Congressional Budget Office

Testimony

Comparing CBO's Long-Term Projections With Those of the Social Security Trustees

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Chairman Johnson, Ranking Member Becerra, and Members of the Subcommittee, thank you for inviting me to testify this morning. As you know, Social Security pays benefits to retired workers, to their eligible dependents, and to some survivors of deceased workers, and also makes payments to disabled workers and to their dependents until those workers are old enough to claim full retirement benefits. The program is funded by dedicated tax revenues from two sources—mostly from a payroll tax, but also from income taxes levied on Social Security benefits. Those revenues are credited to the two trust funds that finance the program's benefits.

Since 2010, annual outlays for Social Security have exceeded the program's receipts, excluding interest credited to the trust funds. In 2015, outlays exceeded receipts, excluding interest, by 8 percent. When such a gap exists, the difference is a draw on the government's cash in that year that must be made up either by running a surplus in the rest of the federal budget or through additional government borrowing in that year.

For some time, both the Congressional Budget Office and the Social Security Trustees have projected that, if full benefits were paid under the formulas specified in current law, the program's spending would rise significantly during the coming decades. In contrast, total revenues for the program are anticipated to grow more slowly than outlays: The faster growth projected for total benefits than for total revenues means that a shortfall in the program's finances is expected to continue. Although both CBO and the Trustees project such a shortfall, they differ in their assessment of its magnitude. This testimony describes that difference and the major factors that contribute to it.

What Is CBO's Estimate of Social Security's Actuarial Balance?

Over the next 75 years, if current laws remained in place, the program's actuarial balance would be -1.55 percent of gross domestic product (GDP), CBO projects.[1] The estimated actuarial balance over a given period is a common measure of the sustainability of a program that has a trust fund and a dedicated revenue source. When that balance is negative, it is a deficit. The actuarial balance is calculated as the sum of the present value of projected tax revenues and the current trust fund balance minus the sum of the present value of projected outlays and a year's worth of benefits at the end of the period. (A present value is a single number that expresses a flow of future income or payments in terms of an equivalent lump sum received or paid at a specific point in time.) Although the 75-year actuarial balance is traditionally presented as a share of taxable payroll—that is, as a share of the earnings subject to Social Security's payroll tax—CBO has generally focused on that balance as a percentage of GDP because doing so better captures the share of national economic activity devoted to Social Security's revenues and outlays, which determine the system's finances.

There are several ways to explain what the actuarial balance represents. For instance, it would be possible to pay the benefits prescribed by current law and maintain the necessary balances in the program's combined trust funds (one each for the program's two parts: Old-Age and Survivors Insurance and Disability Insurance) through 2090 if payroll taxes were raised immediately and permanently by 1.55 percent of GDP, scheduled benefits were reduced by an equivalent amount, or some combination of tax increases and spending reductions of equal present value was adopted. In 2017, 1.55 percent of GDP would be about $300 billion. Last year, CBO estimated the effects of 32 options that would improve the actuarial balance and that illustrate the magnitude of specific policy changes that could be combined to make up the shortfall in the program's finances.[2] For example, gradually increasing the payroll tax rate by 3 percentage points over 60 years would improve the 75-year actuarial balance by 0.5 percentage points of GDP, as would reducing benefits across the board by 15 percent by the mid-2030s.

How Does CBO's Estimate Compare With That of the Social Security Trustees?

The Social Security Trustees' projection of the 75-year actuarial balance is -0.95 percent of GDP, 0.6 percentage points less negative than CBO's projection (see Figure 1 and Table 1). Two-thirds of the difference between those two numbers would be eliminated if CBO adopted the Trustees' projections of four major inputs into estimates of the system's finances:

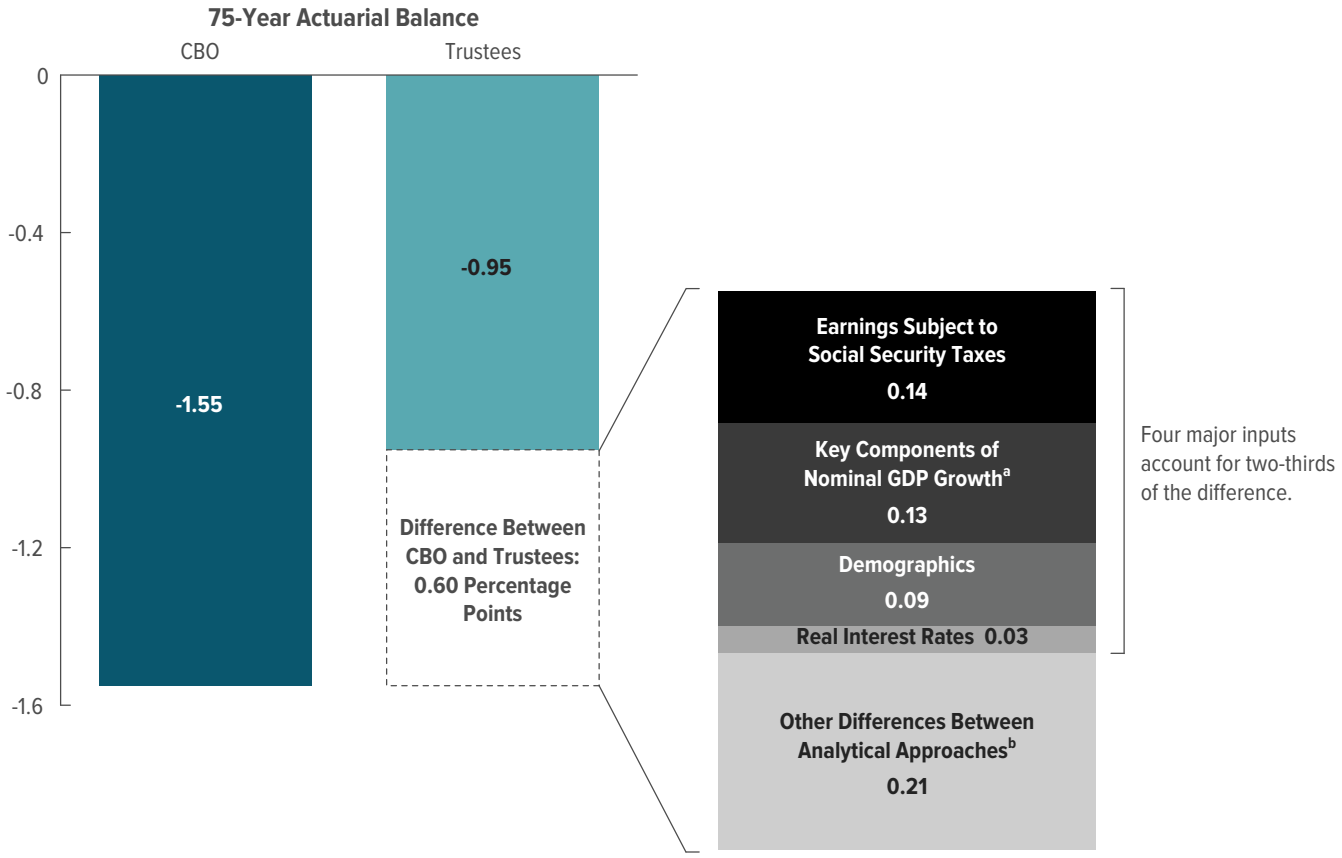
1. For additional discussion of CBO's most recent long-term projections for Social Security, see Congressional Budget Office, *The 2016 Long-Term Budget Outlook* (July 2016), Chapter 2, www.cbo.gov/publication/51580. Those projections incorporated CBO's 10-year economic forecast released in January 2016 and its 10-year budget projections released in March 2016.

2. See Congressional Budget Office, *Social Security Policy Options, 2015* (December 2015), www.cbo.gov/publication/51011.

Figure 1.

Distribution of Differences Between CBO's and the Social Security Trustees' Projections

Percentage of Gross Domestic Product



Sources: Congressional Budget Office; Social Security Trustees.

These projections incorporate the assumption that spending for Social Security continues as scheduled even if its trust funds are exhausted.

The actuarial balance is the difference between the present value of annual tax revenues plus the initial trust fund balance, and the present value of annual outlays plus the present value of a year's worth of benefits as a reserve at the end of the period, each divided by the present value of GDP or taxable payroll. (The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest, known as the discount rate, that is used to translate past and future cash flows into current dollars.)

GDP = gross domestic product.

a. The key components of nominal GDP growth are the labor force participation rate, the unemployment rate, the rate of productivity growth, and the inflation rate.

b. Other differences include the estimated income taxes paid on Social Security benefits and the interactions among the four major inputs—earnings subject to Social Security taxes, key components of nominal GDP growth, demographics, and real (inflation-adjusted) interest rates—and differences that arise mainly because the approaches used by CBO and the Trustees to make estimates differ in various ways even when the major inputs are the same.

- The Trustees' higher estimate of earnings subject to the program's payroll tax;
- Key components of nominal GDP growth projected by the Trustees—higher labor force participation rates (partially offset by higher unemployment rates), higher productivity growth, and higher inflation;
- Demographics—projections by the Trustees of higher fertility rates (partially offset by lower immigration rates) and of slower improvements in mortality rates; and
- The Trustees' projection of higher real interest rates in the long run (that is, rates adjusted to remove the effects of inflation).

Table 1.

Differences Between CBO's and the Social Security Trustees' Projections of the 75-Year Actuarial Balance

	Published Projections	
	As a Percentage of GDP	As a Percentage of Taxable Payroll
CBO	-1.55	-4.68
Trustees	-0.95	-2.66
Difference Between the Projections	0.60	2.02

	Changes to CBO's Projections That Would Result From Adopting Each of the Trustees' Major Inputs to the Projections			
	As a Percentage of GDP		As a Percentage of Taxable Payroll	
	Percentage-Point Change	Difference Explained (Percent)	Percentage-Point Change	Difference Explained (Percent)
Earnings Subject to Social Security Taxes	0.14	23	0.72	36
Key Components of Nominal GDP Growth[a]	0.13	22	0.40	20
Demographics	0.09	15	0.28	14
Real Interest Rates	0.03	6	0.11	5
Other[b]	*	-1	-0.08	-4
Sum of all changes	0.39	65	1.43	71

Sources: Congressional Budget Office; Social Security Trustees.

These projections incorporate the assumption that spending for Social Security continues as scheduled even if its trust funds are exhausted.

The actuarial balance is the difference between the present value of annual tax revenues plus the initial trust fund balance, and the present value of annual outlays plus the present value of a year's worth of benefits as a reserve at the end of the period, each divided by the present value of GDP or taxable payroll. (The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest, known as the discount rate, that is used to translate past and future cash flows into current dollars.)

The 75-year projection period for the financial measures reported here begins in 2016 and ends in 2090.

GDP = gross domestic product; * = between -0.005 and 0.005 percentage points.

a. The key components of nominal GDP growth are the labor force participation rate, the unemployment rate, the rate of productivity growth, and the inflation rate.

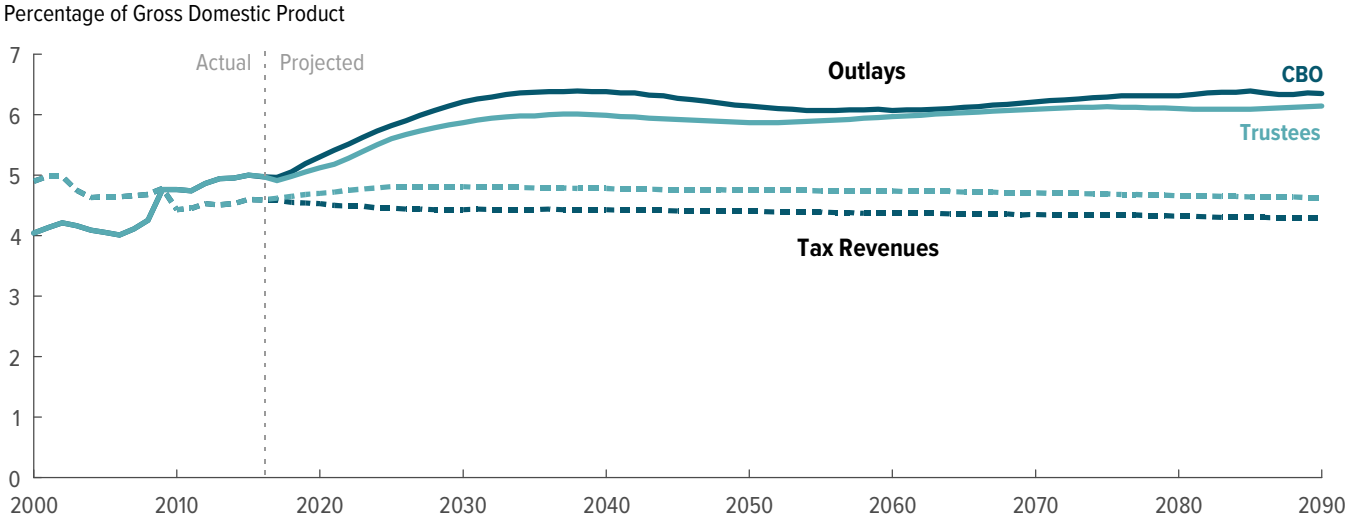
b. Other changes include the differences in estimated income taxes paid on Social Security benefits and the interactions among the four major inputs: earnings subject to Social Security taxes, key components of nominal GDP growth, demographics, and real (inflation-adjusted) interest rates.

The remaining one-third of the difference arises mainly because the approaches used by CBO and the Trustees to make estimates differ in various ways even when the four major inputs are the same. For example, in CBO's modeling, payroll taxes collected from and Social Security benefits received by a retired worker are calculated on the basis of earnings projected for that person, thus ensuring consistency in the projections of payroll taxes and benefits. The Trustees project benefits on the basis of earnings data for a recent cohort of beneficiaries who are retired workers. Those data are adjusted to account for future earnings growth and for other projected changes in the labor market. The Trustees project payroll taxes separately.

Outlays as a percentage of GDP (also known as the cost rate) and revenues as a percentage of GDP (the income rate) are two other useful measures of the system's finances. Over the next 75 years, CBO projects, Social Security's outlays as a percentage of GDP will be higher and revenues will be lower than the Trustees project (see Figure 2). For example, for 2090, CBO's projections of revenues as a percentage of GDP are 8 percent below and its projections of outlays are 3 percent above the Trustees' projections (see Table 2). If CBO adopted the Trustees' projections for the four major inputs, its projection of outlays in 2090 (a year that is representative of long-term trends in the program) would be 4 percent higher than the Trustees', but both CBO and the Trustees

Figure 2.

Social Security Tax Revenues and Outlays



Sources: Congressional Budget Office; Social Security Trustees.

These projections incorporate the assumption that spending for Social Security continues as scheduled even if its trust funds are exhausted.

Tax revenues generally consist of payroll taxes and income taxes paid on benefits. Outlays consist of benefits and administrative costs, which typically account for less than 1 percent of program costs.

would project essentially the same revenues for that year as a percentage of GDP. The difference in the projection of earnings subject to Social Security payroll taxes is the most important contributor to those results.

CBO projects that the program's combined trust funds will be exhausted in 2029. If CBO adopted the Trustees' projections of the four major inputs, it would project the trust funds to be exhausted in 2033—one year earlier than the Trustees project.

How Did CBO Project Social Security's Finances?

The agency's long-term projections for Social Security spending and revenues are based on a detailed microsimulation model that starts with data about individuals from a representative sample of the population and projects demographic and economic outcomes for that sample through time.[3] For each person in the sample, the model simulates birth, death, immigration and emigration, marital status and changes to it, fertility, labor force participation, hours worked, earnings, and payroll taxes, along with Social Security retirement, disability, and dependents' and survivors' benefits.

The amounts of Social Security benefits received and taxes paid, and the resulting gap between total revenues and benefits, depend on estimates of life expectancy, conditions in the labor market, and other factors. CBO's microsimulation model is designed so that, on average, the simulated economic outcomes of the sample equal the agency's long-term economic projections. Those economic projections are extensions of the 10-year economic forecast that underlies the agency's budget projections. They reflect not just historical averages but also trends that many economic forecasters expect will continue.[4]

3. The core individual-level data used in CBO's model come from the Continuous Work History Sample, an administrative data set provided by the Social Security Administration. Those data contain a history of individual earnings records for a sample, beginning in 1951, of 1 percent of all people who have been issued Social Security numbers. The data also contain demographic information and Social Security information for each individual. The information for Old-Age, Survivors, and Disability Insurance includes claiming dates, claim type (retiree, survivor, or disability), primary insurance amount, monthly benefit amount, and the reason for disability. For more detail, see Jonathan Schwabish and Julie Topoleski, *Modeling Individual Earnings in CBO's Long-Term Microsimulation Model*, Working Paper 2013-04 (Congressional Budget Office, June 2013), www.cbo.gov/publication/44306; and Congressional Budget Office, *CBO's Long-Term Model: An Overview* (June 2009), www.cbo.gov/publication/20807.

4. CBO regularly compares the accuracy of its two- and five-year economic forecasts with forecasts from the Office of Management and Budget and organizations in the private sector. See Congressional Budget Office, *CBO's Economic Forecasting Record: 2015 Update* (February 2015), www.cbo.gov/publication/49891.

Table 2.

Differences Between CBO's and the Social Security Trustees' Projections of Tax Revenues and Outlays in 2090

	As a Percentage of GDP		As a Percentage of Taxable Payroll	
	Tax Revenues	Outlays	Tax Revenues	Outlays
		Published Projections		
CBO	4.29	6.34	13.59	20.08
Trustees	4.63	6.14	13.33	17.68
Difference Between the Projections	0.34	-0.20	-0.26	-2.40
Percentage Difference Between the Projections	8	-3	-2	-12
		Changes to CBO's Projections That Would Result From Adopting Each of the Trustees' Major Inputs		
Earnings Subject to Social Security Taxes	0.41	0.36	-0.06	-0.81
Key Components of Nominal GDP Growth[a]	-0.01	-0.07	-0.01	-0.22
Demographics	-0.02	-0.25	-0.05	-0.75
Real Interest Rates	0	0	0	0
Other[b]	-0.05	0.04	-0.15	0.19
Sum of all changes	0.33	0.08	-0.28	-1.58
		Projections Using All of the Trustees' Major Inputs		
CBO With Trustees' Major Inputs	4.62	6.42	13.31	18.50
Trustees' Projections	4.63	6.14	13.33	17.68
Difference Between the Projections	0.01	-0.28	0.02	-0.82
Percentage Difference Between the Projections	0	-4	0	-4

Sources: Congressional Budget Office; Social Security Trustees.

These projections incorporate the assumption that spending for Social Security continues as scheduled even if its trust funds are exhausted.

Tax revenues consist of payroll taxes and income taxes paid on benefits. Outlays consist of scheduled benefits and administrative costs, which typically account for less than 1 percent of program costs.

GDP = gross domestic product.

a. The key components of nominal GDP growth are the labor force participation rate, the unemployment rate, the rate of productivity growth, and the inflation rate

b. Other changes include the differences in estimated income taxes paid on Social Security benefits and the interactions among the four major inputs: earnings subject to Social Security taxes, key components of nominal GDP growth, demographics, and real (inflation-adjusted) interest rates.

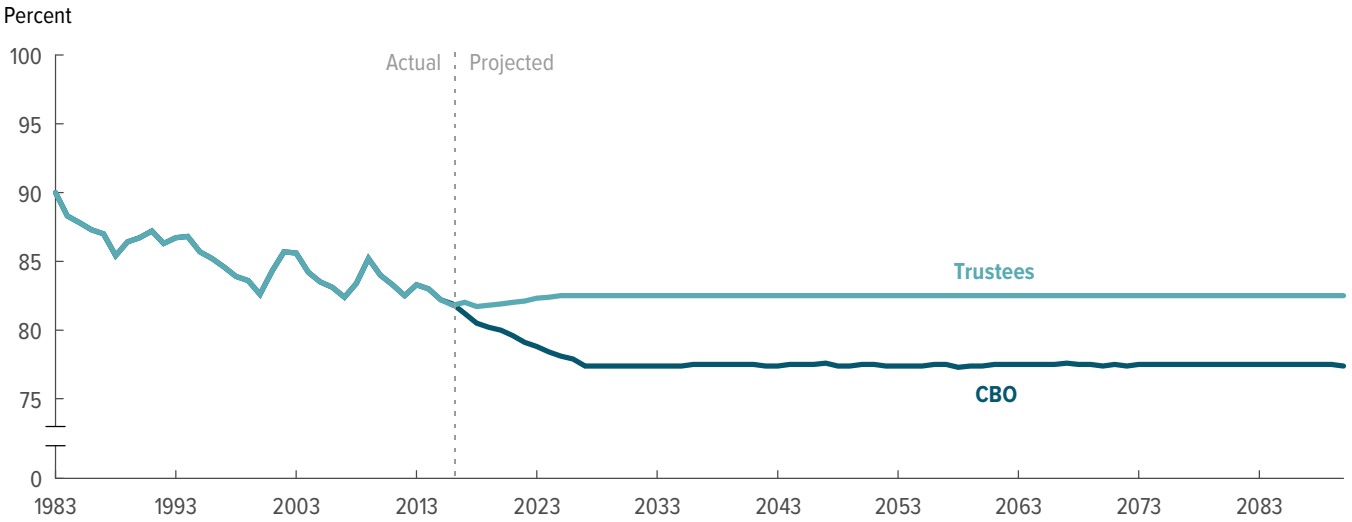
Average benefits per recipient are projected to continue to increase because of future increases in the earnings that are the basis of those benefits. Other things being equal, that relationship would tend to keep total benefits roughly stable as a percentage of GDP. However, as a larger share of the baby-boom generation reaches retirement age and as longer life spans lead to longer retirements, a significantly larger portion of the population will draw benefits. Those developments combine to cause the total amount of benefits scheduled to be paid under current law to grow faster than the economy, in CBO's projections.

Almost all Social Security revenues come from a payroll tax. Consequently, the program's total revenues depend in large part on the share of earnings subject to that tax. Payroll tax revenues as a percentage of GDP decline in CBO's projections, mostly because the taxable share of earnings is expected to continue to fall, furthering the decline of the past several decades. The decline in payroll taxes more than offsets a small increase in income taxes on Social Security benefits—the other source of Social Security revenues—that results from increases in the number of Social Security recipients whose benefits are subject to taxation, the amount of their benefits that is taxed, and their average income tax rates.

CBO updates its projections each year to incorporate the best information available from the research community as well as feedback on the agency's analytical approach and other improvements in modeling. As a result of updates in the past year, for instance, the agency's estimate of the actuarial balance in 2016 is slightly more negative than it was in 2015. Contributing factors included lower projected interest rates, GDP, and taxable payroll amounts; changes to projected educational attainment and to the ages at which future retirees choose to claim Social Security benefits; and the effects of the one-year shift in the

Figure 3.

Share of Covered Earnings Below Social Security's Taxable Maximum



Sources: Congressional Budget Office; Social Security Trustees.

Social Security payroll taxes are levied only on earnings up to a maximum amount ($118,500 in 2016), which increases annually with the national average wage index except in years when there is no cost-of-living adjustment to benefits. Covered earnings are those received by workers in jobs subject to Social Security payroll taxes. The government collects payroll taxes on the earnings of most workers, although a small group of workers—mostly in state and local government or in the clergy—are exempt. The taxable share of covered earnings affects revenues of the Social Security system as well as benefits paid in future years (because taxable earnings are used to calculate benefits).

projection period. Those factors were partially offset by revised demographic projections and lower projected rates of disability incidence.[5]

What Is the Role of Taxable Earnings in the Projections?

The amount of earnings subject to the Social Security payroll tax, as a percentage of GDP, depends largely on the share of total earnings that are at or below the maximum taxable amount ($118,500 in 2016), the share of total compensation that is paid as earnings, and total compensation as a share of GDP. The current year's taxable earnings are the primary determinant of the program's revenues for that year, but those earnings also figure in the calculation of benefits to be paid in the future. Thus, a larger amount of taxable earnings initially increases revenues and later increases spending. In the calculation of the actuarial balance, earlier years receive greater weight than later years—so a larger amount of projected taxable earnings outweighs the effect of larger benefits in the future and improves the actuarial balance.

In CBO's projections, the portion of earnings subject to the Social Security payroll tax falls from 82 percent in 2015 to below 78 percent by 2026 and remains near that level thereafter (see Figure 3). The share of compensation that workers receive as earnings is projected to remain near 81 percent through 2046; it then declines through 2090. Total compensation rises from 61.6 percent of GDP in 2015 to 62.0 percent in 2026 and remains at that level in later years. The amount of earnings subject to the Social Security payroll tax also depends to a lesser extent on the ratio of covered earnings to total earnings and other factors. Covered earnings are those received by workers in jobs subject to Social Security payroll taxes.[6] In CBO's projections, taxable earnings measured as a percentage of GDP fall from 35.7 percent in 2015 to 33.9 percent by 2026 and to 31.6 percent by 2090.

5. Changes to CBO's Social Security projections are described each year in the agency's long-term budget outlook and in a publication with additional information about Social Security. See Congressional Budget Office, *The 2016 Long-Term Budget Outlook* (July 2016), Appendix B, www.cbo.gov/publication/51580, and *CBO's 2015 Long-Term Projections for Social Security: Additional Information* (December 2015), www.cbo.gov/publication/51047.

6. The government collects payroll taxes on the earnings of most workers, although a small group of workers—mostly in state and local government or in the clergy—are exempt.

Comparison With the Trustees' Projections

The Trustees' estimates of overall taxable earnings as a percentage of GDP—which peak at 36.7 percent in 2025 before falling to 34.8 percent by 2090—are higher than CBO's estimates for two main reasons:

- The Trustees estimate that the portion of earnings covered by Social Security on which payroll taxes are collected will increase slightly between 2016 and 2025, in contrast to CBO's estimate of a falling share, and remain constant at 82.5 percent thereafter. Their projections suggest that they anticipate that the growth rate of earnings will be similar for those with earnings above the taxable maximum and others.

- The Trustees' projections of compensation as a share of GDP rise more than CBO's over the next decade, reaching 63.3 percent in 2025, after which that share remains unchanged.

The Trustees' estimate of the proportion of compensation that will be paid as earnings is similar to CBO's for the next four decades and larger than CBO projects thereafter.

If CBO adopted the Trustees' projections of taxable earnings—specifically, for the share of earnings subject to the payroll tax, the share of total compensation paid as earnings, and compensation as a share of GDP—but did not allow those changes to affect projections of other factors, then its estimates of payroll tax receipts and, eventually, benefits paid also would be higher. (Although adopting that projection would improve the projections for Social Security's finances, other aspects of the federal budget would be affected. For example, individual income tax receipts would decrease more than payroll tax receipts would increase because a smaller share of income would be subject to higher income tax rates.) CBO's resulting projection of the 75-year actuarial balance would improve by 0.14 percent of GDP, accounting for 23 percent of the difference between CBO's and the Trustees' projections. Most of that reduction is attributable to differences in projections of the share of earnings subject to the payroll tax.

The Basis of CBO's Projections

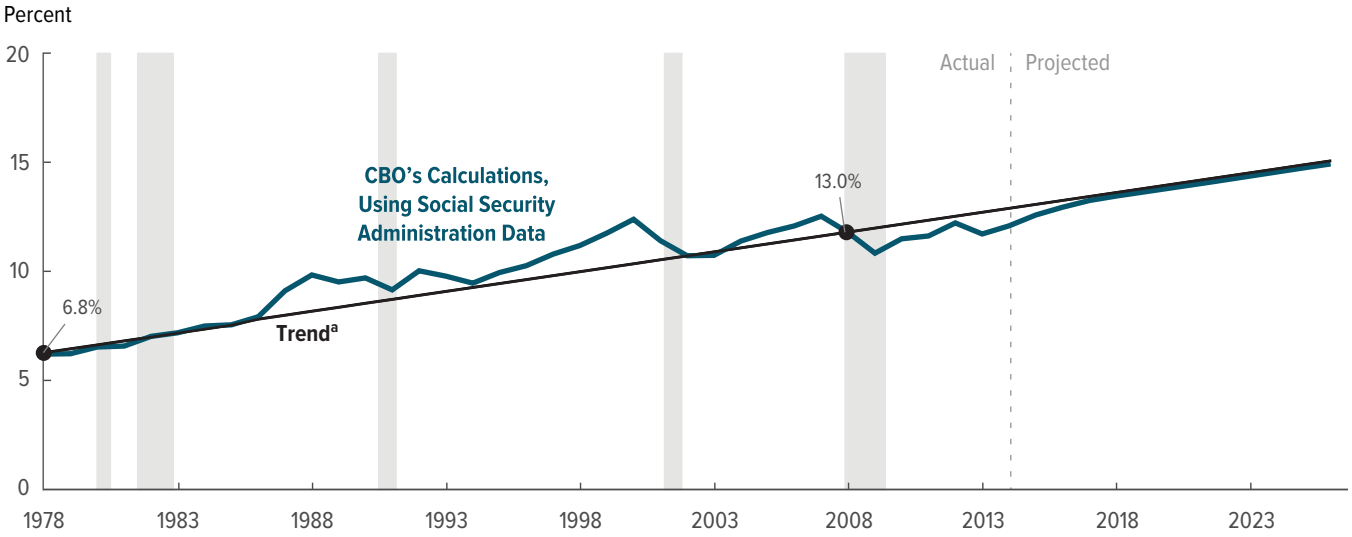
CBO's projections of the amount of earnings subject to the Social Security payroll tax are derived from projections of the entire distribution of compensation that underlie the agency's revenue projections. Those projections reflect an expectation that earnings will grow faster for higher-income people than for others during the next decade—as they have over the past several decades—and that the earnings of all taxpayers will grow at similar rates thereafter. CBO's projections of earnings as a share of compensation reflect trends in the cost of health insurance and incorporate expected responses to future taxes on health insurance. The projections of compensation as a share of GDP reflect the distribution of income among various categories, such as labor income and domestic economic profits. Each of those projections is uncertain.

The Share of Earnings Subject to the Payroll Tax. Social Security payroll taxes are levied only on earnings up to the taxable maximum, which increases annually with the national average wage index except in years when there is no cost-of-living adjustment to benefits. About 6 percent of earners have earnings above the taxable maximum. Earnings below that amount are taxed at a combined rate of 12.4 percent, shared equally by the employer and employee (self-employed workers pay the full amount); no tax is paid on earnings above the cap. The taxable maximum has remained a nearly constant proportion of the average wage since the early 1980s, but because earnings have grown faster for higher earners than for others, the portion of covered earnings on which Social Security payroll taxes are collected fell from 90 percent in 1983 to 83 percent in 2014.

Most of the historical decline in the share of earnings covered by the payroll tax has been caused by an increase in the share of earnings for workers in the top percentile of the income distribution; that share rose steadily in the 1980s and 1990s but since then has fluctuated with conditions in the economy (see Figure 4). The share fell during the recession that began in 2007 and has not returned to its prerecession level. In CBO's view, the data from 2008 through 2014 about the top 1 percent are probably not informative about long-term trends because the 2007–2009 recession was unusually severe, especially for high-income earners, and the subsequent recovery was unusually slow. It also is likely that many high-income workers shifted earnings from 2013 into 2012 to avoid the tax rate increases that took effect in 2013. The earnings share of the top 1 percent rose in 2014, although it

Figure 4.

Share of Wage and Salary Income Earned by the Top 1 Percent of Earners



Sources: Congressional Budget Office based on data from Kopczuk, Saez, and Song (2010) and Social Security Administration.

For 1978 to 1989, estimates are based on tabulations of individual earnings records, as reported in supplemental data to Wojciech Kopczuk, Emmanuel Saez, and Jae Song, "Earnings Inequality and Mobility in the United States: Evidence From Social Security Data Since 1937," *Quarterly Journal of Economics*, vol. 125, no. 1 (February 2010), pp. 91–128, http://dx.doi.org/10.1162/qjec.2010.125.1.91. For 1990 to 2014, the estimates are based on earnings as reported by employers on Internal Revenue Service Forms W-2 and tabulated by the Social Security Administration, "Social Security Online, Automatic Increases: Wage Statistics for 2014" (accessed September 16, 2016), www.ssa.gov/cgi-bin/netcomp.cgi?year=2014. To account for differences in methodology between the two series, CBO adjusted the 1978–1989 estimates for the average difference in years for which data were available for both series (1990–2004).

CBO's projections are extrapolations based on data from the Current Population Survey and from individual income tax returns. The trends found in those data are similar to the trends found in individual earnings records.

The vertical bars indicate the duration of recessions, each of which extends from the peak of a business cycle to its trough.

a. The line connects data points for each group's share of earnings in 1978 and 2008 and extrapolates the trend thereafter.

remained below the longer-term trend. CBO attributes some of that weakness to the fact that the economy was still operating appreciably below its potential in 2014. Preliminary data for 2015 suggest that the earnings share of the top 1 percent rose again last year. For its projections of earnings shares over the coming decade, CBO relies on its review of longer-term trends. Specifically, the agency expects that the earnings share of the top 1 percent will rise, reaching the level suggested by extrapolation of the trend from 1978 to 2008 over the next few years and then following that trend for the remainder of the coming decade.

A smaller amount of the historical decline in the share of earnings covered by the payroll tax has been caused by an increase in the share of earnings for workers in the 96th to 99th percentiles of the earnings distribution. Their earnings share has grown steadily—by about one-half of a percent per decade—since the late 1970s, when the relevant data began to be collected. That trend, which CBO projects will continue for the next 10 years, is expected to contribute to the declining share of earnings subject to the payroll tax over the same period.

The Share of Compensation Paid as Earnings. Workers' total compensation consists of taxable earnings and nontaxable benefits, such as employers' contributions to health insurance and pensions. Over the years, the share of total compensation paid in the form of earnings has slipped—from about 90 percent in 1960 to about 81 percent in 2015—mainly because the cost of health insurance has risen more quickly than has total compensation.[7]

CBO expects that trend in health care costs to continue, and that by itself would further decrease the proportion of compensation that workers receive as earnings. However, starting in 2018, the Affordable Care Act will impose an excise tax on some employment-based health insurance premiums above specified amounts. Some

7. For more details, see Congressional Budget Office, *How CBO Projects Income* (July 2013), www.cbo.gov/publication/44433.

employers and workers will respond by shifting to less expensive plans, thereby reducing the share of compensation consisting of insurance premiums and increasing the share that consists of earnings. CBO projects that, for a few decades, the effects of the tax on the mix of compensation will roughly offset the effects of rising costs for health care; after that, the effects of rising health care costs will outweigh those of the excise tax, and the share of compensation paid as earnings will decline.

Compensation as a Share of GDP. From 1960 to 2000, compensation as a share of GDP varied, averaging 62.9 percent. That share has fallen since, reaching 61.6 percent last year. Although CBO projects that compensation as a share of GDP will rise slightly over the next decade as the economy strengthens, the agency expects some factors that have depressed that share since 2000 to continue. One such factor is globalization, which has tended to move the production of labor-intensive goods and services to countries with labor costs that are lower than those in the United States. Another factor is technological change, which may have increased returns on capital more than returns on labor. As a result of such factors, in CBO's projections, compensation as a share of GDP does not return to its historical average but equals 62.0 percent by 2026 and remains at that level thereafter.

Uncertainty. Projections of taxable earnings are subject to considerable uncertainty. A body of research has considered the ways that many factors could contribute to changes in inequality in earnings and other compensation. For instance, changes in the size and structure of industries and businesses will probably continue to affect earnings distributions. In CBO's projections, the supply of workers with more education increases more quickly than the supply of workers with less education, and that could cause the premium paid to workers with more education to rise more slowly than it has in the past or to stop rising altogether in the long term. That process would tend to slow the growth of earnings for high earners. However, a lack of consensus about the relative importance of those and other factors has made the projections especially uncertain. CBO continues to refine its methods for projecting taxable earnings and to evaluate new data as they become available.

What Is the Role of the Key Components of Nominal GDP Growth in the Projections?

The size of the economy significantly affects Social Security's revenues and spending. When nominal GDP is larger, Social Security receives more revenues initially, and then later—when beneficiaries retire—it pays higher benefits. Higher nominal GDP improves Social Security's actuarial balance because earlier years receive greater weight in the calculation of that balance. In CBO's projections, nominal GDP growth averages 4.1 percent over the 2016–2046 period; it is slightly stronger in later years.[8] This section focuses on key components of nominal GDP growth: the rates of labor force participation, unemployment, productivity growth, and inflation.

The rate of inflation also affects the actuarial balance. In addition to raising nominal GDP, a higher rate of inflation raises nominal interest rates, and those higher interest rates improve the actuarial balance. (For discussion of why that occurs, see the section on the role of real interest rates in the projections.)

Comparison With the Trustees' Projections

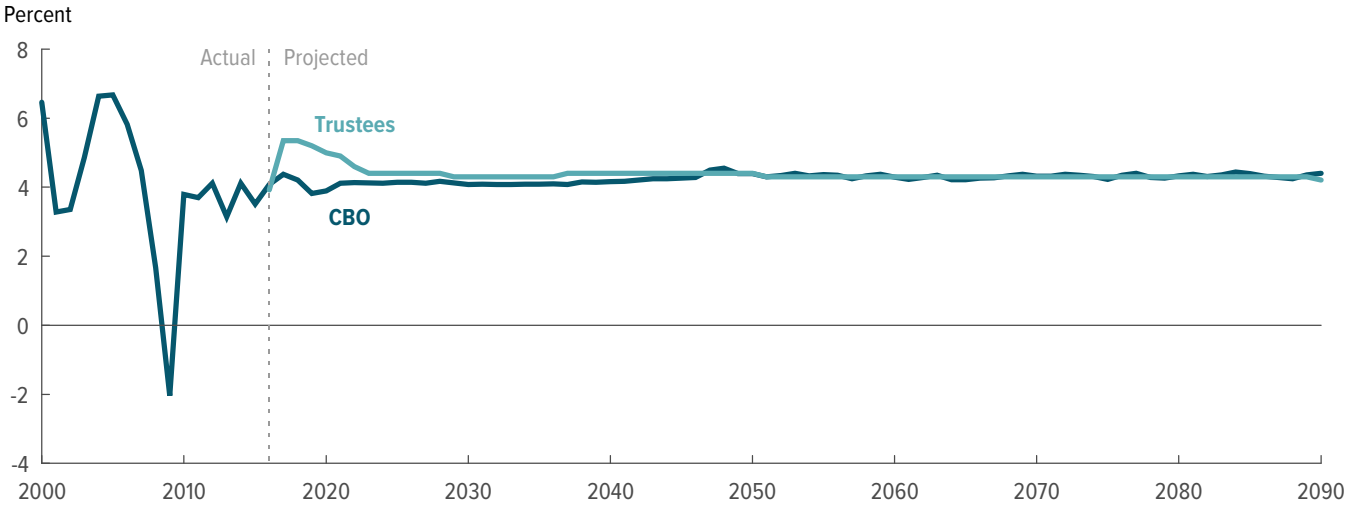
The Trustees project average annual growth in nominal GDP to be 0.7 percentage points faster than CBO does over the next 10 years and slightly faster over the subsequent two decades; after that, the projections are similar (see Figure 5). As a result, the Trustees project total economic output that is 7.4 percent higher after a decade and 13.4 percent higher by 2046 than CBO does; that difference increases slightly by the end of the 75-year projection period. The faster growth through 2046 is the result of several factors:

- Most important, the Trustees project that the labor force participation rate will rise until 2021 before slowly declining, whereas CBO projects a continuous decline in participation that is attributable largely to projected changes in demographics (see Figure 6);
- The Trustees' projection of GDP growth suggests stronger productivity growth than CBO's does through the mid-2040s; and
- The Trustees project faster growth in prices than CBO does.[9]

8. Through 2046, the projections incorporate the adverse economic effects of rising federal debt and marginal tax rates. After 2046, they do not account for such effects.
9. The analysis in this section includes the effect of higher inflation on nominal interest rates.

Figure 5.

Growth of Nominal Gross Domestic Product



Sources: Congressional Budget Office; Social Security Trustees.

The Trustees also project that the unemployment rate will stabilize at a level notably above the current rate, whereas CBO projects that the unemployment rate will stay roughly unchanged. That higher unemployment rate in the Trustees' projections slightly offsets the other factors that raise nominal GDP relative to CBO's estimates. That occurs because, under CBO's projections, a higher unemployment rate implies that a smaller portion of the labor force is employed.

If CBO adopted the Trustees' projections for rates of labor force participation, unemployment, and inflation and also set the rate of productivity growth so that its projection of nominal GDP matched that of the Trustees, but the agency did not allow those changes to affect projections of other factors, then the actuarial balance would improve by 0.13 percent of GDP, accounting for 22 percent of the difference between CBO and the Trustees.

The Basis of CBO's Projections

CBO's forecast of nominal GDP growth over the long term is based on projections of trends in real GDP and inflation. Projections of real GDP growth are based on such underlying factors as growth in the use of labor—which is the result of determinants that include labor force participation and the unemployment rate—and labor productivity, or average real output per hour of labor. (Real GDP is also affected by the size and age structure of the population, discussed in the next section.) The nominal GDP growth rate equals the real GDP growth rate plus the rate of inflation. Each component is subject to considerable uncertainty.

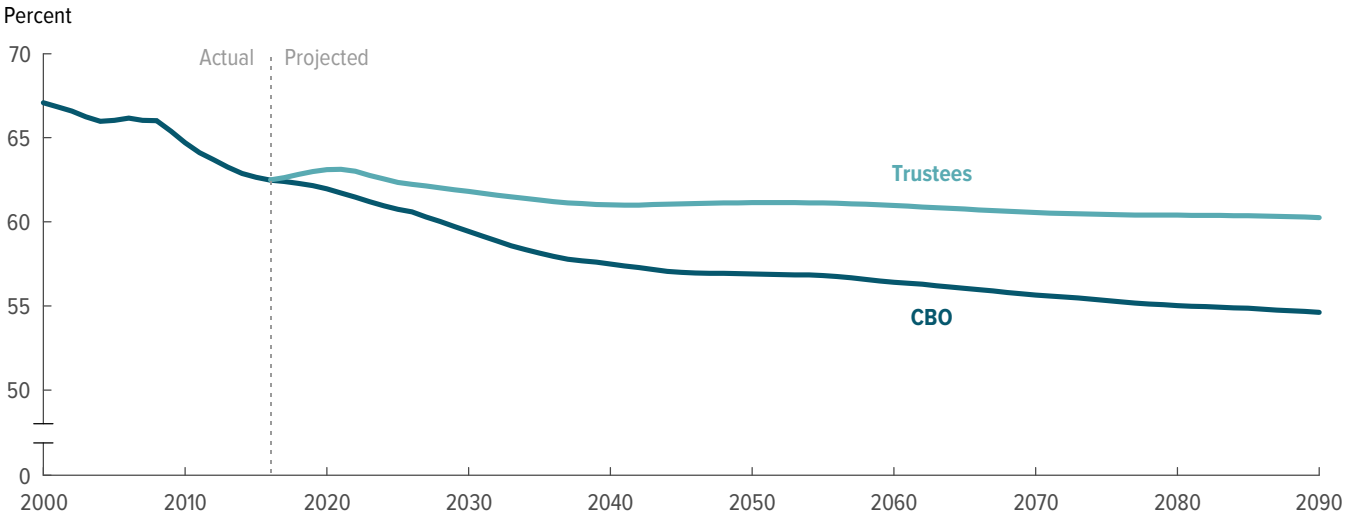
CBO's current projections of nominal GDP growth rates are significantly slower than the past three decades' average of 4.8 percent. The difference is attributable mainly to factors that are projected to constrain growth in real GDP and, to a lesser degree, to result from lower inflation. Together, those factors point to a slowdown in nominal GDP growth of a little more than one-half of a percentage point relative to the rates of the past three decades.

Labor Force Participation. Declining participation in the labor force has been a major factor slowing growth in real GDP, a trend that CBO projects will continue. The rate of labor force participation has dropped noticeably in recent years, from 67.1 percent in 2000 to 62.5 percent today. It will continue to decline to 60.6 percent in 2026 and further in later years, CBO projects.[10] In particular, the growing retirement of baby boomers is expected to lead to continued declines in labor force participation. Today, the number of people who are age 65 or older is one-quarter the size of the population ages 20 to 64; 75 years from now, CBO projects, the older group will be nearly one-half the size of the younger group. In addition, CBO anticipates that there will be slightly less participation in the labor force by younger workers and by less educated workers than there has been in the past, as long-term trends for those groups continue.

10. In contrast, the Trustees project that the labor force participation rate will rise to 63.1 percent in 2020 and 2021 before declining.

Figure 6.

Labor Force Participation Rate



Sources: Congressional Budget Office; Social Security Trustees.

The labor force participation rate is the percentage of people in the civilian noninstitutionalized population who are age 16 or older and either working or actively seeking work.

The forces that dampen participation will be modestly offset by a pair of trends working in the opposite direction, in CBO's view. First, increasing longevity will lead people to work longer: In the coming decades, the average person is likely to work about three months longer for each additional year of life expectancy. Second, the population is becoming more educated, and workers with more education tend to stay in the labor force longer than do people with less education.

The Unemployment Rate. In CBO's projections, the unemployment rate rises slightly over the next decade from its average of 4.9 percent for the first half of 2016 to 5.0 percent by 2020. The change is anticipated as business cycle factors that currently influence the labor market begin to abate, and—in particular—as the unemployment rate moves in line with underlying trends. The unemployment rate is projected to fall slightly over the longer term because of changes in demographics and education: Older and more educated workers tend to have lower rates of unemployment, so the overall unemployment rate is expected to decline both as the labor force ages and as it becomes increasingly more educated. In CBO's projections, that rate declines to 4.8 percent by 2046 and then remains at that level.[11]

Productivity Growth. In CBO's projections, growth in labor productivity will be modestly lower than its average over long periods before the recession of 2007 to 2009, averaging 1.6 percent between 2016 and 2026 and then increasing to 1.8 percent in later years.[12] The rising budget deficits projected under current law would slow the growth of the capital stock and therefore capital services, which contribute to labor productivity. CBO also projects that total factor productivity (or output per unit of combined labor and capital services) will grow slightly more slowly than its historical average—in part because, with the exception of a period of rapid growth in the late 1990s and early 2000s, productivity has tended to grow more slowly in recent decades than it has averaged since the 1950s and 1960s. Total factor productivity growth will average 1.3 percent between 2016 and 2026 and remain at that level in later years, CBO projects.

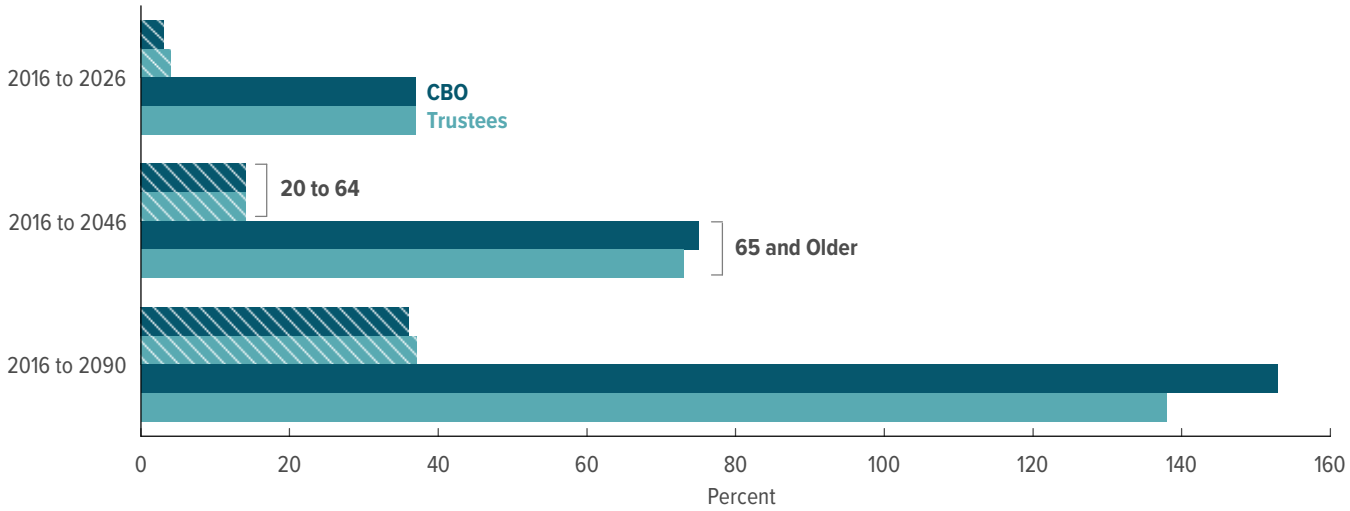
Inflation. CBO projects that the annual rate of inflation for all final goods and services produced in the economy, as measured by the rate of increase in the GDP price

11. The Trustees project that the unemployment rate will increase to 5.6 percent in 2024 and 2025 before settling at 5.5 percent for the rest of the projection period.

12. The Trustees project productivity growth for the U.S. economy overall, and define it as the ratio of real GDP to hours worked by all workers—a measure similar in concept to CBO's reported measure. That growth averages 1.8 percent between 2016 and 2026 and then 1.7 percent in later years in the Trustees' projections.

Figure 7.

Increase in Population in Different Age Groups, 2016 to 2090



Sources: Congressional Budget Office; Social Security Trustees.

index, will average 2 percent over the next 75 years. That rate is consistent with the Federal Reserve's longer-run goal for inflation and is broadly in line with widely held expectations—implying that the GDP price index will increase slightly more slowly than it has over the past three decades. The consumer price index, another gauge of inflation and the one that is used to adjust Social Security benefits for increases in the cost of living, is projected to rise at an average rate of 2.4 percent over the same period.[13] The 0.4 percentage-point difference is generally equal to the historical difference between the two indexes, which are based on the prices of different sets of goods and services and use different methods of calculation.

Uncertainty. Estimates of economic activity over the next 75 years are subject to a great deal of uncertainty. For example, the nation could experience faster growth in productivity than is reflected in CBO's projections, either steadily (as a result of ongoing gains from the integration of information technology into the economy, for example) or more suddenly (from a technological breakthrough, such as the development of a new source of energy). Conversely, the growth of productivity could be slower than projected (if, for example, technological innovation or the diffusion of previous technological innovations throughout the economy diminished more than expected). CBO's projections of productivity growth and other determinants of economic growth are estimated to be in the middle of the distribution of potential outcomes.

What Is the Role of Demographics in the Projections?

Social Security's revenues depend to a large degree on the size of the labor force, which is related to the number of adults between the ages of 20 and 64, and its outlays are closely linked to the nation's population age 65 or older. The actuarial balance improves when a larger segment of the population pays into the trust funds that support Social Security and when a smaller portion receives benefits from the program.

In CBO's projections, the number of people between the ages of 20 and 64 will increase by 3 percent between now and 2026, by 14 percent between now and 2046, and by 36 percent between now and 2090 (see Figure 7). The number of people age 65 or older, by contrast, will increase by 37 percent between now and 2026, by 75 percent between now and 2046, and by 153 percent between now and 2090. CBO bases its population estimates on demographic projections that incorporate recent population data and estimates of future rates of fertility (births), immigration (people entering the country, on net), and mortality (deaths).

13. The Trustees project higher inflation rates. In their projections, the increase in the GDP price index averages 2.2 percent over the 75-year projection period, and growth in the consumer price index averages 2.6 percent.

Comparison With the Trustees' Projections

The Trustees project that the total fertility rate will be slightly higher, the net rate of immigration will be lower, and the mortality rate will decline slightly more slowly than CBO estimates. The Trustees' projection for the increase in the size of the 20–64 age group over the next 75 years is similar to CBO's projection. However, between now and 2090, the Trustees project a 138 percent increase in the number of people age 65 or older, which is 16 percentage points less than CBO's projection. All told, compared with CBO's projections, the Trustees expect a similar number of working-age people and fewer elderly people over the period.

If CBO adopted the Trustees' demographic projections, but the agency did not allow those changes to affect projections of other factors, then the actuarial balance would improve by 0.09 percent of GDP, accounting for 15 percent of the difference between the Trustees' and CBO's projections.

The Basis of CBO's Projections

CBO anticipates that the annual growth rate of the U.S. population will decline gradually from about 0.8 percent in 2016 to about 0.5 percent 30 years from now and to slightly less than 0.5 percent 75 years from now. In CBO's projections, the population not only grows more slowly but also becomes older, on average, relative to past trends because of changes in fertility, immigration, and mortality. Each of those changes is uncertain.

Fertility. Fertility rates often decline during recessions and rebound during recoveries. However, after the 2007–2009 recession, the U.S. fertility rate dropped (it was 2.1 children per woman in 2007), and it has remained below 1.9 since then. CBO estimates a total fertility rate of 1.9 for the 2016–2090 period.[14] (That rate is the average number of children that a woman would have in her lifetime if, at each age of her life, she experienced the birthrate observed or assumed for that year and if she survived her entire childbearing period.) Although CBO projects a total fertility rate, in its long-term model, the likelihood that a particular woman will have a child depends on such factors as that woman's education, marital status, immigration status, and childbearing history.

Immigration. CBO's immigration projections match those underlying its 10-year baseline: The net annual immigration rate (which accounts for all people who either enter or leave the United States in any year) is roughly constant from 2017 through 2026 and slightly higher than in the previous few years to account for the projected strengthening of the U.S. economy. After 2026, that rate is projected to decline slowly until 2036, when it is expected to equal the rate projected by the Census Bureau.[15] (CBO anticipates that net annual immigration will continue to match the Census Bureau's projections thereafter.) On that basis, the rate of net annual immigration to the United States is projected to be 4.0 per thousand people in the U.S. population in 2026, 3.7 in 2046, and 3.6 in 2090. Although that rate declines, CBO projects that the total population will rise faster, so the net annual number of immigrants is anticipated to rise from 1.4 million people in 2026 to 1.5 million people in 2046 and to 1.8 million in 2090.[16]

Mortality. The mortality rate generally declined in the United States from 1950 to 2012, the period on which CBO bases its projections. Over that time, the mortality rate has generally improved more quickly for younger people than for older people. In particular, a recent review of the data by CBO suggests that the differences in relative improvements in mortality exhibited by various age groups are significant and likely to continue. For example, mortality rates for people under the age of 15 declined by an average of more than 2½ percent per year between 1950 and 2012; mortality rates for people over the age of 80 declined by an average of less than 1 percent per year over the same period. CBO projects that mortality rates for each five-year age group will continue to decline at the average pace exhibited over the 1950–2012 period.

CBO projects that life expectancy at age 65 will be 21.6 years in 2046 and 24.6 years in 2090; in 2016, life

14. CBO's projection is consistent with that recommended by the Social Security Advisory Board's 2015 Technical Panel on Assumptions and Methods. See 2015 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2015), p. 9, http://go.usa.gov/cJYR5 (PDF, 3.4 MB). The Trustees project a slightly higher total fertility rate of 2.0 children per woman.

15. See Census Bureau, "Population Projections, 2014 National Population Projections: Summary Tables," Table 1 (accessed September 16, 2016), http://go.usa.gov/x33DB.

16. The Trustees project net immigration of 1.4 million people in 2026, 1.3 million in 2046, and 1.2 million in 2090.

expectancy at age 65 is 19.4 years.[17] Once CBO projects average mortality rates for men and women by age group, it incorporates differences in those rates on the basis of marital status, education, and lifetime household earnings. (For people under 30, the mortality projections account for age and sex only.) CBO projects a greater life expectancy for people who are married, have more education, and are in higher income groups.[18]

Uncertainty. Although in the past, demographic trends have changed more slowly over long periods than have some other major inputs into CBO's projections (such as real interest rates), population projections are still subject to uncertainty. For example, mortality rates have declined over the past half century, and in CBO's projections, that trend continues. Historically, the average annual change in the mortality rate has varied by about 1 percentage point for men and for women during the 25-year periods beginning with 1942 to 1966 and ending with 1986 to 2010. In CBO's view, the projections reflect the middle of the distribution of possible outcomes for all demographic factors, including mortality rates.

What Is the Role of Real Interest Rates in the Projections?

Interest rates affect measures of the system's finances in two particular ways. First, they determine the interest received on balances in the Social Security trust funds—and thus affect the exhaustion of the trust funds. Second, in the calculation of the actuarial balance, they are used to compute the present values of future cash flows. (Present values depend on an interest rate—known as the discount rate—that is used to translate future income or payments into current dollars.) Thus, a higher interest rate improves the actuarial balance because cash flows in future years—in which large shortfalls between outlays and revenues are projected—receive less weight in the calculations. (A nominal interest rate equals the real interest rate plus the rate of inflation as measured by the consumer price index. The analysis in this section focuses on real interest rates because the effects of inflation were included in the analysis of the key components of nominal GDP growth, discussed above.)

Interest rates on federal borrowing increase over the next few years in CBO's projections, as the slack in the economy continues to diminish, inflation returns to the Federal Reserve's 2 percent target, and the central bank gradually reduces the extent to which its monetary policy supports economic growth. The real rate on 10-year Treasury notes (calculated by subtracting the rate of increase in the consumer price index from the nominal yield on those notes) has averaged 0.8 percent since 2009 and will reach 1.7 percent in 2026, CBO estimates. After that, the rate continues to rise, reaching 2.3 percent in 2046 and remaining at that level indefinitely.

In CBO's projections, the special-issue bonds issued by the trust funds generally earn interest at rates that match the 10-year rate. Because interest rates on newly issued bonds are expected to increase in coming years, CBO projects that the average interest rate earned by all bonds held by the Social Security trust funds will be slightly lower than the 10-year rate during the next decade and a half but the same as the 10-year rate thereafter. For the discount rate in the calculation of the actuarial balance, CBO uses the 10-year Treasury note rate.[19]

Comparison With the Trustees' Projections

The Trustees use the average interest rate on special-issue bonds held in the trust funds as the discount rate.[20] That real rate—that is, the nominal rate minus the inflation rate as measured by the consumer price index—is 2.4 percent in 2016 and then increases from 0.4 percent in 2017 to 2.7 percent in 2031 and remains at that level thereafter, according to CBO's calculations using the Trustees'

17. Life expectancy as used here is period life expectancy—the amount of time that a person in a given year would expect to survive beyond his or her current age on the basis of that year's mortality rates for various ages. CBO's projection of life expectancy in 2090 is longer than the Trustees' projection of 23.6 years at age 65 but shorter than the projection of 25.3 years at age 65 recommended in the report of the 2015 Technical Panel on Assumptions and Methods, *Report to the Social Security Advisory Board* (September 2015), pp. 13–20, http://go.usa.gov/cJYR5 (PDF, 3.4 MB).

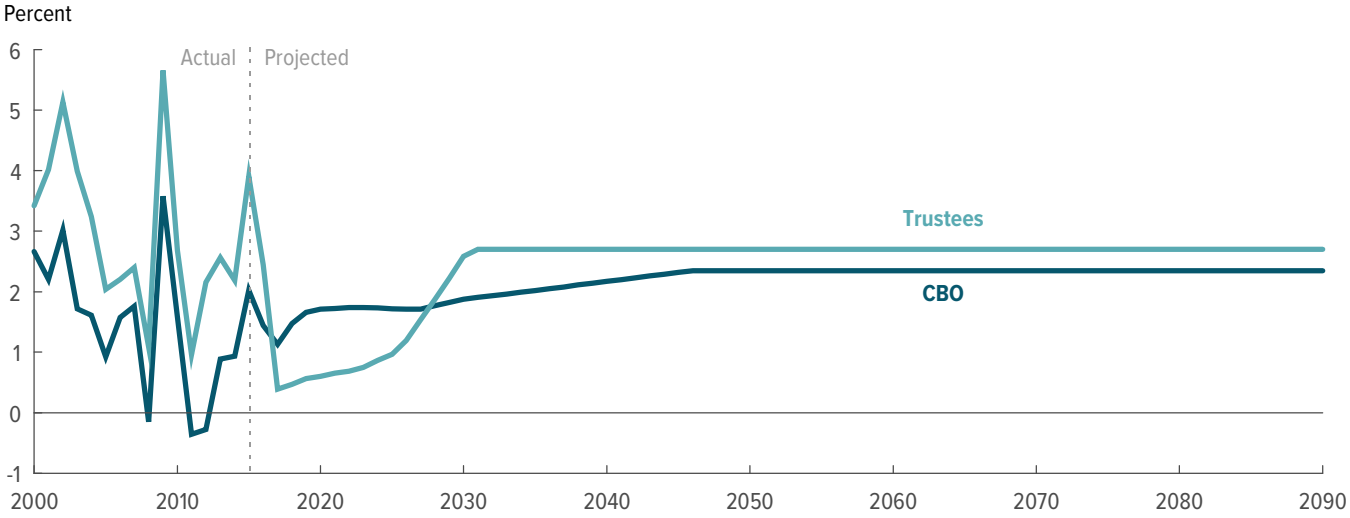
18. For more information about mortality differences among groups with different earnings, see Congressional Budget Office, *Growing Disparities in Life Expectancy* (April 2008), www.cbo.gov/publication/41681; and Julian P. Cristia, *The Empirical Relationship Between Lifetime Earnings and Mortality,* Working Paper 2007-11 (Congressional Budget Office, August 2007), www.cbo.gov/publication/19096.

19. If CBO used its projection of the average interest rate earned by all bonds held by the Social Security trust funds as the discount rate instead of its projection of the rate on the 10-year Treasury note, the 75-year actuarial balance, measured relative to GDP, would worsen by 0.02 percentage points.

20. That rate equals the rate on newly issued bonds in 2031 and later years.

Figure 8.

Real Interest Rate Used to Calculate the 75-Year Actuarial Balance



Sources: Congressional Budget Office; Social Security Trustees.

Actual rates and CBO's projections of real (inflation-adjusted) interest rates consist of the nominal rate on 10-year Treasury notes minus the rate of increase in the consumer price index. The Trustees' actual and projected rates are the average real interest rate on special bonds held in the trust funds until 2031; thereafter, the projections are for the real interest rate on special bonds each year. That rate plus the rate of inflation as measured by the consumer price index equals the nominal interest rate used in the calculation of the actuarial balance.

The actuarial balance is the difference between the present value of annual tax revenues plus the initial trust fund balance, and the present value of annual outlays plus the present value of a year's worth of benefits as a reserve at the end of the period, each divided by the present value of GDP or taxable payroll. (The present value of a flow of revenues or outlays over time is a single number that expresses that flow in terms of an equivalent sum received or paid at a specific time. The present value depends on a rate of interest, known as the discount rate, that is used to translate past and future cash flows into current dollars.)

projections. By contrast, CBO's projections show higher rates until the late 2020s and lower rates thereafter (see Figure 8).

If CBO adopted the Trustees' figure, but the agency did not allow those changes to affect projections of other factors, then the actuarial balance would improve by 0.03 percent of GDP, accounting for 6 percent of the difference between the Trustees' and CBO's projections. (Higher interest rates, however, are not favorable for the federal budget as a whole because they raise the cost of federal borrowing and add to federal budget deficits.)

The Basis of CBO's Projections

CBO expects real interest rates on federal borrowing to be lower in the future than they have been, on average, over the past few decades. The real interest rate on 10-year Treasury notes averaged 3.1 percent between 1990 and 2007.[21] In each year of CBO's projections, however, that rate is at least 0.7 percentage points lower than that average. Nevertheless, real interest rates have been higher and lower than average for sustained periods in the past, and the level of future interest rates is uncertain.

Real Interest Rates. According to CBO's analysis, average real interest rates on Treasury securities will be below their past averages for reasons that include slower growth in the labor force and slightly slower growth of productivity, both of which tend to reduce the rate of return on capital. Furthermore, a greater share of total income is projected to go to high-income households, which will increase saving and make more funds available for borrowing. The premium on risky assets is expected to be

21. CBO uses the 1990–2007 period for comparison because it featured fairly stable expectations of inflation and no severe economic downturns or financial crises. Between 1970 and 2007, the real interest rate on 10-year Treasury notes averaged 3.2 percent; the average from 1953 to 2007 was 2.9 percent. Historical inflation rates are taken from the consumer price index, adjusted to account for changes over time in the way that the index measures inflation. See Bureau of Labor Statistics, "CPI Research Series Using Current Methods (CPI-U-RS)" (April 13, 2016), www.bls.gov/cpi/cpiurs.htm.

above its average from 1990 to 2007—boosting relative demand for Treasury securities, increasing their prices, and thereby lowering their interest rates. And net inflows of capital from other countries, measured as a percentage of GDP, also are expected to be higher, making more funds available for borrowing.

CBO expects the term premium—the extra return paid to bondholders for the added risk associated with holding long-term bonds—to be smaller, on average, than it was before the late 1990s. Over the past two decades, the prices of long-term Treasury securities and of risky assets in the United States have moved in opposite directions: Periods with weaker economic growth and lower returns in the stock market have been associated with increases in the prices of Treasury securities, which was not the case before the early 2000s. As a result, investors trying to protect themselves from adverse economic surprises may be more likely than they were in the past to demand long-term Treasury securities. Investors also may have increased their demand for long-term investments, such as Treasury securities, that offer protection from unexpectedly low inflation. All together, CBO anticipates that greater demand for long-term Treasury securities will result in a term premium and long-term interest rates that are lower than they were before the late 1990s.

Other factors are projected to boost real interest rates, although not enough to offset the opposite forces noted above. Federal debt, for example, is projected to grow as a percentage of GDP, increasing the supply of Treasury securities.[22] The ratio of older people, who will be drawing down their savings, to younger workers, who are in their prime saving years, will be greater than it was before. That shift will decrease total saving and make less money available to borrowers. At the same time, a larger share of income is projected to come from capital, increasing returns on capital assets with which Treasury securities compete to attract buyers in financial markets.

In addition to considering those factors that affect interest rates, CBO relies on information from financial markets, which in recent years has tended to lower the agency's projections of interest rates. For example, the current rate on long-term Treasury securities is determined by investors' expectations for interest rates on shorter-term securities several years into the future. That market forecast informs CBO's assessment of market expectations for the risk premium and for investment opportunities in the United States and abroad, and it points to considerably lower interest rates well into the future relative to those of recent decades.

Uncertainty. Some factors mentioned above are easier than others to quantify. For instance, the effect of labor force growth and rising federal debt can be estimated from available data, theoretical models, and estimates in the literature. But the extent to which other factors will affect interest rates is more difficult to compute. A shift in preferences for low- rather than high-risk assets is not directly observable, for instance. And although the distribution of income is observable, neither models nor empirical estimates offer much guidance for quantifying its effect on interest rates. Moreover, current interest rates are not a reliable indicator of investors' expectations about interest rates over the long term, in part because maturities of most of the government's outstanding debt securities are much shorter than the period that is the focus of CBO's long-term projections. In light of those sources of uncertainty, CBO relied on economic models, the research literature, and other information to guide its assessments of the effects of various factors on interest rates over the long term.

This testimony was prepared by Charles Pineles-Mark, Michael Simpson, and Julie Topoleski, with contributions from Stephanie Hugie Barello, Geena Kim, Marina Kutyavina, and Xiaotong Niu and with guidance from Jeffrey Kling. Comments were provided by Mark Booth, Molly Dahl, Ed Harris, Jonathan Huntley, John McClelland, Noah Meyerson, Robert Shackleton, Emily Stern, and Jeffrey Werling. In keeping with the Congressional Budget Office's mandate to provide objective, impartial analysis, this testimony contains no recommendations.

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Keith Hall
Director

22. Through 2046, CBO's interest rate projections reflect the effect of rising federal debt. After 2046, when interest rates are assumed to remain constant, they do not account for that effect.