



# Budget Model

## A Wide Range of Policy Bundles Can Stabilize Federal Debt while Growing the Economy

**Summary:** Debt ceiling debates would become less frequent if Congress adopted fiscal measures that limited the growth of federal government debt relative to the size of the economy. Without changes in fiscal policy, we project that the debt-to-GDP ratio will grow from 100 percent in 2024 to 190 percent in 2050. Contrary to conventional thinking, there exists a wide range of policy options that can reduce the growth of debt while growing the economy.

### Key Points

- We consider three different bundles---with each bundle consisting of multiple fiscal policy options---along three distinct themes: (1) raising taxes on high-income households, (2) broad-based changes to Social Security and Medicare (“entitlements”), and (3) a mixture of broad-based new tax revenue and discretionary spending cuts.
- If enacted in 2024, we project that each policy bundle raises between \$4.3 trillion (Option 1) and \$5.6 trillion (Option 3) in new revenue over the 10-year budget window. Each policy option also increases GDP and wages over time while reducing federal debt relative to its path under the current-law baseline.
- However, the options vary significantly in their ability to grow GDP and contain debt over the long term. Option 1 would allow the debt-to-GDP ratio to grow from 100 percent today to 150 percent in 2050, which means that fully stabilizing debt requires additional reforms. Option 2 fully stabilizes the debt-to-GDP ratio, in fact, decreasing it to 95 percent by 2050. It increases GDP in 2050 by double the increase achieved under Option 1. Option 3 also roughly stabilizes the debt-to-GDP ratio at its 2024 value, but unlike Option 2, it uses policy levers outside of Social Security and Medicare.
- All three options raise more revenue from, or provide less spending to, higher-income households relative to lower-income households. Future analysis will present the distributional impact in even more detail using [PWBM’s dynamic distribution method](#) that includes macroeconomic effects of policy and the differential impact by generation.

### Introduction

The Penn Wharton Budget Model projects that U.S. federal government debt held by the public will grow to 190 percent of the size of the economy (gross domestic product) by 2050. We have [previously explained](#) how growing debt reduces GDP growth over time. Containing the size of debt can lead to faster GDP growth relative to the current-law baseline with growing debt.

This brief considers three different policy option bundles — with each bundle consisting of multiple fiscal policies — along three distinct themes: (1) raising taxes on high-income households, (2) broad-based changes to Social Security and Medicare (“entitlements”), and (3) a mixture of broad-based new tax revenue and discretionary spending cuts. Each policy bundle option raises similar amounts of revenue over the 10-year budget window. Each policy bundle option reduces the debt-GDP ratio in 2050 below 190 percent, which we project under the current-law baseline with no policy change. Each bundle option also grows the economy relative to the baseline. However, each policy bundle has a very different impact on debt reduction after 10 years and the long-term economy.

## Our Model

Our analysis of each policy bundle starts with our microsimulation model that is estimated across a range of datasets to represent hundreds of thousands of different types of households, differentiated across 60 demographic and economic attributes. The PWBM microsimulation model interacts with various fiscal tax and spending modules. The PWBM tax module covers individual income taxes, payroll taxes, corporate taxes, and estate taxes. It also simulates behavioral responses to changes in tax policy, calculating conventional estimates of the budgetary effects of tax policies as well as effective tax rates for different demographic groups. Various conventional elasticities include income classification, business formation classification, income timing and other material changes. The PWBM Social Security module includes dependent, survivor and other auxiliary benefits and other rules. All major elements of benefits policy are parameterized, allowing for detailed analysis of reform proposals that highlights how structural shifts in demographic and economic forces affect Social Security’s finances.

This conventional modeling informs our heterogeneous-agent overlapping-generations dynamic model that allows for changes to labor supply and savings as well as productivity changes associated with various spending programs. A detailed modeling of the U.S. private and public healthcare (Medicare, Affordable Care Act, Medicaid and other programs) is also activated when needed. Employers make competitive decisions about offering compensation and tax-preferred group healthcare in the presence of competition for talent in labor markets. When making labor supply and savings decisions, households simultaneously make decisions about whether to buy insurance, whether to pay out of pocket for a healthcare shock if insured, and even how to alter labor supply and savings to qualify for premium support or Medicaid. Healthcare premiums are computed in general equilibrium along with other factors prices, subject to various current-law rules regarding information restrictions and risk ratings, the net effect of which can lead to adverse selection and moral hazard. Investments in healthcare by the government or by an individual impacts individual productivity (and wages) by health state, longevity, population size and government revenue and spending even in non-health programs.

The analysis presented below, therefore, considers potentially complicated interactions of policies within each policy bundle. For example, a change to Social Security and Medicare can materially impact other federal tax revenue and spending costs by changing household labor supply and savings decisions. Failing to account for

interactions between fiscal policies can sometimes substantially understate or overstate the impact of a given policy change on total revenue, total costs, the economy and dynamic distributional effects.

In some cases, the complexity of these interactions grow exponentially in the number and types of policies. For example, if the addition of a *single* new policy under consideration requires expanding the model's computational "state space," then the total required number of calculations increases between 10 to 25 times. At the same time, our recent mathematical and computational enhancements are allowing us to continually expand the range of policies that we can consider simultaneously in general equilibrium. Future PWBM publications will, therefore, integrate even more fiscal policies---including fundamental tax reform, healthcare delivery, immigration, and carbon taxes---that we have previously considered in isolation of other policy changes.

## The Policy Bundle Options

The reader can select a policy option using the following dropdown option. For each option, the subsequent text and tables change as appropriate.

### Option 1: Increase Taxes on High Income

This bundle of various high-income tax increases include the following provisions:

- **Raise the top income rate on ordinary income from 37 to 45 percent:** Under current law, the top marginal income tax rate, which applies to any taxable income above \$578,125 for married filers, is 37 percent and is scheduled to rise to 39.6 percent starting in 2026. This policy change would increase the top rate to 45 percent starting in 2024.
- **Tax capital gains and dividends at ordinary rates and tax gains at death:** Under current law, preferential tax rates are applied to capital gains held for a minimum period and qualifying dividends. Moreover, the basis of unrealized capital gains is stepped-up when assets are transferred at the time of death. This policy change would tax all income from capital gains and dividends using the ordinary income tax rate structure and would also subject capital gains without stepped-up basis to those rates at the time of the holder's death.
- **Expand the base of employment taxes to cover all pass-through income:** Under current law, income from pass-through businesses can be classified in a way that avoids self-employment payroll taxes (SECA) and the Net Investment Income Tax (NIIT). This policy change would end such income classification, thereby requiring that all active income earned through pass-through businesses would be subject to SECA taxes or the NIIT.
- **Reduce the estate tax exemption from \$12.9 million to \$3.9 million:** Under current law, estates can exclude the first \$12.9 million when calculating their liability under the federal estate tax, and that exemption is scheduled to drop to about \$7 million in 2026. This policy change would lower the estate tax exemption to \$3.9 million.
- **Introduce a third AMT income bracket, taxing at 45 percent above \$1 million:** Under current law, high-income taxpayers must file taxes under the Alternative Minimum Tax (AMT) system in addition to the normal income tax system and pay taxes according to the greater of the two. This policy change would adjust the AMT so that it has a third bracket that applies a marginal rate of 45 percent on incomes above \$1 million for married filers.
- **Raise the corporate tax rate from 21 percent to 28 percent:** Under current law, corporations face a tax rate of 21 percent. This policy change would increase that rate to 28 percent.

If enacted in 2024, Table 1 shows that this option would generate almost \$4.3 trillion over the 10-year budget window on a conventional basis. As shown in Table 2, GDP is projected to grow under this option in both the short run and the long run. By 2050, GDP is projected to be 2.2 percent larger than under the current-law baseline policy with growing debt. Wages also grow by 2 percent in 2050.

This policy reduces the debt-to-GDP ratio in 2050 to 150 percent relative to the baseline value of 190 percent. Still, this policy bundle fails to stabilize the debt-to-GDP ratio over time, thereby allowing the debt-GDP ratio to increase from 100 percent in 2024 to 150 percent in 2050. Notice, in particular, that the policy has little impact on labor supply (“hours worked”) that is material for expanding the tax base. In fact, average wages mainly increase due to scarcity of labor relative to capital. Moreover, as discussed with Option 2, Option 1 raises less revenue in years immediately outside of the 10-year budget window, thereby reinforcing the challenges with the standard 10-year budget window.

## Table 1: Conventional Revenue Effects

*Billions of dollars, change in primary surplus relative to current-law baseline*[DOWNLOAD DATA](#)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Budget Window
Raise the top income rate on ordinary income from 37 to 45 percent	66	89	92	97	100	106	102	97	98	101	947
Tax capital gains and dividends at ordinary rates and tax gains at death	56	73	78	86	84	86	91	96	102	112	864
Expand the base of employment taxes to cover all pass-through income	17	22	23	24	21	20	21	21	21	22	213
Reduce the estate tax exemption from \$11.7 million to \$3.5 million	2	17	23	24	24	17	13	14	14	16	166
Introduce a third AMT income bracket, taxing at 45 percent above \$1 million	95	98	121	126	128	132	137	143	147	155	1,283
Raise the corporate tax rate from 21 percent to 28 percent	43	64	69	74	84	92	94	96	96	100	814
<b>Total</b>	278	363	407	431	443	452	459	467	478	506	<b>4,286</b>

## Table 2. Macroeconomic Effects

*Percent Change from Baseline unless otherwise indicated*

[DOWNLOAD DATA](#)

	2025	2030	2035	2040	2045	2050
Gross domestic product	1.4%	1.2%	1.5%	1.7%	2.0%	2.2%
Capital stock	4.2%	3.8%	4.6%	5.3%	6.0%	6.9%
Hours worked	0.4%	0.2%	0.2%	0.2%	0.3%	0.3%
Average wage	1.1%	1.0%	1.3%	1.5%	1.7%	2.0%
Debt-to-GDP ratio, baseline	102%	114%	134%	151%	167%	189%
Debt-to-GDP ratio, policy option	101%	106%	119%	128%	137%	150%

## Option 2: Entitlement Program Reforms

This bundle includes the following provisions that mainly impact Social Security and Medicare:

- Slow Social Security expenditure growth by indexing benefits to chained CPI:** Under current law, Social Security benefits are adjusted for inflation each year using the Consumer Price Index (CPI). This policy change would instead use a different version of CPI – chained CPI, which is the measure used to adjust most parameters of the tax system – to adjust benefit payments each year for inflation.
- Make the Social Security benefit formula more progressive:** Under current law, Social Security benefits are calculated by taking a beneficiary’s lifetime average monthly earnings and applying a set of fixed percentages to each segment of those earnings. This policy change would adjust those fixed percentages gradually over the course of 30 years such that a greater weight is put on the lower segments of earnings, resulting in more generous benefits for lower career earners and less generous benefits for higher career earners.
- Raise the full-benefit Social Security retirement age from 67 to 70:** Under current law, the full retirement age for Social Security, or the age at which beneficiaries can claim the full benefit amount that is calculated based on their career average monthly earnings, is 67 for individuals born in 1960 or later. This policy change would gradually continue to increase the full retirement age by 2 months per year until it reaches 70.
- Raise the Social Security payroll tax rate from 12.4 percent to 14.4 percent:** Under current law, workers face a 12.4 percent tax rate on wages, of which 6.2 percent is paid by the worker and 6.2 percent is paid by the employer (or paid in full by self-employed workers) up to \$160,200 in 2023. This policy change would increase the tax rate from 12.4 percent to 14.4 percent, split evenly across workers and employers.
- Double the Social Security taxable maximum earnings threshold:** Under current law, workers and their employers each face the Social Security payroll tax rate on the worker’s first \$160,200 of wages in 2023 (adjusted each year for inflation). This policy change would double that cap, meaning that Social Security payroll taxes would be owed on a worker’s first \$320,400 of wages in 2023, and no change would be made to future benefit payments.
- Raise the Medicare retirement age from 65 to 67:** Under current law, most people qualify for Medicare coverage upon reaching age 65 – some individuals become eligible earlier if they have certain medical conditions. This policy

change would increase the eligibility age to 67, while leaving unchanged the separate qualifying parameters for individuals with certain disabilities.

- **Allow Medicare to negotiate drug prices beyond existing provisions contained in the Inflation Reduction Act:**

Under current law, as a result of the Inflation Reduction Act, the Secretary of Health and Human Services is authorized to negotiate prices directly with manufacturers for a certain set of drugs. This policy change would expand that authority to cover all drugs.<sup>1</sup>

If enacted in 2024, Table 1 shows that this option would generate almost \$4.1 trillion over the 10-year budget window on a conventional basis. As shown in Table 2, in the short run, GDP falls by 0.5 percent. By 2050, however, the economy is projected to be 4.4 percent larger than under the current-law baseline. Moreover, this bundle stabilizes the debt-GDP ratio throughout the entire projection period, ultimately reducing the ratio to 95 percent in 2050.

Relative to bundle Option 1, this policy bundle increases both capital and labor supply. Households must replace some Social Security income with additional private saving. This “crowd in” of capital is especially effective for households facing fewer borrowing constraints, including higher-income households that are relatively more impacted by these changes due to progressive tilting of benefits in Social Security. Households must also work for a longer period of time, which adds to the economy’s labor supply and total production capacity.

More importantly, while Table 1 shows that a similar amount of revenue is raised from Option 1 and Option 2, the standard 10-year budget window obscures the amount of revenue raised after the first 10 years. In particular, for Option 1, the revenue raised during the 10-year budget window somewhat *overstates* the revenue raised during the subsequent decades. The reason is that new tax policy goes into full effect in 2024 in Option 1 but concomitant tax distortions take time to fully materialize, with some of that effect falling outside of the first 10-year budget horizon. In contrast, the net revenue effects for Option 2 are much the opposite: increases in the retirement ages for Social Security are phased in slowly over time so that the first 10 years actual understates the net revenue impact relative to subsequent decades.

## Table 1: Conventional Revenue Effects

*Billions of dollars, change in primary surplus relative to current-law baseline*[DOWNLOAD DATA](#)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Budget Window
Slow Social Security expenditure growth by indexing benefits to chained CPI	2	6	9	12	16	19	22	26	29	33	173
Make the Social Security benefit formula more progressive	0	0	0	1	1	2	4	6	8	10	32
Raise the full-benefit Social Security retirement age from 67 to 70	0	0	1	1	3	6	12	19	31	41	114
Raise the Social Security payroll tax rate from 12.4 percent to 14.4 percent	118	154	158	162	166	169	174	180	184	190	1,656
Double the Social Security taxable maximum earnings threshold	66	87	89	92	93	97	100	102	106	110	941
Raise the Medicare retirement age from 65 to 67	13	14	16	16	17	18	19	20	22	23	178
Allow Medicare to negotiate drug prices	91	97	104	96	108	86	94	97	103	109	984
<b>Total</b>	290	358	376	381	403	396	427	449	483	517	<b>4,080</b>



## Table 2. Macroeconomic Effects

*Percent Change from Baseline unless otherwise indicated*

[DOWNLOAD DATA](#)

	2025	2030	2035	2040	2045	2050
Gross domestic product	-0.6%	-0.4%	0.8%	2.0%	3.4%	4.4%
Capital stock	0.3%	0.9%	2.0%	3.7%	5.8%	8.4%
Hours worked	-0.8%	-0.9%	0.4%	1.6%	2.7%	3.1%
Average wage	0.2%	0.4%	0.4%	0.4%	0.6%	1.2%
Debt-to-GDP ratio, baseline	102%	114%	134%	151%	167%	189%
Debt-to-GDP ratio, policy option	97%	100%	105%	104%	101%	95%

### Option 3: A Mixture of Broad-based Tax Increases and Spending Cuts

This bundle includes the following provisions:

- A 1.5 percent value added tax (VAT):** Under current law, while it is very common for state governments to levy sales taxes, the federal government does not impose a broad-based consumption tax. This policy change would implement a value-added tax (VAT), or a tax on the difference between revenue and the cost of intermediate inputs, of 1.5 percent on a broadly defined base of consumption, with exemptions for certain categories such as government health expenditures.
- Disallow all itemized deductions:** Under current law, when individuals calculate their income tax liability, they can take either the standard deduction or a set of itemized deductions, which includes deductions for mortgage interest, state and local taxes, and charitable contributions, among others. This policy change would disallow all itemized deductions, and all taxpayers would claim the standard deduction.
- Cut annual discretionary spending by 5 percent:** Under current law, about 70 percent of the federal budget is for mandatory programs, for which spending is set by predetermined formulas, and interest payments on the national debt, meaning that only about 30 percent of the budget is for “discretionary” programs, which are the programs for which spending is controlled by annual appropriations acts. This policy change would reduce discretionary spending – of which half is defense spending and the other half is comprised of education, transportation, housing, and more – by 5 percent each year relative to currently projected levels.
- Cut annual infrastructure investment by 10 percent:** Under current law, the federal government makes investments in physical infrastructure and provides grants for those activities to state and local governments. This policy change would reduce annual federal spending on infrastructure by 10 percent.

If enacted in 2024, Table 1 shows that this option would generate almost \$5.6 trillion over the 10-year budget window on a conventional basis. GDP would grow in the short run and be 1.9 percent higher than baseline in 2050. Moreover, the debt-to-GDP ratio would remain roughly flat over time, rising by just 5 percentage points from 100 percent in 2024 to 105

percent in 2050. Relative to Option 2, Option 3 allows for similar long-run reductions in the debt-GDP ratio without relying on changes to Social Security or Medicare.

Table 1: Conventional Revenue Effects

*Billions of dollars, change in primary surplus relative to current-law baseline*

[DOWNLOAD DATA](#)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	Budget Window
Enact a 1.5 percent value added tax (VAT)	83	130	133	138	143	148	153	158	163	168	1,420
Disallow all itemized deductions	87	116	121	127	335	410	429	445	460	482	3,011
Cut annual discretionary spending by 5 percent	77	78	79	81	82	83	84	84	84	84	818
Cut annual infrastructure investment by 10 percent	6	20	29	34	38	39	40	41	41	41	329
<b>Total</b>	252	343	362	381	598	681	707	729	749	776	<b>5,578</b>

Table 2. Macroeconomic Effects

*Percent Change from Baseline unless otherwise indicated*

[DOWNLOAD DATA](#)

	2025	2030	2035	2040	2045	2050
Gross domestic product	0.4%	0.0%	0.5%	0.8%	1.3%	1.9%
Capital stock	1.1%	1.2%	2.8%	4.0%	5.1%	7.0%
Hours worked	0.1%	-0.7%	-0.7%	-0.6%	-0.5%	-0.4%
Average wage	0.3%	0.7%	1.2%	1.5%	1.8%	2.4%
Debt-to-GDP ratio, baseline	102%	114%	134%	151%	167%	189%
Debt-to-GDP ratio, policy option	99%	100%	103%	102%	103%	105%

*This analysis was produced by PWBM staff under the guidance of [Kent Smetters](#). Prepared for the website by [Mariko](#)*

*Paulson.*

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1. This conventional analysis does not account for any potential reduction in drug discovery over time. We plan to return to this important topic at a later date. ↩