Government Debt

Lutz Hendricks
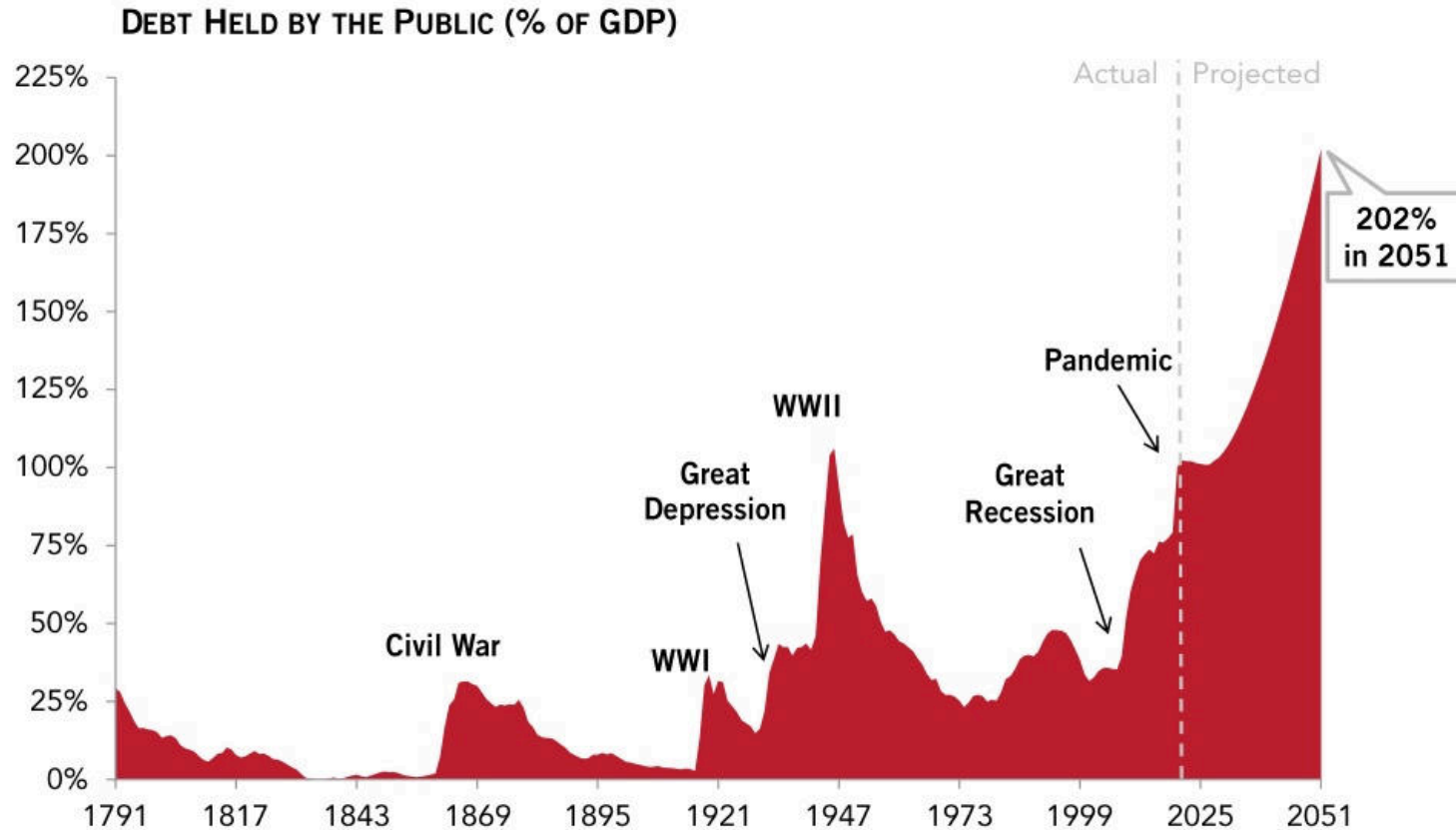
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UNC Chapel Hill

In this section you will learn:

1. what the outlook for the U.S. government budget looks like
2. what deficits do
3. whether current debt levels are "sustainable"

I Facts

DEBT HELD BY THE PUBLIC (% OF GDP)

Actual | Projected

202% in 2051

Pandemic

WWII

Great Depression

Great Recession

Civil War

WWI

SOURCES: Congressional Budget Office, *The 2021 Long-Term Budget Outlook*, March 2021, and *The Budget and Economic Outlook: 2020 to 2030*, January 2020.
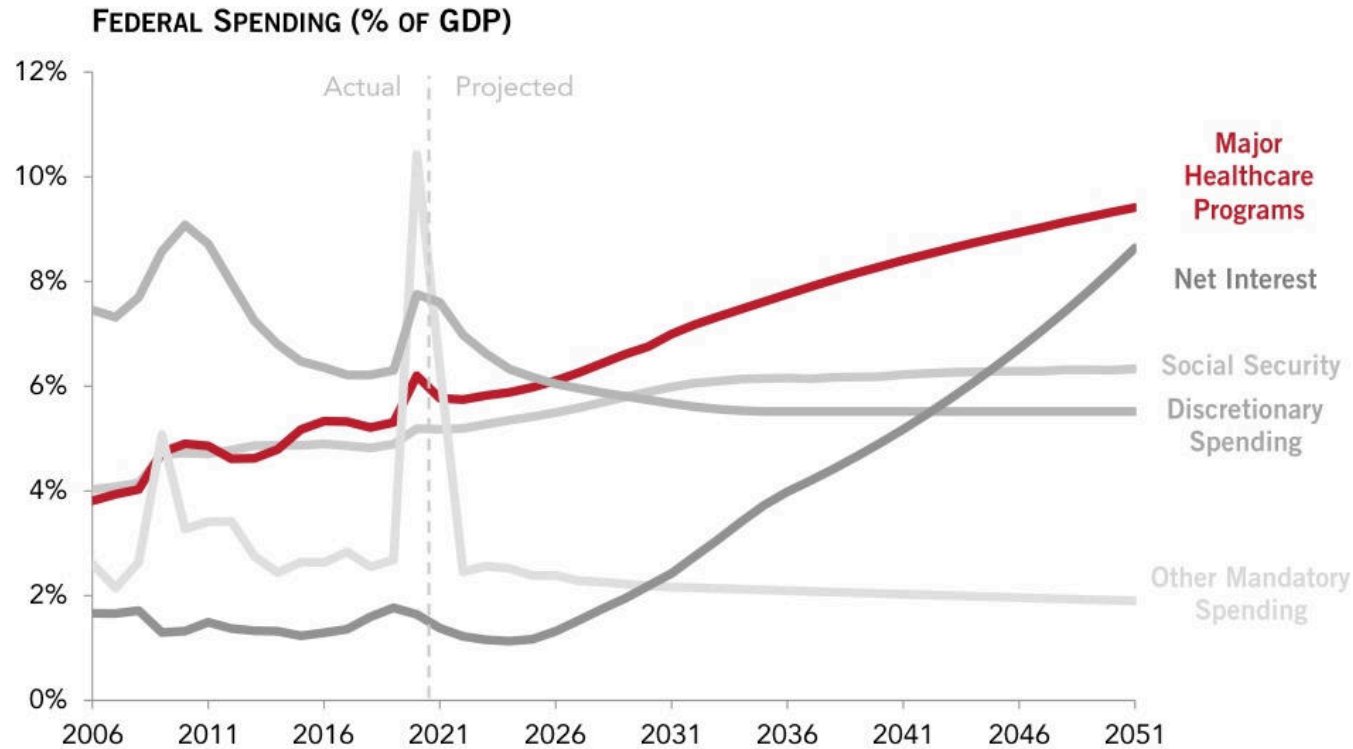
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Public debt is rising.

Before Reagan: Debt was repaid in normal time.

Source: PGPF, 2021

FEDERAL SPENDING (% OF GDP)

Major Healthcare Programs
Net Interest
Social Security
Discretionary Spending
Other Mandatory Spending

SOURCE: Congressional Budget Office, *The 2021 Long-Term Budget Outlook*, March 2021.
NOTE: The major healthcare programs include Medicare (net), Medicaid, the Children's Health Insurance Program, and spending to subsidize health insurance purchased through the marketplaces established under the Affordable Care Act and related spending.
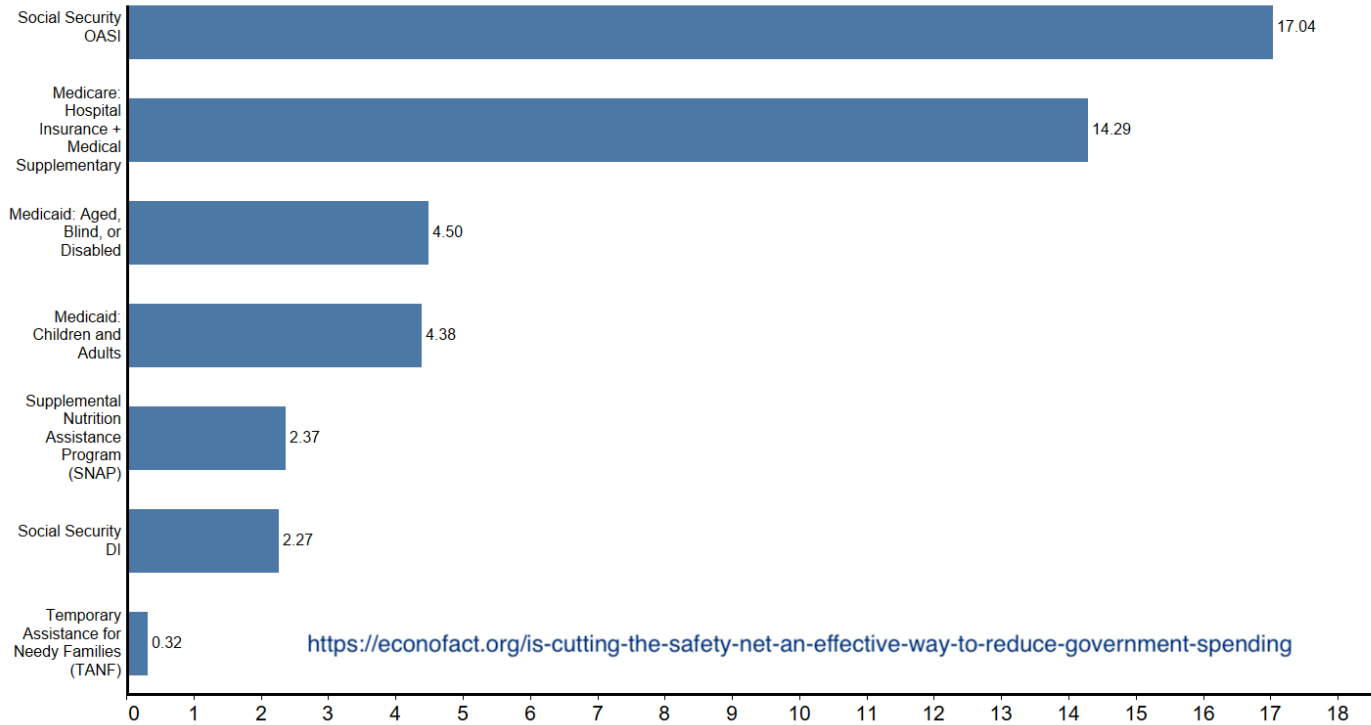© 2021 Peter G. Peterson Foundation   PGPF.ORG

Causes:
- Rising fraction of older people.
- Rising health care prices.

Source: PGPF, 2021

PAYMENTS FOR INDIVIDUALS AS A SHARE OF FEDERAL BUDGET — SELECT PROGRAMS, 2022

Big fry:
- Social Security
- Medicare

Small fry:
- All other transfers

Source: EconoFact

Projected Composition of Federal Spending under Current Policy (2019-2049)

Source: Authors' calculations based on Congressional Budget Office Budget Outlook, Long-term Budget Outlook, and the Social Security and Medicare Trustees Reports.

EconoFact   econofact.org
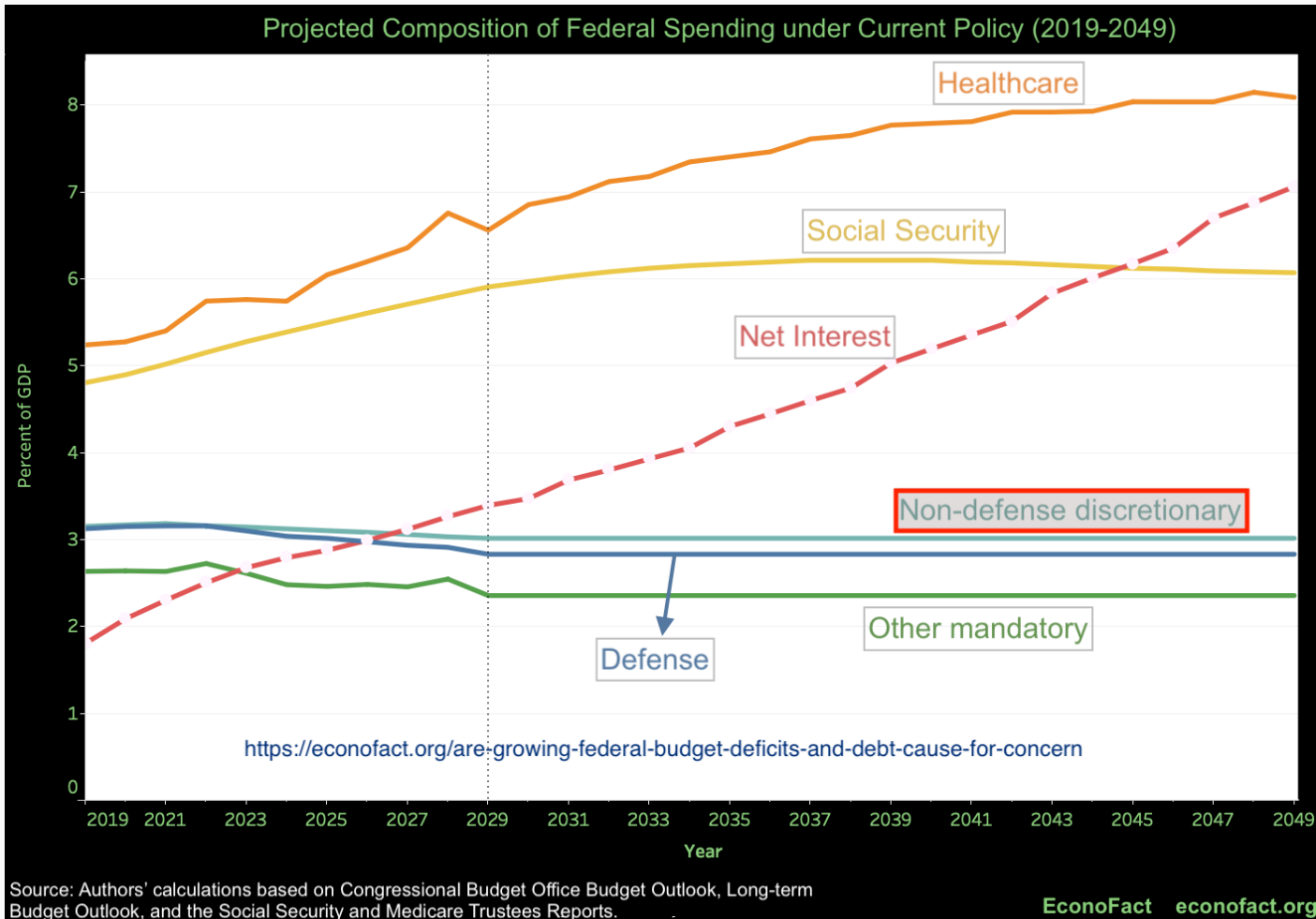
Discretionary spending is also small fry.

That's why nobody makes serious proposals to fix the deficit.

Source: Gale (2022)

1.5 Key Facts

1. At given levels of spending and revenues, the deficit will continue to climb.
2. The main problem is rising health care spending.
3. But there is also a big Social Security imbalance (which does not appear in the budget).
4. Rising interest payments may be a big part of the problem.
   But keep in mind that **real** interest payments matter.
   While nominal interest rates have risen, real interest rates have not (much).

One view:

THE NATIONAL DEBT IS ON AN UNSUSTAINABLE PATH

CBO estimates that federal debt, which is already at high levels, will climb significantly over the next 30 years. In CBO's latest projections, debt is expected to climb from 77 percent of GDP in 2017 to 150 percent of GDP in 2047, based on current law.

Debt at those levels would be unprecedented. – Source: PGPF, 2021

An opposing view:

> Low interest rates also create numerous opportunities. They expand the scope for expansionary fiscal policy, make the debt more sustainable and increase the scope of public investments that will pay for themselves over time. - Furman & Summers, 2020

1.8 Questions About Debt

1. What do big deficits do?

   Crowding out?

   Slower growth?

2. How much debt is "sustainable?"

   What happens when debt gets "too large?"

2 Sustainability

We don't know how much debt is 'sustainable.'

- Some countries have lived with high debt/GDP ratios for decades without trouble (Japan)

- Other countries got into trouble quite suddenly (Greece, Italy, Asian Tigers)

"Trouble" means: countries could not find lenders to roll over debt.

- "debt crisis"

But clearly **debt / GDP has to be stabilized** at some level.

2.2 Stabilizing Debt

What does it take to prevent debt / GDP from exploding?

The growth rate of debt / GDP:

$$g(B/Y) = g(B) - g(Y)$$

To keep (B/Y) bounded, the government needs to ensure that

$$g(B/Y) \leq 0$$

Debt cannot grow faster than GDP.

$$g(B) \leq g(Y)$$

2.3 The growth rate of debt

Government budget constraint:

$$\underbrace{T + \Delta B}_{\text{income}} = \underbrace{G + rB}_{\text{spending}}$$

New bond issues:

$$\Delta B_t = r_t B_t - \underbrace{T - G}_{\text{primary surplus}}$$

Growth rate of debt:

$$g(B_t) = \frac{\Delta B_t}{B_t} = r_t - \frac{S_t}{B_t}$$

$$g(B_t) = \frac{\Delta B_t}{B_t} = r_t - \frac{S_t}{B_t}$$

When the primary surplus is zero:

- $S = 0$

- all principal and interest is rolled over

- debt grows at rate r

A primary surplus is needed to keep $g(B) < r$

$$g(B_t/Y_t) = \underbrace{r_t - S_t/B_t}_{g(B_t)} - g(Y_t)$$

Keeping debt/output bounded requires

$$r - g - S/B \leq 0$$

or

$$S/B \geq r - g$$

where $g \equiv g(Y)$.

Key question:

Does the government have to run larger primary surpluses when it issues more debt?

Recall that bounded debt/output requires

$$S/B \geq r - g$$

The answer depends on r versus g.

Output growth g: perhaps 3% p.a.

Real interest rate r (on stocks!):

- averages about 7% p.a. over that last 100 years.

Therefore $r > g$.

If the government has debt today, it needs to save (enough).

If $S_t = 0, B/Y$ grows at rate $r - g > 0$.

- The interest share of the government budget grows without bounds.
- Not sustainable.

If the government borrows today, it has to save in the future.

This is true even though

- government debt can grow without bounds

- the government never has to repay its debts

The constraint simply comes from the need to keep debt-to-output finite.

2.9 Implications

1. If the government borrows today, taxes will be higher in the future (or spending must be cut)

2. The longer the government waits before stabilizing the debt, the higher taxes must rise
   because the debt grows due to accumulated interest

The $r > g$ logic explains why in budget projections the share of interest payments grows over time.

Figure 1

Real Ten-Year Benchmark Rate
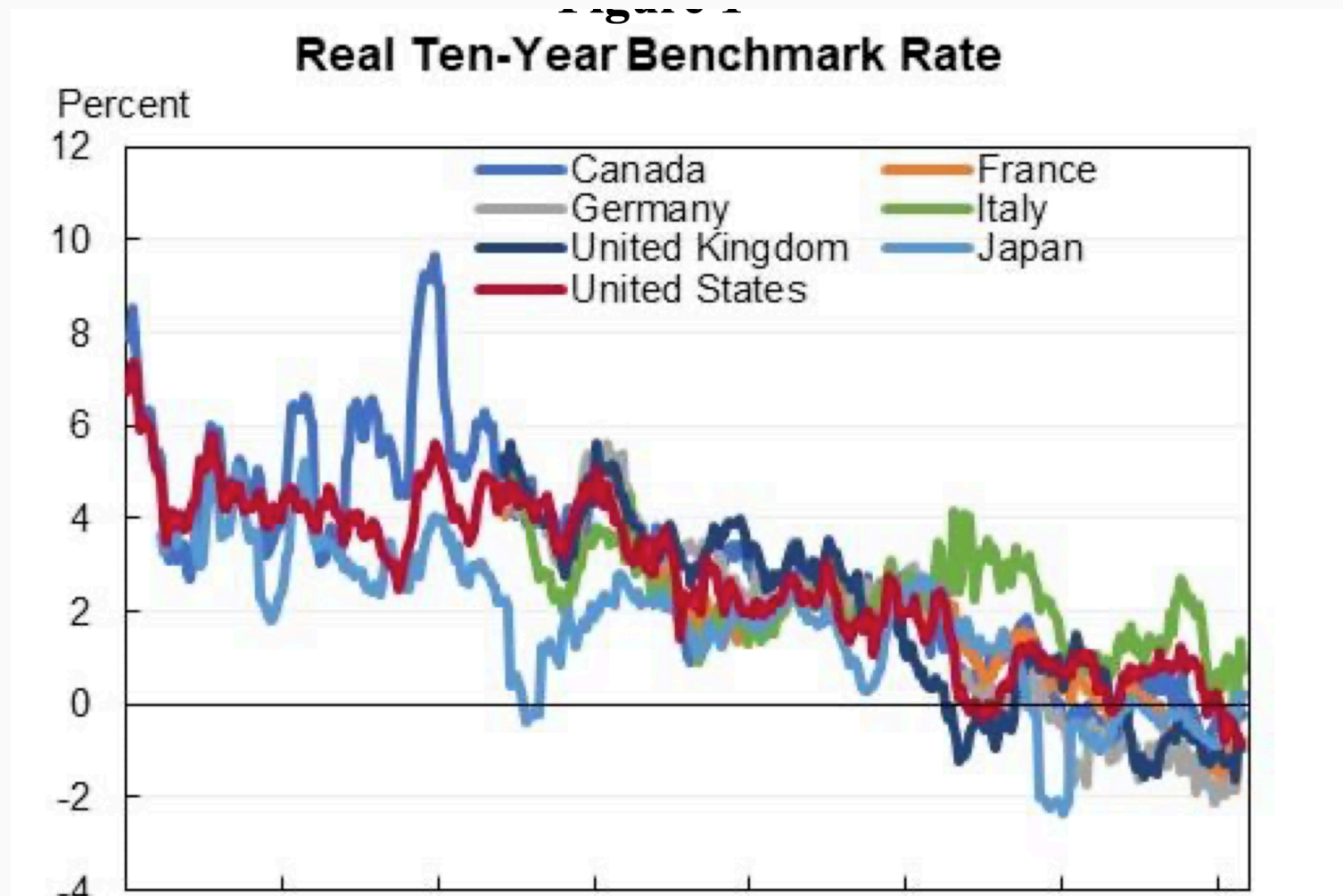
Real interest rates have been falling for a long time (why?).

Furman & Summers, 2020

Now output grows faster than the interest burden on debt.

- Even if the government runs primary deficits $(S < 0)$

- The government can keep rolling over interest payments.

The debt-to-output ratio does not blow up.

The government can invest in future growth without having to worry too much about debt repayment.

- The opportunities that Furman & Summers have in mind.

Figure 14a
U.S. Federal Debt Held by The Public

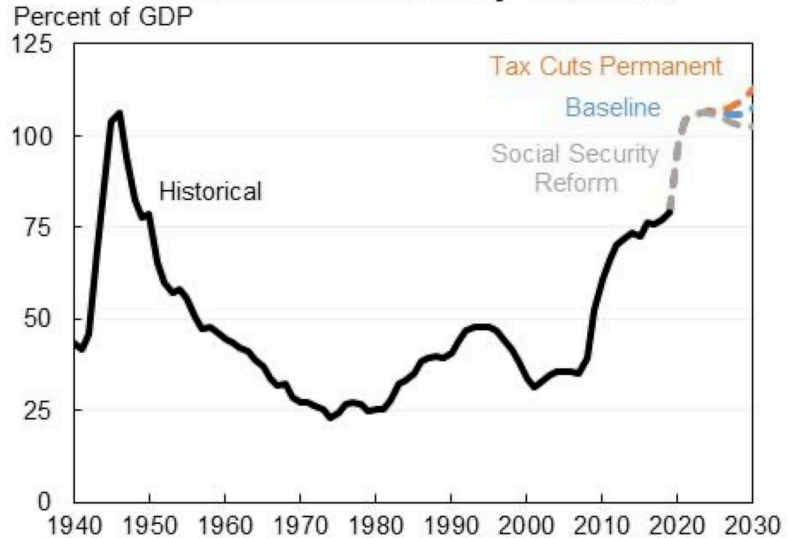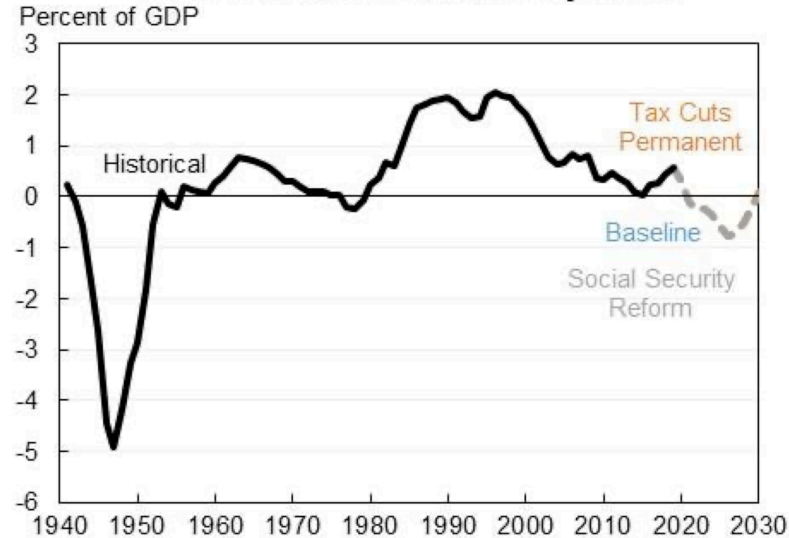**Figure 14b**
U.S. Federal Real Interest Payments

Furman & Summers, 2020

Debt has been rising, but interest payments have been flat.

It's not the size of the debt that matters, it's the size of interest payments **relative to output**.

One risk: what if interest rates rise in the future?

There are only five ways to stop this upward trajectory. They are (1) extraordinary economic growth, (2) government default, (3) large-scale money creation, (4) substantial cuts in government spending, and (5) large tax increases.

I would encourage you to try to assign probabilities to these possible outcomes. Individually, each of these outcomes seems highly unlikely. But the probabilities you assign must sum to at least one.

— N. Gregory Mankiw

Or is there another option?

1. Does the government **need to save** to stabilize debt/GDP?

   The answer depends on r versus g.

2. Recently, r has been very low. More debt is sustainable.

   But future r could be higher.

3. How much debt is sustainable?

   Nobody knows.

3 Effects of Debt

- Does a higher deficit imply that interest rates rise?

- Does government borrowing crowd out private investment?

Start from the NIPA identity

$$Y = C + I + G + EX - IM$$

Rewrite as $I = (Y - C) - G - (IM - EX)$ or

$$\underbrace{Y - C - T}_{\text{private saving}} + \underbrace{T - G}_{\text{public saving}} + \underbrace{IM - EX}_{\text{foreign saving}} = I$$

Everything else equal, higher government deficits reduce investment.

• Analyze the MR AS/AD equilibrium to see this …

But everything else is not equal…

Key question

Do private or foreign savings rise when public deficits rise?

Forward looking consumers

• Present value of consumption = present value of income

If higher debt today raises future taxes

• present value of income falls

• consumption falls

"Ricardian Equivalence" is the theoretical extreme case.

How might that work?

All of the above happens.

Higher government debt

- raises interest rates
- crowds out investment
- attracts foreign saving
  (increases the trade deficit)

1. What is the growth rate of debt if primary surpluses are zero?

2. The U.S. government has a lot more outstanding debt today (relative to GDP), but debt payments / GDP are flat. How can that be?

3. If the government raises the deficit today, does it have to reduce the deficit in the future?

   How does the answer depend on r vs g?

4. Why would private saving rise when public debt rises?

5. If the government reduces its debt burden by inflating away debt, what do you expect to happen to AD?

   Hint: Does it matter who holds the debt? How does it differ from taxing people to pay down debt?

Blanchard (2018), ch. 23

Also useful:

- Time to Worry Less about Federal Budget Deficits?

  Timothy Taylor's summary of Furman & Summers

- Karen Dynan (2023), High and Rising US Federal Debt: Causes and Implications

- Rubin et al. (2004)

  Nice summary of possible consequences of budget deficits

Bibliography

Blanchard, Olivier J. 2018. *Macroeconomics*. 7th ed. Pearson.