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## TESTIMONY OF KENT SMETTERS
## BEFORE THE HOUSE COMMITTEE ON WAYS AND MEANS,
## OVERSIGHT SUBCOMMITEE

Good morning, Chairman Schweikert, Ranking Member Pascrell, and Members of the Subcommittee on Oversight. Thank you for the opportunity to discuss the United States Treasury debt market, including potential opportunities to improve its administrative efficiency.

### I. Background

U.S. fixed-income securities comprise about 40 percent of the $140 trillion global supply. Half of those U.S. securities are issued by the U.S. Treasury. Among the G4 (US, UK, Europe, and Japan), the United States now supplies half of all risk-free securities, a sharp increase during the past 25 years (Figure 1). Moreover, the historical apparent ability to cheaply rollover this debt and to cheaply borrow more in future appears to be over. Capital markets are currently projecting that that U.S. and European borrowing rates will not reverse anytime soon (Figure 2).

At its most basic level, annual deficits reflect spending above tax revenue, and total debt is just the accumulation of past annual deficits. But the topic then gets more complicated.

**Debt Held by the Public.** Although the current *gross* federal debt stands at around $33 trillion, over $6 trillion takes the form of the government holding its own debt in the form of trust funds and similar balance sheet items. The *debt held by the public* is around $26 trillion, a figure that economists generally view as more meaningful as it must be financed in domestic and international capital markets, thereby "crowding out" some private capital formation over time.

As discussed in Section II, the debt held by the public is projected to increase substantially over time under current law, reaching unsustainable levels within two decades.

**Foreign holdings.** The level of foreign holdings of debt by the public has fallen over the past five years, from around 40 percent to 30 percent today.[1] This fall, which was mostly previously projected by the Penn Wharton Budget Model more than four years ago,[2] is consistent with the increase in trade tariffs over time. Economic softening in China has also contributed.[3] Overall, the decrease in international demand for U.S. securities requires the U.S Treasury to sell securities at lower prices to produce larger returns to buyers. Unlike key technologies and other sourcing for the critical infrastructure, economists generally see no gain from "reshoring" the demand for U.S. debt. Even though countries like Japan have a level of national debt relative to

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[1] See Treasury tic data: https://home.treasury.gov/data/treasury-international-capital-tic-system-home-page/tic-forms-instructions/securities-b-portfolio-holdings-of-us-and-foreign-securities
[2] https://budgetmodel.wharton.upenn.edu/issues/2019/7/24/the-trade-war-trade-off-short-term-gains-then-long-term-losses
[3] Some Chinese holdings are custodied in offshore accounts outside of the United States or China.

their GDP more than 200 percent, Japan still has a substantially larger national gross saving rate than the United States, with some of those savings invested in U.S. Treasuries.

**Auction Design and Debt Mix.** U.S. Treasury auctions take the "first-price" or "Dutch" form. In theory, such auctions are susceptible to "bid shading" with bids placed below a bidder's true "reservation price" representing the bidder's willingness to pay for those securities. In practice, Treasury auctions are the world's largest. The numerous bidders in the primary market and its liquid secondary market render the exact auction design unimportant within reason. Instead, the U.S. Treasury focuses more of its attention on the *mixture* of debt instruments (bonds, notes, and bills) that it will auction to cover U.S. federal deficits.[4] See Section III.

## II. Challenges

The U.S. Treasury faces a significant future challenge:

**Point #1: Without major changes to current U.S. fiscal policy, Penn Wharton Budget Model (PWBM) projects that the U.S. Treasury debt will be unable to rollover its accumulated debt in about 20 years. Put differently, the U.S. government will have to default explicitly, by not making interest payments, or default implicitly, through debt monetization (inflation), or some combination. This timespan shortens if capital markets start to believe that U.S. policy will never create fiscal imbalance.**

As shown in Figure 3, PWBM projects that federal debt will increase to around 190 percent of GDP by 2050 under current policy. To put this a different way, having just enough federal tax revenue to cover future spending and interest payments on the debt would require (Figure 4):

- An immediate and permanent increase in all federal tax revenue of 40 percent, or,
- An immediate and permanent increase in all federal spending by 30 percent, or,
- Some combination of both.

Moreover, our recent work estimates that if real borrowing rates continue to persist for longer periods of time, the 190 percent ratio will be reached within 20 years.[5] At that ratio, we estimate that there is no price at which the United States Treasury will be able to rollover or sell its debt. While Japan currently has a debt-GDP ratio more than 200 percent, Japan also has a gross national savings rate that is substantially larger than that of the United States.

This 190 percent threshold holds even if we assume, quite unrealistically, that: (i) *all* future increases in public debt after 2023 are invested in *public* capital; (ii) public capital serves as a *complement* to private capital; and, (iii) the initial return to public capital net of its own depreciation rate is currently 400 basis points above the net return to private capital, an estimate at the upper bound found in the data related to public infrastructure.[6] To be sure, there are

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[4] Besides duration, that mixture includes real (TIPS) and nominal securities. I-Bonds can be purchased at the TreasuryDirect.gov website, with annual purchase caps on direct purchase or using a tax refund.

[5] https://budgetmodel.wharton.upenn.edu/issues/2023/10/6/when-does-federal-debt-reach-unsustainable-levels

[6] See overview and references here: https://budgetmodel.wharton.upenn.edu/issues/2021/6/15/economic-effects-of-infrastructure-investment. For public capital to have such a high marginal return, it must be sufficiently scarce.

smaller public investments that can produce larger returns. For example, PWBM has shown that pre-K education subsidies or vouchers could even "pay for itself", once long-term macroeconomic effects are considered, provided that such subsidies are sufficiently narrow and means tested, thereby avoiding inframarginal giveaways to households who would have otherwise purchased pre-K education.[7] Still, there are very few spending programs with large returns that scale to absorb the increase in public debt that we project over the next 20 years. And, in reality, a large portion of that future debt is to support immediate consumption rather than making investments in public capital or in the future workforce.

Moreover, growing public debt does not rule out reforms that are financed. For example, PWBM shown that shifting healthcare away from an employer-based system toward a portable-premium supported system (with Medicaid subsidizing premiums at lower income) could increase health care coverage while lowering total costs.[8] While this reform reduces debt, it still does not avoid the need to make large changes adjustments to avoid an exploding debt path.

In sum, policy discussions should not distract from the likely demise of the U.S. economy---rendering such policy changes pointless anyway---without *material* changes to curb debt growth.

**Point #2: Administratively, a well-functioning U.S. Treasury market does *not* attempt to simply minimize contemporaneous interest payments to free up money for other uses.**

In practice, when determining the optimal mix of U.S. Treasury securities to auction, the U.S. Treasury places some weight on providing risk-free liquidity at different durations. However, most consideration includes attempting to minimize interest payments on debt. For example, during my brief tenure at the U.S. Treasury Administration (2001 – 2002) under President George W. Bush, we eliminated the auction on new 30-year bonds, despite knowing that such action would create considerable disruption for liability accounting within ERISA defined-benefit plans. I believed then, and continue to believe today, that this action was shortsighted.

If the goal were really to reduce interest payments, the government could shift more debt financing to the overnight repro market, with immense rollover risk. Weighted average duration would then be measured in hours instead of in years. To be even more cheeky, the government would expect to pay *negative* interest---that is, get paid to float debt---if it first invested its proceeds into cryptocurrency, biotechnology stocks and other risky assets. Of course, these ideas are absurd, but so is the idea of trying to minimize debt interest payments more generally.

**Point #3: The U.S. Treasury could improve economic efficiency if the U.S. Treasury committed to eventually auction only longer-dated securities instead of trying to optimize Treasury security duration mix against contemporaneous market prices.**

In practice, the U.S. Treasury optimizes its debt duration mixture against financial market demand (and, hence, prices) at various durations. But markets simultaneously optimize its

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But as its stock increases, its marginal product falls while its total depreciation cost increases even with a fixed cost of depreciation per unit. Eventually, that higher depreciation cost must be covered with distorting taxes.

[7] https://budgetmodel.wharton.upenn.edu/issues/2021/8/23/economic-effects-preschool-and-childcare-programs

[8] https://budgetmodel.wharton.upenn.edu/issues/2020/1/30/medicare-for-all-background

demand at different durations against the U.S. Treasury, including making guesses about future Treasury auction mixes. This two-sided interaction is often *incorrectly* viewed as "competition".

Textbook microeconomics teaches that competition exists between multiple sellers or between multiple bidders. Of course, many markets (e.g., agriculture) manifest competition between multiple sellers who offer products in the presence of multiple bidders. Either way, well-defined markets generally produce "equilibrium" prices at a point in time. More of the "gains from trade" ("surplus") accrues to the less competitive side of a market, either to suppliers or demanders.

It is generally incorrect to view "competition" as happening between a single seller and buyers. In fact, it is possible that such "competition" produces a "hysteresis loop" where an equilibrium never emerges. That could be the case, for example, if the U.S. Treasury adaptively changes its mixture of securities at auction based on recent auction outcomes while buyers adaptively change their projections in response. Or one or *more* equilibrium(s) could emerge.[9]

More importantly, even if an equilibrium exists and is unique---which is actually unclear in the data[10]---efforts by the U.S. Treasury to try to reduce short-term interest payments by changing is optimal mixture of debt instruments generally produces inefficient uncertainty for buyers.[11] Instead, it is more efficient for the U.S. Treasury to mostly focus on producing securities that private markets cannot manufacture, i.e., long-dated risk-free contracts like the 30-year bond. The private market can easily strip and repackage these securities---with minimal counterparty risk using standard custodial relationships---to create intermediate durations, even short durations. This operation would be mundane, competitive, and scalable at low cost.

At first blush, it would seem that markets might demand steep discounts for the 30-year bond. (Indeed, just recently, 30-year bonds appeared to sell cheap, causing the U.S. Treasury to shift toward shorter duration.) But that is only because capital markets have already created multiyear commitments around the existing Treasury mixture and predictions about the future mixture. Moving gradually to a single, predictable long-dated debt contract would reduce supply side uncertainty. It would eventually reduce risk premiums, especially if constructed properly to include rollover risk. It would also simplify rather than complicate existing derivative markets.

**Point #4: However, such a commitment by Treasury is generally not "time consistent" under current budget scoring conventions.**

If Treasury committed to move gradually toward long-dated bonds, it would eventually notice that private markets were repackaging shorter duration debt at lower rates. That outcome is

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[9] For the mathematically inclined, this two-sided competition can produce a differential equation system that is stable (e.g., a linearized version has eigenvalues within the unit circle) or unstable.

[10] https://home.treasury.gov/system/files/221/TreasuryPresentationToTBACQ12021.pdf, p. 21. There have been substantial variations in the weighted average duration over outstanding (not just new) securities. Average duration is naturally procyclical as investors seek safety for shorter-term investments during economic contractions. Still, the evidence is consistent with existence of a single equilibrium, multiple equilibria or no equilibria.

[11] This point holds even if the presence of "tax smoothing" arguments. There are models that attempt to predict optimal weighted average duration based on related economic outcomes. While the "Taylor Rule" approach works for a range of applications including monetary policy, it is not stable for determining the optimal debt mixture. Consistently, many of these papers do not report any statistical significance.

efficient. Treasury would then have a short-term incentive to start floating shorter duration debt again to reduce interest payments, as rewarded by current budget scoring conventions. Such a pivot would produce longer-term rollover risk, not captured by current scoring conventions. Any stated commitment to issuing only long-term debt, therefore, is not "time consistent."

## III. Opportunities

**Point #5: The U.S. Congress could disincentivize the U.S. Treasury from trying to exploit lower contemporaneous short-term interest payments by expanding the 1990 Credit Reform Act to require scoring agencies to report federal interest payments using the 30-year bond yields regardless of the actual security mixture picked by the U.S. Treasury.[12]**

To be sure, the Federal Credit Reform Act of 1990 is far from comprehensive.[13] But such a rule change would be consistent with it and other existing rules (e.g., SFFAS 7, Paragraph 313) that attempt to avoid budget gaming associated with debt, including origination and termination.

**Point #6: There are a range of different tax changes and spending cuts that could stabilize the debt-GDP ratio at least at its current value.**

Figure 5 projects the macroeconomic effects if federal debt is allowed to increase to 180 percent of GDP over the next 30 years. These estimates understate the actual projected path of debt over time, both in magnitude and speed, due to a key technical reason. In a nutshell, an even more aggressive debt path using less favorable policy instruments crashes the economy. There is then no price where the U.S. Treasury can roll over its debt once economic factors are considered.

Even with this favorable bias: GDP is projected to fall by around 8 percent, wages fall by 4 percent and the risk-free rate (borrowing costs) would be permanently 150 basis points higher.

And, that is the good news! These calculations also assume that financial markets believe that the U.S. Congress would then invoke a *major* policy change in 30 years to prevent the debt-GDP ratio from climbing even more. Before then, if financial markets no longer believe that such an action will occur, interest rates will skyrocket, and the economy will unravel even sooner.
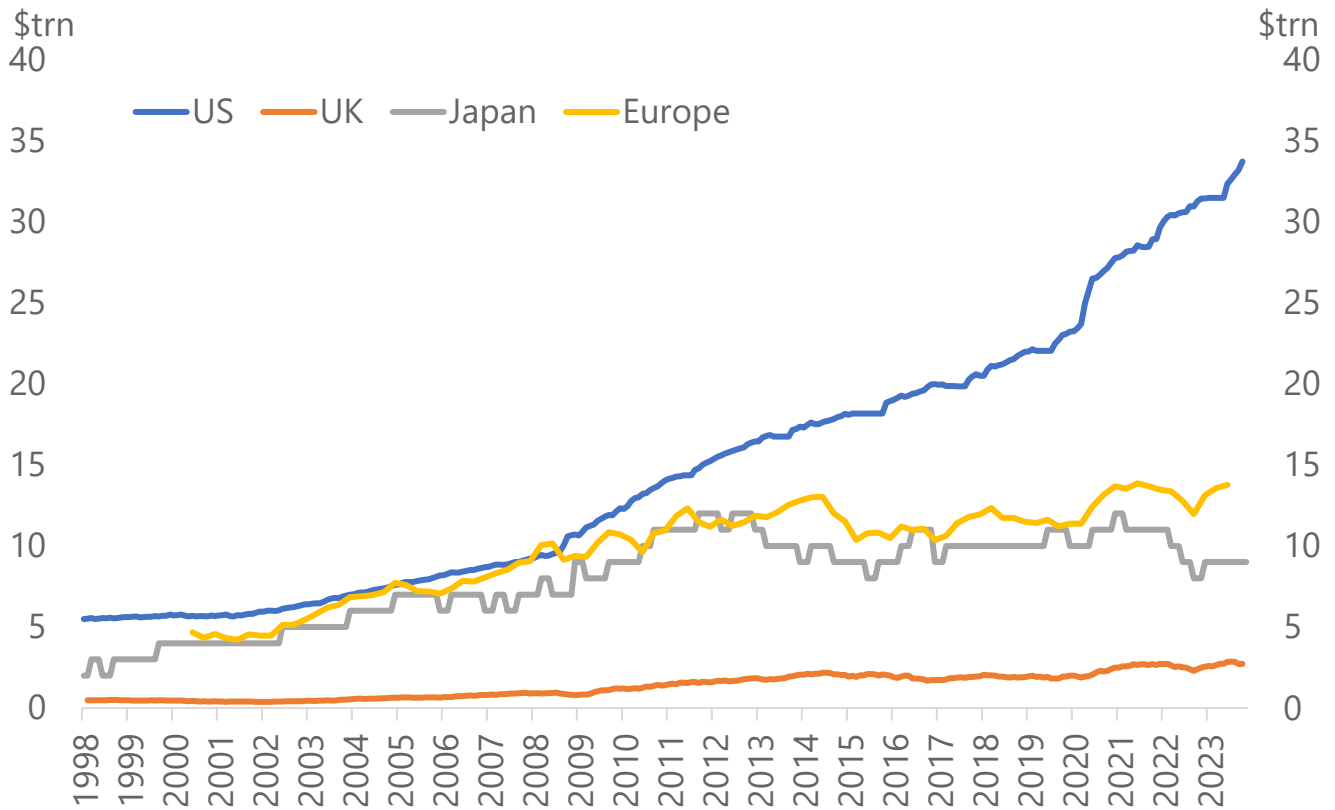
Fortunately, there are still a range of options to consider. Penn Wharton Budget Model has recently posted a range of policy ideas, spanning from traditionally "liberal" to traditionally "conversative" packages.[14] Penn Wharton Budget Model will be releasing a longer and more comprehensive list of policy package ideas over time. However, our estimates already point to a starting point: simple solutions are not sufficient. Just increasing taxes on households with incomes above $400,000 will not raise nearly enough revenue and could negatively impact the economy. Similarly, claims to reduce "wasteful" (but otherwise unspecified) spending will result in no scored cost saving, essentially guaranteeing economic demise along the current debt path.

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[12] If there were concerns about short-term gaming by Treasury, the actual rule could simply require that the highest rate is used along the term structure issued by Treasury.
[13] Bazelon and Smetters, "Discounting Inside the Washington D.C. Beltway" Journal of Economic Perspectives, 1999.
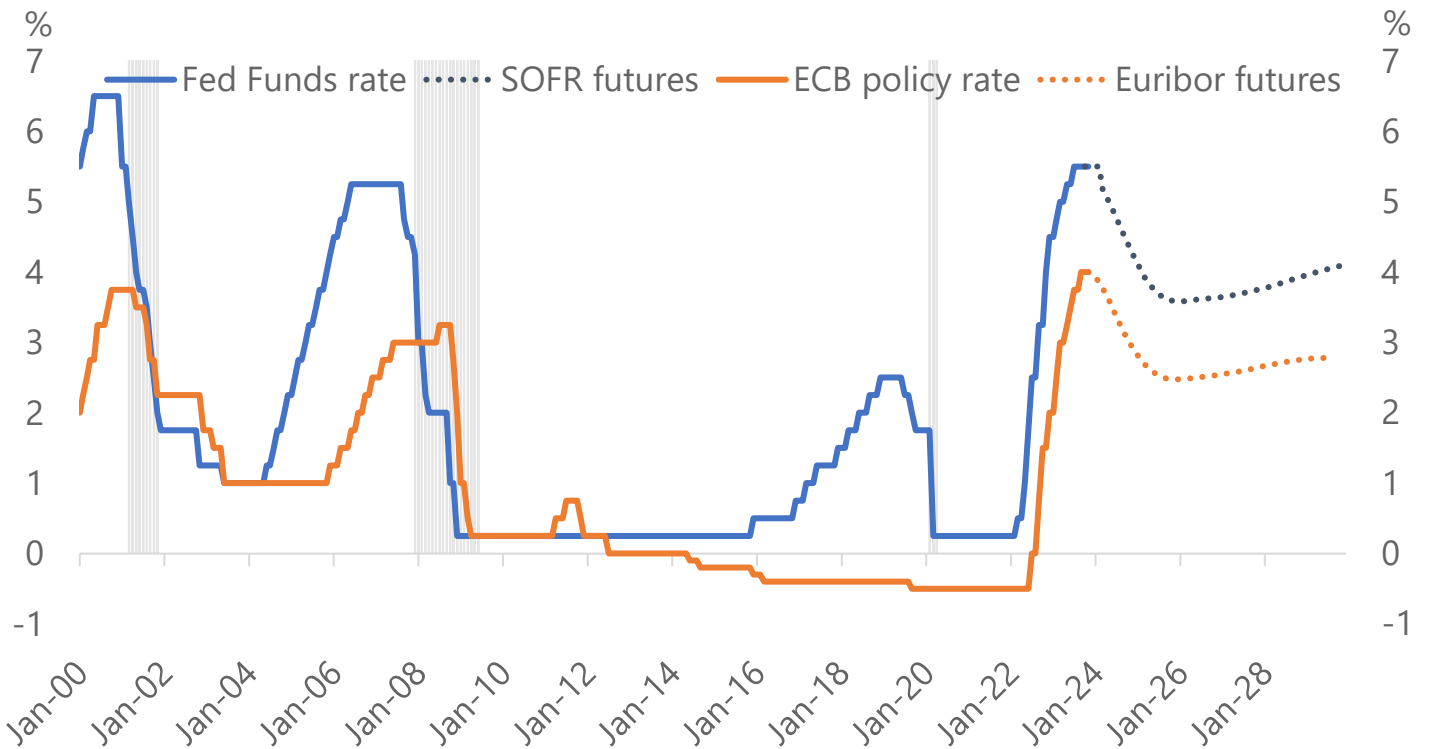[14] https://budgetmodel.wharton.upenn.edu/issues/2023/9/29/stabilize-federal-debt-economic-growth

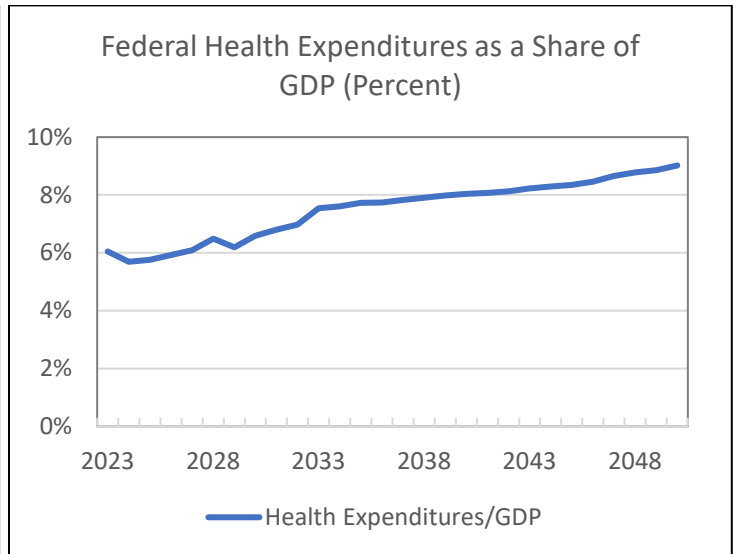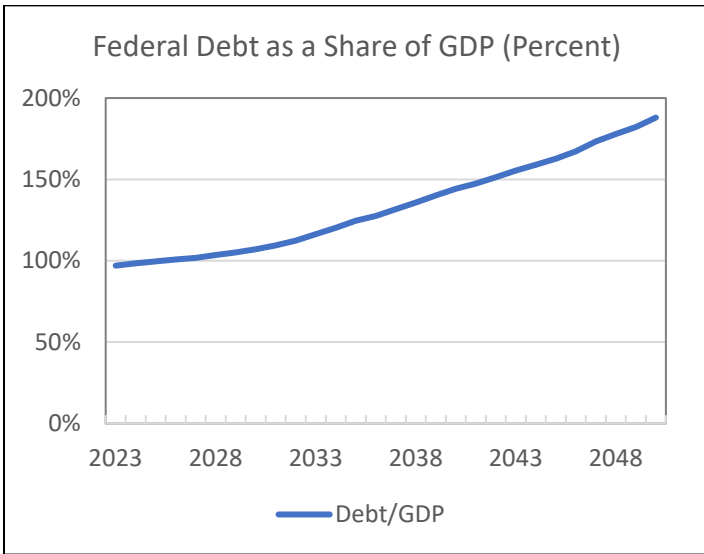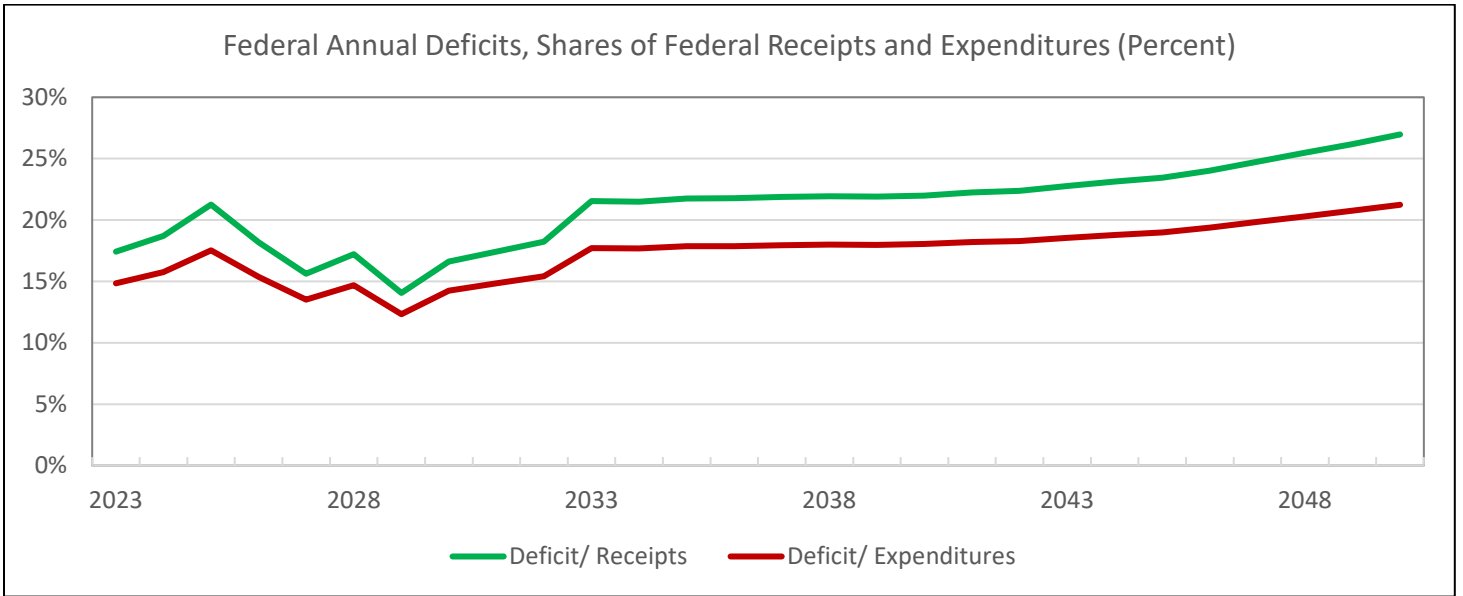## Figure 1: G4 Government Securities Outstanding



Source: Bloomberg, Haver Analytics. Apollo Chief Economist. Note: US includes total Treasuries outstanding, UK includes Gibs outstanding, Japan includes JGBs and T-bills outstanding, and Europe includes General and Central Government debt securities of the Euro area outstanding.

## Figure 2: Fed Fund Futures



Source: Bloomberg, Apollo Chief Economist

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## Figures 3a, b, c: Federal Flows

### Federal Annual Deficits, Shares of Federal Receipts and Expenditures (Percent)



Deficit/ Receipts
Deficit/ Expenditures

### Federal Debt as a Share of GDP (Percent)



Debt/GDP

### Federal Health Expenditures as a Share of GDP (Percent)



Health Expenditures/GDP

Source: Penn Wharton Budget Model

# Figures 4a, b: Fiscal Imbalances

| Next 75 Years | | | | |
|---|---|---|---|---|
| | Federal fiscal imbalance (present values* in billions of constant 2023 dollars) | | | |
| | Assets(+)/Debt(-)** | Receipts | Expenditures | Fiscal imbalance |
| (Asset(+)/Debt)*** | -30,838 | | | -30,838 |
| Social Security | 2,943 | 79,860 | -107,679 | -24,876 |
| Medicare Part A | 197 | 25,638 | -47,865 | -22,031 |
| Other Programs | 3,441 | 220,376 | -163,857 | 59,959 |
| Discretionary | | 824 | -103,054 | -102,230 |
| Total | -24,257 | 326,698 | -422,455 | 120,015 |
| PDVGDP | 1,906,871 | | | |

| Next 75 Years | | | | |
|---|---|---|---|---|
| | Federal fiscal imbalance (as percent of the present value of GDP:) | | | |
| | Assets(+)/Debt(-) | Receipts (+) | Expenditures(-) | Fiscal imbalance |
| (Asset(+)/Debt) | -1.6 | | | -1.6 |
| Social Security | 0.2 | 4.2 | -5.6 | -1.3 |
| Medicare Part A | 0.0 | 1.3 | -2.5 | -1.2 |
| Other Programs | 0.2 | 11.6 | -8.6 | 3.1 |
| Discretionary | | 0.0 | -5.4 | -5.4 |
| Total | -1.3 | 17.1 | -22.2 | 6.3 |
| Ratios | 1,906,871 | 36.7 | 28.4 | |

\* Present values are calculated at a discount rate of 4.4 percent
\*\* Intragovernmental Debt for Social Security, Medicare, and Others Programs
\*\*\* Gross Federal Debt

| Perpetuity | | | | |
|---|---|---|---|---|
| | Federal fiscal imbalance (present values* in billions of constant 2023 dollars) | | | |
| | Assets(+) / Debt(-)** | Receipts | Expenditures | Fiscal imbalance |
| (Asset(+)/Debt)*** | -30,837.6 | | | -30,837.6 |
| Social Security | 2,943.1 | 161,333.1 | -236,592.6 | -72,316.4 |
| Medicare Part A | 196.6 | 51,033.3 | -113,290.0 | -62,060.1 |
| Other Programs | 3,441.0 | 451,606.3 | -359,251.0 | 95,796.4 |
| Discretionary | | 1,593.8 | -200,257.7 | -198,663.9 |
| Total | -24,256.8 | 665,566.5 | -909,391.2 | 268,081.6 |
| PDVGDP | 3,770,834.3 | | | |

| Perpetuity | | | | |
|---|---|---|---|---|
| | Federal fiscal imbalance (as percent of the present value of GDP:) | | | |
| | Assets(+) / Debt(-) | Receipts (+) | Expenditures(-) | Fiscal imbalance |
| (Asset(+)/Debt) | -0.8 | | | -0.8 |
| Social Security | 0.1 | 4.3 | -6.3 | -1.9 |
| Medicare Part A | 0.0 | 1.4 | -3.0 | -1.6 |
| Other Programs | 0.1 | 12.0 | -9.5 | 2.5 |
| Discretionary | | 0.0 | -5.3 | -5.3 |
| Total | -0.6 | 17.7 | -24.1 | 7.1 |
| Ratios | 3,770,834 | 40.3 | 29.5 | |

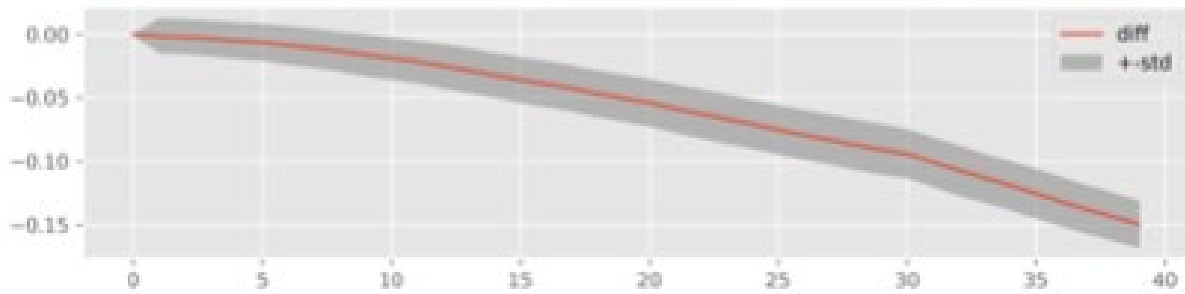Source: Penn Wharton Budget Model

**Figures 5 (various): Economic Effects of Debt Increase from 100 to 180 percent.**

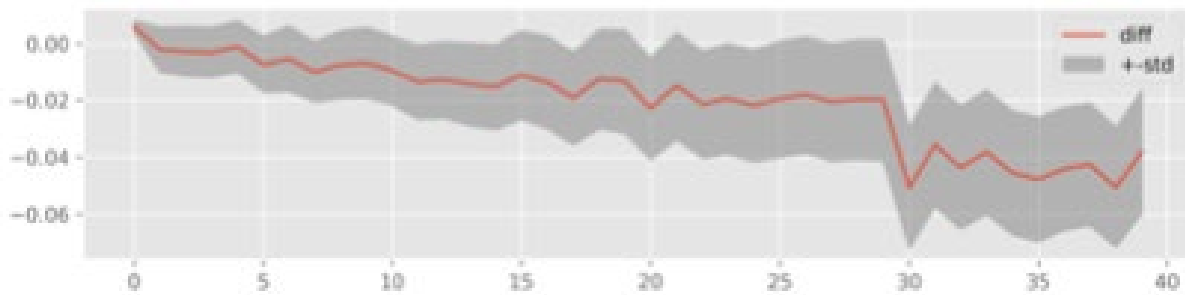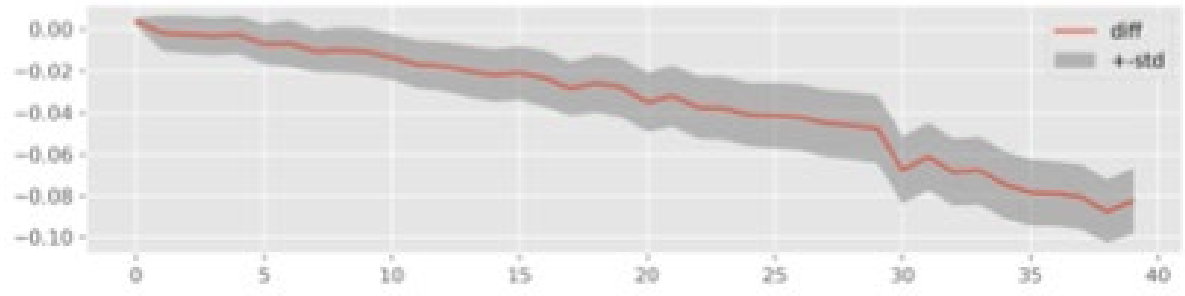Debt-GDP Ratio (Experiment)[15]
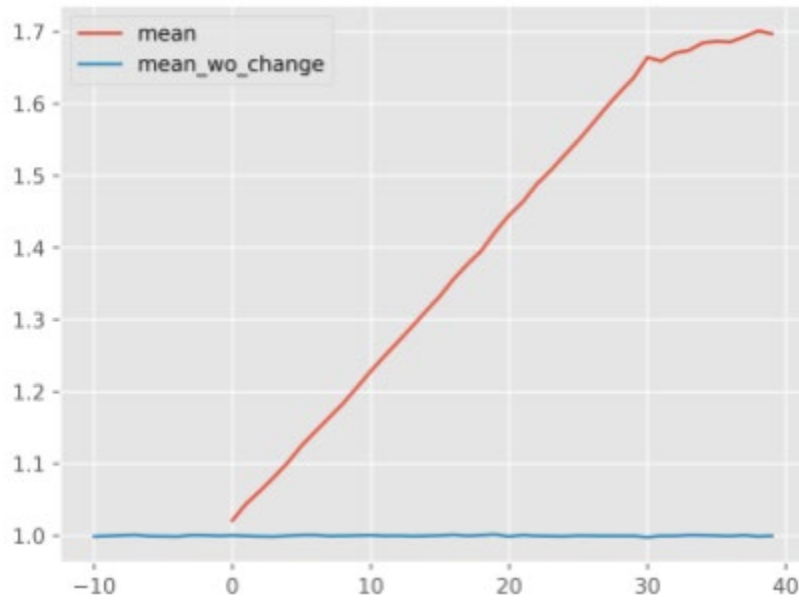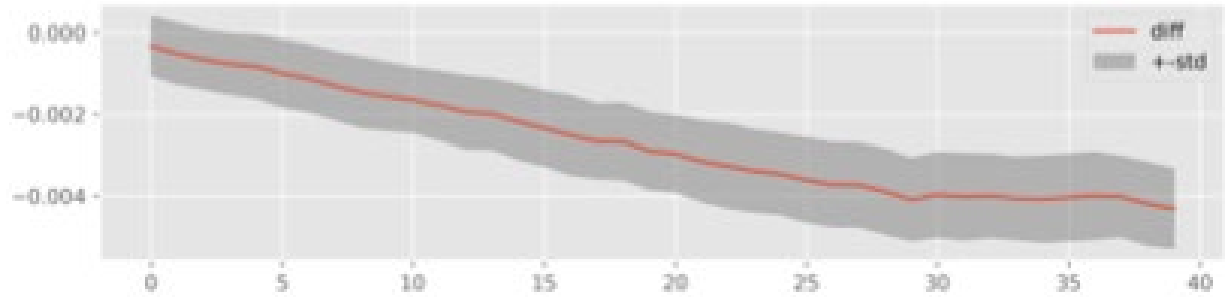


Capital (K)



Labor (L)



Note: mean change in paths in orange with confidence intervals the gray band area.

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[15] Experiment: Decrease in linear wage tax rate for 30 years that produces a debt increase. At year 30, wage tax cut turned off and linear wage tax used to make higher interest payments on debt.
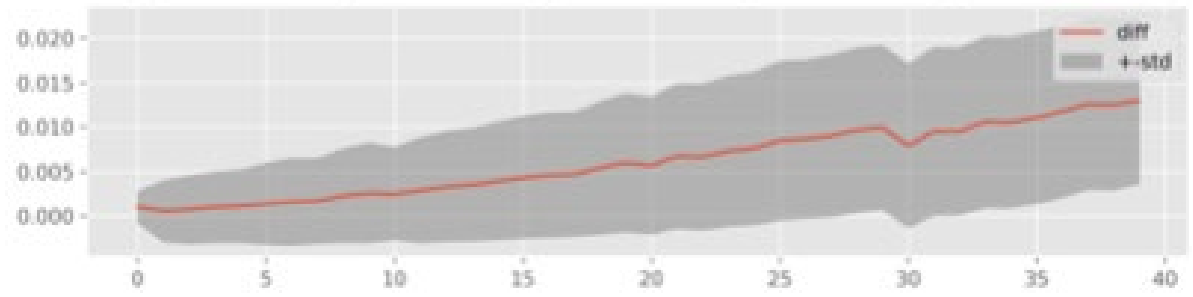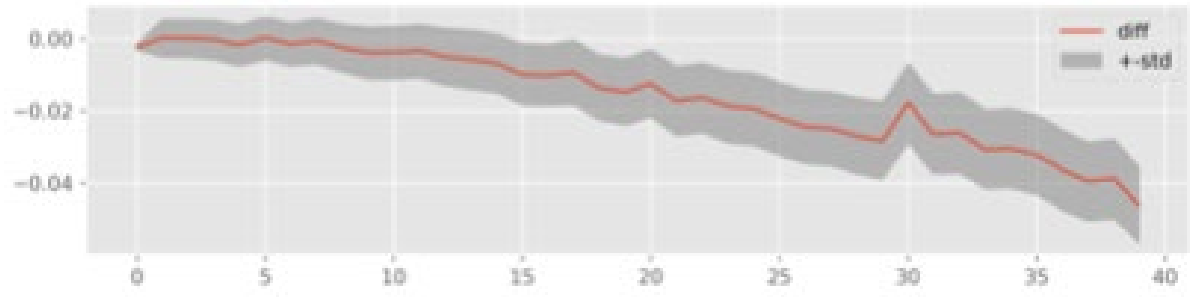
## GDP (Y)



## Equity Premium (ep)



## Risk Free (rf)



## Wages (wage)



Source: Yebiao Jin and Kent Smetters, University of Pennsylvania. Computations from Jin's PhD dissertation under the direction of Smetters.