American Academy of Actuaries
ISSUE BRIEF
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New Report Shows Further Decline

Process of Restoring Social Security's Long-Term Financial Soundness Should Start Now

The newly released 2011 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds* indicates that the Social Security trust fund exhaustion date is one year sooner than projected in the 2010 Trustees' Report. The trust fund is projected to run out of assets during 2036, and if reform has not been enacted by that date, benefits would have to be reduced by about one-fourth thereafter.

- The present value of the shortfall (between assets, including income, and benefits, including expenses) estimated over the 75-year period of the forecast, increased from $5.4 trillion in 2010 to $6.5 trillion in 2011. The shortfall increased from 0.6 to 0.7 percent of the gross domestic product (GDP) and increased from 1.8 percent to 2.1 percent of taxable earnings over the same period.
- The 2011 report showed that, in order to eliminate the projected deficit (using best estimate assumptions), some combination of an immediate increase of 2.15 percentage points in the payroll tax rate or an immediate decrease of 14 percent of benefits would be required. The same numbers from last year's report were a 1.84 percentage point increase in the payroll tax rate and a 12 percent decrease in benefits.
- Congress should act soon to prevent further decline.

An Actuarial Perspective on the 2011 Social Security Trustees' Report

The Social Security Trustees' Report is a detailed annual assessment that serves as a basis for discussion of Social Security's financial problems and solutions. Social Security's Chief Actuary prepares and certifies the financial projections for the Old-Age, Survivors, and Disability Insurance program, under the direction of the Social Security Board of Trustees (the Trustees).

Because future events are inherently uncertain, the report contains three 75-year financial projections to illustrate a broad range of possible outcomes based on separate sets of assumptions. These projections are called intermediate, low-cost, and high-cost. The Trustees consider the intermediate projection to be their best estimate. All estimates in this Issue Brief are based on the intermediate projection unless otherwise noted.

OVERVIEW OF FINANCIAL STATUS

Short-Range Estimates, 2011–2020

Short range solvency is measured separately for Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) based on their projected Trust Fund Ratios. Trust Fund Ratios are the ratio of the trust funds at the beginning of the year to the benefits payable during the year. For the plans to be considered solvent in the short range, the trust fund assets have to exceed 100 percent. The DI trust fund rate

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is projected to drop quickly from 136 percent today to zero in 2018. The OASI trust fund is expected to drop from 401 percent to about 340 percent during the 10-year period. Under the Trustees' projections, action by Congress will be required to allow the DI trust fund to pay full scheduled disability benefits after 2017.

Projected net Social Security finances during the next 10 years are somewhat weaker than anticipated a year ago, and were affected by the following factors:

- **ECONOMIC**—The recovery from the 2007–2009 recession has been slower than anticipated, and this has affected both income and outgo. Average earnings for workers in 2010 were lower than anticipated, which affects tax income. Higher and more persistent unemployment has reduced income from payroll taxes and increased the number of applicants for disability benefits. These negative effects have been partially offset by a lower-than-anticipated projected inflation. The reduced tax income, however, occurs sooner in the projection period (and its cumulative effect through 2020 is larger) than the corresponding effect of lower inflation on benefits through 2020.
- **DEMOGRAPHIC**—Social Security finances were weakened by greater than anticipated lifespans and by lower rates of fertility and immigration, both attributable to the recession.
- **LEGISLATIVE**—Legislation to keep income tax rates lower than anticipated was enacted during 2010 in the *Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act*. Social Security receives a portion of its income from taxes paid on Social Security benefits paid out to beneficiaries, so the lower tax rates decreased this income. Offsetting this was an anticipated growth in jobs and lower unemployment than otherwise would have been anticipated. The legislation also reduced the OASDI payroll tax rate for 2011 by 2 percentage points for employees and for self-employed workers. However, the provision had no effect on trust fund assets or the Trust Fund Ratio because reimbursement is being provided to the trust fund from general revenue to make up for the reduction in payroll tax revenue.

Trust Fund Assets

Any excess of tax income over outgo is recorded as an asset in the Social Security trust funds and allows the Treasury to borrow that much less from the public. These trust fund assets are held in special U.S. Treasury securities amounting to $2.6 trillion at the end of 2010. Trust fund assets are expected to increase to $3.6 trillion at the end of the short-range estimate period (and peak at $3.7 trillion in 2029). The bonds in the trust funds represent the government's commitment to repay the borrowed cash whenever Social Security needs the money. As the securities are redeemed by the trust funds, the U.S. government must raise the necessary cash either by raising taxes, increasing publicly held debt, or lowering other expenditures.

Income and Cost

Figure 1 shows the excess of income over cost (referred to as a positive cash flow) in the period from 1976 through 2009 and the anticipated excess of cost over income through 2020. The excess of income over cost prior to 2009 has led to the current $2.6 trillion trust fund.

The net annual amounts of cash income to and outgo from Social Security also are expressed in the Trustees Report as percentages of taxable payroll. These percentages are known as the income rate and cost rate, respectively. During the short-range estimate period of 2011–2020, the income rate will increase from 12.52 percent to 13.06 percent of taxable payroll. The cost rate, meanwhile, will rise from 13.35 percent to 14.20 percent of taxable payroll. The difference between these two rates, called the annual balance, goes from a deficit of 0.82 percent to a deficit of 1.14 percent of taxable payroll during the period from 2011 to 2020.

Long-Range Estimates, 2011–2085

The 75-year projection covers the future lifetimes of nearly all current participants. The es-

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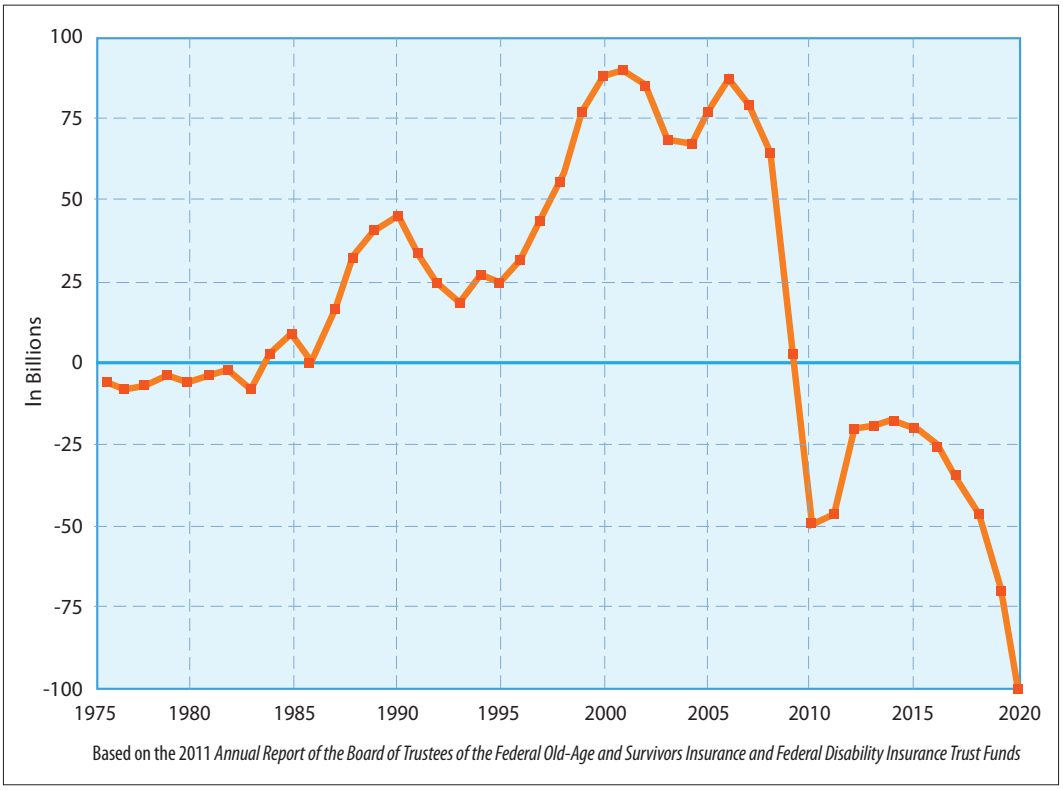
Figure 1: OASDI Cash Flow Excluding Interest on Assets

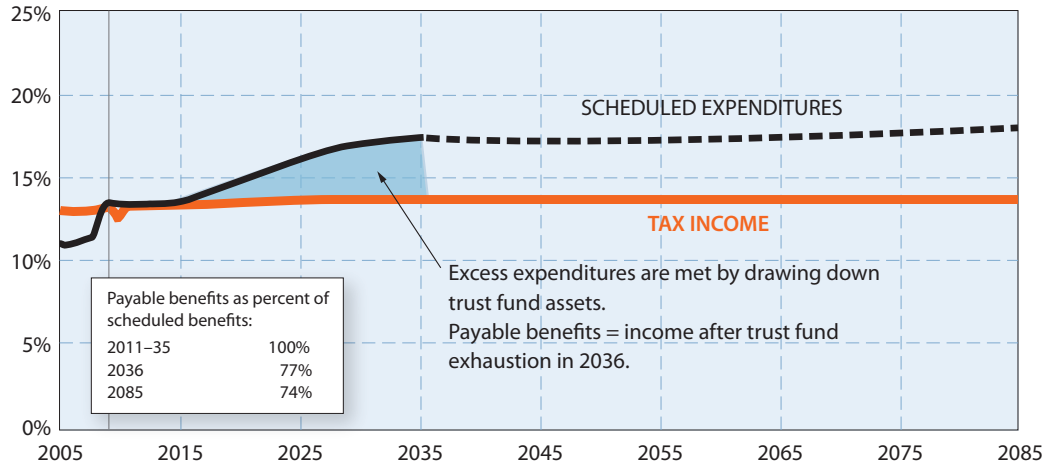


Based on the 2011 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*

timates show that, beginning in 2036, trust fund assets are projected to be exhausted and the system will revert to a pay-as-you-go (paygo) system. The previous (2010) Trustees Report showed that trust fund assets would be exhausted in 2037. The earlier date is a result of the demographic, economic, and legislative changes discussed previously. After 2036, under current law, Social Security income will be sufficient to pay only 74 percent to 77 percent of scheduled benefits, as shown in Figure 2.

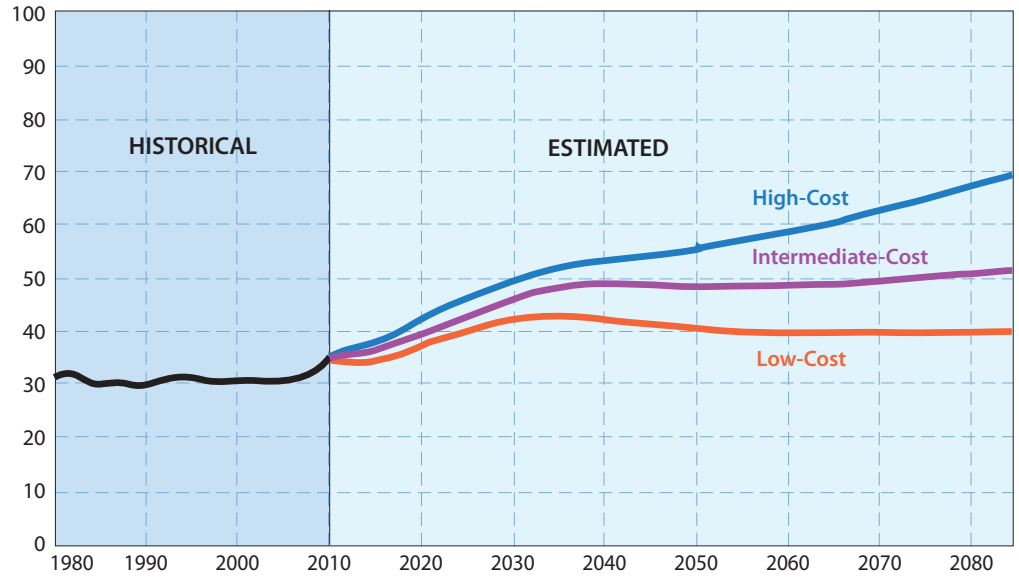
The projections show expenditures exceeding non-interest income in every year after 2010 and rising rapidly during 2015–2035 as the baby

Figure 2: Projected Annual Cost and Tax Income as a Percentage of Taxable Payroll



Based on the 2011 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*

Figure 3: Number of Social Security Beneficiaries Per 100 Workers



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boomers retire. While costs are expected to increase quickly, tax revenue is expected to grow more slowly. After 2035, projected costs are fairly level as a share of GDP and taxable earnings.

Long-range solvency for Social Security can be presented in one number using the Actuarial Balance. The Actuarial Balance is the discounted present value of all future income less all future costs divided by the discounted present value of the taxable payroll. It represents the annual amount by which income would need to increase to bring the system into Actuarial Balance. The Actuarial Balance decreased from a negative 1.92 to a negative 2.22 during 2010. This represents a 16 percent change and a significant worsening of the projected long-range solvency of the system.

PROGRAM REFORM

Now is the Time to Restore Social Security's Long-Term Financial Soundness

Causes of the long-range financial challenges are principally demographic trends. Large numbers of baby boomers will be reaching retirement age in the next two decades, and the longevity of retirees is gradually increasing. Also important is the fact that birth rates dropped precipitously after the baby boom cohort and have remained at a lower level ever since. The ratio of worker to Social Security beneficiary is expected to fall from 2.9 in 2010 to 2.1 in 2029, then decrease slowly to 1.9 by the end of the projection period. This decrease over the projection period of approximately 34 percent is important in a paygo system in which, over time, the number of workers multiplied by the average per person tax must equal the number of beneficiaries multiplied by the average benefit.

Figure 3 shows the projected growth in the number of Social Security beneficiaries relative to the working population under the three sets of assumptions. Because the program financing is nearly paygo, the three alternative projections of long-range cost show similar patterns.

The Academy's Social Insurance Committee believes that any modifications to the Social Security system should include sustainable solvency as a primary goal. Sustainable solvency means that, not only will the program be solvent for the next 75 years under a reform method adopted, but also that the timing of changes will result in stable trust fund reserves as a percentage of annual program cost at the end of the 75-year period.

The Trustees note that providing for solvency beyond the next 75 years would require changes to address increasing longevity, as beneficiaries would be receiving benefits for ever-longer periods of retirement. A 2008 statement from the

American Academy of Actuaries addresses this longevity issue: "Demographic problems require demographic solutions. You just cannot have people living longer and longer with a frozen retirement age. As actuaries, we believe that increasing the retirement age should be a part of any solution."

Regardless of the types of changes ultimately enacted into law, Social Security reform will best serve the public if it is enacted sooner rather than later. Some advantages of acting promptly are:

- Future beneficiaries will have more time to plan for all aspects of retirement and modify their own financial planning while adjusting to changes in Social Security.
- The implementation of program reform can be more gradual and phased in over several years and multiple generations of retirees.
- If lawmakers delay making modifications to the Social Security program, tax increases will need to be higher or benefit cuts deeper than would be required if reforms are implemented soon.

APPENDIX

OTHER MEASURES OF FINANCIAL STATUS

The metrics used by the Trustees to present the program's financial status are discussed in more detail below.

Actuarial Balance

The **Actuarial Balance** is calculated as the difference between the summarized income rate and the summarized cost rate over a period of years. For purposes of evaluating the program's financial adequacy, these amounts are adjusted to include the cost of reaching and maintaining a target trust fund level equal to one year's outgo, as shown in Table 1.

In the 75-year period 2011–2085, the actuarial deficit is 2.22 percent. An immediate increase of 2.15 percentage points in the payroll tax from 12.4 percent of payroll to 14.55 percent of payroll, or a benefit reduction of 14 percent, or some combination of the two would pay all benefits during the period and would end the period with a trust fund balance equal to the scheduled benefits for the following year. The actuarial deficit increased from the comparable figure of 1.92 percent a year ago due to a combination of factors, the most significant of which was changes in mortality attributable to new starting values and revised methods.

The high-cost 75-year projection in the Trustees Report shows a far greater actuarial deficit—5.59 percent of taxable payroll. The low-cost projection is much more favorable—with a positive Actuarial Balance of 0.29 percent.

Table 1: Long-Range Actuarial Balance

(percentage of taxable payroll)

	Summarized Income Rate	Summarized Cost Rate	Actuarial Balance
2011–35	15.01%	15.61%	-0.60%
2011–60	14.25%	16.04%	-1.78%
2011–85	14.02%	16.25%	-2.22%

The summarized income and cost rates are the ratios of the present value of scheduled tax income and cost, respectively, to the present value of taxable payroll, expressed as a percentage.

These calculations include the cost of increasing the trust fund to a target fund at the end of the period equal to one year's outgo.

Based on the 2011 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*

Trust Fund Ratios

The **Trust Fund Ratio**, equal to trust fund assets as a percentage of the following year's cost, is an important measure of short-term solvency. A Trust Fund Ratio of at least 100 percent indicates the ability to cover most short-term contingencies. Figure 4 shows projected Trust Fund Ratios under all three sets of assumptions.

As a measure of long-range solvency, the Trust Fund Ratio shows when the program is expected to run out of money to pay full benefits scheduled under current law. Figure 4 shows such insolvency occurs in 2036 under the intermediate projection. The high-cost projection moves the insolvency date up by approximately seven years, to 2029, while the low-cost projection shows the program remains solvent throughout the projection period.

Sustainable Solvency

Sustainable solvency means the program is not expected to run out of money any time in the 75-year projection period, and Trust Fund Ratios are expected to finish the 75-year projection period on a stable or upward trend.

Sustainable solvency is a stronger requirement than Actuarial Balance in two ways. Actuarial Balance is based on averages over time, without regard to year-by-year figures that could indicate inability to pay benefits from trust fund assets at some time along the way. And Actuarial Balance can exist even when Trust Fund Ratios toward the end of the period are trending downward. For example, large and growing actuarial deficits are now projected at the end of the long-range projection period. Adequate financing beyond 2085 would require larger program changes than would Actuarial Balance.

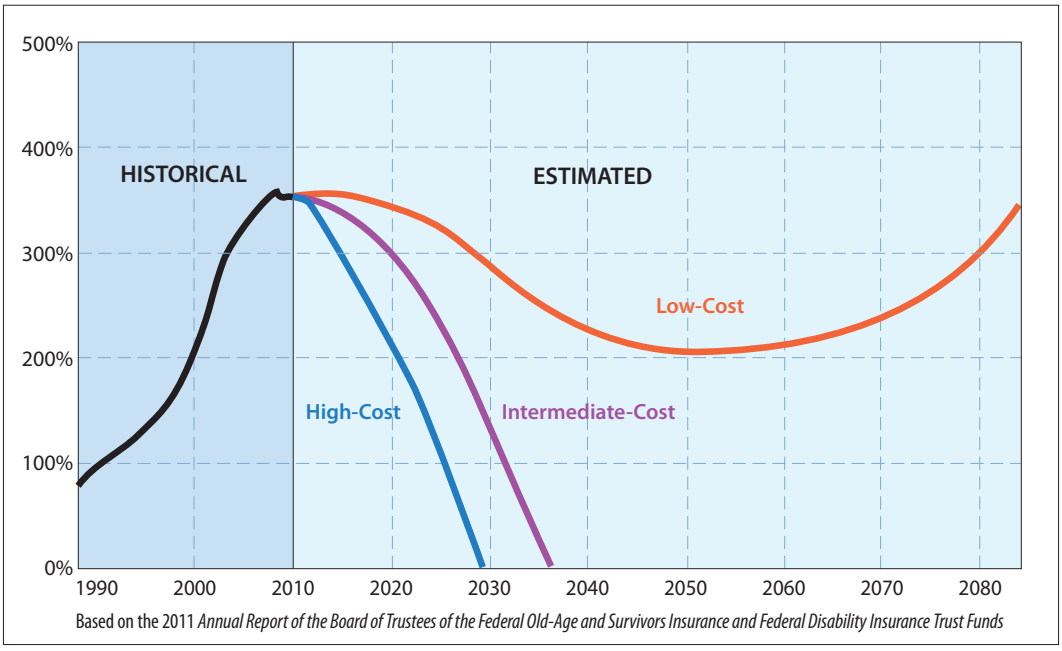
Unfunded Obligation

The **Unfunded Obligation** is another way of measuring Social Security's long-term financial commitment. To compute it, discount the year-by-year streams of future cost and income at interest, then sum them to obtain their present values. Based on these present values, the general formula for computing the Unfunded Obligation is:

> Present value of future cost (benefits and expenses) ***minus*** the present value of future income from taxes ***minus*** current trust fund assets.

The Unfunded Obligation may be computed and presented several ways. Perhaps the most useful way is based on taxes and benefits for an open group of participants over the next 75 years, including many people not yet born, the same as in the basic projections. That methodology is consistent with the primarily pay-as-you-go way the program is designed and currently is

Figure 4: Long-Range Projections of Trust Fund Ratios



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run. Although the Trustees provide alternative calculations based on the closed group of current participants, we believe the open-group basis makes more sense here and avoids certain misleading outcomes. For example, if the program were in exact Actuarial Balance, the open group measure of the Unfunded Obligation would be zero, while the closed group measure still would show a substantial Unfunded Obligation.

The dollar amount of Unfunded Obligation is easier to interpret if put in perspective, for example, by comparing it with the size of the economy over the same period. The Unfunded Obligation often is presented as a percentage of the present value of either taxable payroll or gross domestic product (GDP). At the beginning of 2011, the open-group Unfunded Obligation over the next 75 years was $6.5 trillion. This represents 2.1 percent of taxable payroll, or 0.7 percent of GDP. A year ago, these figures were $5.4 trillion, 1.8 percent of taxable payroll and 0.6 percent of GDP, respectively.

In recent years, the Trustees' Reports also have presented the Unfunded Obligation based on stretching the 75-year projection period into infinity. This measure gives information about trends in effect at the end of the 75-year period of the forecast, but in practice it is highly problematic. Projections over an infinite time period have an extremely high degree of uncertainty. Troublesome inconsistencies can arise among demographic and program-specific assumptions. Assuming that longevity keeps increasing forever while retirement ages remain static, for example, results in an extremely long period of retirement.

Alternative Sets of Assumptions

Table 2 shows the ultimate long-range values of key assumptions used in each of the three projections. With the exception of small changes in the mortality reduction assumption, the ultimate values of these assumptions remain unchanged from last year's report.

Other Measures of Uncertainty

Because the future is unknown, the Trustees use the alternative projections and other methods to assess how the financial results may vary with changing economic and demographic experience.

Sensitivity Analysis

The low-cost and high-cost projections change all the major intermediate assumptions at once in the same direction, favorably or unfavorably. A Sensitivity Analysis is also performed, changing the major assumptions one at a time to determine the financial impact. Table 3 gives results of three sensitivity tests.

If the real-wage growth assumption were changed from 1.2 percent to 1.8 percent, for example, the actuarial deficit would be reduced from 2.22 percent of taxable payroll to 1.36 percent, and the year of trust fund exhaustion would be extended from 2036 to 2041.

Table 2: Current and Long-Range Values of Key Economic and Demographic Assumptions

	Estimated 2009 Value	Ultimate Value		
		Low-Cost Assumptions	Intermediate Assumptions	High-Cost Assumptions
Fertility (children per woman)	2.1	2.3	2.0	1.7
Mortality reduction (assumed average annual decrease in adjusted death rates)	1.0%	0.32%	0.78%	1.31%
Annual net immigration (thousands)	820	1,310	1,025	770
Productivity growth (total U.S. economy)	2.7%	2.0%	1.7%	1.4%
Real-wage growth	0.8%	1.8%	1.2%	0.6%

Based on the 2011 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*

Table 3: Sensitivity to Varying Any of Three Key Assumptions

Ultimate Value	Low-cost Assumptions	Intermediate Assumptions	High-cost Assumptions
Total Fertility Rate			
Ultimate assumption (children per woman)	2.3	2.0	1.7
■ 75-year actuarial deficit	1.86%	2.22%	2.60%
■ Year of combined trust fund exhaustion	2035	2036	2036
Mortality Reduction			
Average annual reduction in adjusted death rates over 75–year period	0.32%	0.78%	1.31%
■ 75-year actuarial deficit	1.54%	2.22%	2.86%
■ Year of combined trust fund exhaustion	2037	2036	2035
Real-wage Growth			
Ultimate assumption (annual rate)	1.8%	1.2%	0.6%
■ 75-year actuarial deficit	1.36%	2.22%	3.10%
■ Year of combined trust fund exhaustion	2041	2036	2033

Based on the 2011 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*

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