



Dots show FRI medians, OMB and our Anthropic reconstructions. Line spans eight other forecasts. Real/potential GDP and source periods differ.

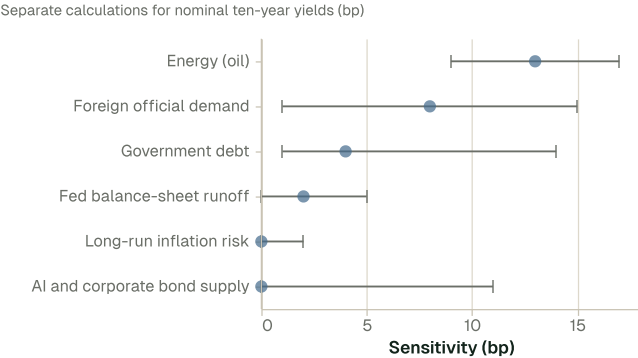
What the decomposition can tell us

Over the shorter window from the 2024–25 average to August 2026, the nominal ten-year yield rose 50 bp. The D'Amico–Kim–Wei model estimates a real-yield increase of 39 bp. It attributes 5 bp to expected real rates, 26 bp to the real term premium and 8 bp to TIPS liquidity. The model estimates the components of the yield rise without identifying their economic causes. Nominal-yield decompositions also differ. The San Francisco Fed's model assigns 15 bp more to expected nominal rates than Kim–Wright does.

The yield-driver chart compares separate yield sensitivities: 13 bp for energy, 8 bp for foreign official demand, 4 bp for government debt and 2 bp for Fed runoff. These combine an oil-price regression, published elasticities and scenario assumptions. Their effects may overlap, so adding them would not explain the rise. Their ranges are not comparable confidence intervals. The methods specify the changes and measurement windows behind each estimate.

We set the central effect of AI borrowing to zero; this does not establish that it has no effect. In our earlier note, Crowding out, we found that AI borrowing affects hyperscaler credit pricing but has added little to Treasury yields so far. Neither these sensitivities nor the yield-component models identify how much AI-driven growth investors have priced.

How other factors could affect yields



Oil-price regression, published elasticities and assumptions. Effects may overlap; ranges are not comparable confidence intervals. These do not decompose the observed rise.

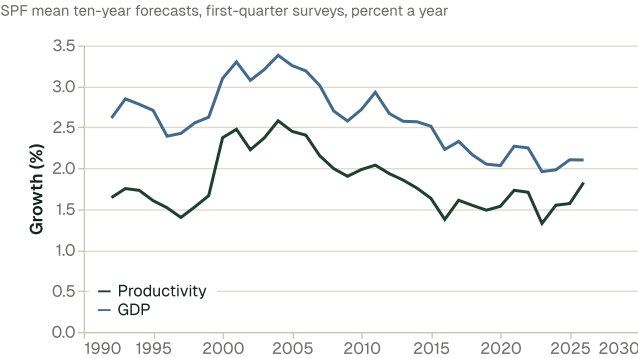
Policy expectations complicate the AI reading

Beaudry, Cavallino and Willems (2026) find that windows around payroll releases and speeches by senior Fed officials cover 23.9% of trading days over August 2020–3 September 2026, but contain 90.5% of the nominal ten-year yield increase. Even the five-to-ten-year forward rate rose mostly in these windows (91.3%). The ten-year yield has recently moved with the news that usually sets short-term rates, more than with slow structural forces such as AI-driven growth. Timing alone cannot separate the two: payroll news is also growth news, and policymakers' view of the neutral rate may itself be shifting.

Their model describes one way policy beliefs can persist. Higher expected returns can reduce the saving needed for retirement. That can partly offset the usual dampening effect of higher rates on spending. A central bank may then mistake resilient demand for a higher neutral rate and maintain a higher rate path. This is a possible mechanism, not an estimate.

A further hypothesis is that competition for AI leadership makes investment in compute and power less sensitive to interest rates. Higher rates could then raise financing costs without substantially slowing that investment. Where those costs are passed through, price pressures could rise. Tightening might instead fall more heavily on housing and other rate-sensitive sectors. That could slow disinflation without showing that higher rates raise inflation overall.

Forecasters raised productivity expectations



Philadelphia Fed Survey of Professional Forecasters. Productivity is nonfarm labour productivity; GDP is real GDP.

Compare revenue with financing costs

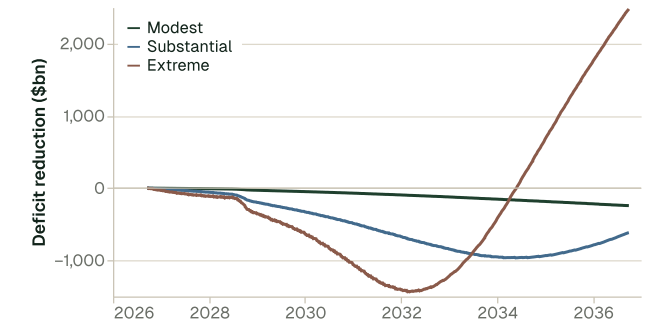
The chart shows extra tax receipts minus additional spending and interest in the three scenarios; positive values mean a smaller annual deficit than CBO's reference, not cumulative savings.

Financing costs use the same consumption-based discount factors as the yields, and the share of positive extra receipts spent rises linearly from 0% to 25% by 2036, on top of CBO's spending path.

In the substantial scenario, the annual effect is $-\$288\text{bn}$ after three years and $-\$616\text{bn}$ in 2036, at the 2026 Q2 GDP level. The early cost comes from timing: yields rise as soon as investors expect the gains, while extra tax receipts arrive only as output grows. The modest scenario costs $-\$43\text{bn}$ after three years and $-\$242\text{bn}$ in 2036. Only in the extreme scenario does growth outrun the higher interest bill, turning $-\$533\text{bn}$ in year three into $+\$2.5\text{tn}$ in 2036.

Annual budget gain or cost from AI

Annual effect at the 2026 Q2 GDP scale (\$bn)



Same three GDP and consumption paths as above. Annual dollar amounts are rescaled to 2026 Q2 GDP; positive values mean a smaller annual deficit.

How Treasury funds the borrowing matters

Marketable debt has an average maturity of 70 months, against 61 months on average since 1980, and a duration of about 4.6 years. About 35% matures or resets within a year, and Treasury plans to keep longer auction sizes unchanged, with bills filling any gap. Higher yields therefore reach the interest bill within a few years. Our calculation rolls each security over at its own maturity: existing fixed coupons stay unchanged, while new borrowing and floating-rate resets use the scenario's financing curve, and temporary surpluses are held as cash until debt matures.

AI companies, by contrast, borrow long at fixed rates. The [Dallas Fed](#) puts their 2026 bond issuance at 12.5% of the duration Treasury supplies. If AI-driven growth raises rates, the government feels it sooner than the companies borrowing to build AI.

We vary the mix of securities issued, additional spending and the tax collected on extra GDP. With 25% less extra revenue, the substantial scenario's annual 2036 budget effect is $-\$1.6\text{tn}$ at the reference GDP scale. A separate sensitivity lets lower debt ratios reduce term premia, using historical elasticities rather than AI-specific estimates. None of these fiscal assumptions feed back into GDP or consumption, and the central scenarios assume no extra inflation.

Sources

- Korinek Jones Sacher Cotter and McCrory - Economic Scenarios for Transformative AI
- Beaudry, Cavallino and Willems - Anatomy of a rise: Monetary policy and the post-Covid surge in long-term interest rates
- Beechey and Wright - The High-Frequency Impact of News on Long-Term Yields and Forward Rates: Is It Real?
- Bank for International Settlements, Quarterly Review, September 2026
- Bank of America Institute - Physical AI part 2 Humanoid robots
- CBO - How Budgetary and Economic Outcomes Might Differ From CBO's February 2026 Projections
- Barlevy, Fisher, Pennington and Villa - The AI Revolution and Monetary Policy
- Christensen and Rudebusch - Can Fiscal, AI, or Monetary News Explain the Rise in r*?
- Albertazzi et al. - The cost channel of monetary policy: evidence from euro area firm-level survey data
- Federal Reserve Board, FEDS Note: Substitutability between balance sheet reductions and policy rate hikes (Crawley, Gagnon, Hebden, Trevino)
- Federal Reserve - FRB/US illustrative baseline data
- Federal Reserve Board GSW nominal yield curve
- Federal Reserve Bank of San Francisco, Treasury yield premiums (Christensen-Rudebusch), data to 2 September 2026
- Forecasting Research Institute - How Accurate Have AI Progress Forecasts Been So Far?
- Goldman Sachs - Robotaxis Are Forecast to Become a 400 Billion Dollar Market in 2035
- Chow, Halperin and Mazlish - Transformative AI, existential risk, and real interest rates
- IFR - Humanoid Robots Vision and Reality
- Randall Kroszner - What Drives Productivity Growth? Implications for the Economy and Prospects for the Future
- Morgan Stanley - Humanoids A Five Trillion Dollar Market
- Philadelphia Fed SPF ten-year real GDP growth forecasts
- SPF mean real GDP level forecasts
- US Treasury, Monthly Statement of the Public Debt, Table 3: Detail of Marketable Treasury Securities Outstanding, 31 August 2026
- US Treasury, TBAC charge: Bill Purchases and the Consolidated Balance Sheet (February 2026)
- US Treasury International Capital - Major Foreign Holders, official and total

Research for discussion purposes and not investment advice. Nothing here is a recommendation, an offer or a solicitation to buy or sell any security, and it takes no account of any reader's circumstances. Sources are believed reliable but are not guaranteed, and views are as at the date shown and may change without notice. Scenario estimates are not forecasts unless explicitly identified as such.

A lower debt ratio need not mean less debt

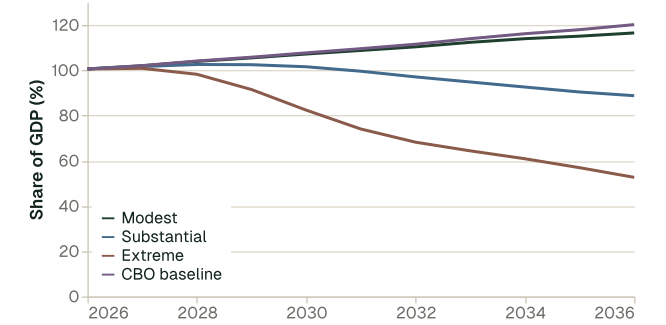
The debt figures cover federal debt held by the public, including CBO's growing debt stock, refinancing and additional borrowing. CBO already counts an average 0.1-point annual AI contribution, which we subtract, with its consumption effect, for the comparison.

In 2036, debt reaches 117% of GDP in the modest scenario, 89% in the substantial scenario and 53% in the extreme scenario, against CBO's 120%. The substantial scenario changes dollar debt by $+\$7.0\text{tn}$ relative to CBO. A larger GDP denominator can lower the ratio even when borrowing is higher.

Receipts are assumed to rise by 17.2% of additional nominal GDP. Tax policy and income distribution could change that response. Unlike annual flows shown at the reference GDP scale, debt stocks are future nominal dollars.

Debt ratios under the same three growth paths

Federal debt held by the public / fiscal-year nominal GDP (%)



Same three growth paths. Debt includes additional financing and TIPS indexation, divided by each case's fiscal-year nominal GDP.

Evidence to watch

- Growth and jobs:** lasting upward revisions to productivity, consumption and GDP forecasts, and whether AI shows up as slower hiring in exposed jobs or as higher wages.
- Energy:** whether yields fall back if the Iran conflict ends and oil prices ease; if they stay high, growth or fiscal pressure becomes the likelier cause.
- Policy versus the neutral rate:** whether the ten-year keeps tracking news about the expected Fed path, which would point to near-term policy rather than a higher long-run neutral rate.
- Where AI revenue lands:** whether capital spending turns into revenue for AI firms' customers, and whether that income goes to wages or to lightly taxed profits.
- Politics:** whether a shift of income toward capital brings tax and transfer changes that decide how much of the gain reaches household spending.

The central cases assume the full consumption path is priced; the model neither validates the GDP scenarios nor forecasts net yields. A future note will examine the equity trade-off between higher discount rates and faster earnings growth.

- BEA via FRED - US capital, depreciation, investment and consumption
- Beaudry, Cavallino and Willems - Monetary policy along the yield curve: why can central banks affect long-term real rates?
- Bhatt, Diercks, Eyal and Skaperdas - Federal Debt and Interest Rates (FEDS 2026-031)
- BLS - Productivity and Costs Second Quarter 2026 Revised
- Borio et al. - Why so low for so long? (BIS WP 685)
- CBO - The Budget and Economic Outlook: 2026 to 2036
- Christensen and Rudebusch - A New Normal for Interest Rates? Evidence from Inflation-Indexed Debt
- Federal Reserve Bank of Dallas, How AI debt financing impacts duration supply and interest rates
- Eggertsson, Mehrotra and Robbins - A Model of Secular Stagnation
- Federal Reserve Board, Tips from TIPS: Update and Discussions
- Federal Reserve - FRB/US model in Python
- Federal Reserve Board - TIPS yield curve (FEDS 2008-05)
- EIA via FRED - Daily Brent crude spot price
- Karger Kuusela and others - Forecasting the Economic Effects of AI
- Grace and others - Advanced AI according to 1580 researchers (ESPAI 2024)
- Holston, Laubach and Williams - Measuring the Natural Rate of Interest after COVID-19
- IMF - A Guide and Tool for Projecting Public Debt and Fiscal Adjustment Paths
- Kung Lustig and Paron - US Treasury Investors Are Long in AI
- SPF ten-year productivity growth forecast
- PIMCO, The Credit Market Lens: AI Capex and the Limits of Crowding Out (Lotfi Karoui)
- St. Louis Fed, On the Economy: Tracking AI's Contribution to GDP Growth (Rubinton and Patro)
- US Treasury, Monthly Treasury Statement, Table 1: Summary of Receipts and Outlays, September 2025
- US Treasury, presentation to the Treasury Borrowing Advisory Committee, August 2026 (fiscal 2026 Q3)
- U.S. Treasury - TIPS indexation and principal protection

Methods and assumptions

Companion to What an AI boom would do to yields. Publication: **30 September 2026**. Market valuation and the start of the scenario clock: **18 September 2026**.

1. Scope and scenario definitions

This is conditional scenario analysis. GDP paths are supplied; investment and consumption are allocated using a historical calibration, and the Ramsey relationship prices consumption growth. The model does not estimate an AI growth forecast, a probability for each path, or how much growth is absent from market prices. Inflation, liquidity and term-premium changes are zero in the main calculation.

Anthropic’s Table 3 puts GDP at the start of 2030 1.6%, 8.3% and 32.4% above its no-AI path. These are scenarios without assigned probabilities. We use all three, reconstruct each dated path and exclude gains assumed delivered before valuation. The substantial case’s remaining gain to 2030 is 7.2%. After 2030 each scenario keeps running on its own adoption and task-efficiency curves.

Additional GDP after valuation	10 years	30 years
Modest	7.2%	28.8%
Substantial	56.9%	141.1%
Extreme	142.8%	747.5%
Test: substantial, extra growth halves every three years	23.5%	28.3%
Test: substantial, reconstructed endpoint pace persists	41.7%	225.1%

Endpoint pace has a specific definition. We retain the instantaneous extra log-growth rate reached in our reconstruction at the start of 2030: 4.15% a year, or 6.15% including the reference rate. Anthropic’s 5.4% is total log GDP growth over the preceding twelve months. These are different measures; we do not set the persistent case equal to the published twelve-month rate.

The GDP chart stops in 2036. Thirty-year yields need our extrapolations to **2056**, and thirty-year bonds issued late in the fiscal projection need paths to about **2066**, so calculations run sixty years. These extensions are ours, not Anthropic forecasts.

Data dates and the adoption extension

Input	Coverage used
Treasury valuation curves	18 September 2026
Capital, investment and consumption calibration	Annual 1990–2024; expenditure shares from 2024; retrieved 30 September 2026
CBO fiscal and economic reference	February 2026 projections, fiscal years 2026–2036
D’Amico–Kim–Wei yield history	Through August 2026
SPF long-run forecasts / realised productivity	First-quarter 2026 survey / second-quarter 2026 release of 3 September

Each scenario’s extension continues its own cognitive deployment and task-efficiency assumptions and adds physical work after 2030. All three use the slower physical case: a five-year capability delay, 1% use within reach in 2030 and one-quarter of cognitive diffusion speed. In the faster case, physical use follows cognitive use five years later. These are assumptions, not estimated adoption bounds. The faster case applied to the substantial scenario gives 81.2% additional GDP at ten years.

2. From output to consumption and yields

We use BEA annual [GDP](#), [consumption](#), [private fixed investment](#), [private fixed capital](#) and [depreciation](#). Capital and depreciation are converted from millions to billions of dollars. Private fixed capital includes residential assets. Current-cost ratios inform the calibration; relative prices are held fixed in the scenarios.

The 2024 consumption and private-investment shares are 67.5% and 17.9%. Depreciation is 5.7% of capital. The annual regression $(\text{investment} - \text{depreciation}) / \text{lagged capital} = a + b \times \text{GDP} / \text{lagged capital}$ over 1990–2024 gives $a = -0.07285$, $b = 0.20214$ and $R^2 = 0.55$. We map these coefficients to continuous adjustment with $\lambda = -\log(1+a)$ and $\kappa = b/(-a)$, approximately 0.07564 and 2.7746. The 2010–2024 fit does not imply stable adjustment. This is not an estimate of AI-specific capital requirements.

Reference GDP grows at 2% in logs; reference consumption keeps its initial GDP share. Reference capital grows at its initial net-investment rate. Other expenditure is the residual and keeps its reference GDP share in the scenario. For extra capital ΔK and extra output ΔY :

$$\Delta \dot{K} = \lambda(\kappa \Delta Y - \Delta K), \quad \Delta I = \Delta \dot{K} + \delta \Delta K, \quad C = Y - I - O$$

Consumption is an accounting residual. The calculation does not independently model income distribution, government transfers or household spending decisions. Population follows the same path in both cases. Starting consumption is unchanged; an immediate consumption jump from anticipated wealth is not solved.

Centrally, extra consumption then trails this allocation by 2 years: consumption's gain over the reference at any date equals the allocated gain two years earlier. The amount not spent is invested; GDP and other spending are unchanged. The lag is our judgment, based on gains going mostly to owners of capital; it is not an estimate.

Under a known consumption path, common time preference and CRRA preferences, [Ramsey pricing](#) gives:

$$\Delta y_T^R = \frac{1}{\psi T} \log \left(\frac{C_T^{AI} / C_0^{AI}}{C_T^{ref} / C_0^{ref}} \right)$$

This is a continuously compounded **zero-coupon yield change**, not a coupon yield or a bond-price return. ψ is the elasticity of intertemporal substitution (EIS). Fixed inflation and premia make nominal and real changes equal. Full recognition is measured against a reference without the additional future consumption gain; it does not establish what markets already price.

Substantial-scenario sensitivity	Ten-year yield increase
Central: two-year consumption lag, EIS 0.735	463 bp
No consumption lag / three-year lag	596 bp / 381 bp
EIS 1	340 bp
EIS 2 / EIS 0.5	170 bp / 681 bp
Half / double the capital-adjustment speed	516 bp / 377 bp
Consumption proportional to GDP	612 bp
Earlier investment on top of the lag; peak in year 3	461 bp

Chow and coauthors cite typical EIS calibrations of 0.2–2. We set EIS = 1/1.36 (approximately 0.735), using their preferred Table 1 GDP-growth coefficient. Applying it to consumption and maturities beyond their five-to-ten-year forward horizon is our assumption. EIS 0.5, 1 and 2 are sensitivities, not confidence bounds. For uncertain outcomes, the calculation averages marginal-utility discount factors weighted by assumed probabilities, not yield changes. No probabilities are assigned to the three scenarios. A supporting 50% mixture of the substantial scenario and no additional gain gives 205 bp; that probability is illustrative.

3. Government financing and the investment-timing sensitivity

Debt means federal debt held by the public, including Federal Reserve holdings and excluding intragovernmental holdings. The denominator is each scenario's **fiscal-year nominal GDP**, not GDP at the end of the year. The reference follows [CBO's February 2026 fiscal projections](#).

CBO attributes an average 0.1 percentage point of annual economic growth to AI. We approximate that allowance as uniform from valuation through 2036 and remove it from our GDP gain relative to CBO. The same capital/consumption block calculates its consumption effect, which is removed before pricing the incremental funding curve. This approximation is ours; CBO does not supply our scenario's annual consumption path.

The ledger includes CBO's growing debt stock, maturing securities, deficits, additional interest and the resulting new borrowing. Existing fixed coupons remain fixed. New coupon securities are priced at par from the consumption-adjusted discount curve using each cash-flow maturity. Bills, floating-rate notes and TIPS retain distinct conventions. Public debt not represented by the security-level marketable-debt file is covered by the baseline reconciliation, not repriced as an invented security.

At issuance time t , the extra consumption log gain H changes the reference discount factor for a cash flow u years later by:

$$D^{AI}(t, t+u)/D^{ref}(t, t+u) = \exp\left(-\frac{H(t+u)-H(t)}{\psi}\right)$$

The CPI path is common to all central cases. TIPS principal indexation adds to debt and accrued interest but is not also funded as an immediate coupon payment. The redemption floor remains. Fed remittances follow CBO's baseline. Temporary surpluses remain cash until debt matures.

Extra receipts equal 17.2% of additional nominal GDP. Extra spending rises linearly from 0% to 25% of positive extra receipts by 2036, on top of the baseline. This is a fiscal assumption, not an estimated response. Tax composition, investment deductions and income distribution could change revenue capture. Spending is not split into purchases and transfers: transfers are not themselves additional GDP. These fiscal sensitivities do not feed back into the supplied GDP or consumption paths.

Units: annual budget effects are expressed at the reference 2026 Q2 GDP scale. They are neither cumulative savings nor future nominal cash amounts. Debt differences are future nominal dollars. Thus the continued-adoption case can have a 89% debt ratio in 2036 while adding +\$7.0tn to dollar debt relative to CBO.

Earlier investment: supporting calculation only

We use the 0.7-percentage-point gap between two [published ICT investment scenarios](#) to scale a sensitivity. Extra investment peaks at 0.7% of reference GDP; peaks in years 1, 3 and 5 are our timing assumptions. GDP and net exports stay fixed, so consumption finances the change. Extra capital is $B(t) = A t^2 \exp(-bt)$, with extra investment $B' + \delta B$. Both start at zero; earlier capital eventually reduces later investment needs. This is not an empirically estimated consumption delay.

For the year-3 peak, the two-year yield increase is -66 bp versus 0 bp centrally. The ten-year effect is 461 bp. Later consumption catch-up raises subsequent funding rates; 2036 debt changes by +\$331bn relative to the central substantial scenario. These are conditional results. A held-GDP-gain case is retained only as a mechanical benchmark, outside the three published scenarios.

4. Market evidence and yield-driver assumptions

The source comparisons do not identify a causal US AI growth-to-rate coefficient. [Chow, Halperin and Mazlish](#) study matched long horizons. Our SPF comparison instead relates revisions to next-year growth to yield changes within the same survey interval; yields are measured before publication. The full sample has 97 revisions (1999–2023), and the pre-Covid comparison 71 (1999–2016). The six-quarter estimate in the cross-study chart is a selected peak in one specification, not an established repricing delay; its interval is not adjusted for selecting that horizon.

[Christensen and Rudebusch](#) estimate event-window rate changes without measuring revisions to expected GDP or consumption. All four models estimate the expected real short rate five to ten years ahead, removing term premia; two also adjust for liquidity. Average daily declines are significant at the 10% level or better in three models, including one at 5%. The [payroll/Fed-speech timing result](#) is not a causal decomposition. D'Amico–Kim–Wei components are term-structure estimates, not identified economic causes. Survey respondents need not have the same expectations as bond investors.

What each bar on page 3 represents

The comparison is framed around the change from the **2024–25 average to August 2026**, but the available proxy windows differ as specified below. The oil row is a regression-based sensitivity; other central values are illustrative choices informed by observed quantities and published relationships. The ranges have different meanings and must not be added.

Driver; central value and range	Input change, window and interpretation
Oil: 13 bp; 9 to 17 bp	Weekly ten-year DKW nominal yield changes against log Brent, 2024–August 2026; 138 observations, Newey–West errors with four lags. Slope 66.4 bp per unit of log price, multiplied by a 0.1963 log-price rise from the 2024–25 average. This is an approximate regression-based 95% interval. Common growth news can drive both prices.
Foreign official demand: 8 bp; 1 to 15 bp	Official Treasury holdings fall about 1.1 percentage points of GDP, December 2024–June 2026. Multiply by roughly –7.4 bp per point from Bhatt et al. . Custody data proxy for the paper's demand measure; the range reflects coefficient uncertainty.
Government debt: 4 bp; 1 to 14 bp	Changes in projected debt/GDP between 2024–25 CBO vintages and February 2026. Published relationships around 2–2.6 bp per GDP point and differing five-/ten-year projection horizons motivate the range. The 4 bp central value is illustrative, not an independently identified fiscal surprise.
Fed runoff: 2 bp; 0 to 5 bp	Runoff ended on 1 December 2025. Remaining duration-supply changes relative to the comparison window and published balance-sheet estimates motivate a rough 0–5 bp bracket. The 2 bp centre is judgmental, not a fitted estimate or confidence interval.
Inflation risk: 0 bp; 0–2 bp	Ten-year inflation compensation rose about 1 bp and the five-year-ahead measure about 2 bp. A small observed change does not isolate inflation risk from expected inflation and liquidity; this is an illustrative bracket.
AI/corporate supply: 0 bp; 0 to 11 bp	PIMCO's September 2026 event study finds no statistically significant effect in its sample. Zero is a chosen centre, not proof of no effect. The upper stress applies 10 bp per GDP point to 1.1% of GDP in ten-year-equivalent supply.

These bars neither explain a residual yield rise nor identify an amount of AI growth already priced. Our judgment about economists' GDP forecasts remains a judgment; benchmark forecast errors do not establish macroeconomic forecast errors.

5. Reproduction, checks and limitations

The source registry, parameter provenance and frozen research exports are the audit trail. The implementation is in the Diffusion Capital research repository. Reproduction requires its retained source snapshots; the note does not claim an independent replication of the commercial cross-country survey panel used by Chow and colleagues.

Verification performed

Resource and capital identities reconcile to numerical precision. The proportional-consumption benchmark gives 612 bp at the central EIS; at EIS 1 it reproduces approximately 450 bp. The matched five-to-ten-year forward identity is checked separately from the ten-year spot yield. A scenario equal to the CBO AI allowance has zero incremental fiscal effect to numerical precision.

Halving the monthly model step changes yields by less than 0.001 bp. Halving the weekly Treasury step changes terminal debt/GDP by less than 0.034 percentage points in the checked cases. Fiscal checks include debt/deficit/cash identities, TIPS treatment, refinancing and unchanged receipts/spending when only investment timing changes. Language checks preserve numeric values, equations and external citations.

What these checks do not establish

They do not validate the GDP continuations, identify AI-specific investment requirements, estimate the EIS or market recognition, solve distributional or fiscal feedback, or establish a net market-yield forecast. The 2010–2024 investment calibration is unstable. The paper’s central contribution is a transparent conditional exposure calculation, not a claim that Treasury yields must rise by the displayed amount.

6. Objections we take seriously

AI could lower rates rather than raise them. If the gains go mostly to owners of capital and they save most of them, more money chases bonds and rates fall; [Mian, Straub and Sufi](#) argue that rising saving at the top helped push rates down in recent decades. A boom that keeps surprising can also lower the policy rate: in the Chicago Fed's model an expected productivity boom raises it by 50 bp, while one that arrives as a series of surprises moves it by -75 bp. Our calculation describes the expected, broadly spent case. We think that case matters because gains of this size would be hard to miss and a sharp shift of income toward capital is likely to bring tax and transfer changes that spread the spending, but the direction of the effect is not certain.

A full macro model gives a much smaller rise. Holding GDP fixed leaves out feedback: higher rates slow investment, and a supply boom lowers inflation, which lets the Fed keep rates lower. We ran the substantial scenario with continued adoption through the Federal Reserve's FRB/US model, with term premia fixed. GDP is 67% higher after ten years, yet the ten-year real yield rises by 123 bp on impact and the nominal yield by 72 bp, against 463 bp in our calculation. In FRB/US the policy rule sets short rates and expectations adjust gradually, so it supports the direction of our result but not its size. Our figures are best read as the rise implied if investors fully priced the scenario; FRB/US shows how much of that a central bank and slower expectations could absorb.

Faster growth should improve the budget. CBO estimates that 0.1 percentage point a year of extra productivity growth reduces deficits by \$317bn over ten years. That growth is small and interest rates follow it as it is realised. In our scenarios growth is large and priced in advance, so interest costs rise before the extra revenue arrives. Over the longer run the results agree: the extreme scenario's budget turns positive by 2036 and the substantial scenario's is already improving.