# CBO's Long-Term Projections for Social Security: 2009 Update
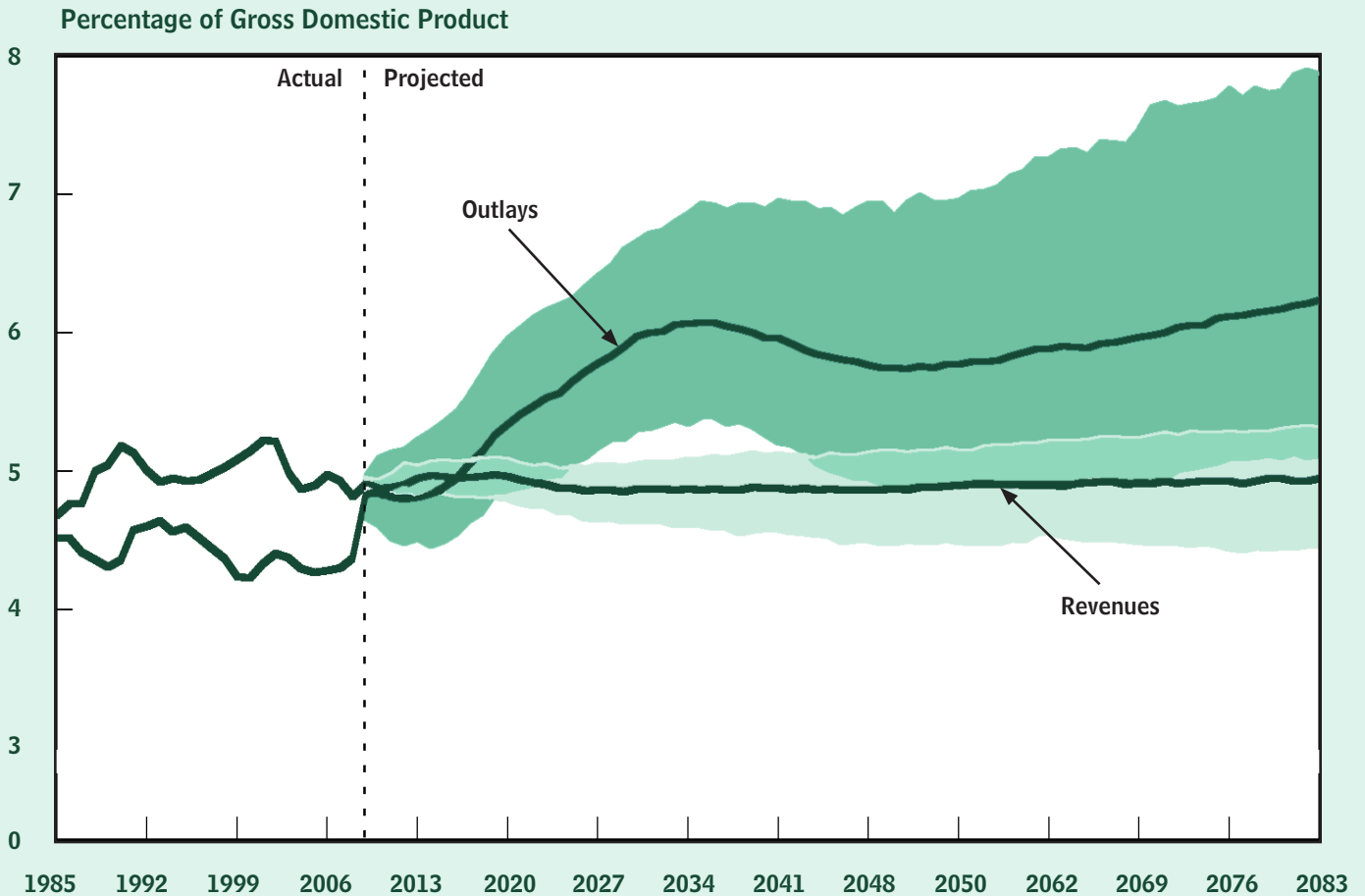
## Potential Range of Scheduled Social Security Outlays and Revenues

**Percentage of Gross Domestic Product**



Actual | Projected

Outlays

Revenues

1985  1992  1999  2006  2013  2020  2027  2034  2041  2048  2050  2062  2069  2076  2083

**AUGUST 2009**

# A CBO PAPER

# CBO's Long-Term Projections for Social Security: 2009 Update

August 2009

The Congress of the United States o Congressional Budget Office

# Notes

Unless otherwise noted, all of the years referred to in this paper are calendar years.

Numbers in the text and tables may not add up to totals because of rounding.
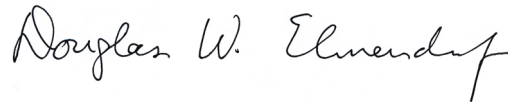
Supplementary data are posted along with this report at CBO's Web site (www.cbo.gov).

# Preface

This Congressional Budget Office (CBO) paper updates CBO's previously published long-term projections of the Social Security program's finances. The projections cover the 75-year period spanning 2009 to 2083. The paper was prepared by Noah Meyerson, Charles Pineles-Mark, Jonathan Schwabish, Michael Simpson, and Julie Topoleski of CBO's Long-Term Modeling Group under the supervision of Joyce Manchester. Kenichiro Kashiwase provided valuable assistance.

Christian Howlett edited the paper, and Leah Mazade proofread it. Maureen Costantino designed the cover and prepared the paper for publication. Lenny Skutnik printed copies of the paper, Linda Schimmel handled the print distribution, and Simone Thomas produced the electronic version for CBO's Web site (www.cbo.gov).

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August 2009

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# CBO's Long-Term Projections for Social Security: 2009 Update

**T**oday, Social Security's annual revenues exceed its annual outlays. But as the baby-boom generation (people born between 1946 and 1964) continues to age, growth in the number of Social Security beneficiaries will pick up, and outlays will increase much faster than revenues. The Congressional Budget Office (CBO) projects that the Social Security trust funds will be exhausted in 2043.[1] (Unless otherwise stated, the years referred to in this report are calendar years.) Thus, if the law remains unchanged, CBO projects that 34 years from now, the Social Security Administration (SSA) will not have the legal authority to pay full benefits. Such long-term projections are necessarily uncertain; nevertheless, the general conclusions presented here hold true under a wide range of assumptions.

CBO regularly prepares long-term projections of revenues and outlays for the Social Security program.[2] This latest report presents projections for the 75-year period from 2009 through 2083; those estimates are consistent with CBO's March 2009 10-year baseline.[3] The projections differ from earlier results because of newly available programmatic and economic data, updated assumptions about future demographic and economic trends, and improvements in CBO's models.[4]

For this analysis, CBO projected future Social Security benefits under two scenarios. In the "payable benefits" scenario, outlays include only those benefits that SSA will have the legal authority to pay under current law. That scenario assumes that once the Social Security trust funds are exhausted, SSA will reduce all benefits—those paid to both existing and new beneficiaries—by whatever percentage is necessary to make the program's total annual outlays equal its total available revenues. That percentage would vary each year. In the other scenario, the "scheduled benefits" scenario, outlays include the full benefits as calculated under current law, regardless of the amounts available in the trust funds. When presenting projections of Social Security's overall finances, CBO generally focuses on the scheduled benefits scenario. (Those scenarios are distinct from the extended-baseline scenario and the alternative fiscal scenario presented in CBO's *The Long-Term Budget Outlook*. In this report, the assumptions about income-tax revenues in both scenarios are consistent with those underlying the extended-baseline scenario, which adheres closely to current law.)

CBO's projections indicate that future Social Security beneficiaries will receive larger benefits during retire-

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1. The results presented here differ from the long-term Social Security projections presented in Chapter 3 of Congressional Budget Office, *The Long-Term Budget Outlook* (June 2009), because of minor adjustments in methodology. The Social Security trust funds (the Old-Age and Survivors Insurance Trust Fund and the Disability Insurance Trust Fund) serve mainly as an accounting mechanism to track revenues and outlays for Social Security. The trust funds' balance summarizes the cumulative accounting history of the Social Security program in a single number, because the balance equals all past revenues, including interest, minus all past outlays. The funds' balance also represents the total amount that the government is legally authorized to spend on Social Security at a point in time. For more details, see Congressional Budget Office, *Federal Debt and the Commitments of Federal Trust Funds*, Issue Brief (October 24, 2002; revised May 6, 2003).

2. CBO first released long-term Social Security projections in *The Outlook for Social Security* (June 2004). It published updated projections in March 2005, June 2006, and August 2008. Differences between the current projections and those published in August 2008 are described in Appendix A.

3. See Congressional Budget Office, *A Preliminary Analysis of the President's Budget and an Update of CBO's Budget and Economic Outlook* (March 2009).

4. For a description of CBO's projection methodology, see Congressional Budget Office, *CBO's Long-Term Model: An Overview* (June 2009).

ment—and will have paid higher payroll taxes—than current beneficiaries do, even after accounting for inflation and even if scheduled payments are reduced because the trust funds are exhausted. However, under both scenarios, those benefits will equal a smaller percentage of beneficiaries' preretirement earnings than they do now, CBO estimates.

## The Finances of the Social Security Program

CBO examines the financial status of Social Security in several ways. The fullest perspective is given by projected streams of annual outlays and revenues; CBO also presents the uncertainty around those projections. A more succinct analysis is given by measures that summarize those annual streams in a single number. Finally, trust fund ratios show the relationship between total scheduled benefits and the resources available to pay those benefits.

### Projected Outlays and Revenues Over the Next 75 Years

Currently, the revenues coming in to the Social Security program each year exceed the program's outlays. Total outlays (benefits plus administrative costs) equaled 4.4 percent of gross domestic product (GDP) in 2008, whereas the program's dedicated revenues equaled 4.8 percent of GDP. Dedicated revenues come primarily from Social Security payroll taxes, but a small portion comes from those income taxes levied on the benefits of higher-income beneficiaries and credited to the Social Security trust funds. The trust funds are also credited with interest on their balances; however, those transactions are intragovernmental and do not represent federal revenues. In 2008, such interest equaled 0.8 percent of GDP.

As the baby boomers age, the number of Social Security beneficiaries will grow considerably. In the absence of legislative changes, spending for the program will climb to 6.1 percent of GDP in 2033, CBO projects. Over the following 20 years, scheduled spending will decline slightly relative to the size of the economy, to about 5.7 percent of GDP, as more baby boomers die. However, demographers generally expect life expectancy to continue rising and birth rates to remain at current levels. As

a result, scheduled Social Security outlays are projected to resume their upward trajectory after 2054, reaching 6.2 percent of GDP in 2083.

The amount of dedicated revenues credited to the Social Security trust funds is likely to stay almost constant as a share of GDP over the next 75 years, edging up from 4.8 percent of GDP last year to 4.9 percent in 2083. CBO projects that although total earnings of individuals will remain nearly constant as a percentage of GDP, taxable earnings will decline relative to GDP because a growing share of compensation will be paid in the form of nontaxable health benefits.[5] Thus, in the absence of changes to the program, revenues from Social Security payroll taxes will edge down as a share of GDP over the 75-year projection period: from 4.7 percent last year to 4.4 percent in 2083.

In contrast, revenues credited to the Social Security trust funds from income taxes on the program's benefits are projected to grow in coming decades. Under current law, receipts from income taxes rise over time as a percentage of GDP for several reasons: a larger number of Social Security beneficiaries become subject to taxes on benefits, existing reductions in income tax rates expire, more taxpayers become subject to the alternative minimum tax, and taxpayers move into higher tax brackets because of economic growth.[6] As a result, under current law, the revenues credited to the Social Security trust funds from taxes on benefits are projected to increase from 0.1 percent of GDP today to 0.5 percent in 2083. (For projections under an alternative assumption about future revenues from income taxes on benefits, see Box 1.) Despite that increase, total revenues credited to the trust funds are projected to remain almost constant as a percentage of GDP.

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5.  Because CBO projects that the annual growth of health care spending will gradually slow down (as reported in *The Long-Term Budget Outlook*), the annual decline in taxable earnings as a share of compensation is projected to slow from about -0.25 percent in 2020 to about -0.05 percent in 2083, averaging -0.12 percent over that period.

6.  For details, see Congressional Budget Office, *The Long-Term Budget Outlook,* Chapter 5.

**Box 1.**

## Comparing Revenues from Income Taxes on Benefits Under Two Long-Term Fiscal Scenarios

In *The Long-Term Budget Outlook,* published in June 2009, the Congressional Budget Office (CBO) made long-term projections of Social Security's finances under two scenarios that incorporated different assumptions about future income tax receipts. The first scenario, called the extended-baseline scenario, continued CBO's 10-year baseline concept over the long term. CBO's baseline is a benchmark for measuring the budgetary effects of proposed changes in federal revenues or spending. As such, it largely reflects current law. That extended-baseline scenario forms the basis for the projections in this report.

The second scenario in *The Long-Term Budget Outlook*, called the alternative fiscal scenario, deviated from the baseline even during the next 10 years by incorporating some policy changes that are widely expected to occur and that policymakers have regularly made in the past. Under that scenario, certain changes to tax law that are currently scheduled to occur (such as next year's expiration of tax changes enacted in 2001 and 2003) would not take effect, and the alternative minimum tax would be indexed for inflation.

CBO's long-term projections of Social Security spending and of revenues from Social Security payroll taxes are identical under those two scenarios. However, revenues for Social Security from income taxes on benefits would be lower under the alternative fiscal scenario than under the extended-baseline scenario. As a result, projections of Social Security's finances would be a bit less favorable under the tax assumptions of the alternative fiscal scenario. Specifically, revenues from taxing benefits would equal 0.4 percent of gross domestic product (GDP) in 2083 rather than the 0.5 percent projected under the extended-baseline scenario, CBO estimates. And 75-year summarized revenues would equal 5.2 percent of GDP or 14.1 percent of taxable payroll (another commonly used measure), instead of 5.3 percent of GDP or 14.3 percent of taxable payroll. The 75-year summarized Social Security deficit would be 0.6 percent of GDP or 1.5 percent of taxable payroll under the alternative fiscal scenario, rather than 0.5 percent of GDP or 1.3 percent of taxable payroll under the extended-baseline concept.

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CBO projects that as outlays rise as a share of GDP, Social Security's annual spending will roughly equal its revenues over the next decade (see Figure 1 on page 11).[7] But by the end of the decade, a gap between the program's income and outlays is likely to develop and then persist for the indefinite future, even if spending ends up being lower and revenues higher than expected.[8]

That gap will ultimately eliminate the balance in the trust funds and make it impossible, under current law, to pay the full amount of scheduled benefits. Payable benefits will equal scheduled benefits until the trust funds are exhausted (see Figure 2 on page 12); thereafter, they will equal the Social Security program's annual revenues. In 2043—CBO's projected date for the exhaustion of the trust funds—revenues will equal only 83 percent of scheduled outlays. Thus, payable benefits will be 17 percent lower than scheduled benefits. The gap between scheduled and payable benefits will begin to widen in about 2055, CBO projects, and by 2083, payable benefits will be 21 percent smaller than scheduled benefits.

The current recession is resulting in lower earnings for workers and therefore in lower Social Security revenues than would otherwise have occurred, but it is not having

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7. The data underlying all figures as well as other related projections are available in a supplementary data file on CBO's Web site (www.cbo.gov).

8. For long-term analyses, CBO generally presents outlays and revenues as a percentage of GDP, but another common practice is to show them relative to taxable payroll. Those projections are presented in Table W-1 of the supplementary data file.

as large an effect on benefit payments. Consequently, for the next few years, surpluses in the Social Security trust funds will be noticeably smaller or deficits larger than they would have been if economic growth had remained steady. In the long term, the recession will have little effect on revenues and outlays as a percentage of GDP, but the trust funds' balances will be permanently lower.

## The Uncertainty of Projections of Social Security's Finances

Many of the factors that will affect Social Security's long-term finances are subject to significant uncertainty. Thus, a full exposition of projected finances includes both the expected outcomes and the inherent uncertainty surrounding such projections. CBO therefore calculated ranges of possible outcomes associated with its projections for the program. To do that, it used standard statistical techniques to analyze patterns of past variation in most of the demographic and economic factors that underlie the analysis, such as fertility and mortality rates, interest rates, and the rate of growth of economic productivity. CBO then ran 500 simulations, each time randomly changing the assumed values for those factors to reflect the historical variations. Individually, the simulations have little meaning, but together, they compose a distribution of possible outcomes.[9] Uncertainty about fertility rates and productivity growth causes the most variation in long-term Social Security projections.

In this report, CBO displays the distribution of outcomes with an 80 percent range of uncertainty—meaning that, by CBO's estimate, there is an 80 percent chance that the actual value will fall within that range. For example, although CBO projects that Social Security outlays will equal about 6.1 percent of GDP in 2033, its uncertainty analysis indicates a 10 percent chance that outlays will be less than 5.4 percent of GDP in that year and a 10 percent chance that outlays will exceed 6.8 percent of GDP (see Table 1 on page 23). In any case, outlays in 2033 are almost certain to be much higher than their current 4.4 percent share of GDP. There is less uncertainty about revenues as a percentage of GDP than about outlays because payroll tax revenues are a fixed share of taxable earnings, which in turn are a relatively constant share of GDP. CBO anticipates that, with payments of scheduled

benefits, Social Security outlays will exceed revenues by about 1 percent of GDP in each of the years shown in Table 1 (2033, 2058, and 2083) and there is only a small chance that revenues will exceed outlays.

## Summarized Outlays and Revenues

Long-term projections of annual outlays and revenues show the magnitude and timing of the budgetary effects of the Social Security program under current law. To present the results more succinctly, analysts frequently summarize the program's scheduled outlays and revenues in a single number covering a given period (for example, total outlays over 75 years).

Summarizing outlays or revenues by taking a simple average of projected annual values would be misleading because it would not account for the fact that people place less value on a dollar in the future than they do on one in the present. As a result, even after adjustments for inflation, a dollar today is more valuable than a dollar in the future. Analysts thus summarize the data by computing the present value of outlays or revenues for a given period and dividing that figure by the present value of the stream of GDP (or taxable payroll) over that same period.[10] In calculating the summarized measures, analysts make two other adjustments: They add the trust funds' current balance to summarized revenues, and they add an additional year's worth of projected outlays to summarized outlays to reflect the goal of having a "cushion" in the trust funds at the end of the period being considered.

Under the scheduled benefits scenario, Social Security's 75-year summarized outlays equal 5.7 percent of GDP, and its summarized revenues equal 5.3 percent, CBO projects. The result is a summarized deficit of 0.5 percent of GDP—or 1.3 percent of taxable payroll (see Table 2 on page 24). In other words, CBO projects that if the Social Security payroll tax rate was increased immediately and permanently by 1.3 percentage points—from the current rate of 12.4 percent to 13.7 percent—then the

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9. For more details, see Congressional Budget Office, *Quantifying Uncertainty in the Analysis of Long-Term Social Security Projections,* Background Paper (November 2005), especially pp. 29 and 34.

10. The present value is a single number that expresses a flow of current and future income (or payments) in terms of an equivalent lump sum received (or paid) today. To calculate the present value of a sum paid or received in a future year, an annual discount rate is applied. For example, at a discount rate of 3 percent, the present value of $105 payable a year from today is about $102. For the calculations in this report, CBO used a discount rate of 3.0 percent.

trust funds' balance at the end of 2083 would equal projected outlays for 2084.

Much uncertainty, however, surrounds many of CBO's assumptions about economic and demographic conditions in the future. That uncertainty implies that the 75-year summarized deficit may be much larger or smaller than 0.5 percent of GDP. In CBO's estimation, there is a 10 percent chance that the summarized deficit will be greater than 1.0 percent of GDP and a 10 percent chance that it will be less than 0.1 percent of GDP.

For another perspective on Social Security's finances, CBO estimated the probability that total outlays would exceed total revenues by a given amount in a particular year (see Table 3 on page 25). The likelihood that outlays will exceed revenues in 2030 is about 99 percent, CBO projects. There is almost a 60 percent chance that the gap will be larger than 1 percentage point of GDP and a 5 percent chance that it will be larger than 2 percentage points. The probability that outlays will exceed revenues is slightly lower after 2035, as many members of the baby-boom generation die, but it still remains above 90 percent. As the uncertainty about outlays grows, as shown in Figure 1, the probability that the gap between outlays and revenues will be at least 2 percentage points of GDP grows in later years, reaching 28 percent by 2080.

### The Trust Fund Ratio

Another common measure of Social Security's finances is the ratio of the trust funds' balance to the program's annual outlays. That calculation indicates how many years' worth of benefits could be financed by a given balance.

The trust fund ratio for 2009—the balance in the Social Security trust funds at the beginning of the year divided by projected outlays for the program for that year—equals 3.5, CBO estimates. The ratio is projected to peak in the next few years and then decline quickly (see Figure 3 on page 13).

CBO has projected that the balance in the trust funds, and thus the trust fund ratio, will fall to zero in 2043. But, as shown in Figure 3, there is a 10 percent chance that the trust funds will be exhausted in 2034 or earlier and a 10 percent chance that they will remain solvent through at least 2072. The negative balances shown in Figure 3 after 2043 represent CBO's estimates of the

cumulative amount of scheduled benefits that cannot be paid from the program's current-law revenues. (The negative balances could also be interpreted as the amount that the program would need to borrow to pay scheduled benefits, but the Social Security Administration does not have the legal authority to borrow money to pay benefits.)

Another way to consider the data that underlie Figure 3 is to examine the probability that the trust funds will be exhausted by a given year (see Figure 4 on page 14). According to CBO's calculations, there is a 20 percent chance that the funds will be exhausted before 2035, a 75 percent chance that they will be exhausted by 2050, and a 94 percent chance that they will be exhausted by 2083.

## The Distribution of Social Security Taxes and Benefits

Grouping Social Security participants by age or other characteristics and examining how taxes and benefits are distributed among them can illuminate the program's effects on people and the economy. Specifically, CBO groups individuals by their 10-year birth cohort—for example, people born in the 1940s—and by the quintile of their lifetime household earnings.[11] (The top one-fifth of earners, for instance, compose the highest earnings quintile.) Focusing on benefits net of the income taxes on benefits that higher-income beneficiaries pay and that are credited to the Social Security trust funds, CBO analyzed the first-year annual benefit received, the ratio of that benefit to average lifetime earnings, lifetime benefits received, and lifetime taxes paid.

### First-Year Benefits

CBO's analysis indicates that, on average, future Social Security beneficiaries are likely to receive higher first-year annual benefits than today's beneficiaries receive, even under the payable benefits scenario and even after an adjustment for the effects of inflation. (The first-year annual benefit that a beneficiary receives calculated in real, or inflation-adjusted, dollars is a measure of the pur-

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11. Projecting earnings for individuals who are in different cohorts and at different points in the earnings distribution is even more challenging than projecting aggregate earnings. CBO is continually working to improve its projections of Social Security's effects among different population groups, and the estimates presented in this section should be viewed with some caution.

chasing power of his or her Social Security benefit in today's dollars.)[12] Furthermore, in any given calendar year, each birth cohort is projected to receive higher real benefits than the preceding one will receive.

The first-year benefit amount depends partly on when an individual decides to claim benefits—the later the age, the greater the annual benefit. Thus, any changes over time in the age at which most people first claim benefits will result in changes in average first-year benefits. To ensure that the data are comparable over time, CBO considered a hypothetical benefit amount in this analysis: the median benefit that a worker would receive if everyone claimed benefits at age 65. CBO has projected those benefits for both retired workers (beneficiaries age 62 or older who receive benefits on the basis of their own work history) and disabled workers (disabled beneficiaries who receive benefits on the basis of their work histories).

Besides the age at which benefits are claimed, the first-year annual benefit that a worker is scheduled to receive depends on the formula used to compute benefit levels, which is specified by law, and on the person's history of earnings. By itself, growth in average earnings over time leads to higher scheduled first-year benefits. However, under current law, the growth of first-year benefits for retired workers in a number of birth cohorts will be approximately offset by the scheduled increase in the normal retirement age, which is gradually rising from 65 for people born before 1938 to 67 for those born after 1959. That increase is effectively equivalent to a reduction in benefits for any age at which benefits are claimed. Once the scheduled increase in the normal retirement age is fully phased in, median first-year benefits will grow (see Figure 5 on page 15 and Table 4 on page 26). In the year that the trust funds are exhausted, payable benefits will fall by 17 percent, CBO projects, but after that they will again increase as earnings grow. In real terms, the scheduled first-year benefits for people born in the first decade of the 21st century will be about 70 percent more than the benefits received by those born in the 1940s; the pay-

able first-year benefits will increase by less than 40 percent.

The trends for first-year benefits for disabled workers are similar to those for retired workers. However, the scheduled increase in the normal retirement age will have no direct effect on benefits for people with disabilities. Thus, CBO projects that real first-year disability benefits will increase steadily over time under both the payable benefits and scheduled benefits scenarios (see Figure 6 on page 16 and Table 5 on page 29).

### First-Year Replacement Rates

The replacement rate—the ratio of first-year benefits to average career earnings—provides a different perspective on the benefits that various groups of retired-worker beneficiaries receive.[13] The scheduled increase in the normal retirement age will lower the replacement rate for future beneficiaries (for any chosen age of claiming benefits) compared with the rate for people who are claiming benefits now. If Social Security benefits are paid as scheduled, the median replacement rate for beneficiaries born in the 1990s (about 42 percent) will be slightly lower than the rate for beneficiaries born in the 1940s (about 45 percent), CBO estimates (see Table 4 on page 26). Under the payable benefits scenario, the replacement rate will drop noticeably at all earnings levels for cohorts who first receive benefits after the trust funds are exhausted and Social Security has to rely only on its annual revenues (see Figure 7 on page 17).

The progressive nature of Social Security's benefit formula means that replacement rates are higher for workers who have lower earnings. For example, for men born in the 1940s, the median replacement rate is 64 percent for those in the lowest household earnings quintile and 24 percent for those in the highest earnings quintile. Because disabled workers tend to have lower earnings than retired workers do, replacement rates tend to be

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12. At the end of each year, the Social Security Administration adjusts benefits by the amount of any increase in the consumer price index, so in real terms, an individual's benefit remains constant. (CBO projects that there will be no such adjustments in 2010 through 2012; see Congressional Budget Office, *A Preliminary Analysis of the President's Budget and an Update of CBO's Budget and Economic Outlook*.)

13. Retired-worker beneficiaries are retirees who receive benefits on the basis of their own work histories, as opposed to dependents or survivors, who may receive benefits on the basis of another person's work history. In these calculations, "average career earnings" are the average of a retired worker's highest 35 years of covered earnings, indexed to compensate for past inflation and for real growth in average earnings nationwide. (Covered earnings may be greater than the earnings that are subject to the Social Security payroll tax because covered earnings include those above the maximum taxable amount.)

higher for disabled workers than for retired workers (see Figure 8 on page 18 and Table 5 on page 29).[14]

## Lifetime Benefits

Another way to measure the income that retired-worker beneficiaries receive from Social Security is to look at lifetime retirement benefits—the present value of all benefits that a worker gets from the program. CBO estimates that each birth cohort will receive greater average lifetime benefits than the preceding cohort, even under the payable benefits scenario. For example, median scheduled lifetime benefits for people born in the 1990s are about 80 percent greater than those for people born in the 1940s; payable benefits for the 1990s cohort are more than 45 percent greater.

The trend in median lifetime retirement benefits (shown in Figure 9 on page 19) differs from the trend in median first-year benefits (shown in Figure 5 on page 15) for two reasons. First, as life expectancy increases, people will collect benefits for longer periods, and scheduled lifetime benefits will grow faster than scheduled first-year benefits. Second, cohorts who begin receiving benefits before the trust funds are exhausted will collect the full amount of their scheduled first-year benefits. However, some members of those cohorts will still be receiving benefits when the trust funds become exhausted. At that point payable benefits will decline, and as a result, the payable lifetime benefits of those cohort members will be lower than their scheduled lifetime benefits (see Table 4 on page 26).

The present value of the median lifetime benefits paid to disabled-worker beneficiaries—including the retirement benefits they receive after reaching the normal retirement age—is much greater than the present value of lifetime benefits paid to retired-worker beneficiaries. Disabled workers receive larger lifetime benefits because they generally claim benefits earlier in their lifetime, which increases the benefits' present value (see Figure 10 on page 20 and Table 5 on page 29). As with retirement benefits, projected lifetime disability benefits are greater for each birth cohort than for the preceding one.

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14. For disabled-worker beneficiaries, average career earnings are calculated not over 35 years but over the same number of years that is used in calculating benefits. For example, if a worker became disabled at age 50, his or her average earnings would be calculated over the highest 23 years of earnings.

## Lifetime Payroll Taxes and Lifetime Benefits for Workers, Dependents, and Survivors

The three measures discussed above cover only benefits for retired- and disabled-worker beneficiaries. A more comprehensive perspective comes from considering the present value of the total amount of Social Security payroll taxes that each participant pays over his or her lifetime and the present value of the total Social Security benefits—including payments to dependents and survivors—received over a lifetime. (Measures of taxes comprise all Social Security payroll taxes levied on individual earnings, including the shares paid by both employers and employees.) CBO has estimated ranges of uncertainty for lifetime measures of taxes and benefits to reflect the inherent uncertainty in the demographic and economic assumptions that CBO used for its projections. (Those assumptions are discussed in the next section.)

CBO projected measures of lifetime payroll taxes and lifetime benefits by 10-year birth cohorts. Those projections indicate that:

B  Projected increases in real taxable earnings over time result in proportional increases in lifetime payments of payroll taxes. In dollar terms, the uncertainty is greatest for workers in the highest quintile of lifetime earners. However, when the uncertainty range for lifetime taxes paid is measured as a percentage of median lifetime taxes paid for each quintile and cohort, the range is approximately equal for all quintiles. (See Figure 11 on page 21, which shows the 80 percent range of uncertainty—the range within which 80 percent of possible values are likely to fall—for the projected lifetime payroll taxes that individuals within a particular birth cohort will pay.)

B  Projected increases in both real earnings and life expectancy lead to increases in lifetime Social Security benefits over time. Lifetime benefits are higher under the scheduled benefits scenario but follow a similar pattern under the payable benefits scenario. (See Figure 12 on page 22, which presents projections of average lifetime benefits received by an individual within a birth cohort—including retired-worker, disabled-worker, dependent, and survivor benefits—minus the income taxes paid on those benefits and credited to the Social Security trust funds. Results are shown under the scenarios for both scheduled and payable benefits.)

The ratio of those two measures—the present value of total net benefits received over a lifetime divided by the present value of total Social Security payroll taxes paid over a lifetime—for individuals in various earnings quintiles indicates how their lifetime benefits compare with the taxes they and their employers pay. A benefit-to-tax ratio of 150 percent, for example, means that benefits are 50 percent greater than taxes. Scheduled taxes are not sufficient to pay full scheduled benefits, however, so those ratios are unrealistically high. The ratio is higher for people with lower earnings and lower for those with higher earnings, partly because Social Security's benefit formula is progressive and partly because people with low household earnings are more likely to receive disability or dependent benefits, or both.[15] For people in the lowest earnings quintile, the ratio is above 150 percent; for those in the middle quintile, it is about 90 percent; and for people in the highest earnings quintile, it averages 60 percent. The effects of the progressive formula are partially offset by the longer average life expectancy of higher earners.[16]

Uncertainty about future benefits can be presented in another way: by showing the likelihood that a cohort will receive a specified percentage of scheduled benefits. For example, according to CBO's projections, the 1940s cohort is virtually certain to receive all of its scheduled first-year benefits (see Table 6 on page 30). The 1990s cohort, however, has only a 16 percent chance of receiving all of its scheduled first-year benefits under the payable benefits scenario, although it has an 85 percent chance of receiving at least 70 percent of those benefits.

The exhaustion of the trust funds may occur after a group has begun collecting benefits, so the odds that a beneficiary will collect all or most of his or her scheduled lifetime benefits are generally lower than the odds of collecting the same proportion of first-year benefits. For instance, although the 1940s cohort has a 100 percent chance of collecting virtually all of its first-year benefits, it has an 83 percent chance of receiving all of its scheduled lifetime benefits under the payable benefits scenario. Still,

the cohort has a 99 percent chance of receiving at least 95 percent of its scheduled benefits. The 1990s cohort, in comparison, has only a 6 percent chance of receiving all of its scheduled lifetime benefits, a 13 percent chance of receiving at least 95 percent of them, and a 45 percent chance of receiving at least 85 percent of them under the payable benefits scenario.

## Demographic and Economic Assumptions Used in CBO's Analysis

CBO develops its long-term Social Security projections using a microsimulation model of the U.S. population, economy, and federal budget. A microsimulation model starts with individual-level data from a representative sample of the population and projects demographic and economic outcomes for that sample through time. CBO then sums the output from the microsimulation model to obtain totals for demographic and economic variables.[17]

Projecting the financial outlook for Social Security over 75 years requires making a host of assumptions about demographic and economic variables. This analysis uses the same assumptions as *The Long-Term Budget Outlook* of June 2009. Specifically, for overall trends in demographics and disability, CBO uses the intermediate assumptions in the 2009 report of the Social Security trustees on the aggregate fertility rate in the United States, the rate of decline in mortality, levels of immigration and emigration, and incidence and termination rates in the Social Security Disability Insurance program.[18]

Long-term assumptions about the economy are based on the assumptions that CBO used in developing its baseline budget projections and on historical economic trends. For fiscal years 2009 through 2019, the economic assumptions are consistent with the ones in CBO's March 2009 economic forecast, which were used for CBO's baseline budget projections for that period.[19] The

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15. Both annual earnings and the number of years of earnings affect lifetime earnings. Earlier claiming of Social Security benefits is often associated with having fewer years of earnings and, in many cases, lower lifetime earnings. Currently, the timing of the claiming of benefits in CBO's model does not vary with earnings.

16. See Congressional Budget Office, *Is Social Security Progressive?* (December 2006).

17. For details, see Congressional Budget Office, *CBO's Long-Term Model: An Overview.*

18. See Social Security Administration, *The 2009 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (May 12, 2009). For a discussion of the differences between CBO's long-term projections and those of the trustees, see Appendix B.

19. See Congressional Budget Office, *A Preliminary Analysis of the President's Budget and an Update of CBO's Budget and Economic Outlook.*

assumptions for 2019 provide the jumping-off point in making assumptions about the values of economic variables for the rest of the 75-year projection period. CBO directly assumed values for interest rates, inflation, and unemployment. In contrast, CBO did not make specific assumptions about the growth of GDP and the rate of growth of earnings. CBO derived those values by using other economic and demographic assumptions. (Annual values for selected economic variables can be found in the supplementary data for this report on CBO's Web site, www.cbo.gov.)

## Assumptions About Interest, Inflation, and Unemployment for 2020 and Later

For its projections after the 10-year baseline period, CBO assumed that the real interest rate on federal debt held by the public would eventually stabilize at 3.0 percent a year, about equal to the average rate observed over the past 50 years. CBO used that same value for the discount rate in its present-value calculations. CBO also assumed that annual inflation—as measured by growth in the consumer price index for urban wage earners and clerical workers (CPI-W)—would be 2.0 percent over the long run and that the unemployment rate would be 4.8 percent.

## Assumptions Underlying Projections of Gross Domestic Product and Earnings

CBO projected that from 2020 to 2083, real GDP would grow at an average annual rate of 2.2 percent and real earnings would grow at an average annual rate of 1.4 percent. Those estimates were based on CBO's demographic assumptions, as noted above, and on four underlying economic assumptions:

B **Growth of Productivity.** CBO assumed that over the long term, total factor productivity (average real output per unit of combined labor and capital services) would increase by 1.3 percent a year, on average. CBO used that assumption in an economic model that included projections of growth in the supply of labor and capital to compute the resulting growth in labor productivity (measured as growth in output per hour worked). Projected growth of labor productivity averages 1.9 percent a year. Growth in labor productivity does not translate directly into growth in earnings.

B **Changes in the Ratio of Taxable Earnings to Total Compensation.** CBO assumed that over the 75-year projection period, the share of compensation that workers received as nontaxable health benefits would increase at the same rate as non-Medicare, non-Medicaid health care spending. That increase would reduce the average growth rate of taxable earnings.[20] Specifically, because CBO projects that growth in health care spending will gradually slow down, it projects that the annual change in taxable earnings as a share of compensation will slow from about -0.25 percent in 2020 to about -0.05 percent in 2083, averaging -0.12 percent over that period. Such a decline would increase the projected annual growth of real wages by the same amount (relative to earnings that stayed constant as a share of compensation).

B **Average Hours Worked.** CBO assumed that the average number of hours worked by people in each demographic group would remain constant, reflecting the fact that different segments of the population work different numbers of hours, on average. For example, men tend to work more hours than women, and people in their 30s tend to work more hours than people in their 50s. As a result, CBO's projection of total average hours worked varies slightly over time because of projected changes in the composition of the labor force.

B **Difference Between Inflation Measured by the GDP Deflator and the CPI-W.** The GDP deflator measures the level of prices of all final goods and services produced; the CPI-W is an index of consumer prices based on the typical market basket of goods and services consumed by urban wage earners and clerical workers. CBO uses the CPI-W to translate nominal earnings growth into real earnings growth. When the GDP deflator grows more slowly than the CPI-W, the projected growth of real earnings is reduced. CBO assumed that the gap, and thus the reduction in real earnings growth, would average 0.3 percentage points a year.

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20. For further details, see Congressional Budget Office, *The Long-Term Budget Outlook*, Chapter 2. The share of compensation made up of other nontaxable benefits was assumed to remain constant.

Long-term budget projections require a stable economic backdrop. For these projections, CBO assumed that even a large increase in federal debt would not affect economic growth or real interest rates after the first 10 years. However, CBO projects that under current law, federal debt will increase substantially, resulting in higher interest rates and slower economic growth than are assumed in this report. If that occurred, the actual shortfall in Social Security's finances would be greater than that projected in this report.[21]

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21. See Congressional Budget Office, *The Long-Term Budget Outlook,* pp. 16–18.

**Figure 1.**

# Potential Ranges of Social Security Outlays and Revenues Under the Scheduled Benefits Scenario, 1985 to 2083

(Percentage of gross domestic product)
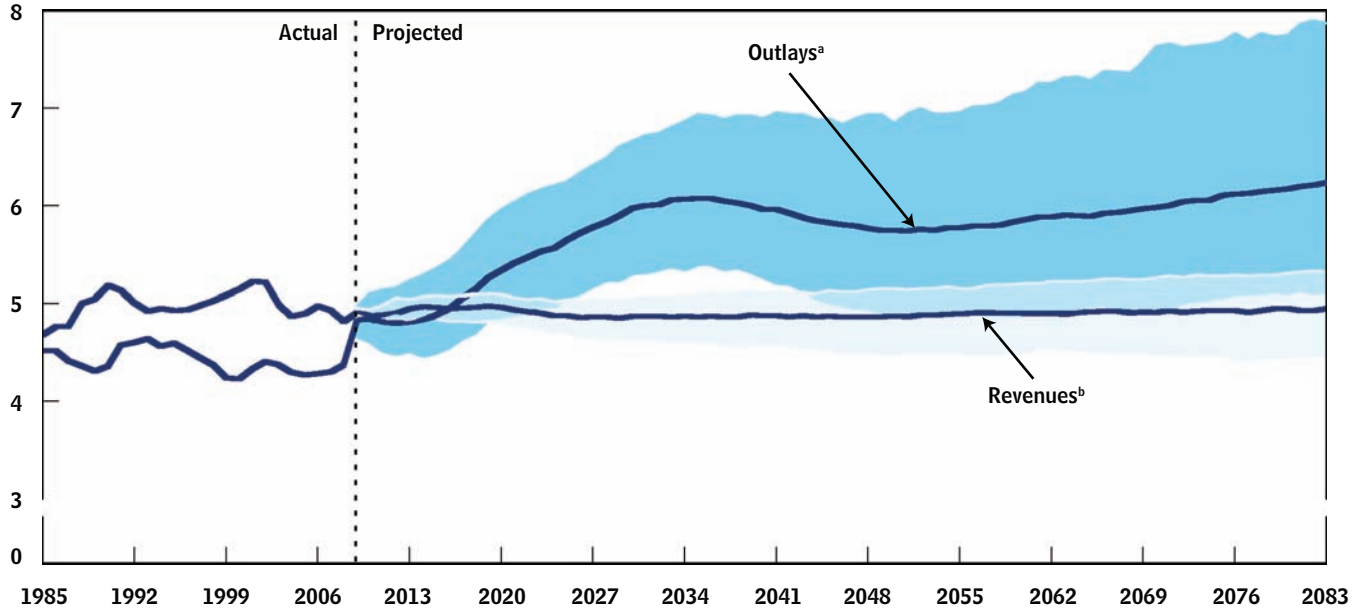


Source:    Congressional Budget Office.

Notes:  The dark lines indicate CBO's projections of expected outcomes. Shaded areas indicate the 80 percent range of uncertainty around each projection based on a distribution of 500 simulations from CBO's long-term model. (An 80 percent range means that there is a 10 percent chance that actual values will be above that range, a 10 percent chance that they will be below it, and an 80 percent chance that they will fall within the range.)

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

a.    Includes scheduled benefits and administrative costs.

b.    Includes payroll taxes and revenues from income taxes on benefits.

**Figure 2.**

# Social Security Outlays Under the Scheduled Benefits and Payable Benefits Scenarios, 1985 to 2083

(Percentage of gross domestic product)



Source:    Congressional Budget Office.

Note:    In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

**Figure 3.**

# Potential Range of the Social Security Trust Fund Ratio Under the Scheduled Benefits Scenario, 1985 to 2083
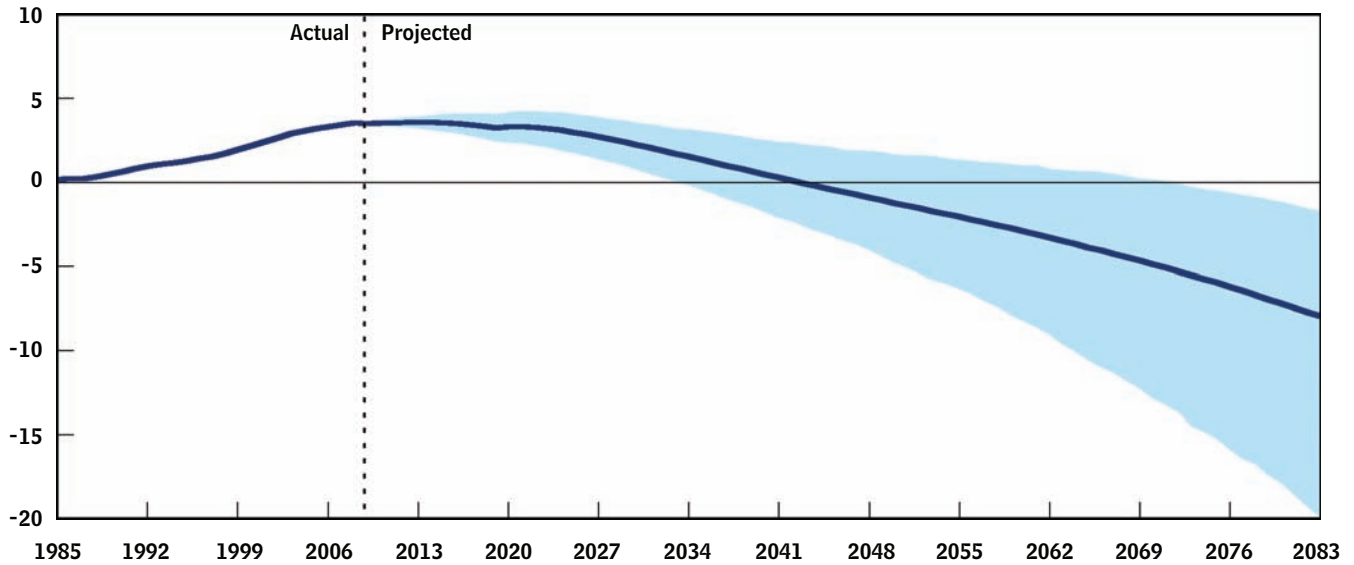


Source:    Congressional Budget Office.

Notes:  The trust fund ratio is the ratio of the total balance in the Social Security trust funds at the beginning of a calendar year to total Social Security outlays during that year.

The dark line indicates CBO's projection of expected outcomes; the shaded area indicates the 80 percent range of uncertainty around the projection based on a distribution of 500 simulations from CBO's long-term model. (An 80 percent range means that there is a 10 percent chance that actual values will be above that range, a 10 percent chance that they will be below it, and an 80 percent chance that they will fall within the range.)

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law.

**Figure 4.**

## Probability That the Social Security Trust Funds Will Have Been Exhausted, by Year, 2009 to 2083

(Percent)
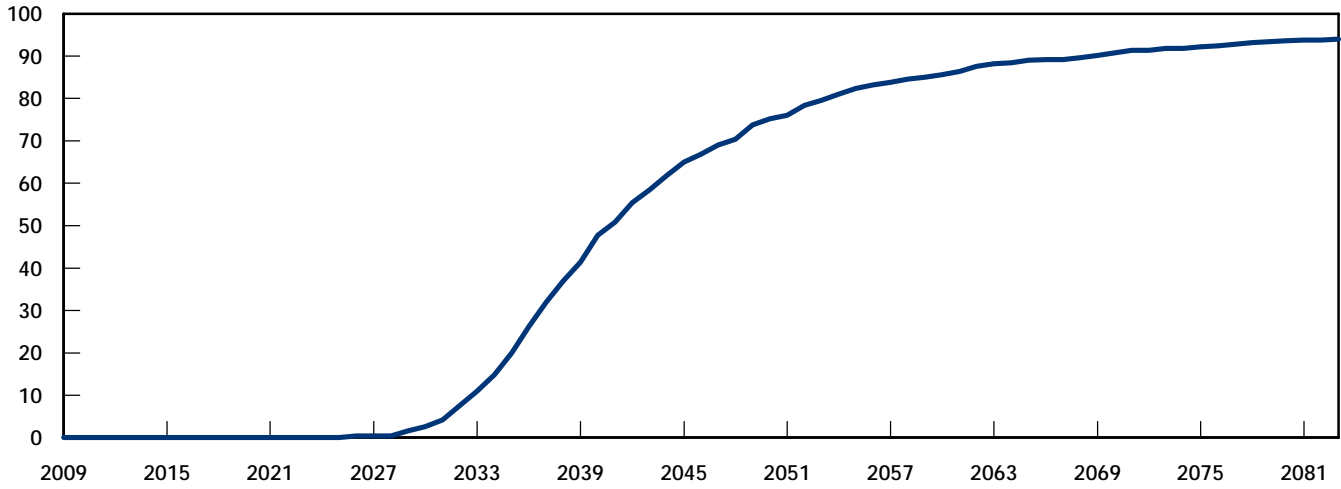


Source:   Congressional Budget Office.

**Figure 5.**

## Median First-Year Social Security Retirement Benefits Under the Scheduled Benefits and Payable Benefits Scenarios, by 10-Year Birth Cohort

(Thousands of 2009 dollars)
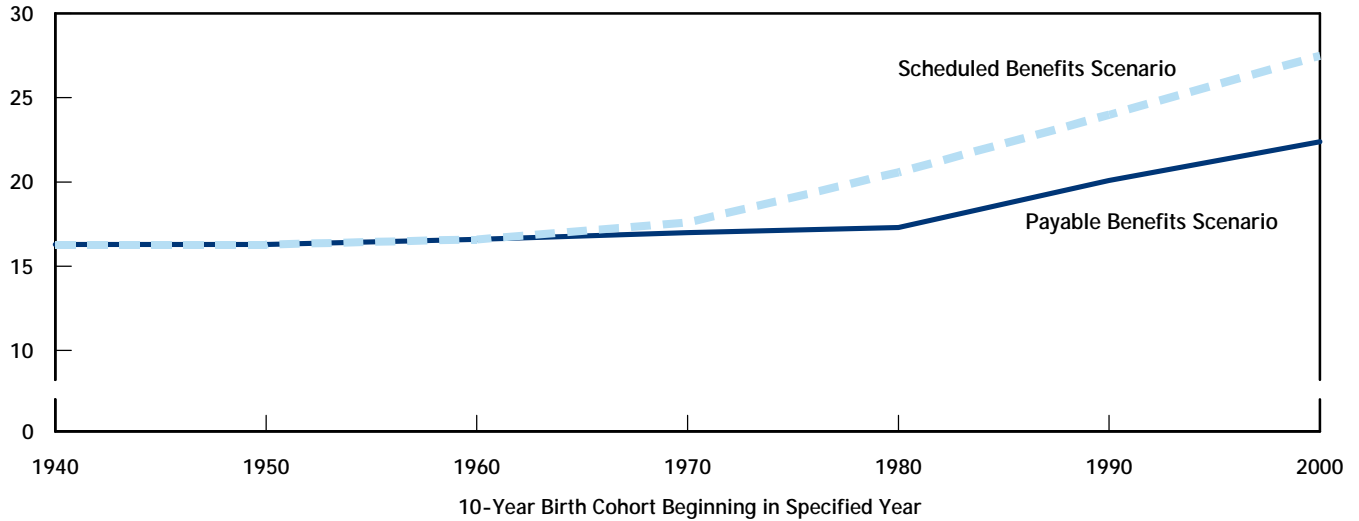


Source:    Congressional Budget Office.

Notes:  First-year benefits are projected by assuming that all workers claim benefits at age 65. Values are net of income taxes paid on benefits and credited to the Social Security trust funds.
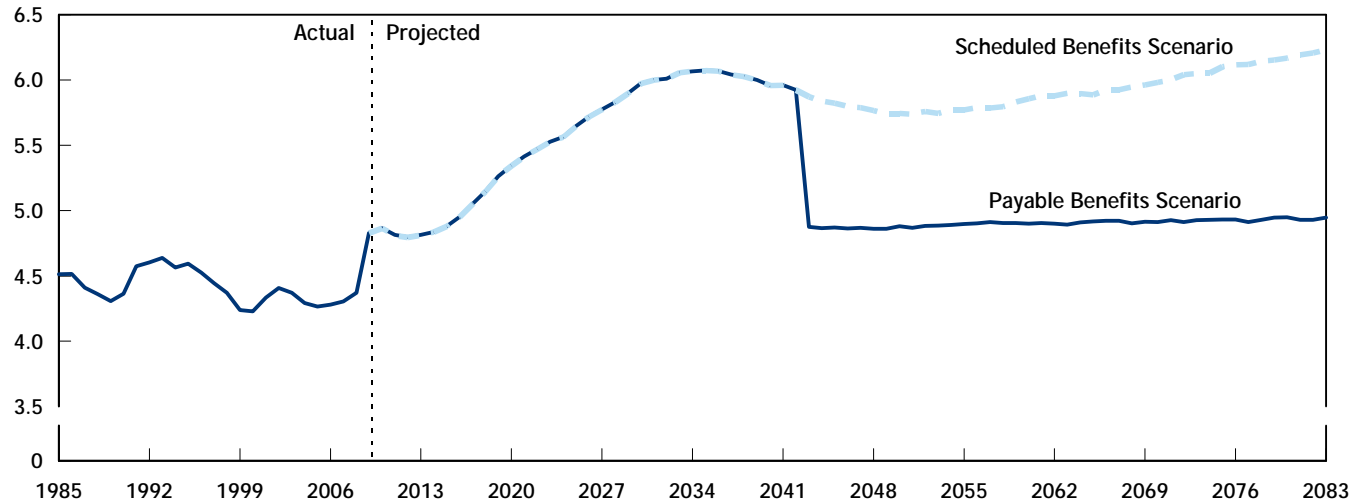
   In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues. The reduction attributable to trust-fund exhaustion shown in this figure is less dramatic than the reduction in total annual outlays shown in Figure 2 because this figure shows average benefits for 10-year cohorts.

**Figure 6.**

# Median First-Year Social Security Disability Benefits Under the Scheduled Benefits and Payable Benefits Scenarios, by 10-Year Birth Cohort

(Thousands of 2009 dollars)



10-Year Birth Cohort Beginning in Specified Year
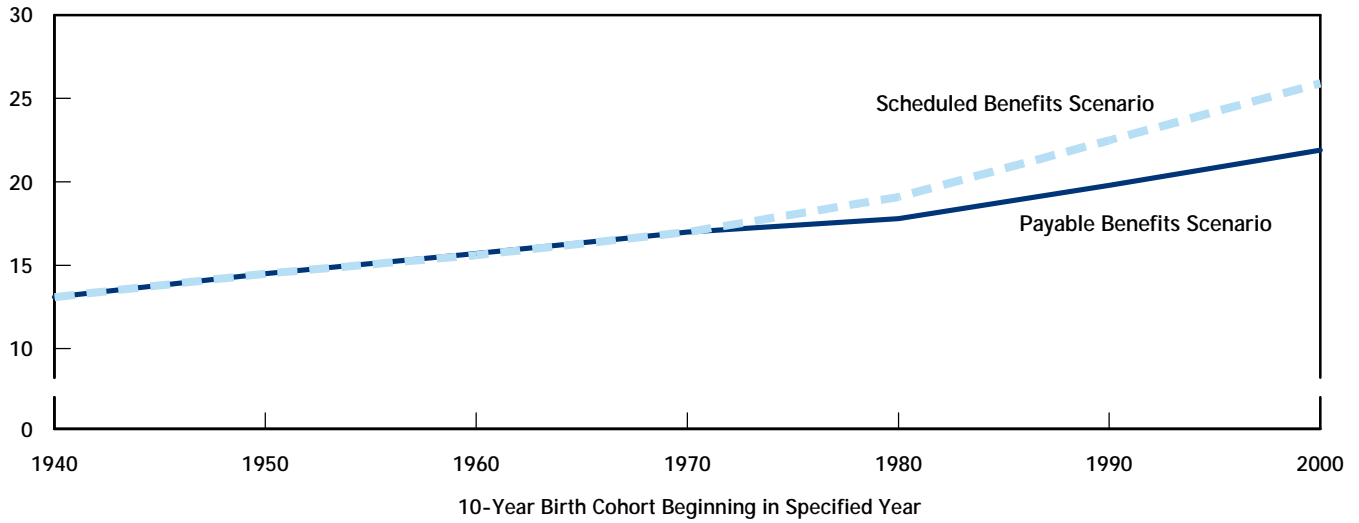
Source:    Congressional Budget Office.

Notes:  Values are net of income taxes paid on benefits and credited to the Social Security trust funds.

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

**Figure 7.**

# Median Replacement Rates for Recipients of Retired-Worker Benefits Under the Scheduled Benefits and Payable Benefits Scenarios, by 10-Year Birth Cohort

(Percent)



Source:   Congressional Budget Office.

Notes:  Replacement rates are first-year benefits as a percentage of average career earnings. (First-year benefits are calculated net of income taxes paid on benefits and credited to the Social Security trust funds.)

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues. The reduction attributable to trust-fund exhaustion shown in this figure is less dramatic than the reduction in total annual outlays shown in Figure 2 because this figure shows average replacement rates for 10-year cohorts.

**Figure 8.**

# Median Replacement Rates for Recipients of Disabled-Worker Benefits Under the Scheduled Benefits and Payable Benefits Scenarios, by 10-Year Birth Cohort

(Percent)



Source:    Congressional Budget Office.

Notes:  Replacement rates are first-year benefits as a percentage of average career earnings. (First-year benefits are calculated net of income taxes paid on benefits and credited to the Social Security trust funds.)

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

**Figure 9.**

# Median Lifetime Social Security Retirement Benefits Under the Scheduled Benefits and Payable Benefits Scenarios, by 10-Year Birth Cohort

(Thousands of 2009 dollars)



10-Year Birth Cohort Beginning in Specified Year
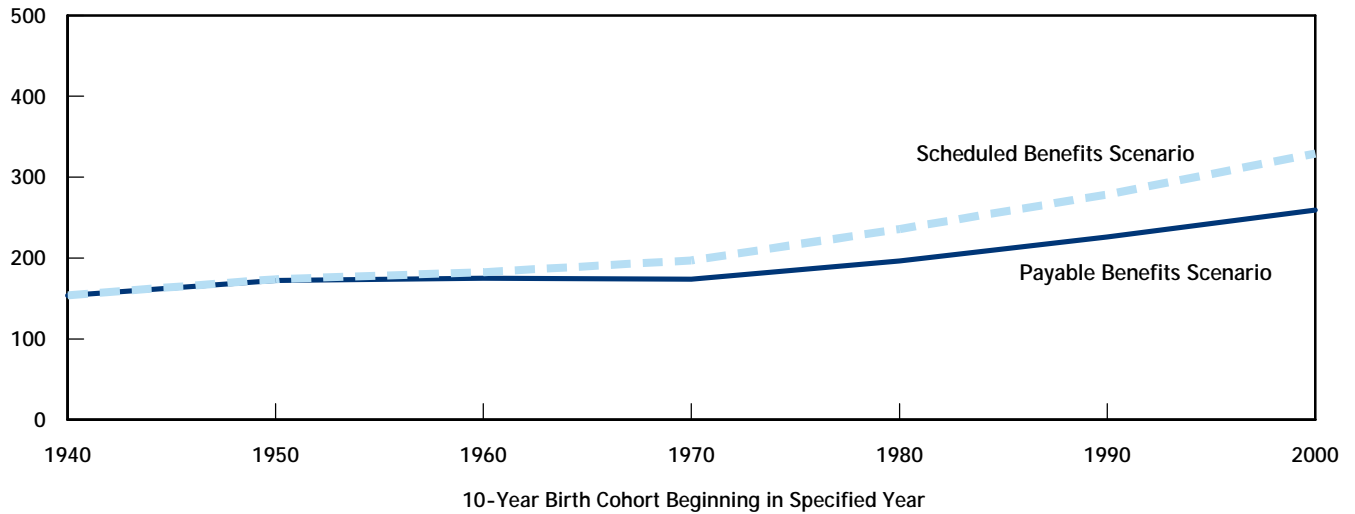
Source: Congressional Budget Office.

Notes: This figure shows the present value of lifetime retirement benefits. To calculate that present value, benefits have been adjusted for inflation (to produce constant dollars) and discounted to age 60. Values are net of income taxes paid on benefits and credited to the Social Security trust funds.

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

**Figure 10.**

# Median Lifetime Social Security Disability Benefits Under the Scheduled Benefits and Payable Benefits Scenarios, by 10-Year Birth Cohort
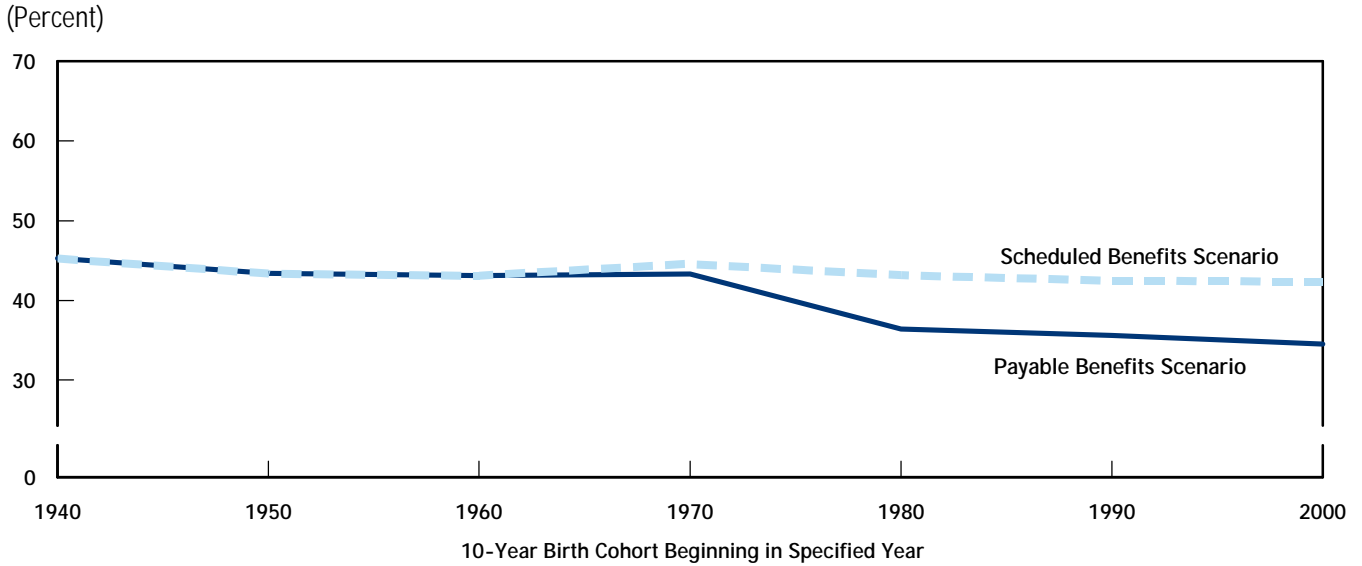
(Thousands of 2009 dollars)
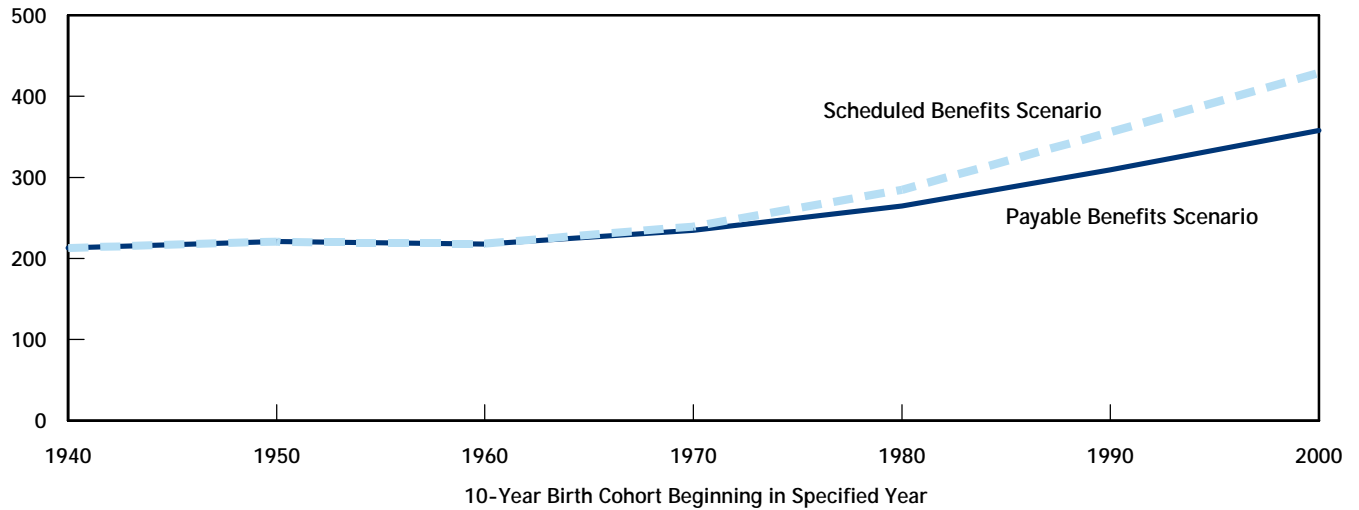


Source:    Congressional Budget Office.

Notes:  This figure shows the present value of all disability benefits received over a lifetime plus retired-worker benefits paid to disabled workers who have reached the normal retirement age designated by law. To calculate that present value, benefits have been adjusted for inflation (to produce constant dollars) and discounted to age 60. Values are net of income taxes paid on benefits and credited to the Social Security trust funds.

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

**Figure 11.**

# Potential Range of Lifetime Social Security Payroll Taxes, by 10-Year Birth Cohort and Lifetime Earnings

(Thousands of 2009 dollars)
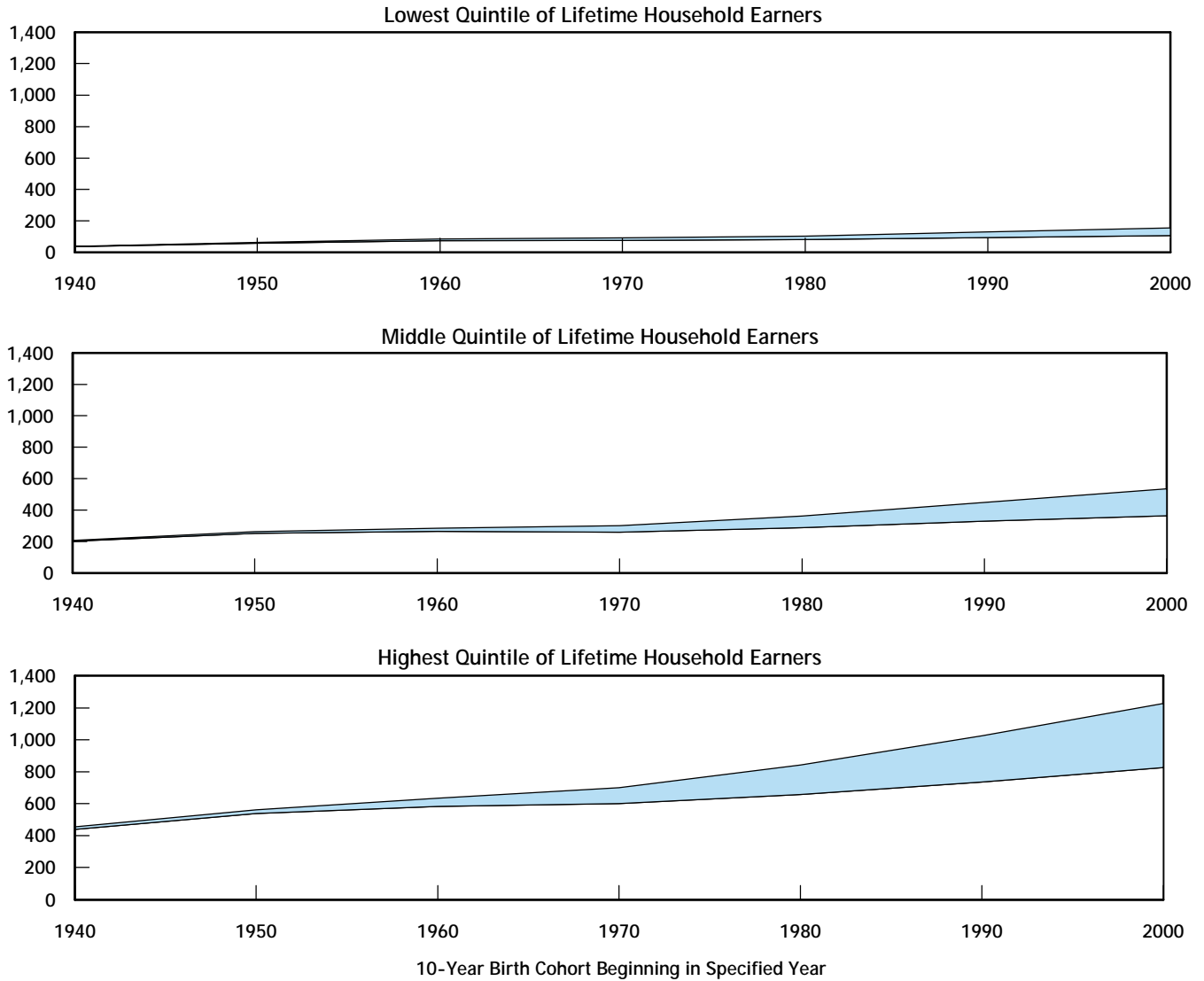


Source:   Congressional Budget Office.

Notes:  Shaded areas indicate the 80 percent range of uncertainty around each projection based on a distribution of 500 simulations from CBO's long-term model. (An 80 percent range means that there is a 10 percent chance that actual values will be above that range, a 10 percent chance that they will be below it, and an 80 percent chance that they will fall within the range.)

Taxes comprise both the employer's and employee's share of Social Security payroll taxes. To calculate their present value, amounts have been adjusted for inflation (to produce constant dollars) and discounted to age 60.

The distribution of lifetime household earners includes only people who live to at least age 45. The distribution is divided into fifths, or quintiles, for presentation.

**Figure 12.**

# Potential Range of Lifetime Social Security Benefits Under the Scheduled Benefits and Payable Benefits Scenarios, by 10-Year Birth Cohort and Lifetime Earnings

(Thousands of 2009 dollars)
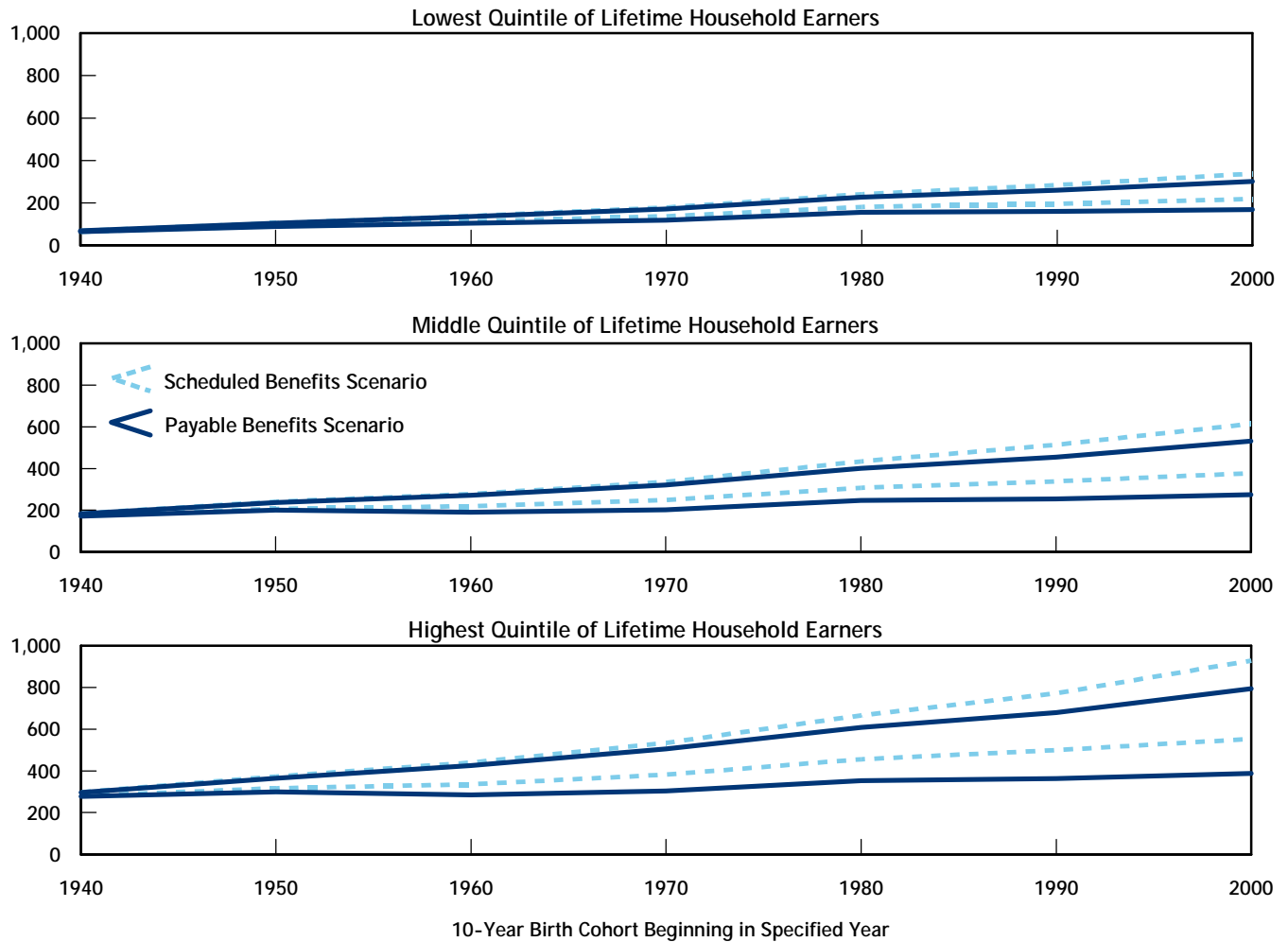


Source:    Congressional Budget Office.

Notes:    The areas encompassed by the solid and dotted lines indicate the 80 percent range of uncertainty around each projection based on a distribution of 500 simulations from CBO's long-term model. (An 80 percent range means that there is a 10 percent chance that actual values will be above that range, a 10 percent chance that they will be below it, and an 80 percent chance that they will fall within the range.)

Benefits comprise Social Security benefits (including retired-worker, disabled-worker, spousal, and survivor benefits) net of income taxes paid on benefits and credited to the Social Security trust funds. To calculate their present value, net benefits have been adjusted for inflation (to produce constant dollars) and discounted to age 60.

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

The distribution of lifetime household earners includes only people who live to at least age 45. The distribution is divided into fifths, or quintiles, for presentation.

**Table 1.**

# Social Security Revenues and Outlays in Selected Years Under the Scheduled Benefits Scenario

(Percentage of gross domestic product)

|  | Actual 2008 | 2033 | 2058 | 2083 |
|---|---|---|---|---|
| | | CBO's Projections | | |
| Revenues | 4.82 | 4.86 | 4.90 | 4.95 |
| Outlays | 4.37 | 6.06 | 5.80 | 6.23 |
| Annual Surplus or Deficit (-) | 0.45 | -1.19 | -0.89 | -1.29 |
| | | 80 Percent Range of Uncertainty for CBO's Projections[a] | | |
| Revenues | 4.82 | 4.6 to 5.1 | 4.5 to 5.2 | 4.5 to 5.3 |
| Outlays | 4.37 | 5.4 to 6.8 | 4.9 to 7.1 | 5.1 to 7.9 |
| Annual Surplus or Deficit (-) | 0.45 | -2.0 to -0.6 | -2.2 to -0.1 | -3.2 to -0.3 |

Source:    Congressional Budget Office.

Notes:  Revenues include payroll taxes and income taxes on benefits in the specified year, and outlays equal scheduled benefits and administrative costs.

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law.

a.    The range within which there is an 80 percent probability that the actual value will fall (that is, the range between the 10th and 90th percentiles for each measure based on a distribution of 500 simulations from CBO's long-term model). Surpluses or deficits do not equal the difference between the outlays and revenues shown because each value is drawn from a different simulation.

**Table 2.**

# Summarized Social Security Revenues and Outlays for Selected Periods Under the Scheduled Benefits Scenario

| Period | Revenues | Outlays | Surplus or Deficit (-) |
|---|---|---|---|
| | **As a Percentage of Gross Domestic Product** | | |
| | *CBO's Projections* | | |
| 25 Years (2009–2033) | 5.74 | 5.55 | 0.19 |
| 50 Years (2009–2058) | 5.37 | 5.66 | -0.29 |
| 75 Years (2009–2083) | 5.26 | 5.74 | -0.48 |
| | *80 Percent Range of Uncertainty for CBO's Projections[a]* | | |
| 25 Years (2009–2033) | 5.6 to 5.9 | 5.2 to 5.9 | -0.2 to 0.5 |
| 50 Years (2009–2058) | 5.2 to 5.5 | 5.3 to 6.1 | -0.7 to 0.0 |
| 75 Years (2009–2083) | 5.0 to 5.5 | 5.3 to 6.3 | -1.0 to -0.1 |
| | **As a Percentage of Taxable Payroll** | | |
| | *CBO's Projections* | | |
| 25 Years (2009–2033) | 15.22 | 14.71 | 0.51 |
| 50 Years (2009–2058) | 14.49 | 15.28 | -0.79 |
| 75 Years (2009–2083) | 14.33 | 15.64 | -1.31 |
| | *80 Percent Range of Uncertainty for CBO's Projections[a]* | | |
| 25 Years (2009–2033) | 15.0 to 15.5 | 13.7 to 15.8 | -0.5 to 1.3 |
| 50 Years (2009–2058) | 14.2 to 14.8 | 14.2 to 16.7 | -2.0 to 0.1 |
| 75 Years (2009–2083) | 14.1 to 14.6 | 14.5 to 17.3 | -2.9 to -0.4 |

Source:    Congressional Budget Office.

Notes:  Summarized revenues are the present value of annual revenues over the relevant period plus the trust funds' balance at the beginning of the period, divided by the present value of GDP or taxable payroll over that period. Summarized outlays are the present value of annual outlays plus an adjustment to cover one more year of outlays at the end of the projection period, divided by the present value of GDP or taxable payroll over the period. The summarized surplus or deficit is the present value of revenues minus the present value of outlays, divided by the present value of GDP or taxable payroll over the period.

In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law.

a.  The range within which there is an 80 percent probability that the actual value will fall (that is, the range between the 10th and 90th percentiles for each measure based on a distribution of 500 simulations from CBO's long-term model). Surpluses or deficits generally do not equal the difference between the outlays and revenues shown because each value is drawn from a different simulation.

**Table 3.**

# Probability That Social Security Outlays Will Exceed Revenues by Specified Percentages in Selected Years Under the Scheduled Benefits Scenario

(Percent)

| | Probability, by Percentage of GDP by Which Outlays Exceed Revenues | | | | | |
|---|---|---|---|---|---|---|
| | By 0 Percent or More | By 1 Percent or More | By 2 Percent or More | By 3 Percent or More | By 4 Percent or More | By 5 Percent or More |
| 2010 | 48 | 0 | 0 | 0 | 0 | 0 |
| 2020 | 86 | 9 | 0 | 0 | 0 | 0 |
| 2030 | 99 | 59 | 5 | 0 | 0 | 0 |
| 2040 | 97 | 59 | 12 | 1 | 0 | 0 |
| 2050 | 92 | 45 | 12 | 2 | 0 | 0 |
| 2060 | 91 | 52 | 16 | 4 | 0 | 0 |
| 2070 | 93 | 58 | 23 | 6 | 1 | 0 |
| 2080 | 94 | 67 | 28 | 10 | 4 | 1 |

Source:  Congressional Budget Office.

Notes:  Revenues include payroll taxes and income taxes on benefits in the specified year, and outlays equal scheduled benefits and administrative costs.

  In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law.

**Table 4.**

# Social Security Benefits Received by Retired Workers Under the Scheduled and Payable Benefits Scenarios, by 10-Year Birth Cohort, Lifetime Earnings Level, and Sex

| 10-Year Birth Cohort Starting in Year | First-Year Benefits (2009 Dollars) | | First-Year Replacement Rate (Percent)[a] | | Present Value of Lifetime Benefits (2009 Dollars)[b] | |
|---|---|---|---|---|---|---|
| | Scheduled | Payable | Scheduled | Payable | Scheduled | Payable |
| | **All Retired Workers** | | | | | |
| | *Median for All Workers* | | | | | |
| 1940 | 16,000 | 16,000 | 45 | 45 | 154,000 | 154,000 |
| 1950 | 16,000 | 16,000 | 43 | 43 | 174,000 | 172,000 |
| 1960 | 17,000 | 17,000 | 43 | 43 | 183,000 | 175,000 |
| 1970 | 18,000 | 17,000 | 45 | 43 | 197,000 | 174,000 |
| 1980 | 21,000 | 17,000 | 43 | 36 | 236,000 | 196,000 |
| 1990 | 24,000 | 20,000 | 42 | 36 | 278,000 | 226,000 |
| 2000 | 27,000 | 22,000 | 42 | 35 | 329,000 | 259,000 |
| | *Median for Those in the Lowest Household Earnings Quintile* | | | | | |
| 1940 | 9,000 | 9,000 | 74 | 74 | 78,000 | 78,000 |
| 1950 | 9,000 | 9,000 | 70 | 70 | 90,000 | 89,000 |
| 1960 | 10,000 | 10,000 | 68 | 68 | 99,000 | 96,000 |
| 1970 | 11,000 | 11,000 | 72 | 68 | 107,000 | 96,000 |
| 1980 | 12,000 | 10,000 | 71 | 60 | 119,000 | 100,000 |
| 1990 | 14,000 | 12,000 | 70 | 58 | 144,000 | 117,000 |
| 2000 | 17,000 | 14,000 | 69 | 56 | 174,000 | 138,000 |
| | *Median for Those in the Middle Household Earnings Quintile* | | | | | |
| 1940 | 18,000 | 18,000 | 43 | 43 | 170,000 | 170,000 |
| 1950 | 18,000 | 18,000 | 42 | 42 | 193,000 | 191,000 |
| 1960 | 18,000 | 18,000 | 41 | 41 | 205,000 | 197,000 |
| 1970 | 19,000 | 19,000 | 43 | 42 | 219,000 | 193,000 |
| 1980 | 22,000 | 19,000 | 42 | 35 | 263,000 | 220,000 |
| 1990 | 26,000 | 22,000 | 41 | 34 | 311,000 | 252,000 |
| 2000 | 30,000 | 24,000 | 41 | 33 | 368,000 | 291,000 |
| | *Median for Those in the Highest Household Earnings Quintile* | | | | | |
| 1940 | 24,000 | 24,000 | 31 | 31 | 269,000 | 269,000 |
| 1950 | 26,000 | 26,000 | 29 | 29 | 309,000 | 307,000 |
| 1960 | 27,000 | 27,000 | 27 | 27 | 339,000 | 322,000 |
| 1970 | 30,000 | 30,000 | 28 | 27 | 382,000 | 332,000 |
| 1980 | 35,000 | 30,000 | 26 | 22 | 448,000 | 376,000 |
| 1990 | 40,000 | 34,000 | 26 | 22 | 525,000 | 426,000 |
| 2000 | 46,000 | 38,000 | 26 | 21 | 615,000 | 489,000 |

**Table 4.**

## Social Security Benefits Received by Retired Workers Under the Scheduled and Payable Benefits Scenarios, by 10-Year Birth Cohort, Lifetime Earnings Level, and Sex

| 10-Year Birth Cohort Starting in Year | First-Year Benefits (2009 Dollars) | | First-Year Replacement Rate (Percent)[a] | | Present Value of Lifetime Benefits (2009 Dollars)[b] | |
|---|---|---|---|---|---|---|
| | Scheduled | Payable | Scheduled | Payable | Scheduled | Payable |
| | | *Male Retired Workers* | | | | |
| | | *Median for All Male Workers* | | | | |
| 1940 | 21,000 | 21,000 | 40 | 40 | 188,000 | 188,000 |
| 1950 | 20,000 | 20,000 | 39 | 39 | 200,000 | 200,000 |
| 1960 | 20,000 | 20,000 | 40 | 40 | 206,000 | 198,000 |
| 1970 | 20,000 | 20,000 | 41 | 40 | 216,000 | 190,000 |
| 1980 | 24,000 | 20,000 | 40 | 34 | 260,000 | 216,000 |
| 1990 | 28,000 | 23,000 | 39 | 33 | 307,000 | 249,000 |
| 2000 | 31,000 | 26,000 | 39 | 32 | 359,000 | 282,000 |
| | | *Median for the Lowest Household Earnings Quintile of Men* | | | | |
| 1940 | 10,000 | 10,000 | 64 | 64 | 84,000 | 84,000 |
| 1950 | 10,000 | 10,000 | 63 | 63 | 92,000 | 92,000 |
| 1960 | 11,000 | 11,000 | 63 | 63 | 101,000 | 98,000 |
| 1970 | 12,000 | 11,000 | 69 | 66 | 107,000 | 96,000 |
| 1980 | 13,000 | 11,000 | 68 | 58 | 121,000 | 101,000 |
| 1990 | 15,000 | 13,000 | 66 | 56 | 147,000 | 119,000 |
| 2000 | 17,000 | 14,000 | 66 | 54 | 173,000 | 135,000 |
| | | *Median for the Middle Household Earnings Quintile of Men* | | | | |
| 1940 | 21,000 | 21,000 | 39 | 39 | 213,000 | 213,000 |
| 1950 | 21,000 | 21,000 | 39 | 39 | 227,000 | 226,000 |
| 1960 | 21,000 | 21,000 | 39 | 39 | 231,000 | 222,000 |
| 1970 | 21,000 | 21,000 | 40 | 39 | 242,000 | 212,000 |
| 1980 | 25,000 | 21,000 | 39 | 33 | 291,000 | 245,000 |
| 1990 | 29,000 | 24,000 | 39 | 32 | 343,000 | 282,000 |
| 2000 | 33,000 | 27,000 | 38 | 31 | 403,000 | 316,000 |
| | | *Median for the Highest Household Earnings Quintile of Men* | | | | |
| 1940 | 26,000 | 26,000 | 24 | 24 | 310,000 | 310,000 |
| 1950 | 27,000 | 27,000 | 24 | 24 | 352,000 | 350,000 |
| 1960 | 29,000 | 29,000 | 22 | 22 | 385,000 | 364,000 |
| 1970 | 32,000 | 32,000 | 23 | 22 | 438,000 | 383,000 |
| 1980 | 37,000 | 32,000 | 21 | 18 | 509,000 | 426,000 |
| 1990 | 43,000 | 36,000 | 21 | 17 | 590,000 | 479,000 |
| 2000 | 49,000 | 40,000 | 21 | 17 | 681,000 | 543,000 |

**Table 4.** <span style="float:right">**Continued**</span>

## Social Security Benefits Received by Retired Workers Under the Scheduled and Payable Benefits Scenarios, by 10-Year Birth Cohort, Lifetime Earnings Level, and Sex

| 10-Year Birth Cohort Starting in Year | First-Year Benefits (2009 Dollars) | | First-Year Replacement Rate (Percent)[a] | | Present Value of Lifetime Benefits (2009 Dollars)[b] | |
|---|---|---|---|---|---|---|
| | Scheduled | Payable | Scheduled | Payable | Scheduled | Payable |
| *Female Retired Workers* | | | | | | |
| *Median for All Female Workers* | | | | | | |
| 1940 | 13,000 | 13,000 | 52 | 52 | 131,000 | 131,000 |
| 1950 | 14,000 | 14,000 | 48 | 48 | 155,000 | 154,000 |
| 1960 | 14,000 | 14,000 | 47 | 47 | 166,000 | 158,000 |
| 1970 | 16,000 | 15,000 | 48 | 47 | 184,000 | 162,000 |
| 1980 | 18,000 | 15,000 | 47 | 40 | 217,000 | 181,000 |
| 1990 | 21,000 | 18,000 | 46 | 38 | 258,000 | 208,000 |
| 2000 | 25,000 | 20,000 | 45 | 37 | 307,000 | 242,000 |
| *Median for the Lowest Household Earnings Quintile of Women* | | | | | | |
| 1940 | 8,000 | 8,000 | 79 | 79 | 72,000 | 72,000 |
| 1950 | 9,000 | 9,000 | 76 | 76 | 87,000 | 87,000 |
| 1960 | 10,000 | 10,000 | 72 | 72 | 98,000 | 95,000 |
| 1970 | 10,000 | 10,000 | 73 | 70 | 107,000 | 95,000 |
| 1980 | 12,000 | 10,000 | 73 | 61 | 119,000 | 99,000 |
| 1990 | 13,000 | 11,000 | 72 | 60 | 142,000 | 114,000 |
| 2000 | 16,000 | 13,000 | 71 | 57 | 176,000 | 139,000 |
| *Median for the Middle Household Earnings Quintile of Women* | | | | | | |
| 1940 | 14,000 | 14,000 | 50 | 50 | 142,000 | 142,000 |
| 1950 | 14,000 | 15,000 | 46 | 47 | 168,000 | 166,000 |
| 1960 | 16,000 | 16,000 | 45 | 45 | 186,000 | 177,000 |
| 1970 | 17,000 | 17,000 | 46 | 45 | 201,000 | 177,000 |
| 1980 | 20,000 | 17,000 | 44 | 37 | 239,000 | 200,000 |
| 1990 | 24,000 | 20,000 | 43 | 36 | 282,000 | 228,000 |
| 2000 | 27,000 | 22,000 | 43 | 35 | 341,000 | 269,000 |
| *Median for the Highest Household Earnings Quintile of Women* | | | | | | |
| 1940 | 19,000 | 19,000 | 41 | 41 | 209,000 | 209,000 |
| 1950 | 21,000 | 21,000 | 37 | 37 | 251,000 | 249,000 |
| 1960 | 23,000 | 23,000 | 35 | 35 | 270,000 | 257,000 |
| 1970 | 25,000 | 24,000 | 36 | 35 | 297,000 | 259,000 |
| 1980 | 30,000 | 25,000 | 34 | 29 | 359,000 | 299,000 |
| 1990 | 34,000 | 29,000 | 34 | 28 | 434,000 | 350,000 |
| 2000 | 40,000 | 33,000 | 33 | 27 | 503,000 | 397,000 |

Source:  Congressional Budget Office.

Notes:  In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

First-year benefits and replacement rates are computed for all individuals who are eligible to claim Old-Age Insurance benefits at age 62 and who have not yet claimed any other benefit. All workers are assumed to have claimed benefits at age 65. All values are net of income taxes paid on benefits and credited to the Social Security trust funds.

The median values for the categories of all workers, all female workers, and all male workers differ from the median values in the respective middle quintiles because individuals are sorted into quintiles (fifths) on the basis of household earnings rather than benefits.

a.  First-year benefits as a percentage of average career earnings.

b.  The present value of all retired-worker benefits received. To calculate their present value, benefits have been adjusted for inflation (to produce constant dollars) and discounted to age 60. Values are net of income taxes paid on benefits and credited to the Social Security trust funds.

**Table 5.**

# Social Security Benefits Received by Disabled Workers Under the Scheduled and Payable Benefits Scenarios, by 10-Year Birth Cohort and Age of Onset of Disability

| 10-Year Birth Cohort Starting in Year | First-Year Benefits (2009 Dollars) | | First-Year Replacement Rate (Percent)[a] | | Present Value of Lifetime Benefits (2009 Dollars)[b] | |
|---|---|---|---|---|---|---|
| | Scheduled | Payable | Scheduled | Payable | Scheduled | Payable |
| **Median for All Disabled Workers** | | | | | | |
| 1940 | 13,000 | 13,000 | 47 | 47 | 157,000 | 157,000 |
| 1950 | 15,000 | 15,000 | 49 | 49 | 186,000 | 186,000 |
| 1960 | 16,000 | 16,000 | 52 | 52 | 198,000 | 196,000 |
| 1970 | 17,000 | 17,000 | 53 | 53 | 231,000 | 221,000 |
| 1980 | 19,000 | 18,000 | 54 | 50 | 287,000 | 257,000 |
| 1990 | 23,000 | 20,000 | 52 | 46 | 359,000 | 305,000 |
| 2000 | 26,000 | 22,000 | 52 | 44 | 430,000 | 351,000 |
| **Median for Disabled Workers with Disability Onset Before Age 40** | | | | | | |
| 1940 | * | * | * | * | * | * |
| 1950 | * | * | * | * | * | * |
| 1960 | 9,000 | 9,000 | 57 | 57 | 199,000 | 199,000 |
| 1970 | 11,000 | 11,000 | 58 | 58 | 362,000 | 362,000 |
| 1980 | 12,000 | 12,000 | 60 | 60 | 434,000 | 427,000 |
| 1990 | 14,000 | 14,000 | 58 | 58 | 521,000 | 500,000 |
| 2000 | 17,000 | 16,000 | 56 | 55 | 639,000 | 567,000 |
| **Median for Disabled Workers with Disability Onset from Ages 40 to 54** | | | | | | |
| 1940 | * | * | * | * | * | * |
| 1950 | 13,000 | 13,000 | 50 | 50 | 199,000 | 199,000 |
| 1960 | 14,000 | 14,000 | 53 | 53 | 227,000 | 225,000 |
| 1970 | 15,000 | 15,000 | 55 | 55 | 223,000 | 221,000 |
| 1980 | 17,000 | 17,000 | 55 | 55 | 273,000 | 259,000 |
| 1990 | 21,000 | 19,000 | 53 | 49 | 351,000 | 301,000 |
| 2000 | 24,000 | 20,000 | 54 | 46 | 424,000 | 354,000 |
| **Median for Disabled Workers with Disability Onset from Age 55 to the Normal Retirement Age** | | | | | | |
| 1940 | 15,000 | 15,000 | 46 | 46 | 171,000 | 171,000 |
| 1950 | 16,000 | 16,000 | 49 | 49 | 188,000 | 188,000 |
| 1960 | 18,000 | 18,000 | 50 | 50 | 179,000 | 176,000 |
| 1970 | 20,000 | 20,000 | 51 | 51 | 213,000 | 199,000 |
| 1980 | 23,000 | 20,000 | 51 | 45 | 266,000 | 227,000 |
| 1990 | 27,000 | 23,000 | 50 | 42 | 334,000 | 277,000 |
| 2000 | 31,000 | 26,000 | 50 | 41 | 397,000 | 313,000 |

Source:    Congressional Budget Office.

Notes:  In the scheduled benefits scenario, workers receive full benefits each year as calculated under current law. In the payable benefits scenario, workers receive full benefits until the trust funds are exhausted in 2043. Then benefits are subjected to an across-the-board cut each year so that total projected benefits equal projected revenues.

First-year benefits and replacement rates are computed for all individuals who are eligible to claim Disability Insurance benefits. All values are net of income taxes paid on benefits and credited to the Social Security trust funds.

* = no results presented (because data are not available for people who died before 1984).

a.   First-year benefits as a percentage of average career earnings.

b.   The present value of all disability benefits received plus retired-worker benefits received after the normal retirement age (the age at which a worker becomes eligible for full retirement benefits). To calculate their present value, benefits have been adjusted for inflation (to produce constant dollars) and discounted to age 60. Values are net of income taxes paid on benefits and credited to the Social Security trust funds.

**Table 6.**

# Probability That the Social Security Trust Funds Will Be Sufficient to Pay Specified Percentages of Scheduled Benefits, by 10-Year Birth Cohort

(Percent)

| 10-Year Birth Cohort Starting in Year | Probability, by Percentage of Payable Benefits[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 99 or More | 95 or More | 90 or More | 85 or More | 80 or More | 75 or More | 70 or More | 65 or More | 60 or More | 55 or More |
| *First-Year Benefits* | | | | | | | | | | |
| 1940 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1950 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1960 | 89 | 94 | 98 | 99 | 99 | 100 | 100 | 100 | 100 | 100 |
| 1970 | 43 | 51 | 61 | 71 | 80 | 91 | 97 | 99 | 100 | 100 |
| 1980 | 22 | 31 | 43 | 55 | 68 | 82 | 90 | 96 | 99 | 100 |
| 1990 | 16 | 21 | 31 | 46 | 58 | 73 | 85 | 93 | 97 | 99 |
| 2000 | 12 | 19 | 28 | 40 | 49 | 62 | 76 | 86 | 93 | 97 |
| *Lifetime Benefits* | | | | | | | | | | |
| 1940 | 83 | 99 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1950 | 43 | 81 | 98 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1960 | 22 | 48 | 71 | 90 | 98 | 99 | 100 | 100 | 100 | 100 |
| 1970 | 13 | 28 | 49 | 68 | 84 | 94 | 99 | 100 | 100 | 100 |
| 1980 | 9 | 19 | 37 | 58 | 76 | 90 | 97 | 100 | 100 | 100 |
| 1990 | 6 | 13 | 28 | 45 | 61 | 78 | 90 | 97 | 99 | 100 |
| 2000 | 4 | 9 | 19 | 32 | 49 | 67 | 84 | 93 | 97 | 99 |

Source: Congressional Budget Office.

a. The sum of all payable benefits for all individuals in a 10-year birth cohort divided by the sum of scheduled benefits for that cohort.

# A

# Changes in CBO's Long-Term Social Security Projections Since August 2008

**S**ince the Congressional Budget Office (CBO) released the last update of its long-term projections for Social Security in August 2008, the long-term financial outlook for the program has worsened slightly, but the short-term outlook has deteriorated substantially because of the current recession.[1]

CBO's latest short-term projections assume much lower levels of gross domestic product (GDP) than last year's projections did. Lower GDP reduces Social Security's revenues by a roughly proportional amount, so revenues are just a bit smaller as a share of GDP. However, lower GDP has relatively little effect on benefit amounts, so Social Security's outlays are substantially higher as a share of GDP. For example, CBO's current projection of outlays for 2010 is 11 percent higher than its projection from last year—4.9 percent of GDP rather than 4.4 percent—even as its projection of revenues is just 1.5 percent lower. Moreover, CBO expects that in the years immediately following the recession, economic growth will be slower than was projected in last year's report. As a result, CBO's projections of annual deficits in the Social Security trust funds are significantly larger or surpluses smaller over the next decade—by 0.3 percent of GDP, on average—than its previous projections.

The difference between the annual deficits or surpluses that CBO projected in 2008 and those it projects this year declines over time. For 2025 and later, CBO's projections of outlays and revenues are quite similar to those

it made in 2008; annual deficits are just 0.1 percent of GDP larger, on average, than in last year's projections.

Primarily because of the worsened short-term outlook, CBO's estimate of the 75-year summarized deficit has grown from 1.1 percent of taxable payroll to 1.3 percent. Specifically, projected summarized outlays have grown by 3 percent (from 15.2 percent of taxable payroll to 15.6 percent), whereas projected summarized revenues have increased by only 1 percent (from 14.2 percent of taxable payroll to 14.3 percent).

CBO's current projections generally assume that taxable payroll will make up a larger share of GDP than in the 2008 projections. As a result, the growth in Social Security's outlays and revenues as a share of GDP is faster than the growth in those measures as a share of taxable payroll. CBO's projection of summarized 75-year outlays has risen from 5.5 percent of GDP to 5.7 percent, and its projection of summarized 75-year revenues has grown from 5.1 percent of GDP to 5.3 percent. CBO now estimates that the 75-year summarized deficit is 0.5 percent of GDP compared with the deficit of 0.4 percent that it projected last year.

The slight worsening in the long-term outlook stems in part from new demographic assumptions by the Social Security trustees, who now foresee greater improvement in mortality rates than they did in 2008. (Lower mortality results in longer life spans and therefore more Social Security beneficiaries.) Some minor modifications to CBO's long-term model over the past year also contribute to the change in the 75-year outlook for Social Security.

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1. See Congressional Budget Office, *Updated Long-Term Projections for Social Security* (August 2008).

# Differences Between CBO's Long-Term Social Security Projections and Those of the Social Security Trustees

**E**ach year, the Social Security trustees publish long-term financial projections for the Social Security program.[1] The trustees' projections differ somewhat from the Congressional Budget Office's (CBO's) projections. But both groups conclude that under current law, Social Security's scheduled outlays will exceed its scheduled revenues during the next 75 years and the program's annual deficits will grow ever larger. Both groups project that Social Security's outlays will rise from 4.8 percent of gross domestic product (GDP) this year to about 6 percent in 2030 and will stabilize thereafter.

CBO's and the trustees' summarized estimates of future outlays and revenues are quite similar. The trustees project that summarized 75-year outlays will equal 16.0 percent of taxable payroll—just 2 percent greater than CBO's projection of 15.6 percent. The trustees' projection of summarized 75-year revenues is 14.0 percent of taxable payroll—2 percent lower than CBO's projection of 14.3 percent. Such small differences between CBO's and the trustees' projections of outlays and revenues can produce relatively large differences in projections of long-term deficits. Thus, CBO estimates that the summarized 75-year shortfall is 1.3 percent of taxable payroll, whereas the trustees project that it is 2.0 percent.

Measures of Social Security's finances as a share of GDP present a different perspective. Both CBO and the trust-

ees project that taxable payroll will account for a declining share of GDP, primarily because the percentage of compensation paid in the form of nontaxable health benefits will increase. However, CBO projects that taxable payroll will fall from its current level of 38 percent of GDP to 35 percent over the next 75 years, whereas the trustees project that it will decline to 33 percent. CBO's higher projection of taxable payroll as a share of GDP offsets its lower projection of outlays as a share of taxable payroll. As a result, CBO's projection of 75-year summarized outlays—5.7 percent—is essentially the same as the trustees' estimate. CBO's projection of summarized revenues, at 5.3 percent of GDP, is higher than the trustees' estimate of 5.0 percent. Consequently, CBO's projected 75-year summarized deficit as a share of GDP is smaller: 0.5 percent versus the trustees' 0.7 percent.

Those differences result partly from different assumptions about income tax law. CBO's long-term projections assume that current income tax law will remain unchanged. With next year's scheduled expiration of the tax cuts enacted in 2001 and 2003, effective income tax rates will rise, boosting revenues from the taxation of Social Security benefits. The trustees, by contrast, assume that effective income tax rates will remain similar to current levels over the 75-year projection period. (As explained in Box 1 on page 3, CBO projects that if none of the currently scheduled changes in tax law took effect, the 75-year summarized deficit would be 1.5 percent of taxable payroll, rather than the 1.3 percent projected under current law.)

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1. Their most recent projections are contained in Social Security Administration, *The 2009 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* (May 12, 2009).

Another difference between the two sets of assumptions involves interest rates. CBO assumes a real (inflation-adjusted) interest rate of 3.0 percent, slightly higher than the trustees' assumed rate of 2.9 percent. In calculating present values, CBO's higher rate places less weight on the large deficits that occur in later years and thus results in smaller summarized deficits. In addition, CBO projects faster growth of wages than the trustees do—1.4 per-

cent a year rather than the trustees' 1.1 percent—which also leads to smaller summarized deficits.

A number of minor differences in modeling further separate CBO's and the trustees' projections. The result is that CBO still projects somewhat smaller average benefits, even after accounting for differences between its economic assumptions and those of the trustees.