113th Congress, 2d Session — — — — — — — — — — — — — — — House Document 113-139

THE 2014 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 2014 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS

July 28, 2014.—Referred to the Committee on Ways and Means and ordered to be printed

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U.S. GOVERNMENT PRINTING OFFICE

88-865 WASHINGTON: 2014

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

LETTER OF TRANSMITTAL

BOARD OF TRUSTEES OF THE
FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND
FEDERAL DISABILITY INSURANCE TRUST FUNDS,
Washington, D.C., July 28, 2014

HON. JOHN A. BOEHNER,
Speaker of the House of Representatives.

HON. JOSEPH R. BIDEN, JR.,
President of the Senate.

DEAR MR. SPEAKER AND MR. PRESIDENT:

We have the honor of transmitting to you the 2014 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, the 74th such report.

Respectfully,

JACOB J. LEW,
Secretary of the Treasury,
and Managing Trustee of the Trust Funds.

THOMAS E. PEREZ,
Secretary of Labor, and Trustee.

SYLVIA M. BURWELL,
Secretary of Health and Human Services,
and Trustee.

CAROLYN W. COLVIN,
Acting Commissioner
of Social Security, and Trustee.

CHARLES P. BLAHOUS III,
Trustee.

ROBERT D. REISCHAUER,
Trustee.

DAVID A. WEAVER,
Associate Commissioner, Office of Research,
Demonstration, and Employment Support,
Social Security Administration,
and Acting Secretary, Board of Trustees.

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THE 2014 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 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 2014 report is the 74th such report.

II. OVERVIEW

A. HIGHLIGHTS

This section summarizes the report's major findings.

In 2013

At the end of 2013, the OASDI program was providing benefit payments[1] to about 58 million people: 41 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 163 million people had earnings covered by Social Security and paid payroll taxes. Total expenditures in 2013 were $823 billion. Total income was $855 billion, which consisted of $752 billion in non-interest income and $103 billion in interest earnings. Asset reserves held in special issue U.S. Treasury securities grew from $2,732 billion at the beginning of the year to $2,764 billion at the end of the year.

Short-Range Results

Social Security's cost exceeded its tax income in 2013, and also exceeded its non-interest income, as it has since 2010. This relationship is projected to continue throughout the short-range period (2014 through 2023) and beyond. The 2013 deficit of tax income relative to cost was $76 billion and the deficit of non-interest income relative to cost was $71 billion. In recent years, OASDI tax income and non-interest income have differed as a result of a temporary reduction in the Social Security payroll tax for 2011 and 2012, combined with reimbursements from the General Fund of the Treasury to the Social Security trust funds that amounted to $103 billion in 2011, $114 billion in 2012, and $5 billion in 2013. Assuming there is no future legislation to transfer General Funds to the trust funds, OASDI tax income should approximately equal non-interest income this year and in future years. For 2014, the deficit of tax income (and non-interest income) is projected to be approximately $80 billion.

The Trustees project that the asset reserves of the OASI Trust Fund and of the theoretical combined OASI and DI Trust Funds[2] will be adequate over the next 10 years under the intermediate assumptions. However, the projected reserves of the DI Trust Fund decline steadily from 62 percent of annual cost at the beginning of 2014 until the trust fund reserves are depleted

[1] The definitions of "benefit payment" and other terms appear in the Glossary.

[2] The OASI and DI Trust Funds are distinct legal entities which operate independently. To illustrate the actuarial status of the program as a whole, the fund operations are often combined on a theoretical basis.

in the fourth quarter of 2016. At the time reserves are depleted, continuing income to the DI Trust Fund would be sufficient to pay 81 percent of scheduled DI benefits. The DI Trust Fund does not satisfy the short-range test of financial adequacy. Figures II.D2 and II.D3 illustrate the implications of reserve depletion for the combined trust funds and for the DI Trust Fund alone.

The Trustees project that the reserves of the combined OASI and DI Trust Funds will increase for the next several years, growing from $2,764 billion at the beginning of 2014 to $2,878 billion at the beginning of 2020. Reserves increase through 2019 because annual cost is less than total income for 2014 through 2019. At the same time, however, the ratio of reserves to cost declines, from 320 percent of annual cost for 2014 to 233 percent of annual cost for 2020.

Beginning in 2020, annual cost exceeds total income, and therefore the combined reserves begin to decline, reaching $2,698 billion at the end of 2023. The ratio of reserves at the beginning of a year to cost for that year declines to 187 percent as of the beginning of 2023. For last year's report, the Trustees projected that combined reserves would be 315 percent of annual cost at the beginning of 2014 and 189 percent at the beginning of 2023.

Long-Range Results

The Trustees project that annual OASDI cost will exceed non-interest income throughout the long-range period (2014 through 2088) under the intermediate assumptions. The dollar level of the theoretical combined trust fund reserves declines beginning in 2020 until reserves become depleted in 2033. Considered separately, the DI Trust Fund reserves become depleted in 2016 and the OASI Trust Fund reserves become depleted in 2034. The projected reserve depletion years were 2033 for OASDI, 2016 for DI, and 2035 for OASI in last year's report.

Projected OASDI cost generally increases more rapidly than projected non-interest income through about 2035 primarily because the retirement of the baby-boom generation will increase the number of beneficiaries much faster than the number of workers increases, as subsequent lower-birth-rate generations replace the baby-boom generation at working ages. From 2035 to 2050, the cost rate (the ratio of program cost to taxable payroll) generally declines because the aging baby-boom generation is gradually replaced at retirement ages by historically low-birth-rate generations, causing the beneficiary-to-worker ratio to decline. Thereafter, increases in life expectancy cause OASDI cost to increase generally relative to non-interest income, but more slowly than between 2010 and 2035.

The projected OASDI annual cost rate increases from 13.95 percent of taxable payroll for 2014 to 17.09 percent for 2035 and to 18.19 percent for 2088, a level that is 4.90 percent of taxable payroll more than the projected income rate (the ratio of program income to taxable payroll) for 2088. For last year's report, the Trustees estimated the OASDI cost for 2088 at 18.07 percent, or 4.82 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 4.9 percent of GDP for 2014 to about 6.2 percent by 2035, then declines to 6.0 percent by 2050, and then remains between 6.0 and 6.1 percent through 2088.

For the 75-year projection period, the actuarial deficit is 2.88 percent of taxable payroll, 0.16 percentage point larger than in last year's report. The open group unfunded obligation for OASDI over the 75-year period is $10.6 trillion in present value and is $1.0 trillion more than the measured level of $9.6 trillion a year ago. If the assumptions, methods, starting values, and the law had all remained unchanged, the actuarial deficit would have increased to 2.78 percent of taxable payroll and the unfunded obligation would have risen to about $10.1 trillion due to the change in the valuation date. The remaining increase in the actuarial deficit and the unfunded obligation is primarily due to changes in methods, assumptions, and starting values.

Conclusion

Under the intermediate assumptions, the Trustees project that annual cost for the OASDI program will exceed non-interest income in 2014 and remain higher throughout the remainder of the long-range period. The projected theoretical combined OASI and DI Trust Fund asset reserves increase through 2019, begin to decline in 2020, and become depleted and unable to pay scheduled benefits in full on a timely basis in 2033. At the time of reserve depletion, continuing income to the combined trust funds would be sufficient to pay 77 percent of scheduled benefits. However, the DI Trust Fund reserves become depleted in 2016, at which time continuing income to the DI Trust Fund would be sufficient to pay 81 percent of DI benefits. Therefore, legislative action is needed as soon as possible to address the DI program's financial imbalance. Lawmakers may consider responding to the impending DI Trust Fund reserve depletion as they did in 1994, solely by reallocating the payroll tax rate between OASI and DI. Such a response might serve to delay DI reforms and much needed corrections for OASDI as a whole. However, enactment of a more permanent solution could include a tax reallocation in the short-run.

For the combined OASI and DI Trust Funds to remain solvent throughout the 75-year projection period: (1) revenues would have to increase by an amount

equivalent to an immediate and permanent payroll tax rate increase of 2.83 percentage points[1] (from its current level of 12.40 percent to 15.23 percent; a relative increase of 22.8 percent); (2) scheduled benefits during the period would have to be reduced by an amount equivalent to an immediate and permanent reduction of 17.4 percent applied to all current and future beneficiaries, or 20.8 percent if the reductions were applied only to those who become initially eligible for benefits in 2014 or later; or (3) some combination of these approaches would have to be adopted.

The Trustees recommend that lawmakers address the projected trust fund shortfalls in a timely way in order to phase in necessary changes gradually 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 59 million beneficiaries and 165 million covered workers and their families in 2014. With informed discussion, creative thinking, and timely legislative action, Social Security can continue to protect future generations.

[1] The necessary tax rate of 2.83 percent differs from the 2.88 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 reserve 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.

B. TRUST FUND FINANCIAL OPERATIONS IN 2013

Table II.B1 shows the income, expenditures, and asset reserves for the OASI, the DI, and the theoretical combined OASI and DI Trust Funds in calendar year 2013.

Table II.B1.—Summary of 2013 Trust Fund Financial Operations
[In billions]

	OASI	DI	OASDI
Asset reserves at the end of 2012	$2,609.7	$122.7	$2,732.3
Total income in 2013	743.8	111.2	855.0
Net payroll tax contributions	620.8	105.4	726.2
Reimbursement from General Fund of the Treasury	4.2	.7	4.9
Taxation of benefits	20.7	.4	21.1
Interest	98.1	4.7	102.8
Total expenditures in 2013	679.5	143.4	822.9
Benefit payments	672.1	140.1	812.3
Railroad Retirement financial interchange	3.9	.6	4.5
Administrative expenses	3.4	2.8	6.2
Net increase in asset reserves in 2013	64.3	-32.2	32.1
Asset reserves at the end of 2013	2,674.0	90.4	2,764.4

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

In 2013, net payroll tax contributions accounted for 85 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 $113,700 in 2013. Table II.B2 shows the tax rates for 2013.

In 2013, less than one percent of OASI and DI combined Trust Fund income came from reimbursements from the General Fund of the Treasury. Public Laws 111-312, 112-78, and 112-96 account for most of the reimbursement for the year. These acts specified general fund reimbursement for temporary reductions in revenue due to reduced payroll tax rates for employees and for self-employed workers.

Two percent of OASI and DI combined Trust Fund income in 2013 came from subjecting up to 50 percent of Social Security benefits to Federal personal income taxation for beneficiaries with income (including half of benefits and all non-taxable interest) exceeding specified levels. Interest earned on investment of trust fund asset reserves accounted for 12 percent of

OASDI income. The Department of the Treasury invests trust fund reserves in interest-bearing securities issued by the U.S. Government. In 2013, the combined trust fund reserves earned interest at an effective annual rate of 3.8 percent.

Almost 99 percent of expenditures from the combined OASI and DI Trust Funds in 2013 were retirement, survivor, and disability benefits totaling $812.3 billion. The financial interchange with the Railroad Retirement program was the source of a net payment of $4.5 billion from the combined OASI and DI Trust Funds, which was about 0.5 percent of total expenditures. The administrative expenses of the Social Security program were $6.2 billion, which was about 0.7 percent of total expenditures.

The trust fund investments provide a reserve to pay benefits whenever total program cost exceeds income. Trust fund reserves increased by $32.1 billion in 2013 because total income to the combined funds, including interest earned on trust fund reserves, exceeded total expenditures. At the end of 2013, the combined reserves of the OASI and the DI Trust Funds were 320 percent of estimated expenditures[1] for 2014. In comparison, the combined reserves at the end of 2012 were 332 percent of expenditures for 2013.

Table II.B2.—Payroll Tax Contribution Rates for 2013
[In percent]

	OASI	DI	OASDI
Payroll tax contribution rate for employees	5.30	0.90	6.20
Payroll tax contribution rate for employers	5.30	.90	6.20
Payroll tax contribution rate for self-employed persons	10.60	1.80	12.40

[1] Estimated expenditures are based on the intermediate set of assumptions.

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 present 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 or high-cost projections. A separate section on the uncertainty of the projections, beginning on page 18, 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 Assumptions for the 75-year Projection Period

Long-range assumptions	Intermediate	Low-cost	High-cost
Demographic:			
Total fertility rate (children per woman), for 2038 and later	2.0	2.3	1.7
Average annual percentage reduction in total age-sex-adjusted death rates from 2013 to 2088	.79	.41	1.20
Average annual net immigration (in thousands) for 2014 to 2088	1,125	1,430	830
Economic:			
Average annual percentage change in:			
Productivity (total U.S. economy), for 2026 and later	1.68	1.98	1.38
Average wage in covered employment from 2025 to 2088	3.83	5.16	2.52
Consumer Price Index (CPI-W), for 2020 and later	2.70	3.40	2.00
Average annual real-wage differential (percent) for 2025 to 2088	1.13	1.76	.52
Unemployment rate (percent, age-sex-adjusted), for 2023 and later	5.5	4.5	6.5
Annual trust fund real interest rate (percent), for 2025 and later	2.9	3.4	2.4
Programmatic:			
Disability incidence rate (per 1,000 exposed, age-sex-adjusted) by 2040	5.4	4.3	6.5
Disability recovery rate (per 1,000 beneficiaries, age-sex-adjusted) by 2045	10.4	12.6	8.3

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

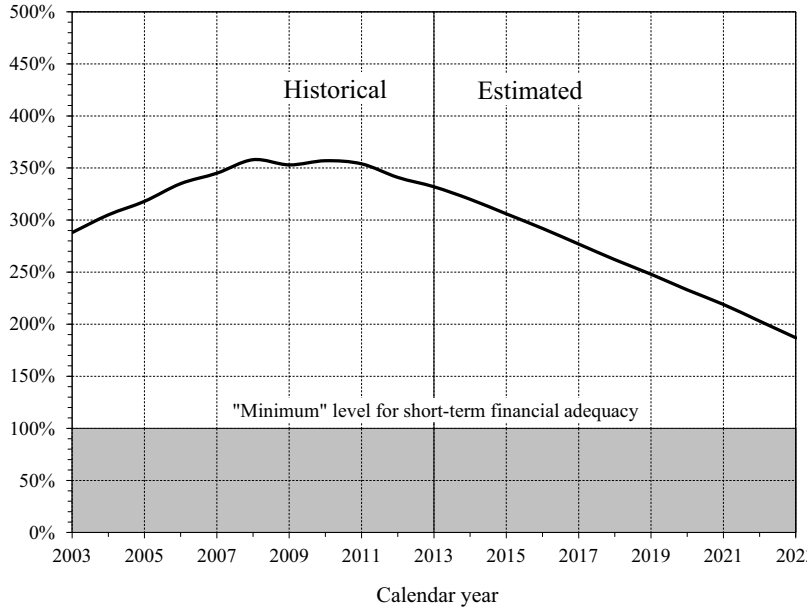
D. PROJECTIONS OF FUTURE FINANCIAL STATUS

Short-Range Actuarial Estimates

For the short-range period (2014 through 2023), the Trustees measure financial adequacy by comparing projected asset reserves at the beginning of each year to projected program cost for that year under the intermediate set of assumptions. Maintaining a trust fund ratio of 100 percent or more—that is, reserves 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 estimate that the DI trust fund ratio was at 62 percent at the beginning of 2014. The projected DI trust fund ratio then declines until the trust fund reserves become depleted in 2016. Figure II.D1 shows that the trust fund ratios for the theoretical combined OASI and DI Trust Funds decline consistently after 2010. Figure II.D3 illustrates the implications of reserve depletion for the DI Trust Fund alone.

As it has since 2010, projected OASDI cost exceeds non-interest income throughout the short-range period. Cost is less than total income until 2020, when cost begins to exceed total income. While trust fund reserves continue to grow through 2019, they grow more slowly than cost, causing the trust fund ratio to decline, as shown in figure II.D1.

Figure II.D1.—Short-Range OASI and DI Combined Trust Fund Ratio
[Asset reserves as a percentage of annual cost]



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 express these measures as percentages of taxable payroll, as percentages of gross domestic product (GDP), or in dollars. The Trustees also present summary measures over the infinite horizon in Appendix F. The infinite horizon values provide an additional indication of Social Security's very-long-run financial condition, but are subject to much greater uncertainty.

The Trustees also apply the test of long-range close actuarial balance each year. To satisfy the test, a trust fund must meet two conditions: (1) the trust fund satisfies the short-range test of financial adequacy, and (2) the trust fund ratio stays above zero throughout the 75-year projection period, such that benefits would be payable in a timely manner throughout the period. The OASI, DI, and theoretical combined OASI and DI Trust Funds all fail the

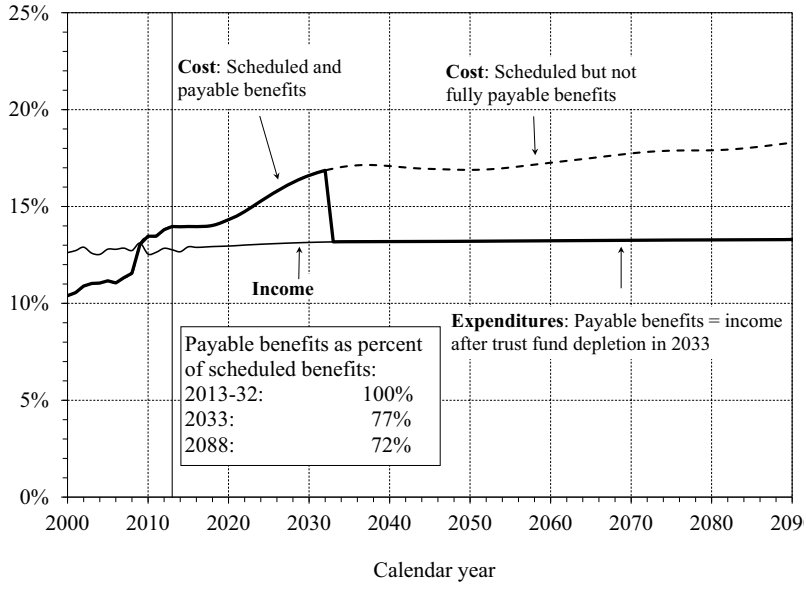
test of long-range close actuarial balance under the intermediate assumptions.

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 (2014 through 2088). 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 lower taxable earnings than expected and more beneficiaries than expected, which in turn sharply increased the cost rate. This recession effect obscures the underlying rising trend in the cost rate for the next few 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 2019, so trust fund asset reserves continue to grow. Beginning in 2020, cost exceeds total income, and theoretical combined OASI and DI Trust Fund reserves diminish until they become depleted in 2033. After trust fund reserve depletion, continuing income is sufficient to support expenditures at a level of 77 percent of program cost for the rest of 2033, declining to 72 percent for 2088. Figure II.D2 depicts OASDI operations as a theoretical combined whole. However, under current law, the differences between scheduled and payable benefits would begin at different times for the program's two trust funds: in 2016 for DI and in 2034 for OASI.

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



To illustrate the more immediate challenges specific to the DI program, figure II.D3 presents the year-by-year relationship among income, cost, and expenditures for the 75-year projection period. The DI Trust Fund reserves are expected to deplete in 2016 if no legislative action is taken before then. After DI Trust Fund reserve depletion, continuing income is sufficient to support expenditures at a level of 81 percent of program cost for the rest of 2016, rising to a somewhat higher level for 2020 through 2040, then declining to 80 percent by 2088.

Figure II.D3.—DI Income, Cost, and Expenditures as Percentages of Taxable Payroll
[Under Intermediate Assumptions]

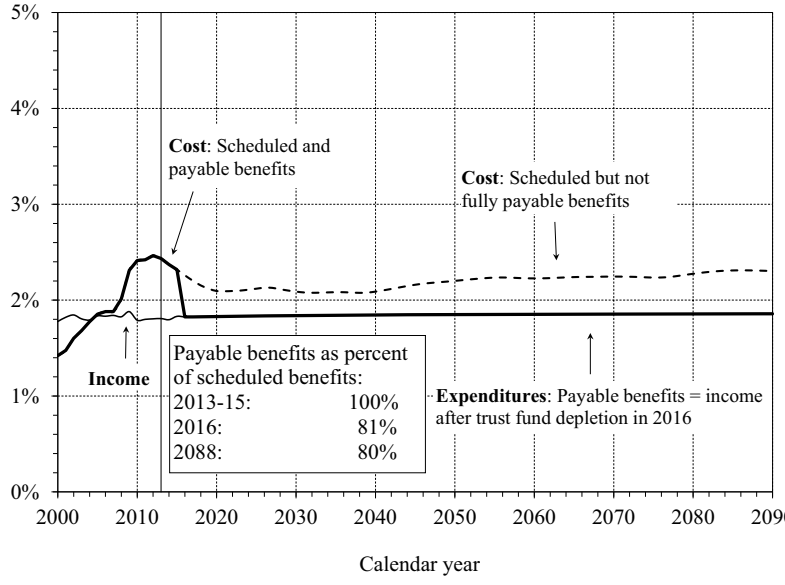
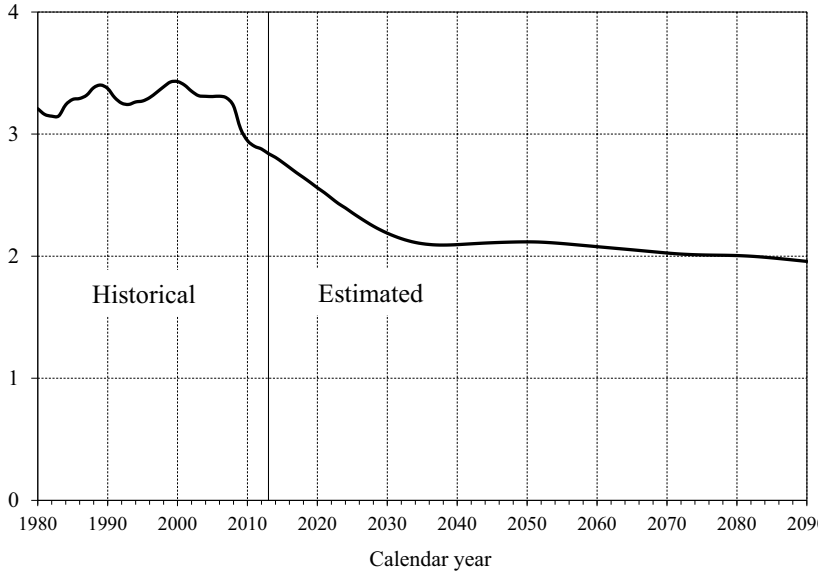


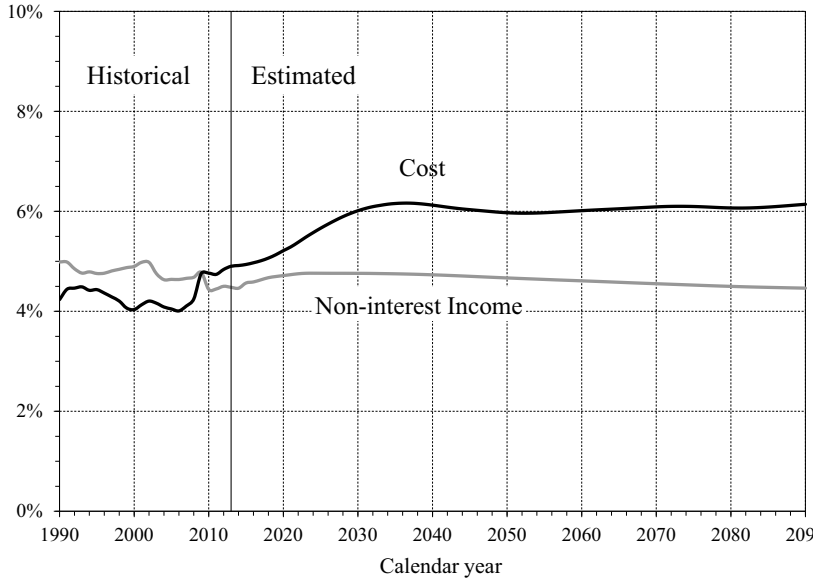
Figure II.D4 shows the estimated number of workers per beneficiary. Figures II.D2 and II.D4 illustrate the inverse relationship between cost rates and the number of workers per beneficiary. In particular, the projected future increase in the cost rate reflects a projected decline in the number of covered workers per beneficiary. There were about 2.8 workers for every OASDI beneficiary in 2013. 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 2.1 by 2035 when the baby-boom generation will have largely retired, with a further gradual decline thereafter due to increasing longevity.

Figure II.D4.—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 (GDP). As shown in figure II.D5, the Trustees project that Social Security's cost as a percent of GDP will grow from 4.4 percent in 2008 to about 6.2 percent by 2035, then decline to 6.0 percent by 2050, and remain between 6.0 and 6.1 percent through 2088. As the economy recovers, Social Security's non-interest income, which reflects scheduled tax rates, increases from its current level of about 4.5 percent of GDP to about 4.8 percent of GDP for 2024. Thereafter, non-interest income as a percent of GDP declines gradually, to about 4.5 percent by 2088, because the Trustees expect the share of employee compensation provided as noncovered fringe benefits to increase gradually.

Figure II.D5.—OASDI Cost and Non-interest Income as a Percentage of GDP



Trust Fund Ratios

The trust fund ratio is defined as the asset reserves 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 reserves 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 OASI and DI funds. The table also shows the year of maximum projected trust fund ratio during the long-range projection period (2014-88) and the year of trust fund reserve depletion. Each trust fund ratio has been generally declining in recent years. OASI reached a peak level of 402 in 2011, DI reached a peak level of 219 in 2003, and OASDI reached a peak level of 358 in 2008.

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

	OASI	DI	OASDI
Maximum trust fund ratio (percent)	373	62	320
Year attained	2014	2014	2014
Year of trust fund reserve depletion	2034	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 asset reserves at the beginning of the period, all cost and income during the valuation period, and the cost of reaching a target trust fund reserve of one year's cost by the end of the period. Therefore, the actuarial balance is essentially the difference between the present values of 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 75-year valuation period, and refer to a negative actuarial balance as an actuarial deficit. The actuarial deficit represents the average amount of change in income or cost that is needed throughout the valuation period in order to achieve actuarial balance.

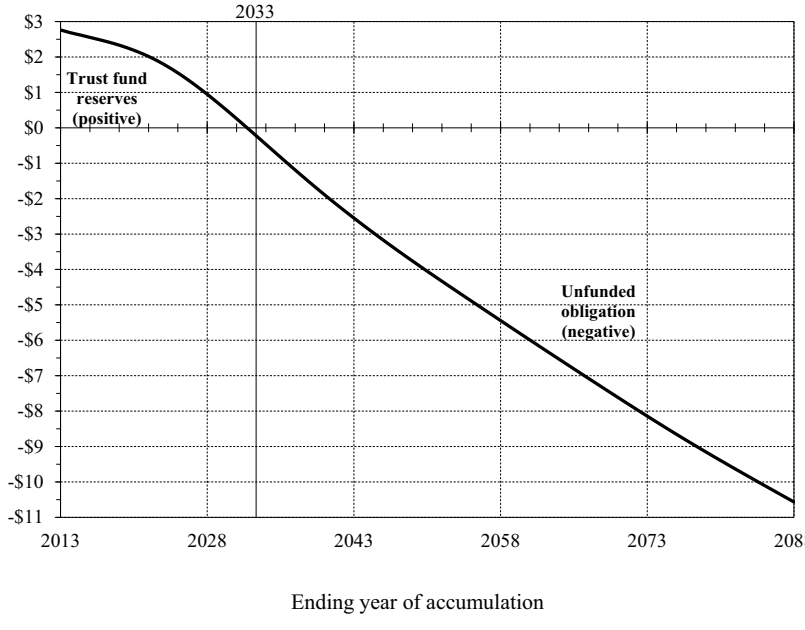
In this report, the actuarial deficit for the combined OASI and DI Trust Funds under the intermediate assumptions is 2.88 percent of taxable payroll. The actuarial deficit was 2.72 percent in the 2013 report. If the assumptions, methods, starting values, and the law had all remained unchanged from last year, the actuarial deficit would have increased to 2.78 percent of payroll solely due to advancing the valuation period by 1 year. Changes in methods, assumptions, and starting values combined to account for most of the remaining change in the actuarial deficit.

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.D6 shows the present value of cumulative OASDI income less cost from the inception of the program through each of the years from 2013 to 2088. A positive value represents the present value of trust fund reserves at the end of the selected year. A negative value is the unfunded obligation through the selected year. The asset reserves of the combined trust funds were $2.8 trillion at the end of 2013. The trust fund reserves decline on a present value basis after 2013, 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 2088, the combined funds have a present-value unfunded obligation of $10.6 trillion. If the assumptions, methods, starting values, and the law had all remained unchanged from last year, the unfunded obligation would have risen to about $10.1 trillion due to the change in the valuation date. The remaining increase in the unfunded obligation is primarily due to changes in methods, assumptions, and starting values.

This unfunded obligation represents 2.73 percent of taxable payroll and 1.0 percent of GDP for the 75-year valuation period. The unfunded obligation as a share of taxable payroll (2.73 percent) and the actuarial deficit (2.88 percent) are similar measures, but differ because the actuarial deficit includes the cost of having an ending trust fund reserve equal to 1 year's cost.

Figures II.D2, II.D5, and II.D6 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.D6.—Cumulative Scheduled OASDI Income Less Cost, From Program Inception Through Years 2013-88
[Present value as of January 1, 2014, in trillions]



[1] Sustainable solvency for the financing of the program under a specified set of assumptions has been achieved when the projected trust fund ratio is positive throughout the 75-year projection period and is either stable or rising at the end of the period.

Appendix F presents summary measures over the infinite horizon. The infinite horizon values provide an additional indication of Social Security's financial condition for the period beginning with the inception of the program and 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, is equivalent to 4.1 percent of future taxable payroll or 1.4 percent of future GDP.

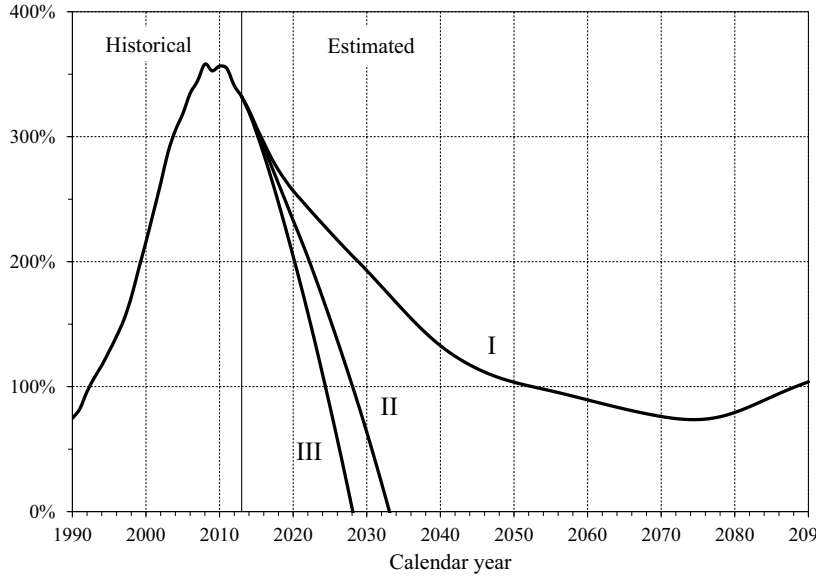
Uncertainty of the Projections

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.D7 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, a higher ultimate annual change in the CPI, 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, a lower ultimate annual change in the CPI, and a higher unemployment rate[1]. These alternatives are not intended to suggest that all parameters would be likely to differ from the intermediate values in the specified directions, 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 or 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.

[1] In prior reports, the low-cost alternative included a lower ultimate annual change in the CPI and the high-cost alternative included a higher ultimate annual change in the CPI. This change contributes to the more positive projection shown for the low-cost alternative compared to last year.

Figure II.D7.—Long-Range OASI and DI Combined Trust Fund Ratios Under Alternative Scenarios
[Asset reserves as a percentage of annual cost]



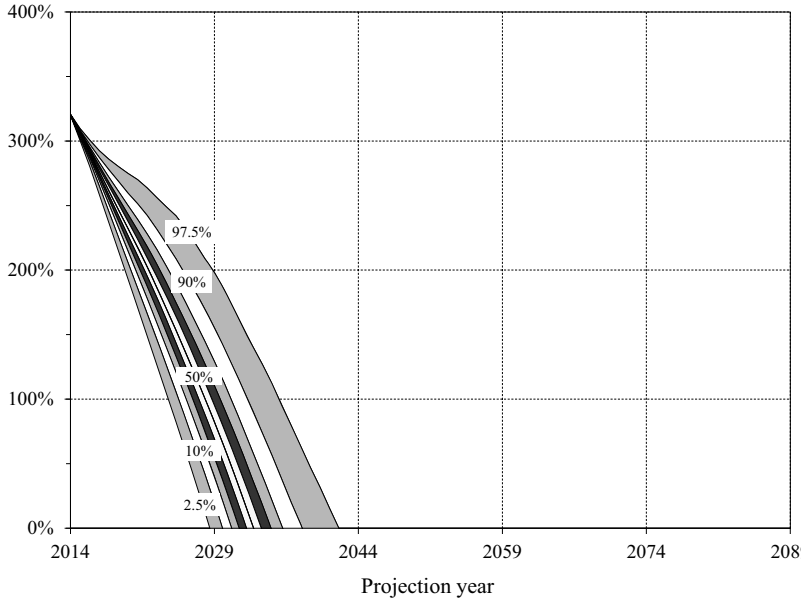
Appendix D of this report presents long-range sensitivity analysis for the OASDI program. By varying one parameter at a time, sensitivity analysis provides a second approach for illustrating the uncertainty surrounding projections into the future.

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 reserve depletion (i.e., the point at which the trust fund ratio reaches zero) is very likely by mid-century. In particular, figure II.D8 suggests that based on these stochastic simulations, trust fund asset reserves will deplete between 2028 and 2044 with a 95-percent probability.

The stochastic results suggest that trust fund ratios as high as the low-cost alternative are very unlikely. However, the relationship between the stochastic results and the low-cost and high-cost alternatives may change as the methodology for the stochastic simulations is further developed. As noted in

appendix E, future improvements and refinements are expected to be more likely to expand rather than reduce the indicated range of uncertainty.

Figure II.D8.—Long-Range OASI and DI Combined Trust Fund Ratios From Stochastic Modeling



Changes From Last Year's Report

The projected long-range OASDI actuarial deficit increased from 2.72 percent of taxable payroll for last year's report to 2.88 percent of taxable payroll for this year's report. The change in the 75-year projection period alone increased the actuarial deficit to 2.78 percent. Changes in methods, assumptions, and starting values combined to account for most of the remaining change in the actuarial deficit. For a detailed description of the specific changes identified in table II.D2, see section IV.B.6.

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

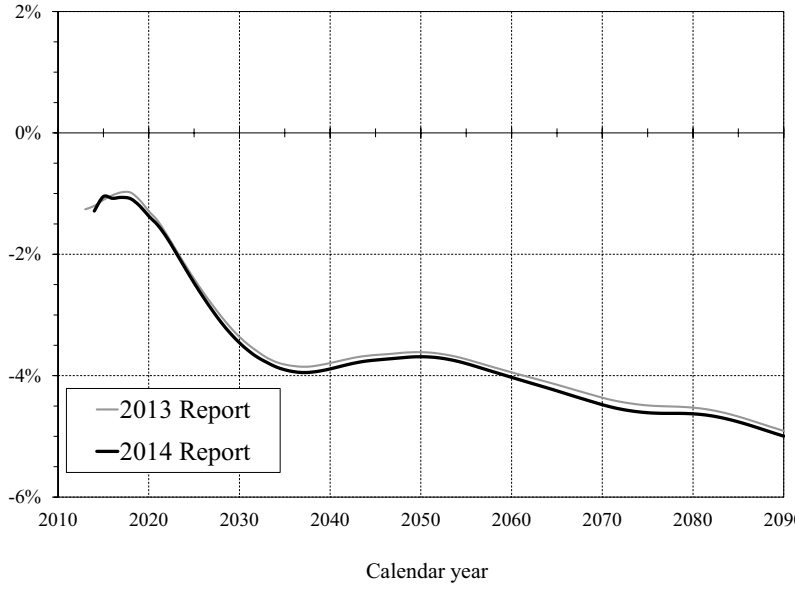
Item	OASI	DI	OASDI
Shown in last year's report:			
Income rate	12.00	1.88	13.88
Cost rate	14.40	2.20	16.60
Actuarial balance	**-2.40**	**-.32**	**-2.72**
Changes in actuarial balance due to changes in:			
Legislation / Regulation	-.01	.00	-.01
Valuation period[a]	-.05	-.01	-.06
Demographic data and assumptions	.04	.00	.04
Economic data and assumptions	-.08	-.02	-.10
Disability data and assumptions	.00	.02	.02
Methods and programmatic data	-.05	.00	-.05
Total change in actuarial balance	-.15	-.01	-.16
Shown in this report:			
Actuarial balance	**-2.55**	**-.33**	**-2.88**
Income rate	12.02	1.87	13.89
Cost rate	14.57	2.20	16.77

[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 2088. This change in the valuation period results in a larger long-range actuarial deficit. The actuarial deficit includes the trust fund reserve at the beginning of the projection period.

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

Figure II.D9 compares this year's projections of annual balances (non-interest income minus cost) to those in last year's report. The annual balances in this year's report are about 0.1 percentage point more negative throughout the projection period. See page 74 for details.

Figure II.D9.—OASDI Annual Balances: 2013 and 2014 Trustees Reports
[As a percentage of taxable payroll, under the intermediate assumptions]



E. CONCLUSION

Under current law, the projected cost of Social Security increases faster than projected income through about 2035 primarily because of the aging of the baby-boom generation and relatively low fertility since the baby-boom period. Cost will continue to grow faster than income, but to a lesser degree, after 2035 due to increasing life expectancy. Based on the Trustees' best estimate, program cost exceeds non-interest income for 2014, as it has since 2010, and remains higher than non-interest income throughout the remainder of the 75-year projection period. Social Security's theoretical combined trust funds increase with the help of interest income through 2019 and allow full payment of scheduled benefits on a timely basis until the trust fund asset reserves become depleted in 2033. At that time, projected continuing income to the combined trust funds equals about 77 percent of program cost. By 2088, continuing income equals about 72 percent of program cost.

The Trustees project that the OASI Trust Fund and the DI Trust Fund will have sufficient reserves to pay full benefits on time until 2034 and 2016, respectively. Legislative action is needed as soon as possible to prevent depletion of the DI Trust Fund reserves in 2016, at which time continuing income to the DI Trust Fund would be sufficient to pay 81 percent of DI benefits. Lawmakers may consider responding to the impending DI Trust Fund reserve depletion as they did in 1994, solely by reallocating the payroll tax rate between OASI and DI. Such a response might serve to delay DI reforms and much needed corrections for OASDI as a whole. However, enactment of a more permanent solution could include a tax reallocation in the short-run.

The Trustees estimate that the 75-year actuarial deficit for the combined trust funds is 2.88 percent of taxable payroll—0.16 percentage point larger than the 2.72 percent deficit in last year's report. For the combined OASI and DI Trust Funds to remain fully solvent throughout the 75-year projection period: (1) revenues would have to increase by an amount equivalent to an immediate and permanent payroll tax rate increase of 2.83 percentage points (from its current level of 12.40 percent to 15.23 percent; a relative increase of 22.8 percent); (2) scheduled benefits during the period would have to be reduced by an amount equivalent to an immediate and permanent reduction of 17.4 percent applied to all current and future beneficiaries, or 20.8 percent if the reductions were applied only to those who become initially eligible for benefits in 2014 or later; or (3) some combination of these approaches would have to be adopted. Under these scenarios, non-interest income would initially be substantially greater than expenditures, and trust fund reserves would accumulate rapidly. Subsequently, however, non-interest income alone

would be inadequate, and reserves would be drawn down to cover the differences. This illustrates that if lawmakers were to design legislative solutions only to eliminate the overall actuarial deficit without consideration of year-by-year patterns, then a substantial financial imbalance could remain at the end of the period, and the long-range sustainability of program financing could still be in doubt.

If substantial actions are deferred for several years, the changes necessary to maintain Social Security solvency would be concentrated on fewer years and fewer generations. Much larger changes would be necessary if action is deferred until the combined trust fund reserves become depleted in 2033. In order to maintain solvency throughout the 75-year projection period and finance scheduled benefits fully in every year starting in 2033, it would be necessary to increase revenues by an amount equivalent to a payroll tax rate increase of about 4.2 percentage points (yielding a total payroll tax rate of about 16.6 percent) at the point of trust fund reserve depletion, with the total rate reaching about 17.7 percent in 2088. Alternatively, solvency could be maintained if benefits were reduced to the level that would be payable with scheduled tax rates and earnings subject to tax in each year beginning in 2033. At the point of combined trust fund reserve depletion in 2033, this would be equivalent to a reduction in all scheduled benefits of 23 percent, with reductions reaching 28 percent in 2088. In addition, of course, there is a continuum of policies combining tax increases with benefit reductions that would maintain solvency at the point of trust fund depletion.

Some strategies for achieving solvency would not be feasible if delayed until trust fund reserve depletion in 2033. For example, even a temporary 100-percent benefit reduction for those newly eligible for benefits in 2033 would not by itself make it possible to pay all benefits scheduled for payment in that year to those already receiving or eligible 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 2088. As a result, lawmakers would have to make additional changes to ensure solvency of the system beyond 2088. Making changes now that achieve sustainable solvency (that is, result in a trust fund ratio that is positive throughout the long-range period and is either level or increasing at the end of the period) could avoid the need for later legislative changes.

The Trustees recommend that lawmakers address the projected trust fund shortfalls in a timely way in order to phase in necessary changes gradually 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 59 million beneficiaries and 165 million covered workers and their families in 2014. 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/2014/index.html
- www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/index.html
- 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 2013

This section presents detailed information on the operations of the OASI and DI Trust Funds[1] during calendar year 2013. Chapter IV provides projections for calendar years 2014 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 2013, and of the asset reserves in the fund at the beginning and end of the calendar year. As shown in this table, total trust fund receipts in 2013 amounted to $743.8 billion, while disbursements totaled $679.5 billion, an increase in trust fund reserves during 2013 of $64.3 billion.

Total receipts during calendar year 2013 included $622.2 billion in payroll tax contributions. These contributions include initial appropriations of payroll taxes, made on an estimated basis, and adjustments to appropriations for prior years to reflect actual tax receipts. The OASI fund paid the general fund $1.4 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 $620.8 billion in 2013.

Net reimbursements from the General Fund of the Treasury amounted to $4.2 billion in 2013. As shown in the table, Public Law 111-312, the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, Public Law 112-78, the Temporary Payroll Tax Cut Continuation Act of 2011, and Public Law 112-96, the Middle Class Tax Relief and Job Creation Act of 2012, account for almost all of the reimbursement for the year, or about $4.1 billion. These acts specified general fund reimbursement for temporary reductions in employee and self-employment payroll taxes.[2]

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

[2] Amounts transferred include adjustments to estimated initial appropriations to reflect actual tax receipts in prior periods.

The General Fund of the Treasury reimbursed the OASI Trust Fund approximately $98 million in 2013 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 2013 under the provisions of Public Law 110-246, the Food, Conservation, and Energy Act of 2008.

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 2013, the general fund reimbursed the OASI Trust Fund approximately $1 thousand. This reimbursement reflects costs incurred for fiscal year 2011. This should be the last such reimbursement because the last remaining beneficiary of these special payments died in fiscal year 2011.

Income based on taxation of OASI benefits amounted to $20.7 billion in 2013. About 99 percent of this income represents amounts credited to the trust funds, generally in advance of the actual receipt of taxes by the Treasury. These credited amounts represent the net amount of initial estimated taxes transferred for tax liabilities in 2013 and adjustments to initial amounts transferred for prior periods. The remaining one percent of the total income from taxation of benefits represents amounts withheld from the benefits paid to nonresident aliens.

In 2013, the OASI Trust Fund earned $98.1 billion in net interest, which consisted of: (1) interest earned on the investments held by 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 Social Security Act authorizes the deposit of monetary gifts or bequests in the trust funds. In 2013, there were no such receipts by the OASI Trust Fund.

Table III.A1.—Operations of the OASI Trust Fund, Calendar Year 2013
[In millions]

Total asset reserves, December 31, 2012		$2,609,668
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$622,211	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund[a]	-1,396	
Net payroll tax contributions[a]		620,814
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312, P.L. 112-78, and P.L. 112-96[a]	4,065	
Reduction in payroll tax contributions due to P.L. 111-147[a]	98	
Reimbursement directed by P.L. 110-246	7	
Payroll tax credits due to P.L. 98-21[a]	b	
Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968	b	
Net general fund reimbursements[a]		4,169
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	177	
All other, not subject to withholding[a]	20,517	
Total income from taxation of benefits[a]		20,694
Investment income and interest adjustments:		
Interest on investments	98,113	
Interest adjustments[c]	1	
Total investment income and interest adjustments		98,114
Gifts		—
Total receipts		743,793
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death payments[d]	672,175	
Reimbursement from the general fund for unnegotiated checks	-49	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	3	
Net benefit payments[d]		672,129
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		3,948
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,823	
Department of the Treasury	583	
Offsetting receipts from sales of supplies, materials, etc.	-3	
Miscellaneous reimbursements from the general fund[e]	-5	
Net administrative expenses		3,397
Total disbursements		679,475
Net increase in asset reserves		64,317
Total asset reserves, December 31, 2013		2,673,985

[a] Includes adjustments for prior calendar years.
[b] Between -$0.5 and $0.5 million.
[c] 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.
[d] Includes net reductions for the recovery of overpayments.
[e] 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.

Of the $679.5 billion in total OASI disbursements in 2013, $672.1 billion was for net benefit payments, including recovered overpayments, reimburse-

ments from the general fund for unnegotiated checks, and the reimbursable costs of vocational rehabilitation services[1]. Net benefit payments increased by 5.4 percent from calendar year 2012 to calendar year 2013. This increase is due primarily to (1) an increase in the total number of beneficiaries and (2) an increase in the average benefit amount. The increase in the average benefit amount in 2013 was due in large part to the automatic cost-of-living benefit increase of 1.7 percent which became effective for December 2012 under the automatic-adjustment provisions in section 215(i) of the Social Security Act. In addition, new beneficiaries tend to have higher benefits than previous cohorts.

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 in had railroad employment always been covered directly by Social Security. The Railroad Retirement Board and the Social Security Administration calculated an interchange of $3.9 billion from the OASI Trust Fund to the Social Security Equivalent Benefit Account for June 2013.

The remaining $3.4 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 is recorded, 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 2013, the cost incurred by the Social Security Administration to administer the OASI program was 83 percent of OASI net administrative expenses. The Social Security Administration charges such costs to the trust fund ($2.8 billion in 2013). In addition, the Department of the Treasury charges to the trust fund expenses ($0.6 billion in 2013) for services provided in administering the OASI program. A relatively small offset ($3 million in 2013) to administrative expenses represents income from the sale of excess supplies and equipment.

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[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.

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 2013) and with the provision of information to participants in certain pension plans ($1 million in 2013). These miscellaneous reimbursements totaled $5 million in 2013.

The asset reserves in the OASI Trust Fund at the end of calendar year 2013 totaled $2,674.0 billion, consisting of $2,674.5 billion in U.S. Government obligations and, as an offset, an extension of credit of $0.5 billion against securities to be redeemed within the following days. The effective annual rate of interest earned by the reserves in the OASI Trust Fund during calendar year 2013 was 3.8 percent, slightly lower than the 4.1 percent earned during calendar year 2012. 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 2012 and 2013.

By law, the Department of the Treasury must invest trust fund reserves 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. Daily receipts are invested in the short-term certificates of indebtedness which mature on the next June 30 following the date of issue. The trust fund normally acquires long-term special-issue bonds when special issues of either type mature on June 30 and must be reinvested. The amount of long-term bonds acquired on June 30 is equal to the amount of special issues maturing (including accrued 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 reinvest the maturing special issues, as of each June 30, so that the value of the securities 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, 2013, so that the maturity dates of the total portfolio of special issues were spread evenly over the 15-year period 2014-28. The bonds purchased on that date have an interest rate of 1.750 percent, reflecting 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. Table III.A7 shows additional details on the investment transactions during 2013, including the amounts of bonds purchased on June 30, 2013.

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 2013, and of the asset reserves in 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 $111.2 billion in total receipts, $105.4 billion was net payroll tax contributions.

Of the $143.4 billion of total disbursements, $140.1 billion was net benefit payments. Net benefit payments increased by 2.4 percent from calendar year 2012 to calendar year 2013. This increase in DI benefit payments was due to the same factors described earlier for OASI benefit payments. Total DI disbursements exceeded non-interest income in years 2005 through 2013 and exceeded total income in years 2009 through 2013.

During 2013, the reserves in the DI Trust Fund decreased by $32.2 billion, from $122.7 billion at the end of 2012 to $90.4 billion at the end of 2013. The $90.4 billion reserves in the DI Trust Fund at the end of calendar year 2013 consisted of $90.7 billion in U.S. Government obligations and, as an offset, an extension of credit of $0.3 billion against securities to be redeemed within the following few days. The effective annual rate of interest earned by the asset reserves in the DI Trust Fund during calendar year 2013 was 4.5 percent, slightly lower than the 4.7 percent earned during calendar year 2012. 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 2012 and 2013.

Table III.A2.—Operations of the DI Trust Fund, Calendar Year 2013
[In millions]

Total asset reserves, December 31, 2012		$122,666
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$105,639	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund[a]	-237	
Net payroll tax contributions[a]		105,402
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312, P.L. 112-78, and P.L. 112-96[a]	712	
Reduction in payroll tax contributions due to P.L. 111-147[a]	17	
Reimbursements directed by P.L. 110-246	1	
Payroll tax credits due to P.L. 98-21[a]	b	
Net general fund reimbursements[a]		729
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	4	
All other, not subject to withholding[a]	387	
Total income from taxation of benefits[a]		391
Investment income and interest adjustments:		
Interest on investments	4,704	
Interest adjustments[c]	1	
Total investment income and interest adjustments		4,706
Gifts		—
Total receipts		111,228
Disbursements:		
Benefit payments:		
Monthly benefits[d]	140,071	
Reimbursement from the general fund for unnegotiated checks	-25	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	84	
Net benefit payments[d]		140,130
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		551
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,644	
Department of the Treasury	110	
Demonstration projects	19	
Miscellaneous reimbursements from the general fund[e]	-3	
Net administrative expenses		2,769
Total disbursements		143,450
Net increase in asset reserves		-32,221
Total asset reserves, December 31, 2013		90,445

[a] Includes adjustments for prior calendar years.
[b] Between -$0.5 and $0.5 million.
[c] 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.
[d] Includes net reductions for the recovery of overpayments.
[e] Reimbursements for costs incurred in performing legislatively mandated activities not directly related to administering the DI program.

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

Section 201(d) of the Social Security Act provides that the Treasury securities 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 reinvest the maturing special issues, as of each June 30, so that the value of the securities maturing in each of the next 15 years are approximately equal. However, as of June 2013, the Trustees projected that the reserves in the DI Trust Fund would be depleted 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, 2013, so that equal amounts of special issues would mature over the three-year period 2014-16. The bonds purchased have an interest rate of 1.750 percent, reflecting 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. As of June 30, 2013, the DI Trust Fund had already redeemed all of the bonds coming due on June 30, 2014, June 30, 2015, and on June 30, 2016, so this investment approach required that all bond purchases on June 30, 2013 be split evenly over maturity dates of June 30, 2014, June 30, 2015, and June 30, 2016. Table III.A7 shows additional details on the investment transactions during 2013.

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 theoretical combined basis[1]. 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.

[1] The OASI and DI Trust Funds are distinct legal entities which operate independently. To illustrate the actuarial status of the program as a whole, the fund operations are often combined on a theoretical basis.

Table III.A3.—Operations of the Combined OASI and DI Trust Funds, Calendar Year 2013
[In millions]

Total asset reserves, December 31, 2012		$2,732,334
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$727,850	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund[a]	-1,633	
Net payroll tax contributions[a]		726,217
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L. 111-312, P.L. 112-78, and P.L. 112-96[a]	4,776	
Reduction in payroll tax contributions due to P.L. 111-147[a]	115	
Reimbursements directed by P.L. 110-246	8	
Payroll tax credits due to P.L. 98-21[a]	[b]	
Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968	[b]	
Net general fund reimbursements[a]		4,899
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	182	
All other, not subject to withholding[a]	20,904	
Total income from taxation of benefits[a]		21,086
Investment income and interest adjustments:		
Interest on investments	102,817	
Interest adjustments[c]	3	
Total investment income and interest adjustments		102,820
Gifts		—
Total receipts		855,021
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death payments[d]	812,247	
Reimbursement from the general fund for unnegotiated checks	-74	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	87	
Net benefit payments[d]		812,259
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		4,499
Administrative expenses:		
Costs incurred by:		
Social Security Administration	5,467	
Department of the Treasury	692	
Offsetting receipts from sales of supplies, materials, etc.	-3	
Demonstration projects	19	
Miscellaneous reimbursements from the general fund[e]	-8	
Net administrative expenses		6,166
Total disbursements		822,925
Net increase in asset reserves		32,096
Total asset reserves, December 31, 2013		2,764,431

[a] Includes adjustments for prior calendar years.
[b] Between -$0.5 and $0.5 million.
[c] 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.
[d] Includes net reductions for the recovery of overpayments.
[e] 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 2013 from the 2009-13 Trustees Reports, to the corresponding actual amounts for 2013.

Table III.A4.—Comparison of Actual Calendar Year 2013 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 2009 report	$874.2	17.5	$678.8	-0.1
Estimate in 2010 report	845.1	13.6	680.4	.1
Estimate in 2011 report	796.4	7.1	670.0	-1.4
Estimate in 2012 report	759.7	2.1	684.9	.8
Estimate in 2013 report	743.4	-.1	682.0	.4
Actual amount	743.8	—	679.5	—
DI Trust Fund:				
Estimate in 2009 report	129.7	16.6	143.9	.3
Estimate in 2010 report	124.4	11.9	147.0	2.5
Estimate in 2011 report	118.7	6.7	143.8	.3
Estimate in 2012 report	113.7	2.2	147.4	2.7
Estimate in 2013 report	111.4	.1	144.8	1.0
Actual amount	111.2	—	143.4	—
OASI and DI Trust Funds, combined:				
Estimate in 2009 report	1,003.9	17.4	822.7	c
Estimate in 2010 report	969.5	13.4	827.4	.5
Estimate in 2011 report	915.1	7.0	813.8	-1.1
Estimate in 2012 report	873.4	2.1	832.3	1.1
Estimate in 2013 report	854.8	c	826.8	.5
Actual amount	855.0	—	822.9	—

[a] Percentage differences are calculated prior to rounding.
[b] "Actual" income for 2013 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.
[c] Between -0.05 and 0.05 percent.

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 earlier assumed levels; and (2) legislation that was enacted or other administrative initiatives that were finalized after the Trustees completed their estimates.

At the end of calendar year 2013, the OASDI program was providing monthly benefits to about 58.0 million people. The OASI Trust Fund was providing benefits to about 47.0 million people and the DI Trust Fund was providing benefits to about 11.0 million people. The number of people receiving benefits from the OASI and DI Trust Funds grew by 2.4 percent

and 0.9 percent, respectively, during the calendar year. This growth reflects increases in the insured population and the gradual aging of the population. Table III.A5 shows the estimated distributions of benefit payments in calendar years 2012 and 2013, by type of beneficiary, for each trust fund separately.

Table III.A5.—Distribution of Benefit Payments by Type of Beneficiary or Payment, Calendar Years 2012 and 2013
[Amounts in millions]

	Calendar year 2012		Calendar year 2013	
	Amount	Percentage of total	Amount	Percentage of total
Total OASDI benefit payments	$774,825	100.0	$812,247	100.0
OASI benefit payments	637,948	82.3	672,175	82.8
DI benefit payments	136,878	17.7	140,071	17.2
OASI benefit payments, total	637,948	100.0	672,175	100.0
Monthly benefits:				
Retired workers and auxiliaries	527,403	82.7	559,942	83.3
Retired workers	497,471	78.0	528,862	78.7
Spouses	25,348	4.0	26,300	3.9
Children	4,583	.7	4,780	.7
Survivors of deceased workers	110,345	17.3	112,032	16.7
Aged widows and widowers	87,603	13.7	89,126	13.3
Disabled widows and widowers	2,293	.4	2,301	.3
Parents	22	[a]	22	[a]
Children	18,752	2.9	18,923	2.8
Widowed mothers and fathers caring for child beneficiaries	1,676	.3	1,660	.2
Lump-sum death payments	200	[a]	201	[a]
DI benefit payments, total	136,878	100.0	140,071	100.0
Disabled workers	127,155	92.9	130,427	93.1
Spouses	631	.5	615	.4
Children	9,092	6.6	9,028	6.4

[a] Less than 0.05 percent.

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 2013 totaled $6.2 billion. This amount is equal to 0.8 percent of non-interest income and 0.7 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 2009-13

Calendar year	OASI Trust Fund		DI Trust Fund		OASI and DI Trust Funds, combined	
	Non-interest income	Total expenditures	Non-interest income	Total expenditures	Non-interest income	Total expenditures
2009	0.6	0.6	2.8	2.3	0.9	0.9
2010	.6	.6	3.1	2.3	1.0	.9
2011	.6	.6	3.0	2.2	.9	.9
2012	.5	.5	2.8	2.1	.9	.8
2013	.5	.5	2.6	1.9	.8	.7

The acquisition and disposition of securities during calendar year 2013 changed the invested reserves 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 2013
[In millions]

	OASI Trust Fund	DI Trust Fund	OASI and DI Trust Funds, combined
Invested asset reserves, December 31, 2012[a]	$2,610,272	$122,802	$2,733,074
Acquisitions:			
Special issues:			
Certificates of indebtedness	701,186	110,371	811,557
Bonds[b]	246,863	6,987	253,850
Total acquisitions	948,049	117,358	1,065,407
Dispositions:			
Special issues:			
Certificates of indebtedness	701,305	111,204	812,508
Bonds	182,527	38,233	220,760
Total dispositions	883,831	149,437	1,033,268
Net increase in invested asset reserves	64,218	-32,079	32,139
Invested asset reserves, December 31, 2013[a]	2,674,490	90,723	2,765,213

[a] Invested asset reserves differ from total asset reserves by the amount of undisbursed balances. See tables VI.A4 and VI.A5 for details.
[b] Purchased on June 30, 2013. The interest rate on these purchases was 1.75 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 2013 REPORT

Since the Trustees submitted the 2013 report to Congress, no laws have been enacted that are expected to have notable financial effects on the OASDI program.

However, the Supreme Court's decision in the *United States v. Windsor* case, issued in June 2013, is projected to have a small but significant effect on the long-range cost of the OASDI program. The *United States v. Windsor* decision repealed parts of the Defense of Marriage Act, which affects the payment of federal benefits based on same-sex marriages. The extent to which OASDI benefits based on marriage will be available to same-sex couples is still not completely clear. SSA has issued guidelines, approved by the Department of Justice, for certain benefits for same-sex couples who were legally married when the insured account holder resided in a State or jurisdiction that recognized same-sex marriages at the time of application or death. Expansion of this authority to other same-sex couples and to other benefits is under review at the Department of Justice. For the estimates in this report, the Trustees have assumed that Social Security will expand its guidelines to recognize all auxiliary beneficiaries for such marriages and that same-sex marriages will eventually be recognized in all States. This projected expansion of benefits has a small but significant financial impact over the long-range period.

Sections IV.A.4 and IV.B.6 of this report provide further description of the nature and magnitude of the effects of *United States v. Windsor* 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 asset reserves 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 period (2014-23) first, followed by estimates and measures of actuarial status for the long range period (2014-88). Summary measures are also provided for trust fund status 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 to be fully 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 reserves 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 reserves 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 reserves are depleted, 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 on a theoretical basis. 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. If the ratio is initially less than 100 percent, then it must reach at least 100 percent within 5 years (without reserve 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 is applied using 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 should 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 2014-23. 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 asset reserves of the OASI Trust Fund continue to increase through 2021 under the intermediate assumptions, throughout the next 10 years under the low-cost assumptions, and through 2016 under the high-cost assumptions. However, trust fund ratios decline throughout the 10-year period under all three sets of assumptions. Based on the intermediate assumptions, the reserves of the OASI Trust Fund continue to exceed 100 percent of annual cost by a large amount through the end of 2023. 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 scheduled benefits 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 2009-23[a]

[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
Calendar year	Total	Net payroll tax contributions	GF reimbursements[b]	Taxation of benefits	Net interest	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
Historical data:												
2009 . . .	$698.2	$570.4	[e]	$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
2012 . . .	731.1	503.9	97.7	26.7	102.8	645.5	637.9	3.4	4.1	85.6	2,609.7	391
2013 . . .	743.8	620.8	4.2	20.7	98.1	679.5	672.1	3.4	3.9	64.3	2,674.0	384
Intermediate:												
2014 . . .	768.0	643.9	.5	28.0	95.6	716.4	709.5	2.8	4.1	51.5	2,725.5	373
2015 . . .	816.8	691.1	.3	30.7	94.7	758.7	751.2	3.2	4.2	58.1	2,783.7	359
2016 . . .	858.8	729.2	.1	33.8	95.7	807.5	799.9	3.3	4.3	51.3	2,835.0	345
2017 . . .	909.7	773.5	.1	37.4	98.8	861.1	853.5	3.4	4.1	48.6	2,883.6	329
2018 . . .	965.3	820.7	[e]	40.9	103.6	920.5	912.4	3.6	4.6	44.7	2,928.3	313
2019 . . .	1,019.0	865.8	[e]	44.7	108.4	985.1	976.7	3.7	4.7	33.9	2,962.2	297
2020 . . .	1,072.0	910.9	[e]	48.6	112.5	1,054.6	1,045.9	3.8	4.9	17.4	2,979.5	281
2021 . . .	1,124.3	956.5	[e]	52.6	115.2	1,122.9	1,114.1	3.9	4.9	1.4	2,980.9	265
2022 . . .	1,176.3	1,001.8	[e]	56.9	117.6	1,197.3	1,188.1	4.0	5.2	-21.0	2,959.9	249
2023 . . .	1,228.2	1,046.7	[e]	61.6	119.9	1,277.1	1,267.7	4.1	5.3	-48.9	2,911.0	232
Low-cost:												
2014 . . .	774.2	649.4	.5	28.0	96.4	716.3	709.4	2.8	4.1	57.9	2,731.9	373
2015 . . .	848.0	717.7	.3	30.8	99.2	759.9	752.4	3.2	4.2	88.1	2,820.0	360
2016 . . .	912.7	771.8	.1	34.2	106.7	816.2	808.7	3.3	4.3	96.5	2,916.5	345
2017 . . .	991.3	836.0	.1	38.2	117.1	880.2	872.6	3.5	4.1	111.1	3,027.6	331
2018 . . .	1,071.3	900.5	[e]	42.2	128.6	949.7	941.4	3.7	4.6	121.6	3,149.2	319
2019 . . .	1,151.1	964.1	[e]	46.5	140.5	1,023.9	1,015.3	3.9	4.8	127.1	3,276.3	308
2020 . . .	1,232.8	1,028.9	[e]	50.9	153.0	1,103.3	1,094.3	4.1	5.0	129.5	3,405.8	297
2021 . . .	1,316.0	1,094.7	[e]	55.4	166.0	1,182.7	1,173.4	4.2	5.0	133.4	3,539.1	288
2022 . . .	1,405.2	1,164.5	[e]	60.4	180.3	1,269.6	1,259.9	4.4	5.3	135.5	3,674.7	279
2023 . . .	1,497.4	1,235.9	[e]	65.8	195.8	1,363.9	1,353.8	4.6	5.4	133.6	3,808.3	269
High-cost:												
2014 . . .	759.7	636.7	.5	28.0	94.6	716.5	709.6	2.8	4.1	43.2	2,717.2	373
2015 . . .	782.0	660.4	.3	30.7	90.6	758.3	750.8	3.2	4.3	23.7	2,740.9	358
2016 . . .	807.3	686.0	.1	33.6	87.6	802.6	794.9	3.3	4.4	4.6	2,745.5	341
2017 . . .	836.8	714.3	.1	36.9	85.6	850.2	842.6	3.4	4.2	-13.3	2,732.2	323
2018 . . .	869.7	744.8	[e]	40.1	84.7	902.7	894.6	3.4	4.7	-33.0	2,699.2	303
2019 . . .	900.6	773.7	[e]	43.5	83.4	959.5	951.2	3.5	4.8	-58.9	2,640.3	281
2020 . . .	931.0	803.0	[e]	47.0	80.9	1,020.1	1,011.6	3.6	4.9	-89.1	2,551.1	259
2021 . . .	960.5	833.3	[e]	50.5	76.6	1,078.4	1,069.8	3.7	4.9	-117.9	2,433.2	237
2022 . . .	989.4	863.9	[e]	54.3	71.3	1,141.5	1,132.6	3.7	5.2	-152.1	2,281.1	213
2023 . . .	1,015.5	891.5	[e]	58.3	65.7	1,208.5	1,199.5	3.8	5.2	-193.1	2,088.1	189

[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, 112-78, and 112-96.

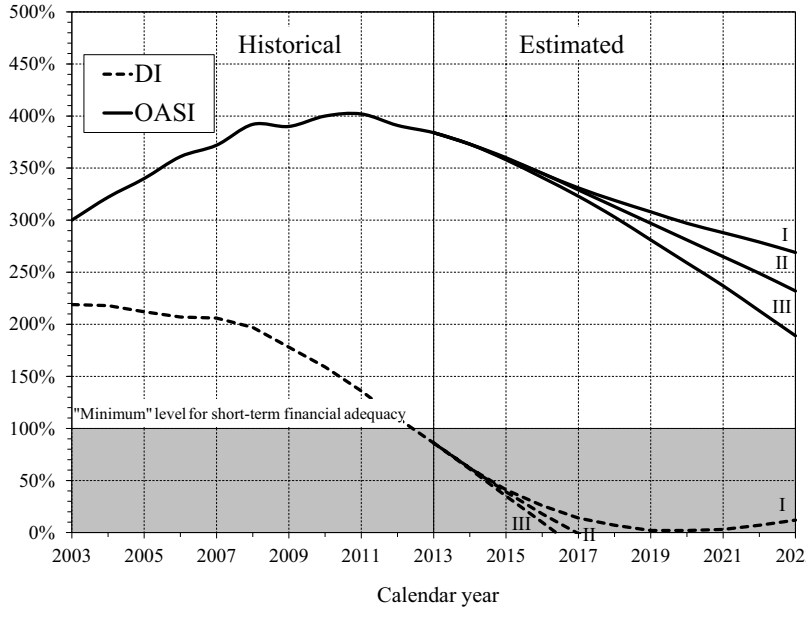
[c] Projected benefits are estimated as scheduled under current law.

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

[e] 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
[Asset reserves 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 reserves in the trust fund. Employment increases in every year through 2023 for all three alternatives. The number of persons with taxable earnings increases on the basis of alternatives I, II, and III from 163 million during calendar year 2013 to about 185 million, 181 million, and 176 million, respectively, in 2023. The total annual amount of taxable earnings increases in every year through 2023 for each alternative. Total earnings increase from $5,913 billion in 2013 to $11,737 billion, $9,937 billion, and $8,459 billion in 2023, 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 generally contribute to the overall projected increase in trust fund income during this period. Despite the projected growth in OASI

Trust Fund reserves, annual interest earnings decline slightly in the early projection years under all three sets of assumptions due to historically low interest rates assumed for newly-issued bonds. Thereafter, interest income increases under the intermediate and low-cost assumptions due to the net effects of higher reserve levels and the patterns of projected interest rates. Under the high-cost assumptions, declining reserves cause interest income to continue to decrease throughout the short-range period. Although interest earnings generally increase over the short-range period, interest declines as a share of total OASI Trust Fund income. By 2023, OASI interest income is about 10 percent of total trust fund income under the intermediate assumptions, as compared to 13 percent in 2013.

Rising OASI cost during 2014-23 reflects 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 since 2009 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 Treasury invests OASI income in financial securities, generally special public-debt obligations of the U.S. Government. The revenue 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. Program expenditures require the redemption of trust fund securities, generally prior to maturity, to cover the payments made by the General Fund of the Treasury on behalf of 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 2014-23 under the three sets of assumptions, together with values for actual experience during 2009-13. Non-interest income increases steadily after 2013 under each alternative, due to most of the same factors described previously for the OASI Trust Fund. DI cost grows at a slower rate than DI income or OASI cost, but remains greater than DI income. As a result, after having reached a maximum in 2008, DI Trust Fund reserves continue to decrease after 2013 under each alternative. Under the intermediate assumptions, reserves continue to decline until their projected depletion in the fourth quarter of 2016. Under the low-cost assumptions, reserves begin to increase again after reaching a low point in 2019; reserves are at such low levels in 2019 and 2020 that the DI trust fund requires advance tax transfers[1] to pay scheduled benefits in a timely fashion.

[1] Advance tax transfers are a change in the timing of the crediting of payroll tax income to a trust fund in which all payroll taxes for a month are credited to the trust fund on the first of the month rather than throughout the month. This timing change allows the trust fund to pay benefits due early in the month on time. Advance tax transfers are permitted under current law only when necessary to pay scheduled benefits.

Under the high-cost assumptions, DI reserves decline steadily until depletion in the second quarter of 2016.

Table IV.A2.—Operations of the DI Trust Fund, Calendar Years 2009-23[a]

[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
Calendar year	Total	Net payroll tax contributions	GF reimbursements[b]	Taxation of benefits	Net interest	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
Historical data:												
2009 . . .	$109.3	$96.9	[e]	$2.0	$10.5	$121.5	$118.3	$2.7	$0.4	-$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
2012 . . .	109.1	85.6	16.5	.6	6.4	140.3	136.9	2.9	.5	-31.2	122.7	110
2013 . . .	111.2	105.4	.7	.4	4.7	143.4	140.1	2.8	.6	-32.2	90.4	86
Intermediate:												
2014 . . .	114.4	109.3	.1	1.7	3.3	146.7	143.3	2.9	.4	-32.2	58.2	62
2015 . . .	121.2	117.3	.1	1.8	2.0	151.0	147.3	3.3	.4	-29.8	28.4	39
2016 . . .	[f]	123.8	[e]	2.0	[f]	155.8	152.1	3.2	.4	[f]	[f]	18
2017 . . .	[f]	131.4	[e]	2.2	[f]	161.2	157.3	3.6	.3	[f]	[f]	[f]
2018 . . .	[f]	139.4	[e]	2.5	[f]	167.1	162.9	3.9	.3	[f]	[f]	[f]
2019 . . .	[f]	147.0	[e]	2.7	[f]	173.6	169.2	4.2	.3	[f]	[f]	[f]
2020 . . .	[f]	154.7	[e]	2.9	[f]	180.6	175.9	4.4	.2	[f]	[f]	[f]
2021 . . .	[f]	162.4	[e]	3.1	[f]	189.4	184.5	4.7	.2	[f]	[f]	[f]
2022 . . .	[f]	170.1	[e]	3.4	[f]	198.5	193.4	5.0	.2	[f]	[f]	[f]
2023 . . .	[f]	177.7	[e]	3.7	[f]	207.8	202.5	5.2	.1	[f]	[f]	[f]
Low-cost:												
2014 . . .	115.4	110.3	.1	1.7	3.4	144.7	141.4	2.9	.4	-29.3	61.1	62
2015 . . .	126.0	121.9	.1	1.8	2.3	147.5	143.8	3.3	.4	-21.5	39.7	41
2016 . . .	134.5	131.1	[e]	2.0	1.4	151.6	147.9	3.3	.4	-17.1	22.6	26
2017 . . .	144.9	142.0	[e]	2.2	.7	156.8	152.7	3.7	.3	-11.9	10.7	14
2018 . . .	155.7	152.9	[e]	2.4	.4	162.2	157.8	4.1	.3	-6.5	4.2	7
2019 . . .	166.6	163.7	[e]	2.6	.3	168.0	163.3	4.5	.3	-1.5	2.7	2
2020 . . .	177.8	174.7	[e]	2.8	.3	174.3	169.3	4.8	.2	3.5	6.3	2
2021 . . .	189.6	185.9	[e]	3.0	.7	182.4	177.1	5.1	.2	7.1	13.4	3
2022 . . .	202.3	197.7	[e]	3.3	1.3	191.0	185.3	5.5	.1	11.4	24.8	7
2023 . . .	215.7	209.9	[e]	3.5	2.3	199.8	193.8	5.9	.1	15.8	40.6	12
High-cost:												
2014 . . .	113.2	108.1	.1	1.7	3.3	148.7	145.3	2.9	.4	-35.5	54.9	61
2015 . . .	115.7	112.1	.1	1.9	1.6	154.9	151.1	3.3	.4	-39.2	15.7	35
2016 . . .	[f]	116.5	[e]	2.1	[f]	161.0	157.4	3.2	.4	[f]	[f]	10
2017 . . .	[f]	121.3	[e]	2.3	[f]	167.3	163.5	3.5	.4	[f]	[f]	[f]
2018 . . .	[f]	126.5	[e]	2.6	[f]	173.9	169.8	3.7	.3	[f]	[f]	[f]
2019 . . .	[f]	131.4	[e]	2.8	[f]	180.9	176.7	3.9	.3	[f]	[f]	[f]
2020 . . .	[f]	136.4	[e]	3.0	[f]	188.2	183.9	4.1	.2	[f]	[f]	[f]
2021 . . .	[f]	141.5	[e]	3.3	[f]	197.2	192.7	4.3	.2	[f]	[f]	[f]
2022 . . .	[f]	146.7	[e]	3.5	[f]	206.3	201.6	4.5	.2	[f]	[f]	[f]
2023 . . .	[f]	151.4	[e]	3.8	[f]	215.4	210.5	4.7	.2	[f]	[f]	[f]

[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, 112-78, and 112-96.

[c] Projected benefits are estimated as scheduled under current law.

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

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

[f] The DI Trust Fund becomes depleted in 2016 under the intermediate and the high-cost assumptions. Accordingly, certain trust fund operation values from the year of the trust fund depletion through 2023 are not meaningful under the present law.

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

In the 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. The number of DI beneficiaries in current-payment status increases but at a slower rate than in the past 20 years during the short-range projection period.

At the beginning of calendar year 2013, the reserves of the DI Trust Fund represented 86 percent of annual cost. During 2013, DI cost exceeded income, and the trust fund ratio for the beginning of 2014 decreased to about 62 percent. Under the intermediate assumptions, cost exceeds total income throughout the short-range projection period. The projected cost in excess of income results in the estimated depletion of the DI Trust Fund reserves in the fourth quarter of 2016.

Under the low-cost assumptions, the trust fund ratio decreases to a low of 2 percent at the beginning of 2020 before increasing to 12 percent at the beginning of 2023. Under the high-cost assumptions, the reserves of the DI Trust Fund decline steadily until depletion in the second quarter of 2016.

Since the reserves of the DI Trust Fund were lower than estimated annual cost at the beginning of 2014, and they remain below that level throughout the short-range period, the DI Trust Fund fails the Trustees' short-range test of financial adequacy under all three alternatives. Furthermore, the DI Trust Fund becomes depleted by the end of the fourth and second quarters of 2016 under alternatives II and III, respectively, and is able to pay scheduled benefits on time in 2019 and 2020 under alternative I only by using advance tax transfers.

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 for calendar years 2014-23 under the three alternatives, together with actual experience in 2009-13. 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 relative strength of the OASI Trust Fund over the next 10 years, the combined OASI and DI Trust Funds would have sufficient financial resources 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 financial resources with another trust fund.

Table IV.A3.—Operations of the Combined OASI and DI Trust Funds, Calendar Years 2009-23[a]

[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
Calendar year	Total	Net payroll tax contributions	GF reimbursements[b]	Taxation of benefits	Net interest	Total	Benefit payments[c]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[d]
Historical data:												
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
2012 . . .	840.2	589.5	114.3	27.3	109.1	785.8	774.8	6.3	4.7	54.4	2,732.3	341
2013 . . .	855.0	726.2	4.9	21.1	102.8	822.9	812.3	6.2	4.5	32.1	2,764.4	332
Intermediate:												
2014 . . .	882.4	753.2	.5	29.7	99.0	863.1	852.8	5.7	4.6	19.3	2,783.7	320
2015 . . .	938.0	808.4	.4	32.6	96.7	909.7	898.5	6.6	4.7	28.3	2,812.1	306
2016 . . .	985.3	853.0	.1	35.8	96.3	963.3	952.0	6.5	4.7	22.0	2,834.1	292
2017 . . .	1,042.7	904.9	.1	39.6	98.1	1,022.3	1,010.8	7.0	4.5	20.4	2,854.4	277
2018 . . .	1,105.0	960.0	e	43.4	101.6	1,087.6	1,075.2	7.5	4.9	17.4	2,871.8	262
2019 . . .	1,165.1	1,012.9	e	47.4	104.9	1,158.7	1,145.8	7.9	5.0	6.4	2,878.3	248
2020 . . .	1,224.5	1,065.5	e	51.5	107.4	1,235.2	1,221.8	8.2	5.1	-10.7	2,867.6	233
2021 . . .	1,283.2	1,118.9	e	55.8	108.5	1,312.3	1,298.6	8.6	5.1	-29.1	2,838.4	219
2022 . . .	1,341.4	1,172.0	e	60.3	109.2	1,395.8	1,381.5	9.0	5.4	-54.4	2,784.1	203
2023 . . .	1,399.3	1,224.5	e	65.2	109.5	1,484.9	1,470.2	9.4	5.4	-85.7	2,698.4	187
Low-cost:												
2014 . . .	889.6	759.7	.5	29.7	99.8	861.1	850.8	5.7	4.6	28.5	2,793.0	321
2015 . . .	974.0	839.6	.4	32.6	101.5	907.4	896.2	6.6	4.6	66.7	2,859.6	308
2016 . . .	1,047.2	902.8	.1	36.1	108.1	967.8	956.6	6.6	4.7	79.4	2,939.0	295
2017 . . .	1,136.2	978.0	.1	40.4	117.8	1,037.0	1,025.3	7.2	4.4	99.2	3,038.3	283
2018 . . .	1,227.0	1,053.4	e	44.6	129.0	1,111.9	1,099.2	7.8	4.9	115.1	3,153.4	273
2019 . . .	1,317.6	1,127.8	e	49.0	140.7	1,191.9	1,178.6	8.3	5.0	125.7	3,279.0	265
2020 . . .	1,410.6	1,203.6	e	53.7	153.3	1,277.6	1,263.6	8.9	5.2	133.0	3,412.0	257
2021 . . .	1,505.6	1,280.5	e	58.4	166.6	1,365.1	1,350.6	9.4	5.2	140.5	3,552.5	250
2022 . . .	1,607.5	1,362.2	e	63.6	181.7	1,460.6	1,445.2	9.9	5.5	146.9	3,699.4	243
2023 . . .	1,713.1	1,445.7	e	69.3	198.1	1,563.7	1,547.7	10.5	5.6	149.4	3,848.9	237
High-cost:												
2014 . . .	872.9	744.8	.5	29.7	97.8	865.2	854.9	5.7	4.6	7.7	2,772.1	320
2015 . . .	897.6	772.5	.4	32.6	92.1	913.2	901.9	6.6	4.7	-15.5	2,756.6	304
2016 . . .	925.7	802.5	.1	35.7	87.4	963.6	952.3	6.5	4.8	-37.8	2,718.8	286
2017 . . .	958.8	835.6	.1	39.2	84.0	1,017.5	1,006.1	6.8	4.6	-58.7	2,660.1	267
2018 . . .	995.2	871.3	e	42.7	81.2	1,076.6	1,064.4	7.2	5.0	-81.4	2,578.7	247
2019 . . .	1,029.0	905.0	e	46.3	77.6	1,140.4	1,127.9	7.4	5.1	-111.4	2,467.3	226
2020 . . .	1,062.1	939.4	e	50.1	72.6	1,208.3	1,195.5	7.7	5.2	-146.2	2,321.0	204
2021 . . .	1,094.2	974.8	e	53.8	65.6	1,275.6	1,262.5	8.0	5.1	-181.3	2,139.7	182
2022 . . .	1,125.6	1,010.5	e	57.8	57.2	1,347.7	1,334.2	8.2	5.3	-222.2	1,917.5	159
2023 . . .	1,153.3	1,042.9	e	62.1	48.3	1,423.9	1,410.1	8.5	5.4	-270.6	1,646.9	135

[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, 112-78, and 112-96.

[c] Projected benefits are estimated as scheduled under current law.

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

[e] 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 2013 Report

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

In the 2013 report, the trust fund ratio for OASI reached 250 percent at the beginning of 2022—the tenth projection year for that report. The change in the short-range valuation period alone, from 2013-22 to 2014-23, lowered the estimated trust fund ratio for the tenth year by 15 percentage points, to 235 percent. Changes to reflect changes in law and regulations 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 232 percent.

Changes in demographic assumptions over the short-range period did not significantly affect the projected tenth-year trust fund ratio for OASI. Changes in economic data and assumptions, primarily the effect of lower cost-of-living adjustments, lower interest rates, and lower payroll tax revenues over the ten year period, generated partially offsetting effects on OASI trust fund ratios resulting in a net reduction in the OASI trust fund ratio of 2 percentage points by the beginning of 2023. Incorporating recent programmatic data, including the numbers of beneficiaries and amount of benefit payments, resulted in no significant net effect on the tenth year OASI trust fund ratio. In addition, there are two changes in the short-range projection methodology worth noting as compared to the methodology used for the 2013 report. The first of these is an improvement in the process used to project the average benefit for new awards, and the second is a refinement of the method for projecting the number of retired workers. In combination, these methodology changes decreased the ending trust fund ratio by a net of 1 percentage point, primarily due to the second change. Finally, the totality of legislative and regulatory changes since the 2013 report was published, including the *United States v. Windsor* decision, did not have a significant effect on the tenth year trust fund ratio. See section III.B for details.

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 2022 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 2023 in this year's report, are theoretical because the Trustees project that the DI Trust Fund reserves will be depleted prior to the end of the short range projection period. The DI trust fund ratio increased by 9 percentage points due to lower-than-expected disability incidence rates experienced since last year. The

overall 9-percentage-point decrease in the DI trust fund ratio is the net effect of this change in disability incidence and the other factors described above for the OASI Trust Fund.

Table IV.A4.—Reasons for Change in Trust Fund (Unfunded Obligation) Ratios at the Beginning of the Tenth Year of Projection Under Intermediate Assumptions
[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 2022[a]	250	-76	204
Change in trust fund ratio due to changes in:			
Legislation and regulations	[b]	[b]	[b]
Valuation period	-15	-14	-15
Demographic data and assumptions	[b]	[b]	[b]
Economic data and assumptions	-2	-4	-2
Programmatic data and assumptions	[b]	9	2
Projection methods and data	-1	[b]	-1
Total change in trust fund ratio	-18	-9	-17
Trust fund ratio shown in this report for calendar year 2023[a]	232	-85	187

[a] Figures for DI, and OASI and DI combined, are theoretical because the DI Trust Fund reserves are depleted before the beginning of the tenth year under the assumptions of each report. The figures for DI are the ratios of the unfunded obligation at the beginning of the tenth year to cost for that year.
[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 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 in assessing actuarial status include: (1) the level and year of maximum trust fund ratio; (2) the year of depletion of the fund reserves and the percent of scheduled benefits that is still payable after reserves are depleted; and (3) the stability of the trust fund ratio at the end of the long-range period.

Solvency at any point in time requires that sufficient financial resources are available to pay all scheduled benefits at that time. Solvency is generally indicated by a positive trust fund ratio. "Sustainable solvency" for the financing of the program under a specified set of assumptions has been achieved when the projected trust fund ratio is positive throughout the 75-year projection period and is either stable or rising at the end of the period.

Summarized measures for any period indicate whether projected income is sufficient, on average, for the whole period. Summarized measures can only indicate the solvency status of a fund for the end of the period. The Trustees summarize the total income and cost over valuation periods that extend through 75 years and over the infinite horizon[1]. 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 work-

[1] See Appendix F.

ers; (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 percentages of taxable payroll, are important in the 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 any general fund transfers or reimbursements. 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 benefits, 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.G8 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 at a very gradual rate from 10.87 percent of taxable payroll for 2014 to 11.43 percent for 2088. Income from taxation of benefits causes this increase for two main reasons: (1) total benefits are rising faster than payroll; and (2) the benefit-taxation threshold amounts are fixed (not indexed), and therefore an increasing share of total benefits will be subject to tax as incomes and benefits rise. The pattern of the cost rate is much different. The OASI cost rate is projected to increase relatively slowly from 11.58 percent of payroll for 2014 to 11.86 percent of payroll for 2018, as the economic recovery through this period largely offsets the effects of the aging population. From 2018 to 2035, the cost rate rises rapidly because the retirement of the baby-boom generation will increase the number of beneficiaries much faster than the number of workers increases, as subsequent lower-birth-rate generations replace the baby-boom generation at working ages. From 2037 to 2051, the cost rate declines because the aging baby-boom generation is gradually replaced at retirement ages by historically low-birth-rate generations born between 1966 and 1989, causing the beneficiary-to-worker ratio to decline. After 2051, the projected OASI cost rate generally rises

[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.

slowly, reaching 15.88 percent of taxable payroll for 2088, 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 similar to those projected for the intermediate assumptions, because income rates are largely a reflection of the payroll tax rates specified in the law, 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 from those projected for the intermediate assumptions. For the low-cost assumptions, the OASI cost rate decreases through 2017, and then rises until it peaks in 2034 at 12.77 percent of payroll. Thereafter, the cost rate generally declines until it reaches 11.29 percent of payroll for 2088, at which point the income rate reaches 11.18 percent. For the high-cost assumptions, the OASI cost rate rises throughout the 75-year period. It rises relatively rapidly through about 2035 because of the aging of the baby-boom generation. Thereafter, the cost rate continues to rise and reaches 23.24 percent of payroll for 2088, at which point the income rate reaches 11.83 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 slowly from 0.71 percent of payroll for 2014 to 0.76 percent for 2018, and then rapidly to 3.71 percent for 2037. The annual deficit then declines to 3.33 percent of payroll for 2051, and generally rises thereafter, reaching 4.45 percent of taxable payroll for 2088.

Under the low-cost assumptions, the Trustees project smaller negative OASI annual deficits throughout the projection period. The annual deficit declines to 0.08 percent of payroll for 2017, rises to 1.54 percent for 2034, and then declines for most years thereafter, reaching a deficit of 0.12 percent of payroll for 2088. Under the high-cost assumptions, the OASI balance worsens throughout the projection period. Annual deficits rise to 2.24 percent for 2020, 6.85 percent for 2050, and 11.41 percent of payroll for 2088.

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

[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
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	8.98	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	11.06	9.29	1.76	1.85	1.60	.24	12.90	10.89	2.01
2003	10.79	9.35	1.44	1.80	1.68	.12	12.59	11.03	1.56
2004	10.73	9.27	1.46	1.79	1.78	.02	12.53	11.05	1.48
2005	10.96	9.31	1.65	1.84	1.85	-.02	12.80	11.16	1.63
2006	10.96	9.18	1.78	1.83	1.88	-.05	12.79	11.06	1.73
2007	11.01	9.44	1.57	1.84	1.88	-.04	12.85	11.32	1.53
2008	10.90	9.54	1.37	1.83	2.01	-.19	12.73	11.55	1.18
2009	11.23	10.74	.50	1.88	2.31	-.43	13.11	13.05	.06
2010	10.75	11.06	-.30	1.79	2.41	-.62	12.54	13.47	-.92
2011	10.84	11.04	-.21	1.80	2.42	-.62	12.64	13.47	-.83
2012	11.04	11.34	-.30	1.81	2.46	-.66	12.84	13.80	-.96
2013	10.96	11.53	-.57	1.81	2.43	-.63	12.77	13.97	-1.20
Intermediate:									
2014	10.87	11.58	-.71	1.80	2.37	-.58	12.67	13.95	-1.29
2015	11.09	11.65	-.56	1.83	2.32	-.49	12.92	13.97	-1.05
2016	11.07	11.71	-.64	1.83	2.26	-.43	12.89	13.97	-1.08
2017	11.08	11.77	-.69	1.83	2.20	-.38	12.91	13.97	-1.06
2018	11.10	11.86	-.76	1.83	2.15	-.33	12.93	14.02	-1.08
2019	11.12	12.03	-.91	1.83	2.12	-.29	12.95	14.15	-1.20
2020	11.13	12.23	-1.10	1.83	2.10	-.27	12.96	14.33	-1.37
2021	11.15	12.41	-1.26	1.83	2.09	-.26	12.98	14.50	-1.52
2022	11.18	12.64	-1.46	1.83	2.10	-.26	13.01	14.74	-1.73
2023	11.20	12.90	-1.71	1.83	2.10	-.27	13.03	15.00	-1.97
2025	11.23	13.42	-2.19	1.84	2.12	-.28	13.07	15.54	-2.47
2030	11.31	14.52	-3.21	1.84	2.09	-.25	13.15	16.60	-3.46
2035	11.34	15.01	-3.66	1.84	2.08	-.24	13.19	17.09	-3.90
2040	11.35	15.00	-3.64	1.84	2.09	-.24	13.20	17.09	-3.89
2045	11.35	14.78	-3.43	1.85	2.16	-.31	13.20	16.94	-3.74
2050	11.35	14.69	-3.34	1.85	2.20	-.35	13.20	16.89	-3.69
2055	11.36	14.78	-3.42	1.85	2.24	-.38	13.21	17.01	-3.80
2060	11.38	15.03	-3.65	1.85	2.23	-.37	13.23	17.26	-4.03
2065	11.39	15.26	-3.86	1.85	2.24	-.39	13.25	17.50	-4.25
2070	11.41	15.49	-4.09	1.85	2.25	-.39	13.26	17.74	-4.48
2075	11.42	15.65	-4.23	1.85	2.24	-.38	13.27	17.88	-4.61
2080	11.42	15.63	-4.21	1.86	2.27	-.42	13.27	17.90	-4.63
2085	11.42	15.73	-4.31	1.86	2.31	-.45	13.28	18.04	-4.76
2090	11.44	15.99	-4.55	1.86	2.30	-.45	13.30	18.29	-5.00
First year balance becomes negative and remains negative throughout the projection period			2010			2005			2010
Low-cost:									
2014	10.81	11.43	-.61	1.79	2.31	-.52	12.60	13.74	-1.14
2015	11.11	11.28	-.16	1.84	2.19	-.35	12.95	13.46	-.52
2016	11.03	11.17	-.14	1.82	2.08	-.25	12.86	13.25	-.39
2017	11.05	11.12	-.08	1.82	1.98	-.16	12.87	13.10	-.23
2018	11.06	11.15	-.08	1.82	1.90	-.08	12.89	13.05	-.16
2019	11.07	11.22	-.15	1.82	1.84	-.02	12.89	13.06	-.16
2020	11.08	11.32	-.24	1.82	1.79	.03	12.90	13.11	-.21
2021	11.10	11.41	-.31	1.82	1.76	.06	12.92	13.17	-.25
2022	11.12	11.52	-.41	1.82	1.73	.09	12.94	13.26	-.32
2023	11.13	11.66	-.53	1.82	1.71	.12	12.96	13.37	-.42

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	11.16	11.99	-0.83	1.83	1.68	0.14	12.99	13.67	-0.69
2030	11.21	12.62	-1.41	1.83	1.58	.25	13.04	14.20	-1.16
2035	11.23	12.76	-1.53	1.83	1.52	.31	13.06	14.28	-1.22
2040	11.22	12.50	-1.28	1.83	1.49	.34	13.06	13.99	-.94
2045	11.21	12.13	-.92	1.83	1.51	.32	13.04	13.65	-.60
2050	11.20	11.91	-.70	1.83	1.52	.31	13.04	13.43	-.39
2055	11.20	11.84	-.64	1.83	1.52	.31	13.04	13.37	-.33
2060	11.21	11.89	-.68	1.83	1.50	.34	13.04	13.38	-.34
2065	11.21	11.86	-.66	1.83	1.49	.35	13.04	13.35	-.31
2070	11.20	11.81	-.60	1.83	1.48	.36	13.04	13.29	-.25
2075	11.20	11.65	-.46	1.83	1.47	.37	13.03	13.12	-.09
2080	11.18	11.37	-.19	1.83	1.49	.34	13.02	12.86	.15
2085	11.18	11.26	-.08	1.84	1.52	.31	13.01	12.78	.23
2090	11.18	11.34	-.16	1.84	1.52	.31	13.02	12.86	.15
First year balance becomes negative and remains negative throughout the projection period			2010			[b]			[b]
High-cost:									
2014	10.94	11.79	-.84	1.81	2.45	-.64	12.75	14.24	-1.48
2015	11.05	12.12	-1.07	1.82	2.48	-.65	12.88	14.60	-1.72
2016	11.10	12.38	-1.28	1.83	2.48	-.65	12.93	14.87	-1.93
2017	11.13	12.59	-1.47	1.83	2.48	-.65	12.96	15.07	-2.11
2018	11.16	12.83	-1.67	1.83	2.47	-.64	12.99	15.30	-2.31
2019	11.17	13.12	-1.95	1.83	2.47	-.64	13.01	15.59	-2.58
2020	11.19	13.43	-2.24	1.84	2.48	-.64	13.03	15.91	-2.88
2021	11.22	13.69	-2.47	1.84	2.50	-.67	13.06	16.19	-3.13
2022	11.25	13.98	-2.74	1.84	2.53	-.69	13.09	16.51	-3.42
2023	11.27	14.35	-3.07	1.84	2.56	-.71	13.12	16.90	-3.79
2025	11.32	15.07	-3.75	1.85	2.63	-.78	13.17	17.70	-4.54
2030	11.42	16.72	-5.30	1.85	2.69	-.84	13.27	19.41	-6.15
2035	11.48	17.70	-6.22	1.86	2.76	-.91	13.33	20.46	-7.13
2040	11.51	18.09	-6.58	1.86	2.82	-.96	13.37	20.91	-7.54
2045	11.52	18.19	-6.67	1.86	2.96	-1.10	13.39	21.15	-7.76
2050	11.54	18.39	-6.85	1.87	3.06	-1.19	13.41	21.45	-8.04
2055	11.57	18.79	-7.22	1.87	3.16	-1.29	13.44	21.95	-8.50
2060	11.61	19.42	-7.81	1.88	3.19	-1.32	13.48	22.61	-9.13
2065	11.65	20.09	-8.45	1.88	3.25	-1.38	13.53	23.35	-9.82
2070	11.69	20.87	-9.18	1.88	3.29	-1.41	13.57	24.16	-10.59
2075	11.74	21.63	-9.89	1.88	3.29	-1.41	13.62	24.92	-11.30
2080	11.77	22.20	-10.43	1.88	3.34	-1.45	13.65	25.54	-11.88
2085	11.81	22.83	-11.02	1.88	3.36	-1.48	13.69	26.19	-12.50
2090	11.85	23.50	-11.65	1.88	3.33	-1.45	13.73	26.83	-13.10
First year balance becomes negative and remains negative throughout the projection period			2010			2005			2010

[a] Income rates include certain reimbursements from the General Fund of the Treasury.

[b] 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 1.09 percent of taxable payroll for 1990 to 1.88 percent of taxable payroll for 2007 as the baby boom generation

moved into prime disability ages, and further to a peak of 2.46 percent for 2012 due to the recent economic recession. Under the intermediate assumptions, the projected DI cost rate declines from 2.46 percent for 2012 to 2.09 percent for 2021. From 2021 to 2040, the DI cost rate stays relatively stable and then generally increases to 2.31 percent for 2088. The income rate increases only very slightly from 1.80 percent of taxable payroll for 2014 to 1.86 percent for 2088. The projected annual deficit declines from 0.58 percent for 2014 to a low of 0.23 percent for 2038, and then increases to 0.45 percent for 2088.

Under the low-cost assumptions, the DI cost rate declines from 2.46 percent of payroll for 2012 to 1.49 percent for 2039, and remains relatively stable thereafter, reaching 1.52 percent for 2088. The annual balance is negative for the first 6 years and is positive throughout the remainder of the long-range period. Under the high-cost assumptions, the DI cost rate generally rises from 2018 through the end of the projection period, reaching 3.35 percent for 2088. The annual deficit is 0.64 percent for 2014, 1.19 percent for 2050, and 1.46 percent for 2088.

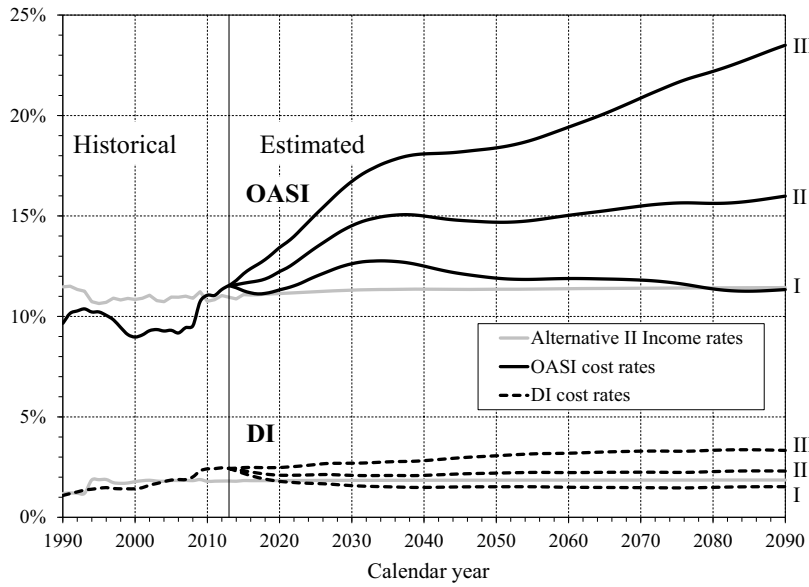
Figure IV.B1 shows the patterns of the OASI and DI annual cost rates. Annual DI cost rates rose substantially between 1990 and 2010 in large part due to: (1) aging of the working population as the baby-boom generation moved from ages 25-44 in 1990, where disability prevalence is low, to ages 45-64 in 2010, where disability prevalence is much higher; (2) a substantial increase in the percentage of women insured for DI benefits as a result of increased and more consistent rates of employment; and (3) increased disability incidence rates for women to a level similar to those for men by 2010. After 2010, all of these factors stabilize, and therefore the DI cost rate stabilizes also. Annual OASI cost rates follow a similar pattern to that for DI, but displaced 20 to 25 years later, because the baby-boom generation enters retirement ages 20 to 25 years after entering prime disability ages. Figure IV.B1 shows only the income rates for alternative II because the variation in income rates by alternative is very small. 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. Annual balances follow closely the pattern of annual cost rates after 1990 because the payroll tax rate does not change for the OASDI program, with only small variations in the allocation between DI and OASI. 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 theoretical 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 most often 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 4.92 percent of GDP for 2014 to a peak of 6.16 percent for 2037. After 2037, OASDI cost as a percentage of GDP declines to a low of 5.96 percent for 2052 and thereafter generally increases

slowly, reaching 6.12 percent by 2088. Appendix G presents full estimates of income and cost relative to GDP.

2. Comparison of Workers to Beneficiaries

Under the intermediate assumptions, the Trustees project the OASDI cost rate will remain relatively stable through 2018 as the economy recovers. The cost rate then rises rapidly between 2018 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 ratio of OASDI beneficiaries to workers is dominated by the OASI program because all workers eventually die or retire, but only a small minority become disabled. The trends described below are primarily due to demographic changes and thus affect the DI program roughly 20 years earlier than the OASI and OASDI programs. 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 OASDI beneficiaries to workers will rise rapidly and reach a permanently higher level after the baby-boom generation retires. Due to increasing longevity, the ratio of beneficiaries 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	65,066	7,564	-	7,564	8.6	12
1960	72,371	13,740	522	14,262	5.1	20
1965	80,539	18,509	1,648	20,157	4.0	25
1970	92,963	22,618	2,568	25,186	3.7	27
1975	100,193	26,998	4,125	31,123	3.2	31
1980	112,651	30,384	4,734	35,117	3.2	31
1985	120,312	32,763	3,874	36,636	3.3	30
1990	133,123	35,255	4,204	39,459	3.4	30
1995	140,976	37,364	5,731	43,096	3.3	31
2000	154,916	38,556	6,606	45,162	3.4	29
2001	155,320	38,888	6,780	45,668	3.4	29
2002	154,754	39,117	7,060	46,176	3.4	30
2003	154,976	39,315	7,438	46,753	3.3	30
2004	156,766	39,558	7,810	47,368	3.3	30
2005	159,212	39,961	8,172	48,133	3.3	30
2006	161,748	40,435	8,428	48,863	3.3	30
2007	163,521	40,863	8,739	49,603	3.3	30
2008	162,902	41,355	9,065	50,420	3.2	31
2009	157,940	42,385	9,475	51,860	3.0	33
2010	157,328	43,440	9,958	53,398	2.9	34
2011	158,988	44,388	10,428	54,816	2.9	34
2012	161,672	45,377	10,799	56,176	2.9	35
2013	163,221	46,517	10,954	57,471	2.8	35
Intermediate:						
2014	165,446	47,866	11,031	58,896	2.8	36
2015	167,493	49,377	11,108	60,485	2.8	36
2020	177,705	57,923	11,489	69,412	2.6	39
2025	182,644	65,509	12,058	77,567	2.4	42
2030	186,049	72,809	12,213	85,022	2.2	46
2035	189,841	77,752	12,545	90,297	2.1	48
2040	195,100	80,187	12,963	93,149	2.1	48
2045	200,717	81,430	13,694	95,124	2.1	47
2050	205,991	83,072	14,223	97,295	2.1	47
2055	210,763	85,475	14,723	100,198	2.1	48
2060	215,272	88,588	15,016	103,605	2.1	48
2065	220,022	91,742	15,470	107,212	2.1	49
2070	225,171	95,245	15,903	111,148	2.0	49
2075	230,524	98,430	16,252	114,681	2.0	50
2080	235,909	100,766	16,899	117,665	2.0	50
2085	241,094	103,890	17,509	121,399	2.0	50
2090	246,038	107,850	17,860	125,710	2.0	51

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:						
2014	165,996	47,861	10,977	58,838	2.8	35
2015	168,951	49,360	10,937	60,296	2.8	36
2020	181,302	57,729	10,667	68,396	2.7	38
2025	186,743	65,012	10,679	75,690	2.5	41
2030	190,730	71,805	10,385	82,190	2.3	43
2035	195,416	76,153	10,339	86,492	2.3	44
2040	202,184	77,996	10,483	88,480	2.3	44
2045	210,045	78,779	10,976	89,754	2.3	43
2050	218,205	80,087	11,367	91,454	2.4	42
2055	226,529	82,319	11,776	94,095	2.4	42
2060	235,171	85,302	12,074	97,376	2.4	41
2065	244,535	88,323	12,553	100,877	2.4	41
2070	254,931	91,572	13,082	104,655	2.4	41
2075	266,242	94,386	13,624	108,011	2.5	41
2080	278,237	96,455	14,485	110,940	2.5	40
2085	290,461	99,793	15,383	115,176	2.5	40
2090	302,748	104,648	16,098	120,746	2.5	40
High-cost:						
2014	164,648	47,871	11,085	58,956	2.8	36
2015	165,331	49,395	11,284	60,679	2.7	37
2020	172,359	58,101	12,332	70,433	2.4	41
2025	178,063	66,046	13,425	79,470	2.2	45
2030	181,104	73,860	14,027	87,886	2.1	49
2035	184,214	79,439	14,724	94,162	2.0	51
2040	188,064	82,557	15,386	97,943	1.9	52
2045	191,522	84,360	16,330	100,690	1.9	53
2050	193,992	86,420	16,964	103,384	1.9	53
2055	195,378	89,056	17,513	106,570	1.8	55
2060	196,044	92,349	17,744	110,093	1.8	56
2065	196,561	95,652	18,090	113,742	1.7	58
2070	197,016	99,410	18,312	117,722	1.7	60
2075	197,253	102,978	18,302	121,280	1.6	61
2080	197,068	105,598	18,506	124,103	1.6	63
2085	196,467	108,419	18,577	126,997	1.5	65
2090	195,580	111,272	18,368	129,640	1.5	66

[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 2013 level of 35 beneficiaries per 100 covered workers, the Trustees project that this ratio rises to 48 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 51 under the intermediate assumptions and 66 under the high-

cost assumptions. Under the low-cost assumptions, this ratio rises to 44 by 2035 and then declines, reaching a stable level of about 40 after 2076. 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

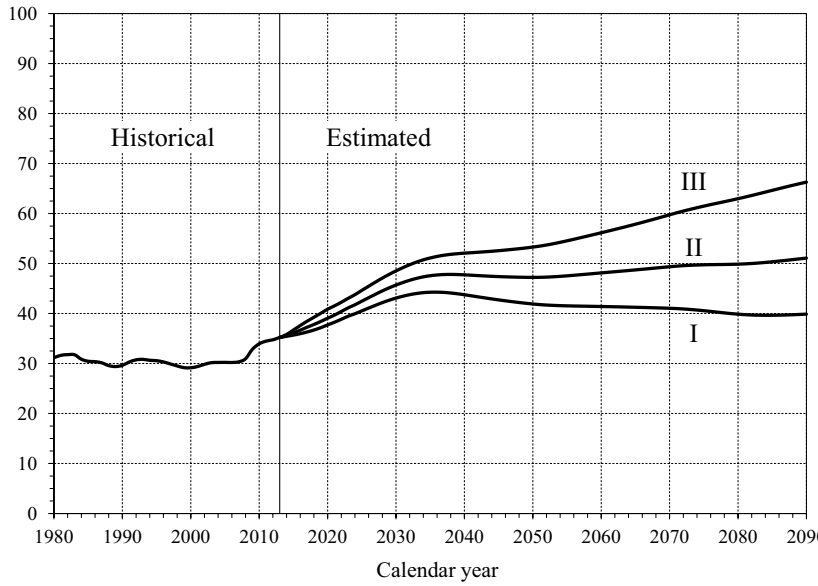


Table IV.B2 also shows the number of covered workers per OASDI beneficiary, which was about 2.8 for 2013. Under the low-cost assumptions, this ratio declines to 2.3 by 2035, and then generally rises throughout the remainder of the period, reaching 2.5 by 2090. Under the intermediate assumptions, this ratio declines generally throughout the long-range period, reaching 2.1 for 2035 and 2.0 by 2090. Under the high-cost assumptions, this ratio decreases steadily to 1.5 by 2090.

3. Trust Fund Ratios and Test of Long-Range Close Actuarial Balance

Trust fund ratios are critical indicators of the adequacy of the financial resources of the Social Security program. The trust fund ratio for a year is the amount of asset reserves in a fund at the beginning of a year expressed as a percentage of the cost for 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 reserves held in either trust fund become depleted during a year, and continuing tax revenues fall short of the cost of scheduled benefits, then full scheduled benefits would not be payable on a timely basis. For this reason, the trust fund ratio is the most critical financial measure.

The trust fund ratio serves an additional important purpose in assessing the actuarial status of the program. If the projected 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.[1]

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 theoretical combined OASI and DI Trust Funds. The table also shows the years of trust fund reserve depletion and the percentage of scheduled benefits that would be payable thereafter, by alternative.

Under the intermediate assumptions, the OASI Trust Fund ratio has declined since 2011 and continues to decline from 373 percent at the beginning of 2014 until the trust fund reserves become depleted in 2034 (one year earlier than projected in last year's report), at which time 75 percent of scheduled benefits would be payable. The DI trust fund ratio has been declining steadily since 2003 (at first slowly and then more rapidly due to the recent recession), and continues to decline from 62 percent at the beginning of 2014 until the trust fund reserves become depleted in the fourth quarter of 2016, at which time 81 percent of scheduled benefits would be payable.

Under the intermediate assumptions, the trust fund ratio for the combined OASI and DI Trust Funds declines from 320 percent at the beginning of 2014 until the combined fund reserves become depleted in 2033, at which time 77 percent of scheduled benefits would be payable. This is the same depletion year that was shown in last year's report.

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[1] As noted in greater detail in the 2014 Medicare Trustees Report, "The trust fund perspective does not encompass the interrelationship between the Medicare and Social Security trust funds and the overall Federal budget." For an explanation of that relationship, see appendix F of the 2014 Medicare Trustees Report.

Under the low-cost assumptions, the trust fund ratio for the DI program declines to 2 percent in 2020, requiring advance tax transfers to pay full scheduled benefits in 2019 and 2020. After 2020, the trust fund ratio increases through the end of the long-range projection period, reaching the extremely high level of 1,761 percent for 2089. For the OASI program, the trust fund ratio declines steadily until the trust fund reserves become depleted in 2059, at which time 94 percent of scheduled benefits would still be payable. For the combined OASDI program, the trust fund ratio declines from 321 percent for 2014 to a low of 74 percent in 2074, then rises thereafter reaching 102 percent by 2089. Because the trust fund ratio is positive throughout the projection period and increasing at the end of the period, under the low-cost assumptions, the combined OASDI program and the DI program achieve sustainable solvency. However, the DI trust fund ratio falls very close to zero percent for some early years of the projection period.

Under the high-cost assumptions, the OASI trust fund ratio declines continually until reserves become depleted in 2029, at which time 68 percent of scheduled benefits would still be payable. The DI trust fund ratio declines from 61 percent for 2014 until reserves become depleted in 2016, at which time 73 percent of scheduled benefits would still be payable. The combined OASI and DI trust fund ratio declines from 320 percent for 2014 until reserves become depleted in 2028, at which time 69 percent of scheduled benefits would still be payable.

The Trustees project trust fund reserve depletion within the 75-year projection period with the exceptions of the combined OASDI Trust Fund and the DI Trust Fund under the low-cost assumptions. It is therefore very likely that lawmakers will need to increase income, reduce program costs, or both, in order to maintain solvency for the trust funds. The stochastic projections discussed in appendix E suggest that trust fund reserve depletion is highly probable by mid-century.

Even under the high-cost assumptions, however, the combined OASI and DI Trust Fund reserves on hand plus their estimated future income are sufficient to fully cover their combined cost until 2028. Under the intermediate assumptions, the combined starting fund reserves plus estimated future income are sufficient to fully cover cost until 2033. In the 2013 report, the Trustees projected that the combined trust fund reserves would become depleted in 2027, 2033, and 2068 under the high-cost, intermediate, and low-cost assumptions, respectively.

Table IV.B3.—Trust Fund Ratios, Calendar Years 2014-90
[In percent]

Calendar year	Intermediate			Low-cost			High-cost		
	OASI	DI	OASDI	OASI	DI	OASDI	OASI	DI	OASDI
2014	373	62	320	373	62	321	373	61	320
2015	359	39	306	360	41	308	358	35	304
2016	345	18	292	345	26	295	341	10	286
2017	329	[a]	277	331	14	283	323	[a]	267
2018	313	[a]	262	319	7	273	303	[a]	247
2019	297	[a]	248	308	2	265	281	[a]	226
2020	281	[a]	233	297	2	257	259	[a]	204
2021	265	[a]	219	288	3	250	237	[a]	182
2022	249	[a]	203	279	7	243	213	[a]	159
2023	232	[a]	187	269	12	237	189	[a]	135
2025	196	[a]	154	251	27	224	138	[a]	84
2030	100	[a]	64	206	89	193	[a]	[a]	[a]
2035	[a]	[a]	[a]	158	189	161	[a]	[a]	[a]
2040	[a]	[a]	[a]	111	313	133	[a]	[a]	[a]
2045	[a]	[a]	[a]	75	432	114	[a]	[a]	[a]
2050	[a]	[a]	[a]	46	554	104	[a]	[a]	[a]
2055	[a]	[a]	[a]	21	682	97	[a]	[a]	[a]
2060	[a]	[a]	[a]	[a]	834	89	[a]	[a]	[a]
2065	[a]	[a]	[a]	[a]	993	82	[a]	[a]	[a]
2070	[a]	[a]	[a]	[a]	1,162	76	[a]	[a]	[a]
2075	[a]	[a]	[a]	[a]	1,343	74	[a]	[a]	[a]
2080	[a]	[a]	[a]	[a]	1,492	79	[a]	[a]	[a]
2085	[a]	[a]	[a]	[a]	1,630	92	[a]	[a]	[a]
2090	[a]	[a]	[a]	[a]	1,795	104	[a]	[a]	[a]
Trust fund reserves deplete in	2034	2016	2033	2059	[b]	[b]	2029	2016	2028
Payable benefits as percent of scheduled benefits:									
At the time of reserve depletion	75	81	77	94	[b]	[b]	68	73	69
For 2088	70	80	72	99	100	100	48	55	49

[a] The Trustees estimate that the trust fund reserves will be depleted by the beginning of this year.
[b] The Trustees estimate that the trust fund reserves will not be depleted within the projection period.

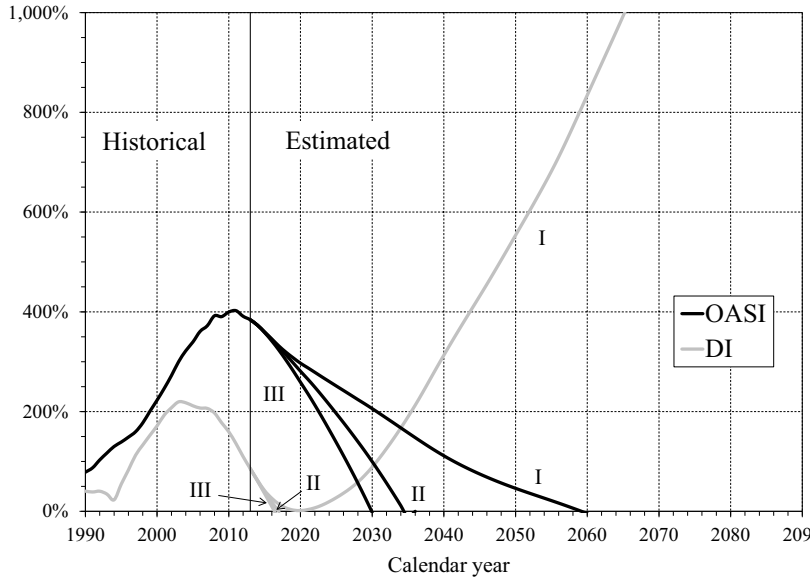
Note: The definition of trust fund ratio appears in the Glossary. The ratios shown for the combined trust funds for years after reserve depletion of either the DI or OASI Trust Fund are theoretical.

The test of long-range close actuarial balance for each trust fund requires meeting two conditions: (1) the short-range test of financial adequacy is satisfied; and (2) the trust fund ratios stay above zero throughout the 75-year projection period, allowing scheduled benefits to be paid in a timely manner throughout the period. As discussed in section IV.A, the DI Trust Fund fails the short-range test of financial adequacy under the intermediate assumptions because trust fund reserves become depleted in the fourth quarter of 2016. Under the intermediate assumptions, the OASI trust fund reserves become depleted in 2034, and the combined OASI and DI trust fund reserves become depleted in 2033. Therefore, the OASI, DI, and combined OASI and DI Trust Funds all fail the long-range test of close actuarial balance.

Beginning with the 2013 report, the Trustees modified the test of long-range close actuarial balance to require solvency throughout the 75-year projection period. The old test allowed for a negative actuarial balance of up to 5 percent of the summarized cost rate for the full 75-year period. The Trustees modified the test to make it simpler and to be more consistent with the actuarial measures presented in this report.

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.D7.

Figure IV.B3.—Long-Range OASI and DI Trust Fund Ratios
[Asset reserves 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. All annual amounts included in a summarized value are present-value discounted to the valuation date. It is important to note that the actuarial balance indicates the solvency status of the fund only for the very end of the period.

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 the present value of non-interest income for a period (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 asset reserves, expressed as a percentage of the present value of taxable payroll over the period. Under current law, the total OASDI payroll tax rate 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 the two reasons discussed earlier on page 54. Summarized cost rates are the sum of the present value of cost for a period (which includes scheduled benefits, administrative expenses, net interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries) and the present value of 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 the present value of taxable payroll over the period.

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 reserve 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 reserve of 1 year's cost by the end of the period. Generally, a trust fund is deemed to be adequately financed for a period if the actuarial balance is zero or positive, meaning that the reserves at the end of the period are at least equal to annual cost. Solvency is still possible with a small negative actuarial balance where reserves are still positive.

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 0.21 percent of taxable payroll under the low-cost assumptions, -1.50 percent under the intermediate assumptions, and -3.55 percent under the high-cost assumptions. These balances indicate that the program is ade-

quately 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 -0.04 percent under the low-cost assumptions, -2.42 percent under the intermediate assumptions, and -5.40 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 assumptions, trust fund reserves are not expected to deplete within the 50-year period but do fall below the target level of 100 percent of annual cost by the end of this period.

For the entire 75-year valuation period, the combined OASDI program has actuarial balances between 0.000 and 0.005 percent of taxable payroll under the low-cost assumptions, -2.88 percent under the intermediate assumptions, and -6.56 percent under the high-cost assumptions. These balances indicate that the combined OASDI program is adequately financed for the 75-year valuation period under only the low-cost assumptions.

Assuming the intermediate assumptions accurately capture future demographic and economic trends, solvency for the program over the next 75 years could be restored using a variety of approaches. For example, revenues could be increased in a manner equivalent to an immediate and permanent increase in the combined Social Security payroll tax rate from 12.40 percent to 15.23 percent (a relative increase of 22.8 percent), cost could be reduced in a manner equivalent to an immediate and permanent reduction in scheduled benefits of 17.4 percent, or some combination of approaches could be used.

However, eliminating the actuarial deficit for the next 75-year valuation period 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. The actuarial deficit could be eliminated for the 75-year period by increasing revenues in a manner equivalent to an immediate and permanent increase in the combined payroll tax from 12.40 percent to 15.39 percent (a relative increase of 24.1 percent),[1] reducing cost in a manner equivalent to an immediate reduction in scheduled benefits of 18.2 percent, or some combination of approaches could be used.

[1] The indicated increase in the payroll tax rate of 2.99 percent is somewhat larger than the 2.88 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.

Under the intermediate assumptions, the OASDI program has large annual deficits toward the end of the long-range period that are increasing and reach 4.90 percent of payroll for 2088 (see table IV.B1). These large deficits indicate that annual cost continues to exceed non-interest income after 2088, 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 actuarial deficit is 4.1 percent of payroll under the intermediate assumptions.

The financial shortfall of the DI program is worse than that of the OASI program for the first 25 years when measured relative to the level of program cost. Summarized over the full 75-year period, however, long-range deficits for the OASI and DI programs under intermediate assumptions are more similar measured relative to the level of program cost. 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.

Table IV.B4.—Components of Summarized Income Rates and Cost Rates, Calendar Years 2014-88

[As a percentage of taxable payroll]

	Summarized income rate			Summarized cost rate			
Valuation period	Non-interest income	Beginning asset reserves	Total	Cost	Ending target fund	Total	Actuarial balance
OASI:							
Intermediate:							
2014-38.	11.23	1.62	12.85	13.48	0.56	14.04	-1.19
2014-63.	11.30	.91	12.21	14.08	.23	14.31	-2.11
2014-88.	11.33	.69	12.02	14.44	.13	14.57	-2.55
Low-cost:							
2014-38.	11.16	1.46	12.63	12.04	.49	12.53	.10
2014-63.	11.19	.80	11.99	12.04	.20	12.24	-.25
2014-88.	11.20	.58	11.78	11.92	.11	12.03	-.25
High-cost:							
2014-38.	11.32	1.79	13.11	15.19	.65	15.84	-2.73
2014-63.	11.42	1.03	12.45	16.63	.27	16.90	-4.45
2014-88.	11.49	.81	12.30	17.67	.16	17.83	-5.52
DI:							
Intermediate:							
2014-38.	1.84	.05	1.89	2.13	.08	2.21	-.32
2014-63.	1.84	.03	1.87	2.15	.03	2.19	-.31
2014-88.	1.85	.02	1.87	2.18	.02	2.20	-.33
Low-cost:							
2014-38.	1.83	.05	1.88	1.71	.06	1.77	.11
2014-63.	1.83	.03	1.86	1.62	.02	1.65	.21
2014-88.	1.83	.02	1.85	1.59	.02	1.60	.25
High-cost:							
2014-38.	1.84	.06	1.91	2.62	.10	2.72	-.81
2014-63.	1.86	.03	1.89	2.80	.04	2.84	-.95
2014-88.	1.86	.03	1.89	2.91	.02	2.93	-1.04

Table IV.B4.—Components of Summarized Income Rates and Cost Rates, Calendar Years 2014-88 (Cont.)
[As a percentage of taxable payroll]

Valuation period	Summarized income rate: Non-interest income	Summarized income rate: Beginning asset reserves	Summarized income rate: Total	Summarized cost rate: Cost	Summarized cost rate: Ending target fund	Summarized cost rate: Total	Actuarial balance
OASDI:							
Intermediate:							
2014-38.	13.07	1.67	14.75	15.61	.64	16.25	-1.50
2014-63.	13.14	.94	14.08	16.24	.26	16.50	-2.42
2014-88.	13.17	.71	13.89	16.62	.15	16.77	-2.88
Low-cost:							
2014-38.	12.99	1.51	14.50	13.75	.54	14.30	.21
2014-63.	13.02	.82	13.85	13.66	.22	13.88	-.04
2014-88.	13.03	.60	13.63	13.50	.13	13.63	[a]
High-cost:							
2014-38.	13.16	1.85	15.01	17.81	.75	18.56	-3.55
2014-63.	13.28	1.07	14.34	19.43	.32	19.74	-5.40
2014-88.	13.35	.84	14.19	20.58	.18	20.75	-6.56

[a] Between 0 and 0.005 percent of taxable payroll.

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 asset reserves at the beginning of the projection period, amounts to $10.6 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 reserves, minus the present value of the ending target trust fund, is -$11.1 trillion for the OASDI program. The actuarial balance, expressed as a percentage of taxable payroll for the period, is -2.88 percent.

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

Item	OASI	DI	OASDI
Present value as of January 1, 2014 (in billions):			
A. Payroll tax revenue	$40,948	$6,953	$47,901
B. Reimbursements from general revenue	1	0	1
C. Taxation of benefits revenue	2,878	189	3,067
D. Non-interest income (A + B + C)	43,826	7,143	50,969
E. Cost	55,863	8,436	64,299
F. Cost minus non-interest income (E - D)	12,037	1,293	13,330
G. Trust fund asset reserves at start of period	2,674	90	2,764
H. Open group unfunded obligation (F - G)	9,363	1,202	10,565
I. Ending target trust fund[a]	509	74	582
J. Income minus cost, plus reserves at start of period, minus ending target trust fund (D - E + G - I = - H - I)	-9,872	-1,276	-11,148
K. Taxable payroll	386,884	386,884	386,884
Percent of taxable payroll:			
Actuarial balance (100 × J ÷ K)	-2.55	-.33	-2.88

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

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

The open group unfunded obligation (row H in the table above) increased from $9.6 trillion shown in last year's report to $10.6 trillion in this report. If there had been no changes in starting values, assumptions, laws, or methods for this report, then the open group unfunded obligation would have increased to $10.1 trillion solely due to the change in the valuation period. This expected increase in the unfunded obligation occurs because: (1) the unfunded obligation is now discounted to January 1, 2014, rather than to January 1, 2013, which tends to increase the unfunded obligation by the annual nominal interest rate; and (2) the unfunded obligation now includes an additional year (2088). However, changes in assumptions, methods, and starting values resulted in a net additional $0.5 trillion increase in the unfunded obligation.

The change in the actuarial deficit can be explained in a similar way. The actuarial deficit was 2.72 percent of payroll in last year's report, and was expected to increase to a deficit of 2.78 percent of payroll solely due to the change in the valuation period. Changes in assumptions, methods, and starting values combined to account for the rest of the change in the actuarial deficit, up to 2.88 percent of payroll. For additional details on these changes, see section IV.B.6.

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 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 2088. The present value of the open group unfunded obligation for the program is $10.6 trillion over 2014-88. 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 2088.

The 75-year unfunded obligation is equivalent to 2.7 percent of future OASDI taxable payroll and 1.0 percent of GDP through 2088. 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 49.

Another measure of trust fund finances, discussed in Appendix F, is the infinite horizon unfunded obligation, which takes account of all annual balances, even those after 75 years. 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. This infinite horizon unfunded obligation is estimated to be 4.1 percent of taxable payroll or 1.4 percent of GDP. Of course, the degree of uncertainty associated with estimates increases substantially for years further in the future.

6. Reasons for Change in Actuarial Balance From Last Report

Table IV.B6 shows the effects of changes on the long-range actuarial balance, by category, between last year's report and this report.

Table IV.B6.—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	12.00	1.88	13.88
Cost rate	14.40	2.20	16.60
Actuarial balance	**-2.40**	**-.32**	**-2.72**
Changes in actuarial balance due to changes in:			
Legislation / Regulation	-.01	.00	-.01
Valuation period[a]	-.05	-.01	-.06
Demographic data and assumptions	.04	.00	.04
Economic data and assumptions	-.08	-.02	-.10
Disability data and assumptions	.00	.02	.02
Methods and programmatic data	-.05	.00	-.05
Total change in actuarial balance	-.15	-.01	-.16
Shown in this report:			
Actuarial balance	**-2.55**	**-.33**	**-2.88**
Income rate	12.02	1.87	13.89
Cost rate	14.57	2.20	16.77

[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 2088. This change in the valuation period results in a larger long-range actuarial deficit. The actuarial deficit includes the trust fund reserve at the beginning of the projection period.

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

If the assumptions, methods, starting values, and the law had all remained unchanged from last year's Trustees Report, the long-range OASDI actuarial balance would have decreased (become more negative) by 0.06 percent of taxable payroll solely due to the change in the valuation period. However, as described below, this report includes changes in law, data, assumptions, and methods. These changes combine to decrease the long-range OASDI actuarial balance, from -2.72 percent of taxable payroll in last year's report to -2.88 percent in this report.

Since the last report, no laws have been enacted that are expected to have significant effects on the long-range cost of the OASDI program. However, the Supreme Court's decision in the *United States v. Windsor* case, in June 2013, is projected to have a small but significant effect on the long-range cost of the OASDI program. This decision repealed parts of the Defense of Marriage Act, which affects the payment of federal benefits based on same-sex marriages. The extent to which OASDI benefits based on marriage will be available to same-sex couples is still not completely clear. SSA has issued guidelines, approved by the Department of Justice, for certain benefits for

same-sex couples who were legally married when the insured account holder resided in a State or jurisdiction that recognized same-sex marriages at the time of application or death. Expansion of this authority to other same-sex couples and to other benefits is under review at the Department of Justice. For the estimates in this report, the Trustees have assumed that Social Security will expand its guidelines to recognize all auxiliary beneficiaries for such marriages and that same-sex marriages will eventually be recognized in all States. This projected expansion of benefits decreases the long-range OASDI actuarial balance by 0.01 percent of taxable payroll.

Changing the 75-year valuation period from 2013-87 to 2014-88 decreased the projected long-range OASDI actuarial balance by 0.06 percent of taxable payroll. This decrease is the result of including the relatively large negative annual balance for 2088 in this year's 75-year projection period. Note that the annual balance for 2013 is not excluded from this year's 75-year projection period because the actuarial balance includes trust fund asset reserves at the beginning of the projection period. These reserves at the start of the period reflect the program's net financial flows for all past years up to the start of the projection period.

The Trustees did not change any of the ultimate demographic assumptions for this year's report. However, updating the starting and historical values, and the way these values transition to ultimate assumed levels, combined to increase the long-range OASDI actuarial balance by 0.04 percent of taxable payroll. The following paragraph describes three demographic changes that had significant effects on the long-range OASDI actuarial balance.

First, preliminary fertility (birth) data for 2012 indicated lower birth rates than were assumed for last year's report. The Trustees recognize the effect of the recent economic recession on the total fertility rate for 2012 and assume the path of the total fertility rate over the first several years of the projection period will reflect the economic recovery. The additional fertility data and the altered path of fertility over the first 25 years of the projection period combined to decrease the long-range actuarial balance by 0.01 percent of taxable payroll. Second, because the National Center for Health Statistics (NCHS) no longer collects detailed divorce data (by age of husband crossed with age of wife), these data are now obtained from certain States. These new detailed historical divorce data, two years of additional total divorce data from the NCHS, and revisions in the assumed path of the age-sex-adjusted divorce rate over the first 25 years of the projection period combined to increase the long-range OASDI actuarial balance by 0.02 percent of taxable payroll. Third, revising historical data since 2001 (to be more consistent with the most recent estimates from the Bureau of the Census) and smoothing the historical distribution of the married population by age of hus-

band and age of wife (to provide a more reasonable distribution for the projections) combined to increase the long-range OASDI actuarial balance by 0.03 percent of taxable payroll.

The Trustees changed one of the ultimate economic assumptions this year: the annual rate of change in the Consumer Price Index (CPI-W). The Trustees now assume an ultimate average increase of 2.7 percent per year, rather than 2.8 percent in last year's report. This change decreased the long-range OASDI actuarial balance by 0.02 percent of taxable payroll. Lowering the ultimate average annual increase in the CPI-W makes it more comparable to recent historical annual increases. The CPI-W grew at an average annual rate of 2.8 percent over the last thirty years (1982 to 2012) and 2.4 percent over the last twenty years (1992 to 2012).

Additionally, updated starting values and changes in near-term economic assumptions combined for a net decrease in the long-range OASDI actuarial balance of 0.08 percent of payroll. One major factor contributing to this change is the projected relationship between average taxable earnings and the average wage index. Compared to last year's report, the ratio of average taxable earnings to the average wage index is lower by 1.9 percent in 2012 and 1.5 percent in 2013. This ratio remains about 1 percent lower throughout the long-range period, resulting in lower payroll taxes (directly related to average taxable earnings) relative to benefit levels (directly related to the average wage index). Additionally, the estimated level of full-employment GDP relative to actual GDP in recent years is assumed to be about 1 percent lower in this year's report. This change reflects the fact that GDP growth, relative to the decline in the unemployment rate, has not been as strong so far in this economic recovery as had been experienced in prior recoveries. As a result, full-employment GDP is projected to be permanently lower by about 1 percent.

The Trustees did not change ultimate disability incidence or termination rates from those in the prior report. However, slightly lower near-term incidence rates reflecting recent experience and updated starting levels of beneficiaries and benefit levels combined to increase the long-range OASDI actuarial balance by 0.02 percent of taxable payroll.

The projections in this report also reflect several methodological improvements and updates of program-specific data. These methodological changes, updates, and interactions combined to decrease the long-range OASDI actuarial balance by 0.05 percent of taxable payroll. Descriptions of four significant methodological changes and updates follow.

The first methodological improvement alters the projected labor force participation rates to better reflect future trends in marital status and longevity on

these rates. Projected labor force participation rates for the population age 55 and older are slightly lower in this year's report in order to better reflect the difference in participation rates between never-married and married populations. This first methodological improvement also alters the projection of increases in the labor force participation rates for older workers due to projected improvement in life expectancy. The calibration year for the age-specific relationship between the labor force participation rate and life expectancy is changed from 2008 to 2050. Changing the calibration year replaces the dated historical relationships with relationships that are projected to evolve over the course of the projection period. These changes in labor force participation rates decreased the long-range OASDI actuarial balance by 0.05 percent of taxable payroll.

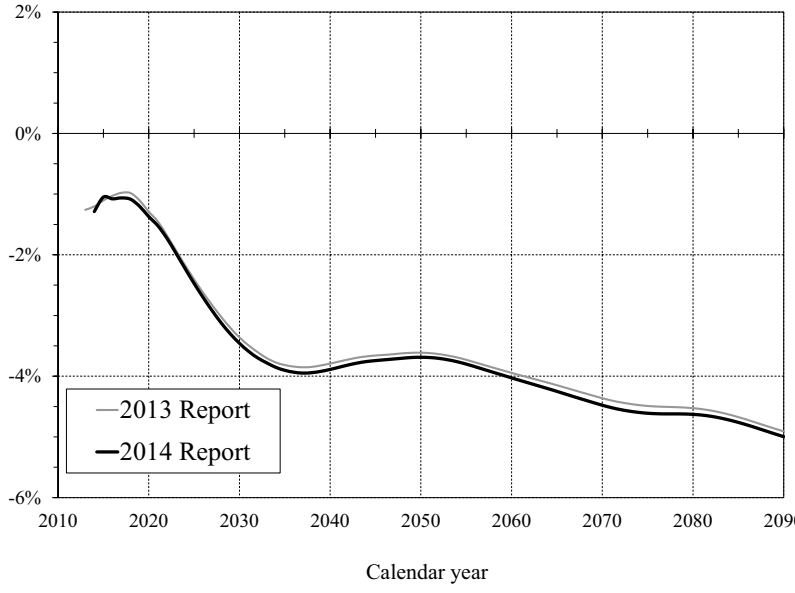
The second methodological improvement revises the treatment of the "other immigrant" population in three ways. First, the other immigrant population is divided into three distinct groups with differing employment and average earnings levels: (1) those with temporary legal status, (2) those never authorized to be in the country, and (3) those who had temporary legal status previously but are no longer authorized to be in the country. Second, the assumed age-sex distribution of other immigrants entering the country was revised, resulting in a slightly lower average age at entry. Third, the projections of other immigrants leaving the country were modified to reflect only rates of exit from the other-immigrant resident population, rather than a combination of exit rates from current residents and recent arrivals. The combined effect of these three components on the long-range OASDI actuarial balance is negligible (between -0.005 and 0.005 percent of taxable payroll).

The third significant change increases the income from taxation of benefits. Based on estimates provided by the Office of Tax Analysis at the Department of Treasury, the ultimate projected ratio of income from taxation of benefits to total benefits was increased. This change increased the long-range OASDI actuarial balance by about 0.02 percent of taxable payroll.

Finally, changes in projected OASI beneficiaries and benefit levels over the first 10 years of the projection period, updating programmatic data, other small methodological improvements, and interactions decreased the long-range OASDI actuarial balance by about 0.02 percent of taxable payroll.

Figure IV.B4 compares the annual cash-flow balances for this report and the prior year's report for the combined OASDI program over the long-range (75-year) projection period. The figure illustrates the annual effects of the changes described earlier in this section.

Figure IV.B4.—OASDI Annual Balances: 2013 and 2014 Trustees Reports
[As a percentage of taxable payroll, based on intermediate assumptions]



Compared to last year's report, the annual balance (income rate minus cost rate) in this year's report is about 0.1 percentage point more negative throughout the projection period, primarily reflecting revised economic and programmatic starting levels. In particular, the level of average taxable earnings is significantly lower in the initial years of the projection period. Compared to last year's report, real growth in average taxable earnings for 2013 is 0.4 percent lower and real earnings growth over the period from 2013 through 2023 is 1 percent lower. By 2087, the annual deficit is 4.85 percent of taxable payroll in this report, compared to 4.77 percent 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, 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 January 2014.

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 actuarial 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 specified directions from the intermediate values, 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/2014/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, at each age of her life, the birth rate 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. From 1991 to 2006, the total fertility rate averaged 2.03 children per woman. Then, the total fertility rate dropped from 2.12 in 2007 to 1.89 in 2011 and, based on preliminary data, to 1.88 in 2012. The recession and high unemployment are likely reasons for this drop. The estimated total fertility rate for 2013 is 1.89.

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.

For the intermediate alternative, the projected total fertility rate rises until 2021 when it reaches 2.07. This reflects the assumption that fertility rates will have a recovery from their current recession-depleted levels. The Trustees then assume the total fertility rate follows a gradual trend toward the ultimate level in 2038. 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 2038.

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 1900-2010 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 and over, the office used final Medicare data on deaths and enrollments for years 1968 through 2010 and preliminary data for 2011. The office produced

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

death rates by cause of death at all ages for years 1979-2010 using data from the NCHS.

The total age-sex-adjusted death rate[1] declined at an average annual rate of 1.07 percent between 1900 and 2010. Between 1979 and 2010, 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 0.99 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 and more rapidly for children than for the rest of the population. Between 1900 and 2010, the age-sex-adjusted death rate for 65 and over declined at an average rate of 0.79 percent per year, while declining at an average rate of 3.13 percent per year for ages under 15.

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 2038 and later. The intermediate set, alternative II, represents the Trustees' best estimate. The average annual percentage reductions for alternative I (low-cost) are smaller than those for alternative II, while those for alternative III (high-cost) are larger. These ultimate annual percentage reductions are the same as those in last year's report.

For the years 2011 through 2013, the assumed annual reductions in central death rates are the same as the average annual reductions by age group, sex, and cause of death experienced between 2000 and 2010. After 2013, annual reductions in central death rates for alternative II are assumed to transition rapidly from the trend experienced between 2000 and 2010, until they reach the ultimate annual percentage reductions for 2038 and later. The assumed reductions in death rates under alternatives I and III also rapidly approach their ultimate levels, but start from levels which are, respectively, 50 and 150 percent of the corresponding alternative II level.

Table V.A1 contains historical and projected age-sex-adjusted death rates for the total population (all ages), for ages under 65, and for ages 65 and over.

[1] Based on the enumerated total population as of April 1, 2010, if that population were to experience the death rates by age and sex for the selected year.

Age-sex adjustment eliminates the effect of a changing distribution of population by age and sex, allowing the pure effects of changes in death rates to be observed. The level of these age-sex-adjusted death rates is substantially higher than the level shown for the age-sex-adjusted death rates in last year's report due to the change in the "standard" population used for age-sex adjusting. For last year's report, this standard population was the enumerated resident population as of April 1, 2000. For this year's report, the standard population is the enumerated resident population as of April 1, 2010. This change in the standard population for age-sex adjusting has very little effect on the rates of improvement. If there had been no change in the standard population used for age-sex adjusting, then the level of projected age-sex-adjusted death rates would be similar to the level shown in last year's report.

The projected average annual rate of decline for the total age-sex-adjusted death rate is about 0.41 percent, 0.79 percent, and 1.20 percent between 2013 and 2088 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 0.37 percent, 0.71 percent, and 1.07 percent between 2013 and 2088 for alternatives I, II, and III, respectively. The projected age-sex-adjusted death rates for ages under 15 decline at average annual rates of about 0.78 percent, 1.56 percent, and 2.57 percent between 2013 and 2088 for alternatives I, II, and III, respectively.

Demographers express a wide range of views on the likely rate of future decline in death rates. For example, some believe that the long-standing historical tendency for mortality to decline more slowly at the highest ages will cease in the future. Others believe that biological factors, social factors, and limitations on health care spending may slow future rates of decline in mortality. The 2011 Technical Panel on Assumptions and Methods, appointed by the Social Security Advisory Board, believed that ultimate rates of decline in mortality will be higher than the rates of decline experienced for sustained periods of time in the past or assumed for the intermediate projections in this report. 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 emigra-

tion, "other immigration," and "other emigration." Legal immigration consists of persons who are granted legal permanent resident status. Legal emigration consists of legal permanent residents and 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 students. "Other emigration" consists of other immigrants who leave the Social Security area population or who adjust their status to become legal permanent residents. 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 895,000 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 770,000 by 2003 as processing slowed and the number of pending applications increased. From 2003 to 2006, processing accelerated and legal immigration increased until it reached about 1,215,000 in 2006. For 2007 through 2009, legal immigration decreased to about 1,110,000 and declined further to about 1,045,000 in 2010, 1,055,000 in 2011, and 1,030,000 in 2012. The estimated level of legal immigration in 2013 is 1,050,000.

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

The intermediate alternative assumes that annual legal immigration will be 1,050,000 persons for 2014 and later. Alternatives I and III assume that ultimate annual legal immigration will be 1,250,000 persons and 850,000 persons, respectively, for 2016 and later. The ultimate assumption for each alternative remains unchanged from the level assumed in 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 immigration and emigration assumptions, ultimate annual net legal immigration is about 790,000 persons. For the low-cost and high-cost scenarios, ultimate annual net legal immigration is 1,000,000 persons and 595,000 persons, respectively.

Significant changes in the method for projecting other immigration were implemented for this year's report. In previous reports, the entire other immigrant population was modeled in aggregate. For this year's report, three categories of other immigrants are modeled separately. These categories are: (1) those that were never authorized to enter the Social Security area; (2) those legally admitted for a limited period of time such as students, temporary workers, and exchange visitors ("nonimmigrants"); and (3) those that were nonimmigrants, but have overstayed their visas. Also, in previous reports, annual other emigration was modeled in two groups: a fixed portion and a varying portion estimated by applying departure rates to the other-immigrant population. For this year's report, other emigration is estimated by applying distinct departure rates to each of the three separate other-immigrant categories, by age and sex.

The estimated number of other immigrants residing in the Social Security area increased from 9.3 million persons for January 1, 2000, to 14.1 million persons for January 1, 2008. The estimated other-immigrant population is 13.3 million persons for January 1, 2009, and 13.4 million persons for January 1, 2010 and January 1, 2011. The estimates for these 3 years are significantly lower than estimates for prior years' levels, and this is likely due to the recession.

During the period from 2000 to 2006, the level of annual other immigration averaged about 1.4 million persons. However, during 2007 to 2010 (the recession and its surrounding years), annual levels dropped significantly, averaging only about 0.7 million persons. Estimated levels for 2011, 2012, and 2013 are 1.0, 1.2, and 1.3 million persons, respectively. Under the inter-

mediate assumptions, annual other immigration is 1.4 million for 2014, and increases to 1.6 million for 2018 and 2019, reflecting a recovery from recession-depleted levels of the other-immigrant population. Subsequently, it decreases to the ultimate level of 1.4 million persons for 2022. For the low-cost and high-cost scenarios, the future ultimate annual other immigration is 1.7 million persons and 1.1 million persons, respectively, for 2022 and later. Although significant methodological changes were made to the modeling of other immigration, the ultimate assumption for each alternative is unchanged from last year's report.

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 citizen or legal permanent resident population.

Under the intermediate assumptions, the total annual number of other emigrants who leave the Social Security area averages 625,000 through the 75-year projection period. In addition, the ultimate annual number of other immigrants who adjust status to become legal permanent residents is assumed to be 450,000 for the intermediate assumptions. This ultimate annual number who adjust status is about 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 725,000 and 500,000, respectively, through the 75-year projection period. The ultimate annual number of people adjusting status to legal permanent resident status is assumed to be 550,000 persons and 350,000 persons, for the low-cost and high-cost scenarios, respectively. While the ultimate annual number of people adjusting status to become legal permanent residents is unchanged from last year's report, the annual number of other emigrants who leave the Social Security area is about 25,000 to 30,000 lower than in last year's report for each alternative. This lower level of other emigration reflects improved historical data from the Department of Homeland Security.

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 615,000 persons for 2000 through 2004. Estimates of net other immigration for 2005 through 2010 are based on data from the Department of Homeland Security. The esti-

mated level is 1,140,000 for 2005, decreasing to 800,000 for 2006 and 70,000 for 2007. For 2008, estimated net other immigration is negative, at -760,000, but returns to a positive level of 105,000 for 2009 and 50,000 for 2010. The estimated net other immigration for 2011, 2012, and 2013 is 80,000, 390,000, and 490,000, respectively.

Under the intermediate assumptions, projected net other immigration is about 555,000 persons for 2014, and about 690,000 persons for 2018. Net other immigration then sharply decreases to about 435,000 for 2022, primarily due to the decline in the number of other immigrants entering the country. This is followed by a more gradual decrease after 2022 to about 315,000 for 2040 and 270,000 for 2090. The decline in net other immigration after 2022 is due to the increasing number of other immigrants residing in the Social Security area. Because the number of other immigrants leaving the Social Security area is based on rates of departure, 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. All other components of other immigration and emigration are assumed to be stable after 2022, 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 335,000 persons. For the low-cost and high-cost assumptions, projected average annual net other immigration is about 430,000 persons and 235,000 persons, respectively.

The projected average total level of net immigration (legal and other, combined) is about 1,125,000 persons per year during the 75-year projection period under the intermediate assumptions. For the low-cost and high-cost assumptions, projected average annual total net immigration is about 1,430,000 persons and 830,000 persons, 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 increasingly attracted to other countries, that potential immigrants may be fewer due to lower birth rates in many 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	1,919.8	750.1	9,718.8	45,000	—
1945	2.42	1,716.6	674.8	8,662.9	55,000	—
1950	3.03	1,561.9	570.2	8,173.7	170,000	—
1955	3.50	1,453.8	508.2	7,758.4	210,000	—
1960	3.61	1,454.3	503.2	7,795.4	200,000	—
1965	2.88	1,428.8	495.2	7,653.3	230,000	—
1970	2.43	1,340.0	485.7	7,036.3	280,000	—
1975	1.77	1,204.8	426.6	6,393.6	295,000	—
1980	1.82	1,136.9	384.3	6,154.3	410,000	200,000
1985	1.83	1,081.0	353.3	5,932.9	435,000	255,000
1990	2.07	1,021.3	333.6	5,606.3	500,000	645,000
1995	1.98	1,001.5	317.9	5,559.5	575,000	585,000
1996	1.98	987.8	306.6	5,529.1	665,000	500,000
1997	1.97	971.9	293.3	5,496.4	570,000	570,000
1998	2.00	963.8	285.4	5,487.1	490,000	615,000
1999	2.01	970.6	283.2	5,553.6	520,000	615,000
2000	2.05	960.7	281.0	5,492.3	670,000	610,000
2001	2.03	951.1	280.4	5,422.8	795,000	610,000
2002	2.03	947.0	279.0	5,400.6	730,000	615,000
2003	2.05	933.4	277.2	5,308.6	575,000	615,000
2004	2.06	898.9	269.7	5,093.9	750,000	620,000
2005	2.06	901.3	270.7	5,105.4	870,000	1,140,000
2006	2.11	876.1	267.6	4,933.5	910,000	800,000
2007	2.12	856.8	261.6	4,825.2	800,000	70,000
2008	2.07	857.0	258.8	4,845.5	835,000	-760,000
2009	2.00	827.1	255.3	4,639.7	830,000	105,000
2010	1.93	821.3	248.5	4,640.1	785,000	50,000
2011[g]	1.89	820.1	249.7	4,622.8	790,000	80,000
2012[g]	1.88	801.9	247.0	4,501.5	775,000	390,000
2013[g]	1.89	790.6	244.4	4,432.2	790,000	490,000
Intermediate:						
2015	1.94	770.0	239.3	4,308.1	790,000	535,000
2020	2.06	730.2	226.7	4,087.1	790,000	560,000
2025	2.05	697.3	214.4	3,917.1	790,000	405,000
2030	2.03	667.6	202.7	3,767.8	790,000	370,000
2035	2.01	640.2	191.6	3,630.7	790,000	335,000
2040	2.00	614.6	181.3	3,503.0	790,000	315,000
2045	2.00	590.6	171.7	3,383.3	790,000	300,000
2050	2.00	568.1	162.7	3,270.7	790,000	295,000
2055	2.00	547.0	154.3	3,164.6	790,000	285,000
2060	2.00	527.1	146.5	3,064.6	790,000	280,000
2065	2.00	508.4	139.1	2,970.2	790,000	280,000
2070	2.00	490.8	132.3	2,880.9	790,000	275,000
2075	2.00	474.1	125.8	2,796.4	790,000	275,000
2080	2.00	458.4	119.8	2,716.3	790,000	270,000
2085	2.00	443.5	114.1	2,640.3	790,000	270,000
2090	2.00	429.5	108.7	2,568.0	790,000	270,000

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	1.96	784.2	243.0	4,392.0	960,000	660,000
2020	2.14	768.1	238.0	4,302.8	1,000,000	735,000
2025	2.19	751.7	231.8	4,218.0	1,000,000	555,000
2030	2.23	735.4	225.4	4,135.5	1,000,000	495,000
2035	2.28	719.4	219.1	4,055.5	1,000,000	445,000
2040	2.30	703.9	212.9	3,977.9	1,000,000	410,000
2045	2.30	689.0	206.9	3,902.7	1,000,000	390,000
2050	2.30	674.5	201.2	3,830.1	1,000,000	370,000
2055	2.30	660.5	195.6	3,759.7	1,000,000	360,000
2060	2.30	646.9	190.3	3,691.7	1,000,000	350,000
2065	2.30	633.8	185.1	3,625.7	1,000,000	345,000
2070	2.30	621.2	180.1	3,561.8	1,000,000	340,000
2075	2.30	608.9	175.3	3,499.9	1,000,000	340,000
2080	2.30	597.0	170.6	3,439.9	1,000,000	335,000
2085	2.30	585.5	166.1	3,381.7	1,000,000	335,000
2090	2.30	574.3	161.7	3,325.2	1,000,000	335,000
High-cost:						
2015	1.91	755.8	235.6	4,224.3	630,000	315,000
2020	1.97	691.6	214.8	3,870.1	595,000	135,000
2025	1.91	641.5	195.7	3,613.5	595,000	320,000
2030	1.83	598.5	178.5	3,398.8	595,000	295,000
2035	1.75	560.5	163.1	3,209.5	595,000	270,000
2040	1.70	526.3	149.3	3,039.7	595,000	250,000
2045	1.70	495.5	137.0	2,885.7	595,000	240,000
2050	1.70	467.6	125.9	2,745.4	595,000	230,000
2055	1.70	442.2	116.0	2,617.0	595,000	225,000
2060	1.70	419.0	107.0	2,499.1	595,000	220,000
2065	1.70	397.8	98.9	2,390.6	595,000	220,000
2070	1.70	378.4	91.6	2,290.4	595,000	215,000
2075	1.70	360.5	85.0	2,197.5	595,000	215,000
2080	1.70	344.0	78.9	2,111.1	595,000	210,000
2085	1.70	328.7	73.4	2,030.7	595,000	210,000
2090	1.70	314.5	68.4	1,955.5	595,000	210,000

[a] The total fertility rate for any year is the average number of children that would be born to a woman in her lifetime if she were to experience, at each age of her life, the birth rate observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period.

[b] Based on the enumerated total population as of April 1, 2010, 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 2011.

[g] Fertility is estimated starting in 2012, mortality starting in 2011, and immigration starting in 2012.

4. Total Population Estimates

The starting Social Security area population for January 1, 2012, is derived from the Census Bureau's estimate of the residents of the 50 States and D.C. and U.S. Armed Forces overseas. Adjustments are made to reflect mortality assumptions for the aged population since 2010 that are consistent with Medicare and Social Security data, net immigration assumptions for the aged population since 2010, estimates of the net undercount in the 2010 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 for January 1 of each year 2013 through 2090 by combining the assumptions for future fertility, mortality, and immigration with assumptions for 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, the Census Bureau, and selected individual States.

For the estimates in this report, the Trustees have assumed that Social Security will expand its guidelines to recognize all auxiliary beneficiaries for valid same-sex marriages and same-sex marriages will eventually be recognized in all States. The effect on marriage rates is assumed to be fully realized within 25 years, reflecting both the gradual acceptance of same-sex marriage in all States and behavioral changes in the population consistent with the acceptance.

This report presents a July 1 (i.e., midyear) population for each year, which is derived from surrounding January populations. Table V.A2 shows the historical and projected population for July 1 by broad age group, for the three alternatives. It also shows the aged and total dependency ratios (see table footnotes for definitions).

Table V.A2.—Social Security Area Population on July 1 and Dependency Ratios, Calendar Years 1945-2090

Calendar year	Population (in thousands)				Dependency ratio	
	Under 20	20-64	65 and over	Total	Aged[a]	Total[b]
Historical data:						
1945	49,121	88,109	10,896	148,126	0.124	0.681
1950	53,902	92,382	12,769	159,052	.138	.722
1955	63,291	96,207	15,075	174,574	.157	.815
1960	73,074	99,802	17,277	190,153	.173	.905
1965	80,032	104,879	19,070	203,982	.182	.945
1970	81,047	113,000	20,901	214,948	.185	.902
1975	78,718	122,654	23,316	224,687	.190	.832
1980	74,851	134,104	26,308	235,263	.196	.754
1985	73,077	144,567	29,145	246,788	.202	.707
1990	74,823	152,753	31,935	259,510	.209	.699
1995	79,570	160,552	34,434	274,557	.214	.710
2000	82,384	169,995	35,687	288,067	.210	.695
2005	84,184	180,245	37,184	301,614	.206	.673
2010	85,393	188,379	41,047	314,819	.218	.671
2013[c]	84,925	192,012	45,176	322,113	.235	.678
Intermediate:						
2015	85,414	194,094	48,170	327,678	.248	.688
2020	88,211	198,246	56,643	343,101	.286	.731
2025	91,406	200,512	66,114	358,032	.330	.786
2030	94,060	203,105	74,364	371,528	.366	.829
2035	97,539	206,276	79,462	383,276	.385	.858
2040	99,185	212,109	82,114	393,407	.387	.855
2045	100,060	218,788	83,783	402,631	.383	.840
2050	101,486	224,196	86,030	411,711	.384	.836
2055	103,714	228,560	88,960	421,234	.389	.843
2060	106,315	232,274	92,678	431,267	.399	.857
2065	108,680	236,738	96,196	441,614	.406	.865
2070	110,587	241,457	99,962	452,006	.414	.872
2075	112,178	246,406	103,722	462,306	.421	.876
2080	113,874	252,688	105,962	472,525	.419	.870
2085	115,905	257,378	109,493	482,776	.425	.876
2090	118,130	261,141	113,830	493,101	.436	.888
Low-cost:						
2015	85,581	194,297	48,143	328,021	.248	.688
2020	89,609	199,626	56,360	345,595	.282	.731
2025	94,798	203,160	65,387	363,345	.322	.788
2030	100,202	206,983	73,042	380,228	.353	.837
2035	107,148	211,369	77,443	395,960	.366	.873
2040	112,480	218,942	79,382	410,804	.363	.876
2045	116,745	228,088	80,432	425,266	.353	.864
2050	121,433	236,676	82,227	440,336	.347	.860
2055	127,032	244,903	84,882	456,818	.347	.865
2060	133,122	253,238	88,419	474,780	.349	.875
2065	139,348	262,784	91,742	493,874	.349	.879
2070	145,298	273,239	95,208	513,744	.348	.880
2075	150,909	284,808	98,555	534,273	.346	.876
2080	156,612	298,554	100,422	555,588	.336	.861
2085	162,773	311,045	104,092	577,911	.335	.858
2090	169,341	322,696	109,265	601,302	.339	.863

Table V.A2.—Social Security Area Population on July 1 and Dependency Ratios, Calendar Years 1945-2090 (Cont.)

Calendar year	Population (in thousands)				Dependency ratio	
	Under 20	20-64	65 and over	Total	Aged[a]	Total[b]
High-cost:						
2015	85,205	193,822	48,197	327,224	0.249	0.688
2020	86,191	195,722	56,912	338,826	.291	.731
2025	87,394	196,635	66,843	350,871	.340	.784
2030	87,438	198,210	75,728	361,376	.382	.823
2035	87,659	200,384	81,581	369,624	.407	.845
2040	85,980	204,625	85,014	375,620	.415	.836
2045	83,966	208,921	87,366	380,253	.418	.820
2050	82,691	211,298	90,105	384,095	.426	.818
2055	82,225	212,039	93,308	387,572	.440	.828
2060	82,187	211,456	97,158	390,801	.459	.848
2065	81,750	211,215	100,796	393,761	.477	.864
2070	80,844	210,676	104,784	396,304	.497	.881
2075	79,761	209,664	108,884	398,309	.519	.900
2080	78,895	209,385	111,437	399,717	.532	.909
2085	78,372	207,555	114,644	400,572	.552	.930
2090	78,012	205,112	117,797	400,921	.574	.955

[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 an additional 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.

- 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, using actual or expected 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 a given year because: (a) death rates at any age tend to decline over time; and (b) cohort life expectancy uses death rates from future years, while period life expectancy uses death rates only from the given year.

Life expectancy at a given age reflects death rates at that and all older ages. Period life expectancy is somewhat related to the age-sex-adjusted death rate discussed in section V.A.2. However, life expectancy places far greater weight on death rates at lower ages than at higher ages. Therefore, changes in death rates at lower ages have far greater effects in changing life expectancy over time. It is important to keep this concept in mind when considering trends in life expectancy.

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
2000	74.0	79.4	15.9	19.0
2001	74.1	79.5	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	80.5	17.2	19.9
2008	75.5	80.5	17.2	19.9
2009	75.9	80.8	17.5	20.2
2010	76.1	80.9	17.6	20.2
2011[b] . . .	76.1	80.9	17.7	20.2
2012[b] . . .	76.4	81.1	17.9	20.4
2013[b] . . .	76.5	81.3	18.0	20.5

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	76.9	81.5	18.3	20.7	76.7	81.3	18.2	20.6	77.1	81.7	18.5	20.8
2020	77.6	82.1	18.8	21.1	77.0	81.6	18.4	20.7	78.3	82.6	19.3	21.5
2025	78.2	82.6	19.2	21.4	77.3	81.8	18.6	20.9	79.3	83.4	19.9	22.0
2030	78.8	83.1	19.6	21.7	77.6	82.1	18.8	21.0	80.2	84.2	20.4	22.5
2035	79.4	83.5	19.9	22.0	77.9	82.3	18.9	21.2	81.0	84.9	20.9	22.9
2040	79.9	84.0	20.2	22.3	78.2	82.5	19.1	21.3	81.8	85.5	21.4	23.3
2045	80.4	84.4	20.5	22.5	78.5	82.8	19.3	21.5	82.6	86.1	21.8	23.7
2050	80.9	84.8	20.7	22.8	78.8	83.0	19.4	21.6	83.3	86.7	22.2	24.1
2055	81.4	85.2	21.0	23.0	79.0	83.2	19.6	21.8	83.9	87.2	22.6	24.5
2060	81.8	85.5	21.3	23.3	79.3	83.5	19.7	21.9	84.5	87.7	23.0	24.8
2065	82.3	85.9	21.5	23.5	79.6	83.7	19.9	22.0	85.1	88.2	23.3	25.2
2070	82.7	86.2	21.8	23.8	79.8	83.9	20.0	22.2	85.7	88.7	23.7	25.5
2075	83.1	86.6	22.0	24.0	80.1	84.1	20.2	22.3	86.2	89.1	24.0	25.8
2080	83.5	86.9	22.3	24.2	80.3	84.3	20.3	22.4	86.7	89.5	24.4	26.1
2085	83.9	87.2	22.5	24.4	80.6	84.5	20.5	22.6	87.2	89.9	24.7	26.4
2090	84.3	87.5	22.8	24.6	80.8	84.7	20.6	22.7	87.7	90.3	25.0	26.7

[a] The period life expectancy at a given age for a given year is the average remaining number of years expected prior to death for a person at that exact age, born on January 1, using the mortality rates for that year over the course of his or her remaining life.
[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	70.6	76.7	12.7	14.7	70.3	76.5	12.7	14.7	70.8	77.1	12.7	14.7
1945	72.5	78.5	13.0	15.4	72.1	78.0	13.0	15.4	72.9	78.9	13.0	15.4
1950	73.8	79.8	13.1	16.2	73.2	79.2	13.1	16.2	74.4	80.5	13.1	16.2
1955	74.5	80.5	13.1	16.7	73.8	79.7	13.1	16.7	75.3	81.3	13.1	16.7
1960	75.2	80.9	13.2	17.4	74.3	80.0	13.2	17.4	76.2	82.0	13.2	17.4
1965	76.1	81.5	13.5	18.0	75.0	80.4	13.5	18.0	77.4	82.7	13.5	18.0
1970	77.3	82.3	13.8	18.5	76.0	81.1	13.8	18.5	78.8	83.8	13.8	18.5
1975	78.2	83.0	14.2	18.7	76.7	81.6	14.2	18.7	80.0	84.7	14.2	18.7
1980	79.1	83.7	14.7	18.8	77.4	82.1	14.7	18.8	81.1	85.5	14.7	18.8
1985	79.8	84.3	15.4	19.1	77.9	82.5	15.4	19.1	82.0	86.3	15.4	19.1
1990	80.5	84.8	16.1	19.5	78.3	82.9	16.1	19.4	82.9	87.0	16.1	19.5
1995	81.2	85.3	16.8	19.8	78.8	83.2	16.7	19.7	83.8	87.6	16.9	20.0
2000	81.7	85.7	17.6	20.3	79.2	83.5	17.5	20.1	84.5	88.2	17.8	20.6
2001	81.8	85.8	17.8	20.4	79.2	83.6	17.6	20.2	84.7	88.3	18.0	20.7
2002	81.9	85.9	17.9	20.5	79.3	83.6	17.7	20.3	84.8	88.4	18.2	20.8
2003	82.0	86.0	18.1	20.6	79.3	83.7	17.8	20.4	84.9	88.5	18.4	21.0
2004	82.1	86.1	18.2	20.7	79.4	83.7	17.9	20.4	85.0	88.6	18.5	21.1
2005	82.2	86.1	18.3	20.8	79.4	83.7	18.0	20.5	85.2	88.7	18.7	21.2
2006	82.3	86.2	18.5	20.9	79.5	83.8	18.1	20.6	85.3	88.8	18.9	21.4
2007	82.4	86.3	18.6	21.0	79.6	83.8	18.2	20.6	85.4	88.9	19.0	21.5
2008	82.5	86.3	18.7	21.1	79.6	83.9	18.3	20.7	85.5	89.0	19.2	21.6
2009	82.6	86.4	18.8	21.2	79.7	83.9	18.3	20.7	85.7	89.1	19.3	21.7
2010	82.7	86.5	18.9	21.3	79.8	84.0	18.4	20.8	85.8	89.2	19.5	21.8
2011	82.7	86.6	19.0	21.4	79.8	84.0	18.5	20.8	85.9	89.3	19.6	22.0
2012	82.8	86.6	19.1	21.4	79.8	84.1	18.5	20.9	86.0	89.4	19.8	22.1
2013	82.9	86.7	19.2	21.5	79.9	84.1	18.6	20.9	86.1	89.5	19.9	22.2
2015	83.1	86.8	19.3	21.6	80.0	84.2	18.7	21.0	86.4	89.7	20.2	22.4
2020	83.5	87.2	19.7	22.0	80.3	84.4	18.8	21.1	87.0	90.2	20.7	22.9
2025	83.9	87.5	20.0	22.3	80.5	84.6	19.0	21.3	87.5	90.6	21.2	23.4
2030	84.3	87.9	20.4	22.5	80.8	84.8	19.2	21.4	88.1	91.1	21.7	23.8
2035	84.7	88.2	20.7	22.8	81.0	85.0	19.3	21.6	88.6	91.5	22.2	24.2
2040	85.1	88.5	21.0	23.1	81.3	85.2	19.5	21.7	89.1	91.9	22.6	24.6
2045	85.5	88.8	21.2	23.3	81.5	85.4	19.7	21.9	89.6	92.2	23.0	25.0
2050	85.8	89.1	21.5	23.6	81.7	85.6	19.8	22.0	90.0	92.6	23.4	25.3
2055	86.2	89.3	21.8	23.8	82.0	85.8	20.0	22.2	90.4	93.0	23.8	25.7
2060	86.5	89.6	22.0	24.0	82.2	86.0	20.1	22.3	90.8	93.3	24.2	26.0
2065	86.8	89.9	22.3	24.3	82.4	86.2	20.3	22.4	91.2	93.6	24.5	26.3
2070	87.2	90.1	22.5	24.5	82.6	86.3	20.4	22.6	91.6	93.9	24.9	26.6
2075	87.5	90.4	22.8	24.7	82.9	86.5	20.6	22.7	92.0	94.2	25.2	26.9
2080	87.8	90.6	23.0	24.9	83.1	86.7	20.7	22.8	92.3	94.5	25.5	27.2
2085	88.0	90.9	23.2	25.1	83.3	86.8	20.9	23.0	92.7	94.8	25.8	27.5
2090	88.3	91.1	23.5	25.3	83.5	87.0	21.0	23.1	93.0	95.1	26.1	27.8

[a] The cohort life expectancy at a given age for a given year is the average remaining number of years expected prior to death for a person at that exact age, born on January 1, using the mortality rates for the series of years in which the individual will actually reach each succeeding age if he or she survives.

[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 2010. For birth years after 2010, these values depend on estimated death rates.

[c] Age 65 cohort life expectancy for those attaining age 65 in calendar years 1940 though 2010 depends on actual death rates or on a combination of actual and estimated death rates. After 2010, these values depend on estimated death rates.

B. ECONOMIC ASSUMPTIONS AND METHODS

The three alternative sets of economic assumptions reflect a continuation of the gradual recovery from the recession that started in December 2007. The intermediate assumptions 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: a faster recovery, stronger long-term economic growth, and relatively optimistic levels for other parameters. The high-cost assumptions represent a more pessimistic scenario: a slower recovery, weaker long-term economic growth, and relatively pessimistic levels for other parameters.

Actual economic data were available through the third quarter of 2013 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 with GDP about 7 percent below the estimated sustainable trend level. The annual growth rate in real GDP has been positive in all years since then, but not as strong as in most past 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 economy is projected to return to its sustainable trend level of output by 2021 for the intermediate assumptions, 2019 for the low-cost assumptions, and 2023 for the high-cost assumptions, about 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 key economic assumptions underlying the three sets of projections of the future financial status of the OASI and DI Trust Funds are discussed in the remainder of this section.

[1] See www.nber.org/cycles/cyclesmain.html.

1. Productivity Assumptions

Total U.S. economy productivity is defined as 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 2.27, 1.10, 1.39, 1.79 and 2.15 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 1.73 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.[2] These rates of increase are unchanged from the 2013 report.

The average annual rate of change in total economy productivity from 2007 (the end of the last complete economic cycle) to 2013 is estimated to be 1.36 percent. For the intermediate assumptions, the annual change in productivity is assumed to be 1.57 percent for 2014, then increase to 1.92 percent for 2015, gradually decline to 1.55 percent for 2020, and then rise to its ultimate value of 1.68 percent for 2023 and later. For the low-cost assumptions, the assumed annual change in productivity is 1.88 percent for 2014, then increases to 2.21 percent for 2015, averages 1.92 percent for 2016 through 2021, and reaches its ultimate value of 1.98 percent for 2022. For the high-cost assumptions, the assumed annual change in productivity is 1.00 percent for 2014, then averages 1.69 percent for 2015 through 2017, 1.34 percent for 2018 through 2023, and reaches its ultimate value of 1.38 percent for 2026 and later.

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

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[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.

[2] These assumptions are consistent with ultimate annual increases in private non-farm business productivity of 2.42, 2.06, and 1.69 percent. Compared to total-economy productivity, private non-farm business productivity is a more widely known concept that excludes the farm, government, non-profit institution, and private household sectors.

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, 7.5, 4.7, 2.2, and 2.5 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 4.0 percent, respectively. The estimated average annual change from 2007 (the end of the last complete economic cycle) to 2013 is 2.1 percent for the CPI and 1.5 percent for the GDP deflator.

The Trustees set the ultimate annual increases in the CPI to 3.4, 2.7, and 2.0 percent for the low-cost, intermediate, and high-cost assumptions, respectively. The CPI assumptions differ in three ways from those in the 2013 report. First, the ultimate annual change in the CPI in the intermediate assumptions is 0.1 percentage point lower. Second, the low-cost assumptions now include a higher (rather than lower), and the high-cost assumptions a lower (rather than higher), rate of increase in the CPI than the intermediate assumptions. Third, the spread in the assumed rates of increase in the CPI across the alternatives is now narrower. Note that a higher price inflation rate results in faster earnings and revenue growth immediately, while the resulting added growth in benefit levels occurs with a delay, causing an overall improvement in the actuarial balance. Similarly, a lower price inflation rate causes an overall decline in the actuarial balance.

The Federal Reserve Board's monetary policy changed in the 1980s toward more vigilance in preventing high inflation. Recognizing this, the Trustees lowered the assumed ultimate annual rate of increase in the CPI for the intermediate case from 4.0 percent for the 1996 report to 2.8 percent for the 2004 through 2013 reports. Consistent with the Board's continued emphasis on preventing inflation, as indicated by their current target for the GDP deflator,[1] the Trustees have decided to decrease the ultimate annual change in the CPI by 0.1 percentage point for the intermediate assumptions.

For the intermediate assumptions, the Trustees assume the annual change in the CPI will be 1.61 percent for 2014, 1.95 percent for 2015, and then, as the economy moves toward full employment, increase gradually to the ultimate growth rate of 2.70 percent for 2020 and later. For the low-cost assumptions,

[1] The Federal Open Market Committee (FOMC) targets a rate of 2 percent for the price index for Personal Consumption Expenditures, which is substantially the same as the GDP deflator. See www.federalreserve.gov/newsevents/press/monetary/20120125c.htm.

the Trustees assume the annual change in the CPI will be 1.79 percent for 2014, increase to 2.82 percent for 2015, and reach its ultimate annual growth rate of 3.40 percent for 2019 and later. For the high-cost assumptions, the Trustees assume the annual rate of change in the CPI will increase from 1.48 percent for 2014 to the ultimate annual change of 2.00 percent for 2020 and later.

The annual increase in the GDP deflator differs from the annual increase in the CPI because the two indices are constructed using different computational methods and coverage. The difference between the rate of change in the CPI and the rate of change in the GDP deflator is called the price differential in this report. For the 41 years from 1966 to 2007, covering the last five complete economic cycles, the average annual price differential was 0.5 percent. From 2007 (the end of the last complete economic cycle) to 2013, the average annual price differential is estimated to be 0.6 percent.

The Trustees assume the ultimate price differentials 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 assumed ultimate annual increase in the GDP deflator is 3.1 (3.4 less 0.3), 2.3 (2.7 less 0.4), and 1.5 (2.0 less 0.5) percent for the low-cost, intermediate, and high-cost alternatives, respectively. The ultimate price differentials for the three alternatives are unchanged from the 2013 report.

The price differential was 1.6 percentage points for 2011, 0.4 percentage point for 2012, and is estimated to be 0.0 percentage point for 2013. 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 do not assume any future fluctuations in oil prices because such fluctuations are inherently unpredictable. For the intermediate assumptions, the Trustees assume the price differential will be 0.2 percentage point for 2014 and 0.4 percentage point for 2015 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 in certain circumstances, the automatic cost-of-living benefit increases.

Average U.S. earnings is defined as the ratio of the sum of total U.S. wage and salary disbursements and net proprietors' income to the sum of total U.S. civilian employment and armed forces. 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 includes 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 -0.64 percent over the economic cycles 1966-73, 1973-79, 1979-89, 1989-2000, and 2000-07, respectively. From 2007 (the end of the last complete economic cycle) to 2013, the average annual change in average hours worked is estimated to be -0.15 percent.

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 unchanged from the 2013 report.

The average annual change in the ratio of earnings to total compensation was -0.20 percent from 1966 to 2007. Most of this decrease was due to the relative increase in the cost of employer-sponsored group health insurance for wage workers. Assuming that the level of total employee compensation is not affected by 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. The Trustees assume that the total amount of future employer-sponsored group health insurance will increase more slowly than in the past due to provisions of the Affordable Care Act of 2010, as described in the 2010 report. Data from the Bureau of Economic Analysis (BEA) indicate that the other significant component of non-wage employee compensation is employer contributions to retirement plans. The other component is assumed to 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 from 2025 to 2088 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 ratio of wages to employee compensation is assumed to decline from 0.806 for 2013 to 0.737 for 2088. 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 both in the numerator and in the denominator. As a result, the rate of decline in earnings to compensation (which over the same period averages 0.11 percent 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 proprietors' 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 0.627. The ratio declined from 0.648 for 2001 to 0.606 for 2012. The Trustees assume that this ratio will rise as the economy recovers, reaching a level of 0.631 for 2022. For years after 2022, relative sizes of different sectors of the economy are assumed to remain constant, and therefore project the ratio of total compensation to GDP to remain unchanged at the 2022 level. The historical and projected ratios of total compensation to GDP are lower than in the 2013 report because BEA changed the methodology of GDP measurement in July 2013.[1] The new method results in a higher level of GDP, but without a corresponding change in compensation.

The projected average annual growth rate in average nominal U.S. earnings from 2025 to 2088 is about 3.85 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 2.30 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 5.17 percent for the low-cost assumptions and 2.55 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 2088 are 5.16, 3.83, and 2.52 percent for

[1] "2013 Comprehensive Revision of the National Income and Product Accounts." See www.bea.gov/national/an1.htm#2013comprehensive.

the low-cost, intermediate, and high-cost assumptions, respectively. The Trustees estimate that the annual rate of change in the average covered wage is 1.92 percent for 2013. For the intermediate assumptions, as the economy recovers, the Trustees assume the annual rate of change in the average covered wage will average 4.37 percent from 2013 to 2023. Thereafter, the assumed average annual rate of change in the average covered wage is 3.83 percent.

4. Assumed Real-Wage Differential

The Trustees have traditionally expressed the real increase in the average OASDI covered wage in the form of a real-wage differential—the annual percentage change in the average covered wage minus the annual percentage change in the CPI. For the 41-year period including 1967 through 2007, covering the last five complete economic cycles, the real-wage differential averaged 0.89 percentage point, the result of averages of 1.48, 0.01, 0.45, 1.57, and 0.60 percentage points over the economic cycles 1966-73, 1973-79, 1979-89, 1989-2000, and 2000-07, respectively.

For the years 2025-88, the Trustees assume that the annual real-wage differentials for OASDI covered employment will average 1.76, 1.13, and 0.52 percentage points for the low-cost, intermediate, and high-cost assumptions, respectively.

The estimated real-wage differential averaged -0.19 percentage point for 2008 through 2013 (the years since the last complete economic cycle). For the intermediate assumptions, the Trustees assume that the real-wage differential will increase from 2.18 percentage points for 2014 to 2.97 percentage points for 2015, an improvement that reflects the economic recovery. Thereafter, the real-wage differential gradually declines to an average of 1.13 percentage points for 2025-88. For the low-cost assumptions, the real-wage differential increases from 3.00 percentage points for 2014 to 3.88 percentage points for 2015, and gradually declines to its long-run average of 1.76 percentage points for 2025-88. For the high-cost assumptions, the real-wage differential increases from 0.81 percentage point for 2014 to 2.10 percentage points for 2016, and gradually declines to an average of 0.52 percentage point for 2025-88.

Table V.B1.—Principal Economic Assumptions

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]
Historical data:							
5-year periods:							
1960 to 1965 . . .	3.27	-0.18	0.16	1.36	3.22	1.24	1.98
1965 to 1970 . . .	2.06	-0.31	-0.68	4.03	5.84	4.23	1.61
1970 to 1975 . . .	2.07	-0.50	-0.87	6.60	6.62	6.76	-0.18
1975 to 1980 . . .	0.95	-0.32	-0.17	7.19	8.87	8.91	-0.06
1980 to 1985 . . .	1.74	-0.33	0.02	5.21	6.53	5.22	1.29
1985 to 1990 . . .	1.37	-0.19	-0.08	3.11	4.75	3.83	0.92
1990 to 1995 . . .	1.26	-0.11	0.41	2.44	3.57	3.03	0.54
1995 to 2000 . . .	2.34	0.28	0.14	1.67	5.31	2.43	2.88
2000 to 2005 . . .	2.64	-0.41	-0.82	2.35	2.69	2.49	0.21
2005 to 2010 . . .	1.61	-0.09	-0.48	1.93	2.55	2.30	0.26
Economic cycles:[c]							
1966 to 1973 . . .	2.27	-0.29	-0.71	4.60	6.10	4.61	1.48
1973 to 1979 . . .	1.10	-0.43	-0.56	7.52	8.55	8.54	0.01
1979 to 1989 . . .	1.39	-0.28	0.00	4.68	5.80	5.31	0.45
1989 to 2000 . . .	1.79	0.05	0.15	2.20	4.52	2.96	1.57
2000 to 2007 . . .	2.15	-0.23	-0.64	2.50	3.23	2.65	0.60
2007 to 2013 . . .	1.36	0.01	-0.15	1.51	1.89	2.08	-0.19
Single years:							
2003	3.31	-0.66	-1.49	2.00	2.51	2.22	0.30
2004	2.66	-0.27	0.02	2.74	4.67	2.61	2.06
2005	1.84	-0.22	-0.23	3.21	3.70	3.52	0.18
2006	0.84	0.49	-0.04	3.07	4.72	3.19	1.53
2007	1.06	-0.05	-0.38	2.66	4.50	2.88	1.62
2008	0.77	-0.06	-0.62	1.92	2.47	4.09	-1.62
2009	2.88	-0.66	-1.89	0.80	-1.52	-0.67	-0.85
2010	2.52	-0.17	0.57	1.22	2.69	2.07	0.62
2011	0.28	0.34	0.99	1.96	3.16	3.56	-0.39
2012	1.04	0.31	-0.07	1.75	2.69	2.10	0.59
2013[d]	0.73	0.30	0.11	1.39	1.92	1.43	0.49
Intermediate:							
2014	1.57	-0.14	0.17	1.44	3.78	1.61	2.18
2015	1.92	-0.17	0.08	1.55	4.92	1.95	2.97
2016	1.87	0.09	0.08	1.78	5.01	2.18	2.84
2017	1.82	0.15	0.07	1.98	4.95	2.38	2.57
2018	1.61	0.06	0.05	2.18	4.70	2.58	2.12
2019	1.58	-0.18	0.02	2.29	4.28	2.69	1.58
2020	1.55	-0.19	[e]	2.30	4.12	2.70	1.42
2021	1.63	-0.17	-0.03	2.30	4.11	2.70	1.41
2022	1.66	-0.13	-0.05	2.30	4.02	2.70	1.32
2023	1.68	-0.12	-0.05	2.30	3.85	2.70	1.15
2020 to 2025 . . .	1.67	-0.13	-0.05	2.30	3.92	2.70	1.22
2025 to 2088 . . .	1.68	-0.11	-0.05	2.30	3.83	2.70	1.13

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]
Low-cost:							
2014	1.88	-0.14	0.31	1.71	4.79	1.79	3.00
2015	2.21	-0.15	0.24	2.52	6.70	2.82	3.88
2016	2.12	0.12	0.22	3.05	7.01	3.35	3.66
2017	1.92	0.18	0.17	3.09	6.43	3.39	3.04
2018	1.64	0.11	0.09	3.08	5.58	3.38	2.20
2019	1.92	-0.12	0.07	3.10	5.34	3.40	1.94
2020	2.00	-0.12	0.06	3.10	5.38	3.40	1.98
2021	1.93	-0.10	0.05	3.10	5.31	3.40	1.91
2022	1.98	-0.06	0.05	3.10	5.38	3.40	1.98
2023	1.98	-0.03	0.05	3.10	5.20	3.40	1.80
2020 to 2025	1.96	-0.04	0.05	3.10	5.23	3.40	1.83
2025 to 2088	1.98	-0.02	0.05	3.10	5.16	3.40	1.76
High-cost:							
2014	1.00	-0.14	-0.05	1.23	2.29	1.48	0.81
2015	1.63	-0.18	-0.13	0.96	3.16	1.46	1.71
2016	1.75	0.07	-0.06	0.98	3.58	1.48	2.10
2017	1.69	0.11	-0.03	1.18	3.75	1.68	2.07
2018	1.43	0.02	-0.03	1.38	3.55	1.88	1.68
2019	1.39	-0.23	-0.04	1.49	3.24	1.99	1.25
2020	1.38	-0.25	-0.05	1.50	3.22	2.00	1.22
2021	1.30	-0.24	-0.06	1.50	3.10	2.00	1.10
2022	1.24	-0.22	-0.08	1.50	2.96	2.00	0.96
2023	1.31	-0.21	-0.11	1.50	2.70	2.00	0.70
2020 to 2025	1.32	-0.21	-0.11	1.50	2.75	2.00	0.75
2025 to 2088	1.38	-0.19	-0.15	1.50	2.52	2.00	0.52

[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] Economic cycles are shown from peak to peak, except for the last cycle, which is not yet complete.
[d] Historical data are not available for the full year. Estimated values vary slightly by alternative and are shown for the intermediate assumptions.
[e] Greater than -0.005 and less than 0.005 percent.

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 reflect 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 across cohorts born through 1948.

The annual rate of growth in the size of 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 0.9 percent per year from 2013 to 2023 and 0.5 percent per year over the remainder of the 75-year projection period.

The projected labor force participation rates are derived 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 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 2.9 percent for 2088.

For men age 16 and over, the projected age-adjusted labor force participation rate[1] for 2088 is 73.1 percent for each of the low-cost, intermediate, and high-cost assumptions. For women age 16 and over, the projected age-adjusted labor force participation rates for 2088 are 60.9, 60.8, and 60.6 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These rates are higher than the actual 2012 levels published by the Bureau of Labor Statistics of 70.6 percent for men and 58.0 percent for women, primarily due to the assumed increase in life expectancy. In the first ten years, the assumed labor force participation rates also increase as the economic recovery draws more people into the labor force. Increasing disability prevalence rates offset these increases somewhat in the intermediate and high-cost assumptions, but a decrease in disability prevalence further contributes to increases in labor force participation in the low-cost assumptions.

The unemployment rates presented in table V.B2 are in the most commonly cited form, the civilian rate. For years through 2023, the table presents total civilian rates without adjustment for the changing age-sex distribution of the population. For years after 2023, the table presents unemployment rates as age-sex-adjusted rates, using the age-sex distribution of the 2011 civilian labor force. Age-sex-adjusted rates allow for more meaningful comparisons across longer time periods. The age-sex adjusted unemployment rate is about 0.1 percentage point lower than the unadjusted rate for 2024.

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.[2] For each alternative, the total civilian unemployment rate moves toward the ultimate assumed rate as the economy moves toward the long-range sustainable growth path.

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 2013 report. The ultimate rates are reached in 2020 for the low-cost, 2021 for the intermediate, and 2023 for the high-cost assumptions.

[1] The Office of the Chief Actuary adjusts the labor force participation rates to the 2011 age distribution of the civilian noninstitutional U.S. population.

[2] Potential GDP is the level of GDP assuming the economy is operating at the underlying sustainable trend rate of growth.

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. Consequently, 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 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 2012 was only 4.0 percent above the 2007 level. The estimated real GDP growth from 2012 to 2013 is 1.8 percent.

For the intermediate assumptions, the average annual growth in real GDP is 2.8 percent from 2013 to 2023, the approximate sum of component growth rates of 1.1 percent for total employment, 1.7 percent for productivity, and 0.0 percent for average hours worked. The projected average annual growth in real GDP of 2.8 percent for this period is 0.6 percentage point higher than the underlying sustainable trend rate of 2.2 percent. This 0.6 percentage point above-trend component reflects a relatively rapid increase in employment as the economy recovers and the age-sex adjusted unemployment rate falls from 7.4 percent in 2013 to its assumed ultimate level of 5.5 percent in 2021. After 2023, the assumptions do not explicitly reflect economic cycles. 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 2023, the annual growth in real GDP averages 2.1 percent, based on the projected average annual growth rate of 0.5 percent for total employment and the assumed ultimate growth rates of 1.7 percent for productivity and -0.05 percent for average hours worked. The assumed growth rate of real GDP is slower than the past average growth rate mainly because the working-age population is expected to grow slower than in the past.

For the low-cost assumptions, the annual growth in real GDP averages 3.4 percent over the decade ending in 2023. 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 2.1 percent for the decade ending in 2023.

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[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.

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 defined as 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 1966 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 1966-73, 1973-79, 1979-89, 1989-2000, and 2000-07, 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. These rates are unchanged from the 2013 report.

The actual average annual nominal interest rate was approximately 1.5 percent for 2012, which means that securities newly issued in 2012 would yield 1.5 percent if held one year. Estimated average prices rose from 2012 to 2013 by approximately 1.4 percent. The annual real interest rate for 2013 is 0.0 percent, the approximate difference between the nominal interest rate and the rate of price increase. For the 10-year short-range projection period, projected nominal interest rates depend on changes in the economic cycle and in the CPI. When combined with the ultimate CPI assumptions of 3.4, 2.7, and 2.0 percent, the assumed ultimate real interest rates yield ultimate nominal interest rates of 6.8 percent for the low-cost assumptions, 5.6 percent for the intermediate assumptions, and 4.4 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.

Table V.B2.—Additional Economic Factors

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]
Historical data:						
5-year periods:						
1960 to 1965	5.5	1.3	1.6	5.0	4.0	2.5
1965 to 1970	3.9	2.2	2.1	3.5	5.9	1.0
1970 to 1975	6.1	2.5	1.5	2.7	6.7	0.0
1975 to 1980	6.8	2.7	2.9	3.7	8.5	-0.9
1980 to 1985	8.3	1.5	1.5	3.3	12.1	6.9
1985 to 1990	5.9	1.7	2.0	3.4	8.5	5.1
1990 to 1995	6.6	1.0	0.9	2.6	7.0	4.3
1995 to 2000	4.6	1.5	1.8	4.3	6.2	3.9
2000 to 2005	5.4	0.9	0.7	2.5	4.6	2.4
2005 to 2010	6.8	0.6	-0.4	0.8	3.8	1.8
Economic cycles:[h]						
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	3.1	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	0.9	2.4	4.6	2.2
2007 to 2013	8.2	0.3	-0.2	1.0	2.5	0.9
Single years:						
2003	6.0	1.1	1.0	2.8	4.1	2.6
2004	5.5	0.6	1.1	3.8	4.3	1.5
2005	5.1	1.3	1.7	3.4	4.3	0.8
2006	4.6	1.4	1.8	2.7	4.8	1.1
2007	4.6	1.1	1.1	1.8	4.7	1.9
2008	5.8	0.8	-0.4	-0.3	3.6	0.6
2009	9.3	-0.1	-3.7	-2.8	2.9	4.4
2010	9.6	-0.2	-0.6	2.5	2.8	0.9
2011	8.9	-0.2	0.6	1.8	2.4	-0.7
2012	8.1	0.9	1.8	2.8	1.5	0.3
2013[i]	7.4	0.3	1.0	1.8	1.9	0.0

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]
Intermediate:						
2014	6.9	0.8	1.3	3.1	2.9	0.3
2015	6.7	1.1	1.3	3.3	3.6	0.9
2016	6.5	1.1	1.3	3.3	4.2	1.4
2017	6.2	1.0	1.3	3.2	4.7	1.8
2018	5.9	1.1	1.3	3.0	5.1	2.1
2019	5.8	1.0	1.2	2.8	5.4	2.4
2020	5.6	0.9	1.0	2.6	5.5	2.7
2021	5.6	0.7	0.8	2.4	5.5	2.8
2022	5.6	0.5	0.5	2.2	5.5	2.8
2023	5.6	0.5	0.5	2.1	5.6	2.8
2025	5.5	0.5	0.5	2.1	5.6	2.9
2030	5.5	0.4	0.4	2.1	5.6	2.9
2035	5.5	0.5	0.5	2.1	5.6	2.9
2040	5.5	0.6	0.6	2.2	5.6	2.9
2045	5.5	0.6	0.6	2.2	5.6	2.9
2050	5.5	0.5	0.5	2.1	5.6	2.9
2055	5.5	0.4	0.4	2.1	5.6	2.9
2060	5.5	0.4	0.4	2.1	5.6	2.9
2065	5.5	0.4	0.4	2.1	5.6	2.9
2070	5.5	0.5	0.5	2.1	5.6	2.9
2075	5.5	0.5	0.5	2.1	5.6	2.9
2080	5.5	0.4	0.4	2.1	5.6	2.9
2085	5.5	0.4	0.4	2.0	5.6	2.9
2090	5.5	0.4	0.4	2.0	5.6	2.9
Low-cost:						
2014	6.7	0.9	1.7	4.0	3.3	0.1
2015	6.1	1.4	2.0	4.5	4.9	0.5
2016	5.5	1.4	2.0	4.3	5.8	1.6
2017	5.1	1.3	1.8	3.9	6.1	2.4
2018	4.8	1.3	1.5	3.3	6.1	2.7
2019	4.7	1.2	1.2	3.3	6.3	2.7
2020	4.6	0.9	1.0	3.1	6.5	2.9
2021	4.6	0.7	0.8	2.8	6.6	3.1
2022	4.6	0.7	0.6	2.7	6.8	3.2
2023	4.6	0.6	0.6	2.6	6.8	3.3
2025	4.5	0.6	0.6	2.6	6.8	3.4
2030	4.5	0.5	0.5	2.6	6.8	3.4
2035	4.5	0.6	0.6	2.6	6.8	3.4
2040	4.5	0.7	0.7	2.8	6.8	3.4
2045	4.5	0.8	0.8	2.8	6.8	3.4
2050	4.5	0.7	0.7	2.8	6.8	3.4
2055	4.5	0.7	0.7	2.8	6.8	3.4
2060	4.5	0.7	0.7	2.8	6.8	3.4
2065	4.5	0.8	0.8	2.8	6.8	3.4
2070	4.5	0.8	0.8	2.9	6.8	3.4
2075	4.5	0.9	0.9	2.9	6.8	3.4
2080	4.5	0.8	0.8	2.9	6.8	3.4
2085	4.5	0.8	0.8	2.9	6.8	3.4
2090	4.5	0.8	0.8	2.8	6.8	3.4

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]
High-cost:						
2014	7.4	0.7	0.7	1.7	2.1	0.4
2015	7.8	0.7	0.3	1.8	2.3	0.6
2016	7.9	0.7	0.6	2.3	2.9	0.9
2017	7.7	0.7	0.8	2.5	3.6	1.3
2018	7.6	0.7	0.9	2.3	4.0	1.7
2019	7.4	0.7	0.8	2.2	4.3	2.0
2020	7.2	0.6	0.8	2.2	4.5	2.3
2021	7.0	0.6	0.9	2.2	4.5	2.5
2022	6.7	0.6	0.8	2.0	4.5	2.5
2023	6.6	0.5	0.6	1.8	4.5	2.5
2025	6.5	0.4	0.4	1.7	4.4	2.4
2030	6.5	0.4	0.4	1.6	4.4	2.4
2035	6.5	0.4	0.4	1.6	4.4	2.4
2040	6.5	0.4	0.4	1.7	4.4	2.4
2045	6.5	0.3	0.3	1.6	4.4	2.4
2050	6.5	0.2	0.2	1.5	4.4	2.4
2055	6.5	0.1	0.1	1.3	4.4	2.4
2060	6.5	0.1	0.1	1.3	4.4	2.4
2065	6.5	j	j	1.3	4.4	2.4
2070	6.5	j	j	1.3	4.4	2.4
2075	6.5	j	j	1.2	4.4	2.4
2080	6.5	j	j	1.2	4.4	2.4
2085	6.5	-0.1	-0.1	1.1	4.4	2.4
2090	6.5	-0.1	-0.1	1.1	4.4	2.4

[a] The Office of the Chief Actuary adjusts the civilian unemployment rates for 2024 and later to the age-sex distribution of the civilian labor force in 2011. For years through 2023, the values are the total rates without adjustment for the changing age-sex distribution.
[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 2009 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] Economic cycles are shown from peak to peak, except for the last cycle, which is not yet complete.
[i] Historical data are not available for the full year. Estimated values vary slightly by alternative and are shown for the intermediate assumptions.
[j] Greater than -0.005 and less than 0.005 percent.

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 many 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 2023. 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. Cost-of-living adjustments resumed in December 2011. Under all three sets of economic assumptions, the Trustees assume a smooth trend in future price increases, without regard to annual fluctuations that will

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

occur. Therefore, the projections include annual cost-of-living adjustments in all 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. Starting in 2000, the retirement earnings test no longer applies beginning with the month of normal retirement age attainment. 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, 1975-2023

Calendar year	Cost-of-living benefit increase[a] (percent)	Average wage index (AWI)[b]		Contribution and benefit base[c]	Retirement earnings test exempt amount	
		Amount	Increase (percent)		Under NRA[d]	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
2011	3.6	42,979.61	3.1	106,800	14,160	37,680
2012	1.7	44,321.67	3.1	110,100	14,640	38,880
Intermediate:						
2013	[g]1.5	45,128.76	1.8	[g]113,700	[g]15,120	[g]40,080
2014	1.5	46,786.77	3.7	[g]117,000	[g]15,480	[g]41,400
2015	2.0	49,058.50	4.9	119,100	15,840	42,120
2016	2.2	51,505.89	5.0	123,600	16,440	43,680
2017	2.4	54,052.13	4.9	129,600	17,160	45,720
2018	2.6	56,590.98	4.7	136,200	18,000	48,000
2019	2.7	59,018.85	4.3	142,800	18,960	50,400
2020	2.7	61,453.22	4.1	149,400	19,800	52,800
2021	2.7	63,979.68	4.1	156,000	20,640	55,080
2022	2.7	66,556.71	4.0	162,300	21,600	57,360
2023	2.7	69,129.06	3.9	168,900	22,440	59,640

Table V.C1.—Cost-of-Living Benefit Increases, Average Wage Index, Contribution and Benefit Bases, and Retirement Earnings Test Exempt Amounts, 1975-2023 (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:						
2013	[g]1.5	$45,167.40	1.9	[g]$113,700	[g]$15,120	[g]$40,080
2014	1.7	47,267.39	4.6	[g]117,000	[g]15,480	[g]41,400
2015	3.0	50,382.48	6.6	119,400	15,840	42,120
2016	3.4	53,894.61	7.0	124,800	16,560	44,040
2017	3.4	57,365.57	6.4	133,200	17,640	47,040
2018	3.4	60,578.54	5.6	142,500	18,840	50,280
2019	3.4	63,823.32	5.4	151,500	20,160	53,520
2020	3.4	67,253.43	5.4	160,200	21,240	56,520
2021	3.4	70,825.38	5.3	168,600	22,320	59,520
2022	3.4	74,636.44	5.4	177,600	23,520	62,760
2023	3.4	78,527.51	5.2	187,200	24,840	66,120
High-cost:						
2013	[g]1.5	45,105.29	1.8	[g]113,700	[g]15,120	[g]40,080
2014	1.4	46,114.81	2.2	[g]117,000	[g]15,480	[g]41,400
2015	1.4	47,560.56	3.1	119,100	15,840	42,120
2016	1.5	49,256.28	3.6	121,800	16,200	43,080
2017	1.7	51,103.87	3.8	125,700	16,680	44,400
2018	1.9	52,927.59	3.6	130,200	17,280	45,960
2019	2.0	54,656.72	3.3	135,000	17,880	47,640
2020	2.0	56,418.17	3.2	139,800	18,600	49,440
2021	2.0	58,168.47	3.1	144,300	19,200	51,000
2022	2.0	59,886.69	3.0	149,100	19,800	52,680
2023	2.0	61,502.02	2.7	153,600	20,400	54,240

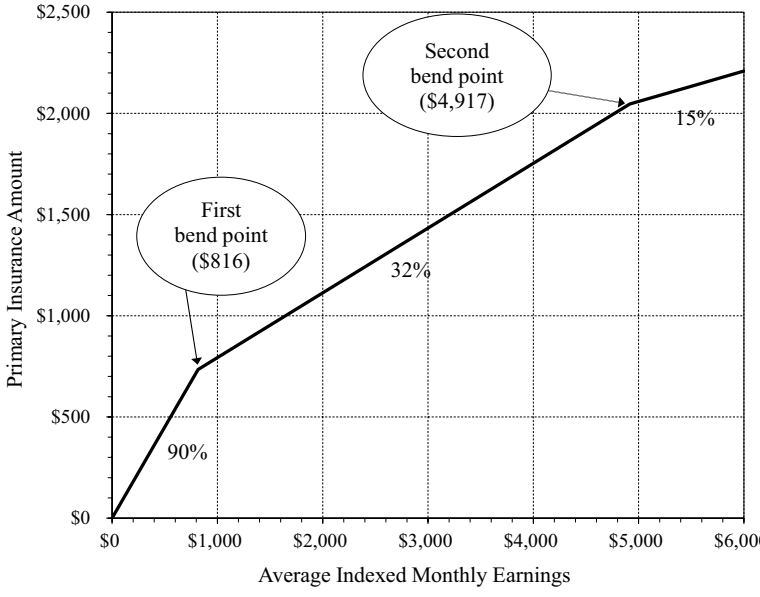
[a] Effective with benefits payable for June in each year 1975-82, and for December in each year after 1982.
[b] See table VI.G6 for projected dollar amounts of the AWI beyond 2023.
[c] Public Law 95-216 specified amounts for 1978-81. Public Law 101-239 changed the indexing procedure and caused slightly 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 2014, and also shows projected values through 2023. 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-

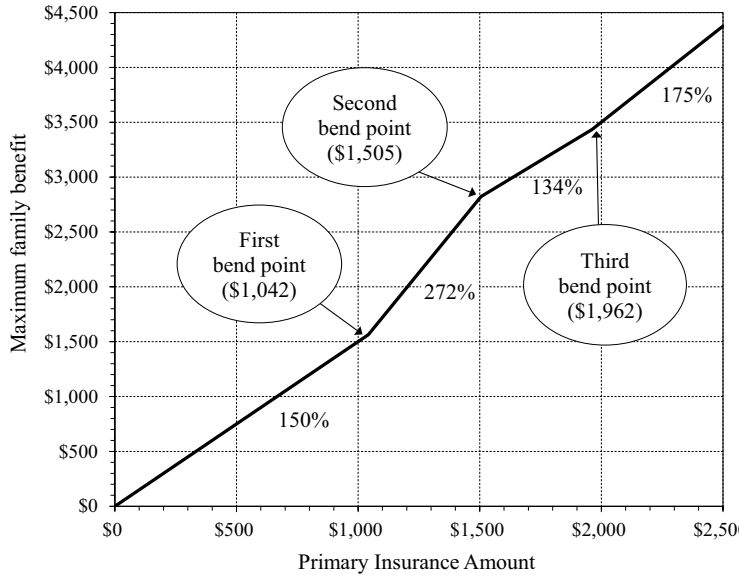
tor by the portion of the worker's AIME that falls within the three respective ranges, and then adds the resulting products together.

Figure V.C1.—Primary-Insurance-Amount Formula for Those Newly Eligible in 2014



- *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 (maximum family benefit).* 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.—OASI Maximum-Family-Benefit Formula for Those Newly Eligible in 2014



- *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 without 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 1978-2023

Calendar year	AIME bend points in PIA formula[a]		PIA bend points in OASI maximum-family-benefit formula[b]			Earnings required for a quarter of coverage	Old-law contribution and benefit base[c]
	First	Second	First	Second	Third		
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
2013	791	4,768	1,011	1,459	1,903	1,160	84,300
2014	816	4,917	1,042	1,505	1,962	1,200	87,000
Intermediate:							
2015	831	5,007	1,061	1,532	1,998	1,220	88,500
2016	861	5,191	1,100	1,588	2,072	1,270	91,800
2017	903	5,443	1,154	1,665	2,172	1,330	96,300
2018	948	5,714	1,211	1,749	2,281	1,400	101,100
2019	995	5,997	1,271	1,835	2,393	1,460	106,200
2020	1,042	6,279	1,331	1,921	2,506	1,530	111,000
2021	1,086	6,548	1,388	2,004	2,613	1,600	115,800
2022	1,131	6,818	1,445	2,086	2,721	1,670	120,600
2023	1,178	7,098	1,505	2,172	2,833	1,730	125,400

Table V.C2.—Values for Selected Wage-Indexed Program Parameters, Calendar Years 1978-2023 (Cont.)

Calendar year	AIME bend points in PIA formula[a]		PIA bend points in OASI maximum-family-benefit formula[b]			Earnings required for a quarter of coverage	Old-law contribution and benefit base[c]
	First	Second	First	Second	Third		
Low-cost:							
2015	$831	$5,011	$1,062	$1,533	$2,000	$1,220	$88,500
2016	870	5,244	1,112	1,605	2,093	1,280	92,700
2017	927	5,590	1,185	1,710	2,231	1,370	99,000
2018	992	5,979	1,268	1,830	2,386	1,460	105,600
2019	1,056	6,365	1,349	1,947	2,540	1,550	112,500
2020	1,115	6,721	1,425	2,057	2,682	1,640	118,800
2021	1,175	7,081	1,501	2,167	2,826	1,730	125,100
2022	1,238	7,462	1,582	2,283	2,978	1,820	132,000
2023	1,304	7,858	1,666	2,404	3,136	1,920	138,900
High-cost:							
2015	830	5,004	1,061	1,531	1,997	1,220	88,500
2016	849	5,116	1,085	1,566	2,042	1,250	90,600
2017	875	5,277	1,119	1,615	2,106	1,290	93,300
2018	907	5,465	1,158	1,672	2,181	1,330	96,600
2019	941	5,670	1,202	1,735	2,263	1,380	100,200
2020	974	5,872	1,245	1,797	2,343	1,430	103,800
2021	1,006	6,064	1,285	1,856	2,420	1,480	107,100
2022	1,038	6,259	1,327	1,915	2,498	1,530	110,700
2023	1,071	6,454	1,368	1,975	2,575	1,580	114,000

[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 an OASI 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. This formula also determines family maximums for disabled workers first eligible after 1978 and entitled before July 1980.

[c] Contribution and benefit base that would have been in effect without 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 U.S. labor force and unemployment rate (see table V.B2) are based on Bureau of Labor Statistics definitions from the Current Population Survey (CPS). These projections represent the average weekly number of employed and unemployed persons, age 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. For those age 16 and over, projected covered employment is the sum of age-sex components, each reflecting the growth projected for the component's total U.S employment and average weeks worked per year.[1] For the short-range period, the average weeks worked for each component is assumed to increase during the economic recovery. After 2023, the average weeks worked for each component is assumed to remain constant. The projection method also accounts for changes in non-OASDI-covered employment, the

[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.

increase in coverage of Federal civilian employment as a result of the 1983 Social Security Amendments, and changes in the number and employment status of other immigrants residing within the Social Security coverage area.

The covered-worker rate is the ratio of OASDI covered workers to the Social Security area population. For men age 16 and over, the projected age-adjusted covered-worker rates[1] for 2088 are 70.1, 69.6, and 68.9 percent for the low-cost, intermediate, and high-cost assumptions, respectively. For women age 16 and over, the projected covered-worker rates for 2088 are 65.8, 64.9, and 63.9 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These rates are higher than the 2012 levels of 67.1 percent for males and 60.6 percent for women, due to the assumed decreases in unemployment rates and assumed increase in labor force participation rates.

3. Insured Population

Eligibility for worker benefits under the OASDI program requires some threshold 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 2014 is $1,200.

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

[1] Age-adjusted covered worker rates are adjusted to the 2012 age distribution of the Social Security area population.

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.

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 fully insured model uses 30,000 simulated work histories for each sex and birth cohort, representing everyone except the other immigrant population. For the other immigrant population, the model generates substantially lower percentages attaining fully insured status. The model constructs simulated work histories using past coverage rates, earnings distributions, and amounts required for crediting QCs, and develops them in a manner that replicates historical individual variations in work patterns. The probability of covered employment in any year is assumed to be higher for those who have worked more consistently in the recent past. Model parameters are selected so that simulated fully insured percentages are consistent with the fully insured percentages estimated by the short-range model for the recent historical 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 covered worker rates. The long-range model projects these percentages 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 83.6 for December 31, 2011, to 88.8, 89.5, and 90.3 for December 31, 2090, under the low-cost, intermediate, and high-cost alternatives, respectively. Over the projection period, the percentage for females increases significantly, reflecting the past substantial growth in the employment of younger cohorts of women. The percentage for males declines to a small degree, reflecting, in part, increases in the percent of the population that is classified as other immigrants and is thus less likely to have earnings reported and credited to them. Under the intermediate assumptions, for example, the percentage for males decreases slightly from 92.3 to 89.4, and the percentage for females increases from 76.5 to 89.6.

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 several 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 relationship between this percentage, the labor force participation rate at age 62, and the number of months from age 62 to normal retirement age. 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

[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.

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 multiplies the projected number of children with a parent aged 62 and over by the ratio of the number of retired workers aged 62 to 71 to the number of members of the population aged 62 to 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
2012	36,720	2,280	612	4,193	154	1,907	1	45,868
2013	37,893	2,285	625	4,139	150	1,899	1	46,992
Intermediate:								
2014	39,294	2,280	640	4,158	147	1,904	1	48,424
2015	40,824	2,283	654	4,169	145	1,908	1	49,985
2020	49,265	2,320	755	4,192	138	1,937	1	58,608
2025	56,969	2,248	855	4,110	137	1,966	1	66,286
2030	64,251	2,245	930	3,900	142	1,975	1	73,444
2035	69,014	2,257	996	3,667	147	2,017	1	78,099
2040	71,414	2,261	1,021	3,473	146	2,004	1	80,320
2045	72,844	2,262	1,028	3,322	143	1,969	1	81,568
2050	74,649	2,286	1,046	3,208	139	1,926	1	83,256
2055	77,198	2,344	1,070	3,129	136	1,886	1	85,763
2060	80,296	2,441	1,088	3,084	133	1,858	1	88,900
2065	83,381	2,543	1,101	3,073	131	1,841	1	92,072
2070	86,770	2,653	1,136	3,084	129	1,831	1	95,604
2075	89,751	2,750	1,154	3,103	125	1,816	1	98,701
2080	91,965	2,831	1,161	3,138	122	1,795	1	101,014
2085	95,063	2,932	1,195	3,177	119	1,775	1	104,261
2090	98,905	3,036	1,232	3,204	116	1,759	1	108,254

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:								
2014	39,287	2,280	640	4,157	147	1,905	1	48,417
2015	40,802	2,283	654	4,167	145	1,910	1	49,961
2020	49,045	2,321	758	4,174	140	1,957	1	58,395
2025	56,346	2,220	870	4,113	137	2,060	1	65,748
2030	62,996	2,214	957	3,932	141	2,140	1	72,382
2035	67,044	2,213	1,041	3,726	145	2,274	1	76,443
2040	68,752	2,190	1,086	3,554	145	2,348	1	78,076
2045	69,643	2,162	1,117	3,419	144	2,391	1	78,877
2050	71,049	2,158	1,166	3,311	144	2,417	1	80,246
2055	73,371	2,185	1,222	3,231	145	2,439	1	82,595
2060	76,285	2,247	1,269	3,179	149	2,472	1	85,601
2065	79,166	2,319	1,309	3,156	153	2,532	1	88,636
2070	82,192	2,412	1,375	3,159	157	2,606	1	91,901
2075	84,685	2,502	1,424	3,174	160	2,672	1	94,618
2080	86,543	2,581	1,457	3,221	163	2,728	1	96,693
2085	89,753	2,687	1,530	3,299	166	2,783	1	100,218
2090	94,365	2,794	1,616	3,384	169	2,846	1	105,175
High-cost:								
2014	39,302	2,280	640	4,159	147	1,904	1	48,434
2015	40,847	2,283	654	4,172	145	1,907	1	50,008
2020	49,481	2,317	750	4,209	136	1,913	1	58,806
2025	57,647	2,279	838	4,097	138	1,864	1	66,864
2030	65,562	2,294	901	3,854	142	1,803	1	74,556
2035	71,065	2,344	949	3,590	142	1,761	1	79,853
2040	74,223	2,388	956	3,369	136	1,679	1	82,752
2045	76,264	2,424	939	3,204	127	1,588	1	84,549
2050	78,516	2,482	928	3,089	118	1,503	1	86,636
2055	81,317	2,568	921	3,015	110	1,430	1	89,361
2060	84,631	2,677	913	2,978	103	1,372	1	92,675
2065	87,923	2,786	901	2,972	96	1,320	1	95,999
2070	91,647	2,905	907	2,977	89	1,274	1	99,800
2075	95,088	3,006	901	2,987	82	1,229	1	103,294
2080	97,636	3,078	887	2,993	76	1,184	1	105,855
2085	100,463	3,162	889	2,992	70	1,140	1	108,719
2090	103,244	3,253	892	2,969	65	1,101	1	111,527

[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 for benefits to disabled workers who: (1) satisfy the disability insured requirements; (2) are unable to engage in any 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 2013. 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 conversion from disabled-worker to retired-worker beneficiary status at normal retirement age, after which the OASI Trust Fund pays for 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 V.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.

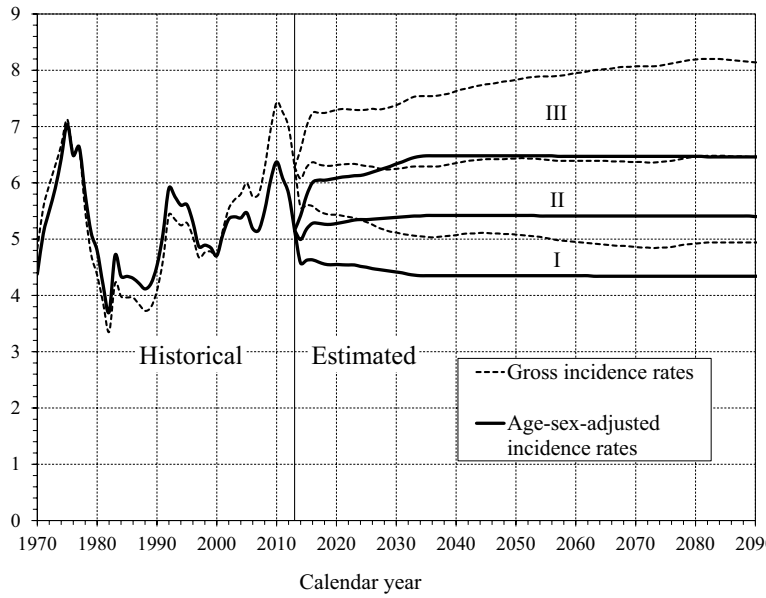
For the first 10 years of the projection period (through 2023), incidence rates reflect several factors including: (1) aspects of program administration, such as efforts to reduce the disability backlog and recent changes to how claims are adjudicated; (2) assumed future unemployment rates; and (3) underlying trends in incidence. As described in section V.B.5, all three sets of economic assumptions reflect a continuation of the gradual economic recovery from the recession that began in December 2007. The corresponding projected unemployment rates follow near-term paths specific to the three alternative sets of economic assumptions, then gradually move toward their respective ultimate levels. At the beginning of the recent period of high unemployment, disability incidence rates were well above the general trend level, with rates reaching a peak in 2010. Over the last few years, incidence rates have subsided as the economy has recovered. At the beginning of the projection period, disability incidence rates briefly drop below the general trend level for each alternative because some of the earlier additional awards would have occurred in a later year. Over the rest of the short-range period, disability incidence rates under each alternative evolve toward their ultimate levels along trajectories consistent with the assumed unemployment rates. After 2023, age-sex-specific incidence rates trend toward the ultimate rates assumed for the long-range projections and reach these ultimate rates in 2033. 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 expected average rates of incidence for the future.

[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.

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 the same as in last year's report. Figure V.C3 illustrates that the estimated ultimate age-sex-adjusted incidence rate of 5.4 is slightly higher than the average rate for the historical period 1970 through 2013, reflecting the increase in female incidence rates over this period. However, a similar comparison using gross incidence rates gives a different result. The estimated ultimate gross incidence rate is substantially greater than the average gross rate over the historical period due to the large changes in the age-sex distribution of the disability-exposed population between 1970 and 2010.

The Trustees assume that the ultimate age-sex-adjusted incidence rates for the low-cost and high-cost alternatives will be 4.3 and 6.5 awards per thousand exposed, or about 17 percent lower and 25 percent higher than the average for the historical period, respectively. These ultimate age-sex-adjusted incidence rates are similar to those in last year's report.

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, recover from their medically-determinable disabling condition, or return to work. Disabled-worker beneficiaries who return to substantial work for an extended period are deemed to have recovered, and their benefits are then terminated. The termination rate is the ratio of the number of terminations for these reasons 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 projects termination rates by duration of entitlement to disabled-worker benefits in the long-range period (post-2023).

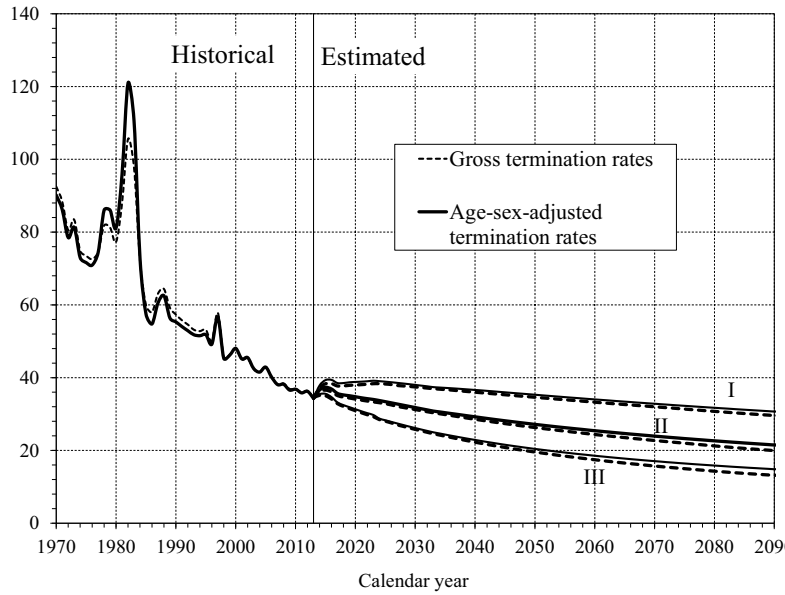
In the short-range period (through 2023), the projected age-sex-adjusted death rate (adjusted to the 2000 disabled-worker population) under the intermediate assumptions gradually declines from 25.7 deaths per thousand beneficiaries in 2013 to about 22.6 per thousand by 2023. The projected age-sex-adjusted recovery rate (medical improvement and return to work) under the intermediate assumptions rises from a level of 8.5 per thousand beneficiaries in 2013 (reflecting temporarily lower levels of continuing disability reviews) to 11.4 per thousand beneficiaries by 2023. 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-2023), 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 12.6 and 8.3 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 (2033) 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 25.7 per thousand beneficiaries in 2013, this rate decreases to 18.1, 11.1, and 6.5 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 (including both recoveries and deaths) for disabled-worker beneficiaries for

the historical period since 1970, and for the projection period through 2090. In the near term, through 2017, recovery terminations are projected to increase, consistent with the assumption that the Social Security Administration will receive sufficient budget appropriations 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 termination rate. A shift in the beneficiary population to older ages, as occurred over the past 20 years when the baby-boom generation moved 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

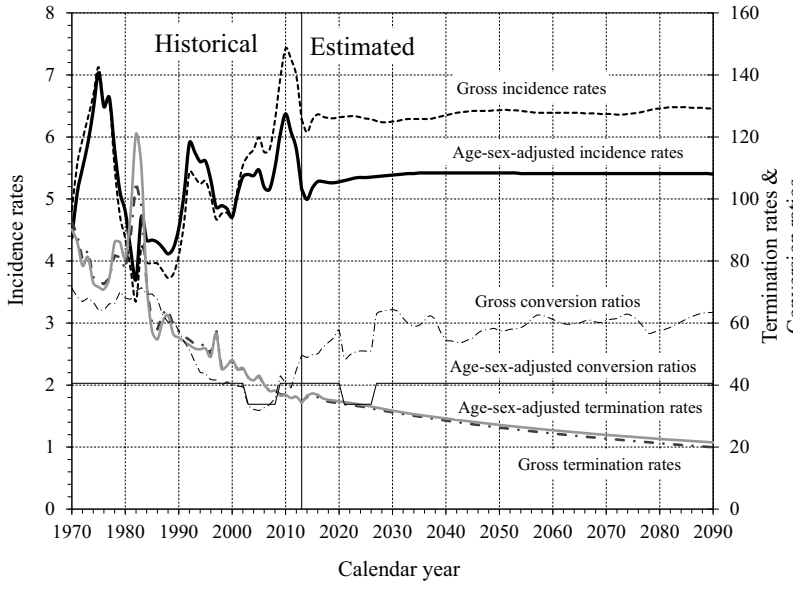
Incidence and termination rates are the foundation for projecting the number of disabled-worker beneficiaries in current-payment status. At normal retirement age, disabled-worker beneficiaries convert to retired-worker status and leave the DI rolls.

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. Incidence rates have varied widely, and the Trustees expect the age-sex adjusted rates under the intermediate assumptions to remain near the middle of the high and low extremes experienced since 1970. Termination rates have declined and the Trustees expect them to continue to decline, largely because of declining death rates.

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. 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. The gross conversion ratio generally increases from 2002 to 2030 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 8.9 million at the end of 2013, to 12.6 million, 14.5 million, and 15.4 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[a]
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	28
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	36	36
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	38
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	58	46
2012	8,827	163	1,900	10,890	59	46
2013	8,941	157	1,889	10,987	59	46
Intermediate:						
2014	9,014	155	1,880	11,050	60	46
2015	9,101	154	1,886	11,141	60	46
2020	9,415	157	1,926	11,498	61	46
2025	9,948	169	1,995	12,112	62	46
2030	9,918	178	2,125	12,222	61	46
2035	10,085	197	2,307	12,589	61	46
2040	10,410	205	2,419	13,034	62	47
2045	11,049	219	2,492	13,760	63	47
2050	11,505	225	2,546	14,276	64	48
2055	11,921	236	2,606	14,764	65	48
2060	12,126	243	2,684	15,052	65	49
2065	12,485	253	2,778	15,516	65	49
2070	12,815	262	2,868	15,944	66	49
2075	13,090	264	2,934	16,289	66	49
2080	13,705	276	2,991	16,973	67	49
2085	14,214	288	3,052	17,554	68	50
2090	14,476	293	3,123	17,892	68	50

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[a]
Low-cost:						
2014	8,936	155	1,853	10,944	59	46
2015	8,921	153	1,833	10,907	59	45
2020	8,698	154	1,770	10,621	56	42
2025	8,754	145	1,779	10,678	54	40
2030	8,363	144	1,848	10,355	51	38
2035	8,212	150	1,986	10,348	49	37
2040	8,287	148	2,092	10,527	48	37
2045	8,685	153	2,185	11,023	48	37
2050	8,988	153	2,268	11,409	48	37
2055	9,297	159	2,356	11,812	48	37
2060	9,485	163	2,464	12,112	47	37
2065	9,828	172	2,606	12,605	47	37
2070	10,199	180	2,758	13,137	47	38
2075	10,603	184	2,897	13,684	46	38
2080	11,356	196	3,031	14,583	47	38
2085	12,086	208	3,167	15,461	48	38
2090	12,638	215	3,314	16,167	48	38
High-cost:						
2014	9,093	156	1,906	11,155	60	47
2015	9,286	156	1,940	11,382	61	47
2020	10,152	161	2,083	12,395	67	50
2025	11,137	195	2,202	13,533	71	52
2030	11,477	220	2,376	14,073	72	54
2035	11,979	256	2,565	14,800	74	56
2040	12,563	275	2,645	15,483	76	57
2045	13,450	297	2,665	16,413	79	58
2050	14,057	307	2,661	17,025	82	59
2055	14,564	322	2,668	17,554	84	60
2060	14,748	327	2,697	17,772	85	60
2065	15,063	336	2,721	18,121	87	61
2070	15,256	343	2,727	18,326	89	61
2075	15,254	338	2,703	18,295	89	61
2080	15,513	344	2,671	18,529	91	61
2085	15,566	352	2,648	18,566	92	62
2090	15,352	352	2,639	18,344	91	62

[a] Adjusted to the age-sex distribution of the insured population for the year 2000.

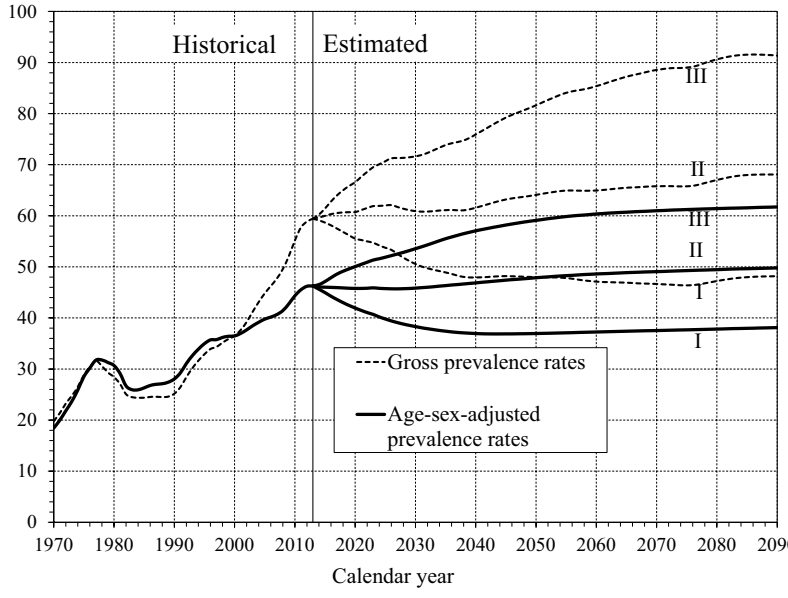
Note: Totals do not necessarily equal the sums of rounded components.

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 termi-

nation 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 45 through normal retirement age, a time of life when disability incidence rates are relatively high. 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) 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 underlying 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 1970 and 1990; 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 1990 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 46.3 per thousand disability insured at the end of 2013 to 49.8 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 38.1 per thousand and increases to 61.7 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 (2014-23), the Office of the Chief Actuary projects incidence and termination rates for each category of auxiliary beneficiary. After 2023, 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 employee 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) for a year is the amount of earnings which, when multiplied by the combined OASDI employee-employer payroll tax rate for that year, yields the total amount of payroll taxes due from wages paid and self-employment net earnings for the year. The Trustees use taxable payroll to determine income rates, cost rates, and actuarial balances. Taxable payroll is derived by adjusting total taxable earnings to account for categories of earnings that are taxed at rates other than the combined employee-employer rate and to take into account amounts credited as wages that were not included in normally reported wages. For 1951 and later, taxable earnings are reduced by one-half of the amount of wages paid to employees with multiple jobs that exceed the contribution and benefit base. For 1983 through 2001, deemed wage credits for military service after 1956 are added to taxable earnings. The self-employment tax rates for 1951 through 1983 were less than the combined employee-employer rates; therefore, the self-employment component of taxable payroll for those years is reduced by multiplying the ratio of the self-employment rate to the combined employee-employer rate times the taxable self-employment net earnings. Finally, for 1966 through 1979, employers were exempt from paying their

share of payroll tax on their employees' tips and, for 1980 through 1987, employers paid tax on only part of their employees' tips. For those years, the taxable payroll is reduced by half of the amount of tips for which the employer owed no payroll tax.

The ratio of taxable payroll to covered earnings (the taxable ratio) fell from 88.3 percent for 1984 to 82.5 percent for 2000, mostly due to much higher increases in wage levels for very high earners than for all other earners. From 2000 to 2010, the taxable ratio varied with the business cycle, rising during economic downturns and falling during recoveries. Specifically, the taxable ratio rose to 85.5 percent for 2002, declined to 82.3 percent for 2007, rose to 85.0 percent for 2009, and was 82.5 percent for 2012.

For the 2014 report, the Trustees assume a level for the taxable ratio at the end of the short range period (2023) of 82.5 percent for the intermediate assumptions, 81.0 percent for the high-cost assumptions (or 1.5 percentage points lower than the intermediate assumptions), and 84.0 percent for the low-cost assumptions (or 1.5 percentage points higher than the intermediate assumptions). These are the same assumptions that the Trustees made for the end of the short range period (2022) for the 2013 report.

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 make up any underestimate on their individual income tax returns. The projection splits

[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.

the self-employed tax liabilities by collection quarter to reflect this pattern of receipts.

The projected tax contributions also reflect the method used to ensure 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 2014.

[1] Table VI.G1 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.	113,700	12.40	10.60	1.80	12.4000	10.6000	1.8000
2014.	117,000	12.40	10.60	1.80	12.4000	10.6000	1.8000
2015 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

Under current law, the OASI and DI Trust Funds are credited with income tax revenue 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 tax revenue from the taxation of up to 85 percent of OASI and DI benefit payments.) Benefits are taxed for beneficiaries with income (including half of benefits and all non-taxable interest) exceeding specified levels.

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 (projected by the Office of Tax Analysis, Department of the Treasury) to total OASI and DI scheduled benefits: (1) the percentage of scheduled benefits (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 scheduled benefits. 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 gradually. 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 reflect recent historical averages, projected average primary insurance amounts (PIAs), and projected ratios of average benefits to average PIAs. Calculations of average PIAs are based 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 differences in mortality by level of lifetime earnings. Calculations of future average PIAs at initial entitlement are based on projected earnings histories, which in turn reflect a combination of the actual earnings histories associated with a sample of 2008 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 are based on projections of age distributions at initial entitlement.

9. Scheduled Benefits

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

Scheduled lump-sum death benefits are estimated as 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 percent-

age of the fully insured population that will qualify for lump-sum death payments; 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 various hypothetical workers attaining age 65 in 2014 and subsequent years. The illustrative benefit amounts in table V.C7 are presented in CPI-indexed 2014 dollars—that is, adjusted to 2014 levels by the CPI indexing series shown in table VI.G6. As a point of comparison, Table V.C7 also shows the national average wage index (AWI) for 2014 and subsequent years in CPI-indexed 2014 dollars.

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 five different pre-retirement earnings patterns. Four of these patterns assume the earnings history of workers with scaled-earnings patterns[1] and reflect very low, low, medium, and high career-average levels of pre-retirement earnings starting at age 21. The fifth pattern assumes the earnings history of a steady maximum earner starting at age 22. The four scaled-earnings patterns derive from earnings experienced by insured workers during 1991-2010. These earnings levels differ by age. The career-average level of earnings for each scaled case targets a percent of the AWI.

For the scaled medium earner, the career-average earnings level is about equal to the AWI (or $46,787 for 2014). For the scaled very low, low, and high earners, the career-average earnings level is about 25 percent, 45 percent, and 160 percent of the AWI, respectively (or $11,697, $21,054, and $74,859, respectively, for 2014). 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 (or $117,000 for 2014).

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[1] Actuarial Note 2013.3 has more details on scaled-earnings patterns. See www.socialsecurity.gov/OACT/NOTES/ran3/an2013-3.html.

Table V.C7.—Annual Scheduled Benefit Amounts for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2014-90

Year attain age 65[b]	Age at retirement	Scaled very low earnings[c]	Scaled low earnings[d]	Scaled medium earnings[e]	Scaled high earnings[f]	Steady maximum earnings[g]	National Average Wage Index in 2014 dollars[h]
		Benefits in 2014 dollars[a] with retirement at normal retirement age					
2014	66:0	$9,031	$11,814	$19,477	$25,821	$31,338	$46,787
2015	66:0	8,910	11,668	19,227	25,483	31,000	48,120
2020	66:2	9,592	12,549	20,698	27,409	33,549	53,266
2025	67:0	10,546	13,799	22,744	30,132	37,096	56,522
2030	67:0	11,192	14,645	24,140	31,978	39,407	59,997
2035	67:0	11,878	15,542	25,623	33,948	41,855	63,635
2040	67:0	12,600	16,482	27,173	35,997	44,351	67,311
2045	67:0	13,324	17,437	28,740	38,078	46,933	71,119
2050	67:0	14,084	18,427	30,369	40,236	49,529	75,056
2055	67:0	14,860	19,443	32,047	42,461	52,171	79,193
2060	67:0	15,683	20,518	33,815	44,803	55,001	83,525
2065	67:0	16,538	21,637	35,663	47,253	58,018	88,061
2070	67:0	17,439	22,815	37,601	49,820	61,175	92,817
2075	67:0	18,380	24,047	39,631	52,511	64,489	97,905
2080	67:0	19,390	25,367	41,807	55,391	68,029	103,369
2085	67:0	20,472	26,783	44,141	58,483	71,826	109,194
2090	67:0	21,625	28,293	46,628	61,778	75,875	115,390
		Benefits in 2014 dollars with retirement at age 65					
2014	65:0	$8,459	$11,077	$18,251	$24,198	$29,209	$46,787
2015	65:0	8,336	10,895	17,968	23,817	28,851	48,120
2020	65:0	8,840	11,572	19,078	25,270	30,806	53,266
2025	65:0	9,134	11,954	19,710	26,115	31,901	56,522
2030	65:0	9,696	12,690	20,917	27,714	33,904	59,997
2035	65:0	10,297	13,471	22,202	29,417	36,016	63,635
2040	65:0	10,916	14,287	23,545	31,199	38,169	67,311
2045	65:0	11,547	15,114	24,909	33,001	40,398	71,119
2050	65:0	12,202	15,966	26,317	34,867	42,639	75,056
2055	65:0	12,879	16,851	27,774	36,800	44,912	79,193
2060	65:0	13,590	17,781	29,305	38,829	47,352	83,525
2065	65:0	14,334	18,754	30,906	40,953	49,952	88,061
2070	65:0	15,113	19,774	32,587	43,178	52,670	92,817
2075	65:0	15,930	20,841	34,346	45,508	55,522	97,905
2080	65:0	16,804	21,985	36,232	48,005	58,570	103,369
2085	65:0	17,742	23,212	38,256	50,684	61,839	109,194
2090	65:0	18,742	24,520	40,411	53,542	65,324	115,390

[a] Annual amounts are the total for the 12-month period starting with the month of retirement, adjusted to be in 2014 dollars by using the CPI indexing series from table VI.G6.
[b] Attains age 65 on January 1 of the year.
[c] Career-average earnings at about 25 percent of the AWI.
[d] Career-average earnings at about 45 percent of the AWI.
[e] Career-average earnings at about 100 percent of the AWI. Such a worker would have career-average earnings at approximately the 56th percentile of all new retired worker beneficiaries.
[f] Career-average earnings at about 160 percent of the AWI.
[g] Earnings for each year at or above the contribution and benefit base.
[h] Average Wage Index from table VI.G6, adjusted to be in 2014 dollars by using the CPI indexing series from table VI.G6.

11. Administrative Expenses

The projection of administrative expenses through the short-range period is based on historical experience and the projected growth in average wages. The Office of Budget of the Social Security Administration provides esti-

mates for the first several years of the projection. For years after the short-range period, projected administrative expenses reflect increases in the number of beneficiaries and increases in the average wage. However, the increases in average wage are partially offset by assumed administrative productivity gains.

12. Railroad Retirement Financial Interchange

Railroad workers are covered under a separate multi-tiered benefit 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 is made to resolve 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 reflects trends similar to those used in estimating the cost of OASDI benefits. The annual short-range net cost for the OASI and DI Trust Funds averages about $5 billion and the long-range summarized net cost for the OASI and DI Trust Funds is 0.04 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 theoretical 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, 111-312, 112-78, and 112-96.

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

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[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.

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.

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 1937-2013
[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
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]
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	8.1	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	[h]20

Table VI.A1.— Operations of the OASI Trust Fund, Calendar Years 1937-2013 (Cont.)
[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
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	[h]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	[h]28
1987 . .	210.7	201.1	1.7	3.3	4.7	187.7	183.6	1.5	2.6	23.1	62.1	[h]30
1988 . .	240.8	227.7	2.1	3.4	7.6	200.0	195.5	1.8	2.8	40.7	102.9	[h]41
1989 . .	264.7	248.1	2.1	2.4	12.0	212.5	208.0	1.7	2.8	52.2	155.1	[h]59
1990 . .	286.7	266.1	-.7	4.8	16.4	227.5	223.0	1.6	3.0	59.1	214.2	[h]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	319.1	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
2012 . .	731.1	503.9	97.7	26.7	102.8	645.5	637.9	3.4	4.1	85.6	2,609.7	391
2013 . .	743.8	620.8	4.2	20.7	98.1	679.5	672.1	3.4	3.9	64.3	2,674.0	384

[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, 111-312, 112-78, and 112-96.
[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 asset reserves at the beginning of a year as a percentage of expenditures during the year. The table shows no ratio for 1937 because no reserves existed at the beginning of the year.
[e] Operations prior to 1940 are for the Old-Age Reserve Account established by the original Social Security Act. The 1939 Amendments transferred the asset reserves 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).
[h] Reserves used for the trust fund ratio calculation include January advance tax transfers.

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

Table VI.A2.— Operations of the DI Trust Fund, Calendar Years 1957-2013
[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
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...	$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	[e]	[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	$0.1	[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	1.9	.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	[g]35
1985...	19.3	17.0	1.2	.2	.9	19.5	18.8	.6	[e]	[f]2.4	6.3	[g]27
1986...	19.4	18.2	.2	.2	.8	20.5	19.9	.6	$0.1	[f]1.5	7.8	[g]38
1987...	20.3	19.5	.2	[e]	.6	21.4	20.5	.8	.1	-1.1	6.7	[g]44
1988...	22.7	21.8	.2	.1	.6	22.5	21.7	.7	.1	.2	6.9	[g]38
1989...	24.8	23.8	.2	.1	.7	23.8	22.9	.8	.1	1.0	7.9	[g]38
1990...	28.8	28.4	-.6	.1	.9	25.6	24.8	.7	.1	3.2	11.1	[g]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 1957-2013 (Cont.)
[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
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
2012 . .	109.1	85.6	16.5	.6	6.4	140.3	136.9	2.9	.5	-31.2	122.7	110
2013 . .	111.2	105.4	.7	.4	4.7	143.4	140.1	2.8	.6	-32.2	90.4	86

[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, 111-312, 112-78, and 112-96.
[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 asset reserves at the beginning of a year as a percentage of expenditures during the year. The table shows no ratio for 1957 because no reserves existed at the beginning of the year.
[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).
[g] Reserves used for the trust fund ratio calculation include January advance tax transfers.

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 1957-2013
[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
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	123.5	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	[g]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	[g]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	[g]29
1987 ..	231.0	220.6	1.9	3.2	5.3	209.1	204.1	2.4	2.6	21.9	68.8	[g]31
1988 ..	263.5	249.5	2.3	3.4	8.2	222.5	217.1	2.5	2.9	41.0	109.8	[g]41
1989 ..	289.4	271.9	2.3	2.5	12.7	236.2	230.9	2.4	2.9	53.2	163.0	[g]57
1990 ..	315.4	294.5	-1.3	5.0	17.2	253.1	247.8	2.3	3.0	62.3	225.3	[g]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	347.0	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	106.9	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 1957-2013 (Cont.)
[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
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 . .	$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
2012 . .	840.2	589.5	114.3	27.3	109.1	785.8	774.8	6.3	4.7	54.4	2,732.3	341
2013 . .	855.0	726.2	4.9	21.1	102.8	822.9	812.3	6.2	4.5	32.1	2,764.4	332

[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, 111-312, 112-78, and 112-96.
[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 asset reserves at the beginning of a year as a percentage of expenditures during the year.
[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).
[g] Reserves used for the trust fund ratio calculation include January advance tax transfers.

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

Tables VI.A4 and VI.A5 show the total asset reserves of the OASI Trust Fund and the DI Trust Fund, respectively, at the end of calendar years 2012 and 2013. The tables show reserves by interest rate and year of maturity. Bonds issued to the trust funds in 2013 had an interest rate of 1.75 percent, compared with an interest rate of 1.375 percent for bonds issued in 2012.

Table VI.A4.—OASI Trust Fund Asset Reserves, End of Calendar Years 2012 and 2013
[In thousands]

	December 31, 2012	December 31, 2013
Obligations sold only to the trust funds (special issues):		
Certificates of indebtedness:		
1.375 percent, 2013	$60,511,850	—
2.250 percent, 2014	—	$60,392,770
Bonds:		
1.375 percent, 2014	6,693,019	—
1.375 percent, 2015-16	13,386,038	13,386,038
1.375 percent, 2017-25	60,237,180	60,237,180
1.375 percent, 2026	6,693,019	6,693,019
1.375 percent, 2027	173,240,401	173,240,401
1.750 percent, 2015-18	—	19,632,744
1.750 percent, 2019-25	—	34,357,295
1.750 percent, 2026-27	—	9,816,372
1.750 percent, 2028	—	178,148,587
2.500 percent, 2014	5,971,788	—
2.500 percent, 2015-16	11,943,576	11,943,576
2.500 percent, 2017-25	53,746,083	53,746,083
2.500 percent, 2026	166,547,382	166,547,382
2.875 percent, 2014	7,264,431	—
2.875 percent, 2015	7,264,431	7,264,431
2.875 percent, 2016-24	65,379,888	65,379,888
2.875 percent, 2025	160,575,595	160,575,595
3.250 percent, 2014	10,628,271	—
3.250 percent, 2015	10,628,271	10,628,271
3.250 percent, 2016-23	85,026,160	85,026,160
3.250 percent, 2024	153,311,163	153,311,163
3.500 percent, 2014	9,513,751	—
3.500 percent, 2015	9,513,751	9,513,751
3.500 percent, 2016-17	19,027,504	19,027,504
3.500 percent, 2018	86,900,994	86,900,994
4.000 percent, 2013	3,300,605	—
4.000 percent, 2014	12,075,192	—
4.000 percent, 2015-22	96,601,536	96,601,536
4.000 percent, 2023	142,682,893	142,682,893
4.125 percent, 2013	10,516,946	—
4.125 percent, 2014	10,516,946	9,439,581
4.125 percent, 2015-19	52,584,730	52,584,730
4.125 percent, 2020	106,585,700	106,585,700
4.625 percent, 2013	9,167,664	—
4.625 percent, 2014-15	18,335,328	18,335,328
4.625 percent, 2016-18	27,502,989	27,502,989
4.625 percent, 2019	96,068,657	96,068,657
5.000 percent, 2013	12,454,232	—
5.000 percent, 2014-21	99,633,856	99,633,856
5.000 percent, 2022	130,607,701	130,607,701
5.125 percent, 2013	11,567,866	—
5.125 percent, 2014-19	69,407,196	69,407,196
5.125 percent, 2020	11,567,769	11,567,769
5.125 percent, 2021	118,153,469	118,153,469
5.250 percent, 2013	9,235,912	—
5.250 percent, 2014-15	18,471,824	18,471,824
5.250 percent, 2016	9,235,911	9,235,911
5.250 percent, 2017	77,387,242	77,387,242
5.625 percent, 2013	9,621,437	—
5.625 percent, 2014-15	19,242,874	19,242,874
5.625 percent, 2016	68,151,331	68,151,331
5.875 percent, 2013	43,258,869	—
6.000 percent, 2013	6,693,628	—
6.000 percent, 2014	49,952,497	49,952,497
6.500 percent, 2013	8,577,396	—
6.500 percent, 2014	8,577,396	8,577,396
6.500 percent, 2015	58,529,893	58,529,893
Total investments	2,610,272,031	2,674,489,577
Undisbursed balances	-604,215	-504,358
Total asset reserves	2,609,667,816	2,673,985,219

Note: Amounts of special issues are at par value. The trust fund 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 in the next few days.

Table VI.A5.—DI Trust Fund Asset Reserves, End of Calendar Years 2012 and 2013
[In thousands]

	December 31, 2012	December 31, 2013
Obligations sold only to the trust funds (special issues):		
Certificates of indebtedness:		
1.375 percent, 2013	$5,102,991	—
2.250 percent, 2014	—	$4,270,852
Bonds:		
3.250 percent, 2017	877,560	—
3.250 percent, 2018	877,560	—
3.250 percent, 2019-20	1,755,120	1,755,120
3.500 percent, 2017	1,115,128	—
3.500 percent, 2018	11,378,384	8,022,082
4.000 percent, 2017	622,571	—
4.000 percent, 2018-19	1,245,142	1,245,142
4.000 percent, 2020-22	1,867,716	1,867,716
4.000 percent, 2023	14,675,554	14,675,554
4.125 percent, 2017	677,385	—
4.125 percent, 2018-19	1,354,772	1,354,772
4.125 percent, 2020	12,911,283	12,911,283
4.625 percent, 2016	54,468	—
4.625 percent, 2017	855,497	—
4.625 percent, 2018	855,497	855,497
4.625 percent, 2019	12,233,881	12,233,881
5.000 percent, 2016	476,586	—
5.000 percent, 2017	476,586	—
5.000 percent, 2018-19	953,172	953,172
5.000 percent, 2020-21	953,168	953,168
5.000 percent, 2022	14,052,982	14,052,982
5.125 percent, 2016	665,131	—
5.125 percent, 2017	665,131	—
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, 2016	1,363,408	—
5.250 percent, 2017	10,263,256	—
5.625 percent, 2016	8,899,848	—
Total investments	122,801,550	90,722,994
Undisbursed balances	-135,125	-277,640
Total asset reserves	122,666,425	90,445,354

Note: Amounts of special issues are at par value. The trust fund 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 in the next few days.

B. HISTORY OF ACTUARIAL STATUS ESTIMATES

This appendix chronicles the history of the OASDI actuarial balance and the year of theoretical combined OASI and DI Trust Fund reserve depletion 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:

- In the reports for 1988 and later, the amount of the trust fund asset reserves on hand at the beginning of the valuation period; and
- In the reports for 1991 and later, the present value of a target trust fund asset reserve equal to 100 percent of the annual cost to be reached and maintained at the end of the valuation period.

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 presented 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 Reserve Depletion Dates as Shown in the Trustees Reports for 1982-2014[a]
[As a percentage of taxable payroll]

Year of report	Summarized income rate	Summarized cost rate	Actuarial balance[b]	Change from previous year[c]	Year of combined trust fund reserve depletion
1982	12.27	14.09	-1.82	[d]	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	[d]	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
2013	13.88	16.60	-2.72	-.05	2033
2014	13.89	16.77	-2.88	-.16	2033

[a] The reports compute the actuarial balance and year of trust fund reserve depletion 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] The definition and method of calculating the actuarial balance were changed in 1988 and 1991. See text for details.
[c] A detailed year-by-year breakdown of the reasons for the changes in the actuarial balance since the 1983 Trustees Report may be found in Actuarial Note 2014.8 at www.socialsecurity.gov/OACT/NOTES/ran8/index.html.
[d] 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 off-

set 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.

For the 2012 report, changes in economic assumptions and starting values accounted for about half of the decrease in actuarial balance. Updating starting economic data resulted in higher benefit levels, lower payroll taxes, and lower real interest rates in the short term than projected in the previous year. Other factors worsening the actuarial balance were the change in valuation period, changes to starting demographic values, changes to ultimate disability incidence assumptions, and methodology changes and data updates.

For the 2013 report, the change in valuation period accounted for the entire net change in the actuarial balance. The effects of substantially lower death rates for 2009 than previously projected and the American Taxpayer Relief Act of 2012 (which lowered the federal marginal income tax rates) were offset by updates of program-specific data and methodology improvements. The primary factors improving the actuarial balance were changes in ultimate age-sex specific unemployment rates, changes in modeling the number of workers insured, changes in average benefit levels due to the update of the sample, changes in projections of income from taxation of benefits, and other method changes and data updates.

Section IV.B.6 describes changes affecting the actuarial balance shown for the 2014 report.

C. FISCAL YEAR HISTORICAL DATA AND PROJECTIONS THROUGH 2023

Tables VI.C1, VI.C2, and VI.C3 contain details of the fiscal year 2013 operations of the OASI, DI, and the theoretical combined OASI and DI Trust Funds, respectively. The fiscal year for the U.S. Government is the 12-month period ending September 30. Fiscal year 2013 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 2013
[In millions]

Total asset reserves, September 30, 2012		$2,585,936
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$591,372	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund[a]	-1,396	
Net payroll tax contributions[a]		589,976
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L.s 111-312, 112-78, and 112-96[a]	26,328	
Reduction in payroll tax contributions due to P.L. 111-147[a]	98	
Reimbursements directed by P.L. 110-246	7	
Payroll tax credits due to P.L. 98-21[a]	[b]	
Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968	[b]	
Net general fund reimbursements[a]		26,433
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	175	
All other, not subject to withholding[a]	22,969	
Total income from taxation of benefits[a]		23,144
Investment income and interest adjustments:		
Interest on investments	100,113	
Interest adjustments[c]	2	
Total investment income and interest adjustments		100,115
Total receipts		739,668
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death payments[d]	663,243	
Reimbursement from the general fund for unnegotiated checks	-51	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	4	
Net benefit payments[d]		663,195
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		3,948
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,848	
Department of the Treasury	573	
Offsetting receipts from sales of supplies, materials, etc.	-4	
Miscellaneous reimbursements from the general fund[e]	-7	
Net administrative expenses		3,410
Total disbursements		670,554
Net increase in asset reserves		69,114
Total asset reserves, September 30, 2013		2,655,049

[a] Includes adjustments for prior years
[b] Between -$0.5 and $0.5 million.
[c] 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.
[d] Includes net reductions for the recovery of overpayments.
[e] 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 2013
[In millions]

Total asset reserves, September 30, 2012		$131,981
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$100,406	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund[a]	-237	
Net payroll tax contributions[a]		100,169
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L.s 111-312, 112-78, and 112-96[a]	4,486	
Reduction in payroll tax contributions due to P.L. 111-147[a]	17	
Reimbursements directed by P.L. 110-246	1	
Payroll tax credits due to P.L. 98-21[a]	b	
Net general fund reimbursements[a]		4,504
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	4	
All other, not subject to withholding[a]	1,047	
Total income from taxation of benefits[a]		1,051
Investment income and interest adjustments:		
Interest on investments	5,536	
Interest adjustments[c]	1	
Total investment income and interest adjustments		5,538
Total receipts		111,262
Disbursements:		
Benefit payments:		
Monthly benefits[d]	139,390	
Reimbursement from the general fund for unnegotiated checks	-24	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	80	
Net benefit payments[d]		139,446
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		551
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,634	
Department of the Treasury	108	
Demonstration projects	22	
Miscellaneous reimbursements from the general fund[e]	-3	
Net administrative expenses		2,760
Total disbursements		142,757
Net increase in asset reserves		-31,494
Total asset reserves, September 30, 2013		100,486

[a] Includes adjustments for prior years.
[b] Between -$0.5 and $0.5 million.
[c] 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.
[d] Includes net reductions for the recovery of overpayments.
[e] 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 2013
[In millions]

Total asset reserves, September 30, 2012		$2,717,916
Receipts:		
Net payroll tax contributions:		
Payroll tax contributions[a]	$691,778	
Payments from the General Fund of the Treasury for payroll tax contributions subject to refund[a]	-1,633	
Net payroll tax contributions[a]		690,145
Reimbursements from the general fund:		
Reduction in payroll tax contributions due to P.L.s 111-312, 112-78, and 112-96[a]	30,814	
Reduction in payroll tax contributions due to P.L. 111-147[a]	115	
Reimbursements directed by P.L. 110-246	8	
Payroll tax credits due to P.L. 98-21[a]	[b]	
Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968	[b]	
Net general fund reimbursements[a]		30,937
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	180	
All other, not subject to withholding[a]	24,016	
Total income from taxation of benefits[a]		24,196
Investment income and interest adjustments:		
Interest on investments	105,649	
Interest adjustments[c]	3	
Total investment income and interest adjustments		105,653
Total receipts		850,930
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death payments[d]	802,633	
Reimbursement from the general fund for unnegotiated checks	-75	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	83	
Net benefit payments[d]		802,641
Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account"		4,499
Administrative expenses:		
Costs incurred by:		
Social Security Administration	5,482	
Department of the Treasury	681	
Offsetting receipts from sales of supplies, materials, etc.	-4	
Demonstration projects	22	
Miscellaneous reimbursements from the general fund[e]	-10	
Net administrative expenses		6,171
Total disbursements		813,311
Net increase in asset reserves		37,619
Total asset reserves, September 30, 2013		2,755,536

[a] Includes adjustments for prior years.
[b] Between -$0.5 and $0.5 million.
[c] 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.
[d] Includes net reductions for the recovery of overpayments.
[e] 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 2009-23.

Table VI.C4.—Operations of the OASI Trust Fund, Fiscal Years 2009-23
[Dollar amounts in billions]

	Income					Cost				Asset Reserves		
Fiscal year	Total	Net payroll tax contributions	GF reimbursements[a]	Taxation of benefits	Net interest	Total	Benefit payments[b]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[c]
Historical data:												
2009 .	$697.3	$571.2	[d]	$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
2012 .	729.0	500.7	95.9	27.2	105.2	634.7	627.2	3.4	4.1	94.3	2,585.9	393
2013 .	739.7	590.0	26.4	23.1	100.1	670.6	663.2	3.4	3.9	69.1	2,655.0	386
Intermediate:												
2014 .	762.4	641.2	.3	24.6	96.4	706.7	699.7	2.8	4.1	55.8	2,710.8	376
2015 .	800.3	675.0	.2	30.0	95.1	748.0	740.5	3.2	4.2	52.3	2,763.1	362
2016 .	852.0	723.8	.1	33.0	95.1	795.0	787.4	3.2	4.3	57.0	2,820.1	348
2017 .	897.2	763.5	.1	36.5	97.2	847.4	839.9	3.4	4.1	49.8	2,869.9	333
2018 .	951.5	810.1	[d]	40.0	101.4	905.6	897.4	3.5	4.6	46.0	2,915.9	317
2019 .	1,005.4	855.6	[d]	43.7	106.0	968.8	960.4	3.7	4.7	36.6	2,952.5	301
2020 .	1,054.8	896.2	[d]	47.6	110.9	1,037.0	1,028.4	3.8	4.9	17.8	2,970.3	285
2021 .	1,113.5	947.9	[d]	51.6	114.0	1,105.6	1,096.8	3.9	4.9	7.9	2,978.2	269
2022 .	1,167.1	995.2	[d]	55.8	116.1	1,178.7	1,169.5	4.0	5.2	-11.6	2,966.6	253
2023 .	1,215.8	1,036.8	[d]	60.4	118.7	1,257.1	1,247.7	4.1	5.3	-41.2	2,925.4	236
Low-cost:												
2014 .	765.0	643.5	.3	24.6	96.6	706.6	699.7	2.8	4.1	58.3	2,713.4	376
2015 .	826.3	698.6	.2	30.0	97.5	748.8	741.4	3.2	4.2	77.4	2,790.8	362
2016 .	898.7	762.7	.1	33.3	102.5	801.8	794.3	3.2	4.3	96.9	2,887.7	348
2017 .	970.6	821.9	.1	37.2	111.5	863.9	856.3	3.5	4.1	106.8	2,994.4	334
2018 .	1,050.4	885.9	[d]	41.2	123.2	932.2	924.0	3.7	4.6	118.2	3,112.6	321
2019 .	1,129.0	949.3	[d]	45.4	134.4	1,005.2	996.6	3.8	4.8	123.9	3,236.5	310
2020 .	1,206.4	1,009.6	[d]	49.7	147.0	1,083.2	1,074.2	4.0	5.0	123.2	3,359.6	299
2021 .	1,295.3	1,081.5	[d]	54.3	159.5	1,162.5	1,153.4	4.2	5.0	132.8	3,492.4	289
2022 .	1,384.7	1,152.8	[d]	59.1	172.8	1,247.8	1,238.1	4.4	5.3	136.9	3,629.3	280
2023 .	1,472.3	1,219.9	[d]	64.4	188.0	1,340.1	1,330.2	4.6	5.4	132.2	3,761.5	271
High-cost:												
2014 .	759.3	638.1	.3	24.6	96.3	706.7	699.8	2.8	4.1	52.5	2,707.6	376
2015 .	769.7	647.0	.2	30.0	92.5	747.7	740.2	3.2	4.3	22.0	2,729.5	362
2016 .	805.7	683.9	.1	32.9	88.8	791.3	783.6	3.2	4.4	14.4	2,744.0	345
2017 .	831.0	707.9	.1	36.1	86.9	838.0	830.5	3.3	4.2	-7.1	2,736.9	327
2018 .	862.0	738.0	[d]	39.3	84.6	889.5	881.4	3.4	4.7	-27.5	2,709.4	308
2019 .	894.4	767.0	[d]	42.7	84.8	945.1	936.9	3.5	4.8	-50.7	2,658.7	287
2020 .	920.3	792.5	[d]	46.1	81.7	1,004.8	996.3	3.6	4.9	-84.5	2,574.2	265
2021 .	956.5	827.8	[d]	49.6	79.1	1,063.6	1,055.1	3.6	4.9	-107.1	2,467.1	242
2022 .	988.0	860.0	[d]	53.3	74.6	1,125.7	1,116.9	3.7	5.2	-137.7	2,329.3	219
2023 .	1,010.9	885.6	[d]	57.3	68.0	1,191.7	1,182.8	3.8	5.2	-180.9	2,148.5	195

[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, 112-78, and 112-96.
[b] Projected benefits are estimated as scheduled under current law.
[c] The "Trust fund ratio" column represents asset reserves at the beginning of a year (which are identical to reserves 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.

Table VI.C5.—Operations of the DI Trust Fund, Fiscal Years 2009-23
[Dollar amounts in billions]

Fiscal year	Income: Total	Income: Net payroll tax contributions	Income: GF reimbursements[a]	Income: Taxation of benefits	Income: Net interest	Cost: Total	Cost: Benefit payments[b]	Cost: Administrative costs	Cost: RRB interchange	Asset Reserves: Net increase during year	Asset Reserves: Amount at end of year	Asset Reserves: Trust fund ratio[c]
Historical data:												
2009	$109.7	$97.0	[d]	$1.8	$10.8	118.1	$115.1	$2.6	$0.4	-$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
2012	108.8	85.1	16.2	.4	7.2	138.5	135.1	2.9	.5	-29.7	132.0	117
2013	111.3	100.2	4.5	1.1	5.5	142.8	139.4	2.8	.6	-31.5	100.5	92
Intermediate:												
2014	113.9	108.9	.1	1.0	4.0	145.4	142.1	2.8	.4	-31.4	69.1	69
2015	119.1	114.6	[d]	1.8	2.7	150.0	146.2	3.4	.4	-30.9	38.2	46
2016	126.2	122.9	[d]	2.0	1.2	154.4	150.9	3.1	.4	-28.3	9.9	25
2017	[e]	129.7	[d]	2.2	[e]	159.9	156.0	3.5	.3	[e]	[e]	6
2018	[e]	137.6	[d]	2.4	[e]	165.6	161.5	3.9	.3	[e]	[e]	[e]
2019	[e]	145.3	[d]	2.6	[e]	172.0	167.6	4.1	.3	[e]	[e]	[e]
2020	[e]	152.2	[d]	2.8	[e]	178.8	174.2	4.4	.2	[e]	[e]	[e]
2021	[e]	161.0	[d]	3.1	[e]	187.1	182.3	4.6	.2	[e]	[e]	[e]
2022	[e]	169.0	[d]	3.3	[e]	196.1	191.1	4.9	.2	[e]	[e]	[e]
2023	[e]	176.1	[d]	3.6	[e]	205.4	200.1	5.1	.1	[e]	[e]	[e]
Low-cost:												
2014	114.3	109.3	.1	1.0	4.0	144.0	140.8	2.8	.4	-29.7	70.8	70
2015	123.2	118.6	[d]	1.8	2.8	146.9	143.1	3.4	.4	-23.7	47.1	48
2016	133.3	129.5	[d]	1.9	1.9	150.4	146.9	3.1	.4	-17.1	30.0	31
2017	142.8	139.6	[d]	2.1	1.1	155.5	151.5	3.6	.3	-12.7	17.3	19
2018	153.3	150.4	[d]	2.3	.5	160.8	156.5	4.0	.3	-7.5	9.8	11
2019	164.1	161.2	[d]	2.5	.4	166.5	161.9	4.4	.3	-2.4	7.4	6
2020	174.4	171.4	[d]	2.7	.2	172.7	167.8	4.7	.2	1.7	9.0	4
2021	187.1	183.7	[d]	3.0	.5	180.3	175.1	5.1	.2	6.8	15.8	5
2022	199.9	195.8	[d]	3.2	1.0	188.8	183.2	5.4	.1	11.2	27.0	8
2023	212.4	207.2	[d]	3.4	1.8	197.5	191.6	5.8	.1	14.8	41.8	14
High-cost:												
2014	113.4	108.4	.1	1.0	4.0	146.8	143.6	2.8	.4	-33.3	67.1	68
2015	114.2	109.9	[d]	1.8	2.5	153.4	149.6	3.4	.4	-39.2	28.0	44
2016	[e]	116.1	[d]	2.1	[e]	159.3	155.7	3.1	.4	[e]	[e]	18
2017	[e]	120.2	[d]	2.3	[e]	165.8	162.0	3.4	.4	[e]	[e]	[e]
2018	[e]	125.3	[d]	2.5	[e]	172.2	168.2	3.7	.3	[e]	[e]	[e]
2019	[e]	130.2	[d]	2.7	[e]	179.1	175.0	3.9	.3	[e]	[e]	[e]
2020	[e]	134.6	[d]	3.0	[e]	186.4	182.1	4.1	.2	[e]	[e]	[e]
2021	[e]	140.6	[d]	3.2	[e]	194.9	190.4	4.3	.2	[e]	[e]	[e]
2022	[e]	146.0	[d]	3.5	[e]	203.9	199.3	4.5	.2	[e]	[e]	[e]
2023	[e]	150.4	[d]	3.7	[e]	213.0	208.2	4.6	.2	[e]	[e]	[e]

[a] Includes reimbursements from the General Fund of the Treasury to the DI Trust Fund for: (1) the cost of non-contributory 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, 112-78, and 112-96.
[b] Projected benefits are estimated as scheduled under current law.
[c] The "Trust fund ratio" column represents asset reserves at the beginning of a year (which are identical to reserves 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 Funds become depleted in fiscal years 2017 and 2016 under the intermediate and high-cost assumptions, respectively. Accordingly, certain trust fund operations values from the year of trust fund reserve depletion through 2023 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 2009-23
[Dollar amounts in billions]

Fiscal year	Income: Total	Income: Net payroll tax contributions	Income: GF reimbursements[a]	Income: Taxation of benefits	Income: Net interest	Cost: Total	Cost: Benefit payments[b]	Cost: Administrative costs	Cost: RRB interchange	Asset Reserves: Net increase during year	Asset Reserves: Amount at end of year	Asset Reserves: Trust fund ratio[c]
Historical data:												
2009 . .	$807.0	$668.2	[d]	$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
2012 . .	837.8	585.7	112.2	27.5	112.4	773.2	762.3	6.3	4.7	64.6	2,717.9	343
2013 . .	850.9	690.1	30.9	24.2	105.7	813.3	802.6	6.2	4.5	37.6	2,755.5	334
Intermediate:												
2014 . .	876.4	750.1	.3	25.6	100.4	852.0	841.9	5.6	4.6	24.3	2,779.9	323
2015 . .	919.4	789.6	.2	31.8	97.8	898.0	886.7	6.6	4.7	21.4	2,801.3	310
2016 . .	978.2	846.7	.1	35.0	96.3	949.4	938.3	6.4	4.7	28.8	2,830.0	295
2017 . .	1,029.0	893.1	.1	38.7	97.1	1,007.3	995.9	6.9	4.5	21.7	2,851.7	281
2018 . .	1,090.2	947.6	[d]	42.4	100.1	1,071.2	1,058.9	7.4	4.9	19.0	2,870.7	266
2019 . .	1,150.5	1,000.9	[d]	46.4	103.2	1,140.7	1,128.0	7.8	5.0	9.8	2,880.5	252
2020 . .	1,205.6	1,048.4	[d]	50.5	106.6	1,215.8	1,202.6	8.2	5.1	-10.3	2,870.2	237
2021 . .	1,271.7	1,108.8	[d]	54.7	108.1	1,292.7	1,279.1	8.5	5.1	-21.0	2,849.2	222
2022 . .	1,331.9	1,164.1	[d]	59.2	108.6	1,374.8	1,360.6	8.9	5.4	-42.9	2,806.3	207
2023 . .	1,386.1	1,212.8	[d]	64.0	109.3	1,462.5	1,447.8	9.3	5.4	-76.4	2,729.9	192
Low-cost:												
2014 . .	879.3	752.8	.3	25.6	100.6	850.7	840.5	5.6	4.6	28.6	2,784.1	324
2015 . .	949.5	817.2	.2	31.8	100.3	895.8	884.5	6.6	4.6	53.7	2,837.9	311
2016 . .	1,032.0	892.2	.1	35.2	104.4	952.2	941.1	6.4	4.7	79.8	2,917.7	298
2017 . .	1,113.4	961.5	.1	39.3	112.5	1,019.4	1,007.9	7.1	4.4	94.0	3,011.7	286
2018 . .	1,203.7	1,036.3	[d]	43.5	123.8	1,093.0	1,080.5	7.7	4.9	110.7	3,122.3	276
2019 . .	1,293.2	1,110.4	[d]	47.9	134.8	1,171.7	1,158.5	8.2	5.0	121.5	3,243.8	266
2020 . .	1,380.8	1,181.1	[d]	52.5	147.2	1,255.9	1,242.0	8.7	5.2	124.8	3,368.6	258
2021 . .	1,482.5	1,265.2	[d]	57.2	160.1	1,342.9	1,328.4	9.2	5.2	139.6	3,508.2	251
2022 . .	1,584.6	1,348.5	[d]	62.3	173.8	1,436.6	1,421.3	9.8	5.5	148.1	3,656.3	244
2023 . .	1,684.7	1,427.1	[d]	67.8	189.8	1,537.7	1,521.8	10.3	5.6	147.0	3,803.3	238
High-cost:												
2014 . .	872.7	746.5	.3	25.6	100.3	853.5	843.3	5.6	4.6	19.2	2,774.7	323
2015 . .	883.9	756.9	.2	31.8	95.0	901.1	889.8	6.6	4.7	-17.2	2,757.5	308
2016 . .	924.5	800.1	.1	34.9	89.4	950.5	939.4	6.4	4.8	-26.1	2,731.5	290
2017 . .	952.7	828.2	.1	38.3	86.1	1,003.8	992.5	6.8	4.6	-51.1	2,680.3	272
2018 . .	987.2	863.4	[d]	41.8	82.0	1,061.8	1,049.7	7.1	5.0	-74.5	2,605.8	252
2019 . .	1,022.8	897.2	[d]	45.4	80.2	1,124.3	1,111.8	7.4	5.1	-101.5	2,504.3	232
2020 . .	1,050.9	927.1	[d]	49.1	74.7	1,191.2	1,178.4	7.6	5.2	-140.3	2,364.0	210
2021 . .	1,090.7	968.4	[d]	52.9	69.4	1,258.5	1,245.5	7.9	5.1	-167.8	2,196.2	188
2022 . .	1,125.0	1,006.1	[d]	56.8	62.1	1,329.7	1,316.2	8.2	5.3	-204.7	1,991.5	165
2023 . .	1,149.4	1,036.0	[d]	61.0	52.4	1,404.8	1,391.0	8.4	5.4	-255.4	1,736.1	142

[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, 112-78, and 112-96.
[b] Projected benefits are estimated as scheduled under current law.
[c] The "Trust fund ratio" column represents asset reserves at the beginning of a year (which are identical to reserves 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.

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 significantly 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 reaches ultimate values in 2038.

Table VI.D1.—Sensitivity of OASDI Measures 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: 2014-38	14.74	14.75	14.75
50-year: 2014-63	14.09	14.08	14.07
75-year: 2014-88	13.93	13.89	13.85
Summarized cost rate:			
25-year: 2014-38	16.22	16.25	16.28
50-year: 2014-63	16.61	16.50	16.40
75-year: 2014-88	17.20	16.77	16.36
Actuarial balance:			
25-year: 2014-38	-1.48	-1.50	-1.53
50-year: 2014-63	-2.52	-2.42	-2.33
75-year: 2014-88	-3.27	-2.88	-2.51
Annual balance for 2088	-7.18	-4.90	-3.06
Year of combined trust fund reserve depletion	2033	2033	2032

[a] The total fertility rate for any year is the average number of children that would be born to a woman in her lifetime if she were to experience, at each age of her life, the birth rate 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 2038.
[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 0.06 percent of taxable payroll. In contrast, the 75-year cost rate varies over a wide range, decreasing from 17.20 to 16.36 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 -3.27 to -2.51 percent.

During the 25-year period, the very slight increases in the working population resulting from higher fertility (than that experienced in an alternative scenario) 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 reductions in death rates for the period 2013-88. 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 0.41 percent, 0.79 percent, and 1.20 percent for alternatives I, II, and III, respectively.

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

Valuation period	Average annual death-rate reduction[a] [b]		
	0.41 percent	0.79 percent	1.20 percent
Summarized income rate:			
25-year: 2014-38	14.75	14.75	14.74
50-year: 2014-63	14.07	14.08	14.09
75-year: 2014-88	13.88	13.89	13.90
Summarized cost rate:			
25-year: 2014-38	16.10	16.25	16.39
50-year: 2014-63	16.16	16.50	16.86
75-year: 2014-88	16.29	16.77	17.26
Actuarial balance:			
25-year: 2014-38	-1.35	-1.50	-1.65
50-year: 2014-63	-2.09	-2.42	-2.77
75-year: 2014-88	-2.42	-2.88	-3.36
Annual balance for 2088	-3.91	-4.90	-5.89
Year of combined trust fund reserve depletion	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 2013 and 2088. The overall age-sex-adjusted death rate decreases from 2013 to 2088 by 27 percent, 45 percent, and 60 percent for alternatives I, II, and III, respectively.
[b] The average annual death-rate reductions used for this analysis are: 0.41 percent from the alternative I assumptions, 0.79 percent from the alternative II assumptions, and 1.20 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 16.10 percent (for an average annual death-rate reduction of 0.41 percent) to 16.39 percent (for an average annual death-rate reduction of 1.20 percent). The 75-year cost rate increases from 16.29 to 17.26 percent. The actuarial balance decreases from -1.35 to -1.65 percent for the 25-year period, and from -2.42 to -3.36 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 830,000 persons, 1,125,000 persons, and 1,430,000 persons over the long-range period under alternatives III, II, and I, respectively.

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

Valuation period	Average annual net immigration[a] [b]		
	830,000	1,125,000	1,430,000
Summarized income rate:			
25-year: 2014-38	14.78	14.75	14.72
50-year: 2014-63	14.11	14.08	14.05
75-year: 2014-88	13.93	13.89	13.86
Summarized cost rate:			
25-year: 2014-38	16.44	16.25	16.09
50-year: 2014-63	16.75	16.50	16.27
75-year: 2014-88	17.05	16.77	16.52
Actuarial balance:			
25-year: 2014-38	-1.66	-1.50	-1.37
50-year: 2014-63	-2.64	-2.42	-2.23
75-year: 2014-88	-3.12	-2.88	-2.67
Annual balance for 2088	-5.34	-4.90	-4.53
Year of combined trust fund reserve depletion	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: 830,000 from the alternative III assumptions, 1,125,000 from the alternative II assumptions, and 1,430,000 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 16.44 percent of taxable payroll (for average annual net immigration of 830,000 persons) to 16.09 percent (for average annual net immigration of 1,430,000 persons). For the 50-year period, it decreases from 16.75 percent to 16.27 percent, and for the 75-year period, it decreases from 17.05 percent to 16.52 percent. The actuarial balance increases from -1.66 to -1.37 percent for the 25-year period, from -2.64 to -2.23 percent for the 50-year period, and from -3.12 to -2.67 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 0.08 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, 1.13 percentage points, and 1.76 percentage points under alternatives III, II, and I, respectively. In each case, the ultimate annual increase in the CPI is 2.70 percent (consistent with alternative II). Therefore, the ultimate percentage increases in average annual wages in covered employment are 3.21, 3.83, and 4.46 percent.

For the 25-year period, the cost rate decreases from 17.01 percent (for a real-wage differential of 0.51 percentage point) to 15.50 percent (for a differential of 1.76 percentage points). For the 50-year period, it decreases from 17.61 to 15.43 percent, and for the 75-year period it decreases from 17.98 to 15.59 percent. The actuarial balance increases from -2.13 to -0.89 percent for the 25-year period, from -3.36 to -1.52 percent for the 50-year period, and from -3.90 to -1.88 percent for the 75-year period.

Table VI.D4.—Sensitivity of OASDI Measures to Varying Real-Wage Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate percentage increase in wages-CPI[a b]		
	3.21-2.70	3.83-2.70	4.46-2.70
Summarized income rate:			
25-year: 2014-38	14.88	14.75	14.61
50-year: 2014-63	14.25	14.08	13.91
75-year: 2014-88	14.08	13.89	13.71
Summarized cost rate:			
25-year: 2014-38	17.01	16.25	15.50
50-year: 2014-63	17.61	16.50	15.43
75-year: 2014-88	17.98	16.77	15.59
Actuarial balance:			
25-year: 2014-38	-2.13	-1.50	-.89
50-year: 2014-63	-3.36	-2.42	-1.52
75-year: 2014-88	-3.90	-2.88	-1.88
Annual balance for 2088	-6.86	-4.90	-3.19
Year of combined trust fund reserve depletion	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, 1.13, and 1.76 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 0.81 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 3.40 percent, 2.70 percent, and 2.00 percent under alternatives I, II, and III, respectively.[1] In each case, the ultimate real-wage differential is 1.13 percentage points (consistent with alternative II), yielding ultimate percentage increases in average annual wages in covered employment of 4.53, 3.83, and 3.13 percent.

[1] In prior reports, alternative I included a lower ultimate annual change in the CPI and alternative III included a higher ultimate annual change in the CPI than was included for alternative II.

Table VI.D5.—Sensitivity of OASDI Measures to Varying CPI-Increase Assumptions
[As a percentage of taxable payroll]

Valuation period	Ultimate percentage increase in wages-CPI[a b]		
	4.53-3.40	3.83-2.70	3.13-2.00
Summarized income rate:			
25-year: 2014-38	14.72	14.75	14.77
50-year: 2014-63	14.06	14.08	14.10
75-year: 2014-88	13.87	13.89	13.91
Summarized cost rate:			
25-year: 2014-38	16.13	16.25	16.37
50-year: 2014-63	16.35	16.50	16.67
75-year: 2014-88	16.60	16.77	16.95
Actuarial balance:			
25-year: 2014-38	-1.41	-1.50	-1.60
50-year: 2014-63	-2.29	-2.42	-2.57
75-year: 2014-88	-2.73	-2.88	-3.04
Annual balance for 2088	-4.70	-4.90	-5.12
Year of combined trust fund reserve depletion	2033	2033	2032

[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 3.40, 2.70, and 2.00 percent are the same as in alternatives I, II, and III, respectively. The ultimate real-wage differential of 1.13 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 increases when the assumed rates of increase in the CPI are smaller. For the 25-year period, the cost rate increases from 16.13 (for CPI increases of 3.40 percent) to 16.37 percent (for CPI increases of 2.00 percent). For the 50-year period, it increases from 16.35 to 16.67 percent, and for the 75-year period, it increases from 16.60 to 16.95 percent. The actuarial balance decreases from -1.41 to -1.60 percent for the 25-year period, from -2.29 to -2.57 percent for the 50-year period, and from -2.73 to -3.04 percent for the 75-year period.

The time lag between the effects of the CPI changes on taxable payroll and on scheduled benefits 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 decrease in the rate of the change in the CPI decreases 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 2.70 percent, which is consistent with alternative II. Therefore, the ultimate annual yields are 5.2, 5.7, and 6.2 percent, respectively.

Table VI.D6.—Sensitivity of OASDI Measures 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: 2014-38	14.68	14.75	14.81
50-year: 2014-63	14.00	14.08	14.16
75-year: 2014-88	13.80	13.89	13.98
Summarized cost rate:			
25-year: 2014-38	16.32	16.25	16.18
50-year: 2014-63	16.60	16.50	16.41
75-year: 2014-88	16.91	16.77	16.64
Actuarial balance:			
25-year: 2014-38	-1.64	-1.50	-1.37
50-year: 2014-63	-2.60	-2.42	-2.25
75-year: 2014-88	-3.10	-2.88	-2.66
Annual balance for 2088	-4.90	-4.90	-4.90
Year of combined trust fund reserve depletion	2032	2033	2033

[a] The ultimate real interest rate is the effective annual yield on asset reserves 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 16.32 percent (for an ultimate real interest rate of 2.4 percent) to 16.18 percent (for an ultimate real interest rate of 3.4 percent). For the 50-year period, it decreases from 16.60 to 16.41 percent and, for the 75-year period, it decreases from 16.91 to 16.64 percent. The actuarial balance increases from -1.64 to -1.37 percent for the 25-year period, from -2.60 to -2.25 percent for the 50-year period, and from -3.10 to -2.66 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 comparison to the historical period 1970 through 2013, the ultimate age-sex-adjusted incidence rate is about 4 percent higher for alternative II, 17 percent lower for alternative I, and 25 percent higher for alternative III.

Table VI.D7.—Sensitivity of OASDI Measures 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: 2014-38	14.74	14.75	14.75
50-year: 2014-63	14.07	14.08	14.08
75-year: 2014-88	13.88	13.89	13.89
Summarized cost rate:			
25-year: 2014-38	16.04	16.25	16.46
50-year: 2014-63	16.24	16.50	16.76
75-year: 2014-88	16.49	16.77	17.04
Actuarial balance:			
25-year: 2014-38	-1.30	-1.50	-1.71
50-year: 2014-63	-2.16	-2.42	-2.68
75-year: 2014-88	-2.61	-2.88	-3.15
Annual balance for 2088	-4.57	-4.90	-5.22
Year of combined trust fund reserve depletion	2034	2033	2032

For the 25-year period, the cost rate increases with increasing disability incidence rates, from 16.04 percent (for the relatively low rates assumed for alternative I) to 16.46 percent (for the relatively high rates assumed for alternative III). For the 50-year period, it increases from 16.24 to 16.76 percent, and for the 75-year period, it increases from 16.49 to 17.04 percent. The actuarial balance decreases from -1.30 to -1.71 percent for the 25-year period, from -2.16 to -2.68 percent for the 50-year period, and from -2.61 to -3.15 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, including deaths and recoveries up to the age at which disabled-worker beneficiaries convert to retired-worker status.

For all three alternatives, the Trustees assume that death rates for disabled-worker beneficiaries will decline throughout the long-range period. For alternative II, the age-sex-adjusted[1] disability death rate declines to a level in 2088 that is about 56 percent lower than the level in 2013. For alternative I, the age-sex-adjusted disability death rate declines to a level in 2088 that is about 29 percent lower than the level in 2013. For alternative III, the age-sex-adjusted disability death rate declines to a level in 2088 that is about 74 percent lower than the level in 2013.

For all three alternatives, ultimate recovery 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 2033 is about 11 recoveries per thousand disabled-worker beneficiaries. For alternative I, the age-sex-adjusted recovery rate in 2033 is about 13 recoveries per thousand disabled-worker beneficiaries. For alternative III, the age-sex-adjusted recovery rate in 2033 is about 8 recoveries per thousand disabled-worker beneficiaries.

Table VI.D8.—Sensitivity of OASDI Measures 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: 2014-38	14.75	14.75	14.75
50-year: 2014-63	14.08	14.08	14.08
75-year: 2014-88	13.89	13.89	13.89
Summarized cost rate:			
25-year: 2014-38	16.21	16.25	16.28
50-year: 2014-63	16.46	16.50	16.54
75-year: 2014-88	16.73	16.77	16.80
Actuarial balance:			
25-year: 2014-38	-1.47	-1.50	-1.54
50-year: 2014-63	-2.38	-2.42	-2.46
75-year: 2014-88	-2.84	-2.88	-2.91
Annual balance for 2088	-4.86	-4.90	-4.91
Year of combined trust fund reserve depletion	2033	2033	2032

For the 25-year period, the cost rate increases with decreasing disability termination rates, from 16.21 percent (for the relatively high termination rates assumed for alternative I) to 16.28 percent (for the relatively low termination rates assumed for alternative III). For the 50-year period, it increases from 16.46 to 16.54 percent, and for the 75-year period, it increases from 16.73 to

[1] Age adjusted to the total disabled workers in current-payment status as of the year 2000.

16.80 percent. The actuarial balance decreases from -1.47 to -1.54 percent for the 25-year period, from -2.38 to -2.46 percent for the 50-year period, and from -2.84 to -2.91 percent for the 75-year period.

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. This model, which was first included in the 2003 report, is subject to further development.

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 use three alternative scenarios (low-cost, intermediate, and high-cost) that 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. The three alternative 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. The fluctuation of each variable over time is simulated using historical data and standard time-series techniques. 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 of at least 5 years and at most 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 for each variable using Monte Carlo techniques. 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 would result if statistical approaches were used to model uncertainty in the central tendencies of the variables. Time-series modeling reflects only what occurred in the historical period. Future uncertainty exists not only for the underlying central tendency but also for the frequency and size of occasional longer-term shifts in the central tendency. The future will bring with it the likelihood of substantial shifts, as predicted by many experts and as seen in prior centuries, that are not fully reflected in the current model. As a result, readers should understand that the true range of uncertainty is larger than indicated in this appendix.

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. Because there is relatively little variation in income rates across the 5,000 stochastic simulations, the figure includes the

[1] More detail on this model, and stochastic modeling in general, is available at www.socialsecurity.gov/OACT/stochastic/index.html.

income rate only under the intermediate assumptions. The two extreme lines in this figure illustrate the range within which future annual cost rates are projected by the current model to occur 95 percent of the time (i.e., a 95-percent confidence interval). In other words, the current 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 delineate additional confidence intervals (80-percent, 60-percent, 40-percent, and 20-percent) around future annual cost rates. The median (50th percentile) cost rate for each year is the rate for which half of the simulated outcomes are higher and half are lower 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

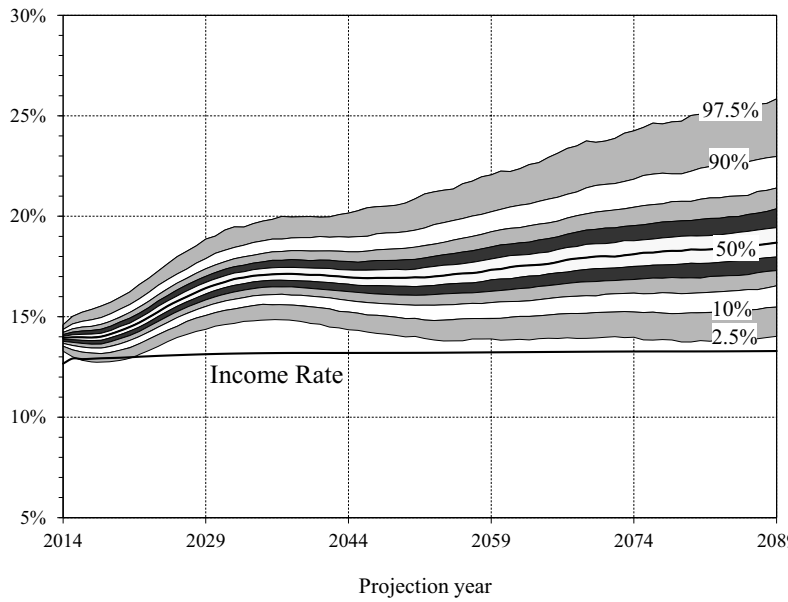
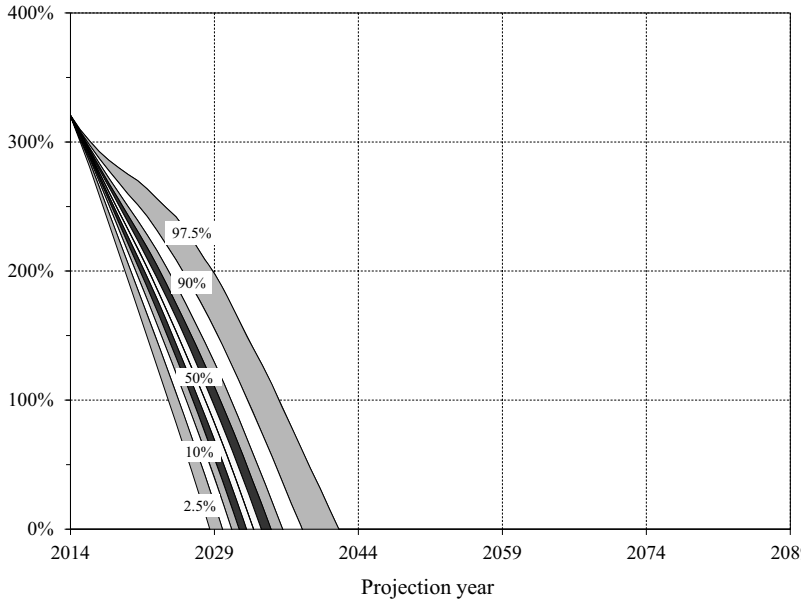


Figure VI.E2 presents the simulated probability distribution of the annual trust fund ratios for the combined OASI and DI Trust Funds. The lines in this figure display the median set (50th percentile) of estimated annual trust fund ratios and delineate the 95-percent, 80-percent, 60-percent, 40-percent, 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.

Figure VI.E2 shows that the 95-percent confidence interval for the trust fund depletion year ranges from 2028 to 2041, and there is a 50-percent probability of trust fund depletion by the end of 2033 (the median depletion year). The median depletion year is the same as the Trustees project under the intermediate assumptions. The figure also shows confidence intervals for the trust fund ratio in each year. For example, the 95-percent confidence interval for the trust fund ratio in 2025 ranges from 242 to 82 percent of annual cost.

Figure VI.E2.—Long-Range OASDI Trust Fund Ratios From Stochastic Modeling



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

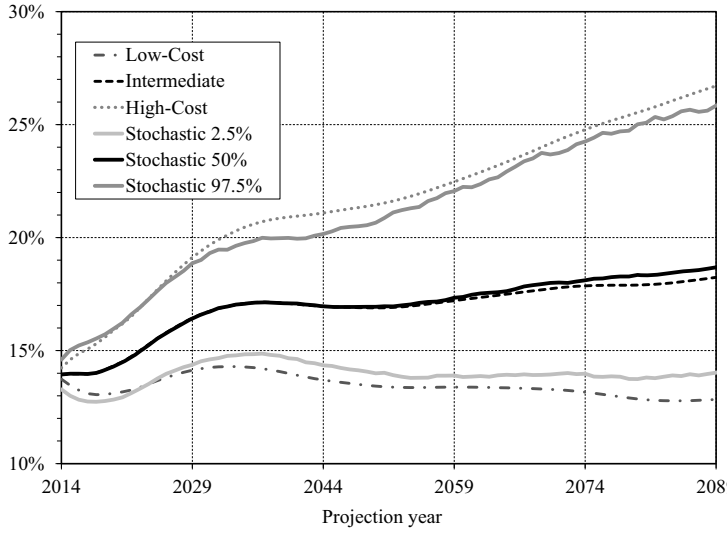
requires an understanding of the differences in the approaches. Two fundamental differences exist between the approach using alternative scenarios and the stochastic approach.

The first fundamental difference relates to the 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 one 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 one year at a time, with no direct relationship of the results among years.

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 for years before 2030. After 2030, results for the alternatives show a wider range. The cost rates for the high-cost alternative are somewhat higher than the stochastic year-by-year results at the 97.5th percentile. The intermediate alternative results generally show somewhat lower cost rates than the stochastic year-by-year results at the 50th percentile. The cost rates are lower for the low-cost alternative than for the stochastic year-by-year results at the 2.5th percentile for years after 2030.

Both the alternatives and the stochastic results suggest that the range of potential cost rates above the central levels (those for the intermediate alternative and for the median, respectively) is larger than the potential range below these central results. The difference between the central results and the higher cost levels (the high-cost alternative and the upper end of the 95-percent confidence range, respectively) is about 1.5 times as large as the difference between the central and lower cost levels for both models by the end of the projection period.

Figure VI.E3.—OASDI Cost Rates: Comparison of Stochastic to Low-Cost, Intermediate, and High-Cost Alternatives
[as a percentage of taxable payroll]

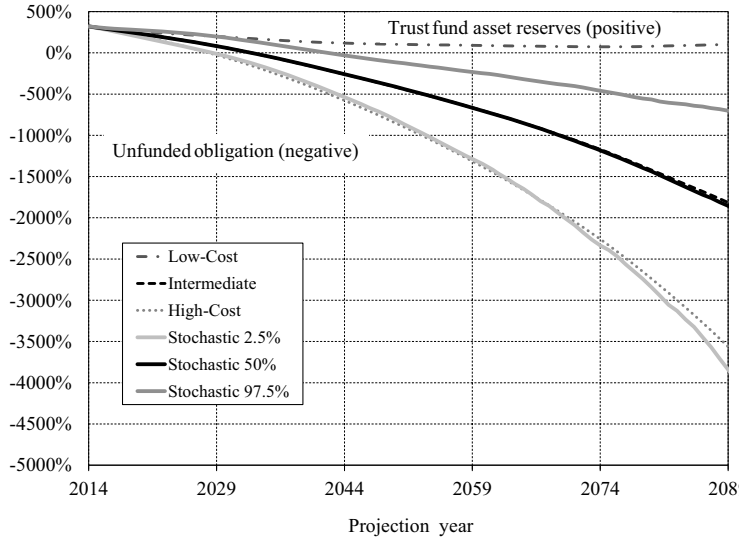


The second fundamental difference between the alternatives and the stochastic simulations is the method of assigning values for assumptions in the simulations. For the alternatives, the Trustees assign specific values for key demographic and economic variables. In comparison to the intermediate alternative, every value assigned to the high-cost alternative tends to raise estimated program cost and every value assigned to the low-cost alternative tends to reduce it throughout the projection period. In contrast, the stochastic method randomly assigns values for the key demographic and economic variables for each year in each of the 5,000 independent stochastic simulations. For each of the stochastic simulations, randomly 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.

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 VI.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 through 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.

Figure VI.E4.—OASDI Trust Fund (Unfunded Obligation) Ratios: Comparison of Stochastic to Low-Cost, Intermediate, and High-Cost Alternatives[a]
[Asset reserves (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 asset reserves are depleted. Note that current law does not permit the trust funds to borrow.

The range of stochastic results for trust fund (unfunded obligation) ratios in Figure VI.E4 appears to be consistent with the range seen for the stochastic cost rates. That is, the difference between the central result (the median) and the high-cost result (the lower level in the figure) is about 1.5 times as large as the distance between the central and low-cost result by the end of the projection period. However, the range for the alternatives is substantially different. For the alternatives, the distance between the central and high-cost projected trust fund (unfunded obligation) ratios is *smaller* than the difference between central and low-cost ratios, the opposite of the results for cost rates.

The difference in the ranges of trust fund (unfunded obligation) ratios between the alternatives and the stochastic results may be a little surprising given the similarity of the ranges for cost rates. Several factors contribute to

this finding, including the fact that cost rates are annual measures, while trust fund (unfunded obligation) ratios are cumulative measures of all financial activity up to that date. However, a clear difference between the ratios for the alternatives and the ratios for the stochastic model is the assignment of interest rates.

For the stochastic model, real interest rates are assigned essentially randomly, and as a result, the range for trust fund (unfunded obligation) ratios is consistent with the range for cost rates. But for the alternatives, real interest rates are specified to be higher for the low-cost alternative and lower for the high-cost alternative. This assignment has the effect of shifting the trust fund (unfunded obligation) ratios up (higher or less negative) for both the high-cost and low-cost alternatives. High interest rates boost the level of the positive trust fund ratio in alternative 1, and low interest rates reduce the magnitude of the negative ratio (unfunded obligation) for alternative 3. This assignment of real interest rates contributes substantially to the upward shift in the range of the ratios for the alternatives.

It is important to understand that the stochastic model's 95-percent confidence intervals for any summary measure of trust fund finances would tend to be narrower than the range produced for the low-cost and high-cost alternatives, even if the stochastic model's 95-percent confidence interval for annual cost rates were identical to the range defined by the low-cost and high-cost projections. This is true because summary measures of trust fund finances depend on cost rates for many years, and the probability that annual cost rates, on average for individual stochastic simulations, will be at least as low (high) as the 2.5 (97.5) percentile line is significantly lower than 2.5 percent. As a result, the relationship between the ranges presented for annual cost rates and summary measures of trust fund finances is fundamentally different for the stochastic model than it is for the low-cost and high-cost alternatives.

This contrast in results and methods does not mean that either approach to illustrating ranges of uncertainty, alternative scenarios or stochastic simulations, 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 pessimistic than the intermediate scenario-based estimates. The median estimate of the long-range actuarial balance is -2.99 percent of taxable payroll, about 0.11 percentage point lower than projected under the intermediate assumptions. The median first projected year that cost exceeds non-interest income (as it did in 2010 through 2013), and remains in excess of non-interest income throughout the remainder of the long-range period, is 2014. This is the same year as projected under the intermediate assumptions. The median year that asset reserves first become depleted 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 18.62 percent of taxable payroll and 6.26 percent of gross domestic product (GDP). The comparable estimates under the intermediate assumptions are 18.19 percent of payroll and 6.12 percent of GDP.

For four measures in table VI.E1 (the actuarial balance, the first year cost exceeds non-interest income and remains in excess through 2088, the first projected year asset reserves become depleted, and annual cost in the 75th year as a percent of taxable payroll), 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 the remaining two measures (the open group unfunded obligation, and the annual cost in the 75th year as a percent of GDP), 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	
	Interme-diate	Low-cost	High-cost	Median 50th percentile	10th percentile	90th percentile	2.5th percentile	97.5th percentile
Actuarial balance	-2.88	[a]	-6.56	-2.99	-4.25	-1.88	-4.98	-1.28
Open group unfunded obligation (in trillions)	$10.6	-$0.6	$21.0	$11.0	$17.2	$6.5	$21.6	$4.4
First projected year cost exceeds non-interest income and remains in excess through 2088[b] .	2014	[c]	2014	2014	2014	2020	2014	2077
First year asset reserves become depleted[d]	2033	[e]	2028	2033	2029	2038	2028	2041
Annual cost in 75th year (percent of taxable payroll)	18.19	12.82	26.59	18.62	15.45	22.91	13.97	25.62
Annual cost in 75th year (percent of GDP).	6.12	4.70	8.21	6.26	5.21	7.67	4.73	8.53

[a] Between 0 and 0.005 percent of taxable payroll.

[b] Cost also exceeded non-interest income in 2010 through 2013.

[c] The annual balance is projected to be negative for a temporary period, returning to positive levels before the end of the projection period.

[d] For some stochastic simulations, the first year in which trust fund reserves become depleted does not indicate a permanent depletion of reserves.

[e] Trust fund reserves are not estimated to be depleted within the projection period.

F. INFINITE HORIZON PROJECTIONS

Another measure of trust fund finances is the infinite horizon unfunded obligation, which takes account of all annual balances, even those after 75 years. 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 VI.F1 shows that the OASDI open group unfunded obligation over the infinite horizon is $24.9 trillion in present value, which is $14.3 trillion larger than for the 75-year period. The $14.3 trillion increment reflects a significant financing gap projected for OASDI for years after 2088. Of course, the degree of uncertainty associated with estimates increases substantially for years further in the future.

The $24.9 trillion infinite horizon open group unfunded obligation is equivalent to 4.1 percent of taxable payroll or 1.4 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.

The summarized shortfalls for the 75-year period and through the infinite horizon both reflect annual cash-flow shortfalls for all years after trust fund reserve depletion. The annual shortfalls after trust fund reserve depletion 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, and annual shortfalls within the 75-year period represent a smaller share of taxable payroll and GDP than do the shortfalls in later years.

The projected infinite horizon shortfall could be eliminated with additional revenue equivalent to an immediate increase in the combined payroll tax rate from 12.4 percent to about 16.7 percent (a relative increase of 35 percent).[1] This shortfall could be eliminated by reducing cost in a manner equivalent to an immediate and permanent reduction in benefits for all current and future beneficiaries by 24.5 percent.

[1] The indicated increase in the payroll tax rate of 4.3 percent is somewhat larger than the 4.1 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 VI.F1.—Unfunded OASDI Obligations Through the Infinite Horizon, Based on Intermediate Assumptions
[Present values as of January 1, 2014; dollar amounts in trillions]

	Present value	Expressed as a percentage of future payroll and GDP	
		Taxable payroll	GDP
Unfunded obligation through the infinite horizon[a]	$24.9	4.1	1.4
Unfunded obligation through 2088[b]	10.6	2.7	1.0

[a] Present value of future cost less future non-interest income, reduced by the amount of trust fund asset reserves at the beginning of 2014. Expressed as a percentage of payroll and GDP for the period 2014 through the infinite horizon.
[b] Present value of future cost less future non-interest income through 2088, reduced by the amount of trust fund reserves at the beginning of 2014. Expressed as a percentage of payroll and GDP for the period 2014 through 2088.

Notes:
1. The present values of future taxable payroll for 2014-88 and for 2014 through the infinite horizon are $386.9 trillion and $603.3 trillion, respectively.
2. The present values of GDP for 2014-88 and for 2014 through the infinite horizon are $1,093.7 trillion and $1,816.7 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 $23.1 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 $0.9 trillion, to $24.0 trillion. The net effects of changes in assumptions, methods, law, and starting values increased the infinite horizon unfunded obligation by an additional $0.9 trillion, to $24.9 trillion in present value.

The infinite horizon unfunded obligation is 0.1 percentage point higher than in last year's report when expressed as a share of taxable payroll, and about the same as 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, a change in the ultimate consumer-price index, legislative changes, changes in near-term economic assumptions, and other method changes. See section IV.B.6 for details regarding changes in law, data, methods, and assumptions.

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

Table VI.F2 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 past general fund reimbursements among participants because there is no clear basis for attributing the reimbursements across generations.

Past participants are defined as those no longer alive as of the valuation date. Current participants are those age 15 and older as of 2014. Future participants are those under age 15 or not yet born.

The excess of the present value of cost for past and current participants over the present value of dedicated tax income for past and current participants produces an unfunded obligation for past and current participants of $26.1 trillion. Table VI.F2 also shows an unfunded obligation of $25.5 trillion for past and current participants, including past and future general fund reimbursements. Future participants will pay dedicated taxes of $0.6 trillion more into the system than the cost of their benefits ($53.6 trillion of dedicated tax income as compared to $53.0 trillion of cost). The unfunded obligation for all participants through the infinite horizon thus equals $24.9 trillion.

This accounting demonstrates that some generations are scheduled to receive benefits with a present value exceeding the present value of their dedicated tax income, while other generations are scheduled to receive benefits with a present value less than the present value of their dedicated tax income, whether past 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 $24.9 trillion in present value, 4.1 percent of future taxable payroll, or 1.4 percent of future GDP.

Table VI.F2.—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, 2014; dollar amounts in trillions]

		Expressed as a percentage of future payroll and GDP	
	Present value	Taxable payroll	GDP
Present value of past cost	$50.9	8.4	2.8
Less present value of past dedicated tax income	53.1	8.8	2.9
Plus present value of future cost for current participants	54.6	9.1	3.0
Less present value of future dedicated tax income for current participants	26.4	4.4	1.5
Equals unfunded obligation for past and current participants excluding general fund reimbursements	26.1	4.3	1.4
Less present value of past general fund reimbursements[a]	.6	.1	[b]
Less present value of future general fund reimbursements over the infinite horizon[a]	[c]	[d]	[b]
Equals unfunded obligation for past and current participants including general fund reimbursements	25.5	4.2	1.4
Plus present value of cost for future participants over the infinite horizon	53.0	8.8	2.9
Less present value of dedicated tax income for future participants over the infinite horizon	53.6	8.9	2.9
Equals unfunded obligation for all participants through the infinite horizon	24.9	4.1	1.4

[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 $50 billion.

[d] Less than 0.05 percent of taxable payroll.

Notes:

1. The present value of future taxable payroll for 2014 through the infinite horizon is $603.3 trillion.
2. The present value of GDP for 2014 through the infinite horizon is $1,816.7 trillion.
3. Totals do not necessarily equal the sums of rounded components.

G. 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 asset reserves 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 2014 Medicare Trustees Report.

The information 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]

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 25 percent larger than the OASDI taxable payroll throughout the long-range period.

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.G1 shows the OASDI and HI contribution rates that are authorized in the Federal Insurance Contributions Act.

[1] Note that this year's low-cost (alternative I) assumptions include a higher (rather than lower as in past years) rate of increase in the CPI than the intermediate (alternative II) assumptions. The high-cost (alternative III) assumptions include a lower (rather than higher as in past years) rate of increase in the CPI. This change has varying effects on the results for the three trust funds.

Table VI.G1.—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 $117,000 for 2014.
[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 tax year 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.G2 shows the Trustees' estimates of annual income rates and cost rates for the OASDI program and the HI program 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.G1. For the HI pro-

gram, the income rates 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 asset reserves. Table VI.G2 also shows annual balances, which are the differences between annual income rates and cost rates.

The Trustees project that the OASDI and HI cost rates will rise generally above current levels under the intermediate and high-cost sets of assumptions. The greatest increase occurs during the period 2018-35 under both sets of assumptions for OASDI and under the intermediate assumptions for HI. Under the intermediate assumptions, the OASDI cost rate increases by 30 percent from its current level by 2088, while under the high-cost assumptions, the cost rate increases by 87 percent by 2088. For HI, cost rates increase 64 percent and 238 percent from 2014-88 under the intermediate and high-cost assumptions, respectively. Under the low-cost assumptions, the OASDI and HI cost rates decrease from 2014-88 by 7 percent and 23 percent, respectively.

The Trustees project annual deficits for every year of the projection period under the intermediate and high-cost assumptions for the OASDI program and under the high-cost assumptions for HI. For the HI program intermediate assumptions, the Trustees project a positive annual balance from 2015-21. Under the low-cost assumptions, OASDI annual balances are negative through 2076 and positive thereafter, while HI annual balances are positive throughout the projection period.

Table VI.G2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2014-90

[As a percentage of taxable payroll[a]]

Calendar year	OASDI Income rate	OASDI Cost rate	OASDI Balance	HI Income rate	HI Cost rate[b]	HI Balance
Intermediate:						
2014	12.67	13.95	-1.29	3.29	3.40	-0.11
2015	12.92	13.97	-1.05	3.31	3.24	.06
2016	12.89	13.97	-1.08	3.32	3.21	.11
2017	12.91	13.97	-1.06	3.34	3.20	.14
2018	12.93	14.02	-1.08	3.36	3.25	.10
2019	12.95	14.15	-1.20	3.38	3.28	.10
2020	12.96	14.33	-1.37	3.39	3.34	.05
2021	12.98	14.50	-1.52	3.41	3.41	[c]
2022	13.01	14.74	-1.73	3.43	3.49	-.06
2023	13.03	15.00	-1.97	3.45	3.56	-.11
2025	13.07	15.54	-2.47	3.50	3.82	-.33
2030	13.15	16.60	-3.46	3.59	4.20	-.61
2035	13.19	17.09	-3.90	3.67	4.55	-.89
2040	13.20	17.09	-3.89	3.72	4.83	-1.10
2045	13.20	16.94	-3.74	3.78	5.01	-1.23
2050	13.20	16.89	-3.69	3.84	5.11	-1.27
2055	13.21	17.01	-3.80	3.91	5.15	-1.24
2060	13.23	17.26	-4.03	3.98	5.21	-1.23
2065	13.25	17.50	-4.25	4.05	5.32	-1.27
2070	13.26	17.74	-4.48	4.11	5.45	-1.33
2075	13.27	17.88	-4.61	4.17	5.55	-1.38
2080	13.27	17.90	-4.63	4.21	5.58	-1.36
2085	13.28	18.04	-4.76	4.26	5.57	-1.31
2090	13.30	18.29	-5.00	4.31	5.55	-1.24
Low-cost:						
2014	12.60	13.74	-1.14	3.29	3.28	.01
2015	12.95	13.46	-.52	3.30	3.03	.27
2016	12.86	13.25	-.39	3.31	2.94	.37
2017	12.87	13.10	-.23	3.33	2.87	.46
2018	12.89	13.05	-.16	3.34	2.86	.48
2019	12.89	13.06	-.16	3.36	2.83	.53
2020	12.90	13.11	-.21	3.38	2.82	.55
2021	12.92	13.17	-.25	3.39	2.83	.56
2022	12.94	13.26	-.32	3.41	2.83	.57
2023	12.96	13.37	-.42	3.43	2.84	.59
2025	12.99	13.67	-.69	3.47	2.93	.54
2030	13.04	14.20	-1.16	3.58	2.92	.66
2035	13.06	14.28	-1.22	3.67	2.86	.81
2040	13.06	13.99	-.94	3.74	2.69	1.05
2045	13.04	13.65	-.60	3.82	2.57	1.25
2050	13.04	13.43	-.39	3.89	2.46	1.44
2055	13.04	13.37	-.33	3.97	2.37	1.59
2060	13.04	13.38	-.34	4.03	2.36	1.68
2065	13.04	13.35	-.31	4.09	2.40	1.69
2070	13.04	13.29	-.25	4.14	2.46	1.67
2075	13.03	13.12	-.09	4.17	2.51	1.66
2080	13.02	12.86	.15	4.20	2.53	1.68
2085	13.01	12.78	.23	4.24	2.53	1.71
2090	13.02	12.86	.15	4.28	2.55	1.73

Table VI.G2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2014-90 (Cont.)
[As a percentage of taxable payroll[a]]

Calendar year	OASDI Income rate	OASDI Cost rate	OASDI Balance	HI Income rate	HI Cost rate[b]	HI Balance
High-cost:						
2014	12.75	14.24	-1.48	3.29	3.54	-.25
2015	12.88	14.60	-1.72	3.32	3.49	-.17
2016	12.93	14.87	-1.93	3.34	3.53	-.19
2017	12.96	15.07	-2.11	3.36	3.59	-.23
2018	12.99	15.30	-2.31	3.38	3.72	-.34
2019	13.01	15.59	-2.58	3.40	3.83	-.43
2020	13.03	15.91	-2.88	3.42	3.98	-.56
2021	13.06	16.19	-3.13	3.44	4.14	-.70
2022	13.09	16.51	-3.42	3.46	4.32	-.85
2023	13.12	16.90	-3.79	3.49	4.50	-1.01
2025	13.17	17.70	-4.54	3.53	5.02	-1.49
2030	13.27	19.41	-6.15	3.62	6.11	-2.49
2035	13.33	20.46	-7.13	3.69	7.34	-3.65
2040	13.37	20.91	-7.54	3.74	8.51	-4.76
2045	13.39	21.15	-7.76	3.79	9.61	-5.82
2050	13.41	21.45	-8.04	3.83	10.42	-6.59
2055	13.44	21.95	-8.50	3.89	10.95	-7.06
2060	13.48	22.61	-9.13	3.95	11.30	-7.35
2065	13.53	23.35	-9.82	4.01	11.55	-7.54
2070	13.57	24.16	-10.59	4.09	11.82	-7.73
2075	13.62	24.92	-11.30	4.16	12.03	-7.87
2080	13.65	25.54	-11.88	4.22	12.06	-7.84
2085	13.69	26.19	-12.50	4.29	12.02	-7.74
2090	13.73	26.83	-13.10	4.35	12.25	-7.90

[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.
[b] Estimated costs attributable to insured beneficiaries only, on an incurred basis. The Trustees expect benefits and administrative costs for non-insured persons to be financed through general revenue transfers and premium payments, rather than through payroll taxes.
[c] Between 0 and 0.005 percent of taxable payroll.

Notes:
1. The income rate excludes interest income.
2. Totals do not necessarily equal the sums of rounded components.

Table VI.G3 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 trust fund asset reserves, and the summarized cost rates include the cost of accumulating an ending fund reserve equal to 100 percent of annual cost at the end of the period.

Table VI.G3.—Summarized OASDI and HI Income Rates and Cost Rates for Valuation Periods,[a] Calendar Years 2014-88
[As a percentage of taxable payroll[b]]

Valuation period	OASDI Income rate	OASDI Cost rate	OASDI Actuarial balance	HI Income rate	HI Cost rate	HI Actuarial balance
Intermediate:						
25-year:						
2014-38	14.75	16.25	-1.50	3.61	4.03	-0.42
50-year:						
2014-63	14.08	16.50	-2.42	3.71	4.46	-.75
75-year:						
2014-88	13.89	16.77	-2.88	3.82	4.69	-.87
Low-cost:						
25-year:						
2014-38	14.50	14.30	.21	3.59	2.99	.60
50-year:						
2014-63	13.85	13.88	-.04	3.73	2.75	.98
75-year:						
2014-88	13.63	13.63	[c]	3.84	2.68	1.17
High-cost:						
25-year:						
2014-38	15.01	18.56	-3.55	3.64	5.55	-1.90
50-year:						
2014-63	14.34	19.74	-5.40	3.72	7.45	-3.72
75-year:						
2014-88	14.19	20.75	-6.56	3.81	8.34	-4.52

[a] Income rates include beginning trust fund asset reserves 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.
[c] Between 0 and 0.005 percent of taxable payroll.

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

The Trustees project that the OASDI and HI systems will each 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. Under the low-cost assumptions, the HI system has a positive actuarial balance for all three valuation periods, while the actuarial balance for the OASDI system is positive for the 25-year period, slightly negative for the 50-year period, and slightly positive for the 75-year period.

2. Estimates as a Percentage of Gross Domestic Product

This section contains long-range projections of the operations of the theoretical 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.G4 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.G4 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 scheduled benefits, 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 throughout the projection period under the intermediate and high-cost assumptions, and to be negative through 2076 under the low-cost assumptions. Under the low-cost assumptions the OASDI annual deficit as a percentage of GDP decreases through 2018. After 2018, deficits increase to a peak in 2033 and then decrease through 2076, after which annual balances are positive, reaching 0.07 percent of GDP in 2088. Under the intermediate assumptions, annual deficits decrease from 2014 to 2015, generally increase through 2037, decrease from 2037 through 2051, and mostly increase thereafter. Under the high-cost assumptions, annual deficits increase throughout the projection period.

The Trustees project that the HI balance as a percentage of GDP will be positive throughout the projection period under the low-cost assumptions. Under the intermediate assumptions, the HI balance is negative for each year of the

projection period except for 2015-21. Annual deficits increase through 2049 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 2075 and mostly 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 through 2015, positive from 2016 through 2024, negative from 2025 through 2037, and then positive and mostly rising thereafter. Under the intermediate assumptions, combined OASDI and HI annual deficits decline from 2014 through 2017, increase from 2017 through 2041, and mostly decrease through 2052. After 2052, annual deficits generally rise, reaching 2.18 percent of GDP by 2088. Under the high-cost assumptions, combined annual deficits rise throughout the projection period.

By 2088, the combined OASDI and HI annual balances as percentages of GDP range from a positive balance of 0.85 percent for the low-cost assumptions to a deficit of 7.01 percent for the high-cost assumptions. Balances differ by a much smaller amount for the tenth year, 2023, ranging from a positive balance of 0.11 percent for the low-cost assumptions to a deficit of 1.82 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 0.53 percent under the low-cost assumptions to a deficit of 4.20 percent under the high-cost assumptions. The 25-year summarized balance varies by a smaller amount, from a positive balance of 0.35 percent to a deficit of 2.12 percent. Summarized rates are calculated on a present-value basis. They include the trust fund balances on January 1, 2014 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.G4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2014-90

	Percentage of GDP									
	OASDI			HI			Combined			GDP in dollars (billions)
Calendar year	Income[a]	Cost	Balance	Income[a]	Cost	Balance	Income[a]	Cost	Balance	
Intermediate:										
2014	4.46	4.92	-0.45	1.45	1.50	-0.05	5.92	6.42	-0.50	$17,557
2015	4.57	4.94	-.37	1.47	1.44	.03	6.04	6.38	-.34	18,426
2016	4.59	4.97	-.38	1.49	1.44	.05	6.08	6.41	-.33	19,377
2017	4.63	5.01	-.38	1.51	1.45	.06	6.14	6.46	-.32	20,400
2018	4.67	5.06	-.39	1.53	1.48	.05	6.20	6.55	-.34	21,475
2019	4.70	5.13	-.44	1.54	1.50	.04	6.24	6.63	-.39	22,578
2020	4.71	5.21	-.50	1.55	1.53	.02	6.27	6.74	-.47	23,694
2021	4.73	5.29	-.55	1.56	1.56	[b]	6.30	6.85	-.55	24,815
2022	4.75	5.38	-.63	1.57	1.60	-.03	6.32	6.98	-.66	25,935
2023	4.76	5.48	-.72	1.58	1.63	-.05	6.34	7.11	-.77	27,091
2025	4.76	5.66	-.90	1.60	1.74	-.15	6.36	7.41	-1.05	29,575
2030	4.76	6.01	-1.25	1.63	1.91	-.28	6.39	7.92	-1.53	36,750
2035	4.75	6.16	-1.41	1.66	2.06	-.40	6.41	8.21	-1.81	45,659
2040	4.73	6.12	-1.39	1.67	2.17	-.50	6.40	8.29	-1.89	57,003
2045	4.70	6.03	-1.33	1.69	2.24	-.55	6.39	8.27	-1.88	71,254
2050	4.67	5.97	-1.30	1.70	2.26	-.56	6.37	8.24	-1.87	88,833
2055	4.64	5.97	-1.33	1.72	2.27	-.54	6.36	8.24	-1.88	110,392
2060	4.61	6.01	-1.40	1.74	2.28	-.54	6.35	8.29	-1.94	136,921
2065	4.58	6.05	-1.47	1.76	2.31	-.55	6.34	8.36	-2.02	169,890
2070	4.55	6.09	-1.54	1.77	2.35	-.57	6.32	8.44	-2.11	211,004
2075	4.52	6.10	-1.57	1.78	2.38	-.59	6.31	8.47	-2.16	262,181
2080	4.50	6.07	-1.57	1.79	2.37	-.58	6.29	8.44	-2.15	325,644
2085	4.48	6.08	-1.61	1.80	2.36	-.55	6.28	8.44	-2.16	403,770
2090	4.46	6.14	-1.68	1.82	2.34	-.52	6.28	8.48	-2.20	499,900
Summarized rates: [c]										
25-year:										
2014-38 . . .	5.33	5.87	-.54	1.64	1.83	-.19	6.97	7.70	-.73	
50-year:										
2014-63 . . .	5.04	5.91	-.87	1.67	2.00	-.34	6.71	7.91	-1.20	
75-year:										
2014-88 . . .	4.91	5.93	-1.02	1.70	2.08	-.39	6.61	8.01	-1.41	
Low-cost:										
2014	4.44	4.85	-.40	1.45	1.45	[b]	5.90	6.29	-.40	17,771
2015	4.58	4.77	-.18	1.47	1.35	.12	6.06	6.12	-.06	19,032
2016	4.59	4.73	-.14	1.49	1.32	.17	6.08	6.05	.03	20,464
2017	4.65	4.73	-.08	1.51	1.30	.21	6.16	6.04	.12	21,918
2018	4.71	4.76	-.06	1.53	1.31	.22	6.23	6.07	.16	23,335
2019	4.74	4.80	-.06	1.54	1.29	.24	6.28	6.09	.18	24,843
2020	4.76	4.84	-.08	1.55	1.29	.25	6.31	6.13	.18	26,401
2021	4.79	4.88	-.09	1.56	1.30	.26	6.34	6.18	.17	27,969
2022	4.82	4.93	-.12	1.57	1.30	.26	6.38	6.24	.15	29,611
2023	4.84	4.99	-.16	1.57	1.31	.27	6.41	6.30	.11	31,324
2025	4.84	5.10	-.26	1.59	1.34	.25	6.44	6.44	-.01	35,064
2030	4.85	5.28	-.43	1.64	1.34	.30	6.49	6.62	-.13	46,398
2035	4.85	5.31	-.45	1.68	1.31	.37	6.53	6.61	-.08	61,419
2040	4.85	5.20	-.35	1.71	1.23	.48	6.56	6.43	.13	81,834
2045	4.84	5.06	-.22	1.74	1.17	.57	6.58	6.23	.35	109,456
2050	4.82	4.97	-.14	1.77	1.12	.65	6.59	6.08	.51	146,344
2055	4.81	4.93	-.12	1.80	1.08	.72	6.61	6.01	.60	195,464
2060	4.80	4.93	-.13	1.83	1.07	.76	6.63	6.00	.63	261,102
2065	4.79	4.91	-.11	1.85	1.08	.76	6.64	5.99	.65	349,338
2070	4.78	4.87	-.09	1.87	1.11	.76	6.65	5.98	.66	468,439
2075	4.77	4.80	-.03	1.88	1.13	.75	6.65	5.94	.72	629,283
2080	4.77	4.71	.06	1.89	1.14	.75	6.66	5.85	.81	845,859
2085	4.77	4.68	.09	1.91	1.14	.77	6.67	5.82	.86	1,135,314
2090	4.77	4.72	.06	1.93	1.15	.78	6.70	5.86	.84	1,521,298

Table VI.G4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2014-90 (Cont.)

	Percentage of GDP									GDP in dollars (billions)
	OASDI			HI			Combined			
Calendar year	Income[a]	Cost	Balance	Income[a]	Cost	Balance	Income[a]	Cost	Balance	
Low-cost (Cont.):										
Summarized rates: [c]										
25-year:										
2014-38 . . .	5.36	5.28	.08	1.64	1.37	.27	6.99	6.65	.35	
50-year:										
2014-63 . . .	5.12	5.13	-.01	1.70	1.25	.45	6.82	6.38	.43	
75-year:										
2014-88 . . .	5.03	5.03	[b]	1.75	1.22	.53	6.77	6.24	.53	
High-cost:										
2014	4.49	5.01	-.52	1.45	1.56	-.11	5.94	6.57	-.63	17,268
2015	4.54	5.14	-.61	1.47	1.54	-.08	6.01	6.69	-.68	17,750
2016	4.57	5.26	-.68	1.49	1.57	-.08	6.06	6.83	-.77	18,332
2017	4.60	5.35	-.75	1.51	1.61	-.10	6.11	6.97	-.85	19,002
2018	4.64	5.46	-.82	1.53	1.68	-.15	6.17	7.15	-.98	19,710
2019	4.65	5.58	-.92	1.54	1.74	-.19	6.20	7.32	-1.12	20,442
2020	4.67	5.70	-1.03	1.56	1.81	-.25	6.23	7.51	-1.29	21,200
2021	4.68	5.80	-1.12	1.57	1.89	-.32	6.25	7.69	-1.44	21,983
2022	4.69	5.92	-1.23	1.59	1.98	-.39	6.28	7.90	-1.62	22,758
2023	4.70	6.05	-1.36	1.60	2.06	-.46	6.29	8.11	-1.82	23,522
2025	4.70	6.31	-1.62	1.61	2.29	-.68	6.30	8.60	-2.30	25,060
2030	4.68	6.85	-2.17	1.63	2.76	-1.12	6.32	9.61	-3.30	29,275
2035	4.66	7.16	-2.49	1.65	3.28	-1.63	6.31	10.44	-4.12	34,167
2040	4.63	7.25	-2.61	1.66	3.77	-2.11	6.29	11.01	-4.72	39,978
2045	4.59	7.25	-2.66	1.66	4.21	-2.55	6.25	11.46	-5.21	46,683
2050	4.54	7.26	-2.72	1.66	4.51	-2.85	6.20	11.77	-5.57	54,209
2055	4.49	7.34	-2.84	1.66	4.68	-3.02	6.16	12.02	-5.86	62,586
2060	4.45	7.46	-3.01	1.67	4.77	-3.11	6.12	12.24	-6.12	71,948
2065	4.41	7.61	-3.20	1.67	4.82	-3.14	6.08	12.43	-6.34	82,599
2070	4.37	7.77	-3.41	1.68	4.87	-3.19	6.05	12.64	-6.59	94,757
2075	4.33	7.92	-3.59	1.69	4.90	-3.20	6.02	12.81	-6.79	108,592
2080	4.29	8.02	-3.73	1.70	4.86	-3.16	5.99	12.88	-6.89	124,200
2085	4.25	8.14	-3.88	1.71	4.79	-3.08	5.96	12.93	-6.97	141,718
2090	4.22	8.25	-4.03	1.72	4.83	-3.12	5.94	13.09	-7.15	161,487
Summarized rates: [c]										
25-year:										
2014-38 . . .	5.32	6.57	-1.26	1.64	2.50	-.86	6.96	9.07	-2.12	
50-year:										
2014-63 . . .	4.98	6.86	-1.88	1.65	3.30	-1.65	6.63	10.16	-3.53	
75-year:										
2014-88 . . .	4.83	7.07	-2.24	1.66	3.63	-1.97	6.49	10.70	-4.20	

[a] Income for individual years excludes interest on the trust funds. Interest is implicit in all summarized values.
[b] Between 0 and 0.005 percent of GDP.
[c] Summarized rates are calculated on a present-value basis. They include the value of the trust funds on January 1, 2014 and the cost of reaching a target trust fund level equal to 100 percent of annual cost at the end of the period.

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.G5 displays ratios of OASDI taxable payroll to GDP. HI taxable payroll is about 25 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.G5.—Ratio of OASDI Taxable Payroll to GDP, Calendar Years 2014-90

Calendar year	Intermediate	Low-cost	High-cost
2014	0.352	0.353	0.352
2015	.353	.354	.352
2016	.356	.357	.354
2017	.359	.361	.355
2018	.361	.365	.357
2019	.363	.367	.358
2020	.364	.369	.358
2021	.365	.370	.358
2022	.365	.372	.359
2023	.365	.373	.358
2025	.364	.373	.357
2030	.362	.372	.353
2035	.360	.372	.350
2040	.358	.371	.347
2045	.356	.371	.343
2050	.354	.370	.338
2055	.351	.369	.334
2060	.348	.368	.330
2065	.346	.367	.326
2070	.343	.367	.322
2075	.341	.366	.318
2080	.339	.366	.314
2085	.337	.366	.311
2090	.336	.367	.308

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 0.25 percent. The Trustees project that the ratio of wages to employee compensation will continue to decline, over the 65-year period ending in 2088, 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 theoretical 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.G6 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 Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W, hereafter referred to as CPI), published by the Bureau of Labor Statistics, Department of Labor, is one such price index. 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 3.4, 2.7, and 2.0 percent for the low-cost, intermediate, and high-cost sets of assumptions, respectively. Table VI.G7 provides CPI-indexed dollar values (those adjusted using the CPI in table VI.G6), 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 209(k)(1) 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 5.2, 3.8, and 2.5 percent under the low-cost, intermediate, and high-cost assumptions, respectively, between 2023 and 2088. 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.G6 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 asset reserves, 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 6.8, 5.6, and 4.4 percent for the low-cost, intermediate, and high-cost assumptions, respectively.

Table VI.G6.—Selected Economic Variables, Calendar Years 2013-90
[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:					
2013	98.42	$45,128.76	$5,892	$16,790	0.9720
2014	100.00	46,786.77	6,185	17,557	1.0000
2015	101.95	49,058.50	6,512	18,426	1.0359
2016	104.17	51,505.89	6,896	19,377	1.0796
2017	106.64	54,052.13	7,317	20,400	1.1310
2018	109.39	56,590.98	7,759	21,475	1.1896
2019	112.33	59,018.85	8,190	22,578	1.2541
2020	115.37	61,453.22	8,620	23,694	1.3240
2021	118.48	63,979.68	9,049	24,815	1.3979
2022	121.68	66,556.71	9,472	25,935	1.4764
2023	124.97	69,129.06	9,898	27,091	1.5603
2025	131.81	74,502.16	10,774	29,575	1.7425
2030	150.59	90,348.80	13,305	36,750	2.2967
2035	172.04	109,478.18	16,448	45,659	3.0272
2040	196.56	132,306.97	20,430	57,003	3.9899
2045	224.57	159,710.83	25,376	71,254	5.2589
2050	256.56	192,564.84	31,408	88,833	6.9315
2055	293.12	232,131.12	38,749	110,392	9.1359
2060	334.89	279,718.32	47,705	136,921	12.0416
2065	382.61	336,930.59	58,750	169,890	15.8713
2070	437.12	405,721.36	72,427	211,004	20.9190
2075	499.41	488,947.39	89,388	262,181	27.5721
2080	570.57	589,789.73	110,375	325,644	36.3412
2085	651.87	711,804.76	136,175	403,770	47.8992
2090	744.76	859,380.63	167,825	499,900	63.1331
Low-cost:					
2013	98.24	45,167.40	5,896	16,807	.9674
2014	100.00	47,267.39	6,268	17,771	1.0000
2015	102.82	50,382.48	6,739	19,032	1.0499
2016	106.26	53,894.61	7,304	20,464	1.1120
2017	109.87	57,365.57	7,915	21,918	1.1808
2018	113.59	60,578.54	8,520	23,335	1.2542
2019	117.45	63,823.32	9,127	24,843	1.3347
2020	121.44	67,253.43	9,743	26,401	1.4225
2021	125.57	70,825.38	10,362	27,969	1.5185
2022	129.84	74,636.44	11,017	29,611	1.6227
2023	134.25	78,527.51	11,694	31,324	1.7348
2025	143.54	86,816.44	13,072	35,064	1.9830
2030	169.66	112,291.05	17,258	46,398	2.7704
2035	200.53	145,010.03	22,824	61,419	3.8703
2040	237.01	186,635.92	30,388	81,834	5.4069
2045	280.14	239,894.75	40,576	109,456	7.5536
2050	331.11	308,006.37	54,123	146,344	10.5526
2055	391.36	395,389.23	72,134	195,464	14.7423
2060	462.58	507,618.10	96,149	261,102	20.5954
2065	546.75	651,693.62	128,368	349,338	28.7724
2070	646.23	836,461.37	171,791	468,439	40.1959
2075	763.82	1,074,476.32	230,492	629,283	56.1549
2080	902.81	1,381,405.44	309,711	845,859	78.4500
2085	1,067.08	1,776,889.82	415,913	1,135,314	109.5969
2090	1,261.25	2,286,224.53	557,808	1,521,298	153.1100

Table VI.G6.—Selected Economic Variables, Calendar Years 2013-90
[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:					
2013	98.54	$45,105.29	$5,889	$16,779	0.9795
2014	100.00	46,114.81	6,078	17,268	1.0000
2015	101.46	47,560.56	6,255	17,750	1.0236
2016	102.96	49,256.28	6,482	18,332	1.0540
2017	104.68	51,103.87	6,751	19,002	1.0922
2018	106.65	52,927.59	7,036	19,710	1.1367
2019	108.77	54,656.72	7,313	20,442	1.1863
2020	110.95	56,418.17	7,594	21,200	1.2403
2021	113.17	58,168.47	7,879	21,983	1.2968
2022	115.43	59,886.69	8,162	22,758	1.3558
2023	117.74	61,502.02	8,424	23,522	1.4170
2025	122.50	64,600.56	8,938	25,060	1.5459
2030	135.24	73,426.07	10,336	29,275	1.9217
2035	149.32	83,461.41	11,954	34,167	2.3888
2040	164.86	94,705.85	13,852	39,978	2.9695
2045	182.02	107,341.82	15,996	46,683	3.6913
2050	200.97	121,503.01	18,349	54,209	4.5886
2055	221.88	137,498.50	20,923	62,586	5.7040
2060	244.98	155,456.62	23,749	71,948	7.0906
2065	270.47	175,611.55	26,915	82,599	8.8142
2070	298.63	198,288.48	30,479	94,757	10.9568
2075	329.71	224,061.18	34,502	108,592	13.6203
2080	364.02	253,439.27	39,010	124,200	16.9311
2085	401.91	286,866.61	44,043	141,718	21.0468
2090	443.74	324,883.28	49,679	161,487	26.1630

[a] CPI-W indexed to calendar year 2014.
[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.G7 shows the operations of the combined OASI and DI Trust Funds in CPI-indexed 2014 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) asset reserves 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 scheduled benefits, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. Table VI.G7 shows trust fund operations under the low-cost, intermediate, and high-cost sets of assumptions.

Table VI.G7.—Operations of the Combined OASI and DI Trust Funds, in CPI-indexed 2014 Dollars,[a] Calendar Years 2014-90
[In billions]

Calendar year	Non-interest income	Interest income	Total income	Cost	Asset reserves at end of year
Intermediate:					
2014	$783.4	$99.0	$882.4	$863.1	$2,783.7
2015	825.3	94.8	920.1	892.3	2,758.3
2016	853.4	92.5	945.8	924.7	2,720.7
2017	885.7	92.0	977.7	958.7	2,676.7
2018	917.3	92.9	1,010.2	994.3	2,625.4
2019	943.8	93.4	1,037.2	1,031.5	2,562.2
2020	968.3	93.1	1,061.4	1,070.7	2,485.6
2021	991.4	91.6	1,083.0	1,107.6	2,395.7
2022	1,012.7	89.7	1,102.4	1,147.1	2,288.0
2023	1,032.1	87.6	1,119.7	1,188.3	2,159.3
2025	1,068.4	87.7	1,156.1	1,270.4	1,844.8
2030[b]	1,161.5	45.8	1,207.4	1,467.0	672.3
Low-cost:					
2014	789.9	99.8	889.6	861.1	2,793.0
2015	848.6	98.7	947.3	882.5	2,781.2
2016	883.7	101.8	985.5	910.8	2,765.8
2017	926.9	107.2	1,034.2	943.8	2,765.3
2018	966.7	113.6	1,080.2	978.9	2,776.2
2019	1,002.1	119.8	1,121.9	1,014.9	2,791.9
2020	1,035.3	126.2	1,161.6	1,052.1	2,809.6
2021	1,066.3	132.7	1,199.0	1,087.1	2,829.1
2022	1,098.2	139.9	1,238.1	1,124.9	2,849.3
2023	1,128.5	147.6	1,276.0	1,164.7	2,866.9
2025	1,182.8	166.3	1,349.1	1,245.2	2,889.5
2030	1,326.5	190.8	1,517.3	1,444.7	2,859.3
2035	1,486.5	178.5	1,665.0	1,625.0	2,654.8
2040	1,673.8	163.4	1,837.3	1,794.1	2,426.2
2045	1,889.2	156.5	2,045.7	1,976.6	2,330.4
2050	2,130.9	158.5	2,289.3	2,194.8	2,367.4
2055	2,402.8	166.5	2,569.4	2,463.6	2,487.4
2060	2,710.5	174.0	2,884.5	2,781.7	2,590.0
2065	3,061.7	180.6	3,242.3	3,134.7	2,682.9
2070	3,465.9	189.4	3,655.3	3,532.0	2,812.3
2075	3,931.9	207.2	4,139.1	3,958.1	3,097.0
2080	4,465.1	251.3	4,716.4	4,412.0	3,806.3
2085	5,071.2	327.6	5,398.7	4,980.1	4,990.5
2090	5,756.3	420.1	6,176.5	5,688.3	6,394.2
High-cost:					
2014	775.0	97.8	872.9	865.2	2,772.1
2015	793.9	90.8	884.8	900.1	2,717.1
2016	814.2	84.9	899.1	935.9	2,640.6
2017	835.7	80.2	915.9	972.0	2,541.1
2018	857.0	76.1	933.2	1,009.5	2,418.0
2019	874.7	71.3	946.0	1,048.4	2,268.3
2020	891.8	65.5	957.3	1,089.1	2,092.0
2021	909.0	57.9	966.9	1,127.1	1,890.7
2022	925.5	49.6	975.1	1,167.6	1,661.2
2023	938.5	41.1	979.5	1,209.4	1,398.8
2025[b]	960.7	30.0	990.6	1,291.7	784.8

[a] CPI-indexed 2014 dollars equal current dollars adjusted by the CPI indexing series in table VI.G6.
[b] The combined OASI and DI Trust Funds become depleted in 2033 under the intermediate assumptions and in 2028 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.G1 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 2014 dollars, consistent with table VI.G7. 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 asset reserves, is sufficient to cover annual cost for years 2014 through 2019; and (3) total annual income is not sufficient to cover annual cost for years beginning in 2020. From 2020 through 2032 (the year preceding the year of trust fund reserve depletion), annual cost is covered by drawing down combined trust fund reserves.

Figure VI.G1.—Estimated OASDI Income and Cost in CPI-indexed 2014 Dollars, Based on Intermediate Assumptions
[In billions]

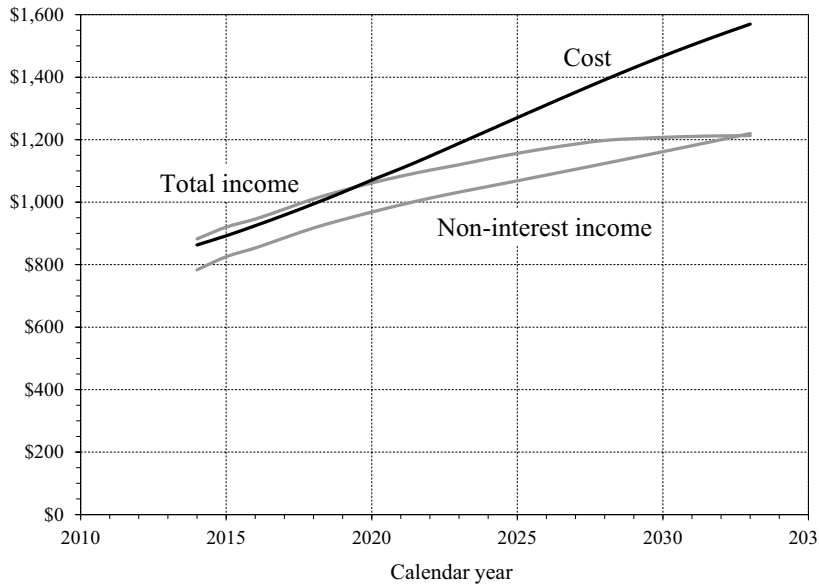


Table VI.G8 shows the operations of the combined OASI and DI Trust Funds in current dollars—that is, in dollars unadjusted for price inflation. The following items are presented in the table: (1) non-interest income; (2) interest income; (3) total income; (4) total cost; and (5) asset reserves at the 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.G8.—Operations of the Combined OASI and DI Trust Funds, in Current Dollars, Calendar Years 2014-90

[In billions]

Calendar year	Non-interest income	Interest income	Total income	Cost	Asset reserves at end of year
Intermediate:					
2014	$783.4	$99.0	$882.4	$863.1	$2,783.7
2015	841.4	96.7	938.0	909.7	2,812.1
2016	888.9	96.3	985.3	963.3	2,834.1
2017	944.5	98.1	1,042.7	1,022.3	2,854.4
2018	1,003.4	101.6	1,105.0	1,087.6	2,871.8
2019	1,060.3	104.9	1,165.1	1,158.7	2,878.3
2020	1,117.1	107.4	1,224.5	1,235.2	2,867.6
2021	1,174.7	108.5	1,283.2	1,312.3	2,838.4
2022	1,232.3	109.2	1,341.4	1,395.8	2,784.1
2023	1,289.7	109.5	1,399.3	1,484.9	2,698.4
2025	1,408.2	115.6	1,523.8	1,674.5	2,431.6
2030[a]	1,749.1	69.0	1,818.1	2,209.2	1,012.5
Low-cost:					
2014	789.9	99.8	889.6	861.1	2,793.0
2015	872.5	101.5	974.0	907.4	2,859.6
2016	939.1	108.1	1,047.2	967.8	2,939.0
2017	1,018.4	117.8	1,136.2	1,037.0	3,038.3
2018	1,098.0	129.0	1,227.0	1,111.9	3,153.4
2019	1,176.9	140.7	1,317.6	1,191.9	3,279.0
2020	1,257.3	153.3	1,410.6	1,277.6	3,412.0
2021	1,339.0	166.6	1,505.6	1,365.1	3,552.5
2022	1,425.9	181.7	1,607.5	1,460.6	3,699.4
2023	1,515.0	198.1	1,713.1	1,563.7	3,848.9
2025	1,697.8	238.7	1,936.5	1,787.3	4,147.6
2030	2,250.5	323.7	2,574.1	2,450.9	4,851.0
2035	2,980.8	357.9	3,338.7	3,258.6	5,323.7
2040	3,967.2	387.3	4,354.5	4,252.3	5,750.4
2045	5,292.5	438.3	5,730.8	5,537.2	6,528.3
2050	7,055.7	524.7	7,580.3	7,267.1	7,838.9
2055	9,403.8	651.8	10,055.6	9,641.8	9,734.9
2060	12,538.2	804.9	13,343.0	12,867.4	11,980.6
2065	16,739.8	987.5	17,727.3	17,138.7	14,668.7
2070	22,398.1	1,223.8	23,621.9	22,824.8	18,173.7
2075	30,032.9	1,582.6	31,615.5	30,233.1	23,655.3
2080	40,311.1	2,268.6	42,579.7	39,832.1	34,363.8
2085	54,113.5	3,495.2	57,608.7	53,141.8	53,252.7
2090	72,601.6	5,299.1	77,900.7	71,743.2	80,646.6
High-cost:					
2014	775.0	97.8	872.9	865.2	2,772.1
2015	805.5	92.1	897.6	913.2	2,756.6
2016	838.3	87.4	925.7	963.6	2,718.8
2017	874.9	84.0	958.8	1,017.5	2,660.1
2018	914.0	81.2	995.2	1,076.6	2,578.7
2019	951.4	77.6	1,029.0	1,140.4	2,467.3
2020	989.5	72.6	1,062.1	1,208.3	2,321.0
2021	1,028.7	65.6	1,094.2	1,275.6	2,139.7
2022	1,068.3	57.2	1,125.6	1,347.7	1,917.5
2023	1,105.0	48.3	1,153.3	1,423.9	1,646.9
2025[a]	1,176.8	36.7	1,213.5	1,582.2	961.3

[a] The combined OASI and DI Trust Funds become depleted in 2033 under the intermediate assumptions and in 2028 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.G9 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 scheduled benefits, 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.G9 also shows the balance, which equals the difference between non-interest income and cost.

Table VI.G9.—OASDI and HI Annual Non-interest Income, Cost, and Balance in Current Dollars, Calendar Years 2014-90
[In billions]

Calendar year	OASDI			HI			Combined		
	Non-interest income	Cost	Balance	Non-interest income	Cost	Balance	Non-interest income	Cost	Balance
Intermediate:									
2014	$783	$863	-$80	$255	$263	-$8	$1,039	$1,127	-$88
2015	841	910	-68	271	266	5	1,112	1,176	-63
2016	889	963	-74	289	279	10	1,178	1,243	-65
2017	945	1,022	-78	308	296	13	1,253	1,318	-65
2018	1,003	1,088	-84	329	318	10	1,332	1,406	-74
2019	1,060	1,159	-98	348	338	10	1,408	1,497	-89
2020	1,117	1,235	-118	368	362	6	1,485	1,597	-112
2021	1,175	1,312	-138	388	388	[a]	1,563	1,700	-137
2022	1,232	1,396	-164	408	415	-7	1,640	1,810	-170
2023	1,290	1,485	-195	428	442	-14	1,718	1,927	-209
2025	1,408	1,674	-266	472	516	-44	1,880	2,191	-310
2030	1,749	2,209	-460	599	701	-103	2,348	2,911	-563
2035	2,169	2,811	-642	756	939	-183	2,925	3,750	-825
2040	2,696	3,491	-794	954	1,236	-282	3,650	4,727	-1,077
2045	3,349	4,299	-950	1,203	1,595	-393	4,552	5,894	-1,342
2050	4,146	5,305	-1,158	1,513	2,012	-499	5,660	7,317	-1,657
2055	5,120	6,593	-1,473	1,900	2,502	-602	7,020	9,095	-2,074
2060	6,312	8,233	-1,922	2,383	3,118	-735	8,695	11,352	-2,657
2065	7,782	10,279	-2,497	2,985	3,919	-934	10,768	14,198	-3,431
2070	9,605	12,848	-3,243	3,739	4,951	-1,212	13,344	17,799	-4,455
2075	11,863	15,984	-4,121	4,677	6,227	-1,550	16,540	22,211	-5,671
2080	14,650	19,759	-5,109	5,840	7,728	-1,888	20,490	27,487	-6,998
2085	18,085	24,569	-6,484	7,284	9,520	-2,237	25,369	34,090	-8,721
2090	22,313	30,699	-8,386	9,075	11,694	-2,619	31,387	42,392	-11,005
Low-cost:									
2014	790	861	-71	258	258	1	1,048	1,119	-71
2015	873	907	-35	280	257	23	1,153	1,165	-12
2016	939	968	-29	305	271	34	1,245	1,239	6
2017	1,018	1,037	-19	332	286	46	1,350	1,323	27
2018	1,098	1,112	-14	357	305	52	1,455	1,417	38
2019	1,177	1,192	-15	382	322	60	1,559	1,514	45
2020	1,257	1,278	-20	408	342	67	1,666	1,619	46
2021	1,339	1,365	-26	435	363	72	1,774	1,728	46
2022	1,426	1,461	-35	464	386	78	1,890	1,846	43
2023	1,515	1,564	-49	493	409	84	2,008	1,973	36
2025	1,698	1,787	-90	559	471	87	2,256	2,259	-2
2030	2,250	2,451	-200	759	620	139	3,010	3,071	-61
2035	2,981	3,259	-278	1,029	803	227	4,010	4,061	-51
2040	3,967	4,252	-285	1,400	1,006	394	5,367	5,258	109
2045	5,292	5,537	-245	1,906	1,282	624	7,198	6,819	379
2050	7,056	7,267	-211	2,591	1,635	957	9,647	8,902	745
2055	9,404	9,642	-238	3,518	2,107	1,411	12,922	11,749	1,173
2060	12,538	12,867	-329	4,768	2,786	1,982	17,307	15,654	1,653
2065	16,740	17,139	-399	6,455	3,789	2,666	23,195	20,928	2,268
2070	22,398	22,825	-427	8,739	5,202	3,537	31,137	28,026	3,111
2075	30,033	30,233	-200	11,830	7,120	4,710	41,863	37,353	4,510
2080	40,311	39,832	479	16,007	9,624	6,383	56,318	49,456	6,862
2085	54,113	53,142	972	21,663	12,916	8,747	75,777	66,057	9,719
2090	72,602	71,743	858	29,323	17,464	11,859	101,925	89,207	12,718

Table VI.G9.—OASDI and HI Annual Non-interest Income, Cost, and Balance in Current Dollars, Calendar Years 2014-90 (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:									
2014	$775	$865	-$90	$251	$269	-$19	$1,026	$1,135	-$109
2015	806	913	-108	260	274	-13	1,066	1,187	-121
2016	838	964	-125	273	288	-16	1,111	1,252	-141
2017	875	1,018	-143	287	306	-20	1,162	1,324	-162
2018	914	1,077	-163	301	332	-30	1,215	1,408	-193
2019	951	1,140	-189	316	356	-40	1,267	1,496	-229
2020	989	1,208	-219	331	384	-54	1,320	1,593	-273
2021	1,029	1,276	-247	346	416	-70	1,374	1,691	-317
2022	1,068	1,348	-279	361	450	-89	1,429	1,797	-368
2023	1,105	1,424	-319	375	484	-109	1,480	1,908	-428
2025	1,177	1,582	-405	403	574	-171	1,580	2,156	-576
2030	1,371	2,007	-635	478	807	-329	1,849	2,814	-965
2035	1,594	2,446	-852	564	1,121	-557	2,158	3,567	-1,409
2040	1,852	2,897	-1,045	663	1,506	-844	2,515	4,403	-1,889
2045	2,141	3,383	-1,242	775	1,965	-1,190	2,916	5,348	-2,432
2050	2,461	3,937	-1,476	899	2,445	-1,546	3,360	6,382	-3,022
2055	2,812	4,592	-1,779	1,040	2,930	-1,890	3,853	7,521	-3,669
2060	3,202	5,371	-2,168	1,200	3,435	-2,235	4,402	8,806	-4,404
2065	3,641	6,284	-2,643	1,383	3,981	-2,598	5,024	10,265	-5,241
2070	4,137	7,365	-3,228	1,595	4,615	-3,020	5,732	11,980	-6,248
2075	4,698	8,597	-3,899	1,837	5,317	-3,480	6,536	13,914	-7,379
2080	5,326	9,962	-4,635	2,110	6,033	-3,923	7,437	15,995	-8,558
2085	6,030	11,535	-5,505	2,421	6,790	-4,370	8,451	18,326	-9,875
2090	6,821	13,330	-6,509	2,773	7,807	-5,034	9,594	21,136	-11,543

[a] Between -$500 million and $500 million.

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

H. 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, 2013, about 1,065,000 individuals were receiving monthly benefits from the OASI Trust Fund because of their disabilities or the disabilities of children. This total includes approximately 26,000 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 2013, the OASI Trust Fund paid a total of $9,953 million to the people described above. Table VI.H1 shows OASI scheduled benefits for disability for selected calendar years during 1960-2013 and estimates for 2014-23 based on the intermediate set of assumptions.

Table VI.H1.—Benefit Disbursements From the OASI Trust Fund With Respect to Disabled Beneficiaries

[Beneficiaries in thousands; scheduled benefits in millions]

Calendar year	Disabled beneficiaries, end of year			Amount of scheduled benefits[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	6,449	5,556	834
2006	840	732	108	6,720	5,852	864
2007	851	744	107	7,053	6,181	869
2008	922	813	109	7,688	6,776	908
2009	969	857	112	8,595	7,618	974
2010	996	879	117	8,858	7,848	1,008
2011	1,020	899	121	9,136	8,085	1,050
2012	1,045	920	125	9,698	8,595	1,102
2013	1,065	939	126	9,953	8,840	1,109
Estimates under the intermediate assumptions:						
2014	1,083	958	125	10,441	9,305	1,128
2015	1,100	976	124	10,832	9,695	1,130
2016	1,117	994	123	11,278	10,139	1,132
2017	1,132	1,012	121	11,756	10,612	1,136
2018	1,148	1,029	119	12,282	11,126	1,147
2019	1,163	1,046	117	12,850	11,680	1,161
2020	1,178	1,062	116	13,465	12,269	1,187
2021	1,194	1,078	116	14,110	12,877	1,223
2022	1,210	1,094	116	14,794	13,517	1,267
2023	1,226	1,110	117	15,502	14,187	1,304

[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 scheduled benefits 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, estimated total scheduled benefits from the OASI Trust Fund with respect to disabled beneficiaries will increase from $10,441 million in calendar year 2014 to $15,502 million in calendar year 2023.

In calendar year 2013, 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 $150,108 million. Of this amount, $9,953 million, or 6.6 percent, represented payments from the OASI Trust Fund. Table VI.H2 contains these and similar figures for selected calendar years during 1960-2013 and estimates for calendar years 2014-23.

Table VI.H2.—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	91,835	85,386	6,449	7.0
2006	99,165	92,446	6,720	6.8
2007	106,200	99,147	7,053	6.6
2008	114,064	106,376	7,688	6.7
2009	127,002	118,407	8,595	6.8
2010	133,103	124,245	8,858	6.7
2011	138,115	128,979	9,136	6.6
2012	146,623	136,925	9,698	6.6
2013	150,108	140,155	9,953	6.6
Estimates under the intermediate assumptions:				
2014	153,769	143,328	10,441	6.8
2015	158,124	147,292	10,832	6.9
2016	163,426	152,147	11,278	6.9
2017	169,023	157,266	11,756	7.0
2018	175,167	162,886	12,282	7.0
2019	182,009	169,158	12,850	7.1
2020	189,399	175,934	13,465	7.1
2021	198,614	184,504	14,110	7.1
2022	208,179	193,385	14,794	7.1
2023	217,988	202,486	15,502	7.1

[a] Beginning in 1966, includes payments for vocational rehabilitation services.
[b] Scheduled benefits for disabled workers and their children and spouses.
[c] Scheduled benefits for disabled children aged 18 and over, for certain mothers and fathers (see text), and for disabled widows and widowers (see footnote d, table VI.H1).

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

I. GLOSSARY

Actuarial balance. The difference between the summarized income rate and the summarized cost rate over a given valuation period.

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.

Asset reserves. 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 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, high 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, low 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 benefits, 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. Wages 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. A fiscal year is the 12-month period ending September 30. For example, fiscal year 2014 began October 1, 2013, and will end September 30, 2014.

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, 111-312, 112-78, and 112-96.

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 asset reserves 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 investments.

Interfund borrowing. The borrowing of asset reserves by a trust fund (OASI, DI, or HI) from another trust fund when the first fund is in danger of depletion. 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 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 payment. 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 under Title XVIII of the Social Security Act to cover the cost of hospitalization, medical care, and some related services for most people age 65 and over. In 1972, lawmakers extended coverage to people receiving Social Security Disability Insurance payments for 2 years and people

with End-Stage Renal Disease. (For beneficiaries whose primary or secondary diagnosis is Amyotrophic Lateral Sclerosis, the 2-year waiting period is waived.) In 2010, people exposed to environmental health hazards within areas under a corresponding emergency declaration became Medicare-eligible. In 2006, prescription drug coverage was added as well. Medicare consists of two separate but coordinated trust funds—Hospital Insurance (HI, Part A) and Supplementary Medical Insurance (SMI). The SMI trust fund is composed of two separate accounts—the Part B account and the Part D 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.

Military service wage credits. Credits toward OASDI earnings records for benefit computation purposes, recognizing that military personnel receive non-wage compensation (such as food and shelter) in addition to their basic pay and other cash payments. Military personnel do not pay payroll taxes on these credits. 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 specified ad hoc bases for 1978-81, with subsequent bases updated in accor-

dance 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 asset reserves, 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 asset reserves built up only to the extent needed to prevent depletion 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 stream of values (either income or cost, past or future). Present values are used widely in calculations involving financial transactions over long periods of time to account for the time value of money, by discounting or accumulating these transactions at the rate of interest. Present-value calculations for this report use the effective yield on trust fund asset reserves.

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 typically 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 2014, a worker receives one quarter of coverage (up to a total of four) for each $1,200 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.

Reserves. See "Asset reserves."

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."

Scheduled benefits. The level of benefits specified under current law.

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 asset reserves.

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 non-interest 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 asset reserves 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 reserve 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 under a specified set of assumptions has been achieved when the projected trust fund ratio is positive throughout the 75-year projection period and is either 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 conditions required to meet this test are:

- The trust fund satisfies the short-range test of financial adequacy;
- The trust fund ratios stay above zero throughout the 75-year projection period, such that benefits would be payable in a timely manner throughout the period.

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;
- If the ratio is initially less than 100 percent, then it must reach at least 100 percent within 5 years (without asset reserve 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.

The trust funds are distinct legal entities which operate independently. Fund operations are sometimes combined on a theoretical basis.

Trust fund ratio. A measure of trust fund adequacy. The asset reserves 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 reserves 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 depletion of trust fund

asset reserves. 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 reserves 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 depletion. The year in which a trust fund becomes unable to pay benefits when due because the fund's asset reserves have been used up.

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STATEMENT OF ACTUARIAL OPINION

It is my opinion that, with the important caveats noted below: (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. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Uncertainty Illustrations

Comparisons between projections for the three alternative scenarios (low-cost, intermediate, and high-cost) and the stochastic simulations presented in this report should be made with a full understanding of the limitations on these two approaches for illustrating uncertainty. The stochastic simulations include random annual variations in several key parameters, but these annual variations tend to cancel out over time so the *average* variation for each parameter diminishes with longer periods, approaching zero variation across the simulations. (See Actuarial Study 117 at www.socialsecurity.gov/OACT/NOTES/s2000s.html for additional details.) For this and other reasons, the variation reflected in the stochastic simulations is unreasonably small. In addition, the variation across the three alternative scenarios was increased this year by reversing the assignment of ultimate price inflation assumptions between the low-cost and high-cost scenarios.

Federal Budget Accounting

This report focuses on the actuarial status of the OASI and DI Trust Funds and includes important information on (1) the years in which trust fund asset reserves are projected to be depleted and (2) the degree to which benefits scheduled in the law would no longer be fully payable on a timely basis after reserve depletion. However, the footnote on page 60 of this report directs the reader to an appendix in the Medicare Trustees Report, which states, "The trust fund perspective does not encompass the relationship between the Medicare and Social Security trust funds and the overall federal budget." The reader of this report should consider this "overall" federal unified budget perspective with care because the assumptions underlying unified budget accounting are inconsistent with the assumptions of trust fund accounting.

In particular, trust fund accounting accurately reflects the law, under which benefits cannot be paid in full on a timely basis after reserve depletion. In contrast, unified budget accounting assumes that full scheduled benefits will continue to be paid through transfers from the General Fund of the Treasury, thus representing "a draw on other Federal resources for which there is no earmarked source of revenue from the public." Not only are such "draws" not permissible under the law, no precedent exists for a change in the Social Security Act to finance unfunded trust fund obligations with such draws on other Federal resources. Under this unified budget accounting assumption, $10.6 trillion of OASDI unfunded obligations, which are not payable under the law over the next 75 years, are referred to as "expenditures" requiring a "draw" from the General Fund of the Treasury.

In addition, unified budget accounting treats redemptions of trust fund reserves as an addition to annual federal deficits, referring to these redemptions also as "a draw on other Federal resources." In fact, redemptions of trust fund reserves represent a deferred use of revenues earmarked for the trust fund program alone, which have been collected in prior years and saved for later use. These redemptions utilize the entire $2.8 trillion accumulation of net past earmarked revenue for OASDI, but are referred to as draws on the General Fund of the Treasury under the unified budget perspective.

Therefore, the actual operations of the trust funds under current law do not draw on other Federal resources. Expenditures can only be paid from current or deferred earmarked resources for the specific program financed from the trust fund. Assertions that trust fund reserve redemption and shortfalls after reserve depletion represent draws on other Federal resources are based on assumptions that are inconsistent with the law and with actual trust fund annual cash-flow operations.

In addition to federal budget annual cash flows, the budget perspective is equally concerned with the build-up of federal debt. The total federal debt subject to limit includes trust fund reserves. Thus, as trust fund reserves are accumulated or redeemed, they are offset in the total federal debt by securities issued to the public, with no net effect on the total federal debt. Moreover, even in considering the federal debt owed to (held by) the public, there is no net direct effect on that debt from accumulating and then redeeming trust fund asset reserves. However, budget analysis frequently refers to both trust fund reserve redemptions and trust fund obligations not payable under the law after reserve depletion as factors that increase the federal debt held by the public in the future. This assertion is not consistent with a full assessment of the investment and redemption flows of the trust funds or with the

limitations in the law on paying benefits after trust fund reserves are depleted.

Benefit Replacement Rates

Finally, while the Trustees eliminated benefit replacement rates from the report this year, a full analysis of benefit replacement rates is presented in Actuarial Notes 155 and 2014.9 at www.socialsecurity.gov/OACT/NOTES/actnote.html.

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