112th Congress, 2d Session – – – – – – – – – – – – – – – House Document 112-102

THE 2012 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS

COMMUNICATION

FROM

THE BOARD OF TRUSTEES, FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS

TRANSMITTING

THE 2012 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS

April 25, 2012.—Referred to the Committee on Ways and Means and ordered to be printed

---

U.S. GOVERNMENT PRINTING OFFICE

73-947 WASHINGTON: 2012

LETTER OF TRANSMITTAL

BOARD OF TRUSTEES OF THE
FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND
FEDERAL DISABILITY INSURANCE TRUST FUNDS,
Washington, D.C., April 23, 2012

The Honorable John A. Boehner
Speaker of the House of Representatives
Washington, D.C.

The Honorable Joseph R. Biden, Jr.
President of the Senate
Washington, D.C.

Dear Mr. Speaker and Mr. President:

We have the honor of transmitting to you the 2012 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, the 72nd such report.

Respectfully,

Timothy F. Geithner, *Secretary of the Treasury, and Managing Trustee of the Trust Funds.*

Hilda L. Solis, *Secretary of Labor, and Trustee.*

Kathleen Sebelius, *Secretary of Health and Human Services, and Trustee.*

Michael J. Astrue, *Commissioner of Social Security, and Trustee.*

Charles P. Blahous III, *Trustee.*

Robert D. Reischauer, *Trustee.*

Carolyn W. Colvin, *Deputy Commissioner of Social Security, and Secretary, Board of Trustees.*

CONTENTS

THE 2012 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS

I. INTRODUCTION

The Old-Age, Survivors, and Disability Insurance (OASDI) program makes monthly income available to insured workers and their families at retirement, death, or disability. The OASDI program consists of two parts. Retired workers, their families, and survivors of deceased workers receive monthly benefits under the Old-Age and Survivors Insurance (OASI) program. Disabled workers and their families receive monthly benefits under the Disability Insurance (DI) program.

The Social Security Act established the Board of Trustees to oversee the financial operations of the OASI and DI Trust Funds. The Board is composed of six members. Four members serve by virtue of their positions in the Federal Government: the Secretary of the Treasury, who is the Managing Trustee; the Secretary of Labor; the Secretary of Health and Human Services; and the Commissioner of Social Security. The President appoints and the Senate confirms the other two members to serve as public representatives. The Deputy Commissioner of the Social Security Administration (SSA) serves as Secretary of the Board.

The Social Security Act requires that the Board, among other duties, report annually to the Congress on the actuarial status and financial operations of the OASI and DI Trust Funds. The 2012 report is the 72nd such report.

II. OVERVIEW

A. HIGHLIGHTS

This section summarizes the report's major findings.

In 2011

At the end of 2011, the OASDI program was providing benefits to about 55 million people: 38 million retired workers and dependents of retired workers, 6 million survivors of deceased workers, and 11 million disabled workers and dependents of disabled workers. During the year, an estimated 158 million people had earnings covered by Social Security and paid payroll taxes. Total expenditures in 2011 were $736 billion. Total income was $805 billion, which consisted of $691 billion in non-interest income and $114 billion in interest earnings. Assets held in special issue U.S. Treasury securities grew to $2.7 trillion.

Short-Range Results

In 2011, Social Security's cost continued to exceed both the program's tax income and its non-interest income, a trend that the Trustees project to continue throughout the short-range period and beyond. The 2011 deficit of tax income relative to cost was $148 billion, and the projected 2012 deficit is $165 billion. The sizes of these deficits are largely due to a temporary reduction in the Social Security payroll tax for 2011 and 2012. The legislation establishing the payroll tax reduction also provided for transfers from the General Fund of the Treasury to the trust funds to "replicate to the extent possible" revenues that would have occurred in the absence of the payroll tax reduction. Including these general revenue reimbursements, the 2011 deficit of non-interest income relative to cost was $45 billion, and the projected 2012 deficit is $53 billion.

The Trustees project that the assets of the OASI Trust Fund and of the combined OASI and DI Trust Funds will be adequate over the next 10 years under the intermediate assumptions. However, the projected assets of the DI Trust Fund decline steadily, fall below 100 percent of annual cost by the beginning of 2013, and continue to decline until the trust fund is exhausted in 2016. The DI Trust Fund does not satisfy the short-range test of financial adequacy because the test requires that the trust fund remain above 100 percent of annual cost throughout the short-range period.

The Trustees project that the combined assets of the OASI and DI Trust Funds will increase for the next several years, growing from $2,678 billion at the beginning of 2012 to $3,061 billion at the beginning of 2021. At the same

time, the ratio of assets to cost continues to decline, from 340 percent of annual cost for 2012 to 227 percent of annual cost for 2021. Assets increase because annual cost is less than total income for 2012 through 2020. Beginning in 2021, however, annual cost exceeds total income, and therefore assets begin to decline, reaching $3,053 billion at the beginning of 2022. Excluding interest earned on trust fund assets from the comparison, annual cost exceeds non-interest income in 2012 and remains higher throughout the remainder of the short-range period. For last year's report, the Trustees projected that combined assets would be 347 percent of annual cost at the beginning of 2012 and 272 percent at the beginning of 2021. Projected trust fund assets decline more quickly than in last year's report principally due to updated economic data and assumptions.

Long-Range Results

The Trustees project that annual cost will exceed non-interest income throughout the long-range period under the intermediate assumptions. The dollar level of the combined trust funds declines beginning in 2021 until assets are exhausted in 2033. Considered separately, the DI Trust Fund becomes exhausted in 2016 and the OASI Trust Fund becomes exhausted in 2035. The projected exhaustion date occurs two years earlier for the DI Trust Fund and three years earlier for the OASI Trust Fund and the combined OASI and DI Trust Funds.

Projected OASDI cost generally increases more rapidly than projected non-interest income through 2035 because the retirement of the baby-boom generation will increase the number of beneficiaries much faster than subsequent lower-birth-rate generations increase the number of workers. From 2035 to 2050, the cost rate declines due principally to the aging of the already retired baby-boom generation. Thereafter, increases in life expectancy cause OASDI cost to increase generally relative to non-interest income, but more slowly than prior to 2035.

The projected OASDI annual cost rate increases from 13.83 percent of taxable payroll for 2012 to 17.41 percent for 2035 and to 17.83 percent for 2086, a level that is 4.50 percent of taxable payroll more than the projected income rate for 2086. For last year's report, the Trustees estimated the OASDI cost for 2086 at 17.59 percent, or 4.28 percent of payroll more than the annual income rate for that year. Expressed in relation to the projected gross domestic product (GDP), OASDI cost rises from the current level of 5.0 percent of GDP to about 6.4 percent by 2035, then declines to 6.1 percent by 2055, and remains between 6.0 and 6.1 percent through 2086.

For the 75-year projection period, the actuarial deficit is 2.67 percent of taxable payroll, 0.44 percentage point larger than in last year's report. The open group unfunded obligation for OASDI over the 75-year period is $8.6 trillion in present value and is $2.1 trillion more than the measured level of a year ago. If the assumptions, methods, starting values, and the law had all remained unchanged, the unfunded obligation would have risen to about $7.0 trillion due to the change in the valuation date. The remaining increase in the unfunded obligation is primarily due to updated data and economic assumptions.

Conclusion

Under the long-range intermediate assumptions, the Trustees project that annual cost for the OASDI program will exceed non-interest income in 2012 and remain higher throughout the remainder of the long-range period. The projected combined OASI and DI Trust Fund assets increase through 2020, begin to decline in 2021, and become exhausted and unable to pay scheduled benefits in full on a timely basis in 2033. However, the DI Trust Fund becomes exhausted in 2016, so legislative action is needed as soon as possible. In the absence of a long-term solution, lawmakers could reallocate the payroll tax rate between OASI and DI, as they did in 1994.

For the combined OASI and DI Trust Funds to remain solvent throughout the 75-year projection period, lawmakers could: (1) increase the combined payroll tax rate for the period in a manner equivalent to an immediate and permanent increase of 2.61 percentage points (from its current level of 12.40 percent to 15.01 percent);[1] (2) reduce scheduled benefits for the period in a manner equivalent to an immediate and permanent reduction of 16.2 percent; (3) draw on alternative sources of revenue; or (4) adopt some combination of these approaches. Lawmakers would have to make significantly larger changes for future beneficiaries if they decide to avoid changes for current beneficiaries and those close to retirement age.

The Trustees recommend that lawmakers address the projected trust fund shortfalls in a timely way in order to phase in necessary changes and give workers and beneficiaries time to adjust to them. Implementing changes soon would allow more generations to share in the needed revenue increases or reductions in scheduled benefits. Social Security will play a critical role in

[1] The necessary tax rate increase of 2.61 percent differs from the 2.67 percent actuarial deficit for two reasons. First, the necessary tax rate is the rate required to maintain solvency throughout the period that does not result in any trust fund reserve at the end of the period, whereas the actuarial deficit incorporates an ending trust fund balance equal to 1 year's cost. Second, the necessary tax rate reflects a behavioral response to tax rate changes, whereas the actuarial deficit does not. In particular, the calculation of the necessary tax rate assumes that an increase in payroll taxes results in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

the lives of 56 million beneficiaries and 159 million covered workers and their families in 2012. With informed discussion, creative thinking, and timely legislative action, Social Security can continue to protect future generations.

B. TRUST FUND FINANCIAL OPERATIONS IN 2011

Table II.B1 shows the income, expenditures, and assets for the OASI, the DI, and the combined OASI and DI Trust Funds in calendar year 2011.

Table II.B1.—Summary of 2011 Trust Fund Financial Operations
[In billions]

	OASI	DI	OASDI
Assets at the end of 2010	$2,429.0	$179.9	$2,609.0
Total income in 2011	698.8	106.3	805.1
Net payroll tax contributions	482.4	81.9	564.2
Reimbursements from General Fund of the Treasury	87.8	14.9	102.7
Taxation of benefits	22.2	1.6	23.8
Interest	106.5	7.9	114.4
Total expenditures in 2011	603.8	132.3	736.1
Benefit payments	596.2	128.9	725.1
Railroad Retirement financial interchange	4.1	.5	4.6
Administrative expenses	3.5	2.9	6.4
Net increase in assets in 2011	95.0	-26.1	69.0
Assets at the end of 2011	2,524.1	153.9	2,677.9

Note: Totals do not necessarily equal the sums of rounded components.

In 2011, net payroll tax contributions accounted for 70 percent of total trust fund income. Net payroll tax contributions consist of taxes paid by employees, employers, and the self-employed on earnings covered by Social Security. These taxes are paid on covered earnings up to a specified maximum annual amount, which was $106,800 in 2011. Table II.B2 shows the tax rates scheduled under current law for 2011.

In 2011, approximately 13 percent of OASDI Trust Fund income came from reimbursements from the General Fund of the Treasury. Public Law 111-312, the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, accounts for almost all of the reimbursement for the year. This act specified general fund reimbursement for temporary reductions in revenue due to reduced payroll tax rates for employees and for self-employed workers.

Three percent of OASDI Trust Fund income in 2011 came from subjecting up to 50 percent of Social Security benefits above specified levels to Federal personal income taxation, and 14 percent of OASDI income came from interest earned on investment of OASDI Trust Fund reserves. The Department of the Treasury invests trust fund assets in interest-bearing securities of the U.S.

Government. In 2011, the combined trust fund assets earned interest at an effective annual rate of 4.4 percent. Almost 99 percent of expenditures from the combined OASI and DI Trust Funds in 2011 were retirement, survivor, and disability benefits totaling $725.1 billion. The financial interchange with the Railroad Retirement program was the source of a net payment of $4.6 billion from the combined OASI and DI Trust Funds, which was about 0.6 percent of total expenditures. The administrative expenses of the Social Security program were $6.4 billion, which was about 0.9 percent of total expenditures.

Assets of the trust funds provide a reserve to pay benefits whenever total program cost exceeds income. Trust fund assets increased by $69.0 billion in 2011 because total income to the combined funds, including interest earned on trust fund assets, exceeded total expenditures. At the end of 2011, the combined assets of the OASI and the DI Trust Funds were 340 percent of estimated expenditures for 2012, down from an actual level of 354 percent at the end of 2010.

Table II.B2.—Payroll Tax Contribution Rates for 2011
[In percent]

	OASI	DI	OASDI
Payroll tax contribution rate for employees	3.59	0.61	4.20
Payroll tax contribution rate for employers	5.30	.90	6.20
Payroll tax contribution rate for self-employed persons	8.89	1.51	10.40

Note: Public Law 111-312 reduced the OASDI payroll tax rate for 2011 by 2 percentage points for employees and for self-employed workers. This law required that the General Fund of the Treasury reimburse the OASI and DI Trust Funds for these temporary reductions in 2011 payroll tax revenue.

C. ASSUMPTIONS ABOUT THE FUTURE

The future income and expenditures of the OASI and DI Trust Funds will depend on many factors, including the size and characteristics of the population receiving benefits, the level of monthly benefit amounts, the size of the workforce, and the level of covered workers' earnings. These factors will depend in turn on future birth rates, death rates, immigration, marriage and divorce rates, retirement-age patterns, disability incidence and termination rates, employment rates, productivity gains, wage increases, inflation, interest rates, and many other demographic, economic, and program-specific factors.

Table II.C1 presents key demographic and economic assumptions for three alternative scenarios. The intermediate assumptions reflect the Trustees' best estimates of future experience. Therefore, most of the figures in this overview depict only the outcomes under the intermediate assumptions. Any projection of the future is, of course, uncertain. For this reason, the Trustees also present results under low-cost and high-cost alternatives to provide a range of possible future experience. The actual future costs are unlikely to be as extreme as those portrayed by the low-cost and high-cost projections. A separate section on the uncertainty of the projections, beginning on page 16, highlights the implications of these alternative scenarios.

The Trustees reexamine the assumptions each year in light of recent experience and new information. This annual review helps to ensure that the Trustees' assumptions provide the best estimate of future possibilities.

Table II.C1.—Long-Range Values[a] of Key Demographic and Economic Assumptions for the 75-year Projection Period

Long-range assumptions	Intermediate	Low-cost	High-cost
Total fertility rate (children per woman), starting in 2036	2.0	2.3	1.7
Average annual percentage reduction in total age-sex-adjusted death rates from 2011 to 2086	.77	.39	1.18
Average annual net immigration (in thousands) for years 2012-86	1,080	1,375	790
Productivity (total U.S. economy), starting in 2024	1.68	1.98	1.38
Average annual percentage change in average wage in covered employment from 2021 to 2086	3.92	3.51	4.31
Consumer Price Index (CPI), starting in 2021	2.80	1.80	3.80
Average annual real-wage differential (percent) for years 2022-86	1.12	1.71	.51
Unemployment rate (percent), starting in 2021	5.5	4.5	6.5
Annual trust fund real interest rate (percent), starting in 2022	2.9	3.4	2.4

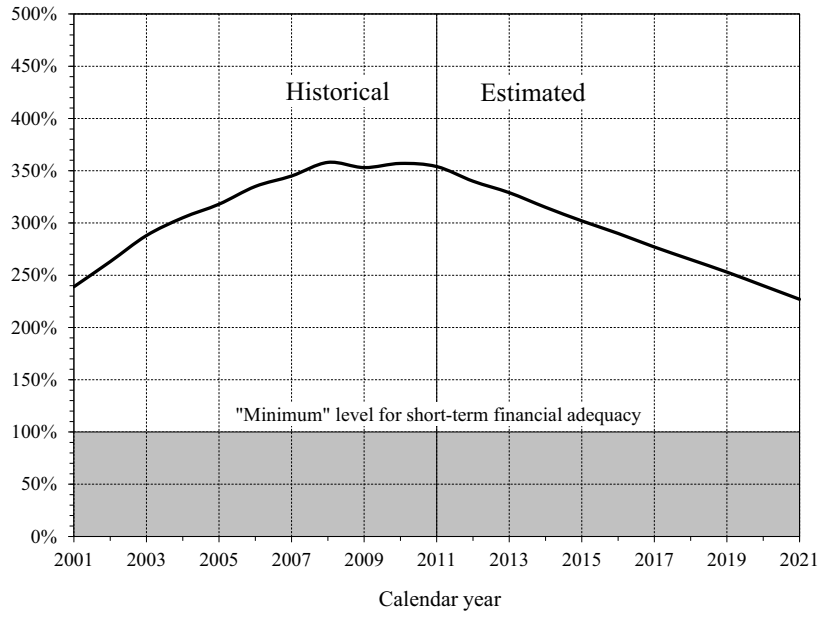
[a] See chapter V for details, including historical values and projected values.

D. PROJECTIONS OF FUTURE FINANCIAL STATUS

Short-Range Actuarial Estimates

For the short-range period (2012 through 2021), the Trustees measure financial adequacy by comparing projected assets at the beginning of each year to projected program cost for that year under the intermediate set of assumptions. A trust fund ratio of 100 percent or more — that is, assets at the beginning of each year at least equal to projected cost for the year — is a good indication that the trust fund can cover most short-term contingencies. The projected trust fund ratios under the intermediate assumptions for OASI alone, and for OASI and DI combined, exceed 100 percent throughout the short-range period. Therefore, OASI and OASDI satisfy the Trustees' short-term test of financial adequacy. However, the DI Trust Fund fails the Trustees' short-term test of financial adequacy. The Trustees project that the DI trust fund ratio will fall below 100 percent by the beginning of 2013. After 2013, the projected DI trust fund ratio continues to decline until the trust fund is exhausted in 2016. Figure II.D1 shows that the trust fund ratios for the combined OASI and DI Trust Funds decline consistently after 2010.

Figure II.D1.—Short-Range OASDI Trust Fund Ratio
[Assets as a percentage of annual expenditures]



As it has since 2010, projected cost exceeds non-interest income throughout the short-range period. Cost is less than total income until the last year of the short-range period (2021), when cost exceeds total income. While trust fund assets continue to grow through 2020, they grow more slowly than cost, causing the trust fund ratio to decline, as shown in figure II.D1.

Long-Range Actuarial Estimates

The Trustees use three types of measures to assess the actuarial status of the program over the next 75 years: (1) annual cash-flow measures, including income rates, cost rates, and balances; (2) trust fund ratios; and (3) summary measures such as actuarial balances and open group unfunded obligations. The Trustees most often express these measures as percentages of taxable payroll, but may also express the measures as percentages of gross domestic product (GDP) or in dollars. The Trustees also present summary measures over the infinite horizon.[1] The infinite horizon values provide an additional indication of Social Security's very-long-run financial condition, but are subject to much greater uncertainty.

Annual Income Rates, Cost Rates, and Balances

Figure II.D2 illustrates the year-by-year relationship among OASDI income (excluding interest), cost (including scheduled benefits), and expenditures (including payable benefits) for the full 75-year period. The figure shows all values as percentages of taxable payroll. Under the intermediate assumptions, demographic factors would by themselves cause the projected cost rate to rise rapidly for the next two decades before leveling off in about 2035. However, the recent recession led to a reduction in the tax base and a surge in beneficiaries, which in turn sharply increased the cost rate. This recession effect obscures the underlying rising trend in the cost rate for the next 5 years. The projected income rate is stable at about 13 percent throughout the 75-year period.

Annual OASDI cost exceeded non-interest income in 2010 for the first time since 1983. The Trustees project that cost will continue to exceed non-interest income throughout the 75-year valuation period. Nevertheless, total trust fund income, including interest income, is more than is necessary to cover costs through 2020, so trust fund assets continue to grow. Beginning in 2021, cost exceeds total income and combined OASI and DI Trust Fund assets diminish until they become exhausted in 2033. After trust fund exhaustion,

[1] The definition of infinite horizon appears in the Glossary.

continuing income is sufficient to support expenditures at a level of 75 percent of program cost for the rest of 2033, declining to 73 percent for 2086.

Figure II.D2.—OASDI Income, Cost, and Expenditures as Percentages of Taxable Payroll
[Under Intermediate Assumptions]

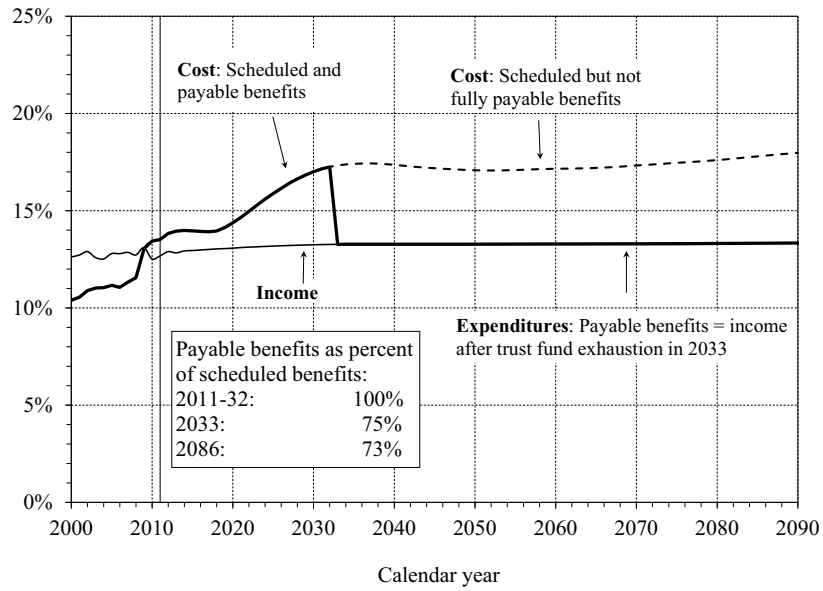
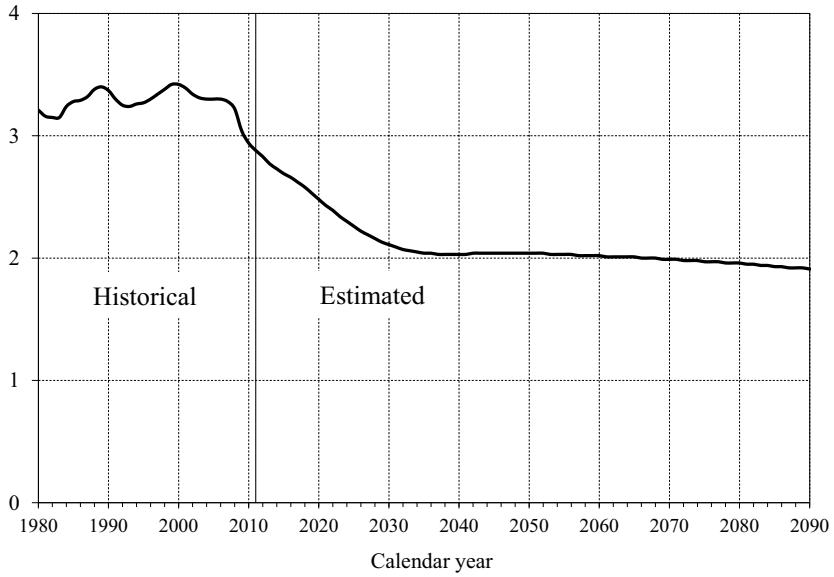


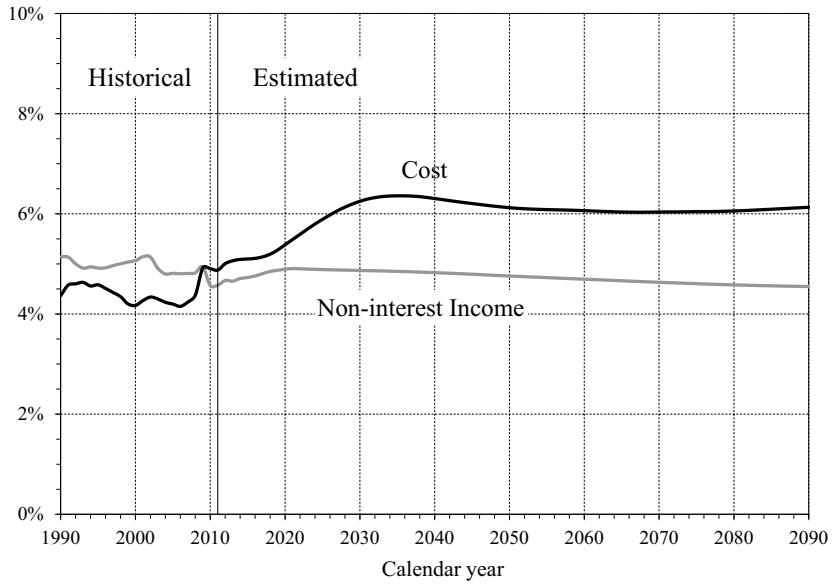
Figure II.D3 shows the estimated number of workers per beneficiary. Figures II.D2 and II.D3 illustrate the inverse relationship between cost rates and the number of workers per beneficiary. In particular, the projected future increase in the cost rate reflects a projected decline in the number of covered workers per beneficiary. There were about 2.9 workers for every OASDI beneficiary in 2011. This ratio had been extremely stable, remaining between 3.2 and 3.4 from 1974 through 2008, and has declined since then due to the economic recession and the beginning of the demographic shift that will drive this ratio over the next 20 years. The Trustees project that the ratio of workers to beneficiaries will continue to decline, even as the economy recovers, due to this demographic shift — as workers of lower-birth-rate generations replace workers of the baby-boom generation. The ratio of workers to beneficiaries reaches 2.0 by 2035 when the baby-boom generation will have largely retired, with a further gradual decline thereafter due to increasing longevity.

Figure II.D3.—Number of Covered Workers Per OASDI Beneficiary



Another important way to look at Social Security's future is to view its annual cost and non-interest income as a share of U.S. economic output. As shown in figure II.D4, the Trustees project that Social Security's cost as a percent of GDP will grow from 4.4 percent in 2008 to about 6.4 percent by 2035, then decline to 6.1 percent by 2055, and remain between 6.0 and 6.1 percent through 2086. As the economy recovers, Social Security's non-interest income, which reflects scheduled tax rates, increases from its current level of about 4.7 percent of GDP to about 4.9 percent of GDP for 2021. Thereafter, non-interest income as a percent of GDP declines gradually, to about 4.6 percent by 2086, because the Trustees expect the share of employee compensation provided in noncovered fringe benefits to increase gradually.

Figure II.D4.—OASDI Cost and Non-interest Income as a Percentage of GDP



Trust Fund Ratios

The trust fund ratio is defined as the assets at the beginning of a year expressed as a percentage of the cost during the year. The trust fund ratio thus represents the proportion of a year's cost which could be paid solely with the assets at the beginning of the year. Table II.D1 displays the projected maximum trust fund ratios during the long-range period for the OASI, DI, and combined funds. The table also shows the year of maximum projected trust fund ratio during the long-range projection period (2012-86) and the year of trust fund exhaustion. While the trust fund ratio for 2012 is the highest for this period, the trust fund ratio was higher for some earlier years.

Table II.D1.—Projected Maximum Trust Fund Ratios During the Long-Range Period and Trust Fund Exhaustion Dates
[Under the Intermediate Assumptions]

	OASI	DI	OASDI
Maximum trust fund ratio (percent)	390	109	340
Year attained	2012	2012	2012
Year of trust fund exhaustion	2035	2016	2033

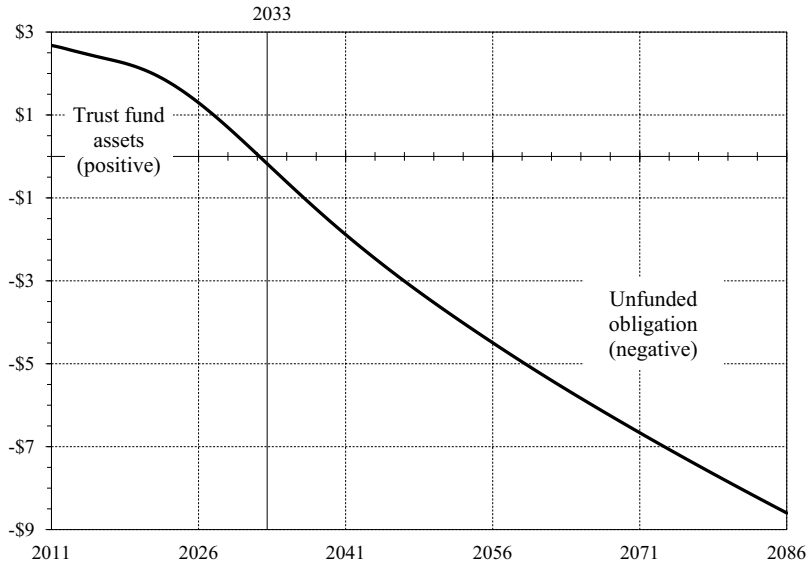
Summary Measures

The actuarial balance is a summary measure of the program's financial status through the end of the 75-year valuation period. The actuarial balance measure includes the trust fund assets at the beginning of the period, so it is essentially the difference between the income and cost from 1937 through the end of the valuation period. The Trustees express actuarial balance as a percentage of the taxable payroll for the valuation period, and refer to a negative actuarial balance as an actuarial deficit. In other words, the actuarial deficit is the percentage that could be added to the current-law income rate for each of the next 75 years, or subtracted from the cost rate for each year, to make the trust fund assets at the end of the period equal to the following year's projected cost. More generally, the actuarial deficit is the average amount of change in income or cost that is needed throughout the valuation period in order to achieve actuarial balance. In this report, the actuarial deficit for the combined OASI and DI Trust Funds under the intermediate assumptions is 2.67 percent of taxable payroll. The actuarial deficit was 2.22 percent in the 2011 report. If the assumptions, methods, starting values, and the law had all remained unchanged from last year, the actuarial deficit would have increased to 2.28 percent of payroll solely due to advancing the valuation period by 1 year.

Another way to illustrate the projected financial shortfall of the OASDI program is to examine the cumulative present value of scheduled income less cost. Figure II.D5 shows the present value of cumulative OASDI income less cost from the inception of the program through years 2011-86. A positive cumulative value represents the level of trust fund assets at the end of the selected year. A negative value is the unfunded obligation through the selected year. The balance of the combined trust funds was $2.7 trillion at the end of 2011. The trust fund assets decline on a present value basis after 2011, but remain positive through 2032. However, after 2032 this cumulative amount becomes negative, which means that the combined OASI and DI Trust Funds have a net unfunded obligation through each year after 2032. Through the end of 2086, the combined funds have a present-value unfunded obligation of $8.6 trillion. This unfunded obligation represents 2.52 percent of taxable payroll and 0.9 percent of GDP for the 75-year valuation period. The unfunded obligation as a share of taxable payroll (2.52 percent) and the actuarial deficit (2.67 percent) are similar measures, but differ because the actuarial deficit incorporates the cost of having an ending trust fund balance equal to 1 year's cost.

Figures II.D2, II.D4, and II.D5 show that the program's financial condition is worsening at the end of the projection period. Trends in annual balances and cumulative values toward the end of the 75-year period provide an indication of the program's ability to maintain solvency beyond 75 years. Consideration of summary measures alone for a 75-year period can lead to incorrect perceptions and to policy prescriptions that do not achieve sustainable solvency.[1]

Figure II.D5.—Cumulative Scheduled OASDI Income Less Cost, From Program Inception Through Years 2011-86
[Present value as of January 1, 2012, in trillions]



The Trustees also consider summary measures over the infinite horizon. The infinite horizon values provide an additional indication of Social Security's financial condition over a period extending indefinitely into the future, but results are subject to much greater uncertainty.

Extending the horizon beyond 75 years increases the measured unfunded obligation. Through the infinite horizon, the unfunded obligation, or shortfall, equals $20.5 trillion in present value, which represents 3.9 percent of future taxable payroll or 1.3 percent of future GDP. The summarized short-

[1] Sustainable solvency occurs when the program has positive trust fund ratios throughout the 75-year projection period that are either stable or rising at the end of the period.

falls for the 75-year period and through the infinite horizon both reflect annual cash-flow shortfalls for all years after trust fund exhaustion. The annual shortfalls after trust fund exhaustion rise slowly and reflect increases in life expectancy after 2033. The summarized shortfalls for the 75-year period, as percentages of taxable payroll and GDP, are lower than those for the infinite horizon principally because only about three-quarters of the years in the 75-year period have unfunded annual shortfalls.

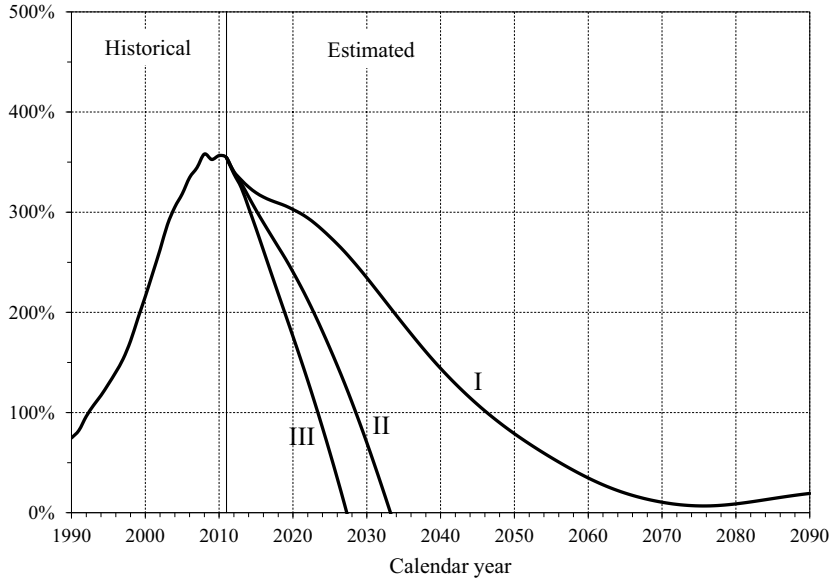
The measured unfunded obligation over the infinite horizon increased from $17.9 trillion in last year's report to $20.5 trillion in this year's report. If the assumptions, methods, starting values, and the law had all remained unchanged, the unfunded obligation over the infinite horizon would have risen to $18.7 trillion solely due to the change in the valuation date. Expressed as a percentage of taxable payroll, the measured unfunded obligation through the infinite horizon increased from 3.6 percent in last year's report to 3.9 percent in this year's report. As a percentage of GDP, the measured unfunded obligation through the infinite horizon increased from 1.2 percent in last year's report to 1.3 percent in this year's report.

Uncertainty of the Projections

Significant uncertainty surrounds the intermediate assumptions. The Trustees use several methods to help illustrate that uncertainty.

A first approach uses alternative scenarios reflecting low-cost (alternative I) and high-cost (alternative III) sets of assumptions. Figure II.D6 shows the projected trust fund ratios for the combined OASI and DI Trust Funds under the intermediate, low-cost, and high-cost assumptions. The low-cost alternative includes a higher ultimate total fertility rate, slower improvement in mortality, a higher real-wage differential, a higher ultimate real interest rate, and a lower unemployment rate. The high-cost alternative, in contrast, includes a lower ultimate total fertility rate, more rapid improvement in mortality, a lower real-wage differential, a lower ultimate real interest rate, and a higher unemployment rate. These alternatives are not intended to suggest that all parameters would be likely to differ from the intermediate values in the same direction, but are intended to illustrate the effect of clearly defined scenarios that are, on balance, very favorable or unfavorable for the program's financial status. Actual future costs are unlikely to be as extreme as those portrayed by the low-cost and high-cost projections. The method for constructing the low-cost and high-cost projections does not lend itself to estimating the probability that actual experience will lie within or outside the range they define.

Figure II.D6.—Long-Range OASDI Trust Fund Ratios Under Alternative Scenarios
[Assets as a percentage of annual cost]

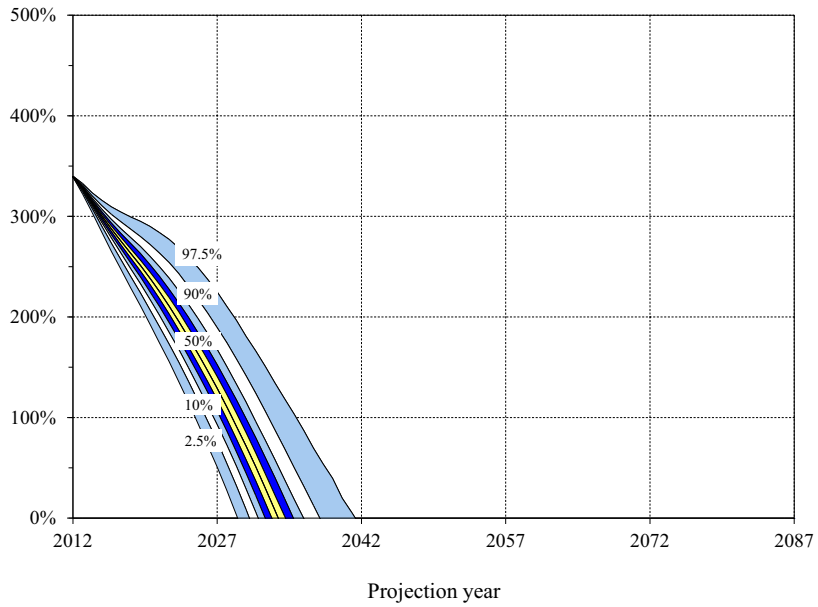


Appendix D of this report presents long-range sensitivity analysis for the OASDI program. By varying one parameter at a time, sensitivity analysis provides a second approach for illustrating the uncertainty surrounding projections into the future.

A third approach uses stochastic simulations that reflect randomly assigned annual values for each parameter. These simulations produce a distribution of projections and corresponding probabilities that future outcomes will fall within or outside a given range. The results of the stochastic simulations, discussed in more detail in appendix E, suggest that trust fund exhaustion (i.e. the point at which the trust fund ratio reaches zero) is likely by mid-century. In particular, figure II.D7 suggests that based on these stochastic simulations, trust fund assets will exhaust between 2029 and 2041 with a 95-percent probability.

The stochastic results suggest that trust fund ratios as high as the low-cost alternative are unlikely. The difference in the ranges of the projected trust fund ratios between two of the methods for illustrating uncertainty (alternative scenarios and stochastic simulations) is substantially due to the different assignment of real interest rates in these two methods. Appendix E includes an explanation of the different treatments.

Figure II.D7.—Long-Range OASDI Trust Fund Ratios From Stochastic Modeling



Changes From Last Year's Report

The projected long-range OASDI actuarial deficit increased from 2.22 percent of taxable payroll for last year's report to 2.67 percent of taxable payroll for this year's report. Changes in economic projections, due to new starting values and revised assumptions, are the most significant of several factors contributing to the increase in the deficit. For a detailed description of the specific changes identified in table II.D2, see section IV.B.7.

Table II.D2.—Reasons for Change in the 75-Year Actuarial Balance, Based on Intermediate Assumptions
[As a percentage of taxable payroll]

Item	OASI	DI	OASDI
Shown in last year's report:			
Income rate	12.11	1.91	14.02
Cost rate	14.04	2.21	16.25
Actuarial balance	**-1.92**	**-.30**	**-2.22**
Changes in actuarial balance due to changes in:			
Legislation / Regulation	.00	.00	.00
Valuation period[a]	-.05	-.01	-.05
Demographic data and assumptions	-.05	.00	-.05
Economic data and assumptions	-.20	-.01	-.21
Disability data and assumptions	.00	-.05	-.04
Methods and programmatic data	-.09	.00	-.08
Total change in actuarial balance	-.37	-.07	-.44
Shown in this report:			
Actuarial balance	**-2.30**	**-.37**	**-2.67**
Income rate	12.12	1.90	14.02
Cost rate	14.42	2.27	16.69

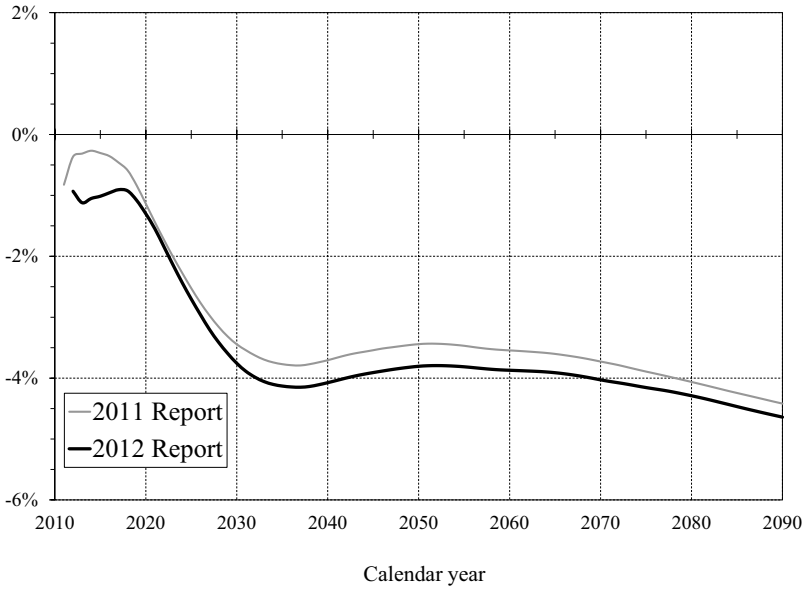
[a] The change in the 75-year valuation period from last year's report to this report means that the 75-year actuarial balance now includes the relatively large negative annual balance for 2086. This change in the valuation period results in a larger long-range actuarial deficit. The actuarial deficit includes the trust fund balance at the beginning of the projection period.

Note: Totals do not necessarily equal the sums of rounded components.

The open group unfunded obligation for the 75-year projection period increased from $6.5 trillion (present discounted value as of January 1, 2011) to $8.6 trillion (present discounted value as of January 1, 2012). The unfunded obligation increased by about $0.5 trillion solely due to advancing the valuation date by 1 year and including the year 2086. The combination of legislative changes, changes in methods, revisions in assumptions, and updated data increased the unfunded obligation by about $1.6 trillion.

This year's projections of annual balances (non-interest income minus cost) are lower than those in last year's report throughout the 75-year projection period. See figure II.D8.

Figure II.D8.—OASDI Annual Balances: 2011 and 2012 Trustees Reports
[As a percentage of taxable payroll, under the intermediate assumptions]



E. CONCLUSION

Under current law, the projected cost of Social Security generally increases faster than projected income because of the aging of the baby-boom generation, continuing low fertility since the baby-boom period, and increasing life expectancy. Based on the Trustees' best estimate, program cost exceeds non-interest income for 2012, as it did for 2010 and 2011, and remains higher than non-interest income throughout the remainder of the 75-year projection period. Social Security's combined trust funds increase with the help of interest income through 2020 and allow full payment of scheduled benefits on a timely basis until the trust funds become exhausted in 2033. At that time, projected continuing income to the trust funds equals about 75 percent of program cost. By 2086, continuing income equals about 73 percent of program cost.

The Trustees project that the OASI Trust Fund and the DI Trust Fund will have sufficient assets to pay full benefits on time until 2035 and 2016, respectively. Legislative action is needed as soon as possible to prevent exhaustion of the DI Trust Fund. In the absence of a longer-term solution, lawmakers could reallocate the payroll tax rate between OASI and DI, as they did in 1994.

The Trustees estimate that the 75-year actuarial deficit for the combined trust funds is 2.67 percent of taxable payroll—0.44 percentage point larger than the 2.22 percent deficit in last year's report. For the combined OASI and DI Trust Funds to remain solvent throughout the 75-year projection period, lawmakers could: (1) increase the combined payroll tax rate during the period in a manner equivalent to an immediate and permanent increase of 2.61 percentage points[1] (from its current level of 12.40 percent to 15.01 percent); (2) reduce scheduled benefits during the period in a manner equivalent to an immediate and permanent reduction of 16.2 percent; (3) draw on alternative sources of revenue; or (4) adopt some combination of these approaches.

If lawmakers do not take substantial action for several years, then changes necessary to maintain Social Security solvency will be concentrated on fewer years and fewer generations. Lawmakers will have to make large and sudden

[1] The necessary tax rate of 2.61 percent differs from the 2.67 percent actuarial deficit for two reasons. First, the necessary tax rate is the rate required to maintain solvency throughout the period that does not result in any trust fund reserve at the end of the period, whereas the actuarial deficit incorporates an ending trust fund balance equal to 1 year's cost. Second, the necessary tax rate reflects a behavioral response to tax rate changes, whereas the actuarial deficit does not. In particular, the calculation of the necessary tax rate assumes that an increase in payroll taxes results in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

changes if they defer action until the combined trust funds become exhausted in 2033. For example, either of the following two actions would eliminate the shortfall for the 75-year period as a whole by specifically eliminating annual deficits after trust fund exhaustion:

- Lawmakers could raise payroll taxes to finance scheduled benefits fully in every year starting in 2033. They could increase the payroll tax rate to about 16.7 percent at the point of trust fund exhaustion in 2033, with the rate reaching about 17.1 percent in 2086.
- Similarly, lawmakers could reduce benefits to the level that would be payable with scheduled tax rates in each year beginning in 2033. They could reduce scheduled benefits by 25 percent at the point of trust fund exhaustion in 2033, with reductions reaching 27 percent in 2086.

The illustrations above make the critical assumption that lawmakers would permit sudden changes in 2033 that would either increase tax rates substantially for all workers or reduce benefits substantially for all beneficiaries, regardless of their age or when they started to receive benefits.

If the life expectancy of the population continues to improve after the end of the 75-year period, Social Security's annual cost will very likely continue to grow faster than non-interest income after 2086. As a result, lawmakers would have to make significantly larger changes to ensure solvency of the system beyond 2086.

The Trustees recommend that lawmakers address the projected trust fund shortfalls in a timely way in order to phase in necessary changes and give workers and beneficiaries time to adjust to them. Implementing changes soon would allow more generations to share in the needed revenue increases or reductions in scheduled benefits. Social Security will play a critical role in the lives of 56 million beneficiaries and 159 million covered workers and their families in 2012. With informed discussion, creative thinking, and timely legislative action, Social Security can continue to protect future generations.

For further information related to the contents of this report, see the following websites:

- www.socialsecurity.gov/oact/tr/2012/index.html
- www.cms.gov/ReportsTrustFunds/
- www.treasury.gov/resource-center/economic-policy/ss-medicare/Pages/social_security.aspx

III. FINANCIAL OPERATIONS OF THE TRUST FUNDS AND LEGISLATIVE CHANGES IN THE LAST YEAR

A. OPERATIONS OF THE OLD-AGE AND SURVIVORS INSURANCE (OASI) AND DISABILITY INSURANCE (DI) TRUST FUNDS, IN CALENDAR YEAR 2011

This section presents detailed information on the operations of the OASI and DI Trust Funds[1] during calendar year 2011. Chapter IV provides projections for calendar years 2012 through 2090.

1. OASI Trust Fund

Table III.A1 presents a statement of the income and disbursements of the Federal Old-Age and Survivors Insurance Trust Fund in calendar year 2011, and of the assets of the fund at the beginning and end of the calendar year. As shown in this table, total trust fund receipts in 2011 amounted to $698.8 billion, while disbursements totaled $603.8 billion, an increase in trust fund assets during 2011 of $95.0 billion.

Total receipts during calendar year 2011 included $484.1 billion in gross payroll tax contributions. The OASI fund paid the general fund $1.8 billion for the estimated amount of employee payroll-tax refunds, partially offsetting these gross contributions. Employees who work for more than one employer during a year and pay contributions on total earnings in excess of the contribution and benefit base are eligible for such refunds. Net payroll tax contributions were therefore $482.4 billion in 2011.

Reimbursements from the General Fund of the Treasury amounted to $87.8 billion in 2011. As shown in the table, Public Law 111-312, the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, accounts for almost all of the reimbursement for the year, or about $87.6 billion. This act specified general fund reimbursement for temporary reductions in employee payroll taxes.

The General Fund of the Treasury reimbursed the OASI Trust Fund approximately $142 million in 2011 under the provisions of Public Law 111-147, the Hiring Incentives to Restore Employment (HIRE) Act. The General Fund reimbursed the OASI Trust Fund about $7 million in 2011 under the provisions of Public Law 110-246, the Food, Conservation, and Energy Act of 2008.

---

[1] See www.socialsecurity.gov/oact/progdata/fundsQuery.html.

The Social Security Administration makes special payments to uninsured persons who meet certain requirements. The General Fund of the Treasury largely reimburses costs associated with providing such payments. In 2011, the general fund reimbursed the OASI Trust Fund approximately $7 thousand. These reimbursements reflect costs incurred in fiscal years 2009 and 2010.

Income based on taxation of benefits amounted to $22.2 billion in 2011. About 99 percent of this income represents amounts credited to the trust funds, on an estimated basis, generally in advance of the actual receipt of taxes by the Treasury. The remaining 1 percent of the total income from taxation of benefits represents amounts withheld from the benefits paid to nonresident aliens.

In 2011, the OASI Trust Fund earned $106.5 billion in net interest, which consisted of: (1) interest earned on the investments of the trust fund; (2) interest on adjustments in the allocation of administrative expenses between the trust fund and the general fund account for the Supplemental Security Income program; (3) interest arising from the revised allocation of administrative expenses among the trust funds; and (4) interest on certain reimbursements to the trust fund.

The remaining receipts, about $1 million, consisted of gifts received under the provisions authorizing the deposit of money gifts or bequests in the trust funds.

Of the $603.8 billion in total OASI disbursements in 2011, $596.2 billion was for net benefit payments, including the reimbursable costs of vocational rehabilitation services.[1] Net benefit payments increased by 3.2 percent from calendar year 2010 to calendar year 2011. Normally, benefit payments increase because of both an increase in the total number of beneficiaries and an increase in the average benefit. The increase in benefit payments was lessened this year because there was no automatic cost-of-living adjustment for December 2010.

[1] Vocational rehabilitation services are furnished to disabled widow(er) beneficiaries and to those children of retired or deceased workers who receive benefits based on disabilities that began before age 22. The Trust Funds reimburse the providers of such services only in those cases where the services contributed to the successful rehabilitation of the beneficiary.

Table III.A1.—Operations of the OASI Trust Fund, Calendar Year 2011
[In millions]

Total assets, December 31, 2010		$2,429,043
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions	$484,141	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-1,790	
Net payroll tax contributions		482,350
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312	87,604	
Reduction in payroll tax contributions due to P.L. 111-147	142	
Reimbursement directed by P.L. 110-246	7	
Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968	[a]	
Payroll tax credits due to P.L. 98-21	[a]	
Net general fund reimbursements		87,753
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	162	
All other, not subject to withholding	22,049	
Total income from taxation of benefits		22,211
Investment income and interest adjustments:		
Interest on investments	106,461	
Interest adjustments[b]	6	
Total investment income and interest adjustments		106,467
Gifts		1
Total receipts		698,781
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death benefits	596,212	
Reimbursement from the general fund for unnegotiated checks	-59	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	1	
Net benefit payments		596,155
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		4,110
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,772	
Department of the Treasury	726	
Offsetting receipts from sales of supplies, materials, etc.	-5	
Miscellaneous reimbursements from the general fund [c]	-7	
Net administrative expenses		3,486
Total disbursements		603,750
Net increase in assets		95,031
Total assets, December 31, 2011		2,524,075

[a] Between -$0.5 and $0.5 million.

[b] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust fund and the general fund account for the Supplemental Security Income program; (2) interest arising from the revised allocation of administrative expenses among the trust funds; and (3) interest on certain reimbursements to the trust fund.

[c] Reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the OASI program.

Note: Totals do not necessarily equal the sums of rounded components.

The Railroad Retirement Act requires an annual financial interchange between the Railroad Retirement program and the OASDI program. The purpose of the interchange is to put the OASI and DI Trust Funds in the same financial position they would have been had railroad employment always

been covered by Social Security. The Railroad Retirement Board and the Social Security Administration calculated an interchange of $4.1 billion from the OASI Trust Fund to the Social Security Equivalent Benefit Account for June 2011.

The remaining $3.5 billion of disbursements from the OASI Trust Fund represents net administrative expenses. The Social Security Administration and the Department of the Treasury initially charge administrative expenses directly to the trust fund on an estimated basis. Periodically, as actual experience develops, they adjust the allocations of administrative expenses for prior periods. These adjustments affect the OASI Trust Fund, the DI Trust Fund, and the general fund account for the Supplemental Security Income program, and include appropriate interest adjustments. As described earlier, the trust fund accounting records such interest adjustments under investment income.

In 2011, the cost of administering the OASI program was 80 percent of OASI net administrative expenses. The Social Security Administration charges such costs to the trust fund ($2.8 billion in 2011). In addition, the Department of the Treasury charges directly to the trust fund expenses ($0.7 billion in 2011) for services provided in administering the OASI program. A relatively small offset ($5 million in 2011) to administrative expenses represents income from the sale of excess supplies and equipment.

Finally, the General Fund of the Treasury makes net reimbursements for administrative costs incurred by the Social Security Administration in performing legislatively mandated activities that are not directly related to the OASI program. These reimbursements include the costs associated with union activities related to administering the OASI program ($4 million in 2011) and with the provision of information to participants in certain pension plans ($3 million in 2011). These miscellaneous reimbursements totaled $7 million in 2011.

The assets of the OASI Trust Fund at the end of calendar year 2011 totaled $2,524.1 billion, consisting of $2,524.9 billion in U.S. Government obligations and, as an offset, an extension of credit of $0.8 billion against securities to be redeemed within the following days. The effective annual rate of interest earned by the assets of the OASI Trust Fund during calendar year 2011 was 4.4 percent, slightly lower than the 4.6 percent earned during calendar year 2010. Table VI.A4, presented in appendix A, shows a detailed listing of OASI Trust Fund holdings by type of security, interest rate, and year of maturity at the end of calendar years 2010 and 2011.

By law, the Department of the Treasury must invest trust fund assets in interest-bearing securities backed by the full faith and credit of the United States Government. Those securities currently held by the OASI Trust Fund are special issues, that is, securities sold only to the trust funds. These special issues are of two types: short-term certificates of indebtedness and longer-term bonds. On a daily basis, the Federal Government issues certificates of indebtedness which mature on the next June 30 following the date of issue. Receipts not required to meet current expenditures are invested in these certificates of indebtedness. The trust fund normally acquires long-term special-issue bonds when special issues of either type mature on June 30. The amount of long-term bonds acquired on June 30 is equal to the amount of special issues maturing (including interest earnings), plus tax receipts for that day, less amounts required to meet expenditures on that day.

Section 201(d) of the Social Security Act provides that the obligations issued for purchase by the OASI and DI Trust Funds shall have maturities fixed with due regard for the needs of the funds. The usual practice has been to spread the holdings of special issues, as of each June 30, so that the amounts maturing in each of the next 15 years are approximately equal. Accordingly, the Department of the Treasury, in consultation with the Chief Actuary of the Social Security Administration, selected the amounts and maturity dates of the special-issue bonds purchased on June 30, 2011, so that the maturity dates of the total portfolio of special issues were spread evenly over the 15-year period 2012-26. The bonds purchased had an interest rate of 2.5 percent. Table III.A7 shows additional details on the investment transactions during 2011, including the amounts of bonds purchased on June 30, 2011.

2. DI Trust Fund

Table III.A2 presents a statement of the income and disbursements of the Federal Disability Insurance Trust Fund in calendar year 2011, and of the assets of the fund at the beginning and end of the calendar year.

Line entries in the DI statement are similar to those in the OASI statement. The explanations of the OASI entries generally apply to DI as well.

Of the $106.3 billion in total receipts, $81.9 billion was net payroll tax contributions.

Table III.A2.—Operations of the DI Trust Fund, Calendar Year 2011
[In millions]

Total assets, December 31, 2010		$179,907
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions	$82,185	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-304	
Net payroll tax contributions		81,881
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312	14,902	
Reduction in payroll tax contributions due to P.L. 111-147	24	
Reimbursements directed by P.L. 110-246	1	
Payroll tax credits due to P.L. 98-21	[a]	
Net general fund reimbursements		14,927
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	4	
All other, not subject to withholding	1,577	
Total income from taxation of benefits		1,581
Investment income and interest adjustments:		
Interest on investments	7,883	
Interest adjustments[b]	4	
Total investment income and interest adjustments		7,887
Total receipts		106,276
Disbursements:		
Benefit payments:		
Monthly benefits	128,935	
Reimbursement from the general fund for unnegotiated checks	-31	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	44	
Net benefit payments		128,948
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		465
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,758	
Department of the Treasury	138	
Demonstration projects	28	
Miscellaneous reimbursements from the general fund[c]	-4	
Total administrative expenses		2,920
Total disbursements		132,332
Net increase in assets		-26,056
Total assets, December 31, 2011		153,850

[a] Between -$0.5 and $0.5 million.

[b] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust fund and the general fund account for the Supplemental Security Income program; (2) interest arising from the revised allocation of administrative expenses among the trust funds; and (3) interest on certain reimbursements to the trust fund.

[c] Includes reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the DI program.

Note: Totals do not necessarily equal the sums of rounded components.

Of the $132.3 billion in total disbursements, $128.9 billion was net benefit payments. Net benefit payments increased by 3.8 percent from calendar year 2010 to calendar year 2011. This increase in DI benefit payments was due to the same factors described earlier for OASI benefit payments. As with OASI benefits, the increase in DI benefit payments was lessened in 2011 because there was no automatic cost-of-living increase in December 2010. The

increase in the number of DI beneficiaries from 2010 to 2011 was more pronounced than the corresponding increase in the number of OASI beneficiaries, due to the increase in applications for disability benefits associated with the weak economy.

Total DI disbursements, which started to exceed non-interest income in 2005, continued to exceed such income in 2011. As in 2010, DI disbursements exceeded total DI income (including interest).

The assets of the DI Trust Fund at the end of calendar year 2011 totaled $153.9 billion, and consisted of $154.0 billion in U.S. Government obligations and, as an offset, an extension of credit of $0.1 billion against securities to be redeemed within the following few days. The effective annual rate of interest earned by the assets of the DI Trust Fund during calendar year 2011 was 4.8 percent, slightly lower than the 4.9 percent earned during calendar year 2010. Table VI.A5, presented in appendix A, shows a detailed listing of DI Trust Fund holdings by type of security, interest rate, and year of maturity at the end of calendar years 2010 and 2011.

Section 201(d) of the Social Security Act provides that the obligations issued for purchase by the OASI and DI Trust Funds shall have maturities fixed with due regard for the needs of the funds. The usual practice has been to spread the holdings of special issues, as of each June 30, so that the amounts maturing in each of the next 15 years are approximately equal. However, as of June 2011, the Trustees projected that the assets of the DI Trust Fund would be exhausted within 15 years. Therefore, the Department of the Treasury, in consultation with the Chief Actuary of the Social Security Administration, selected the amounts and maturity dates of the DI special-issue bonds purchased on June 30, 2011, so that equal amounts of special issues would mature over the 10-year period 2012-21. The bonds purchased had an interest rate of 2.5 percent. The DI Trust Fund had already redeemed many of the bonds coming due June 30, 2012, so this investment approach required that all bond purchases on June 30, 2011 have a maturity date of June 30, 2012. Table III.A7 shows additional details on the investment transactions during 2011.

3. OASI and DI Trust Funds, Combined

Table III.A3 presents a statement of the operations of the OASI and DI Trust Funds on a combined basis. The entries in this table represent the sums of the corresponding values from tables III.A1 and III.A2. The two preceding subsections that cover OASI and DI provide a description of the nature of these income and expenditure transactions.

Table III.A3.—Operations of the Combined OASI and DI Trust Funds, Calendar Year 2011
[In millions]

Total assets, December 31, 2010		$2,608,950
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions	$566,325	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-2,094	
Net payroll tax contributions		564,231
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312	102,506	
Reduction in payroll tax contributions due to P.L. 111-147	166	
Reimbursements directed by P.L. 110-246	8	
Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968	[a]	
Payroll tax credits due to P.L. 98-21	[a]	
Net general fund reimbursements		102,680
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	166	
All other, not subject to withholding	23,626	
Total income from taxation of benefits		23,792
Investment income and interest adjustments:		
Interest on investments	114,344	
Interest adjustments[b]	9	
Total investment income and interest adjustments		114,354
Gifts		1
Total receipts		805,057
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death payments	725,148	
Reimbursement from the general fund for unnegotiated checks	-90	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	45	
Net benefit payments		725,103
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		4,574
Administrative expenses:		
Costs incurred by:		
Social Security Administration	5,530	
Department of the Treasury	864	
Offsetting receipts from sales of supplies, materials, etc.	-5	
Demonstration projects	28	
Miscellaneous reimbursements from the general fund[c]	-11	
Net administrative expenses		6,405
Total disbursements		736,083
Net increase in assets		68,975
Total assets, December 31, 2011		2,677,925

[a] Between -$0.5 and $0.5 million.

[b] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust funds and the general fund account for the Supplemental Security Income program; (2) interest arising from the revised allocation of administrative expenses among the trust funds; and (3) interest on certain reimbursements to the trust funds.

[c] Includes reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the OASI and DI programs.

Note: Totals do not necessarily equal the sums of rounded components.

Table III.A4 compares estimates of total income and total expenditures for calendar year 2011 from the 2007-11 Trustees Reports, to the corresponding actual amounts for 2011.

Table III.A4.—Comparison of Actual Calendar Year 2011 Trust Fund Operations With Estimates Made in Prior Reports, Based on Intermediate Assumptions[a]
[Amounts in billions]

	Total income[b]		Total expenditures	
	Amount	Difference from actual (percent)	Amount	Difference from actual (percent)
OASI Trust Fund:				
Estimate in 2007 report	$860.8	23.2	$610.6	1.1
Estimate in 2008 report	848.1	21.4	615.0	1.9
Estimate in 2009 report	771.8	10.5	602.0	-.3
Estimate in 2010 report	741.9	6.2	607.5	.6
Estimate in 2011 report	700.7	.3	605.6	.3
Actual amount	698.8	—	603.8	—
DI Trust Fund:				
Estimate in 2007 report	130.9	23.1	126.8	-4.2
Estimate in 2008 report	129.4	21.8	128.7	-2.8
Estimate in 2009 report	118.2	11.2	133.1	.6
Estimate in 2010 report	112.9	6.2	134.2	1.4
Estimate in 2011 report	107.0	.6	132.8	.3
Actual amount	106.3	—	132.3	—
OASI and DI Trust Funds, combined:				
Estimate in 2007 report	991.6	23.2	737.4	.2
Estimate in 2008 report	977.5	21.4	743.7	1.0
Estimate in 2009 report	890.0	10.5	735.1	-.1
Estimate in 2010 report	854.8	6.2	741.7	.8
Estimate in 2011 report	807.7	.3	738.4	.3
Actual amount	805.1	—	736.1	—

[a] Percentage differences are calculated prior to rounding.
[b] "Actual" income for 2011 reflects adjustments to payroll tax contributions for prior calendar years (see appendix A for description of these adjustments). "Estimated" income also includes such adjustments, but on an estimated basis.

Note: Totals do not necessarily equal the sums of rounded components.

A number of factors contribute to differences between estimates and subsequent actual amounts, including: (1) actual values for key demographic, economic, and other variables that differ from assumed levels; and (2) legislation or other administrative initiatives that lawmakers enacted or finalized after the Trustees completed their estimates. Estimates for 2011 were far too optimistic in the 2007 and 2008 reports because they did not anticipate the economic recession. Estimates in the 2009 and 2010 reports included an economic recession in the projections but assumed the recession would not be as deep as it actually was and the recovery would not be as gradual as it has been so far.

At the end of calendar year 2011, the OASDI program was providing monthly benefits to about 55.4 million people. The OASI Trust Fund was providing benefits to about 44.8 million people and the DI Trust Fund was providing benefits to about 10.6 million people. The number of people receiving benefits from the OASI and DI Trust Funds grew by 2.2 percent

and 4.2 percent, respectively, during the calendar year. This growth reflects increases in the insured population and effects of the economic downturn. Table III.A5 shows the estimated distributions of benefit payments in calendar years 2010 and 2011, by type of beneficiary, for each trust fund separately.

Table III.A5.—Distribution of Benefit Payments by Type of Beneficiary or Payment, Calendar Years 2010 and 2011
[Amounts in millions]

	Calendar year 2010		Calendar year 2011	
	Amount	Percentage of total	Amount	Percentage of total
Total OASDI benefit payments	$701,639	100.0	$725,148	100.0
OASI benefit payments	577,448	82.3	596,212	82.2
DI benefit payments	124,191	17.7	128,935	17.8
OASI benefit payments, total	577,448	100.0	596,212	100.0
Monthly benefits:				
Retired workers and auxiliaries	471,505	81.7	489,699	82.1
Retired workers	443,390	76.8	461,234	77.4
Spouses	24,001	4.2	24,176	4.1
Children	4,114	.7	4,288	.7
Survivors of deceased workers	105,741	18.3	106,310	17.8
Aged widows and widowers	83,927	14.5	84,342	14.1
Disabled widows and widowers	2,121	.4	2,199	.4
Parents	23	[a]	22	[a]
Children	18,024	3.1	18,100	3.0
Widowed mothers and fathers caring for child beneficiaries	1,645	.3	1,647	.3
Uninsured persons generally aged 72 before 1968	[b]	[a]	[b]	[a]
Lump-sum death payments	203	[a]	204	[a]
DI benefit payments, total	124,191	100.0	128,935	100.0
Disabled workers	115,059	92.6	119,563	92.7
Spouses	598	.5	608	.5
Children	8,534	6.9	8,765	6.8

[a] Less than 0.05 percent.
[b] Less than $0.5 million.

Note: Benefits are monthly benefits and lump-sum death payments. Totals do not necessarily equal the sums of rounded components.

Net administrative expenses of the OASI and DI Trust Funds in calendar year 2011 totaled $6.4 billion. This amount is equal to 0.9 percent of noninterest income and 0.9 percent of total expenditures. Table III.A6 shows corresponding percentages for each trust fund separately and for the OASDI program as a whole for each of the last 5 years.

Table III.A6.—Administrative Expenses as a Percentage of Non-interest Income and of Total Expenditures, Calendar Years 2007-11

	OASI Trust Fund		DI Trust Fund		OASI and DI Trust Funds, combined	
Calendar year	Non-interest income	Total expenditures	Non-interest income	Total expenditures	Non-interest income	Total expenditures
2007	0.5	0.6	2.6	2.5	0.8	0.9
2008	.5	.6	2.6	2.3	.8	.9
2009	.6	.6	2.8	2.3	.9	.9
2010	.6	.6	3.1	2.3	1.0	.9
2011	.6	.6	3.0	2.2	.9	.9

The acquisition and disposition of securities during calendar year 2011 changed the invested assets of the OASI Trust Fund and the DI Trust Fund. Table III.A7 presents these investment transactions for each trust fund separately and for the trust funds combined.

Table III.A7.—Trust Fund Investment Transactions, Calendar Year 2011
[In millions]

	OASI Trust Fund	DI Trust Fund	OASI and DI Trust Funds, combined
Invested assets, December 31, 2010	$2,429,514	$180,023	$2,609,537
Acquisitions:			
Special issues:			
Certificates of indebtedness	654,372	103,661	758,033
Bonds[a]	250,152	7,123	257,276
Total acquisitions	904,525	110,784	1,015,309
Dispositions:			
Special issues:			
Certificates of indebtedness	660,837	104,920	765,758
Bonds	148,303	31,890	180,193
Total dispositions	809,140	136,811	945,951
Net increase in invested assets	95,385	-26,027	69,358
Invested assets, December 31, 2011	2,524,898	153,996	2,678,895

[a] Purchased on June 30, 2011. The interest rate on these purchases was 2.5 percent.

Note: All investments are shown at par value. Totals do not necessarily equal the sums of rounded components.

B. SOCIAL SECURITY AMENDMENTS SINCE THE 2011 REPORT

Several laws enacted since the Trustees submitted the 2011 report to Congress are likely to have financial effects on the OASDI program.

The Budget Control Act of 2011, Public Law 112-25, enacted on August 2, 2011, authorized the appropriation of funds for fiscal years 2012 through 2021 to be used for certain program integrity initiatives, including continuing disability reviews of OASDI disabled beneficiaries. The Disaster Relief Appropriations Act of 2012, Public Law 112-77, enacted on December 23, 2011, appropriated the funds for those program integrity initiatives for fiscal year 2012. The Trustees have generally assumed that lawmakers would provide appropriate levels of funding to conduct legislatively mandated continuing disability reviews. The Trustees estimate that the enactment of these two laws will cause a negligible change in the financial status of the OASDI program over the short-range and long-range periods.

The Three-Percent Withholding Repeal and Job Creation Act, Public Law 112-56, enacted on November 21, 2011, provides qualified tax-exempt organizations with credit against 2012 payroll taxes for employment of qualified veterans. This law provides for reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds to make up for any reduction in payroll tax revenue. Therefore, this law has no direct financial impact on the OASDI program over the short-range and long-range periods.

The Temporary Payroll Tax Cut Continuation Act of 2011, Public Law 112-78, enacted on December 23, 2011, and the Middle Class Tax Relief and Job Creation Act of 2012, Public Law 112-96, enacted on February 22, 2012, reduce the OASDI payroll tax rate for 2012 by 2 percentage points for employees and for self-employed workers. These laws provide for reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds to make up for the reduction in payroll tax revenue. Therefore, these laws have no direct financial impact on the OASDI program over the short-range and long-range periods.

The financial projections shown in this report include the effects of these laws. Sections IV.A.4 and IV.B.7 of this report provide further analysis of the nature and magnitude of the effect of these laws on the financial status of the OASDI program.

IV. ACTUARIAL ESTIMATES

This chapter presents actuarial estimates of the future financial condition of the Social Security program. These estimates show the income, cost, and assets or unfunded obligation of the OASI and DI Trust Funds: (1) in dollars over the 10-year short-range period; and (2) as a percentage of taxable payroll, as a percentage of gross domestic product, and in present-value dollars over the 75-year long-range period. In addition, the chapter discusses a variety of measures of the adequacy of current program financing. This report distinguishes between: (1) the cost (obligations) of the program, which includes all future benefits scheduled under current law; and (2) expenditures (disbursements), which include actual payments for the past plus only the portion of projected program cost that would be payable with the financing provisions in current law.

This chapter presents the estimates and measures of trust fund financial adequacy for the short range (2012-21) first, followed by estimates and measures of actuarial status for the long range (2012-86) and over the infinite horizon. As described in the Overview chapter of this report, these estimates depend upon a broad set of demographic, economic, and programmatic factors. This chapter presents estimates under three sets of assumptions to show a wide range of possible outcomes, because assumptions related to these factors are subject to uncertainty. The intermediate set of assumptions, designated as alternative II, reflects the Trustees' best estimate of future experience; the low-cost alternative I is significantly more optimistic and the high-cost alternative III is significantly more pessimistic for the trust funds' future financial outlook. The tables of this report show the intermediate estimates first, followed by the low-cost and high-cost estimates. Chapter V describes these three sets of assumptions, along with the actuarial methods used to produce the estimates. Appendix D and appendix E present two additional methods to illustrate the uncertainty of the projections. Appendix D presents sensitivity analyses of the effects of variation in individual factors and appendix E presents probability distributions generated by a stochastic model.

A. SHORT-RANGE ESTIMATES

The Trustees consider the trust funds solvent if the funds can pay scheduled benefits in full on a timely basis. A standard method of assessing solvency is the "trust fund ratio," which is the assets in a fund at the beginning of a year (which do not include advance tax transfers) expressed as a percentage of the cost during the year. The trust fund ratio represents the proportion of a year's cost which the assets available at the beginning of that year can cover. The Trustees assume that a trust fund ratio of 100 percent of annual program cost

provides a reasonable "contingency reserve." Maintaining a reasonable contingency reserve is important because the trust funds do not have borrowing authority. After exhaustion, the trust funds would be unable to pay benefits in full on a timely basis if annual revenue were less than annual cost. Unexpected events, such as severe economic recessions or large changes in other trends, can quickly deplete reserves. In such cases, a reasonable contingency reserve can maintain the ability to pay scheduled benefits while giving lawmakers time to address possible changes to the program.

The short-range test of financial adequacy applies to the OASI and DI Trust Funds individually and combined. If the estimated trust fund ratio is at least 100 percent at the beginning of the projection period, the test requires that it remain at or above 100 percent throughout the 10-year period. Alternatively, if the ratio is initially less than 100 percent, then it must reach at least 100 percent within 5 years (without depletion at any time during this period) and then remain at or above 100 percent throughout the remainder of the 10-year period. This test uses the estimates based on the intermediate assumptions. If either trust fund fails this test, then program solvency in the next 10 years is in question, and lawmakers will have to take prompt action to improve short-range financial adequacy.

1. Operations of the OASI Trust Fund

This subsection presents estimates, based on the assumptions described in chapter V, of the operations and financial status of the OASI Trust Fund for the period 2012-21. These estimates assume that there are no changes in the statutory provisions and regulations under which the OASDI program currently operates.[1]

Table IV.A1 shows these estimates, which indicate that the assets of the OASI Trust Fund continue to increase throughout the next 10 years under the intermediate and low-cost sets of assumptions, but begin to decline in 2018 under the high-cost assumptions. Based on the intermediate assumptions, the assets of the OASI Trust Fund continue to exceed 100 percent of annual expenditures by a large amount through the end of 2021. Consequently, the OASI Trust Fund satisfies the test of short-range financial adequacy by a wide margin. Table IV.A1 also indicates that the OASI Trust Fund would satisfy the short-range test even under the high-cost assumptions. See figure IV.A1 for an illustration of these results.

[1] The estimates shown in this subsection reflect 12 months of benefit payments in each year of the short-range projection period. In practice, the actual payment dates have at times shifted over calendar year boundaries as a result of the statutory requirement for early delivery of benefit checks when the normal check delivery date is a Saturday, Sunday, or legal public holiday.

Table IV.A1.—Operations of the OASI Trust Fund, Calendar Years 2007-21[a]
[Dollar amounts in billions]

Calendar year	Income					Cost				Assets		
	Total	Net payroll tax contributions	GF reimbursements[b]	Taxation of benefits	Net interest	Total	Benefit payments	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[c]
Historical data:												
2007	$675.0	$560.9	[d]	$17.2	$97.0	$495.7	$489.1	$3.1	$3.6	$179.3	$2,023.6	372
2008	695.5	574.6	[d]	15.6	105.3	516.2	509.3	3.2	3.6	179.3	2,202.9	392
2009	698.2	570.4	[d]	19.9	107.9	564.3	557.2	3.4	3.7	133.9	2,336.8	390
2010	677.1	544.8	$2.0	22.1	108.2	584.9	577.4	3.5	3.9	92.2	2,429.0	400
2011	698.8	482.4	87.8	22.2	106.5	603.8	596.2	3.5	4.1	95.0	2,524.1	402
Intermediate:												
2012	735.7	506.9	95.8	28.9	104.0	647.2	639.9	3.4	4.0	88.5	2,612.6	390
2013	759.7	624.6	2.3	29.6	103.3	684.9	677.7	3.3	3.9	74.8	2,687.4	381
2014	803.8	665.9	-.1	32.7	105.3	727.2	719.6	3.4	4.2	76.6	2,764.0	370
2015	851.6	706.0	.2	36.3	109.1	773.8	766.0	3.6	4.3	77.7	2,841.7	357
2016	903.8	749.5	.1	40.2	114.0	823.3	815.6	3.7	4.1	80.5	2,922.2	345
2017	960.5	796.4	[d]	44.6	119.5	877.5	869.1	3.8	4.6	82.9	3,005.1	333
2018	1,019.1	844.4	[d]	48.7	126.0	937.5	928.8	3.9	4.7	81.6	3,086.8	321
2019	1,073.3	887.6	[d]	53.1	132.6	1,002.7	993.7	4.1	4.9	70.6	3,157.4	308
2020	1,127.5	930.8	[d]	57.9	138.8	1,074.4	1,065.2	4.2	5.1	53.1	3,210.5	294
2021	1,180.2	973.6	[d]	63.0	143.7	1,148.1	1,138.9	4.3	4.9	32.1	3,242.6	280
Low-cost:												
2012	740.3	510.4	96.5	28.9	104.4	647.0	639.6	3.4	4.0	93.3	2,617.4	390
2013	778.5	641.6	2.8	29.5	104.7	682.9	675.7	3.3	3.8	95.7	2,713.1	383
2014	827.6	687.4	-.1	32.4	107.9	719.7	712.1	3.4	4.2	107.9	2,821.0	377
2015	880.9	732.1	.2	35.6	113.0	759.4	751.6	3.6	4.2	121.5	2,942.5	371
2016	937.7	778.9	.1	39.2	119.5	802.1	794.6	3.7	3.9	135.5	3,078.0	367
2017	994.9	824.9	[d]	43.1	126.8	849.0	840.9	3.8	4.4	145.9	3,223.9	363
2018	1,052.7	870.5	[d]	46.7	135.4	899.3	890.9	3.9	4.5	153.4	3,377.2	358
2019	1,107.1	911.8	[d]	50.5	144.8	954.1	945.5	4.0	4.6	153.0	3,530.3	354
2020	1,162.7	953.9	[d]	54.6	154.2	1,013.4	1,004.6	4.1	4.7	149.3	3,679.5	348
2021	1,218.2	996.2	[d]	58.9	163.2	1,073.5	1,064.9	4.2	4.5	144.7	3,824.3	343
High-cost:												
2012	728.5	501.5	94.8	28.9	103.2	647.6	640.2	3.4	4.0	80.9	2,605.0	390
2013	736.0	603.7	1.6	29.7	101.0	687.0	679.8	3.3	3.9	49.0	2,654.0	379
2014	775.8	640.7	-.1	33.1	102.2	735.0	727.3	3.4	4.3	40.8	2,694.8	361
2015	815.9	674.1	.2	36.9	104.7	788.0	780.0	3.6	4.4	27.9	2,722.7	342
2016	865.9	715.8	.1	41.4	108.7	847.2	839.2	3.7	4.2	18.8	2,741.4	321
2017	923.5	763.2	[d]	46.4	113.8	913.1	904.4	3.9	4.8	10.3	2,751.8	300
2018	984.7	814.4	[d]	51.2	119.1	986.1	977.0	4.0	5.0	-1.4	2,750.4	279
2019	1,044.0	864.7	[d]	56.5	122.8	1,066.8	1,057.3	4.2	5.3	-22.8	2,727.6	258
2020	1,100.0	913.6	[d]	62.2	124.2	1,153.7	1,143.8	4.4	5.5	-53.7	2,673.9	236
2021	1,151.0	960.1	[d]	68.2	122.7	1,243.8	1,233.9	4.5	5.4	-92.8	2,581.1	215

[a] Appendix A presents a detailed description of the components of income and cost, along with complete historical values.

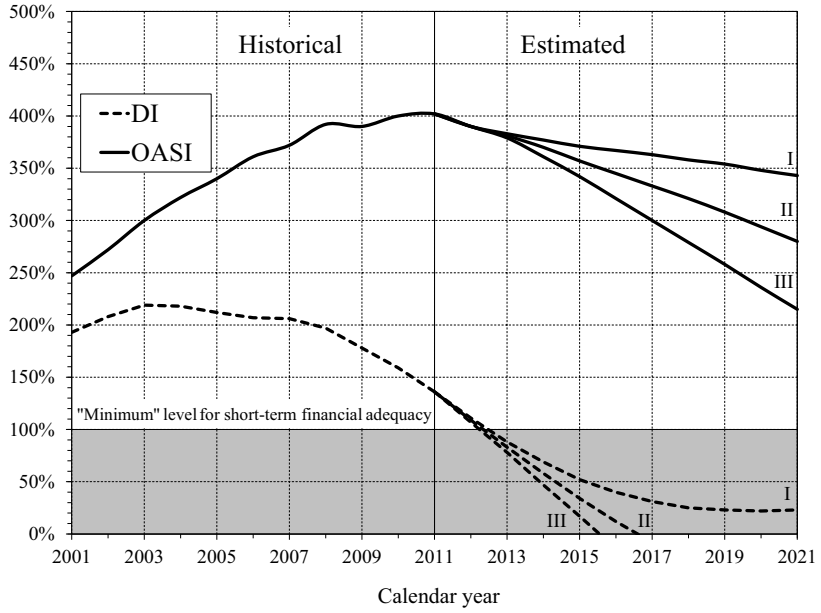
[b] Includes reimbursements from the General Fund of the Treasury to the OASI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (3) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (4) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (5) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, and 112-96.

[c] The "Trust fund ratio" column represents assets at the beginning of a year (which are identical to assets at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.

[d] Between -$50 million and $50 million.

Note: Totals do not necessarily equal the sums of rounded components.

Figure IV.A1.—Short-Range OASI and DI Trust Fund Ratios
[Assets as a percentage of annual cost]



The estimated income shown in table IV.A1 increases annually under each set of assumptions throughout the short-range projection period. The estimated increases in income reflect increases in estimated OASDI taxable earnings and growth in interest earnings on the invested assets of the trust fund. After decreasing in the period 2008-10, employment increases in every year through 2021 for all three alternatives, except for a slight decrease in 2013 under the high-cost set of assumptions due to an assumed second dip of the recession. The number of persons with taxable earnings increases on the basis of alternatives I, II, and III from 158 million during calendar year 2011 to about 179 million, 175 million, and 170 million, respectively, in 2021. The total annual amount of taxable earnings increases in every year through 2021 for each alternative. Total earnings increase from $5,466 billion in 2011 to $9,459 billion, $9,247 billion, and $9,123 billion in 2021, on the basis of alternatives I, II, and III, respectively. These increases in taxable earnings are due primarily to: (1) projected increases in employment levels as the working age population increases; (2) trend increases in average earnings in covered employment (reflecting both real growth and price inflation); (3) increases in the contribution and benefit base under the automatic-adjustment provisions; and (4) growth in employment and average earnings, temporarily higher than trend, as the economy recovers from the economic recession.

Interest earnings contribute to the overall projected increase in trust fund income during this period. Despite the projected growth in OASI Trust Fund assets, annual interest earnings decline slightly in the early projection years under all three sets of assumptions due to historically low interest rates on newly-issued bonds. Thereafter, interest income generally increases due to the net effects of higher asset levels and the patterns of projected interest rates. Although interest earnings generally increase over the short-range period, interest declines as a share of total OASI Trust Fund income. By 2021, OASI interest income is about 12 percent of total trust fund income under the intermediate assumptions, as compared to 15 percent in 2011.

Rising expenditures during 2012-21 reflect automatic benefit increases as well as the upward trend in the number of beneficiaries and in the average monthly earnings underlying benefits. The growth in the number of beneficiaries in the past and the expected future growth result both from the increase in the aged population and from the increase in the proportion of the population that is eligible for benefits.

The estimates under the intermediate and low-cost sets of assumptions shown in table IV.A1 indicate that income to the OASI Trust Fund, including interest earned on trust fund assets, exceeds expenditures in every year of the short-range projection period. While trust fund assets increase substantially, they grow more slowly near the end of the short-range period. Under the high-cost assumptions, assets begin to decline in 2018.

The Treasury invests OASI income in financial securities, generally special public-debt obligations of the U.S. Government. The cash used to make these purchases flows to the General Fund of the Treasury. The trust fund earns interest on these securities, and the Treasury invests maturing securities in new securities if not immediately needed to pay program costs. When payment of program costs requires the redemption of securities prior to maturity, general fund revenue flows to the trust fund.

2. Operations of the DI Trust Fund

Table IV.A2 shows the estimated operations and financial status of the DI Trust Fund during calendar years 2012-21 under the three sets of assumptions, together with values for actual experience during 2007-11. Non-interest income increases steadily after 2011 under each alternative, due to most of the same factors described previously for the OASI Trust Fund. However, DI costs grow at an even faster pace than income for reasons explained in greater detail below. As a result, after having reached a maximum in 2008, DI Trust Fund assets continue to decrease in 2012 under each alternative. Under the low-cost assumptions, assets begin to increase again after reaching a low point in 2018. Under the intermediate assumptions, assets continue to decline until their projected exhaustion in 2016. Under the high-cost assumptions, DI assets decline steadily until exhaustion in 2015.

Table IV.A2.—Operations of the DI Trust Fund, Calendar Years 2007-21 [a]

[Dollar amounts in billions]

Calendar year	Income					Cost				Assets		
	Total	Net payroll tax contributions	GF reimbursements [b]	Taxation of benefits	Net interest	Total	Benefit payments	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio [c]
Historical data:												
2007	$109.9	$95.2	[d]	$1.4	$13.2	$98.8	$95.9	$2.5	$0.4	$11.1	$214.9	206
2008	109.8	97.6	[d]	1.3	11.0	109.0	106.0	2.5	.4	.9	215.8	197
2009	109.3	96.9	[d]	2.0	10.5	121.5	118.3	2.7	.4	-12.2	203.5	178
2010	104.0	92.5	$0.4	1.9	9.3	127.7	124.2	3.0	.5	-23.6	179.9	159
2011	106.3	81.9	14.9	1.6	7.9	132.3	128.9	2.9	.5	-26.1	153.9	136
Intermediate:												
2012	110.2	86.1	16.3	1.5	6.4	141.5	137.8	3.2	.5	-31.2	122.6	109
2013	113.7	106.1	.4	2.5	4.7	147.4	143.7	3.2	.5	-33.7	88.9	83
2014	119.1	113.1	[d]	2.8	3.2	153.2	149.2	3.5	.5	-34.1	54.8	58
2015	124.7	119.9	[d]	3.1	1.7	159.3	155.2	3.7	.5	-34.6	20.2	34
2016	[e]	127.3	[d]	3.4	[e]	165.0	160.7	3.9	.5	[e]	[e]	12
2017	[e]	135.2	[d]	3.7	[e]	170.7	166.1	4.1	.5	[e]	[e]	[e]
2018	[e]	143.4	[d]	4.0	[e]	177.0	172.2	4.4	.4	[e]	[e]	[e]
2019	[e]	150.7	[d]	4.3	[e]	183.8	178.8	4.6	.4	[e]	[e]	[e]
2020	[e]	158.1	[d]	4.7	[e]	191.6	186.3	4.9	.4	[e]	[e]	[e]
2021	[e]	165.3	[d]	5.1	[e]	201.4	196.0	5.2	.3	[e]	[e]	[e]
Low-cost:												
2012	111.0	86.7	16.4	1.5	6.5	139.2	135.5	3.2	.5	-28.2	125.6	111
2013	116.9	108.9	.5	2.5	5.0	142.8	139.1	3.2	.5	-25.9	99.7	88
2014	123.3	116.7	[d]	2.6	3.9	145.4	141.4	3.5	.5	-22.1	77.6	69
2015	130.3	124.3	[d]	2.8	3.1	148.0	143.8	3.7	.5	-17.7	59.9	52
2016	137.8	132.3	[d]	3.1	2.5	150.5	146.2	3.9	.4	-12.7	47.2	40
2017	145.5	140.1	[d]	3.3	2.0	153.2	148.6	4.1	.4	-7.7	39.5	31
2018	153.1	147.8	[d]	3.5	1.8	156.4	151.7	4.3	.4	-3.2	36.3	25
2019	160.3	154.8	[d]	3.8	1.7	160.3	155.3	4.6	.4	[d]	36.3	23
2020	167.8	162.0	[d]	4.0	1.8	164.7	159.5	4.8	.3	3.1	39.4	22
2021	175.5	169.2	[d]	4.3	2.0	170.7	165.3	5.0	.3	4.8	44.2	23
High-cost:												
2012	109.1	85.2	16.1	1.5	6.3	143.8	140.2	3.2	.5	-34.7	119.1	107
2013	109.8	102.5	.3	2.6	4.3	152.5	148.8	3.2	.5	-42.7	76.4	78
2014	114.1	108.8	[d]	3.0	2.4	162.0	158.0	3.5	.5	-47.9	28.5	47
2015	[e]	114.5	[d]	3.3	[e]	172.1	167.9	3.7	.5	[e]	[e]	17
2016	[e]	121.5	[d]	3.7	[e]	182.1	177.7	3.9	.5	[e]	[e]	[e]
2017	[e]	129.6	[d]	4.2	[e]	192.1	187.5	4.2	.5	[e]	[e]	[e]
2018	[e]	138.3	[d]	4.6	[e]	202.6	197.7	4.5	.5	[e]	[e]	[e]
2019	[e]	146.8	[d]	5.0	[e]	213.6	208.4	4.8	.4	[e]	[e]	[e]
2020	[e]	155.1	[d]	5.5	[e]	224.9	219.4	5.1	.4	[e]	[e]	[e]
2021	[e]	163.0	[d]	6.0	[e]	238.6	232.8	5.4	.4	[e]	[e]	[e]

[a] Appendix A presents a detailed description of the components of income and cost, along with complete historical values.

[b] Includes reimbursements from the General Fund of the Treasury to the DI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (3) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (4) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, and 112-96.

[c] The "Trust fund ratio" column represents assets at the beginning of a year (which are identical to assets at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.

[d] Between -$50 million and $50 million.

[e] The DI Trust Fund becomes exhausted in 2016 and 2015 under the intermediate and the high-cost assumptions, respectively. Accordingly, certain trust fund operation values from the year of trust fund exhaustion through 2021 are not meaningful under present law.

Note: Totals do not necessarily equal the sums of rounded components.

Future DI cost increases in part due to increases in average benefit levels resulting from: (1) automatic benefit increases; and (2) projected increases in the amounts of average monthly earnings on which benefits are based. In addition, the number of DI beneficiaries in current-payment status generally increases during the short-range projection period. Over the period 2011-21, the projected annual average growth rate in the number of DI disabled-worker beneficiaries is roughly 0.2, 1.3, and 2.5 percent under alternatives I, II, and III, respectively. This growth in DI beneficiaries is largely due to the gradual progression of the baby-boom generation through ages 50 to normal retirement age, the ages which have the highest rates of disability prevalence. The estimates under all three sets of assumptions anticipate additional growth in the numbers of disabled-worker beneficiaries due to a projected continuation of incidence rates at historically high levels. These projected higher levels of disability incidence subside as the economy recovers from the recent economic recession and return to levels consistent with longer-term trends in incidence rates.[1]

The proportion of disabled-worker beneficiaries whose benefits terminate or convert to retirement benefits in a given year has fluctuated in the past. Over the last 20 years, the rates of benefit termination due to death have declined very gradually, and generally have mirrored the improving mortality experience for the overall population. The proportion of disabled-worker beneficiaries who converted to retirement benefits at attainment of normal retirement age also declined gradually through 2008 due to: (1) the relatively low average age of new beneficiaries coming on the rolls during the 1990s; and (2) the effects over the period 2003-08 of the gradual increase in the normal retirement age to age 66. After 2008, the conversion proportion returned to pre-2003 levels because the normal retirement age remains at age 66 from 2009-20 before beginning to increase again. Furthermore, starting in 2012, the projected conversion proportion increases sharply as the baby boom cohorts begin to reach normal retirement age.

The termination rate due to recovery has been much more volatile. In recent years, the proportion of disabled beneficiaries whose benefits cease because of their recovery from disability has been relatively low in comparison to levels experienced throughout the 1970s and early 1980s. Projected rates of recovery terminations assumed in the report are elevated for several years beginning in 2012 due to an assumed increase in funding for reducing the backlog of continuing disability reviews. Following this temporary increase in continuing disability reviews, projected recovery termination rates return to levels consistent with: (1) projected levels of work terminations; and (2) the assumption that terminations for medical improvement will be consis-

[1] Section V.C.5 describes historical and projected patterns of disability incidence rates in greater detail.

tent with continued timely completion of continuing disability reviews after 2014. The overall proportion of disabled workers leaving the DI rolls (reflecting all causes) generally increases due to the aging of the beneficiary population.

At the beginning of calendar year 2011, the assets of the DI Trust Fund represented 136 percent of annual expenditures. During 2011, DI expenditures exceeded income, and the trust fund ratio for the beginning of 2012 decreased to about 109 percent. Under the intermediate set of assumptions, expenditures exceed total income throughout the short-range projection period. The projected expenditures in excess of income result in the estimated exhaustion of the DI Trust Fund by the end of 2016.

Under the low-cost assumptions, the trust fund ratio decreases to a low of 22 percent at the beginning of 2020 before increasing to 23 percent at the beginning of 2021. Under the high-cost assumptions, the assets of the DI Trust Fund decline steadily, and dip below the level of annual expenditures during 2012 before complete depletion in 2015.

Although assets of the DI Trust Fund were greater than annual expenditures at the beginning of 2012, the DI Trust Fund fails the Trustees' short-range test of financial adequacy under all three alternatives. Furthermore, the DI Trust Fund becomes exhausted by the end of 2016 and 2015 under alternatives II and III, respectively.

3. Operations of the Combined OASI and DI Trust Funds

Table IV.A3 shows the estimated operations and status of the combined OASI and DI Trust Funds during calendar years 2012-21 for the three alternatives, together with figures on actual experience in 2007-11. Income and cost for the OASI Trust Fund represent over 80 percent of the corresponding amounts for the combined OASI and DI Trust Funds. Therefore, based on the strength of the OASI Trust Fund over the next 10 years, the combined OASI and DI Trust Funds would have sufficient assets to pay all scheduled benefits through the end of the short-range period and would satisfy the short-range test of financial adequacy under all three alternative sets of assumptions. Under current law, one trust fund cannot share assets with another trust fund without changes to the Social Security Act.

Table IV.A3.—Operations of the Combined OASI and DI Trust Funds, Calendar Years 2007-21[a]

[Dollar amounts in billions]

Calendar year	Income					Cost				Assets		
	Total	Net payroll tax contributions	GF reimbursements[b]	Taxation of benefits	Net interest	Total	Benefit payments	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[c]
Historical data:												
2007	$784.9	$656.1	[d]	$18.6	$110.2	$594.5	$584.9	$5.5	$4.0	$190.4	$2,238.5	345
2008	805.3	672.1	[d]	16.9	116.3	625.1	615.3	5.7	4.0	180.2	2,418.7	358
2009	807.5	667.3	[d]	21.9	118.3	685.8	675.5	6.2	4.1	121.7	2,540.3	353
2010	781.1	637.3	$2.4	23.9	117.5	712.5	701.6	6.5	4.4	68.6	2,609.0	357
2011	805.1	564.2	102.7	23.8	114.4	736.1	725.1	6.4	4.6	69.0	2,677.9	354
Intermediate:												
2012	846.0	593.0	112.1	30.4	110.4	788.7	777.7	6.6	4.4	57.3	2,735.2	340
2013	873.4	730.7	2.7	32.1	108.0	832.3	821.4	6.5	4.3	41.1	2,776.3	329
2014	922.9	779.0	-.1	35.5	108.5	880.5	868.8	6.9	4.7	42.4	2,818.8	315
2015	976.3	825.9	.2	39.3	110.9	933.2	921.1	7.2	4.8	43.1	2,861.9	302
2016	1,034.6	876.8	.1	43.6	114.1	988.4	976.3	7.6	4.5	46.2	2,908.1	290
2017	1,098.0	931.6	.1	48.3	118.0	1,048.2	1,035.2	7.9	5.1	49.7	2,957.8	277
2018	1,163.4	987.8	[d]	52.7	122.8	1,114.5	1,101.0	8.3	5.2	48.9	3,006.8	265
2019	1,223.4	1,038.3	[d]	57.4	127.7	1,186.5	1,172.5	8.7	5.3	36.9	3,043.7	253
2020	1,283.4	1,088.9	[d]	62.6	131.9	1,266.0	1,251.5	9.1	5.4	17.3	3,061.0	240
2021	1,341.5	1,138.9	[d]	68.1	134.6	1,349.5	1,334.9	9.5	5.2	-8.0	3,053.0	227
Low-cost:												
2012	851.3	597.1	112.9	30.4	110.9	786.2	775.2	6.6	4.4	65.1	2,743.0	341
2013	895.4	750.6	3.2	32.0	109.7	825.7	814.9	6.5	4.3	69.8	2,812.8	332
2014	950.8	804.2	-.1	35.0	111.8	865.1	853.5	6.9	4.7	85.8	2,898.5	325
2015	1,011.2	856.4	.2	38.4	116.1	907.4	895.5	7.2	4.7	103.8	3,002.4	319
2016	1,075.5	911.1	.1	42.2	122.0	952.6	940.7	7.5	4.4	122.8	3,125.2	315
2017	1,140.4	965.0	.1	46.4	128.9	1,002.2	989.5	7.9	4.8	138.2	3,263.4	312
2018	1,205.8	1,018.3	[d]	50.3	137.2	1,055.7	1,042.6	8.2	4.9	150.1	3,413.5	309
2019	1,267.4	1,066.6	[d]	54.2	146.5	1,114.3	1,100.8	8.5	5.0	153.1	3,566.6	306
2020	1,330.4	1,115.8	[d]	58.6	156.0	1,178.0	1,164.1	8.9	5.1	152.4	3,719.0	303
2021	1,393.7	1,165.3	[d]	63.2	165.2	1,244.2	1,230.2	9.2	4.8	149.5	3,868.5	299
High-cost:												
2012	837.6	586.7	110.9	30.4	109.6	791.4	780.4	6.6	4.4	46.2	2,724.1	338
2013	845.7	706.2	1.9	32.3	105.4	839.5	828.6	6.5	4.4	6.2	2,730.4	324
2014	889.9	749.4	-.1	36.0	104.6	897.0	885.3	6.9	4.8	-7.1	2,723.2	304
2015	933.7	788.6	.2	40.3	104.7	960.0	947.9	7.2	4.9	-26.3	2,696.9	284
2016	988.0	837.3	.1	45.1	105.5	1,029.3	1,016.9	7.6	4.7	-41.3	2,655.7	262
2017	1,050.1	892.8	.1	50.6	106.6	1,105.3	1,091.9	8.1	5.3	-55.1	2,600.5	240
2018	1,116.1	952.7	[d]	55.8	107.5	1,188.7	1,174.7	8.5	5.5	-72.7	2,527.9	219
2019	1,179.4	1,011.5	[d]	61.5	106.3	1,280.4	1,265.7	9.0	5.7	-101.0	2,426.9	197
2020	1,238.9	1,068.7	[d]	67.7	102.5	1,378.6	1,363.2	9.4	5.9	-139.7	2,287.2	176
2021	1,292.8	1,123.1	[d]	74.3	95.5	1,482.4	1,466.8	9.9	5.7	-189.5	2,097.7	154

[a] Appendix A presents a detailed description of the components of income and cost, along with complete historical values.

[b] Includes reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (3) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (4) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (5) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, and 112-96.

[c] The "Trust fund ratio" column represents assets at the beginning of a year (which are identical to assets at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.

[d] Between -$50 million and $50 million.

Note: Totals do not necessarily equal the sums of rounded components.

4. Factors Underlying Changes in 10-Year Trust Fund Ratio Estimates From the 2011 Report

Table IV.A4 presents an analysis of the factors underlying the changes in the intermediate estimates for the OASI, DI, and the combined funds from last year's report to this report.

In the 2011 report, the trust fund ratio for OASI reached 339 percent at the beginning of 2020—the tenth projection year from that report. The change in the short-range valuation period alone, from 2011-20 to 2012-21, lowered the estimated ratio for the tenth year by 13 percentage points, to 326 percent. Changes to reflect legislation enacted since last year's report, the most recent data, adjustments to the assumptions for future years, and changes in projection methods further reduced the ratio for the tenth projection year to 280 percent.

Changes in demographic assumptions over the short-range period reduced the projected tenth-year trust fund ratio by 2 percentage points. Changes in economic data and assumptions, which include the effect of the actual 3.6 percent cost-of-living adjustment for December 2011, as well as slower growth in average earnings, lower interest rates, and higher unemployment rates due to a longer period of recovery from the recent recession, reduced the trust fund ratio by 53 percentage points by the beginning of 2021. Incorporating recent programmatic data, including the numbers of beneficiaries and amount of benefit payments, increased the 2021 trust fund ratio by 8 percentage points. In addition, there were several relatively minor changes in the short-range projection methodology since the 2011 report, none of which had a significant effect on the ending trust fund ratio. Finally, legislation enacted since the 2011 report did not have any significant impact on the projected ending OASI Trust Fund ratio in this report.

Table IV.A4 also shows corresponding estimates of the factors underlying the changes in the financial projections for the DI Trust Fund, and for the combined OASI and DI Trust Funds. The ratios at the beginning of 2020 for the DI Trust Fund and the combined OASI and DI Trust Funds in last year's report, as well as the corresponding ratios for the beginning of 2021 in this year's report, are theoretical because the Trustees project that the DI Trust Fund will be depleted prior to the end of the short range projection period. The 51 percentage point decrease in the DI trust fund ratio is largely due to the change in the valuation period, as well as updates to economic data and assumptions that account for continuing effects of the economic downturn that began in December 2007. The incorporation of recent programmatic data accounts for the remainder of the change.

Table IV.A4.—Reasons for Change in Trust Fund Ratios at the Beginning of the Tenth Year of Projection
[In percent]

Item	OASI Trust Fund	DI Trust Fund	OASI and DI Trust Funds, combined
Trust fund ratio shown in last year's report for calendar year 2020[a]	339	-23	284
Change in trust fund ratio due to changes in:			
Legislation	[b]	[b]	[b]
Valuation period	-13	-14	-12
Demographic data and assumptions	-2	[b]	-2
Economic data and assumptions	-53	-36	-50
Programmatic data and assumptions	8	-2	7
Projection methods and data	[b]	[b]	[b]
Total change in trust fund ratio	-59	-51	-57
Trust fund ratio shown in this report for calendar year 2021[a]	280	-74	227

[a] Figures for DI, and OASI and DI combined, are theoretical because the DI trust fund is depleted before the beginning of the tenth year under the assumptions of each report.
[b] Between -0.5 and 0.5 percent.

Note: Totals do not necessarily equal the sums of rounded components.

B. LONG-RANGE ESTIMATES

The Trustees use three types of financial measures to assess the actuarial status of the Social Security trust funds under the financing approach specified in current law: (1) annual cash-flow measures, including income rates, cost rates, and balances; (2) trust fund ratios; and (3) summary measures such as actuarial balances and unfunded obligations.

The difference between the annual income rate and annual cost rate, both expressed as percentages of taxable payroll, is the annual balance. The level and trend of the annual balances at the end of the 75-year projection period are critical factors that the Trustees use to assess the financial condition of the program.

The trust fund ratio for a year is the proportion of the year's projected cost that could be paid with funds available at the beginning of the year. Critical factors considered by the Trustees include: (1) the level and year of maximum trust fund ratio; (2) the year of exhaustion of the funds; and (3) the stability of the trust fund ratio at the end of the long-range period. "Sustainable solvency" occurs when the program has positive trust fund ratios throughout the 75-year projection period that are either stable or rising at the end of the period.

Summarized measures indicate whether projected income is sufficient, on average, for the whole period. The Trustees summarize the total income and cost over valuation periods that extend through 75 years and over the infinite horizon. This section presents two summarized measures: (1) the actuarial balance; and (2) the open group unfunded obligation. The actuarial balance indicates the size of any surplus or shortfall as a percentage of the taxable payroll over the period. The open group unfunded obligation indicates the size of any shortfall in present-value dollars.

This section also includes additional information that the Trustees use to assess the financial status of the Social Security program, including: (1) a comparison of the number of beneficiaries to the number of covered workers; (2) the test of long-range close actuarial balance; and (3) the reasons for the change in the actuarial balance from the last report.

1. Annual Income Rates, Cost Rates, and Balances

The concepts of income rate and cost rate, expressed as a percentage of taxable payroll, are essential to consideration of the long-range actuarial status of the trust funds. The annual income rate is the ratio of all non-interest income to the OASDI taxable payroll for the year. Non-interest income includes payroll taxes, taxes on scheduled benefits, and general fund trans-

fers. The OASDI taxable payroll consists of the total earnings subject to OASDI taxes with some relatively small adjustments.[1] The annual cost rate is the ratio of the cost of the program to the taxable payroll for the year. The cost includes scheduled benefit payments, administrative expenses, net interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. For any year, the income rate minus the cost rate is the "balance" for the year.

Table IV.B1 presents a comparison of the estimated annual income rates and cost rates by trust fund and alternative. Table VI.F8 shows detailed long-range projections of trust fund operations in current dollar amounts.

Under the intermediate assumptions, the Trustees project that the OASI income rate will rise from 11.00 percent of taxable payroll in 2013 to 11.47 percent in 2086. Income from taxation of benefits causes this increase for two main reasons: (1) benefits are rising faster than payroll; and (2) the benefit-taxation threshold amounts are not indexed, and therefore an increasing share of benefits will be subject to tax. The pattern of the cost rate is much different. The OASI cost rate increased from 11.03 percent of taxable payroll in 2010 to 11.09 percent in 2011. For 2012 and 2013, the Trustees project larger increases in the cost rate, reaching levels of 11.35 and 11.48 percent of taxable payroll, respectively. From 2014 to 2017, the growth in the cost rate slows, as the economic recovery through this period roughly offsets the effects of the aging population. From 2017 to 2035, the cost rate rises rapidly because the retirement of the baby-boom generation will increase the number of beneficiaries much faster than subsequent lower-birth-rate generations increase the number of workers. From 2037 to 2053, the aging of the baby-boom generation causes an increase in the average age of beneficiaries and a decline in the cost rate. After initial benefit eligibility, benefits increase annually with price inflation rather than wage inflation. As beneficiaries age, their benefit amounts drop relative to current average taxable earnings because wages generally rise more rapidly than prices. After 2053, the Trustees project the OASI cost rate to rise, reaching 15.53 percent of taxable payroll for 2086, primarily because of projected reductions in death rates.

The Trustees' projections of income rates under the low-cost and high-cost sets of assumptions are very similar to those projected for the intermediate assumptions, because income rates are largely a reflection of the payroll tax rates specified in the law (including reimbursements from the General Fund of the Treasury to compensate fully for the reduction in payroll tax revenue),

[1] Adjustments include adding deemed wage credits based on military service for 1983-2001 and reflecting the lower effective tax rates (as compared to the combined employee-employer rate) that apply to multiple-employer "excess wages." Lower rates also applied to net earnings from self-employment before 1984 and to income from tips before 1988.

with the gradual change from taxation of benefits noted above. In contrast, OASI cost rates for the low-cost and high-cost assumptions are significantly different than those projected for the intermediate assumptions. For the low-cost assumptions, the OASI cost rate decreases from 2012 through 2017, and then rises until it peaks in 2034 at 13.29 percent of payroll. Thereafter, the cost rate generally declines gradually until it reaches 11.38 percent of payroll for 2086, at which point the income rate reaches 11.23 percent. For the high-cost assumptions, the OASI cost rate rises throughout the 75-year period. It rises relatively rapidly through 2035 because of the aging of the baby-boom generation. Subsequently, the cost rate continues to rise and reaches 21.93 percent of payroll for 2086, at which point the income rate reaches 11.84 percent.

The pattern of the projected OASI annual balance is important in the analysis of the financial condition of the program. Under the intermediate assumptions, the annual balance is negative throughout the projection period. This annual deficit rises rapidly, reaching a peak of 3.84 percent of taxable payroll for 2037, then declines to 3.41 percent of taxable payroll for 2053, and rises thereafter until it reaches 4.06 percent of taxable payroll for 2086.

Under the low-cost assumptions, the Trustees project the OASI annual balance to be negative in 2012-2013, positive for 2014 through 2019, and negative thereafter. The annual deficit peaks at 1.97 percent of taxable payroll for 2034 and then declines through 2084, reaching a deficit of 0.15 percent of payroll for 2086. Under the high-cost assumptions, the OASI balance is negative throughout the projection period, with deficits of 2.06 percent for 2020, 6.48 percent for 2050, and 10.09 percent of payroll for 2086.

Table IV.B1.—Annual Income Rates, Cost Rates, and Balances, Calendar Years 1990-2090

[As a percentage of taxable payroll]

Calendar year	OASI			DI			OASDI		
	Income rate[a]	Cost rate	Balance	Income rate[a]	Cost rate	Balance	Income rate[a]	Cost rate	Balance
Historical data:									
1990	11.47	9.66	1.82	1.18	1.09	0.10	12.66	10.74	1.91
1995	10.64	10.22	.42	1.87	1.44	.43	12.51	11.67	.85
2000	10.84	8.97	1.87	1.78	1.42	.36	12.62	10.40	2.23
2001	10.90	9.08	1.82	1.82	1.48	.35	12.72	10.55	2.17
2002	11.05	9.29	1.76	1.84	1.60	.24	12.90	10.89	2.01
2003	10.78	9.34	1.44	1.80	1.68	.12	12.59	11.03	1.56
2004	10.73	9.27	1.46	1.79	1.77	.02	12.52	11.05	1.48
2005	10.96	9.31	1.65	1.84	1.85	-.02	12.79	11.16	1.63
2006	10.96	9.18	1.78	1.83	1.88	-.05	12.79	11.06	1.73
2007	11.02	9.45	1.57	1.84	1.88	-.04	12.86	11.33	1.53
2008	10.90	9.53	1.37	1.83	2.01	-.19	12.73	11.55	1.18
2009	11.22	10.73	.49	1.88	2.31	-.43	13.10	13.04	.06
2010	10.73	11.03	-.30	1.79	2.41	-.62	12.51	13.44	-.92
2011	10.88	11.09	-.21	1.81	2.43	-.62	12.68	13.52	-.83
Intermediate:									
2012	11.07	11.35	-.27	1.82	2.48	-.66	12.89	13.83	-.93
2013	11.00	11.48	-.48	1.83	2.47	-.64	12.83	13.95	-1.12
2014	11.09	11.55	-.46	1.84	2.43	-.59	12.93	13.98	-1.05
2015	11.11	11.58	-.47	1.84	2.38	-.54	12.95	13.97	-1.01
2016	11.14	11.61	-.47	1.84	2.33	-.48	12.98	13.94	-.96
2017	11.16	11.65	-.49	1.84	2.27	-.42	13.01	13.91	-.91
2018	11.19	11.74	-.56	1.85	2.22	-.37	13.03	13.96	-.93
2019	11.21	11.94	-.74	1.85	2.19	-.34	13.05	14.13	-1.08
2020	11.23	12.20	-.97	1.85	2.18	-.33	13.07	14.37	-1.30
2021	11.26	12.47	-1.21	1.85	2.19	-.34	13.11	14.65	-1.55
2025	11.33	13.62	-2.29	1.85	2.26	-.41	13.18	15.88	-2.70
2030	11.39	14.77	-3.38	1.85	2.23	-.38	13.25	17.01	-3.76
2035	11.42	15.22	-3.80	1.85	2.19	-.33	13.28	17.41	-4.13
2040	11.43	15.20	-3.77	1.85	2.16	-.30	13.28	17.36	-4.07
2045	11.42	14.98	-3.56	1.86	2.20	-.35	13.28	17.19	-3.91
2050	11.42	14.85	-3.43	1.86	2.23	-.37	13.27	17.08	-3.81
2055	11.42	14.84	-3.42	1.86	2.25	-.39	13.28	17.09	-3.81
2060	11.43	14.92	-3.49	1.86	2.24	-.38	13.28	17.16	-3.87
2065	11.43	14.95	-3.52	1.86	2.25	-.39	13.29	17.20	-3.91
2070	11.44	15.05	-3.62	1.86	2.27	-.41	13.30	17.33	-4.03
2075	11.45	15.18	-3.74	1.86	2.28	-.42	13.31	17.46	-4.16
2080	11.45	15.31	-3.85	1.86	2.30	-.44	13.32	17.60	-4.29
2085	11.47	15.49	-4.03	1.86	2.30	-.44	13.33	17.79	-4.47
2090	11.48	15.68	-4.21	1.86	2.30	-.44	13.34	17.98	-4.64
First year balance becomes negative and remains negative through 2090			2010			2005			2010
Low-cost:									
2012	11.02	11.21	-.19	1.81	2.41	-.60	12.83	13.63	-.79
2013	11.03	11.18	-.15	1.83	2.34	-.51	12.87	13.52	-.65
2014	11.07	11.07	[b]	1.84	2.24	-.40	12.90	13.30	-.40
2015	11.08	10.96	.12	1.84	2.14	-.30	12.92	13.09	-.18
2016	11.10	10.88	.22	1.84	2.04	-.21	12.94	12.93	.01
2017	11.12	10.88	.24	1.84	1.96	-.12	12.96	12.84	.12
2018	11.15	10.93	.22	1.84	1.90	-.06	12.99	12.83	.16
2019	11.16	11.07	.10	1.84	1.86	-.02	13.00	12.92	.08
2020	11.18	11.23	-.05	1.84	1.82	.01	13.01	13.05	-.04
2021	11.20	11.39	-.20	1.84	1.81	.03	13.04	13.21	-.17

Table IV.B1.—Annual Income Rates, Cost Rates, and Balances, Calendar Years 1990-2090 (Cont.)
[As a percentage of taxable payroll]

Calendar year	OASI Income rate[a]	OASI Cost rate	OASI Balance	DI Income rate[a]	DI Cost rate	DI Balance	OASDI Income rate[a]	OASDI Cost rate	OASDI Balance
Low-cost (Cont.):									
2025	11.25	12.26	-1.01	1.84	1.79	0.05	13.09	14.05	-0.96
2030	11.30	13.08	-1.78	1.84	1.70	.14	13.14	14.79	-1.65
2035	11.32	13.28	-1.96	1.84	1.63	.21	13.16	14.90	-1.75
2040	11.31	13.06	-1.75	1.84	1.58	.26	13.15	14.64	-1.49
2045	11.29	12.68	-1.39	1.84	1.59	.25	13.13	14.28	-1.15
2050	11.28	12.41	-1.13	1.84	1.59	.25	13.12	14.00	-.88
2055	11.27	12.24	-.97	1.84	1.58	.26	13.11	13.82	-.71
2060	11.26	12.11	-.85	1.84	1.55	.29	13.10	13.66	-.56
2065	11.25	11.91	-.65	1.84	1.54	.30	13.09	13.45	-.36
2070	11.25	11.73	-.49	1.84	1.54	.29	13.08	13.28	-.19
2075	11.24	11.56	-.33	1.84	1.54	.29	13.08	13.11	-.03
2080	11.23	11.41	-.18	1.84	1.56	.28	13.07	12.97	.10
2085	11.23	11.38	-.15	1.84	1.57	.27	13.07	12.95	.12
2090	11.23	11.42	-.19	1.84	1.57	.27	13.07	13.00	.07
First year balance becomes negative and remains negative through 2090			2020			[c]			[c]
High-cost:									
2012	11.16	11.55	-.40	1.83	2.57	-.73	12.99	14.12	-1.13
2013	10.95	11.85	-.90	1.82	2.63	-.81	12.77	14.48	-1.71
2014	11.13	12.14	-1.01	1.85	2.68	-.83	12.97	14.82	-1.84
2015	11.15	12.35	-1.20	1.85	2.70	-.85	13.00	15.05	-2.05
2016	11.18	12.51	-1.33	1.85	2.69	-.84	13.03	15.20	-2.17
2017	11.21	12.65	-1.43	1.85	2.66	-.81	13.07	15.31	-2.24
2018	11.24	12.81	-1.56	1.86	2.63	-.78	13.10	15.44	-2.34
2019	11.26	13.04	-1.78	1.86	2.61	-.75	13.12	15.65	-2.53
2020	11.29	13.34	-2.06	1.86	2.60	-.74	13.14	15.94	-2.80
2021	11.32	13.69	-2.37	1.86	2.63	-.77	13.18	16.32	-3.14
2025	11.41	15.15	-3.74	1.87	2.79	-.92	13.28	17.94	-4.66
2030	11.50	16.69	-5.19	1.87	2.84	-.97	13.37	19.53	-6.16
2035	11.55	17.52	-5.97	1.87	2.84	-.96	13.42	20.36	-6.93
2040	11.58	17.84	-6.27	1.87	2.84	-.97	13.45	20.68	-7.23
2045	11.59	17.93	-6.34	1.88	2.94	-1.07	13.46	20.87	-7.40
2050	11.60	18.08	-6.48	1.88	3.02	-1.14	13.48	21.10	-7.62
2055	11.62	18.38	-6.76	1.88	3.09	-1.21	13.50	21.47	-7.97
2060	11.65	18.83	-7.17	1.88	3.11	-1.23	13.53	21.94	-8.40
2065	11.68	19.27	-7.59	1.89	3.17	-1.28	13.56	22.43	-8.87
2070	11.71	19.85	-8.14	1.89	3.22	-1.34	13.60	23.08	-9.47
2075	11.76	20.53	-8.77	1.89	3.24	-1.35	13.64	23.77	-10.12
2080	11.79	21.18	-9.39	1.89	3.25	-1.37	13.68	24.44	-10.76
2085	11.83	21.82	-9.98	1.89	3.23	-1.35	13.72	25.05	-11.33
2090	11.86	22.34	-10.47	1.89	3.21	-1.32	13.75	25.54	-11.79
First year balance becomes negative and remains negative through 2090			2010			2005			2010

[a] Income rates include certain reimbursements from the General Fund of the Treasury.
[b] Between -0.005 and 0.005 percent of taxable payroll.
[c] The Trustees project the annual balance to be negative for a temporary period and return to positive levels before the end of the projection period.

Notes:
1. The income rate excludes interest income.
2. Revisions of taxable payroll may change some historical values.
3. Totals do not necessarily equal the sums of rounded components.

The DI cost rate rose substantially from 1.88 percent of taxable payroll in 2007 to 2.43 percent for 2011 due to the recent economic recession. Under

the intermediate assumptions, the Trustees project that the DI cost rate will increase to 2.48 percent for 2012 and then decline to 2.18 percent for 2020. From 2020 to 2045, the DI cost rate stays relatively stable and then generally increases thereafter, reaching 2.30 percent for 2086. The income rate increases only very slightly from 1.82 percent of taxable payroll for 2012 to 1.86 percent for 2086. The projected annual deficit is 0.66 percent in 2012 and reaches 0.44 percent for 2086.

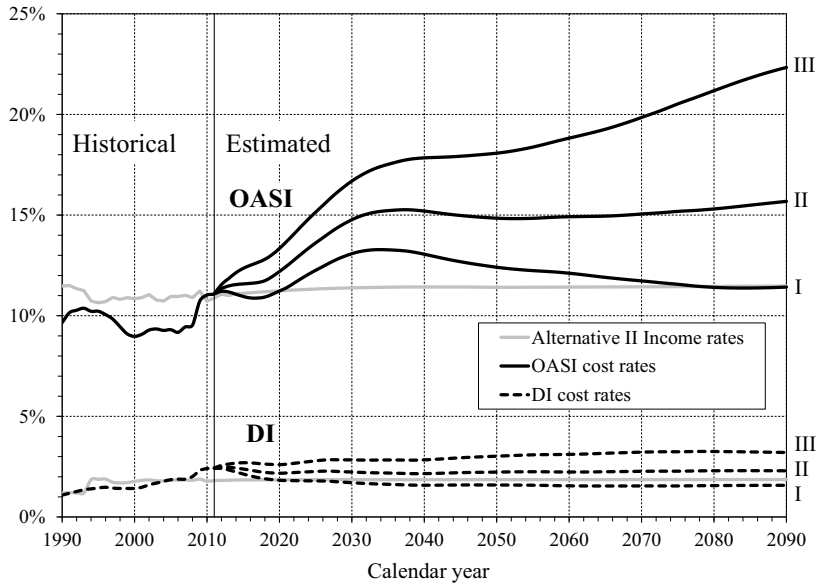
Under the low-cost assumptions, the Trustees project the DI cost rate will decline from 2.43 percent of payroll for 2011 to 1.58 percent for 2040, and will remain relatively stable thereafter, reaching 1.57 percent for 2086. The annual balance is negative for the first 8 years and is positive throughout the remainder of the long-range period. For the high-cost assumptions, the Trustees project the DI cost rate to generally rise over the projection period, reaching 3.23 percent for 2086. The annual deficit is 0.73 percent in 2012 and rises to 1.34 percent for 2086.

Figure IV.B1 shows the patterns of the OASI and DI annual income rates and cost rates. The variation in income rates by alternative is very small, and, to simplify the presentation, figure IV.B1 shows only the income rates for alternative II. Income rates generally increase slowly for each of the alternatives over the long-range period. Taxation of benefits, which is a relatively small portion of income, is the main source of both the increases in the income rate and the variation among the alternatives. Increases in income from taxation of benefits reflect: (1) increases in the total amount of benefits paid; and (2) the increasing share of individual benefits that will be subject to taxation because benefit taxation threshold amounts are not indexed.

Figure IV.B1 shows the patterns of the annual balances for OASI and DI. For each alternative and for historical data, the magnitude of each of the positive balances, as a percentage of taxable payroll, is the distance between the appropriate cost-rate curve and the income-rate curve above it. The magnitude of each of the deficits is the distance between the appropriate cost-rate curve and the income-rate curve below it. The pattern of the projected OASDI annual balances is important to the analysis of the financial condition of the Social Security program as a whole.

In the future, the costs of OASI, DI, and the combined OASDI programs as a percentage of taxable payroll are unlikely to fall outside the range encompassed by alternatives I and III because alternatives I and III define a wide range of demographic and economic conditions.

Figure IV.B1.—Long-Range OASI and DI Annual Income Rates and Cost Rates
[As a percentage of taxable payroll]



Long-range OASDI cost and income are generally expressed as percentages of taxable payroll. However, the Trustees also present cost and income as shares of gross domestic product (GDP), the value of goods and services produced during the year in the United States. Under alternative II, the Trustees project the OASDI cost to rise from 5.01 percent of GDP for 2012 to a peak of 6.36 percent for 2035. Thereafter, OASDI cost as a percentage of GDP declines to a low of 6.03 percent for 2067 and then increases slowly thereafter, reaching a level of 6.10 percent by 2086. Appendix F presents full estimates of income and cost relative to GDP.

2. Comparison of Workers to Beneficiaries

The Trustees project the OASDI cost rate to increase through 2014 and then decrease slightly through 2017 as the economy recovers. The cost rate then rises rapidly between 2017 and 2035, primarily because the number of beneficiaries rises much more rapidly than the number of covered workers as the baby-boom generation retires. The baby-boom generation had lower fertility rates than their parents, and the Trustees expect those lower fertility rates to persist; therefore, the ratio of beneficiaries to workers will rise rapidly and reach a permanently higher level after the baby-boom generation retires. To account for increasing longevity, the Trustees project that the ratio of benefi-

ciaries to workers will generally rise slowly thereafter. Table IV.B2 provides a comparison of the numbers of covered workers and beneficiaries.

Table IV.B2.—Covered Workers and Beneficiaries, Calendar Years 1945-2090

Calendar year	Covered workers[a] (in thousands)	Beneficiaries[b] (in thousands)			Covered workers per OASDI beneficiary	OASDI beneficiaries per 100 covered workers
		OASI	DI	OASDI		
Historical data:						
1945	46,390	1,106	-	1,106	41.9	2
1950	48,280	2,930	-	2,930	16.5	6
1955	65,065	7,564	-	7,564	8.6	12
1960	72,370	13,740	522	14,262	5.1	20
1965	80,533	18,509	1,648	20,157	4.0	25
1970	92,906	22,618	2,568	25,186	3.7	27
1975	100,140	26,998	4,125	31,123	3.2	31
1980	112,645	30,384	4,734	35,117	3.2	31
1985	120,228	32,763	3,874	36,636	3.3	30
1990	133,070	35,255	4,204	39,459	3.4	30
1995	140,860	37,364	5,731	43,096	3.3	31
2000	154,539	38,556	6,606	45,162	3.4	29
2001	154,881	38,888	6,780	45,668	3.4	29
2002	154,312	39,117	7,060	46,176	3.3	30
2003	154,527	39,315	7,438	46,753	3.3	30
2004	156,259	39,558	7,810	47,368	3.3	30
2005	158,638	39,961	8,172	48,133	3.3	30
2006	161,129	40,435	8,428	48,863	3.3	30
2007	162,928	40,863	8,739	49,603	3.3	30
2008	162,340	41,355	9,065	50,420	3.2	31
2009	157,612	42,385	9,475	51,860	3.0	33
2010	156,978	43,440	9,958	53,398	2.9	34
2011	157,736	44,388	10,428	54,816	2.9	35
Intermediate:						
2012	159,393	45,542	10,803	56,345	2.8	35
2015	165,087	49,820	11,523	61,343	2.7	37
2020	173,725	58,132	11,931	70,064	2.5	40
2025	177,757	66,025	12,572	78,597	2.3	44
2030	181,233	73,320	12,736	86,055	2.1	47
2035	185,675	78,079	12,894	90,973	2.0	49
2040	190,642	80,598	13,168	93,766	2.0	49
2045	195,742	82,091	13,790	95,881	2.0	49
2050	200,466	83,957	14,260	98,217	2.0	49
2055	205,102	86,362	14,706	101,068	2.0	49
2060	209,850	89,056	15,008	104,064	2.0	50
2065	214,867	91,587	15,492	107,079	2.0	50
2070	219,961	94,507	16,013	110,520	2.0	50
2075	225,036	97,541	16,444	113,986	2.0	51
2080	230,033	100,589	16,967	117,556	2.0	51
2085	234,908	104,074	17,384	121,457	1.9	52
2090	239,791	107,724	17,760	125,484	1.9	52

Table IV.B2.—Covered Workers and Beneficiaries, Calendar Years 1945-2090 (Cont.)

Calendar year	Covered workers[a] (in thousands)	Beneficiaries[b] (in thousands) OASI	DI	OASDI	Covered workers per OASDI beneficiary	OASDI beneficiaries per 100 covered workers
Low-cost:						
2012	160,063	45,540	10,737	56,277	2.8	35
2015	168,463	49,757	10,981	60,738	2.8	36
2020	177,659	57,830	10,767	68,597	2.6	39
2025	182,719	65,382	10,899	76,281	2.4	42
2030	186,973	72,163	10,646	82,809	2.3	44
2035	192,435	76,323	10,525	86,848	2.2	45
2040	199,044	78,251	10,629	88,880	2.2	45
2045	206,570	79,286	11,084	90,369	2.3	44
2050	214,409	80,865	11,466	92,331	2.3	43
2055	222,822	83,124	11,863	94,987	2.3	43
2060	231,762	85,688	12,201	97,888	2.4	42
2065	241,446	88,034	12,736	100,770	2.4	42
2070	251,881	90,667	13,363	104,030	2.4	41
2075	263,032	93,369	13,998	107,368	2.4	41
2080	274,734	96,324	14,790	111,114	2.5	40
2085	286,798	100,269	15,544	115,813	2.5	40
2090	299,156	105,029	16,279	121,309	2.5	41
High-cost:						
2012	158,363	45,548	10,868	56,417	2.8	36
2015	160,566	49,861	12,130	61,991	2.6	39
2020	169,149	58,401	13,265	71,666	2.4	42
2025	172,802	66,674	14,345	81,019	2.1	47
2030	175,655	74,551	14,841	89,392	2.0	51
2035	179,135	80,009	15,240	95,250	1.9	53
2040	182,465	83,231	15,661	98,892	1.8	54
2045	185,232	85,288	16,418	101,706	1.8	55
2050	187,045	87,529	16,930	104,459	1.8	56
2055	188,220	90,172	17,366	107,539	1.8	57
2060	189,146	93,055	17,561	110,615	1.7	58
2065	189,971	95,764	17,894	113,657	1.7	60
2070	190,395	98,893	18,187	117,080	1.6	61
2075	190,359	102,173	18,258	120,431	1.6	63
2080	189,924	105,212	18,284	123,496	1.5	65
2085	189,189	108,014	18,140	126,154	1.5	67
2090	188,365	110,301	17,976	128,277	1.5	68

[a] Workers who are paid at some time during the year for employment on which OASDI taxes are due.
[b] Beneficiaries with monthly benefits in current-payment status as of June 30.

Notes:
1. The number of beneficiaries does not include uninsured individuals who receive benefits under Section 228 of the Social Security Act. The General Fund of the Treasury reimburses the trust funds for the costs of most of these individuals.
2. Historical covered worker and beneficiary data are subject to revision.
3. Totals do not necessarily equal the sums of rounded components.

The effect of the demographic shift under the three alternatives on the OASDI cost rates is clear when one considers the projected number of OASDI beneficiaries per 100 covered workers. Compared to the 2011 level of 35 beneficiaries per 100 covered workers, the Trustees project that this ratio will rise to 49 by 2035 under the intermediate assumptions because the growth in beneficiaries greatly exceeds the growth in workers. By 2090, this projected ratio rises further under the intermediate and high-cost assumptions, reaching 52 under the intermediate assumptions and 68 under the high-

cost assumptions. Under the low-cost assumptions, this ratio rises to 45 by 2035 and then declines, reaching a stable level of about 40 after 2070. Figure IV.B2 shows beneficiaries per 100 covered workers.

For each alternative, the curve in figure IV.B2 is strikingly similar to the corresponding cost-rate curve in figure IV.B1. This similarity emphasizes the extent to which the cost rate is determined by the age distribution of the population. The cost rate is essentially the product of the number of beneficiaries and their average benefit, divided by the product of the number of covered workers and their average taxable earnings. For this reason, the pattern of the annual cost rates is similar to that of the annual ratios of beneficiaries to workers.

Figure IV.B2.—Number of OASDI Beneficiaries Per 100 Covered Workers

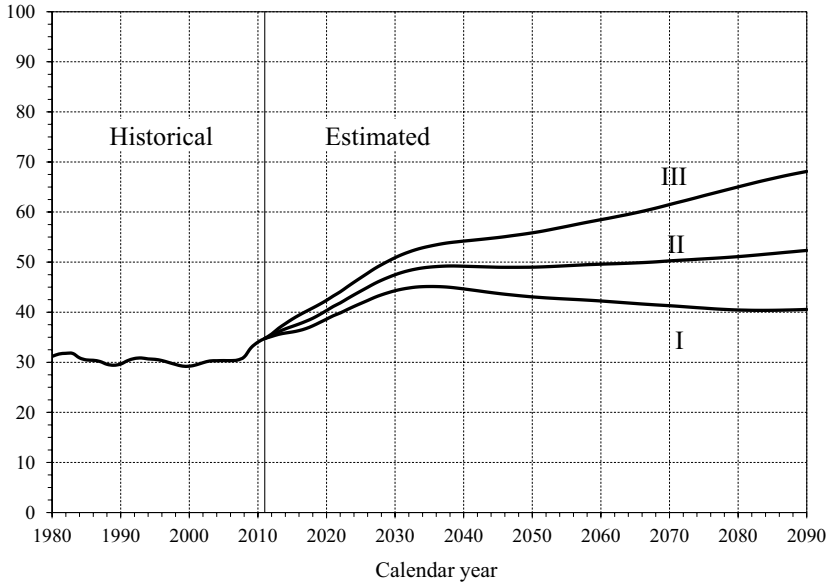


Table IV.B2 also shows the number of covered workers per OASDI beneficiary, which was about 2.9 for 2011. Under the low-cost assumptions, the Trustees project that this ratio will decline to 2.2 by 2035, and then generally rise throughout the remainder of the period, reaching 2.5 by 2090. Under the intermediate assumptions, this ratio declines generally throughout the long-range period, reaching 2.0 for 2035 and 1.9 by 2090. Under the high-cost assumptions, this ratio decreases steadily to 1.5 by 2090.

3. Trust Fund Ratios

Trust fund ratios are useful indicators of the adequacy of the financial resources of the Social Security program. The trust fund ratio for a year is the assets in a fund at the beginning of a year (which do not include advance tax transfers) expressed as a percentage of the cost during the year. Under present law, the OASI and DI Trust Funds do not have the authority to borrow other than in the form of advance tax transfers, which are limited to expected taxes for the current calendar month. If either trust fund becomes exhausted during a year, then there would not be sufficient assets in the fund to pay the full amount of benefits scheduled for the year on a timely basis.

The trust fund ratio serves an additional important purpose in assessing the actuarial status of the program. If the trust fund ratio is positive throughout the period and is either level or increasing at the end of the period, then projected adequacy for the long-range period is likely to continue for subsequent reports. Under these conditions, the program has achieved sustainable solvency.

Table IV.B3 shows the Trustees' projections of trust fund ratios by alternative, without regard to advance tax transfers that would be effected, for the separate and combined OASI and DI Trust Funds. The table also shows the years of trust fund exhaustion by alternative.

Under the intermediate assumptions, the Trustees project that the OASI Trust Fund ratio will decline from 390 percent at the beginning of the period, at first slowly, and then more rapidly, until the trust fund becomes exhausted in 2035. The DI trust fund ratio has been declining steadily since 2003, and continues to decline from 109 percent at the beginning of 2012 until the trust fund becomes exhausted in 2016.

The Trustees estimate that, under the intermediate assumptions, the trust fund ratio for the combined OASI and DI Trust Funds will decline from 340 percent at the beginning of 2012 until the combined funds become exhausted in 2033. This is three years earlier than the Trustees projected in last year's report.

Under the intermediate assumptions, the Trustees project that OASDI cost will exceed non-interest income for the entire projection period. However, for the period 2012 through 2020, trust fund income, including interest income, is more than is needed to cover costs, so combined trust fund assets continue to grow. Beginning in 2021, combined trust fund assets diminish until assets are exhausted in 2033.

Under the low-cost assumptions, the trust fund ratio for the DI program increases from 2020 through the end of the long-range projection period,

reaching the extremely high level of 1,289 percent for 2087. For the OASI program, the trust fund ratio declines slowly at first, and then more rapidly, until the trust fund becomes exhausted in 2054. For the combined OASDI program, the trust fund ratio declines to a low of 7 percent for 2076, and increases slightly thereafter, reaching 16 percent for 2087. Thus, under the low-cost assumptions, the DI program and the combined OASDI program achieve sustainable solvency. However, the trust fund ratio for each program falls below 25 percent for some years during the 75-year projection period.

In contrast, under the high-cost assumptions, the Trustees estimate that the OASI trust fund ratio will decline continually to fund exhaustion in 2029. The DI trust fund ratio declines from 107 percent for 2012 to fund exhaustion in 2015. The combined OASI and DI trust fund ratio declines from 338 percent for 2012 to fund exhaustion in 2027.

The Trustees project large, persistent annual deficits under all but the low-cost assumptions. It is highly likely that lawmakers will need to increase income, reduce program costs, or both, in order to prevent exhaustion of the trust funds. The stochastic projections discussed in appendix E suggest that trust fund exhaustion is highly probable by mid-century.

Even under the high-cost assumptions, however, the combined OASI and DI Trust Fund assets on hand plus their estimated future income are sufficient to cover their combined cost until 2027. Under the intermediate assumptions, the combined starting funds plus estimated future income are sufficient to cover cost until 2033. The combined program is able to cover cost for the foreseeable future under the more optimistic low-cost assumptions. In the 2011 report, the Trustees projected that the combined trust funds would become exhausted in 2029 under the high-cost assumptions and in 2036 under the intermediate assumptions.

Table IV.B3.—Trust Fund Ratios, Calendar Years 2012-90
[In percent]

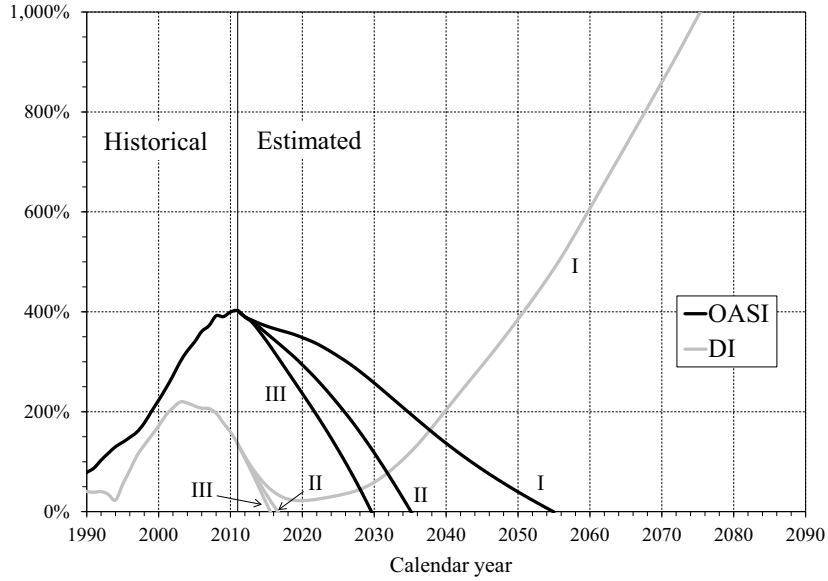
Calendar year	Intermediate			Low-cost			High-cost		
	OASI	DI	OASDI	OASI	DI	OASDI	OASI	DI	OASDI
2012	390	109	340	390	111	341	390	107	338
2013	381	83	329	383	88	332	379	78	324
2014	370	58	315	377	69	325	361	47	304
2015	357	34	302	371	52	319	342	17	284
2016	345	12	290	367	40	315	321	[a]	262
2017	333	[a]	277	363	31	312	300	[a]	240
2018	321	[a]	265	358	25	309	279	[a]	219
2019	308	[a]	253	354	23	306	258	[a]	197
2020	294	[a]	240	348	22	303	236	[a]	176
2021	280	[a]	227	343	23	299	215	[a]	154
2025	215	[a]	164	311	33	275	123	[a]	60
2030	118	[a]	70	257	59	235	[a]	[a]	[a]
2035	3	[a]	[a]	196	119	188	[a]	[a]	[a]
2040	[a]	[a]	[a]	137	204	144	[a]	[a]	[a]
2045	[a]	[a]	[a]	85	292	108	[a]	[a]	[a]
2050	[a]	[a]	[a]	40	385	79	[a]	[a]	[a]
2055	[a]	[a]	[a]	[a]	486	55	[a]	[a]	[a]
2060	[a]	[a]	[a]	[a]	607	35	[a]	[a]	[a]
2065	[a]	[a]	[a]	[a]	733	20	[a]	[a]	[a]
2070	[a]	[a]	[a]	[a]	859	10	[a]	[a]	[a]
2075	[a]	[a]	[a]	[a]	991	7	[a]	[a]	[a]
2080	[a]	[a]	[a]	[a]	1,112	9	[a]	[a]	[a]
2085	[a]	[a]	[a]	[a]	1,237	14	[a]	[a]	[a]
2090	[a]	[a]	[a]	[a]	1,369	19	[a]	[a]	[a]
Trust fund exhausts in	2035	2016	2033	2054	[b]	[b]	2029	2015	2027
Payable benefits as percent of scheduled benefits:									
In year of exhaustion	74	79	75	91	[b]	[b]	68	68	70
In 2086	72	80	73	99	100	100	51	57	52

[a] The Trustees estimate that the trust fund will be exhausted by the beginning of this year. In addition, the table includes the year in which the trust fund exhausts.
[b] The Trustees estimate that the trust fund will not be exhausted within the projection period.

Note: The definition of trust fund ratio appears in the Glossary.The combined ratios shown for years after exhaustion of the DI Trust Fund are theoretical.

Figure IV.B3 illustrates the trust fund ratios for the separate OASI and DI Trust Funds for each of the alternative sets of assumptions. DI Trust Fund status is more uncertain than OASI Trust Fund status because there is a high degree of uncertainty associated with future disability prevalence. A graph of the trust fund ratios for the combined trust funds appears in figure II.D6.

Figure IV.B3.—Long-Range OASI and DI Trust Fund Ratios
[Assets as a percentage of annual cost]



4. Summarized Income Rates, Summarized Cost Rates, and Actuarial Balances

Summarized values for the full 75-year period are useful in analyzing the program's long-range financial adequacy over the period as a whole, both under present law and under proposed modifications to the law. Table IV.B4 presents summarized income rates, summarized cost rates, and actuarial balances for 25-year, 50-year, and 75-year valuation periods. Summarized income rates are the sum of non-interest income (which includes scheduled payroll taxes, the projected income from the taxation of scheduled benefits, and reimbursements from the General Fund of the Treasury) and the starting trust fund balance, expressed as a percentage of taxable payroll. Under current law, the total OASDI payroll tax rate, which includes payroll taxes and reimbursements from the General Fund of the Treasury to make up for the reduction in payroll tax revenue, will remain at 12.4 percent in the future. In contrast, the Trustees expect income from taxation of benefits, expressed as a percentage of taxable payroll, to increase in most years of the long-range period for two reasons. First, total benefit payments are rising faster than payroll. Second, the benefit-taxation threshold amounts are not indexed, so an increasing share of beneficiaries will pay tax on a larger portion of their benefits. Summarized cost rates are the sum of cost (which includes sched-

uled benefit payments, administrative expenses, net interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries) and the cost of reaching a target trust fund of 100 percent of annual cost at the end of the period, expressed as a percentage of taxable payroll.

The actuarial balance for a valuation period is equal to the difference between the summarized income rate and the summarized cost rate for the period. An actuarial balance of zero for any period indicates that cost for the period could be met for the period as a whole (but not necessarily at all points within the period), with a remaining trust fund balance at the end of the period equal to 100 percent of the following year's cost. A negative actuarial balance for a period indicates that the present value of income to the program plus the existing trust fund is less than the present value of the cost of the program plus the cost of reaching a target trust fund balance of 1 year's cost by the end of the period. This negative balance, combined with a falling trust fund ratio, indicates that the current-law level of financing is not sustainable.

Payroll tax income, expressed as a percentage of taxable payroll, is generally slightly smaller than the actual tax rates in effect for each period. The reason for this difference is that workers receive earnings before the trust funds receive the corresponding payroll taxes. As a result of this timing difference, payroll tax income received in a given year includes taxes paid from a combination of the taxable payrolls for that year and prior years. When payroll tax income is divided by taxable payroll for a particular year (or period of years), the resulting income rate is slightly lower than the applicable tax rate for the period.

Table IV.B4 contains summarized rates for the intermediate, low-cost, and high-cost assumptions. The low-cost and high-cost assumptions define a wide range of possibilities. Financial outcomes as good as the low-cost scenario or as bad as the high-cost scenario are unlikely to occur.

For the 25-year valuation period, the OASDI program has an actuarial balance of 0.38 percent of taxable payroll under the low-cost assumptions, -1.21 percent under the intermediate assumptions, and -3.13 percent under the high-cost assumptions. These balances indicate that the program is more than adequately financed for the 25-year valuation period under only the low-cost projections.

For the 50-year valuation period, the OASDI program has actuarial balances of -0.16 percent under the low-cost assumptions, -2.28 percent under the intermediate assumptions, and -4.91 percent under the high-cost assumptions. These actuarial deficits mean that the program is not adequately

financed for the 50-year valuation period under the intermediate and high-cost sets of assumptions. Under the low-cost projections, in which the combined OASI and DI Trust Fund does not exhaust, the small actuarial deficit means that the reserves of the trust fund fall below 1 year's projected program cost by the end of 2061.

For the entire 75-year valuation period, the combined OASDI program again has actuarial deficits under all three sets of assumptions. The actuarial balance for this long-range valuation period is -0.11 percent of taxable payroll under the low-cost assumptions, -2.67 percent under the intermediate assumptions, and -5.89 percent under the high-cost assumptions.

Assuming the Trustees' intermediate assumptions accurately capture future demographic and economic trends, lawmakers could restore solvency for the program over the next 75 years using a variety of approaches. For example, they could immediately increase the combined Social Security payroll tax rate from 12.40 percent to 15.01 percent, immediately reduce scheduled benefits by 16.2 percent, or use some combination of approaches.

However, eliminating the actuarial deficit over the next 75 years requires raising payroll taxes or lowering benefits by more than is required just to achieve solvency, because the actuarial deficit includes the cost of attaining a target trust fund ratio equal to 100 percent of annual program cost by the end of the period. Lawmakers could eliminate the actuarial deficit for the 75-year period by immediately increasing the combined payroll tax from 12.40 percent to 15.16 percent,[1] immediately decreasing scheduled benefits by 17.0 percent, or using a combination of these approaches. The Trustees project that these changes would be sufficient to eliminate the actuarial deficit and leave an actuarial balance of zero for the OASDI program.

Under the intermediate assumptions, the Trustees project large annual deficits toward the end of the long-range period that reach 4.50 percent of payroll for 2086 (see table IV.B1). These large deficits indicate that annual cost continues to exceed non-interest income after 2086, so continued adequate financing would require larger changes than those needed to maintain solvency for the 75-year period. Over the period extending through the infinite horizon, the Trustees estimate the actuarial deficit to be 3.9 percent of taxable payroll under the intermediate assumptions. This deficit indicates that lawmakers could eliminate the projected infinite horizon shortfall with an immediate increase in the combined payroll tax rate from 12.4 percent to

[1] The indicated increase in the payroll tax rate of 2.76 percent is somewhat larger than the 2.67 percent 75-year actuarial deficit because the indicated increase reflects a behavioral response to tax rate changes. In particular, the calculation assumes that an increase in payroll taxes results in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

about 16.5 percent.[1] They could also eliminate this shortfall by reducing all current and future benefits immediately by 23.3 percent.

The financial condition of the DI program is substantially worse than that of the OASI program for the first 25 years. Summarized over the full 75-year period, however, long-range deficits for the OASI and DI programs under intermediate assumptions are more similar when measured relative to the level of program costs. Increases in longevity after 2027, when the disability conversion age remains fixed, have a greater effect on OASI cost than on DI cost. As a result of this greater effect on OASI cost, the financial status of the OASI program in the later portion of the 75-year projection period is worse than the financial status of the DI program.

[1] The indicated increase in the payroll tax rate of 4.1 percent is somewhat larger than the 3.9 percent infinite horizon actuarial deficit because the indicated increase reflects a behavioral response to tax rate changes. In particular, the calculation assumes that an increase in payroll taxes results in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

Table IV.B4.—Components of Summarized Income Rates and Cost Rates, Calendar Years 2012-86
[As a percentage of taxable payroll]

Valuation period	Summarized income rate: Non-interest income	Summarized income rate: Beginning fund balance	Summarized income rate: Total	Summarized cost rate: Cost	Summarized cost rate: Ending target fund	Summarized cost rate: Total	Actuarial balance
OASI:							
Intermediate:							
2012-36.	11.29	1.72	13.01	13.28	0.56	13.84	-0.82
2012-61.	11.36	.97	12.33	14.02	.22	14.24	-1.92
2012-86.	11.38	.74	12.12	14.29	.13	14.42	-2.30
Low-cost:							
2012-36.	11.22	1.68	12.90	12.05	.49	12.55	.36
2012-61.	11.26	.93	12.18	12.29	.20	12.48	-.30
2012-86.	11.26	.68	11.94	12.11	.11	12.23	-.29
High-cost:							
2012-36.	11.37	1.75	13.12	14.72	.65	15.37	-2.25
2012-61.	11.48	1.00	12.48	16.17	.26	16.44	-3.95
2012-86.	11.54	.79	12.33	17.05	.15	17.20	-4.87
DI:							
Intermediate:							
2012-36.	1.85	.10	1.96	2.26	.08	2.34	-.39
2012-61.	1.85	.06	1.91	2.24	.03	2.27	-.36
2012-86.	1.86	.05	1.90	2.25	.02	2.27	-.37
Low-cost:							
2012-36.	1.84	.10	1.94	1.86	.06	1.91	.03
2012-61.	1.84	.06	1.90	1.73	.03	1.76	.14
2012-86.	1.84	.04	1.88	1.69	.02	1.70	.18
High-cost:							
2012-36.	1.86	.11	1.97	2.74	.10	2.84	-.87
2012-61.	1.87	.06	1.93	2.84	.04	2.89	-.95
2012-86.	1.87	.05	1.92	2.92	.02	2.94	-1.02
OASDI:							
Intermediate:							
2012-36.	13.14	1.83	14.97	15.54	.64	16.18	-1.21
2012-61.	13.21	1.03	14.24	16.26	.26	16.52	-2.28
2012-86.	13.24	.78	14.02	16.54	.15	16.69	-2.67
Low-cost:							
2012-36.	13.06	1.78	14.84	13.91	.55	14.46	.38
2012-61.	13.10	.98	14.08	14.02	.22	14.24	-.16
2012-86.	13.10	.72	13.82	13.80	.13	13.93	-.11
High-cost:							
2012-36.	13.23	1.86	15.09	17.46	.76	18.22	-3.13
2012-61.	13.35	1.06	14.41	19.01	.31	19.32	-4.91
2012-86.	13.41	.84	14.25	19.97	.17	20.14	-5.89

Note: Totals do not necessarily equal the sums of rounded components.

Table IV.B5 presents the components and the calculation of the long-range (75-year) actuarial balance under the intermediate assumptions. The present value of future cost less future non-interest income over the long-range period, minus the amount of trust fund assets at the beginning of the projection period, amounts to $8.6 trillion for the OASDI program. This amount is the 75-year "open group unfunded obligation" (see row H). The actuarial deficit (which is the negative of the actuarial balance) combines this unfunded obligation with the present value of the ending target trust fund and expresses the total as a percentage of the present value of the taxable payroll for the period. The present value of future non-interest income minus cost,

plus starting trust fund assets, minus the present value of the ending target trust fund, is -$9.1 trillion for the OASDI program. The actuarial balance, expressed as a percentage of taxable payroll for the period, is -2.67 percent.

Table IV.B5.—Components of 75-Year Actuarial Balance Under Intermediate Assumptions

Item	OASI	DI	OASDI
Present value as of January 1, 2012 (in billions):			
A. Payroll tax revenue	$36,035	$6,119	$42,154
B. Reimbursements from general revenue	96	16	113
C. Taxation of benefits revenue	2,730	202	2,931
D. Non-interest income (A + B + C)	38,861	6,337	45,198
E. Cost	48,797	7,680	56,477
F. Cost minus non-interest income (E - D)	9,936	1,343	11,278
G. Trust fund assets at start of period	2,524	154	2,678
H. Open group unfunded obligation (F - G)	7,412	1,189	8,601
I. Ending target trust fund[a]	436	64	501
J. Income minus cost, plus assets at start of period, minus ending target trust fund (D - E + G - I = - H - I)	-7,848	-1,253	-9,101
K. Taxable payroll	341,465	341,465	341,465
Percent of taxable payroll:			
Actuarial balance (100 × J ÷ K)	-2.30	-.37	-2.67

[a] The calculation of the actuarial balance includes the cost of accumulating a target trust fund balance equal to 100 percent of annual cost at the end of the period.

Note: Totals do not necessarily equal the sums of rounded components.

5. Additional Measures of OASDI Unfunded Obligations

A negative actuarial balance (i.e., an actuarial deficit) is one measure of the unfunded obligation of the program. This subsection presents two additional measures of OASDI unfunded obligations under the intermediate assumptions.

a. Open Group Unfunded Obligations

Consistent with practice since 1965, this report focuses on a 75-year open group valuation to evaluate the long-run financial status of the OASDI program. The open group valuation includes non-interest income and cost for past, current, and future participants through the year 2086. The second line of table IV.B6 shows that the present value of the open group unfunded obligation for the program is $8.6 trillion over 2012-86. The open group unfunded obligation measures the adequacy of financing over the period as a whole for a program financed on a pay-as-you-go basis. On this basis, payroll taxes and scheduled benefits for all participants are included through 2086.

Table IV.B6 also presents the 75-year unfunded obligation as percentages of future OASDI taxable payroll and GDP through 2086. The 75-year unfunded obligation as a percentage of taxable payroll is less than the actuarial deficit,

because the unfunded obligation excludes the ending target trust fund value (see table IV.B5).

Consideration of summary measures alone (such as the actuarial balance and open group unfunded obligation) for a 75-year period can lead to incorrect perceptions and to policy prescriptions that do not achieve sustainable solvency. These concerns can be addressed by considering the trend in trust fund ratios toward the end of the period. See the discussion of "sustainable solvency" beginning on page 46.

Another measure that reflects the continued, and probably increasing, annual shortfalls after 75 years is the unfunded obligation extended over the infinite horizon. The extension of the time period past 75 years assumes that the current-law OASDI program and the demographic and economic trends used for the 75-year projection continue indefinitely.

Table IV.B6 reports that the OASDI open group unfunded obligation over the infinite horizon is $20.5 trillion, which is $11.9 trillion larger than for the 75-year period. The $11.9 trillion increment reflects a significant financing gap projected for OASDI for years after 2086. Of course, the degree of uncertainty associated with estimates beyond 2086 is substantial.

The $20.5 trillion infinite horizon open group unfunded obligation is 3.9 percent of taxable payroll or 1.3 percent of GDP. These relative measures of the unfunded obligation over the infinite horizon express its magnitude in relation to the resources potentially available to finance the shortfall.

Table IV.B6.—Unfunded OASDI Obligations Through the Infinite Horizon, Based on Intermediate Assumptions
[Present values as of January 1, 2012; dollar amounts in trillions]

		Expressed as a percentage of future payroll and GDP	
	Present value	Taxable payroll	GDP
Unfunded obligation through the infinite horizon[a]	$20.5	3.9	1.3
Unfunded obligation through 2086[b]	8.6	2.5	.9

[a] Present value of future cost less future non-interest income, reduced by the amount of trust fund assets at the beginning of 2012. Expressed as a percentage of payroll and GDP for the period 2012 through the infinite horizon.
[b] Present value of future cost less future non-interest income through 2086, reduced by the amount of trust fund assets at the beginning of 2012. Expressed as a percentage of payroll and GDP for the period 2012 through 2086.

Notes:
1. The present values of future taxable payroll for 2012-86 and for 2012 through the infinite horizon are $341.5 trillion and $530.2 trillion, respectively.
2. The present values of GDP for 2012-86 and for 2012 through the infinite horizon are $947.8 trillion and $1,569.1 trillion, respectively. Present values of GDP shown in the Medicare Trustees Report differ slightly due to the use of interest discount rates that are specific to each program's trust fund holdings.

Last year, the Trustees projected that the infinite horizon unfunded obligation was $17.9 trillion in present value. If the assumptions, methods, and starting

values had not changed, moving the valuation date forward by 1 year would have increased the unfunded obligation by about $0.8 trillion, to $18.7 trillion. The net effects of changes in assumptions, methods, and starting values increased the infinite horizon unfunded obligation by an additional $1.8 trillion, to $20.5 trillion in present value.

The infinite horizon unfunded obligation is 0.3 percentage point higher than in last year's report when expressed as a share of taxable payroll, and 0.1 percentage point higher than last year when expressed as a share of GDP. The main changes affecting the infinite horizon unfunded obligation for this report are revised starting values, changes in interest rates, changes in near-term economic assumptions, revisions to ultimate real-wage differential and disability incidence rates, and other method changes. See section IV.B.7 for details regarding changes in law, data, methods, and assumptions.

b. Unfunded Obligations for Past, Current, and Future Participants

Table IV.B7 separates the components of the infinite horizon unfunded obligation (with the exception of general fund reimbursements) among past, current, and future participants. The table does not separate the general fund reimbursements among participants because there is no clear basis for attributing the reimbursements across generations.

The excess of the present value of cost for past and current participants[1] over the present value of dedicated tax income for past and current participants produces an unfunded obligation for past and current participants of $22.2 trillion. Table IV.B7 also shows an unfunded obligation of $21.6 trillion for past and current participants, including past and future general fund reimbursements. Future participants will pay dedicated taxes of $1.1 trillion more into the system than the cost of their benefits ($47.0 trillion of dedicated tax income as compared to $45.9 trillion of cost). The unfunded obligation for all participants through the infinite horizon thus equals $20.5 trillion.

This accounting demonstrates that some generations receive benefits with a present value exceeding the present value of their dedicated tax income, while other generations receive benefits with a present value less than the present value of their dedicated tax income, whether general fund reimbursements are included or not. Making Social Security solvent over the infinite horizon requires some combination of increased revenue or reduced benefits for current and future participants amounting to $20.5 trillion in present value, 3.9 percent of future taxable payroll, or 1.3 percent of future GDP.

[1] Individuals who attain age 15 or older in 2012.

Table IV.B7.—Present Values of OASDI Cost Less Non-interest Income and Unfunded Obligations for Program Participants, Based on Intermediate Assumptions
[Present values as of January 1, 2012; dollar amounts in trillions]

	Present value	Expressed as a percentage of future payroll and GDP: Taxable payroll	GDP
Present value of past cost	$45.5	8.6	2.9
Less present value of past dedicated tax income	47.8	9.0	3.0
Plus present value of future cost for current participants	47.9	9.0	3.1
Less present value of future dedicated tax income for current participants	23.5	4.4	1.5
Equals unfunded obligation for past and current participants excluding general fund reimbursements	22.2	4.2	1.4
Less present value of past general fund reimbursements[a]	.4	.1	[b]
Less present value of future general fund reimbursements over the infinite horizon[a]	.1	[c]	[b]
Equals unfunded obligation for past and current participants including general fund reimbursements	21.6	4.1	1.4
Plus present value of cost for future participants over the infinite horizon	45.9	8.7	2.9
Less present value of dedicated tax income for future participants over the infinite horizon	47.0	8.9	3.0
Equals unfunded obligation for all participants through the infinite horizon	20.5	3.9	1.3

[a] Distribution of general fund reimbursements among past, current, and future participants cannot be determined.
[b] Less than 0.05 percent of GDP.
[c] Less than 0.05 percent of taxable payroll.

Notes:
1. The present value of future taxable payroll for 2012 through the infinite horizon is $530.2 trillion.
2. The present value of GDP for 2012 through the infinite horizon is $1,569.1 trillion.
3. Totals do not necessarily equal the sums of rounded components.

6. Test of Long-Range Close Actuarial Balance

The test of long-range close actuarial balance applies to a set of 66 separate valuation periods beginning with the first 10-year period, and including the periods of the first 11 years, the first 12 years, up through the full 75-year projection period. Under the long-range test, the actuarial balance ratio for each of these valuation periods must meet certain criteria. The actuarial balance ratio is defined as the ratio of the actuarial balance to the summarized cost rate. The long-range test is met if, for each of the 66 valuation periods, the actuarial balance ratio is either: (1) not negative; or (2) negative by at most a specified percentage, the "allowable threshold." The allowable threshold is zero for the first 10-year period and decreases uniformly for longer periods until it reaches -5 percent for the 75-year period. To recognize the greater uncertainty associated with estimates for more distant years, the criterion for meeting the test is less stringent for the longer periods.

The program fails the test of long-range close actuarial balance if the actuarial balance ratio falls below the allowable threshold for one or more of the 66 separate valuation periods. When the program is out of close actuarial bal-

ance, the program will experience financial problems in the future, and lawmakers should consider ways of improving its financial status. To allow future beneficiaries and workers to plan effectively for their retirement, lawmakers should not delay necessary changes in program financing or benefit provisions.

Table IV.B8 presents a comparison, based on the intermediate assumptions, of the actuarial balance ratios with the allowable thresholds under the long-range test. For display purposes, values are shown only for selected valuation periods. However, each of the 66 periods is considered for the test. Summarized income rates, summarized cost rates, and actuarial balances for the 25-year, 50-year, and 75-year valuation periods equal those presented in table IV.B4. Figure IV.B4 is a graphical presentation of the estimated balances as a percentage of the summarized cost rates. It includes the allowable thresholds for the OASI, DI, and combined OASDI programs.

For the OASI program, the Trustees estimate that, under the intermediate assumptions, the actuarial balance ratio does not fall below the allowable threshold for valuation periods of 10 through 19 years, but it does fall below for periods of greater than 19 years. For the full 75-year long-range period, the actuarial balance ratio reaches -15.94 percent, which is 10.94 percent less than the allowable threshold of -5.0 percent. Although the OASI program satisfies the test of short-range financial adequacy (as discussed in section IV.A), it is not in long-range close actuarial balance.

For the DI program, under the intermediate assumptions, the actuarial balance ratio falls below the allowable threshold for all 66 valuation periods. For the full 75-year long-range period, the actuarial balance ratio reaches -16.18 percent, which is 11.18 percent less than the allowable threshold of -5.0 percent. Thus, the DI program fails the short-range test of financial adequacy, and is also not in long-range close actuarial balance.

The long-range test indicates that financing for the DI program is less adequate than for the OASI program, even though long-range actuarial deficits for the two programs are comparable over the entire 75-year period. The increase in long-range cost due to the aging of the baby-boom generation occurs much earlier for the DI program than for the OASI program. As a result of this earlier impact on the DI program, payroll tax rates that are relatively more adequate for the OASI program during the first 25 years are relatively less adequate later in the long-range period.

For the OASDI program, the Trustees estimate that, under the intermediate assumptions, the actuarial balance ratio does not fall below the allowable threshold for valuation periods of 10 through 16 years, but it does fall below for periods of greater than 16 years. For the full 75-year long-range period,

the actuarial balance ratio reaches -15.97 percent, which is 10.97 percent less than the allowable threshold of -5.0 percent. Although the OASDI program satisfies the short-range test of financial adequacy, it is out of long-range close actuarial balance.

Last year, the Trustees reported that the OASI and DI programs, both separate and combined, were out of close actuarial balance. This year, the Trustees project that the deficits for the OASI, DI, and combined OASDI programs are larger than in last year's report for all valuation periods.

Figure IV.B4.—Test of Long-Range Close Actuarial Balance
[Comparison of long-range actuarial balance ratios with the allowable threshold for close actuarial balance, based on intermediate assumptions]

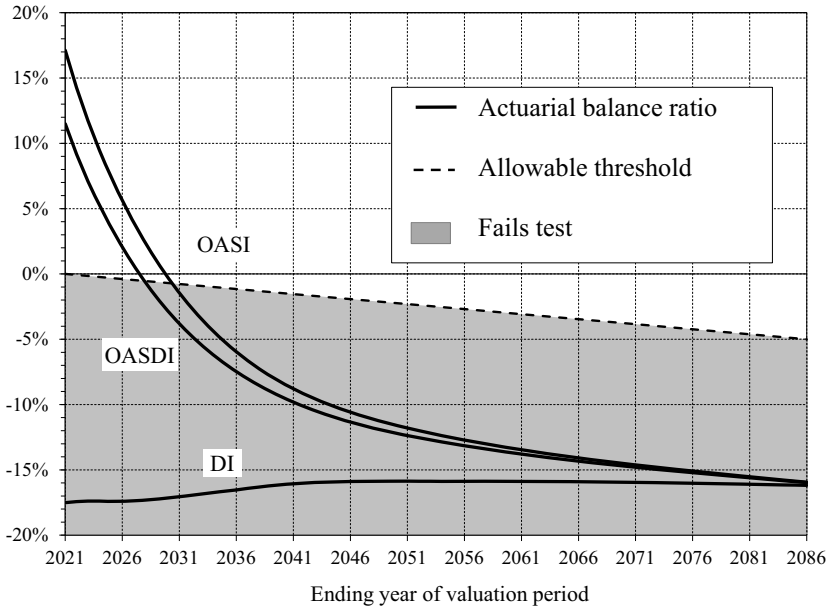


Table IV.B8.—Comparison of Actuarial Balance Ratios With the Allowable Threshold in the Test of Long-Range Close Actuarial Balance
Based on Intermediate Assumptions

Valuation period	Rates (percentage of taxable payroll)				
	Summarized income rate	Summarized cost rate	Actuarial balance	Actuarial balance ratio[a]	Allowable threshold
OASI:					
10-year: 2012-21	15.39	13.14	2.25	17.12	0.00
15-year: 2012-26	14.00	13.26	.75	5.64	-.38
20-year: 2012-31	13.37	13.57	-.20	-1.45	-.77
25-year: 2012-36	13.01	13.84	-.82	-5.96	-1.15
30-year: 2012-41	12.78	14.01	-1.23	-8.79	-1.54
35-year: 2012-46	12.62	14.11	-1.49	-10.58	-1.92
40-year: 2012-51	12.49	14.16	-1.67	-11.80	-2.31
45-year: 2012-56	12.40	14.21	-1.81	-12.72	-2.69
50-year: 2012-61	12.33	14.24	-1.92	-13.47	-3.08
55-year: 2012-66	12.27	14.28	-2.01	-14.08	-3.46
60-year: 2012-71	12.22	14.31	-2.09	-14.61	-3.85
65-year: 2012-76	12.18	14.35	-2.17	-15.09	-4.23
70-year: 2012-81	12.15	14.38	-2.23	-15.53	-4.62
75-year: 2012-86	12.12	14.42	-2.30	-15.94	-5.00
DI:					
10-year: 2012-21	2.10	2.55	-.45	-17.51	.00
15-year: 2012-26	2.02	2.44	-.42	-17.40	-.38
20-year: 2012-31	1.98	2.38	-.41	-17.05	-.77
25-year: 2012-36	1.96	2.34	-.39	-16.53	-1.15
30-year: 2012-41	1.94	2.31	-.37	-16.06	-1.54
35-year: 2012-46	1.93	2.30	-.36	-15.89	-1.92
40-year: 2012-51	1.92	2.29	-.36	-15.87	-2.31
45-year: 2012-56	1.92	2.28	-.36	-15.89	-2.69
50-year: 2012-61	1.91	2.27	-.36	-15.88	-3.08
55-year: 2012-66	1.91	2.27	-.36	-15.90	-3.46
60-year: 2012-71	1.91	2.27	-.36	-15.96	-3.85
65-year: 2012-76	1.90	2.27	-.36	-16.02	-4.23
70-year: 2012-81	1.90	2.27	-.37	-16.11	-4.62
75-year: 2012-86	1.90	2.27	-.37	-16.18	-5.00
OASDI:					
10-year: 2012-21	17.49	15.68	1.80	11.50	.00
15-year: 2012-26	16.02	15.70	.32	2.05	-.38
20-year: 2012-31	15.35	15.95	-.60	-3.78	-.77
25-year: 2012-36	14.97	16.18	-1.21	-7.49	-1.15
30-year: 2012-41	14.72	16.32	-1.60	-9.82	-1.54
35-year: 2012-46	14.55	16.40	-1.86	-11.32	-1.92
40-year: 2012-51	14.42	16.45	-2.03	-12.36	-2.31
45-year: 2012-56	14.32	16.49	-2.17	-13.16	-2.69
50-year: 2012-61	14.24	16.52	-2.28	-13.80	-3.08
55-year: 2012-66	14.18	16.55	-2.37	-14.33	-3.46
60-year: 2012-71	14.13	16.58	-2.45	-14.80	-3.85
65-year: 2012-76	14.09	16.61	-2.53	-15.22	-4.23
70-year: 2012-81	14.05	16.65	-2.60	-15.61	-4.62
75-year: 2012-86	14.02	16.69	-2.67	-15.97	-5.00

[a] Ratio of the actuarial balance to the summarized cost rate.

Note: Totals do not necessarily equal the sums of rounded components.

7. Reasons for Change in Actuarial Balance From Last Report

Table IV.B9 shows the effects of changes on the long-range actuarial balance, by category, between last year's report and this report.

Table IV.B9.—Reasons for Change in the 75-Year Actuarial Balance, Based on Intermediate Assumptions
[As a percentage of taxable payroll]

Item	OASI	DI	OASDI
Shown in last year's report:			
Income rate	12.11	1.91	14.02
Cost rate	14.04	2.21	16.25
Actuarial balance	**-1.92**	**-.30**	**-2.22**
Changes in actuarial balance due to changes in:			
Legislation / Regulation	.00	.00	.00
Valuation period[a]	-.05	-.01	-.05
Demographic data and assumptions	-.05	.00	-.05
Economic data and assumptions	-.20	-.01	-.21
Disability data and assumptions	.00	-.05	-.04
Methods and programmatic data	-.09	.00	-.08
Total change in actuarial balance	-.37	-.07	-.44
Shown in this report:			
Actuarial balance	**-2.30**	**-.37**	**-2.67**
Income rate	12.12	1.90	14.02
Cost rate	14.42	2.27	16.69

[a] The change in the 75-year valuation period from last year's report to this report means that the 75-year actuarial balance now includes the relatively large negative annual balance for 2086. This change in the valuation period results in a larger long-range actuarial deficit. The actuarial deficit includes the trust fund balance at the beginning of the projection period.

Note: Totals do not necessarily equal the sums of rounded components.

No legislation enacted since the last report had a significant long-range financial effect on the OASDI program. See section III.B for details.

Changing the 75-year valuation period from 2011-85 to 2012-86 decreased the projected long-range OASDI actuarial balance by 0.05 percent of taxable payroll. This decrease occurred because the 75-year actuarial balance now includes the relatively large negative annual balance for 2086. Note that the trust fund assets at the beginning of the projection period are included in the 75-year actuarial balance. Since these assets reflect the program's net financial flows for all past years, the actuarial balance incorporates financial activity from 1937 through the end of the long-range period.

The Trustees did not change any of the ultimate demographic assumptions this year. However, updated starting demographic values, and the way these values transition to ultimate assumptions, decreased the long-range OASDI actuarial balance by 0.05 percent of taxable payroll. Three changes significantly affect the long-range OASDI actuarial balance. First, preliminary birth rate data for 2009 and 2010 are lower than had been expected in last year's report. The Trustees also project generally lower birth rates than in last

year's report during the transition years to ultimate rates. These changes in birth rates decreased the long-range OASDI actuarial balance by 0.02 percent of taxable payroll. Second, this year's estimates incorporate final data on legal immigration for 2010, which are slightly lower than the estimates in last year's report. Including these new immigration data decreased the long-range OASDI actuarial balance by 0.01 percent of taxable payroll. Third, the updated starting population levels, and the interaction of these levels with the changes in fertility and immigration, decreased the long-range OASDI actuarial balance by 0.02 percent of taxable payroll.

The Trustees changed one of the ultimate economic assumptions this year — the annual rate of change in average hours worked for the future. The Trustees now assume a decline in average hours worked of 0.05 percent per year, rather than no change as they assumed last year. This change decreased the long-range OASDI actuarial balance by 0.07 percent of taxable payroll. Reasons for the change in the ultimate average hours worked include: (1) establishing consistency with the projections of an aging workforce; and (2) the belief that increasing productivity is likely to result in workers' desire to enjoy some of these productivity gains in the form of more leisure. In addition, historical data and trends support this reduction in the assumed average hours worked. See Section V.B.3 for details. The change in this assumption lowers the ultimate annual real wage differential by 0.05 percentage point from last year's report, with the level of the differential changing from 1.17 percentage points to 1.12 percentage points.

In addition, updated starting values and changes in near-term economic growth rate assumptions combined to decrease the long-range OASDI actuarial balance by 0.14 percent of taxable payroll. Two specific changes to starting values and growth assumptions account for this decrease in the actuarial balance. First, starting values for 2011 resulted in higher benefit levels and lower payroll taxes for 2012 than those projected in last year's report. Price inflation in 2011 was higher than expected, with the cost-of-living adjustment to benefits in December 2011 being 2.9 percentage points higher than assumed in last year's report. Furthermore, the average level of taxable earnings for covered workers in 2011 was about 1.6 percent lower than estimated in last year's report. The higher-than-expected adjustment to benefits for 2012, combined with a 2.0 percent lower-than-expected level of average taxable earnings for 2012, increased annual cost rates for at least the next 20 years. The second main reason for the decrease in the actuarial balance is the lower projected real interest rates on trust fund investments during the first 10 years in this year's report. Real interest rates for new investments during 2011 are significantly lower than projected in last year's report, and these lower real interest rates on new investments continue for several years before reaching their ultimate levels.

The Trustees revised one of the ultimate disability assumptions in this year's report, the assumption of disability incidence. This change in the ultimate disability incidence rates decreased the long-range OASDI actuarial balance by 0.04 percent of taxable payroll. Compared to last year's report, the ultimate age-adjusted disability incidence rates increased by 2 percent for males and 5 percent for females. The revised ultimate disability incidence rates are now more consistent with the levels and the trends experienced in the most recent 10-year historical period.

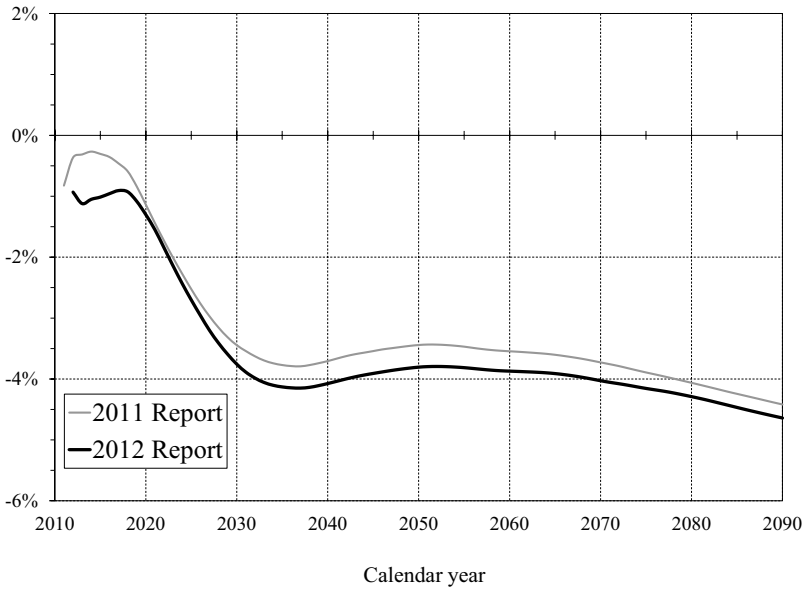
This report also includes methodological changes and updates of program-specific data that combined to decrease the long-range OASDI actuarial balance by 0.08 percent of taxable payroll. Two methodological changes related to the projection of average benefit levels for workers who become eligible for benefits in the future together decreased the long-range OASDI actuarial balance by about 0.04 percent of taxable payroll. The first methodological change improves consistency between the projected earnings of new beneficiaries and the projected economy-wide covered worker rates. Compared to last year's report, this methodological change increases benefit levels for workers who become eligible for benefits in the future. The second methodological change slightly increases average benefit levels for retired-worker beneficiaries and disabled-worker beneficiaries for their first two years of benefit entitlement. The method for estimating these average benefit levels now includes beneficiaries who first start receiving benefits more than two years after their initial entitlement date, who tend to have higher benefits. In addition to these changes in methodology, updating programmatic data and projection factors that determine benefit levels and the interaction of all changes combined to decrease the long-range OASDI actuarial balance by about 0.04 percent of taxable payroll. As an example of updated projection factors, updates to post-entitlement factors (used to project the growth in benefit levels after initial entitlement in excess of the cost-of-living adjustment) decreased the OASDI actuarial balance by about 0.01 percent of taxable payroll.

If the assumptions, methods, and starting values had all remained unchanged from last year, the OASDI long-range actuarial balance would have become more negative by 0.05 percent of taxable payroll solely due to the change in the valuation period. However, the combined changes in data, assumptions, and methods described above made the actuarial balance more negative by an additional 0.39 percent of payroll; after rounding, the actuarial balance changed from -2.22 percent of taxable payroll in last year's report to -2.67 percent in this report.

Comparing the annual cash-flow balances for this report and the prior year's report illustrates the effects of the changes made. Figure IV.B5 provides this

comparison for the combined OASDI program over the long-range (75-year) projection period.

Figure IV.B5.—OASDI Annual Balances: 2011 and 2012 Trustees Reports
[As a percentage of taxable payroll, based on intermediate assumptions]



The annual balance (income rate minus cost rate) for each year in the 75-year projection period is lower than projected in last year's report. For 2012, the annual balance in this report is 0.6 percent of payroll lower than projected in last year's report. This lower balance for 2012 is mainly due to two factors: (1) the cost-of-living adjustment to benefits for December 2011 was 2.9 percentage points higher than assumed in last year's report; and (2) average taxable earnings were 2.0 percent lower for 2012 than assumed in last year's report. The difference between the annual balances in the two reports over the next 5 years remains close to the difference for 2012, as the cost-of-living adjustment for December 2011 still significantly affects benefit levels for these years. However, over the following 4 years (2018-21), the difference between the annual balances in the two reports declines rapidly. Compared to last year's report, recovery from the recent recession takes 1 year longer, with the economy returning to its full employment level in 2019. By 2021, the difference in the annual balances is only 0.1 percent of payroll. After 2021, the difference between the annual balances increases until around 2040, when it reaches almost 0.4 percent of payroll. For the period 2050 through 2085, the difference between the annual balances decreases and

reaches 0.2 percent of payroll in 2085. The annual deficit for 2085 is 4.47 percent of taxable payroll in this report, compared to 4.24 percent for 2085 in last year's report.

This pattern of differences between the annual balances in the two reports after 2021 is due to a combination of the changes described earlier in this section. After 2021, the assumed lower ultimate real wage differential in this year's report causes the difference between the annual balances in the two reports to grow throughout the remainder of the long-range period. This lower real wage differential explains most of the 0.2 percent of payroll difference in 2085 between the annual balances in the two reports. The assumed higher ultimate disability incidence rates have a similar effect, but to a lesser degree; the incidence rates explain about one-fourth of the 0.2 percent of payroll difference in 2085 between the annual balances in the two reports. In addition, the population changes contribute to the increasing and then decreasing pattern of differences between the annual balances after 2021. Compared to last year's report, revisions to the starting level population result in more people age 20 and older through 2030. In 2021, this increase in the population is slightly greater for the working age population (those ages 20-64) than for the beneficiary age population (those ages 65 and older). After 2030, the working age population is smaller in this year's report, reflecting the lower starting fertility levels. However, the beneficiary age population remains greater than in last year's report until 2065. At the very end of the long-range period, the working age population is 0.4 percent less than in last year's report and the beneficiary age population is 0.6 percent less than in last year's report.

V. ASSUMPTIONS AND METHODS UNDERLYING ACTUARIAL ESTIMATES

The future income and cost of the OASDI program will depend on many demographic, economic, and program-specific factors. Trust fund income will depend on how these factors affect the size and composition of the working population as well as the level and distribution of earnings. Similarly, program cost will depend on how these factors affect the size and composition of the beneficiary population as well as the general level of benefits.

The Trustees make basic assumptions for several of these factors based on analysis of historical trends, historical conditions, and expected future conditions. These factors include fertility, mortality, immigration, marriage, divorce, productivity, inflation, average earnings, unemployment, real interest rate, retirement, and disability incidence and termination. Other factors depend on these basic assumptions. These other, often interdependent, factors include total population, life expectancy, labor force participation, gross domestic product, and program-specific factors. Each year the Trustees reexamine these assumptions and methods in light of new information and make appropriate revisions. The Trustees selected the assumptions for this report by the end of December 2011.

Future levels of these factors and their interrelationships are inherently uncertain. To address these uncertainties, this report uses three sets of assumptions, designated as intermediate (alternative II), low-cost (alternative I), and high-cost (alternative III). The intermediate set represents the Trustees' best estimate of the future course of the population and the economy. With regard to the net effect on the status of the OASDI program, the low-cost set is more optimistic and the high-cost set is more pessimistic. The low-cost and high-cost sets of assumptions reflect significant potential changes in the interrelationships among factors, as well as changes in the values for individual factors.

While it is unlikely that all of the factors and interactions will differ in the same direction from those expected, many combinations of individual differences in the factors could have a similar overall effect. Outcomes with overall long-range cost as low as the low-cost scenario or as high as the high-cost scenario are very unlikely. This report also includes sensitivity analysis, where factors are changed one at a time (see appendix D), and a stochastic projection, which provides a probability distribution of possible future outcomes that is centered around the intermediate assumptions (see appendix E).

Readers should interpret with care the estimates based on the three sets of alternative assumptions. These estimates are not specific predictions of the future financial status of the OASDI program, but rather a reasonable range of future income and cost under a variety of plausible demographic and economic conditions.

The Trustees assume that values for each of the demographic, economic, and program-specific factors change toward long-range ultimate values from recent levels or trends within the next 25 years. For extrapolations beyond the 75-year long-range period, the ultimate levels or trends reached by the end of the 75-year period remain unchanged. The assumed ultimate values represent average annual experience or growth rates. Actual future values will exhibit fluctuations or cyclical patterns, as in the past.

The following sections briefly discuss the various assumptions and methods required to make the estimates of trust fund financial status, which are the heart of this report.[1] There are, of course, many interrelationships among these factors that make a sequential presentation potentially misleading.

A. DEMOGRAPHIC ASSUMPTIONS AND METHODS

Table V.A1 displays the principal demographic assumptions relating to fertility, mortality, and net immigration for the three alternatives.

1. Fertility Assumptions

Birth rates by single year of age, for women aged 14 to 49, are the basis for the fertility assumptions. These rates apply to the total number of women, across all marital statuses, in the midyear population at each age.

Historically, birth rates in the United States have fluctuated widely. The total fertility rate[2] decreased from 3.31 children per woman at the end of World War I (1918) to 2.15 during the Great Depression (1936). After 1936, the total fertility rate rose to 3.68 in 1957 and then fell to 1.74 by 1976. After 1976, the total fertility rate began to rise again until it reached a level of 2.07

---

[1] Actuarial Studies published by the Office of the Chief Actuary, Social Security Administration, contain further details about the assumptions, methods, and actuarial estimates. A complete list of available studies may be found at www.socialsecurity.gov/OACT/NOTES/actstud.html. To obtain copies of such studies or of this report, please submit a request at www.socialsecurity.gov/OACT/request.html or write to: Office of the Chief Actuary, 700 Altmeyer Building, 6401 Security Boulevard, Baltimore, MD 21235. This entire report, along with supplemental year-by-year tables, may also be found at www.socialsecurity.gov/OACT/TR/2012/index.html.

[2] Defined to be the average number of children that would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period. A rate of about 2.1 would ultimately result in a nearly constant population if immigration and emigration were both zero, and if death rates were to remain at current levels.

for 1990. Since 1990, the total fertility rate has been fairly stable at around 2.00 children per woman.

These variations in the total fertility rate resulted from changes in many factors, including social attitudes, economic conditions, birth-control practices, and the racial/ethnic composition of the population. The Trustees expect future total fertility rates to remain close to recent levels. Certain population characteristics, such as the higher percentages of women who have never married, of women who are divorced, and of young women who are in the labor force, are consistent with continued lower total fertility rates than experienced during the baby-boom era (1946-65). Based on consideration of these factors, the Trustees assume ultimate total fertility rates of 2.30, 2.00, and 1.70 children per woman for the low-cost, intermediate, and high-cost assumptions, respectively. These ultimate rates are unchanged from last year's report.

Based on preliminary data, the estimated total fertility rate decreased to a level of 2.01 children per woman in 2009, and decreased further to 1.95 in 2010. The recession and high unemployment are likely reasons for these decreases. For 2011, the estimated total fertility rate rises to 2.03, as the economy gradually improves. These levels are lower than those estimated in last year's report.

For the intermediate alternative, the projected total fertility rate rises slightly until 2015 when it reaches 2.06. The Trustees then assume the total fertility rate follows a gradual trend toward the ultimate level in 2036. The Trustees assume the low-cost and high-cost total fertility rates gradually trend away from the intermediate path to reach the ultimate values in 2036.

2. Mortality Assumptions

The Office of the Chief Actuary at the Social Security Administration develops average percentage reductions in future mortality rates by age group, sex, and cause of death. The office uses these percentages to estimate future central death rates by age group, sex, and cause of death. From these estimated central death rates, the office calculates probabilities of death by single year of age and sex.

The Office of the Chief Actuary calculated historical death rates for years 1900-2007 for ages below 65 (and for all ages for years prior to 1968) using data from the National Center for Health Statistics (NCHS).[1] For ages 65

[1] These rates reflect NCHS data on deaths and Census estimates of population.

and over, the office used final Medicare data on deaths and enrollments for years 1968 through 2007. The office produced death rates by cause of death at all ages for years 1979-2007 using data from the NCHS.

The total age-sex-adjusted death rate[1] declined at an average rate[2] of 1.10 percent per year between 1900 and 2007. Between 1979 and 2007, the period for which death rates were analyzed by cause, the total age-sex-adjusted death rate, for all causes combined, declined at an average rate of 0.93 percent per year.

Death rates have declined substantially in the U.S. since 1900, with rapid declines over some periods and slow or no improvement over the other periods. Historical death rates generally declined more slowly for older ages than for the rest of the population. The age-sex-adjusted death rate for ages 65 and over declined at an average rate of 0.79 percent per year between 1900 and 2007.

Many factors are responsible for historical reductions in death rates, including increased medical knowledge, increased availability of health-care services, and improvements in sanitation and nutrition. Considering the expected rate of future progress in these and other areas, the Trustees assume three alternative sets of ultimate annual percentage reductions in central death rates by age group and cause of death, for 2036 and later. The intermediate set, alternative II, represents the Trustees' best estimate. The average annual percentage reductions for alternative I are generally smaller than those for alternative II, while those for alternative III are generally larger. These ultimate annual percentage reductions are similar to those in last year's report. However, the same reductions now apply for both males and females, and the number of causes of death decreased from seven to five.

For the years 2008 through 2011, the assumed reductions in central death rates are the same as the average annual reductions by age group, sex, and cause of death observed between 1997 and 2007. After 2011, the assumed reductions in central death rates for alternative II change rapidly from the average annual reductions observed between 1997 and 2007, until they reach the ultimate annual percentage reductions for 2036 and later. The assumed reductions in death rates under alternatives I and III also rapidly reach their ultimate levels, but start from levels which are, respectively, 50 and 150 percent of the corresponding alternative II level.

---

[1] Calculated here as the crude rate that would occur in the enumerated total population, as of April 1, 2000, if that population were to experience the death rates by age and sex for the selected year.

[2] Average rate of decline is the annual geometric rate of reduction between the first and last years of the period.

Table V.A1 contains projections of age-sex-adjusted death rates for the total population (all ages), for ages under 65, and for ages 65 and over. Under the intermediate assumptions, projected age-sex-adjusted death rates for the total population are approximately the same as the death rates in last year's report. For the age group 65 and over, projected age-sex-adjusted death rates start slightly lower than in last year's report and end about 1 percent higher in 2086. These changes primarily result from revising estimates for 2011 and regrouping the ultimate annual percentage reductions.

After adjusting for changes in the age-sex distribution of the population, the projected total death rates decline at average annual rates of about 0.39 percent, 0.77 percent, and 1.18 percent between 2011 and 2086 for alternatives I, II, and III, respectively. In keeping with the patterns observed in the historical data, the assumed future rates of decline are greater for younger ages than for older ages, but to a substantially lesser degree than in the past. Accordingly, the projected age-sex-adjusted death rates for ages 65 and over decline at average annual rates of about 0.36 percent, 0.70 percent, and 1.06 percent between 2011 and 2086 for alternatives I, II, and III, respectively.

Experts express a wide range of views on the likely rate of future decline in death rates. For example, the 2011 Technical Panel on Assumptions and Methods, appointed by the Social Security Advisory Board, believed that ultimate rates of decline in mortality would be higher than the rates of decline assumed for the intermediate projections in this report. Others believe that biological factors, social factors, and limitations on health care spending may slow future rates of decline in mortality. Evolving trends in health care and lifestyle will determine what further modifications to the assumed ultimate rates of decline in mortality will be warranted for future reports.

3. Immigration Assumptions

In order to develop projections of the total Social Security area population, the Trustees make assumptions for annual legal immigration, legal emigration, "other immigration," and "other emigration." Legal immigration consists of persons who are granted legal permanent resident status. Legal emigration consists of those legal immigrants and native-born citizens who leave the Social Security area population. Net legal immigration is the difference between legal immigration and legal emigration. "Other immigration" consists of immigrants who enter the Social Security area in a given year and stay to the end of that year without having legal permanent resident status, such as undocumented immigrants and temporary foreign workers and stu-

dents. "Other emigration" consists of other immigrants who leave the Social Security area population or who adjust their status to legal permanent resident. Net other immigration is the difference between other immigration and other emigration. Net immigration refers to the sum of net legal immigration and net other immigration.

The Trustees make separate assumptions for the low-cost, intermediate, and high-cost scenarios. The low-cost scenario includes higher annual net immigration and the high-cost scenario includes lower annual net immigration.

Legal immigration increased after World War II to around 300,000 persons per year and remained around that level until shortly after 1960. With the Immigration Act of 1965 and other related changes, annual legal immigration increased to about 400,000 and remained fairly stable until 1977. Between 1977 and 1990, legal immigration once again increased, averaging about 580,000[1] per year. The Immigration Act of 1990, which took effect in fiscal year 1992, restructured the immigration categories and increased significantly the number of immigrants who may legally enter the United States.

Legal immigration averaged about 780,000[1] persons per year during the period 1992 through 1999. Legal immigration increased to about 900,000 in 2000 and about 1,060,000 in 2001, primarily due to an increase in the number of persons granted legal permanent resident status as immediate relatives of U.S. citizens, the only category of legal immigration that is not numerically limited. However, legal immigration declined to less than 800,000 by 2003 as the number of pending applications increased. From 2003 to 2006, legal immigration increased until it reached about 1,200,000 for 2005 and 2006. For 2007 through 2009, legal immigration decreased to about 1,100,000 and declined further to about 1,050,000 in 2010.

The intermediate alternative assumes that annual legal immigration will be 1,000,000 persons for 2011 and later. Alternatives I and III assume that ultimate annual legal immigration will be 1,200,000 persons and 800,000 persons, respectively. The ultimate assumptions for all of the alternatives are unchanged from last year's report.

The assumed ratios of annual legal emigration to legal immigration are 20, 25, and 30 percent for alternatives I, II, and III, respectively. This range is consistent with the limited historical data for legal emigration from the Social Security area. These ratios are unchanged from last year's report. Under the intermediate alternative, by combining the ultimate annual legal

[1] Excludes those persons who attained legal permanent resident status under the special, one-time provisions of the Immigration Reform and Control Act of 1986.

immigration and emigration assumptions, ultimate annual net legal immigration is 750,000 persons. For the low-cost and high-cost scenarios, ultimate annual net legal immigration is 960,000 persons and 560,000 persons, respectively.

The estimated number of other immigrants in the Social Security area population is about 8.8 million persons as of January 1, 2000, and about 13.5 million persons as of January 1, 2007. The estimated other-immigrant population decreased during the recession to a level of 12.6 million persons as of January 1, 2010.

Estimated annual other immigration for 2010 and 2011 is 1.0 million and 1.1 million persons, respectively. Due to the recent recession, these levels are significantly lower than those estimated during the period 2000 through 2006. Under the intermediate assumptions, annual other immigration is 1.2 million in 2012, and increases until 2015 to the ultimate level of 1.5 million persons. For the low-cost and high-cost scenarios, the future ultimate annual other immigration is 1.8 million persons and 1.2 million persons, respectively.

Emigration from the other-immigrant population includes those who leave the Social Security area and those who adjust their status to become legal permanent residents. This other-immigrant population is highly mobile and far more likely to leave the Social Security area than is the native-born or legal-immigrant population. The Office of the Chief Actuary models the annual number of other immigrants who leave the Social Security area in two groups. The first departing group equals a proportion of the number of other immigrants, by age and sex, who have recently entered the Social Security area. The second departing group derives from applying annual departure rates, by age and sex, to the other-immigrant population in the Social Security area.

Under the intermediate assumptions, the total annual number of other emigrants who leave the Social Security area averages 665,000 through the 75-year projection period. In addition, the Trustees assume that the ultimate annual number of other immigrants who adjust status to become legal permanent residents is 500,000 for the intermediate assumptions. This ultimate level is one-third of the ultimate annual number of other immigrants entering the Social Security area. For the low-cost and high-cost scenarios, the total annual number of other emigrants averages 755,000 and 550,000, respectively, through the 75-year projection period. The Trustees assume the ultimate annual number of people adjusting status to legal permanent resident

status will be 600,000 persons and 400,000 persons, for the low-cost and high-cost scenarios, respectively.

Under the assumptions and methods described above, the projected size of the other-immigrant population grows substantially. This growth reflects the excess of annual other immigration over the combined annual numbers of emigrants and deaths that occur within the other-immigrant population.

Estimated annual net other immigration averaged about 660,000 persons from 2000 through 2004. Estimates of net other immigration for 2005 through 2008 are based on data from the Department of Homeland Security. The estimated level is 1,045,000 for 2005, decreasing to 710,000 for 2006 and 10,000 for 2007. For 2008, estimated net other immigration is negative, at -770,000, but returns to a positive level of 40,000 for 2009. Under the intermediate assumptions, projected net other immigration is about 210,000 persons in 2012, and rises to about 500,000 persons in 2015. Net other immigration then decreases to about 325,000 in 2040 and to about 275,000 in 2090. The decline in net other immigration is due to the increasing number of other immigrants residing in the Social Security area. Based on the rates of departure described above, an increase in the number of other immigrants residing in the Social Security area results in an increase in the number who emigrate out of the area. The Trustees assume all other components of other immigration and emigration are stable after 2014, and thus do not contribute toward any change in net other immigration. Under the intermediate assumptions, the projected average annual level of net other immigration over the 75-year projection period is about 330,000 persons. For the low-cost and high-cost assumptions, projected average net other immigration is about 420,000 persons per year and 230,000 persons per year, respectively.

The projected average total level of net immigration (legal and other combined) is about 1,080,000 persons per year during the 75-year projection period under the intermediate assumptions. For the low-cost and high-cost assumptions, projected average total net immigration is about 1,375,000 persons per year and 790,000 persons per year, respectively.

Demographers express a wide range of views about the future course of immigration for the United States. Some, like the 2011 Technical Panel mentioned in the previous section, believe that net immigration will increase substantially in the future. Others believe that potential immigrants may be attracted to other countries or that changes in the law or enforcement of the law could reduce immigration.

Table V.A1.—Principal Demographic Assumptions, Calendar Years 1940-2090

Calendar year	Total fertility rate[a]	Age-sex-adjusted death rate[b] per 100,000, by age			Net immigration[c d]	
		Total	Under 65	65 and over	Legal[e]	Other[f]
Historical data:						
1940	2.23	1,779.1	673.0	9,569.0	45,000	—
1945	2.42	1,586.6	601.8	8,522.4	55,000	—
1950	3.03	1,435.6	499.4	8,028.3	170,000	—
1955	3.50	1,334.2	442.8	7,612.2	210,000	—
1960	3.61	1,330.9	436.9	7,626.7	200,000	—
1965	2.88	1,304.6	430.0	7,464.0	230,000	—
1970	2.43	1,224.3	422.6	6,870.7	280,000	—
1975	1.77	1,099.0	369.5	6,236.4	295,000	—
1980	1.82	1,035.9	331.9	5,993.6	410,000	215,000
1985	1.83	984.2	303.6	5,777.6	435,000	280,000
1990	2.07	931.2	289.4	5,451.1	500,000	630,000
1995	1.98	913.9	277.3	5,397.5	575,000	575,000
1996	1.98	900.4	266.1	5,367.2	665,000	490,000
1997	1.97	885.1	253.6	5,332.5	570,000	565,000
1998	2.00	878.3	246.9	5,325.2	490,000	610,000
1999	2.01	884.4	245.0	5,387.5	520,000	615,000
2000	2.05	875.7	243.4	5,328.3	670,000	655,000
2001	2.03	867.5	243.7	5,260.7	795,000	660,000
2002	2.03	863.9	243.0	5,236.6	730,000	660,000
2003	2.06	851.8	241.7	5,148.2	575,000	665,000
2004	2.06	820.4	235.4	4,940.6	750,000	665,000
2005	2.06	822.6	236.6	4,949.3	870,000	1,045,000
2006	2.12	799.8	234.2	4,783.5	910,000	710,000
2007	2.13	782.1	228.9	4,678.1	800,000	10,000
2008[g]	2.08	789.5	229.9	4,730.4	835,000	-770,000
2009[g]	2.01	781.3	228.3	4,675.8	830,000	40,000
2010[g]	1.95	773.5	226.8	4,624.2	780,000	60,000
2011[g]	2.03	766.2	225.3	4,575.3	750,000	150,000
Intermediate:						
2015	2.06	739.8	218.9	4,407.7	750,000	500,000
2020	2.04	708.6	208.7	4,229.3	750,000	455,000
2025	2.03	678.7	197.9	4,064.7	750,000	410,000
2030	2.02	650.4	187.5	3,910.6	750,000	375,000
2035	2.00	623.8	177.6	3,766.0	750,000	345,000
2040	2.00	598.8	168.3	3,630.4	750,000	325,000
2045	2.00	575.3	159.6	3,503.1	750,000	310,000
2050	2.00	553.3	151.4	3,383.5	750,000	300,000
2055	2.00	532.7	143.8	3,271.0	750,000	295,000
2060	2.00	513.2	136.7	3,165.1	750,000	290,000
2065	2.00	494.9	130.0	3,065.1	750,000	285,000
2070	2.00	477.7	123.7	2,970.7	750,000	285,000
2075	2.00	461.4	117.7	2,881.5	750,000	280,000
2080	2.00	446.0	112.2	2,796.9	750,000	280,000
2085	2.00	431.5	106.9	2,716.8	750,000	280,000
2090	2.00	417.7	102.0	2,640.7	750,000	275,000

Table V.A1.—Principal Demographic Assumptions, Calendar Years 1940-2090 (Cont.)

Calendar year	Total fertility rate[a]	Age-sex-adjusted death rate[b] per 100,000, by age			Net immigration[c d]	
		Total	Under 65	65 and over	Legal[e]	Other[f]
Low-cost:						
2015	2.10	762.6	225.2	4,547.6	960,000	410,000
2020	2.15	750.8	221.3	4,480.2	960,000	635,000
2025	2.20	735.9	215.9	4,397.8	960,000	560,000
2030	2.24	720.2	210.2	4,312.1	960,000	505,000
2035	2.29	704.6	204.5	4,227.1	960,000	460,000
2040	2.30	689.4	198.8	4,144.0	960,000	430,000
2045	2.30	674.6	193.4	4,063.6	960,000	405,000
2050	2.30	660.4	188.2	3,985.8	960,000	390,000
2055	2.30	646.6	183.1	3,910.7	960,000	375,000
2060	2.30	633.3	178.2	3,837.9	960,000	365,000
2065	2.30	620.4	173.5	3,767.5	960,000	360,000
2070	2.30	607.9	168.9	3,699.3	960,000	355,000
2075	2.30	595.8	164.5	3,633.3	960,000	350,000
2080	2.30	584.1	160.2	3,569.3	960,000	350,000
2085	2.30	572.8	156.1	3,507.4	960,000	350,000
2090	2.30	561.8	152.1	3,447.3	960,000	345,000
High-cost:						
2015	2.01	716.5	212.4	4,266.6	560,000	40,000
2020	1.93	664.9	195.2	3,972.7	560,000	340,000
2025	1.86	619.4	178.6	3,723.7	560,000	305,000
2030	1.79	578.7	163.4	3,503.3	560,000	275,000
2035	1.71	542.1	149.7	3,305.5	560,000	250,000
2040	1.70	509.1	137.4	3,126.8	560,000	235,000
2045	1.70	479.2	126.3	2,964.8	560,000	230,000
2050	1.70	452.2	116.3	2,817.3	560,000	225,000
2055	1.70	427.5	107.3	2,682.6	560,000	220,000
2060	1.70	405.0	99.2	2,559.1	560,000	220,000
2065	1.70	384.4	91.8	2,445.5	560,000	220,000
2070	1.70	365.5	85.1	2,340.6	560,000	215,000
2075	1.70	348.1	79.0	2,243.6	560,000	215,000
2080	1.70	332.1	73.4	2,153.6	560,000	215,000
2085	1.70	317.2	68.3	2,069.8	560,000	210,000
2090	1.70	303.4	63.7	1,991.5	560,000	210,000

[a] The total fertility rate for any year is the average number of children who would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period. The assumed total fertility rate does not change after 2036.

[b] The age-sex-adjusted death rate is the crude rate that would occur in the enumerated total population as of April 1, 2000, if that population were to experience the death rates by age and sex observed in, or assumed for, the selected year.

[c] Net immigration values are rounded to the nearest 5,000.

[d] Estimates do not include persons who attained legal permanent resident status under the special one-time provisions of the Immigration Reform and Control Act of 1986.

[e] Historical estimates of net legal immigration assume a 25 percent reduction in legal immigration due to legal emigration.

[f] Historical net other immigration estimates depend on a residual method, using Department of Homeland Security January 1 stock estimates for 2005 through 2010.

[g] Fertility estimated starting in 2009, mortality estimated starting in 2008, and immigration estimated starting in 2010.

4. Total Population Estimates

The starting Social Security area population for January 1, 2010 derives from, with several adjustments, the Census Bureau's estimate of the residents of the 50 States and D.C. and U.S. Armed Forces overseas. These adjustments reflect mortality assumptions for the aged population since 2000 that are consistent with Medicare and Social Security data, net immigration assumptions for the aged population since 2000, estimates of the net undercount in the 2000 census, inclusion of U.S. citizens living abroad (including residents of U.S. territories), and inclusion of non-citizens living abroad who are insured for Social Security benefits. The Office of the Chief Actuary projects the population in the Social Security area by age, sex, and marital status as of January 1 of each year 2011 through 2090 by combining the assumptions for future fertility, mortality, and net immigration with assumptions on marriage and divorce. Previous sections of this chapter present the assumptions for future fertility, mortality, and immigration. Assumptions for future rates of marriage and divorce reflect historical data from the National Center for Health Statistics.

This report contains a July 1 (i.e., midyear) population for each year, which derives from surrounding January populations. Table V.A2 shows the historical and projected population as of July 1 by broad age group, for the three alternatives. Also shown are aged and total dependency ratios (see table footnotes for definitions).

Table V.A2.—Social Security Area Population as of July 1 and Dependency Ratios, Calendar Years 1950-2090

Calendar year	Population (in thousands)				Dependency ratio	
	Under 20	20-64	65 and over	Total	Aged[a]	Total[b]
Historical data:						
1950	54,477	92,849	12,812	160,138	0.138	0.725
1960	73,059	99,818	17,278	190,155	.173	.905
1965	79,999	104,879	19,070	203,948	.182	.945
1970	80,886	112,987	20,888	214,760	.185	.901
1975	78,651	122,551	23,166	224,367	.189	.831
1980	74,891	134,036	26,176	235,103	.195	.754
1985	73,160	144,505	29,069	246,735	.201	.707
1990	74,937	152,718	31,909	259,563	.209	.700
1995	79,637	160,513	34,424	274,574	.214	.711
2000	82,432	169,779	35,692	287,902	.210	.696
2005	84,036	179,644	37,322	301,002	.208	.676
2010	84,997	189,138	41,054	315,189	.217	.666
2011[c]	84,919	190,647	42,012	317,579	.220	.666
Intermediate:						
2015	86,190	194,635	47,615	328,440	.245	.687
2020	89,096	198,201	55,639	342,936	.281	.730
2025	91,745	200,268	64,769	356,782	.323	.782
2030	93,958	202,776	72,747	369,481	.359	.822
2035	95,929	207,252	77,556	380,737	.374	.837
2040	97,437	213,336	80,009	390,782	.375	.832
2045	99,080	219,478	81,523	400,081	.371	.823
2050	101,025	224,291	83,812	409,127	.374	.824
2055	103,195	228,390	86,791	418,376	.380	.832
2060	105,290	232,469	90,299	428,058	.388	.841
2065	107,179	237,452	93,536	438,167	.394	.845
2070	108,948	242,384	97,104	448,435	.401	.850
2075	110,746	247,173	100,718	458,637	.407	.856
2080	112,662	251,872	104,154	468,689	.414	.861
2085	114,654	256,075	107,966	478,695	.422	.869
2090	116,622	260,269	111,847	488,738	.430	.878
Low-cost:						
2015	86,525	194,873	47,525	328,923	.244	.688
2020	90,780	199,479	55,238	345,497	.277	.732
2025	95,641	202,853	63,894	362,388	.315	.786
2030	100,860	206,618	71,239	378,718	.345	.833
2035	106,485	212,488	75,315	394,288	.354	.856
2040	111,742	220,578	77,029	409,348	.349	.856
2045	116,802	229,487	77,910	424,199	.339	.848
2050	122,073	237,808	79,741	439,622	.335	.849
2055	127,634	246,147	82,448	456,229	.335	.853
2060	133,312	255,121	85,797	474,230	.336	.859
2065	139,187	265,418	88,859	493,465	.335	.859
2070	145,087	276,379	92,127	513,593	.333	.858
2075	150,993	288,099	95,326	534,419	.331	.855
2080	157,006	300,489	98,480	555,975	.328	.850
2085	163,214	312,655	102,581	578,450	.328	.850
2090	169,604	324,878	107,441	601,922	.331	.853

Table V.A2.—Social Security Area Population as of July 1 and Dependency Ratios, Calendar Years 1950-2090 (Cont.)

Calendar year	Population (in thousands)				Dependency ratio	
	Under 20	20-64	65 and over	Total	Aged[a]	Total[b]
High-cost:						
2015	85,479	193,484	47,696	326,659	0.247	0.688
2020	86,836	195,566	56,031	338,433	.287	.731
2025	87,321	196,539	65,672	349,531	.334	.778
2030	86,647	197,985	74,338	358,970	.375	.813
2035	85,195	201,243	79,945	366,383	.397	.821
2040	83,456	205,315	83,200	371,971	.405	.812
2045	82,198	208,784	85,389	376,371	.409	.803
2050	81,384	210,331	88,126	379,841	.419	.806
2055	80,882	210,546	91,313	382,741	.434	.818
2060	80,345	210,097	94,922	385,364	.452	.834
2065	79,424	210,138	98,298	387,860	.468	.846
2070	78,392	209,544	102,124	390,060	.487	.861
2075	77,501	208,131	106,117	391,749	.510	.882
2080	76,829	206,199	109,756	392,785	.532	.905
2085	76,270	204,000	112,945	393,214	.554	.928
2090	75,690	201,963	115,486	393,138	.572	.947

[a] Ratio of the population at ages 65 and over to the population at ages 20-64.
[b] Ratio of the population at ages 65 and over and the population under age 20 to the population at ages 20-64.
[c] Estimated.

Notes:
1. Historical data are subject to revision.
2. Totals do not necessarily equal the sums of rounded components.

5. Life Expectancy Estimates

Life expectancy, or average remaining number of years expected prior to death, is one way to summarize the Trustees' mortality assumptions. This report includes life expectancy in two different forms (period and cohort) for two separate purposes.

- Period life expectancy for a given year uses the actual or expected death rates at each age for that year. It is a useful summary statistic for illustrating the overall level of the death rates experienced in a single year. Period life expectancy for a particular year provides an individual's expected average remaining lifetime at a selected age, assuming no change in death rates after that year. Table V.A3 presents historical and projected life expectancy calculated on a period basis. While life expectancy relates to the age-sex-adjusted death rate discussed in section V.A.2, life expectancy places far greater weight on changes in death rates at lower ages than at higher ages. It is important to keep this concept in mind when considering trends in life expectancy.

- Cohort life expectancy does not use death rates for a single year, but for the series of years in which the individual will actually reach each succeeding age if he or she survives. Cohort life expectancy provides an individual's expected average remaining lifetime at a selected age in a given year, assuming future changes in death rates. Table V.A4 presents historical and projected life expectancy calculated on a cohort basis. Cohort life expectancy is somewhat greater than period life expectancy for the same year because death rates for any given age tend to decline as time passes and the cohort grows older.

Table V.A3.—Period Life Expectancy[a]

Calendar year	Historical data			
	At birth		At age 65	
	Male	Female	Male	Female
1940	61.4	65.7	11.9	13.4
1945	62.9	68.4	12.6	14.4
1950	65.6	71.1	12.8	15.1
1955	66.7	72.8	13.1	15.6
1960	66.7	73.2	12.9	15.9
1965	66.8	73.8	12.9	16.3
1970	67.2	74.9	13.1	17.1
1975	68.7	76.6	13.7	18.0
1980	69.9	77.5	14.0	18.4
1985	71.1	78.2	14.4	18.6
1990	71.8	78.9	15.1	19.1
1995	72.5	79.1	15.4	19.1
1996	73.0	79.2	15.5	19.1
1997	73.4	79.4	15.6	19.1
1998	73.7	79.4	15.7	19.1
1999	73.8	79.3	15.7	19.0
2000	74.0	79.4	15.9	19.0
2001	74.1	79.4	16.1	19.1
2002	74.2	79.5	16.2	19.1
2003	74.4	79.6	16.3	19.2
2004	74.8	80.0	16.7	19.5
2005	74.8	80.0	16.7	19.5
2006	75.1	80.2	17.0	19.7
2007	75.4	80.4	17.2	19.9
2008[b]	75.4	80.3	17.2	19.8
2009[b]	75.6	80.4	17.4	19.8
2010[b]	75.7	80.5	17.5	19.9
2011[b]	75.9	80.6	17.7	20.0

Calendar year	Intermediate				Low-cost				High-cost			
	At birth		At age 65		At birth		At age 65		At birth		At age 65	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
2015	76.5	80.9	18.1	20.2	76.1	80.6	17.9	20.0	76.9	81.2	18.4	20.4
2020	77.1	81.3	18.5	20.5	76.4	80.8	18.1	20.1	77.9	82.0	19.1	20.9
2025	77.7	81.8	18.9	20.8	76.7	81.0	18.2	20.2	78.9	82.8	19.6	21.4
2030	78.3	82.3	19.2	21.1	77.0	81.2	18.4	20.4	79.8	83.5	20.1	21.9
2035	78.8	82.7	19.5	21.3	77.3	81.5	18.6	20.5	80.6	84.2	20.6	22.3
2040	79.4	83.2	19.8	21.6	77.5	81.7	18.7	20.7	81.4	84.8	21.1	22.7
2045	79.9	83.6	20.1	21.9	77.8	82.0	18.9	20.8	82.1	85.4	21.5	23.1
2050	80.4	84.0	20.4	22.2	78.1	82.2	19.1	21.0	82.8	86.0	21.9	23.5
2055	80.9	84.4	20.7	22.4	78.4	82.4	19.2	21.1	83.5	86.6	22.3	23.9
2060	81.3	84.8	21.0	22.7	78.7	82.6	19.4	21.3	84.1	87.1	22.7	24.2
2065	81.8	85.2	21.2	22.9	78.9	82.9	19.5	21.4	84.7	87.6	23.1	24.6
2070	82.2	85.5	21.5	23.1	79.2	83.1	19.7	21.5	85.3	88.1	23.4	24.9
2075	82.6	85.9	21.7	23.4	79.5	83.3	19.8	21.7	85.8	88.5	23.8	25.3
2080	83.0	86.2	22.0	23.6	79.7	83.5	20.0	21.8	86.3	88.9	24.1	25.6
2085	83.4	86.5	22.2	23.8	80.0	83.7	20.1	21.9	86.8	89.4	24.4	25.9
2090	83.8	86.8	22.4	24.0	80.2	83.9	20.3	22.1	87.3	89.8	24.7	26.2

[a] The period life expectancy at a given age for a given year is the average number of years of life remaining if a group of persons at that exact age, born on January 1, were to experience the mortality rates for that year over the course of their remaining lives.
[b] Estimated.

Table V.A4.—Cohort Life Expectancy[a]

Calendar year	Intermediate				Low-cost				High-cost			
	At birth[b]		At age 65[c]		At birth[b]		At age 65[c]		At birth[b]		At age 65[c]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1940	70.4	76.3	12.7	14.7	70.1	76.0	12.7	14.7	70.7	76.6	12.7	14.7
1945	72.2	77.9	13.0	15.4	71.8	77.5	13.0	15.4	72.7	78.4	13.0	15.4
1950	73.5	79.2	13.1	16.2	72.9	78.6	13.1	16.2	74.2	79.9	13.1	16.2
1955	74.2	79.8	13.1	16.7	73.4	79.1	13.1	16.7	75.1	80.7	13.1	16.7
1960	74.9	80.3	13.2	17.4	73.9	79.3	13.2	17.4	76.0	81.4	13.2	17.4
1965	75.7	80.8	13.5	18.0	74.6	79.7	13.5	18.0	77.1	82.1	13.5	18.0
1970	76.9	81.6	13.8	18.5	75.5	80.3	13.8	18.5	78.5	83.1	13.8	18.5
1975	77.8	82.3	14.2	18.7	76.2	80.8	14.2	18.7	79.6	84.0	14.2	18.7
1980	78.7	83.0	14.7	18.8	76.8	81.3	14.7	18.8	80.8	84.9	14.7	18.8
1985	79.3	83.5	15.4	19.0	77.3	81.7	15.4	19.0	81.6	85.6	15.4	19.0
1990	79.9	84.0	16.0	19.3	77.7	82.0	16.0	19.2	82.5	86.3	16.1	19.3
1995	80.6	84.6	16.7	19.6	78.2	82.4	16.6	19.4	83.3	87.0	16.8	19.7
1996	80.7	84.7	16.9	19.6	78.3	82.5	16.8	19.5	83.5	87.1	17.0	19.8
1997	80.8	84.8	17.0	19.7	78.3	82.5	16.9	19.5	83.6	87.3	17.2	19.9
1998	80.9	84.8	17.2	19.8	78.4	82.6	17.0	19.6	83.8	87.4	17.3	20.0
1999	81.0	84.9	17.3	19.8	78.4	82.6	17.2	19.6	83.9	87.5	17.5	20.1
2000	81.1	85.0	17.5	19.9	78.5	82.7	17.3	19.7	84.1	87.6	17.7	20.2
2001	81.2	85.1	17.6	20.0	78.6	82.7	17.4	19.7	84.2	87.7	17.8	20.3
2002	81.3	85.2	17.7	20.1	78.6	82.8	17.5	19.8	84.3	87.8	18.0	20.4
2003	81.4	85.2	17.9	20.2	78.7	82.8	17.6	19.9	84.4	87.9	18.2	20.5
2004	81.5	85.3	18.0	20.2	78.7	82.9	17.7	19.9	84.6	88.0	18.3	20.6
2005	81.6	85.4	18.1	20.3	78.8	82.9	17.8	20.0	84.7	88.1	18.5	20.7
2006	81.7	85.5	18.2	20.4	78.9	83.0	17.8	20.0	84.8	88.2	18.7	20.8
2007	81.8	85.5	18.3	20.5	78.9	83.0	17.9	20.0	84.9	88.3	18.8	21.0
2008	81.9	85.6	18.4	20.5	79.0	83.1	18.0	20.1	85.1	88.4	19.0	21.1
2009	82.0	85.7	18.5	20.6	79.0	83.1	18.0	20.1	85.2	88.5	19.1	21.2
2010	82.1	85.8	18.6	20.7	79.1	83.2	18.1	20.2	85.3	88.6	19.3	21.3
2011	82.2	85.8	18.7	20.7	79.1	83.2	18.1	20.2	85.5	88.7	19.4	21.4
2015	82.5	86.1	19.0	21.0	79.4	83.4	18.3	20.3	86.0	89.1	19.9	21.8
2020	83.0	86.5	19.4	21.3	79.6	83.6	18.5	20.5	86.6	89.6	20.5	22.3
2025	83.4	86.9	19.7	21.6	79.9	83.8	18.7	20.6	87.1	90.1	21.0	22.8
2030	83.8	87.2	20.0	21.9	80.2	84.0	18.8	20.8	87.7	90.6	21.4	23.2
2035	84.2	87.5	20.3	22.2	80.4	84.2	19.0	20.9	88.2	91.0	21.9	23.6
2040	84.6	87.8	20.6	22.4	80.7	84.4	19.2	21.1	88.7	91.4	22.3	24.0
2045	85.0	88.2	20.9	22.7	80.9	84.6	19.3	21.2	89.2	91.8	22.7	24.4
2050	85.4	88.5	21.2	23.0	81.1	84.8	19.5	21.4	89.7	92.2	23.1	24.8
2055	85.7	88.7	21.5	23.2	81.4	85.0	19.6	21.5	90.1	92.5	23.5	25.1
2060	86.1	89.0	21.7	23.4	81.6	85.2	19.8	21.7	90.5	92.9	23.9	25.5
2065	86.4	89.3	22.0	23.7	81.8	85.4	19.9	21.8	91.0	93.2	24.2	25.8
2070	86.7	89.6	22.2	23.9	82.1	85.6	20.1	21.9	91.4	93.6	24.6	26.1
2075	87.1	89.8	22.5	24.1	82.3	85.8	20.2	22.1	91.7	93.9	24.9	26.5
2080	87.4	90.1	22.7	24.3	82.5	86.0	20.4	22.2	92.1	94.2	25.3	26.8
2085	87.7	90.3	22.9	24.6	82.7	86.1	20.5	22.3	92.5	94.5	25.6	27.1
2090	87.9	90.6	23.2	24.8	82.9	86.3	20.7	22.5	92.8	94.8	25.9	27.4

[a] The cohort life expectancy at a given age for a given year is the average number of years of life remaining if a group of persons at that exact age, born on January 1, were to experience the mortality rates for the series of years in which they reach each succeeding age.

[b] Cohort life expectancy at birth for those born in the calendar year is based on a combination of actual and estimated death rates for birth years 1940 through 2007. For birth years after 2007, these values depend on estimated death rates.

[c] Age 65 cohort life expectancy for those attaining age 65 in calendar years 1940 though 2007 depends on actual death rates or on a combination of actual and estimated death rates. After 2007, these values depend on estimated death rates.

B. ECONOMIC ASSUMPTIONS AND METHODS

The three alternative sets of economic assumptions project a continuation of the gradual recovery from the recession that started in December 2007. They reflect the Trustees' consensus expectation of sustained moderate economic growth and their best estimate for various other economic parameters. The low-cost assumptions represent a more optimistic outlook and assume a faster recovery, stronger economic growth, and optimistic levels for other parameters. The high-cost assumptions represent a more pessimistic scenario, beginning with a small second dip to the recession, followed by relatively weak economic growth and pessimistic levels for other parameters.

Actual economic data were available through the third quarter of 2011 at the time the Trustees set the assumptions for this report. The data indicated that economic activity peaked in December 2007[1] with the level of gross domestic product (GDP) about 1 percent above the estimated long-term sustainable trend level. A severe recession followed, with a low point in the economic cycle reached in the second quarter of 2009[2] that was about 7 percent below the estimated sustainable trend level. The actual growth rate in real GDP has been positive in all quarters since then, but not as strong as in typical recoveries. The Trustees project that the economy will return to its sustainable trend level of output within the first 10 years of the projection period and remain on that trend thereafter. However, the speed of the return varies by alternative. The Trustees project that the economy will return to its sustainable trend level of output in 2019 for the intermediate assumptions, 2017 for the low-cost assumptions, and 2021 for the high-cost assumptions, 1 year later than in last year's report for each alternative. Complete cycles have little effect on the long-range estimates of financial status, so the assumptions do not include economic cycles beyond 10 years.

The remainder of this section discusses the key economic assumptions underlying the three sets of projections of the future financial status of the combined OASI and DI Trust Funds.

---

[1] Determination of the December 2007 Peak in Economic Activity, Business Cycle Dating Committee, National Bureau of Economic Research. See www.nber.org/cycles/dec2008.html.

[2] See www.nber.org/cycles/sept2010.html.

1. Productivity Assumptions

"Total U.S. economy productivity" denotes the ratio of real GDP to hours worked by all workers.[1] The rate of change in total-economy productivity is a major determinant in the growth of average earnings. Over the last five complete economic cycles (1966-73, 1973-79, 1979-89, 1989-2000, and 2000-07, measured peak to peak), the annual increases in total productivity averaged 2.26, 1.08, 1.30, 1.75 and 2.06 percent, respectively. For the 41-year period from 1966 to 2007, covering those last five complete economic cycles, the annual increase in total-economy productivity averaged 1.68 percent.

The Trustees set the ultimate annual increases in total-economy productivity to 1.98, 1.68, and 1.38 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These assumptions are consistent with ultimate annual increases in private non-farm business productivity of 2.39, 2.03, and 1.67 percent. The private non-farm business sector excludes the farm, government, non-profit institution, and private household sectors. These rates of increase are unchanged from the 2011 report, and reflect the belief that recent strong growth in private non-farm business productivity is consistent with future long-term growth that mirrors the long-term trends of the past.

The estimated annual change in total-economy productivity is 0.40 percent for 2011. For the intermediate assumptions, the Trustees assume the annual change in productivity will be 1.09 percent for 2012, then average 2.08 percent for 2013 through 2015, gradually decline to 1.62 percent for 2019 and 2020, and reach its ultimate value of 1.68 percent thereafter. For the low-cost assumptions, the assumed annual change in productivity is 1.44 percent for 2012, averages 2.51 percent for 2013 through 2015, 1.94 percent for 2016 through 2020, and reaches its ultimate value of 1.98 percent thereafter. For the high-cost assumptions, the assumed annual change in productivity is 0.25 percent for 2012, then averages 1.68 percent for 2013 through 2019, and reaches the assumed ultimate value of 1.38 percent thereafter.

2. Price Inflation Assumptions

Future changes in the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI) will directly affect the OASDI program through the automatic cost-of-living benefit increases. Future changes in the GDP price

[1] Historical levels of real GDP are from the Bureau of Economic Analysis' National Income and Product Accounts. Historical total hours worked is an unpublished series provided by the Bureau of Labor Statistics that includes all U.S. Armed Forces and civilian employment.

index (GDP deflator) affect the nominal levels of GDP, wages, self-employment income, average earnings, and taxable payroll.

The annual increases in the CPI averaged 4.6, 8.5, 5.3, 3.0, and 2.6 percent over the economic cycles 1966-73, 1973-79, 1979-89, 1989-2000, and 2000-07, respectively. The annual increases in the GDP deflator averaged 4.6, 7.7, 4.7, 2.2, and 2.6 percent for the same respective economic cycles. For the 41 years from 1966 to 2007, covering the last five complete economic cycles, the annual increases in the CPI and GDP deflator averaged 4.6 and 4.1 percent, respectively. For 2011, the estimated annual change is 3.7 percent for the CPI and 2.1 percent for the GDP deflator.

The Trustees set the ultimate annual increases in the CPI to 1.8, 2.8, and 3.8 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These rates of increase are unchanged from the 2011 report, and reflect a belief that: (1) future shocks that increase inflation will likely be offset by succeeding periods of relatively low inflation; and (2) future monetary policy will be similar to that of the last 20 years, which emphasizes holding the growth rate in prices to relatively low levels.

For the intermediate assumptions, the Trustees assume the annual change in the CPI will average 2.0 percent for 2012 through 2015 and then, as the economy moves toward full employment, increase gradually until it reaches the ultimate growth rate of 2.8 percent for 2019 and later. The actual levels of the CPI in the third quarters of 2009 and 2010 were below the level of the CPI in the third quarter of 2008; therefore, there were no automatic cost-of-living benefit increases for December 2009 and December 2010. Automatic cost-of-living benefit increases resumed in December 2011, and the Trustees project that they will occur in each subsequent year.

For the low-cost assumptions, the Trustees assume the annual change in the CPI will decline from 1.9 percent for 2012 to 1.3 percent for 2013-2014, and then gradually increase until it reaches the ultimate annual change of 1.8 percent for 2019 and later. For the high-cost assumptions, the Trustees assume the annual change in the CPI will increase from 2.2 percent for 2012 until it reaches the ultimate annual change of 3.8 percent for 2019 and later.

The ultimate annual increase in the GDP deflator is equal to the annual increase in the CPI minus a price differential. The price differential is based primarily on methodological differences in the construction of the two indices. The Trustees assume the price differential will be 0.3, 0.4, and 0.5 percentage point for the low-cost, intermediate, and high-cost alternatives, respectively. Varying the ultimate projected price differential across alternatives recognizes the historical variation in this measure. Accordingly, the Trustees assume the ultimate annual increase in the GDP deflator will be

1.5 (1.8 less 0.3), 2.4 (2.8 less 0.4), and 3.3 (3.8 less 0.5) percent for the low-cost, intermediate, and high-cost alternatives, respectively. These ultimate price differentials and GDP deflator growth rates are unchanged from the 2011 report.

The estimated price differential is 1.6 percentage points for 2011. Under the intermediate assumptions, the assumed price differential is 0.3 percentage point for 2012. The large change in the price differential between 2011 and 2012 primarily reflects fluctuations in oil prices in recent years. Changes in oil prices affect the CPI much more than the GDP deflator because oil represents a much larger share of U.S. consumption than of U.S. production. The Trustees assume no future fluctuations in oil prices because such fluctuations are inherently unpredictable. Therefore, the Trustees assume the price differential will be 0.3 percentage point in 2012, 0.5 percentage point in 2013, and then stabilize at 0.4 percentage point in 2014 and later.

3. Average Earnings Assumptions

The average level of nominal earnings in OASDI covered employment for each year has a direct effect on the size of the taxable payroll and on the future level of average benefits. In addition, under the automatic-adjustment provisions in the law, growth in the average wage in the U.S. economy directly affects certain parameters used in the OASDI benefit formulas as well as the contribution and benefit base, the exempt amounts under the retirement earnings test, the amount of earnings required for a quarter of coverage, and certain automatic cost-of-living benefit increases.

"Average U.S. earnings" denotes the ratio of the sum of total U.S. wage and salary disbursements and net proprietor income to the sum of total U.S. military and civilian employment. The growth rate in average U.S. earnings for any period is equal to the combined growth rates for total U.S. economy productivity, average hours worked, the ratio of earnings to total compensation (which reflects fringe benefits), the ratio of total compensation to GDP, and the GDP deflator.

The average annual change in average hours worked was -0.27 percent over the last five complete economic cycles covering the period from 1966 to 2007. The annual change in average hours worked averaged -0.71, -0.56, 0.00, 0.15, and -0.63 percent over the economic cycles 1966-73, 1973-79, 1979-89, 1989-2000, and 2000-07, respectively.

The Trustees set the ultimate annual rates of change for average hours worked at 0.05, -0.05, and -0.15 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These ultimate annual rates of change

for average hours worked are 0.05 percentage point lower than in the 2011 report.

The average annual change in the ratio of earnings to total compensation was -0.21 percent from 1966 to 2007. Most of this decrease was due to the relative increase in employer-sponsored group health insurance for wage workers. Assuming that the level of total employee compensation does not react to the amount of employer-sponsored group health insurance, any increase or decrease in employer-sponsored group health insurance leads to a commensurate decrease or increase in other components of employee compensation, including wages. Projections of future ratios of earnings to total compensation follow this principle and are consistent with the year-by-year cost of employer-sponsored group health insurance projected by the Office of the Actuary at the Centers for Medicare and Medicaid Services. This office projects that the total amount of future employer-sponsored group health insurance will increase more slowly due to provisions of the Affordable Care Act of 2010, as described in the 2010 report. Data from the Bureau of Economic Analysis indicate that the other significant component of non-wage employee compensation is employer contributions to retirement plans, which this report assumes will grow faster than employee compensation in the future as life expectancy and potential time in retirement increase.

The Trustees set the average annual rate of change in the ratio of wages to employee compensation to about -0.03, -0.13, and -0.23 percent for the low-cost, intermediate, and high-cost assumptions, respectively. Under the intermediate assumptions, the Trustees assume that the ratio of wages to employee compensation will decline from 0.805 for 2011 to 0.735 for 2086. The rate of this decline is about half the rate assumed prior to enactment of the Affordable Care Act of 2010, as described in the 2010 report. The ratio of earnings to compensation includes self-employment income and self-employment compensation, which are equal to each other. As a result, the rate of decline in earnings to compensation (which ultimately averages 0.11 under the intermediate assumptions) is less than the rate of decline in wages to employee compensation.

The ratio of total compensation (i.e., employee compensation and net proprietor income) to GDP varies over the economic cycle and with changes in the relative sizes of different sectors of the economy. Over the last five economic cycles from 1966 to 2007, this ratio has averaged 0.648. The ratio declined from 0.658 for 2001 to 0.620 for 2010. The Trustees assume that this ratio will rise as the economy recovers, reaching an ultimate level of 0.649 for 2019. For years after 2019, the Trustees assume the relative sizes of different

sectors of the economy will remain constant, and therefore project the ratio of total compensation to GDP to remain unchanged.

The projected average annual growth rate in average U.S. earnings from 2025 to 2086 is about 3.95 percent for the intermediate alternative. This growth rate reflects the average annual growth rate of approximately -0.11 percent for the ratio of earnings to total compensation, and also reflects the assumed ultimate annual growth rates of 1.68, -0.05, and 2.40 percent for productivity, average hours worked, and the GDP deflator, respectively. Similarly, the projected average annual growth rate in average nominal U.S. earnings is 3.53 percent for the low-cost assumptions and 4.36 percent for the high-cost assumptions.

Over long periods, the Trustees expect the average annual growth rate in the average wage in OASDI covered employment (henceforth the "average covered wage") to be very close to the average annual growth rate in average U.S. earnings. Specifically, the assumed average annual growth rates in the average covered wage from 2025 to 2086 are 3.51, 3.92, and 4.32 percent for the low-cost, intermediate, and high-cost assumptions, respectively. The Trustees estimate that the annual rate of change in the average covered wage is 3.60 percent for 2011. For the intermediate assumptions, as the economy recovers, the Trustees assume the annual rate of change in the average covered wage will average 4.45 percent from 2011 to 2020. Thereafter, the assumed average annual rate of change in the average covered wage is 3.92 percent.

4. Assumed Real-Wage Differentials

The Trustees have traditionally expressed real increases in the average OASDI covered wage in the form of real-wage differentials — i.e., the percentage change in the average covered wage minus the percentage change in the CPI. This differential relates closely to assumed growth rates in average earnings and productivity, which previous sections of this chapter present. For the 41-year period including 1967 through 2007, covering the last five complete economic cycles, the real-wage differential averaged 0.91 percentage point, the result of averages of 1.50, 0.02, 0.43, 1.58, and 0.61 percentage points over the economic cycles 1966-73, 1973-79, 1979-89, 1989-2000, and 2000-07, respectively.

For the years 2022-86, the Trustees assume that the annual real-wage differentials for OASDI covered employment will average 1.71, 1.12, and 0.51 percentage points for the low-cost, intermediate, and high-cost assumptions, respectively.

Based on preliminary data, the estimated real-wage differential is -0.10 percentage point for 2011. For the intermediate assumptions, the Trustees assume that the real-wage differential will increase from 1.74 percentage points for 2012 to 2.67 percentage points for 2015, an improvement that reflects the economic recovery. Thereafter, the real-wage differential gradually declines to an average of 1.12 percentage points for 2022 and later. For the low-cost assumptions, the real-wage differential increases from 2.65 percentage points for 2012 to 3.42 percentage points for 2014, gradually declines to 1.69 percentage points for 2021, and averages 1.71 percentage points thereafter. For the high-cost assumptions, the real-wage differential increases from 0.12 percentage point for 2012 to 2.39 percentage points for 2016-17, gradually declines to 0.56 percentage point for 2021, and averages 0.51 percentage point thereafter.

Table V.B1.—Principal Economic Assumptions

	Annual percentage change[a] in—						
Calendar year	Productivity (Total U.S. economy)	Earnings as a percent of compensation	Average hours worked	GDP price index	Average annual wage in covered employment	Consumer Price Index	Real-wage differential[b]
Historical data:							
1960 to 1965....	3.21	-0.20	0.16	1.38	3.22	1.24	1.98
1965 to 1970....	1.98	-.38	-.68	4.07	5.84	4.23	1.61
1970 to 1975....	2.11	-.70	-.87	6.66	6.64	6.76	-.16
1975 to 1980....	.93	-.57	-.17	7.31	8.86	8.91	-.06
1980 to 1985....	1.67	-.26	.02	5.23	6.53	5.22	1.30
1985 to 1990....	1.26	.07	-.07	3.22	4.75	3.83	.91
1990 to 1995....	1.19	-.15	.40	2.46	3.59	3.03	.56
1995 to 2000....	2.33	.46	.13	1.69	5.33	2.43	2.91
2000 to 2005....	2.49	-.52	-.80	2.42	2.71	2.49	.23
2005 to 2010....	1.59	-.14	-.49	2.11	2.49	2.30	.20
1966 to 1973....	2.26	-.44	-.71	4.63	6.12	4.61	1.50
1973 to 1979....	1.08	-.67	-.56	7.65	8.57	8.54	.02
1979 to 1989....	1.30	-.14	.00	4.73	5.78	5.31	.43
1989 to 2000....	1.75	.13	.15	2.23	4.54	2.96	1.58
2000 to 2007....	2.06	-.25	-.63	2.61	3.25	2.65	.61
2001	2.38	-.52	-1.32	2.26	1.98	2.72	-.75
2002	3.16	-1.07	-1.03	1.61	.68	1.38	-.71
2003	3.08	-1.30	-1.50	2.11	2.52	2.22	.31
2004	2.32	.71	.03	2.81	4.70	2.61	2.09
2005	1.51	-.43	-.18	3.32	3.72	3.52	.20
2006	.82	.50	-.02	3.24	4.76	3.19	1.57
2007	1.21	.39	-.41	2.90	4.47	2.88	1.59
2008	.75	-.62	-.64	2.20	2.23	4.09	-1.85
2009	2.13	-1.21	-1.87	1.08	-1.35	-.67	-.68
2010	3.07	.25	.53	1.16	2.45	2.07	.38
2011[c]	.40	.20	.81	2.13	3.60	3.70	-.10

Table V.B1.—Principal Economic Assumptions (Cont.)

Calendar year	Annual percentage change[a] in— Productivity (Total U.S. economy)	Earnings as a percent of compensation	Average hours worked	GDP price index	Average annual wage in covered employment	Consumer Price Index	Real-wage differential[b]
Intermediate:							
2012	1.09	0.04	0.22	1.70	3.75	2.01	1.74
2013	2.07	-.02	.00	1.43	3.93	1.93	2.00
2014	2.10	-.17	.06	1.63	4.59	2.03	2.56
2015	2.06	-.12	.10	1.72	4.79	2.12	2.67
2016	1.88	-.02	.08	1.84	4.80	2.24	2.56
2017	1.80	.19	.04	2.04	5.05	2.44	2.60
2018	1.77	.11	.01	2.17	4.85	2.57	2.28
2019	1.62	-.14	-.03	2.38	4.20	2.78	1.43
2020	1.62	-.14	-.05	2.41	4.07	2.81	1.26
2021	1.68	-.14	-.05	2.40	3.90	2.80	1.10
2020 to 2025	1.68	-.13	-.05	2.40	3.83	2.80	1.03
2025 to 2086	1.68	-.11	-.05	2.40	3.92	2.80	1.12
Low-cost:							
2012	1.44	.07	.33	1.84	4.52	1.87	2.65
2013	2.76	-.01	.18	1.00	4.64	1.32	3.32
2014	2.50	-.15	.21	0.96	4.68	1.26	3.42
2015	2.27	-.09	.21	1.06	4.53	1.36	3.17
2016	2.06	.02	.16	1.16	4.41	1.46	2.94
2017	1.77	.24	.07	1.26	4.19	1.56	2.63
2018	1.97	.17	.05	1.36	4.17	1.66	2.50
2019	1.98	-.06	.05	1.46	3.72	1.76	1.96
2020	1.93	-.06	.05	1.50	3.64	1.80	1.84
2021	1.98	-.05	.05	1.50	3.49	1.80	1.69
2020 to 2025	1.98	-.04	.05	1.50	3.42	1.80	1.62
2025 to 2086	1.98	-.03	.05	1.50	3.51	1.80	1.71
High-cost:							
2012	.25	-.01	.03	1.58	2.33	2.21	.12
2013	1.62	-.04	-.18	2.09	3.64	2.55	1.09
2014	1.52	-.20	-.10	2.30	4.32	2.80	1.52
2015	1.76	-.15	-.05	2.54	4.94	3.04	1.90
2016	1.93	-.06	.00	2.78	5.66	3.28	2.38
2017	1.67	.14	.00	3.02	5.93	3.52	2.41
2018	1.62	.04	-.03	3.24	5.83	3.74	2.09
2019	1.64	-.20	-.05	3.30	5.27	3.80	1.47
2020	1.42	-.22	-.09	3.30	4.80	3.80	1.00
2021	1.35	-.23	-.13	3.30	4.36	3.80	.56
2020 to 2025	1.37	-.21	-.15	3.30	4.24	3.80	.44
2025 to 2086	1.38	-.20	-.15	3.30	4.32	3.80	.52

[a] For rows with a single year listed, the value is the annual percentage change from the prior year. For rows with a range of years listed, the value is the compound average annual percentage change.

[b] For rows with a single year listed, the value is the annual percentage change in the average annual wage in covered employment less the annual percentage change in the Consumer Price Index. For rows with a range of years listed, the value is the average of annual values of the differential. Values are rounded after all computations.

[c] Historical data are not available for the full year. Estimated values vary slightly by alternative and are shown for the intermediate assumptions.

5. Labor Force and Unemployment Projections

The Office of the Chief Actuary at the Social Security Administration projects the civilian labor force by age, sex, marital status, and presence of children. Projections of the labor force participation rates for each group take into account disability prevalence, educational attainment, the average level of Social Security retirement benefits, the state of the economy, and the change in life expectancy. The projections also include a "cohort effect", which reflects a shift upward in female participation rates for cohorts born through 1948.

The annual rate of growth in the labor force decreased from an average of about 2.4 percent during the 1966-73 economic cycle and 2.7 percent during the 1973-79 cycle to 1.7 percent during the 1979-89 cycle, 1.3 percent during the 1989-2000 cycle, and 1.0 percent during the 2000-07 cycle. The Trustees expect further slowing of labor force growth due to a substantial slowing of growth in the working age population in the future — a consequence of the baby-boom generation approaching retirement and succeeding lower-birth-rate cohorts reaching working age. Under the intermediate assumptions, the Office of the Chief Actuary projects that the labor force will increase by an average of 0.8 percent per year from 2012 through 2021 and 0.5 percent per year over the remainder of the 75-year projection period.

The projected labor force participation rates are not basic assumptions. They derive from a historically based structural relationship that uses demographic and economic assumptions specific to each alternative. More optimistic economic assumptions in the low-cost alternative are consistent with higher labor force participation rates, but demographic assumptions in the low-cost alternative (such as slower improvement in longevity) are consistent with lower labor force participation rates. These relationships with various basic assumptions move the labor force participation rates in opposite directions; therefore, the net effect is small, and projected labor force participation rates do not vary substantially across alternatives.

Historically, labor force participation rates reflect trends in demographics and pensions. Between the mid-1960s and the mid-1980s, labor force participation rates at ages 50 and over declined for males but were fairly stable for females. During this period, the baby boom generation reached working age and more women entered the labor force. This increasing supply of labor allowed employers to offer attractive early retirement options. Between the mid-1980s and the mid-1990s, participation rates roughly stabilized for males and increased for females. Since the mid-1990s, however, participation rates for both sexes at ages 50 and over have generally risen significantly.

Many economic and demographic factors, including longevity, health, disability prevalence, the business cycle, incentives for retirement in Social Security and private pensions, education, and marriage patterns, will influence future labor force participation rates. The Office of the Chief Actuary models some of these factors directly. To model the effects of other factors related to increases in life expectancy, the office adjusts projected participation rates upward for mid-career and older ages to reflect projected increases in life expectancy. For the intermediate projections, this adjustment increases the total labor force by 3.1 percent for 2086.

For men age 16 and over, the projected age-adjusted labor force participation rates[1] for 2086 are 73.0, 72.7, and 72.5 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These rates are higher than the 2010 level of 71.2 percent because of: (1) increases due to assumed improvements in life expectancy; (2) decreases due to higher assumed disability prevalence rates; and (3) decreases due to an increasing proportion of males who never marry. For women age 16 and over, the projected age-adjusted labor force participation rates for 2086 are 61.1, 60.8, and 60.6 percent, for the low-cost, intermediate, and high-cost assumptions, respectively. These rates are higher than the 2010 level of 58.6 percent because of: (1) decreases due to higher assumed disability prevalence rates; (2) increases due to assumed improvements in life expectancy; and (3) increases due to assumed changes in the proportion of females who are separated, widowed, divorced, or never married.

The unemployment rates presented in table V.B2 are in the most commonly cited form, the civilian rate. For years through 2021, the table presents total civilian rates without adjustment for the changing age-sex distribution of the population. For years after 2021, the table presents unemployment rates as age-sex-adjusted rates, using the age-sex distribution of the 2010 civilian labor force. Age-sex-adjusted rates allow for more meaningful comparisons across longer time periods. The effect of age-sex adjustment through 2021 is small.

The total civilian unemployment rate reflects the projected levels of unemployment for various age-sex groups of the population. The Office of the Chief Actuary projects each group's unemployment rate by relating changes in the unemployment rate to the changes in the economic cycle, as measured by the ratio of actual to potential GDP. For each alternative, the total civilian

[1] The Office of the Chief Actuary adjusts the labor force participation rates to the 2010 age distribution of the civilian noninstitutional U.S. population.

unemployment rate moves toward the ultimate assumed rate as the economy moves toward the long-range sustainable growth path.

The Trustees assume that each alternative will reach the ultimate age-sex-adjusted unemployment rate by 2021. The ultimate assumed unemployment rates are 4.5, 5.5, and 6.5 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These values are unchanged from the 2011 report.

6. Gross Domestic Product Projections

The value of real GDP equals the product of three components: (1) average weekly total employment;[1] (2) productivity; and (3) average hours worked per week. Given this formula, the growth rate in real GDP is approximately equal to the sum of the growth rates for total employment, productivity, and average hours worked. For the 41-year period from 1966 to 2007, which covers the last five complete economic cycles, the average growth rate in real GDP was 3.1 percent. This average growth rate approximately equals the sum of the average growth rates of 1.6, 1.7, and -0.3 percent for total employment, productivity, and average hours worked, respectively. As a result of the 2007-09 recession, the real GDP in 2011 was only 0.8 percent above the 2007 level.

For the intermediate assumptions, the average annual growth in real GDP is 3.0 percent from 2011 to 2021, the approximate sum of component growth rates of 1.1 percent for total employment, 1.8 percent for productivity, and 0.0 percent for average hours worked. The projected average annual growth in real GDP of 3.0 percent for this period is 0.7 percentage point higher than the underlying sustainable trend rate of 2.3 percent. This 0.7 percentage point above-trend component reflects a relatively rapid increase in employment as the economy recovers and the unemployment rate falls from 9 percent in 2011 to its assumed ultimate level of 5.5 percent in 2019. After 2021, the Trustees do not project any economic cycles. Accordingly, the projected annual growth rate in real GDP combines the projected growth rates for total employment, total U.S. economy productivity, and average hours worked. After 2021, the annual growth in real GDP averages 2.1 percent, based on the assumed ultimate growth rates of 0.5 percent for total employment, 1.7 percent for productivity, and -0.05 percent for average hours worked.

[1] Total employment is the sum of the U.S. Armed Forces and total civilian employment, which depends on the projected total civilian labor force and unemployment rates.

For the low-cost assumptions, the annual growth in real GDP averages 3.6 percent over the decade ending in 2021. The relatively faster growth is due mostly to higher assumed rates of growth for employment and worker productivity. For the high-cost assumptions, the annual growth in real GDP averages 2.2 percent for the decade ending in 2021.

7. Interest Rates

Table V.B2 presents average annual nominal and real interest rates for newly issued trust fund securities. The nominal rate is the average of the nominal interest rates for special U.S. Government obligations issuable to the trust funds in each of the 12 months of the year. Interest for these securities is generally compounded semiannually. The "real interest rate" is the annual yield rate for investments in these securities divided by the annual rate of growth in the CPI for the first year after issuance. The real rate shown for each year reflects the actual realized (historical) or expected (future) real yield on securities issuable in the prior year.

To develop a reasonable range of assumed ultimate future real interest rates for the three alternatives, the Office of the Chief Actuary examined historical experience for the last five complete economic cycles. For the 41-year period from 1967 to 2007, the real interest rate averaged 2.8 percent per year. The real interest rates averaged 1.3, -1.0, 5.2, 4.0, and 2.2 percent per year over the economic cycles 1967-73, 1974-79, 1980-89, 1990-2000, and 2001-07, respectively. The assumed ultimate real interest rates are 3.4 percent, 2.9 percent, and 2.4 percent for the low-cost, intermediate, and high-cost assumptions, respectively. Compared to the 2011 report, the ultimate real interest rate is unchanged for the intermediate assumptions, 0.2 percentage point lower for the low-cost assumptions, and 0.3 percentage point higher for the high-cost assumptions.[1] These ultimate real interest rates, when combined with the ultimate CPI assumptions of 1.8, 2.8, and 3.8 percent, yield ultimate nominal interest rates of about 5.2 percent for the low-cost assumptions, about 5.7 percent for the intermediate assumptions, and about 6.2 percent for the high-cost assumptions. These nominal rates for newly issued trust fund securities reach their ultimate levels by the end of the short-range period.

The actual average annual nominal interest rate was 2.8 percent for 2010, which means that securities newly issued in 2010 would yield 2.8 percent if

[1] The Trustees narrowed the range of interest rates for three reasons: (1) to reduce the differential effects of interest rates on the ranges of trust fund ratios produced by the alternative scenarios and the stochastic simulations; (2) to make the range more symmetric; and (3) to offset the widening of the range of estimates for the alternative scenarios due to other assumption changes.

held 1 year. Estimated average prices rise from 2010 to 2011 by 3.7 percent; therefore, the annual real interest rate for 2011 is -0.9 percent. For the 10-year short-range projection period, projected nominal interest rates depend on changes in the economic cycle and in the CPI. Under the intermediate assumptions, the nominal interest rate rises to the ultimate assumed level of 5.7 percent by 2021. Under the low-cost assumptions, the average annual nominal interest rate reaches an ultimate level of about 5.2 percent by 2021. Under the high-cost assumptions, the rate reaches the ultimate level of about 6.2 percent by 2021.

Table V.B2.—Additional Economic Factors

Calendar year	Average annual unemployment rate[a]	Annual percentage change[b] in—			Average annual interest rate	
		Labor force[c]	Total employment[d]	Real GDP[e]	Nominal[f]	Real[g]
Historical data:						
1960 to 1965	5.5	1.3	1.6	5.0	4.0	2.5
1965 to 1970	3.9	2.2	2.1	3.4	5.9	1.0
1970 to 1975	6.1	2.5	1.5	2.7	6.7	.0
1975 to 1980	6.8	2.7	2.9	3.7	8.5	-.9
1980 to 1985	8.3	1.5	1.5	3.2	12.1	6.9
1985 to 1990	5.9	1.7	2.0	3.2	8.5	5.1
1990 to 1995	6.6	1.0	.9	2.5	7.0	4.3
1995 to 2000	4.6	1.5	1.8	4.3	6.2	3.9
2000 to 2005	5.4	.9	.7	2.4	4.6	2.4
2005 to 2010	6.8	.6	-.4	.7	3.8	1.8
1966 to 1973	4.6	2.4	2.0	3.6	6.1	1.3
1973 to 1979	6.8	2.7	2.4	3.0	7.7	-1.0
1979 to 1989	7.3	1.7	1.7	3.0	10.5	5.2
1989 to 2000	5.6	1.3	1.3	3.3	6.8	4.0
2000 to 2007	5.2	1.0	.9	2.4	4.6	2.2
2001	4.7	.8	.0	1.1	5.2	3.5
2002	5.8	.8	-.3	1.8	4.9	3.9
2003	6.0	1.1	1.0	2.5	4.1	2.6
2004	5.5	.6	1.1	3.5	4.3	1.5
2005	5.1	1.3	1.7	3.1	4.3	.8
2006	4.6	1.4	1.8	2.7	4.8	1.1
2007	4.6	1.1	1.1	1.9	4.7	1.9
2008	5.8	.8	-.4	-.3	3.6	.6
2009	9.3	-.1	-3.7	-3.5	2.9	4.4
2010	9.6	-.2	-.6	3.0	2.8	.9
2011[h]	9.0	-.2	.5	1.7	2.4	-.9
Intermediate:						
2012	8.9	1.2	1.3	2.6	2.4	.4
2013	8.7	.7	.8	2.9	3.4	.5
2014	8.2	.8	1.3	3.5	4.4	1.4
2015	7.4	.9	1.8	4.0	5.0	2.3
2016	6.6	.9	1.8	3.8	5.1	2.8
2017	6.1	.9	1.5	3.3	5.0	2.7
2018	5.7	.8	1.2	3.0	5.2	2.4
2019	5.5	.6	.8	2.4	5.5	2.4
2020	5.5	.6	.6	2.2	5.6	2.7
2021	5.5	.5	.5	2.1	5.7	2.8
2025	5.5	.5	.5	2.1	5.7	2.9
2030	5.5	.4	.4	2.0	5.7	2.9
2035	5.5	.6	.6	2.2	5.7	2.9
2040	5.5	.5	.6	2.2	5.7	2.9
2045	5.5	.5	.5	2.2	5.7	2.9
2050	5.5	.5	.5	2.1	5.7	2.9
2055	5.5	.4	.4	2.1	5.7	2.9
2060	5.5	.4	.4	2.1	5.7	2.9
2065	5.5	.4	.4	2.1	5.7	2.9
2070	5.5	.4	.4	2.1	5.7	2.9
2075	5.5	.4	.4	2.1	5.7	2.9
2080	5.5	.4	.4	2.0	5.7	2.9
2085	5.5	.4	.4	2.0	5.7	2.9
2090	5.5	.4	.4	2.0	5.7	2.9
Low-cost:						
2012	8.5	1.3	1.7	3.6	2.6	0.5
2013	7.9	.9	1.5	4.5	3.6	1.3
2014	7.0	1.0	2.0	4.8	4.4	2.3
2015	6.0	1.1	2.2	4.8	4.8	3.0
2016	5.1	1.1	2.0	4.3	4.8	3.3

Table V.B2.—Additional Economic Factors (Cont.)

Calendar year	Average annual unemployment rate[a]	Annual percentage change[b] in— Labor force[c]	Total employment[d]	Real GDP[e]	Average annual interest rate Nominal[f]	Real[g]
Low-cost: (Cont.)						
2017	4.6	1.0	1.5	3.3	4.7	3.3
2018	4.5	.9	1.0	3.0	4.8	3.0
2019	4.5	.7	.7	2.8	5.1	3.1
2020	4.5	.7	.7	2.7	5.1	3.3
2021	4.6	.6	.6	2.7	5.2	3.3
2025	4.5	.6	.6	2.7	5.2	3.4
2030	4.5	.5	.5	2.5	5.2	3.4
2035	4.5	.7	.7	2.7	5.2	3.4
2040	4.5	.7	.7	2.8	5.2	3.4
2045	4.5	.8	.8	2.8	5.2	3.4
2050	4.5	.7	.7	2.8	5.2	3.4
2055	4.5	.8	.8	2.8	5.2	3.4
2060	4.5	.8	.8	2.8	5.2	3.4
2065	4.5	.8	.8	2.8	5.2	3.4
2070	4.5	.8	.8	2.9	5.2	3.4
2075	4.5	.8	.8	2.9	5.2	3.4
2080	4.5	.8	.8	2.9	5.2	3.4
2085	4.5	.8	.8	2.9	5.2	3.4
2090	4.5	.8	.8	2.8	5.2	3.4
High-cost:						
2012	9.4	1.0	.6	.8	1.9	.2
2013	9.9	.3	-.3	1.2	3.4	-.6
2014	9.7	.4	.6	2.0	4.7	.6
2015	9.4	.5	.8	2.6	5.4	1.6
2016	8.8	.5	1.2	3.1	6.0	2.1
2017	8.1	.6	1.3	3.0	6.4	2.5
2018	7.6	.6	1.3	2.9	6.6	2.6
2019	7.0	.6	1.2	2.8	6.6	2.8
2020	6.7	.6	.9	2.3	6.4	2.8
2021	6.5	.5	.6	1.8	6.2	2.6
2025	6.5	.4	.4	1.6	6.2	2.4
2030	6.5	.3	.3	1.5	6.2	2.4
2035	6.5	.5	.5	1.7	6.2	2.4
2040	6.5	.4	.4	1.6	6.2	2.4
2045	6.5	.3	.3	1.5	6.2	2.4
2050	6.5	.2	.2	1.4	6.2	2.4
2055	6.5	.1	.1	1.3	6.2	2.4
2060	6.5	.1	.1	1.3	6.2	2.4
2065	6.5	.1	.1	1.3	6.2	2.4
2070	6.5	.0	.0	1.2	6.2	2.4
2075	6.5	.0	.0	1.2	6.2	2.4
2080	6.5	-.1	-.1	1.2	6.2	2.4
2085	6.5	-.1	-.1	1.1	6.2	2.4
2090	6.5	-.1	-.1	1.1	6.2	2.4

[a] The Office of the Chief Actuary adjusts the civilian unemployment rates for 2022 and later to the age-sex distribution of the civilian labor force in 2010.

[b] For rows with a single year listed, the value is the annual percentage change from the prior year. For rows with a range of years listed, the value is the compounded average annual percentage change.

[c] The U.S. civilian labor force.

[d] Total U.S. military and civilian employment.

[e] The value of the total output of goods and services in 2005 dollars.

[f] The average of the nominal interest rates, which compound semiannually, for special public-debt obligations issuable to the trust funds in each of the 12 months of the year.

[g] The realized or expected annual real yield for each year on securities issuable in the prior year.

[h] Historical data are not available for the full year. Estimated values vary slightly by alternative and are shown for the intermediate assumptions.

C. PROGRAM-SPECIFIC ASSUMPTIONS AND METHODS

The Office of the Chief Actuary at the Social Security Administration uses a set of models to project future income and cost under the OASDI program. These models rely not only on the demographic and economic assumptions described in the previous sections, but also on a number of program-specific assumptions and methods. Values of certain program parameters change from year to year as prescribed by formulas set out in the Social Security Act. These program parameters affect the level of payroll taxes collected and the level of benefits paid. The office uses more complex models to project the numbers of future workers covered under OASDI and the levels of their covered earnings, as well as the numbers of future beneficiaries and the expected levels of their benefits. The following subsections provide descriptions of these program-specific assumptions and methods.

1. Automatically Adjusted Program Parameters

The Social Security Act requires that certain parameters affecting the determination of OASDI benefits and taxes be adjusted annually to reflect changes in particular economic measures. Formulas prescribed in the law, applied to reported statistics, change these program parameters annually. The law bases these automatic adjustments on measured changes in the national average wage index (AWI) and the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI).[1] This section shows values for program parameters adjusted using these indices from the time that these adjustments became effective through 2021. Projected values for future years depend on the economic assumptions described in the preceding section of this report.

Tables V.C1 and V.C2 present the historical and projected values of the CPI-based benefit increases, the AWI series, and the values of many of the wage-indexed program parameters. Each table shows projections under the three alternative sets of economic assumptions. Table V.C1 includes:

- *The annual cost-of-living benefit increase percentages.* The automatic cost-of-living adjustment provisions in the Social Security Act specify increases in OASDI benefits based on increases in the CPI. In December 2009 and December 2010, there were no cost-of-living adjustments, and in December 2011 there was a cost-of-living adjustment of 3.6 percent. Under all three sets of economic assumptions, the Trustees project

[1] The *Federal Register* publishes details of these indexation procedures annually. Also see www.socialsecurity.gov/OACT/COLA/index.html.

that there will be an annual cost-of-living adjustment in December 2012 and in future years.

- *The annual levels of and percentage increases in the AWI.* Under section 215(b)(3) of the Social Security Act, Social Security benefit computations index taxable earnings (for most workers first becoming eligible for benefits in 1979 or later) using the AWI for each year after 1950. This procedure converts a worker's past earnings to approximately average-wage-indexed equivalent values near the time of his or her benefit eligibility. Other program parameters presented in this section that are subject to the automatic-adjustment provisions also rely on the AWI.
- *The wage-indexed contribution and benefit base.* For any year, the contribution and benefit base is the maximum amount of earnings subject to the OASDI payroll tax and creditable toward benefit computation. The Social Security Act defers any increase in the contribution and benefit base if there is no cost-of-living adjustment effective for December of the preceding year. There was no increase in the contribution and benefit base in 2010 and 2011. Increases resumed in 2012.
- *The wage-indexed retirement earnings test exempt amounts.* The exempt amounts are the annual amount of earnings below which beneficiaries do not have benefits withheld. A lower exempt amount applies in years before normal retirement age. A higher amount applies for the year in which a beneficiary attains normal retirement age. The retirement earnings test does not apply beginning at normal retirement age. The Social Security Act defers any increase in these exempt amounts if there is no cost-of-living adjustment effective for December of the preceding year. There was no increase in these exempt amounts in 2010 and 2011. Increases resumed in 2012.

Table V.C1.—Cost-of-Living Benefit Increases, Average Wage Index, Contribution and Benefit Bases, and Retirement Earnings Test Exempt Amounts, 1975-2021

Calendar year	Cost-of-living benefit increase[a] (percent)	Average wage index (AWI)[b] Amount	Average wage index (AWI)[b] Increase (percent)	Contribution and benefit base[c]	Retirement earnings test exempt amount Under NRA[d]	Retirement earnings test exempt amount At NRA[e]
Historical data:						
1975	8.0	$8,630.92	7.5	$14,100	$2,520	$2,520
1976	6.4	9,226.48	6.9	15,300	2,760	2,760
1977	5.9	9,779.44	6.0	16,500	3,000	3,000
1978	6.5	10,556.03	7.9	17,700	3,240	4,000
1979	9.9	11,479.46	8.7	22,900	3,480	4,500
1980	14.3	12,513.46	9.0	25,900	3,720	5,000
1981	11.2	13,773.10	10.1	29,700	4,080	5,500
1982	7.4	14,531.34	5.5	32,400	4,440	6,000
1983	3.5	15,239.24	4.9	35,700	4,920	6,600
1984	3.5	16,135.07	5.9	37,800	5,160	6,960
1985	3.1	16,822.51	4.3	39,600	5,400	7,320
1986	1.3	17,321.82	3.0	42,000	5,760	7,800
1987	4.2	18,426.51	6.4	43,800	6,000	8,160
1988	4.0	19,334.04	4.9	45,000	6,120	8,400
1989	4.7	20,099.55	4.0	48,000	6,480	8,880
1990	5.4	21,027.98	4.6	51,300	6,840	9,360
1991	3.7	21,811.60	3.7	53,400	7,080	9,720
1992	3.0	22,935.42	5.2	55,500	7,440	10,200
1993	2.6	23,132.67	.9	57,600	7,680	10,560
1994	2.8	23,753.53	2.7	60,600	8,040	11,160
1995	2.6	24,705.66	4.0	61,200	8,160	11,280
1996	2.9	25,913.90	4.9	62,700	8,280	12,500
1997	2.1	27,426.00	5.8	65,400	8,640	13,500
1998	1.3	28,861.44	5.2	68,400	9,120	14,500
1999	[f]2.5	30,469.84	5.6	72,600	9,600	15,500
2000	3.5	32,154.82	5.5	76,200	10,080	17,000
2001	2.6	32,921.92	2.4	80,400	10,680	25,000
2002	1.4	33,252.09	1.0	84,900	11,280	30,000
2003	2.1	34,064.95	2.4	87,000	11,520	30,720
2004	2.7	35,648.55	4.6	87,900	11,640	31,080
2005	4.1	36,952.94	3.7	90,000	12,000	31,800
2006	3.3	38,651.41	4.6	94,200	12,480	33,240
2007	2.3	40,405.48	4.5	97,500	12,960	34,440
2008	5.8	41,334.97	2.3	102,000	13,560	36,120
2009	.0	40,711.61	-1.5	106,800	14,160	37,680
2010	.0	41,673.83	2.4	106,800	14,160	37,680
Intermediate:						
2011	[g]3.6	43,008.96	3.2	[g]106,800	[g]14,160	[g]37,680
2012	1.8	44,644.06	3.8	[g]110,100	[g]14,640	[g]38,880
2013	1.9	46,496.20	4.1	113,700	15,120	40,080
2014	2.1	48,595.38	4.5	117,900	15,600	41,640
2015	2.1	50,892.59	4.7	123,000	16,320	43,440
2016	2.2	53,317.30	4.8	128,400	17,040	45,360
2017	2.5	55,988.97	5.0	134,400	17,880	47,520
2018	2.6	58,698.31	4.8	141,000	18,720	49,800
2019	2.8	61,178.72	4.2	147,900	19,680	52,200
2020	2.8	63,675.71	4.1	155,100	20,520	54,720
2021	2.8	66,160.67	3.9	161,700	21,480	57,120

Table V.C1.—Cost-of-Living Benefit Increases, Average Wage Index, Contribution and Benefit Bases, and Retirement Earnings Test Exempt Amounts, 1975-2021 (Cont.)

Calendar year	Cost-of-living benefit increase[a] (percent)	Average wage index (AWI)[b] Amount	Average wage index (AWI)[b] Increase (percent)	Contribution and benefit base[c]	Retirement earnings test exempt amount Under NRA[d]	Retirement earnings test exempt amount At NRA[e]
Low-cost:						
2011	[g]3.6	$43,024.67	3.2	[g]$106,800	[g]$14,160	[g]$37,680
2012	1.6	44,975.10	4.5	[g]110,100	[g]14,640	[g]38,880
2013	1.2	47,148.54	4.8	113,700	15,120	40,200
2014	1.3	49,327.53	4.6	118,800	15,720	42,000
2015	1.4	51,541.31	4.5	124,500	16,560	44,040
2016	1.5	53,798.61	4.4	130,200	17,280	46,080
2017	1.6	56,046.67	4.2	136,200	18,120	48,120
2018	1.7	58,378.15	4.2	142,200	18,840	50,160
2019	1.8	60,561.85	3.7	148,200	19,680	52,320
2020	1.8	62,770.53	3.6	154,200	20,520	54,480
2021	1.8	64,960.49	3.5	159,900	21,240	56,520
High-cost:						
2011	[g]3.6	43,004.50	3.2	[g]106,800	[g]14,160	[g]37,680
2012	2.0	44,061.05	2.5	[g]110,100	[g]14,640	[g]38,880
2013	2.6	45,755.82	3.8	113,700	15,120	40,080
2014	2.8	47,696.44	4.2	116,400	15,480	41,160
2015	3.1	50,024.82	4.9	120,900	16,080	42,720
2016	3.3	52,825.03	5.6	126,000	16,680	44,520
2017	3.6	55,928.50	5.9	132,300	17,520	46,680
2018	3.8	59,176.22	5.8	139,500	18,480	49,320
2019	3.8	62,301.42	5.3	147,900	19,560	52,200
2020	3.8	65,304.65	4.8	156,300	20,760	55,200
2021	3.8	68,163.48	4.4	164,700	21,840	58,080

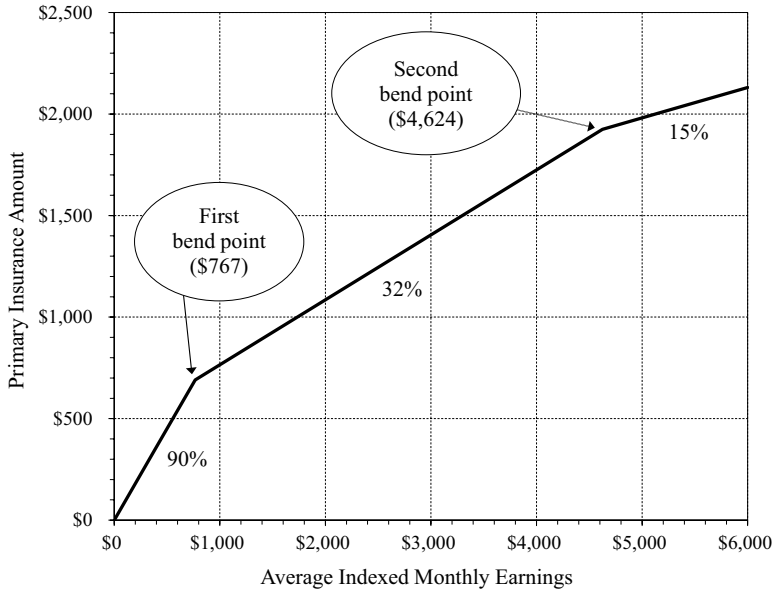
[a] Effective with benefits payable for June in each year 1975-82, and for December in each year after 1982.
[b] See table VI.F6 for projected dollar amounts of the AWI beyond 2021.
[c] Public Law 95-216 specified amounts for 1979-81. Public Law 101-239 changed the indexing procedure and caused slightly higher bases after 1989.
[d] Normal retirement age. See table V.C3 for specific values.
[e] In 1955-82, the retirement earnings test did not apply at ages 72 and over. In 1983-99, the test did not apply at ages 70 and over. Beginning in 2000, the test does not apply beginning with the month of normal retirement age attainment. In the year of normal retirement age attainment, the higher exempt amount applies to earnings prior to the month of normal retirement age attainment. Public Law 95-216 specified amounts for 1978-82. Public Law 104-121 specified amounts for 1996-2002.
[f] Originally determined as 2.4 percent. Pursuant to Public Law 106-554, effectively 2.5 percent.
[g] Actual amount, as determined under automatic-adjustment provisions.

Table V.C2 shows values for other wage-indexed parameters. The table provides historical values from 1978, when indexing of the amount of earnings required for a quarter of coverage first began, through 2011, and also shows projected values through 2021. These other wage-indexed program parameters are:

- *The bend points in the formula for computing the primary insurance amount (PIA) for workers who reach age 62, become disabled, or die in a given year.* As figure V.C1 illustrates, these two bend points define three ranges in a worker's average indexed monthly earnings (AIME). The formula for the worker's PIA multiplies a 90, 32, or 15 percent fac-

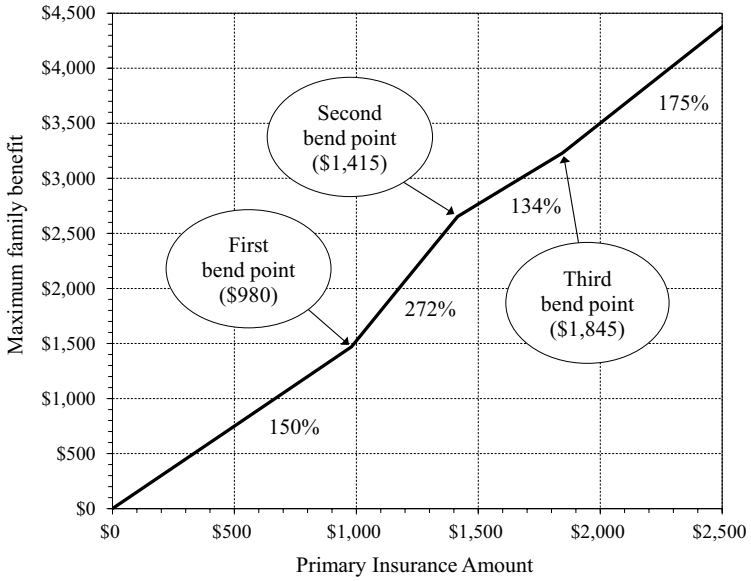
tor by the portion of the worker's AIME that falls within the three respective ranges, and then adds the resulting products together.

Figure V.C1.—Primary-Insurance-Amount Formula for Those Newly Eligible in 2012



- *The bend points in the formula for computing the maximum total amount of monthly benefits payable based on the earnings record of a retired or deceased worker.* As figure V.C2 illustrates, these three bend points define four ranges in a worker's PIA. The formula for the maximum family benefit multiplies a 150, 272, 134, or 175 percent factor by the portion of the worker's PIA that falls within the four respective ranges, and then adds the resulting products together.

Figure V.C2.—Maximum-Family-Benefit Formula for Those Newly Eligible in 2012



- *The amount of earnings required in a year to earn a quarter of coverage (QC).* The number and timing of QCs earned determines an individual's insured status—the basic requirement for benefit eligibility under OASDI.
- *The old-law contribution and benefit base—the contribution and benefit base that would have been in effect under the law prior to enactment of the 1977 amendments.* This old-law base is used in determining special-minimum benefits for certain workers who have many years of low earnings in covered employment. Since 1986, the calculation of OASDI benefits for certain workers who are eligible to receive pensions based on noncovered employment uses the old-law base. In addition, the Railroad Retirement program and the Employee Retirement Income Security Act of 1974 use the old-law base for certain purposes.

Table V.C2.—Values for Selected Wage-Indexed Program Parameters, Calendar Years 1978-2021

Calendar year	AIME bend points in PIA formula[a] First	AIME bend points in PIA formula[a] Second	PIA bend points in maximum-family-benefit formula[b] First	PIA bend points in maximum-family-benefit formula[b] Second	PIA bend points in maximum-family-benefit formula[b] Third	Earnings required for a quarter of coverage	Old-law contribution and benefit base[c]
Historical data:							
1978	[d]	[d]	[d]	[d]	[d]	[e] $250	[e] $17,700
1979	[e] $180	[e] $1,085	[e] $230	[e] $332	[e] $433	260	18,900
1980	194	1,171	248	358	467	290	20,400
1981	211	1,274	270	390	508	310	22,200
1982	230	1,388	294	425	554	340	24,300
1983	254	1,528	324	468	610	370	26,700
1984	267	1,612	342	493	643	390	28,200
1985	280	1,691	358	517	675	410	29,700
1986	297	1,790	379	548	714	440	31,500
1987	310	1,866	396	571	745	460	32,700
1988	319	1,922	407	588	767	470	33,600
1989	339	2,044	433	626	816	500	35,700
1990	356	2,145	455	656	856	520	38,100
1991	370	2,230	473	682	890	540	39,600
1992	387	2,333	495	714	931	570	41,400
1993	401	2,420	513	740	966	590	42,900
1994	422	2,545	539	779	1,016	620	45,000
1995	426	2,567	544	785	1,024	630	45,300
1996	437	2,635	559	806	1,052	640	46,500
1997	455	2,741	581	839	1,094	670	48,600
1998	477	2,875	609	880	1,147	700	50,700
1999	505	3,043	645	931	1,214	740	53,700
2000	531	3,202	679	980	1,278	780	56,700
2001	561	3,381	717	1,034	1,349	830	59,700
2002	592	3,567	756	1,092	1,424	870	63,000
2003	606	3,653	774	1,118	1,458	890	64,500
2004	612	3,689	782	1,129	1,472	900	65,100
2005	627	3,779	801	1,156	1,508	920	66,900
2006	656	3,955	838	1,210	1,578	970	69,900
2007	680	4,100	869	1,255	1,636	1,000	72,600
2008	711	4,288	909	1,312	1,711	1,050	75,900
2009	744	4,483	950	1,372	1,789	1,090	79,200
2010	761	4,586	972	1,403	1,830	1,120	79,200
2011	749	4,517	957	1,382	1,803	1,120	79,200
2012	767	4,624	980	1,415	1,845	1,130	81,900
Intermediate:							
2013	792	4,772	1,012	1,460	1,904	1,170	84,300
2014	822	4,953	1,050	1,516	1,977	1,210	87,600
2015	856	5,159	1,094	1,578	2,059	1,260	91,200
2016	894	5,392	1,143	1,650	2,152	1,320	95,400
2017	937	5,646	1,197	1,728	2,253	1,380	99,900
2018	981	5,915	1,254	1,810	2,361	1,440	104,700
2019	1,031	6,212	1,317	1,901	2,479	1,520	109,800
2020	1,080	6,512	1,381	1,993	2,599	1,590	115,200
2021	1,126	6,788	1,439	2,077	2,709	1,660	120,000

Table V.C2.—Values for Selected Wage-Indexed Program Parameters, Calendar Years 1978-2021 (Cont.)

Calendar year	AIME bend points in PIA formula[a] First	AIME bend points in PIA formula[a] Second	PIA bend points in maximum-family-benefit formula[b] First	PIA bend points in maximum-family-benefit formula[b] Second	PIA bend points in maximum-family-benefit formula[b] Third	Earnings required for a quarter of coverage	Old-law contribution and benefit base[c]
Low-cost:							
2013	$792	$4,773	$1,012	$1,461	$1,905	$1,170	$84,300
2014	828	4,990	1,058	1,527	1,991	1,220	88,200
2015	868	5,231	1,109	1,601	2,088	1,280	92,400
2016	908	5,473	1,160	1,675	2,184	1,340	96,900
2017	949	5,718	1,212	1,750	2,282	1,400	101,100
2018	990	5,969	1,265	1,826	2,382	1,460	105,600
2019	1,032	6,218	1,318	1,903	2,482	1,520	110,100
2020	1,075	6,477	1,373	1,982	2,585	1,580	114,600
2021	1,115	6,719	1,424	2,056	2,681	1,640	118,800
High-cost:							
2013	792	4,771	1,011	1,460	1,904	1,170	84,300
2014	811	4,888	1,036	1,496	1,951	1,190	86,400
2015	842	5,076	1,076	1,553	2,026	1,240	89,700
2016	878	5,292	1,122	1,619	2,112	1,290	93,600
2017	921	5,550	1,177	1,698	2,215	1,360	98,100
2018	972	5,861	1,242	1,793	2,339	1,430	103,500
2019	1,029	6,205	1,315	1,899	2,476	1,520	109,800
2020	1,089	6,565	1,392	2,009	2,620	1,600	116,100
2021	1,147	6,912	1,465	2,115	2,758	1,690	122,100

[a] The formula to compute a PIA is: (1) 90% of AIME below the first bend point; plus (2) 32% of AIME in excess of the first bend point but not in excess of the second; plus (3) 15% of AIME in excess of the second bend point. The bend points are determined based on the first year a beneficiary becomes eligible for benefits.

[b] The formula to compute a family maximum is: (1) 150% of PIA below the first bend point; plus (2) 272% of PIA in excess of the first bend point but not in excess of the second; plus (3) 134% of PIA in excess of the second bend point but not in excess of the third; plus (4) 175% of PIA in excess of the third bend point.

[c] Contribution and benefit base that would have been in effect under the law prior to enactment of the Social Security Amendments of 1977. Public Law 101-239 changed the indexing procedure and caused slightly higher bases after 1989.

[d] No provision in law for this amount in this year.

[e] Amount specified by Social Security Amendments of 1977.

In addition to the economic factors that affect the determination of OASDI benefits, there are certain legislated changes that affect current and future benefit amounts. Two such changes are the scheduled increases in the normal retirement age and in the delayed retirement credits. Table V.C3 shows the scheduled changes in these parameters and the resulting effects on benefit levels expressed as a percentage of PIA.

Table V.C3.—Legislated Changes in Normal Retirement Age and Delayed Retirement Credits for Persons Reaching Age 62 in Each Year 1986 and Later

Year of birth	Year of attainment of age 62	Normal retirement age (NRA)	Credit for each year of delayed retirement after NRA (percent)	Benefit, as a percentage of PIA, beginning at age —				
				62	65	66	67	70
1924	1986	65	3	80	100	103	106	115
1925	1987	65	3 1/2	80	100	103 1/2	107	117 1/2
1926	1988	65	3 1/2	80	100	103 1/2	107	117 1/2
1927	1989	65	4	80	100	104	108	120
1928	1990	65	4	80	100	104	108	120
1929	1991	65	4 1/2	80	100	104 1/2	109	122 1/2
1930	1992	65	4 1/2	80	100	104 1/2	109	122 1/2
1931	1993	65	5	80	100	105	110	125
1932	1994	65	5	80	100	105	110	125
1933	1995	65	5 1/2	80	100	105 1/2	111	127 1/2
1934	1996	65	5 1/2	80	100	105 1/2	111	127 1/2
1935	1997	65	6	80	100	106	112	130
1936	1998	65	6	80	100	106	112	130
1937	1999	65	6 1/2	80	100	106 1/2	113	132 1/2
1938	2000	65, 2 mo	6 1/2	79 1/6	98 8/9	105 5/12	111 11/12	131 5/12
1939	2001	65, 4 mo	7	78 1/3	97 7/9	104 2/3	111 2/3	132 2/3
1940	2002	65, 6 mo	7	77 1/2	96 2/3	103 1/2	110 1/2	131 1/2
1941	2003	65, 8 mo	7 1/2	76 2/3	95 5/9	102 1/2	110	132 1/2
1942	2004	65, 10 mo	7 1/2	75 5/6	94 4/9	101 1/4	108 3/4	131 1/4
1943-54	2005-16	66	8	75	93 1/3	100	108	132
1955	2017	66, 2 mo	8	74 1/6	92 2/9	98 8/9	106 2/3	130 2/3
1956	2018	66, 4 mo	8	73 1/3	91 1/9	97 7/9	105 1/3	129 1/3
1957	2019	66, 6 mo	8	72 1/2	90	96 2/3	104	128
1958	2020	66, 8 mo	8	71 2/3	88 8/9	95 5/9	102 2/3	126 2/3
1959	2021	66, 10 mo	8	70 5/6	87 7/9	94 4/9	101 1/3	125 1/3
1960 & later	2022 & later	67	8	70	86 2/3	93 1/3	100	124

2. Covered Employment

Projections of the total labor force and unemployment rate (see table V.B2) use Bureau of Labor Statistics definitions from the Current Population Survey (CPS). These projections represent the average weekly number of employed and unemployed persons, aged 16 and over, in the U.S. in a calendar year. The Office of the Chief Actuary defines the total covered workers in a year as the persons who have any OASDI covered earnings (that is, earnings subject to the OASDI payroll tax) at any time during the year. Projected covered employment is the sum of age-sex components, each of which the office projects as a ratio to the CPS definition of employment.[1] The projection methodology accounts for changes in the economic cycle, changes in non-OASDI covered employment, the increase in coverage of Federal civilian employment as a result of the 1983 Social Security Amendments, and

[1] For those under age 16, projected covered employment is the sum of age-sex components, each of which the office projects as a ratio to the Social Security area population.

changes in the number and employment status of other immigrants estimated to be residing within the Social Security coverage area.

The covered-worker rate is the ratio of OASDI covered workers to the Social Security area population. The projected age-adjusted coverage rate[1] for males age 16 and over is 70.8, 69.8, and 68.8 percent for 2086 for the low-cost, intermediate, and high-cost assumptions, respectively. These rates are higher than the 2010 level of about 66.4 percent. For females, the projected age-adjusted coverage rate increases from 59.9 percent for 2010 to 63.6, 62.6, and 61.6 percent for 2086 for the low-cost, intermediate, and high-cost assumptions, respectively.

3. Insured Population

Eligibility for worker benefits under the OASDI program requires some minimal level of work in covered employment. A worker satisfies this requirement by his or her accumulation of quarters of coverage (QCs). Prior to 1978, a worker earned one QC for each calendar quarter in which he or she earned at least $50. In 1978, when annual earnings reporting replaced quarterly reporting, the amount required to earn a QC (up to a maximum of four per year) was set at $250. As specified in the law, the Social Security Administration has adjusted this amount each year since then according to changes in the AWI. Its value in 2012 is $1,130.

There are three types of insured status that a worker can acquire under the OASDI program. The number and recency of QCs earned determine each status. A worker acquires fully insured status when his or her total number of QCs is greater than or equal to the number of years elapsed after the year of attainment of age 21 (but not less than six). Once a worker has accumulated 40 QCs, he or she remains permanently fully insured. A worker acquires disability insured status if he or she is: (1) a fully insured worker who has accumulated 20 QCs during the 40-quarter period ending with the current quarter; (2) a fully insured worker aged 24-30 who has accumulated QCs during one-half of the quarters elapsed after the quarter of attainment of age 21 and up to and including the current quarter; or (3) a fully insured worker under age 24 who has accumulated six QCs during the 12-quarter period ending with the current quarter. A worker acquires currently insured status when he or she has accumulated six QCs during the 13-quarter period ending with the current quarter. Periods of disability reduce the number of quarters required for insured status, but not below the minimum of six QCs.

---

[1] Age-adjusted covered worker rates are adjusted to the 2010 age distribution of the Social Security area population.

There are many types of benefits payable to workers and their family members under the OASDI program. A worker must be fully insured to be eligible for a primary retirement benefit and for his or her spouse or children to be eligible for auxiliary benefits. A deceased worker must have been either currently insured or fully insured at the time of death for his or her children (and their mother or father) to be eligible for benefits. If there are no eligible surviving children, the deceased worker must have been fully insured at the time of death for his or her surviving spouse to be eligible. A worker must be disability insured to be eligible for a primary disability benefit and for his or her spouse or children to be eligible for auxiliary benefits.

The Office of the Chief Actuary estimates the fully insured population, as a percentage of the Social Security area population, by single year of age and sex starting in 1969. The short-range model extrapolates the historical trend in these rates from data in the Continuous Work History Sample. The model uses information on quarters of coverage earned due to employment covered by Social Security derived from tabulations of the Continuous Work History Sample. The model also uses historical administrative data on beneficiaries in force and estimated historical mortality rates. The model combines this information to estimate the proportion of individuals who were alive and fully insured as of the end of each historical year. Using projected mortality rates and covered workers, the model extrapolates these rates into the future and applies them to the historical and projected population to arrive at the fully insured population by age and sex through the end of the short-range period.

The long-range model uses 30,000 simulated work histories for each sex and birth cohort. The model constructs simulated work histories from past coverage rates, median earnings, and amounts required for crediting QCs, and develops them in a manner that replicates historical individual variations in tendency to work. Specifically, persons who have recently been out of covered employment are less likely to be in covered employment. This model produces simulated fully insured percentages close to the fully insured percentages estimated by the short-range model from 1970 to the end of the short-range period.

The Office of the Chief Actuary estimates the disability insured population, as a percentage of the fully insured population, by age and sex starting in 1970. The office bases historical values on a tabulation of the disability insured population from the Continuous Work History Sample and estimates of the fully insured population. The short-range model projects these percentages by using the relationship between the historical percentages and labor force participation rates. The long-range model projects these percent-

ages by using the same simulated work histories used to project the fully insured percentages. The long-range model makes additional adjustments to the model simulations in order to bring the disability insured percentages in the historical and short-range periods into close agreement with those estimated from the Continuous Work History Sample and the short-range model.

The office does not project the currently insured population because the number of beneficiaries who are entitled to benefits based solely on currently insured status has been very small and is likely to remain small in the future.

Using these insured models, the percentage of the Social Security area population aged 62 and over that is fully insured will increase from its estimated level of 82.5 for December 31, 2009, to 89.7, 89.7, and 89.6 for December 31, 2090, under the low-cost, intermediate, and high-cost alternatives, respectively. Over the projection period, the percentage for females increases significantly, while the percentage for males declines somewhat. Under the intermediate assumptions, for example, the percentage for males decreases slightly from 92.4 to 90.7, and the percentage for females increases from 74.7 to 88.8.

4. Old-Age and Survivors Insurance Beneficiaries

The Office of the Chief Actuary projects the number of OASI beneficiaries for each type of benefit separately by the sex of the worker on whose earnings the benefits are based and by the age of the beneficiary. For the long-range period, the office also projects the number of beneficiaries by marital status for selected types of benefits. The office uses two separate models in making these projections. The short-range model makes projections during the first 10 years of the projection period and the long-range model makes projections thereafter.

The short-range model develops the number of retired-worker beneficiaries by applying award rates to the aged fully insured population, excluding those already receiving retired-worker, disabled-worker, aged-widow(er)'s, or aged-spouse's benefits, and by applying termination rates to the number of retired-worker beneficiaries.

The long-range model projects the number of retired-worker beneficiaries who were not previously converted from disabled-worker beneficiary status as a percentage of the exposed population.[1] For age 62, the model projects this percentage by using a linear regression based on the historical relation-

[1] The exposed population is the fully insured population age 62 and over, excluding persons entitled to or converted from disabled-worker benefits and fully insured persons entitled only to widow(er)'s benefits.

ship between this percentage and the labor force participation rate at age 62. The percentage for ages 70 and over is nearly 100 because delayed retirement credits cannot be earned after age 70. The long-range model projects the percentage for each age 63 through 69 based on historical experience with an adjustment for changes in the portion of the primary insurance amount that is payable at each age of entitlement. The model adjusts these percentages for ages 62 through 69 to reflect changes in the normal retirement age.

The long-range model calculates the number of retired-worker beneficiaries previously converted from disabled-worker beneficiary status using an extension of disabled-worker death rates by age, sex, and duration.

The Office of the Chief Actuary estimates the number of aged-spouse beneficiaries, excluding those who are also receiving a retired-worker benefit, from the population projected by age and sex. Benefits of aged-spouse beneficiaries depend on the earnings records of their husbands or wives, who are referred to as "earners." The short-range model projects insured aged-spouse beneficiaries in conjunction with the retired-worker beneficiaries. This model projects uninsured aged-spouse beneficiaries by applying award rates to the aged uninsured male or female population and by applying termination rates to the population already receiving such benefits.

The long-range model estimates aged-spouse beneficiaries separately for those married and divorced. The model projects the number of married aged-spouse beneficiaries, by age and sex, by applying a series of factors to the number of spouses, aged 62 and over, in the population. These factors are the probabilities that the spouse and the earner meet all of the conditions of eligibility—that is, the probabilities that: (1) the earner is 62 or over; (2) the earner is insured; (3) the earner is receiving benefits; (4) the spouse is not receiving a benefit for the care of an entitled child; (5) the spouse is not insured; and (6) the spouse is not eligible to receive a significant government pension based on earnings in noncovered employment. To calculate the estimated number of aged-spouse beneficiaries, the model applies a projected prevalence rate to the resulting number of spouses.

The long-range model estimates the number of divorced aged-spouse beneficiaries, by age and sex, by applying the same factors to the number of divorced persons aged 62 and over in the population, with three differences. First, the model applies a factor to reflect the probability that the earner (former spouse) is still alive. If the former spouse is not alive, the person may be entitled to a divorced widow(er)'s benefit. Second, the model applies a factor to reflect the probability that the marriage to the former spouse lasted at least

10 years. Third, the model does not apply factor (3) in the previous paragraph because, effective January 1985, a divorced person is generally no longer required to wait for the former spouse to receive benefits.

The Office of the Chief Actuary bases the projected numbers of children under age 18, and students aged 18 and 19, who are eligible for benefits as children of retired-worker beneficiaries, on the projected number of children in the population. The short-range model develops the number of entitled children by applying award rates to the number of children in the population who have two living parents and by applying termination rates to the number of children already receiving benefits.

The long-range model projects separately the number of entitled children by sex of the earner parent. For each age under 18, the model projects the number of entitled children from the latest data by incorporating changes in the number of children in the population and the ratio of retired workers aged 62 through 71 to the population aged 20 through 71. For student beneficiaries, the model multiplies the number of children aged 18 and 19 in the population by the probabilities that: (1) the parent is alive, aged 62 or over, insured, and receiving a retired-worker benefit; and (2) the child is attending high school.

The Office of the Chief Actuary projects the number of disabled children, aged 18 and over, of retired-worker beneficiaries from the adult population. The short-range model applies award rates to the population and applies termination rates to the number of disabled children already receiving benefits. The long-range model projects the number of disabled children in a manner similar to that used for student children except for a factor that reflects the probability of being disabled before age 22.

The short-range model develops the number of spouses of retired workers, who are entitled to spouse benefits because they are caring for a child who is under age 16 or disabled, by applying award rates to the number of awards to children of retired workers and by applying termination rates to the number of young spouses with a child in their care who are already receiving benefits. The long-range model projects the number of young-spouse beneficiaries with a child in their care as a proportion of the number of child beneficiaries of retired workers, including projected changes in average family size.

The Office of the Chief Actuary projects the number of aged-widow(er) beneficiaries, excluding those who are also receiving a retired-worker benefit, from the population by age and sex. The short-range model projects fully insured aged-widow(er) beneficiaries in conjunction with the retired-worker beneficiaries. The model projects the number of uninsured aged-widow(er)

beneficiaries by applying award rates to the aged uninsured male or female population and by applying termination rates to the population already receiving such benefits. The long-range model projects uninsured aged-widow(er) beneficiaries by marital status. The model multiplies the number of widow(er)s in the population aged 60 and over by the probabilities that: (1) the deceased earner is fully insured at death; (2) the widow(er) is not receiving a benefit for the care of an entitled child; (3) the widow(er) is not fully insured; and (4) the widow(er)'s benefits are not withheld because of receipt of a significant government pension based on earnings in noncovered employment. In addition, the model applies the same factors to the number of divorced persons aged 60 and over in the population and includes additional factors representing the probability that the person's former earner spouse has died and that the marriage lasted at least 10 years. The model projects the number of insured aged-widow(er) beneficiaries who are ages 60 through 70 in a manner similar to that for uninsured aged-widow(er) beneficiaries. In addition, the model assumes that some insured widow(er)s who had not applied for their retired-worker benefits will receive widow(er)'s benefits. The model projects insured aged-widow(er) beneficiaries over age 70 by applying termination rates to the population that started receiving such benefits prior to age 70.

The short-range model develops the number of disabled-widow(er) beneficiaries by applying award rates to the uninsured male or female population and by applying termination rates to the population already receiving a disabled-widow(er) benefit. The long-range model projects the number for each cohort by age from 50 to normal retirement age as percentages of the widowed and divorced populations, adjusted for the insured status of the deceased spouse, the prevalence of disability, and the probability that the disabled spouse is not receiving another type of benefit.

The Office of the Chief Actuary bases the projected number of children under age 18, and students aged 18 and 19, who are entitled to benefits as survivors of deceased workers, on the number of children in the population whose mothers or fathers are deceased. The short-range model develops the number of entitled children by applying award rates to the number of orphaned children and by applying termination rates to the number of children already receiving benefits.

The long-range model projects the number of child-survivor beneficiaries in a manner similar to that for student beneficiaries of retired workers, except that the model replaces the probability that the parent is aged 62 or over with the probability that the parent is deceased.

The Office of the Chief Actuary projects the number of disabled-child-survivor beneficiaries, aged 18 and over, from the adult population. The short-range model applies award rates to the population and applies termination rates to the number of disabled-child-survivor beneficiaries already receiving benefits. The long-range model projects the number of disabled-child-survivor beneficiaries in a manner similar to that for student-child-survivor beneficiaries, except for including an additional factor to reflect the probability of being disabled before age 22.

The short-range model develops the numbers of entitled mother-survivor and father-survivor beneficiaries by applying award rates to the number of awards to child-survivor beneficiaries, in cases where the children are either under age 16 or disabled, and by applying termination rates to the number of mother-survivors and father-survivors already receiving benefits. The long-range model estimates the numbers of mother-survivor and father-survivor beneficiaries, assuming they are not remarried, from the number of child-survivor beneficiaries.

The Office of the Chief Actuary projects the number of parent-survivor beneficiaries based on the historical pattern of the number of such beneficiaries.

Table V.C4 shows the projected number of beneficiaries under the OASI program by type of benefit. The retired worker beneficiary counts include those persons who receive a residual auxiliary benefit in addition to their retired-worker benefit. The office makes estimates of the number and amount of residual payments separately for spouses and widow(er)s.

Table V.C4.—OASI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1945-2090
[In thousands]

	Retired workers and auxiliaries			Survivors				
Calendar year	Worker[a]	Spouse	Child	Widow-widower	Mother-father	Child	Parent	Total
Historical data:								
1945	518	159	13	94	121	377	6	1,288
1950	1,771	508	46	314	169	653	15	3,477
1955	4,474	1,192	122	701	292	1,154	25	7,961
1960	8,061	2,269	268	1,544	401	1,577	36	14,157
1965	11,101	2,614	461	2,371	472	2,074	35	19,128
1970	13,349	2,668	546	3,227	523	2,688	29	23,030
1975	16,589	2,867	643	3,888	582	2,919	21	27,509
1980	19,564	3,018	639	4,415	563	2,610	15	30,823
1985	22,435	3,069	456	4,862	372	1,918	10	33,122
1990	24,841	3,104	421	5,098	304	1,777	6	35,551
1995	26,679	3,027	441	5,213	275	1,884	4	37,522
1996	26,905	2,971	442	5,199	242	1,898	4	37,661
1997	27,282	2,926	441	5,043	230	1,893	3	37,817
1998	27,518	2,866	439	4,981	221	1,884	3	37,911
1999	27,784	2,811	442	4,936	212	1,885	3	38,073
2000	28,505	2,798	459	4,901	203	1,878	3	38,747
2001	28,843	2,742	467	4,828	197	1,890	3	38,969
2002	29,195	2,681	477	4,771	194	1,908	2	39,227
2003	29,537	2,622	480	4,707	190	1,910	2	39,448
2004	29,952	2,569	482	4,643	184	1,901	2	39,733
2005	30,461	2,524	488	4,569	178	1,903	2	40,126
2006	30,976	2,476	490	4,494	171	1,899	2	40,508
2007	31,528	2,431	494	4,436	165	1,892	2	40,947
2008	32,274	2,370	525	4,380	160	1,915	2	41,625
2009	33,514	2,343	561	4,327	160	1,921	2	42,828
2010	34,593	2,316	580	4,285	159	1,913	2	43,847
2011	35,600	2,291	594	4,239	158	1,907	2	44,791
Intermediate:								
2012	36,841	2,264	610	4,215	155	1,911	1	45,998
2015	41,252	2,232	661	4,171	152	1,946	1	50,415
2020	49,612	2,185	733	4,092	151	2,021	1	58,795
2025	57,646	2,256	798	3,920	141	2,046	2	66,809
2030	64,779	2,413	842	3,707	132	2,062	2	73,936
2035	69,465	2,358	862	3,541	129	2,056	2	78,412
2040	72,139	2,213	876	3,361	125	2,033	2	80,750
2045	73,935	2,113	889	3,191	122	2,002	2	82,253
2050	76,012	2,103	921	3,024	119	1,976	2	84,156
2055	78,523	2,198	945	2,889	117	1,955	2	86,629
2060	81,114	2,389	964	2,790	114	1,936	2	89,309
2065	83,509	2,587	971	2,758	112	1,913	2	91,851
2070	86,298	2,745	993	2,783	109	1,889	2	94,818
2075	89,174	2,846	1,012	2,840	107	1,862	2	97,842
2080	92,125	2,918	1,030	2,906	104	1,836	2	100,919
2085	95,534	2,974	1,060	2,949	102	1,814	2	104,434
2090	99,103	3,033	1,086	2,969	99	1,798	2	108,090

Table V.C4.—OASI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1945-2090 (Cont.)
[In thousands]

	Retired workers and auxiliaries			Survivors				
Calendar year	Worker[a]	Spouse	Child	Widow-widower	Mother-father	Child	Parent	Total
Low-cost:								
2012	36,837	2,264	610	4,214	155	1,911	1	45,994
2015	41,176	2,233	661	4,165	152	1,950	1	50,339
2020	49,273	2,187	736	4,069	154	2,051	1	58,471
2025	56,879	2,213	807	3,923	138	2,163	2	66,124
2030	63,382	2,349	862	3,736	127	2,260	2	72,718
2035	67,370	2,264	895	3,598	121	2,346	2	76,596
2040	69,357	2,095	923	3,444	117	2,412	2	78,349
2045	70,620	1,970	951	3,288	114	2,465	2	79,410
2050	72,340	1,935	1,003	3,132	114	2,519	2	81,045
2055	74,636	2,011	1,044	3,003	115	2,569	2	83,381
2060	77,036	2,164	1,079	2,905	117	2,623	2	85,926
2065	79,180	2,325	1,100	2,867	120	2,681	2	88,275
2070	81,611	2,443	1,142	2,883	122	2,742	2	90,945
2075	84,122	2,490	1,182	2,921	125	2,799	2	93,641
2080	86,983	2,511	1,223	2,972	127	2,854	2	96,672
2085	90,818	2,543	1,288	3,015	130	2,914	2	100,708
2090	95,429	2,589	1,352	3,052	132	2,981	2	105,537
High-cost:								
2012	36,850	2,264	610	4,216	155	1,910	1	46,008
2015	41,306	2,231	659	4,175	151	1,938	1	50,462
2020	49,943	2,179	725	4,112	147	1,981	1	59,088
2025	58,443	2,293	786	3,908	143	1,926	2	67,501
2030	66,288	2,469	818	3,663	133	1,863	2	75,236
2035	71,779	2,441	825	3,462	127	1,775	2	80,411
2040	75,245	2,316	829	3,255	120	1,681	2	83,448
2045	77,660	2,236	827	3,069	112	1,590	2	85,496
2050	80,151	2,248	840	2,897	105	1,515	2	87,756
2055	82,934	2,359	848	2,760	98	1,458	2	90,459
2060	85,737	2,576	852	2,662	92	1,405	2	93,325
2065	88,306	2,831	841	2,635	85	1,347	2	96,046
2070	91,265	3,085	842	2,663	78	1,290	2	99,225
2075	94,322	3,289	840	2,735	72	1,235	2	102,495
2080	97,166	3,439	835	2,821	67	1,183	2	105,513
2085	99,838	3,522	834	2,875	62	1,135	2	108,268
2090	102,050	3,563	832	2,901	58	1,093	2	110,499

[a] Retired-worker beneficiaries include persons who also receive a residual benefit consisting of the excess of an auxiliary benefit over their retired-worker benefit.

Notes:
1. The number of beneficiaries does not include uninsured individuals who receive benefits under Section 228 of the Social Security Act. Transfers from the General Fund of the Treasury reimburse the OASI Trust Fund for the cost of most of these individuals.
2. Totals do not necessarily equal the sums of rounded components.

5. Disability Insurance Beneficiaries

The DI Trust Fund pays benefits to disabled workers who: (1) satisfy the disability insured requirements; (2) are unable to engage in substantial gainful activity due to a medically determinable physical or mental impairment severe enough to satisfy the requirements of the program; and (3) have not yet attained normal retirement age. Spouses and children of such disabled

workers may also receive DI benefits provided they satisfy certain criteria, primarily age and earnings requirements.

The Office of the Chief Actuary projects the number of disabled-worker beneficiaries in current-payment status (disability prevalence) for each future year. The projections start with the number in current-payment status as of December 2011. Projections of the number of new beneficiaries awarded benefits each year (disability incidence) and the number of beneficiaries leaving the disability rolls each year then determine the number in current-payment status in later years. Beneficiaries leave the rolls due to death and recovery (disability terminations) and due to conversions from disabled-worker to retired-worker beneficiary status, after which the OASI Trust Fund pays benefits. The remainder of this section describes the concepts of disability incidence, termination, and prevalence.

a. Disability Incidence

The disability incidence rate is the ratio of the number of new beneficiaries awarded benefits each year to the number of individuals who meet insured requirements but are not yet receiving benefits (the disability-exposed population[1]). The Office of the Chief Actuary projects the number of newly awarded beneficiaries for each future year by multiplying assumed age-sex-specific disability incidence rates and the projected disability-exposed population by age and sex.

Figure V.C3 illustrates the historical and estimated incidence rates under the three alternatives. Incidence rates have varied substantially during the historical period since 1970 due to a variety of demographic and economic factors, along with changes in legislation and program administration. The solid lines in figure V.C3 show the incidence rate adjusted to the age-sex distribution of the disability-exposed population for 2000. This adjustment allows a comparison of incidence rates over time by focusing on the likelihood of becoming disabled, and by excluding the effects of a changing distribution of the population toward ages where disability is more or less likely.

The dashed lines in figure V.C3 represent the gross (unadjusted) incidence rates. The changing age-sex distribution of the exposed population over time influences these unadjusted rates. The gross incidence rate fell substantially below the age-sex-adjusted rate between 1975 and 1995 as the baby-boom generation swelled the size of the younger working-age population, where

[1] The disability-exposed population excludes those receiving benefits, while the disability insured population includes them. Section .C.3 of this report describes the projection of the disability insured population.

disability incidence is lower than in older populations. After 1995, the gross rate rose faster than the age-sex-adjusted rate as the baby-boom generation moved into an age range where disability incidence peaks. After 2023, the projected gross incidence rate declines relative to the age-sex-adjusted rate as the baby-boom generation moves above the normal retirement age and the lower-birth-rate cohorts of the 1970s enter prime disability ages (50 to normal retirement age). As these smaller cohorts age beyond normal retirement age, by about 2050, the gross incidence rate returns to a higher relative level under the intermediate assumptions. Thereafter, the gross rate remains higher and reflects the persistently higher average age of the working-age population, which is largely due to lower birth rates since 1965.

For the first 10 years of the projection period (through 2021), incidence rates reflect several factors including: (1) aspects of program administration, such as efforts to reduce the disability backlog and recent changes to how claims are adjudicated; (2) assumed future unemployment rates; and (3) underlying trends in incidence. For this year's report, all three sets of underlying economic assumptions include a gradual economic recovery with unemployment rates gradually declining to their ultimate sustainable levels. During the period of high unemployment, the projected disability incidence rates are above the general trend level. The elevated incidence rates subside as the economy recovers, and then briefly drop below the general trend level since some of the earlier additional awards would have occurred in a later year. After 2021, age-sex-specific incidence rates trend toward the ultimate rates assumed for the long-range projections and reach these ultimate rates in 2031. These ultimate age-sex-specific disability incidence rates were selected based on careful analysis of historical levels and patterns and expected future conditions, including the impact of scheduled increases in the normal retirement age.[1] The ultimate incidence rates represent the likely average rates of incidence for the future.

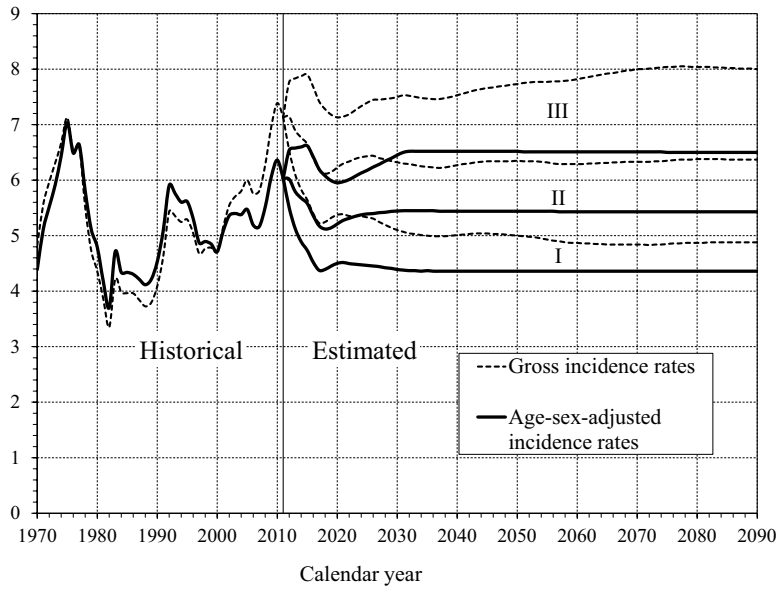
For the intermediate alternative, the Trustees assume that the ultimate age-sex-adjusted incidence rate (adjusted to the disability-exposed population for the year 2000) will be 5.4 awards per thousand exposed, which is higher than in last year's report by 0.2 awards per thousand exposed. Figure V.C3 illustrates that the estimated ultimate age-sex-adjusted incidence level of 5.4 is only slightly higher than the average rate for the historical period 1970 through 2011. However, a similar comparison using gross incidence rates gives a different result. The estimated ultimate gross incidence rate is signifi-

[1] Projected incidence rates are adjusted upward to account for additional workers who are expected to file for disability benefits (rather than retirement benefits) in response to reductions in retirement benefits as the normal retirement age rises.

cantly greater than the average gross rate over the historical period due to the changing age-sex distribution of the disability-exposed population.

The Trustees assume that the ultimate age-sex-adjusted incidence rates for the low-cost and high-cost alternatives will be 4.4 and 6.5 awards per thousand exposed, or about 15 percent lower and 25 percent higher than the average for the historical period, respectively. Each of these ultimate age-sex-adjusted incidence rates is higher than those in last year's report by 0.2 awards per thousand exposed.

Figure V.C3.—DI Disability Incidence Rates, 1970-2090
[Awards per thousand disability-exposed]



b. Disability Termination

Beneficiaries stop receiving disability benefits when they die or recover from their disabling condition. The basis for determining recovery can be either medical or vocational. The termination rate is the ratio of the number of terminations to the average number of disabled-worker beneficiaries during the year.

The Office of the Chief Actuary projects termination rates by age, sex, and reason for termination. In addition, the office assumes that termination rates

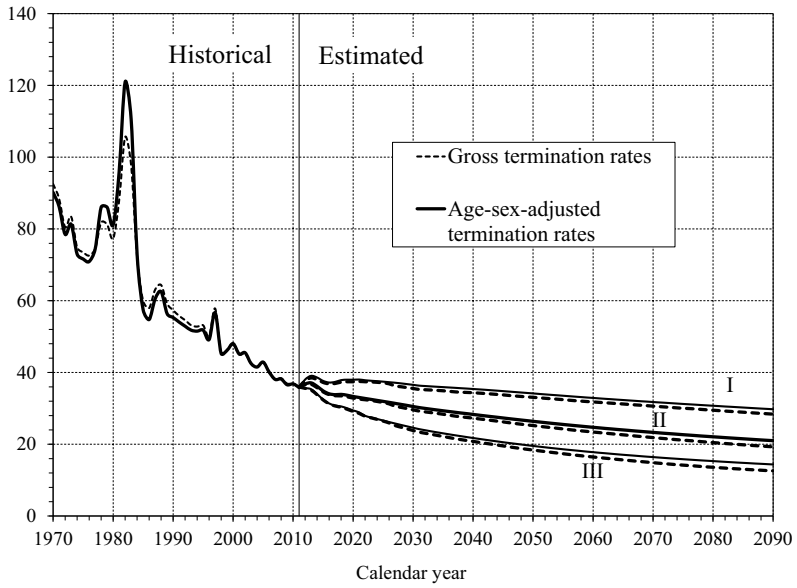
in the long-range period (post-2021) vary by duration of entitlement to disabled-worker benefits.

In the short-range period (through 2021), the projected age-sex-adjusted death rate (adjusted to the 2000 disabled-worker population) under the intermediate assumptions gradually declines from 26.0 deaths per thousand beneficiaries in 2011 to about 21.9 per thousand by 2021. The projected age-sex-adjusted recovery rate under the intermediate assumptions rises from a relatively low level of 9.9 per thousand beneficiaries in 2011 (reflecting temporarily lower levels of continuing disability reviews) to 11.2 per thousand beneficiaries by 2021. Under the low-cost and high-cost assumptions, total age-sex-adjusted termination rates due to death and recovery are roughly 10-15 percent higher or lower, respectively, than under the intermediate assumptions.

For the long-range period (post-2021), the Office of the Chief Actuary projects death and recovery rates by age, sex, and duration of entitlement relative to the average level of rates experienced over the base period 2001-2005. The assumed ultimate age-sex-adjusted recovery rate for disabled workers is about 10.4 per thousand beneficiaries. The assumed ultimate age-sex-adjusted recovery rates for the low-cost and high-cost alternatives are about 12.5 and 8.2 recoveries per thousand beneficiaries, respectively. Recovery rates by age, sex, and duration of entitlement reach ultimate levels in the twentieth year of the projection period (2031) for all three sets of assumptions. In contrast, death rates by age and sex change throughout the long-range period at the same rate as death rates in the general population. From the age-sex-adjusted death rate of 26.0 per thousand beneficiaries in 2011, rates decrease to 17.3, 10.6, and 6.1 per thousand disabled-worker beneficiaries for 2090 under the low-cost, intermediate, and high-cost assumptions, respectively.

Figure V.C4 illustrates gross and age-sex-adjusted total termination rates for disabled-worker beneficiaries for the historical period since 1970, and for the projection period through 2090. In the near term, in 2013 and 2014, projected recovery terminations increase because the Social Security Administration continues to reduce the pending backlog of continuing disability reviews. As with incidence rates, the age-sex-adjusted termination rate illustrates the real change in the tendency to terminate benefits. Changes in the age-sex distribution of the beneficiary population influence the gross rate. A shift in the beneficiary population to older ages, as when the baby-boom generation moves into pre-retirement ages, increases gross death termination rates relative to the age-sex-adjusted rates.

Figure V.C4.—DI Disability Termination Rates, 1970-2090
[Terminations per thousand disabled-worker beneficiaries]



c. Comparison of Incidence, Termination, and Conversion

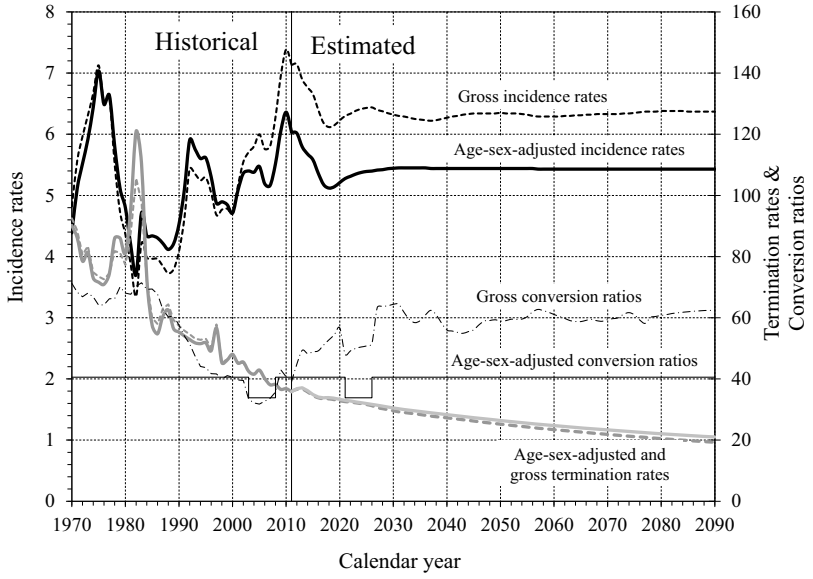
Incidence and termination rates are the foundation for projecting the number of disabled-worker beneficiaries in current-payment status. At normal retirement age, beneficiaries convert to retired-worker status and leave the DI rolls. Conversions are simply a transfer of beneficiaries at normal retirement age from the DI Trust Fund account to the OASI Trust Fund account. Therefore, the disability "conversion" rate is 100 percent for disabled-worker beneficiaries reaching normal retirement age in a given year and zero at all other ages. After conversion, recovery from the disabling condition is no longer relevant. Conversions represent a form of exit from the DI rolls and therefore the Office of the Chief Actuary excludes them from disabled-worker beneficiary totals.

Figure V.C5 compares the historical and projected (intermediate) levels of incidence, termination, and conversion on both a gross basis and an age-sex-adjusted basis. The conversion ratio is the number of conversions in a given year (that is, beneficiaries who reach normal retirement age) divided by the average number of disabled-worker beneficiaries at all ages in that year. The ratio is constant on an age-sex-adjusted basis, except for the two periods during which normal retirement age increases under current law. On a gross

basis, however, the conversion ratio rises and falls with the changing proportion of all disabled-worker beneficiaries who attain normal retirement age in a given year.

Termination rates have declined and the Trustees expect them to continue to decline, largely because of declining death rates. Incidence rates have varied widely, and, on an age-sex-adjusted basis under the intermediate assumptions, the Trustees expect them to remain near the middle of the high and low extremes experienced since 1970. The gross conversion ratio generally increases due to aging of the beneficiary population.

Figure V.C5.—Comparison of DI Disability Incidence Rates, Termination Rates and Conversion Ratios Under Intermediate Assumptions, 1970-2090
[Awards per thousand disability-exposed;
terminations and conversions per thousand disabled-worker beneficiaries]



d. DI Beneficiaries and Disability Prevalence Rates

The Office of the Chief Actuary makes detailed projections of disabled-worker awards, terminations, and conversions and combines these to project the number of disabled workers receiving benefits over the next 75 years. Table V.C5 presents the projected numbers of disabled workers in current-payment status. The number of disabled workers in current-payment status grows from 8.6 million at the end of 2011, to 12.7 million, 14.4 million, and 15.0 million at the end of 2090, under the low-cost, intermediate, and high-

cost assumptions, respectively. Of course, much of this growth results from the growth and aging of the population described earlier in this chapter. Table V.C5 also presents projected numbers of auxiliary beneficiaries and disability prevalence rates on both a gross basis and an age-sex-adjusted basis.

Table V.C5.—DI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1960-2090

[Beneficiaries in thousands; prevalence rates per thousand persons insured for disability benefits]

Calendar year	Disabled-worker beneficiaries	Auxiliary beneficiaries		Total beneficiaries	Disability prevalence rates	
		Spouse	Child		Gross	Age-sex-adjusted
Historical data:						
1960	455	77	155	687	—	—
1965	988	193	558	1,739	—	—
1970	1,493	283	889	2,665	20	18
1975	2,488	453	1,411	4,351	29	29
1980	2,856	462	1,359	4,677	28	31
1985	2,653	306	945	3,904	24	26
1990	3,007	266	989	4,261	25	28
1995	4,179	264	1,409	5,852	33	35
1996	4,378	224	1,463	6,065	34	36
1997	4,501	207	1,438	6,146	34	36
1998	4,691	190	1,446	6,327	35	36
1999	4,870	176	1,468	6,514	36	36
2000	5,036	165	1,466	6,667	37	37
2001	5,268	157	1,482	6,907	38	37
2002	5,539	152	1,526	7,217	39	38
2003	5,869	151	1,571	7,590	41	39
2004	6,198	153	1,599	7,950	43	39
2005	6,519	157	1,633	8,309	45	40
2006	6,807	156	1,652	8,615	46	40
2007	7,099	154	1,665	8,918	48	41
2008	7,427	155	1,692	9,273	50	41
2009	7,788	159	1,749	9,695	52	43
2010	8,204	161	1,820	10,185	55	44
2011	8,576	164	1,874	10,614	57	45
Intermediate:						
2012	8,864	164	1,933	10,960	58	46
2015	9,396	163	2,044	11,602	61	47
2020	9,683	168	2,086	11,937	62	47
2025	10,280	180	2,175	12,635	64	47
2030	10,264	180	2,287	12,731	63	48
2035	10,385	170	2,368	12,922	62	48
2040	10,623	165	2,436	13,224	62	48
2045	11,166	178	2,506	13,850	63	49
2050	11,539	189	2,579	14,307	64	49
2055	11,874	208	2,664	14,745	65	49
2060	12,077	220	2,749	15,046	65	50
2065	12,485	230	2,831	15,547	65	50
2070	12,923	236	2,904	16,063	66	50
2075	13,282	237	2,968	16,488	66	51
2080	13,734	244	3,035	17,013	67	51
2085	14,068	250	3,104	17,423	68	51
2090	14,366	255	3,177	17,797	68	51

Table V.C5.—DI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1960-2090 (Cont.)
[Beneficiaries in thousands; prevalence rates per thousand persons insured for disability benefits]

Calendar year	Disabled-worker beneficiaries	Auxiliary beneficiaries		Total beneficiaries	Disability prevalence rates	
		Spouse	Child		Gross	Age-sex-adjusted
Low-cost:						
2012	8,770	163	1,900	10,832	58	45
2015	8,910	159	1,909	10,977	58	45
2020	8,697	163	1,873	10,732	55	42
2025	8,850	151	1,907	10,908	54	40
2030	8,497	142	1,972	10,611	51	39
2035	8,364	125	2,042	10,530	49	38
2040	8,425	115	2,127	10,667	48	38
2045	8,785	120	2,225	11,130	48	38
2050	9,052	126	2,328	11,506	48	38
2055	9,322	137	2,441	11,900	47	38
2060	9,534	144	2,565	12,243	47	38
2065	9,939	152	2,706	12,797	47	38
2070	10,422	156	2,850	13,428	47	38
2075	10,918	156	2,992	14,066	47	39
2080	11,569	162	3,135	14,867	47	39
2085	12,169	169	3,280	15,619	48	39
2090	12,748	175	3,430	16,353	48	39
High-cost:						
2012	8,958	165	1,966	11,089	59	46
2015	9,943	167	2,198	12,309	65	50
2020	10,806	174	2,321	13,301	70	53
2025	11,790	214	2,447	14,450	74	54
2030	12,073	223	2,566	14,862	75	57
2035	12,450	221	2,618	15,289	76	59
2040	12,876	221	2,635	15,732	78	60
2045	13,602	243	2,642	16,488	81	60
2050	14,066	261	2,652	16,978	83	61
2055	14,431	282	2,686	17,400	85	62
2060	14,574	299	2,712	17,584	86	62
2065	14,899	315	2,715	17,930	87	63
2070	15,181	329	2,700	18,210	89	63
2075	15,253	330	2,675	18,257	90	63
2080	15,289	331	2,653	18,273	91	63
2085	15,157	327	2,639	18,124	91	64
2090	15,004	324	2,631	17,959	91	64

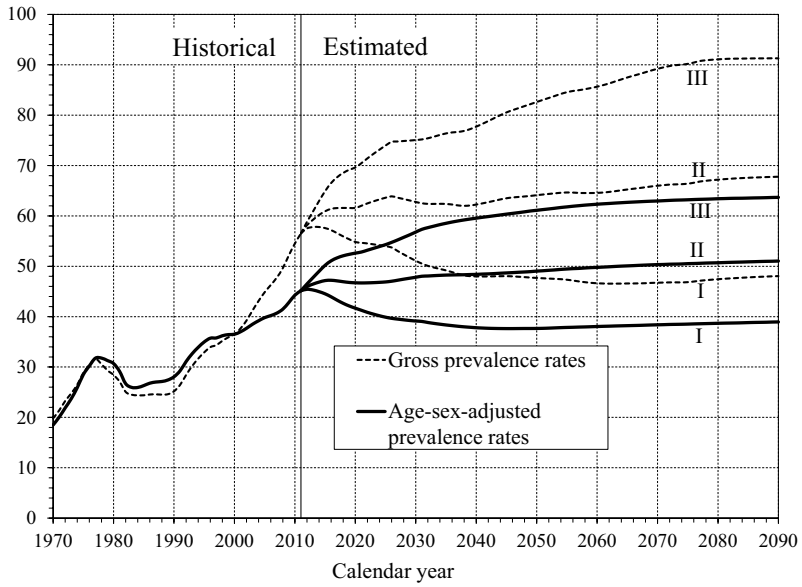
Note: Totals do not necessarily equal the sums of rounded components.

The disability prevalence rate is the ratio of the number of disabled-worker beneficiaries in current-payment status to the number of persons insured for disability benefits. Figure V.C6 illustrates the historical and projected disability prevalence rates on both a gross basis and on an age-sex-adjusted basis (adjusted to the age-sex distribution of the insured population for the year 2000).

Changes in prevalence rates are a direct result of changes in incidence rates and termination rates. Figure V.C5 depicts patterns for incidence and termination rates, which are helpful for understanding the trend in prevalence

rates. Annual incidence and termination rates are not directly comparable or combinable because their denominators differ.

Figure V.C6.—DI Disability Prevalence Rates, 1970-2090
[Rate per thousand persons insured for disability benefits]



Age-sex-adjusted prevalence rates have increased primarily because: (1) termination rates have declined; (2) incidence rates at younger ages have increased relative to rates at older ages; and (3) incidence rates have increased substantially for women to parity with men. Gross prevalence rates have increased more than age-sex-adjusted prevalence rates ever since the baby-boom generation began to reach ages 50 through normal retirement age, a time of life when disability incidence rates are relatively high. With this upward shift in the age distribution of the disabled population, gross conversions to retired worker status at normal retirement age have naturally increased as well. The Office of the Chief Actuary projects both gross and age-sex adjusted prevalence rates to grow at a slower pace based on assumed stabilization in three factors: (1) the age distribution of the general population; (2) the age distribution of the disability insured population; and (3) relative incidence rates by age and gender. As these factors gradually stabilize, the declining death termination rate continues to have a small influence toward higher disability prevalence rates.

As mentioned above in the discussion of incidence and termination rates, the age-sex-adjusted prevalence rate isolates the changing trend in the true likelihood of receiving benefits for the insured population, without reflecting changes in the age distribution of the population. As with incidence rates, gross disability prevalence rates declined relative to the age-sex-adjusted rate when the baby-boom generation reached working age between 1975 and 1995; this trend reflects the lower disability prevalence rates associated with younger ages. Conversely, the gross rate of disability prevalence has increased relative to the age-sex-adjusted rate after 1995 due to the aging of the baby-boom generation into ages with higher disability prevalence rates.

Under the intermediate assumptions, the projected age-sex-adjusted disability prevalence rate grows from 45.1 per thousand disability insured at the end of 2011 to 51.0 per thousand at the end of 2090. As mentioned above, the Office of the Chief Actuary projects that the growth in prevalence will slow relative to the historical period.

Under the low-cost and high-cost assumptions, the age-sex-adjusted disability prevalence rate decreases to 39.0 per thousand and increases to 63.7 per thousand insured workers at the end of 2090, respectively.

Table V.C5 presents projections of the numbers of auxiliary beneficiaries paid from the DI Trust Fund. As indicated at the beginning of this subsection, auxiliary beneficiaries are qualifying spouses and children of disabled workers. A spouse must either be at least age 62 or have an eligible child beneficiary in his or her care who is either under age 16 or disabled prior to age 22. A child must be: (1) under age 18; (2) age 18 or 19 and still a student in high school; or (3) age 18 or older and disabled prior to age 22.

The projection of the number of auxiliary beneficiaries relies on the projected number of disabled-worker beneficiaries. In the short-range period (2012-21), the Office of the Chief Actuary projects incidence and termination rates for each category of auxiliary beneficiary. After 2021, the office projects child beneficiaries at ages 18 and under in relation to the projected number of children in the population using the probability that either of their parents is a disabled-worker beneficiary. The office projects the remaining categories of children and spouses in a similar manner.

6. Covered and Taxable Earnings, Taxable Payroll, and Payroll Tax Contributions

Covered earnings are the sum of covered wages and covered self-employment net earnings. The Office of the Chief Actuary projects covered wages for component sectors of the economy (i.e., private, State and local, Federal

civilian, and military) based on the projected overall growth of sectoral and total wages in the U.S. economy. The projections of covered wages also reflect changes in covered employment due to a relative increase in non-covered undocumented immigrants and to the mandatory coverage of new hires in the Federal civilian sector. The office projects covered self-employment net earnings based on the growth in net proprietors' income in the U.S. economy.

Taxable earnings are the amount of covered earnings subject to the Social Security payroll tax. Taxable wages for an employee are total covered wages from all wage employment up to the contribution and benefit base. Taxable wages for an employer are the sum of all covered wages paid to each employee up to the base. Employees with multiple jobs whose total wages exceed the base are eligible for a refund of excess taxes withheld; employers are not eligible for a refund on this basis. For self-employed workers with no taxable wages, taxable earnings are the amount of covered self-employment net earnings up to the base. For self-employed workers with taxable wages less than the base, covered self-employment net earnings are taxable up to the difference between the base and their taxable wages. For projection purposes, the Office of the Chief Actuary computes taxable earnings based on a proportion of covered earnings that is at or below the base.

The OASDI taxable payroll (see table VI.F6) is the amount of earnings in a year that, when multiplied by the combined OASDI employee-employer payroll tax rate, yields the total amount of payroll taxes due from wages and self-employment net earnings in the year. The Trustees use taxable payroll to estimate OASDI income and to determine income rates, cost rates, and actuarial balances. (See section IV.B.1 for definitions of these terms.) Taxable payroll derives from taxable earnings, which is the sum of taxable wages and self-employment earnings. In computing taxable payroll, wages take into account the "excess wages" earned by workers with multiple jobs whose combined wages exceed the contribution and benefit base. In addition, from 1983 through 2001, taxable payroll includes deemed wage credits for military service after 1956. Prior to 1984, the self-employment tax rate was less than the combined employee-employer rate; therefore, the Office of the Chief Actuary multiplies taxable self-employment earnings by the ratio of the self-employment rate to the combined employee-employer rate to reflect this difference in payroll tax rate. Also, prior to 1988, employers were exempt from paying Social Security payroll tax on part of their employees' tips. To take this exemption into account, the office reduces taxable payroll by half of the amount of tips not subject to employer tax.

The ratio of taxable payroll to covered earnings fell from 88.1 percent for 1984 to 82.5 percent for 2000, mostly due to relatively higher increases in wage levels for very high earners. From 2000 to 2010, the taxable payroll ratio varied with the business cycle, rising during economic downturns and falling during recoveries. Specifically, the ratio rose to 85.6 percent for 2002, declined to 82.2 percent for 2007, rose to 84.9 percent for 2009, and was 83.9 percent for 2010.

For the 2011 report, the Trustees assumed a level for the taxable payroll ratio for 2021 of 82.5 percent for the intermediate assumptions, 81.8 percent for the high-cost assumptions (or about 0.75 percentage point lower than the intermediate assumptions), and 83.3 percent for the low-cost assumptions (or about 0.75 percentage point higher than the intermediate assumptions). For the 2012 report, the Trustees assume a level for the taxable payroll ratio for 2021 of 82.5 percent for the intermediate assumptions, 81.0 percent for the high-cost assumptions (or about 1.50 percentage points lower than the intermediate assumptions), and 84.0 percent for the low-cost assumptions (or about 1.50 percentage points higher than the intermediate assumptions). Compared to the 2011 report, the Trustees assume the same level (82.5 percent) for the taxable payroll ratio for 2021 under the intermediate assumptions, but assume levels that have a wider range for the high-cost and low-cost assumptions.

The Office of the Chief Actuary projects payroll tax contributions using the patterns of tax collection required by Federal laws and regulations. The office determines payroll tax liabilities by multiplying the scheduled tax rates for each year by the amount of taxable wages and self-employment net earnings for that year. The office then splits these liabilities into amounts by collection period. For wages, Federal law requires that employers withhold OASDI and HI payroll taxes and Federal individual income taxes from employees' pay. As an employer's accumulation of such taxes (including the employer share of payroll taxes) meets certain thresholds, which the Department of the Treasury determines, the employer must deposit these taxes with the U.S. Treasury by a specific day, depending on the amount of money involved[1]. For projection purposes, the office splits the payroll tax contributions related to wages into amounts paid in the same quarter as incurred and in the following quarter. Self-employed workers must make estimated tax payments on their earnings four times during the year and to make up any

[1] Generally, the higher the amount of liability, the sooner the taxes must be paid. For smaller employers, payment is due by the middle of the month following when the liability was incurred. Medium-size employers have three banking days in which to make their deposits. Larger employers must make payment on the next business day after paying their employees.

underestimate on their individual income tax returns. The projection splits the self-employed tax liabilities by collection quarter to reflect this pattern of receipts.

The projected tax contributions also reflect the method used to insure that money transferred to the trust funds is adjusted, over time, to equal the actual liability owed. Because payers generally make tax payments without identifying the separate OASDI contribution amounts, Treasury makes daily transfers of money from the general fund to the trust funds on an initial estimated basis. The Social Security Administration periodically certifies the amounts of wages and self-employment net earnings on which tax contributions are owed for each year, at which time Treasury determines adjustments to appropriations to reconcile tax liabilities with deposits in the trust funds. This process also includes periodic transfers from the trust funds to the general fund for contributions on wages in excess of the contribution and benefit base.

Table V.C6 shows the payroll tax contribution rates applicable under current law in each calendar year and the allocation of these rates between the OASI and DI Trust Funds.[1] It also shows the contribution and benefit base for each year through 2012.

[1] Table VI.F1 shows the payroll tax contribution rates for the Hospital Insurance (HI) program.

Table V.C6.—Contribution and Benefit Base and Payroll Tax Contribution Rates

Calendar years	Contribution and benefit base	Payroll tax contribution rates (percent)					
		Employees and employers, combined[a]			Self-employed[b]		
		OASDI	OASI	DI	OASDI	OASI	DI
1937-49	$3,000	2.00	2.00	—	—	—	—
1950	3,000	3.00	3.00	—	—	—	—
1951-53	3,600	3.00	3.00	—	2.2500	2.2500	—
1954	3,600	4.00	4.00	—	3.0000	3.0000	—
1955-56	4,200	4.00	4.00	—	3.0000	3.0000	—
1957-58	4,200	4.50	4.00	0.50	3.3750	3.0000	0.3750
1959	4,800	5.00	4.50	.50	3.7500	3.3750	.3750
1960-61	4,800	6.00	5.50	.50	4.5000	4.1250	.3750
1962	4,800	6.25	5.75	.50	4.7000	4.3250	.3750
1963-65	4,800	7.25	6.75	.50	5.4000	5.0250	.3750
1966	6,600	7.70	7.00	.70	5.8000	5.2750	.5250
1967	6,600	7.80	7.10	.70	5.9000	5.3750	.5250
1968	7,800	7.60	6.65	.95	5.8000	5.0875	.7125
1969	7,800	8.40	7.45	.95	6.3000	5.5875	.7125
1970	7,800	8.40	7.30	1.10	6.3000	5.4750	.8250
1971	7,800	9.20	8.10	1.10	6.9000	6.0750	.8250
1972	9,000	9.20	8.10	1.10	6.9000	6.0750	.8250
1973	10,800	9.70	8.60	1.10	7.0000	6.2050	.7950
1974	13,200	9.90	8.75	1.15	7.0000	6.1850	.8150
1975	14,100	9.90	8.75	1.15	7.0000	6.1850	.8150
1976	15,300	9.90	8.75	1.15	7.0000	6.1850	.8150
1977	16,500	9.90	8.75	1.15	7.0000	6.1850	.8150
1978	17,700	10.10	8.55	1.55	7.1000	6.0100	1.0900
1979	22,900	10.16	8.66	1.50	7.0500	6.0100	1.0400
1980	25,900	10.16	9.04	1.12	7.0500	6.2725	.7775
1981	29,700	10.70	9.40	1.30	8.0000	7.0250	.9750
1982	32,400	10.80	9.15	1.65	8.0500	6.8125	1.2375
1983	35,700	10.80	9.55	1.25	8.0500	7.1125	.9375
1984[c]	37,800	11.40	10.40	1.00	11.4000	10.4000	1.0000
1985[c]	39,600	11.40	10.40	1.00	11.4000	10.4000	1.0000
1986[c]	42,000	11.40	10.40	1.00	11.4000	10.4000	1.0000
1987[c]	43,800	11.40	10.40	1.00	11.4000	10.4000	1.0000
1988[c]	45,000	12.12	11.06	1.06	12.1200	11.0600	1.0600
1989[c]	48,000	12.12	11.06	1.06	12.1200	11.0600	1.0600
1990	51,300	12.40	11.20	1.20	12.4000	11.2000	1.2000
1991	53,400	12.40	11.20	1.20	12.4000	11.2000	1.2000
1992	55,500	12.40	11.20	1.20	12.4000	11.2000	1.2000
1993	57,600	12.40	11.20	1.20	12.4000	11.2000	1.2000
1994	60,600	12.40	10.52	1.88	12.4000	10.5200	1.8800
1995	61,200	12.40	10.52	1.88	12.4000	10.5200	1.8800
1996	62,700	12.40	10.52	1.88	12.4000	10.5200	1.8800
1997	65,400	12.40	10.70	1.70	12.4000	10.7000	1.7000
1998	68,400	12.40	10.70	1.70	12.4000	10.7000	1.7000
1999	72,600	12.40	10.70	1.70	12.4000	10.7000	1.7000
2000	76,200	12.40	10.60	1.80	12.4000	10.6000	1.8000
2001	80,400	12.40	10.60	1.80	12.4000	10.6000	1.8000
2002	84,900	12.40	10.60	1.80	12.4000	10.6000	1.8000
2003	87,000	12.40	10.60	1.80	12.4000	10.6000	1.8000
2004	87,900	12.40	10.60	1.80	12.4000	10.6000	1.8000
2005	90,000	12.40	10.60	1.80	12.4000	10.6000	1.8000

Table V.C6.—Contribution and Benefit Base and Payroll Tax Contribution Rates (Cont.)

Calendar years	Contribution and benefit base	Payroll tax contribution rates (percent)					
		Employees and employers, combined[a]			Self-employed[b]		
		OASDI	OASI	DI	OASDI	OASI	DI
2006	$94,200	12.40	10.60	1.80	12.4000	10.6000	1.8000
2007	97,500	12.40	10.60	1.80	12.4000	10.6000	1.8000
2008	102,000	12.40	10.60	1.80	12.4000	10.6000	1.8000
2009	106,800	12.40	10.60	1.80	12.4000	10.6000	1.8000
2010[d]	106,800	12.40	10.60	1.80	12.4000	10.6000	1.8000
2011[d]	106,800	10.40	8.89	1.51	10.4000	8.8900	1.5100
2012[d]	110,100	10.40	8.89	1.51	10.4000	8.8900	1.5100
2013 and later	[e]	12.40	10.60	1.80	12.4000	10.6000	1.8000

[a] Except as noted below, the combined employee/employer rate is divided equally between employees and employers.
[b] Beginning in 1990, self-employed persons receive a deduction, for purposes of computing their net earnings, equal to half of the combined OASDI and HI contributions that would be payable without regard to the contribution and benefit base. The OASDI contribution rate then applies to net earnings after this deduction, but subject to the OASDI base.
[c] In 1984 only, employees received an immediate credit of 0.3 percent of taxable wages against their OASDI payroll tax contributions. The self-employed received similar credits of 2.7 percent, 2.3 percent, and 2.0 percent against their combined OASDI and Hospital Insurance (HI) contributions on net earnings from self-employment in 1984, 1985, and 1986-89, respectively. The General Fund of the Treasury reimbursed the trust funds for these credits.
[d] Public Law 111-147 exempted most employers from paying the employer share of OASDI payroll tax on wages paid during the period March 19, 2010 through December 31, 2010 to certain qualified individuals hired after February 3, 2010. Public Law 111-312 reduced the OASDI payroll tax rate for 2011 by 2 percentage points for employees and for self-employed workers. Public Law 112-96 extended the 2011 rate reduction through 2012. These laws require that the General Fund of the Treasury reimburse the OASI and DI Trust Funds for these temporary reductions in 2010 through 2012 payroll tax revenue, in order to "replicate to the extent possible" revenue that would have been received if the combined employee/employer payroll tax rates had remained at 12.4 percent for OASDI (10.6 percent for OASI and 1.8 percent for DI).
[e] Subject to automatic adjustment based on increases in average wages.

7. Income From Taxation of Benefits

Current law credits the OASI and DI Trust Funds with income taxes from the taxation of up to the first 50 percent of OASI and DI benefit payments. (The HI Trust Fund receives the remainder of the income taxes from the taxation of up to 85 percent of OASI and DI benefit payments.)

For the short-range period, the Office of the Chief Actuary estimates the income to the trust funds from taxation of benefits by applying the following two factors to total OASI and DI benefit payments: (1) the percentage of benefit payments (limited to 50 percent) that is taxable; and (2) the average marginal tax rate applicable to those benefits.

For the long-range period, the office estimates the income to the trust funds from taxation of benefits by applying projected ratios of taxation of OASI and DI benefits to total OASI and DI benefit payments. The income thresholds used for benefit taxation are, by law, constant in the future, while income and benefit levels continue to rise. Accordingly, projected ratios of income from taxation of benefits to the amount of benefits increase gradu-

ally. Ultimate tax ratios for OASI and DI benefits used in the projection rely on estimates from the Office of Tax Analysis in the Department of the Treasury.

8. Average Benefits

Projections of average benefits for each benefit type depend on recent historical averages, projected average primary insurance amounts (PIAs), and projected ratios of average benefits to average PIAs. Calculations of average PIAs depend on projected distributions of beneficiaries by duration from year of initial entitlement, average PIAs at initial entitlement, and increases in PIAs after initial entitlement. Projected increases in average PIAs after initial entitlement depend on automatic benefit increases, recomputations to reflect additional covered earnings, and other factors. Calculations of future average PIAs at initial entitlement depend on projected earnings histories, which in turn depend on a combination of the actual earnings histories associated with a sample of 2007 initial entitlements and more recent actual earnings levels by age and sex for covered workers.

For retired-worker, aged-spouse, and aged-widow(er) benefits, the percentage of the PIA that is payable depends on the age at initial entitlement to benefits. Projected ratios of average benefits to average PIAs for these types of benefits depend on projections of age distributions at initial entitlement.

9. Benefit Payments

For each type of benefit, benefit payments are the product of the number of beneficiaries and the corresponding average monthly benefit. The short-range model calculates benefit payments on a quarterly basis. The long-range model calculates all benefit payments on an annual basis, using the number of beneficiaries on December 31. Adjustments to these annual benefit payments include retroactive payments to newly awarded beneficiaries and other amounts not reflected in the regular monthly benefit payments.

Lump-sum death payments are the product of: (1) the number of lump-sum death payments projected on the basis of the assumed death rates, the projected fully insured population, and the estimated percentage of the fully insured population that will qualify for benefits; and (2) the amount of the lump-sum death payment, which is $255 (unindexed since 1973).

10. Illustrative Scheduled Benefit Amounts

Table V.C7 shows, under the intermediate assumptions, future benefit amounts payable upon retirement at the normal retirement age and at age 65,

for workers attaining age 65 in 2012 and subsequent years. The table shows illustrative benefit amounts for workers with four separate pre-retirement earnings patterns. The benefit amounts in table V.C7 are in CPI-indexed 2012 dollars—that is, adjusted to 2012 levels by the CPI indexing series shown in table VI.F6. Table V.C7 also shows each benefit amount as a percentage of career-average earnings, wage indexed to the year prior to retirement. These percentages are therefore the benefit "replacement rates" for earners with the career-average level of earnings.

The normal retirement age was 65 for individuals who reached age 62 before 2000. It increased to age 66 during the period 2000-05, at a rate of 2 months per year as workers attained age 62. Under current law, the normal retirement age will increase to age 67 during the period 2017-22, also by 2 months per year as workers attain age 62. The illustrative benefit amounts shown in table V.C7 for retirees at age 65 are lower than the amounts shown for retirees at normal retirement age because the statute requires actuarial reduction of benefits taken before normal retirement age.

Table V.C7 shows four different pre-retirement earnings patterns. Three of these patterns assume the earnings history of workers with scaled-earnings patterns[1] and reflect low, medium, and high career-average levels of pre-retirement earnings starting at age 21. The fourth pattern assumes the earnings history of a steady maximum earner. The three scaled-earnings patterns derive from earnings experienced by insured workers during 1991-2008. These earnings levels differ by age. The career-average level of earnings for each scaled case targets a percent of the national average wage index (AWI). As a result, the benefit amounts shown here are consistent with the levels for "steady-earnings" cases presented in the 2000 and earlier Trustees Reports. Since 2001, the Trustees have used scaled-earnings cases, instead of steady-earnings cases, because they better illustrate the differences in benefit levels under the wide variety of reform proposals considered in recent years.

For the scaled medium earner, the career-average earnings level is about equal to the AWI. For the scaled low and high earners, the career-average earnings level is about 45 percent and 160 percent of the AWI, respectively. The steady maximum earner has earnings at or above the contribution and benefit base for each year starting at age 22 through the year prior to retirement.

---

[1] Actuarial Note Number 2011.3 has more details on scaled-earnings patterns. See www.socialsecurity.gov/OACT/NOTES/ran3/an2011-3.html.

Table V.C7.—Annual Scheduled Benefit Amounts[a] for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2012-90

Year attain age 65[b]	Retirement at normal retirement age: Age at retirement	Retirement at normal retirement age: CPI-indexed 2012 dollars[c]	Retirement at normal retirement age: Percent of earnings	Retirement at age 65: Age at retirement	Retirement at age 65: CPI-indexed 2012 dollars[c]	Retirement at age 65: Percent of earnings
Scaled low earnings:[d]						
2012	66:0	$11,390	57.8	65:0	$10,648	55.0
2015	66:0	11,327	53.7	65:0	10,582	51.4
2020	66:2	12,481	53.9	65:0	11,503	50.4
2025	67:0	13,643	55.5	65:0	11,827	49.2
2030	67:0	14,347	55.3	65:0	12,436	49.0
2035	67:0	15,161	55.2	65:0	13,134	48.9
2040	67:0	16,042	55.1	65:0	13,904	48.9
2045	67:0	16,988	55.3	65:0	14,722	48.9
2050	67:0	17,960	55.3	65:0	15,568	49.0
2055	67:0	18,958	55.4	65:0	16,429	49.0
2060	67:0	20,001	55.4	65:0	17,335	49.1
2065	67:0	21,084	55.4	65:0	18,273	49.1
2070	67:0	22,228	55.4	65:0	19,264	49.1
2075	67:0	23,428	55.4	65:0	20,304	49.1
2080	67:0	24,710	55.4	65:0	21,415	49.0
2085	67:0	26,079	55.3	65:0	22,603	49.0
2090	67:0	27,551	55.3	65:0	23,877	49.0
Scaled medium earnings:[e]						
2012	66:0	18,771	42.9	65:0	17,534	40.8
2015	66:0	18,667	39.8	65:0	17,441	38.1
2020	66:2	20,575	40.0	65:0	18,966	37.4
2025	67:0	22,498	41.2	65:0	19,492	36.5
2030	67:0	23,644	41.0	65:0	20,491	36.3
2035	67:0	24,987	40.9	65:0	21,652	36.3
2040	67:0	26,444	40.9	65:0	22,920	36.3
2045	67:0	27,999	41.0	65:0	24,266	36.3
2050	67:0	29,603	41.1	65:0	25,655	36.4
2055	67:0	31,244	41.1	65:0	27,079	36.4
2060	67:0	32,958	41.1	65:0	28,565	36.4
2065	67:0	34,745	41.1	65:0	30,113	36.4
2070	67:0	36,632	41.1	65:0	31,747	36.4
2075	67:0	38,607	41.1	65:0	33,459	36.4
2080	67:0	40,719	41.0	65:0	35,289	36.4
2085	67:0	42,979	41.0	65:0	37,246	36.3
2090	67:0	45,403	41.0	65:0	39,348	36.3
Scaled high earnings:[f]						
2012	66:0	24,891	35.5	65:0	23,255	33.8
2015	66:0	24,745	33.0	65:0	23,124	31.6
2020	66:2	27,252	33.1	65:0	25,122	30.9
2025	67:0	29,817	34.1	65:0	25,836	30.2
2030	67:0	31,337	34.0	65:0	27,159	30.1
2035	67:0	33,110	33.9	65:0	28,694	30.0
2040	67:0	35,041	33.9	65:0	30,368	30.0
2045	67:0	37,101	33.9	65:0	32,155	30.1
2050	67:0	39,227	34.0	65:0	33,999	30.1
2055	67:0	41,404	34.0	65:0	35,880	30.1
2060	67:0	43,675	34.0	65:0	37,854	30.1
2065	67:0	46,045	34.0	65:0	39,903	30.1
2070	67:0	48,543	34.1	65:0	42,073	30.1
2075	67:0	51,160	34.0	65:0	44,339	30.1
2080	67:0	53,957	34.0	65:0	46,763	30.1
2085	67:0	56,951	34.0	65:0	49,356	30.1
2090	67:0	60,163	33.9	65:0	52,139	30.1

Table V.C7.—Annual Scheduled Benefit Amounts[a] for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2012-90 (Cont.)

Year attain age 65[b]	Retirement at normal retirement age			Retirement at age 65		
	Age at retirement	CPI-indexed 2012 dollars[c]	Percent of earnings	Age at retirement	CPI-indexed 2012 dollars[c]	Percent of earnings
Steady maximum earnings:[g]						
2012	66:0	$29,902	28.7	65:0	$27,762	27.4
2015	66:0	30,115	26.5	65:0	28,002	25.3
2020	66:2	33,338	26.5	65:0	30,619	24.7
2025	67:0	36,667	27.3	65:0	31,545	24.0
2030	67:0	38,600	27.2	65:0	33,207	23.9
2035	67:0	40,803	27.1	65:0	35,109	23.9
2040	67:0	43,148	27.1	65:0	37,128	23.9
2045	67:0	45,697	27.1	65:0	39,333	23.9
2050	67:0	48,251	27.2	65:0	41,532	24.0
2055	67:0	50,820	27.3	65:0	43,747	24.0
2060	67:0	53,607	27.3	65:0	46,145	24.0
2065	67:0	56,521	27.3	65:0	48,653	24.0
2070	67:0	59,582	27.3	65:0	51,290	24.0
2075	67:0	62,798	27.3	65:0	54,056	24.0
2080	67:0	66,237	27.3	65:0	57,017	24.0
2085	67:0	69,911	27.3	65:0	60,179	24.0
2090	67:0	73,854	27.2	65:0	63,572	24.0

[a] Annual amounts are the total for the 12-month period starting with the month of retirement.
[b] Attains age 65 on January 1 of the year.
[c] CPI-indexed dollar adjustment uses the adjusted CPI indexing series shown in table VI.F6.
[d] Career-average earnings at about 45 percent of the national average wage index (AWI).
[e] Career-average earnings at about 100 percent of the AWI.
[f] Career-average earnings at about 160 percent of the AWI.
[g] Earnings for each year at or above the contribution and benefit base.

11. Administrative Expenses

The projection of administrative expenses through 2021 depends on historical experience and the expected growth in average wages. Additionally, the Office of Budget of the Social Security Administration provides estimates for the first several years of the projection. For years after 2021, projected administrative expenses increase by increases in the number of beneficiaries and increases in the average wage, which more than offset assumed improvements in administrative productivity. Legislative simplification of the Social Security Act could offset these assumed increases.

12. Railroad Retirement Financial Interchange

Federal law covers railroad workers under a separate multi-tiered plan, with a first tier of coverage similar to OASDI coverage. An annual financial interchange between the Railroad Retirement fund and the OASI and DI Trust Funds reflects the difference between: (1) the amount of OASDI benefits that would be paid to railroad workers and their families if railroad employment had been covered under the OASDI program, plus administrative expenses

associated with these benefits; and (2) the amount of OASDI payroll tax and income tax that would be received with allowances for interest from railroad workers.

Calculation of the financial interchange with the Railroad Retirement depends on trends similar to those used in estimating the cost of OASDI benefits. The annual short-range cost is about $4-5 billion and the long-range summarized cost is 0.03 percent of taxable payroll.

13. Military Service Transfers

Beginning in 1966, the General Fund of the Treasury reimbursed the OASI and DI Trust Funds annually for the cost (including administrative expenses) of providing additional benefit payments resulting from noncontributory wage credits for military service performed prior to 1957. The 1983 amendments modified the reimbursement mechanism and the timing of the reimbursements, and required a reimbursement in 1983 to include all future costs attributable to the wage credits. The amendments also require adjustments to that 1983 reimbursement every fifth year, beginning with 1985, to account for actual data.

VI. APPENDICES

A. HISTORY OF OASI AND DI TRUST FUND OPERATIONS

The Federal Old-Age and Survivors Insurance (OASI) Trust Fund was established on January 1, 1940 as a separate account in the United States Treasury. The Federal Disability Insurance (DI) Trust Fund, another separate account in the United States Treasury, was established on August 1, 1956. These funds conduct the financial operations of the OASI and DI programs. The Board of Trustees is responsible for overseeing the financial operations of these funds. The following paragraphs describe the various components of trust fund income and outgo. Following this description, tables VI.A1 and VI.A2 present the historical operations of the separate trust funds since their inception, and table VI.A3 presents the operations of the combined trust funds during the period when they have co-existed.

The primary receipts of these two funds are amounts appropriated under permanent authority on the basis of payroll tax contributions. Federal law requires that all employees who work in OASDI covered employment, and their employers, make payroll tax contributions on their wages. Employees and their employers must also make payroll tax contributions on monthly cash tips if such tips are at least $20. Self-employed persons must make payroll tax contributions on their covered net earnings from self-employment. The Federal Government pays amounts equivalent to the combined employer and employee contributions that would be paid on deemed wage credits attributable to military service performed between 1957 and 2001, if such wage credits were covered wages.

Income also includes various reimbursements from the General Fund of the Treasury, such as: (1) the cost of noncontributory wage credits for military service before 1957, and periodic adjustments to previous determinations of this cost; (2) the cost in 1971-82 of deemed wage credits for military service performed after 1956; (3) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (4) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (5) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (6) payroll tax revenue forgone under the provisions of Public Laws 111-147 and 111-312.

Beginning in 1984, Federal law subjected up to 50 percent of an individual's or couple's OASDI benefits to Federal income taxation under certain circumstances. Effective for taxable years beginning after 1993, the law increased the maximum percentage from 50 percent to 85 percent. Treasury credits the proceeds from this taxation of up to 50 percent of benefits to the OASI and DI Trust Funds in advance, on an estimated basis, at the beginning of each

calendar quarter, with no reimbursement to the general fund for interest costs attributable to the advance transfers.[1] Treasury makes subsequent adjustments based on the actual amounts shown on annual income tax records. Each of the OASI and DI Trust Funds receives the income taxes paid on the benefits from that trust fund.[2]

Another source of income to the trust funds is interest received on investments held by the trust funds. On a daily basis, Treasury invests trust fund income not required to meet current operating expenses, primarily in interest-bearing obligations of the U.S. Government. These investments include the special public-debt obligations described in the next paragraph. The Social Security Act also authorizes the trust funds to hold obligations guaranteed as to both principal and interest by the United States. The act therefore permits the trust funds to hold certain Federally sponsored agency obligations and marketable obligations.[3] The trust funds may acquire any of these obligations on original issue at the issue price or by purchase of outstanding obligations at their market price.

The Social Security Act authorizes the issuance of special public-debt obligations for purchase exclusively by the trust funds. The act provides that the interest rate for special obligations newly issued in any month is the average market yield, as of the last business day of the prior month, on all of the outstanding marketable U.S. obligations that are due or callable more than 4 years in the future. This rate is rounded to the nearest one-eighth of one percent. Beginning January 1999, in calculating the average market yield rate for this purpose, the Treasury incorporates the yield to the call date when a callable bond's market price is above par.

Although the Social Security Act does not authorize the purchase or sale of special issues in the open market, the Treasury may redeem them at any time at par value. In practice, the Treasury redeems special issues prior to maturity only when needed to meet current operating expenses. Given this separation from market-based valuations, changes in market yield rates do not cause fluctuations in principal value. As is true for marketable Treasury securities held by the public, the full faith and credit of the U.S. Government backs all of the investments held by the trust funds.

---

[1] The HI Trust Fund receives the additional tax revenue resulting from the increase to 85 percent.

[2] A special provision applies to benefits paid to nonresident aliens. Effective for taxable years beginning after 1994, Public Law 103-465 subjects benefits to a flat-rate tax, usually 25.5 percent, before they are paid. Therefore, this tax remains in the trust funds. From 1984 to 1994, the flat-rate tax was usually 15 percent.

[3] The Social Security Act requires the trust funds to acquire special-issue obligations unless the Managing Trustee determines that the purchase of marketable obligations is in the public interest. The purchase of marketable obligations has been quite limited and has not occurred since 1980.

The primary expenditures of the OASI and DI Trust Funds are: (1) OASDI benefit payments, net of any reimbursements from the General Fund of the Treasury for unnegotiated benefit checks; and (2) expenses incurred by the Social Security Administration and the Department of the Treasury in administering the OASDI program and the provisions of the Internal Revenue Code relating to the collection of contributions. Such administrative expenses include expenditures for construction, rental and lease, or purchase of office buildings and related facilities for the Social Security Administration. The Social Security Act prohibits expenditures from the OASI and DI Trust Funds for any purpose not related to the payment of benefits or administrative costs for the OASDI program.

The expenditures of the trust funds also include: (1) the costs of vocational rehabilitation services furnished to disabled persons receiving cash benefits because of their disabilities, where such services contributed to their successful rehabilitation; and (2) net costs of the provisions of the Railroad Retirement Act that provide for a system of coordination and financial interchange between the Railroad Retirement program and the Social Security program. Under the financial interchange provisions, the Railroad Retirement program's Social Security Equivalent Benefit Account and the trust funds interchange amounts on an annual basis so that each trust fund is in the same position it would have been had railroad employment always been covered under Social Security.

The statements of the operations of the trust funds in this report do not include the net worth of facilities and other fixed capital assets because the value of fixed capital assets is not available in the form of a financial asset redeemable for the payment of benefits or administrative expenditures. As a result of this unavailability, the actuarial status of the trust funds does not take these assets into account.

Table VI.A1.— Operations of the OASI Trust Fund, Calendar Years 1937-2011
[Dollar amounts in billions]

Calendar year	Income					Cost				Assets		
	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest[b]	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
1937[e]	$0.8	$0.8	—	—	[f]	[f]	[f]	—	—	$0.8	$0.8	—
1938[e]	.4	.4	—	—	[f]	[f]	[f]	—	—	.4	1.1	7,660
1939[e]	.6	.6	—	—	[f]	[f]	[f]	—	—	.6	1.7	8,086
1940	.4	.3	—	—	[f]	$0.1	[f]	[f]	—	.3	2.0	2,781
1941	.8	.8	—	—	$0.1	.1	$0.1	[f]	—	.7	2.8	1,782
1942	1.1	1.0	—	—	.1	.2	.1	[f]	—	.9	3.7	1,737
1943	1.3	1.2	—	—	.1	.2	.2	[f]	—	1.1	4.8	1,891
1944	1.4	1.3	—	—	.1	.2	.2	[f]	—	1.2	6.0	2,025
1945	1.4	1.3	—	—	.1	.3	.3	[f]	—	1.1	7.1	1,975
1946	1.4	1.3	—	—	.2	.4	.4	[f]	—	1.0	8.2	1,704
1947	1.7	1.6	[f]	—	.2	.5	.5	[f]	—	1.2	9.4	1,592
1948	2.0	1.7	[f]	—	.3	.6	.6	$0.1	—	1.4	10.7	1,542
1949	1.8	1.7	[f]	—	.1	.7	.7	.1	—	1.1	11.8	1,487
1950	2.9	2.7	[f]	—	.3	1.0	1.0	.1	—	1.9	13.7	1,156
1951	3.8	3.4	[f]	—	.4	2.0	1.9	.1	—	1.8	15.5	698
1952	4.2	3.8	—	—	.4	2.3	2.2	.1	—	1.9	17.4	681
1953	4.4	3.9	—	—	.4	3.1	3.0	.1	—	1.3	18.7	564
1954	5.6	5.2	—	—	.4	3.7	3.7	.1	[f]	1.9	20.6	500
1955	6.2	5.7	—	—	.5	5.1	5.0	.1	[f]	1.1	21.7	405
1956	6.7	6.2	—	—	.5	5.8	5.7	.1	[f]	.9	22.5	371
1957	7.4	6.8	—	—	.6	7.5	7.3	.2	[f]	-.1	22.4	300
1958	8.1	7.6	—	—	.6	8.6	8.3	.2	$0.1	-.5	21.9	259
1959	8.6	8.1	—	—	.5	10.3	9.8	.2	.3	-1.7	20.1	212
1960	11.4	10.9	—	—	.5	11.2	10.7	.2	.3	.2	20.3	180
1961	11.8	11.3	—	—	.5	12.4	11.9	.2	.3	-.6	19.7	163
1962	12.6	12.1	—	—	.5	14.0	13.4	.3	.4	-1.4	18.3	141
1963	15.1	14.5	—	—	.5	14.9	14.2	.3	.4	.1	18.5	123
1964	16.3	15.7	—	—	.6	15.6	14.9	.3	.4	.6	19.1	118
1965	16.6	16.0	—	—	.6	17.5	16.7	.3	.4	-.9	18.2	109
1966	21.3	20.6	$0.1	—	.6	19.0	18.3	.3	.4	2.3	20.6	96
1967	24.0	23.1	.1	—	.8	20.4	19.5	.4	.5	3.7	24.2	101
1968	25.0	23.7	.4	—	.9	23.6	22.6	.5	.4	1.5	25.7	103
1969	29.6	27.9	.4	—	1.2	25.2	24.2	.5	.5	4.4	30.1	102
1970	32.2	30.3	.4	—	1.5	29.8	28.8	.5	.6	2.4	32.5	101
1971	35.9	33.7	.5	—	1.7	34.5	33.4	.5	.6	1.3	33.8	94
1972	40.1	37.8	.5	—	1.8	38.5	37.1	.7	.7	1.5	35.3	88
1973	48.3	46.0	.4	—	1.9	47.2	45.7	.6	.8	1.2	36.5	75
1974	54.7	52.1	.4	—	2.2	53.4	51.6	.9	.9	1.3	37.8	68
1975	59.6	56.8	.4	—	2.4	60.4	58.5	.9	1.0	-.8	37.0	63
1976	66.3	63.4	.6	—	2.3	67.9	65.7	1.0	1.2	-1.6	35.4	54
1977	72.4	69.6	.6	—	2.2	75.3	73.1	1.0	1.2	-2.9	32.5	47
1978	78.1	75.5	.6	—	2.0	83.1	80.4	1.1	1.6	-5.0	27.5	39
1979	90.3	87.9	.6	—	1.8	93.1	90.6	1.1	1.4	-2.9	24.7	30
1980	105.8	103.5	.5	—	1.8	107.7	105.1	1.2	1.4	-1.8	22.8	23
1981	125.4	122.6	.7	—	2.1	126.7	123.8	1.3	1.6	-1.3	21.5	18
1982	125.2	123.7	.7	—	.8	142.1	138.8	1.5	1.8	[g].6	22.1	15
1983	150.6	138.3	5.5	—	6.7	153.0	149.2	1.5	2.3	-2.4	19.7	14
1984	169.3	159.5	4.7	$2.8	2.3	161.9	157.8	1.6	2.4	7.4	27.1	20

Table VI.A1.— Operations of the OASI Trust Fund, Calendar Years 1937-2011 (Cont.)
[Dollar amounts in billions]

	Income					Cost				Assets		
Calendar year	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest[b]	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
1985 . .	$184.2	$175.1	$4.0	$3.2	$1.9	$171.2	$167.2	$1.6	$2.3	[g]$8.7	$35.8	24
1986 . .	197.4	189.1	1.8	3.4	3.1	181.0	176.8	1.6	2.6	[g]3.2	39.1	28
1987 . .	210.7	201.1	1.7	3.3	4.7	187.7	183.6	1.5	2.6	23.1	62.1	30
1988 . .	240.8	227.7	2.1	3.4	7.6	200.0	195.5	1.8	2.8	40.8	102.9	41
1989 . .	264.7	248.1	2.1	2.4	12.0	212.5	208.0	1.7	2.8	52.2	155.1	59
1990 . .	286.7	266.1	-.7	4.8	16.4	227.5	223.0	1.6	3.0	59.1	214.2	78
1991 . .	299.3	272.5	.1	5.9	20.8	245.6	240.5	1.8	3.4	53.7	267.8	87
1992 . .	311.2	281.1	-.1	5.9	24.3	259.9	254.9	1.8	3.1	51.3	319.2	103
1993 . .	323.3	290.9	[f]	5.3	27.0	273.1	267.8	2.0	3.4	50.2	369.3	117
1994 . .	328.3	293.3	[f]	5.0	29.9	284.1	279.1	1.6	3.4	44.1	413.5	130
1995 . .	342.8	304.7	-.2	5.5	32.8	297.8	291.6	2.1	4.1	45.0	458.5	139
1996 . .	363.7	321.6	[f]	6.5	35.7	308.2	302.9	1.8	3.6	55.5	514.0	149
1997 . .	397.2	349.9	[f]	7.4	39.8	322.1	316.3	2.1	3.7	75.1	589.1	160
1998 . .	424.8	371.2	[f]	9.1	44.5	332.3	326.8	1.9	3.7	92.5	681.6	177
1999 . .	457.0	396.4	[f]	10.9	49.8	339.9	334.4	1.8	3.7	117.2	798.8	201
2000 . .	490.5	421.4	[f]	11.6	57.5	358.3	352.7	2.1	3.5	132.2	931.0	223
2001 . .	518.1	441.5	[f]	11.9	64.7	377.5	372.3	2.0	3.3	140.6	1,071.5	247
2002 . .	539.7	455.2	.4	12.9	71.2	393.7	388.1	2.1	3.5	146.0	1,217.5	272
2003 . .	543.8	456.1	[f]	12.5	75.2	406.0	399.8	2.6	3.6	137.8	1,355.3	300
2004 . .	566.3	472.8	[f]	14.6	79.0	421.0	415.0	2.4	3.6	145.3	1,500.6	322
2005 . .	604.3	506.9	-.3	13.8	84.0	441.9	435.4	3.0	3.6	162.4	1,663.0	340
2006 . .	642.2	534.8	[f]	15.6	91.8	461.0	454.5	3.0	3.5	181.3	1,844.3	361
2007 . .	675.0	560.9	[f]	17.2	97.0	495.7	489.1	3.1	3.6	179.3	2,023.6	372
2008 . .	695.5	574.6	[f]	15.6	105.3	516.2	509.3	3.2	3.6	179.3	2,202.9	392
2009 . .	698.2	570.4	[f]	19.9	107.9	564.3	557.2	3.4	3.7	133.9	2,336.8	390
2010 . .	677.1	544.8	2.0	22.1	108.2	584.9	577.4	3.5	3.9	92.2	2,429.0	400
2011 . .	698.8	482.4	87.8	22.2	106.5	603.8	596.2	3.5	4.1	95.0	2,524.1	402

[a] Includes reimbursements from the General Fund of the Treasury to the OASI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost in 1971-82 of deemed wage credits for military service performed after 1956; (3) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (4) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (5) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (6) payroll tax revenue forgone under the provisions of Public Laws 111-147 and 111-312.

[b] Net interest includes net profits or losses on marketable investments. Beginning in 1967, the trust fund pays administrative expenses on an estimated basis, with a final adjustment including interest made in the following fiscal year. Net interest includes the amounts of these interest adjustments. The 1970 report describes the accounting for administrative expenses for years prior to 1967. Beginning in October 1973, figures include relatively small amounts of gifts to the fund. Net interest for 1983-86 reflects payments for interest on amounts owed under the interfund borrowing provisions. During 1983-90, net interest reflects interest reimbursements paid from the trust fund to the general fund on advance tax transfers.

[c] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, net benefit amounts include reimbursements paid from the general fund to the trust fund for unnegotiated benefit checks.

[d] The "Trust fund ratio" column represents assets at the beginning of a year as a percentage of expenditures during the year. The table shows no ratio for 1937 because no assets existed at the beginning of the year. For years 1984-90, assets at the beginning of a year include January advance tax transfers.

[e] Operations prior to 1940 are for the Old-Age Reserve Account established by the original Social Security Act. The 1939 Amendments transferred the assets of the Account to the OASI Trust Fund effective January 1, 1940.

[f] Between -$50 million and $50 million.

[g] Reflects interfund borrowing and subsequent repayment of loans. The OASI Trust Fund borrowed $17.5 billion from the DI and HI Trust Funds in 1982 and repaid the loans in 1985 ($4.4 billion) and 1986 ($13.2 billion).

Note: Totals do not necessarily equal the sums of rounded components.

Table VI.A2.— Operations of the DI Trust Fund, Calendar Years 1957-2011
[Dollar amounts in billions]

Calendar year	Income					Cost				Assets		
	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest[b]	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
1957	$0.7	$0.7	—	—	[e]	$0.1	$0.1	[e]	—	$0.6	$0.6	—
1958	1.0	1.0	—	—	[e]	.3	.2	[e]	—	.7	1.4	249
1959	.9	.9	—	—	[e]	.5	.5	$0.1	[e]	.4	1.8	284
1960	1.1	1.0	—	—	$0.1	.6	.6	[e]	[e]	.5	2.3	304
1961	1.1	1.0	—	—	.1	1.0	.9	.1	[e]	.1	2.4	239
1962	1.1	1.0	—	—	.1	1.2	1.1	.1	[e]	-.1	2.4	206
1963	1.2	1.1	—	—	.1	1.3	1.2	.1	[e]	-.1	2.2	183
1964	1.2	1.2	—	—	.1	1.4	1.3	.1	[e]	-.2	2.0	159
1965	1.2	1.2	—	—	.1	1.7	1.6	.1	[e]	-.4	1.6	121
1966	2.1	2.0	[e]	—	.1	1.9	1.8	.1	[e]	.1	1.7	82
1967	2.4	2.3	[e]	—	.1	2.1	2.0	.1	[e]	.3	2.0	83
1968	3.5	3.3	[e]	—	.1	2.5	2.3	.1	[e]	1.0	3.0	83
1969	3.8	3.6	[e]	—	.2	2.7	2.6	.1	[e]	1.1	4.1	111
1970	4.8	4.5	[e]	—	.3	3.3	3.1	.2	[e]	1.5	5.6	126
1971	5.0	4.6	$0.1	—	.4	4.0	3.8	.2	[e]	1.0	6.6	140
1972	5.6	5.1	.1	—	.4	4.8	4.5	.2	[e]	.8	7.5	140
1973	6.4	5.9	.1	—	.5	6.0	5.8	.2	[e]	.5	7.9	125
1974	7.4	6.8	.1	—	.5	7.2	7.0	.2	[e]	.2	8.1	110
1975	8.0	7.4	.1	—	.5	8.8	8.5	.3	[e]	-.8	7.4	92
1976	8.8	8.2	.1	—	.4	10.4	10.1	.3	[e]	-1.6	5.7	71
1977	9.6	9.1	.1	—	.3	11.9	11.5	.4	[e]	-2.4	3.4	48
1978	13.8	13.4	.1	—	.3	13.0	12.6	.3	[e]	.9	4.2	26
1979	15.6	15.1	.1	—	.4	14.2	13.8	.4	[e]	1.4	5.6	30
1980	13.9	13.3	.1	—	.5	15.9	15.5	.4	[e]	-2.0	3.6	35
1981	17.1	16.7	.2	—	.2	17.7	17.2	.4	[e]	-.6	3.0	21
1982	22.7	22.0	.2	—	.5	18.0	17.4	.6	[e]	[f] -.4	2.7	17
1983	20.7	18.0	1.1	—	1.6	18.2	17.5	.6	[e]	2.5	5.2	15
1984	17.3	15.5	.4	$0.2	1.2	18.5	17.9	.6	[e]	-1.2	4.0	35
1985	19.3	17.0	1.2	.2	.9	19.5	18.8	.6	[e]	[f] 2.4	6.3	27
1986	19.4	18.2	.2	.2	.8	20.5	19.9	.6	$0.1	[f] 1.5	7.8	38
1987	20.3	19.5	.2	[e]	.6	21.4	20.5	.8	.1	-1.1	6.7	44
1988	22.7	21.8	.2	.1	.6	22.5	21.7	.7	.1	.2	6.9	38
1989	24.8	23.8	.2	.1	.7	23.8	22.9	.8	.1	1.0	7.9	38
1990	28.8	28.4	-.6	.1	.9	25.6	24.8	.7	.1	3.2	11.1	40
1991	30.4	29.1	[e]	.2	1.1	28.6	27.7	.8	.1	1.8	12.9	39
1992	31.4	30.1	[e]	.2	1.1	32.0	31.1	.8	.1	-.6	12.3	40
1993	32.3	31.2	[e]	.3	.8	35.7	34.6	1.0	.1	-3.4	9.0	35
1994	52.8	51.4	[e]	.3	1.2	38.9	37.7	1.0	.1	14.0	22.9	23
1995	56.7	54.4	-.2	.3	2.2	42.1	40.9	1.1	.1	14.6	37.6	55
1996	60.7	57.3	[e]	.4	3.0	45.4	44.2	1.2	[e]	15.4	52.9	83
1997	60.5	56.0	[e]	.5	4.0	47.0	45.7	1.3	.1	13.5	66.4	113
1998	64.4	59.0	[e]	.6	4.8	49.9	48.2	1.6	.2	14.4	80.8	133
1999	69.5	63.2	[e]	.7	5.7	53.0	51.4	1.5	.1	16.5	97.3	152
2000	77.9	71.1	-.8	.7	6.9	56.8	55.0	1.6	.2	21.1	118.5	171
2001	83.9	74.9	[e]	.8	8.2	61.4	59.6	1.7	[e]	22.5	141.0	193
2002	87.4	77.3	[e]	.9	9.2	67.9	65.7	2.0	.2	19.5	160.5	208
2003	88.1	77.4	[e]	.9	9.7	73.1	70.9	2.0	.2	15.0	175.4	219
2004	91.4	80.3	[e]	1.1	10.0	80.6	78.2	2.2	.2	10.8	186.2	218

Table VI.A2.— Operations of the DI Trust Fund, Calendar Years 1957-2011 (Cont.)
[Dollar amounts in billions]

	Income					Cost				Assets		
Calendar year	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest[b]	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
2005. . .	$97.4	$86.1	[e]	$1.1	$10.3	$88.0	$85.4	$2.3	$0.3	$9.4	$195.6	212
2006. . .	102.6	90.8	[e]	1.2	10.6	94.5	91.7	2.3	.4	8.2	203.8	207
2007. . .	109.9	95.2	[e]	1.4	13.2	98.8	95.9	2.5	.4	11.1	214.9	206
2008. . .	109.8	97.6	[e]	1.3	11.0	109.0	106.0	2.5	.4	.9	215.8	197
2009. . .	109.3	96.9	[e]	2.0	10.5	121.5	118.3	2.7	.4	-12.2	203.5	178
2010. . .	104.0	92.5	$0.4	1.9	9.3	127.7	124.2	3.0	.5	-23.6	179.9	159
2011. . .	106.3	81.9	14.9	1.6	7.9	132.3	128.9	2.9	.5	-26.1	153.9	136

[a] Includes reimbursements from the General Fund of the Treasury to the DI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost in 1971-82 of deemed wage credits for military service performed after 1956; (3) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (4) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (5) payroll tax revenue forgone under the provisions of Public Laws 111-147 and 111-312.

[b] Net interest includes net profits or losses on marketable investments. Beginning in 1967, the trust fund pays administrative expenses on an estimated basis, with a final adjustment including interest made in the following fiscal year. Net interest includes the amounts of these interest adjustments. The 1970 report describes the accounting for administrative expenses for years prior to 1967. Beginning in July 1974, figures include relatively small amounts of gifts to the fund. Net interest for 1983-86 reflects payments for interest on amounts owed under the interfund borrowing provisions. During 1983-90, net interest reflects interest reimbursements paid from the trust fund to the general fund on advance tax transfers.

[c] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, net benefit amounts include reimbursements paid from the general fund to the trust fund for unnegotiated benefit checks.

[d] The "Trust fund ratio" column represents assets at the beginning of a year as a percentage of expenditures during the year. The table shows no ratio for 1957 because no assets existed at the beginning of the year. For years 1984-90, assets at the beginning of a year include January advance tax transfers.

[e] Between -$50 million and $50 million.

[f] Reflects interfund borrowing and subsequent repayment of loans. The DI Trust Fund loaned $5.1 billion to the OASI Trust Fund in 1982. The OASI Trust Fund repaid the loan in 1985 ($2.5 billion) and 1986 ($2.5 billion).

Note: Totals do not necessarily equal the sums of rounded components.

Table VI.A3.— Operations of the Combined OASI and DI Trust Funds, Calendar Years 1957-2011
[Dollar amounts in billions]

	Income					Cost				Assets		
Calendar year	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest[b]	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
1957 . .	$8.1	$7.5	—	—	$0.6	$7.6	$7.4	$0.2	[e]	$0.5	$23.0	298
1958	9.1	8.5	—	—	.6	8.9	8.6	.2	$0.1	.2	23.2	259
1959 . .	9.5	8.9	—	—	.6	10.8	10.3	.2	.3	-1.3	22.0	215
1960 . .	12.4	11.9	—	—	.6	11.8	11.2	.2	.3	.6	22.6	186
1961 . .	12.9	12.3	—	—	.6	13.4	12.7	.3	.3	-.5	22.2	169
1962 . .	13.7	13.1	—	—	.6	15.2	14.5	.3	.4	-1.5	20.7	146
1963 . .	16.2	15.6	—	—	.6	16.2	15.4	.3	.4	[e]	20.7	128
1964 . .	17.5	16.8	—	—	.6	17.0	16.2	.4	.4	.5	21.2	122
1965 . .	17.9	17.2	—	—	.7	19.2	18.3	.4	.5	-1.3	19.8	110
1966 . .	23.4	22.6	$0.1	—	.7	20.9	20.1	.4	.5	2.5	22.3	95
1967 . .	26.4	25.4	.1	—	.9	22.5	21.4	.5	.5	3.9	26.3	99
1968 . .	28.5	27.0	.4	—	1.0	26.0	25.0	.6	.5	2.5	28.7	101
1969 . .	33.3	31.5	.5	—	1.3	27.9	26.8	.6	.5	5.5	34.2	103
1970 . .	37.0	34.7	.5	—	1.8	33.1	31.9	.6	.6	3.9	38.1	103
1971 . .	40.9	38.3	.5	—	2.0	38.5	37.2	.7	.6	2.4	40.4	99
1972 . .	45.6	42.9	.5	—	2.2	43.3	41.6	.9	.7	2.3	42.8	93
1973 . .	54.8	51.9	.5	—	2.4	53.1	51.5	.8	.8	1.6	44.4	80
1974 . .	62.1	58.9	.5	—	2.7	60.6	58.6	1.1	.9	1.5	45.9	73
1975 . .	67.6	64.3	.5	—	2.9	69.2	67.0	1.2	1.0	-1.5	44.3	66
1976 . .	75.0	71.6	.7	—	2.7	78.2	75.8	1.2	1.2	-3.2	41.1	57
1977 . .	82.0	78.7	.7	—	2.5	87.3	84.7	1.4	1.2	-5.3	35.9	47
1978 . .	91.9	88.9	.8	—	2.3	96.0	93.0	1.4	1.6	-4.1	31.7	37
1979 . .	105.9	103.0	.7	—	2.2	107.3	104.4	1.5	1.5	-1.5	30.3	30
1980 . .	119.7	116.7	.7	—	2.3	123.6	120.6	1.5	1.4	-3.8	26.5	25
1981 . .	142.4	139.4	.8	—	2.2	144.4	141.0	1.7	1.6	-1.9	24.5	18
1982 . .	147.9	145.7	.9	—	1.4	160.1	156.2	2.1	1.8	[f] .2	24.8	15
1983 . .	171.3	156.3	6.7	—	8.3	171.2	166.7	2.2	2.3	.1	24.9	14
1984 . .	186.6	175.0	5.2	$3.0	3.4	180.4	175.7	2.3	2.4	6.2	31.1	21
1985 . .	203.5	192.1	5.2	3.4	2.7	190.6	186.1	2.2	2.4	[f] 11.1	42.2	24
1986 . .	216.8	207.4	1.9	3.7	3.9	201.5	196.7	2.2	2.7	[f] 4.7	46.9	29
1987 . .	231.0	220.6	1.9	3.2	5.3	209.1	204.1	2.4	2.6	21.9	68.8	31
1988 . .	263.5	249.5	2.3	3.4	8.2	222.5	217.1	2.5	2.9	41.0	109.8	41
1989 . .	289.4	271.9	2.3	2.5	12.7	236.2	230.9	2.4	2.9	53.2	163.0	57
1990 . .	315.4	294.5	-1.3	5.0	17.2	253.1	247.8	2.3	3.0	62.3	225.3	75
1991 . .	329.7	301.6	.1	6.1	21.9	274.2	268.2	2.6	3.5	55.5	280.7	82
1992 . .	342.6	311.3	-.1	6.1	25.4	291.9	286.0	2.7	3.2	50.7	331.5	96
1993 . .	355.6	322.0	.1	5.6	27.9	308.8	302.4	3.0	3.4	46.8	378.3	107
1994 . .	381.1	344.7	[e]	5.3	31.1	323.0	316.8	2.7	3.5	58.1	436.4	117
1995 . .	399.5	359.1	-.4	5.8	35.0	339.8	332.6	3.1	4.1	59.7	496.1	128
1996 . .	424.5	378.9	[e]	6.8	38.7	353.6	347.1	3.0	3.6	70.9	567.0	140
1997 . .	457.7	406.0	[e]	7.9	43.8	369.1	362.0	3.4	3.7	88.6	655.5	154
1998 . .	489.2	430.2	[e]	9.7	49.3	382.3	375.0	3.5	3.8	107.0	762.5	171
1999 . .	526.6	459.6	[e]	11.6	55.5	392.9	385.8	3.3	3.8	133.7	896.1	194
2000 . .	568.4	492.5	-.8	12.3	64.5	415.1	407.6	3.8	3.7	153.3	1,049.4	216
2001 . .	602.0	516.4	[e]	12.7	72.9	438.9	431.9	3.7	3.3	163.1	1,212.5	239
2002 . .	627.1	532.5	.4	13.8	80.4	461.7	453.8	4.2	3.6	165.4	1,378.0	263
2003 . .	631.9	533.5	[e]	13.4	84.9	479.1	470.8	4.6	3.7	152.8	1,530.8	288
2004 . .	657.7	553.0	[e]	15.7	89.0	501.6	493.3	4.5	3.8	156.1	1,686.8	305

Table VI.A3.— Operations of the Combined OASI and DI Trust Funds, Calendar Years 1957-2011 (Cont.)
[Dollar amounts in billions]

Calendar year	Income					Cost				Assets		
	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest[b]	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
2005 . .	$701.8	$592.9	-$0.3	$14.9	$94.3	$529.9	$520.7	$5.3	$3.9	$171.8	$1,858.7	318
2006 . .	744.9	625.6	[e]	16.9	102.4	555.4	546.2	5.3	3.8	189.5	2,048.1	335
2007 . .	784.9	656.1	[e]	18.6	110.2	594.5	584.9	5.5	4.0	190.4	2,238.5	345
2008 . .	805.3	672.1	[e]	16.9	116.3	625.1	615.3	5.7	4.0	180.2	2,418.7	358
2009 . .	807.5	667.3	[e]	21.9	118.3	685.8	675.5	6.2	4.1	121.7	2,540.3	353
2010 . .	781.1	637.3	2.4	23.9	117.5	712.5	701.6	6.5	4.4	68.6	2,609.0	357
2011 . .	805.1	564.2	102.7	23.8	114.4	736.1	725.1	6.4	4.6	69.0	2,677.9	354

[a] Includes reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost in 1971-82 of deemed wage credits for military service performed after 1956; (3) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (4) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (5) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (6) payroll tax revenue forgone under the provisions of Public Laws 111-147 and 111-312.

[b] Net interest includes net profits or losses on marketable investments. Beginning in 1967, the trust funds pay administrative expenses on an estimated basis, with a final adjustment including interest made in the following fiscal year. Net interest includes the amounts of these interest adjustments. The 1970 report describes the accounting for administrative expenses for years prior to 1967. Beginning in October 1973, figures include relatively small amounts of gifts to the funds. Net interest for 1983-86 reflects payments for interest on amounts owed under the interfund borrowing provisions. During 1983-90, net interest reflects interest reimbursements paid from the trust funds to the general fund on advance tax transfers.

[c] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, net benefit amounts include reimbursements paid from the general fund to the trust funds for unnegotiated benefit checks.

[d] The "Trust fund ratio" column represents assets at the beginning of a year as a percentage of expenditures during the year. For years 1984-90, assets at the beginning of a year include January advance tax transfers.

[e] Between -$50 million and $50 million.

[f] Reflects interfund borrowing and subsequent repayment of loans. The OASI trust fund borrowed $12.4 billion from the HI Trust Fund in 1982 and repaid the loan in 1985 ($1.8 billion) and 1986 ($10.6 billion).

Note: Totals do not necessarily equal the sums of rounded components.

Tables VI.A4 and VI.A5 show the total assets of the OASI Trust Fund and the DI Trust Fund, respectively, at the end of calendar years 2010 and 2011. The tables show assets by interest rate and year of maturity. Bonds issued to the trust funds in 2011 had an interest rate of 2.5 percent, compared with an interest rate of 2.875 percent for bonds issued in 2010.

Table VI.A4.—Assets of the OASI Trust Fund, End of Calendar Years 2010 and 2011
[In thousands]

	December 31, 2010	December 31, 2011
Obligations sold only to the trust funds (special issues):		
Certificates of indebtedness:		
1.750 percent, 2012	—	$63,015,398
2.375 percent, 2011	$69,480,186	—
Bonds:		
2.500 percent, 2013-16	—	23,887,152
2.500 percent, 2017-25	—	53,746,083
2.500 percent, 2026	—	166,547,382
2.875 percent, 2012	7,264,431	—
2.875 percent, 2013-15	21,793,293	21,793,293
2.875 percent, 2016-24	65,379,888	65,379,888
2.875 percent, 2025	160,575,595	160,575,595
3.250 percent, 2012	10,628,270	—
3.250 percent, 2013-15	31,884,813	31,884,813
3.250 percent, 2016-23	85,026,160	85,026,160
3.250 percent, 2024	153,311,163	153,311,163
3.500 percent, 2012	9,513,751	—
3.500 percent, 2013-15	28,541,253	28,541,253
3.500 percent, 2016-17	19,027,504	19,027,504
3.500 percent, 2018	86,900,994	86,900,994
4.000 percent, 2012	12,075,193	9,125,781
4.000 percent, 2013-22	120,751,920	120,751,920
4.000 percent, 2023	142,682,893	142,682,893
4.125 percent, 2011	1,398,449	—
4.125 percent, 2012-19	84,135,568	84,135,568
4.125 percent, 2020	106,585,700	106,585,700
4.625 percent, 2011	9,167,664	—
4.625 percent, 2012-15	36,670,656	36,670,656
4.625 percent, 2016-18	27,502,989	27,502,989
4.625 percent, 2019	96,068,657	96,068,657
5.000 percent, 2011	12,454,233	—
5.000 percent, 2012-21	124,542,320	124,542,320
5.000 percent, 2022	130,607,701	130,607,701
5.125 percent, 2011	11,567,866	—
5.125 percent, 2012-19	92,542,928	92,542,928
5.125 percent, 2020	11,567,769	11,567,769
5.125 percent, 2021	118,153,469	118,153,469
5.250 percent, 2011	9,235,912	—
5.250 percent, 2012-15	36,943,648	36,943,648
5.250 percent, 2016	9,235,911	9,235,911
5.250 percent, 2017	77,387,242	77,387,242
5.625 percent, 2011	9,621,438	—
5.625 percent, 2012-15	38,485,748	38,485,748
5.625 percent, 2016	68,151,331	68,151,331
5.875 percent, 2011	6,169,273	—
5.875 percent, 2012	6,169,273	6,169,273
5.875 percent, 2013	43,258,869	43,258,869
6.000 percent, 2011	6,693,627	—
6.000 percent, 2012-13	13,387,256	13,387,256
6.000 percent, 2014	49,952,497	49,952,497
6.500 percent, 2011	8,577,396	—
6.500 percent, 2012-14	25,732,188	25,732,188
6.500 percent, 2015	58,529,893	58,529,893
6.875 percent, 2011	3,975,272	—
6.875 percent, 2012	37,089,596	37,089,596
7.000 percent, 2011	33,114,324	—
Total investments	2,429,513,970	2,524,898,481
Undisbursed balances	-470,689	-823,874
Total assets	2,429,043,281	2,524,074,607

Note: Amounts of special issues are at par value. The trust fund always purchases and redeems special issues at par value. The table groups equal amounts that mature in two or more years at a given interest rate. A negative undisbursed balance represents an extension of credit against securities to be redeemed within the following few days.

Table VI.A5.—Assets of the DI Trust Fund, End of Calendar Years 2010 and 2011
[In thousands]

	December 31, 2010	December 31, 2011
Obligations sold only to the trust funds (special issues):		
Certificates of indebtedness:		
1.750 percent, 2012	—	$5,575,386
2.375 percent, 2011	$6,835,145	—
Bonds:		
3.250 percent, 2013	877,560	—
3.250 percent, 2014	877,560	—
3.250 percent, 2015-16	1,755,118	1,755,118
3.250 percent, 2017-20	3,510,240	3,510,240
3.500 percent, 2013	1,115,127	—
3.500 percent, 2014	1,115,127	—
3.500 percent, 2015	1,115,127	1,115,127
3.500 percent, 2016-17	2,230,256	2,230,256
3.500 percent, 2018	11,378,384	11,378,384
4.000 percent, 2013	622,572	—
4.000 percent, 2014	622,572	—
4.000 percent, 2015-16	1,245,144	1,245,144
4.000 percent, 2017-19	1,867,713	1,867,713
4.000 percent, 2020-22	1,867,716	1,867,716
4.000 percent, 2023	14,675,554	14,675,554
4.125 percent, 2013	677,385	—
4.125 percent, 2014	677,385	—
4.125 percent, 2015-17	2,032,155	2,032,155
4.125 percent, 2018-19	1,354,772	1,354,772
4.125 percent, 2020	12,911,283	12,911,283
4.625 percent, 2013	855,498	—
4.625 percent, 2014	855,498	—
4.625 percent, 2015	855,498	855,498
4.625 percent, 2016-18	2,566,491	2,566,491
4.625 percent, 2019	12,233,881	12,233,881
5.000 percent, 2013	476,586	—
5.000 percent, 2014	476,586	147,273
5.000 percent, 2015-19	2,382,930	2,382,930
5.000 percent, 2020-21	953,168	953,168
5.000 percent, 2022	14,052,982	14,052,982
5.125 percent, 2013	665,131	—
5.125 percent, 2014-17	2,660,524	2,660,524
5.125 percent, 2018-19	1,330,260	1,330,260
5.125 percent, 2020	665,115	665,115
5.125 percent, 2021	13,576,398	13,576,398
5.250 percent, 2013	1,363,408	—
5.250 percent, 2014-16	4,090,224	4,090,224
5.250 percent, 2017	10,263,256	10,263,256
5.625 percent, 2013	1,524,968	—
5.625 percent, 2014-15	3,049,934	3,049,934
5.625 percent, 2016	8,899,848	8,899,848
5.875 percent, 2013	5,361,805	—
6.000 percent, 2013	695,967	—
6.000 percent, 2014	6,057,772	6,057,772
6.500 percent, 2012	291,007	—
6.500 percent, 2013	1,317,108	—
6.500 percent, 2014	1,317,109	1,317,109
6.500 percent, 2015	7,374,881	7,374,881
6.875 percent, 2012	4,445,520	—
Total investments	180,023,248	153,996,392
Undisbursed balances	-116,407	-146,009
Total assets	179,906,841	153,850,383

Note: Amounts of special issues are at par value. The trust fund always purchases and redeems special issues at par value. The table groups equal amounts that mature in two or more years at a given interest rate. A negative undisbursed balance represents an extension of credit against securities to be redeemed within the following few days.

B. HISTORY OF ACTUARIAL STATUS ESTIMATES

This appendix chronicles the history of the OASDI actuarial balance and the year of combined OASI and DI Trust Fund exhaustion since 1982. The actuarial balance is the principal summary measure of long-range actuarial status. The 1983 report was the last report for which the actuarial balance was positive. Section IV.B.4 defines actuarial balance in detail. The two basic components of actuarial balance are the summarized income rate and the summarized cost rate, both of which are expressed as percentages of taxable payroll. For any given period, the actuarial balance is the difference between the present value of non-interest income for the period and the present value of the cost for the period, each divided by the present value of taxable payroll for all years in the period. The computation of the actuarial balance also includes:

- The amount of the trust fund balances on hand at the beginning of the valuation period in the reports for 1988 and later; and
- The present value of a target trust fund balance equal to 100 percent of the annual cost to be reached and maintained at the end of the valuation period in the reports for 1991 and later.

Reports prior to 1973 used the current method of calculating the actuarial balance based on present values, but the reports of 1973-87 did not. During that period, the reports used the average-cost method, a simpler method which approximates the results of the present-value approach. Under the average-cost method, the sum of the annual cost rates over the 75-year projection period was divided by the total number of years, 75, to obtain the average cost rate per year. A similar computation produced the average income rate. The actuarial balance was the difference between the average income rate and the average cost rate.

When the 1973 report introduced the average-cost method, the long-range financing of the program was more nearly on a pay-as-you-go basis. Also, the long-range demographic and economic assumptions in that report produced an annual rate of growth in taxable payroll which was about the same as the annual rate at which the trust funds earned interest. In either situation (i.e., pay-as-you-go financing, where the annual income rate is the same as the annual cost rate, or an annual rate of growth in taxable payroll equal to the annual interest rate), the average-cost method produces the same result as the present-value method. However, by 1988, neither of these situations still existed.

After the 1977 and 1983 Social Security Amendments, estimates showed substantial increases in the trust funds continuing well into the 21st century. These laws changed the program's financing from essentially pay-as-you-go to partial advance funding. Also, the reports from 1973-87 phased in reductions in long-range fertility rates and average real-wage growth, which produced an annual rate of growth in long-range taxable earnings which was significantly lower than the assumed interest rate. As a result of the difference between this rate of growth and the assumed interest rate, the results of the average-cost method and the present-value method in the reports for 1973-87 began to diverge, and by 1988 they were quite different. While the average-cost method still accounted for most of the effects of the assumed interest rate, it no longer accounted for all of the interest effects. The present-value method, by contrast, accounts for the full effect of the assumed interest rates. The 1988 report reintroduced the present-value method of calculating the actuarial balance in order to fully reflect the effects of interest.

A positive actuarial balance indicates that estimated income is more than sufficient to meet estimated trust fund obligations for the period as a whole. A negative actuarial balance indicates that estimated income is insufficient to meet estimated trust fund obligations for the entire period. An actuarial balance of zero indicates that the estimated income exactly matches estimated trust fund obligations for the period.

Table VI.B1 contains the estimated OASDI actuarial balances, summarized income rates, and summarized cost rates for the 1982 report through the current report. The reports computed these values on the basis of the intermediate assumptions, which recent reports refer to as alternative II and reports prior to 1991 referred to as alternative II-B.

Table VI.B1.—Long-Range OASDI Actuarial Balances and Trust Fund Exhaustion Dates as Shown in the Trustees Reports for 1982-2012[a]
[As a percentage of taxable payroll]

Year of report	Summarized income rate	Summarized cost rate	Actuarial balance	Change from previous year	Year of combined trust fund exhaustion
1982	12.27	14.09	-1.82	[b]	1983
1983	12.87	12.84	+.02	+1.84	solvent
1984	12.90	12.95	-.06	-.08	solvent
1985	12.94	13.35	-.41	-.35	2049
1986	12.96	13.40	-.44	-.03	2051
1987	12.89	13.51	-.62	-.18	2051
1988	12.94	13.52	-.58	+.04	2048
1989	13.02	13.72	-.70	-.13	2046
1990	13.04	13.95	-.91	-.21	2043
1991	13.11	14.19	-1.08	-.17	2041
1992	13.16	14.63	-1.46	-.38	2036
1993	13.21	14.67	-1.46	[b]	2036
1994	13.24	15.37	-2.13	-.66	2029
1995	13.27	15.44	-2.17	-.04	2030
1996	13.33	15.52	-2.19	-.02	2029
1997	13.37	15.60	-2.23	-.03	2029
1998	13.45	15.64	-2.19	+.04	2032
1999	13.49	15.56	-2.07	+.12	2034
2000	13.51	15.40	-1.89	+.17	2037
2001	13.58	15.44	-1.86	+.03	2038
2002	13.72	15.59	-1.87	-.01	2041
2003	13.78	15.70	-1.92	-.04	2042
2004	13.84	15.73	-1.89	+.03	2042
2005	13.87	15.79	-1.92	-.04	2041
2006	13.88	15.90	-2.02	-.09	2040
2007	13.92	15.87	-1.95	+.06	2041
2008	13.94	15.63	-1.70	+.26	2041
2009	14.02	16.02	-2.00	-.30	2037
2010	14.01	15.93	-1.92	+.08	2037
2011	14.02	16.25	-2.22	-.30	2036
2012	14.02	16.69	-2.67	-.44	2033

[a] The reports compute the actuarial balance and year of trust fund exhaustion based on the intermediate assumptions, which the 1982-90 reports referred to as alternative II-B and the 1991 and later reports refer to as alternative II.
[b] Between -0.005 and 0.005 percent of taxable payroll.

Note: Totals do not necessarily equal the sums of rounded components.

For several of the years included in the table, significant legislative changes or definitional changes affected the estimated actuarial balance. The Social Security Amendments of 1983 accounted for the largest single change in recent history: the actuarial balance of -1.82 for the 1982 report improved to +0.02 for the 1983 report. In 1985, the estimated actuarial balance changed largely because of an adjustment made to the method for estimating the age distribution of immigrants.

Rebenchmarking of the National Income and Product Accounts and changes in demographic assumptions contributed to the change in the actuarial balance for 1987. Various changes in assumptions and methods for the 1988 report had roughly offsetting effects on the actuarial balance. In 1989 and 1990, changes in economic assumptions accounted for most of the changes in the estimated actuarial balance.

In 1991, the effect of legislation, changes in economic assumptions, and the introduction of the cost of reaching and maintaining an ending target trust fund combined to produce the change in the actuarial balance. In 1992, changes in disability assumptions and the method for projecting average benefit levels accounted for most of the change in the actuarial balance. In 1993, numerous small changes in assumptions and methods had offsetting effects on the actuarial balance. In 1994, changes in the real-wage assumptions, disability rates, and the earnings sample used for projecting average benefit levels accounted for most of the change in the actuarial balance. In 1995, numerous small changes had largely offsetting effects on the actuarial balance, including a substantial reallocation of the payroll tax rate, which reduced the OASI actuarial balance, but increased the DI actuarial balance.

In 1996, a change in the method of projecting dually-entitled beneficiaries produced a large increase in the actuarial balance, which almost totally offset decreases produced by changes in the valuation period and in the demographic and economic assumptions. Various changes in assumptions and methods for the 1997 report had roughly offsetting effects on the actuarial balance. In 1998, increases caused by changes in the economic assumptions, although partially offset by decreases produced by changes in the valuation period and in the demographic assumptions, accounted for most of the changes in the estimated actuarial balance. In 1999, increases caused by changes in the economic assumptions (related to improvements in the CPI by the Bureau of Labor Statistics) accounted for most of the changes in the estimated actuarial balance.

For the 2000 report, changes in economic assumptions and methodology caused increases in the actuarial balance, although reductions in the balance caused by the change in valuation period and changes in demographic assumptions partially offset these increases. For the 2001 report, increases caused by changes in the demographic starting values, although partially offset by a decrease produced by the change in the valuation period, accounted for most of the changes in the estimated actuarial balance. For the 2002 report, changes in the valuation period and the demographic assumptions—both decreases in the actuarial balance—were offset by changes in the economic assumptions, while an increase due to disability assumptions was

slightly more than offset by a decrease due to changes in the projection methods and data. For the 2003 report, an increase due to the change in program assumptions was more than offset by decreases due to the change in valuation period and changes in demographic assumptions. In the 2004 report, increases due to changing the method of projecting benefit levels for higher earners more than offset decreases in the actuarial balance arising from the change in the valuation period and the net effect of other changes in programmatic data and methods.

For the 2005 report, an increase due to changing the method of projecting future average benefit levels was more than offset by decreases due to changes in the valuation period, updated starting values for the economic assumptions, and other methodological changes. In 2006, decreases in the actuarial balance due to the change in the valuation period, a reduction in the ultimate annual real interest rate, and improvements in calculating mortality for disabled workers, were greater in aggregate than increases in the actuarial balance due to changes in demographic starting values and the ultimate total fertility rate, as well as other programmatic data and method changes. For the 2007 report, increases in the actuarial balance arising from revised disability incidence rate assumptions, improvements in average benefit level projections, and changes in near-term economic projections, more than offset decreases in the balance due to the valuation period change and updated historical mortality data.

For the 2008 report, the large increase in the actuarial balance was primarily due to changes in immigration projection methods and assumptions. These changes more than offset the decreases in the actuarial balance due to the change in the valuation period and the lower starting and ultimate mortality rates. In 2009, changes in starting values and near-term economic assumptions due to the economic recession, faster ultimate rates of decline in death rates for ages 65-84, and the change in the valuation period accounted for most of the large decrease in the actuarial balance. Legislative changes, in particular the estimated effects of the Patient Protection and Affordable Care Act and the Health Care and Education Reconciliation Act of 2010, were the main reason for the increase in the actuarial balance for the 2010 report. The change in the valuation period partially offset this increase; there were also changes in several assumptions, methods, and recent data which had largely offsetting effects.

For the 2011 report, changes in mortality projections, due to new starting values and revised methods, were the most significant of several factors contributing to the increase in the deficit. These mortality changes resulted in lower death rates for the population age 65 and over. Adding to this negative

effect were near-term lower levels of net other immigration and real earnings than assumed in the 2010 report.

Section IV.B.7 describes changes affecting the actuarial balance shown for the 2012 report.

C. FISCAL YEAR HISTORICAL DATA AND PROJECTIONS THROUGH 2021

Tables VI.C1, VI.C2, and VI.C3 contain details of the fiscal year 2011 operations of the OASI, DI, and the combined OASI and DI Trust Funds, respectively. Fiscal year 2011 is the most recent fiscal year for which complete information is available. These tables are similar to the calendar year operations tables in section III.A. Please see that section for a description of the various items of income and outgo.

Table VI.C1.—Operations of the OASI Trust Fund, Fiscal Year 2011
[In millions]

Total assets, September 30, 2010		$2,398,377
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions	$496,821	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-1,790	
Net payroll tax contributions		495,031
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312	67,433	
Reduction in payroll tax contributions due to P.L. 111-147	1,559	
Reimbursements directed by P.L. 110-246	7	
Adjustment of previous determinations of costs attributable to noncontributory wage credits for military service performed before 1957	-113	
Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968	[a]	
Payroll tax credits due to P.L. 98-21	[a]	
Net general fund reimbursements		68,886
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	161	
All other, not subject to withholding	21,013	
Total income from taxation of benefits		21,174
Investment income and interest adjustments:		
Interest on investments	107,411	
Net Interest adjustments[b]	6	
Net investment income and interest adjustments		107,418
Gifts		1
Total receipts		692,510
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death benefits	591,535	
Reimbursement from the general fund for unnegotiated checks	-59	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	1	
Net benefit payments		591,477
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		4,110
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,945	
Department of the Treasury	712	
Offsetting receipts from sales of supplies, materials, etc.	-5	
Miscellaneous reimbursements from the general fund [c]	-7	
Net administrative expenses		3,645
Total disbursements		599,232
Net increase in assets		93,278
Total assets, September 30, 2011		2,491,654

[a] Between -$0.5 and $0.5 million.
[b] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust fund and the general fund account for the Supplemental Security Income program; (2) interest arising from the revised allocation of administrative expenses among the trust funds; and (3) interest on certain reimbursements to the trust fund.
[c] Reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the OASI program.

Note: Totals do not necessarily equal the sums of rounded components.

Table VI.C2.—Operations of the DI Trust Fund, Fiscal Year 2011
[In millions]

Total assets, September 30, 2010		$186,946
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions	$84,335	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-304	
Net payroll tax contributions		84,031
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312	11,482	
Reduction in payroll tax contributions due to P.L. 111-147	265	
Reimbursements directed by P.L. 110-246	1	
Adjustment of previous determinations of costs attributable to noncontributory wage credits for military service performed before 1957	-3	
Payroll tax credits due to P.L. 98-21	[a]	
Net general fund reimbursements		11,745
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	4	
All other, not subject to withholding	1,874	
Total income from taxation of benefits		1,878
Investment income and interest adjustments:		
Interest on investments	8,567	
Interest adjustments[b]	4	
Total investment income and interest adjustments		8,571
Total receipts		106,225
Disbursements:		
Benefit payments:		
Monthly benefits	127,980	
Reimbursement from the general fund for unnegotiated checks	-31	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	41	
Net benefit payments		127,990
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		465
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,877	
Department of the Treasury	133	
Demonstration projects	27	
Miscellaneous reimbursements from the general fund[c]	-3	
Total administrative expenses		3,034
Total disbursements		131,489
Net increase in assets		-25,264
Total assets, September 30, 2011		161,682

[a] Between -$0.5 and $0.5 million.
[b] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust fund and the general fund account for the Supplemental Security Income program; (2) interest arising from the revised allocation of administrative expenses among the trust funds; and (3) interest on certain reimbursements to the trust fund.
[c] Reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the DI program.

Note: Totals do not necessarily equal the sums of rounded components.

Table VI.C3.—Operations of the Combined OASI and DI Trust Funds, Fiscal Year 2011
[In millions]

Total assets, September 30, 2010		$2,585,323
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions	$581,156	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund	-2,094	
Net payroll tax contributions		579,062
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312	78,915	
Reduction in payroll tax contributions due to P.L. 111-147	1,824	
Reimbursements directed by P.L. 110-246	8	
Adjustment of previous determinations of costs attributable to noncontributory wage credits for military service performed before 1957	-116	
Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968	[a]	
Payroll tax credits due to P.L. 98-21	[a]	
Net general fund reimbursements		80,631
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	166	
All other, not subject to withholding	22,887	
Total income from taxation of benefits		23,053
Investment income and interest adjustments:		
Interest on investments	115,978	
Net Interest adjustments[b]	10	
Net investment income and interest adjustments		115,988
Gifts		1
Total receipts		798,735
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death benefits	719,515	
Reimbursement from the general fund for unnegotiated checks	-90	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	42	
Net benefit payments		719,467
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		4,574
Administrative expenses:		
Costs incurred by:		
Social Security Administration	5,822	
Department of the Treasury	845	
Offsetting receipts from sales of supplies, materials, etc.	-5	
Demonstration projects	27	
Miscellaneous reimbursements from the general fund[c]	-10	
Net administrative expenses		6,680
Total disbursements		730,721
Net increase in assets		68,014
Total assets, September 30, 2011		2,653,336

[a] Between -$0.5 and $0.5 million.
[b] Includes: (1) interest on adjustments in the allocation of administrative expenses between the trust funds and the general fund account for the Supplemental Security Income program; (2) interest arising from the revised allocation of administrative expenses among the trust funds; and (3) interest on certain reimbursements to the trust funds.
[c] Reimbursements for costs incurred in performing certain legislatively mandated activities not directly related to administering the OASI and DI programs.

Note: Totals do not necessarily equal the sums of rounded components.

Tables VI.C4, VI.C5, and VI.C6 show estimates of the operations and status of the OASI, DI, and the combined OASI and DI Trust Funds, respectively, during fiscal years 2007-21. Since 1976, the fiscal year for the U.S. Government is the 12-month period ending September 30.

Table VI.C4.—Operations of the OASI Trust Fund, Fiscal Years 2007-21
[Dollar amounts in billions]

	Income					Cost				Assets		
Fiscal year	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest	Total	Benefit payments	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[b]
Historical data:												
2007	$663.4	$553.4	[c]	$16.4	$93.3	$488.6	$481.8	$3.2	$3.6	$174.8	$1,967.0	367
2008	692.9	573.7	[c]	16.4	102.7	509.9	503.0	3.3	3.6	183.0	2,150.1	386
2009	697.3	571.2	[c]	19.0	107.1	551.5	544.5	3.4	3.7	145.8	2,295.8	390
2010	682.4	552.0	$0.7	21.1	108.6	579.9	572.5	3.5	3.9	102.5	2,398.4	396
2011	692.5	495.0	68.9	21.2	107.4	599.2	591.5	3.6	4.1	93.3	2,491.7	400
Intermediate:												
2012	729.3	500.7	94.8	28.6	105.3	635.7	628.4	3.4	4.0	93.5	2,585.2	392
2013	749.6	593.7	23.7	29.0	103.2	675.0	667.9	3.3	3.9	74.6	2,659.8	383
2014	792.9	657.0	-.1	31.9	104.2	716.5	708.8	3.4	4.2	76.5	2,736.2	371
2015	837.2	694.7	-.1	35.4	107.2	762.0	754.1	3.5	4.3	75.2	2,811.5	359
2016	894.3	743.5	.1	39.2	111.5	810.6	802.9	3.6	4.1	83.7	2,895.1	347
2017	946.3	786.1	.1	43.5	116.7	863.9	855.5	3.8	4.6	82.4	2,977.5	335
2018	1,004.8	834.1	[c]	47.7	123.0	922.3	913.6	3.9	4.7	82.5	3,060.0	323
2019	1,058.9	877.8	[c]	52.0	129.1	986.1	977.2	4.0	4.9	72.7	3,132.8	310
2020	1,109.3	916.3	[c]	56.7	136.3	1,056.2	1,047.0	4.2	5.1	53.1	3,185.8	297
2021	1,168.0	965.4	[c]	61.7	141.0	1,129.7	1,120.6	4.3	4.9	38.3	3,224.1	282
Low-cost:												
2012	731.2	502.2	95.1	28.6	105.3	635.6	628.2	3.4	4.0	95.6	2,587.3	392
2013	766.6	609.0	24.6	28.9	104.2	673.5	666.4	3.3	3.8	93.2	2,680.4	384
2014	814.9	677.3	-.1	31.6	106.1	710.3	702.7	3.4	4.2	104.6	2,785.0	377
2015	864.7	719.6	-.1	34.8	110.4	749.2	741.5	3.5	4.2	115.5	2,900.5	372
2016	926.9	772.4	.1	38.3	116.1	791.1	783.6	3.6	3.9	135.8	3,036.2	367
2017	980.3	814.8	.1	42.1	123.3	837.2	829.1	3.7	4.4	143.0	3,179.3	363
2018	1,037.4	860.5	[c]	45.8	131.1	886.5	878.2	3.8	4.5	150.9	3,330.2	359
2019	1,091.8	902.2	[c]	49.5	140.0	940.1	931.6	3.9	4.6	151.7	3,481.9	354
2020	1,143.1	939.6	[c]	53.6	149.9	998.3	989.5	4.0	4.7	144.8	3,626.7	349
2021	1,204.5	988.1	[c]	57.8	158.5	1,058.5	1,049.9	4.1	4.5	145.9	3,772.6	343
High-cost:												
2012	726.0	498.0	94.2	28.6	105.2	636.0	628.6	3.4	4.0	90.1	2,581.7	392
2013	727.1	574.0	22.5	29.1	101.5	676.7	669.5	3.3	3.9	50.4	2,632.1	382
2014	767.6	634.1	-.1	32.2	101.5	722.8	715.1	3.4	4.3	44.8	2,676.9	364
2015	803.5	664.1	-.1	35.9	103.6	774.5	766.5	3.5	4.4	29.0	2,705.9	346
2016	856.8	709.8	.1	40.2	106.7	832.0	824.1	3.7	4.2	24.8	2,730.7	325
2017	909.1	753.0	.1	45.1	111.0	896.6	887.9	3.8	4.8	12.5	2,743.2	305
2018	970.0	803.0	[c]	50.0	116.9	967.6	958.6	4.0	5.0	2.3	2,745.6	283
2019	1,029.5	853.3	[c]	55.1	121.1	1,046.4	1,036.9	4.2	5.3	-16.8	2,728.8	262
2020	1,083.2	898.3	[c]	60.7	124.2	1,131.7	1,121.9	4.3	5.5	-48.5	2,680.3	241
2021	1,141.2	950.9	[c]	66.7	123.6	1,221.3	1,211.5	4.5	5.4	-80.1	2,600.1	219

[a] Includes reimbursements from the General Fund of the Treasury to the OASI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (3) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (4) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (5) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, and 112-96.
[b] The "Trust fund ratio" column represents assets at the beginning of a year (which are identical to assets at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.
[c] Between -$50 million and $50 million.

Note: Totals do not necessarily equal the sums of rounded components.

Table VI.C5.—Operations of the DI Trust Fund, Fiscal Years 2007-21
[Dollar amounts in billions]

Fiscal year	Income					Cost				Assets		
	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest	Total	Benefit payments	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[b]
Historical data:												
2007 . .	$108.4	$94.0	[c]	$1.4	$13.1	$96.8	$94.0	$2.4	$0.4	$11.6	$213.6	209
2008 . .	109.8	97.4	[c]	1.4	11.0	107.2	104.2	2.5	.4	2.7	216.2	199
2009 . .	109.7	97.0	[c]	1.8	10.8	118.1	115.1	2.6	.4	-8.5	207.8	183
2010 . .	105.5	93.7	$0.1	1.7	9.9	126.3	122.9	2.9	.5	-20.8	186.9	164
2011 . .	106.2	84.0	11.7	1.9	8.6	131.5	128.0	3.0	.5	-25.3	161.7	142
Intermediate:												
2012 . .	109.4	85.0	16.1	1.1	7.2	138.8	135.2	3.1	.5	-29.4	132.3	116
2013 . .	112.9	100.8	4.0	2.5	5.6	146.0	142.3	3.1	.5	-33.1	99.2	91
2014 . .	118.2	111.6	[c]	2.7	4.0	151.8	147.9	3.4	.5	-33.6	65.6	65
2015 . .	123.5	118.0	[c]	3.0	2.5	157.8	153.7	3.6	.5	-34.3	31.3	42
2016 . .	[d]	126.3	[c]	3.3	[d]	163.6	159.3	3.8	.5	[d]	[d]	19
2017 . .	[d]	133.5	[c]	3.6	[d]	169.3	164.8	4.1	.5	[d]	[d]	[d]
2018 . .	[d]	141.6	[c]	3.9	[d]	175.4	170.7	4.3	.4	[d]	[d]	[d]
2019 . .	[d]	149.1	[c]	4.2	[d]	182.1	177.1	4.6	.4	[d]	[d]	[d]
2020 . .	[d]	155.6	[c]	4.6	[d]	189.6	184.4	4.8	.4	[d]	[d]	[d]
2021 . .	[d]	163.9	[c]	5.0	[d]	198.9	193.5	5.1	.3	[d]	[d]	[d]
Low-cost:												
2012 . .	109.7	85.3	16.1	1.1	7.2	137.2	133.7	3.1	.5	-27.5	134.2	118
2013 . .	115.7	103.4	4.2	2.4	5.7	142.0	138.4	3.1	.5	-26.3	107.9	94
2014 . .	122.0	115.0	[c]	2.6	4.4	144.8	140.9	3.4	.5	-22.8	85.1	74
2015 . .	128.5	122.2	[c]	2.8	3.5	147.4	143.3	3.6	.5	-18.9	66.2	58
2016 . .	137.0	131.2	[c]	3.0	2.8	149.9	145.6	3.8	.4	-12.9	53.3	44
2017 . .	143.9	138.4	[c]	3.3	2.2	152.5	148.0	4.0	.4	-8.6	44.6	35
2018 . .	151.5	146.1	[c]	3.5	1.9	155.5	150.9	4.3	.4	-4.1	40.6	29
2019 . .	158.7	153.2	[c]	3.7	1.8	159.2	154.4	4.5	.4	-.6	40.0	25
2020 . .	165.2	159.6	[c]	3.9	1.7	163.5	158.5	4.7	.3	1.7	41.7	24
2021 . .	173.9	167.8	[c]	4.2	1.9	169.1	163.8	5.0	.3	4.8	46.6	25
High-cost:												
2012 . .	108.9	84.6	16.0	1.1	7.2	140.4	136.9	3.1	.5	-31.6	130.1	115
2013 . .	109.2	97.5	3.8	2.6	5.4	150.3	146.7	3.1	.5	-41.1	89.0	87
2014 . .	113.9	107.7	[c]	2.9	3.4	159.7	155.7	3.4	.5	-45.7	43.3	56
2015 . .	[d]	112.8	[c]	3.2	[d]	169.5	165.4	3.6	.5	[d]	[d]	26
2016 . .	[d]	120.5	[c]	3.6	[d]	179.6	175.3	3.8	.5	[d]	[d]	[d]
2017 . .	[d]	127.9	[c]	4.1	[d]	189.7	185.1	4.1	.5	[d]	[d]	[d]
2018 . .	[d]	136.4	[c]	4.5	[d]	200.0	195.2	4.4	.5	[d]	[d]	[d]
2019 . .	[d]	144.9	[c]	4.9	[d]	210.9	205.7	4.7	.4	[d]	[d]	[d]
2020 . .	[d]	152.5	[c]	5.4	[d]	222.1	216.7	5.0	.4	[d]	[d]	[d]
2021 . .	[d]	161.5	[c]	5.9	[d]	235.0	229.4	5.3	.4	[d]	[d]	[d]

[a] Includes reimbursements from the General Fund of the Treasury to the DI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (3) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (4) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, and 112-96.
[b] The "Trust fund ratio" column represents assets at the beginning of a year (which are identical to assets at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.
[c] Between -$50 million and $50 million.
[d] The DI Trust Fund becomes exhausted in fiscal years 2016 and 2015 under the intermediate and the high-cost assumptions, respectively. Accordingly, certain trust fund operation values from the year of trust fund exhaustion through 2021 are not meaningful under present law.

Note: Totals do not necessarily equal the sums of rounded components.

Table VI.C6.—Operations of the Combined OASI and DI Trust Funds, Fiscal Years 2007-21
[Dollar amounts in billions]

Fiscal year	Income					Cost				Assets		
	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest	Total	Benefit payments	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[b]
Historical data:												
2007. .	$771.8	$647.4	[c]	$18.0	$106.4	$585.3	$575.8	$5.5	$4.0	$186.5	$2,180.6	341
2008. .	802.7	671.2	[c]	17.8	113.7	617.0	607.2	5.8	4.0	185.7	2,366.3	353
2009. .	807.0	668.2	[c]	20.8	118.0	669.7	659.6	6.0	4.1	137.3	2,503.6	353
2010. .	788.0	645.8	$0.9	22.8	118.5	706.3	695.4	6.4	4.4	81.7	2,585.3	354
2011. .	798.7	579.1	80.6	23.1	116.0	730.7	719.5	6.7	4.6	68.0	2,653.3	354
Intermediate:												
2012. .	838.7	585.7	110.8	29.7	112.4	774.5	763.7	6.4	4.4	64.1	2,717.5	343
2013. .	862.5	694.5	27.8	31.5	108.8	821.0	810.2	6.4	4.3	41.5	2,759.0	331
2014. .	911.2	768.5	-.1	34.6	108.1	868.3	856.7	6.9	4.7	42.9	2,801.9	318
2015. .	960.7	812.7	-.1	38.4	109.7	919.8	907.8	7.1	4.8	40.9	2,842.8	305
2016. .	1,024.8	869.7	.1	42.5	112.4	974.3	962.3	7.5	4.5	50.5	2,893.3	292
2017. .	1,082.8	919.6	.1	47.1	116.0	1,033.2	1,020.3	7.9	5.1	49.5	2,942.8	280
2018. .	1,148.1	975.7	[c]	51.6	120.7	1,097.7	1,084.3	8.2	5.2	50.4	2,993.1	268
2019. .	1,208.2	1,026.8	[c]	56.2	125.1	1,168.2	1,154.3	8.6	5.3	40.0	3,033.1	256
2020. .	1,263.6	1,071.9	[c]	61.3	130.4	1,245.9	1,231.4	9.0	5.4	17.7	3,050.8	243
2021. .	1,329.0	1,129.3	[c]	66.7	133.0	1,328.6	1,314.0	9.4	5.2	.4	3,051.2	230
Low-cost:												
2012. .	840.9	587.5	111.2	29.7	112.5	772.8	761.9	6.4	4.4	68.1	2,721.4	343
2013. .	882.4	712.4	28.7	31.3	109.9	815.5	804.8	6.4	4.3	66.9	2,788.3	334
2014. .	936.9	792.3	-.1	34.2	110.5	855.1	843.6	6.9	4.7	81.7	2,870.1	326
2015. .	993.2	841.8	-.1	37.6	113.9	896.6	884.7	7.2	4.7	96.6	2,966.7	320
2016. .	1,063.9	903.6	.1	41.3	118.9	941.0	929.2	7.5	4.4	122.9	3,089.5	315
2017. .	1,124.1	953.2	.1	45.4	125.5	989.7	977.1	7.8	4.8	134.4	3,223.9	312
2018. .	1,188.9	1,006.6	[c]	49.3	133.0	1,042.1	1,029.0	8.1	4.9	146.9	3,370.8	309
2019. .	1,250.5	1,055.5	[c]	53.2	141.8	1,099.4	1,085.9	8.4	5.0	151.1	3,521.9	307
2020. .	1,308.3	1,099.2	[c]	57.5	151.7	1,161.8	1,148.0	8.8	5.1	146.5	3,668.4	303
2021. .	1,378.4	1,155.9	[c]	62.0	160.4	1,227.6	1,213.7	9.1	4.8	150.8	3,819.2	299
High-cost:												
2012. .	834.9	582.6	110.2	29.7	112.4	776.4	765.5	6.4	4.4	58.5	2,711.9	342
2013. .	836.3	671.5	26.3	31.6	106.8	827.0	816.2	6.4	4.4	9.2	2,721.1	328
2014. .	881.5	741.7	-.1	35.1	104.9	882.5	870.8	6.9	4.8	-1.0	2,720.1	308
2015. .	920.7	776.8	-.1	39.2	104.8	944.0	932.0	7.1	4.9	-23.3	2,696.8	288
2016. .	979.6	830.4	.1	43.9	105.2	1,011.7	999.4	7.5	4.7	-32.1	2,664.7	267
2017. .	1,035.9	880.8	.1	49.2	105.9	1,086.3	1,073.0	7.9	5.3	-50.3	2,614.4	245
2018. .	1,101.6	939.4	[c]	54.5	107.6	1,167.7	1,153.8	8.4	5.5	-66.1	2,548.3	224
2019. .	1,165.4	998.2	[c]	60.1	107.1	1,257.2	1,242.6	8.9	5.7	-91.8	2,456.5	203
2020. .	1,222.0	1,050.8	[c]	66.1	105.1	1,353.8	1,338.5	9.3	5.9	-131.7	2,324.8	181
2021. .	1,284.2	1,112.4	[c]	72.6	99.2	1,456.4	1,440.9	9.8	5.7	-172.2	2,152.5	160

[a] Includes reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (3) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (4) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (5) payroll tax revenue forgone under the provisions of Public Laws 111-147, 111-312, and 112-96.
[b] The "Trust fund ratio" column represents assets at the beginning of a year (which are identical to assets at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.
[c] Between -$50 million and $50 million.

Note: Totals do not necessarily equal the sums of rounded components.

D. LONG-RANGE SENSITIVITY ANALYSIS

This appendix presents estimates that illustrate the sensitivity of the long-range actuarial status of the OASDI program to changes in selected individual assumptions. The estimates based on the three alternative sets of assumptions, which were presented earlier in this report, illustrate the effects of varying all of the principal assumptions simultaneously, in order to portray a generally more optimistic or pessimistic future. For each sensitivity analysis presented in this appendix, the intermediate alternative II projection is the reference point, and one assumption is varied within that alternative. The variation used for each individual assumption is the same as the level used for that assumption in the low-cost alternative I and high-cost alternative III projections.

Each table in this section shows the effects of changing a particular assumption on the OASDI summarized income rates, summarized cost rates, and actuarial balances for 25-year, 50-year, and 75-year valuation periods. Following each table is a discussion of the estimated changes in cost rates. The change in each of the actuarial balances is approximately equal to the change in the corresponding cost rate, but in the opposite direction. This appendix does not discuss income rates following each table because income rates vary only slightly with changes in assumptions. This stability occurs because the combined rate, which includes payroll taxes and reimbursements from the General Fund of the Treasury, is constant for the entire 75-year valuation period.

1. Total Fertility Rate

Table VI.D1 shows OASDI income rates, cost rates, and actuarial balances on the basis of alternative II with various assumptions about the ultimate total fertility rate. The Trustees assume that total fertility will ultimately be 1.7, 2.0, and 2.3 children per woman under alternatives III, II, and I, respectively. The total fertility rate changes gradually from the 2011 level and reaches ultimate values in 2036.

Table VI.D1.—Sensitivity to Varying Fertility Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate total fertility rate[a] [b] 1.7	2.0	2.3
Summarized income rate:			
25-year: 2012-36	14.96	14.97	14.97
50-year: 2012-61	14.25	14.24	14.23
75-year: 2012-86	14.07	14.02	13.98
Summarized cost rate:			
25-year: 2012-36	16.16	16.18	16.21
50-year: 2012-61	16.63	16.52	16.41
75-year: 2012-86	17.12	16.69	16.27
Actuarial balance:			
25-year: 2012-36	-1.19	-1.21	-1.24
50-year: 2012-61	-2.38	-2.28	-2.19
75-year: 2012-86	-3.05	-2.67	-2.29
Annual balance for 2086	-6.76	-4.50	-2.67
Year of combined trust fund exhaustion	2033	2033	2033

[a] The total fertility rate for any year is the average number of children who would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period. The ultimate total fertility rate is reached in 2036.
[b] Ultimate total fertility rates used for this analysis are: 1.7 from the alternative III assumptions, 2.0 from the alternative II assumptions, and 2.3 from the alternative I assumptions. All other assumptions used for this analysis are from alternative II.

For the 25-year period, the cost rate for the three fertility assumptions varies by only about 0.05 percent of taxable payroll. In contrast, the 75-year cost rate varies over a wide range, decreasing from 17.12 to 16.27 percent, as the assumed ultimate total fertility rate increases from 1.7 to 2.3. Similarly, while the 25-year actuarial balance varies by only 0.05 percent of taxable payroll, the 75-year actuarial balance varies over a much wider range, from -3.05 to -2.29 percent.

During the 25-year period, the very slight increases in the working population resulting from increases in fertility are more than offset by decreases in the female labor force and increases in the number of child beneficiaries. Therefore, program cost increases slightly with higher fertility. For the 75-year long-range period, however, changes in fertility have a relatively greater effect on the labor force than on the beneficiary population. As a result, an increase in fertility significantly reduces the cost rate. Each increase of 0.1 in the ultimate total fertility rate increases the long-range actuarial balance by about 0.13 percent of taxable payroll.

2. Death Rates

Table VI.D2 shows OASDI income rates, cost rates, and actuarial balances on the basis of alternative II with various assumptions about future reduc-

tions in death rates for the period 2011-86. These assumptions are described in section V.A.2. The Trustees assume that the age-sex-adjusted death rates will decline at average annual rates of 0.39 percent, 0.77 percent, and 1.18 percent for alternatives I, II, and III, respectively.

Table VI.D2.—Sensitivity to Varying Death-Rate Assumptions
[As a percentage of taxable payroll]

Valuation period	Average annual death-rate reduction[a] [b]		
	0.39 percent	0.77 percent	1.18 percent
Summarized income rate:			
25-year: 2012-36	14.97	14.97	14.96
50-year: 2012-61	14.23	14.24	14.25
75-year: 2012-86	14.01	14.02	14.04
Summarized cost rate:			
25-year: 2012-36	16.04	16.18	16.33
50-year: 2012-61	16.17	16.52	16.89
75-year: 2012-86	16.20	16.69	17.19
Actuarial balance:			
25-year: 2012-36	-1.07	-1.21	-1.36
50-year: 2012-61	-1.94	-2.28	-2.64
75-year: 2012-86	-2.19	-2.67	-3.16
Annual balance for 2086	-3.49	-4.50	-5.49
Year of combined trust fund exhaustion	2033	2033	2032

[a] The average annual death-rate reduction is the average annual geometric rate of decline in the age-sex-adjusted death rate between 2010 and 2085. The overall age-sex-adjusted death rate decreases from 2011 to 2086 by 26 percent, 44 percent, and 59 percent for alternatives I, II, and III, respectively.
[b] The average annual death-rate reductions used for this analysis are: 0.39 percent from the alternative I assumptions, 0.77 percent from the alternative II assumptions, and 1.18 percent from the alternative III assumptions. All other assumptions used for this analysis are from alternative II.

The variation in cost for the 25-year period is less pronounced than the variation for the 75-year period because the Trustees assume that decreases in death rates will occur gradually. The 25-year cost rate increases from 16.04 percent (for an average annual death-rate reduction of 0.39 percent) to 16.33 percent (for an average annual death-rate reduction of 1.18 percent). The 75-year cost rate increases from 16.20 to 17.19 percent. The actuarial balance decreases from -1.07 to -1.36 percent for the 25-year period, and from -2.19 to -3.16 percent for the 75-year period.

Lower death rates raise both the income (through increased taxable payroll) and the cost of the OASDI program. The relative increase in cost, however, exceeds the relative increase in taxable payroll. For any given year, reductions in the death rates for people who are age 62 and over (ages at which death rates are the highest) increase the number of retired-worker beneficiaries (and, therefore, the amount of retirement benefits paid) without adding significantly to the number of covered workers (and, therefore, to the taxable payroll). Reductions for people at age 50 to retirement eligibility age result

in significant increases to the taxable payroll. However, those increases are not large enough to offset the sum of the additional retirement benefits mentioned above and the disability benefits paid to additional beneficiaries at these pre-retirement ages, which are ages of high disability incidence. At ages under 50, death rates are so low that even substantial reductions in death rates do not result in significant increases in the numbers of covered workers or beneficiaries. Consequently, if death rates decline by about the same relative amount for all ages, the cost increases faster than the rate of growth in payroll, which results in higher cost rates and lower actuarial balances. Each additional 0.1-percentage-point increase in the average annual rate of decline in the death rate decreases the long-range actuarial balance by about 0.12 percent of taxable payroll.

3. Net Immigration

Table VI.D3 shows OASDI income rates, cost rates, and actuarial balances under alternative II with various assumptions about the magnitude of net immigration. The Trustees assume that annual net immigration will average 790,000 persons, 1,080,000 persons, and 1,375,000 persons over the long-range period under alternatives III, II, and I, respectively.

Table VI.D3.—Sensitivity to Varying Net-Immigration Assumptions
[As a percentage of taxable payroll]

Valuation period	Average annual net immigration[a] [b]		
	790,000	1,080,000	1,375,000
Summarized income rate:			
25-year: 2012-36	15.00	14.97	14.94
50-year: 2012-61	14.27	14.24	14.21
75-year: 2012-86	14.06	14.02	13.99
Summarized cost rate:			
25-year: 2012-36	16.32	16.18	16.06
50-year: 2012-61	16.74	16.52	16.33
75-year: 2012-86	16.95	16.69	16.46
Actuarial balance:			
25-year: 2012-36	-1.33	-1.21	-1.11
50-year: 2012-61	-2.47	-2.28	-2.12
75-year: 2012-86	-2.89	-2.67	-2.47
Annual balance for 2086	-4.91	-4.50	-4.13
Year of combined trust fund exhaustion	2032	2033	2033

[a] Net immigration per year is the annual net immigration to the Social Security area, including both legal and other immigration, averaged over the 75-year projection period.
[b] The average annual net immigration assumptions used for this analysis are: 790,000 from the alternative III assumptions, 1,080,000 from the alternative II assumptions, and 1,375,000 from the alternative I assumptions. All other assumptions used for this analysis are from alternative II.

For all three periods, when net immigration increases, the cost rate decreases. For the 25-year period, the cost rate decreases from 16.32 percent of taxable payroll (for average annual net immigration of 790,000 persons) to 16.06 percent (for average annual net immigration of 1,375,000 persons). For the 50-year period, it decreases from 16.74 percent to 16.33 percent, and for the 75-year period, it decreases from 16.95 percent to 16.46 percent. The actuarial balance increases from -1.33 to -1.11 percent for the 25-year period, from -2.47 to -2.12 percent for the 50-year period, and from -2.89 to -2.47 percent for the 75-year period.

The cost rate decreases with an increase in net immigration because immigration occurs at relatively young ages, thereby increasing the numbers of covered workers earlier than the numbers of beneficiaries. Increasing average annual net immigration by 100,000 persons improves the long-range actuarial balance by about 0.07 percent of taxable payroll.

4. Real-Wage Differential

Table VI.D4 shows OASDI income rates, cost rates, and actuarial balances on the basis of alternative II with various assumptions about the real-wage differential. The Trustees assume the ultimate real-wage differential will be 0.51 percentage point, 1.12 percentage points, and 1.71 percentage points under alternatives III, II, and I, respectively. In each case, the ultimate annual increase in the CPI is 2.80 percent (consistent with alternative II). Therefore, the ultimate percentage increases in average annual wages in covered employment are 3.31, 3.92, and 4.51 percent.

For the 25-year period, the cost rate decreases from 16.89 percent (for a real-wage differential of 0.51 percentage point) to 15.51 percent (for a differential of 1.71 percentage points). For the 50-year period, it decreases from 17.56 to 15.54 percent, and for the 75-year period it decreases from 17.84 to 15.60 percent. The actuarial balance increases from -1.78 to -0.68 percent for the 25-year period, from -3.14 to -1.47 percent for the 50-year period, and from -3.61 to -1.77 percent for the 75-year period.

Table VI.D4.—Sensitivity to Varying Real-Wage Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate percentage increase in wages-CPI[a b] 3.31-2.80	3.92-2.80	4.51-2.80
Summarized income rate:			
25-year: 2012-36	15.11	14.97	14.83
50-year: 2012-61	14.43	14.24	14.07
75-year: 2012-86	14.23	14.02	13.84
Summarized cost rate:			
25-year: 2012-36	16.89	16.18	15.51
50-year: 2012-61	17.56	16.52	15.54
75-year: 2012-86	17.84	16.69	15.60
Actuarial balance:			
25-year: 2012-36	-1.78	-1.21	-.68
50-year: 2012-61	-3.14	-2.28	-1.47
75-year: 2012-86	-3.61	-2.67	-1.77
Annual balance for 2086	-6.33	-4.50	-2.96
Year of combined trust fund exhaustion	2031	2033	2036

[a] The first value in each pair is the ultimate annual percentage increase in average wages in covered employment. The second value is the ultimate annual percentage increase in the Consumer Price Index. The difference between the two values is the ultimate real-wage differential.
[b] The ultimate real-wage differentials of 0.51, 1.12, and 1.71 percentage points are the same as in alternatives III, II, and I, respectively. All other assumptions used for this analysis are from alternative II.

The cost rate decreases with increasing real-wage differentials. Higher wages increase taxable payroll immediately, but they increase benefit levels only gradually as new beneficiaries become entitled. In addition, cost-of-living adjustments (COLAs) to benefits depend not on changes in wages, but on changes in prices. Each 0.5-percentage-point increase in the real-wage differential increases the long-range actuarial balance by about 0.77 percent of taxable payroll.

5. Consumer Price Index

Table VI.D5 shows OASDI income rates, cost rates, and actuarial balances on the basis of alternative II with various assumptions about the rate of increase for the Consumer Price Index (CPI). The Trustees assume the annual increase in the CPI will be 1.80 percent, 2.80 percent, and 3.80 percent under alternatives I, II, and III, respectively. In each case, the ultimate real-wage differential is 1.12 percentage points (consistent with alternative II), yielding ultimate percentage increases in average annual wages in covered employment of 2.92, 3.92, and 4.92 percent.

Table VI.D5.—Sensitivity to Varying CPI-Increase Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate percentage increase in wages-CPI[a b]		
	2.92-1.80	3.92-2.80	4.92-3.80
Summarized income rate:			
25-year: 2012-36	15.01	14.97	14.92
50-year: 2012-61	14.27	14.24	14.21
75-year: 2012-86	14.05	14.02	13.99
Summarized cost rate:			
25-year: 2012-36	16.36	16.18	16.01
50-year: 2012-61	16.75	16.52	16.29
75-year: 2012-86	16.94	16.69	16.44
Actuarial balance:			
25-year: 2012-36	-1.35	-1.21	-1.08
50-year: 2012-61	-2.48	-2.28	-2.09
75-year: 2012-86	-2.88	-2.67	-2.45
Annual balance for 2086	-4.80	-4.50	-4.22
Year of combined trust fund exhaustion	2032	2033	2033

[a] The first value in each pair is the ultimate annual percentage increase in average wages in covered employment. The second value is the ultimate annual percentage increase in the Consumer Price Index. The difference between the two values is the ultimate real-wage differential.
[b] The ultimate CPI increases of 1.80, 2.80, and 3.80 percent are the same as in alternatives I, II, and III, respectively. The ultimate real-wage differential of 1.12 percentage points is the same as in alternative II. All other assumptions used for this analysis are also from alternative II.

For all three periods, the cost rate decreases when the assumed rates of increase in the CPI are greater. For the 25-year period, the cost rate decreases from 16.36 (for CPI increases of 1.80 percent) to 16.01 percent (for CPI increases of 3.80 percent). For the 50-year period, it decreases from 16.75 to 16.29 percent, and for the 75-year period, it decreases from 16.94 to 16.44 percent. The actuarial balance increases from -1.35 to -1.08 percent for the 25-year period, from -2.48 to -2.09 percent for the 50-year period, and from -2.88 to -2.45 percent for the 75-year period.

The time lag between the effects of the CPI changes on taxable payroll and on benefit payments explains these patterns. When the rate of increase in the CPI is greater and the real-wage differential is constant, then: (1) the effect on taxable payroll due to a greater rate of increase in average wages occurs immediately; and (2) the effect on benefits due to a larger COLA occurs with a lag of about 1 year. As a result of these effects, the higher taxable payrolls have a stronger effect than the higher benefits, which results in lower cost rates. Each 1.0-percentage-point increase in the rate of the change in the CPI increases the long-range actuarial balance by about 0.22 percent of taxable payroll.

6. Real Interest Rate

Table VI.D6 shows OASDI income rates, cost rates, and actuarial balances under alternative II with various assumptions about the annual real interest rate (compounded semiannually) for special public-debt obligations issuable to the trust funds. The Trustees assume that the ultimate annual real interest rate will be 2.4 percent, 2.9 percent, and 3.4 percent under alternatives III, II, and I, respectively. In each case, the ultimate annual increase in the CPI is 2.80 percent, which is consistent with alternative II. Therefore, the ultimate annual yields are 5.3, 5.8, and 6.3 percent, respectively.

Table VI.D6.—Sensitivity to Varying Real-Interest Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate annual real interest rate[a] [b]		
	2.4 percent	2.9 percent	3.4 percent
Summarized income rate:			
25-year: 2012-36	14.90	14.97	15.04
50-year: 2012-61	14.15	14.24	14.33
75-year: 2012-86	13.93	14.02	14.12
Summarized cost rate:			
25-year: 2012-36	16.26	16.18	16.10
50-year: 2012-61	16.62	16.52	16.42
75-year: 2012-86	16.81	16.69	16.56
Actuarial balance:			
25-year: 2012-36	-1.36	-1.21	-1.07
50-year: 2012-61	-2.47	-2.28	-2.09
75-year: 2012-86	-2.89	-2.67	-2.44
Annual balance for 2086	-4.50	-4.50	-4.50
Year of combined trust fund exhaustion	2032	2033	2033

[a] The ultimate real interest rate is the effective annual yield on assets held by the trust funds divided by the annual rate of growth in the CPI.
[b] The ultimate annual real interest rates used for this analysis are: 2.4 percent from the alternative III assumptions, 2.9 percent from the alternative II assumptions, and 3.4 percent from the alternative I assumptions. All other assumptions used for this analysis are from alternative II.

For the 25-year period, the cost rate decreases with increasing real interest rates from 16.26 percent (for an ultimate real interest rate of 2.4 percent) to 16.10 percent (for an ultimate real interest rate of 3.4 percent). For the 50-year period, it decreases from 16.62 to 16.42 percent and, for the 75-year period, it decreases from 16.81 to 16.56 percent. The actuarial balance increases from -1.36 to -1.07 percent for the 25-year period, from -2.47 to -2.09 percent for the 50-year period, and from -2.89 to -2.44 percent for the 75-year period. Each 0.5-percentage-point increase in the real interest rate increases the long-range actuarial balance by about 0.22 percent of taxable payroll.

7. Disability Incidence Rates

Table VI.D7 shows OASDI income rates, cost rates, and actuarial balances on the basis of alternative II with various assumptions concerning future disability incidence rates. For all three alternatives, the Trustees assume that incidence rates by age and sex will vary during the early years of the projection period before attaining ultimate levels in 2031. In comparison to the historical period 1970 through 2011, the ultimate age-sex-adjusted incidence rate is about 4 percent higher for alternative II, 15 percent lower for alternative I, and 25 percent higher for alternative III.

Table VI.D7.—Sensitivity to Varying Disability Incidence Assumptions
[As a percentage of taxable payroll]

Valuation period	Disability incidence rates based on alternative— I	II	III
Summarized income rate:			
25-year: 2012-36	14.96	14.97	14.97
50-year: 2012-61	14.23	14.24	14.25
75-year: 2012-86	14.01	14.02	14.03
Summarized cost rate:			
25-year: 2012-36	15.96	16.18	16.41
50-year: 2012-61	16.24	16.52	16.79
75-year: 2012-86	16.40	16.69	16.97
Actuarial balance:			
25-year: 2012-36	-1.00	-1.21	-1.44
50-year: 2012-61	-2.01	-2.28	-2.55
75-year: 2012-86	-2.38	-2.67	-2.95
Annual balance for 2086	-4.17	-4.50	-4.82
Year of combined trust fund exhaustion	2034	2033	2032

For the 25-year period, the cost rate increases with increasing disability incidence rates, from 15.96 percent (for the relatively low rates assumed for alternative I) to 16.41 percent (for the relatively high rates assumed for alternative III). For the 50-year period, it increases from 16.24 to 16.79 percent, and for the 75-year period, it increases from 16.40 to 16.97 percent. The actuarial balance decreases from -1.00 to -1.44 percent for the 25-year period, from -2.01 to -2.55 percent for the 50-year period, and from -2.38 to -2.95 percent for the 75-year period.

8. Disability Termination Rates

Table VI.D8 shows OASDI income rates, cost rates, and actuarial balances on the basis of alternative II with various assumptions about future disability termination rates. For all three alternatives, the Trustees assume that death rates will decline throughout the long-range period. For alternative II, the

age-sex-adjusted[1] death rate declines to a level in 2086 that is about 58 percent lower than the level in 2011. For alternative I, the age-sex-adjusted death rate declines to a level in 2086 that is about 32 percent lower than the level in 2011. For alternative III, the age-sex-adjusted death rate declines to a level in 2086 that is about 75 percent lower than the level in 2011.

For all three alternatives, ultimate recovery-termination rates by age, sex, and duration are attained in the twentieth year of the projection period. For alternative II, the age-sex-adjusted[1] recovery rate in 2031 is about 10 recoveries per thousand disabled-worker beneficiaries. For alternative I, the age-sex-adjusted recovery rate in 2031 is about 12 recoveries per thousand disabled-worker beneficiaries. For alternative III, the age-sex-adjusted recovery rate in 2031 is about 8 recoveries per thousand disabled-worker beneficiaries.

Table VI.D8.—Sensitivity to Varying Disability Termination Assumptions
[As a percentage of taxable payroll]

Valuation period	Disability termination rates based on alternative— I	II	III
Summarized income rate:			
25-year: 2012-36	14.97	14.97	14.97
50-year: 2012-61	14.24	14.24	14.24
75-year: 2012-86	14.02	14.02	14.02
Summarized cost rate:			
25-year: 2012-36	16.14	16.18	16.22
50-year: 2012-61	16.47	16.52	16.57
75-year: 2012-86	16.64	16.69	16.73
Actuarial balance:			
25-year: 2012-36	-1.18	-1.21	-1.25
50-year: 2012-61	-2.23	-2.28	-2.33
75-year: 2012-86	-2.62	-2.67	-2.71
Annual balance for 2086	-4.45	-4.50	-4.55
Year of combined trust fund exhaustion	2033	2033	2033

For the 25-year period, the cost rate increases with decreasing disability termination rates, from 16.14 percent (for the relatively high termination rates assumed for alternative I) to 16.22 percent (for the relatively low termination rates assumed for alternative III). For the 50-year period, it increases from 16.47 to 16.57 percent, and for the 75-year period, it increases from 16.64 to 16.73 percent. The actuarial balance decreases from -1.18 to -1.25 percent for the 25-year period, from -2.23 to -2.33 percent for the 50-year period, and from -2.62 to -2.71 percent for the 75-year period.

[1] Age adjusted to the total disabled workers in current-payment status as of the year 2000.

E. STOCHASTIC PROJECTIONS AND UNCERTAINTY

Significant uncertainty surrounds the estimates under the intermediate assumptions, especially for a period as long as 75 years. This appendix presents a way to illustrate the uncertainty of these estimates. The stochastic projections supplement the traditional methods of examining such uncertainty.

1. Background

The Trustees have traditionally shown estimates using the low-cost and high-cost sets of specified assumptions to illustrate the presence of uncertainty. These alternative estimates provide a range of possible outcomes for the projections. However, they do not provide an indication of the probability that actual future experience will be inside or outside this range. This appendix presents the results of a model, based on stochastic modeling techniques, that estimates a probability distribution of future outcomes of the financial status of the combined OASI and DI Trust Funds.

2. Stochastic Methodology

Other sections of this report provide estimates of the financial status of the combined OASI and DI Trust Funds using a scenario-based model. For the scenario-based model, the Trustees make assumptions about levels of fertility, changes in mortality, legal and other immigration levels, legal and other emigration levels, changes in the Consumer Price Index, changes in average real wages, unemployment rates, trust fund real yield rates, and disability incidence and recovery rates. In general, the Trustees assume that each of these variables will reach an ultimate value at a specific point during the long-range period, and will maintain that value throughout the remainder of the period. As mentioned above, three scenarios assume separate, specified values for each of these variables. Chapter V contains more details about each of these assumptions.

This appendix presents estimates of the probability that key measures of OASDI solvency will fall in certain ranges, based on 5,000 independent stochastic simulations. Each simulation allows the above variables to vary throughout the long-range period. Each variable fluctuates using standard time-series modeling, a method designed to make inferences based on historical data. Generally, each variable is modeled using an equation that: (a) captures a relationship between current and prior years' values of the variable; and (b) introduces year-by-year random variation as observed in the historical period. For some variables, the equations also reflect relationships with other variables. The equations contain parameters that are estimated using

historical data for periods between 25 years and 110 years, depending on the nature and quality of the available data. Each time-series equation is designed so that, in the absence of random variation over time, the value of the variable for each year equals its value under the intermediate assumptions.[1]

For each simulation, the stochastic method develops year-by-year random variation in most of the variables using Monte Carlo techniques. The one exception is that the model varies net other immigration directly rather than as the difference of its components (other immigration minus other emigration). Each simulation produces an estimate of the financial status of the combined OASI and DI Trust Funds. This appendix shows the distribution of results from 5,000 simulations of the model.

Readers should interpret the results from this model with caution and with an understanding of the model's limitations. Results are very sensitive to equation specifications, degrees of interdependence among variables, and the historical periods used for the estimates. For some variables, recent historical variation may not provide a realistic representation of the potential variation for the future. Also, results would differ if additional variables (such as labor force participation rates, retirement rates, marriage rates, and divorce rates) were also allowed to vary randomly. Furthermore, more variability could result if statistical approaches were used to model shifts in the central tendencies of the variables. The historical period utilized for most variables does not reflect many substantial shifts, and time-series modeling reflects only what occurred in the historical period. As a result, readers should understand that the true range of uncertainty is likely to be larger than indicated in this appendix. Substantial shifts, as predicted by many experts and as seen in prior centuries, are not fully reflected in the current model.

3. Stochastic Results

Figure VI.E1 displays the probability distribution of the year-by-year OASDI cost rates (that is, cost as a percentage of taxable payroll). The range of the cost rates widens as the projections move further into the future, which reflects increasing uncertainty. The figure includes the income rate under the intermediate assumptions to indicate the patterns of cash flow for the OASDI program. The figure includes only this income rate, because there is relatively little variation in income rates throughout the projection period. The

[1] More detail on this model, and stochastic modeling in general, is available at www.socialsecurity.gov/OACT/stochastic/index.html.

two extreme lines in this figure illustrate the range within which future annual cost rates are projected to occur 95 percent of the time (i.e., a 95-percent confidence interval). In other words, the model indicates that there is a 2.5 percent probability that the cost rate in a given year will exceed the upper bound and a 2.5 percent probability that it will fall below the lower bound. Other lines in the figure display additional confidence intervals (80-percent, 60-percent, 40-percent, and 20-percent) around future annual cost rates. The median cost rate for each year is the rate that falls exactly in the middle of possible outcomes for that year. These lines do not represent the results of individual stochastic simulations. Instead, for each given year, they represent the percentile distribution of cost rates based on all stochastic simulations for that year.

Figure VI.E1.—Long-Range OASDI Cost Rates From Stochastic Modeling

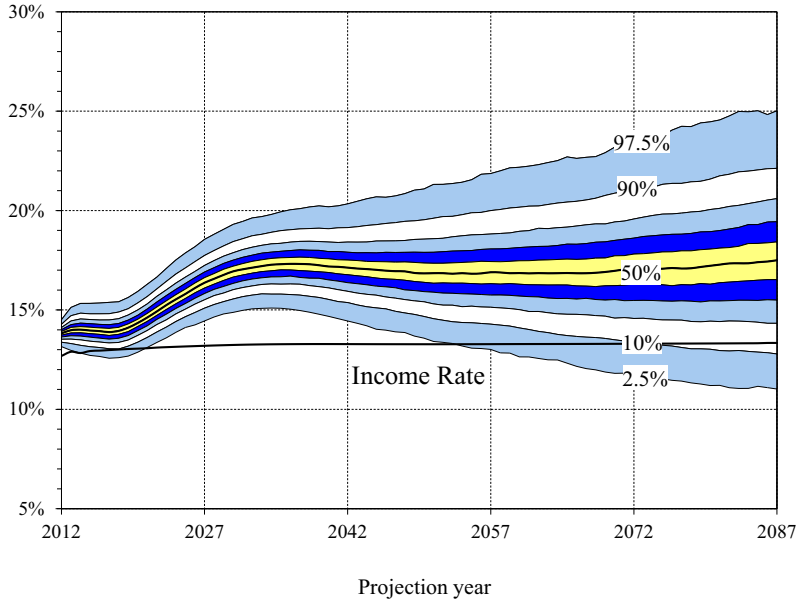
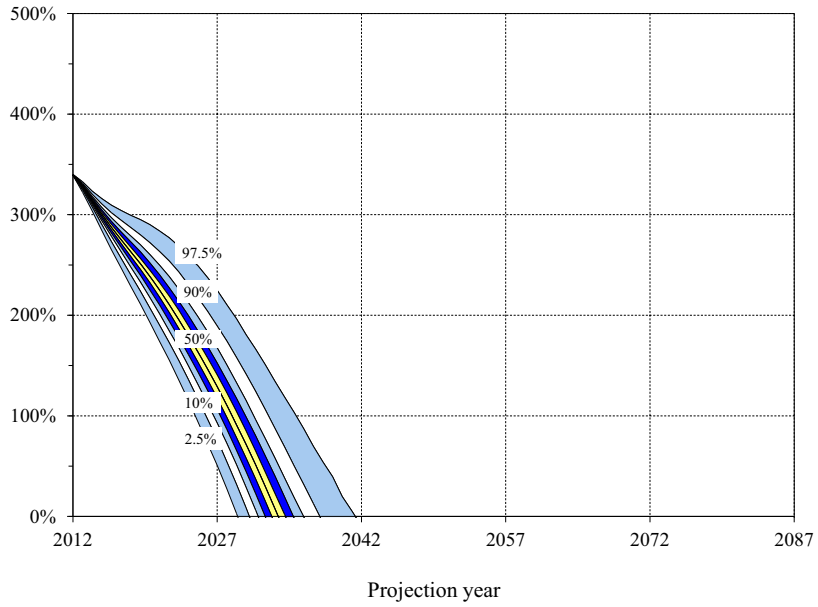


Figure VI.E2 presents the simulated probability distribution of the annual trust fund ratios for the combined OASI and DI Trust Funds. The lines in this figure display the median set (50th percentile) of estimated annual trust fund ratios and the 95-percent, 80-percent, 60-percent, 40-percent, and 20-percent confidence intervals expected for future annual trust fund ratios. These lines are not the results of individual stochastic simulations. For each given year,

they represent the percentile distribution of trust fund ratios based on all stochastic simulations for that year.

The median estimate for each year indicates that the assets of the combined OASI and DI Trust Funds become exhausted by the end of 2033 with a probability of 50 percent. This exhaustion date is the same as the year of exhaustion the Trustees project under the intermediate assumptions. Figure VI.E2 shows that the 95-percent confidence interval for the trust fund ratio in 2025 ranges from 249 to 94 percent of annual cost.

Figure VI.E2.—Long-Range OASDI Trust Fund Ratios From Stochastic Modeling



The difference in the ranges of the projected trust fund ratios between two of the methods for illustrating uncertainty (alternative scenarios and stochastic simulations) is substantially due to the different assignment of real interest rates in these two methods. The next section includes an explanation of the different treatments.

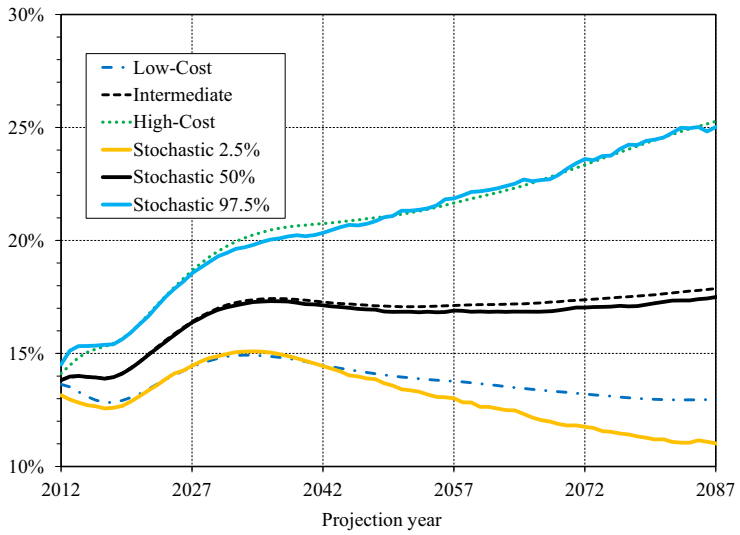
4. Comparison of Results: Stochastic to Low-Cost, Intermediate, and High-Cost Alternatives

This section compares results from two different approaches for determining ranges of uncertainty for trust fund actuarial status. One approach uses

results from the low-cost, intermediate, and high-cost alternative scenarios. The other approach uses stochastic distributions of results. Each of these approaches provides insights into uncertainty. Comparison of the results requires an understanding of the differences in the approaches. Two fundamental differences exist between the approach using alternative scenarios and the stochastic approach.

The first fundamental difference relates to presentation of results. Figure VI.E3 shows projected OASDI annual cost rates for the low-cost, intermediate, and high-cost alternatives along with the annual cost rates at the 97.5th percentile, 50th percentile, and 2.5th percentile for the stochastic simulations. While all values on each line for the alternatives are results from a single specified scenario, the values on each stochastic line may be results from different simulations for different years. The one stochastic simulation (from the 5,000 simulations) that yields results closest to a particular percentile in 1 year may yield results that are distant from that percentile in another year. Thus, the stochastic presentation illustrates distributions of the range of potential results 1 year at a time, with no direct relationship of the results among years.

Figure VI.E3.—OASDI Cost Rates: Comparison of Stochastic to Low-Cost, Intermediate, and High-Cost Alternatives
[as a percentage of taxable payroll]



Even with this fundamental difference in the presentation of results, figure VI.E3 shows similar results between the range of OASDI cost rates resulting from the alternatives and from the 95-percent confidence interval of stochastic results. The cost rates for the high-cost alternative are similar to the stochastic year-by-year results at the 97.5th percentile. The intermediate alternative results show slightly higher cost rates than the stochastic year-by-year results at the 50th percentile. The largest differences are between the low-cost alternative and the stochastic year-by-year results at the 2.5th percentile. For this comparison, cost rates are higher for the low-cost alternative than for the stochastic year-by-year results at the 2.5th percentile for years before 2020 and after 2040.

The second fundamental difference between the alternatives and the stochastic simulations is the method of assigning values for assumptions in the simulations. For the alternatives, the Trustees assign specific values for key demographic and economic variables. In comparison to the intermediate alternative, each value assigned to the high-cost alternative tends to raise estimated program cost and each value assigned to the low-cost alternative tends to reduce it. In contrast, the stochastic method randomly assigns values for the key demographic and economic variables in each of the 5,000 independent stochastic simulations. For each of the stochastic simulations, assigned values for the various assumptions may have varying effects on projected cost, with some tending toward higher cost and some tending toward lower cost. Nonetheless, figure VI.E3 shows that the ranges in cost rates for the alternatives and the 95-percent confidence interval of stochastic simulations are similar. The principal difference is that the low-cost and intermediate scenarios generate cost rates after 2040 that are somewhat higher than the 2.5th-percentile and median stochastic results, respectively. Accordingly, the alternatives produce a narrower, less optimistic range of cost rates than do the stochastic simulations.

In contrast, the alternatives produce a wider, more optimistic range of trust fund (unfunded obligation) ratios than do the stochastic simulations. Figure VI.E4 compares the ranges of trust fund (unfunded obligation) ratios for the alternative scenarios and the 95-percent confidence interval of the stochastic simulations. This figure extends figure IV.E2 to show unfunded obligation ratios, expressed as negative values below the zero percent line. Unfunded obligation ratios are the ratio of the unfunded obligation at the beginning of the year to the present value of annual cost for that year. Figure VI.E4 presents a more complete picture of the difference between the results from the three alternative scenarios and the stochastic simulations.

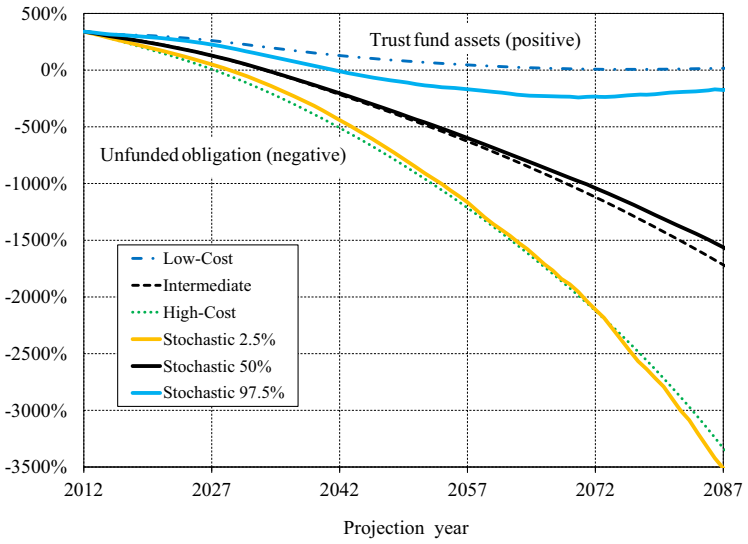
As with cost rates, the trust fund (unfunded obligation) ratios differ most notably in the comparison of the results from the low-cost alternative to the 97.5th-percentile results from the stochastic simulations. However, the direction of the difference reverses. While cost rates are considerably less optimistic for the low-cost alternative than for the 2.5th-percentile results of the stochastic simulations, the trust fund (unfunded obligation) ratios for the low-cost scenario are more optimistic than the 97.5th-percentile results of the stochastic simulations. A similar relationship exists for the high-cost results, where the alternative scenario and the stochastic results have similar cost rates but the alternative scenario has higher (more favorable) trust fund (unfunded obligation) ratios toward the end of the period.

This reversal is explainable. Projections of trust fund (unfunded obligation) ratios shown in figure VI.E4 require an additional variable not reflected in the cost rates shown in figure VI.E3. This additional variable is the real interest rate. For the alternatives, the Trustees assign higher real interest rates for the low-cost alternative and lower real interest rates for the high-cost alternative. Under the limitations imposed by the law, where the trust funds cannot borrow, a lower real interest rate is relatively pessimistic and thus consistent with the high-cost alternative. However, in order to show the size of the cumulative shortfall of non-interest income relative to scheduled cost, or the unfunded obligation, that would not be payable under current law, the Trustees project the cost of scheduled benefits, even after the point at which trust fund reserves become exhausted. In the case of the high-cost alternative, the relatively low assumed interest rates have the effect of making this unfunded obligation smaller than it otherwise would be. For the low-cost alternative, the relatively high assumed real interest rates help maintain trust fund reserves and account for the fact that the trust fund reserves remain positive throughout the 75-year projection period. This assignment of real interest rates elevates the level of the trust fund (unfunded obligation) ratio for both low-cost and high-cost alternatives compared to the expected result without variation in real interest rates across alternatives.

The stochastic model, however, assigns real interest randomly, yielding rates with no correlation to the overall "optimism" or "pessimism" of the other variable assignments. The tendency for elevated trust fund (unfunded obligation) ratios resulting from the assignment of real interest rates in both the high-cost and low-cost alternatives is not present in the stochastic results. The relationship between cost rates for the alternatives and cost rates for the stochastic simulations, as shown in figure IV.E3, is therefore different from the relationship between the trust fund (unfunded obligation) ratios for the alternatives and the stochastic simulations as shown in figure IV.E4. Figure

IV.E4 shows trust fund (unfunded obligation) ratios that tend to be higher (more optimistic) for the extreme alternatives than for the extreme stochastic results, which is contrary to the elevated cost rates (more pessimistic) for the extreme alternatives. This contrary effect is more evident for the low-cost alternative, which has substantially higher cost rates (more pessimistic) than the stochastic 2.5th percentile for most years, but has substantially higher trust fund reserves (more optimistic) throughout the projection period.

Figure VI.E4.—OASDI Trust Fund (Unfunded Obligation) Ratios: Comparison of Stochastic to Low-Cost, Intermediate, and High-Cost Alternatives[a]
[Assets (Unfunded obligation) as a percentage of annual cost]



[a] An unfunded obligation, shown as a negative value in this figure, is equivalent to the amount the trust funds would need to have borrowed to date in order to pay all scheduled benefits (on a timely basis) after trust fund assets are exhausted. Note that current law does not permit the trust funds to borrow.

This contrast in results and methods does not mean that either approach to illustrating ranges of uncertainty is superior to the other. The ranges are different and explainable.

Table VI.E1 displays long-range actuarial estimates for the combined OASDI program using the two methods of illustrating uncertainty: (1) alternative scenarios and (2) stochastic simulations. The table shows stochastic estimates for the median (50th percentile) and for the 95-percent and 80-percent confidence intervals. For comparison, the table shows scenario-based

estimates for the intermediate, low-cost, and high-cost assumptions. Each individual stochastic estimate in the table is the level at that percentile from the distribution of the 5,000 simulations. For each given percentile, the values in the table for each long-range actuarial measure are generally from different stochastic simulations.

The median stochastic estimates displayed in table VI.E1 are, in general, slightly more optimistic than the intermediate-alternative scenario-based estimates. The median estimate of the long-range actuarial balance is -2.50 percent of taxable payroll, about 0.17 percentage point higher than projected under the intermediate assumptions. The median year that cost first exceeds non-interest income (and remains in excess of non-interest income throughout the remainder of the long-range period) is 2012, the same year as projected under the intermediate assumptions. The median year that assets first become exhausted is 2033, also the same as projected under the intermediate assumptions. The median estimates of the annual cost rate for the 75th year of the projection period are 17.43 percent of taxable payroll and 5.77 percent of gross domestic product (GDP). The comparable estimates under the intermediate assumptions are 17.83 percent of payroll and 6.10 percent of GDP.

A comparison of the 95-percent confidence interval to the range of variation defined by the traditional low-cost and high-cost alternatives follows. For three measures in table VI.E1 (the actuarial balance, the open group unfunded obligation, and the first year assets become exhausted), the 95-percent stochastic confidence interval is narrower than the range defined by the low-cost and high-cost alternatives. In other words, for these measures, the range defined by the low-cost and high-cost alternatives contains the 95-percent confidence interval of the stochastic modeling projections. For one measure (the first year cost exceeds non-interest income and remains in excess through 2086), the low-cost and high-cost estimates are consistent with the bounds of the 95-percent stochastic confidence interval. For the remaining two measures (the annual costs in the 75th year), one or both of the bounds of the 95-percent stochastic confidence interval fall outside the range defined by the low-cost and high-cost alternatives.

Table VI.E1.—Long-Range Estimates Relating to the Actuarial Status of the Combined OASDI Program
[Comparison of scenario-based and stochastic results]

	Traditional scenario-based model			Stochastic model				
					80-percent confidence interval		95-percent confidence interval	
	Intermediate	Low-cost	High-cost	Median 50th percentile	10th percentile	90th percentile	2.5th percentile	97.5th percentile
Actuarial balance	-2.67	-0.11	-5.89	-2.50	-3.91	-1.11	-4.71	-0.39
Open group unfunded obligation (in trillions)	$8.6	-$0.1	$18.3	$8.2	$13.5	$3.6	$16.9	$1.0
First projected year cost exceeds non-interest income and remains in excess through 2086[a]	2012	[b]	2012	2012	2012	[c]	2012	[c]
First year assets become exhausted[d]	2033	[e]	2027	2033	2030	2037	2029	2041
Annual cost in 75th year (percent of taxable payroll)	17.83	12.96	25.16	17.43	12.85	22.10	11.09	24.83
Annual cost in 75th year (percent of GDP)	6.10	4.83	7.91	5.77	3.74	7.52	3.05	8.45

[a] Cost began to exceed non-interest income prior to 2012.
[b] The annual balance is negative for a temporary period and returns to positive levels before the end of the projection period.
[c] For this percentile, cost does not exceed non-interest income in 2086.
[d] For some stochastic simulations, the first year in which trust fund assets become exhausted does not indicate a permanent exhaustion of assets.
[e] The fund does not become exhausted within the projection period.

F. ESTIMATES FOR OASDI AND HI, SEPARATE AND COMBINED

In this appendix, the Trustees present long-range actuarial estimates for the OASDI and Hospital Insurance (HI) programs both separately and on a combined basis. These estimates facilitate analysis of the adequacy of the income and assets of these programs relative to their cost under current law. This appendix does not include estimates for the Supplementary Medical Insurance (SMI) program because adequate financing is guaranteed in the law, and because the SMI program is not financed through a payroll tax. For more information on Medicare estimates, please see the 2012 Medicare Trustees Report.

The emphasis in this appendix on combined operations, while significant, should not obscure the analysis of the financial status of the individual trust funds, which are legally separate and cannot be commingled. In addition, the factors which determine the costs of the OASI, DI, and HI programs differ substantially.

1. Estimates as a Percentage of Taxable Payroll

Comparing cost and income rates for the OASDI and HI programs as percentages of taxable payroll requires a note of caution. The taxable payrolls for the HI program are larger than those estimated for the OASDI program because: (1) a larger maximum taxable amount was established for the HI program in 1991, with the maximum eliminated altogether for the HI program in 1994; (2) a larger proportion of Federal, State, and local government employees are covered under the HI program; and (3) the earnings of railroad workers are included directly in the HI taxable payroll but not in the OASDI taxable payroll. (Railroad contributions for the equivalent of OASDI benefits are accounted for in a net interchange that occurs annually between the OASDI and Railroad Retirement programs.) As a result, the HI taxable payroll is about 26 percent larger than the OASDI taxable payroll throughout the long-range period. Nonetheless, in this section the separately derived rates for the programs are added to produce combined OASDI and HI rates.

As with the OASI and DI Trust Funds, income to the HI Trust Fund comes primarily from contributions paid by employees, employers, and self-employed persons. Table VI.F1 shows the OASDI and HI contribution rates that are authorized in the Federal Insurance Contributions Act.

Table VI.F1.—Payroll Tax Contribution Rates for the OASDI and HI Programs
[In percent]

Calendar years	Employees and employers, combined[a]		Employees only	Self employed[b]		
	OASDI up to base[c]	HI all earnings[d]	HI over limit[e]	OASDI up to base[c]	HI all earnings[d]	HI over limit[e]
1966	7.70	0.70	—	5.80	0.35	—
1967	7.80	1.00	—	5.90	.50	—
1968	7.60	1.20	—	5.80	.60	—
1969-70	8.40	1.20	—	6.30	.60	—
1971-72	9.20	1.20	—	6.90	.60	—
1973	9.70	2.00	—	7.00	1.00	—
1974-77	9.90	1.80	—	7.00	.90	—
1978	10.10	2.00	—	7.10	1.00	—
1979-80	10.16	2.10	—	7.05	1.05	—
1981	10.70	2.60	—	8.00	1.30	—
1982-83	10.80	2.60	—	8.05	1.30	—
1984[f]	11.40	2.60	—	11.40	2.60	—
1985[f]	11.40	2.70	—	11.40	2.70	—
1986-87[f]	11.40	2.90	—	11.40	2.90	—
1988-89[f]	12.12	2.90	—	12.12	2.90	—
1990-2010[g]	12.40	2.90	—	12.40	2.90	—
2011-2012[g]	10.40	2.90	—	10.40	2.90	—
2013 and later	12.40	2.90	0.90	12.40	2.90	0.90

[a] Except as noted below, the combined employee/employer rate is divided equally between employees and employers.

[b] Beginning in 1990, self-employed persons receive a deduction, for purposes of computing their net earnings, equal to half of the combined OASDI and HI contributions that would be payable without regard to the contribution and benefit base. The OASDI contribution rate then applies to net earnings after this deduction, but subject to the OASDI base.

[c] The payroll tax on earnings for the OASDI program applies to annual earnings up to a contribution and benefit base indexed to the average wage level. The base is $106,800 for 2011.

[d] Prior to 1994, the payroll tax on earnings for the HI program applied to annual earnings up to a contribution base. The HI contribution base was eliminated beginning in 1994.

[e] Starting with Federal personal income tax returns for 2013, earned income exceeding $200,000 for individual filers and $250,000 for married couples filing jointly is subject to an additional HI tax of 0.9 percent. These income limits are not indexed after 2013.

[f] In 1984 only, employees received an immediate credit of 0.3 percent of taxable wages against their OASDI payroll tax contributions. The self-employed received similar credits of 2.7 percent, 2.3 percent, and 2.0 percent against their combined OASDI and Hospital Insurance (HI) contributions on net earnings from self-employment in 1984, 1985, and 1986-89, respectively. The General Fund of the Treasury reimbursed the trust funds for these credits.

[g] Public Law 111-147 exempted most employers from paying the employer share of OASDI payroll tax on wages paid during the period March 19, 2010 through December 31, 2010 to certain qualified individuals hired after February 3, 2010. Public Law 111-312, Public Law 112-78, and Public Law 112-96 reduced the OASDI payroll tax rate for 2011 and 2012 by 2 percentage points for employees and for self-employed workers. These laws require that the General Fund of the Treasury reimburse the OASI and DI Trust Funds for these temporary reductions in 2010, 2011, and 2012 payroll tax revenue, in order to "replicate to the extent possible" revenue that would have been received if the combined employee/employer payroll tax rates had remained at 12.4 percent for OASDI (10.6 percent for OASI and 1.8 percent for DI).

Table VI.F2 shows the Trustees' estimates of annual income rates and cost rates for the OASDI program, the HI program, and the combined OASDI and HI programs, under the low-cost, intermediate, and high-cost sets of assumptions described earlier in this report. The income rates reflect the tax rates

shown in table VI.F1. For the HI program, the income rates beginning in 2013 reflect: (1) the additional 0.9 percent tax on employees for relatively high earnings; and (2) the portion of total payroll to which the 0.9 percent rate applies. Annual income and cost rates indicate the cash-flow operation of the programs. Therefore, income rates exclude interest earned on trust fund assets. Table VI.F2 also shows annual balances, which are the differences between annual income rates and cost rates. Estimates shown for the combined trust funds are theoretical because there is no current statutory authority for borrowing by or transfers among these trust funds.

The Trustees project that the combined OASDI and HI cost rate will rise generally above current levels under the intermediate and high-cost sets of assumptions, with the greatest increase occurring during the period 2018-35. Under both the intermediate and the high-cost assumptions, the Trustees project annual deficits for the combined programs in each year of the 75-year projection period. Under the intermediate assumptions, the combined cost rate increases by 37 percent from its current level by 2086, while under the high-cost assumptions, the cost rate more than doubles by 2086. Under the low-cost assumptions, the combined cost rate decreases by 7 percent by the end of the period, with positive annual balances in all years except for 2012-15 and 2023-50.

Table VI.F2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2012-90

[As a percentage of taxable payroll[a]]

	OASDI			HI			Combined		
Calendar year	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance
Intermediate:									
2012	12.89	13.83	-0.93	3.20	3.73	-0.53	16.10	17.55	-1.46
2013	12.83	13.95	-1.12	3.31	3.70	-.39	16.14	17.65	-1.51
2014	12.93	13.98	-1.05	3.33	3.66	-.33	16.26	17.64	-1.38
2015	12.95	13.97	-1.01	3.35	3.54	-.19	16.30	17.51	-1.20
2016	12.98	13.94	-.96	3.37	3.50	-.13	16.35	17.44	-1.09
2017	13.01	13.91	-.91	3.40	3.48	-.09	16.40	17.40	-1.00
2018	13.03	13.96	-.93	3.41	3.50	-.08	16.45	17.46	-1.01
2019	13.05	14.13	-1.08	3.43	3.54	-.11	16.49	17.68	-1.19
2020	13.07	14.37	-1.30	3.46	3.61	-.15	16.53	17.99	-1.46
2021	13.11	14.65	-1.55	3.48	3.69	-.21	16.59	18.35	-1.76
2025	13.18	15.88	-2.70	3.56	4.16	-.60	16.74	20.04	-3.30
2030	13.25	17.01	-3.76	3.65	4.68	-1.04	16.90	21.69	-4.79
2035	13.28	17.41	-4.13	3.72	5.19	-1.47	17.00	22.60	-5.60
2040	13.28	17.36	-4.07	3.78	5.54	-1.77	17.06	22.90	-5.84
2045	13.28	17.19	-3.91	3.83	5.74	-1.90	17.11	22.92	-5.81
2050	13.27	17.08	-3.81	3.90	5.82	-1.93	17.17	22.90	-5.73
2055	13.28	17.09	-3.81	3.96	5.85	-1.88	17.24	22.94	-5.70
2060	13.28	17.16	-3.87	4.03	5.91	-1.87	17.32	23.06	-5.74
2065	13.29	17.20	-3.91	4.10	6.02	-1.92	17.38	23.22	-5.83
2070	13.30	17.33	-4.03	4.16	6.16	-2.00	17.45	23.48	-6.03
2075	13.31	17.46	-4.16	4.21	6.26	-2.05	17.52	23.72	-6.20
2080	13.32	17.60	-4.29	4.26	6.29	-2.03	17.58	23.90	-6.32
2085	13.33	17.79	-4.47	4.31	6.29	-1.97	17.64	24.08	-6.44
2090	13.34	17.98	-4.64	4.36	6.27	-1.91	17.70	24.25	-6.55
Low-cost:									
2012	12.83	13.63	-.79	3.20	3.60	-.40	16.03	17.22	-1.19
2013	12.87	13.52	-.65	3.30	3.49	-.19	16.17	17.01	-.85
2014	12.90	13.30	-.40	3.32	3.39	-.07	16.22	16.69	-.47
2015	12.92	13.09	-.18	3.33	3.21	.12	16.25	16.30	-.06
2016	12.94	12.93	.01	3.35	3.11	.24	16.29	16.04	.25
2017	12.96	12.84	.12	3.37	3.04	.33	16.33	15.88	.45
2018	12.99	12.83	.16	3.39	3.00	.39	16.37	15.83	.55
2019	13.00	12.92	.08	3.40	2.98	.43	16.40	15.90	.50
2020	13.01	13.05	-.04	3.42	2.98	.44	16.44	16.04	.40
2021	13.04	13.21	-.17	3.44	2.99	.44	16.48	16.20	.28
2025	13.09	14.05	-.96	3.50	3.13	.37	16.59	17.18	-.59
2030	13.14	14.79	-1.65	3.57	3.22	.35	16.71	18.01	-1.30
2035	13.16	14.90	-1.75	3.62	3.26	.36	16.78	18.16	-1.39
2040	13.15	14.64	-1.49	3.67	3.18	.49	16.81	17.81	-1.00
2045	13.13	14.28	-1.15	3.71	3.05	.66	16.84	17.33	-.49
2050	13.12	14.00	-.88	3.76	2.93	.83	16.87	16.93	-.06
2055	13.11	13.82	-.71	3.81	2.84	.97	16.92	16.66	.25
2060	13.10	13.66	-.56	3.86	2.83	1.03	16.97	16.50	.47
2065	13.09	13.45	-.36	3.91	2.89	1.02	17.00	16.34	.67
2070	13.08	13.28	-.19	3.96	2.96	1.00	17.04	16.23	.81
2075	13.08	13.11	-.03	4.00	3.00	1.00	17.08	16.11	.97
2080	13.07	12.97	.10	4.04	3.02	1.02	17.11	15.99	1.12
2085	13.07	12.95	.12	4.08	3.02	1.07	17.15	15.97	1.18
2090	13.07	13.00	.07	4.12	3.01	1.11	17.19	16.01	1.19

Table VI.F2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2012-90 (Cont.)
[As a percentage of taxable payroll[a]]

	OASDI			HI			Combined		
Calendar year	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance	Income rate	Cost rate	Balance
High-cost:									
2012	12.99	14.12	-1.13	3.21	3.89	-0.69	16.20	18.01	-1.82
2013	12.77	14.48	-1.71	3.32	3.94	-.62	16.09	18.42	-2.33
2014	12.97	14.82	-1.84	3.35	3.98	-.64	16.32	18.80	-2.48
2015	13.00	15.05	-2.05	3.37	3.94	-.57	16.37	18.99	-2.62
2016	13.03	15.20	-2.17	3.40	3.98	-.58	16.43	19.18	-2.75
2017	13.07	15.31	-2.24	3.43	4.04	-.61	16.49	19.35	-2.85
2018	13.10	15.44	-2.34	3.45	4.13	-.68	16.55	19.57	-3.02
2019	13.12	15.65	-2.53	3.47	4.26	-.79	16.59	19.91	-3.32
2020	13.14	15.94	-2.80	3.50	4.43	-.93	16.64	20.38	-3.73
2021	13.18	16.32	-3.14	3.53	4.63	-1.10	16.71	20.94	-4.23
2025	13.28	17.94	-4.66	3.62	5.63	-2.01	16.90	23.57	-6.67
2030	13.37	19.53	-6.16	3.73	7.00	-3.27	17.11	26.53	-9.42
2035	13.42	20.36	-6.93	3.83	8.59	-4.76	17.25	28.95	-11.70
2040	13.45	20.68	-7.23	3.91	10.09	-6.19	17.36	30.78	-13.42
2045	13.46	20.87	-7.40	3.99	11.26	-7.27	17.45	32.12	-14.67
2050	13.48	21.10	-7.62	4.07	12.06	-7.99	17.55	33.16	-15.61
2055	13.50	21.47	-7.97	4.16	12.53	-8.37	17.66	34.01	-16.34
2060	13.53	21.94	-8.40	4.25	12.82	-8.58	17.78	34.76	-16.98
2065	13.56	22.43	-8.87	4.33	13.07	-8.74	17.89	35.50	-17.61
2070	13.60	23.08	-9.47	4.41	13.37	-8.97	18.01	36.45	-18.44
2075	13.64	23.77	-10.12	4.48	13.59	-9.11	18.13	37.36	-19.23
2080	13.68	24.44	-10.76	4.55	13.66	-9.11	18.24	38.10	-19.86
2085	13.72	25.05	-11.33	4.62	13.65	-9.03	18.34	38.70	-20.36
2090	13.75	25.54	-11.79	4.68	13.61	-8.93	18.43	39.16	-20.73

[a] The taxable payroll for HI is significantly larger than the taxable payroll for OASDI because the HI taxable maximum amount was eliminated beginning in 1994, and because HI covers all Federal civilian employees, all State and local government employees hired after April 1, 1986, and railroad employees. Combined OASDI and HI rates are the sum of the separately derived rates for each program.

Notes:
1. The income rate excludes interest income.
2. Totals do not necessarily equal the sums of rounded components.

Table VI.F3 shows summarized values over the 25-year, 50-year, and 75-year valuation periods. For each of those periods, the summarized income rates include beginning fund balances, and the summarized cost rates include the cost of accumulating an ending fund balance equal to 100 percent of annual cost at the end of the period. Estimates for the combined trust funds are theoretical because there is no authority for borrowing by or transfers among these trust funds.

Table VI.F3.—Summarized OASDI and HI Income Rates and Cost Rates for Valuation Periods,[a] Calendar Years 2012-90
[As a percentage of taxable payroll[b]]

Valuation period	OASDI			HI			Combined		
	Income rate	Cost rate	Actuarial balance	Income rate	Cost rate	Actuarial balance	Income rate	Cost rate	Actuarial balance
Intermediate:									
25-year:									
2012-36	14.97	16.18	-1.21	3.66	4.34	-0.69	18.62	20.52	-1.90
50-year:									
2012-61	14.24	16.52	-2.28	3.75	4.92	-1.17	17.99	21.44	-3.45
75-year:									
2012-86	14.02	16.69	-2.67	3.86	5.21	-1.35	17.88	21.89	-4.02
Low-cost:									
25-year:									
2012-36	14.84	14.46	.38	3.60	3.30	.31	18.45	17.76	.69
50-year:									
2012-61	14.08	14.24	-.16	3.67	3.14	.52	17.75	17.38	.36
75-year:									
2012-86	13.82	13.93	-.11	3.75	3.09	.66	17.57	17.02	.55
High-cost:									
25-year:									
2012-36	15.09	18.22	-3.13	3.72	5.92	-2.20	18.81	24.14	-5.32
50-year:									
2012-61	14.41	19.32	-4.91	3.85	8.21	-4.35	18.27	27.53	-9.26
75-year:									
2012-86	14.25	20.14	-5.89	3.98	9.25	-5.27	18.23	29.39	-11.17

[a] Income rates include beginning trust fund balances and cost rates include the cost of reaching an ending target trust fund equal to 100 percent of annual cost at the end of the period.
[b] The taxable payroll for HI is significantly larger than the taxable payroll for OASDI because the HI taxable maximum amount was eliminated beginning 1994, and because HI covers all Federal civilian employees, all State and local government employees hired after April 1, 1986, and railroad employees. Combined OASDI and HI rates are computed as the sum of the separately derived rates for each program.

Note: Totals do not necessarily equal the sums of rounded components.

The Trustees project that the combined OASDI and HI system will experience large actuarial deficits for the 25-year, 50-year, and 75-year valuation periods under the high-cost assumptions. Actuarial deficits under the intermediate assumptions are smaller than those for the high-cost assumptions for all three valuation periods. The combined OASDI and HI system has a positive actuarial balance under the low-cost assumptions for all three valuation periods.

2. Estimates as a Percentage of Gross Domestic Product

This section contains long-range projections of the operations of the combined Old-Age and Survivors Insurance and Disability Insurance (OASI and DI) Trust Funds and of the Hospital Insurance (HI) Trust Fund, expressed as a percentage of gross domestic product (GDP). While expressing fund operations as a percentage of taxable payroll is the most useful approach for assessing the financial status of the programs (see section IV.B.1), expressing them as a percentage of the total value of goods and services produced in the United States provides an additional perspective.

Table VI.F4 shows non-interest income, total cost, and the resulting balance of the combined OASI and DI Trust Funds, of the HI Trust Fund, and of the combined OASI, DI, and HI Trust Funds, expressed as percentages of GDP on the basis of each of the three alternative sets of assumptions. Table VI.F4 also contains estimates of GDP. For OASDI, non-interest income consists of payroll tax contributions, proceeds from taxation of benefits, and reimbursements from the General Fund of the Treasury, if any. Cost consists of benefit payments, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. For HI, non-interest income consists of payroll tax contributions (including contributions from railroad employment), up to an additional 0.9 percent tax on earned income for relatively high earners, proceeds from taxation of OASDI benefits, and reimbursements from the General Fund of the Treasury, if any. Cost consists of outlays (benefits and administrative expenses) for insured beneficiaries. The Trustees show income and cost estimates on a cash basis for the OASDI program and on an incurred basis for the HI program.

The Trustees project the OASDI annual balance (non-interest income less cost) as a percentage of GDP to be negative from 2012 through 2015 under all three sets of assumptions. Under the low-cost assumptions, the OASDI annual balance as a percentage of GDP is positive from 2016 through 2019. After 2019, deficits increase to a peak in 2033 and decrease thereafter. By 2076, the OASDI balance becomes positive, reaching 0.04 percent of GDP in 2086. Under the intermediate assumptions, the Trustees estimate that the OASDI balance will be negative for all years of the projection period. Annual deficits decrease from 2013 through 2017, increase from 2017 through 2036, decrease from 2036 through 2053, and increase thereafter. Under the high-cost assumptions, the OASDI balance is negative, with increasing deficits throughout the projection period.

The Trustees project that the HI balance as a percentage of GDP will be negative from 2012 through 2014 under the low-cost assumptions, and then pos-

itive and generally increasing thereafter. Under the intermediate assumptions, the HI balance is negative throughout the projection period. Annual deficits decline through 2018, reach a peak in 2047, and remain relatively stable thereafter. Under the high-cost assumptions, the HI balance is negative for all years of the projection period. Annual deficits reach a peak in 2074 and decline thereafter.

The combined OASDI and HI annual balance as a percentage of GDP is negative throughout the projection period under both the intermediate and high-cost assumptions. Under the low-cost assumptions, the combined OASDI and HI balance is negative from 2012 through 2015, positive from 2016 through 2022, negative from 2023 through 2048, and then positive and rising thereafter. Under the intermediate assumptions, combined OASDI and HI annual deficits decline from 2013 through 2017, and then rise, reaching a peak in 2041. After 2041, annual deficits fluctuate between about 2.2 percent and 2.4 percent of GDP. Under the high-cost assumptions, combined annual deficits rise throughout the projection period.

By 2086, the combined OASDI and HI annual balances as percentages of GDP range from a positive balance of 0.54 percent for the low-cost assumptions to a deficit of 7.23 percent for the high-cost assumptions. Balances differ by a smaller amount for the tenth year, 2021, and range from a positive balance of 0.15 percent for the low-cost assumptions to a deficit of 1.67 percent for the high-cost assumptions.

The summarized long-range (75-year) balance as a percentage of GDP for the combined OASDI and HI programs varies among the three alternatives by a relatively large amount, from a positive balance of 0.26 percent under the low-cost assumptions to a deficit of 4.40 percent under the high-cost assumptions. The 25-year summarized balance varies by a smaller amount, from a positive balance of 0.29 percent to a deficit of 2.15 percent. Summarized rates are calculated on a present-value basis. They include the trust fund balances on January 1, 2012 and the cost of reaching a target trust fund level equal to 100 percent of the following year's annual cost at the end of the period. (See section IV.B.4 for further explanation.)

Table VI.F4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2012-90

	Percentage of GDP									GDP in dollars
	OASDI			HI			Combined			
Calendar year	Income[a]	Cost	Balance	Income[a]	Cost	Balance	Income[a]	Cost	Balance	(billions)
Intermediate:										
2012	4.67	5.01	-0.34	1.46	1.70	-0.24	6.12	6.70	-0.58	$15,757
2013	4.66	5.06	-.41	1.51	1.69	-.18	6.17	6.75	-.58	16,441
2014	4.71	5.09	-.38	1.53	1.68	-.15	6.23	6.77	-.53	17,300
2015	4.73	5.10	-.37	1.55	1.63	-.09	6.27	6.73	-.46	18,303
2016	4.76	5.11	-.35	1.56	1.63	-.06	6.32	6.74	-.41	19,340
2017	4.81	5.14	-.33	1.59	1.63	-.04	6.39	6.77	-.38	20,392
2018	4.85	5.19	-.34	1.61	1.64	-.04	6.46	6.84	-.38	21,458
2019	4.87	5.28	-.40	1.62	1.67	-.05	6.49	6.94	-.45	22,488
2020	4.89	5.38	-.49	1.63	1.70	-.07	6.52	7.08	-.56	23,525
2021	4.91	5.49	-.58	1.64	1.74	-.10	6.54	7.22	-.68	24,597
2025	4.89	5.89	-1.00	1.66	1.94	-.28	6.54	7.83	-1.28	29,392
2030	4.87	6.25	-1.38	1.68	2.16	-.48	6.55	8.41	-1.86	36,679
2035	4.85	6.36	-1.51	1.71	2.38	-.68	6.56	8.74	-2.18	45,940
2040	4.83	6.31	-1.48	1.72	2.53	-.81	6.55	8.84	-2.29	57,653
2045	4.79	6.21	-1.41	1.74	2.60	-.86	6.53	8.81	-2.28	72,302
2050	4.76	6.12	-1.36	1.76	2.62	-.87	6.51	8.75	-2.23	90,396
2055	4.73	6.08	-1.36	1.77	2.62	-.84	6.50	8.70	-2.20	112,810
2060	4.69	6.06	-1.37	1.79	2.63	-.83	6.49	8.69	-2.20	140,739
2065	4.66	6.04	-1.37	1.81	2.66	-.85	6.47	8.69	-2.22	175,704
2070	4.63	6.04	-1.40	1.82	2.70	-.88	6.45	8.74	-2.28	219,280
2075	4.61	6.04	-1.44	1.83	2.73	-.89	6.44	8.77	-2.33	273,504
2080	4.58	6.06	-1.48	1.85	2.73	-.88	6.43	8.78	-2.35	340,865
2085	4.56	6.09	-1.53	1.86	2.71	-.85	6.42	8.80	-2.38	424,327
2090	4.55	6.13	-1.58	1.87	2.69	-.82	6.42	8.82	-2.40	527,996
Summarized rates:[b]										
25-year:										
2012-36 . . .	5.52	5.97	-.45	1.70	2.01	-.32	7.21	7.98	-.77	
50-year:										
2012-61 . . .	5.19	6.02	-.83	1.72	2.26	-.54	6.91	8.28	-1.37	
75-year										
2012-86 . . .	5.05	6.01	-.96	1.75	2.36	-.61	6.80	8.37	-1.57	
Low-cost:										
2012	4.65	4.93	-.29	1.46	1.64	-.18	6.10	6.57	-.47	15,936
2013	4.67	4.91	-.24	1.51	1.60	-.09	6.18	6.50	-.32	16,827
2014	4.71	4.86	-.15	1.53	1.56	-.03	6.24	6.42	-.18	17,803
2015	4.75	4.81	-.07	1.54	1.48	.06	6.29	6.30	-.01	18,849
2016	4.80	4.79	[c]	1.56	1.45	.11	6.35	6.24	.11	19,883
2017	4.86	4.82	.04	1.58	1.43	.15	6.44	6.24	.20	20,803
2018	4.92	4.86	.06	1.60	1.41	.18	6.52	6.28	.24	21,719
2019	4.95	4.92	.03	1.61	1.41	.20	6.56	6.33	.23	22,645
2020	4.98	4.99	-.02	1.62	1.41	.21	6.59	6.40	.19	23,601
2021	4.99	5.06	-.06	1.63	1.42	.21	6.62	6.47	.15	24,596
2025	4.98	5.34	-.36	1.64	1.47	.17	6.62	6.81	-.19	28,972
2030	4.97	5.59	-.62	1.66	1.50	.16	6.63	7.09	-.46	35,463
2035	4.96	5.62	-.66	1.69	1.52	.17	6.64	7.14	-.49	43,558
2040	4.95	5.51	-.56	1.70	1.48	.23	6.65	6.98	-.33	53,705
2045	4.93	5.36	-.43	1.72	1.41	.31	6.65	6.78	-.13	66,377
2050	4.92	5.25	-.33	1.74	1.35	.38	6.65	6.60	.05	82,004
2055	4.90	5.17	-.27	1.76	1.31	.45	6.66	6.48	.18	101,347
2060	4.89	5.10	-.21	1.78	1.31	.47	6.67	6.41	.26	125,382
2065	4.88	5.02	-.13	1.80	1.33	.47	6.68	6.34	.34	155,356
2070	4.87	4.94	-.07	1.82	1.36	.46	6.69	6.30	.39	192,689
2075	4.87	4.88	-.01	1.84	1.38	.46	6.71	6.26	.45	239,214
2080	4.87	4.83	.04	1.86	1.39	.47	6.72	6.22	.51	297,037
2085	4.87	4.83	.04	1.88	1.39	.49	6.75	6.21	.53	368,574
2090	4.88	4.85	.03	1.90	1.39	.51	6.78	6.24	.54	456,969

Table VI.F4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2012-90 (Cont.)

	Percentage of GDP									GDP in dollars
	OASDI			HI			Combined			
Calendar year	Income[a]	Cost	Balance	Income[a]	Cost	Balance	Income[a]	Cost	Balance	(billions)
Low-cost (Cont.):										
Summarized rates: [b]										
25-year:										
2012-36 . . .	5.59	5.45	.14	1.68	1.54	0.14	7.27	6.99	0.29	
50-year:										
2012-61 . . .	5.29	5.35	-.06	1.70	1.46	.24	7.00	6.82	.18	
75-year										
2012-86 . . .	5.18	5.22	-.04	1.74	1.43	.30	6.92	6.66	.26	
High-cost:										
2012	4.71	5.12	-.41	1.46	1.77	-.31	6.17	6.89	-.72	$15,457
2013	4.64	5.26	-.62	1.51	1.80	-.28	6.15	7.05	-.90	15,968
2014	4.71	5.38	-.67	1.53	1.82	-.29	6.24	7.21	-.96	16,669
2015	4.73	5.48	-.75	1.55	1.82	-.26	6.28	7.29	-1.01	17,531
2016	4.75	5.54	-.79	1.58	1.85	-.27	6.33	7.38	-1.06	18,584
2017	4.79	5.61	-.82	1.60	1.89	-.29	6.39	7.50	-1.11	19,716
2018	4.82	5.68	-.86	1.62	1.95	-.32	6.44	7.62	-1.18	20,941
2019	4.83	5.76	-.93	1.64	2.01	-.37	6.46	7.77	-1.30	22,233
2020	4.84	5.87	-1.03	1.65	2.09	-.44	6.49	7.96	-1.47	23,487
2021	4.85	6.00	-1.15	1.66	2.18	-.52	6.51	8.18	-1.67	24,702
2025	4.82	6.52	-1.69	1.68	2.62	-.93	6.51	9.13	-2.63	29,980
2030	4.80	7.01	-2.21	1.72	3.22	-1.50	6.51	10.22	-3.71	38,168
2035	4.77	7.23	-2.46	1.74	3.91	-2.17	6.51	11.14	-4.63	48,763
2040	4.73	7.28	-2.55	1.76	4.55	-2.79	6.49	11.83	-5.33	62,258
2045	4.69	7.26	-2.58	1.78	5.02	-3.24	6.47	12.28	-5.82	79,158
2050	4.63	7.25	-2.62	1.79	5.32	-3.52	6.43	12.57	-6.14	100,057
2055	4.59	7.29	-2.71	1.81	5.46	-3.65	6.40	12.75	-6.35	125,930
2060	4.54	7.35	-2.82	1.83	5.51	-3.69	6.36	12.87	-6.50	158,131
2065	4.49	7.42	-2.93	1.84	5.55	-3.71	6.32	12.97	-6.64	198,405
2070	4.44	7.53	-3.09	1.85	5.61	-3.76	6.29	13.14	-6.85	248,401
2075	4.40	7.66	-3.26	1.86	5.63	-3.77	6.25	13.29	-7.03	310,269
2080	4.36	7.78	-3.42	1.86	5.59	-3.73	6.22	13.37	-7.15	386,786
2085	4.32	7.89	-3.57	1.87	5.53	-3.66	6.19	13.41	-7.22	481,453
2090	4.29	7.96	-3.68	1.88	5.46	-3.58	6.16	13.42	-7.26	599,053
Summarized rates: [b]										
25-year:										
2012-36 . . .	5.47	6.60	-1.13	1.72	2.74	-1.02	7.19	9.34	-2.15	
50-year:										
2012-61 . . .	5.12	6.86	-1.74	1.75	3.72	-1.98	6.87	10.58	-3.72	
75-year										
2012-86 . . .	4.96	7.01	-2.05	1.77	4.12	-2.35	6.73	11.13	-4.40	

[a] Income for individual years excludes interest on the trust funds. Interest is implicit in all summarized values.
[b] Summarized rates are calculated on a present-value basis. They include the value of the trust funds on January 1, 2012 and the cost of reaching a target trust fund level equal to 100 percent of annual cost at the end of the period.
[c] Between -0.005 and 0.005 percent of GDP.

Note: Totals do not necessarily equal the sums of rounded components.

To compare trust fund operations expressed as percentages of taxable payroll and those expressed as percentages of GDP, table VI.F5 displays ratios of OASDI taxable payroll to GDP. HI taxable payroll is about 26 percent larger than the OASDI taxable payroll throughout the long-range period; see section 1 of this appendix for a detailed description of the difference. The cost

as a percentage of GDP is equal to the cost as a percentage of taxable payroll multiplied by the ratio of taxable payroll to GDP.

Table VI.F5.—Ratio of OASDI Taxable Payroll to GDP, Calendar Years 2012-90

Calendar year	Intermediate	Low-cost	High-cost
2012	0.362	0.362	0.363
2013	.363	.363	.363
2014	.364	.365	.363
2015	.365	.368	.364
2016	.367	.371	.364
2017	.369	.375	.366
2018	.372	.379	.368
2019	.373	.381	.368
2020	.374	.382	.368
2021	.374	.383	.368
2025	.371	.380	.363
2030	.368	.378	.359
2035	.365	.377	.355
2040	.363	.376	.352
2045	.361	.376	.348
2050	.358	.375	.344
2055	.356	.374	.340
2060	.353	.373	.335
2065	.351	.373	.331
2070	.348	.372	.326
2075	.346	.372	.322
2080	.344	.372	.318
2085	.342	.373	.315
2090	.341	.373	.312

Projections of GDP reflect projected increases in U.S. employment, labor productivity, average hours worked, and the GDP deflator. Projections of taxable payroll reflect the components of growth in GDP along with assumed changes in the ratio of worker compensation to GDP, the ratio of earnings to worker compensation, the ratio of OASDI covered earnings to total earnings, and the ratio of taxable to total covered earnings.

Over the long-range period, the Trustees project that the ratio of OASDI taxable payroll to GDP will decline mostly due to a projected decline in the ratio of wages to employee compensation. Over the last five complete economic cycles, the ratio of wages to employee compensation declined at an average annual rate of 0.31 percent. The Trustees project that the ratio of wages to employee compensation will continue to decline, over the 65-year period ending in 2086, at an average annual rate of 0.03, 0.13, and 0.23 percent for the low-cost, intermediate, and high-cost assumptions, respectively.

3. Estimates in Dollars

This section contains long-range projections, in dollars, of the operations of the combined OASI and DI Trust Funds and in some cases the HI Trust Fund. Comparing current dollar values over long periods of time is difficult because of the effect of inflation. In order to compare dollar values in a meaningful way, table VI.F6 provides several economic series or indices which can be used to adjust current dollars for changes in prices, wages, or other aspects of economic growth during the projection period. Any series of values can be adjusted by dividing the value for each year by the corresponding index value for the year.

One of the most common forms of standardization is price indexing, which uses some measure of change in the prices of consumer goods. The Bureau of Labor Statistics, Department of Labor, publishes one such price index, the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W, hereafter referred to as CPI). The Social Security Administration (SSA) uses this index to determine the annual cost-of-living increases for OASDI monthly benefits. The Trustees assume the ultimate annual rate of increase in the CPI will be 1.8, 2.8, and 3.8 percent for the low-cost, intermediate, and high-cost sets of assumptions, respectively. Table VI.F7 provides CPI-indexed dollar values (those adjusted using the CPI in table VI.F6), which indicate the relative purchasing power of the values over time.

Wage indexing is another type of standardization. It combines the effects of price inflation and real-wage growth. The wage index presented here is the national average wage index, as defined in section 215(i)(1)(G) of the Social Security Act. SSA uses this index to annually adjust the contribution and benefit base and other earnings-related program amounts. The Trustees assume that the average wage will grow by an average rate of 3.5, 3.9, and 4.3 percent under the low-cost, intermediate, and high-cost assumptions, respectively, between 2021 and 2086. Wage-indexed values indicate the level of a series relative to the standard of living of workers over time.

The taxable payroll index adjusts for the effects of changes in the number of workers and changes in the proportion of earnings that are taxable, as well as for the effects of price inflation and real-wage growth. The OASDI taxable payroll consists of all earnings subject to OASDI taxation, with an adjustment for the lower effective tax rate on multiple-employer excess wages. A series of values, divided by the taxable payroll, indicates the percentage of payroll that each value represents, and thus the extent to which the series of values increases or decreases as a percent of payroll over time.

The GDP index adjusts for the growth in the aggregate amount of goods and services produced in the United States. Values adjusted by GDP (see section 2 of this appendix) indicate their relative share of the total output of the economy. The Trustees make no explicit assumption about growth in taxable payroll or GDP. These series reflect the basic demographic and economic assumptions, as discussed in sections V.A and V.B, respectively.

Discounting at the rate of interest is another way of adjusting current dollars. Each interest-rate factor shown in table VI.F6 equals the average of the assumed annual interest rates for special public-debt obligations issuable to the trust funds in that year. The Trustees use a slightly different series of interest rates, the actual annual yields on currently-held trust fund assets, to calculate the summarized values presented elsewhere in this report. The Trustees assume that ultimate nominal interest rates, which in practice are compounded semiannually, will equal approximately 5.2, 5.7, and 6.2 percent for the low-cost, intermediate, and high-cost assumptions, respectively.

Table VI.F6.—Selected Economic Variables, Calendar Years 2011-90
[GDP and taxable payroll in billions]

Calendar year	Adjusted CPI[a]	Average wage index	Taxable payroll[b]	Gross domestic product	Compound interest-rate factor[c]
Intermediate:					
2011	98.03	$43,008.96	$5,446	$15,099	0.9765
2012	100.00	44,644.06	5,704	15,757	1.0000
2013	101.93	46,496.20	5,965	16,441	1.0347
2014	104.00	48,595.38	6,297	17,300	1.0808
2015	106.21	50,892.59	6,682	18,303	1.1354
2016	108.58	53,317.30	7,091	19,340	1.1943
2017	111.24	55,988.97	7,534	20,392	1.2549
2018	114.09	58,698.31	7,983	21,458	1.3207
2019	117.26	61,178.72	8,394	22,488	1.3942
2020	120.56	63,675.71	8,807	23,525	1.4737
2021	123.93	66,160.67	9,209	24,597	1.5590
2025	138.41	76,830.87	10,899	29,392	1.9520
2030	158.90	93,192.94	13,481	36,679	2.5854
2035	182.43	113,227.81	16,781	45,940	3.4243
2040	209.44	137,642.06	20,945	57,653	4.5354
2045	240.45	167,075.91	26,106	72,302	6.0070
2050	276.05	202,452.23	32,402	90,396	7.9561
2055	316.93	245,183.63	40,157	112,810	10.5377
2060	363.85	296,734.92	49,739	140,739	13.9568
2065	417.72	359,179.10	61,661	175,704	18.4854
2070	479.57	434,566.59	76,394	219,280	24.4834
2075	550.58	526,186.96	94,657	273,504	32.4276
2080	632.10	637,582.43	117,269	340,865	42.9494
2085	725.69	773,236.75	145,261	424,327	56.8852
2090	833.14	938,606.76	180,022	527,996	75.3428
Low-cost:					
2011	98.16	43,024.67	5,448	15,110	.9748
2012	100.00	44,975.10	5,770	15,936	1.0000
2013	101.32	47,148.54	6,107	16,827	1.0363
2014	102.60	49,327.53	6,502	17,803	1.0821
2015	104.00	51,541.31	6,930	18,849	1.1342
2016	105.52	53,798.61	7,370	19,883	1.1898
2017	107.17	56,046.67	7,803	20,803	1.2462
2018	108.95	58,378.15	8,229	21,719	1.3071
2019	110.87	60,561.85	8,622	22,645	1.3739
2020	112.86	62,770.53	9,024	23,601	1.4453
2021	114.89	64,960.49	9,422	24,596	1.5209
2025	123.39	74,251.79	11,017	28,972	1.8671
2030	134.90	88,308.88	13,407	35,463	2.4128
2035	147.49	105,099.43	16,421	43,558	3.1179
2040	161.25	125,080.99	20,213	53,705	4.0290
2045	176.30	148,686.55	24,935	66,377	5.2064
2050	192.74	176,526.37	30,728	82,004	6.7279
2055	210.73	209,555.72	37,910	101,347	8.6941
2060	230.39	248,829.89	46,822	125,382	11.2348
2065	251.88	295,585.99	57,944	155,356	14.5180
2070	275.38	350,941.21	71,771	192,689	18.7607
2075	301.08	416,976.42	89,051	239,214	24.2432
2080	329.17	495,793.52	110,590	297,037	31.3279
2085	359.88	590,011.62	137,376	368,574	40.4830
2090	393.45	702,721.70	170,654	456,969	52.3136

Table VI.F6.—Selected Economic Variables, Calendar Years 2011-90
[GDP and taxable payroll in billions]

Calendar year	Adjusted CPI[a]	Average wage index	Taxable payroll[b]	Gross domestic product	Compound interest-rate factor[c]
High-cost:					
2011	97.84	$43,004.50	$5,444	$15,091	0.9813
2012	100.00	44,061.05	5,605	15,457	1.0000
2013	102.55	45,755.82	5,797	15,968	1.0339
2014	105.42	47,696.44	6,054	16,669	1.0826
2015	108.63	50,024.82	6,378	17,531	1.1416
2016	112.19	52,825.03	6,772	18,584	1.2116
2017	116.14	55,928.50	7,221	19,716	1.2901
2018	120.48	59,176.22	7,701	20,941	1.3760
2019	125.06	62,301.42	8,181	22,233	1.4684
2020	129.81	65,304.65	8,646	23,487	1.5640
2021	134.75	68,163.48	9,083	24,702	1.6624
2025	156.42	80,394.53	10,892	29,980	2.1219
2030	188.49	99,421.88	13,697	38,168	2.8788
2035	227.13	123,305.21	17,326	48,763	3.9057
2040	273.69	153,050.02	21,908	62,258	5.2988
2045	329.80	189,578.37	27,554	79,158	7.1890
2050	397.41	234,287.72	34,398	100,057	9.7533
2055	478.88	289,282.61	42,757	125,930	13.2325
2060	577.05	356,613.22	52,996	158,131	17.9526
2065	695.34	439,507.54	65,636	198,405	24.3564
2070	837.88	541,428.70	81,084	248,401	33.0446
2075	1,009.65	667,468.96	99,995	310,269	44.8318
2080	1,216.63	823,470.78	123,149	386,786	60.8237
2085	1,466.04	1,017,070.35	151,587	481,453	82.5201
2090	1,766.57	1,257,532.91	186,694	599,053	111.9557

[a] CPI-W indexed to calendar year 2012.
[b] Total earnings subject to OASDI contribution rates, adjusted to reflect the lower effective contribution rates (compared to the combined employee-employer rate) that apply to multiple-employer "excess wages."
[c] Incorporates the average of the assumed annual interest rates for special public-debt obligations issuable to the trust funds in the 12 months of the year, under each alternative.

Table VI.F7 shows the operations of the combined OASI and DI Trust Funds in CPI-indexed 2012 dollars—that is, adjusted by the CPI indexing series as discussed above. The following items are presented in the table: (1) non-interest income; (2) interest income; (3) total income; (4) total cost; and (5) assets at the end of the year. Non-interest income consists of payroll tax contributions, income from taxation of benefits, and reimbursements from the General Fund of the Treasury, if any. Cost consists of benefit payments, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. Table VI.F7 shows trust fund operations under the low-cost, intermediate, and high-cost sets of assumptions.

Table VI.F7.—Operations of the Combined OASI and DI Trust Funds, in CPI-indexed 2012 Dollars,[a] Calendar Years 2012-90
[In billions]

Calendar year	Non-interest income	Interest income	Total income	Cost	Assets at end of year
Intermediate:					
2012	$735.5	$110.4	$846.0	$788.7	$2,735.2
2013	750.9	105.9	856.8	816.5	2,723.7
2014	783.0	104.4	887.4	846.6	2,710.3
2015	814.8	104.4	919.2	878.6	2,694.6
2016	847.7	105.1	952.8	910.2	2,678.2
2017	880.9	106.1	987.0	942.4	2,659.0
2018	912.0	107.7	1,019.7	976.8	2,635.3
2019	934.4	108.9	1,043.3	1,011.8	2,595.6
2020	955.1	109.4	1,064.5	1,050.1	2,539.0
2021	973.8	108.6	1,082.5	1,088.9	2,463.4
2025	1,037.8	108.5	1,146.3	1,250.6	1,950.3
2030[b]	1,124.0	50.8	1,174.8	1,442.7	742.4
Low-cost:					
2012	740.4	110.9	851.3	786.2	2,743.0
2013	775.5	108.3	883.8	814.9	2,776.2
2014	817.8	109.0	926.8	843.2	2,825.2
2015	860.7	111.7	972.3	872.5	2,887.0
2016	903.6	115.6	1,019.3	902.8	2,961.8
2017	943.9	120.3	1,064.1	935.2	3,045.2
2018	980.9	125.9	1,106.8	969.0	3,133.2
2019	1,011.0	132.2	1,143.2	1,005.1	3,217.0
2020	1,040.6	138.2	1,178.8	1,043.8	3,295.1
2021	1,069.2	143.8	1,213.0	1,082.9	3,367.0
2025	1,169.1	175.2	1,344.2	1,254.6	3,545.4
2030	1,306.1	178.7	1,484.9	1,469.7	3,463.2
2035	1,464.6	160.6	1,625.2	1,659.0	3,081.1
2040	1,647.8	136.2	1,784.0	1,834.5	2,592.8
2045	1,857.0	112.8	1,969.7	2,019.3	2,131.5
2050	2,091.2	91.5	2,182.7	2,231.9	1,711.5
2055	2,358.4	71.5	2,429.9	2,486.5	1,310.2
2060	2,663.0	50.9	2,714.0	2,776.7	900.0
2065	3,012.0	33.4	3,045.4	3,093.7	557.2
2070	3,410.1	21.9	3,432.0	3,460.0	334.6
2075	3,867.5	18.4	3,885.9	3,876.6	273.4
2080	4,390.7	26.4	4,417.1	4,358.5	443.6
2085	4,988.5	44.0	5,032.5	4,943.1	788.1
2090	5,669.6	64.8	5,734.4	5,637.9	1,181.9
High-cost:					
2012	728.0	109.6	837.6	791.4	2,724.1
2013	722.0	102.7	824.7	818.6	2,662.5
2014	744.9	99.2	844.1	850.9	2,583.2
2015	763.2	96.4	859.6	883.8	2,482.7
2016	786.6	94.0	880.7	917.4	2,367.1
2017	812.4	91.8	904.2	951.7	2,239.1
2018	837.1	89.2	926.4	986.7	2,098.1
2019	858.0	85.0	943.0	1,023.8	1,940.5
2020	875.4	78.9	954.4	1,062.0	1,761.9
2021	888.6	70.9	959.5	1,100.1	1,556.8
2025[b]	924.5	34.4	958.9	1,249.2	460.4

[a] CPI-indexed 2012 dollars equal current dollars adjusted by the CPI indexing series in table VI.F6.
[b] The combined OASI and DI Trust Funds become exhausted in 2033 under the intermediate assumptions and in 2027 under the high-cost assumptions, so estimates for later years are not shown.

Note: Totals do not necessarily equal the sums of rounded components.

Figure VI.F1 compares annual cost with annual total income and annual non-interest income. The figure shows only the OASDI program under intermediate assumptions, and presents values in CPI-indexed 2012 dollars, consistent with table VI.F7. The difference between the income values for each year is equal to the trust fund interest earnings. The figure illustrates that, under intermediate assumptions: (1) annual cost exceeds non-interest income in each year of the projection period; (2) total annual income, which includes interest earnings on trust fund assets, is sufficient to cover annual cost for years 2012 through 2020; and (3) total annual income is not sufficient to cover annual cost for years beginning in 2021. From 2021 through 2032 (the year preceding the year of trust fund exhaustion), annual cost is covered by drawing down combined trust fund assets.

Figure VI.F1.—Estimated OASDI Income and Cost in CPI-indexed 2012 Dollars, Based on Intermediate Assumptions
[In billions]

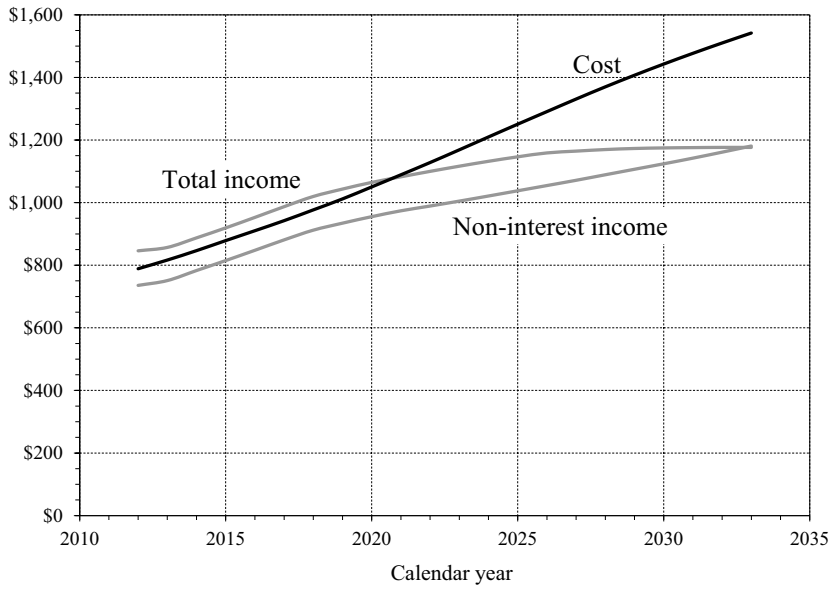


Table VI.F8 shows the operations of the combined OASI and DI Trust Funds in current dollars—that is, in dollars unadjusted for price inflation. The following items are presented in the table: (1) non-interest income; (2) interest income; (3) total income; (4) total cost; and (5) assets at the end of the year. The Trustees present these estimates, using the low-cost, intermediate, and

high-cost sets of demographic and economic assumptions, to facilitate independent analysis.

Table VI.F8.—Operations of the Combined OASI and DI Trust Funds, in Current Dollars, Calendar Years 2012-90
[In billions]

Calendar year	Non-interest income	Interest income	Total income	Cost	Assets at end of year
Intermediate:					
2012	$735.5	$110.4	$846.0	$788.7	$2,735.2
2013	765.4	108.0	873.4	832.3	2,776.3
2014	814.3	108.5	922.9	880.5	2,818.8
2015	865.4	110.9	976.3	933.2	2,861.9
2016	920.5	114.1	1,034.6	988.4	2,908.1
2017	979.9	118.0	1,098.0	1,048.2	2,957.8
2018	1,040.6	122.8	1,163.4	1,114.5	3,006.8
2019	1,095.7	127.7	1,223.4	1,186.5	3,043.7
2020	1,151.5	131.9	1,283.4	1,266.0	3,061.0
2021	1,206.9	134.6	1,341.5	1,349.5	3,053.0
2025	1,436.4	150.1	1,586.6	1,730.9	2,699.4
2030[a]	1,786.1	80.7	1,866.7	2,292.4	1,179.7
Low-cost:					
2012	740.4	110.9	851.3	786.2	2,743.0
2013	785.7	109.7	895.4	825.7	2,812.8
2014	839.0	111.8	950.8	865.1	2,898.5
2015	895.1	116.1	1,011.2	907.4	3,002.4
2016	953.5	122.0	1,075.5	952.6	3,125.2
2017	1,011.5	128.9	1,140.4	1,002.2	3,263.4
2018	1,068.6	137.2	1,205.8	1,055.7	3,413.5
2019	1,120.8	146.5	1,267.4	1,114.3	3,566.6
2020	1,174.5	156.0	1,330.4	1,178.0	3,719.0
2021	1,228.5	165.2	1,393.7	1,244.2	3,868.5
2025	1,442.6	216.1	1,658.7	1,548.1	4,374.8
2030	1,762.0	241.1	2,003.1	1,982.7	4,672.0
2035	2,160.2	236.9	2,397.1	2,446.9	4,544.3
2040	2,657.2	219.7	2,876.8	2,958.2	4,180.9
2045	3,273.8	198.8	3,472.6	3,559.9	3,757.7
2050	4,030.6	176.4	4,207.0	4,301.8	3,298.8
2055	4,969.8	150.6	5,120.4	5,239.7	2,760.9
2060	6,135.3	117.4	6,252.7	6,397.1	2,073.5
2065	7,586.7	84.2	7,670.8	7,792.6	1,403.5
2070	9,390.9	60.4	9,451.3	9,528.2	921.3
2075	11,644.3	55.3	11,699.6	11,671.5	823.3
2080	14,452.7	87.0	14,539.8	14,346.8	1,460.0
2085	17,952.4	158.4	18,110.8	17,789.3	2,836.2
2090	22,307.1	255.1	22,562.3	22,182.7	4,650.2
High-cost:					
2012	728.0	109.6	837.6	791.4	2,724.1
2013	740.4	105.4	845.7	839.5	2,730.4
2014	785.3	104.6	889.9	897.0	2,723.2
2015	829.0	104.7	933.7	960.0	2,696.9
2016	882.5	105.5	988.0	1,029.3	2,655.7
2017	943.5	106.6	1,050.1	1,105.3	2,600.5
2018	1,008.6	107.5	1,116.1	1,188.7	2,527.9
2019	1,073.0	106.3	1,179.4	1,280.4	2,426.9
2020	1,136.4	102.5	1,238.9	1,378.6	2,287.2
2021	1,197.4	95.5	1,292.8	1,482.4	2,097.7
2025[a]	1,446.1	53.9	1,500.0	1,954.0	720.1

[a] The combined OASI and DI Trust Funds become exhausted in 2033 under the intermediate assumptions and in 2027 under the high-cost assumptions, so estimates for later years are not shown.

Note: Totals do not necessarily equal the sums of rounded components.

Table VI.F9 shows, in current dollars, the annual non-interest income and cost of the combined OASI and DI Trust Funds, of the HI Trust Fund, and of the combined OASI, DI, and HI Trust Funds, based on the low-cost, intermediate, and high-cost sets of assumptions. For OASDI, non-interest income consists of payroll tax contributions, proceeds from taxation of OASDI benefits, and reimbursements from the General Fund of the Treasury, if any. Cost consists of benefit payments, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. For HI, non-interest income consists of payroll tax contributions (including contributions from railroad employment), up to an additional 0.9 percent tax on earned income for relatively high earners, proceeds from the taxation of OASDI benefits, and reimbursements from the General Fund of the Treasury, if any. Total cost consists of outlays (scheduled benefits and administrative expenses) for insured beneficiaries. The Trustees show income and cost estimates on a cash basis for the OASDI program and on an incurred basis for the HI program. Table VI.F9 also shows the balance, which equals the difference between income excluding interest and cost.

Table VI.F9.—OASDI and HI Annual Non-interest Income, Cost, and Balance in Current Dollars, Calendar Years 2012-90
[In billions]

Calendar year	OASDI			HI			Combined		
	Non-interest income	Cost	Balance	Non-interest income	Cost	Balance	Non-interest income	Cost	Balance
Intermediate:									
2012	$736	$789	-$53	$230	$267	-$38	$965	$1,056	-$91
2013	765	832	-67	248	277	-29	1,014	1,110	-96
2014	814	880	-66	264	290	-26	1,079	1,171	-92
2015	865	933	-68	283	299	-16	1,148	1,232	-84
2016	920	988	-68	303	314	-12	1,223	1,303	-80
2017	980	1,048	-68	324	332	-9	1,304	1,380	-77
2018	1,041	1,114	-74	345	353	-8	1,385	1,467	-82
2019	1,096	1,187	-91	364	375	-11	1,459	1,561	-102
2020	1,151	1,266	-115	383	400	-17	1,535	1,666	-132
2021	1,207	1,350	-143	403	427	-25	1,610	1,777	-167
2025	1,436	1,731	-295	487	569	-82	1,923	2,300	-377
2030	1,786	2,292	-506	618	793	-176	2,404	3,086	-682
2035	2,228	2,921	-693	784	1,094	-310	3,012	4,016	-1,003
2040	2,782	3,635	-854	994	1,459	-465	3,776	5,095	-1,319
2045	3,466	4,486	-1,021	1,258	1,883	-625	4,724	6,370	-1,645
2050	4,301	5,534	-1,233	1,588	2,372	-785	5,889	7,906	-2,018
2055	5,332	6,863	-1,532	2,002	2,953	-951	7,334	9,817	-2,482
2060	6,607	8,533	-1,925	2,523	3,695	-1,172	9,130	12,228	-3,097
2065	8,194	10,606	-2,412	3,177	4,668	-1,491	11,371	15,274	-3,903
2070	10,158	13,235	-3,077	3,995	5,921	-1,926	14,153	19,157	-5,003
2075	12,595	16,529	-3,933	5,018	7,456	-2,438	17,613	23,984	-6,371
2080	15,615	20,645	-5,030	6,293	9,290	-2,996	21,908	29,934	-8,026
2085	19,359	25,849	-6,489	7,886	11,497	-3,612	27,245	37,346	-10,101
2090	24,013	32,367	-8,354	9,877	14,205	-4,328	33,890	46,572	-12,682
Low-cost:									
2012	740	786	-46	232	261	-29	972	1,047	-75
2013	786	826	-40	254	269	-15	1,040	1,094	-55
2014	839	865	-26	272	277	-6	1,111	1,142	-32
2015	895	907	-12	291	280	11	1,186	1,187	-2
2016	953	953	1	310	288	22	1,264	1,241	23
2017	1,012	1,002	9	329	297	32	1,340	1,299	41
2018	1,069	1,056	13	347	307	40	1,416	1,363	53
2019	1,121	1,114	7	364	319	46	1,485	1,433	52
2020	1,174	1,178	-4	382	333	49	1,556	1,511	45
2021	1,228	1,244	-16	400	348	52	1,628	1,592	36
2025	1,443	1,548	-106	476	426	50	1,918	1,974	-56
2030	1,762	1,983	-221	590	533	58	2,353	2,516	-163
2035	2,160	2,447	-287	734	661	73	2,894	3,108	-214
2040	2,657	2,958	-301	914	792	122	3,571	3,751	-179
2045	3,274	3,560	-286	1,141	938	203	4,415	4,498	-84
2050	4,031	4,302	-271	1,424	1,110	314	5,455	5,412	42
2055	4,970	5,240	-270	1,781	1,330	452	6,751	6,569	182
2060	6,135	6,397	-262	2,231	1,637	594	8,366	8,034	332
2065	7,587	7,793	-206	2,796	2,064	732	10,382	9,857	526
2070	9,391	9,528	-137	3,504	2,617	888	12,895	12,145	750
2075	11,644	11,672	-27	4,395	3,299	1,097	16,039	14,970	1,069
2080	14,453	14,347	106	5,513	4,119	1,394	19,966	18,465	1,500
2085	17,952	17,789	163	6,916	5,111	1,806	24,869	22,900	1,969
2090	22,307	22,183	124	8,674	6,330	2,344	30,981	28,513	2,469

Table VI.F9.—OASDI and HI Annual Non-interest Income, Cost, and Balance in Current Dollars, Calendar Years 2012-90 (Cont.)
[In billions]

Calendar year	OASDI			HI			Combined		
	Non-interest income	Cost	Balance	Non-interest income	Cost	Balance	Non-interest income	Cost	Balance
High-cost:									
2012	$728	$791	-$63	$225	$274	-$48	$954	$1,065	-$112
2013	740	840	-99	241	287	-45	982	1,126	-144
2014	785	897	-112	255	304	-49	1,041	1,201	-160
2015	829	960	-131	272	318	-46	1,101	1,278	-177
2016	883	1,029	-147	293	343	-50	1,176	1,372	-197
2017	943	1,105	-162	316	373	-56	1,260	1,478	-218
2018	1,009	1,189	-180	340	407	-67	1,349	1,596	-247
2019	1,073	1,280	-207	364	447	-83	1,437	1,727	-290
2020	1,136	1,379	-242	388	491	-103	1,524	1,869	-345
2021	1,197	1,482	-285	410	538	-127	1,608	2,020	-412
2025	1,446	1,954	-508	505	785	-280	1,951	2,738	-788
2030	1,832	2,675	-844	655	1,227	-573	2,486	3,903	-1,416
2035	2,326	3,527	-1,201	849	1,906	-1,057	3,175	5,433	-2,258
2040	2,947	4,531	-1,585	1,096	2,832	-1,736	4,043	7,363	-3,320
2045	3,710	5,750	-2,040	1,408	3,973	-2,566	5,118	9,724	-4,606
2050	4,637	7,258	-2,621	1,795	5,319	-3,524	6,432	12,576	-6,144
2055	5,774	9,181	-3,407	2,280	6,871	-4,591	8,054	16,052	-7,998
2060	7,172	11,626	-4,454	2,886	8,718	-5,832	10,059	20,344	-10,285
2065	8,903	14,725	-5,822	3,645	11,006	-7,361	12,548	25,731	-13,183
2070	11,029	18,711	-7,683	4,589	13,925	-9,336	15,617	32,636	-17,019
2075	13,643	23,767	-10,124	5,760	17,457	-11,697	19,403	41,224	-21,822
2080	16,851	30,096	-13,245	7,210	21,629	-14,419	24,060	51,725	-27,665
2085	20,798	37,972	-17,174	9,005	26,611	-17,605	29,804	64,583	-34,779
2090	25,672	47,690	-22,018	11,238	32,696	-21,458	36,910	80,385	-43,476

Note: Totals do not necessarily equal the sums of rounded components.

G. ANALYSIS OF BENEFIT DISBURSEMENTS FROM THE OASI TRUST FUND WITH RESPECT TO DISABLED BENEFICIARIES

(Required by section 201(c) of the Social Security Act)

Effective January 1957, the OASI Trust Fund pays monthly benefits to disabled children aged 18 and over of retired and deceased workers if the disability began before age 18. The age by which disability must have begun was later changed to age 22. Effective February 1968, the OASI Trust Fund pays reduced monthly benefits to disabled widows and widowers at ages 50 and over. Effective January 1991, the requirements for the disability of the widow or widower were made less restrictive.

As of December 31, 2011, the OASI Trust Fund paid monthly benefits to about 1,020,000 individuals because of their disabilities or the disabilities of children. This total includes approximately 27,000 mothers and fathers (wives or husbands under normal retirement age of retired-worker beneficiaries and widows or widowers of deceased insured workers) who met all other qualifying requirements and were receiving unreduced benefits solely because they had disabled-child beneficiaries (or disabled children aged 16 or 17) in their care. In calendar year 2011, the OASI Trust Fund paid a total of $9,138 million to the people described above. Table VI.G1 shows OASI benefit payments for disability for selected calendar years during 1960-2011 and estimates for 2012-21 based on the intermediate set of assumptions.

Table VI.G1.—Benefit Disbursements From the OASI Trust Fund With Respect to Disabled Beneficiaries

[Beneficiaries in thousands; benefit payments in millions]

Calendar year	Disabled beneficiaries, end of year			Amount of benefit payments[a]		
	Total	Children[b]	Widows-widowers[c]	Total	Children[b]	Widows-widowers[d]
Historical data:						
1960	117	117	—	$59	$59	—
1965	214	214	—	134	134	—
1970	316	281	36	301	260	$41
1975	435	376	58	664	560	104
1980	519	460	59	1,223	1,097	126
1985	594	547	47	2,072	1,885	187
1990	662	613	49	2,882	2,649	233
1991	687	627	61	3,179	2,875	304
1992	715	643	72	3,459	3,079	380
1993	740	659	81	3,752	3,296	456
1994	758	671	86	3,973	3,481	492
1995	772	681	91	4,202	3,672	531
1996	782	687	94	4,410	3,846	565
1997	789	693	96	4,646	4,050	596
1998	797	698	99	4,838	4,210	627
1999	805	702	102	4,991	4,336	655
2000	811	707	104	5,203	4,523	680
2001	817	712	105	5,520	4,802	718
2002	823	717	106	5,773	5,024	749
2003	827	722	105	5,950	5,184	764
2004	828	723	105	6,099	5,316	781
2005	836	728	108	6,458	5,556	843
2006	840	732	108	6,741	5,852	885
2007	851	744	107	7,051	6,181	867
2008	922	813	109	7,685	6,776	905
2009	969	857	112	8,592	7,618	971
2010	996	879	117	8,854	7,848	1,004
2011	1,020	899	121	9,138	8,085	1,051
Estimates under the intermediate assumptions:						
2012	1,043	919	124	9,738	8,624	1,111
2013	1,064	938	126	10,177	9,023	1,150
2014	1,084	957	127	10,618	9,437	1,177
2015	1,103	975	127	11,093	9,884	1,204
2016	1,120	993	127	11,574	10,344	1,225
2017	1,136	1,011	126	12,081	10,829	1,247
2018	1,152	1,028	125	12,643	11,363	1,275
2019	1,168	1,044	124	13,246	11,930	1,310
2020	1,184	1,060	124	13,908	12,542	1,360
2021	1,200	1,075	125	14,593	13,168	1,419

[a] Beginning in 1966, includes payments for vocational rehabilitation services.

[b] Also includes certain mothers and fathers (see text).

[c] In 1984 and later years, includes only disabled widows and widowers aged 50-59, because disabled widows and widowers age 60 and older are eligible for the same benefit as a nondisabled aged widow or widower. Therefore, they are not receiving benefits solely because of a disability.

[d] In 1983 and prior years, includes the offsetting effect of lower benefits payable to disabled widows and widowers who continued to receive benefits after attaining age 60 (62, for disabled widowers prior to 1973), compared to the higher nondisabled widow's and widower's benefits that would otherwise be payable. In 1984 and later years, includes only benefit payments to disabled widows and widowers aged 50-59 (see footnote c).

Note: Totals do not necessarily equal the sums of rounded components.

Under the intermediate assumptions, the Trustees estimate that total benefit payments from the OASI Trust Fund with respect to disabled beneficiaries will increase from $9,738 million in calendar year 2012 to $14,593 million in calendar year 2021.

In calendar year 2011, benefit payments (including expenditures for vocational rehabilitation services) with respect to disabled persons from the OASI Trust Fund and from the DI Trust Fund (including payments from the DI fund to all children and spouses of disabled-worker beneficiaries) totaled $138,117 million. Of this amount, $9,138 million, or 6.6 percent, represented payments from the OASI Trust Fund. Table VI.G2 contains these and similar figures for selected calendar years during 1960-2011 and estimates for calendar years 2012-21.

Table VI.G2.—Benefit Disbursements Under the OASDI Program With Respect to Disabled Beneficiaries
[Amounts in millions]

Calendar year	Total [a]	DI Trust Fund [b]	OASI Trust Fund	
			Amount [c]	Percentage of total
Historical data:				
1960	$627	$568	$59	9.4
1965	1,707	1,573	134	7.9
1970	3,386	3,085	301	8.9
1975	9,169	8,505	664	7.2
1980	16,738	15,515	1,223	7.3
1985	20,908	18,836	2,072	9.9
1990	27,717	24,835	2,882	10.4
1991	30,877	27,698	3,179	10.3
1992	34,583	31,124	3,459	10.0
1993	38,378	34,626	3,752	9.8
1994	41,730	37,757	3,973	9.5
1995	45,140	40,937	4,202	9.3
1996	48,615	44,205	4,410	9.1
1997	50,358	45,712	4,646	9.2
1998	53,062	48,224	4,838	9.1
1999	56,390	51,399	4,991	8.9
2000	60,204	55,001	5,203	8.6
2001	65,157	59,637	5,520	8.5
2002	71,493	65,721	5,773	8.1
2003	76,902	70,952	5,950	7.7
2004	84,350	78,251	6,099	7.2
2005	91,843	85,386	6,458	7.0
2006	99,186	92,446	6,741	6.8
2007	106,197	99,147	7,051	6.6
2008	114,061	106,376	7,685	6.7
2009	127,000	118,407	8,592	6.8
2010	133,100	124,245	8,854	6.7
2011	138,117	128,979	9,138	6.6
Estimates under the intermediate assumptions:				
2012	147,563	137,824	9,738	6.6
2013	153,875	143,698	10,177	6.6
2014	159,869	149,251	10,618	6.6
2015	166,250	155,157	11,093	6.7
2016	172,259	160,685	11,574	6.7
2017	178,209	166,129	12,081	6.8
2018	184,822	172,179	12,643	6.8
2019	192,062	178,817	13,246	6.9
2020	200,256	186,348	13,908	6.9
2021	210,552	195,959	14,593	6.9

[a] Beginning in 1966, includes payments for vocational rehabilitation services.
[b] Benefit payments to disabled workers and their children and spouses.
[c] Benefit payments to disabled children aged 18 and over, to certain mothers and fathers (see text), and to disabled widows and widowers (see footnote d, table VI.G1).

Note: Totals do not necessarily equal the sums of rounded components.

H. GLOSSARY

Actuarial balance. The difference between the summarized income rate and the summarized cost rate over a given valuation period.

Actuarial balance ratio. The ratio of the actuarial balance to the summarized cost rate. Used in the test of long-range close actuarial balance.

Actuarial deficit. A negative actuarial balance.

Administrative expenses. Expenses incurred by the Social Security Administration and the Department of the Treasury in administering the OASDI program and the provisions of the Internal Revenue Code relating to the collection of contributions. Such administrative expenses are paid from the OASI and DI Trust Funds.

Advance tax transfers. Amounts representing the estimated total OASDI tax contributions for a given month. From May 1983 through November 1990, such amounts were credited to the OASI and DI Trust Funds at the beginning of each month. The trust funds reimbursed the General Fund of the Treasury for the associated loss of interest. Advance tax transfers are no longer made unless needed in order to pay benefits.

Alternatives I, II, or III. See "Assumptions."

Annual balance. The difference between the income rate and the cost rate for a given year.

Assets. Treasury notes and bonds, other securities guaranteed by the Federal Government, certain Federally sponsored agency obligations, and cash, held by the trust funds for investment purposes.

Assumptions. Values related to future trends in key factors that affect the balance in the trust funds. Demographic assumptions include fertility, mortality, net immigration, marriage, and divorce. Economic assumptions include unemployment rates, average earnings, inflation, interest rates, and productivity. Program-specific assumptions include retirement patterns, and disability incidence and termination rates. This report presents three sets of demographic, economic, and program-specific assumptions:

- Alternative II is the intermediate set of assumptions, and represents the Trustees' best estimates of likely future demographic, economic, and program-specific conditions.
- Alternative I is a low-cost set of assumptions—it assumes relatively rapid economic growth, low inflation, and favorable (from the standpoint of program financing) demographic and program-specific conditions.

- Alternative III is a high-cost set of assumptions—it assumes relatively slow economic growth, high inflation, and unfavorable (from the standpoint of program financing) demographic and program-specific conditions.

See tables V.A1, V.B1, and V.B2.

Automatic cost-of-living benefit increase. The annual increase in benefits, effective for December, reflecting the increase, if any, in the cost of living. A benefit increase is applicable only after a beneficiary becomes eligible for benefits. In general, the benefit increase equals the percentage increase in the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) measured from the third quarter of the previous year to the third quarter of the current year. If there is no increase in the CPI-W, there is no cost-of-living benefit increase. See table V.C1.

Auxiliary benefits. Monthly benefits payable to a spouse or child of a retired or disabled worker, or to a survivor of a deceased worker.

Average indexed monthly earnings—AIME. The measure of lifetime earnings used in determining the primary insurance amount (PIA) for most workers who attain age 62, become disabled, or die after 1978. A worker's actual past earnings are adjusted by changes in the average wage index, in order to bring them up to their approximately equivalent value at the time of retirement or other eligibility for benefits.

Average wage index—AWI. A series that generally increases with the average amount of total wages for each year after 1950, including wages in noncovered employment and wages in covered employment in excess of the OASDI contribution and benefit base. (See Title 20, Chapter III, section 404.211(c) of the Code of Federal Regulations for a more precise definition.) These average wage amounts are used to index the taxable earnings of most workers first becoming eligible for benefits in 1979 or later, and for automatic adjustments in the contribution and benefit base, bend points, earnings test exempt amounts, and other wage-indexed amounts. See table V.C1.

Award. An administrative determination that an individual is entitled to receive a specified type of OASDI benefit. Awards can represent not only new entrants to the benefit rolls but also persons already on the rolls who become entitled to a different type of benefit. Awards usually result in the immediate payment of benefits, although payments may be deferred or withheld depending on the individual's particular circumstances.

Baby boom. The period from the end of World War II (1946) through 1965 marked by unusually high birth rates.

Bend points. The dollar amounts defining the AIME or PIA brackets in the benefit formulas. For the bend points for years 1979 and later, see table V.C2.

Beneficiary. A person who has been awarded benefits on the basis of his or her own or another's earnings record. The benefits may be either in current-payment status or withheld.

Benefit award. See "Award."

Benefit payments. The amounts disbursed for OASI and DI benefits by the Department of the Treasury.

Benefit termination. See "Termination."

Best estimate assumptions. See "Assumptions."

Board. See "Board of Trustees."

Board of Trustees. A Board established by the Social Security Act to oversee the financial operations of the Federal Old-Age and Survivors Insurance Trust Fund and the Federal Disability Insurance Trust Fund. The Board is composed of six members. Four members serve by virtue of their positions in the Federal Government: the Secretary of the Treasury, who is the Managing Trustee; the Secretary of Labor; the Secretary of Health and Human Services; and the Commissioner of Social Security. The President appoints and the Senate confirms the other two members to serve as public representatives. Also referred to as the "Board" or the "Trustees".

Cash flow. Actual or projected revenue and costs reflecting the levels of payroll tax contribution rates and benefits scheduled in the law. Net cash flow is the difference between non-interest income and cost.

Consumer Price Index—CPI. An official measure of inflation in consumer prices. In this report, CPI refers to the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). The Bureau of Labor Statistics, Department of Labor, publishes historical values for the CPI-W.

Contribution and benefit base. Annual dollar amount above which earnings in employment covered under the OASDI program are neither taxable nor creditable for benefit-computation purposes. (Also referred to as maximum contribution and benefit base, annual creditable maximum, taxable maximum, and maximum taxable.) See tables V.C1 and V.C6. See "HI contribution base."

Contributions. See "Payroll tax contributions."

Cost. The cost for a year includes scheduled benefit payments, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries.

Cost-of-living adjustment. See "Automatic cost-of-living benefit increase."

Cost rate. The cost rate for a year is the ratio of the cost of the program to the taxable payroll for the year.

Covered earnings. Earnings in employment covered by the OASDI program.

Covered employment. All employment for which earnings are creditable for Social Security purposes. The program covers almost all employment. Some exceptions are:

- State and local government employees whose employer has not elected to be covered under Social Security and who are participating in an employer-provided pension plan.
- Current Federal civilian workers hired before 1984 who have not elected to be covered.
- Self-employed workers earning less than $400 in a calendar year.

Covered worker. A person who has earnings creditable for Social Security purposes based on services for wages in covered employment or income from covered self-employment.

CPI-indexed dollars. Amounts adjusted by the CPI to the value of the dollar in a particular year.

Creditable earnings. Wage or self-employment earnings posted to a worker's earnings record. Such earnings determine eligibility for benefits and the amount of benefits on that worker's record. The contribution and benefit base is the maximum amount of creditable earnings for each worker in a calendar year.

Current-cost financing. See "Pay-as-you-go financing."

Current dollars. Amounts expressed in nominal dollars with no adjustment for inflationary changes in the value of the dollar over time.

Currently insured status. A worker acquires currently insured status when he or she has accumulated six quarters of coverage during the 13-quarter period ending with the current quarter.

Current-payment status. Status of a beneficiary to whom a benefit is being paid for a given month (with or without deductions, provided the deductions add to less than a full month's benefit).

Deemed wage credit. See "Military service wage credits."

Delayed retirement credits. Increases in the benefit amount for certain individuals who did not receive benefits for months after attaining normal retirement age but before age 70. Delayed retirement credits apply to benefits for January of the year following the year they are earned or for the month of attainment of age 70, whichever comes first. See table V.C3.

Demographic assumptions. See "Assumptions."

Disability. For Social Security purposes, the inability to engage in substantial gainful activity (see "Substantial gainful activity — SGA") by reason of any medically determinable physical or mental impairment that can be

expected to result in death or to last for a continuous period of not less than 12 months. Special rules apply for workers at ages 55 and over whose disability is based on blindness.

The law generally requires that a person be disabled continuously for 5 months before he or she can qualify for a disabled-worker benefit.

Disability conversion ratio. For a given year, the ratio of the number of disability conversions to the average number of disabled-worker beneficiaries at all ages during the year.

Disability conversion. Upon attainment of normal retirement age, a disabled-worker beneficiary is automatically converted to retired-worker status.

Disability incidence rate. The proportion of workers in a given year, insured for but not receiving disability benefits, who apply for and are awarded disability benefits.

Disability Insurance (DI) Trust Fund. See "Trust fund."

Disability insured status. A worker acquires disability insured status if he or she is: (1) a fully insured worker who has accumulated 20 quarters of coverage during the 40-quarter period ending with the current quarter; (2) a fully insured worker aged 24-30 who has accumulated quarters of coverage during one-half of the quarters elapsed after the quarter of attainment of age 21 and up to and including the current quarter; or (3) a fully insured worker under age 24 who has accumulated six quarters of coverage during the 12-quarter period ending with the current quarter.

Disability prevalence rate. The proportion of persons insured for disability benefits who are disabled-worker beneficiaries in current-payment status.

Disability termination rate. The proportion of disabled-worker beneficiaries in a given year whose disability benefits terminate as a result of their recovery or death.

Disabled-worker benefit. A monthly benefit payable to a disabled worker under normal retirement age and insured for disability. Before November 1960, disability benefits were limited to disabled workers aged 50-64.

Disbursements. Actual expenditures (outgo) made or expected to be made under current law, including benefits paid or payable, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries.

Earnings. Unless otherwise qualified, all wages from employment and net earnings from self-employment, whether or not they are taxable or covered.

Earnings test. The provision requiring the withholding of benefits if beneficiaries under normal retirement age have earnings in excess of certain exempt amounts. See table V.C1.

Economic assumptions. See "Assumptions."

Effective interest rate. See "Interest rate."

Excess wages. Wages in excess of the contribution and benefit base on which a worker initially makes payroll tax contributions, usually as a result of working for more than one employer during a year. Employee payroll taxes on excess wages are refundable to affected employees, while the employer taxes are not refundable.

Expenditures. See "Disbursements."

Federal Insurance Contributions Act—FICA. Provision authorizing payroll taxes on the wages of employed persons to provide for Old-Age, Survivors, and Disability Insurance, and for Hospital Insurance. Workers and their employers generally pay the tax in equal amounts.

Financial interchange. Provisions of the Railroad Retirement Act providing for transfers between the trust funds and the Social Security Equivalent Benefit Account of the Railroad Retirement program in order to place each trust fund in the same financial position it would have been had railroad employment always been covered under Social Security.

Fiscal year. The accounting year of the United States Government. Since 1976, a fiscal year is the 12-month period ending September 30. For example, fiscal year 2011 began October 1, 2010, and will end September 30, 2011.

Full advance funding. A financing method in which contributions are established to match the full cost of future benefits as these costs are incurred through current service. Such financing methods also provide for amortization over a fixed period of any financial obligation that is incurred at the beginning of the program (or subsequent modification) as a result of granting credit for past service.

Fully insured status. A worker acquires fully insured status when his or her total number of quarters of coverage is greater than or equal to the number of years elapsed after the year of attainment of age 21 (but not less than six). Once a worker has accumulated 40 quarters of coverage, he or she remains permanently fully insured.

General Fund of the Treasury. Funds held by the Treasury of the United States, other than receipts collected for a specific purpose (such as Social Security), and maintained in a separate account for that purpose.

General fund reimbursements. Payments from the General Fund of the Treasury to the trust funds for specific purposes defined in the law, including:

- The cost of noncontributory wage credits for military service before 1957, and periodic adjustments of previous determinations.
- The cost in 1971-82 of deemed wage credits for military service performed after 1956.

- The cost of benefits to certain uninsured persons who attained age 72 before 1968.
- The cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21.
- The cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246.
- Payroll tax revenue forgone under the provisions of Public Laws 111-147 and 111-312.

The general fund also reimburses the trust funds for various other items, including interest on checks which are not negotiated 6 months after the month of issue and costs incurred in performing certain legislatively mandated activities not directly related to administering the OASI and DI programs.

Gross domestic product—GDP. The total dollar value of all goods and services produced by labor and property located in the United States, regardless of who supplies the labor or property.

HI contribution base. Annual dollar amount above which earnings in employment covered under the HI program are not taxable. (Also referred to as maximum contribution base, taxable maximum, and maximum taxable.) Beginning in 1994, the HI contribution base was eliminated.

High-cost assumptions. See "Assumptions."

Hospital Insurance (HI) Trust Fund. See "Trust fund."

Immigration. See "Legal immigration" and "Other immigration."

Income. Income for a given year is the sum of tax revenue on a cash basis (payroll tax contributions and income from the taxation of scheduled benefits), reimbursements from the General Fund of the Treasury, if any, and interest credited to the trust funds.

Income rate. Ratio of non-interest income to the OASDI taxable payroll for the year.

Infinite horizon. The period extending into the indefinite future.

Inflation. An increase in the general price level of goods and services.

Insured status. The state or condition of having sufficient quarters of coverage to meet the eligibility requirements for retired-worker or disabled-worker benefits, or to permit the worker's spouse and children or survivors to establish eligibility for benefits in the event of his or her disability, retirement, or death. See "Quarters of coverage."

Interest. A payment in exchange for the use of money during a specified period.

Interest rate. Interest rates on new public-debt obligations issuable to Federal trust funds (see "Special public-debt obligation") are determined

monthly. Such rates are equal to the average market yield on all outstanding marketable U.S. securities not due or callable until after 4 years from the date the rate is determined. See table V.B2 for historical and assumed future interest rates on new special-issue securities. The effective interest rate for a trust fund is the ratio of the interest earned by the fund over a given period of time to the average level of assets held by the fund during the period. The effective rate of interest thus represents a measure of the overall average interest earnings on the fund's portfolio of assets.

Interfund borrowing. The borrowing of assets by a trust fund (OASI, DI, or HI) from another trust fund when the first fund is in danger of exhaustion. The Social Security Act permitted interfund borrowing only during 1982 through 1987, and required all amounts borrowed to be repaid prior to the end of 1989. The only exercise of this authority occurred in 1982, when the OASI Trust Fund borrowed assets from the DI and HI Trust Funds. The final repayment of borrowed amounts occurred in 1986.

Intermediate assumptions. See "Assumptions."

Legal emigration. Legal emigration for a given year consists of those legal permanent residents and native-born citizens who leave the Social Security area during the year.

Legal immigration. Consistent with the definition used by the Department of Homeland Security, legal immigration for a given year consists of foreign-born individuals who are granted legal permanent resident status during the year.

Life expectancy. Average remaining number of years expected prior to death. Period life expectancy is calculated for a given year using the actual or expected death rates at each age for that year. Cohort life expectancy, sometimes referred to as generational life expectancy, is calculated for individuals at a specific age in a given year using actual or expected death rates from the years in which the individuals would actually reach each succeeding age if they survive.

Long range. The next 75 years. The Trustees make long-range actuarial estimates for this period because it is approximately the maximum remaining lifetime of current Social Security participants.

Low-cost assumptions. See "Assumptions."

Lump-sum death benefit. A lump sum, generally $255, payable on the death of a fully or currently insured worker. The lump sum is payable to the surviving spouse of the worker, under most circumstances, or to the worker's children.

Maximum family benefit. The maximum monthly amount that can be paid on a worker's earnings record. Whenever the total of the individual monthly benefits payable to all the beneficiaries entitled on one earnings record

exceeds the maximum, each dependent's or survivor's benefit is proportionately reduced. Benefits payable to divorced spouses or surviving divorced spouses are not reduced under the family maximum provision.

Medicare. A nationwide, Federally administered health insurance program authorized in 1965 to cover the cost of hospitalization, medical care, and some related services for most people age 65 and over. In 1972, coverage was extended to people receiving Social Security Disability Insurance payments for 2 years and people with End-Stage Renal Disease. In 2006, prescription drug coverage was added. Medicare consists of two separate but coordinated programs — Hospital Insurance (HI, Part A) and Supplementary Medical Insurance (SMI). The SMI program is composed of three separate accounts — the Part B Account, the Part D Account, and the Transitional Assistance Account. Almost all persons who are aged 65 and over or disabled and who are entitled to HI are eligible to enroll in Part B and Part D on a voluntary basis by paying monthly premiums. Health insurance protection is available to Medicare beneficiaries without regard to income.

Military service wage credits. Credits recognizing that military personnel receive wages in kind (such as food and shelter) in addition to their basic pay and other cash payments. Noncontributory wage credits of $160 were provided for each month of active military service from September 16, 1940, through December 31, 1956. For years after 1956, the basic pay of military personnel is covered under the Social Security program on a contributory basis. In addition to the contributory credits for basic pay, noncontributory wage credits of $300 were granted for each calendar quarter, from January 1957 through December 1977, in which a person received pay for military service. Noncontributory wage credits of $100 were granted for each $300 of military wages, up to a maximum credit of $1,200 per calendar year, from January 1978 through December 2001.

National average wage index—AWI. See "Average wage index — AWI."

Non-interest income. Non-interest income for a given year is the sum of tax revenue on a cash basis (payroll tax contributions and income from the taxation of scheduled benefits) and reimbursements from the General Fund of the Treasury, if any.

Normal retirement age—NRA. The age at which a person may first become entitled to retirement benefits without reduction based on age. For persons reaching age 62 before 2000, the normal retirement age is 65. It will increase gradually to 67 for persons reaching that age in 2027 or later, beginning with an increase to 65 years and 2 months for persons reaching age 65 in 2003. See table V.C3.

Old-Age and Survivors Insurance (OASI) Trust Fund. See "Trust fund."

Old-law base. Amount the contribution and benefit base would have been if the 1977 amendments had not provided for ad hoc increases. The Social

Security Amendments of 1972 provided for automatic annual indexing of the contribution and benefit base. The Social Security Amendments of 1977 provided for ad hoc increases to the bases for 1979-81, with subsequent bases updated in accordance with the normal indexing procedure. See table V.C2.

Open group unfunded obligation. See "Unfunded obligation."

Other emigration. Other emigration for a given year consists of individuals from the other-immigrant population who leave the Social Security area during the year or who adjust status to become legal permanent residents during the year.

Other immigration. Other immigration for a given year consists of individuals who enter the Social Security area and stay 6 months or more but without legal permanent resident status, such as undocumented immigrants and temporary workers and students.

Outgo. See "Disbursements."

Par value. The value printed on the face of a bond. For both public and special issues held by the trust funds, par value is also the redemption value at maturity.

Partial advance funding. A financing method in which contributions are established to provide a substantial accumulation of trust fund assets, thereby generating additional interest income to the trust funds and reducing the need for payroll tax increases in periods when costs are relatively high. Higher general contributions or additional borrowing may be required, however, to support the payment of such interest. While substantial, the trust fund buildup under partial advance funding is much smaller than it would be with full advance funding.

Pay-as-you-go financing. A financing method in which contributions are established to produce just as much income as required to pay current benefits, with trust fund assets built up only to the extent needed to prevent exhaustion of the fund by random economic fluctuations.

Payment cycling. Beneficiaries who applied for benefits before May 1, 1997, are paid on the third of the month. Persons applying for OASDI benefits after April 1997 generally are paid on the second, third, or fourth Wednesday of the month following the month for which payment is due. The particular Wednesday payment date is based on the earner's date of birth. For those born on the first through tenth, the benefit payment day is the second Wednesday of the month; for those born on the eleventh through the twentieth, the benefit payment day is the third Wednesday of the month; and for those born after the twentieth of the month, the payment day is the fourth Wednesday of the month.

Payroll tax contributions. The amount based on a percent of earnings, up to an annual maximum, that must be paid by:

- employers and employees on wages from employment under the Federal Insurance Contributions Act,
- the self-employed on net earnings from self-employment under the Self-Employment Contributions Act, and
- States on the wages of State and local government employees covered under the Social Security Act through voluntary agreements under section 218 of the act.

Also referred to as payroll taxes.

Population in the Social Security area. See "Social Security area population."

Present value. The equivalent value, at the present time, of a future stream of payments (either income or cost). The present value of a future stream of payments may be thought of as the lump-sum amount that, if invested today, together with interest earnings would be just enough to meet each of the payments as they fell due. Present values are used widely in calculations involving financial transactions over long periods of time to account for the time value of money (interest). Present-value calculations for this report use the effective yield on trust fund assets.

Primary insurance amount—PIA. The monthly amount payable to a retired worker who begins to receive benefits at normal retirement age or (generally) to a disabled worker. This amount, which is related to the worker's average monthly wage or average indexed monthly earnings, is also used as a base for computing all types of benefits payable on an individual's earnings record.

Primary-insurance-amount formula. The mathematical formula relating the PIA to the AIME for workers who attain age 62, become disabled, or die after 1978. The PIA is equal to the sum of 90 percent of AIME up to the first bend point, plus 32 percent of AIME above the first bend point up to the second bend point, plus 15 percent of AIME in excess of the second bend point. Automatic benefit increases are applied beginning with the year of eligibility. See table V.C2 for historical and assumed future bend points and table V.C1 for historical and assumed future benefit increases.

Quarters of coverage. Basic unit of measurement for determining insured status. In 2012, a worker receives one quarter of coverage (up to a total of four) for each $1,130 of annual covered earnings. For years after 1978, the amount of earnings required for a quarter of coverage is subject to annual automatic increases in proportion to increases in average wages. See table V.C2.

Railroad retirement. A Federal insurance program, similar to Social Security, designed for workers in the railroad industry. The provisions of the Railroad Retirement Act provide for a system of coordination and financial interchange between the Railroad Retirement program and the Social Security program.

Reallocation of payroll tax rates. An increase in the payroll tax rate for either the OASI or DI Trust Fund, with a corresponding reduction in the rate for the other fund, so that the total OASDI payroll tax rate is not changed.

Real-wage differential. The difference between the percentage increases in: (1) the average annual wage in covered employment; and (2) the average annual Consumer Price Index. See table V.B1.

Recession. A period of adverse economic conditions; in particular, two or more successive calendar quarters of negative growth in gross domestic product.

Retired-worker benefit. A monthly benefit payable to a fully insured retired worker aged 62 or older or to a person entitled under the transitionally insured status provision in the law.

Retirement earnings test. See "Earnings test."

Retirement eligibility age. The age, currently age 62, at which a fully insured individual first becomes eligible to receive retired-worker benefits.

Retirement test. See "Earnings test."

Scenario-based model. A model with specified assumptions for and relationships among variables. Under such a model, any specified set of assumptions determines a single outcome directly reflecting the specifications.

Self-employment. Operation of a trade or business by an individual or by a partnership in which an individual is a member.

Self-Employment Contributions Act–SECA. Provision authorizing Social Security payroll taxes on the net earnings of most self-employed persons.

Short range. The next 10 years. The Trustees prepare short-range actuarial estimates for this period because of the short-range test of financial adequacy. The Social Security Act requires estimates for 5 years; the Trustees prepare estimates for an additional 5 years to help clarify trends which are only starting to develop in the mandated first 5-year period.

Social Security Act. Provisions of the law governing most operations of the Social Security program. The original Social Security Act is Public Law 74-271, enacted August 14, 1935. With subsequent amendments, the Social Security Act consists of 21 titles, of which three have been repealed. Title II of the Social Security Act authorized the Old-Age, Survivors, and Disability Insurance program.

Social Security area population. The population comprised of: (1) residents of the 50 States and the District of Columbia (adjusted for net census undercount); (2) civilian residents of Puerto Rico, the Virgin Islands, Guam, American Samoa and the Northern Mariana Islands; (3) Federal civilian employees and persons in the U.S. Armed Forces abroad and their dependents; (4) non-citizens living abroad who are insured for Social Security benefits; and (5) all other U.S. citizens abroad.

Solvency. A program is solvent at a point in time if it is able to pay scheduled benefits when due with scheduled financing. For example, the OASDI program is solvent over any period for which the trust funds maintain a positive level of assets.

Special public-debt obligation. Securities of the United States Government issued exclusively to the OASI, DI, HI, and SMI Trust Funds and other Federal trust funds. Section 201(d) of the Social Security Act provides that the public-debt obligations issued for purchase by the OASI and DI Trust Funds shall have maturities fixed with due regard for the needs of the funds. The usual practice has been to spread the holdings of special issues, as of each June 30, so that the amounts maturing in each of the next 15 years are approximately equal. Special public-debt obligations are redeemable at par value at any time and carry interest rates determined by law (see "Interest rate"). See tables VI.A4 and VI.A5 for a listing of the obligations held by the OASI and DI Trust Funds, respectively.

Statutory blindness. Central visual acuity of 20/200 or less in the better eye with the use of a correcting lens or tunnel vision of 20 degrees or less.

Stochastic model. A model used for projecting a probability distribution of potential outcomes. Such models allow for random variation in one or more variables through time. The random variation is generally based on fluctuations observed in historical data for a selected period. A large number of simulations, each of which reflects random variation in the variable(s), produce a distribution of potential outcomes.

Substantial gainful activity—SGA. The level of work activity used to establish disability. A finding of disability requires that a person be unable to engage in substantial gainful activity. A person who earns more than a certain monthly amount (net of impairment-related work expenses) is ordinarily considered to be engaging in SGA. The amount of monthly earnings considered as SGA depends on the nature of a person's disability. The Social Security Act specifies a higher SGA amount for statutorily blind individuals; Federal regulations specify a lower SGA amount for non-blind individuals. Both SGA amounts increase with increases in the national average wage index.

Summarized balance. The difference between the summarized cost rate and the summarized income rate, expressed as a percentage of taxable payroll.

Summarized cost rate. The ratio of the present value of cost to the present value of the taxable payroll for the years in a given period, expressed as a percentage. To evaluate the financial adequacy of the program, the summarized cost rate is adjusted to include the cost of reaching and maintaining a target trust fund level. A trust fund level of about 1 year's cost is considered to be an adequate reserve for unforeseen contingencies; therefore, the targeted trust fund ratio is 100 percent of annual cost. Accordingly, the adjusted summarized cost rate is equal to the ratio of: (1) the sum of the present value of the cost during the period plus the present value of the targeted ending trust fund level; to (2) the present value of the taxable payroll during the projection period.

Summarized income rate. The ratio of the present value of scheduled noninterest income to the present value of taxable payroll for the years in a given period, expressed as a percentage. To evaluate the financial adequacy of the program, the summarized income rate is adjusted to include assets on hand at the beginning of the period. Accordingly, the adjusted summarized income rate equals the ratio of: (1) the sum of the trust fund balance at the beginning of the period plus the present value of non-interest income during the period; to (2) the present value of the taxable payroll for the years in the period.

Supplemental Security Income—SSI. A Federally administered program (often with State supplementation) of cash assistance for needy aged, blind, or disabled persons. The General Fund of the Treasury funds SSI and the Social Security Administration administers it.

Supplementary Medical Insurance (SMI) Trust Fund. See "Trust fund."

Survivor benefit. Benefit payable to a survivor of a deceased worker.

Sustainable solvency. Sustainable solvency for the financing of the program has been achieved when the program has positive trust fund ratios throughout the 75-year projection period and these ratios are stable or rising at the end of the period.

Taxable earnings. Wages or self-employment income, in employment covered by the OASDI or HI programs, that is under the applicable annual maximum taxable limit. For 1994 and later, no maximum taxable limit applies to the HI program.

Taxable payroll. A weighted sum of taxable wages and taxable self-employment income. When multiplied by the combined employee-employer payroll tax rate, taxable payroll yields the total amount of payroll taxes incurred by employees, employers, and the self-employed for work during the period.

Taxable self-employment income. The maximum amount of net earnings from self-employment by an earner which, when added to any taxable wages, does not exceed the contribution and benefit base. For HI beginning in 1994, all net earnings from self-employment.

Taxable wages. See "Taxable earnings."

Taxation of benefits. Beginning in 1984, Federal law subjected up to 50 percent of an individual's or a couple's OASDI benefits to Federal income taxation under certain circumstances. Treasury allocates the revenue derived from this provision to the OASI and DI Trust Funds on the basis of the income taxes paid on the benefits from each fund. Beginning in 1994, the law increased the maximum percentage from 50 percent to 85 percent. The HI Trust Fund receives the additional tax revenue resulting from the increase to 85 percent.

Taxes. See "Payroll tax contributions" and "Taxation of benefits."

Termination. Cessation of payment because the beneficiary is no longer entitled to receive a specific type of benefit. For example, benefits might terminate as a result of the death of the beneficiary, the recovery of a disabled beneficiary, or the attainment of age 18 by a child beneficiary. In some cases, the individual may become immediately entitled to another type of benefit, such as the conversion of a disabled-worker beneficiary at normal retirement age to a retired-worker beneficiary.

Test of long-range close actuarial balance. The test of long-range close actuarial balance applies to a set of 66 separate valuation periods beginning with the first 10-year period, and including the periods of the first 11 years, the first 12 years, up through the full 75-year projection period. Under the long-range test, the Trustees analyze the actuarial balance ratio for each of these valuation periods. The actuarial balance ratio is defined as the ratio of the actuarial balance to the summarized cost rate. The long-range test is met if, for each of the 66 valuation periods, the actuarial balance ratio is either: (1) not negative; or (2) negative by at most a specified percentage, the "allowable threshold." The allowable threshold is zero for the first 10-year period and decreases uniformly for longer periods until it reaches -5 percent for the 75-year period. To recognize the greater uncertainty associated with estimates for more distant years, the criterion for meeting the test is less stringent for the longer periods. The Trustees apply the test to OASI, DI, and the combined OASDI program based on the intermediate set of assumptions.

Test of short-range financial adequacy. The conditions required to meet this test are:

- If the trust fund ratio for a fund is at least 100 percent at the beginning of the projection period, the test requires that it remain at or above 100 percent throughout the 10-year projection period;
- Alternatively, if the ratio is initially less than 100 percent, then it must reach at least 100 percent within 5 years (without depletion at any time during this period) and then remain at or above 100 percent throughout the remainder of the 10-year period.

The Trustees apply the test to OASI, DI, and the combined OASDI program based on the intermediate set of assumptions.

Total fertility rate. The average number of children that would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, a specified year, and if she were to survive the entire childbearing period.

Trust fund. Separate accounts in the United States Treasury which hold the payroll taxes received under the Federal Insurance Contributions Act and the Self-Employment Contributions Act; payroll taxes resulting from coverage of State and local government employees; any sums received under the financial interchange with the railroad retirement account; voluntary hospital and medical insurance premiums; and reimbursements or payments from the General Fund of the Treasury. As required by law, the Department of the Treasury invests funds not required to meet current expenditures in interest-bearing securities backed by the full faith and credit of the U.S. Government. The interest earned is also deposited in the trust funds.

- **Old-Age and Survivors Insurance (OASI).** The trust fund used for paying monthly benefits to retired-worker (old-age) beneficiaries, their spouses and children, and to survivors of deceased insured workers.
- **Disability Insurance (DI).** The trust fund used for paying monthly benefits to disabled-worker beneficiaries, their spouses and children, and for providing rehabilitation services to the disabled.
- **Hospital Insurance (HI).** The trust fund used for paying part of the costs of inpatient hospital services and related care for aged and disabled individuals who meet the eligibility requirements. Also known as Medicare Part A.
- **Supplementary Medical Insurance (SMI).** The Medicare trust fund composed of the Part B Account, the Part D Account, and the Transitional Assistance Account. The Part B Account pays for a portion of the costs of physicians' services, outpatient hospital services, and other related medical and health services for voluntarily enrolled aged and disabled individuals. The Part D Account pays private plans to provide prescription drug coverage, beginning in 2006. The Transitional Assistance Account paid for transitional assistance under the prescription drug card program in 2004 and 2005.

Trust fund ratio. A measure of trust fund adequacy. The assets at the beginning of a year, which do not include advance tax transfers, expressed as a percentage of the cost for the year. The trust fund ratio represents the proportion of a year's cost which could be paid solely with the assets at the beginning of the year.

Trustees. See "Board of Trustees".

Unfunded obligation. A measure of the shortfall of trust fund income to fully cover program cost through a specified date after exhaustion of trust fund assets. This measure is computed as the excess of the present value of the projected cost of the program through a specified date over the sum of: (1) the value of trust fund assets at the beginning of the valuation period; and (2) the present value of the projected non-interest income of the program through a specified date, assuming scheduled tax rates and benefit levels. This measure can apply for all participants through a specified date, i.e. the open group, or be limited to a specified subgroup of participants.

Unfunded obligation ratio. The unfunded obligation at the beginning of a year expressed as a percentage of the present value of the cost for the year.

Unnegotiated check. A check which has not been cashed 6 months after the end of the month in which the check was issued. When a check has been outstanding for a year, the Department of the Treasury administratively cancels the check and reimburses the issuing trust fund separately for the amount of the check and interest for the period the check was outstanding. The appropriate trust fund also receives an interest adjustment for the time the check was outstanding if it is cashed 6-12 months after the month of issue. If a check is presented for payment after it has been administratively cancelled, a replacement check is issued.

Valuation period. A period of years which is considered as a unit for purposes of calculating the financial status of a trust fund.

Vocational rehabilitation. Services provided to disabled persons to help them to return to gainful employment. The trust funds reimburse the providers of such services only in those cases where the services contributed to the successful rehabilitation of the beneficiaries.

Year of exhaustion. The year in which a trust fund becomes unable to pay benefits when due because the assets of the fund have been depleted.

II. OVERVIEW

III. FINANCIAL OPERATIONS OF THE TRUST FUNDS AND LEGISLATIVE CHANGES IN THE LAST YEAR

IV. ACTUARIAL ESTIMATES

V. ASSUMPTIONS AND METHODS UNDERLYING ACTUARIAL ESTIMATES

VI. APPENDICES

A. HISTORY OF OASI AND DI TRUST FUND OPERATIONS

B. HISTORY OF ACTUARIAL STATUS ESTIMATES

C. FISCAL YEAR HISTORICAL DATA AND PROJECTIONS THROUGH 2021

D. LONG-RANGE SENSITIVITY ANALYSIS

E. STOCHASTIC PROJECTIONS AND UNCERTAINTY

F. ESTIMATES FOR OASDI AND HI, SEPARATE AND COMBINED

G. ANALYSIS OF BENEFIT DISBURSEMENTS FROM THE OASI TRUST FUND WITH RESPECT TO DISABLED BENEFICIARIES

II. OVERVIEW

IV. ACTUARIAL ESTIMATES

V. ASSUMPTIONS AND METHODS UNDERLYING ACTUARIAL ESTIMATES

VI. APPENDICES

A

B

C

STATEMENT OF ACTUARIAL OPINION

It is my opinion that: (1) the techniques and methodology used herein to evaluate the financial and actuarial status of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds are based upon sound principles of actuarial practice and are generally accepted within the actuarial profession; and (2) the assumptions used and the resulting actuarial estimates are, individually and in the aggregate, reasonable for the purpose of evaluating the financial and actuarial status of the trust funds, taking into consideration the past experience and future expectations for the population, the economy, and the program.

Stephen C. Goss,

Associate of the Society of Actuaries,
Member of the American Academy of Actuaries,
Chief Actuary, Social Security Administration