



## New Report Shows Further Decline

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

The newly released *2012 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 three years earlier than projected in the 2011 Trustees Report. The trust fund is projected to run out of assets during 2033, 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 \$6.5 trillion in 2011 to \$8.6 trillion in 2012. The shortfall increased from 0.7 to 0.9 percent of the gross domestic product (GDP) and increased from 2.1 percent to 2.5 percent of taxable earnings over the same period.
- The 2012 report showed that to eliminate the projected deficit (using best estimate assumptions) some combination of an immediate increase of 2.61 percentage points in the payroll tax rate or an immediate decrease of 16 percent of benefits would be required. The same numbers from last year's report were a 2.15 percentage point increase in the payroll tax rate and a 14 percent decrease in benefits.
- Without legislative action, the Disability Insurance trust fund will be unable to pay full scheduled disability benefits beyond 2016.

Congress should act soon to improve the long term financial outlook of the program.

## An Actuarial Perspective on the 2012 Social Security Trustees' Report

The Social Security Trustees Report is a detailed annual assessment that serves as a basis for discussions of Social Security's financial problems and their 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.

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 information in this issue brief is based on the intermediate projection unless otherwise noted.**

## OVERVIEW OF FINANCIAL STATUS

### Short-Range Estimates, 2012–2021

Short-range solvency and financial adequacy are measured separately for Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) as well as for the combined (OASDI) trust funds. These measures are based on the funds' projected trust fund ratios. Trust fund ratio is the ratio of the trust fund assets at the beginning of the year to the benefits payable during the year. The plans are considered solvent during any peri-

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od if the trust fund ratios are positive throughout the period. For the plans to pass the test of short-range financial adequacy, a further requirement is that the trust fund ratios remain at or above 100 percent throughout the 10-year short-range period.<sup>1</sup> The DI trust fund ratio is projected to drop quickly from 109 percent today to zero during 2016. The OASI trust fund is expected to drop from 390 percent to 280 percent during the 10-year period. Under the trustees' projections, action by Congress will be required to allow the DI trust fund to continue to pay full scheduled disability benefits beyond 2016. Unless noted otherwise, all information in this issue brief is based on the combined OASDI trust funds.

Projected net Social Security finances during the next 10 years are weaker than projected a year ago, and have been affected by the following factors:

- **ECONOMIC DATA**—The recovery from the 2007–2009 recession has been slower than anticipated and has affected both income and outgo. Average earnings for workers in 2011 were lower than anticipated, which affects tax income. At the same time, oil prices drove price inflation in 2011 higher than anticipated, resulting in higher automatic benefit increases for 2012 as well as higher projected benefit payments for many years into the future. Higher and more persistent unemployment has reduced income from payroll taxes and increased the number of applicants for disability benefits.
- **ECONOMIC ASSUMPTIONS**—Consistent with a slower recovery, the expected level of interest rates for the near future is lower than in the last year's report, implying less investment income for the trust funds.
- **DEMOGRAPHIC DATA**—Lower than anticipated rates of fertility and immigration, both attributable to the recession, have weakened Social Security finances slightly.

Regarding legislative changes, the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act provision that reduced the OAS-

DI payroll tax rate for 2011 by 2 percentage points for employees and for self-employed workers was extended through 2012. The provision had no effect on trust fund assets or the trust fund ratio, however, 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. These trust fund assets are held in special U.S. Treasury securities amounting to almost \$2.7 trillion at the end of 2011. Trust fund assets are expected to increase to \$3.1 trillion at the end of the short-range estimate period in 2021. 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 2021. The excess of income over cost prior to 2009 has led to the current \$2.7 trillion in trust fund assets.

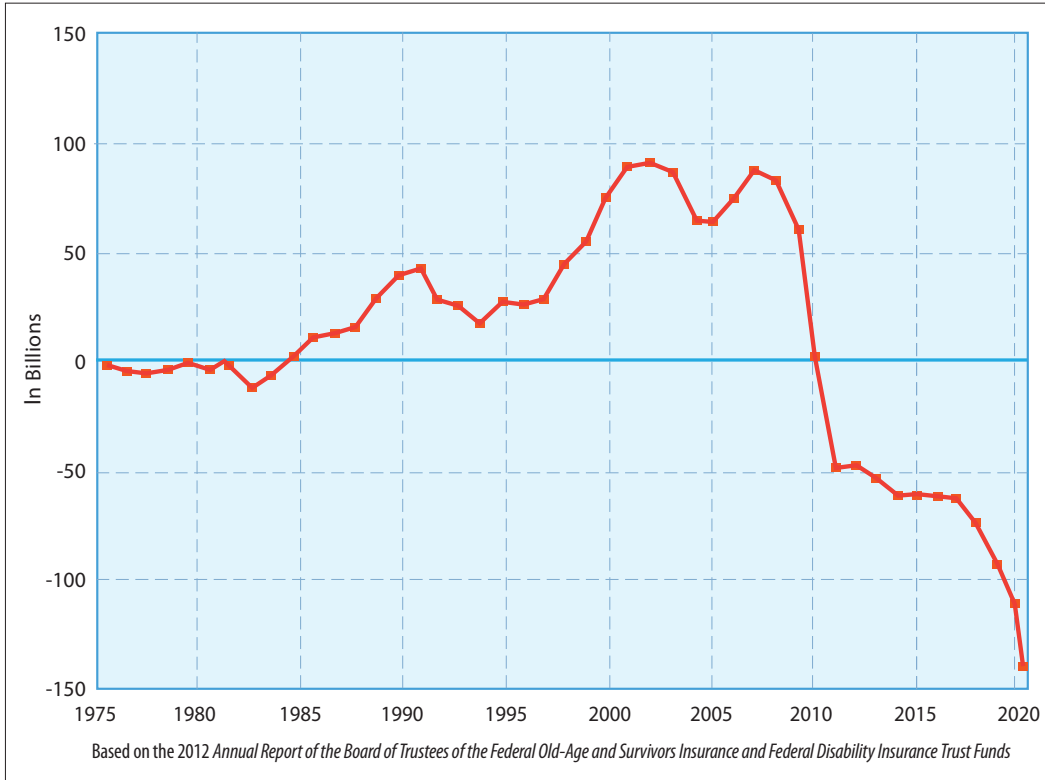
The net annual amounts of cash income to and outgo from Social Security also are expressed in the Trustees Report as percentages of taxable payroll. These percentages are known respectively as the **income rate** and **cost rate**. During the short-range estimate period of 2012–2021, the income rate will increase from 12.89 percent to 13.11 percent of taxable payroll. The cost rate, meanwhile, will rise from 13.83 percent to 14.65 percent of taxable payroll. The difference between these two rates, called the **annual balance**, goes from a deficit of 0.93 percent to a deficit of 1.55 percent<sup>2</sup> of taxable payroll during the period from 2012 to 2021.

<sup>1</sup>This condition applies when the trust fund ratio is at least 100 percent at the beginning of the period. If the trust fund ratio is below 100 percent at the beginning of the period, the test of short-term financial adequacy requires that the trust fund ratio increase to 100 percent within five years (while remaining positive at all times) and then remain at or above 100 percent for the rest of the short-range period.

<sup>2</sup>Table IV.B1, 2012 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*. Please note that due to rounding, the numbers do not add up.

Members of the Academy's Social Security Committee who participated in drafting this issue brief include: Robert Alps, MAAA, ASA; Eric Atwater, MAAA, FSA, FCA, EA; Janet Barr, MAAA, ASA, EA - chairperson; Raymond Berry, MAAA, ASA, EA; Michael Callahan, MAAA, EA, FSPA; Eric Klieber, MAAA, FSA, EA - vice chairperson; Timothy Leier, MAAA, FSA, EA; Timothy Marnell, MAAA, ASA, EA; John Nylander, MAAA, FSA; Brendan O'Farrell, MAAA, EA, FSPA, FCA; Steven Rubenstein, MAAA, ASA; Bruce Schobel, MAAA, FSA, FCA; Mark Shemtob, MAAA, ASA, EA; P.J. Eric Stallard, MAAA, ASA, FCA; Ali Zaker-Shahrak, MAAA, FSA

**Figure 1: OASDI Cash Flow Excluding Interest on Assets**



**Long-Range Estimates, 2012–2086**

The 75-year projection covers the future lifetimes of nearly all current participants. The estimates show that, beginning in 2033, trust fund assets are projected to be exhausted and the system will revert to a pay-as-you-go (PAYGO) system. The 2011 Trustees Report showed that trust fund assets would be exhausted in 2036. The earlier date

is a result of the demographic and economic changes discussed previously. After 2033, under current law, Social Security income will be sufficient to pay only 73 percent to 76 percent of scheduled benefits, as shown in Figure 2.

The projections show expenditures exceeding non-interest income in every year after 2011 and rising rapidly through 2035 as the baby boomers

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

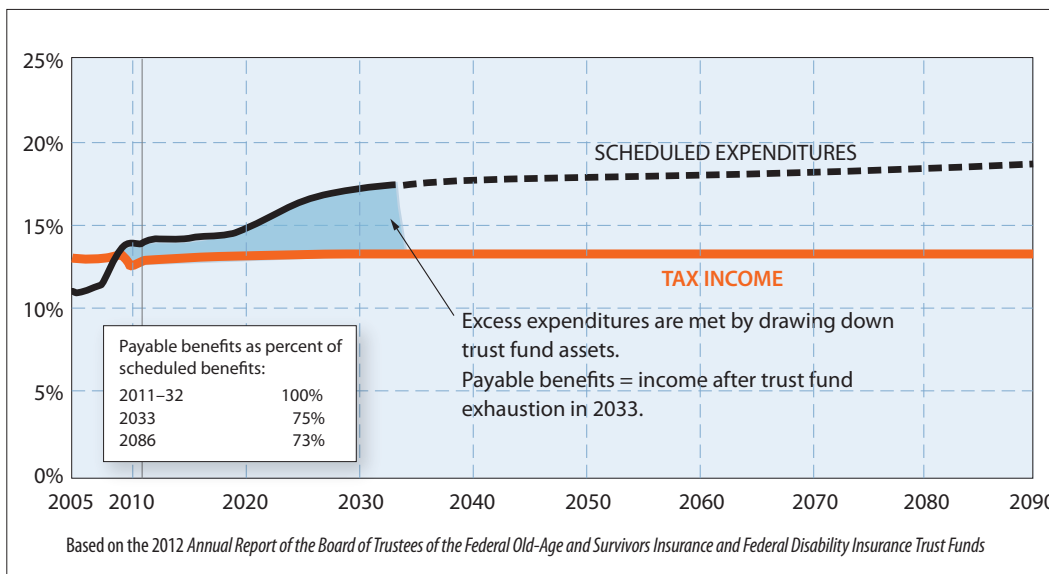
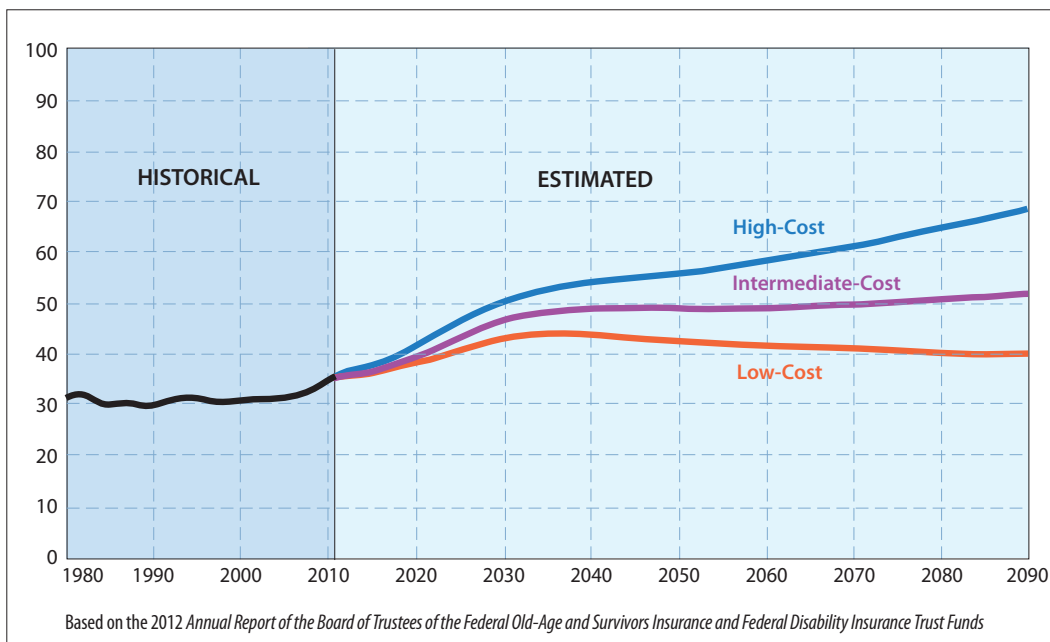


Figure 3: Number of Social Security Beneficiaries Per 100 Workers



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 (expressed as a percent of taxable payroll) by which income would need to increase to bring the system into actuarial balance. The actuarial balance decreased from a negative 2.22 percent to a negative 2.67 percent during 2011. This represents a significant worsening of the projected long-range solvency of the system.

Besides the factors already listed as affecting short-run estimates, one change in economic assumptions mostly affects the long-run projections. This year's report assumes a slight downward long-run trend (0.05 percent per year) in average weekly work hours, instead of stable average hours assumed in recent years. As a result, future earnings are projected to grow at a correspondingly slower rate.

## NEED FOR PROGRAM REFORM

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

Causes of the long-range expected increase in cost are principally demographic trends. Large num-

bers 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 workers to Social Security beneficiaries is expected to fall from 2.9 in 2011 to 2.1 in 2030, then decrease slowly to 1.9 by the end of the projection period. This decrease over the projection period of approximately one-third 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 Security 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 the reform method adopted but also that the trust fund reserves will be stable or increasing 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. An August 2008 [position statement](#) from the Academy 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, the Academy believes that 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.
- Public trust that the program will remain financially sound will improve.

## 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. The summarized income rate is the ratio of the sum of the present value of scheduled tax income for each year of the period to the sum of the present value of taxable payroll for each year of the period. The summarized cost rate is the ratio of the sum of the present value of cost for each year of the period to the sum of the present value of taxable payroll for each year of the period. 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 2012–2086, the actu-

arial deficit is 2.67 percent. The actuarial deficit increased from the comparable figure of 2.22 percent a year ago due to a combination of factors. Approximately half of it is attributable to economic factors—worse economic data than expected and a change in the assumed future hours worked.

An immediate increase of 2.61 percentage points in the payroll tax from 12.4 percent of payroll to 15.01 percent of payroll, or a benefit reduction of 16 percent, or some combination of the two would pay all benefits during the period, but would not end the period with any trust fund reserve.

The high-cost 75-year projection in the Trustees Report shows a far greater actuarial deficit—5.89 percent of taxable payroll. The low-cost projection is much more favorable, with a small actuarial deficit of -0.11 percent of taxable payroll, wholly attributable to the cost of reaching the target level of the trust fund at the end of the period.

#### Trust Fund Ratios

The **trust fund ratio**, equal to trust fund assets as a percentage of the following year’s cost, is an im-

**Table 1: Long-Range Actuarial Balance**  
(percentage of taxable payroll)

	Summarized Income Rate	Summarized Cost Rate	Actuarial Balance
2012–36	14.97%	16.18%	-1.21%
2012–61	14.24%	16.52%	-2.28%
2012–86	14.02%	16.69%	-2.67%

Based on the 2012 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds

portant 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 2033 under the intermediate projection. The high-cost projection moves the insolvency date up by approximately six years, to 2027, 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 standard 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. Actuarial balance can exist even when trust fund ratios toward the end of the period are trending downward. For example, following the last major reform, the 1983 Trustees Report projected a positive actuarial bal-

ance under the intermediate assumptions but the annual balances were negative and declining at the end of the period. As a result, the actuarial balance has been declining every year merely as a consequence of the passage of time, and a short-fall would have resulted even without changes in data and assumptions. Large and growing actuarial deficits are now projected at the end of the long-range projection period. Adequate financing beyond 2086 would require larger program changes than needed to achieve actuarial balance.

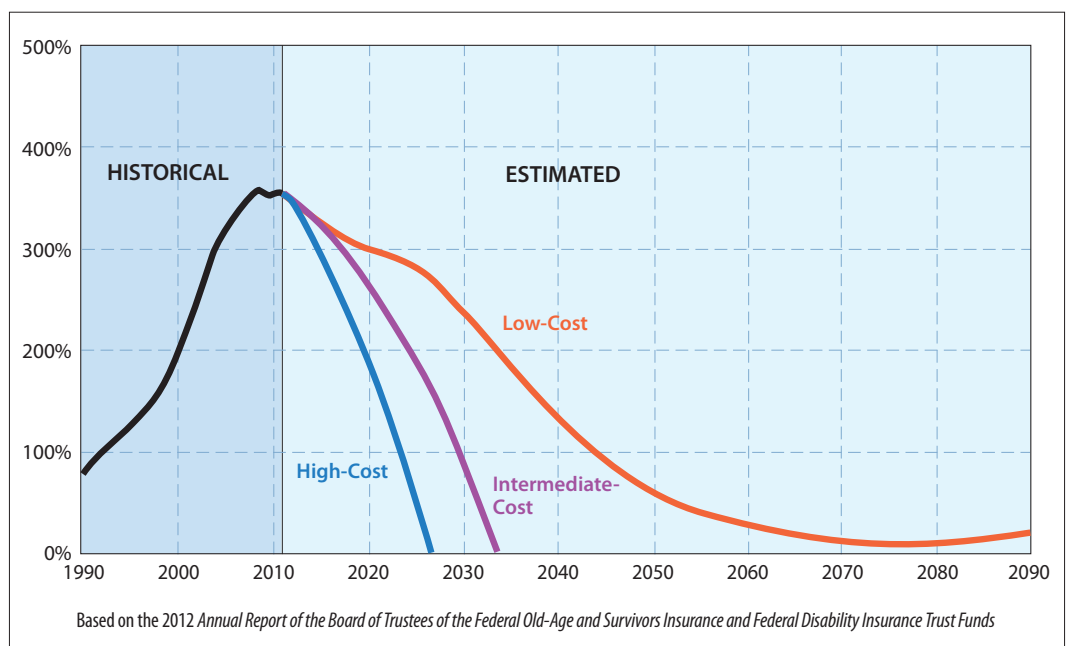
### Unfunded Obligation

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:

$$\begin{aligned} &\text{Present value of future cost (benefits and expenses)} \\ &\textit{minus} \text{ the present value of future income from taxes} \\ &\textit{minus} \text{ current trust fund assets.} \end{aligned}$$

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

**Figure 4: Long-Range Projections of Trust Fund Ratios Under Alternative Scenarios**  
(assets as a percentage of annual cost)



consistent with the primarily pay-as-you-go way the program is designed and currently is 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 2012, the open-group unfunded obligation over the next 75 years was \$8.6 trillion. This represents 2.5 percent of taxable payroll, or 0.9 percent of GDP. A year ago, these figures respectively were \$6.5 trillion, 2.1 percent of taxable payroll, and 0.7 percent of GDP.

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 also is 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 1.12 percent to 1.71 percent, for example, the actuarial deficit would be reduced from 2.67 percent of taxable payroll to 1.77 percent, and the year of trust fund exhaustion would be extended from 2033 to 2036.

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

	Estimated 2011 Value	Ultimate Value		
		Low-Cost Assumptions	Intermediate Assumptions	High-Cost Assumptions
Fertility (children per woman)	2.03	2.3	2.0	1.7
Mortality reduction (assumed average annual decrease in adjusted death rates)	0.94%	0.39%	0.77%	1.18%
Annual net immigration (thousands)	900	1,305	1,025	770
Productivity growth (total U.S. economy)	0.4%	1.98%	1.68%	1.38%
Real-wage growth	(0.1)%	1.71%	1.12%	0.51%

Based on the 2012 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
<b>Total Fertility Rate</b>			
Ultimate assumption (children per woman)	2.3	2.0	1.7
■ 75-year actuarial deficit	2.29%	2.67%	3.05%
■ Year of combined trust fund exhaustion	2033	2033	2033
<b>Mortality Reduction</b>			
Average annual reduction in adjusted death rates over 75-year period	0.39%	0.77%	1.18%
■ 75-year actuarial deficit	2.19%	2.67%	3.16%
■ Year of combined trust fund exhaustion	2033	2033	2032
<b>Real-wage Growth</b>			
Ultimate assumption (annual rate)	1.71%	1.12%	0.51%
■ 75-year actuarial deficit	1.77%	2.67%	3.61%
■ Year of combined trust fund exhaustion	2036	2033	2031

Based on the 2012 *Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*

## REFERENCES

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