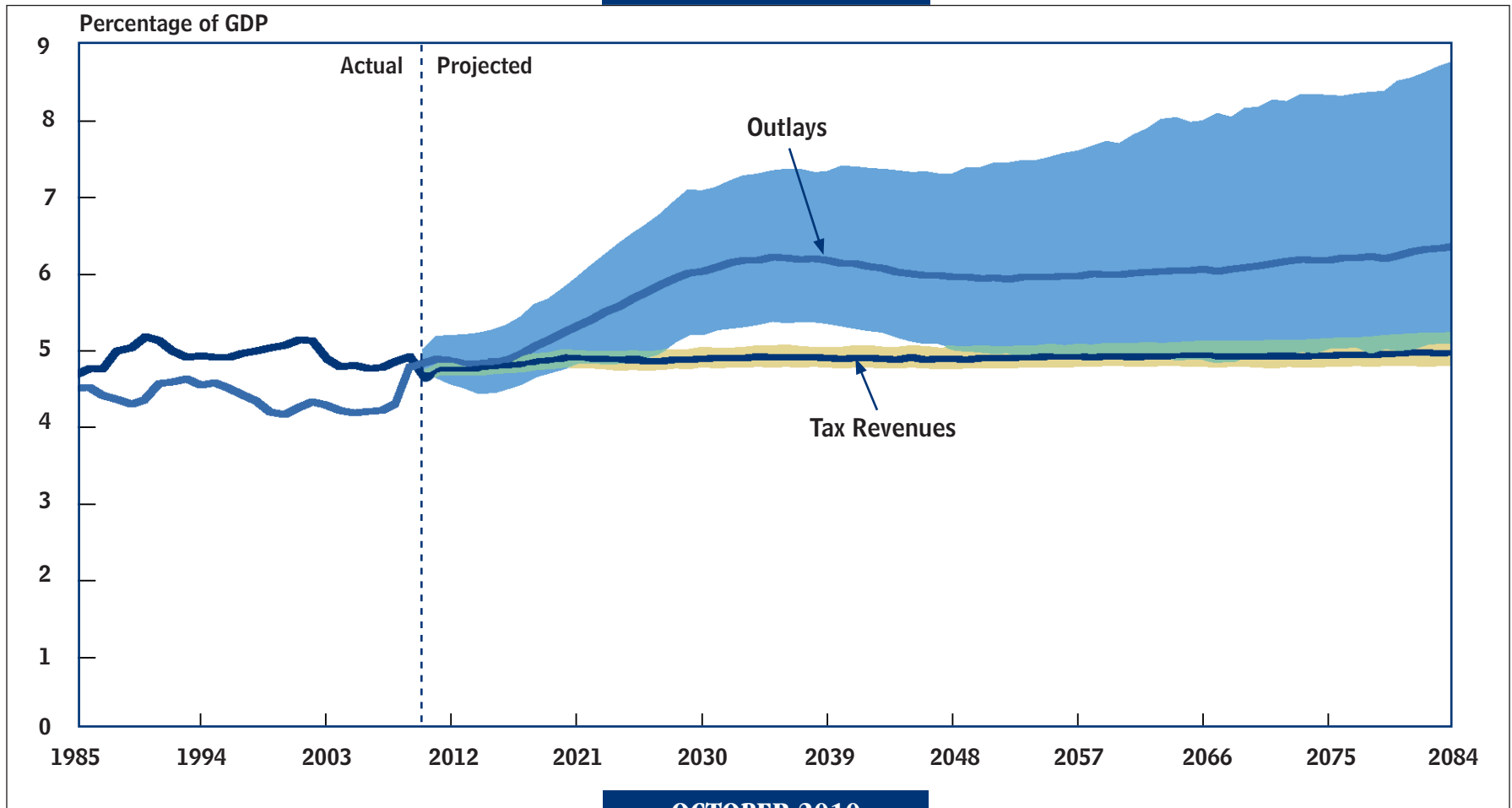


# CBO

## CBO's 2010 Long-Term Projections for Social Security: Additional Information







**CBO**

# **CBO's 2010 Long-Term Projections for Social Security: Additional Information**

October 2010

---

## Notes and Definitions

Unless otherwise noted, all years referred to are calendar years. Numbers in the text and tables may not add up to totals because of rounding. Supplemental data are posted on CBO's Web site ([www.cbo.gov](http://www.cbo.gov)).

**80 percent range of uncertainty:** A range of uncertainty based on a distribution of 500 simulations from CBO's long-term model. Outcomes were above the range in 10 percent of the simulations, below the range in 10 percent, and within the range in 80 percent.

**Median:** The middle of the distribution. When the median outcome for a group of people (defined in this document by birth cohort and lifetime earnings category) is shown, the value is lower for half of the people in that group and higher for half of the group.

**Present value:** 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.

**Cost rate:** The present value of outlays for a period, plus the present value of a year's worth of benefits as a reserve at the end of the period, divided by the present value of the stream of gross domestic product (or taxable payroll) over the same period.

**Income rate:** The present value of tax revenues for a period, plus the trust funds' initial balance, divided by the present value of the stream of gross domestic product (or taxable payroll) over the same period.

**Actuarial balance:** The difference between the income rate and the cost rate.

**Scheduled benefits:** Full benefits as calculated under current law, regardless of the amounts available in the Social Security trust funds.

**Payable benefits:** Benefits as calculated under current law, reduced as necessary to make outlays equal the Social Security system's revenues. Upon exhaustion of the Social Security trust funds, the Social Security Administration would reduce all scheduled benefits such that outlays from the funds would equal revenues flowing into the funds.

---



## Preface

**T**his Congressional Budget Office (CBO) publication provides additional information about long-term projections of the Social Security program's finances that were included in *The Long-Term Budget Outlook* (June 2010, revised August 2010) and in *Social Security Policy Options* (July 2010). Those projections, which cover the 75-year period spanning 2010 to 2084, and the additional information presented in this document update projections CBO prepared last year and reported in *CBO's Long-Term Projections for Social Security: 2009 Update*.

The analysis 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.

Kate Kelly edited the document and Sherry Snyder proofread it. Maureen Costantino designed the cover and, with assistance from Jeanine Rees, prepared the document for publication. Monte Ruffin produced the initial printed copies, Linda Schimmel handled the print distribution, and Simone Thomas produced the electronic version for CBO's Web site ([www.cbo.gov](http://www.cbo.gov)).

Douglas W. Elmendorf  
Director

October 2010



## List of Exhibits

<b>Exhibit</b>	<b>Page</b>
1. Social Security Tax Revenues and Outlays, with Scheduled Benefits	5
2. Social Security Tax Revenues and Outlays, with Scheduled Benefits	6
3. Percentage of Simulations in Which Social Security Outlays Exceed Tax Revenues by Specified Percentages, with Scheduled Benefits	7
4. Social Security Tax Revenues and Outlays, with Scheduled and Payable Benefits	8
5. Summarized Financial Measures for Social Security Under the Extended-Baseline Scenario, with Scheduled Benefits	9
6. Summarized Financial Measures for Social Security Under the Alternative Fiscal Scenario, with Scheduled Benefits	10
7. Trust Fund Ratio, with Scheduled Benefits	11
8. Percentage of Simulations That Show the Social Security Trust Funds Exhausted by a Particular Year	12
9. Median Initial Benefits for Retired Workers, with Scheduled and Payable Benefits	13
10. Median Initial Replacement Rates for Retired Workers, with Scheduled and Payable Benefits	14
11. Median Present Value of Lifetime Benefits for Retired Workers, with Scheduled and Payable Benefits	15
12. Median Benefits and Initial Replacement Rates for Disabled Workers, with Scheduled and Payable Benefits	16
13. Potential Range of Lifetime Social Security Payroll Taxes	17
14. Potential Range of Lifetime Social Security Benefits, with Scheduled and Payable Benefits	18
15. Potential Range of Lifetime Benefit-to-Tax Ratios, with Scheduled and Payable Benefits	19
16. Percentage of Simulations in Which Payable Benefits Exceed Specified Percentages of Scheduled Benefits	20

# CBO's 2010 Long-Term Projections for Social Security: Additional Information

Social Security is the federal government's largest single program.<sup>1</sup> About 54 million people currently receive Social Security benefits. About 69 percent are retired workers, their spouses, and children and another 12 percent are survivors of deceased workers; all of those beneficiaries receive payments through Old-Age and Survivors Insurance (OASI). The other 19 percent are disabled workers or their spouses and children; they receive Disability Insurance (DI) benefits. Social Security's outlays in fiscal year 2010 totaled \$706 billion, one-fifth of the federal budget; OASI payments accounted for 82 percent of those outlays and DI payments made up about 18 percent.

Social Security has two primary sources of tax revenues: payroll taxes and income taxes on benefits. In fiscal year 2010, roughly 97 percent of tax revenues dedicated to Social Security were collected from a payroll tax of 12.4 percent that is levied on earnings and split evenly by workers and their

employers at 6.2 percent apiece. Self-employed workers pay the entire 12.4 percent tax on earnings themselves. The payroll tax applies only to taxable earnings—earnings up to a maximum annual amount (\$106,800 in 2010). Some Social Security benefits also are subject to taxation: In fiscal year 2010, about 3 percent of Social Security's tax revenues came from the income taxes that higher-income beneficiaries paid on their Social Security benefits. Tax revenues credited to the program totaled \$670 billion in that year.

Revenues from taxes, along with intragovernmental interest payments, are credited to Social Security's two trust funds—one for OASI and one for DI—and the program's benefits and administrative costs are paid from those funds. Legally, the funds are separate, but they often are described collectively as the OASDI trust funds. In a given year, the sum of receipts to a fund along with the interest that is credited on previous balances, less spending for benefits and administrative costs, constitutes that fund's surplus or deficit.

In calendar year 2010, Social Security's outlays will exceed tax revenues (that is, the trust funds' receipts excluding interest) for the first time since

the enactment of the Social Security Amendments of 1983. Over the next few years, the Congressional Budget Office (CBO) projects, the program's tax revenues will be approximately equal to its outlays. However, as more of the baby-boom generation (that is, people born between 1946 and 1964) enters retirement, outlays will increase relative to the size of the economy, whereas tax revenues will remain at an almost constant share of the economy. Starting in 2016, CBO projects, outlays as scheduled under current law will regularly exceed tax revenues.

CBO projects that the DI trust fund will be exhausted in 2018 and that the OASI trust fund will be exhausted in 2042. Once a trust fund's balance has fallen to zero and current revenues are insufficient to cover the benefits that are specified in law, a program will be unable to pay full benefits without changes in law. The DI trust fund came close to exhaustion in 1994, but that outcome was prevented by legislation that redirected revenue from the OASI trust fund to the DI trust fund. In part because of that experience, it is a common analytical convention to consider the DI and OASI trust funds as combined. CBO projects that, if legislation to shift resources from the OASI trust fund

---

1. For a description of the Social Security program, see Congressional Budget Office, *Social Security Policy Options* (July 2010), "An Overview of Social Security," pp.1–4. Social Security's financing and trust funds are discussed on pp. 3–5 of that study.

to the DI trust fund was enacted, the combined OASDI trust funds would be exhausted in 2039.

The amount of Social Security taxes paid by various groups of people differs, as do the benefits that different groups receive. For example, people with higher earnings pay more in Social Security payroll taxes than do lower-earning participants, and they also receive larger benefits (although not proportionately larger). Because of the progressive nature of Social Security's benefit formula, replacement rates—the amount of annual benefits as a percentage of annual lifetime earnings—are lower, on average, for workers who have had higher earnings. As another example, the amount of taxes paid and benefits received will be greater for people in later birth cohorts because they typically will have higher earnings over a lifetime, even after adjusting for inflation, CBO projects. However, replacement rates will be slightly lower, on average, for people in later birth groups because their full retirement age (the age at which they can receive unreduced retirement benefits) will be higher.

## About This Analysis

CBO regularly prepares long-term projections of revenues and outlays for the Social Security program. The most recent projections, for the 75 years from 2010 through 2084, were published in Chapter 3 of *The Long-Term Budget Outlook* (June 2010, revised August 2010). This publication presents additional information about those projections.

The budget projections published in *The Long-Term Budget Outlook* involved two scenarios: The first, CBO's extended-baseline scenario, adheres

closely to current law. For example, that scenario reflects the assumption that the tax cuts enacted in 2001 and 2003 expire as scheduled at the end of 2010. CBO also has developed an alternative fiscal scenario, which incorporates several changes to current law that are widely expected to occur or that would modify some provisions of law that might be difficult to sustain for a long period. Unless otherwise noted, the projections presented in this analysis are based on the assumptions of the extended-baseline scenario. In that scenario, income taxes, including the income taxes on Social Security benefits that are credited to the trust funds, are higher than they are in the alternative fiscal scenario.

## Scheduled and Payable Benefits

CBO prepared two types of benefit projections. Benefits as calculated under the Social Security Act, regardless of the balances in the trust funds, are called *scheduled benefits*. The Social Security Administration has no legal authority to pay scheduled benefits if their amounts exceed the balances in the trust funds, however. Therefore, if the trust funds became exhausted, payments to current and new beneficiaries would need to be reduced to make the outlays from the funds equal the revenues flowing into the funds.<sup>2</sup> Benefits thus reduced are called *payable benefits*. In such a case, all receipts to the trust funds would be used and the trust fund balances would remain essentially at zero. When presenting projections of Social Security's finances,

CBO generally focuses on scheduled benefits because, by definition, the system would be fully financed if only payable benefits are disbursed.

## Quantifying Uncertainty

To quantify the amount of uncertainty in its Social Security projections, CBO created a distribution of outcomes from 500 simulations using its long-term model. In those simulations, the assumed values for most of the key demographic and economic factors that underlie the analysis—for example, fertility and mortality rates, interest rates, and the rate of growth of productivity—were varied on the basis of historical patterns of variation.<sup>3</sup> Several of the exhibits in this publication show the simulations' 80 percent range of uncertainty: That is, in 80 percent of the 500 simulations, the value in question fell within the range shown; in 10 percent of the simulations, the values were above that range; and in 10 percent they were below. Long-term projections are necessarily uncertain, and that uncertainty is illustrated in this publication; nevertheless, the general conclusions of this analysis hold true under a variety of assumptions.

## System Finances

The first part of this publication (Exhibits 1 through 8) examines Social Security's financial status from several vantage points. The fullest perspective is provided by projected streams of annual revenues and outlays. A more succinct analysis is

2. See Kathleen Romig, *Social Security: What Would Happen If the Trust Funds Ran Out?* Report for Congress RL33514 (Congressional Research Service, updated August 20, 2009).

3. For more information, see Congressional Budget Office, *Quantifying Uncertainty in the Analysis of Long-Term Social Security Projections*, Background Paper (November 2005). The methodology used here differs slightly from the techniques described in that report.



given by measures that summarize the annual streams in a single number. The system's finances are also described by projecting what is called the trust fund ratio, the amount in the trust funds at the beginning of a year in proportion to the outlays in that year.

### The Distribution of Benefits

In the second part (Exhibits 9 through 16), CBO examines the program's effects on people by grouping Social Security participants by various characteristics and presenting the average taxes and benefits for those groups. In its analysis, CBO divided people into groups by the decade in which they were born and by the quintile of their lifetime household earnings.<sup>4</sup> For example, one 10-year cohort consists of people born in the 1940s, and the top fifth of earners constitutes the highest earnings quintile. CBO's modeling approach produces estimates for individuals; household status is used only to place people into earnings groups.

In this part of the analysis, benefits are calculated net of income taxes paid on benefits by higher-income recipients and credited to the Social Security trust funds.<sup>5</sup> Median values are estimated for

4. Each person who lives at least to age 45 is ranked by lifetime household earnings. Lifetime earnings for someone who is single in all years equals the present value of his or her real earnings over a lifetime. In any year a person is married, the earnings measure is a function of his or her earnings plus those of his or her spouse (adjusted for economies of scale in household consumption). A person's lifetime earnings consist of the present value of those annual amounts.

each group: Estimates for half of the people in the group are lower and estimates for half are higher.

Most retired and disabled workers receive Social Security benefits on the basis of their own work history. This publication first presents measures of those benefits that do not include benefits received by dependents or survivors who are entitled on the basis of another person's work history. Then, for a more comprehensive perspective on the distribution of Social Security benefits, this analysis presents measures of the total amount of Social Security payroll taxes that each participant pays over his or her lifetime as well as the total Social Security benefits—including payments received as a worker's dependent or survivors—that each receives over a lifetime.

### Changes in CBO's Long-Term Social Security Projections Since 2009

The shortfalls for Social Security that CBO is currently projecting are larger than the shortfalls projected in *CBO's Long-Term Projections for Social Security: 2009 Update* (August 2009). The 75-year imbalance has increased from 1.3 percent to 1.6 percent of taxable payroll under the extended-baseline scenario (see Exhibit 5) and from 1.5 percent to 2.1 percent of taxable payroll under the alternative fiscal scenario (see Exhibit 6). Those

5. Benefits are not reduced by the portion of those income taxes that is credited to the Medicare Hospital Insurance trust fund.

differences are attributable to changes both in projected outlays and in projected revenues. The 75-year cost rate—a measure of outlays—is about 2 percent higher under both scenarios because of near-term economic weakness, slightly lower projections of real (inflation-adjusted) growth in wages, and technical changes in modeling methods. The projected 75-year income rate—a measure of Social Security's revenues—is slightly higher than CBO estimated in 2009 under the extended-baseline scenario because income taxes on benefits are projected to be higher as a share of benefits. However, the income rate is about 1 percent lower than in 2009 under the alternative fiscal scenario because income taxes on benefits are projected to equal a smaller share of benefits.

### Related CBO Analyses

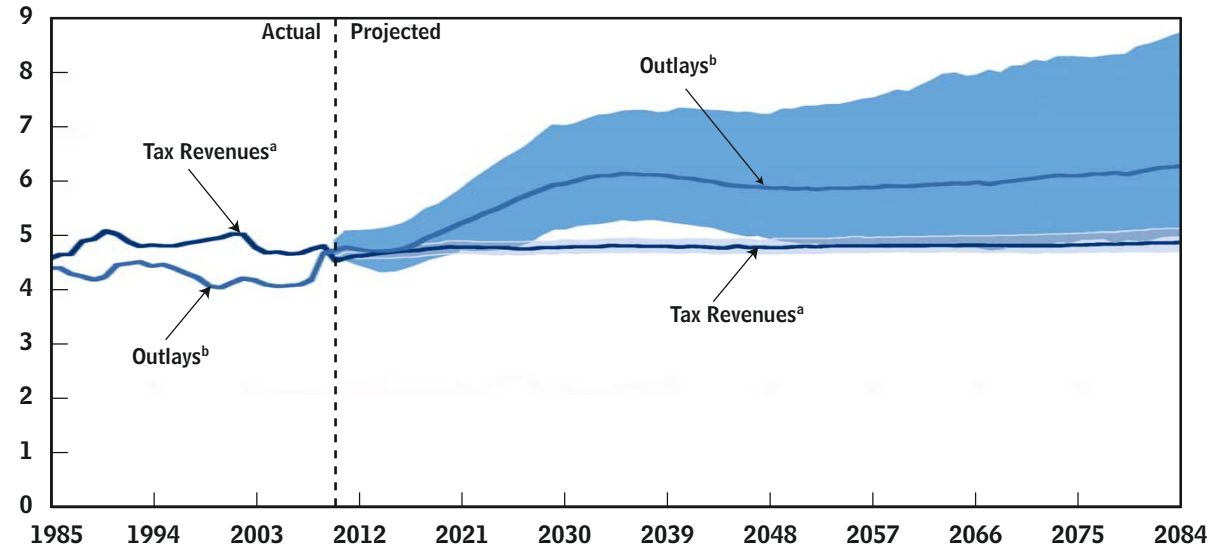
Further information about Social Security and CBO's projections is available in other CBO publications:

- Various approaches to changing the program are presented in *Social Security Policy Options* (July 2010).
- The current long-term projections are consistent with the 10-year baseline CBO published in *A Preliminary Analysis of the President's Budgetary Proposals for Fiscal Year 2011* (March 2010). (Data in that report and in *The Long-Term Budget Outlook* are generally presented for fiscal years; this analysis and *Social Security Policy Options* use calendar-year data.)

- The current projections update those in *CBO's Long-Term Projections for Social Security: 2009 Update*. Differences in the two sets of projections are the result of newly available programmatic and economic data, updated assumptions about future economic trends, and improvements in models. This current set of projections also incorporates the effects of the health care legislation passed in March 2010.<sup>6</sup>
  - The methodology used to develop the projections in this publication is described in *CBO's Long-Term Model: An Overview*, a background paper published in June 2009.
  - Appendix B of *The Long-Term Budget Outlook* offers an explanation of the values used for the demographic and economic variables underlying the projections. (As was the case for CBO's 2009 projections, the projections in this publication are based on the demographic assumptions of the 2009 report of the Social Security trustees.)<sup>7</sup>
  - Numerous other aspects of the program are addressed in various publications available from CBO's [Web site](#).
- 
6. The Patient Protection and Affordable Care Act (Public Law 111-148) and the Health Care and Education Reconciliation Act of 2010 (P.L. 111-152).
- 
7. 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), [www.ssa.gov/OACT/TR/2009/tr09.pdf](http://www.ssa.gov/OACT/TR/2009/tr09.pdf).)

**Exhibit 1.****Social Security Tax Revenues and Outlays, with Scheduled Benefits**

(Percentage of gross domestic product)



Source: Congressional Budget Office.

Note: The lines indicate CBO's projections of expected outcomes. The shaded areas indicate the 80 percent range of uncertainty.

- a. Includes payroll taxes and income taxes on benefits.
- b. Includes scheduled benefits and administrative costs.

In 2009, Social Security's total outlays (benefits plus administrative costs) equaled 4.8 percent of the country's gross domestic product (GDP); tax revenues equaled 4.9 percent of GDP. Most of the program's tax revenues come from Social Security payroll taxes, although a small portion comes from income taxes on benefits paid to higher-income beneficiaries. In addition to those tax revenues, the trust funds are credited with interest. Over the next few years, outlays will approximately equal tax revenues, CBO projects.

By 2034, as the baby-boom generation ages and the number of beneficiaries grows, scheduled spending will climb to 6.2 percent of GDP, CBO estimates. Over the ensuing two decades, spending will decline slightly, relative to the size of the economy, as people in the baby-boom generation die. Demographers generally predict that life expectancy will continue to rise and that birth rates will remain as they are now, so scheduled outlays are projected to resume their upward trajectory after 2050, reaching 6.4 percent of GDP in 2084.

The amount of tax revenues credited to the trust funds is likely to stay almost constant as a share of GDP over the next 75 years, edging up from 4.9 percent of GDP in 2009 to 5.0 percent in 2084. CBO projects that although people's total compensation will be nearly constant as a percentage of GDP, taxable earnings will decline relative to GDP. Revenues from payroll taxes thus will fall slightly as a share of GDP, from 4.8 percent in

*(Continued)*

**Exhibit 2.****Social Security Tax Revenues and Outlays, with Scheduled Benefits**

(Percentage of gross domestic product)

	Actual 2009	Projected		
		2034	2059	2084
Tax Revenues	4.92	4.93	4.93	4.99
Outlays	4.79	6.18	5.99	6.37
Difference	0.13	-1.25	-1.06	-1.37
<b>80 Percent Range of Uncertainty for CBO's Projections</b>				
Tax Revenues		4.8 to 5.0	4.8 to 5.1	4.8 to 5.2
Outlays		5.4 to 7.3	4.9 to 7.7	5.1 to 8.8
Difference <sup>a</sup>		-2.3 to -0.5	-2.7 to 0.0	-3.9 to -0.3

Source: Congressional Budget Office.

Note: Tax revenues consist of payroll taxes and income taxes on benefits that are credited to the Social Security trust funds in the specified year. Outlays consist of scheduled benefits and administrative costs; scheduled benefits are benefits as calculated under the Social Security Act, regardless of the balances in the trust funds.

- a. The differences displayed generally do not equal the difference between the outlays and revenues shown because each value is drawn from a different simulation.

*(Continued)*

2009 to 4.4 percent in 2084. However, that drop will be offset by growth in the revenues credited to the Social Security trust funds from income taxes on the program's benefits.

The uncertainty in these projections is illustrated by the range of the outcomes from a series of 500 simulations that vary most of the key demographic and economic factors in the analysis according to historical patterns. Although CBO projects that the program's outlays will equal 6.2 percent of GDP in 2034, in 10 percent of the simulations outlays in 2034 are below 5.4 percent of GDP and in 10 percent they exceed 7.3 percent of GDP. In most simulations, outlays in 2034 are projected to account for a much larger share of GDP than the current 4.8 percent.

Because payroll taxes are a fixed share of taxable earnings and because earnings generally grow with GDP, there is less uncertainty about tax revenues as a share of GDP than there is about outlays. However, the range of uncertainty reported here—about half that shown in CBO's *Long-Term Projections for Social Security: 2009 Update*—understates the true uncertainty. To incorporate the effects of the health care legislation enacted in March 2010, CBO updated its projections of the share of compensation that will be paid in wages subject to payroll taxes. That change has not been incorporated into the uncertainty model, so—unlike CBO's past publications—this publication's uncertainty analysis does not account for variation in that share.

**Exhibit 3.****Percentage of Simulations in Which Social Security Outlays Exceed Tax Revenues by Specified Percentages, with Scheduled Benefits**

(Percent)

	By 0 Percent of GDP or More	By 1 Percent of GDP or More	By 2 Percent of GDP or More	By 3 Percent of GDP or More	By 4 Percent of GDP or More	By 5 Percent of GDP or More
2020	86	5	0	0	0	0
2030	99	63	13	1	0	0
2040	98	66	19	3	0	0
2050	93	55	19	4	1	0
2060	91	56	23	8	2	0
2070	92	61	30	12	4	1
2080	93	68	33	13	6	3

Source: Congressional Budget Office.

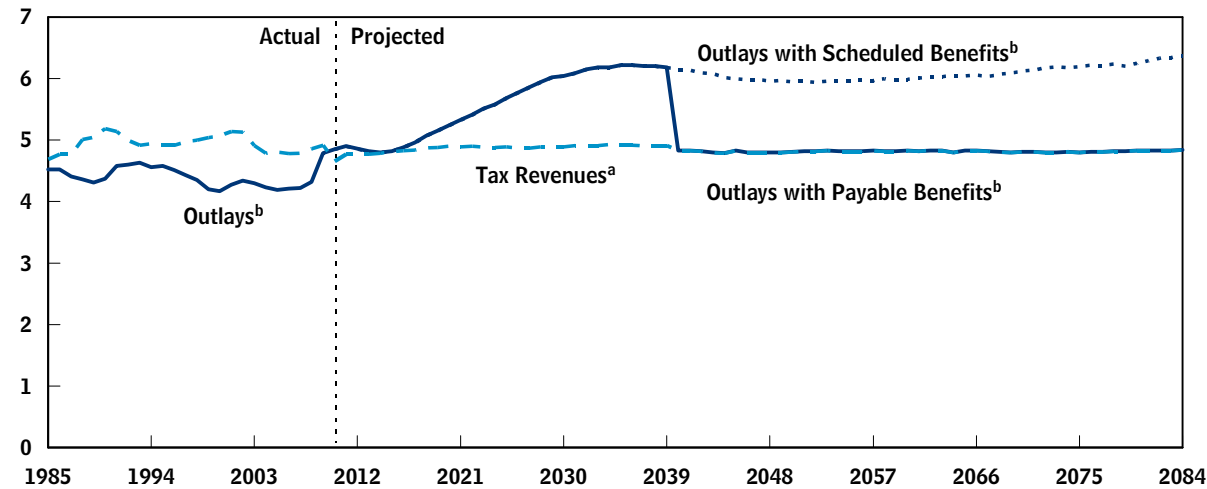
Notes: Tax revenues consist of payroll taxes and income taxes on benefits that are credited to the Social Security trust funds in the specified year. Outlays consist of scheduled benefits and administrative costs; scheduled benefits are benefits as calculated under the Social Security Act, regardless of the balances in the trust funds. This analysis is based on 500 simulations from CBO's long-term model.

GDP = gross domestic product.

Another perspective on the uncertainty in projections of Social Security's finances involves the percentage of CBO's simulations in which total outlays exceed tax revenues by a given amount in a particular year. In the 500 simulations, most of the key demographic and economic factors in the analysis vary according to historical patterns. In 99 percent of them, outlays equal or exceed tax revenues in 2030. Outlays are at least 1 percentage point of GDP greater than tax revenues in 63 percent of simulations for that year and at least 2 percentage points greater in 13 percent of those simulations. The percentage of simulations in which outlays equal or exceed tax revenues is slightly lower after 2035, when many members of the baby-boom generation will have died, but that value is still above 90 percent. As uncertainty about outlays increases, the percentage of simulations in which outlays exceed tax revenues by at least 2 percentage points of GDP rises, reaching 33 percent by 2080.

**Exhibit 4.****Social Security Tax Revenues and Outlays, with Scheduled and Payable Benefits**

(Percentage of gross domestic product)



Source: Congressional Budget Office.

- a. Includes payroll taxes and income taxes on benefits. Tax revenues shown are consistent with payable benefits and would decline slightly if the trust funds became exhausted because revenues from taxation of benefits would decline.
- b. Includes benefits and administrative costs.

The projected gap between outlays and revenues ultimately will 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; after that, they will equal the Social Security program's annual revenues. In 2039—CBO's projected date for the exhaustion of the trust funds—revenues equal 79 percent of scheduled outlays in CBO's projections. Thus, payable benefits will be 21 percent lower than scheduled benefits. The gap between scheduled and payable benefits will then shrink slightly for a decade, falling to 19 percent. It will then begin to widen slightly in about 2055, and by 2084, payable benefits will be 24 percent smaller than scheduled benefits.

**Exhibit 5.****Summarized Financial Measures for Social Security Under the Extended-Baseline Scenario, with Scheduled Benefits**

	As a Percentage of GDP			As a Percentage of Taxable Payroll		
	Income Rate	Cost Rate	Actuarial Balance	Income Rate	Cost Rate	Actuarial Balance
<b>CBO's Projections</b>						
25 Years (2010–2034)	5.66	5.61	0.06	15.24	15.09	0.15
50 Years (2010–2059)	5.34	5.77	-0.42	14.55	15.70	-1.15
75 Years (2010–2084)	5.25	5.84	-0.60	14.39	16.03	-1.63
<b>80 Percent Range of Uncertainty for CBO's Projections<sup>a</sup></b>						
25 Years (2010–2034)	5.6 to 5.8	5.1 to 6.1	-0.4 to 0.4	15.0 to 15.6	13.9 to 16.4	-1.0 to 1.1
50 Years (2010–2059)	5.2 to 5.5	5.3 to 6.3	-0.9 to 0.0	14.3 to 14.8	14.5 to 17.2	-2.5 to -0.1
75 Years (2010–2084)	5.2 to 5.4	5.4 to 6.5	-1.2 to -0.2	14.2 to 14.7	14.8 to 17.8	-3.2 to -0.5

Source: Congressional Budget Office.

**Note:** Over the relevant periods, the income rate is the present value of annual tax revenues (plus the initial trust fund balance) and the cost rate is 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 taxable payroll or gross domestic product (GDP). The actuarial balance is the difference between the income and cost rates.

- a. The balances displayed generally do not equal the difference between the outlays and revenues shown because each value is drawn from a different simulation.

To present the results of long-term projections succinctly, analysts often summarize scheduled outlays and revenues as a single number that covers a given period (for example, total outlays over 75 years). The data are summarized by computing the present value of outlays or tax revenues for a period and dividing that figure by the present value of the stream of GDP (or taxable payroll) over the same period. (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. That computation uses the interest rate used to compute interest credited to the trust funds.) The income rate is the summarized measure of revenues, and the cost rate is the summarized measure of outlays. The actuarial balance is the difference between the income and cost rates.

This analysis focuses on CBO's extended-baseline scenario, which adheres closely to current law. In that scenario, federal income tax rates would increase over time, and the estimated 75-year actuarial balance would be -0.6 percent of GDP or -1.6 percent of taxable payroll. That means, for example, that if the Social Security payroll tax rate was increased immediately and permanently by 1.6 percentage points—from the current rate of 12.4 percent to 14.0 percent—or if scheduled benefits were reduced by an equivalent amount, then the trust funds' projected balance at the end of 2084 would equal projected outlays for 2085.

**Exhibit 6.****Summarized Financial Measures for Social Security Under the Alternative Fiscal Scenario, with Scheduled Benefits**

	As a Percentage of GDP			As a Percentage of Taxable Payroll		
	Income Rate	Cost Rate	Actuarial Balance	Income Rate	Cost Rate	Actuarial Balance
<b>CBO's Projections</b>						
25 Years (2010–2034)	5.62	5.62	0.00	15.09	15.09	0.00
50 Years (2010–2059)	5.25	5.78	-0.54	14.24	15.69	-1.46
75 Years (2010–2084)	5.11	5.86	-0.75	13.97	16.02	-2.06
<b>80 Percent Range of Uncertainty for CBO's Projections<sup>a</sup></b>						
25 Years (2010–2034)	5.5 to 5.7	5.2 to 6.1	-0.4 to 0.4	14.8 to 15.4	13.9 to 16.4	-1.2 to 1.0
50 Years (2010–2059)	5.2 to 5.4	5.3 to 6.4	-1.0 to -0.2	14.0 to 14.5	14.5 to 17.2	-2.9 to -0.4
75 Years (2010–2084)	5.0 to 5.2	5.4 to 6.5	-1.3 to -0.4	13.7 to 14.3	14.8 to 17.8	-3.6 to -1.0

Source: Congressional Budget Office.

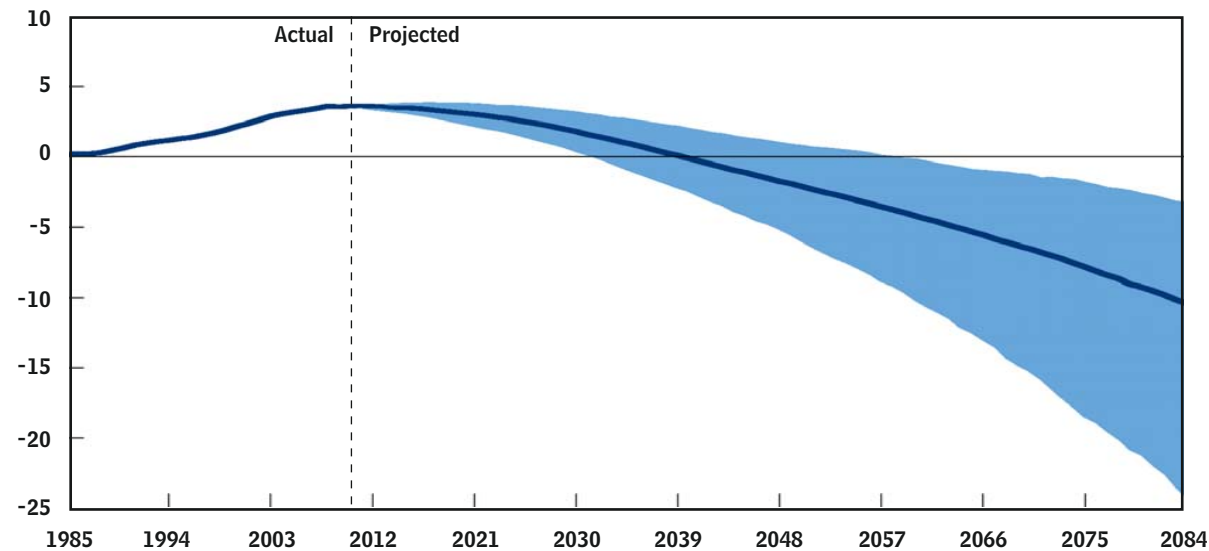
Note: Over the relevant periods, the income rate is the present value of annual tax revenues (plus the initial trust fund balance) and the cost rate is the present value of annual outlays (plus the present value of a year's worth of benefits as a reserve at the end of the period), each divided by the present value of taxable payroll or gross domestic product (GDP). The actuarial balance is the difference between the income and cost rates.

- a. The balances displayed generally do not equal the difference between the outlays and revenues shown because each value is drawn from a different simulation.

This publication focuses mostly on CBO's extended-baseline scenario, which adheres closely to current law. CBO also has made long-term budget projections using an alternative fiscal scenario that incorporates several changes to current law that are widely expected to occur or that would modify some provisions of law that might be difficult to sustain for a long period. (Details of the two scenarios are outlined in Table 1-1 of the 2010 edition of *The Long-Term Budget Outlook*.)

The financial outlook for Social Security is less favorable under the alternative fiscal scenario (shown in this exhibit) than under the extended-baseline scenario (shown in Exhibit 5). Income tax rates are assumed to be lower under the alternative fiscal scenario, resulting in lower revenues from the taxation of Social Security benefits and therefore a lower Social Security income rate. Under the alternative fiscal scenario, the 75-year income rate is 5.11 percent of GDP, compared with a rate of 5.25 percent under the extended-baseline scenario. As a result, the 75-year actuarial deficit is larger: 0.75 percent of GDP under the alternative fiscal scenario, compared with a deficit of 0.60 percent of GDP under the extended-baseline scenario.

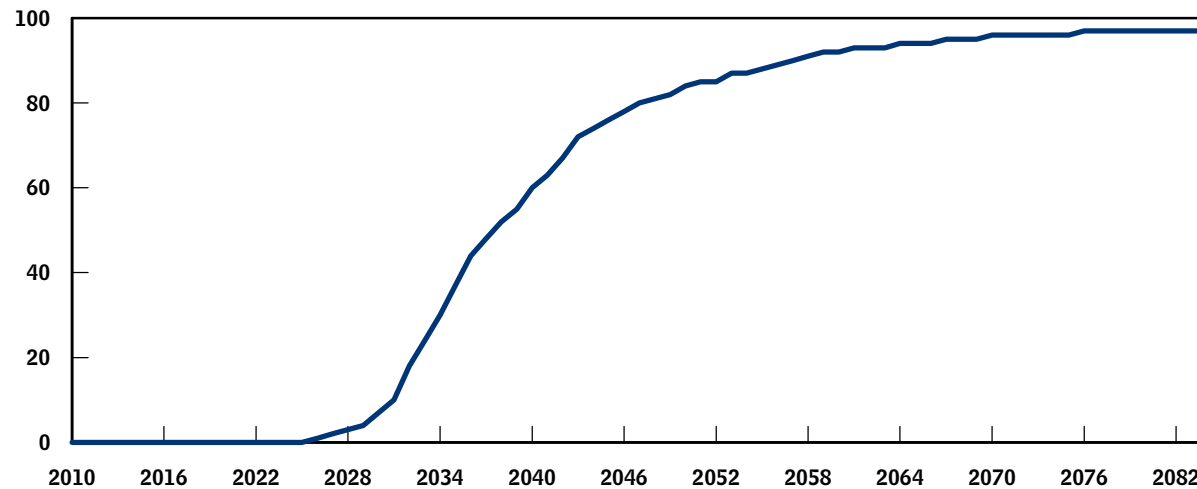


**Exhibit 7.****Trust Fund Ratio, with Scheduled Benefits**

Source: Congressional Budget Office.

Note: The trust fund ratio is the ratio of the trust fund balance (the amount in the trust funds) at the beginning of a year to outlays in that year. Outlays consist of benefits and administrative costs. The trust funds are exhausted when the trust fund ratio reaches zero. Under current law, the trust funds cannot incur negative balances. The negative balances shown in this exhibit indicate a projected shortfall, reflecting the trust funds' inability to pay scheduled benefits out of current-law revenues. The dark line indicates CBO's projection of expected outcomes; the shaded area indicates the 80 percent range of uncertainty around the projection.

The trust fund ratio—the balance in the Social Security trust funds at the beginning of the year divided by the system's outlays projected for that year—indicates the proportion of a year's cost that could be paid with the funds available. The trust fund ratio for 2010 is 3.6, but CBO projects that the ratio will decline beginning in 2011, reaching zero in 2039; at that point, payments to current and new beneficiaries would need to be reduced to make the outlays from the funds equal to the revenues flowing into the funds. The year in which the trust funds will be exhausted could differ significantly from CBO's projection, however. In 10 percent of CBO's simulations, the trust funds will be exhausted in 2031 or earlier and in 10 percent they will be exhausted in 2057 or later; in those simulations, most of the key demographic and economic factors in the analysis were varied according to historical patterns. (The shaded area in the figure shows the 80 percent range of uncertainty. The intersection between the shaded area and the horizontal line at zero, spanning the years between 2031 and 2057, corresponds to the 80 percent range of uncertainty about the year in which the trust funds will become exhausted.) The negative balances represent CBO's estimates of the cumulative amount of scheduled benefits that cannot be paid from the program's current-law revenues (expressed as a ratio to outlays in each year).

**Exhibit 8.****Percentage of Simulations That Show the Social Security Trust Funds Exhausted by a Particular Year**

Source: Congressional Budget Office.

Note: The data are based on 500 simulations from CBO's long-term model.

An alternative way to consider uncertainty is to examine the percentage of simulations in which the trust funds are exhausted by a specific year. In those simulations, most of the key demographic and economic factors in the analysis vary according to historical patterns. In 37 percent of CBO's simulations, the funds are exhausted before 2035. In 84 percent of the simulations, the trust funds are exhausted by 2050. In 97 percent of the simulations, the trust funds are exhausted by 2084.

**Exhibit 9.****Median Initial Benefits for Retired Workers, with Scheduled and Payable Benefits**

(Thousands of 2010 dollars)

10-Year Birth Cohort	All Retired Workers		Lowest Quintile of Lifetime Household Earnings		Middle Quintile of Lifetime Household Earnings		Highest Quintile of Lifetime Household Earnings	
	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable
<b>All</b>								
1940s	17	17	9	9	19	19	25	25
1960s	18	18	11	11	20	20	31	31
1980s	22	18	13	11	24	20	38	31
2000s	29	23	18	14	32	25	50	40
<b>Men</b>								
1940s	21	21	10	10	22	22	27	27
1960s	22	22	12	12	23	23	32	32
1980s	25	21	14	12	27	22	40	33
2000s	33	26	19	15	35	28	53	42
<b>Women</b>								
1940s	13	13	8	8	14	14	21	21
1960s	16	16	10	10	17	17	26	26
1980s	19	15	13	10	21	17	33	27
2000s	25	20	16	13	28	22	45	36

Source: Congressional Budget Office.

Note: Initial annual benefits are computed for all individuals who are eligible to claim retirement benefits at age 62 and who have not yet claimed any other benefit. All workers are assumed to claim benefits at age 65. All values are net of income taxes paid on benefits and credited to the Social Security trust funds.

Future retired workers are likely to receive higher initial annual Social Security benefits than today's beneficiaries receive, even with payable benefits and even after an adjustment for the effects of inflation. With scheduled benefits, the median initial benefit for each birth cohort is projected to be higher than that for the preceding cohort. CBO considered a hypothetical benefit amount: the median benefit a worker would receive if everyone claimed benefits at age 65, based on earnings through age 61.

By itself, growth in average earnings leads to higher scheduled initial benefits. However, under current law, the growth of initial benefits for retired workers in several cohorts will be offset somewhat by the scheduled rise in the full retirement age, from 65 for people born before 1938 to 67 for those born after 1959. The effect is equivalent to a reduction in benefits for any age at which benefits are claimed. Once the older retirement age is in place, median initial benefits will grow at approximately the same rate as average earnings.

When the trust funds are exhausted, payable benefits will fall, CBO projects, but then they will rise again as earnings (and therefore tax revenues) grow. Initial payable benefits are lower than scheduled benefits for people born in 1974 and later. Projected benefits are lower for women than for men in all cohorts because women have lower average earnings; the gap narrows (as a share of average benefits) for later cohorts because men's and women's earnings are becoming more equal. For the 1940s cohort, projected initial benefits for women are about 40 percent below those for men, but in the 1980s group they are about 25 percent below those for men.

**Exhibit 10.****Median Initial Replacement Rates for Retired Workers, with Scheduled and Payable Benefits**

(Percent)

10-Year Birth Cohort	All Retired Workers		Lowest Quintile of Lifetime Household Earnings		Middle Quintile of Lifetime Household Earnings		Highest Quintile of Lifetime Household Earnings	
	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable
<b>All</b>								
1940s	45	45	71	71	43	43	31	31
1960s	43	43	63	63	41	41	28	28
1980s	44	36	63	53	42	34	28	23
2000s	42	33	62	50	41	33	26	21
<b>Men</b>								
1940s	40	40	64	64	39	39	25	25
1960s	39	39	59	59	39	39	22	22
1980s	40	33	59	50	40	33	23	19
2000s	39	31	57	47	39	31	22	17
<b>Women</b>								
1940s	51	51	76	76	49	49	40	40
1960s	47	47	67	67	45	45	37	37
1980s	48	39	68	56	45	37	36	30
2000s	46	36	66	53	44	35	34	27

Source: Congressional Budget Office.

Note: The average initial replacement rate is a worker's initial benefit as a percentage of a worker's average annual lifetime earnings. (To compute lifetime earnings, past earnings are adjusted for average growth in economywide earnings.) Replacement rates are computed for all individuals who are eligible to claim retirement benefits at age 62 and who have not yet claimed any other benefit. All workers are assumed to claim benefits at age 65. All values are net of income taxes paid on benefits and credited to the Social Security trust funds.

Initial replacement rates—initial annual benefits as a percentage of average annual lifetime earnings—provide a perspective on retired workers' benefits that is different from that provided by looking simply at dollar amounts.

The progressive nature of Social Security's benefit formula results in replacement rates that are higher for workers within a birth cohort who have had lower earnings. With payable benefits, the replacement rate will drop noticeably at all earnings amounts for people in the cohorts that first receive benefits after the trust funds are exhausted.

The scheduled increase in the full retirement age will lower the replacement rate for future beneficiaries (for any chosen age for claiming benefits) compared with the rate for people who are claiming benefits now. In particular, if Social Security benefits are paid as scheduled, the median replacement rate for beneficiaries born in the 2000s (about 42 percent) will be slightly lower than the rate for beneficiaries born in the 1940s (about 45 percent), CBO estimates. People in later cohorts, however, are expected to collect benefits for a longer time as life expectancy increases.

Because women tend to have lower lifetime earnings, their average replacement rates are higher than men's are, especially for earlier birth cohorts. The difference between women and men in the highest quintile is large, in part because that group includes many women who spend time out of the labor force or who work part time. In contrast, most men in households with high earnings are employed full time.

**Exhibit 11.****Median Present Value of Lifetime Benefits for Retired Workers, with Scheduled and Payable Benefits**

(Thousands of 2010 dollars)

10-Year Birth Cohort	All Retired Workers		Lowest Quintile of Lifetime Household Earnings		Middle Quintile of Lifetime Household Earnings		Highest Quintile of Lifetime Household Earnings	
	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable
<b>All</b>								
1940s	163	163	75	75	186	186	310	310
1960s	194	180	100	95	215	200	390	356
1980s	232	188	124	104	266	215	481	395
2000s	322	247	166	133	366	281	660	515
<b>Men</b>								
1940s	197	197	77	77	219	219	352	352
1960s	220	205	103	98	244	227	436	397
1980s	261	212	132	108	295	240	542	445
2000s	363	277	175	137	405	311	730	570
<b>Women</b>								
1940s	142	141	72	72	155	155	249	248
1960s	175	162	96	91	192	177	320	291
1980s	210	170	117	98	240	195	397	324
2000s	290	223	158	130	328	254	550	430

Source: Congressional Budget Office.

Note: Benefits are the present value of all retired-worker benefits received. To calculate their present value, benefits are adjusted for inflation (to produce constant dollars) and discounted to age 62. All values are net of income taxes paid on benefits and credited to the Social Security trust funds.

Lifetime retirement benefits are the present value, discounted to the year in which the beneficiary turns 62, of all retired-worker benefits that a worker receives from the program. CBO estimates that real median lifetime benefits for each birth cohort will be greater than those for the preceding cohort, even with payable benefits, because benefits grow with earnings. For example, CBO estimates that median scheduled lifetime benefits for people born in the 2000s will be almost double those for people born in the 1940s in real terms; median payable lifetime benefits for the 2000s cohort will be about 50 percent greater.

The projected trends in median *lifetime* retirement benefits differ from the trends in median *initial* benefits for two reasons. First, as life expectancy increases, people will collect benefits for longer periods, so scheduled lifetime benefits will grow faster than scheduled initial benefits. Second, although cohorts that begin to receive benefits before the trust funds are exhausted will collect their scheduled benefits, some members of those cohorts will still be receiving benefits when the trust funds are exhausted. At that point, payable benefits will decline, and the payable lifetime benefits for those recipients will be less than their scheduled lifetime benefits.

Lifetime benefits are lower for women than for men. However, the gap is smaller than it is for initial benefits because women live longer, on average, and thus tend to collect benefits for a longer time.

**Exhibit 12.****Median Benefits and Initial Replacement Rates for Disabled Workers, with Scheduled and Payable Benefits**

10-Year Birth Cohort	Initial Benefits (Thousands of 2010 dollars)		Initial Replacement Rate <sup>a</sup> (Percent)		Present Value of Lifetime Benefits <sup>b</sup> (Thousands of 2010 dollars)	
	Scheduled	Payable	Scheduled	Payable	Scheduled	Payable
<b>All Disabled Workers</b>						
1940s	13	13	47	47	228	228
1960s	16	16	52	52	216	212
1980s	19	17	54	49	288	247
2000s	24	20	53	44	428	335
<b>Workers Whose Disability Begins Before Age 40</b>						
1940s	*	*	*	*	*	*
1960s	10	10	58	58	250	250
1980s	12	12	60	60	447	437
2000s	16	15	58	53	640	538
<b>Workers Whose Disability Begins Between Ages 40 and 54</b>						
1940s	*	*	*	*	*	*
1960s	14	14	53	53	237	236
1980s	17	17	55	54	285	254
2000s	22	18	55	45	427	340
<b>Workers Whose Disability Begins Between Age 55 and the Full Retirement Age</b>						
1940s	16	16	48	48	202	202
1960s	18	18	50	50	198	193
1980s	22	18	52	43	266	215
2000s	29	23	51	41	388	299

Source: Congressional Budget Office.

Notes: Initial annual benefits and replacement rates are computed for all individuals who are projected to receive Disability Insurance worker benefits. All values are net of income taxes paid on benefits and credited to the Social Security trust funds.

\* = no data are available for people who died before 1984.

- a. Initial annual benefits as a percentage of average annual lifetime earnings.
- b. The present value of all disability benefits received plus retired-worker benefits received after the full retirement age. To calculate present value, benefits are adjusted for inflation (to produce constant dollars) and discounted to age 62.

The projected trends for initial benefits for disabled workers and retired workers are similar (see also Exhibit 9): Future beneficiaries are likely to receive higher initial annual benefits than today's beneficiaries receive. However, the scheduled increase in the full retirement age—which will effectively reduce annual benefits for retired workers—will have no direct effect on people who receive disability benefits because they can receive those benefits in any year before they reach the full retirement age. Thus, CBO projects that real initial disability benefits (scheduled and payable) will increase more rapidly than retirement benefits will.

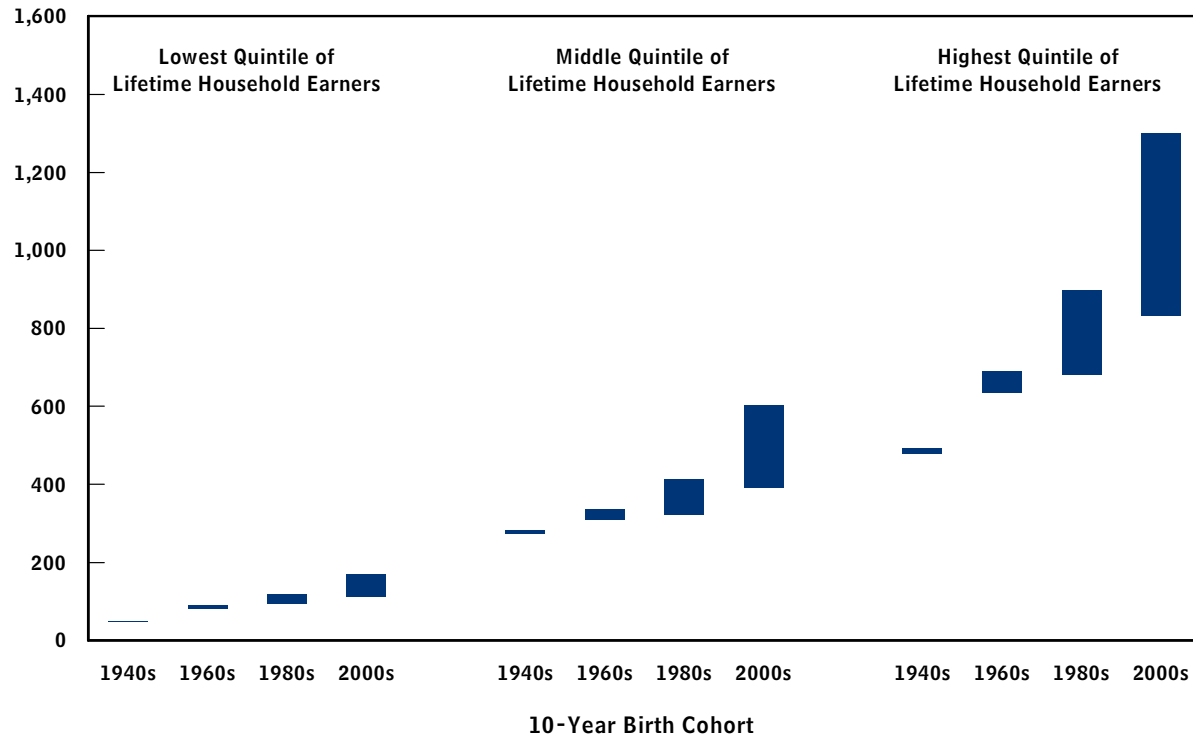
Initial replacement rates tend to be higher for disabled workers than for retired workers (shown in Exhibit 10) because their earnings tend to be lower. For the same reason, workers who become disabled at earlier ages tend to have lower benefits, but higher replacement rates, than do those who become disabled when they are older.

The median present value of lifetime benefits paid to disabled beneficiaries—including the retirement benefits they receive after reaching the full retirement age—is much greater than the present value of lifetime benefits paid to retired workers (shown in Exhibit 11), for two reasons. First, disabled beneficiaries are younger when they begin to collect benefits, so they receive them for a longer period, on average, than retired workers do. Second, because benefits are received at younger ages, their present value is greater. As with retirement benefits, projected lifetime disability benefits are generally greater for each birth cohort than for the preceding one.

**Exhibit 13.**

**Potential Range of Lifetime Social Security Payroll Taxes**

(Thousands of 2010 dollars)



Source: Congressional Budget Office.

Note: Ranges indicate the 80 percent range of uncertainty around each projection. The distribution of lifetime household earners includes only people who live to at least age 45. Payroll taxes consist of the employer's and employee's shares combined. To calculate present value, amounts are adjusted for inflation (to produce constant dollars) and discounted to age 62.

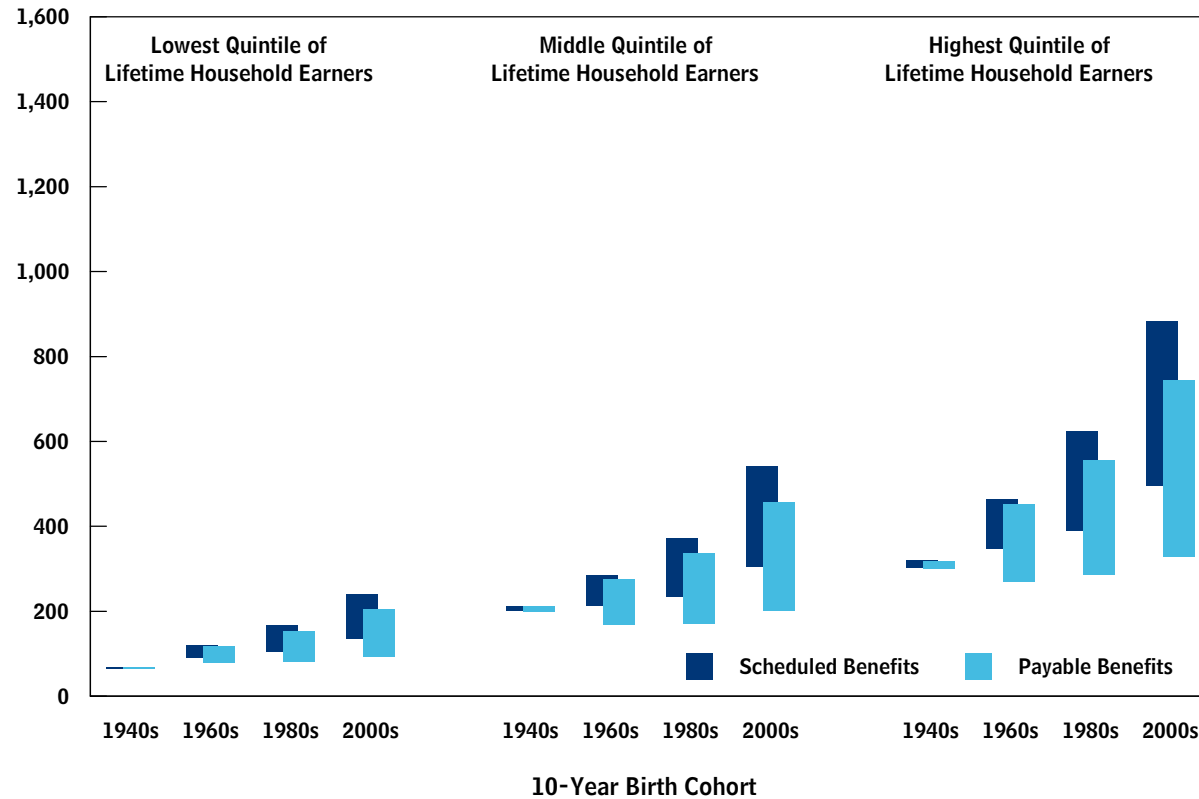
Payroll taxes are a fixed share of taxable earnings, so people with higher earnings generally pay more in payroll taxes. (Measures of taxes in this analysis comprise all Social Security payroll taxes levied on individual earnings, including the shares paid by employers and by employees. Individuals' earnings above a threshold that increases over time with average earnings—the so-called taxable maximum, which this year is \$106,800—are not taxable.) Because future workers' taxable earnings will be higher, even when adjusted for inflation, CBO projects that they will pay more in inflation-adjusted payroll taxes.

In dollar terms, uncertainty about projected taxes is greatest for workers in the highest quintile of lifetime earners. (CBO's estimates are based on 500 simulations in which most of the key demographic and economic factors in the analysis vary according to historical patterns.) However, when the range of uncertainty for lifetime payroll taxes paid is measured as a percentage of median lifetime payroll taxes paid for each quintile and birth cohort, the range is approximately equal for all quintiles.

**Exhibit 14.**

**Potential Range of Lifetime Social Security Benefits, with Scheduled and Payable Benefits**

(Thousands of 2010 dollars)



Source: Congressional Budget Office.

Note: Ranges indicate the 80 percent range of uncertainty around each projection. The distribution of lifetime household earners includes only people who live to at least age 45. To calculate present value, amounts are adjusted for inflation (to produce constant dollars) and discounted to age 62. Benefits are net of income taxes paid on benefits and credited to the Social Security trust funds.

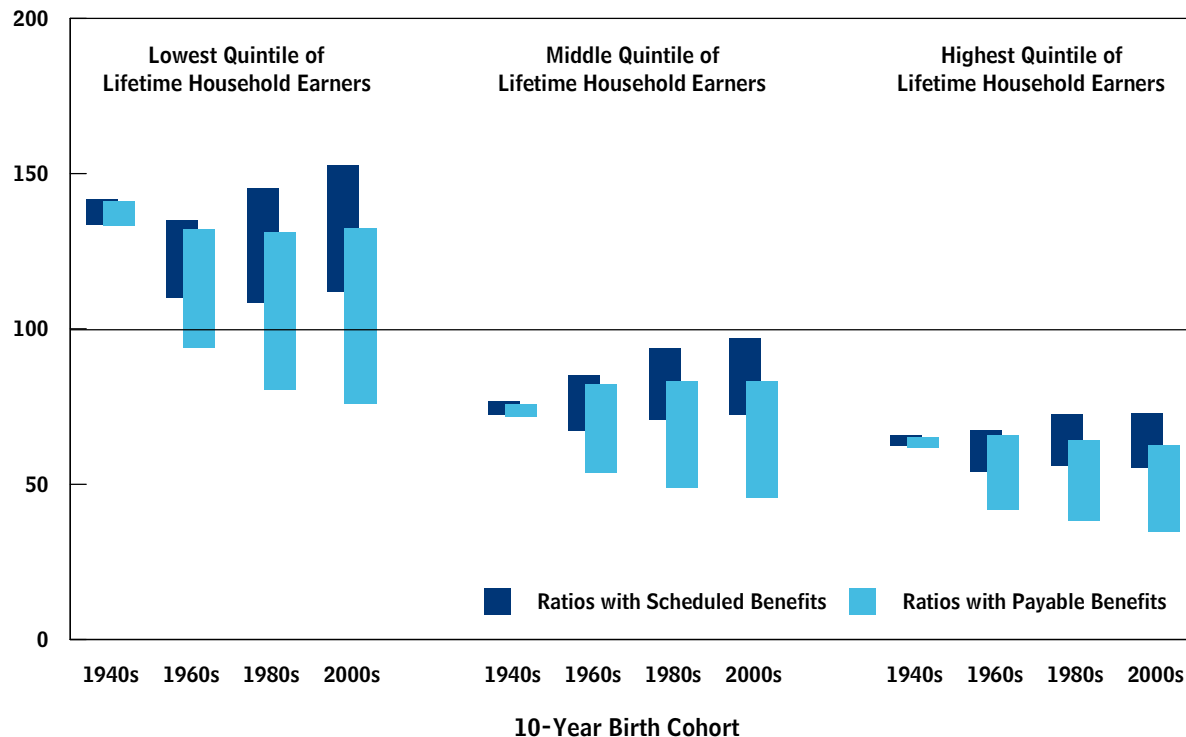
Projected increases in real earnings and in life expectancy lead to projected increases in real lifetime Social Security benefits over time. Benefits shown in this exhibit include almost all payments made to individuals—those based on a recipient’s own work history as well as most benefits the individual receives as a worker’s dependent or survivor. (Because there are insufficient data on benefits received by young widows and children for years before 1984, those benefits are excluded from this measure.) Payable lifetime benefits are lower than scheduled lifetime benefits, but they follow a similar pattern over time. Benefits are substantially higher for people in groups with higher lifetime household earnings.

In dollar terms, uncertainty about projected benefits is greatest for workers in the highest quintile of lifetime earners. (CBO’s estimates are based on 500 simulations in which most of the key demographic and economic factors in the analysis vary according to historical patterns.) However, when the range of uncertainty for lifetime benefits is measured as a percentage of median lifetime benefits for each quintile and birth cohort, the range is approximately equal for all quintiles.



**Exhibit 15.****Potential Range of Lifetime Benefit-to-Tax Ratios, with Scheduled and Payable Benefits**

(Lifetime benefits as a percentage of lifetime payroll taxes)



Source: Congressional Budget Office.

Notes: Ranges indicate the 80 percent range of uncertainty around each projection. The distribution of lifetime household earners includes only people who live to at least age 45. Payroll taxes consist of the employer's and employee's shares combined. Benefits are net of income taxes paid on benefits and credited to the Social Security trust funds. To calculate their present value, amounts have been adjusted for inflation (to produce constant dollars) and discounted to age 62.

A ratio of less than 100 percent indicates that the present value of lifetime benefits is less than the present value of lifetime taxes.

The present value of total net benefits received over a lifetime (see Exhibit 14) can be compared with the present value of total Social Security payroll taxes paid over a lifetime (see Exhibit 13) by computing a ratio. For example, a benefit-to-tax ratio of 150 percent indicates that benefits are 50 percent greater than taxes.

The first generations of Social Security participants received more in benefits than they paid in taxes. As the program is currently structured, however, total taxes must equal total benefits on a present-value basis. For today's participants, the present value of lifetime taxes is, on average, more than the present value of benefits.

Scheduled taxes are projected to be insufficient to pay for full scheduled benefits, so the scheduled benefit-to-tax ratios are unsustainably high. The ratios decline as household earnings grow, in part because the benefit formula is progressive and in part because those with low earnings are more likely to receive disability benefits, dependent benefits, or both. Those effects are partially offset by the longer average life expectancy of higher earners. (See Congressional Budget Office, *Is Social Security Progressive?* Issue Brief, December 15, 2006.)

The uncertainty about benefit-to-tax ratios is greatest for workers in the lowest quintile of lifetime earners. (CBO's estimates are based on 500 simulations in which most of the key demographic and economic factors in the analysis vary according to historical patterns.) However, when the uncertainty range is compared with the median ratio for each quintile and birth cohort, it is approximately equal for all quintiles.

**Exhibit 16.****Percentage of Simulations in Which Payable Benefits Exceed Specified Percentages of Scheduled Benefits**

(Percent)

10-Year Birth Cohort	Payable Benefits as a Percentage of Scheduled Benefits <sup>a</sup>									
	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
<b>Initial Benefits</b>										
1940s	100	100	100	100	100	100	100	100	100	100
1960s	76	87	94	97	98	99	100	100	100	100
1980s	15	22	30	43	57	72	83	93	97	99
2000s	10	15	23	33	44	58	69	81	90	95
<b>Lifetime Benefits<sup>b</sup></b>										
1940s	71	99	100	100	100	100	100	100	100	100
1960s	14	33	56	77	93	98	99	100	100	100
1980s	5	13	29	50	68	86	95	99	100	100
2000s	2	6	16	29	44	62	80	90	96	98

Source: Congressional Budget Office.

Note: This analysis is based on a distribution of 500 simulations from CBO's long-term model.

- The sum of all payable benefits for everyone in a 10-year birth cohort divided by the sum of scheduled benefits for everyone in that cohort.
- Lifetime benefits are calculated as the present value of all benefits received by everyone in a cohort during their lifetime.

CBO's uncertainty analysis indicates that payable benefits are more likely to fall short of specified percentages of scheduled benefits for later birth cohorts. For that analysis, CBO created a distribution of outcomes from 500 simulations in which most of the key demographic and economic factors that underlie the analysis were varied on the basis of historical patterns. In all of the simulations, the 1940s cohort receives payable initial benefits that are at least 99 percent of the amount of scheduled initial benefits. However, the 1980s cohort does so in only 15 percent of the simulations. In 83 percent of the simulations, the 1980s cohort receives payable initial benefits that are at least 70 percent of the amount of scheduled initial benefits.

The exhaustion of the trust funds could occur after a group has begun collecting benefits, so the odds that a beneficiary's payable benefits will be as large as—or nearly as large as—scheduled lifetime benefits are generally lower than the corresponding odds for initial benefits. For instance, although payable initial benefits are equal to at least 99 percent of scheduled initial benefits in every simulation for the 1940s cohort, in only 71 percent of the simulations does the same occur for lifetime benefits. In 99 percent of CBO's simulations, the 1940s cohort receives payable lifetime benefits that equal at least 95 percent of scheduled lifetime benefits. By contrast, in only 13 percent of the simulations does the 1980s cohort receive payable lifetime benefits that equal at least 95 percent of scheduled lifetime benefits.