

Overview of GAO's Long-Term Federal Budget 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 different 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 held by the public to gross domestic product (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 the Congressional Budget Office's (CBO) 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 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 2009 estimates the Trustees of the Social Security and Medicare trust funds (Trustees). Medicaid spending is based on CBO's most recent long-term 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 June 2009 long-term 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 August 2009 baseline through 2019; thereafter remains constant at 20.2 percent of GDP (CBO's projection in 2019)	CBO's estimates assuming expiring tax provisions are extended through 2019 and the AMT is indexed to inflation for years 2009-2019; thereafter phases into 40-year historical average of 18.3 percent of GDP
Social Security spending	CBO's August 2009 baseline through 2019; thereafter based on 2009 Social Security Trustees' intermediate projections adjusted to reflect wage growth implied in GAO's simulations	Same as Baseline Extended
Medicare spending	CBO's August 2009 baseline through 2019; thereafter 2009 Medicare Trustees' intermediate projections that assume per enrollee Medicare spending grows on average 1 percent faster than GDP per capita over the long term	CBO's projections are 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 August 2009 baseline through 2019; thereafter CBO's June 2009 long-term projections adjusted to reflect excess cost growth consistent with the 2009 Medicare Trustees' intermediate projections	Same as Baseline Extended
Other mandatory spending	CBO's August 2009 baseline through 2019; thereafter remains constant as a share of GDP at 2.1 percent of GDP (implied by CBO's projection in 2019)	Baseline Extended adjusted for extension of certain tax credits through 2019; thereafter is phased back to 2.1 percent of GDP by 2025 (same as Baseline Extended)
Discretionary spending	CBO's August 2009 baseline through 2019; thereafter remains constant at 7.0 percent of GDP (CBO's projection in 2019)	Nonstimulus spending increases at the rate of economic growth after 2009 (i.e., remains constant at 8.6 percent of GDP); stimulus spending is included but assumed to be temporary

Source: GAO analysis.

Note: CBO's projections are from *The Budget and Economic Outlook: An Update* (August 2009) and *The Long-Term Budget Outlook* (June 2009). Trustees projections are from *The 2009 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* and *2009 Annual Report of the Boards of Trustees of the Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds*, which were both issued on May 12, 2009. We assume that Social Security and Medicare benefits are paid in full regardless of the amounts available in the trust funds.

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 August 2009 baseline through 2019; thereafter based on CBO’s August 2009 long-term projections for Social Security. These projections are based on the 2009 Social Security Trustees’ demographic projections and CBO’s own economic assumptions.	Same as Baseline Extended
Medicare spending	CBO’s August 2009 baseline through 2019; thereafter based on CBO’s June 2009 long-term projections. Per enrollee Medicare spending grows on average 1.5 percentage points faster than GDP per capita over the long term.	Based on CBO’s projections that assume physician payment rates grow with inflation (using the Medicare Economic Index) ^a
Medicaid spending	CBO’s August 2009 baseline through 2019; thereafter CBO’s June 2009 long-term projections. Per enrollee Medicaid spending grows on average 0.6 percentage points faster than GDP per capita over the long term.	Same as Baseline Extended

Source: GAO analysis.

Notes: CBO’s projections are from *CBO’s Long-Term Projections for Social Security: 2009 Update* (August 2009) and *The Long-Term Budget Outlook* (June 2009). CBO assumes that full benefits as calculated under current law are paid regardless of the amounts available in the trust funds.

^a This is slightly higher than the assumption used in GAO’s Alternative simulation using the Trustees’ assumptions. In the Trustees’ analysis, expenditures under the Medicare Economic Index assumption—which CBO bases its projections on—are 17.2 percent higher than current law by 2018. Expenditures under the 0 percent update used in GAO’s Alternative simulation (based on Trustees’ data) are only 12.2 percent higher than current law.

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 Old-Age, Survivors, and Disability Insurance (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 1.5 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 generally 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 However, CBO deviated from this procedure for its August 2009 baseline and did not extrapolate the \$283 billion in discretionary budget authority provided in the American Recovery and Reinvestment Act.⁴ After the first 10 years, we assume discretionary spending grows with the economy (i.e., remains constant as a share of GDP). In our Alternative simulation, we assume revenue remains constant as a share of GDP from its most recent enacted level—fiscal year 2009. The Recovery Act spending provisions are included but assumed to be temporary (i.e., they are not extended over the long term).

Discretionary spending as a share of GDP remained roughly constant from the end of the Vietnam 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

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.

⁴ Pub. L. 111-5.

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 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.

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 3.

Table 3: Key Economic Assumptions

Model inputs	All simulations
Labor: growth in hours worked	2009 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 1949 to 2008)
Current account balance (percent of GDP)	From 2009 to 2019, 2008 share of GDP plus one-third of any change in gross national saving from 2008; thereafter equal to 2019 nominal level plus one-third of any change in gross national saving from 2008 (that is, a declining share of GDP)
Total factor productivity growth	1.4 percent through 2019 (CBO's August 2009 short-term assumption); 1.4 percent thereafter (long-term average from 1950 to 2008)
Inflation (percent change in GDP price index)	CBO August 2009 baseline through 2019; 1.7 percent thereafter (CBO's projection in 2019)
Interest rate (on publicly held debt)	Rate implied by CBO's August 2009 baseline net interest payment projections through 2019; 5.3 percent thereafter (the rate implied in 2019)

Source: GAO analysis.