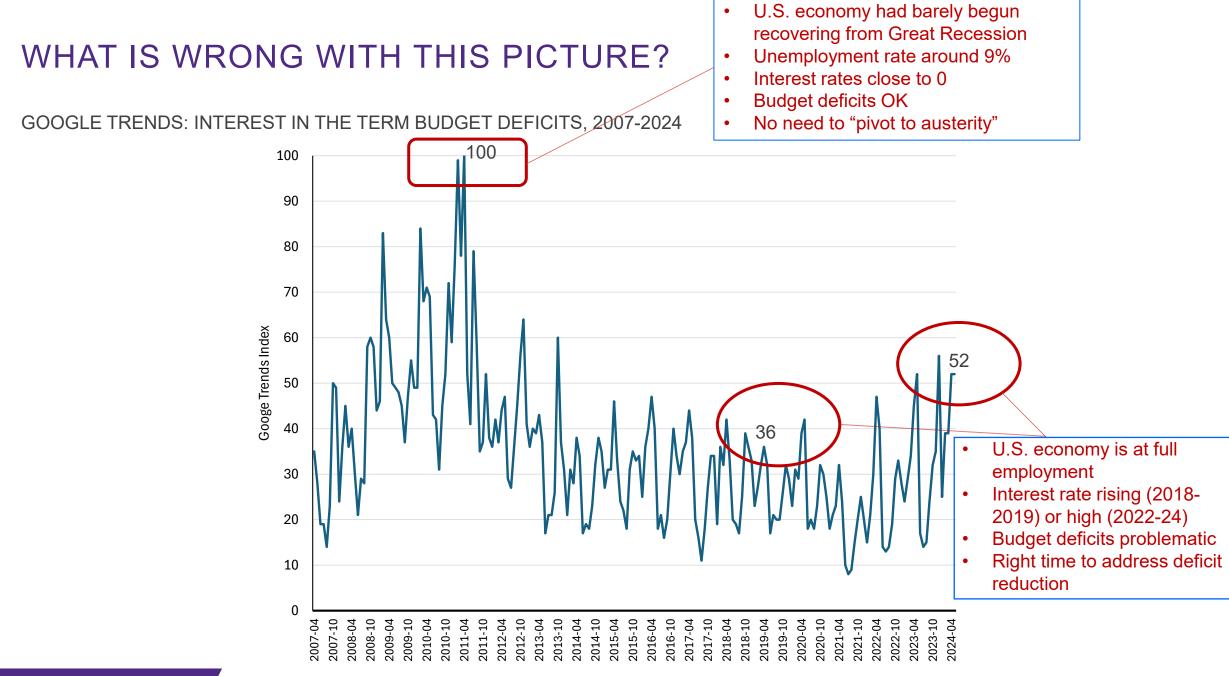
Budget Deficits and National Debt: Economics of the U.S. Federal Budget

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ROAD MAP

U.S. federal budget at a glance: where we have been; where we are going

The national debt

Do budget deficits and the debt matter?

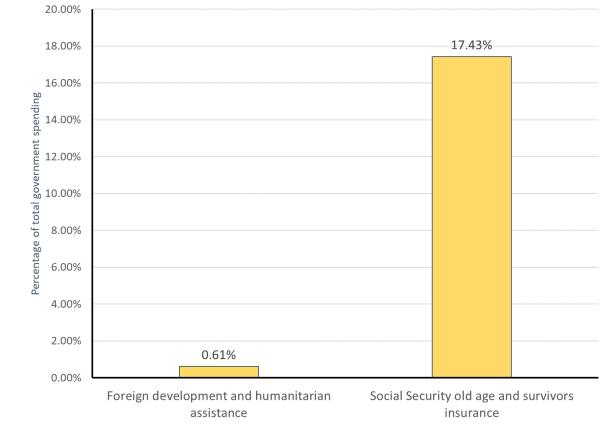
What could be done?

U.S. federal budget at a glance: where we have been, where we are going



WHAT FRACTION OF U.S. GOVERNMENT SPENDING IN FY 2023 WENT FOR FOREIGN DEVELOPMENT AND HUMANITARION ASSISTANCE ("FOREIGN AID")?

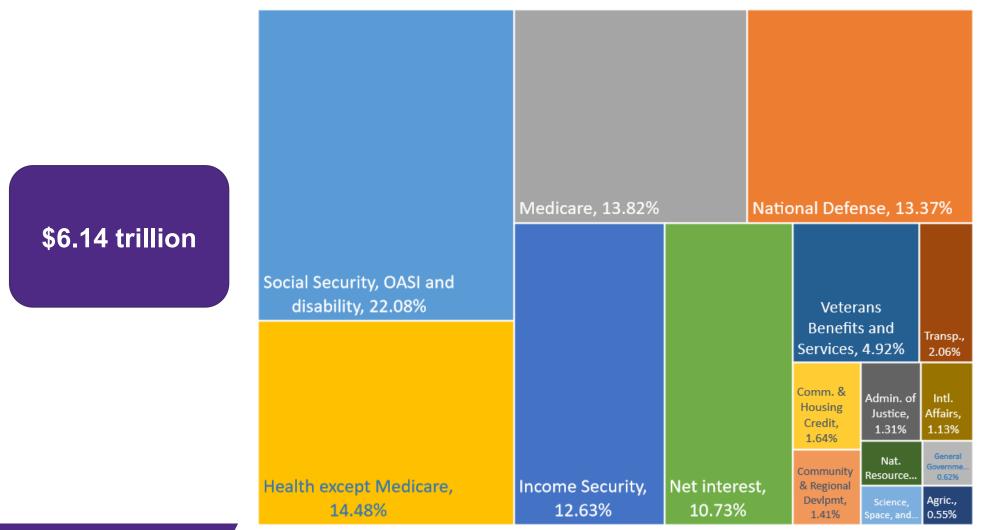
- □ \$37.58 billion or 0.61%
- □ Many Americans believe it is over 25%
- Some believe the U.S. spends more on foreign aid than it does on Social Security
- But the U.S. spends more on Social Security every 1.9 weeks than it spends on foreign aid in a year
- So, let's educate ourselves about the budget



SPENDING ON FOREIGN DEVELOPMENT AND HUMANITARIAN ASSISTANCE AND SOCIAL SECURITY OASI, FY 2023

U.S. FEDERAL BUDGET AT A GLANCE: SPENDING, 2023

FY 2023, EXPENDITURES AS PERCENTAGE OF TOTAL FEDERAL EXPENDITURES

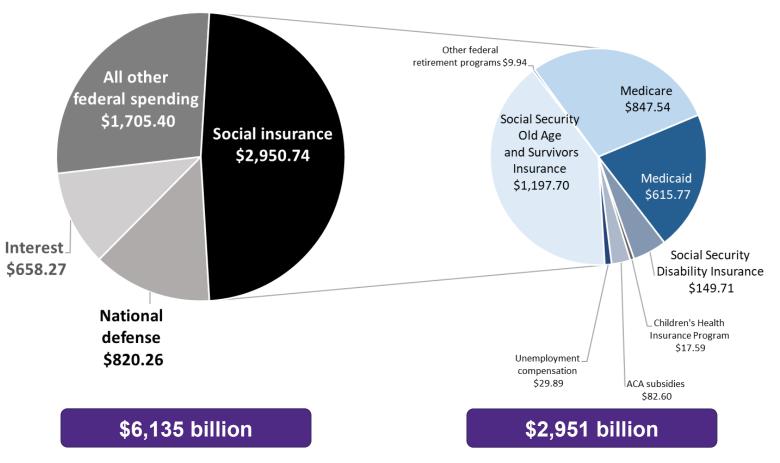


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Source: Office of Management and Budget Historical Tables, Table 3.1, https://www.whitehouse.gov/omb/budget/historical-tables/ (accessed April 28, 2024)

A BIG INSURANCE COMPANY ... WITH AN ARMY

U.S. Federal Government Outlays, Fiscal Year 2023 (billions of 2023 dollars)



U.S. FEDERAL BUDGET AT A GLANCE: SPENDING, 1962

FY 1962 EXPENDITURES AS PERCENTAGE OF TOTAL FEDERAL EXPENDITURES

Social Security, OASI and Income Security, disability, 13.45% 8.61% Veterans Benefits and Services, 5.27% Transp., 4.02% Net interest, 6.45% Comm. & Housing and Tech., 1.61% Credit,... Edu., Training, Agric., 3.3<u>3%</u> Employment, and Social.. Energy 0.57% Nat. Resources & Intl. Affairs, Environment, Admin. of Justice, 0.40% Community National Defense, 49.00% 5.28% & Regional 1.91%

\$1.07 trillion (2023 dollars)

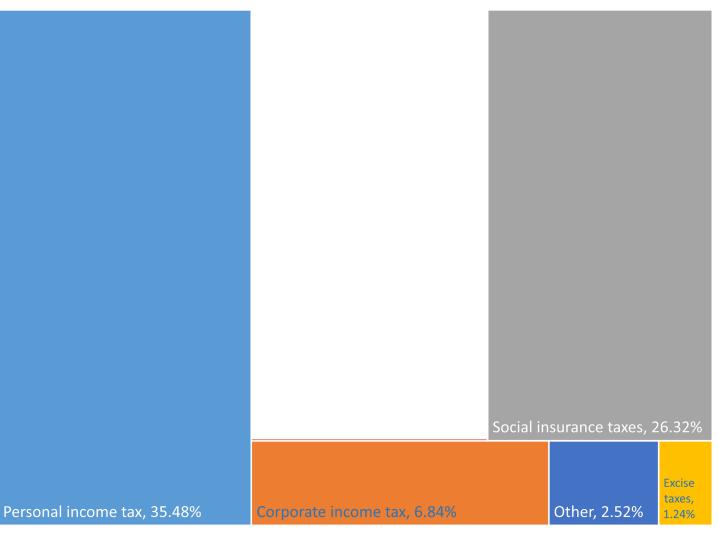
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Source: Office of Management and Budget Historical Tables, Table 3.1 https://www.whitehouse.gov/omb/historical-tables/ (accessed February 7, 2022)

U.S. FEDERAL BUDGET AT A GLANCE: REVENUE, 2023

FY 2023, REVENUE AS PERCENTAGE OF TOTAL FEDERAL EXPENDITURES

\$4.44 trillion



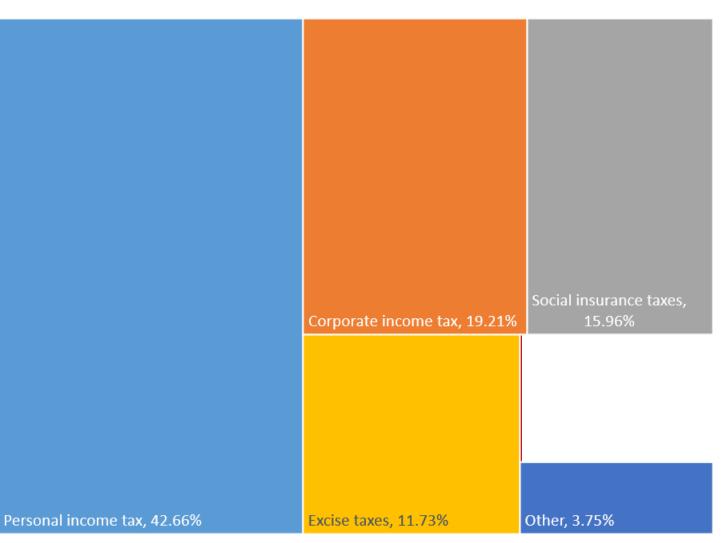
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Source: Office of Management and Budget Historical Tables, Table 2.1, https://www.whitehouse.gov/omb/budget/historical-tables/ (accessed April 28, 2024)

U.S. FEDERAL BUDGET AT A GLANCE, REVENUE 1962

FY 1962, REVENUE AS PERCENTAGE OF TOTAL FEDERAL EXPENDITURES

\$1.00 trillion (2022 dollars)

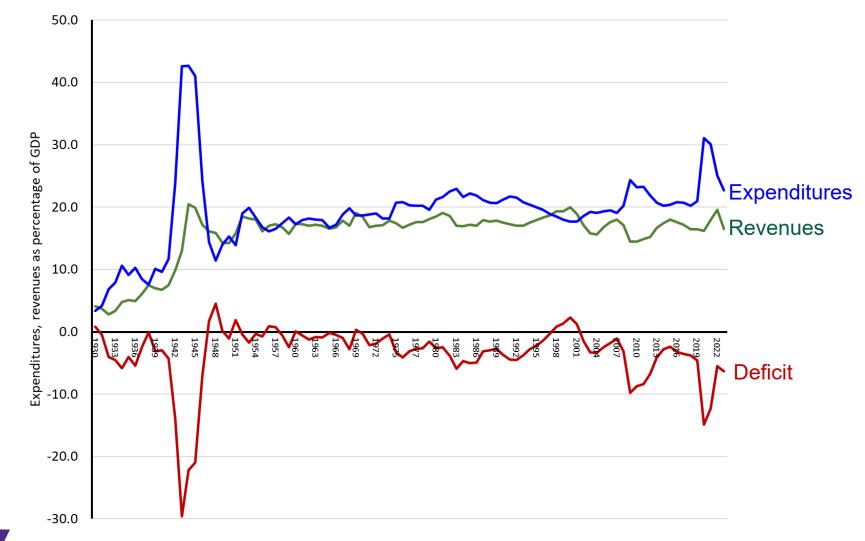


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Source: Office of Management and Budget Historical Tables, Table 2.1, https://www.whitehouse.gov/omb/budget/historical-tables/ (accessed January 9, 2024)

U.S. FEDERAL BUDGET DEFICITS OVER TIME

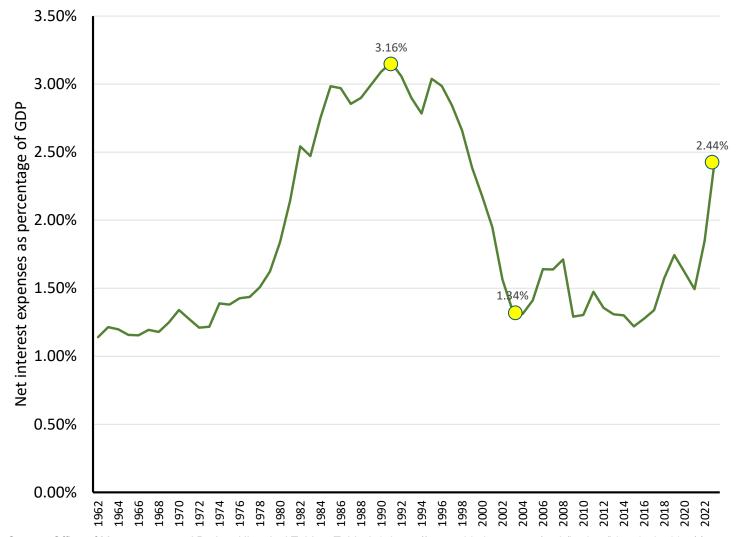
FEDERAL EXPENDITURES, REVENUES, AND DEFICIT AS PERCENTAGE OF GDP, FY 1930-2023



Source: Office of Management and Budget Historical Tables, Table 1.2, https://www.whitehouse.gov/omb/budget/historical-tables/ (accessed April 28, 2024)

INTEREST EXPENSES TO FINANCE FEDERAL BORROWING

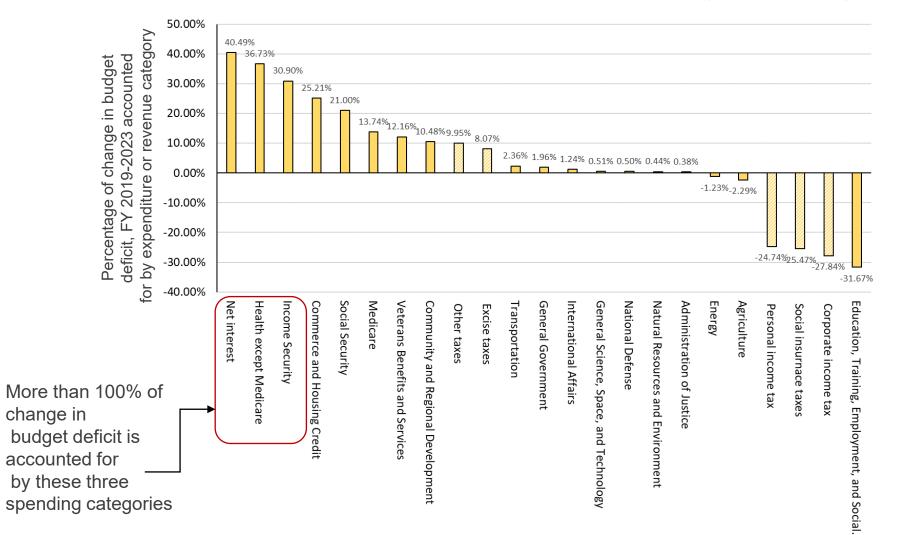
NET INTEREST EXPENSES AS A PERCENTAGE OF GDP, FY 1962-2023



Source: Office of Management and Budget Historical Tables, Table 3.1, https://www.whitehouse.gov/omb/budget/historical-tables/ (accessed April 28, 2024)

WHY HAS THE FEDERAL BUDGET DEFICIT INCREASED SINCE 2019?

THE FEDERAL BUDGET DEFICIT HAS INCREASED BY \$521 BILLION IN REAL TERMS (2023 DOLLARS) SINCE 2019. WHY?



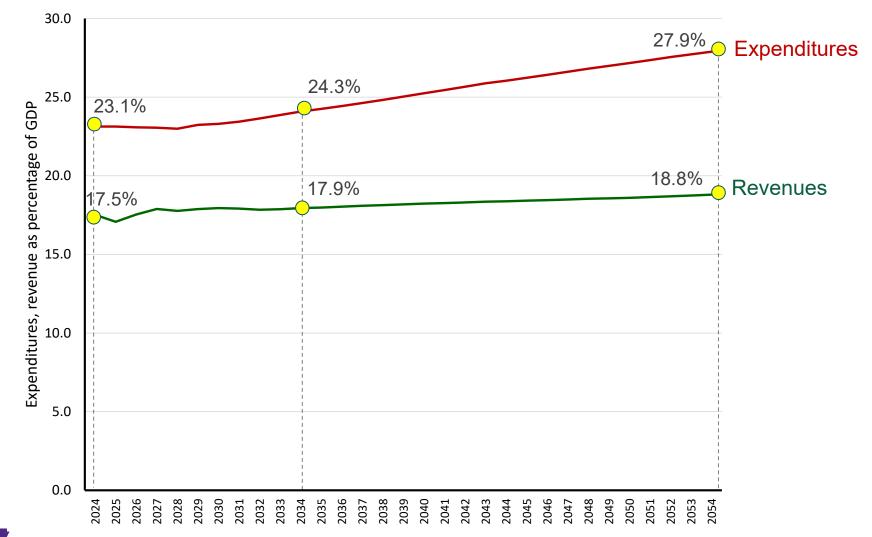
LET'S PAUSE FOR A COUNTERPOINT

• IS THERE REALLY REASON TO BE SO CONCERNED ABOUT THE DEFICIT?

- In FY 2023, federal spending was still unwinding from spending authorized by the various pandemic relief bills (e.g., enhanced SNAP benefits under the American Rescue Plan Act of March 2021):
 - That spending will continue to wind down and dwindle away in the next fiscal year
- Interest rates have probably peaked and should be lower in the next few years
- Budget deficits should subside and financing the will be less expensive in the near-term and intermediate term

CONGRESSIONAL BUDGET OFFICE (CBO) LONG-RANGE BUDGET PROJECTIONS

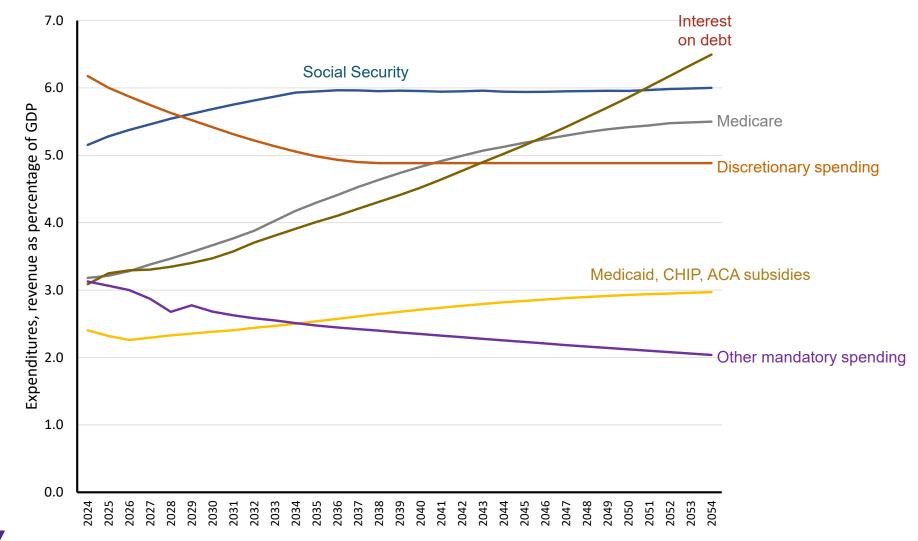
FEDERAL EXPENDITURES AND REVENUES AS PERCENTAGE OF GDP, 2024-2054



Source: Congressional Budget Office, "The Long-Term Budget Outlook: 2024 to 2054," (March 2024), https://www.cbo.gov/publication/59711 (accessed May 4, 2024)

CBO LONG-RANGE BUDGET PROJECTIONS

FEDERAL EXPENDITURES BY SELECTED CATEGORY AS PERCENTAGE OF GDP, 2024-2054



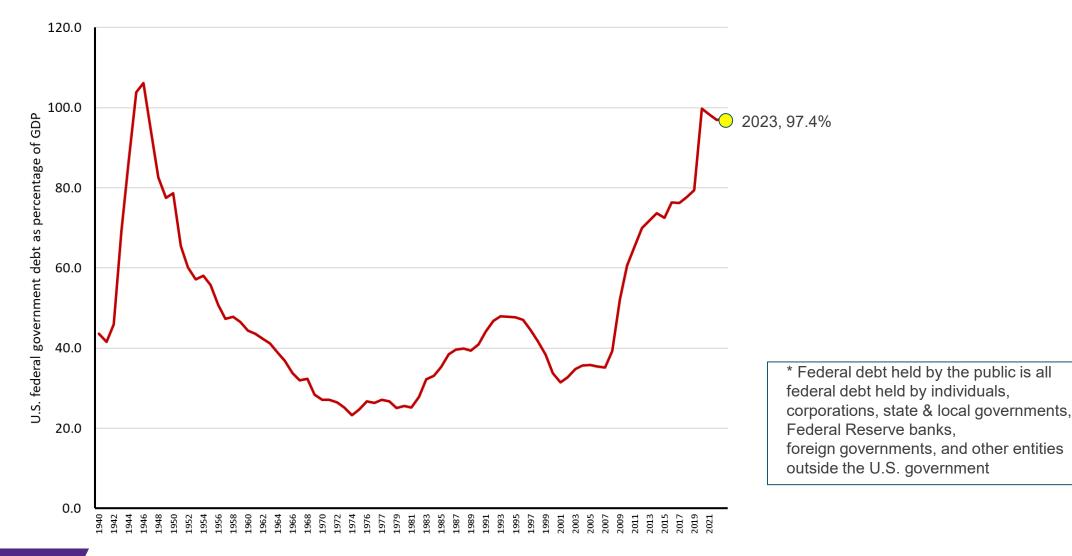
Source: Congressional Budget Office, "The Long-Term Budget Outlook: 2024 to 2054," (March 2024), https://www.cbo.gov/publication/59711 (accessed May 4, 2024)

The national debt



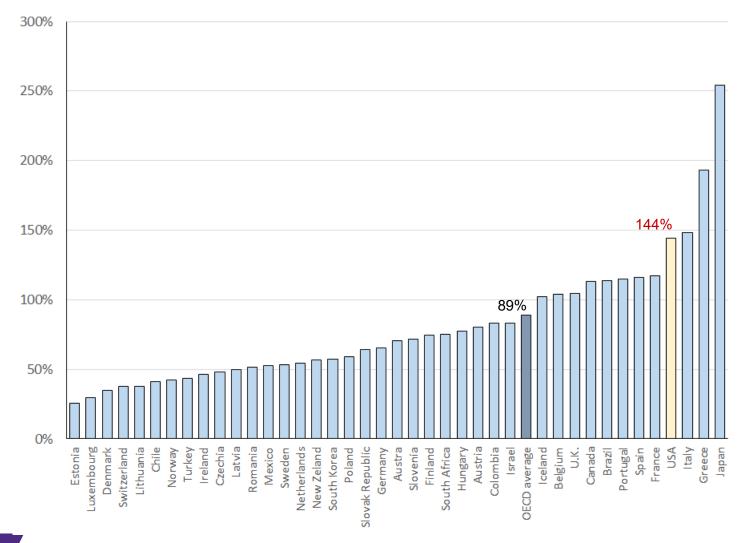
U.S. FEDERAL DEBT OVER TIME

FEDERAL DEBT HELD BY THE PUBLIC AS A PERCENTAGE OF GDP, 1940-2023*



NATIONAL GOVERNMENT DEBT AROUND THE WORLD

NATIONAL GOVERNMENT DEBT AS PERCENTAGE OF GDP, OECD COUNTRIES, 2022 OR LATEST YEAR AVAILABLE



FEDERAL DEBT OWNED BY PUBLIC

WHO OWNS U.S. FEDERAL DEBT? DECEMBER 2022

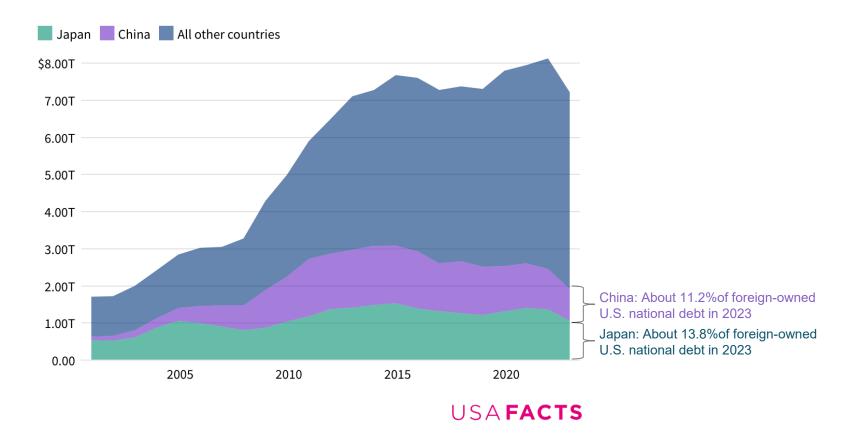
Mutual funds, 9.68% \$26.94 trillion Federal Reserve, 23.81% U.S. depository State & local governments, 6.86% 6.26% State & gov't Private pension 1.30% Foreign investors, 29.20% Other, 17.34% funds, 3.28%

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Source: U.S. Department of Treasury, Bureau of the Fiscal Service, *Treasury Bulletin*, Tables OFS-1 and OFS-2 (March 2024), https://fiscal.treasury.gov/reports-statements/treasury-bulletin/current.html (accessed April 28, 2024)

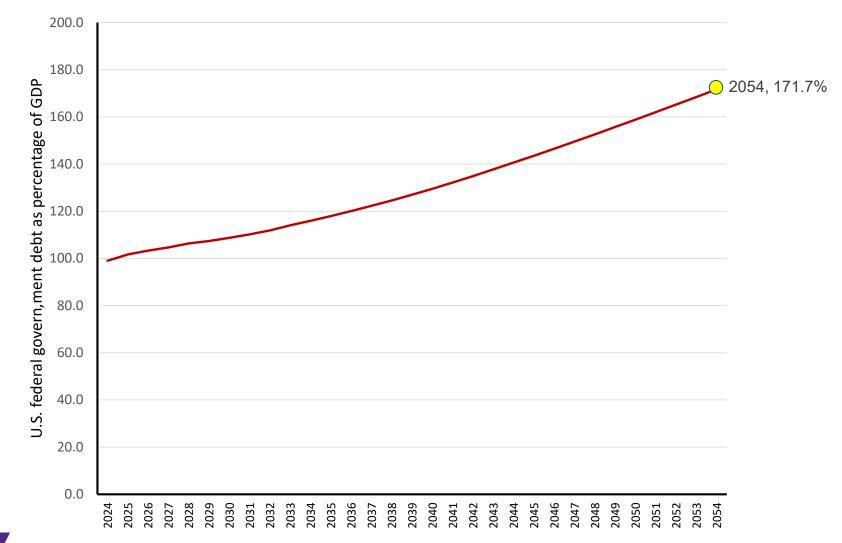
WHICH COUNTRIES OWN U.S. FEDERAL DEBT?

U.S. DEBT: FOREIGN OWNERSHIP



CBO LONG-RANGE PROJECTIONS: NATIONAL DEBT

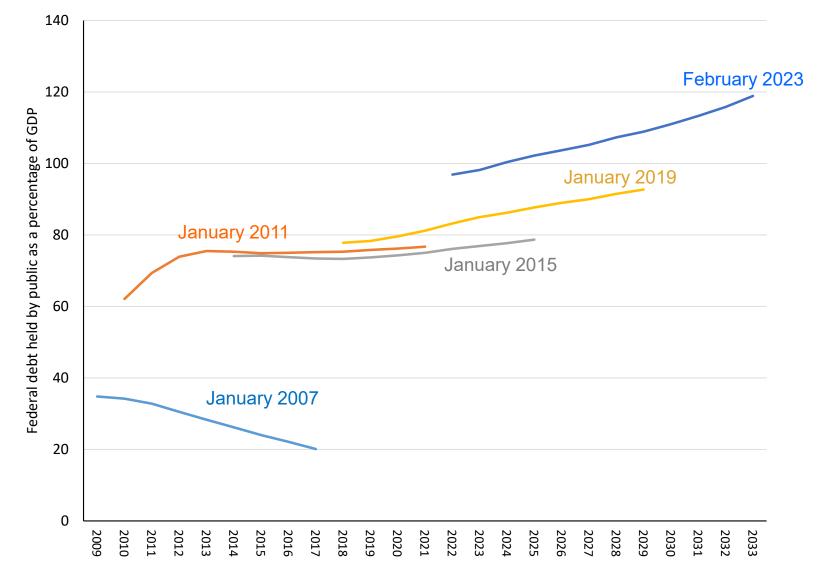
FEDERAL DEBT HELD BY THE PUBLIC AS A PERCENTAGE OF GDP, 2024-2054*



Source: Congressional Budget Office, "The Long-Term Budget Outlook: 2024 to 2054," (March 2024), https://www.cbo.gov/publication/59711 (accessed May 4, 2024)

THESE PROJECTIONS ARE SUBJECT TO CHANGE

CONGRESSIONAL BUDGET OFFICE 10-YEAR PROJECTIONS OF DEBT-GDP RATIO, 2007, 2011, 2015, 2019, 2023



Source: Penn Wharton Budget Model, "When Does Federal Debt Reach Unsustainable Levels" (October 6, 2023),

https://budgetmodel.wharton.upenn.edu/issues/2023/10/6/when-does-federal-debt-reach-unsustainable-levels#:~:text=

As%20we%20have%20discussed%20elsewhere,to%20accommodate%20future%20interest%20payments.

CAN DEBT-GDP RATIO EVER COME DOWN?

□ Yes!

□ It did in the 27 years between 1947 and 1974

□ ... and it did last year

□ How does that work?

DYNAMICS OF DEBT-GDP RATIO

□ Here is a formula!

$$\frac{D_t}{Y_t} = \left(\frac{1+r_t}{1+g_t}\right)\frac{D_{t-1}}{Y_{t-1}} + \frac{PBD_t}{Y_t}$$

where

- D_t = federal government debt held by public in year t (nominal)
- $Y_t = GDP$ in year t (nominal)
- r_t = average interest on federal debt held by public in year t
- $g_t = \text{nominal GDP growth in year } t$
- PBD_t = primary budget deficit year t (*non-interest* expenditures minus tax revenue)

DYNAMICS OF DEBT-GDP RATIO

□ Here is a formula!

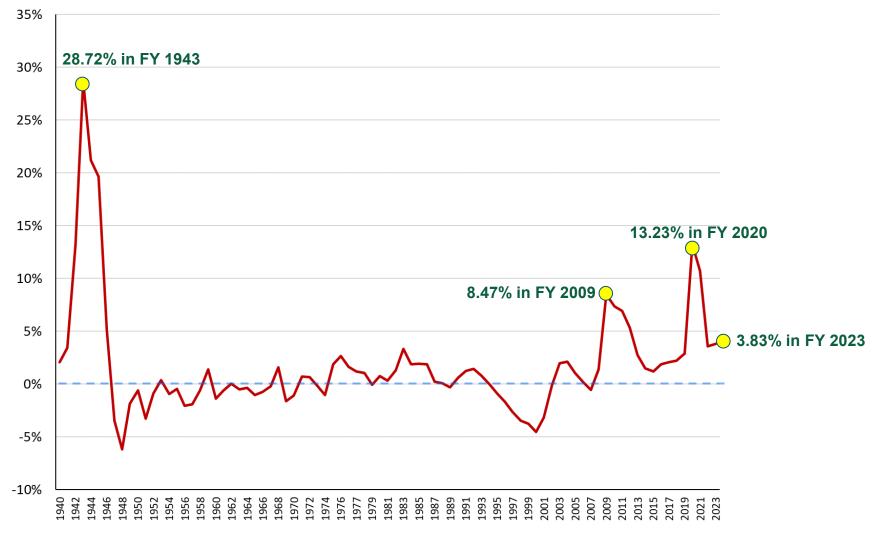
$$\frac{D_t}{Y_t} = \left(\frac{1+r_t}{1+g_t}\right)\frac{D_{t-1}}{Y_{t-1}} + \frac{PBD_t}{Y_t}$$

□ What does it mean?

- If nominal GDP growth exceeds average interest rate on debt ($g_t > r_t$) and primary budget deficit (PBD) is zero or negative (i.e., a surplus), debt-GDP ratio is sure to fall
- If nominal GDP growth exceeds average interest, debt-GDP ratio could fall, even if PBD is positive
- If nominal GDP growth is at or below average interest rate on debt *and* PBD is zero or positive, debt-GDP ratio is sure to go up

PRIMARY BUDGET DEFICIT

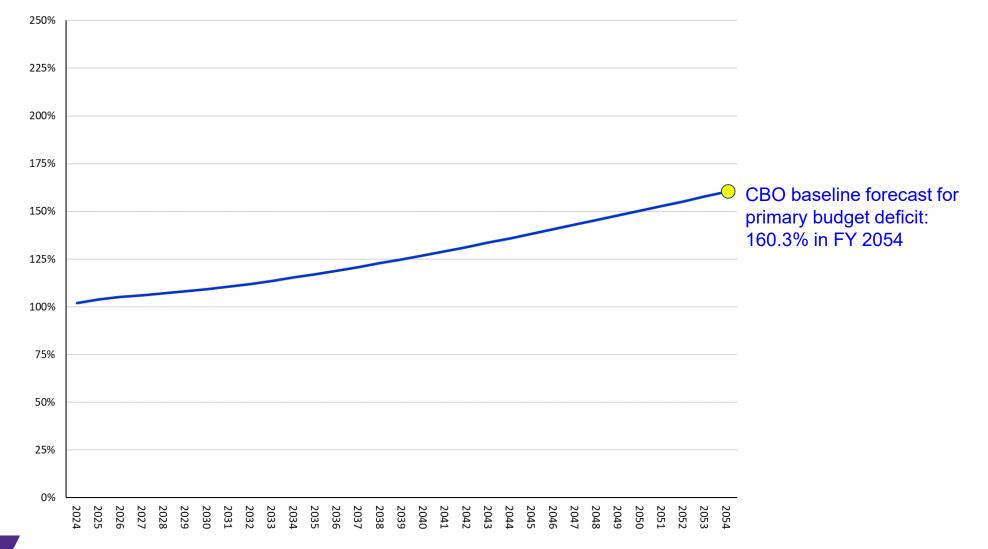
PRIMARY FEDERAL BUDGET DEFICIT (SURPLUS) AS PERCENTAGE OF GDP



Source: Author's computations based on Office of Management and Budget Historical Tables, Tables 1.2 and 3.1, https://www.whitehouse.gov/omb/budget/historical-tables/ (accessed April 28, 2024)

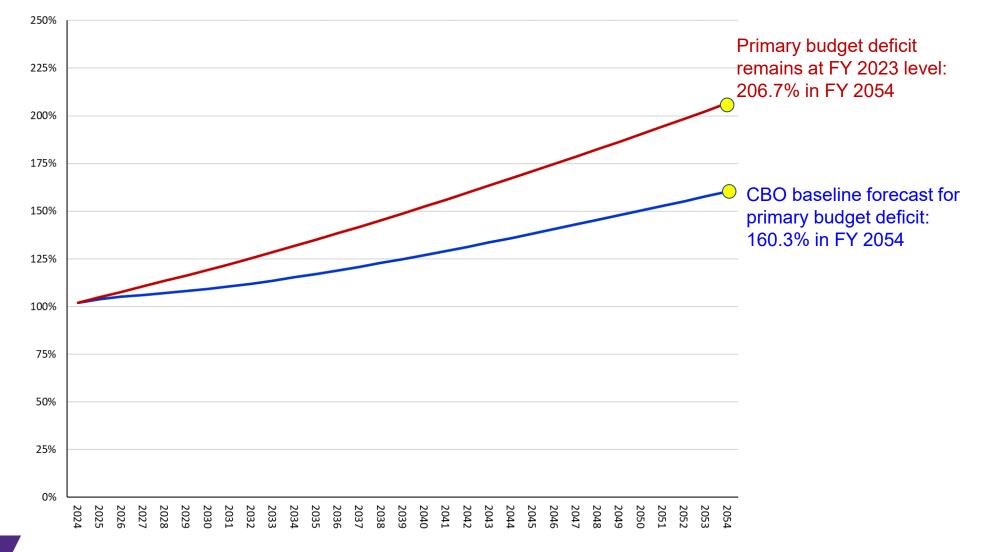
SIMULATED DEBT DYNAMICS

PRIMARY BUDGET DEFICIT EQUALS CBO BASELINE FORECAST



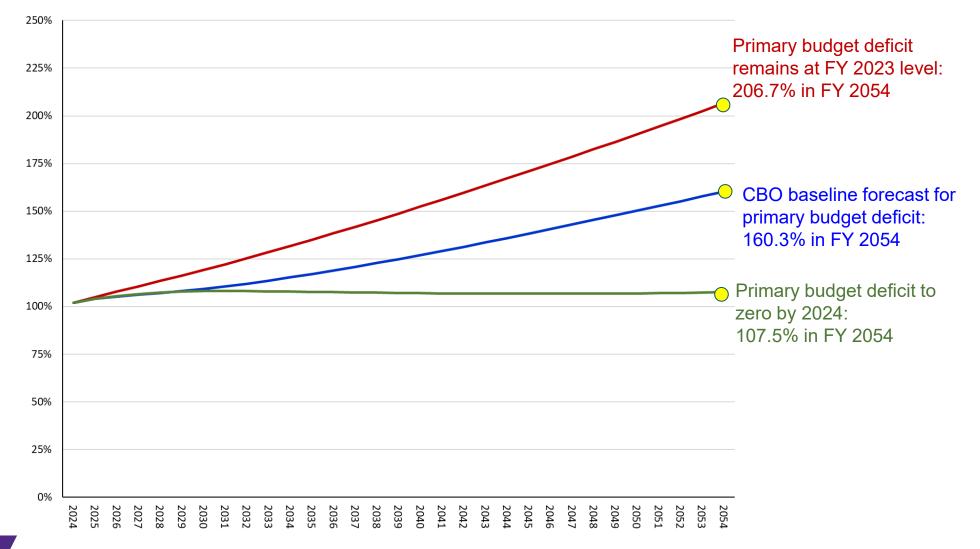
SIMULATED DEBT DYNAMICS

PRIMARY BUDGET DEFICIT REMAINS AT FY 2023 LEVEL



SIMULATED DEBT DYNAMICS

ZERO PRIMARY BUDGET DEFICIT BY 2040



Do deficits and debt matter?



FEDERAL DEBT AND DEFICITS MATTER

• JUST NOT IN THE WAY MANY PEOPLE THINK Growing levels of federal debt will *not* (someday) lead to a financial crisis. It is not an existential crisis like climate change, but it has three costs to the U.S. economy

1. Direct drag on long-run economic growth:

Higher debt can lead to higher interest rates in the future, which can reduce private investment and lower national income in the future, i.e., higher levels of debt can be a drag on economic growth

2. Indirect drag on long-run economic growth:

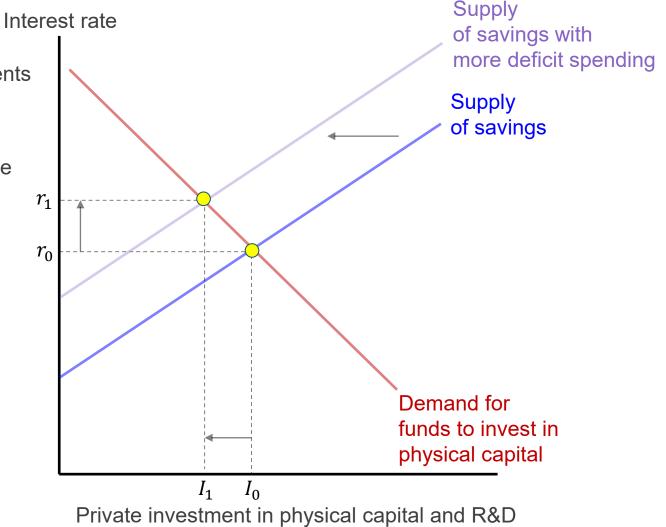
Higher debt reduces the political support for public investments that spur long run growth, e.g., in science, infrastructure, and income assistance programs that benefit children

3. Limits ability of federal government to respond to an economic crisis:

Higher deficits and debt limit ability of governments to deficit-spend during recessions

WHY DO BUDGET DEFICITS LEAD TO HIGHER INTEREST RATES?

- Suppose government cuts taxes or increases transfer payments to citizens and finances these moves by borrowing \$X
- □ While some amount of the tax cut or transfer payment may be saved, not all of it will be. Say aX is saved, a < 1
- □ Net effect on supply of saving is negative— $\Delta S = aX - X = (a - 1)X < 0$:
 - Supply curve of saving shifts leftward
 - \Rightarrow Higher interest rates
 - \Rightarrow Less private investment in plant, equipment, and R&D
 - \Rightarrow National output (GDP) lower in future
 - Deficit spending "crowds out" private investment



WAIT! WHY IS THE POOL OF NATIONAL SAVINGS LIMITED?

□ Couldn't the U.S. government finance budget deficit by borrowing from foreign sources?

- If there is an unlimited supply of funds to finance the budget deficit available from abroad, deficit spending need not reduce national savings:
 - And thus it would not increase interest rates, crowd out private investment, and decrease future GDP

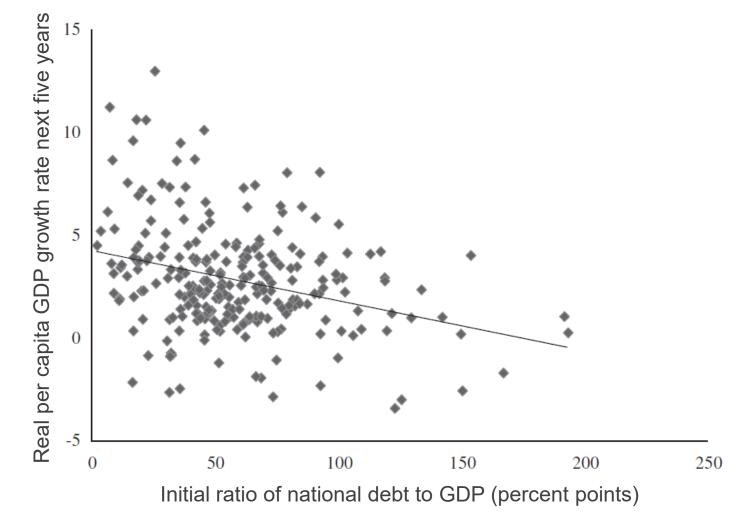
□ Two responses:

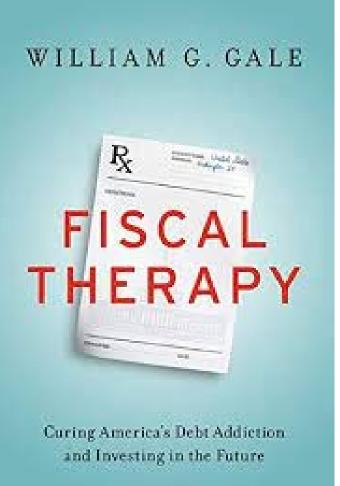
- Yes, with an unlimited supply of foreign funds to purchase federal government debt, future GDP would not be reduced. However, U.S. households and business would have a smaller claim on that future GDP since part of that future GDP is needed to repay foreign lenders
- 2. Evidence suggests that even a rich, highly developed economy like the U.S. does not face a perfectly elastic supply of savings from abroad

EMPIRICAL EVIDENCE

- Gale and Orzag (2003)—U.S.:
 - For every 1% increase in deficit/GDP ratio, long-term interest rates rise by 0.5-1%
- Ardagna, Caselli, and Lane (2007)—international:
 - For every 1% increase in deficit/GDP ratio, long-term interest rates by 1.5%
- ❑ Woo and Kumar (2015)—79 developed and emerging countries with populations > \$5 million, 1970-2000:
 - 10 percent point increase in debt-to-GDP ratio reduces growth in real per capita GDP by 0.1 – 0.2 percent points

Gale, William and Peter Orzag, "Economic Effects of Sustained Budget Deficit," *National Tax Journal*, Vol. 56 (September 2003), pp. 463-465; Ardagna, Silvia, Francesco Caselli, and Timothy Lane, "Fiscal Discipline and the Cost of Public Debt Service: Some Estimates for OECD Countries." *B.E. Journal of Macroeconomics: Topics in Macroeconomics*, Vol. 7, No. 1 (2007) Woo, J. and Kumar, M.S. (2015), "Public Debt and Growth," *Economica*, 82: 705-739.





TANGIBLE ILLUSTRATIVE IMPACT: FISCAL THERAPY

- In 2019, economist William Gale of the Brookings Institution published a book called *Fiscal Therapy*
- Book laid out a comprehensive plan for deficit reduction, involving a combination of net spending reductions and tax increases
- Aimed at audience of policy makers, especially those from center-left, who might otherwise have been skeptical about deficit reduction
- Included many progressive policy priorities such as *expanded* Child Tax Credit and *expansion* of Medicaid, and universal pre-K
- Message of book got drowned with the sharp recession induced by the onset of the pandemic and the enormous rescue plans that followed (CARES Act, American Rescue Plan) that significantly increased the deficit

PENN-WHARTON MODEL 2019 ESTIMATE OF IMPACT OF WILLIAM GALE'S FISCAL THERAPY PLAN

		<i>Fiscal Therapy</i> policy
Revenue/GDP	21.0%	27.8%
Non-interest expenditures/GDP	22.6%	23.3%
Interest expenditures/GDP	7.9%	0.8%
Federal debt/GDP	196.6%	15.3%

Estimates of budgetary and debt impacts by 2050, percentage of GDP

		Fiscal Therapy policy relative to current policy baseline
of impact, 2050	GDP	+ 7.3%
	Capital services	+ 20.6%
	Hours worked	+ 1.0%
	Labor income	+ 7.3%

Estimates economic

37 Source: Ricco, John, Rich Prisinzano, and Sophie Shin, "Analysis of Fiscal Therapy: Conventional and Dynamic Estimates," Penn-Wharton Budget Model (April 9, 2019), https://budgetmodel.wharton.upopp.edu/iocuce/2014/0/archesi.co.f.f. https://budgetmodel.wharton.upenn.edu/issues/2019/4/9/analysis-of-fiscal-therapy-conventional-and-dynamic-estimates (accessed March 2, 2023)



WHAT? WHEN? HOW?

- It is not difficult to answer the question, "What should be done?"
 Some combination of cutting spending and increasing taxes!
- The answer to the second question, "When should policymakers address the budget deficit?" is also not difficult:
 - The time for reducing budget deficits is when the economy is at full employment, which it is now
- As to "How?" there are ways of putting together near-term (2024-2033) deficit reduction plans that could eliminate the ten-year deficit and leave something over to finance your preferred policy options
- However, it is more difficult to eliminate the budget deficit now than it was in 2019 when Bill Gale proposed his plan because the deficit is higher and interest rates are higher
- What follows is a plan that would broadly reflect center-left policy priorities, but which also involves some provisions that reflect priorities from a center-right perspective

A PLAN TO ELIMINATE THE 10-YEAR DEFICIT OF \$17,841 BILLION*

Tax "bads", tax goods that cause "bads," tax consumption

- New \$50 per ton carbon tax
- Increase federal gasoline tax by 15 cents per gallon
- Increase federal excise tax on tobacco products
- Increase federal excise tax on alcoholic beverages
- Impose fee on systemically important financial institutions
- New 10% VAT excluding food, housing, and post-secondary education

Deficit reduction: \$7,120 billion

Shore up Medicare

- Increase Medicare payroll tax rate by 2 percent points
- Reduce Medicare Advantage benchmarks
- Increase premiums paid to Medicare Part B Deficit reduction: \$2,576

Reduce or eliminate tax expenditures

- Eliminate itemized deductions
- Limit income and payroll tax exemption of employersponsored health insurance to 50th percentile of premiums
- Further limit non-taxed annual contributions to retirement plans
- Raise tax rates on long-term capital gains and qualified dividends by 2 percent points
- Eliminate tax exemption of new qualified private activity bonds

Deficit reduction: \$3,689 billion

Reduce agricultural subsidies

- Eliminate Title 1 agricultural programs
- Reduce subsidies in the crop insurance program
- Limit ARC and PLC payment acres to 30% of base acres

Deficit reduction: \$102 billion

Tax affluent households more

- Surtax of 1 percent point on AGI above standard deduction
- Increase corporate income tax rate by 4 percentage points to 25 percent
- Require half of advertising expenses to be amortized over 10 years
- Create new financial transactions tax of 0.01% on securities and derivatives

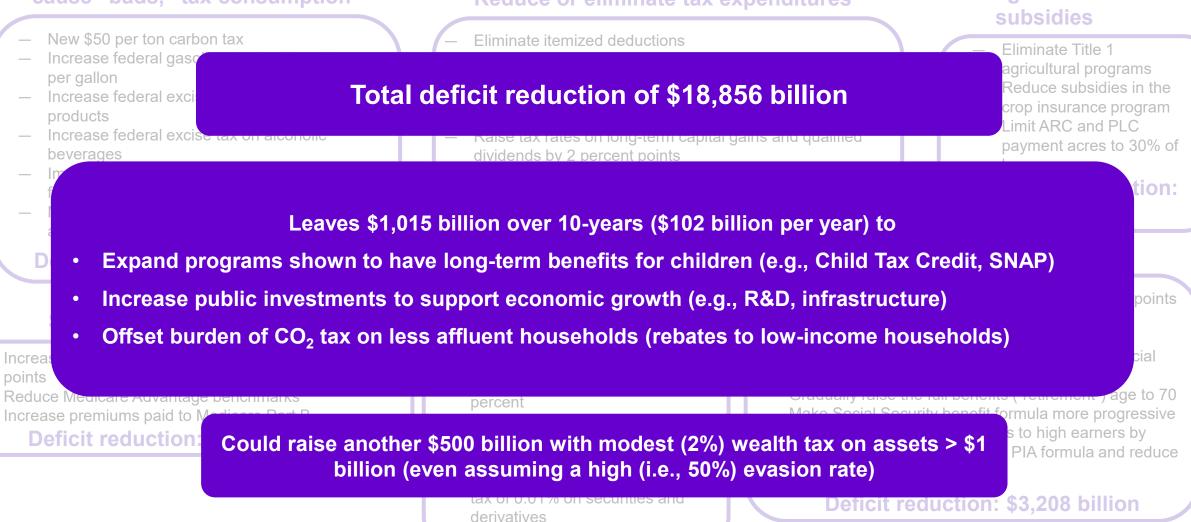
Deficit reduction: \$2,263

Shore up Social Security

- Increase Social Security payroll tax by 2 percent points
- Subject earnings greater than \$250,00 to Social Security payroll taxes
- Use chained-CPI instead of CPI for COLA for Social Security and other federal programs
- Gradually raise the full benefits ("retirement") age to 70
- Make Social Security benefit formula more progressive
- Reduce Social Security benefits to high earners by introducing new "bend point" in PIA formula and reduce PIA factors

Deficit reduction: \$3,208 billion

A PLAN TO ELIMINATE THE 10-YEAR DEFICIT OF \$17,841 BILLION* Tax "bads", tax goods that cause "bads," tax consumption Reduce or eliminate tax expenditures Reduce agricultural subsidios



Deficit reduction: \$2.263

*See Appendix for more detail

Q&A



Reunite. Reignite.



Appendix



TAX OPTIONS

TAXING "BADS", TAXING GOODS THAT CREATE "BADS", OR TAXING CONSUMPTION

Budget option	Effect on deficit, 2023-2032 (billions of current dollars)	Ten-year budget deficit (billions of current dollars)
Status quo	0	\$17,841
New \$50 per ton carbon tax, with rate increasing 5% per year, and index to inflation	- \$1,730	
Increase federal gasoline tax by 15 cents per gallon and index to inflation	- \$240	
Increase federal excise tax on tobacco products by 50%	- \$42	
Increase federal taxes on alcoholic beverages to \$16 per proof gallon and index to inflation	- \$240	
Impose a fee on financial institutions with assets of \$50 billion or more	- \$103	
New 10% VAT excluding food, housing, and post-secondary education	- \$3,900	
Total	- \$7,120	

Based on Congressional Budget Office, "Options for Reducing the Deficit, 2023 to 2032--Volume I: Larger Reductions," (December 7, 2022), <u>https://www.cbo.gov/publication/58164</u> (accessed April 28, 2024), and "Options for Reducing the Deficit, 2023 to 2032--Volume II: Smaller Reductions," (December 7, 2022), https://www.cbo.gov/publication/58163



REDUCE OR ELIMINATE TAX EXPENDITURES ("SPENDING THROUGH THE TAX CODE"

Budget option	Effect on deficit, 2023-2032 (billions of current dollars)	Ten-year budget deficit (billions of current dollars)
Status quo	0	\$17,841
Eliminate itemized deductions	- \$2,507	
Limit the income and payroll tax exclusion for employment- based health insurance to the 50th percentile of premiums	- \$893	
Further limit non-taxed annual contributions to retirement plans	- \$152	
Raise tax rates on long-term capital gains and qualified dividends by 2 percent points	- \$102	
Eliminate the tax exemption for new qualified private activity bonds	- \$35	
Total this page	- \$3,689	
Total from previous page	- \$7,120	
Total	- \$10,809	

Based on Congressional Budget Office, "Options for Reducing the Deficit, 2023 to 2032--Volume I: Larger Reductions," (December 7, 2022), <u>https://www.cbo.gov/publication/58164</u> (accessed April 28, 2024), and "Options for Reducing the Deficit, 2023 to 2032--Volume II: Smaller Reductions," (December 7, 2022), https://www.cbo.gov/publication/58163

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TAX AND SPENDING OPTIONS

SHORE UP FINANCES OF SOCIAL SECURITY

Budget option	Effect on deficit, 2023-2032 (billions of current dollars)	Ten-year budget deficit (billions of current dollars)
Status quo	0	\$17,841
Increase the Social Security payroll tax by 2 percent points	- \$1,406	
Subject earnings greater than \$250,000 to Social Security payroll taxes	- \$1,204	
Use chained CPI instead of CPI for COLA for Social Security and other federal programs	- \$257	
Make Social Security's benefit formula more progressive	- \$36	
Gradually raise the Social Security full-benefits age to 70	- \$121	
Reduce Social Security benefits to high earners by introducing new bend point and reducing primary insurance amount	- \$184	
Total this page	- \$3,208	
Total from previous pages	- \$10,809	
Total	- \$14,017	

Based on Congressional Budget Office, "Options for Reducing the Deficit, 2023 to 2032--Volume I: Larger Reductions," (December 7, 2022), <u>https://www.cbo.gov/publication/58164</u> (accessed April 28, 2024), and "Options for Reducing the Deficit, 2023 to 2032--Volume II: Smaller Reductions," (December 7, 2022), https://www.cbo.gov/publication/58163

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TAX AND SPENDING OPTIONS

SHORE UP FINANCES OF MEDICARE

Budget option	Effect on deficit, 2023-2032 (billions of current dollars)	Ten-year budget deficit (billions of current dollars)
Status quo	0	\$17,841
Increase the payroll tax rate for Medicare hospital insurance by 2 percent points	- \$1,736	
Reduce Medicare Advantage benchmarks	- \$392	
Increase premiums paid for Medicare Part B	- \$448	
Total this page	- \$2,576	
Total from previous pages	- \$14,017	
Total	- \$16,593	

TAX OPTIONS

PERSONAL AND CORPORATE INCOME TAXES

Budget option	Effect on deficit, 2023-2032 (billions of current dollars)	Ten-year budget deficit (billions of current dollars)
Status quo	0	\$17,841
Impose a surtax of 1 percentage point on AGI above the standard deduction and exemption	- \$1,329	
Increase the corporate income tax rate by 4 percentage points to 25 percent	- \$516	
Require half of advertising expenses to be amortized over 10 years	- \$154	
Create new financial transaction tax of 0.01% on value of securities and derivatives	- \$264	
Total this page	- \$2,263	
Total from previous pages	- \$16,593	
Total	- \$18,856	

Based on Congressional Budget Office, "Options for Reducing the Deficit, 2023 to 2032--Volume I: Larger Reductions," (December 7, 2022), <u>https://www.cbo.gov/publication/58164</u> (accessed April 28, 2024), and "Options for Reducing the Deficit, 2023 to 2032--Volume II: Smaller Reductions," (December 7, 2022), https://www.cbo.gov/publication/58163

SPENDING OPTIONS

REDUCE AGRICULTURAL SUBSIDIES

Budget option	Effect on deficit, 2023-2032 (billions of current dollars)	Ten-year budget deficit (billions of current dollars)
Status quo	0	\$17,841
Eliminate Title I agriculture programs	- \$49.3	
Reduce subsidies in the crop insurance program	- \$28.3	
Limit ARC and PLC payment acres to 30 percent of base acres	- \$24.4	
Total this page	- \$102.0	
Total from previous pages	- \$19,105	
Total	- \$19,207	

Based on Congressional Budget Office, "Options for Reducing the Deficit, 2023 to 2032--Volume I: Larger Reductions," (December 7, 2022), <u>https://www.cbo.gov/publication/58164</u> (accessed April 28, 2024), and "Options for Reducing the Deficit, 2023 to 2032--Volume II: Smaller Reductions," (December 7, 2022), https://www.cbo.gov/publication/58163