

Overview of the Model

Since 1992, GAO has provided the Congress with a long-term perspective on alternative fiscal policy paths.¹ In recent years we have been updating these projections on a regular basis.² The model is used to simulate the long-term budgetary effects of alternative assumptions about broad fiscal policy decisions and is helpful for determining whether fiscal policy paths are sustainable. In our work, sustainable fiscal policy is gauged by examining the projected path of the ratio of federal debt to GDP. Projections suggesting that the debt-to-GDP ratio is likely to increase continuously imply that the budget is on an unsustainable path because, ultimately, the nation's entire income would be devoted to federal interest payments.

The results provide illustrations rather than precise forecasts of the budgetary outcomes associated with alternative policy assumptions. These simulations are not predictions of what will happen in the future as policymakers would likely take action to prevent damaging out-year fiscal consequences.

Budget Assumptions

We run two simulations to illustrate a range of possible outcomes of current policy decisions on the long-term budget outlook. In our Baseline Extended simulation, we closely follow CBO's 10-year baseline budget projections, which serve as the benchmark against which the Congress evaluates the potential budgetary impact of policy decisions. CBO's baseline is not a forecast of future outcomes; rather, it is based on the assumption that current laws and policies remain the same. These assumptions are changed in our alternative simulation to reflect historical trends and recent policy preferences.

We use two different sources for long-term projections of Social Security, Medicare, and Medicaid. In the first set of simulations, Social Security and Medicare are based on the Trustees' 2008 estimates. Medicaid spending is based on CBO's projections but adjusted to reflect excess cost growth consistent with the Trustees. Table 1 lists the key assumptions incorporated in the Baseline Extended and Alternative simulations for the simulations based on the Trustees' assumptions. In the second set of simulations, we use CBO's projections for Social Security, Medicare and Medicaid. Table 2 shows the assumptions that differ from those shown in Table 1.

¹GAO, *Budget Policy: Prompt Action Necessary to Avert Long-Term Damage to the Economy* (GAO/OCG-92-2, June 5, 1992).

²For related products, see <http://www.gao.gov/special.pubs/longterm/longtermproducts.html>.

Table 1: Key Budget Assumptions for Simulations Based on the Trustees' Assumptions for Social Security and Medicare

Model inputs	Baseline extended	Alternative
Revenue	CBO's September 2008 baseline through 2018; thereafter remains constant at 20.4 percent of GDP (CBO's projection in 2018)	All expiring tax provisions are extended through 2018; thereafter equal to 40-year historical average of 18.3 percent of GDP plus revenue from tax-deferred retirement plans
Social Security spending	CBO's September 2008 baseline through 2018; thereafter based on 2008 Social Security Trustees' intermediate projections	Same as Baseline Extended
Medicare spending	CBO's September 2008 baseline through 2018; thereafter 2008 Medicare Trustees' intermediate projections that assume per enrollee Medicare spending grows on average 1 percent faster than GDP per capita over the long term	2008 Trustees intermediate projections adjusted for the Centers for Medicare & Medicaid Services' alternative assumption of 0-percent physician payment updates in the first 10 years
Medicaid spending	CBO's September 2008 baseline through 2018; thereafter CBO's December 2007 long-term projections adjusted to reflect excess cost growth consistent with the 2008 Medicare Trustees' intermediate projections	Same as Baseline Extended
Other mandatory spending	CBO's September 2008 baseline through 2018; thereafter remains constant as a share of GDP at 2.0 percent of GDP (i.e., increases at the rate of economic growth)	Baseline Extended through 2011, then adjusted for extension of certain tax credits through 2018; thereafter remains constant at 2.1 percent of GDP
Discretionary spending	CBO's September 2008 baseline through 2018; thereafter remains constant at 6.8 percent of GDP	Increases at the rate of economic growth starting after 2008 (i.e., remains constant at 7.9 percent of GDP)

Table 2: Key Budget Assumptions Underlying GAO’s Simulations Using CBO’s Long-Term Entitlement Spending Projections

Model inputs	Baseline extended	Alternative
Social Security spending	CBO’s September 2008 baseline through 2018; thereafter CBO’s August 2008 projections that assume full benefits as calculated under current law are paid regardless of the amounts available in the trust funds. These projections are based on the 2008 Social Security Trustees’ demographic projections and CBO’s own economic assumptions.	Same as Baseline Extended
Medicare spending	CBO’s September 2008 baseline through 2018; thereafter CBO’s December 2007 projections based on current law. Per enrollee Medicare spending grows on average 1.7 percentage points faster than GDP per capita over the long term.	CBO’s projections that assume physician payment rates grow with inflation (using the Medicare economic index) ^a
Medicaid spending	CBO’s September 2008 baseline through 2018; thereafter CBO’s December 2007 long-term projections based on current law. Per enrollee Medicaid spending grows on average 0.9 percentage points faster than GDP per capita over the long term.	Same as Baseline Extended

Source: GAO analysis.

Notes: CBO’s projections are from *Updated Long-Term Projections for Social Security* (August 2008) and *The Long-Term Budget Outlook* (December 2007).

^a This is slightly higher than the assumption used in GAO’s alternative using the Trustees’ assumptions. In the Trustees’ analysis, expenditures under the Medicare economic index are 22.5 percent higher than current law by 2017, whereas expenditures under the 0 percent update are only 16.8 percent higher.

As described in Table 1 we make different assumptions about revenue in the short term in each simulation but in both simulations we hold revenues constant as a share of GDP after the 10-year budget window. Under current law, revenue as a share of GDP would increase over time because of several factors including “real bracket creep,” wherein the growth of real income causes a greater proportion of taxpayers’ income to be taxed in higher brackets, and increased retirement income subject to taxation upon withdrawal (i.e., deferred taxes). However, history suggests that Congress and the President would likely enact legislation to offset such increases in revenue.

In all of our simulations, Social Security outlays are based on the most recent CBO 10-year baseline. Thereafter, in our simulations based on the Trustees’ assumptions, we gradually phase into our estimates based on the OASDI beneficiary population under the intermediate assumptions of the most recent Trustees’ Report. The average Social Security benefit per beneficiary is adjusted to reflect the rate of economic growth in our model. In our simulations based on CBO’s projections, after the first 10 years, we gradually phase into CBO’s most recent long-term projections for Social Security outlays as a share of GDP. In all simulations, we assume that Social Security benefits will continue to be paid even after the OASDI trust fund is exhausted.

Medicare outlays in our Baseline Extended simulations reflect CBO's most recent 10-year estimates. Thereafter, they are gradually phased into the intermediate assumptions of the most recent Trustees' report or, in our simulations based on CBO's assumptions, they are gradually phased into CBO's most recent long-term projections for Medicare. The key difference between the Trustees and CBO projections is excess health care cost growth, or the percentage by which growth of health care costs for an individual exceeds the growth of GDP per individual. Whereas the Medicare Trustees assume that excess cost growth will average one percent over the long term, CBO assumes excess cost growth will slow when health care cost increases would otherwise cause a reduction in real nonhealth consumption. CBO's assumption results in average excess health care cost growth of 1.7 percentage points over the long term. In both simulations, we assume that Medicare benefits will continue to be paid even after the trust funds are exhausted. The assumption regarding Medicare physician payments is changed in our alternative simulation to reflect the fact that in most years, Congress has acted to override reductions that would occur because of the sustainable growth rate.

Medicaid outlays are based on CBO's most recent 10-year baseline in all simulations. In our simulations based on the Trustees' assumptions, we also use CBO's most recent long-term projections but adjust them so that excess health care cost growth is consistent with the most recent Trustees intermediate assumptions for Medicare—about 1 percentage points over the long term. In our simulations using CBO's projections, we use CBO's most recent long-term projections that assume excess cost growth will slow when health care cost increases would otherwise cause a reduction in real nonhealth consumption. CBO's assumption results in average excess health cost growth of 0.9 percentage points for Medicaid.

In our baseline extended simulation, we assume that discretionary spending follows CBO's most recent projections over the first 10 years. CBO's projections for discretionary spending assume that funding levels enacted for the current fiscal year, including any supplemental appropriations, grow over the next 10 years at the rate of inflation.³ After the first 10 years, we assume discretionary spending grows with the economy (i.e., remains constant as a share of GDP). Discretionary spending as a share of GDP remained roughly constant from the end of the Viet Nam War until the late 1980's. Thereafter, the share declined because of several factors, including the post-cold war peace dividend and adherence to discretionary spending caps. However, discretionary spending has increased as a share of GDP in recent years due to the global war on terror and the government's response to natural disasters. The expiration of discretionary spending caps may also be a factor. In the absence of extraordinary events, we believe discretionary spending would generally grow with the economy. An assumption used in other models of the long-term federal budget outlook is that real discretionary spending per person remains constant over the long-term, which results in lower spending over the long-term than in GAO's projections. Sensitivity analysis reveals that using this more optimistic assumption would not affect the conclusion about the sustainability of the government's finances.

The interest rate on the national debt is held constant even when deficits climb and the national saving rate plummets. Under such conditions, there could be a rise in the rate of

³CBO's assumption stems from longstanding procedures that were until recently required by law. The Balanced Budget and Emergency Deficit Control Act of 1985, which established rules that have governed the calculation of CBO's baseline, expired on September 30, 2006. Nevertheless, CBO continues to prepare baselines according to the methodology prescribed in that law.

interest and a more rapid increase in federal interest payments than our simulations display. Sensitivity analyses reveal that variations in these assumptions generally would not affect the relative outcomes of alternative policies.

Economic Assumptions

In the model, GDP is determined by the labor force, capital stock, and total factor productivity. GDP is held constant across simulations and does not respond to changes in fiscal policy.

Labor Input

Economic growth is partly dependent on how much labor is employed. In our simulations, we used the labor input assumptions of the Social Security Administration actuaries underlying the intermediate projections in the most recent *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Trust Funds*. The intermediate projections, which reflect the Trustees' best estimate, reflect changes in the working age population, particularly the increasing rate of retirement by the baby boom generation after 2010. They also reflect projections of labor force participation rates, unemployment rates, and weekly hours worked. The demographic and economic assumptions imply a gradual decline in the annual growth of aggregate hours worked after 2010.

Capital Stock

To determine the GDP used in our simulations, we assume federal saving is consistent with a balanced budget. We also make the simplifying assumption that the combined saving rate of the household, business, and state and local government sectors is consistent with historical experience, typically the average over the last fifty-five years. When the most recent historical saving rate is substantially above or below the longer-term historical average, we gradually phase in our long-term saving rate assumption over about ten years. Future saving rates of these sectors will of course vary in response to a variety of influences, such as demographics, expectations, and changes in preferences.

Nonfederal and federal saving together compose national saving, which – combined with the net flow of foreign capital – finance domestic investment. The year-to-year change in the capital stock equals domestic investment minus an amount reflecting the depreciation of the previous period's capital stock. Capital combines with labor and total factor productivity to determine GDP in the next period, and the process continues.

Total Factor Productivity

Total factor productivity reflects sources of growth not captured in straightforward measures of aggregate labor input and aggregate physical capital employed. These include not only the improvements in products and processes yielded by advancing technology but also the improved quality of labor and capital inputs, reallocation of inputs to uses where they are more productive, and improvements in physical and social infrastructure.

Our simulations use CBO's total factor productivity growth assumption for the first ten years. Thereafter, we set total factor productivity growth equal to the average over the last fifty-five years. Although the future course of productivity growth is essentially

unknowable, the experience over the past fifty years provides a reference path for the simulations.

The specific assumptions used for these and other key economic assumptions in our current simulations are shown in Table 2.

Table 2: Key Economic Assumptions

Model inputs	All simulations
Labor: growth in hours worked	2008 Social Security Trustees' intermediate projections
Nonfederal saving: gross saving of the private sector and state and local government sector	Increases gradually over the first 10 years to 18.5 percent of GDP (the average nonfederal saving rate from 1950-2007)
Current account balance (percent of GDP)	From 2007-2018, 2007 share of GDP plus one-third of any change in gross national saving from 2007; thereafter equal to 2018 nominal level plus one-third of any change in gross national saving from 2007
Total factor productivity growth	1.4 percent through 2018 (CBO's September 2008 short-term assumption); 1.4 percent thereafter (long-term average from 1950-2007)
Inflation (percent change in GDP price index)	CBO September 2008 baseline through 2018; 1.9 percent thereafter (CBO's projection in 2018)
Interest rate (on publicly held debt)	Rate implied by CBO's September 2008 baseline net interest payment projections through 2018; 5.1 percent thereafter (the rate implied in 2018)