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# THE 2011 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS

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## COMMUNICATION

FROM

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

TRANSMITTING

THE 2011 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS



May 13, 2011.—Referred to the Committee on Ways and Means and ordered to be printed

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## LETTER OF TRANSMITTAL

BOARD OF TRUSTEES OF THE
FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND
FEDERAL DISABILITY INSURANCE TRUST FUNDS,
Washington, D.C., May 13, 2011

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

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

Dear Mr. Speaker and Mr. President:

We have the honor of transmitting to you the 2011 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, the 71st such report.

Respectfully,

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

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

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

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

Charles P. Blahous, III, *Trustee.*

Robert D. Reischauer, *Trustee.*

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

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# THE 2011 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 in the United States makes available a basic level of monthly income upon the attainment of retirement eligibility age, death, or disability by insured workers. The OASDI program consists of two separate parts that pay benefits to workers and their families—Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI). Under OASI, monthly benefits are paid to retired workers and their families and to survivors of deceased workers. Under DI, monthly benefits are paid to disabled workers and their families.

The Board of Trustees was established under the Social Security Act 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 other two members are public representatives, appointed by the President. The Deputy Commissioner of the Social Security Administration (SSA) is designated as Secretary of the Board.

The Social Security Act requires that the Board, among other duties, report annually to the Congress on the actuarial (financial) status of the OASI and DI Trust Funds. This annual report, for 2011, is the 71st such report.

# II. OVERVIEW

## *A. HIGHLIGHTS*

The report's major findings are summarized below.

### In 2010

At the end of 2010, about 54 million people were receiving benefits: 37 million retired workers and dependents of retired workers, 6 million survivors of deceased workers, and 10 million disabled workers and dependents of disabled workers. During the year, an estimated 157 million people had earnings covered by Social Security and paid payroll taxes. Total expenditures in 2010 were $713 billion. Total income was $781 billion ($664 billion in non-interest income and $117 billion in interest earnings), and assets held in special issue U.S. Treasury securities grew to $2.6 trillion.

### Short-Range Results

The assets of the OASI Trust Fund and of the combined OASI and DI Trust Funds are projected to be adequate over the next 10 years under the intermediate assumptions. However, the assets of the DI Trust Fund are projected to steadily decline under the intermediate assumptions, and would fall below 100 percent of annual cost by the beginning of 2013 and continue to decline until the trust fund is exhausted in 2018. The DI Trust Fund does not satisfy the short-range test of financial adequacy, which requires that the trust fund remain above 100 percent of annual cost throughout the short-range period.

The combined assets of the OASI and DI Trust Funds are projected to grow throughout the short-range period, from $2,609 billion at the beginning of 2011, or 353 percent of annual cost, to $3,526 billion at the beginning of 2020, or 284 percent of annual cost, under the intermediate assumptions. This increase in assets indicates that annual cost is less than total income throughout the short-range period. However, annual cost exceeds non-interest income in 2011 and remains higher throughout the remainder of the short-range period. For last year's report, combined assets were projected to be 353 percent of annual cost at the beginning of 2011 and 299 percent at the beginning of 2020.

### Long-Range Results

Under the intermediate assumptions, OASDI cost generally increases more rapidly than non-interest income through 2035 because the retirement of the baby-boom generation increases the number of beneficiaries much faster than subsequent lower-birth-rate generations increase the labor force. From 2035 to 2050, the cost rate declines due principally to the aging of the

already retired baby-boom generation. Thereafter, increases in life expectancy generally cause OASDI cost to increase relative to non-interest income, but more slowly than prior to 2035. Annual cost is projected to exceed non-interest income in 2011 and remain higher throughout the remainder of the long-range period. However, total income, including interest earnings on trust fund assets, will be sufficient to cover annual cost until 2023. The dollar level of the combined trust funds is projected to be drawn down beginning in 2023 until assets are exhausted in 2036. Individually, the DI Trust Fund is projected to be exhausted in 2018 and the OASI Trust Fund in 2038.

The OASDI annual cost rate is projected to increase from 13.35 percent of taxable payroll in 2011 to 17.01 percent in 2035 and to 17.56 percent in 2085, a level that is 4.24 percent of taxable payroll more than the projected income rate for 2085. For last year's report, the OASDI cost for 2085 was estimated at 17.47 percent, or 4.16 percent of payroll more than the annual income rate for that year. Expressed in relation to the projected gross domestic product (GDP), OASDI cost is estimated to rise from the current level of 4.8 percent of GDP to about 6.2 percent in 2035, then to decline to 6.0 percent by 2050, and to remain between 5.9 and 6.0 percent through 2085.

For the 75-year projection period, the actuarial deficit is 2.22 percent of taxable payroll, 0.30 percentage point larger than in last year's report. The open group unfunded obligation for OASDI over the 75-year period is $6.5 trillion in present value and is $1.1 trillion more than the measured level of a year ago. If the assumptions, methods, starting values, and the law had all remained unchanged, the unfunded obligation would have risen to about $5.8 trillion due to the change in the valuation date.

**Conclusion**

Under the long-range intermediate assumptions, annual cost for the OASDI program is projected to exceed non-interest income in 2011 and remain higher throughout the remainder of the long-range period. The combined OASI and DI Trust Funds are projected to increase through 2022, and then to decline and become exhausted and unable to pay scheduled benefits in full on a timely basis in 2036. However, the DI Trust Fund is projected to become exhausted in 2018, so legislative action will be needed as soon as possible. At a minimum, a reallocation of the payroll tax rate between OASI and DI would be necessary, as was done in 1994.

For the combined OASDI Trust Funds to remain solvent throughout the 75-year projection period, the combined payroll tax rate could be increased

during the period in a manner equivalent to an immediate and permanent increase of 2.15 percentage points,[1] scheduled benefits could be reduced during the period in a manner equivalent to an immediate and permanent reduction of 13.8 percent, or some combination of these approaches could be adopted. Significantly larger changes would be required if current beneficiaries and those close to retirement age were to be held harmless, or if trust fund asset levels were to be stabilized at the end of the 75-year projection period.

The projected trust fund shortfalls should be addressed in a timely way so that necessary changes can be phased in gradually and workers and beneficiaries can be given time to adjust to them. Implementing changes sooner would allow the needed revenue increases or benefit reductions to be spread over more generations. Social Security will play a critical role in the lives of 56 million beneficiaries and 158 million covered workers and their families in 2011. With informed discussion, creative thinking, and timely legislative action, Social Security can continue to protect future generations.

[1] The necessary tax rate increase differs from the 2.22 percent actuarial deficit for two reasons. First, the necessary tax rate is the rate required to maintain solvency throughout the period that would not result in any trust fund reserve at the end of the period. Second, the necessary tax rate is increased based on the expectation that any change in tax rates will affect the proportion of employee compensation paid in wages. For proposed changes in law that would alter payroll tax rates, an increase in payroll taxes is presumed to result 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 2010*

The table below shows the income, expenditures, and assets for the OASI, the DI, and the combined OASDI Trust Funds in calendar year 2010.

**Table II.B1.—Summary of 2010 Trust Fund Financial Operations**
[In billions]

| | OASI | DI | OASDI |
|---|---|---|---|
| Assets at the end of 2009 | $2,336.8 | $203.5 | $2,540.3 |
| Total income in 2010 | 677.1 | 104.0 | 781.1 |
| Net payroll tax contributions | 544.8 | 92.5 | 637.3 |
| Reimbursements from General Fund of the Treasury | 2.0 | .4 | 2.4 |
| Taxation of benefits | 22.1 | 1.9 | 23.9 |
| Interest | 108.2 | 9.3 | 117.5 |
| Total expenditures in 2010 | 584.9 | 127.7 | 712.5 |
| Benefit payments | 577.4 | 124.2 | 701.6 |
| Railroad Retirement financial interchange | 3.9 | .5 | 4.4 |
| Administrative expenses | 3.5 | 3.0 | 6.5 |
| Net increase in assets in 2010 | 92.2 | -23.6 | 68.6 |
| Assets at the end of 2010 | 2,429.0 | 179.9 | 2,609.0 |

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

In 2010, net payroll tax contributions accounted for 82 percent of total trust fund income. Net payroll tax contributions consist of taxes paid by employees, employers, and the self-employed on earnings covered by Social Security. These taxes are paid on covered earnings up to a specified maximum annual amount, which was $106,800 in 2010. The tax rates scheduled under current law for 2010 and later are shown in table II.B2.

**Table II.B2.—Payroll Tax Contribution Rates for 2010 and Later**

| | OASI | DI | OASDI |
|---|---|---|---|
| Payroll tax contribution rate for employees and employers, each (in percent) | 5.30 | 0.90 | 6.20 |
| Payroll tax contribution rate for self-employed persons (in percent) | 10.60 | 1.80 | 12.40 |

Note: Under Public Law 111-147, most employers were exempt 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. Under Public Law 111-312, the OASDI payroll tax rate is reduced for 2011 by 2 percentage points for employees and for self-employed workers. These temporary reductions in 2010 and 2011 payroll tax revenue due to lower payroll tax rates have been and will be made up by reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds.

Less than one percent of OASDI Trust Fund income in 2010 came from reimbursements from the General Fund of the Treasury. The primary reimbursement for the year resulted from Public Law 111-147, the Hiring Incen-

tives to Restore Employment (HIRE) Act, which specified general fund reimbursement for temporary reductions in employer payroll taxes on behalf of certain qualified individuals.

Three percent of OASDI Trust Fund income in 2010 came from subjecting up to 50 percent of Social Security benefits above specified levels to Federal personal income taxation, and 15 percent of OASDI income came from interest earned on investment of OASDI Trust Fund reserves. Trust fund assets are invested in interest-bearing securities of the U.S. Government. In 2010, the combined trust fund assets earned interest at an effective annual rate of 4.6 percent. More than 98 percent of expenditures from the combined OASDI Trust Funds in 2010 were retirement, survivor, and disability benefits totaling $701.6 billion. The financial interchange with the Railroad Retirement program resulted in a net payment of $4.4 billion from the combined OASDI Trust Funds, or about 0.6 percent of total expenditures. The administrative expenses of the Social Security program were $6.5 billion, or about 0.9 percent of total expenditures.

Assets of the trust funds provide a reserve to pay benefits whenever total program cost exceeds income. Trust fund assets increased by $68.6 billion in 2010 because total income to the combined funds, including interest earned on trust fund assets, exceeded total expenditures. At the end of 2010, the combined assets of the OASI and the DI Trust Funds were 353 percent of estimated expenditures for 2011, down from an actual level of 357 percent at the end of 2009.

## *C. ASSUMPTIONS ABOUT THE FUTURE*

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.

The intermediate demographic and economic assumptions shown in table II.C1 reflect the Trustees' best estimates of future experience, and therefore most of the figures in this overview depict only the outcomes under the intermediate assumptions. Any projection of the future is, of course, uncertain. For this reason, alternatives I (low-cost) and III (high-cost) are included to provide a range of possible future experience. The actual outcome for future costs is very unlikely to be as extreme as either of the outcomes portrayed by the low- and high-cost projections. The assumptions for these two alternatives are also shown in table II.C1, and their implications are highlighted in a separate section, beginning on page 15, on the uncertainty of the projections.

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

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

| Long-range assumptions | Intermediate | Low-cost | High-cost |
|---|---|---|---|
| Total fertility rate (children per woman), starting in 2035 | 2.0 | 2.3 | 1.7 |
| Average annual percentage reduction in total age-sex-adjusted death rates from 2010 to 2085 | .78 | .32 | 1.31 |
| Average annual net immigration (in thousands) for years 2011-85 | 1,075 | 1,385 | 785 |
| Productivity (total U.S. economy), starting in 2021 | 1.7 | 2.0 | 1.4 |
| Average annual percentage change in average wage in covered employment from 2020 to 2085 | 4.0 | 3.6 | 4.4 |
| Consumer Price Index (CPI), starting in 2019 | 2.8 | 1.8 | 3.8 |
| Average annual real-wage differential (percent) for years 2021-85 | 1.2 | 1.8 | .6 |
| Unemployment rate (percent), starting in 2021 | 5.5 | 4.5 | 6.5 |
| Annual trust fund real interest rate (percent), starting in 2022 | 2.9 | 3.6 | 2.1 |

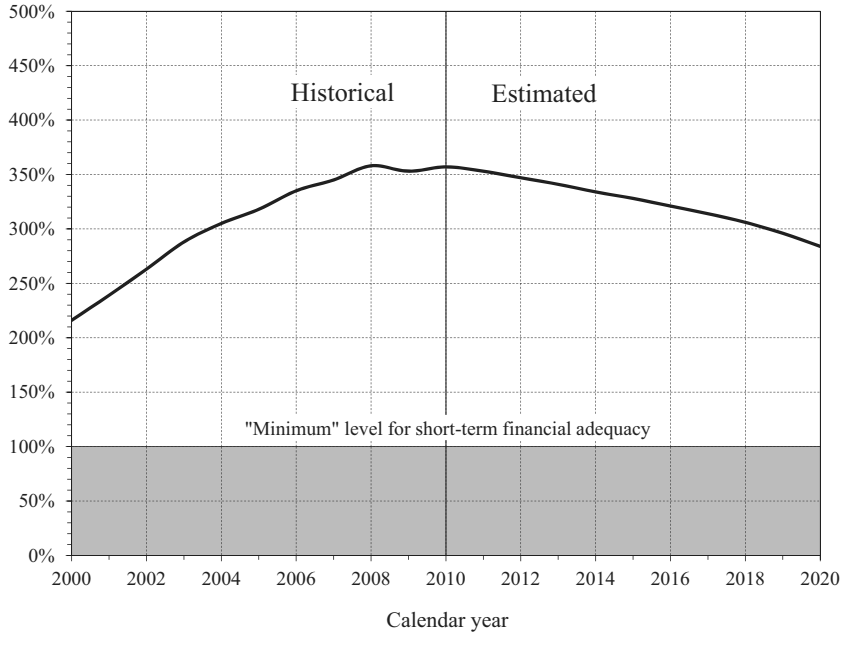
[a] See chapter V for details, including historical values and projected values.

## *D. PROJECTIONS OF FUTURE FINANCIAL STATUS*

### Short-Range Actuarial Estimates

For the short range (2011-20), the Trustees measure financial adequacy by comparing projected assets at the beginning of each year to projected program cost for that year under the intermediate set of assumptions. A trust fund ratio of 100 percent or more—that is, assets at the beginning of each year at least equal to projected cost for the year—is a good indication of a trust fund's ability to cover most short-term contingencies. The projected trust fund ratios for OASI alone, and for OASI and DI combined, under the intermediate assumptions exceed 100 percent throughout the short-range period, and 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. Its trust fund ratio is projected to fall below the 100 percent level by the beginning of 2013. After 2013, the DI trust fund ratio continues to decline until the trust fund is exhausted in 2018. Figure II.D1 below shows that the trust fund ratios for the combined OASI and DI Trust Funds decline gradually after 2010.

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



For 2010 and throughout the remainder of the short-range period, cost will exceed non-interest income but will be less than total income, including interest earned on trust fund assets. Trust fund assets are projected to grow more slowly than cost, which causes the trust fund ratio to decline, as shown in figure II.D1.

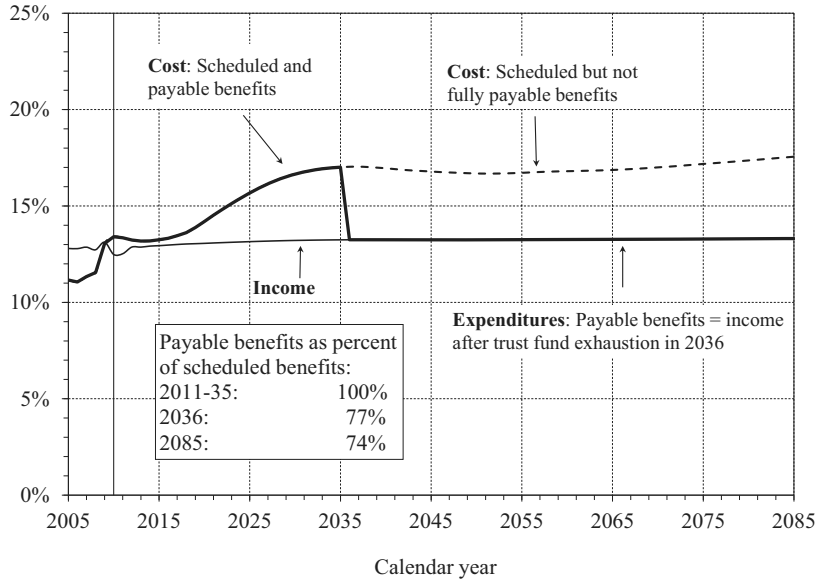
**Long-Range Actuarial Estimates**

The actuarial status of the program over the next 75 years is measured in terms of annual cost and income as a percentage of taxable payroll, trust fund ratios, the actuarial balance (also as a percentage of taxable payroll), and the open group unfunded obligation (expressed in present-value dollars, as a percentage of taxable payroll, and as a percentage of gross domestic product (GDP)). Consideration of Social Security's annual cost and income as a percentage of the total U.S. economic output or GDP provides an additional important perspective.

The year-by-year relationship among income (excluding interest), cost (including scheduled benefits), and expenditures (including payable benefits) for the OASDI program is illustrated in figure II.D2 for the full 75-year period. All values are expressed as percentages of taxable payroll and, in the case of income and cost, are referred to as the income rate and the cost rate, respectively. Under the intermediate assumptions, demographic factors would by themselves cause the cost rate to rise rapidly for about the next two decades before leveling off in about 2035. For the next 5 years, this effect will be obscured by the sharp increase in the cost rate that occurred when the recent recession led to a reduction in the tax base and a surge in beneficiaries. The projected income rate is stable at about 13 percent throughout the 75-year period except for a dip in 2011 due to an expected $10 billion downward adjustment to 2011 income that corrects for excess payroll tax revenue credited to the trust funds in earlier years.

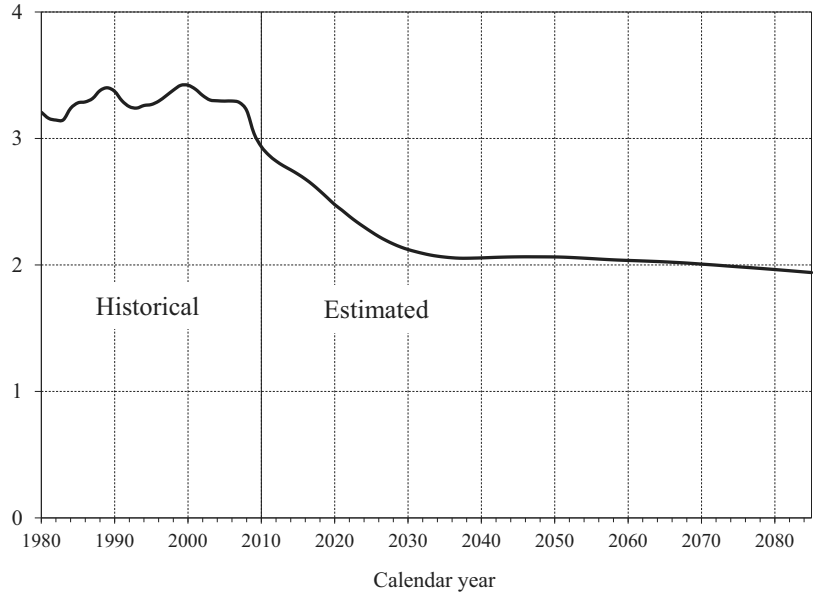
Annual cost exceeded non-interest income in 2010 and is projected to continue to be larger throughout the remainder of the 75-year valuation period. Nevertheless, from 2010 through 2022, total trust fund income, including interest income, is more than is necessary to cover costs, so trust fund assets will continue to grow during that time period. Beginning in 2023, trust fund assets will diminish until they become exhausted in 2036. Non-interest income is projected to be sufficient to support expenditures at a level of 77 percent of scheduled benefits after trust fund exhaustion in 2036, and then to decline to 74 percent of scheduled benefits in 2085.

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




The estimated number of workers per beneficiary is shown in figure II.D3. There were about 2.9 workers for every OASDI beneficiary in 2010. This ratio had been extremely stable, remaining between 3.2 and 3.4 from 1974 through 2008, and is lower for 2009 and 2010 due to the economic recession. The projected future increase in the cost rate reflects a projected decline in the number of covered workers per beneficiary. The ratio of workers to beneficiaries is projected to decline, even as the economy recovers, because the workers of the baby-boom generation are being replaced in the workforce by lower-birth-rate generations. This ratio 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.D3.—Number of Covered Workers Per OASDI Beneficiary**




The projected maximum trust fund ratios during the long-range period for the OASI, DI, and combined funds appear in table II.D1. The table also shows the year in which the maximum projected trust fund ratio is attained and the year in which the assets are projected to be exhausted.

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

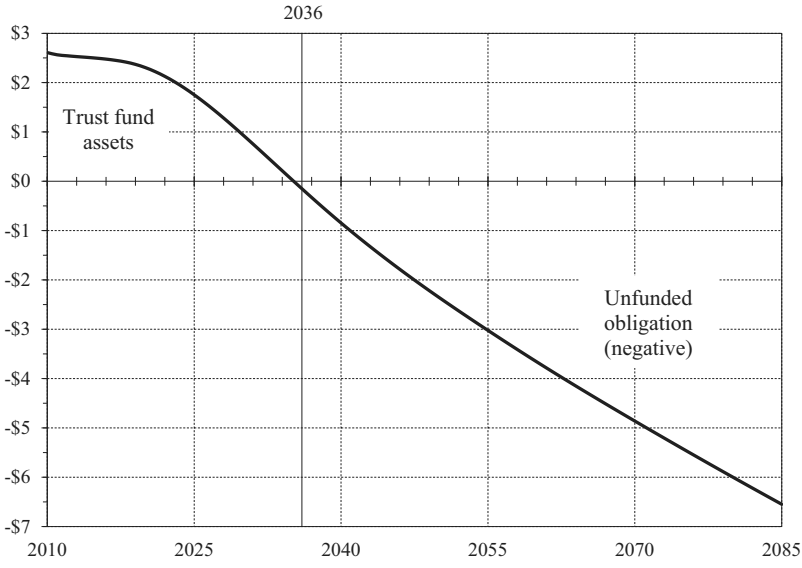
| | OASI | DI | OASDI |
|---|---|---|---|
| Maximum trust fund ratio (percent) | 401 | 136 | 353 |
| Year attained | 2011 | 2011 | 2011 |
| Year of trust fund exhaustion | 2038 | 2018 | 2036 |

The actuarial balance is a summary measure of the program's financial status through the end of the 75-year valuation period. It is essentially the difference, expressed as a percentage of taxable payroll during the valuation period, between income and cost of the program from 1937 through the end of the valuation period. When the actuarial balance is negative, the actuarial deficit can be interpreted as the percentage that could be added to the current-law income rate for each of the next 75 years, or subtracted from the cost rate for each year, to bring the funds into actuarial balance. More gener-

ally, this measure is the average amount of change in income or cost that is needed over the valuation period in order to achieve actuarial balance. In this report, the actuarial balance under the intermediate assumptions is a deficit of 2.22 percent of taxable payroll for the combined OASI and DI Trust Funds. The actuarial deficit was 1.92 percent in the 2010 report and has been in the range of 1.70 percent to 2.23 percent for every year beginning with the 1994 report. If the assumptions, methods, starting values, and the law had all remained unchanged from last year, the actuarial deficit in this report would have increased to 1.97 percent of payroll due to adding one year to the projection period.

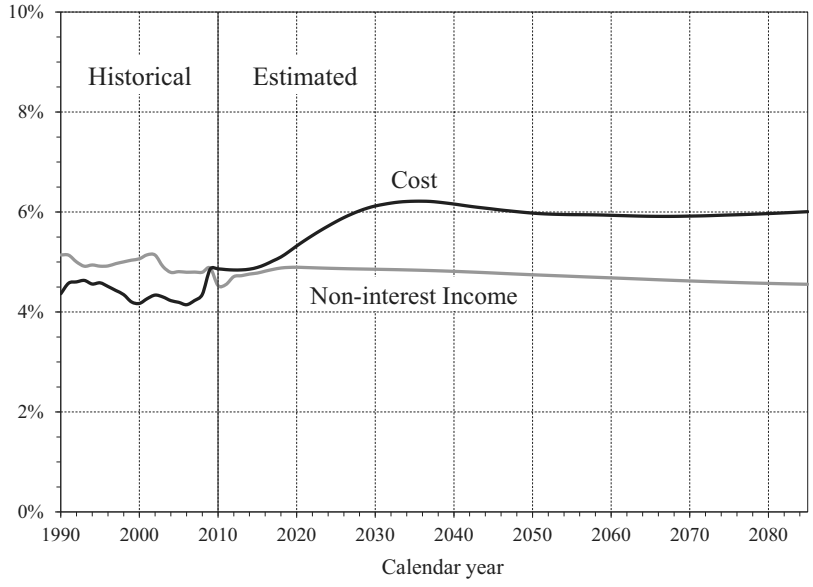
Another way to illustrate the financial shortfall of the OASDI program is to examine the cumulative present value of scheduled income less cost. Figure II.D4 shows the present value of cumulative OASDI income less cost from the inception of the program through 2010 and through each of the next 75 years. A positive cumulative value represents the level of trust fund assets through the end of the selected year. A negative value is referred to as the unfunded obligation through the selected year. The balance of the combined trust funds is $2.6 trillion at the end of 2010. This cumulative amount declines after 2010 in present value, but continues to be positive through 2035. However, after 2035 this cumulative amount becomes negative, which means that the OASDI Trust Funds have a net unfunded obligation through each year after 2035. Through the end of 2085, the combined funds have a present-value unfunded obligation of $6.5 trillion. This unfunded obligation represents 2.1 percent of taxable payroll and 0.7 percent of GDP during the 75-year valuation period. The 0.14 percentage point difference between the unfunded obligation as a share of taxable payroll (2.08 percent) and the actuarial deficit (2.22 percent) reflects the additional requirement of an ending trust fund balance equal to one year's cost for the actuarial balance measure.

**Figure II.D4.—Cumulative Scheduled OASDI Income Less Cost, From 1937 Through Selected Years**
[Present value as of January 1, 2011, in trillions]




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. Figure II.D5 shows that Social Security's cost as a percentage of GDP is projected to continue growing from 4.4 percent in 2008 to about 6.2 percent in 2035, then to decline to 6.0 percent by 2050, and to remain between 5.9 and 6.0 percent through 2085. As the economy recovers, Social Security's non-interest income, which reflects scheduled tax rates, is projected to increase from its current level of about 4.5 percent of GDP to about 4.9 percent of GDP for 2020. Thereafter, non-interest income as a percent of GDP declines gradually, until it reaches about 4.6 percent by 2085. Future non-interest income declines generally in relation to GDP because the share of employee compensation provided in fringe benefits is projected to increase gradually, which will make wages a declining share of GDP.

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




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

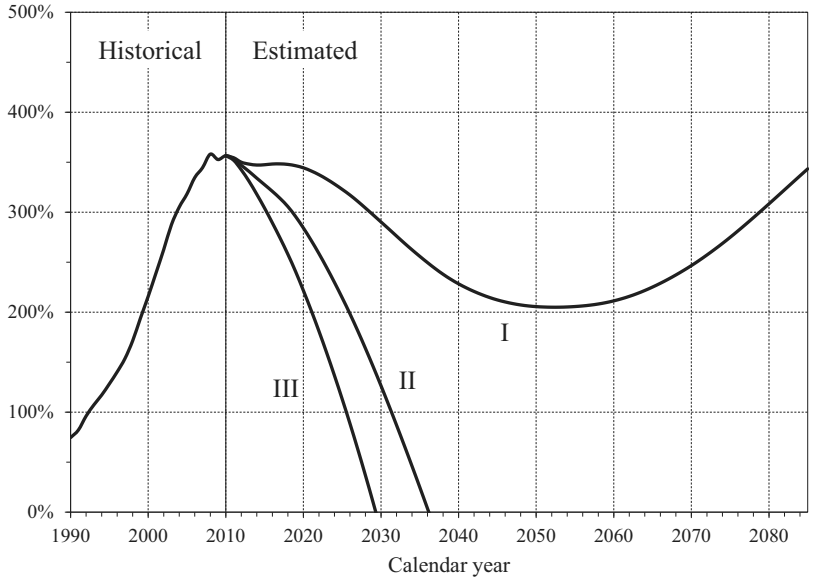
Summary measures for a time period that extends over the infinite horizon are also included in this report. These measures provide an additional indication of Social Security's very long-run financial condition, but are subject to much greater uncertainty. These calculations show that extending the horizon beyond 75 years increases the unfunded obligation. Over the infinite horizon, the shortfall (unfunded obligation) amounts to $17.9 trillion in present value, 3.6 percent of future taxable payroll, or 1.2 percent of future GDP. The summarized shortfalls for the 75-year period and the infinite horizon both reflect annual shortfalls only for years after trust fund exhaustion. The annual shortfalls after trust fund exhaustion rise slowly and reflect increases in life expectancy after 2036. 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 two-thirds of the years in the 75-year period have unfunded annual shortfalls.

The measured unfunded obligation over the infinite horizon is increased from $16.1 trillion in last year's report. If the assumptions, methods, starting values, and the law had all remained unchanged, the unfunded obligation over the infinite horizon would have risen to $16.9 trillion due to the change in the valuation date. Expressed as a percentage of taxable payroll, the measured unfunded obligation over the infinite horizon increased from 3.3 percent in last year's report to 3.6 percent for this year's report. As a percentage of GDP, the measured unfunded obligation over the infinite horizon of 1.2 percent is the same as it was in last year's report.

**Uncertainty of the Projections**

Significant uncertainty surrounds the intermediate assumptions. The Trustees use several methods to help illustrate that uncertainty. One approach is the use of low-cost (alternative I) and high-cost (alternative III) sets of assumptions. Figure II.D6 shows the projected trust fund ratios for the combined OASI and DI Trust Funds under the intermediate, low-cost, and high-cost assumptions. The low-cost alternative reflects a set of assumptions that improves the projected financial status of the trust funds relative to the financial status under the intermediate set of assumptions. The low-cost alternative includes a higher ultimate total fertility rate, slower improvement in mortality, a higher real-wage differential, and lower unemployment. The high-cost alternative, in contrast, includes a lower ultimate total fertility rate, more rapid improvement in mortality, a lower real-wage differential, and higher unemployment. These alternatives are not intended to suggest that all parameters would be likely to differ from the intermediate values in the same direction, but are intended to illustrate the effect of clearly defined scenarios that are, on balance, very favorable or unfavorable for the program's financial status. The actual outcome for future costs is very unlikely to be as extreme as either of the outcomes portrayed by the low- and high-cost projections. The method for constructing these low- and high-cost projections does not provide an estimate of the probability that actual experience will lie within or outside the range they define.

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

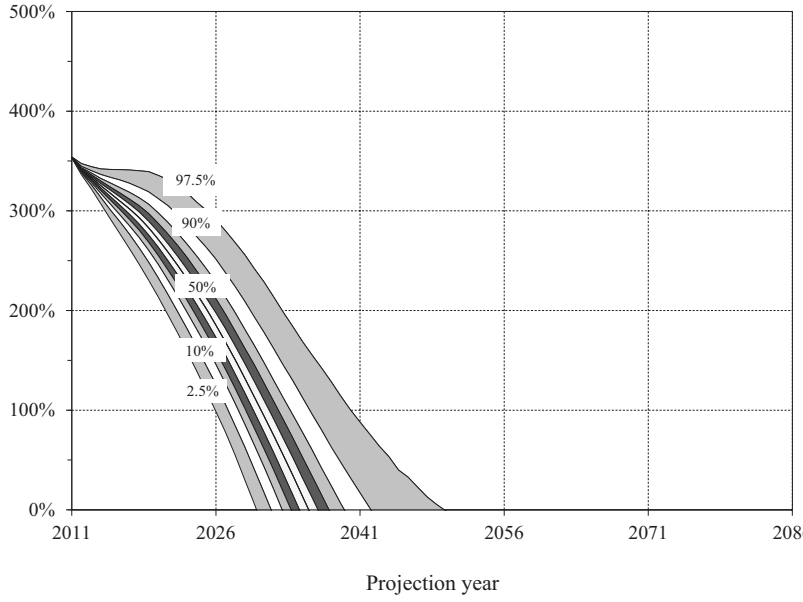



In appendix D, this report also provides long-range sensitivity analysis for the OASDI program, by varying one parameter at a time. These estimates provide further illustrations of the uncertainty surrounding projections into the future.

A third approach that measures uncertainty uses stochastic simulations to develop a range of projections and provides estimates of the probability that future outcomes will fall within or outside a given range. The results of the stochastic simulations, discussed in more detail in appendix E, suggest that trust fund exhaustion is highly probable by mid-century (see figure II.D7).

The stochastic results suggest that outcomes as good as the low-cost alternative or as bad as the high-cost alternative are unlikely. However, the relationship between the stochastic results and the low- 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.D7.—Long-Range OASDI Trust Fund Ratios From Stochastic Modeling**




## Changes From Last Year's Report

The long-range OASDI actuarial deficit of 2.22 percent of taxable payroll for this year's report is larger than the deficit of 1.92 percent of taxable payroll shown in last year's report under intermediate assumptions. Changes in mortality projections, due to new starting values and revised methods, are 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 are near-term lower levels of net other immigration and real earnings than assumed in last year's report. For a detailed description of the specific changes identified in table II.D2 below, see section IV.B.7 on page 72.

**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 | 12.09 | 1.92 | 14.01 |
| Cost rate | 13.71 | 2.22 | 15.93 |
| Actuarial balance | **-1.62** | **-.30** | **-1.92** |
| **Changes in actuarial balance due to changes in:** | | | |
| Legislation / Regulation | .00 | .00 | .00 |
| Valuation period[a] | -.04 | -.01 | -.05 |
| Demographic data and assumptions | -.14 | .00 | -.14 |
| Economic data and assumptions | -.05 | -.01 | -.06 |
| Disability assumptions | .00 | .00 | -.01 |
| Methods and programmatic data | -.06 | +.02 | -.05 |
| Total change in actuarial balance | -.30 | .00 | -.30 |
| **Shown in this report:** | | | |
| Actuarial balance | **-1.92** | **-.30** | **-2.22** |
| Income rate | 12.11 | 1.91 | 14.02 |
| Cost rate | 14.04 | 2.21 | 16.25 |

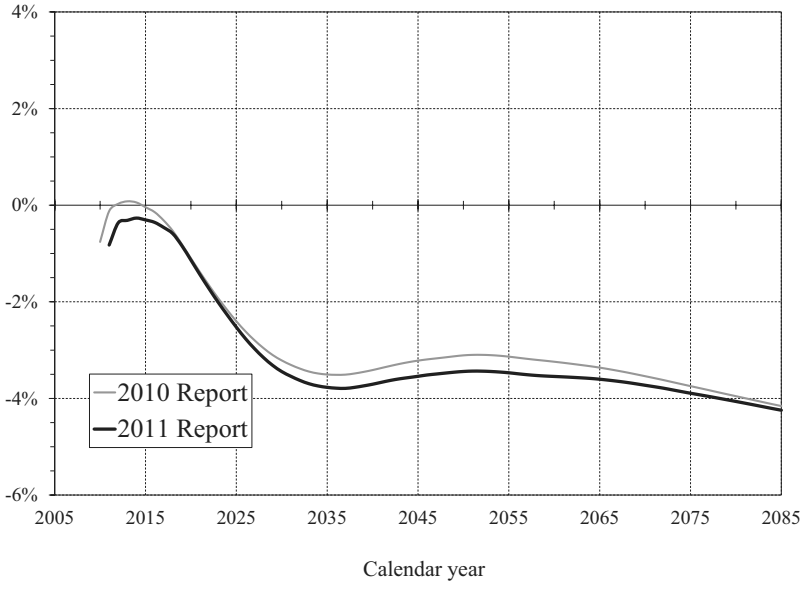
[a] In changing from the valuation period of last year's report, which was 2010-84, to the valuation period of this report, 2011-85, the relatively large negative annual balance for 2085 is included. This change in the valuation period results in a larger long-range actuarial deficit. The fund balance at the end of 2010, i.e., at the beginning of the projection period, is included in the 75-year actuarial balance.

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

The open group unfunded obligation over the 75-year projection period has increased from $5.4 trillion (present discounted value as of January 1, 2010) to $6.5 trillion (present discounted value as of January 1, 2011). The measured unfunded obligation would be expected to increase by about $0.4 trillion due to advancing the valuation date by 1 year and including the additional year 2085. Legislative changes, changes in methods, revisions in assumptions, and updated data increased the measured unfunded obligation by about $0.7 trillion.

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

**Figure II.D8.—OASDI Annual Balances: 2010 and 2011 Trustees Reports**
[As a percentage of taxable payroll, under the intermediate assumptions]



## *E. CONCLUSION*

Under current law, the cost of Social Security will generally increase faster than the program's income because of the aging of the baby-boom generation, continuing low fertility compared to the baby-boom period, and increasing life expectancy. Based on the Trustees' best estimate, program cost will exceed non-interest income in 2011, as it did in 2010, and remain higher throughout the remainder of the 75-year projection period. Social Security's combined trust funds are projected to increase with the help of interest income through 2022 and allow full payment of scheduled benefits on a timely basis until the trust funds become exhausted in 2036. At that time, annual non-interest income to the trust funds is projected to equal about 77 percent of program cost. By 2085, annual non-interest income is projected to be about 74 percent as large as the annual cost of the OASDI program.

The OASI Trust Fund and the DI Trust Fund are projected to have sufficient funds to pay full benefits on time until 2038 and 2018, respectively. Given that the DI Trust Fund is projected to become exhausted in 2018, legislative action will be needed as soon as possible. At a minimum, a reallocation of the payroll tax rate between OASI and DI would be necessary, as was done in 1994.

Over the full 75-year projection period, the actuarial deficit estimated for the combined trust funds is 2.22 percent of taxable payroll—0.30 percentage point larger than the 1.92 percent deficit projected in last year's report. Solvency of the combined OASDI Trust Funds for the next 75 years could be restored under the intermediate assumptions if increases in revenue were made equivalent to immediately and permanently increasing the Social Security payroll tax from its current level of 12.40 percent (for employees and employers combined) to 14.55 percent.[1] Alternatively, changes could be made that are equivalent to reducing scheduled benefits by about 13.8 percent. Other ways of reducing the deficit include other sources of revenue or some combination of these approaches.

If no substantial action is taken for several years, then changes necessary to maintain Social Security solvency will be concentrated on fewer years and fewer generations. This possible outcome can be seen by examining the large and sudden changes that would be required if action were deferred until the

[1] The necessary tax rate increase differs from the 2.22 percent actuarial deficit for two reasons. First, the necessary tax rate is the rate required to maintain solvency throughout the period that would not result in any trust fund reserve at the end of the period. Second, the necessary tax rate is increased based on the expectation that any change in tax rates will affect the proportion of employee compensation paid in wages. For proposed changes in law that would alter payroll tax rates, an increase in payroll taxes is presumed to result in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

combined trust funds become exhausted in 2036. For example, either of the following two actions would eliminate the shortfall for the 75-year period as a whole by specifically eliminating annual deficits after trust fund exhaustion:

- Payroll taxes could be raised to finance scheduled benefits fully in every year starting in 2036. The payroll tax rate could be increased to about 16.4 percent at the point of trust fund exhaustion in 2036 and continue rising generally thereafter, reaching about 16.9 percent in 2085.
- Similarly, benefits could be reduced to the level that is payable with scheduled tax rates in each year beginning in 2036. Scheduled benefits could be reduced 23 percent at the point of trust fund exhaustion in 2036, with reductions reaching 26 percent in 2085.

Based on the assumption of continued increase in the average age of the population after the 75-year period (due to expected improvement in life expectancy), Social Security's annual cost will very likely continue to grow faster than non-interest income after 2085. As a result, ensuring solvency of the system beyond 2085 would likely require further changes beyond those expected to be needed through 2085.

The projected trust fund shortfalls should be addressed in a timely way so that necessary changes can be phased in gradually and workers and beneficiaries can be given time to adjust to them. Implementing changes sooner would allow the needed revenue increases or benefit reductions to be spread over more generations. Social Security will play a critical role in the lives of 56 million beneficiaries and 158 million covered workers and their families in 2011. 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/2011/index.html
- www.cms.gov/ReportsTrustFunds/
- www.treasury.gov/resource-center/economic-policy/ss-medicare/Pages/social_security.aspx

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

## *A. OPERATIONS OF THE OLD-AGE AND SURVIVORS INSURANCE (OASI) AND DISABILITY INSURANCE (DI) TRUST FUNDS, IN CALENDAR YEAR 2010*

This section presents detailed information on the operations of the OASI and DI Trust Funds[1] during calendar year 2010. Chapter IV provides projections for calendar years 2011 through 2085.

### 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 2010, and of the assets of the fund at the beginning and end of the calendar year. As shown in this table, total trust fund receipts in 2010 amounted to $677.1 billion, while disbursements totaled $584.9 billion, an increase in trust fund assets during 2010 of $92.2 billion.

Included in total receipts during calendar year 2010 were $546.3 billion in payroll tax contributions. These contributions were partially offset by payments totaling $1.5 billion to the general fund for the estimated amount of refunds to employees who worked for more than one employer during a year and paid contributions on total earnings in excess of the contribution and benefit base. Net payroll tax contributions thus amounted to $544.8 billion in 2010.

Reimbursements from the General Fund of the Treasury amounted to $2.0 billion in 2010. As shown in the table, the primary reimbursement for the year resulted from Public Law 111-147, the Hiring Incentives to Restore Employment (HIRE) Act. This law specified general fund reimbursement for temporary reductions in employer payroll taxes on behalf of certain qualified individuals.

The OASI Trust Fund was reimbursed approximately $12 million in 2010 under the provisions of Public Law 110-246, the Food, Conservation, and Energy Act of 2008.

Reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds have been made for the cost attributable to the granting of noncontributory wage credits for military service prior to 1957. Adjustments are

[1] Data on trust fund operations are available at www.socialsecurity.gov/oact/progdata/fundsQuery.html.

made to the original reimbursements on a periodic basis. In 2010, a $113 million adjustment was made from the OASI Trust Fund to the general fund.

Special payments are made to uninsured persons who meet certain requirements. The costs associated with providing such payments are largely reimbursed from the General Fund of the Treasury. Although there was no reimbursement in 2010, a reimbursement of about $3,000 is scheduled for 2011, reflecting costs incurred in fiscal year 2009.

Income based on taxation of benefits amounted to $22.1 billion in 2010. About 99 percent of this income represents amounts credited to the trust funds, on an estimated basis, generally in advance of the actual receipt of taxes by the Treasury. The remaining 1 percent of the total income from taxation of benefits represents amounts withheld from the benefits paid to nonresident aliens.

The OASI Trust Fund was credited with net interest of $108.2 billion in 2010, which consisted of: (1) interest earned on the investments of the trust fund; (2) interest on adjustments in the allocation of administrative expenses between the trust fund and the general fund account for the Supplemental Security Income program; (3) interest arising from the revised allocation of administrative expenses among the trust funds; and (4) interest on certain reimbursements to the trust fund.

The remaining receipts, about $97,000, consisted of gifts received under the provisions authorizing the deposit of money gifts or bequests in the trust funds.

Of the $584.9 billion in total OASI disbursements in 2010, $577.4 billion was for net benefit payments, including the reimbursable costs of vocational rehabilitation services.[1] The amount of net benefit payments in calendar year 2010 represents an increase of 3.6 percent over the corresponding amount in calendar year 2009. Normally, benefit payments increase because of both an increase in the total number of beneficiaries and an increase in the average benefit. The increase in benefit payments was smaller than normal because there was no automatic cost-of-living adjustment for December 2009.

[1] Vocational rehabilitation services are furnished to disabled widow(er) beneficiaries and to those children of retired or deceased workers who receive benefits on the basis of disabilities that began before age 22. Reimbursement from the trust funds for the costs of vocational rehabilitation services is made only in those cases where the services contributed to the successful rehabilitation of the beneficiary.

**Table III.A1.—Operations of the OASI Trust Fund, Calendar Year 2010**
[In millions]

| | | |
|---|---|---|
| Total assets, December 31, 2009 | | $2,336,798 |
| Receipts: | | |
| Net payroll tax contributions: | | |
| Payroll tax contributions | $546,267 | |
| Payments from the General Fund of the Treasury for payroll tax contributions subject to refund | -1,495 | |
| Net payroll tax contributions | | 544,773 |
| Reimbursements from the general fund: | | |
| Reduction in payroll tax contributions due to P.L. 111-147 | 2,143 | |
| Reimbursements directed by P.L. 110-246 | 12 | |
| Adjustment of previous determinations of costs attributable to noncontributory wage credits for military service performed before 1957 | -113 | |
| Payroll tax credits due to P.L. 98-21 | [a] | |
| Net general fund reimbursements | | 2,042 |
| Income based on taxation of benefit payments: | | |
| Withheld from benefit payments to nonresident aliens | 159 | |
| All other, not subject to withholding | 21,931 | |
| Total income from taxation of benefits | | 22,090 |
| Investment income and interest adjustments: | | |
| Interest on investments | 108,200 | |
| Interest adjustments[b] | 6 | |
| Total investment income and interest adjustments | | 108,206 |
| Gifts | | [a] |
| Total receipts | | 677,111 |
| Disbursements: | | |
| Benefit payments: | | |
| Monthly benefits and lump-sum death benefits | 577,448 | |
| Reimbursement from the general fund for unnegotiated checks | -57 | |
| Payment for costs of vocational rehabilitation services for disabled beneficiaries | 2 | |
| Net benefit payments | | 577,393 |
| Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account" | | 3,930 |
| Administrative expenses: | | |
| Costs incurred by: | | |
| Social Security Administration | 2,911 | |
| Department of the Treasury | 636 | |
| Offsetting receipts from sales of supplies, materials, etc. | [a] | |
| Miscellaneous reimbursements from the general fund [c] | -4 | |
| Net administrative expenses | | 3,543 |
| Total disbursements | | 584,866 |
| Net increase in assets | | 92,245 |
| Total assets, December 31, 2010 | | 2,429,043 |

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

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

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

covered by Social Security. Under those provisions, the Railroad Retirement Board and the Commissioner of Social Security determined that an interchange of $3.9 billion to the Social Security Equivalent Benefit Account from the OASI Trust Fund was required in June 2010.

The remaining $3.5 billion of disbursements from the OASI Trust Fund represented net administrative expenses. The expenses of administering the OASI program are initially charged directly to the trust fund on an estimated basis. Periodically, as actual experience develops and is analyzed, adjustments to the allocations of administrative expenses for prior periods are made between the OASI Trust Fund, the DI Trust Fund, and the general fund account for the Supplemental Security Income program, with appropriate interest adjustments. As described earlier, the interest adjustments arising from the reallocation of administrative expenses are recorded in the trust fund accounting under investment income.

In 2010, 82 percent of OASI net administrative expenses represented the cost of administering the program. The Social Security Administration charges such costs to the trust fund ($2.9 billion in 2010). In addition, the Department of the Treasury charges directly to the trust fund expenses ($0.6 billion in 2010) for services provided in administering the OASI program. A relatively small offset ($413 thousand in 2010) to administrative expenses represents income from the sale of excess supplies and equipment.

Finally, net reimbursements are made from the General Fund of the Treasury 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 ($2 million in 2010) and with the provision of information to participants in certain pension plans ($2 million in 2010). These miscellaneous reimbursements totaled $4 million in 2010.

The assets of the OASI Trust Fund at the end of calendar year 2010 totaled $2,429.0 billion, consisting of $2,429.5 billion in U.S. Government obligations and, as an offset, an extension of credit in the amount of $0.5 billion against securities to be redeemed within the following days. The effective annual rate of interest earned by the assets of the OASI Trust Fund during calendar year 2010 was 4.6 percent, as compared to 4.8 percent earned during calendar year 2009. Table VI.A5, 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 each year 2009 and 2010.

By law, trust fund assets can be invested only 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 (i.e., securities sold only to the trust funds). These are of two types: short-term certificates of indebtedness and long-term bonds. The certificates of indebtedness are issued on a daily basis for the investment of receipts not required to meet current expenditures, and they mature on the next June 30 following the date of issue. Special-issue bonds, on the other hand, are normally acquired only when special issues of either type mature on June 30. The amount of bonds acquired on June 30 is equal to the amount of special issues maturing (including interest earnings), plus tax receipts for that day, less amounts required to meet expenditures on that day.

Section 201(d) of the Social Security Act provides that the obligations issued for purchase by the OASI and DI Trust Funds shall have maturities fixed with due regard for the needs of the funds. The usual practice has been to spread the holdings of special issues, as of each June 30, so that the amounts maturing in each of the next 15 years are approximately equal. Accordingly, the amounts and maturity dates of the OASI special-issue bonds purchased on June 30, 2010, with an interest rate of 2.875 percent, were selected so that the maturity dates of the total portfolio of special issues were spread evenly over the 15-year period 2011-25. The amounts of bonds purchased on June 30, 2010 are shown in table III.A7.

### 2. DI Trust Fund

A statement of the income and disbursements of the Federal Disability Insurance Trust Fund in calendar year 2010, and of the assets of the fund at the beginning and end of the calendar year, is presented in table III.A2.

**Table III.A2.—Operations of the DI Trust Fund, Calendar Year 2010**
[In millions]

| | | |
|---|---|---|
| Total assets, December 31, 2009 | | $203,550 |
| Receipts: | | |
| Net payroll tax contributions: | | |
| Payroll tax contributions | $92,765 | |
| Payments from the General Fund of the Treasury for payroll tax contributions subject to refund | -254 | |
| Net payroll tax contributions | | 92,511 |
| Reimbursements from the general fund: | | |
| Reduction in payroll tax contributions due to P.L. 111-147 | 364 | |
| Reimbursements directed by P.L. 110-246 | 2 | |
| Adjustment of previous determinations of costs attributable to noncontributory wage credits for military service performed before 1957 | -3 | |
| Payroll tax credits due to P.L. 98-21 | [a] | |
| Net general fund reimbursements | | 363 |
| Income based on taxation of benefit payments: | | |
| Withheld from benefit payments to nonresident aliens | 4 | |
| All other, not subject to withholding | 1,848 | |
| Total income from taxation of benefits | | 1,852 |
| Investment income and interest adjustments: | | |
| Interest on investments | 9,290 | |
| Interest adjustments[b] | 2 | |
| Total investment income and interest adjustments | | 9,292 |
| Total receipts | | 104,017 |
| Disbursements: | | |
| Benefit payments: | | |
| Monthly benefits | 124,191 | |
| Reimbursement from the general fund for unnegotiated checks | -29 | |
| Payment for costs of vocational rehabilitation services for disabled beneficiaries | 54 | |
| Net benefit payments | | 124,216 |
| Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account" | | 462 |
| Administrative expenses: | | |
| Costs incurred by: | | |
| Social Security Administration | 2,842 | |
| Department of the Treasury | 118 | |
| Miscellaneous reimbursements from the general fund[c] | 22 | |
| Total administrative expenses | | 2,982 |
| Total disbursements | | 127,660 |
| Net increase in assets | | -23,643 |
| Total assets, December 31, 2010 | | 179,907 |

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

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

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

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

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

Of the $104.0 billion in total receipts, $92.5 billion was net payroll tax contributions.

Of the $127.7 billion in total disbursements, $124.2 billion was net benefit payments. This amount represents an increase of 4.9 percent over the corresponding amount in calendar year 2009. This increase in DI benefit payments was due to the same factors that resulted in the net increase in benefit payments from the OASI Trust Fund. As with OASI benefits, the increase in DI benefit payments was smaller than normal in 2010 because there was no automatic cost-of-living increase in December 2009. The increase in the number of DI beneficiaries from 2009 to 2010 was more pronounced than the corresponding increase in the number of OASI beneficiaries, due to the increase in applications for disability benefits caused by the economic slowdown.

Total DI disbursements, which started to exceed non-interest income in 2005, continued to exceed such income in 2010. As in 2009, DI disbursements exceeded total DI income (including interest).

The assets of the DI Trust Fund at the end of calendar year 2010 totaled $179.9 billion, and consisted of $180.0 billion in U.S. Government obligations and, as an offset, an extension of credit amounting to $0.1 billion against securities to be redeemed within the following few days. The effective annual rate of interest earned by the assets of the DI Trust Fund during calendar year 2010 was 4.9 percent, as compared to 5.0 percent earned during calendar year 2009. Table VI.A6, 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 each year 2009 and 2010.

Section 201(d) of the Social Security Act provides that the obligations issued for purchase by the OASI and DI Trust Funds shall have maturities fixed with due regard for the needs of the funds. The usual practice has been to spread the holdings of special issues, as of each June 30, so that the amounts maturing in each of the next 15 years are approximately equal. However, as of June 2010, the DI Trust Fund was estimated to exhaust its assets within 15 years. Therefore, the amounts and maturity dates of the DI special-issue bonds purchased on June 30, 2010, with an interest rate of 2.875 percent, were selected so that equal amounts of special issues would mature over the 10-year period 2011-20. The DI Trust Fund had already redeemed many of the bonds coming due June 30, 2011, so this even spread led to the purchase of a single bond maturing on June 30, 2011, as shown in table III.A7.

## 3. OASI and DI Trust Funds, Combined

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

**Table III.A3.—Operations of the Combined OASI and DI Trust Funds, Calendar Year 2010**
[In millions]

| | | |
|---|---|---|
| Total assets, December 31, 2009 | | $2,540,348 |
| Receipts: | | |
| Net payroll tax contributions: | | |
| Payroll tax contributions | $639,032 | |
| Payments from the General Fund of the Treasury for payroll tax contributions subject to refund | -1,748 | |
| Net payroll tax contributions | | 637,283 |
| Reimbursements from the general fund: | | |
| Reduction in payroll tax contributions due to P.L. 111-147 | 2,507 | |
| Reimbursements directed by P.L. 110-246 | 14 | |
| Adjustment of previous determinations of costs attributable to noncontributory wage credits for military service performed before 1957 | -116 | |
| Payroll tax credits due to P.L. 98-21 | [a] | |
| Net general fund reimbursements | | 2,405 |
| Income based on taxation of benefit payments: | | |
| Withheld from benefit payments to nonresident aliens | 163 | |
| All other, not subject to withholding | 23,779 | |
| Total income from taxation of benefits | | 23,942 |
| Investment income and interest adjustments: | | |
| Interest on investments | 117,490 | |
| Interest adjustments[b] | 8 | |
| Total investment income and interest adjustments | | 117,498 |
| Gifts | | [a] |
| Total receipts | | 781,128 |
| Disbursements: | | |
| Benefit payments: | | |
| Monthly benefits and lump-sum death payments | 701,639 | |
| Reimbursement from the general fund for unnegotiated checks | -86 | |
| Payment for costs of vocational rehabilitation services for disabled beneficiaries | 56 | |
| Net benefit payments | | 701,609 |
| Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account" | | 4,392 |
| Administrative expenses: | | |
| Costs incurred by: | | |
| Social Security Administration | 5,753 | |
| Department of the Treasury | 755 | |
| Offsetting receipts from sales of supplies, materials, etc. | [a] | |
| Miscellaneous reimbursements from the general fund[c] | 17 | |
| Net administrative expenses | | 6,525 |
| Total disbursements | | 712,526 |
| Net increase in assets | | 68,602 |
| Total assets, December 31, 2010 | | 2,608,950 |

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

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

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

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

Table III.A4 compares estimates of total income and total expenditures for calendar year 2010, from the 2006-10 Trustees Reports, to the corresponding actual amounts for 2010.[1]

**Table III.A4.—Comparison of Actual Calendar Year 2010 Trust Fund Operations With Estimates Made in Prior Reports[a]**
[Amounts in billions]

| | Total income[b] | | Total expenditures | |
|---|---|---|---|---|
| | Amount | Difference from actual (percent) | Amount | Difference from actual (percent) |
| **OASI Trust Fund:** | | | | |
| Estimate in 2006 report | $810.4 | 19.7 | $575.7 | -1.6 |
| Estimate in 2007 report | 810.3 | 19.7 | 573.5 | -1.9 |
| Estimate in 2008 report | 801.2 | 18.3 | 577.9 | -1.2 |
| Estimate in 2009 report | 733.9 | 8.4 | 581.2 | -.6 |
| Estimate in 2010 report | 686.1 | 1.3 | 586.2 | .2 |
| Actual amount | 677.1 | — | 584.9 | — |
| **DI Trust Fund:** | | | | |
| Estimate in 2006 report | 124.2 | 19.4 | 121.2 | -5.1 |
| Estimate in 2007 report | 124.7 | 19.9 | 120.7 | -5.4 |
| Estimate in 2008 report | 123.8 | 19.0 | 121.8 | -4.6 |
| Estimate in 2009 report | 113.9 | 9.5 | 128.1 | .4 |
| Estimate in 2010 report | 105.2 | 1.1 | 128.4 | .6 |
| Actual amount | 104.0 | — | 127.7 | — |
| **OASI and DI Trust Funds, combined:** | | | | |
| Estimate in 2006 report | 934.7 | 19.7 | 696.9 | -2.2 |
| Estimate in 2007 report | 935.0 | 19.7 | 694.2 | -2.6 |
| Estimate in 2008 report | 925.0 | 18.4 | 699.6 | -1.8 |
| Estimate in 2009 report | 847.7 | 8.5 | 709.3 | -.4 |
| Estimate in 2010 report | 791.3 | 1.3 | 714.6 | .3 |
| Actual amount | 781.1 | — | 712.5 | — |

[a] The estimates shown are based on the intermediate assumptions.
[b] "Actual" income for 2010 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.

A number of factors can contribute to differences between estimates and subsequent actual amounts, including actual values for key demographic, economic, and other variables that differ from assumed levels. In addition, new legislation or other administrative initiatives that were not enacted or finalized at the time the earlier estimates were completed can contribute to such differences. Estimates for 2010 were far too optimistic in the 2006 through 2008 reports because they did not anticipate the economic recession. Estimates in the 2009 report were more accurate, but still underestimated the effect of the recession for 2010.

[1] Percentage differences are calculated using amounts before rounding to the nearest $0.1 billion.

At the end of calendar year 2010, about 54.0 million persons were receiving monthly benefits under the OASDI program. Of these persons, about 43.8 million and 10.2 million were receiving monthly benefits from the OASI Trust Fund and the DI Trust Fund, respectively. The number of persons receiving benefits from the OASI and DI Trust Funds grew by 2.4 percent and 5.0 percent, respectively, during the calendar year, which reflects increases in the insured population and effects of the economic downturn. The estimated distributions of benefit payments in calendar years 2009 and 2010, by type of beneficiary, are shown in table III.A5 for each trust fund separately.

**Table III.A5.—Distribution of Benefit Payments by Type of Beneficiary or Payment, Calendar Years 2009 and 2010**
[Amounts in millions]

| | Calendar year 2009 | | Calendar year 2010 | |
|---|---|---|---|---|
| | Amount | Percentage of total | Amount | Percentage of total |
| Total OASDI benefit payments | $675,488 | 100.0 | $701,639 | 100.0 |
| OASI benefit payments | 557,160 | 82.5 | 577,448 | 82.3 |
| DI benefit payments | 118,329 | 17.5 | 124,191 | 17.7 |
| OASI benefit payments, total | 557,160 | 100.0 | 577,448 | 100.0 |
| Monthly benefits: | | | | |
| Retired workers and auxiliaries | 451,578 | 81.1 | 471,505 | 81.7 |
| Retired workers | 424,044 | 76.1 | 443,390 | 76.8 |
| Spouses | 23,613 | 4.2 | 24,001 | 4.2 |
| Children | 3,922 | .7 | 4,114 | .7 |
| Survivors of deceased workers | 105,380 | 18.9 | 105,741 | 18.3 |
| Aged widows and widowers | 83,572 | 15.0 | 83,927 | 14.5 |
| Disabled widows and widowers | 2,067 | .4 | 2,121 | .4 |
| Parents | 23 | [a] | 23 | [a] |
| Children | 18,071 | 3.2 | 18,024 | 3.1 |
| Widowed mothers and fathers caring for child beneficiaries | 1,647 | .3 | 1,645 | .3 |
| Uninsured persons generally aged 72 before 1968 | [b] | [a] | [b] | [a] |
| Lump-sum death payments | 201 | [a] | 203 | [a] |
| DI benefit payments, total | 118,329 | 100.0 | 124,191 | 100.0 |
| Disabled workers | 109,549 | 92.6 | 115,059 | 92.6 |
| Spouses | 586 | .5 | 598 | .5 |
| Children | 8,194 | 6.9 | 8,534 | 6.9 |

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

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

Net administrative expenses drawn from the OASI and DI Trust Funds in calendar year 2010 totaled $6.5 billion. This amount represented 1.0 percent of non-interest income and 0.9 percent of expenditures. Corresponding per-

centages for each trust fund separately and for the OASDI program as a whole are shown in table III.A6 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 2006-10**

| | OASI Trust Fund | | DI Trust Fund | | OASI and DI Trust Funds, combined | |
|---|---|---|---|---|---|---|
| Calendar year | Non-interest income | Total expenditures | Non-interest income | Total expenditures | Non-interest income | Total expenditures |
| 2006 | 0.5 | 0.7 | 2.5 | 2.5 | 0.8 | 1.0 |
| 2007 | .5 | .6 | 2.6 | 2.5 | .8 | .9 |
| 2008 | .5 | .6 | 2.6 | 2.3 | .8 | .9 |
| 2009 | .6 | .6 | 2.8 | 2.3 | .9 | .9 |
| 2010 | .6 | .6 | 3.1 | 2.3 | 1.0 | .9 |

Changes in the invested assets of the OASI Trust Fund and the DI Trust Fund between the end of 2009 and the end of 2010 result from the acquisition and disposition of securities during calendar year 2010. 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 2010**
[In millions]

| | OASI Trust Fund | DI Trust Fund | OASI and DI Trust Funds, combined |
|---|---|---|---|
| Invested assets, December 31, 2009 | $2,318,780 | $199,760 | $2,518,541 |
| Acquisitions: | | | |
| Special issues: | | | |
| Certificates of indebtedness | 646,634 | 103,195 | 749,830 |
| Bonds[a] | 262,278 | 7,732 | 270,010 |
| Total acquisitions | 908,912 | 110,927 | 1,019,839 |
| Dispositions: | | | |
| Special issues: | | | |
| Certificates of indebtedness | 629,578 | 100,095 | 729,674 |
| Bonds | 168,600 | 30,569 | 199,169 |
| Total dispositions | 798,179 | 130,664 | 928,843 |
| Net increase in invested assets | 110,733 | -19,737 | 90,996 |
| Invested assets, December 31, 2010 | 2,429,514 | 180,023 | 2,609,537 |

[a] Amounts shown were purchased on June 30, 2010. The interest rate on such purchases was 2.875 percent.

Note: All investments are shown at par value.

## *B. SOCIAL SECURITY AMENDMENTS SINCE THE 2010 REPORT*

Since the 2010 report was transmitted to Congress on August 5, 2010, two laws were enacted that are expected to have direct financial effects on the OASDI program.

The Small Business Jobs Act of 2010, Public Law 111-240, was enacted on September 27, 2010. It allows business owners to deduct the cost of health insurance incurred in 2010 for themselves and their family members when calculating their 2010 self-employment taxable income. The amount of self-employment taxes collected by the combined OASI and DI Trust Funds is estimated to be reduced by about $1.3 billion in calendar year 2011. The financial effect of this law over the long-range period is estimated to be negligible.

The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, Public Law 111-312, was enacted on December 17, 2010. Two provisions of this law directly affect the financial status of the OASDI program. First, this law extended the temporary lowering of Federal income tax rates scheduled through tax year 2010 for two additional years, through 2012. This first provision is expected to have a small financial impact over the short-range period and a negligible financial impact over the long-range period, due to reduced taxes paid on OASDI benefits in 2011 and 2012. Second, this law reduced the OASDI payroll tax rate for 2011 by 2 percentage points for employees and for self-employed workers. This law provides for reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds to make up for the reduction in payroll tax revenue. Therefore, this second provision is estimated to have no financial impact on the OASDI program over the short-range and long-range periods.

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

## IV. ACTUARIAL ESTIMATES

This chapter presents actuarial estimates of the future financial condition of the Social Security program. The income, cost, and assets or unfunded obligation of the OASI and DI Trust Funds are projected: (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, a variety of measures of the adequacy of current program financing are discussed. 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 program cost that is projected to be payable with the financing provisions in current law.

As described in the Overview section of this report, these estimates depend upon a broad set of demographic, economic, and programmatic factors. The estimates presented in this section are prepared 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 intermediate estimates are shown first in the tables of this report, followed by the low-cost and high-cost estimates. These sets of assumptions, along with the actuarial methods used to produce the estimates, are described in chapter V. In this chapter, the estimates and measures of trust fund financial adequacy for the short range (2011-20) are presented first, followed by estimates and measures of actuarial status for the long range (2011-85) and over the infinite horizon. As additional illustrations related to uncertainty, sensitivity analyses of the effects of variation in individual factors are presented in appendix D and probability distributions of certain measures are presented in appendix E.

### *A. SHORT-RANGE ESTIMATES*

Financial adequacy, or solvency, of the trust funds reflects the ability to pay scheduled benefits in full on a timely basis. A standard method of assessing solvency is the "trust fund ratio," which is defined as the assets 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 could be paid solely with the assets at the beginning of that year. A trust fund ratio of 100 percent of annual program cost is generally assumed to provide a reasonable "contingency reserve."

Maintaining a reasonable contingency reserve is important because the trust funds do not have borrowing authority. The trust funds would be unable to pay benefits in full on a timely basis if they were to become exhausted and 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 Congress time to address possible changes to the program.

The short-range test of financial adequacy applies to the OASI and DI Trust Funds individually and combined. If the estimated trust fund ratio is at least 100 percent at the beginning of the projection period, the test requires that it be projected to remain at or above 100 percent throughout the 10-year period. Alternatively, if the ratio is initially less than 100 percent, then it must be projected to reach at least 100 percent within 5 years (and not be depleted 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 on the basis of the intermediate estimates. The failure of either trust fund to meet this test indicates that program solvency in the next 10 years is in question and that legislative action is needed 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 2011-20. No changes are assumed to occur in the present statutory provisions and regulations under which the OASDI program operates.[1]

These estimates are shown in table IV.A1 and indicate that the assets of the OASI Trust Fund would continue to increase throughout the next 10 years under all three sets of assumptions. Based on the intermediate assumptions, the assets of the OASI Trust Fund would continue to exceed 100 percent of annual expenditures by a large amount through the end of 2020. Consequently, the OASI Trust Fund satisfies the test of short-range financial adequacy by a wide margin. The estimates in table IV.A1 also indicate that the short-range test would be satisfied even under the high-cost assumptions (see figure IV.A1 for graphical illustration of these results).

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

**Table IV.A1.—Operations of the OASI Trust Fund, Calendar Years 2006-20[a]**

[Dollar amounts in billions]

| Calendar year | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Net payroll tax contributions | GF reimbursements[b] | Taxation of benefits | Net interest | Total | Benefit payments | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[c] |
| **Historical data:** | | | | | | | | | | | | |
| 2006 . . | $642.2 | $534.8 | [d] | $15.6 | $91.8 | $461.0 | $454.5 | $3.0 | $3.5 | $181.3 | $1,844.3 | 361 |
| 2007 . . | 675.0 | 560.9 | [d] | 17.2 | 97.0 | 495.7 | 489.1 | 3.1 | 3.6 | 179.3 | 2,023.6 | 372 |
| 2008 . . | 695.5 | 574.6 | [d] | 15.6 | 105.3 | 516.2 | 509.3 | 3.2 | 3.6 | 179.3 | 2,202.9 | 392 |
| 2009 . . | 698.2 | 570.4 | [d] | 19.9 | 107.9 | 564.3 | 557.2 | 3.4 | 3.7 | 133.9 | 2,336.8 | 390 |
| 2010 . . | 677.1 | 544.8 | $2.0 | 22.1 | 108.2 | 584.9 | 577.4 | 3.5 | 3.9 | 92.2 | 2,429.0 | 400 |
| **Intermediate:** | | | | | | | | | | | | |
| 2011 . . | 700.7 | 482.7 | 90.1 | 20.9 | 107.0 | 605.6 | 598.0 | 3.7 | 4.0 | 95.1 | 2,524.1 | 401 |
| 2012 . . | 752.8 | 616.1 | 4.3 | 22.9 | 109.5 | 633.0 | 625.1 | 3.9 | 4.1 | 119.8 | 2,643.9 | 399 |
| 2013 . . | 796.4 | 653.0 | [d] | 28.0 | 115.4 | 670.0 | 662.1 | 3.8 | 4.1 | 126.4 | 2,770.3 | 395 |
| 2014 . . | 845.7 | 690.0 | [d] | 33.0 | 122.7 | 711.7 | 703.7 | 3.9 | 4.2 | 133.9 | 2,904.2 | 389 |
| 2015 . . | 893.7 | 727.1 | [d] | 36.3 | 130.2 | 757.2 | 748.9 | 4.0 | 4.3 | 136.5 | 3,040.7 | 384 |
| 2016 . . | 943.4 | 765.6 | [d] | 40.0 | 137.8 | 805.6 | 797.4 | 4.1 | 4.1 | 137.8 | 3,178.6 | 377 |
| 2017 . . | 993.9 | 803.8 | [d] | 44.1 | 146.1 | 858.0 | 849.2 | 4.2 | 4.6 | 135.9 | 3,314.5 | 370 |
| 2018 . . | 1,048.7 | 844.8 | — | 47.7 | 156.2 | 915.3 | 906.1 | 4.3 | 4.8 | 133.4 | 3,447.9 | 362 |
| 2019 . . | 1,102.4 | 884.4 | — | 51.6 | 166.4 | 981.1 | 971.7 | 4.5 | 4.9 | 121.3 | 3,569.2 | 351 |
| 2020 . . | 1,155.1 | 923.7 | — | 55.9 | 175.4 | 1,052.6 | 1,042.8 | 4.6 | 5.1 | 102.5 | 3,671.7 | 339 |
| **Low-cost:** | | | | | | | | | | | | |
| 2011 . . | 702.6 | 484.1 | 90.6 | 20.9 | 107.0 | 605.4 | 597.7 | 3.7 | 4.0 | 97.2 | 2,526.3 | 401 |
| 2012 . . | 760.5 | 623.6 | 4.3 | 22.9 | 109.8 | 631.9 | 623.9 | 3.9 | 4.0 | 128.7 | 2,655.0 | 400 |
| 2013 . . | 808.1 | 664.1 | [d] | 27.8 | 116.2 | 665.2 | 657.3 | 3.8 | 4.1 | 143.0 | 2,797.9 | 399 |
| 2014 . . | 861.6 | 704.7 | [d] | 32.5 | 124.4 | 702.0 | 694.0 | 3.9 | 4.1 | 159.6 | 2,957.6 | 399 |
| 2015 . . | 913.4 | 744.5 | [d] | 35.6 | 133.4 | 741.8 | 733.7 | 4.0 | 4.2 | 171.6 | 3,129.2 | 399 |
| 2016 . . | 965.3 | 783.5 | [d] | 39.0 | 142.7 | 784.8 | 776.8 | 4.1 | 3.9 | 180.5 | 3,309.7 | 399 |
| 2017 . . | 1,017.0 | 821.2 | [d] | 42.7 | 153.0 | 832.0 | 823.4 | 4.2 | 4.4 | 185.0 | 3,494.7 | 398 |
| 2018 . . | 1,071.9 | 860.9 | — | 46.0 | 165.1 | 882.7 | 873.9 | 4.3 | 4.6 | 189.2 | 3,683.8 | 396 |
| 2019 . . | 1,126.0 | 899.3 | — | 49.3 | 177.3 | 937.7 | 928.6 | 4.4 | 4.7 | 188.3 | 3,872.1 | 393 |
| 2020 . . | 1,179.0 | 937.0 | — | 52.9 | 189.0 | 996.2 | 986.8 | 4.5 | 4.9 | 182.8 | 4,054.9 | 389 |
| **High-cost:** | | | | | | | | | | | | |
| 2011 . . | 698.6 | 481.3 | 89.5 | 20.9 | 106.9 | 605.9 | 598.2 | 3.7 | 4.0 | 92.7 | 2,521.7 | 401 |
| 2012 . . | 745.0 | 608.2 | 4.3 | 23.1 | 109.5 | 636.7 | 628.8 | 3.9 | 4.1 | 108.3 | 2,630.0 | 396 |
| 2013 . . | 789.5 | 645.6 | [d] | 28.4 | 115.5 | 679.1 | 671.2 | 3.8 | 4.1 | 110.4 | 2,740.4 | 387 |
| 2014 . . | 838.4 | 681.9 | [d] | 33.7 | 122.7 | 728.5 | 720.3 | 3.9 | 4.2 | 109.9 | 2,850.4 | 376 |
| 2015 . . | 888.9 | 721.1 | [d] | 37.6 | 130.1 | 783.5 | 775.0 | 4.1 | 4.4 | 105.4 | 2,955.8 | 364 |
| 2016 . . | 943.6 | 763.9 | [d] | 42.0 | 137.7 | 844.3 | 835.9 | 4.2 | 4.2 | 99.3 | 3,055.0 | 350 |
| 2017 . . | 1,000.0 | 807.4 | [d] | 46.8 | 145.8 | 910.6 | 901.4 | 4.4 | 4.8 | 89.4 | 3,144.4 | 335 |
| 2018 . . | 1,056.9 | 852.2 | — | 51.2 | 153.5 | 983.5 | 973.9 | 4.5 | 5.1 | 73.5 | 3,217.9 | 320 |
| 2019 . . | 1,112.1 | 896.1 | — | 56.0 | 160.0 | 1,064.1 | 1,054.1 | 4.7 | 5.3 | 48.0 | 3,265.9 | 302 |
| 2020 . . | 1,165.6 | 939.7 | — | 61.3 | 164.7 | 1,153.2 | 1,142.7 | 4.9 | 5.6 | 12.4 | 3,278.4 | 283 |

[a] A detailed description of the components of income and cost, along with complete historical values, is presented in appendix A.

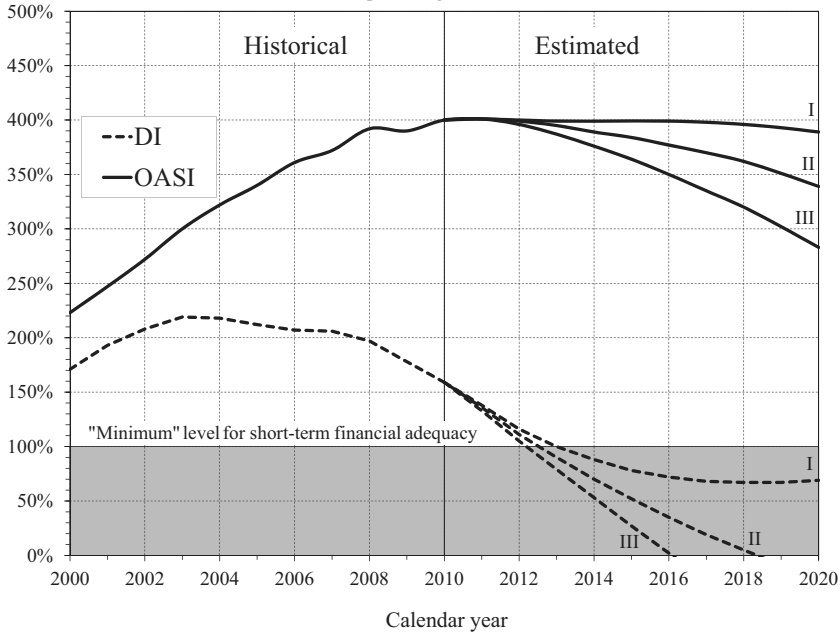
[b] Includes reimbursements from the General Fund of the Treasury to the OASI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968; (3) the cost of payroll tax credits provided 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 and 111-312.

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

[d] Less than $50 million.

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

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




The estimated income shown in table IV.A1 increases annually under each set of assumptions throughout the short-range projection period. The estimated increases in income reflect increases in estimated OASDI taxable earnings and growth in interest earnings on the invested assets of the trust fund. After decreasing in the period 2008-10, employment is assumed to increase in every year through 2020 for all three alternatives. The number of persons with taxable earnings would increase on the basis of alternatives I, II, and III from 157 million during calendar year 2010 to about 179 million, 174 million, and 170 million, respectively, in 2020. The total annual amount of taxable earnings is projected to increase in every year through 2020 for each alternative. Total earnings increase from $5,333 billion in 2010 to $8,899 billion, $8,774 billion, and $8,927 billion in 2020, on the basis of alternatives I, II, and III, respectively.[1] 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, tem-

[1] Note that the pattern, by alternative, of these nominal amounts of total taxable earnings may not be as expected because of the varying inflation assumptions embedded in the respective estimates.

porarily higher than trend, as the economy recovers from the economic recession.

Growth in interest earnings represents a significant component of the overall increase in trust fund income during this period. The effective interest rates payable on trust fund investments are projected to temporarily decline from current levels through 2012, resulting in a slight decline in interest income in 2011. Thereafter, the rapid increase in OASI assets results in a corresponding net increase in interest income. By 2020, interest income to the OASI Trust Fund is projected to be about 15 percent of total trust fund income on the basis of the intermediate assumptions, as compared to 16 percent in 2010.

Rising expenditures during 2011-20 reflect automatic benefit increases as well as the upward trend in the number of beneficiaries and in the average monthly earnings underlying benefits. The growth in the number of beneficiaries in the past and the expected future growth result both from the increase in the aged population and from the increase in the proportion of the population that is eligible for benefits.

The estimates under all three sets of assumptions shown in table IV.A1 indicate that income to the OASI Trust Fund, including interest earned on trust fund assets, would exceed expenditures in every year of the short-range projection period. While trust fund assets are estimated to increase substantially, they will increase at a slowing rate of growth near the end of the short-range period.

The portion of OASI income that is not needed to meet day-to-day expenditures is used to purchase financial securities, generally special public-debt obligations of the U.S. Government. The cash used to make these purchases flows to the General Fund of the Treasury. Interest on these securities is credited to the trust fund and, when the securities mature, they are reinvested in new securities if not immediately needed to pay program costs. When securities are redeemed prior to maturity in order to pay program costs, general fund revenue flows to the trust fund.

## 2. Operations of the DI Trust Fund

The estimated operations and financial status of the DI Trust Fund during calendar years 2011-20 under the three sets of assumptions are shown in table IV.A2, together with values for actual experience during 2006-10. Income is projected to increase steadily after 2010 under each alternative, due to most of the same factors described previously in connection with the OASI Trust Fund. DI costs are projected to grow at an even faster pace than income for reasons explained in greater detail below. As a result, DI Trust Fund assets are projected to continue to decrease in 2011 under each alterna-

**Table IV.A2.—Operations of the DI Trust Fund, Calendar Years 2006-20[a]**

[Dollar amounts in billions]

| Calendar year | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Net payroll tax contributions | GF reimbursements[b] | Taxation of benefits | Net interest | Total | Benefit payments | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[c] |
| **Historical data:** | | | | | | | | | | | | |
| 2006. . . | $102.6 | $90.8 | [d] | $1.2 | $10.6 | $94.5 | $91.7 | $2.3 | $0.4 | $8.2 | $203.8 | 207 |
| 2007. . . | 109.9 | 95.2 | [d] | 1.4 | 13.2 | 98.8 | 95.9 | 2.5 | .4 | 11.1 | 214.9 | 206 |
| 2008. . . | 109.8 | 97.6 | [d] | 1.3 | 11.0 | 109.0 | 106.0 | 2.5 | .4 | .9 | 215.8 | 197 |
| 2009. . . | 109.3 | 96.9 | [d] | 2.0 | 10.5 | 121.5 | 118.3 | 2.7 | .4 | -12.2 | 203.5 | 178 |
| 2010. . . | 104.0 | 92.5 | $0.4 | 1.9 | 9.3 | 127.7 | 124.2 | 3.0 | .5 | -23.6 | 179.9 | 159 |
| **Intermediate:** | | | | | | | | | | | | |
| 2011. . . | 107.0 | 82.0 | 15.3 | 1.8 | 7.9 | 132.8 | 129.3 | 3.0 | .4 | -25.8 | 154.1 | 136 |
| 2012. . . | 114.0 | 104.6 | .7 | 2.1 | 6.6 | 139.0 | 135.3 | 3.2 | .5 | -25.0 | 129.1 | 111 |
| 2013. . . | 118.7 | 110.9 | [d] | 2.5 | 5.3 | 143.8 | 140.0 | 3.3 | .5 | -25.1 | 104.0 | 90 |
| 2014. . . | 124.2 | 117.2 | [d] | 3.0 | 4.1 | 148.8 | 144.9 | 3.5 | .4 | -24.6 | 79.4 | 70 |
| 2015. . . | 129.7 | 123.5 | [d] | 3.2 | 3.1 | 153.8 | 149.7 | 3.7 | .4 | -24.1 | 55.4 | 52 |
| 2016. . . | 135.5 | 130.0 | [d] | 3.5 | 2.0 | 159.2 | 155.0 | 3.9 | .4 | -23.7 | 31.6 | 35 |
| 2017. . . | 141.2 | 136.5 | [d] | 3.8 | .9 | 165.1 | 160.7 | 4.1 | .4 | -23.9 | 7.7 | 19 |
| 2018. . . | [e] | 143.5 | — | 4.1 | [e] | 171.7 | 167.0 | 4.3 | .3 | [e] | [e] | 5 |
| 2019. . . | [e] | 150.2 | — | 4.4 | [e] | 179.5 | 174.6 | 4.6 | .3 | [e] | [e] | [e] |
| 2020. . . | [e] | 156.9 | — | 4.7 | [e] | 187.9 | 182.8 | 4.8 | .3 | [e] | [e] | [e] |
| **Low-cost:** | | | | | | | | | | | | |
| 2011. . . | 107.3 | 82.2 | 15.4 | 1.8 | 7.9 | 130.5 | 127.1 | 3.0 | .4 | -23.2 | 156.7 | 138 |
| 2012. . . | 115.5 | 105.9 | .7 | 2.0 | 6.9 | 134.7 | 131.0 | 3.2 | .5 | -19.2 | 137.5 | 116 |
| 2013. . . | 121.2 | 112.8 | [d] | 2.4 | 6.0 | 137.0 | 133.2 | 3.3 | .5 | -15.8 | 121.7 | 100 |
| 2014. . . | 127.7 | 119.7 | [d] | 2.8 | 5.3 | 139.0 | 135.1 | 3.5 | .4 | -11.3 | 110.4 | 88 |
| 2015. . . | 134.1 | 126.4 | [d] | 2.9 | 4.8 | 141.0 | 137.0 | 3.7 | .4 | -6.9 | 103.5 | 78 |
| 2016. . . | 140.8 | 133.1 | [d] | 3.1 | 4.6 | 143.6 | 139.4 | 3.8 | .4 | -2.8 | 100.7 | 72 |
| 2017. . . | 147.4 | 139.5 | [d] | 3.4 | 4.6 | 147.0 | 142.6 | 4.1 | .4 | .4 | 101.1 | 68 |
| 2018. . . | 154.7 | 146.2 | — | 3.6 | 4.9 | 151.0 | 146.5 | 4.3 | .3 | 3.6 | 104.7 | 67 |
| 2019. . . | 161.8 | 152.7 | — | 3.8 | 5.3 | 155.6 | 150.8 | 4.5 | .3 | 6.3 | 111.0 | 67 |
| 2020. . . | 169.0 | 159.1 | — | 4.0 | 5.8 | 160.3 | 155.3 | 4.7 | .3 | 8.7 | 119.7 | 69 |
| **High-cost:** | | | | | | | | | | | | |
| 2011. . . | 106.6 | 81.7 | 15.2 | 1.8 | 7.8 | 135.1 | 131.7 | 3.0 | .4 | -28.5 | 151.4 | 133 |
| 2012. . . | 112.4 | 103.3 | .7 | 2.1 | 6.3 | 144.0 | 140.3 | 3.2 | .5 | -31.6 | 119.7 | 105 |
| 2013. . . | 116.9 | 109.6 | [d] | 2.7 | 4.6 | 151.9 | 148.1 | 3.4 | .5 | -35.0 | 84.8 | 79 |
| 2014. . . | 122.0 | 115.8 | [d] | 3.2 | 3.0 | 160.3 | 156.3 | 3.5 | .5 | -38.3 | 46.4 | 53 |
| 2015. . . | 127.2 | 122.5 | [d] | 3.5 | 1.2 | 169.2 | 165.0 | 3.8 | .4 | -42.0 | 4.4 | 27 |
| 2016. . . | [e] | 129.7 | [d] | 3.9 | [e] | 178.7 | 174.3 | 4.0 | .4 | [e] | [e] | 2 |
| 2017. . . | [e] | 137.1 | [d] | 4.4 | [e] | 188.8 | 184.2 | 4.3 | .4 | [e] | [e] | [e] |
| 2018. . . | [e] | 144.7 | — | 4.8 | [e] | 199.6 | 194.7 | 4.5 | .4 | [e] | [e] | [e] |
| 2019. . . | [e] | 152.2 | — | 5.2 | [e] | 211.2 | 206.1 | 4.8 | .3 | [e] | [e] | [e] |
| 2020. . . | [e] | 159.6 | — | 5.6 | [e] | 223.9 | 218.5 | 5.1 | .3 | [e] | [e] | [e] |

[a] A detailed description of the components of income and cost, along with complete historical values, is presented in appendix A.

[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 and 111-312.

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

[d] Less than $50 million.

[e] The DI Trust Fund is projected to become exhausted in 2018 and 2016 under the intermediate and the high-cost assumptions, respectively. Accordingly, certain trust fund operation values from the year of trust fund exhaustion through 2020 are not meaningful under present law and are not shown in this table.year.

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

tive, after reaching a maximum in 2008. Under the low-cost assumptions, assets would begin to increase again after reaching a low point in 2016. Under the intermediate assumptions, assets would continue to decline until their projected exhaustion in 2018. Under the high-cost assumptions, DI assets would decline steadily until exhaustion in 2016.

Future DI cost is estimated to increase in part due to increases in average benefit levels resulting from: (1) automatic benefit increases; and (2) projected increases in the amounts of average monthly earnings on which benefits are based. In addition, the number of DI beneficiaries in current-payment status is projected to generally increase during the short-range projection period. Over the period 2010-20, the projected annual average growth rate in the number of DI disabled-worker beneficiaries is roughly 0.5, 1.6, and 2.7 percent under alternatives I, II, and III, respectively. Growth is largely attributable to the gradual progression of the baby-boom generation through ages 50 to normal retirement age (NRA), at which ages higher rates of disability prevalence are experienced. The estimates under all three sets of assumptions anticipate additional growth in the numbers of disabled-worker beneficiaries due to a projected sharp, but temporary, increase in incidence rates to levels comparable to some of the highest ever experienced under the DI program. These increases are projected to result from the economic recession. The projected higher levels of disability incidence are expected to subside as the economy recovers, and to return to levels consistent with longer term trends in incidence rates.[1]

The proportion of disabled-worker beneficiaries whose benefits terminate or convert to retirement benefits in a given year has also fluctuated in the past. Over the last 20 years, the rates of benefit termination due to death have declined very gradually, and generally mirror the improving mortality experience for the overall population. The proportion of disabled worker beneficiaries converting to retirement benefits at attainment of NRA also declined gradually through 2008 due to the relatively low average age of new beneficiaries coming on the rolls during the 1990s, along with the effects over the period 2003-08 of the gradual increase in the NRA to age 66. After 2008, the conversion proportion returned to pre-2003 levels as an 11-year period began where the NRA remains at age 66 before beginning to increase again. Furthermore, starting in 2012, the conversion proportion will increase sharply as the baby boom cohorts begin to reach NRA.

The termination rate due to recovery has been much more volatile. Currently, the proportion of disabled beneficiaries whose benefits cease because of their recovery from disability is very low in comparison to levels experienced

[1] Historical and projected patterns of disability incidence rates are described in greater detail in section V.C.6.

throughout the 1970s and early 1980s. Projected rates of recovery terminations in this year's report are temporarily elevated in years 2013-15 due to an assumed increase in funding for the purpose of reducing the backlog of continuing disability reviews (CDRs), although it is not clear that Congress will provide the level of funding necessary to reduce this backlog. Following this temporary increase in CDRs, recovery termination rates are projected to return to levels consistent with: (1) projected levels of work terminations; and (2) the assumption that terminations for medical improvement will be consistent with continued timely completion of CDRs after 2015. The overall proportion of disabled workers leaving the DI rolls (reflecting all causes) is projected to generally increase due to the aging of the beneficiary population.

At the beginning of calendar year 2010, the assets of the DI Trust Fund represented 159 percent of annual expenditures. During 2010, DI expenditures exceeded income, and the trust fund ratio for the beginning of 2011 decreased to about 136 percent. Under the intermediate set of assumptions, expenditures are estimated to exceed total income throughout the short-range projection period. The projected expenditures in excess of income result in the estimated exhaustion of the DI Trust Fund by the end of 2018.

Under the low-cost assumptions, the trust fund ratio would decrease to a low of 67 percent at the beginning of 2018 before increasing to 69 percent at the beginning of 2020. Under the high-cost assumptions, the assets of the DI Trust Fund would decline steadily, and dip below the level of annual expenditures during 2012 before becoming completely depleted in 2016.

Although assets of the DI Trust Fund were greater than annual expenditures at the beginning of 2011, under all three alternatives the DI Trust Fund does not satisfy the Trustees' short-range test of financial adequacy. Furthermore, the DI Trust Fund is projected to be exhausted by the end of 2018 and 2016 under alternatives II and III, respectively.

### 3. Operations of the Combined OASI and DI Trust Funds

The estimated operations and status of the combined OASI and DI Trust Funds during calendar years 2011-20 for the three alternatives are shown in table IV.A3, together with figures on actual experience in 2006-10. With income and cost for the OASI Trust Fund representing over 80 percent of the corresponding amounts for the combined OASI and DI Trust Funds, the operations of the OASI Trust Fund tend to dominate the combined operations of the two funds. Consequently, based on the strength of the OASI Trust Fund over the next 10 years, the combined OASI and DI Trust Funds meet the requirements of the short-range test of financial adequacy under all three alternative sets of assumptions.

**Table IV.A3.—Operations of the Combined OASI and DI Trust Funds, Calendar Years 2006-20[a]**

[Dollar amounts in billions]

| Calendar year | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Net payroll tax contributions | GF reimbursements[b] | Taxation of benefits | Net interest | Total | Benefit payments | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[c] |
| **Historical data:** | | | | | | | | | | | | |
| 2006 . . | $744.9 | $625.6 | [d] | $16.9 | $102.4 | $555.4 | $546.2 | $5.3 | $3.8 | $189.5 | $2,048.1 | 335 |
| 2007 . . | 784.9 | 656.1 | [d] | 18.6 | 110.2 | 594.5 | 584.9 | 5.5 | 4.0 | 190.4 | 2,238.5 | 345 |
| 2008 . . | 805.3 | 672.1 | [d] | 16.9 | 116.3 | 625.1 | 615.3 | 5.7 | 4.0 | 180.2 | 2,418.7 | 358 |
| 2009 . . | 807.5 | 667.3 | [d] | 21.9 | 118.3 | 685.8 | 675.5 | 6.2 | 4.1 | 121.7 | 2,540.3 | 353 |
| 2010 . . | 781.1 | 637.3 | $2.4 | 23.9 | 117.5 | 712.5 | 701.6 | 6.5 | 4.4 | 68.6 | 2,609.0 | 357 |
| **Intermediate:** | | | | | | | | | | | | |
| 2011 . . | 807.7 | 564.7 | 105.4 | 22.7 | 114.9 | 738.4 | 727.3 | 6.7 | 4.4 | 69.3 | 2,678.2 | 353 |
| 2012 . . | 866.8 | 720.7 | 5.0 | 25.0 | 116.1 | 772.0 | 760.3 | 7.1 | 4.5 | 94.8 | 2,773.0 | 347 |
| 2013 . . | 915.1 | 763.9 | [d] | 30.5 | 120.7 | 813.8 | 802.1 | 7.2 | 4.5 | 101.3 | 2,874.3 | 341 |
| 2014 . . | 969.9 | 807.2 | [d] | 35.9 | 126.8 | 860.5 | 848.5 | 7.4 | 4.6 | 109.4 | 2,983.7 | 334 |
| 2015 . . | 1,023.4 | 850.5 | [d] | 39.5 | 133.3 | 911.0 | 898.6 | 7.7 | 4.7 | 112.4 | 3,096.1 | 328 |
| 2016 . . | 1,079.0 | 895.6 | [d] | 43.5 | 139.8 | 964.8 | 952.4 | 8.0 | 4.4 | 114.1 | 3,210.2 | 321 |
| 2017 . . | 1,135.1 | 940.2 | [d] | 47.9 | 147.0 | 1,023.1 | 1,009.8 | 8.3 | 5.0 | 112.0 | 3,322.2 | 314 |
| 2018 . . | 1,196.0 | 988.2 | — | 51.7 | 156.1 | 1,086.9 | 1,073.2 | 8.7 | 5.1 | 109.1 | 3,431.3 | 306 |
| 2019 . . | 1,255.4 | 1,034.6 | — | 56.0 | 164.8 | 1,160.6 | 1,146.3 | 9.1 | 5.2 | 94.8 | 3,526.1 | 296 |
| 2020 . . | 1,313.4 | 1,080.5 | — | 60.7 | 172.2 | 1,240.4 | 1,225.6 | 9.4 | 5.4 | 73.0 | 3,599.1 | 284 |
| **Low-cost:** | | | | | | | | | | | | |
| 2011 . . | 809.9 | 566.4 | 105.9 | 22.7 | 115.0 | 735.9 | 724.8 | 6.7 | 4.4 | 74.1 | 2,683.0 | 355 |
| 2012 . . | 876.0 | 729.4 | 5.1 | 24.9 | 116.7 | 766.5 | 754.9 | 7.1 | 4.5 | 109.5 | 2,792.5 | 350 |
| 2013 . . | 929.3 | 776.9 | [d] | 30.2 | 122.2 | 802.1 | 790.5 | 7.2 | 4.5 | 127.2 | 2,919.7 | 348 |
| 2014 . . | 989.3 | 824.4 | [d] | 35.3 | 129.6 | 840.9 | 829.0 | 7.4 | 4.5 | 148.3 | 3,068.0 | 347 |
| 2015 . . | 1,047.6 | 870.9 | [d] | 38.5 | 138.1 | 882.9 | 870.6 | 7.6 | 4.6 | 164.7 | 3,232.7 | 348 |
| 2016 . . | 1,106.0 | 916.6 | [d] | 42.1 | 147.3 | 928.3 | 916.1 | 7.9 | 4.3 | 177.7 | 3,410.4 | 348 |
| 2017 . . | 1,164.4 | 960.7 | [d] | 46.1 | 157.6 | 979.0 | 966.0 | 8.2 | 4.8 | 185.4 | 3,595.8 | 348 |
| 2018 . . | 1,226.6 | 1,007.0 | — | 49.5 | 170.0 | 1,033.8 | 1,020.3 | 8.6 | 4.9 | 192.8 | 3,788.6 | 348 |
| 2019 . . | 1,287.8 | 1,052.1 | — | 53.1 | 182.6 | 1,093.3 | 1,079.4 | 8.9 | 5.0 | 194.5 | 3,983.1 | 347 |
| 2020 . . | 1,347.9 | 1,096.2 | — | 56.9 | 194.8 | 1,156.5 | 1,142.1 | 9.2 | 5.1 | 191.4 | 4,174.5 | 344 |
| **High-cost:** | | | | | | | | | | | | |
| 2011 . . | 805.2 | 563.0 | 104.7 | 22.7 | 114.7 | 741.1 | 730.0 | 6.7 | 4.4 | 64.1 | 2,673.1 | 352 |
| 2012 . . | 857.4 | 711.4 | 5.0 | 25.2 | 115.8 | 780.8 | 769.1 | 7.1 | 4.5 | 76.6 | 2,749.7 | 342 |
| 2013 . . | 906.4 | 755.2 | [d] | 31.1 | 120.1 | 831.0 | 819.2 | 7.2 | 4.6 | 75.4 | 2,825.2 | 331 |
| 2014 . . | 960.4 | 797.8 | [d] | 36.9 | 125.7 | 888.8 | 876.6 | 7.5 | 4.7 | 71.6 | 2,896.8 | 318 |
| 2015 . . | 1,016.0 | 843.6 | [d] | 41.1 | 131.3 | 952.6 | 940.0 | 7.8 | 4.8 | 63.4 | 2,960.2 | 304 |
| 2016 . . | 1,076.2 | 893.6 | [d] | 45.9 | 136.7 | 1,023.0 | 1,010.2 | 8.2 | 4.6 | 53.2 | 3,013.4 | 289 |
| 2017 . . | 1,137.7 | 944.6 | [d] | 51.2 | 142.0 | 1,099.4 | 1,085.6 | 8.6 | 5.2 | 38.3 | 3,051.7 | 274 |
| 2018 . . | 1,199.6 | 996.9 | — | 56.0 | 146.7 | 1,183.1 | 1,168.6 | 9.0 | 5.4 | 16.6 | 3,068.3 | 258 |
| 2019 . . | 1,259.2 | 1,048.3 | — | 61.2 | 149.7 | 1,275.4 | 1,260.2 | 9.5 | 5.7 | -16.1 | 3,052.1 | 241 |
| 2020 . . | 1,316.5 | 1,099.2 | — | 66.9 | 150.3 | 1,377.1 | 1,361.3 | 9.9 | 5.9 | -60.7 | 2,991.5 | 222 |

[a] A detailed description of the components of income and cost, along with complete historical values, is presented in appendix A.

[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 and 111-312.

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

[d] Less than $50 million.

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

While this analysis permits an assessment of the short-range test for the two programs on a combined basis, in practice one trust fund cannot share assets with another trust fund without legislative changes to the Social Security Act. For example, under the intermediate scenario, table IV.A2 shows that the DI Trust Fund becomes exhausted in 2018. Nevertheless, considering the OASI and DI Trust Funds together demonstrates that, on a combined basis, a legislative change would allow sufficient assets to be available to pay all benefits through the end of the short-range period.

### 4. Factors Underlying Changes in 10-Year Trust Fund Ratio Estimates From the 2010 Report

The factors underlying the changes in the intermediate estimates for the OASI, DI, and the combined funds from last year's report to this report are analyzed in table IV.A4.

In the 2010 report, the trust fund ratio for OASI was estimated to reach 366 percent at the beginning of 2019—the tenth projection year from that report. Based on the change in the short-range valuation period alone, from 2010-19 to 2011-20, the estimated ratio for the tenth year (now 2020) would be 10 percentage points lower, or 356 percent. Changes to reflect legislation enacted since last year's report, the latest actual data, adjustments to the assumptions for future years, and changes in projection methods further reduce the ratio for the tenth projection year (2020) to 339 percent.

Public Law 111-312 (The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010) included a temporary two-year extension of lower Federal income tax rates that had been scheduled through tax year 2010. This provision is projected to decrease revenue due to the effect on the taxation of Social Security benefits over the next two years, with a cumulative effect of reducing the OASI trust fund ratio for 2020 by 1 percentage point. This law also reduced the OASDI payroll tax rate for 2011 by 2 percentage points for employees and for self-employed workers, and provided for reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds to make up for this reduction in payroll tax revenue. This provision has no effect on trust fund assets or the trust fund ratio. A second piece of legislation enacted in 2010, Public Law 111-240 (The Small Business Jobs Act of 2010), provided for a temporary deduction of family health insurance costs in the computation of self-employment earnings for business owners. The legislation is estimated to decrease OASI SECA tax collections by slightly more than $1 billion in 2011, but this one-time reduction in SECA collections has a negligible effect on the OASI trust fund ratio for 2020.

The net effect of changes in demographic assumptions over the short-range period resulted in a reduction in the tenth-year trust fund ratio of 7 percentage points. The cumulative net effects of changes in economic data and assumptions, which reflects revised estimates of the effects of the economic recession that started in December 2007, resulted in a reduction in the trust fund ratio of 13 percentage points by the beginning of 2020. An increase in the 2020 trust fund ratio of 5 percentage points resulted from the combined effects of incorporating recent programmatic data including the numbers of beneficiaries, amount of benefit payments, and administrative expenses. Finally, there were several relatively minor changes in the short-range projection methodology since the 2010 report. The most important of these changes was an improvement in the data and methods used to estimate the growth rates of average benefit amounts awarded over the projection period. The combined effect of the various methodological improvements on the ending trust fund ratio was negligible.

Corresponding estimates of the factors underlying the changes in the financial projections for the DI Trust Fund, and for the OASI and DI Trust Funds combined, are also shown in table IV.A4. The ratios at the beginning of 2019 (shown in last year's report) and 2020 (shown in this report) for the DI Trust Fund and the OASI and DI Trust Funds combined under the intermediate assumptions are theoretical because the DI Trust Fund is projected to be depleted during 2018 in both reports. The 20 percentage point decrease in the DI trust fund ratio by the beginning of 2020 (compared with the ratio at the beginning of 2019 in last year's report) is largely caused by the change in the valuation period, as well as updates to economic data and assumptions that account for continuing effects of the economic downturn that began in December 2007. The remainder of the change results from the combined effects of enactments of Public Laws 111-240 and 111-312, demographic changes, and the incorporation of recent programmatic data.

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

| Item | OASI Trust Fund | DI Trust Fund | OASI and DI Trust Funds, combined |
|---|---|---|---|
| Trust fund ratio shown in last year's report for calendar year 2019[a] | 366 | -3 | 309 |
| Change in trust fund ratio due to changes in: | | | |
| Legislation | -1 | -1 | -1 |
| Valuation period | -10 | -14 | -10 |
| Demographic data and assumptions | -7 | 1 | -6 |
| Economic data and assumptions | -13 | -12 | -13 |
| Programmatic data and assumptions | 5 | 6 | 5 |
| Projection methods and data | [b] | [b] | [b] |
| Total change in trust fund ratio | -27 | -20 | -25 |
| Trust fund ratio shown in this report for calendar year 2020[a] | 339 | -23 | 284 |

[a] Figures for DI, and OASI and DI combined, are theoretical because of the depletion of the DI trust fund in 2018.
[b] Between -0.5 and 0.5 percent.

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

## *B. LONG-RANGE ESTIMATES*

Three types of financial measures are useful in assessing the actuarial status of the Social Security trust funds under the financing approach specified in current law: (1) annual cash-flow measures, including income and cost rates, and balances; (2) trust fund ratios; and (3) summary measures such as actuarial balances and unfunded obligations. The first long-range estimates presented are the series of projected annual balances (or net cash flow), which are the differences between the projected annual income rates and annual cost rates (expressed as percentages of the taxable payroll). In assessing the financial condition of the program, critical factors include the level and trend of the annual balances at the end of the long-range period.

The next measure is the pattern of projected trust fund ratios. The trust fund ratio represents the proportion of a year's projected cost that could be paid with the funds available at the beginning of the year. Critical factors include the level and year of maximum trust fund ratio, the year of exhaustion of the funds, and the stability of the trust fund ratio in cases where the ratio remains positive through the end of the long-range period. When a program has positive trust fund ratios throughout the 75-year projection period and these ratios are stable or rising at the end of the period, the program financing is said to achieve "sustainable solvency."

The final measures in this section summarize the total income and cost over valuation periods that extend through 75 years and over the infinite horizon. These measures indicate whether projected income will be sufficient for the period as a whole. The first such measure, actuarial balance, indicates the size of any surplus or shortfall as a percentage of the taxable payroll over the period. The second, open group unfunded obligation, indicates the size of any shortfall in present-value dollars.

This section also includes additional estimates that are useful in assessing the financial status of the Social Security program. These estimates include a comparison of the number of beneficiaries to the number of covered workers. In addition, this section provides the test of long-range close actuarial balance and the reasons for the change in the actuarial balance from the last report.

If the 75-year actuarial balance is zero (or positive), then the trust fund ratio at the end of the period will be at 100 percent (or greater), and financing for the program would be sufficient for the 75-year period as a whole. Financial adequacy, or solvency, for each year is determined by whether the trust fund asset level is positive throughout the year. Whether or not financial adequacy is stable in the sense that it is likely to continue for subsequent 75-year periods is also important to the actuarial status of the program. One measure of

this stability is sustainable solvency, which requires that trust fund ratios be positive throughout the period and be at a constant or rising level for the last several years of the long-range period. When sustainable solvency is achieved, it is likely that subsequent Trustees Reports will also show projections of financial adequacy (assuming no changes in demographic and economic assumptions or the law). The actuarial balance and the open group unfunded obligation over the infinite horizon provide additional measures of the financial status of the program for the very long range.

## 1. Annual Income Rates, Cost Rates, and Balances

Basic to the consideration of the long-range actuarial status of the trust funds are the concepts of income rate and cost rate, each of which is expressed as a percentage of taxable payroll. Other measures of the cash flow of the program are shown in appendix F. The annual income rate is the ratio of all noninterest income reflecting scheduled tax rates to the OASDI taxable payroll for the year. 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 is defined to include scheduled benefit payments, administrative expenses, net interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. For any year, the income rate minus the cost rate is referred to as 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. Detailed long-range projections of trust fund operations, in current dollar amounts, are shown in table VI.F8.

The projections for OASI under the intermediate assumptions show the income rate generally rising from 11.03 percent of taxable payroll in 2012 to 11.45 percent for 2085, mainly due to the gradually increasing effect of the taxation of benefits. The projected income from the taxation of benefits, expressed as a percentage of taxable payroll, is expected to increase for two reasons. First, benefits are rising faster than payroll. Second, the benefit-taxation threshold amounts are not indexed, so that an increasing share of benefits will be subject to tax. The pattern of the cost rate is much different. The cost rate, which increased substantially in 2009 and 2010 due to the effects of the recent economic recession, remains fairly stable through 2014 as the

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

economic recovery through this period roughly offsets the effects of the aging population. From 2014 to 2035, the cost rate rises rapidly because the retirement of the baby-boom generation will increase the number of beneficiaries much faster than subsequent lower-birth-rate generations will increase the labor force. From 2037 to 2052, the cost rate declines as the baby-boom generation ages, causing an increase in the average age of beneficiaries. After initial benefit eligibility, benefits increase annually with price inflation rather than wage inflation, so as beneficiaries increase in age, their benefit amounts drop relative to current average taxable earnings. Thereafter, the OASI cost rate rises because of the projected reductions in death rates, reaching 15.33 percent of taxable payroll for 2085.

Projected income rates under the low-cost and high-cost sets of assumptions are very similar to those projected for the intermediate assumptions because they 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 differ significantly from those projected for the intermediate assumptions. For the low-cost assumptions, the OASI cost rate decreases from 2011 through 2014, then rises until it peaks in 2034 at 13.04 percent of payroll. The cost rate then generally declines gradually, until it reaches 11.04 percent of payroll for 2085, at which point the income rate reaches 11.20 percent. For the high-cost assumptions, the OASI cost rate rises from 2012 through the end of the 75-year period. It rises at a relatively fast pace between 2012 and 2035 because of the aging of the baby-boom generation. Subsequently, the projected cost rate continues rising and reaches 22.20 percent of payroll for 2085, at which point the income rate reaches 11.85 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 in 2011, positive for 2012 through 2016, and then negative thereafter. This annual deficit rises rapidly, reaching 3.49 percent of taxable payroll for 2035, and generally rises thereafter (except for the period 2038-52), until it reaches 3.87 percent of taxable payroll for 2085.

Under the low-cost assumptions, the projected OASI annual balance is negative in 2011, positive for 2012 through 2019, and then becomes negative, with the annual deficit peaking at 1.76 percent of taxable payroll for 2034. The annual deficit then declines until 2073, when the OASI annual balance becomes positive and reaches a surplus of 0.16 percent of payroll for 2085. Under the high-cost assumptions, in contrast, the OASI balance is projected to be negative throughout the projection period, with deficits of 1.71 percent for 2020, 6.35 percent for 2050, and 10.35 percent of payroll for 2085.

**Table IV.B1.—Annual Income Rates, Cost Rates, and Balances, Calendar Years 1990-2085**
[As a percentage of taxable payroll]

| Calendar year | OASI | | | DI | | | OASDI | | |
|---|---|---|---|---|---|---|---|---|---|
| | Income rate[a] | Cost rate | Balance | Income rate[a] | Cost rate | Balance | Income rate[a] | Cost rate | Balance |
| **Historical data:** | | | | | | | | | |
| 1990 | 11.47 | 9.66 | 1.82 | 1.18 | 1.09 | 0.10 | 12.66 | 10.74 | 1.91 |
| 1991 | 11.51 | 10.15 | 1.36 | 1.21 | 1.18 | .03 | 12.72 | 11.33 | 1.39 |
| 1992 | 11.34 | 10.27 | 1.07 | 1.20 | 1.27 | -.06 | 12.54 | 11.54 | 1.00 |
| 1993 | 11.25 | 10.37 | .88 | 1.20 | 1.35 | -.16 | 12.45 | 11.73 | .72 |
| 1994 | 10.73 | 10.22 | .51 | 1.86 | 1.40 | .46 | 12.59 | 11.62 | .97 |
| 1995 | 10.64 | 10.22 | .42 | 1.87 | 1.44 | .43 | 12.51 | 11.67 | .85 |
| 1996 | 10.70 | 10.06 | .65 | 1.88 | 1.48 | .40 | 12.58 | 11.53 | 1.05 |
| 1997 | 10.91 | 9.83 | 1.08 | 1.73 | 1.44 | .29 | 12.63 | 11.27 | 1.37 |
| 1998 | 10.82 | 9.45 | 1.37 | 1.69 | 1.42 | .27 | 12.51 | 10.87 | 1.64 |
| 1999 | 10.90 | 9.09 | 1.80 | 1.71 | 1.42 | .29 | 12.61 | 10.51 | 2.09 |
| 2000 | 10.84 | 8.97 | 1.87 | 1.78 | 1.42 | .36 | 12.62 | 10.40 | 2.23 |
| 2001 | 10.90 | 9.08 | 1.82 | 1.82 | 1.48 | .35 | 12.73 | 10.56 | 2.17 |
| 2002 | 11.06 | 9.29 | 1.76 | 1.85 | 1.60 | .24 | 12.90 | 10.90 | 2.01 |
| 2003 | 10.78 | 9.34 | 1.44 | 1.80 | 1.68 | .12 | 12.59 | 11.03 | 1.56 |
| 2004 | 10.73 | 9.27 | 1.46 | 1.79 | 1.77 | .02 | 12.52 | 11.05 | 1.48 |
| 2005 | 10.96 | 9.31 | 1.65 | 1.84 | 1.85 | -.02 | 12.79 | 11.16 | 1.63 |
| 2006 | 10.95 | 9.17 | 1.78 | 1.83 | 1.88 | -.05 | 12.79 | 11.05 | 1.73 |
| 2007 | 11.02 | 9.45 | 1.57 | 1.84 | 1.88 | -.04 | 12.86 | 11.33 | 1.53 |
| 2008 | 10.90 | 9.53 | 1.37 | 1.83 | 2.01 | -.19 | 12.73 | 11.55 | 1.18 |
| 2009 | 11.24 | 10.74 | .50 | 1.88 | 2.31 | -.43 | 13.12 | 13.06 | .06 |
| 2010 | 10.70 | 11.00 | -.30 | 1.78 | 2.40 | -.62 | 12.48 | 13.40 | -.92 |
| **Intermediate:** | | | | | | | | | |
| 2011 | 10.73 | 10.95 | -.22 | 1.79 | 2.40 | -.61 | 12.52 | 13.35 | -.82 |
| 2012 | 11.03 | 10.85 | .18 | 1.84 | 2.38 | -.54 | 12.87 | 13.23 | -.36 |
| 2013 | 11.03 | 10.85 | .18 | 1.84 | 2.33 | -.49 | 12.87 | 13.18 | -.31 |
| 2014 | 11.08 | 10.90 | .17 | 1.84 | 2.28 | -.44 | 12.92 | 13.18 | -.27 |
| 2015 | 11.10 | 11.01 | .09 | 1.84 | 2.24 | -.39 | 12.94 | 13.24 | -.30 |
| 2016 | 11.13 | 11.13 | [b] | 1.84 | 2.20 | -.36 | 12.97 | 13.33 | -.36 |
| 2017 | 11.16 | 11.29 | -.13 | 1.85 | 2.17 | -.33 | 13.00 | 13.46 | -.46 |
| 2018 | 11.18 | 11.47 | -.29 | 1.85 | 2.15 | -.30 | 13.03 | 13.62 | -.59 |
| 2019 | 11.19 | 11.73 | -.54 | 1.85 | 2.15 | -.30 | 13.04 | 13.88 | -.84 |
| 2020 | 11.21 | 12.05 | -.83 | 1.85 | 2.15 | -.30 | 13.06 | 14.20 | -1.14 |
| 2025 | 11.30 | 13.42 | -2.13 | 1.85 | 2.25 | -.40 | 13.15 | 15.67 | -2.52 |
| 2030 | 11.36 | 14.44 | -3.08 | 1.85 | 2.21 | -.36 | 13.21 | 16.66 | -3.44 |
| 2035 | 11.39 | 14.88 | -3.49 | 1.85 | 2.14 | -.28 | 13.24 | 17.01 | -3.77 |
| 2040 | 11.40 | 14.86 | -3.46 | 1.85 | 2.09 | -.24 | 13.25 | 16.95 | -3.71 |
| 2045 | 11.39 | 14.65 | -3.26 | 1.85 | 2.14 | -.28 | 13.24 | 16.79 | -3.54 |
| 2050 | 11.39 | 14.52 | -3.13 | 1.85 | 2.16 | -.31 | 13.24 | 16.69 | -3.44 |
| 2055 | 11.39 | 14.54 | -3.15 | 1.86 | 2.18 | -.32 | 13.25 | 16.72 | -3.47 |
| 2060 | 11.40 | 14.64 | -3.24 | 1.86 | 2.16 | -.31 | 13.26 | 16.80 | -3.55 |
| 2065 | 11.41 | 14.69 | -3.28 | 1.86 | 2.18 | -.32 | 13.27 | 16.87 | -3.60 |
| 2070 | 11.42 | 14.80 | -3.38 | 1.86 | 2.20 | -.34 | 13.27 | 17.00 | -3.73 |
| 2075 | 11.43 | 14.97 | -3.54 | 1.86 | 2.21 | -.36 | 13.29 | 17.18 | -3.89 |
| 2080 | 11.44 | 15.14 | -3.70 | 1.86 | 2.23 | -.37 | 13.30 | 17.36 | -4.06 |
| 2085 | 11.45 | 15.33 | -3.87 | 1.86 | 2.23 | -.37 | 13.31 | 17.56 | -4.24 |
| First year balance becomes negative and remains negative through 2085 | | | 2017 | | | 2005 | | | 2010 |
| **Low-cost:** | | | | | | | | | |
| 2011 | 10.71 | 10.89 | -.18 | 1.79 | 2.35 | -.56 | 12.50 | 13.24 | -.74 |
| 2012 | 11.04 | 10.72 | .32 | 1.84 | 2.28 | -.44 | 12.88 | 13.00 | -.12 |
| 2013 | 11.01 | 10.59 | .43 | 1.83 | 2.18 | -.35 | 12.85 | 12.77 | .08 |
| 2014 | 11.06 | 10.53 | .53 | 1.84 | 2.09 | -.25 | 12.90 | 12.61 | .28 |
| 2015 | 11.07 | 10.53 | .54 | 1.84 | 2.00 | -.17 | 12.91 | 12.53 | .38 |
| 2016 | 11.10 | 10.59 | .51 | 1.84 | 1.94 | -.10 | 12.94 | 12.53 | .41 |
| 2017 | 11.13 | 10.71 | .41 | 1.84 | 1.89 | -.05 | 12.97 | 12.61 | .36 |
| 2018 | 11.15 | 10.85 | .30 | 1.84 | 1.86 | -.02 | 12.99 | 12.71 | .28 |
| 2019 | 11.16 | 11.03 | .13 | 1.84 | 1.83 | .01 | 13.00 | 12.86 | .14 |
| 2020 | 11.17 | 11.24 | -.07 | 1.84 | 1.81 | .03 | 13.01 | 13.05 | -.04 |

**Table IV.B1.—Annual Income Rates, Cost Rates, and Balances, Calendar Years 1990-2085 (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 | 11.23 | 12.23 | -1.00 | 1.84 | 1.79 | 0.05 | 13.07 | 14.02 | -0.95 |
| 2030 | 11.27 | 12.90 | -1.63 | 1.84 | 1.69 | .15 | 13.11 | 14.60 | -1.48 |
| 2035 | 11.29 | 13.03 | -1.74 | 1.84 | 1.59 | .25 | 13.13 | 14.62 | -1.49 |
| 2040 | 11.28 | 12.75 | -1.47 | 1.84 | 1.53 | .31 | 13.11 | 14.28 | -1.17 |
| 2045 | 11.26 | 12.34 | -1.08 | 1.84 | 1.54 | .30 | 13.10 | 13.88 | -.78 |
| 2050 | 11.25 | 12.03 | -.79 | 1.84 | 1.53 | .30 | 13.08 | 13.57 | -.48 |
| 2055 | 11.24 | 11.85 | -.61 | 1.84 | 1.52 | .32 | 13.08 | 13.37 | -.29 |
| 2060 | 11.23 | 11.70 | -.47 | 1.84 | 1.49 | .34 | 13.07 | 13.19 | -.12 |
| 2065 | 11.22 | 11.48 | -.26 | 1.84 | 1.49 | .35 | 13.06 | 12.97 | .09 |
| 2070 | 11.22 | 11.30 | -.09 | 1.84 | 1.49 | .35 | 13.05 | 12.79 | .26 |
| 2075 | 11.21 | 11.15 | .06 | 1.84 | 1.50 | .34 | 13.05 | 12.65 | .40 |
| 2080 | 11.20 | 11.05 | .15 | 1.84 | 1.51 | .33 | 13.04 | 12.56 | .48 |
| 2085 | 11.20 | 11.04 | .16 | 1.84 | 1.52 | .32 | 13.04 | 12.56 | .48 |
| First year balance becomes negative and remains negative through 2085 | | | [c] | | | [c] | | | [c] |
| **High-cost:** | | | | | | | | | |
| 2011 | 10.77 | 11.02 | -.26 | 1.80 | 2.46 | -.66 | 12.56 | 13.48 | -.92 |
| 2012 | 11.00 | 11.02 | -.02 | 1.84 | 2.49 | -.66 | 12.84 | 13.52 | -.68 |
| 2013 | 11.04 | 11.12 | -.08 | 1.84 | 2.49 | -.65 | 12.88 | 13.61 | -.73 |
| 2014 | 11.10 | 11.29 | -.20 | 1.84 | 2.49 | -.64 | 12.94 | 13.78 | -.84 |
| 2015 | 11.12 | 11.48 | -.36 | 1.85 | 2.48 | -.63 | 12.97 | 13.96 | -1.00 |
| 2016 | 11.15 | 11.68 | -.53 | 1.85 | 2.47 | -.62 | 13.00 | 14.16 | -1.16 |
| 2017 | 11.19 | 11.92 | -.74 | 1.85 | 2.47 | -.62 | 13.04 | 14.40 | -1.36 |
| 2018 | 11.22 | 12.21 | -.99 | 1.86 | 2.48 | -.62 | 13.07 | 14.69 | -1.62 |
| 2019 | 11.24 | 12.56 | -1.32 | 1.86 | 2.49 | -.64 | 13.09 | 15.05 | -1.96 |
| 2020 | 11.26 | 12.97 | -1.71 | 1.86 | 2.52 | -.66 | 13.12 | 15.49 | -2.37 |
| 2025 | 11.37 | 14.79 | -3.42 | 1.87 | 2.74 | -.87 | 13.24 | 17.53 | -4.29 |
| 2030 | 11.46 | 16.24 | -4.79 | 1.87 | 2.78 | -.91 | 13.33 | 19.02 | -5.69 |
| 2035 | 11.52 | 17.14 | -5.63 | 1.87 | 2.74 | -.87 | 13.39 | 19.88 | -6.50 |
| 2040 | 11.55 | 17.55 | -6.00 | 1.87 | 2.73 | -.86 | 13.42 | 20.28 | -6.86 |
| 2045 | 11.57 | 17.72 | -6.15 | 1.87 | 2.83 | -.96 | 13.44 | 20.55 | -7.11 |
| 2050 | 11.58 | 17.94 | -6.35 | 1.88 | 2.90 | -1.03 | 13.46 | 20.84 | -7.38 |
| 2055 | 11.61 | 18.32 | -6.71 | 1.88 | 2.97 | -1.09 | 13.49 | 21.29 | -7.80 |
| 2060 | 11.64 | 18.83 | -7.18 | 1.88 | 2.99 | -1.11 | 13.52 | 21.82 | -8.29 |
| 2065 | 11.68 | 19.34 | -7.66 | 1.88 | 3.04 | -1.16 | 13.56 | 22.38 | -8.82 |
| 2070 | 11.72 | 19.99 | -8.28 | 1.88 | 3.10 | -1.21 | 13.60 | 23.09 | -9.49 |
| 2075 | 11.76 | 20.77 | -9.00 | 1.88 | 3.12 | -1.24 | 13.65 | 23.89 | -10.24 |
| 2080 | 11.81 | 21.53 | -9.72 | 1.88 | 3.11 | -1.23 | 13.69 | 24.65 | -10.95 |
| 2085 | 11.85 | 22.20 | -10.35 | 1.88 | 3.10 | -1.21 | 13.73 | 25.30 | -11.56 |
| First year balance becomes negative and remains negative through 2085 | | | 2010 | | | 2005 | | | 2010 |

[a] Income rates include certain reimbursements from the General Fund of the Treasury.
[b] Between -0.005 and 0.005 percent of taxable payroll.
[c] The annual balance is projected 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. Some historical values are subject to change due to revisions of taxable payroll.
3. Totals do not necessarily equal the sums of rounded components.

Under the intermediate assumptions, the cost rate for DI, which rose substantially from 2.01 percent of taxable payroll in 2008 to 2.40 percent for 2010 due to the economic recession, generally declines to 2.09 percent for 2039, and generally increases gradually thereafter to 2.23 percent for 2085. The

income rate increases only very slightly from 1.84 percent of taxable payroll for 2012 to 1.86 percent for 2085. The annual deficit is 0.54 percent in 2012 and reaches 0.37 percent for 2085.

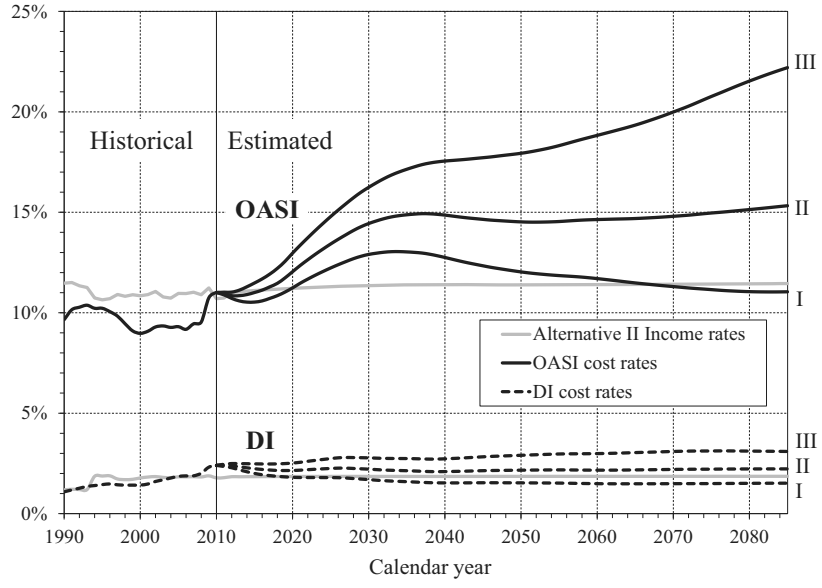
Under the low-cost assumptions, the DI cost rate declines from 2.35 percent of payroll for 2011 to 1.53 percent for 2041, and reaches 1.52 percent for 2085. The annual balance is negative for the first 8 years and is positive throughout the remainder of the long-range period. For the high-cost assumptions, the DI cost rate rises much more and reaches 3.10 percent for 2085. The annual deficit is 0.66 percent in 2011 and reaches 1.21 percent for 2085.

Figure IV.B1 shows the patterns of the OASI and DI annual income rates and cost rates. The income rates shown here are only for alternative II in order to simplify the graphical presentation because, as shown in table IV.B1, the variation in the income rates by alternative is very small. Income rates increase generally, but at a slow rate for each of the alternatives over the long-range period. Both increases in the income rate and variation among the alternatives result primarily from the relatively small component of income from taxation of benefits. Increases in income from taxation of benefits reflect increases in the total amount of benefits paid and the increasing share of individual benefits that will be subject to taxation because benefit taxation threshold amounts are not indexed.

The patterns of the annual balances for OASI and DI can be inferred from figure IV.B1. For each alternative, the magnitude of each of the positive balances, as a percentage of taxable payroll, is represented by the distance between the appropriate cost-rate curve and the income-rate curve above it. The magnitude of each of the deficits is represented by the distance between the appropriate cost-rate curve and the income-rate curve below it.

In the future, the cost of OASI, DI, and the combined OASDI programs as a percentage of taxable payroll will not necessarily be within the range encompassed by alternatives I and III. Nonetheless, the resulting estimates delineate a reasonable range for consideration of potential future program costs, because alternatives I and III define a reasonably wide range of demographic and economic conditions.

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




Long-range OASDI cost and income are generally expressed as percentages of taxable payroll. Also of interest are estimates of income and cost expressed as shares of gross domestic product (GDP), the value of goods and services produced during the year in the United States. Under alternative II, OASDI cost rises from 4.84 percent of GDP for 2012 to a peak of 6.22 percent for 2036. Then OASDI cost as a percentage of GDP is projected to decline to a low of 5.91 percent for 2067 and increase slowly thereafter, until it reaches a level of 6.01 percent by 2085. Full estimates of income and cost are presented on this basis in appendix VI.F.2 beginning on page 185.

## 2. Comparison of Workers to Beneficiaries

The estimated OASDI cost rate is projected to decrease through 2014 as the economy recovers. The cost rate is expected to rise rapidly between 2014 and 2035 primarily because the number of beneficiaries is expected to rise substantially more rapidly than the number of covered workers as the baby-boom generation retires. The baby-boom generation had low fertility rates relative to their parents, and those lower fertility rates are expected to persist; therefore, the ratio of beneficiaries to workers is expected to rise rapidly and to reach a permanently higher level after the baby-boom generation retires. After 2035, the ratio of beneficiaries to workers generally rises slowly due to

increasing longevity. A comparison of the numbers of covered workers and beneficiaries is shown in table IV.B2.

**Table IV.B2.—Covered Workers and Beneficiaries, Calendar Years 1945-2085**

| Calendar year | Covered workers[a] (in thousands) | Beneficiaries[b] (in thousands) | | | Covered workers per OASDI beneficiary | OASDI beneficiaries per 100 covered workers |
|---|---|---|---|---|---|---|
| | | OASI | DI | OASDI | | |
| **Historical data:** | | | | | | |
| 1945 | 46,390 | 1,106 | - | 1,106 | 41.9 | 2 |
| 1950 | 48,280 | 2,930 | - | 2,930 | 16.5 | 6 |
| 1955 | 65,065 | 7,564 | - | 7,564 | 8.6 | 12 |
| 1960 | 72,370 | 13,740 | 522 | 14,262 | 5.1 | 20 |
| 1965 | 80,533 | 18,509 | 1,648 | 20,157 | 4.0 | 25 |
| 1970 | 92,905 | 22,618 | 2,568 | 25,186 | 3.7 | 27 |
| 1975 | 100,191 | 26,998 | 4,125 | 31,123 | 3.2 | 31 |
| 1980 | 112,640 | 30,384 | 4,734 | 35,117 | 3.2 | 31 |
| 1985 | 120,223 | 32,763 | 3,874 | 36,636 | 3.3 | 30 |
| 1990 | 133,065 | 35,255 | 4,204 | 39,459 | 3.4 | 30 |
| 1995 | 140,847 | 37,364 | 5,731 | 43,096 | 3.3 | 31 |
| 2000 | 154,493 | 38,556 | 6,606 | 45,162 | 3.4 | 29 |
| 2001 | 154,808 | 38,888 | 6,780 | 45,668 | 3.4 | 29 |
| 2002 | 154,218 | 39,117 | 7,060 | 46,176 | 3.3 | 30 |
| 2003 | 154,467 | 39,315 | 7,438 | 46,753 | 3.3 | 30 |
| 2004 | 156,211 | 39,558 | 7,810 | 47,368 | 3.3 | 30 |
| 2005 | 158,610 | 39,961 | 8,172 | 48,133 | 3.3 | 30 |
| 2006 | 161,052 | 40,435 | 8,428 | 48,863 | 3.3 | 30 |
| 2007 | 162,905 | 40,863 | 8,739 | 49,603 | 3.3 | 30 |
| 2008 | 162,387 | 41,355 | 9,065 | 50,420 | 3.2 | 31 |
| 2009 | 157,606 | 42,385 | 9,475 | 51,860 | 3.0 | 33 |
| 2010 | 156,725 | 43,440 | 9,958 | 53,398 | 2.9 | 34 |
| **Intermediate:** | | | | | | |
| 2011 | 157,752 | 44,543 | 10,436 | 54,979 | 2.9 | 35 |
| 2015 | 167,403 | 50,171 | 11,437 | 61,607 | 2.7 | 37 |
| 2020 | 174,353 | 58,541 | 11,852 | 70,394 | 2.5 | 40 |
| 2025 | 178,251 | 66,182 | 12,642 | 78,824 | 2.3 | 44 |
| 2030 | 182,066 | 73,033 | 12,776 | 85,810 | 2.1 | 47 |
| 2035 | 186,683 | 77,727 | 12,805 | 90,532 | 2.1 | 48 |
| 2040 | 191,614 | 80,244 | 12,971 | 93,215 | 2.1 | 49 |
| 2045 | 196,669 | 81,762 | 13,530 | 95,292 | 2.1 | 48 |
| 2050 | 201,445 | 83,689 | 13,953 | 97,641 | 2.1 | 48 |
| 2055 | 206,136 | 86,189 | 14,357 | 100,546 | 2.1 | 49 |
| 2060 | 210,941 | 88,997 | 14,626 | 103,624 | 2.0 | 49 |
| 2065 | 216,051 | 91,654 | 15,077 | 106,731 | 2.0 | 49 |
| 2070 | 221,196 | 94,653 | 15,582 | 110,235 | 2.0 | 50 |
| 2075 | 226,253 | 97,933 | 16,026 | 113,959 | 2.0 | 50 |
| 2080 | 231,214 | 101,281 | 16,470 | 117,752 | 2.0 | 51 |
| 2085 | 236,079 | 104,840 | 16,869 | 121,708 | 1.9 | 52 |

**Table IV.B2.—Covered Workers and Beneficiaries, Calendar Years 1945-2085 (Cont.)**

| 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 | | |
| **Low-cost:** | | | | | | |
| 2011 | 158,184 | 44,542 | 10,369 | 54,911 | 2.9 | 35 |
| 2015 | 171,687 | 50,109 | 10,762 | 60,871 | 2.8 | 35 |
| 2020 | 178,712 | 58,202 | 10,615 | 68,817 | 2.6 | 39 |
| 2025 | 183,460 | 65,428 | 10,857 | 76,284 | 2.4 | 42 |
| 2030 | 187,895 | 71,653 | 10,620 | 82,274 | 2.3 | 44 |
| 2035 | 193,559 | 75,604 | 10,404 | 86,008 | 2.3 | 44 |
| 2040 | 200,301 | 77,356 | 10,421 | 87,777 | 2.3 | 44 |
| 2045 | 207,877 | 78,277 | 10,815 | 89,092 | 2.3 | 43 |
| 2050 | 215,813 | 79,798 | 11,153 | 90,951 | 2.4 | 42 |
| 2055 | 224,275 | 81,998 | 11,516 | 93,514 | 2.4 | 42 |
| 2060 | 233,310 | 84,456 | 11,832 | 96,288 | 2.4 | 41 |
| 2065 | 243,188 | 86,699 | 12,344 | 99,043 | 2.5 | 41 |
| 2070 | 253,820 | 89,238 | 12,952 | 102,191 | 2.5 | 40 |
| 2075 | 265,065 | 92,002 | 13,589 | 105,591 | 2.5 | 40 |
| 2080 | 276,722 | 95,200 | 14,316 | 109,516 | 2.5 | 40 |
| 2085 | 288,645 | 99,248 | 15,021 | 114,269 | 2.5 | 40 |
| **High-cost:** | | | | | | |
| 2011 | 157,184 | 44,547 | 10,503 | 55,049 | 2.9 | 35 |
| 2015 | 163,700 | 50,247 | 12,128 | 62,375 | 2.6 | 38 |
| 2020 | 169,813 | 58,943 | 13,102 | 72,045 | 2.4 | 42 |
| 2025 | 173,038 | 67,143 | 14,323 | 81,466 | 2.1 | 47 |
| 2030 | 176,318 | 74,807 | 14,799 | 89,606 | 2.0 | 51 |
| 2035 | 179,975 | 80,463 | 15,055 | 95,518 | 1.9 | 53 |
| 2040 | 183,237 | 83,972 | 15,338 | 99,310 | 1.8 | 54 |
| 2045 | 185,901 | 86,319 | 16,013 | 102,332 | 1.8 | 55 |
| 2050 | 187,684 | 88,835 | 16,468 | 105,303 | 1.8 | 56 |
| 2055 | 188,826 | 91,741 | 16,862 | 108,603 | 1.7 | 58 |
| 2060 | 189,774 | 94,909 | 17,012 | 111,921 | 1.7 | 59 |
| 2065 | 190,648 | 97,954 | 17,297 | 115,251 | 1.7 | 60 |
| 2070 | 191,047 | 101,437 | 17,561 | 118,998 | 1.6 | 62 |
| 2075 | 190,933 | 105,231 | 17,641 | 122,872 | 1.6 | 64 |
| 2080 | 190,440 | 108,787 | 17,571 | 126,358 | 1.5 | 66 |
| 2085 | 189,726 | 111,811 | 17,441 | 129,252 | 1.5 | 68 |

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

Notes:
1. The number of beneficiaries does not include uninsured individuals who receive benefits under Section 228 of the Social Security Act. Costs are reimbursed from the General Fund of the Treasury for 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 impact of the demographic shifts under the three alternatives on the OASDI cost rates is clear if one considers the projected number of OASDI beneficiaries per 100 covered workers. As compared to the 2010 level of 34 beneficiaries per 100 covered workers, this ratio is estimated to rise to 48 by 2035 under the intermediate assumptions as the growth in beneficiaries greatly exceeds the growth in workers. By 2085, this ratio rises further under the intermediate and high-cost assumptions, until it reaches 52 under the intermediate assumptions and 68 under the high-cost assumptions. Under the low-cost assumptions, this ratio rises to 44 by 2035 and then declines to 40

by 2085. The significance of these numbers is clear when one compares figure IV.B1 to figure IV.B2.

For each alternative, the shape of the curve in figure IV.B2, which shows beneficiaries per 100 covered workers, is strikingly similar to that of the corresponding cost-rate curve in figure IV.B1, thereby emphasizing the extent to which the cost of the OASDI program as a percentage of taxable payroll is determined by the age distribution of the population. The cost rate is basically 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. Therefore, the pattern of the annual cost rates is similar to that of the annual ratios of beneficiaries to workers.

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

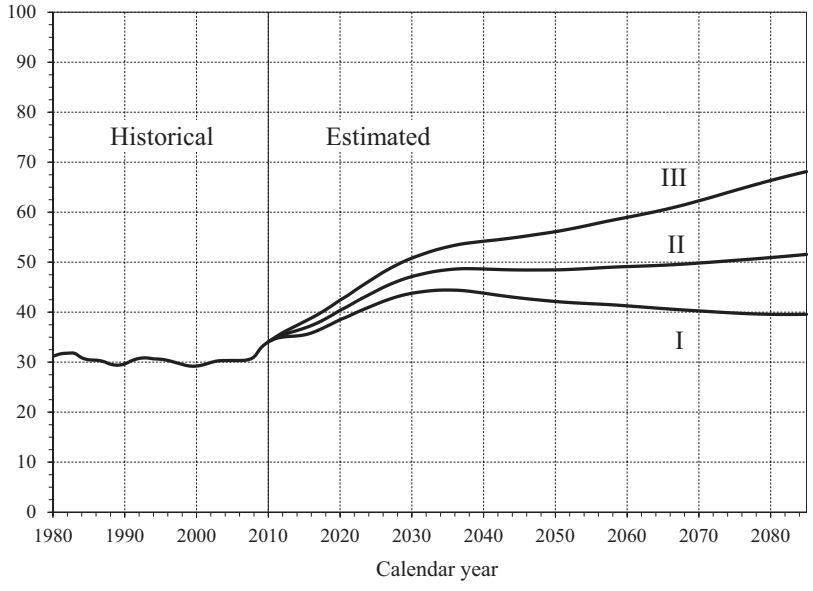



Table IV.B2 also shows the number of covered workers per OASDI beneficiary, which was about 2.9 for 2010. Under the low-cost assumptions, this ratio declines to 2.3 by 2035, and then generally rises throughout the remainder of the period, reaching 2.5 for 2085. Under the intermediate assumptions, this ratio declines generally throughout the long-range period, reaching 2.1 for 2035 and 1.9 for 2085, while under the high-cost assumptions, this ratio decreases steadily to 1.5 for 2085.

### 3. Trust Fund Ratios

Trust fund ratios are useful indicators of the adequacy of the financial resources of the Social Security program. The trust fund ratio for a year is defined as the assets at the beginning of a year, which do not include advance tax transfers, expressed as a percentage of the cost during the year. When the trust fund ratio is positive for a year, but is not positive for the following year, the trust fund becomes exhausted during that 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). Exhaustion of the assets in either fund during a year would mean there are no longer sufficient assets in the fund to pay on a timely basis the full amount of benefits scheduled for the year under present law.

The trust fund ratio serves an additional important purpose in assessing the actuarial status of the program. When the financing is adequate for the timely payment of full benefits throughout the long-range period, the stability of the trust fund ratio toward the end of the period reflects the likelihood that this projected adequacy will continue for subsequent Trustees Reports. If the trust fund ratio is positive throughout the period and is 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 financing is said to achieve sustainable solvency.

Table IV.B3 shows, by alternative, the estimated trust fund ratios (without regard to advance tax transfers that would be effected) for the separate and combined OASI and DI Trust Funds. Also shown in this table is the year in which a fund is estimated to become exhausted.

Based on the intermediate assumptions, the OASI Trust Fund ratio declines from 401 percent at the beginning of the period, at first slowly, and then more rapidly, before becoming exhausted in 2038. The DI trust fund ratio has been declining steadily since 2003, and is estimated to continue to decline from 136 percent at the beginning of 2011 until the trust fund becomes exhausted in 2018.

The trust fund ratio for the combined OASI and DI Trust Funds under the intermediate assumptions declines from 353 percent at the beginning of 2011, with the combined funds becoming exhausted in 2036, one year earlier than in last year's report.

Under the intermediate assumptions, OASDI cost is projected to exceed non-interest income for the entire projection period. However, for the period 2011 through 2022, trust fund income, including interest income, is projected to be more than needed to cover costs, so combined trust fund assets will continue

to grow. Beginning in 2023, combined trust fund assets will diminish until assets are exhausted in 2036.

Under the low-cost assumptions, the trust fund ratio for the DI program increases from 2018 through the end of the long-range projection period, and reaches the extremely high level of 1,717 percent for 2086. The DI trust fund ratio in 2086 rises by 36 percentage points from the level in 2085. For the OASI program, the trust fund ratio generally declines to a low of 123 percent for 2067, and rises thereafter to a level of 163 percent for 2086. At the end of the period, the OASI trust fund ratio is rising by 3 percentage points per year. For the OASDI program, the trust fund ratio generally declines to 205 percent for 2052, and increases thereafter, until it reaches 350 percent for 2086. Subsequent Trustees Reports are likely to contain projections of adequate long-range financing of the OASI, the DI, and the combined OASDI programs under the low-cost assumptions, because the trust fund ratios are large and increasing at the end of the long-range period. Thus, under the low-cost assumptions, each program achieves sustainable solvency.

In contrast, under the high-cost assumptions, the OASI trust fund ratio is estimated to decline continually to fund exhaustion in 2031. The DI trust fund ratio is estimated to decline from 133 percent for 2011 to fund exhaustion in 2016. The combined OASI and DI trust fund ratio is estimated to decline from 352 percent for 2011 to fund exhaustion in 2029.

With large, persistent annual deficits projected under all but the low-cost assumptions, it is highly likely that income will need to be increased, program costs will need to be reduced, or both, in order to prevent exhaustion of the trust funds. The stochastic projections discussed in appendix E suggest that trust fund exhaustion is highly probable by mid-century.

Even under the high-cost assumptions, however, the combined OASI and DI Trust Fund assets on hand plus their estimated future income would be able to cover their combined cost for 18 years (until 2029). Under the intermediate assumptions, the combined starting funds plus estimated future income would be able to cover cost for 25 years (until 2036). The program would be able to cover cost for the foreseeable future under the more optimistic low-cost assumptions. In the 2010 report, the combined trust funds were projected to become exhausted in 2029 under the high-cost assumptions and in 2037 under the intermediate assumptions.

**Table IV.B3.—Trust Fund Ratios, Calendar Years 2011-85**
[In percent]

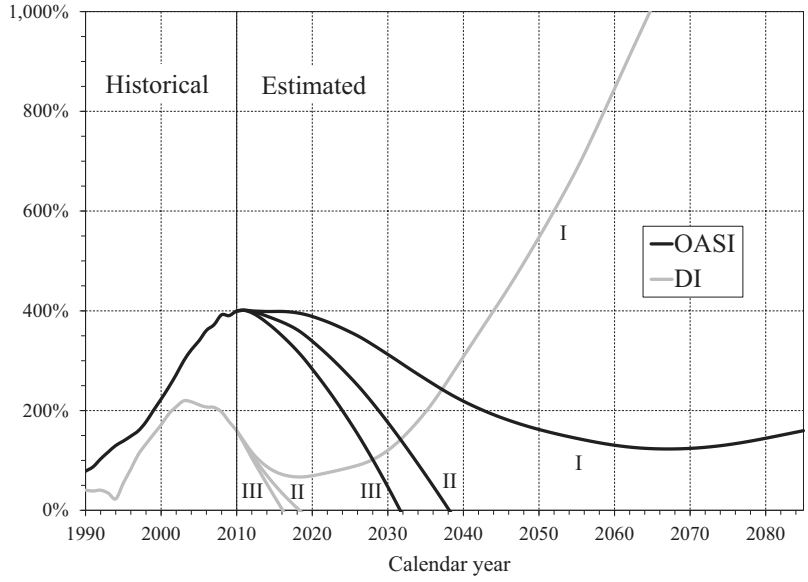
| Calendar year | Intermediate | | | Low-cost | | | High-cost | | |
|---|---|---|---|---|---|---|---|---|---|
| | OASI | DI | OASDI | OASI | DI | OASDI | OASI | DI | OASDI |
| 2011 | 401 | 136 | 353 | 401 | 138 | 355 | 401 | 133 | 352 |
| 2012 | 399 | 111 | 347 | 400 | 116 | 350 | 396 | 105 | 342 |
| 2013 | 395 | 90 | 341 | 399 | 100 | 348 | 387 | 79 | 331 |
| 2014 | 389 | 70 | 334 | 399 | 88 | 347 | 376 | 53 | 318 |
| 2015 | 384 | 52 | 328 | 399 | 78 | 348 | 364 | 27 | 304 |
| 2016 | 377 | 35 | 321 | 399 | 72 | 348 | 350 | 2 | 289 |
| 2017 | 370 | 19 | 314 | 398 | 68 | 348 | 335 | [a] | 274 |
| 2018 | 362 | 5 | 306 | 396 | 67 | 348 | 320 | [a] | 258 |
| 2019 | 351 | [a] | 296 | 393 | 67 | 347 | 302 | [a] | 241 |
| 2020 | 339 | [a] | 284 | 389 | 69 | 344 | 283 | [a] | 222 |
| 2025 | 267 | [a] | 214 | 358 | 86 | 323 | 177 | [a] | 113 |
| 2030 | 176 | [a] | 127 | 313 | 120 | 290 | 47 | [a] | [a] |
| 2035 | 71 | [a] | 25 | 263 | 197 | 256 | [a] | [a] | [a] |
| 2040 | [a] | [a] | [a] | 219 | 308 | 228 | [a] | [a] | [a] |
| 2045 | [a] | [a] | [a] | 186 | 423 | 212 | [a] | [a] | [a] |
| 2050 | [a] | [a] | [a] | 162 | 547 | 206 | [a] | [a] | [a] |
| 2055 | [a] | [a] | [a] | 144 | 684 | 206 | [a] | [a] | [a] |
| 2060 | [a] | [a] | [a] | 130 | 845 | 211 | [a] | [a] | [a] |
| 2065 | [a] | [a] | [a] | 124 | 1,010 | 225 | [a] | [a] | [a] |
| 2070 | [a] | [a] | [a] | 124 | 1,175 | 247 | [a] | [a] | [a] |
| 2075 | [a] | [a] | [a] | 131 | 1,344 | 275 | [a] | [a] | [a] |
| 2080 | [a] | [a] | [a] | 144 | 1,508 | 308 | [a] | [a] | [a] |
| 2085 | [a] | [a] | [a] | 160 | 1,681 | 343 | [a] | [a] | [a] |
| Trust fund is estimated to become exhausted in | 2038 | 2018 | 2036 | [b] | [b] | [b] | 2031 | 2016 | 2029 |

[a] The trust fund is estimated to be exhausted by the beginning of this year. The last line of the table shows the specific year of trust fund exhaustion.
[b] The trust fund is not estimated to be exhausted within the projection period

Note: See definition of trust fund ratio on page 222.The combined ratios shown for years after the DI Trust Fund is estimated to be exhausted are theoretical and are shown for informational purposes only.

An illustration of the trust fund ratios for the separate OASI and DI Trust Funds is shown in figure IV.B3 for each of the alternative sets of assumptions. A graph of the trust fund ratios for the combined trust funds is shown in figure II.D6 on page 16.

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




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

Summarized income and cost rates, along with their components, are presented in table IV.B4 for 25-year, 50-year, and 75-year valuation periods. Income rates reflect the scheduled payroll tax rates, the projected income from the taxation of scheduled benefits, and reimbursements from the General Fund of the Treasury, if any, expressed as a percentage of taxable payroll. Under current law, the combined payroll tax rate of 12.4 percent will remain unchanged in the future. In contrast, the projected income from taxation of benefits, expressed as a percentage of taxable payroll, is expected to generally increase throughout the long-range period for two reasons. First, total benefit payments are rising faster than payroll. Second, the benefit-taxation threshold amounts are not indexed, so that an increasing share of beneficiaries will be paying tax on a larger portion of their benefits. Summarized income rates also include the starting trust fund balance. Summarized cost rates include the cost of reaching a target trust fund of 100 percent of annual cost at the end of the period in addition to the cost included in the annual cost rates.

The payroll tax income expressed as a percentage of taxable payroll, as shown in table IV.B4, is generally slightly smaller than the actual tax rates in effect for each period. The reason for this difference is that all OASDI

income and cost amounts are attributed to the year in which they are expected to be received or expended, while taxable payroll is attributed to the year in which earnings are paid. Earnings are paid to workers before the corresponding payroll taxes are credited to the funds; therefore, payroll tax income received in a given year reflects taxes paid from a combination of the taxable payrolls for that year and prior years. Dividing payroll tax income by taxable payroll for a particular year, or period of years, will thus generally result in an income rate slightly lower than the applicable tax rate for the period.

Summarized values for the full 75-year period are useful in analyzing the long-range adequacy of financing for the program over the period as a whole, both under present law and under proposed modifications to the law. Table IV.B4 shows summarized rates for valuation periods of the first 25, the first 50, and the entire 75 years of the long-range projection period, including the funds on hand at the start of the period and the cost of accumulating a target trust fund balance equal to 100 percent of the following year's annual cost by the end of the period. The actuarial balance for each of these three valuation periods is equal to the difference between the summarized income rate and the summarized cost rate for the corresponding period. An actuarial balance of zero for any period indicates that estimated cost for the period could be met for the period as a whole (but not necessarily at all points within the period), with a remaining trust fund balance at the end of the period equal to 100 percent of the following year's cost. A negative actuarial balance indicates that, over the period, the present value of income to the program plus the existing trust fund falls short of the present value of the cost of the program plus the cost of reaching a target trust fund balance of 1 year's cost by the end of the period. This negative balance, combined with a falling trust fund ratio, implies that the current-law level of financing is not sustainable.

The values in table IV.B4 show summarized rates for the intermediate assumptions, as well as for the low-cost and high-cost assumptions. The low-cost and high-cost assumptions define a wide range of possibilities, but are each unlikely to occur. The combined OASDI program is expected to operate with a positive actuarial balance over the 25-year valuation period under only the low-cost assumptions. For the 25-year valuation period, the summarized values indicate actuarial balances of 0.78 percent of taxable payroll under the low-cost assumptions, -0.60 percent under the intermediate assumptions, and -2.26 percent under the high-cost assumptions.[1] These bal-

[1] The negative 25-year actuarial balance under intermediate assumptions means that the combined OASI and DI Trust Fund balance falls below one year's projected program cost by the end of 2035. In fact, under the intermediate assumptions, the combined trust fund exhaustion date is 2036.

ances indicate that the program is more than adequately financed for the 25-year valuation period under only the low-cost projections. For the 50-year valuation period, the OASDI program would have a positive actuarial balance of 0.23 percent under the low-cost assumptions, but would have deficits of 1.78 percent under the intermediate assumptions and 4.37 percent under the high-cost assumptions. These deficits mean that the program is more than adequately financed for the 50-year valuation period under only the low-cost set of assumptions.

For the entire 75-year valuation period, the combined OASDI program would once again have actuarial deficits except under the low-cost set of assumptions. The actuarial balance for this long-range valuation period is projected to be 0.29 percent of taxable payroll under the low-cost assumptions, -2.22 percent under the intermediate assumptions, and -5.59 percent under the high-cost assumptions.

Assuming the Trustees' intermediate assumptions accurately reflect future demographic and economic trends, solvency for the program over the next 75 years (timely payment of scheduled benefits throughout this period) could be restored if the Social Security payroll tax rate were increased for earnings during this period from 12.40 percent (combined employee-employer rates) to 14.55 percent. Solvency for this period could also be restored if scheduled benefits for this period were reduced by 13.8 percent. Alternatively, a combination of these approaches could be used.

However, eliminating the actuarial deficit over the next 75 years would require 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. Eliminating the actuarial deficit could be achieved for the 75-year period with an increase in the combined payroll tax to 14.71 percent[1] for all earnings during this period or a decrease in scheduled benefits of 14.6 percent for benefits paid during this period. Alternatively, a combination of these approaches could be used. These changes would be sufficient to eliminate the actuarial deficit and leave a projected actuarial balance of zero for the OASDI program.

Large annual deficits projected under current law for the end of the long-range period, which equal 4.24 percent of payroll for 2085, under the inter-

[1] The indicated increase in the payroll tax rate is somewhat larger than the actuarial deficit due to a reduction in the tax base, reflecting the assumed response of employers and employees to an increase in taxes. For proposed changes in law that would alter payroll tax rates, an increase in payroll taxes is presumed to result in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

mediate assumptions (see table IV.B1), indicate that the annual cost will very likely continue to exceed non-interest income after 2085. As a result, ensuring continued adequate financing would eventually 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 estimated to be 3.6 percent of taxable payroll under the intermediate assumptions. This estimate indicates that the projected infinite horizon shortfall could be eliminated with an immediate increase in the combined payroll tax rate from 12.4 percent to about 16.2 percent.[1] This shortfall could also be eliminated if all current and future benefits were immediately reduced by 21.9 percent.

Table IV.B4 indicates that the financial condition of the DI program is substantially worse than that of the OASI program for the first 25 years. Summarized over the full 75-year period, however, long-range deficits for the OASI and DI programs under intermediate assumptions are more similar when measured relative to the level of program costs. The relatively worse financial status of the OASI program in the long-term occurs because increases in longevity have a greater impact on OASI cost than on DI cost largely due to the fixed normal retirement age after 2022.

[1] The indicated increase in the payroll tax rate is somewhat larger than the actuarial deficit due to a reduction in the tax base, reflecting the assumed response of employers and employees to an increase in taxes. For proposed changes in law that would alter payroll tax rates, an increase in payroll taxes is presumed to result in a small shift of wages and salaries to forms of employee compensation that are not subject to the payroll tax.

**Table IV.B4.—Components of Summarized Income Rates and Cost Rates, Calendar Years 2011-85**
[As a percentage of taxable payroll]

| Valuation period | Summarized income rate: Non-interest income | Summarized income rate: Beginning fund balance | Summarized income rate: Total | Summarized cost rate: Cost | Summarized cost rate: Ending target fund | Summarized cost rate: Total | Actuarial balance |
|---|---|---|---|---|---|---|---|
| **OASI:** | | | | | | | |
| **Intermediate:** | | | | | | | |
| 2011-35..... | 11.24 | 1.79 | 13.03 | 12.77 | 0.54 | 13.31 | -0.28 |
| 2011-60..... | 11.31 | 1.01 | 12.33 | 13.60 | .22 | 13.82 | -1.49 |
| 2011-85..... | 11.34 | .77 | 12.11 | 13.91 | .13 | 14.04 | -1.92 |
| **Low-cost:** | | | | | | | |
| 2011-35..... | 11.18 | 1.77 | 12.96 | 11.77 | .47 | 12.24 | .72 |
| 2011-60..... | 11.22 | 1.00 | 12.22 | 11.99 | .18 | 12.17 | .05 |
| 2011-85..... | 11.22 | .75 | 11.97 | 11.81 | .10 | 11.91 | .06 |
| **High-cost:** | | | | | | | |
| 2011-35..... | 11.30 | 1.77 | 13.08 | 13.95 | .64 | 14.59 | -1.52 |
| 2011-60..... | 11.43 | 1.00 | 12.43 | 15.68 | .28 | 15.97 | -3.54 |
| 2011-85..... | 11.51 | .76 | 12.27 | 16.78 | .17 | 16.95 | -4.68 |
| **DI:** | | | | | | | |
| **Intermediate:** | | | | | | | |
| 2011-35..... | 1.85 | .13 | 1.98 | 2.22 | .08 | 2.30 | -.32 |
| 2011-60..... | 1.85 | .08 | 1.93 | 2.19 | .03 | 2.22 | -.29 |
| 2011-85..... | 1.85 | .06 | 1.91 | 2.19 | .02 | 2.21 | -.30 |
| **Low-cost:** | | | | | | | |
| 2011-35..... | 1.84 | .13 | 1.97 | 1.85 | .06 | 1.91 | .06 |
| 2011-60..... | 1.84 | .07 | 1.91 | 1.71 | .02 | 1.73 | .18 |
| 2011-85..... | 1.84 | .06 | 1.89 | 1.66 | .01 | 1.67 | .22 |
| **High-cost:** | | | | | | | |
| 2011-35..... | 1.86 | .13 | 1.99 | 2.63 | .10 | 2.73 | -.74 |
| 2011-60..... | 1.87 | .07 | 1.94 | 2.73 | .04 | 2.77 | -.83 |
| 2011-85..... | 1.87 | .06 | 1.93 | 2.81 | .02 | 2.84 | -.91 |
| **OASDI:** | | | | | | | |
| **Intermediate:** | | | | | | | |
| 2011-35..... | 13.09 | 1.93 | 15.01 | 14.99 | .62 | 15.61 | -.60 |
| 2011-60..... | 13.16 | 1.09 | 14.25 | 15.78 | .25 | 16.04 | -1.78 |
| 2011-85..... | 13.20 | .83 | 14.02 | 16.10 | .15 | 16.25 | -2.22 |
| **Low-cost:** | | | | | | | |
| 2011-35..... | 13.02 | 1.90 | 14.93 | 13.62 | .52 | 14.14 | .78 |
| 2011-60..... | 13.06 | 1.07 | 14.14 | 13.70 | .20 | 13.90 | .23 |
| 2011-85..... | 13.06 | .80 | 13.87 | 13.46 | .11 | 13.58 | .29 |
| **High-cost:** | | | | | | | |
| 2011-35..... | 13.16 | 1.90 | 15.07 | 16.58 | .74 | 17.32 | -2.26 |
| 2011-60..... | 13.30 | 1.07 | 14.37 | 18.41 | .33 | 18.74 | -4.37 |
| 2011-85..... | 13.38 | .82 | 14.20 | 19.59 | .20 | 19.79 | -5.59 |

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

Table IV.B5 presents the components and the calculation of the long-range (75-year) actuarial balance under the intermediate assumptions. The present value of future cost less future non-interest income over the long-range period, minus the amount of trust fund assets at the beginning of the projection period, amounts to $6.5 trillion for the OASDI program. This amount is referred to as the 75-year "open group unfunded obligation" (see row G). The actuarial deficit (i.e., the negative of the actuarial balance) combines this unfunded obligation with the present value of the "ending target trust fund" and expresses the total as a percentage of the present value of the taxable payroll for the period. The present value of future non-interest income minus

cost, plus starting trust fund assets, minus the present value of the ending target trust fund, amounts to -$7.0 trillion for the OASDI program. The actuarial balance—this amount expressed as a percentage of taxable payroll for the period—is therefore -2.22 percent.

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

| Item | OASI | DI | OASDI |
|---|---|---|---|
| **Present value as of January 1, 2011 (in billions):** | | | |
| A. Payroll tax revenue | $33,256 | $5,647 | $38,903 |
| B. Reimbursements from general revenue | 92 | 16 | 108 |
| C. Taxation of benefits revenue | 2,411 | 181 | 2,592 |
| D. Non-interest income (A + B + C) | 35,759 | 5,844 | 41,603 |
| E. Cost | 43,850 | 6,910 | 50,760 |
| F. Cost minus non-interest income (E - D) | 8,092 | 1,066 | 9,157 |
| G. Trust fund assets at start of period | 2,429 | 180 | 2,609 |
| H. Open group unfunded obligation (F - G) | 5,663 | 886 | 6,548 |
| I. Ending target trust fund[a] | 403 | 58 | 462 |
| J. Income minus cost, plus assets at start of period, minus ending target trust fund (D - E + G - I = - H - I) | -6,066 | -944 | -7,010 |
| K. Taxable payroll | 315,246 | 315,246 | 315,246 |
| **Percent of taxable payroll:** | | | |
| Actuarial balance (100 × J ÷ K) | -1.92 | -.30 | -2.22 |

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

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

## 5. Additional Measures of OASDI Unfunded Obligations

As shown in the previous section, a negative actuarial balance (or an actuarial deficit) provides one measure of the unfunded obligation of the program over a period of time. Two additional measures of OASDI unfunded obligations under the intermediate assumptions are presented below.

### *a. Open Group Unfunded Obligations*

Consistent with practice since 1965, this report focuses on the 75-year period (from 2011 to 2085 for this report) for the evaluation of the long-run financial status of the OASDI program on an open group basis (i.e., including non-interest income and cost for past, current, and future participants through the year 2085). Table IV.B6, in its second line, shows that the present value of the open group unfunded obligation for the program over that period is $6.5 trillion. 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 2085.

Table IV.B6 also presents the 75-year unfunded obligation as percentages of future OASDI taxable payroll and GDP through 2085. 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 "sustainable solvency" at the beginning of section IV.B on page 46).

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

Over the infinite horizon, table IV.B6 reports that the projected OASDI open group unfunded obligation is $17.9 trillion, which is $11.3 trillion larger than for the 75-year period. The $11.3 trillion increment reflects a significant financing gap projected for OASDI for years after 2085. Of course, the degree of uncertainty associated with estimates beyond 2085 is substantial.

The $17.9 trillion infinite horizon open group unfunded obligation amounts to 3.6 percent of taxable payroll or 1.2 percent of GDP. These relative measures of the unfunded obligation over the infinite horizon express its magnitude in relation to the resources that are potentially available to finance the shortfall.

**Table IV.B6.—Unfunded OASDI Obligations for 1935 (Program Inception) Through the Infinite Horizon, Based on Intermediate Assumptions**
[Present values as of January 1, 2011; dollar amounts in trillions]

| | Present value | Expressed as a percentage of future payroll and GDP | |
|---|---|---|---|
| | | Taxable payroll | GDP |
| Unfunded obligation for 1935 through the infinite horizon[a] | $17.9 | 3.6 | 1.2 |
| Unfunded obligation for 1935 through 2085[b] | 6.5 | 2.1 | .7 |

[a] Present value of future cost less future non-interest income, reduced by the amount of trust fund assets at the beginning of 2011. Expressed as percentage of payroll and GDP for the period 2011 through the infinite horizon.
[b] Present value of future cost less future non-interest income through 2085, reduced by the amount of trust fund assets at the beginning of 2011. Expressed as percentage of payroll and GDP for the period 2011 through 2085.

Notes:
1. The present values of future taxable payroll for 2011-85 and for 2011 through the infinite horizon are $315.2 trillion and $500.5 trillion, respectively.
2. The present values of GDP for 2011-85 and for 2011 through the infinite horizon are $873.7 trillion and $1,460.4 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's report projected the infinite horizon unfunded obligation at $16.1 trillion in present value. If the assumptions, methods, and starting values had all remained unchanged, the change in the valuation date to one year later would have increased the unfunded obligation by about $0.8 trillion to $16.9 trillion. The net effects of changes in assumptions, methods, and starting values increased the infinite horizon unfunded obligation by about $1.0 trillion in present value.

The infinite horizon unfunded obligation is 0.3 percentage point higher than in last year's report when expressed as a share of taxable payroll, and is unchanged when expressed as a share of GDP. The main changes affecting the infinite horizon unfunded obligation for this report are reductions in mortality rates at the older ages. See section IV.B.7 for details regarding changes in law, data, methods, and assumptions.

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

Table IV.B7 disaggregates the infinite horizon unfunded obligation of $17.9 trillion into components for past, current, and future participants. The present value of future cost reduced by future non-interest income over the next 100 years for all current participants[1] equals $21.4 trillion. Subtracting the current value of the trust fund gives a closed group unfunded obligation of $18.8 trillion, which represents the shortfall of lifetime contributions for all past and current participants relative to the cost of benefits for them.

[1] Individuals who attain age 15 or older in 2011.

Future participants, on the other hand, are scheduled to pay $0.9 trillion more into the system than the cost of benefits for them. The total unfunded obligation, $17.9 trillion, is the sum of the unfunded obligation for current and past participants ($18.8 trillion) and the present value of cost less non-interest income for future participants (-$0.9 trillion).

This accounting makes clear that if some generations receive benefits with a present value exceeding the present value of their payroll tax contributions and other receipts on their behalf, other generations must receive benefits with a present value less than the present value of their payroll tax contributions and other receipts on their behalf. Making Social Security solvent over the infinite horizon requires some combination of increased revenue or reduced benefits for current and future participants that amounts to $17.9 trillion in present value, 3.6 percent of future taxable payroll, or 1.2 percent of future GDP.

**Table IV.B7.—Present Values of OASDI Cost Less Non-interest Income and Unfunded Obligations for Program Participants, Based on Intermediate Assumptions**
[Present values as of January 1, 2011; dollar amounts in trillions]

| | | Expressed as a percentage of future payroll and GDP | |
|---|---|---|---|
| | Present value | Taxable payroll | GDP |
| Present value of future cost less future non-interest income for current participants | $21.4 | 4.3 | 1.5 |
| Less current trust fund (accumulation of non-interest income minus expenditures to date for past and current participants) | 2.6 | .5 | .2 |
| Equals unfunded obligation for past and current participants[a] | 18.8 | 3.8 | 1.3 |
| Plus present value of cost less non-interest income for future participants over the infinite horizon | -.9 | -.2 | -.1 |
| Equals unfunded obligation for all participants through the infinite horizon | 17.9 | 3.6 | 1.2 |

[a] This concept is also referred to as the closed group unfunded obligation.

Notes:
1. It is not clear how to allocate across generations the burden of providing $0.1 trillion of reimbursement from the General Fund of the Treasury in 2010, 2011, and 2012. Any allocation would make at most a rounding difference in some values in this table. Therefore, for the purpose of this table, these reimbursements are allocated as though they represent taxes in the years of reimbursements.
2. The present value of future taxable payroll for 2011 through the infinite horizon is $500.5 trillion.
3. The present value of GDP for 2011 through the infinite horizon is $1,460.4 trillion.
4. Totals do not necessarily equal the sums of rounded components.

## 6. Test of Long-Range Close Actuarial Balance

The test of long-range close actuarial balance applies to a set of 66 separate valuation periods beginning with the first 10-year period, and including the periods of the first 11 years, the first 12 years, up through the full 75-year projection period. Under the long-range test, the summarized income rate and cost rate are calculated for each of these valuation periods. The long-range test is met if, for each of the 66 valuation periods, the actuarial balance

is not less than zero or is negative by, at most, a specified percentage of the summarized cost rate for the same time period. The percentage allowed for a negative actuarial balance is 5 percent for the full 75-year period. For shorter periods, the allowable percentage begins with zero for the first 10 years and increases uniformly for longer periods, until it reaches the maximum percentage of 5 percent allowed for the 75-year period. The criterion for meeting the test is less stringent for the longer periods in recognition of the greater uncertainty associated with estimates for more distant years.

When a negative actuarial balance in excess of the allowable percentage of the summarized cost rate is projected for one or more of the 66 separate valuation periods, the program fails the test of long-range close actuarial balance. Being out of close actuarial balance indicates that the program will experience financial problems in the future and that ways of improving the financial status of the program should be considered. The sooner the actuarial balance is less than the minimum allowable balance, expressed as a percentage of the summarized cost rate, the more urgent is the need for corrective action. Necessary changes in program financing or benefit provisions should not be put off until the last possible moment if future beneficiaries and workers are to plan effectively for their retirement.

Table IV.B8 presents a comparison, based on the intermediate estimates, of the actuarial balances with the minimum allowable balance (or maximum allowable deficit) under the long-range test, each expressed as a percentage of the summarized cost rate. For display purposes, values are shown for 14 selected valuation periods, ranging from 10 years to 75 years in length. However, each of the 66 periods—those of 10 years, 11 years, and continuing in 1-year increments through 75 years—is considered for the test. These minimum allowable balances are calculated to show the limit for each valuation period resulting from the graduated tolerance scale. The patterns in the estimated balances as a percentage of the summarized cost rates, as well as that for the minimum allowable balance, are presented graphically in figure IV.B4 for the OASI, DI, and combined OASDI programs. Values shown for the 25-year, 50-year, and 75-year valuation periods correspond to those presented in table IV.B4.

For the OASI program, the estimated actuarial balance as a percentage of the summarized cost rate exceeds the minimum allowable for valuation periods of 10 through 23 years under the intermediate estimates. For valuation periods of greater than 23 years, the estimated actuarial balance is less than the minimum allowable. For the full 75-year long-range period, the estimated actuarial balance reaches -13.71 percent of the summarized cost rate, for a shortfall of 8.71 percent from the minimum allowable balance of -5.0 percent of the summarized cost rate. Although the OASI program satisfies the test of

short-range financial adequacy (as discussed earlier on page 35), it is not in long-range close actuarial balance.

For the DI program, under the intermediate assumptions, the estimated actuarial balance as a percentage of the summarized cost rate is less than the minimum allowable balance for all 66 valuation periods. For the full 75-year long-range period, the estimated actuarial balance reaches -13.55 percent of the summarized cost rate, for a shortfall of 8.55 percent from the minimum allowable balance of -5.0 percent of the summarized cost rate. Thus, the DI program fails to meet the short-range test of financial adequacy (as discussed on page 35), and is also not in long-range close actuarial balance.

Financing for the DI program is much less adequate than for the OASI program in satisfying the test for long-range actuarial balance, even though long-range actuarial deficits are more comparable over the entire 75-year period. For the long-range actuarial deficit, much more of the increase in the long-range cost due to the aging of the baby-boom generation occurs earlier for the DI program than for the OASI program. As a result, payroll tax rates that are relatively more adequate for the OASI program during the first 25 years become relatively less adequate later in the long-range period.

For the OASDI program, the estimated actuarial balance as a percentage of the summarized cost rate exceeds the minimum allowable balance for valuation periods of 10 through 21 years under the intermediate estimates. For valuation periods of greater than 21 years, the estimated actuarial balance is below the minimum allowable balance. The size of the shortfall from the minimum allowable balance rises gradually, reaching 8.69 percent of the summarized cost rate for the full 75-year long-range valuation period. Although the OASDI program satisfies the short-range test of financial adequacy, it is out of long-range close actuarial balance.

The OASI and DI programs, both separate and combined, were out of close actuarial balance in last year's report. The estimated deficits for the OASI, DI, and combined OASDI programs in this report are larger when compared to those shown in last year's report for all valuation periods.

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

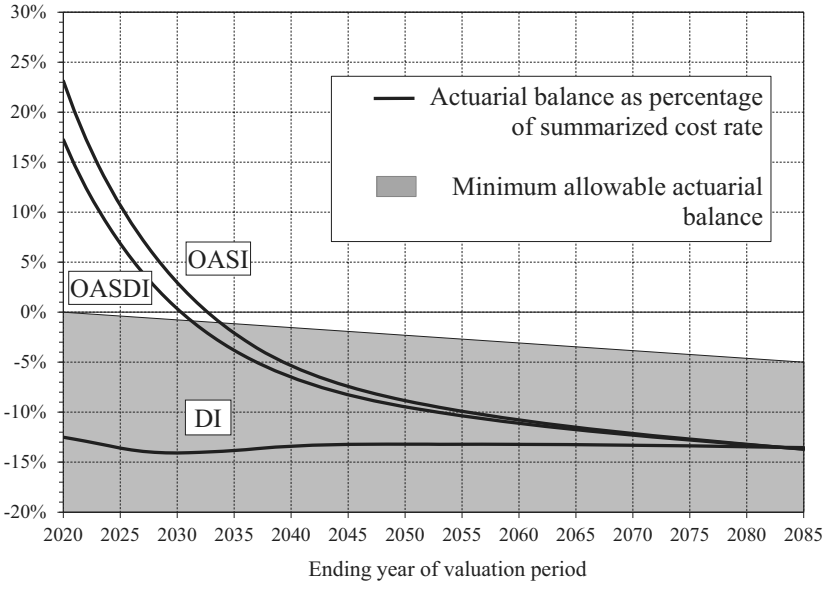


**Table IV.B8.—Comparison of Long-Range Actuarial Balances With the Minimum Allowable in the Test for Close Actuarial Balance, Based on Intermediate Assumptions**

| Valuation period | Rates (percentage of taxable payroll) | | | Values expressed as a percentage of cost rate | |
|---|---|---|---|---|---|
| | Summarized income rate | Summarized cost rate | Actuarial balance | Actuarial balance | Minimum allowable actuarial balance |
| **OASI:** | | | | | |
| 10-year: 2011-20 | 15.40 | 12.51 | 2.89 | 23.12 | 0.00 |
| 15-year: 2011-25 | 14.03 | 12.68 | 1.35 | 10.68 | -.38 |
| 20-year: 2011-30 | 13.40 | 13.01 | .39 | 2.96 | -.77 |
| 25-year: 2011-35 | 13.03 | 13.31 | -.28 | -2.09 | -1.15 |
| 30-year: 2011-40 | 12.79 | 13.52 | -.72 | -5.35 | -1.54 |
| 35-year: 2011-45 | 12.62 | 13.64 | -1.01 | -7.43 | -1.92 |
| 40-year: 2011-50 | 12.50 | 13.71 | -1.21 | -8.84 | -2.31 |
| 45-year: 2011-55 | 12.40 | 13.77 | -1.36 | -9.91 | -2.69 |
| 50-year: 2011-60 | 12.33 | 13.82 | -1.49 | -10.78 | -3.08 |
| 55-year: 2011-65 | 12.27 | 13.86 | -1.60 | -11.51 | -3.46 |
| 60-year: 2011-70 | 12.22 | 13.90 | -1.69 | -12.13 | -3.85 |
| 65-year: 2011-75 | 12.18 | 13.95 | -1.77 | -12.70 | -4.23 |
| 70-year: 2011-80 | 12.14 | 13.99 | -1.85 | -13.22 | -4.62 |
| 75-year: 2011-85 | 12.11 | 14.04 | -1.92 | -13.71 | -5.00 |
| **DI:** | | | | | |
| 10-year: 2011-20 | 2.16 | 2.47 | -.31 | -12.51 | .00 |
| 15-year: 2011-25 | 2.06 | 2.38 | -.32 | -13.59 | -.38 |
| 20-year: 2011-30 | 2.01 | 2.34 | -.33 | -14.08 | -.77 |
| 25-year: 2011-35 | 1.98 | 2.30 | -.32 | -13.84 | -1.15 |
| 30-year: 2011-40 | 1.96 | 2.27 | -.30 | -13.40 | -1.54 |
| 35-year: 2011-45 | 1.95 | 2.25 | -.30 | -13.22 | -1.92 |
| 40-year: 2011-50 | 1.94 | 2.23 | -.29 | -13.20 | -2.31 |
| 45-year: 2011-55 | 1.93 | 2.23 | -.29 | -13.23 | -2.69 |
| 50-year: 2011-60 | 1.93 | 2.22 | -.29 | -13.22 | -3.08 |
| 55-year: 2011-65 | 1.92 | 2.22 | -.29 | -13.24 | -3.46 |
| 60-year: 2011-70 | 1.92 | 2.21 | -.29 | -13.30 | -3.85 |
| 65-year: 2011-75 | 1.92 | 2.21 | -.30 | -13.38 | -4.23 |
| 70-year: 2011-80 | 1.91 | 2.21 | -.30 | -13.47 | -4.62 |
| 75-year: 2011-85 | 1.91 | 2.21 | -.30 | -13.55 | -5.00 |
| **OASDI:** | | | | | |
| 10-year: 2011-20 | 17.56 | 14.98 | 2.58 | 17.25 | .00 |
| 15-year: 2011-25 | 16.09 | 15.06 | 1.03 | 6.84 | -.38 |
| 20-year: 2011-30 | 15.41 | 15.35 | .06 | .36 | -.77 |
| 25-year: 2011-35 | 15.01 | 15.61 | -.60 | -3.82 | -1.15 |
| 30-year: 2011-40 | 14.76 | 15.78 | -1.03 | -6.51 | -1.54 |
| 35-year: 2011-45 | 14.57 | 15.88 | -1.31 | -8.25 | -1.92 |
| 40-year: 2011-50 | 14.44 | 15.95 | -1.51 | -9.45 | -2.31 |
| 45-year: 2011-55 | 14.33 | 15.99 | -1.66 | -10.37 | -2.69 |
| 50-year: 2011-60 | 14.25 | 16.04 | -1.78 | -11.12 | -3.08 |
| 55-year: 2011-65 | 14.19 | 16.08 | -1.89 | -11.75 | -3.46 |
| 60-year: 2011-70 | 14.14 | 16.12 | -1.98 | -12.29 | -3.85 |
| 65-year: 2011-75 | 14.09 | 16.16 | -2.07 | -12.79 | -4.23 |
| 70-year: 2011-80 | 14.06 | 16.20 | -2.15 | -13.25 | -4.62 |
| 75-year: 2011-85 | 14.02 | 16.25 | -2.22 | -13.69 | -5.00 |

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

## 7. Reasons for Change in Actuarial Balance From Last Report

The estimated effects (by category) of various changes from last year's report to this report on the long-range actuarial balance under the intermediate assumptions are listed in table IV.B9.

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

| Item | OASI | DI | OASDI |
|---|---|---|---|
| **Shown in last year's report:** | | | |
| Income rate | 12.09 | 1.92 | 14.01 |
| Cost rate | 13.71 | 2.22 | 15.93 |
| Actuarial balance | **-1.62** | **-.30** | **-1.92** |
| **Changes in actuarial balance due to changes in:** | | | |
| Legislation / Regulation | .00 | .00 | .00 |
| Valuation period[a] | -.04 | -.01 | -.05 |
| Demographic data and assumptions | -.14 | .00 | -.14 |
| Economic data and assumptions | -.05 | -.01 | -.06 |
| Disability assumptions | .00 | .00 | -.01 |
| Methods and programmatic data | -.06 | +.02 | -.05 |
| Total change in actuarial balance | -.30 | .00 | -.30 |
| **Shown in this report:** | | | |
| Actuarial balance | **-1.92** | **-.30** | **-2.22** |
| Income rate | 12.11 | 1.91 | 14.02 |
| Cost rate | 14.04 | 2.21 | 16.25 |

[a] In changing from the valuation period of last year's report, which was 2010-84, to the valuation period of this report, 2011-85, the relatively large negative annual balance for 2085 is included. This change in the valuation period results in a larger long-range actuarial deficit. The fund balance at the end of 2010, i.e., at the beginning of the projection period, is included in the 75-year actuarial balance.

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

Since the last report, no legislation that has a significant long-range financial effect on the OASDI program has been enacted (see section III.B).

In changing from the valuation period of last year's report, which was 2010-84, to the valuation period of this report, 2011-85, the relatively large negative annual balance for 2085 is included. This change results in a decrease in the long-range OASDI actuarial balance of 0.05 percent of taxable payroll. (Note that the trust fund assets at the end of 2010, i.e., at the beginning of the projection period, are included in the 75-year actuarial balance. These assets reflect the net financial flows for the program for all past years. In effect, therefore, the actuarial balance presented in these reports reflects financial activity from 1937 through the end of the long-range period.)

The ultimate demographic assumptions are unchanged from those in last year's report. However, changes in the demographic starting values and the transition to ultimate assumptions combine to decrease the long-range OASDI actuarial balance by 0.14 percent of taxable payroll. The demo-

graphic change contributing most to this reduction is the inclusion of final mortality data for 2007, which results in lower starting death rates and faster near-term declines in death rates at older ages compared to last year's report. These lower death rates result in a decrease in the long-range OASDI actuarial balance of 0.10 percent of taxable payroll. Revised historical estimates of net other immigration and final data on legal immigration for 2009 are also included in this year's report. Based on estimates from the Department of Homeland Security for 2007 and 2008 and due to the weak U.S. economy since 2008, net other immigration levels for years 2007-10 are estimated to be negative. These levels are significantly lower than the positive estimates in last year's report. For years 2011-14, the number of other immigrants entering the country is assumed to be lower than in last year's report, consistent with the expected timing of the economic recovery. The effect of including these new immigration data and assumptions is a decrease in the long-range OASDI actuarial balance of 0.05 percent of taxable payroll. Birth rates projected through 2026 are slightly lower than in last year's report, a result caused by lower preliminary birth data for 2008 and 2009 than had been expected for last year's report. These changes in birth rates result in a decrease in the long-range OASDI actuarial balance of 0.01 percent of taxable payroll. Finally, incorporating updated starting population levels and the interaction of these levels with the changes in fertility, mortality, and immigration result in an increase in the long-range OASDI actuarial balance of 0.02 percent of taxable payroll.

The ultimate economic assumptions are unchanged from those in last year's report. However, the combination of updating starting economic values and changing near-term economic growth rate assumptions decreases the long-range OASDI actuarial balance by 0.06 percent of taxable payroll. The economic recovery has been slower than assumed in last year's report. For this year's report, OASDI taxable earnings are considerably lower for the starting year, 2010, than were projected in last year's report. Even with faster real earnings growth after 2010 through 2019, the projected level of earnings is lower through 2018 than in last year's report. In addition, consistent with the less robust recovery, unemployment rates are slightly higher over the next few years than assumed in last year's report.

This report includes updated disabled worker mortality and termination rates that reflect a more recent historical period. Combining these updated rates with new starting disability data result in a decrease in the long-range OASDI actuarial balance of 0.01 percent of taxable payroll.

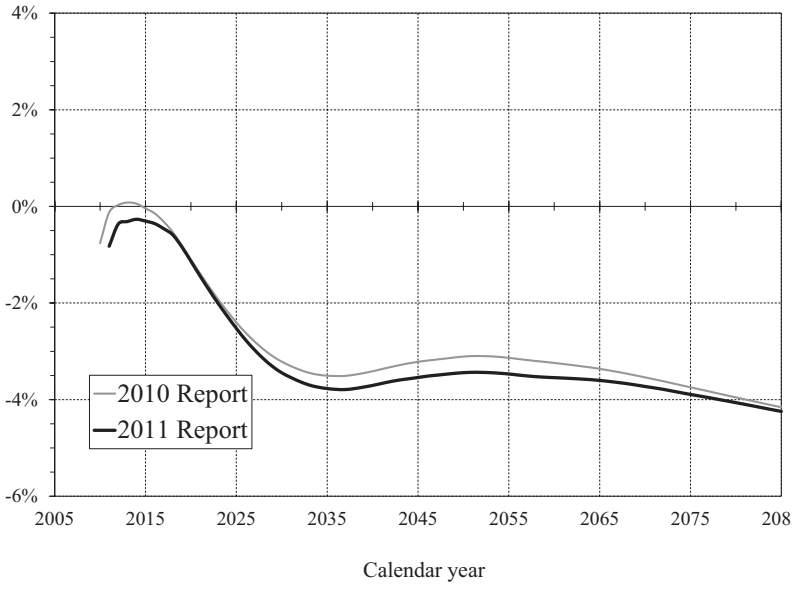
Several methodological improvements and updates of program-specific data are included in this report. These changes to programmatic data and methods have partially offsetting effects and combine to decrease the long-range

OASDI actuarial balance by 0.05 percent of taxable payroll. First, the method for determining the initial projected rates of mortality decline was changed to place greater emphasis on recent experience. These initial rates of decline are now determined using the mortality data during the most recent 10 years of historical data, rather than the most recent 20 years. This change increased the rate of decline in death rates at older ages for years following the year of final data (2007) up to the year the ultimate rates of decline are fully in effect (2035). This mortality change results in a decrease in the long-range OASDI actuarial balance of about 0.05 percent of taxable payroll. The second significant change improved the historical estimates of the other immigrant population by age and sex and the consistency between the other immigrant population and the total population. This change to the historical population results in a decrease in the long-range OASDI actuarial balance of about 0.04 percent of taxable payroll. A third significant change in methodology affects labor force participation rates. The assumed effect of gains in life expectancy on labor force participation for persons over 40 was doubled, significantly increasing projected participation rates at higher ages. Partially offsetting this increase in labor force participation, disability prevalence was added as an input variable to the labor force model for persons over normal retirement age. The net of these changes on labor force participation increases the long-range OASDI actuarial balance by about 0.01 percent of taxable payroll. A fourth significant change relates to the projection of average benefit levels for workers who will become eligible for benefits in the future. The historical sample of new beneficiaries, which serves as the basis for the projection of average benefit levels, was updated from a 2006 sample to a 2007 sample. The update of this sample resulted in an increase in the long-range OASDI actuarial balance of about 0.02 percent of taxable payroll. Finally, updating programmatic data and other small methodological improvements resulted in an increase in the long-range OASDI actuarial balance of about 0.01 percent of taxable payroll.

If the assumptions, methods, starting values, and the law had all remained unchanged from last year, the OASDI long-range actuarial balance would have diminished (become more negative) by 0.05 percent of taxable payroll due to the change in the valuation period. However, the combined changes in law, data, assumptions, and methods reflected in this report decrease the actuarial balance by an additional 0.25 percent of payroll. Thus, the actuarial balance changes from -1.92 percent of taxable payroll in last year's report to -2.22 percent in this report.

The effects of changes made in this report can also be illustrated by comparing the annual (cash-flow) balances for this and the prior year’s report. Figure IV.B5 provides this comparison for the combined OASDI program over the long-range (75-year) projection period.

**Figure IV.B5.—OASDI Annual Balances: 2010 and 2011 Trustees Reports**
[As a percentage of taxable payroll, based on intermediate assumptions]




The annual balance (income rate minus cost rate) for each year in the 75-year projection period is lower than projected in last year's report. For 2011, the annual balance in this report is 0.70 percent of payroll lower than was projected in last year's report. This lower balance is mainly due to an expected $10 billion downward adjustment to 2011 income that corrects for excess payroll tax revenue credited to the trust funds in earlier years, and to a slower than expected recovery from the economic recession. In particular, earnings for 2011 are projected to be significantly lower than in last year's report. However, over the next 10 years, the difference between the annual balances in the two reports declines rapidly. The economic recovery assumed for this year's report is complete at about the same time with about the same level of economic output as for last year's report. By 2020, the difference in the annual balances is only 0.04 percent of payroll. After 2020, the difference between the annual balances in the two reports begins to increase, until it reaches a level of 0.34 percent of payroll shortly after 2050. For the period 2055 through 2084, the difference between the annual balances in the two reports decreases, reaching a level of 0.09 percent of payroll in 2084. This pattern of differences after 2020 (first increasing and then decreasing) is largely due to changes in mortality. Compared to last year's report, age-sex-adjusted death rates for ages 65 and older become progressively lower through 2034, while age-sex-adjusted death rates for ages under 65 become

progressively higher. Lower death rates at older ages result in more beneficiaries, while higher death rates for ages under 65 eventually tend to offset some of the increase in beneficiaries from longer life after age 65. The cumulative effects of these mortality changes result in more beneficiaries throughout the projection period as compared to last year's report. The differences in the number of retired-worker beneficiaries between the reports generally increase each year until soon after 2055. Thereafter, the increases reverse, which results in decreasing differences between the two reports through 2084. Compared to last year's report, the number of additional retired-worker beneficiaries increases through about 2053, reaching a level that is 2.2 percent higher than in last year's report. Thereafter, the number of additional retired-worker beneficiaries decreases until it reaches a level for 2084 that is only 0.7 percent higher than in last year's report. The annual deficit for 2084 is 4.21 percent of taxable payroll in this report compared to 4.12 percent for 2084 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.

Basic assumptions are developed for several of these factors based on analysis of historical trends and conditions, as well as expected future conditions. These factors include fertility, mortality, immigration, marriage, divorce, productivity, inflation, average earnings, unemployment, real interest rate, retirement, and disability incidence and termination. Other factors are developed utilizing these basic assumptions. The other factors include total population, life expectancy, labor force participation, gross domestic product, and program-specific factors. All factors included in any consistent set of assumptions are interrelated directly or indirectly.

The assumptions and methods used in this report are reexamined each year in light of new information that may influence future conditions and are revised, if warranted.

Projections of these factors and their interrelationships are inherently uncertain. Therefore, 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 Board's best estimate of the future course of the population and the economy. With regard to the net effect on the status of the OASDI program, the low-cost is more optimistic, and the high-cost is more pessimistic. The low- and high-cost sets of assumptions reflect significant potential changes in the interrelationship among factors, as well as changes in the values for individual factors.

While it is unlikely that all of the factors and interactions would differ in the same direction from those expected, many combinations of individual differences in the factors could have a similar overall effect. Outcomes with overall long-range cost as low as (or lower than) the low-cost scenario or as high as (or higher than) 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).

The estimates developed using the three sets of alternative assumptions should be interpreted with care. These estimates are not intended to be 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 values for each of the demographic, economic, and program-specific factors are assumed to change toward long-range ultimate values from recently experienced levels or trends, generally over 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 are generally maintained.

The assumed ultimate values, which are generally reached within the first 25 years for both the demographic and the economic factors (and apply thereafter through the end of the 75-year long-range period), are intended to represent average annual experience or growth rates. Actual future values will exhibit fluctuations or cyclical patterns, as in the past.

The following sections discuss, in abbreviated form, 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. Nevertheless, the following sections roughly follow the order used in building the trust fund estimates presented in chapter IV.

## *A. DEMOGRAPHIC ASSUMPTIONS AND METHODS*

The principal demographic assumptions relating to fertility, mortality, and net immigration for the three alternatives are shown in table V.A1.

### 1. Fertility Assumptions

Fertility assumptions are developed for women in the form of birth rates by single year of age, from 14 to 49. These rates apply to the total number of women, for all marital statuses, in the midyear population at each age.

[1] Further details about the assumptions, methods, and actuarial estimates are contained in Actuarial Studies published by the Office of the Chief Actuary, Social Security Administration. 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; or call 410-965-3000. This entire report, along with supplemental year-by-year tables, may also be found at www.socialsecurity.gov/OACT/TR/TR11/index.html.

Historically, birth rates in the United States have fluctuated widely. The total fertility rate[1] 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 for 1990. In the 1990s, the total fertility rate was fairly stable, around 2.00 children per woman. Since 2000, the total fertility rate has been consistently above 2.00, and was 2.13 in 2007.

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. Future total fertility rates are expected 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, ultimate total fertility rates of 2.30, 2.00, and 1.70 children per woman are assumed for the low-cost, intermediate, and high-cost assumptions, respectively. These assumptions are unchanged from those used in last year's report.

Based on preliminary data, the total fertility rate is assumed to have decreased to a level of 2.09 children per woman in 2008, and decreased further to 2.03 in 2009. The total fertility rate for 2010 is assumed to be 2.08. These levels are slightly lower than those estimated in last year's report for the intermediate assumptions. For each of the three alternatives, the total fertility rate is then assumed to follow a gradual trend toward the selected ultimate level, which is reached in 2035.

## 2. Mortality Assumptions

For the projections in this year's report, assumed average percentage reductions in future mortality rates were developed by age group, sex, and cause of death. These assumptions were then used to estimate future central death rates by age group, sex, and cause of death. From these estimated central death rates, probabilities of death by single year of age and sex were calculated.

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

Historical death rates (for years 1900-2007) were calculated 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, final Medicare data on deaths and enrollments were used for years 1968 through 2007. Death rates by cause of death at all ages for years 1979-2007 were produced using data from the NCHS.

The total age-sex-adjusted death rate[2] declined at an average rate[3] of 1.10 percent per year between 1900 and 2007. Between 1979 and 2007, the period for which death rates were analyzed by cause, the total age-sex-adjusted death rate (for all causes combined) declined at an average rate of 0.93 percent per year.

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

Reductions in death rates resulted from many factors, including increased medical knowledge, increased availability of health-care services, and improvements in sanitation and nutrition. Based on consideration of the expected rate of future progress in these and other areas, three alternative sets of ultimate annual percentage reductions in central death rates by age group, sex, and cause of death are assumed for 2035 and later. The intermediate set, which is used for alternative II, is considered to be the most likely to occur. The average annual percentage reductions used for alternative I are generally smaller than those for alternative II, while those used for alternative III are generally larger. These ultimate annual percentage reductions are the same as those in last year's report.

For the years 2008 through 2010, the reductions in central death rates are assumed to be the same as the average annual reductions by age group, sex, and cause of death observed between 1997 and 2007. After 2010, the reductions in central death rates for alternative II are assumed to change rapidly from the average annual reductions by age group, sex, and cause of death observed between 1997 and 2007 until they reach the ultimate annual per-

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

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

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

centage reductions by age group, sex, and cause of death assumed for 2035 and later. The reductions in death rates under alternatives I and III are also assumed to change rapidly to their ultimate levels, but start from levels which are, respectively, 50 or 150 percent of the average annual reductions observed between 1997 and 2007.

Projections of age-sex-adjusted death rates are presented in table V.A1 for the total population (all ages), for under age 65, and for ages 65 and over. Under the intermediate assumptions, projected age-sex-adjusted death rates for the total population are lower than the death rates in last year's report. However, for the age group under age 65, projected age-sex-adjusted death rates are higher than in last year's report. For the age group 65 and over, projected age-sex-adjusted death rates are lower than in last year's report. These changes primarily result from incorporating new final mortality data for 2007 and a methodological change to use a more recent 10-year period (1997-2007), rather than a 20-year period (1987-2007), to set the starting rates of annual reduction in death rates.

After adjustment for changes in the age-sex distribution of the population, the resulting total death rates are projected to decline at average annual rates of about 0.32 percent, 0.78 percent, and 1.31 percent between 2010 and 2085 for alternatives I, II, and III, respectively. In keeping with the patterns observed in the historical data, future rates of decline are assumed to be greater for younger ages than for older ages, but to a substantially lesser degree than in the past. Accordingly, age-sex-adjusted death rates for ages 65 and over are projected to decline at average annual rates of about 0.29 percent, 0.72 percent, and 1.26 percent between 2010 and 2085 for alternatives I, II, and III, respectively.

Experts express a wide range of views on the likely rate of future decline in death rates. For example, the 2007 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 assumed for the intermediate projections in this report. Others believe that biological and social factors may slow future rates of decline in mortality. Evolving mortality trends in health care and lifestyle will be closely monitored to 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, assumptions are made for annual legal immigration, legal emigration, "other

immigration," and "other emigration." Legal immigration consists of persons who are granted legal permanent resident (LPR) status. Legal emigration consists of those legal immigrants and native-born citizens who leave the Social Security area population. Net legal immigration is then calculated as 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 LPR 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 LPR. Net other immigration is then calculated as the difference between other immigration and other emigration. Net immigration refers to the sum of net legal immigration and net other immigration.

Separate assumptions are developed for the low-cost, intermediate, and high-cost scenarios. The low-cost scenario includes higher annual net immigration and the high-cost scenario includes lower annual net immigration.

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

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

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

For the intermediate alternative, the Department of Homeland Security is expected to continue to reduce the backlog of pending applications, and legal immigration is assumed to be about 1,100,000 persons in 2010, 1,050,000 in 2011, and 1,000,000 persons per year thereafter. For alternatives I and III, annual legal immigration is ultimately assumed to be 1,200,000 persons and 800,000 persons, respectively. These ultimate assumptions are unchanged from last year's report.

The ratios of annual legal emigration to legal immigration are assumed to be 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 the same ratios used in last year's report. Under the intermediate alternative, by combining the ultimate annual legal immigration and emigration assumptions, the ultimate annual net legal immigration is 750,000 persons. For the low-cost and high-cost scenarios, ultimate annual net legal immigration is 960,000 persons and 560,000 persons, respectively.

The number of other immigrants residing in the Social Security area population is estimated to have been about 8.9 million persons as of January 1, 2000, increasing to about 13.5 million persons as of January 1, 2007. During the recession, the other-immigrant population is estimated to have decreased and reached a level of 12.6 million persons as of January 1, 2009.

Annual other immigration for 2009 and 2010 is estimated to have been 1.0 million persons. Due to the recent recession, these levels are significantly lower than those estimated during the period 2000 through 2006. Under the intermediate assumptions, annual other immigration would be 1.1 million in 2011, and would increase until 2015 to the ultimate level of 1.5 million persons. For the low- and high-cost scenarios, the future ultimate annual other immigration is assumed to be 1.8 million persons and 1.2 million persons, respectively.

Emigration from the other-immigrant population includes those who leave the Social Security area and those who adjust their status to become LPRs. This other-immigrant population is highly mobile and far more likely to leave the Social Security area than is the native-born or legal-immigrant population. The annual number of other immigrants who leave the Social Security area is estimated in two groups. The first departing group is set, by age and sex, at a stable proportion of the number of other immigrants who are assumed to have recently entered the Social Security area. The size of the second departing group is calculated by applying a set of annual departure rates, by age and sex, to the other-immigrant population in the Social Secu-

rity area. The annual number of other emigrants who leave the Social Security area is projected to average 665,000 through the 75-year projection period. In addition, the annual number of other immigrants who adjust status to become LPRs is assumed to ultimately be 500,000 for the intermediate assumptions. This ultimate level is one-third of the annual number of other immigrants assumed to enter the Social Security area. For the low- and high-cost scenarios, ultimate annual numbers adjusting status to LPR are assumed to average 600,000 persons and 400,000 persons, respectively.

Under the assumptions and methods described above, the size of the other-immigrant population is projected to grow 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.

Net other immigration is estimated to have averaged about 610,000 persons from 2000 through 2004. Estimates of net other immigration are based on data from the Department of Homeland Security for 2005 through 2008. The levels for 2005 and 2006 are estimated to have been 1,015,000 persons and 675,000 persons, respectively. For 2007 through 2010, net other immigration is estimated to have been negative, as compared to high positive levels in last year's report. Under the intermediate assumptions, net other immigration is projected to return to a positive level of 105,000 persons in 2011, and rise to about 500,000 persons in 2015. Net other immigration is then projected to decrease to about 320,000 in 2040 and to about 275,000 in 2085. The decline in net other immigration is attributable to the increasing number of other immigrants residing in the Social Security area. Based on the rates of departure described above, this effect occurs because 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 2014, and thus do not contribute toward any change in net other immigration. The average annual level of net other immigration over the 75-year projection period is estimated to be about 325,000 persons. Net other immigration is estimated to average about 425,000 persons per year under the low-cost assumptions and 225,000 persons per year under the high-cost assumptions.

The total level of net immigration (legal and other combined) is estimated to average 1,075,000 persons per year during the 75-year projection period under the intermediate assumptions. For the low-cost assumptions, total net immigration is estimated to average 1,385,000 persons per year. Under the high-cost assumptions, total net immigration is estimated to average 785,000 persons per year.

Demographers express a wide range of views about the future course of immigration for the United States. Some, like the 2007 Technical Panel mentioned in the previous section, believe that immigration will increase substantially in the future. Others believe that potential immigrants may be attracted to other countries or that changes in the law or enforcement of the law could restrict immigration.

**Table V.A1.—Principal Demographic Assumptions, Calendar Years 1940-2085**

| Calendar year | Total fertility rate[a] | Age-sex-adjusted death rate[b] per 100,000, by age | | | Net immigration[c] | |
|---|---|---|---|---|---|---|
| | | Total | Under 65 | 65 and over | Legal[d] | Other[e] |
| **Historical data:** | | | | | | |
| 1940 | 2.23 | 1,779.1 | 673.0 | 9,569.0 | 45,000 | — |
| 1945 | 2.42 | 1,586.6 | 601.8 | 8,522.4 | 55,000 | — |
| 1950 | 3.03 | 1,435.6 | 499.4 | 8,028.3 | 170,000 | — |
| 1955 | 3.50 | 1,334.2 | 442.8 | 7,612.2 | 210,000 | — |
| 1960 | 3.61 | 1,330.9 | 436.9 | 7,626.7 | 200,000 | — |
| 1965 | 2.88 | 1,304.6 | 430.0 | 7,464.0 | 230,000 | — |
| 1970 | 2.43 | 1,224.3 | 422.6 | 6,870.7 | 280,000 | — |
| 1975 | 1.77 | 1,099.0 | 369.5 | 6,236.4 | 295,000 | — |
| 1980 | 1.82 | 1,035.9 | 331.9 | 5,993.6 | 410,000 | 290,000 |
| 1985 | 1.83 | 984.2 | 303.6 | 5,777.6 | 435,000 | 355,000 |
| 1990 | 2.07 | 931.2 | 289.4 | 5,451.1 | 500,000 | 530,000 |
| 1995 | 1.98 | 913.9 | 277.3 | 5,397.5 | 575,000 | 470,000 |
| 1996 | 1.98 | 900.4 | 266.1 | 5,367.2 | 665,000 | 385,000 |
| 1997 | 1.97 | 885.1 | 253.6 | 5,332.5 | 570,000 | 460,000 |
| 1998 | 2.00 | 878.3 | 246.9 | 5,325.2 | 490,000 | 510,000 |
| 1999 | 2.01 | 884.4 | 245.0 | 5,387.5 | 520,000 | 510,000 |
| 2000 | 2.05 | 875.7 | 243.4 | 5,328.3 | 670,000 | 610,000 |
| 2001 | 2.03 | 867.5 | 243.7 | 5,260.7 | 795,000 | 610,000 |
| 2002 | 2.03 | 863.9 | 243.0 | 5,236.6 | 730,000 | 610,000 |
| 2003 | 2.06 | 851.8 | 241.7 | 5,148.2 | 575,000 | 615,000 |
| 2004 | 2.06 | 820.4 | 235.4 | 4,940.6 | 750,000 | 615,000 |
| 2005 | 2.06 | 822.6 | 236.6 | 4,949.3 | 870,000 | 1,015,000 |
| 2006 | 2.12 | 799.8 | 234.2 | 4,783.5 | 910,000 | 675,000 |
| 2007 | 2.13 | 782.1 | 228.9 | 4,678.1 | 800,000 | -20,000 |
| 2008[f] | 2.09 | 789.6 | 230.0 | 4,730.9 | 835,000 | -800,000 |
| 2009[f] | 2.03 | 781.5 | 228.4 | 4,676.7 | 850,000 | -10,000 |
| 2010[f] | 2.08 | 773.8 | 226.8 | 4,625.4 | 825,000 | -5,000 |
| **Intermediate:** | | | | | | |
| 2015 | 2.06 | 739.6 | 218.3 | 4,411.0 | 750,000 | 500,000 |
| 2020 | 2.05 | 707.8 | 207.8 | 4,228.6 | 750,000 | 445,000 |
| 2025 | 2.03 | 677.4 | 197.1 | 4,059.7 | 750,000 | 400,000 |
| 2030 | 2.02 | 648.7 | 186.8 | 3,901.7 | 750,000 | 365,000 |
| 2035 | 2.00 | 621.8 | 177.1 | 3,753.8 | 750,000 | 340,000 |
| 2040 | 2.00 | 596.6 | 167.9 | 3,615.3 | 750,000 | 320,000 |
| 2045 | 2.00 | 572.9 | 159.4 | 3,485.5 | 750,000 | 305,000 |
| 2050 | 2.00 | 550.8 | 151.4 | 3,363.7 | 750,000 | 300,000 |
| 2055 | 2.00 | 530.0 | 143.9 | 3,249.4 | 750,000 | 290,000 |
| 2060 | 2.00 | 510.5 | 136.9 | 3,141.9 | 750,000 | 290,000 |
| 2065 | 2.00 | 492.2 | 130.3 | 3,040.6 | 750,000 | 285,000 |
| 2070 | 2.00 | 474.9 | 124.1 | 2,945.1 | 750,000 | 280,000 |
| 2075 | 2.00 | 458.6 | 118.3 | 2,855.0 | 750,000 | 280,000 |
| 2080 | 2.00 | 443.2 | 112.8 | 2,769.8 | 750,000 | 280,000 |
| 2085 | 2.00 | 428.7 | 107.7 | 2,689.1 | 750,000 | 275,000 |

**Table V.A1.—Principal Demographic Assumptions, Calendar Years 1940-2085 (Cont.)**

| Calendar year | Total fertility rate[a] | Age-sex-adjusted death rate[b] per 100,000, by age | | | Net immigration[c] | |
|---|---|---|---|---|---|---|
| | | Total | Under 65 | 65 and over | Legal[d] | Other[e] |
| **Low-cost:** | | | | | | |
| 2015 | 2.12 | 769.0 | 226.4 | 4,590.3 | 960,000 | 645,000 |
| 2020 | 2.17 | 758.3 | 222.6 | 4,530.8 | 960,000 | 570,000 |
| 2025 | 2.21 | 745.4 | 217.7 | 4,461.5 | 960,000 | 515,000 |
| 2030 | 2.26 | 732.1 | 212.7 | 4,390.1 | 960,000 | 465,000 |
| 2035 | 2.30 | 718.9 | 207.6 | 4,319.4 | 960,000 | 430,000 |
| 2040 | 2.30 | 705.9 | 202.7 | 4,250.1 | 960,000 | 410,000 |
| 2045 | 2.30 | 693.4 | 197.9 | 4,183.1 | 960,000 | 390,000 |
| 2050 | 2.30 | 681.3 | 193.3 | 4,118.0 | 960,000 | 375,000 |
| 2055 | 2.30 | 669.6 | 188.9 | 4,054.9 | 960,000 | 365,000 |
| 2060 | 2.30 | 658.2 | 184.6 | 3,993.8 | 960,000 | 360,000 |
| 2065 | 2.30 | 647.2 | 180.4 | 3,934.4 | 960,000 | 355,000 |
| 2070 | 2.30 | 636.5 | 176.4 | 3,876.8 | 960,000 | 350,000 |
| 2075 | 2.30 | 626.2 | 172.5 | 3,820.8 | 960,000 | 350,000 |
| 2080 | 2.30 | 616.1 | 168.8 | 3,766.5 | 960,000 | 350,000 |
| 2085 | 2.30 | 606.4 | 165.2 | 3,713.7 | 960,000 | 350,000 |
| **High-cost:** | | | | | | |
| 2015 | 2.00 | 709.8 | 210.9 | 4,223.4 | 560,000 | 150,000 |
| 2020 | 1.93 | 655.7 | 195.2 | 3,898.8 | 560,000 | 330,000 |
| 2025 | 1.85 | 607.3 | 180.4 | 3,614.2 | 560,000 | 295,000 |
| 2030 | 1.78 | 563.8 | 166.6 | 3,361.2 | 560,000 | 265,000 |
| 2035 | 1.70 | 524.7 | 154.0 | 3,135.1 | 560,000 | 245,000 |
| 2040 | 1.70 | 489.5 | 142.5 | 2,932.6 | 560,000 | 235,000 |
| 2045 | 1.70 | 457.6 | 132.1 | 2,750.5 | 560,000 | 225,000 |
| 2050 | 1.70 | 428.8 | 122.5 | 2,586.5 | 560,000 | 225,000 |
| 2055 | 1.70 | 402.7 | 113.7 | 2,438.2 | 560,000 | 220,000 |
| 2060 | 1.70 | 378.9 | 105.6 | 2,303.8 | 560,000 | 220,000 |
| 2065 | 1.70 | 357.3 | 98.2 | 2,181.5 | 560,000 | 215,000 |
| 2070 | 1.70 | 337.5 | 91.4 | 2,070.0 | 560,000 | 215,000 |
| 2075 | 1.70 | 319.3 | 85.2 | 1,967.9 | 560,000 | 215,000 |
| 2080 | 1.70 | 302.6 | 79.5 | 1,874.2 | 560,000 | 210,000 |
| 2085 | 1.70 | 287.2 | 74.2 | 1,787.9 | 560,000 | 210,000 |

[a] The total fertility rate for any year is the average number of children who would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period. The ultimate total fertility rate is assumed to be reached in 2035.

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

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

[d] Historical estimates of net legal immigration assume a 25 percent reduction in legal immigration due to legal emigration. 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 net other immigration estimates are based on a residual method. The total other population is forced to match the Department of Homeland Security estimates for 2005 through 2009.

[f] Estimated.

## 4. Total Population Estimates

Combining the above assumptions for future fertility, mortality, and net immigration with assumptions on marriage and divorce based on data from the NCHS, projections were made of the population in the Social Security area by age, sex, and marital status as of January 1 of each year 2010 through

2085. The starting Social Security area population for January 1, 2009, is based, with several adjustments, on the Census Bureau's estimate of the residents of the 50 States and D.C., and U.S. Armed Forces overseas. These adjustments reflect mortality assumptions for the aged population since 2000 that are consistent with Medicare and Social Security data, net immigration assumptions for the aged population since 2000, estimates of the net undercount in the 2000 census, inclusion of U.S. citizens living abroad (including residents of U.S. territories), and inclusion of non-citizens living abroad who are insured for Social Security benefits. This starting population was then projected using assumed rates of birth, death, marriage, and divorce; and assumed levels of net immigration.

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

**Table V.A2.—Social Security Area Population as of July 1 and Dependency Ratios, Calendar Years 1950-2085**

| Calendar year | Population (in thousands) | | | | Dependency ratio | |
|---|---|---|---|---|---|---|
| | Under 20 | 20-64 | 65 and over | Total | Aged[a] | Total[b] |
| **Historical data:** | | | | | | |
| 1950 | 54,477 | 92,849 | 12,812 | 160,138 | 0.138 | 0.725 |
| 1960 | 73,059 | 99,818 | 17,278 | 190,155 | .173 | .905 |
| 1965 | 79,997 | 104,881 | 19,073 | 203,951 | .182 | .945 |
| 1970 | 80,882 | 112,991 | 20,893 | 214,766 | .185 | .901 |
| 1975 | 78,664 | 122,574 | 23,176 | 224,414 | .189 | .831 |
| 1980 | 74,932 | 134,103 | 26,196 | 235,231 | .195 | .754 |
| 1985 | 73,342 | 144,853 | 29,121 | 247,315 | .201 | .707 |
| 1990 | 75,239 | 153,333 | 31,989 | 260,562 | .209 | .699 |
| 1995 | 79,856 | 160,870 | 34,450 | 275,176 | .214 | .711 |
| 2000 | 82,583 | 169,907 | 35,650 | 288,139 | .210 | .696 |
| 2005 | 84,158 | 179,763 | 37,231 | 301,152 | .207 | .675 |
| 2010[c] | 85,230 | 188,906 | 40,896 | 315,032 | .216 | .668 |
| **Intermediate:** | | | | | | |
| 2015 | 86,790 | 194,371 | 47,498 | 328,659 | .244 | .691 |
| 2020 | 89,723 | 197,924 | 55,582 | 343,228 | .281 | .734 |
| 2025 | 92,419 | 199,991 | 64,700 | 357,110 | .324 | .786 |
| 2030 | 94,500 | 202,741 | 72,609 | 369,850 | .358 | .824 |
| 2035 | 96,236 | 207,659 | 77,324 | 381,219 | .372 | .836 |
| 2040 | 97,857 | 213,901 | 79,702 | 391,459 | .373 | .830 |
| 2045 | 99,638 | 220,159 | 81,204 | 401,002 | .369 | .821 |
| 2050 | 101,665 | 225,058 | 83,552 | 410,275 | .371 | .823 |
| 2055 | 103,828 | 229,299 | 86,594 | 419,721 | .378 | .830 |
| 2060 | 105,867 | 233,529 | 90,201 | 429,597 | .386 | .840 |
| 2065 | 107,712 | 238,662 | 93,536 | 439,909 | .392 | .843 |
| 2070 | 109,502 | 243,734 | 97,151 | 450,387 | .399 | .848 |
| 2075 | 111,365 | 248,428 | 100,995 | 460,788 | .407 | .855 |
| 2080 | 113,326 | 252,907 | 104,778 | 471,011 | .414 | .862 |
| 2085 | 115,321 | 257,187 | 108,642 | 481,150 | .422 | .871 |
| **Low-cost:** | | | | | | |
| 2015 | 87,829 | 195,967 | 47,381 | 331,176 | .242 | .690 |
| 2020 | 92,412 | 200,739 | 55,094 | 348,245 | .274 | .735 |
| 2025 | 97,537 | 203,983 | 63,631 | 365,150 | .312 | .790 |
| 2030 | 102,845 | 207,861 | 70,750 | 381,455 | .340 | .835 |
| 2035 | 108,282 | 214,240 | 74,544 | 397,067 | .348 | .853 |
| 2040 | 113,479 | 222,719 | 75,994 | 412,193 | .341 | .851 |
| 2045 | 118,652 | 231,890 | 76,709 | 427,251 | .331 | .842 |
| 2050 | 124,124 | 240,350 | 78,488 | 442,961 | .327 | .843 |
| 2055 | 129,814 | 248,900 | 81,140 | 459,854 | .326 | .848 |
| 2060 | 135,604 | 258,130 | 84,365 | 478,100 | .327 | .852 |
| 2065 | 141,510 | 268,834 | 87,200 | 497,544 | .324 | .851 |
| 2070 | 147,454 | 280,282 | 90,150 | 517,886 | .322 | .848 |
| 2075 | 153,471 | 292,288 | 93,190 | 538,949 | .319 | .844 |
| 2080 | 159,641 | 304,613 | 96,509 | 560,763 | .317 | .841 |
| 2085 | 165,999 | 316,836 | 100,644 | 583,479 | .318 | .842 |

**Table V.A2.—Social Security Area Population as of July 1 and Dependency Ratios, Calendar Years 1950-2085 (Cont.)**

| Calendar year | Population (in thousands) | | | | Dependency ratio | |
|---|---|---|---|---|---|---|
| | Under 20 | 20-64 | 65 and over | Total | Aged[a] | Total[b] |
| **High-cost:** | | | | | | |
| 2015 | 85,807 | 192,887 | 47,629 | 326,323 | 0.247 | 0.692 |
| 2020 | 87,111 | 195,130 | 56,132 | 338,374 | .288 | .734 |
| 2025 | 87,496 | 196,074 | 65,935 | 349,505 | .336 | .783 |
| 2030 | 86,531 | 197,746 | 74,779 | 359,056 | .378 | .816 |
| 2035 | 84,806 | 201,281 | 80,590 | 366,677 | .400 | .822 |
| 2040 | 83,222 | 205,352 | 84,078 | 372,652 | .409 | .815 |
| 2045 | 82,110 | 208,794 | 86,524 | 377,428 | .414 | .808 |
| 2050 | 81,371 | 210,287 | 89,536 | 381,195 | .426 | .813 |
| 2055 | 80,883 | 210,464 | 92,984 | 384,332 | .442 | .826 |
| 2060 | 80,234 | 210,063 | 96,910 | 387,208 | .461 | .843 |
| 2065 | 79,240 | 210,125 | 100,638 | 390,003 | .479 | .856 |
| 2070 | 78,222 | 209,526 | 104,801 | 392,548 | .500 | .874 |
| 2075 | 77,395 | 207,864 | 109,341 | 394,600 | .526 | .898 |
| 2080 | 76,764 | 205,705 | 113,507 | 395,976 | .552 | .925 |
| 2085 | 76,199 | 203,579 | 116,927 | 396,705 | .574 | .949 |

[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 a useful analytical concept. Life expectancy is calculated in two different forms for two separate purposes.

Period life expectancy is calculated for a given year using 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, and thus is closely related to the age-sex-adjusted death rate discussed in section V.A.2. Period life expectancy for a particular year may be viewed as the expected remaining life at a selected age only if it is assumed that there is 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 truly answers the question "What is the expected average remaining lifetime for an individual at a selected age in a given year?" Cohort life expectancy is calculated using death rates not from a single year, but from the series of years in which the individual will actually reach each succeeding age if he or she survives. Table V.A4 presents historical and projected life expectancy calculated on a cohort basis. Cohort life expectancy is somewhat greater than period life expectancy for the same year, because death rates for any given age tend to decline as time passes and the cohort grows older.

**Table V.A3.—Period Life Expectancy[a]**

| Calendar year | Historical data | | | |
|---|---|---|---|---|
| | At birth | | At age 65 | |
| | Male | Female | Male | Female |
| 1940 | 61.4 | 65.7 | 11.9 | 13.4 |
| 1945 | 62.9 | 68.4 | 12.6 | 14.4 |
| 1950 | 65.6 | 71.1 | 12.8 | 15.1 |
| 1955 | 66.7 | 72.8 | 13.1 | 15.6 |
| 1960 | 66.7 | 73.2 | 12.9 | 15.9 |
| 1965 | 66.8 | 73.8 | 12.9 | 16.3 |
| 1970 | 67.2 | 74.9 | 13.1 | 17.1 |
| 1975 | 68.7 | 76.6 | 13.7 | 18.0 |
| 1980 | 69.9 | 77.5 | 14.0 | 18.4 |
| 1985 | 71.1 | 78.2 | 14.4 | 18.6 |
| 1990 | 71.8 | 78.9 | 15.1 | 19.1 |
| 1995 | 72.5 | 79.1 | 15.4 | 19.1 |
| 1996 | 73.0 | 79.2 | 15.5 | 19.1 |
| 1997 | 73.4 | 79.4 | 15.6 | 19.1 |
| 1998 | 73.7 | 79.4 | 15.7 | 19.1 |
| 1999 | 73.8 | 79.3 | 15.7 | 19.0 |
| 2000 | 74.0 | 79.4 | 15.9 | 19.0 |
| 2001 | 74.1 | 79.4 | 16.1 | 19.1 |
| 2002 | 74.2 | 79.5 | 16.2 | 19.1 |
| 2003 | 74.4 | 79.6 | 16.3 | 19.2 |
| 2004 | 74.8 | 80.0 | 16.7 | 19.5 |
| 2005 | 74.8 | 80.0 | 16.7 | 19.5 |
| 2006 | 75.1 | 80.2 | 17.0 | 19.7 |
| 2007 | 75.4 | 80.4 | 17.2 | 19.9 |
| 2008[b] | 75.4 | 80.3 | 17.2 | 19.8 |
| 2009[b] | 75.6 | 80.4 | 17.4 | 19.8 |
| 2010[b] | 75.8 | 80.5 | 17.5 | 19.9 |

| Calendar year | Intermediate | | | | Low-cost | | | | High-cost | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | At birth | | At age 65 | | At birth | | At age 65 | | At birth | | At age 65 | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| 2015 | 76.5 | 80.9 | 18.1 | 20.2 | 76.0 | 80.5 | 17.8 | 19.9 | 77.0 | 81.3 | 18.5 | 20.5 |
| 2020 | 77.1 | 81.4 | 18.5 | 20.5 | 76.2 | 80.7 | 17.9 | 20.0 | 78.0 | 82.2 | 19.2 | 21.1 |
| 2025 | 77.7 | 81.9 | 18.8 | 20.8 | 76.5 | 80.9 | 18.1 | 20.1 | 79.0 | 83.0 | 19.8 | 21.7 |
| 2030 | 78.2 | 82.4 | 19.2 | 21.1 | 76.8 | 81.1 | 18.2 | 20.2 | 79.9 | 83.8 | 20.4 | 22.3 |
| 2035 | 78.8 | 82.8 | 19.5 | 21.4 | 77.0 | 81.3 | 18.3 | 20.4 | 80.7 | 84.5 | 20.9 | 22.8 |
| 2040 | 79.3 | 83.3 | 19.8 | 21.7 | 77.3 | 81.5 | 18.5 | 20.5 | 81.6 | 85.2 | 21.5 | 23.3 |
| 2045 | 79.8 | 83.7 | 20.1 | 22.0 | 77.5 | 81.7 | 18.6 | 20.6 | 82.4 | 85.9 | 22.0 | 23.8 |
| 2050 | 80.3 | 84.1 | 20.3 | 22.3 | 77.8 | 81.9 | 18.7 | 20.7 | 83.1 | 86.6 | 22.5 | 24.3 |
| 2055 | 80.8 | 84.5 | 20.6 | 22.6 | 78.0 | 82.1 | 18.8 | 20.8 | 83.8 | 87.2 | 22.9 | 24.7 |
| 2060 | 81.3 | 84.9 | 20.9 | 22.8 | 78.3 | 82.3 | 19.0 | 21.0 | 84.5 | 87.7 | 23.4 | 25.2 |
| 2065 | 81.7 | 85.3 | 21.2 | 23.1 | 78.5 | 82.5 | 19.1 | 21.1 | 85.2 | 88.3 | 23.8 | 25.6 |
| 2070 | 82.1 | 85.7 | 21.4 | 23.3 | 78.7 | 82.6 | 19.2 | 21.2 | 85.8 | 88.8 | 24.2 | 26.0 |
| 2075 | 82.5 | 86.0 | 21.7 | 23.6 | 78.9 | 82.8 | 19.3 | 21.3 | 86.4 | 89.3 | 24.6 | 26.3 |
| 2080 | 82.9 | 86.4 | 21.9 | 23.8 | 79.1 | 83.0 | 19.4 | 21.4 | 87.0 | 89.8 | 25.0 | 26.7 |
| 2085 | 83.3 | 86.7 | 22.1 | 24.0 | 79.4 | 83.2 | 19.5 | 21.5 | 87.6 | 90.3 | 25.4 | 27.1 |

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

**Table V.A4.—Cohort Life Expectancy[a]**

| Calendar year | Intermediate | | | | Low-cost | | | | High-cost | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | At birth[b] | | At age 65[c] | | At birth[b] | | At age 65[c] | | At birth[b] | | At age 65[c] | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| 1940 . . . . | 70.4 | 76.3 | 12.7 | 14.7 | 70.1 | 76.0 | 12.7 | 14.7 | 70.7 | 76.8 | 12.7 | 14.7 |
| 1945 . . . . | 72.2 | 78.0 | 13.0 | 15.4 | 71.7 | 77.5 | 13.0 | 15.4 | 72.8 | 78.7 | 13.0 | 15.4 |
| 1950 . . . . | 73.5 | 79.3 | 13.1 | 16.2 | 72.8 | 78.5 | 13.1 | 16.2 | 74.3 | 80.2 | 13.1 | 16.2 |
| 1955 . . . . | 74.2 | 79.9 | 13.1 | 16.7 | 73.3 | 78.9 | 13.1 | 16.7 | 75.3 | 81.2 | 13.1 | 16.7 |
| 1960 . . . . | 74.8 | 80.3 | 13.2 | 17.4 | 73.7 | 79.2 | 13.2 | 17.4 | 76.3 | 81.9 | 13.2 | 17.4 |
| 1965 . . . . | 75.7 | 80.9 | 13.5 | 18.0 | 74.3 | 79.5 | 13.5 | 18.0 | 77.4 | 82.7 | 13.5 | 18.0 |
| 1970 . . . . | 76.8 | 81.7 | 13.8 | 18.5 | 75.2 | 80.0 | 13.8 | 18.5 | 78.9 | 83.8 | 13.8 | 18.5 |
| 1975 . . . . | 77.7 | 82.4 | 14.2 | 18.7 | 75.8 | 80.5 | 14.2 | 18.7 | 80.1 | 84.8 | 14.2 | 18.7 |
| 1980 . . . . | 78.6 | 83.1 | 14.7 | 18.8 | 76.4 | 81.0 | 14.7 | 18.8 | 81.3 | 85.7 | 14.7 | 18.8 |
| 1985 . . . . | 79.3 | 83.7 | 15.4 | 19.0 | 76.8 | 81.3 | 15.4 | 19.0 | 82.2 | 86.5 | 15.4 | 19.0 |
| 1990 . . . . | 79.9 | 84.2 | 16.0 | 19.3 | 77.2 | 81.6 | 16.0 | 19.2 | 83.1 | 87.3 | 16.1 | 19.4 |
| 1995 . . . . | 80.6 | 84.8 | 16.7 | 19.6 | 77.6 | 81.9 | 16.6 | 19.4 | 84.1 | 88.0 | 16.8 | 19.8 |
| 1996 . . . . | 80.7 | 84.9 | 16.9 | 19.7 | 77.7 | 82.0 | 16.7 | 19.5 | 84.2 | 88.2 | 17.0 | 19.8 |
| 1997 . . . . | 80.8 | 84.9 | 17.0 | 19.7 | 77.7 | 82.0 | 16.9 | 19.5 | 84.4 | 88.3 | 17.2 | 19.9 |
| 1998 . . . . | 80.9 | 85.0 | 17.2 | 19.8 | 77.8 | 82.1 | 17.0 | 19.6 | 84.5 | 88.4 | 17.4 | 20.0 |
| 1999 . . . . | 81.0 | 85.1 | 17.3 | 19.9 | 77.9 | 82.1 | 17.1 | 19.6 | 84.7 | 88.5 | 17.6 | 20.2 |
| 2000 . . . . | 81.1 | 85.2 | 17.5 | 20.0 | 77.9 | 82.2 | 17.2 | 19.7 | 84.9 | 88.7 | 17.7 | 20.3 |
| 2001 . . . . | 81.2 | 85.3 | 17.6 | 20.0 | 78.0 | 82.2 | 17.3 | 19.7 | 85.0 | 88.8 | 17.9 | 20.4 |
| 2002 . . . . | 81.3 | 85.3 | 17.7 | 20.1 | 78.0 | 82.3 | 17.4 | 19.8 | 85.1 | 88.9 | 18.1 | 20.5 |
| 2003 . . . . | 81.4 | 85.4 | 17.9 | 20.2 | 78.0 | 82.3 | 17.5 | 19.8 | 85.3 | 89.0 | 18.2 | 20.7 |
| 2004 . . . . | 81.5 | 85.5 | 18.0 | 20.3 | 78.1 | 82.3 | 17.6 | 19.9 | 85.4 | 89.1 | 18.4 | 20.8 |
| 2005 . . . . | 81.6 | 85.6 | 18.1 | 20.4 | 78.1 | 82.4 | 17.7 | 19.9 | 85.6 | 89.2 | 18.6 | 20.9 |
| 2006 . . . . | 81.7 | 85.7 | 18.2 | 20.4 | 78.2 | 82.4 | 17.7 | 20.0 | 85.7 | 89.4 | 18.8 | 21.0 |
| 2007 . . . . | 81.8 | 85.7 | 18.3 | 20.5 | 78.2 | 82.4 | 17.8 | 20.0 | 85.9 | 89.5 | 18.9 | 21.2 |
| 2008 . . . . | 81.9 | 85.8 | 18.4 | 20.6 | 78.3 | 82.5 | 17.9 | 20.0 | 86.0 | 89.6 | 19.1 | 21.3 |
| 2009 . . . . | 81.9 | 85.9 | 18.5 | 20.7 | 78.3 | 82.5 | 17.9 | 20.1 | 86.1 | 89.7 | 19.2 | 21.4 |
| 2010 . . . . | 82.0 | 86.0 | 18.6 | 20.7 | 78.4 | 82.6 | 18.0 | 20.1 | 86.3 | 89.8 | 19.4 | 21.6 |
| 2015 . . . . | 82.5 | 86.3 | 19.0 | 21.1 | 78.6 | 82.8 | 18.1 | 20.2 | 87.0 | 90.4 | 20.1 | 22.2 |
| 2020 . . . . | 82.9 | 86.7 | 19.3 | 21.4 | 78.9 | 82.9 | 18.3 | 20.4 | 87.6 | 90.9 | 20.8 | 22.8 |
| 2025 . . . . | 83.4 | 87.1 | 19.7 | 21.7 | 79.1 | 83.1 | 18.4 | 20.5 | 88.3 | 91.4 | 21.4 | 23.4 |
| 2030 . . . . | 83.8 | 87.4 | 20.0 | 22.0 | 79.3 | 83.3 | 18.5 | 20.6 | 88.9 | 91.9 | 21.9 | 23.9 |
| 2035 . . . . | 84.2 | 87.7 | 20.3 | 22.3 | 79.6 | 83.5 | 18.7 | 20.7 | 89.5 | 92.4 | 22.5 | 24.5 |
| 2040 . . . . | 84.6 | 88.1 | 20.6 | 22.6 | 79.8 | 83.7 | 18.8 | 20.8 | 90.1 | 92.9 | 23.0 | 24.9 |
| 2045 . . . . | 84.9 | 88.4 | 20.9 | 22.9 | 80.0 | 83.9 | 18.9 | 21.0 | 90.6 | 93.3 | 23.5 | 25.4 |
| 2050 . . . . | 85.3 | 88.7 | 21.1 | 23.1 | 80.2 | 84.0 | 19.0 | 21.1 | 91.1 | 93.8 | 24.0 | 25.9 |
| 2055 . . . . | 85.7 | 89.0 | 21.4 | 23.4 | 80.4 | 84.2 | 19.2 | 21.2 | 91.6 | 94.2 | 24.4 | 26.3 |
| 2060 . . . . | 86.0 | 89.3 | 21.7 | 23.6 | 80.6 | 84.4 | 19.3 | 21.3 | 92.1 | 94.6 | 24.9 | 26.7 |
| 2065 . . . . | 86.3 | 89.5 | 21.9 | 23.9 | 80.8 | 84.5 | 19.4 | 21.4 | 92.6 | 95.0 | 25.3 | 27.1 |
| 2070 . . . . | 86.7 | 89.8 | 22.2 | 24.1 | 81.0 | 84.7 | 19.5 | 21.5 | 93.1 | 95.4 | 25.7 | 27.5 |
| 2075 . . . . | 87.0 | 90.1 | 22.4 | 24.4 | 81.2 | 84.8 | 19.6 | 21.6 | 93.5 | 95.8 | 26.1 | 27.9 |
| 2080 . . . . | 87.3 | 90.3 | 22.6 | 24.6 | 81.4 | 85.0 | 19.7 | 21.7 | 94.0 | 96.2 | 26.5 | 28.2 |
| 2085 . . . . | 87.6 | 90.6 | 22.9 | 24.8 | 81.6 | 85.1 | 19.8 | 21.8 | 94.4 | 96.6 | 26.9 | 28.6 |

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

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

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

## B. ECONOMIC ASSUMPTIONS AND METHODS

All three sets of basic economic assumptions project a continuation of the gradual recovery from the recent recession that started in December 2007. The intermediate assumptions reflect the Trustees' consensus expectation of sustained moderate economic growth after the recovery and their best estimate for various other economic parameters. The low-cost assumptions represent a more optimistic outlook and assume relatively strong economic growth and optimistic levels for other parameters. The high-cost assumptions represent a more pessimistic scenario, with relatively weak economic growth and pessimistic levels for other parameters.

Actual economic data were available through the third quarter of 2010 at the time the assumptions for this report were set. The data indicated that economic activity peaked in December 2007[1] with the level of gross domestic product (GDP) about 1 percent above the estimated long-term sustainable trend level. A severe recession followed, with a low point in the economic cycle reached in the second quarter of 2009[2] that was about 7 percent below the estimated sustainable trend level. The actual growth rate in real GDP has been positive in all quarters since then, but not as strong as in typical recoveries. The economy is projected to return to its sustainable trend level of output in each alternative within the first 10 years of the projection period and to 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 in 2018 for the intermediate assumptions, 2016 for the low-cost assumptions, and 2020 for the high-cost assumptions. Economic cycles are not included in the assumptions beyond the first 10 years of the projection period because complete cycles have little effect on the long-range estimates of financial status.

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

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

[2] See www.nber.org/cycles/Sept2010.html.

## 1. Productivity Assumptions

"Total U.S. economy productivity" 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. For the 40 years from 1969 to 2009, annual increases in total productivity averaged 1.7 percent, the result of average annual increases of 1.7, 1.3, 1.7, and 2.1 percent for the 10-year periods 1969-79, 1979-89, 1989-99, and 1999-2009, respectively. For 2010, the estimated annual change in productivity is 2.7 percent.

It is more useful to consider historical average growth rates for complete economic cycles, because productivity growth can vary substantially within economic cycles. The annual increase in total productivity, covering the 41-year period from 1966 to 2007, also averaged 1.7 percent over the last five complete economic cycles (measured from peak to peak). The annual increase in total productivity averaged 2.3, 1.2, 1.2, 1.8, and 2.1 percent over the economic cycles 1966-73, 1973-78, 1978-89, 1989-2000, and 2000-07, respectively.

The ultimate annual increases in total economy productivity are assumed to be 2.0, 1.7, and 1.4 percent for the low-cost, intermediate, and high-cost assumptions, respectively, and are consistent with ultimate annual increases in private non-farm business productivity of 2.4, 2.0, and 1.7 percent. The private non-farm business sector excludes the farm, government, non-profit institution, and private household sectors. These rates of increase are the same as those used in the 2010 report, and reflect the belief that recent strong growth in private non-farm business productivity, after the relatively poor performance from 1973 to 1995, is consistent with future long-term growth that mirrors the long-term trends of the past.

For the intermediate assumptions, the annual change in productivity is assumed to be 1.7 percent for 2011, then average 2.0 percent for 2012 through 2014, 1.6 percent for 2015 through 2020, and reach its ultimate value of 1.7 percent thereafter. For the low-cost assumptions, the annual change in productivity is assumed to be 1.8 percent for 2011, then average 2.1 percent for 2012 through 2014, 1.8 percent for 2015 through 2020, and reach its ultimate value of 2.0 percent thereafter. For the high-cost assumptions, the annual change in productivity is assumed to be 1.3 percent for

[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.

2011, then average 1.9 percent for 2012 through 2014, and average the assumed ultimate value of 1.4 percent thereafter.

### 2. Price Inflation Assumptions

Future changes in the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI) will directly affect the OASDI program through the automatic cost-of-living benefit increases. Future changes in the GDP price index (GDP deflator) affect the nominal levels of GDP, wages, self-employment income, average earnings, and taxable payroll.

Historically, the CPI increased at an average annual rate of 4.4 percent for the 40 years from 1969 to 2009, the result of average annual increases of 7.1, 5.3, 2.9, and 2.5 percent for the 10-year periods 1969-79, 1979-89, 1989-99, and 1999-2009, respectively. The GDP deflator increased at an average annual rate of 4.0 percent from 1969 to 2009, the result of average annual increases of 6.6, 4.7, 2.2, and 2.4 percent for the same respective 10-year periods. For 2010, the annual change is estimated to be 2.1 percent for the CPI and 1.0 percent for the GDP deflator.

The ultimate annual increases in the CPI are estimated to be 1.8, 2.8, and 3.8 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These rates of increase are the same as those used in the 2010 report, and reflect a belief that future inflationary shocks will likely be offset by succeeding periods of relatively slow inflation due to future monetary policy that is similar to that of the last 20 years, with a continuing emphasis on holding the growth rate in prices to relatively low levels.

For the intermediate assumptions, as the economy moves on a path toward full employment, the annual change in the CPI is assumed to increase gradually from 1.2 percent in 2011 until it reaches the ultimate growth rate of 2.8 percent for 2019 and later. The actual levels of the CPI in the third quarters of 2009 and 2010 were below the level of the CPI in the third quarter of 2008; therefore, there were no automatic cost-of-living benefit increases for December 2009 and December 2010. Automatic cost-of-living benefit increases are projected to resume in December 2011 and occur in each subsequent year.

For the low-cost assumptions, the annual change in the CPI is assumed to increase from 1.1 percent for 2011 until it reaches its ultimate assumed annual change of 1.8 percent for 2018 and later. For the high-cost assumptions, the annual change in the CPI is assumed to increase from 1.6 percent for 2011 until it reaches its ultimate assumed annual change of 3.8 percent for 2019 and later.

The ultimate annual increase in the GDP deflator is assumed to be equal to the annual increase in the CPI minus a price differential. The price differential is based primarily on methodological differences in the construction of the two indices. The price differential is assumed to equal 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 concept. Accordingly, the ultimate annual increase in the GDP deflator is assumed to be 1.5 (1.8 less 0.3), 2.4 (2.8 less 0.4), and 3.3 (3.8 less 0.5) percent for the low-cost, intermediate, and high-cost alternatives, respectively. These assumptions reflect the same ultimate price differentials and GDP deflator growth rates assumed for the 2010 report.

The price differential is estimated to be 1.1 percentage points for 2010. Under the intermediate assumptions, the price differential is projected to be 0.0 percentage point for 2011. This large change in the price differential is mostly due to the 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. Oil prices are assumed to behave less cyclically in the future. The price differential is assumed to be 0.4 percentage point in 2012 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 additional parameters used for the computation of the contribution and benefit base, the exempt amounts under the retirement earnings test, the amount of earnings required for a quarter of coverage, and certain automatic cost-of-living benefit increases.

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

The average annual change in average hours worked was -0.3 percent over the last 40 years, and -0.7, -0.0, 0.3, and -0.8 percent for the 10-year periods 1969-79, 1979-89, 1989-99, and 1999-2009, respectively. The average annual change in average hours worked was -0.3 percent over the last five complete economic cycles covering the period from 1966 to 2007. The annual change in average hours worked averaged -0.7, -0.7, 0.0, 0.1, and -0.6 percent over the economic cycles 1966-73, 1973-78, 1978-89, 1989-2000, and 2000-07, respectively.

The ultimate annual rates of change for average hours worked are assumed to be 0.1, 0.0, and -0.1 percent for the low-cost, intermediate, and high-cost assumptions, respectively. These ultimate annual rates of change for average hours worked are the same as those assumed for the 2010 report.

The average annual change in the ratio of earnings to compensation was -0.2 percent from 1969 to 2009. Most of this decrease has been due to the relative increase in 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 compensation, including wages. Projections of future ratios of earnings to compensation follow this principle and are consistent with the year-by-year projections of the cost of employer-sponsored group health insurance from the Office of the Actuary at the Centers for Medicare and Medicaid Services. The total amount of future employer-sponsored group health insurance is projected to increase more slowly due to provisions of the Affordable Care Act of 2010, as described in the 2010 Report. Data from the Bureau of Economic Analysis indicate that the other significant component of non-wage employee compensation is employer contributions to retirement plans, which are assumed to grow faster than employee compensation in the future as life expectancy and potential time in retirement increase.

The assumed annual rates of change in the ratio of wages to employee compensation average 0.0, -0.1, and -0.2 percent for the low-cost, intermediate, and high-cost assumptions, respectively. Under the intermediate assumptions, the ratio of wages to employee compensation is projected to decline from 0.802 for 2010 to 0.733 for 2085. 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 compensation to GDP is assumed to be stable at 0.649 after 2019.

The projected average annual growth rate in average U.S. earnings from 2020 to 2085 is about 4.0 percent for the intermediate assumptions. This

growth rate reflects the average annual growth rate of approximately -0.1 percent for the ratio of earnings to compensation, and the assumed ultimate annual growth rates of 1.7, 0.0, and 2.4 percent for productivity, average hours worked, and the GDP deflator, respectively. Similarly, the projected average annual growth rate in average nominal U.S. earnings is 3.6 percent for the low-cost assumptions and 4.4 percent for the high-cost assumptions.

Over long periods, the average annual growth rate in the average wage in OASDI covered employment (henceforth the "average covered wage") is expected 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 2020 to 2085 are 3.6, 4.0, and 4.4 percent for the low-cost, intermediate, and high-cost assumptions, respectively. The annual rate of change in the average covered wage is estimated to be -1.8 percent for 2009, which reflects the recession low point, and is estimated to be 2.9 percent for 2010. For the intermediate assumptions, as the economy recovers, the annual rate of change in the average covered wage is assumed to average 4.2 percent from 2011 to 2019, and 3.9 percent from 2020 to 2025. Thereafter, the assumed average annual rate of change in the average covered wage is 4.0 percent.

### 4. Assumed Real-Wage Differentials

Real increases in the average OASDI covered wage have traditionally been expressed in the form of real-wage differentials—i.e., the percentage change in the average covered wage minus the percentage change in the CPI. This differential is closely related to assumed growth rates in average earnings and productivity, which are discussed in the previous sections. For the 40-year period including 1970 through 2009, the real-wage differential averaged 0.7 percentage point, the result of averages of 0.5, 0.4, 1.5, and 0.4 percentage points for the 10-year periods 1970-79, 1980-89, 1990-99, and 2000-2009, respectively.

For the years 2020-85, the annual real-wage differentials for OASDI covered employment average 1.8, 1.2, and 0.6 percentage points for the low-cost, intermediate, and high-cost assumptions, respectively.

Based on preliminary data, the real-wage differential is estimated to be 0.8 percentage point for 2010. For the intermediate assumptions, the real-wage differential is projected to average 2.8 percentage points for 2011 through 2013, an improvement that reflects the economic recovery. Thereafter, the real-wage differential is assumed to gradually decline to

1.1 percentage points for 2020 and to average 1.2 percentage points for 2021 through 2085. For the low-cost assumptions, the real-wage differential is projected to average 3.3 percentage points for 2011 through 2013, 2.2 percentage points for 2014 through 2020, and 1.8 percentage points for 2021 through 2085. For the high-cost assumptions, the real-wage differential is projected to average 2.3 percentage points for 2011 through 2013, and then mostly decline to 0.6 percentage point by 2020, and to average 0.6 percentage point for 2021 through 2085.

**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:** | | | | | | | |
| 1960 to 1965. . . . | 3.2 | -0.2 | 0.2 | 1.4 | 3.2 | 1.2 | 2.0 |
| 1965 to 1970. . . . | 2.0 | -.4 | -.7 | 4.1 | 5.8 | 4.2 | 1.6 |
| 1970 to 1975. . . . | 2.1 | -.7 | -.9 | 6.7 | 6.6 | 6.8 | -.2 |
| 1975 to 1980. . . . | .9 | -.6 | -.2 | 7.3 | 8.9 | 8.9 | -.1 |
| 1980 to 1985. . . . | 1.7 | -.3 | .0 | 5.2 | 6.5 | 5.2 | 1.3 |
| 1985 to 1990. . . . | 1.3 | .1 | -.1 | 3.2 | 4.7 | 3.8 | .9 |
| 1990 to 1995. . . . | 1.2 | -.2 | .4 | 2.5 | 3.6 | 3.0 | .6 |
| 1995 to 2000. . . . | 2.3 | .5 | .1 | 1.7 | 5.3 | 2.4 | 2.9 |
| 2000 to 2005. . . . | 2.5 | -.5 | -.8 | 2.4 | 2.7 | 2.5 | .2 |
| 2005 to 2010. . . . | 1.8 | -.2 | -.4 | 2.1 | 2.5 | 2.3 | .2 |
| 2000 . . . . . | 2.7 | .1 | -1.1 | 2.2 | 6.1 | 3.5 | 2.6 |
| 2001 . . . . . | 2.4 | -.5 | -1.3 | 2.3 | 2.0 | 2.7 | -.7 |
| 2002 . . . . . | 3.2 | -1.1 | -1.0 | 1.6 | .7 | 1.4 | -.7 |
| 2003 . . . . . | 3.0 | -1.3 | -1.5 | 2.2 | 2.6 | 2.2 | .3 |
| 2004 . . . . . | 2.4 | .7 | .0 | 2.8 | 4.7 | 2.6 | 2.1 |
| 2005 . . . . . | 1.5 | -.4 | -.2 | 3.3 | 3.7 | 3.5 | .2 |
| 2006 . . . . . | .8 | .5 | .0 | 3.3 | 4.6 | 3.2 | 1.4 |
| 2007 . . . . . | 1.2 | .4 | -.4 | 2.9 | 4.7 | 2.9 | 1.8 |
| 2008 . . . . . | 1.1 | -.4 | -.7 | 2.2 | 2.3 | 4.1 | -1.8 |
| 2009 . . . . . | 2.9 | -1.2 | -1.8 | .9 | -1.8 | -.7 | -1.2 |
| 2010[c] . . . . . | 2.7 | -.1 | .7 | 1.0 | 2.9 | 2.1 | .8 |
| **Intermediate:** | | | | | | | |
| 2011 . . . . . | 1.7 | .2 | .2 | 1.2 | 4.1 | 1.2 | 2.9 |
| 2012 . . . . . | 2.0 | .2 | .0 | 1.3 | 4.5 | 1.7 | 2.9 |
| 2013 . . . . . | 2.0 | .0 | .0 | 1.5 | 4.6 | 1.9 | 2.7 |
| 2014 . . . . . | 1.9 | -.3 | .0 | 1.6 | 4.2 | 2.0 | 2.2 |
| 2015 . . . . . | 1.7 | -.3 | .0 | 1.6 | 3.9 | 2.0 | 1.9 |
| 2016 . . . . . | 1.5 | .0 | .0 | 1.6 | 4.0 | 2.0 | 2.0 |
| 2017 . . . . . | 1.5 | .0 | .0 | 1.8 | 4.0 | 2.2 | 1.8 |
| 2018 . . . . . | 1.6 | .2 | .0 | 2.2 | 4.4 | 2.6 | 1.8 |
| 2019 . . . . . | 1.6 | .0 | .0 | 2.4 | 4.2 | 2.8 | 1.4 |
| 2020 . . . . . | 1.6 | -.1 | .0 | 2.4 | 3.9 | 2.8 | 1.1 |
| 2020 to 2025. . . . | 1.7 | -.1 | .0 | 2.4 | 3.9 | 2.8 | 1.1 |
| 2025 to 2085. . . . | 1.7 | -.1 | .0 | 2.4 | 4.0 | 2.8 | 1.2 |

**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:** | | | | | | | |
| 2011 | 1.8 | 0.2 | 0.3 | 1.2 | 4.4 | 1.1 | 3.2 |
| 2012 | 2.2 | .2 | .1 | .9 | 4.5 | 1.1 | 3.4 |
| 2013 | 2.2 | .0 | .1 | 1.0 | 4.5 | 1.3 | 3.3 |
| 2014 | 1.8 | -.2 | .1 | 1.1 | 3.9 | 1.4 | 2.5 |
| 2015 | 1.6 | -.3 | .1 | 1.2 | 3.6 | 1.5 | 2.2 |
| 2016 | 1.6 | .0 | .1 | 1.3 | 3.8 | 1.6 | 2.2 |
| 2017 | 1.8 | .1 | .1 | 1.4 | 3.9 | 1.7 | 2.2 |
| 2018 | 1.9 | .2 | .1 | 1.5 | 4.0 | 1.8 | 2.3 |
| 2019 | 1.9 | .0 | .1 | 1.5 | 3.8 | 1.8 | 2.0 |
| 2020 | 1.9 | .0 | .1 | 1.5 | 3.5 | 1.8 | 1.7 |
| 2020 to 2025 | 2.0 | .0 | .1 | 1.5 | 3.5 | 1.8 | 1.7 |
| 2025 to 2085 | 2.0 | .0 | .1 | 1.5 | 3.6 | 1.8 | 1.8 |
| **High-cost:** | | | | | | | |
| 2011 | 1.3 | .2 | .1 | 1.5 | 3.8 | 1.6 | 2.2 |
| 2012 | 1.9 | .2 | -.1 | 1.9 | 4.8 | 2.4 | 2.5 |
| 2013 | 1.9 | .0 | -.1 | 2.3 | 5.1 | 2.8 | 2.3 |
| 2014 | 1.7 | -.3 | -.1 | 2.5 | 4.8 | 3.0 | 1.8 |
| 2015 | 1.7 | -.4 | -.1 | 2.7 | 4.9 | 3.2 | 1.7 |
| 2016 | 1.6 | -.1 | -.1 | 2.7 | 5.1 | 3.2 | 1.9 |
| 2017 | 1.4 | -.1 | -.1 | 2.9 | 4.9 | 3.4 | 1.5 |
| 2018 | 1.3 | .1 | -.1 | 3.1 | 4.8 | 3.6 | 1.2 |
| 2019 | 1.3 | -.1 | -.1 | 3.3 | 4.7 | 3.8 | .9 |
| 2020 | 1.4 | -.2 | -.1 | 3.3 | 4.4 | 3.8 | .6 |
| 2020 to 2025 | 1.4 | -.2 | -.1 | 3.3 | 4.3 | 3.8 | .5 |
| 2025 to 2085 | 1.4 | -.2 | -.1 | 3.3 | 4.4 | 3.8 | .6 |

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

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

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

## 5. Labor Force and Unemployment Projections

The civilian labor force is projected by age, sex, marital status, and presence of children. Projections of the labor force participation rates for each group take into account disability prevalence, educational attainment, the average level of Social Security retirement benefits, the state of the economy, and the change in life expectancy. The projections also include a "cohort effect" that applies differences in participation rates for a cohort at a specific age, relative to earlier cohorts at the same age, to participation rates for that cohort at older ages.

The annual rate of growth in the labor force decreased from an average of about 2.1 percent during the 1970s and 1980s to about 1.1 percent from 1990

to 2009. Further slowing of labor force growth is projected due to a substantial slowing of growth in the working age population in the future—a natural consequence of the baby-boom generation approaching retirement and succeeding lower-birth-rate cohorts reaching working age. Under the intermediate assumptions, the labor force is projected to increase by about 0.7 percent per year, on average, through 2020. Thereafter, the labor force is projected to increase by an average of 0.5 percent per year over the remainder of the 75-year projection period.

The projected labor force participation rates are not basic assumptions. They 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 generally associated 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. The relations with various basic assumptions move the labor force participation rates in opposite directions; therefore, the net effect is small, and projected labor force participation rates do not vary substantially across alternatives.

Historically, labor force participation rates reflect trends in demographics and pensions. Between the mid-1960s and the mid-1980s, labor force participation rates at ages 50 and over declined for males and 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 early-retirement options that were attractive. 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. Some of these factors are modeled directly. To model the effects of other factors related to increases in life expectancy, projected participation rates are adjusted upward for mid-career and older ages to reflect assumed increases in life expectancy. For the intermediate projections, this adjustment adds about 3.0 percent to the total labor force in 2085.

For men age 16 and over, the projected age-adjusted labor force participation rates for 2085 are 72.1, 72.7, and 72.5 percent for the low-cost, intermediate, and high-cost assumptions, respectively, compared to the 2009 level of

72.0 percent. (Age-adjusted labor force participation rates are adjusted to the 2009 age distribution of the civilian noninstitutional U.S. population.) These rates reflect the net effect of: (1) increases due to assumed improvements in life expectancy; (2) decreases due to higher assumed disability prevalence rates; and (3) decreases due to an increasing proportion of males who never marry. For women age 16 and over, the projected age-adjusted labor force participation rates for 2085 are 60.9, 60.7, and 60.5 percent, for the low-cost, intermediate, and high-cost assumptions, respectively, compared to the 2009 level of 59.2 percent. These projections reflect the combination of decreases due to higher assumed disability prevalence rates, increases due to assumed improvements in life expectancy, and increases due to assumed changes in the proportion of females who are separated, widowed, divorced, or never married.

The unemployment rates presented in table V.B2 are in the most commonly cited form, the civilian rate. For years through 2020, total civilian rates are presented without adjustment for the changing age-sex distribution of the population. For years after 2020, unemployment rates are presented as age-sex-adjusted rates (using the age-sex distribution of the 2009 civilian labor force). Age-sex-adjusted rates allow for more meaningful comparisons across longer time periods. The effect of this adjustment through 2020 is small.

The total civilian unemployment rate reflects the projected levels of unemployment for various age-sex groups of the population. The unemployment rate for each group is projected by relating changes in the unemployment rate to the changes in the economic cycle, as measured by the ratio of actual to potential GDP. For each alternative, the total civilian unemployment rate is projected to move toward the ultimate assumed rate as the economy moves toward the long-range sustainable growth path.

The ultimate age-sex-adjusted unemployment rate for each alternative is assumed to be reached by 2020. 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 the same as those assumed for the 2010 report.

## 6. Gross Domestic Product Projections

Real GDP can be expressed as the product of three components: (1) total employment;[1] (2) productivity; and (3) average hours worked. Given this, 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 40-year period from 1969 to 2009, the average growth rate in real GDP was 2.8 percent, which approximately equals the sum of the average growth rates of 1.4, 1.7, and -0.3 percent for total employment, productivity, and average hours worked, respectively.

For the intermediate assumptions, the average annual growth in real GDP is projected to be 3.0 percent from 2010 to 2020, the approximate sum of component growth rates of 1.2 percent for total employment, 1.7 percent for productivity, and 0.0 percent for average hours worked. This projected average annual growth in real GDP of 3.0 percent can also be approximately separated into an underlying sustainable trend rate of change of 2.2 percent for this period, plus an above-trend growth rate of 0.7 percent that is mostly associated with a relatively rapid increase in employment as the economy recovers and the unemployment rate falls from near 10 percent in 2010 to its assumed ultimate level of 5.5 percent in 2018. After 2020, no economic cycles are projected. Accordingly, the projected annual growth rate in real GDP is determined by combining the projected growth rates for total employment, total U.S. economy productivity, and average hours worked. After 2050, the annual growth in real GDP is 2.1 percent due to the assumed ultimate growth rates of 0.4 percent for total employment, 1.7 percent for productivity, and 0.0 percent for average hours worked.

For the low-cost assumptions, the annual growth in real GDP is projected to average 3.5 percent over the decade ending in 2020. 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 is projected to average 2.4 percent for the decade ending in 2020.

## 7. Interest Rates

Average annual nominal and real interest rates for new trust fund assets are presented in table V.B2. 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" (ex post) is defined to be

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

the annual compound 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) annual real yield on securities issuable in the prior year.

In developing a reasonable range of assumed ultimate future real interest rates for the three alternatives, historical experience was examined for the 40 years, 1970-2009, and for each of the 10-year subperiods, 1970-79, 1980-89, 1990-99, and 2000-2009. For the 40-year period, the real interest rate averaged 2.9 percent per year. For the four 10-year subperiods, the real interest rates averaged 0.0, 5.2, 4.2, and 2.3 percent, respectively. The assumed ultimate real interest rates are 3.6 percent, 2.9 percent, and 2.1 percent for the low-cost, intermediate, and high-cost assumptions, respectively, and are unchanged from the 2010 report. These ultimate real interest rates, when combined with the ultimate CPI assumptions of 1.8, 2.8, and 3.8 percent, yield ultimate nominal interest rates of about 5.4 percent for the low-cost assumptions, about 5.7 percent for the intermediate assumptions, and about 5.9 percent for the high-cost assumptions. These ultimate nominal rates are assumed to be reached by the end of the short-range period.

The actual average annual nominal interest rate was 2.9 percent for 2009, which means that assets newly invested in 2009 would increase by 2.9 percent a year later. Average prices are estimated to rise from 2009 to 2010 by 2.1 percent; therefore, the annual real interest rate for 2010 is 0.9 percent. For the next 10-year short-range projection period, nominal interest rates are projected based on changes in the business cycle and in the CPI. Under the intermediate assumptions, the nominal interest rate is projected to rise to the ultimate assumed level of 5.7 percent by 2020. For the low-cost assumptions, the average annual nominal interest rate is assumed to reach an ultimate level of about 5.4 percent by 2019. For the high-cost assumptions, it is assumed to reach the ultimate level of about 5.9 percent by 2020.

**Table V.B2.—Additional Economic Factors**

| Calendar year | Average annual unemployment rate[a] | Annual percentage change[b] in— | | | Average annual interest rate | |
|---|---|---|---|---|---|---|
| | | Labor force[c] | Total employment[d] | Real GDP[e] | Nominal[f] | Real[g] |
| **Historical data:** | | | | | | |
| 1960 to 1965 | 5.5 | 1.3 | 1.6 | 5.0 | 4.0 | 2.5 |
| 1965 to 1970 | 3.9 | 2.2 | 2.1 | 3.4 | 5.9 | 1.0 |
| 1970 to 1975 | 6.1 | 2.5 | 1.5 | 2.7 | 6.7 | .0 |
| 1975 to 1980 | 6.8 | 2.7 | 2.9 | 3.7 | 8.5 | -.9 |
| 1980 to 1985 | 8.3 | 1.5 | 1.5 | 3.2 | 12.1 | 6.9 |
| 1985 to 1990 | 5.9 | 1.7 | 2.0 | 3.2 | 8.5 | 5.1 |
| 1990 to 1995 | 6.6 | 1.0 | .9 | 2.5 | 7.0 | 4.3 |
| 1995 to 2000 | 4.6 | 1.5 | 1.8 | 4.3 | 6.2 | 3.9 |
| 2000 to 2005 | 5.4 | .9 | .7 | 2.4 | 4.6 | 2.4 |
| 2005 to 2010 | 6.8 | .6 | -.4 | .9 | 3.8 | 1.8 |
| 2000 | 4.0 | 2.3 | 2.5 | 4.1 | 6.2 | 2.4 |
| 2001 | 4.7 | .8 | .0 | 1.1 | 5.2 | 3.5 |
| 2002 | 5.8 | .8 | -.3 | 1.8 | 4.9 | 3.9 |
| 2003 | 6.0 | 1.1 | 1.0 | 2.5 | 4.1 | 2.6 |
| 2004 | 5.5 | .6 | 1.1 | 3.6 | 4.3 | 1.5 |
| 2005 | 5.1 | 1.3 | 1.7 | 3.1 | 4.3 | .8 |
| 2006 | 4.6 | 1.4 | 1.8 | 2.7 | 4.8 | 1.1 |
| 2007 | 4.6 | 1.1 | 1.1 | 1.9 | 4.7 | 1.9 |
| 2008 | 5.8 | .8 | -.4 | .0 | 3.6 | .6 |
| 2009 | 9.3 | -.1 | -3.7 | -2.6 | 2.9 | 4.4 |
| 2010[h] | 9.7 | -.2 | -.6 | 2.8 | 2.8 | .9 |
| **Intermediate:** | | | | | | |
| 2011 | 9.5 | .5 | .7 | 2.7 | 3.1 | 1.5 |
| 2012 | 8.9 | .7 | 1.4 | 3.4 | 4.4 | 1.4 |
| 2013 | 8.0 | .9 | 1.7 | 3.8 | 5.0 | 2.5 |
| 2014 | 7.2 | 1.0 | 1.9 | 3.8 | 5.2 | 3.1 |
| 2015 | 6.5 | .9 | 1.7 | 3.5 | 5.2 | 3.2 |
| 2016 | 5.9 | .9 | 1.5 | 3.0 | 5.1 | 3.2 |
| 2017 | 5.6 | .8 | 1.1 | 2.7 | 5.1 | 2.9 |
| 2018 | 5.5 | .7 | .8 | 2.4 | 5.5 | 2.5 |
| 2019 | 5.5 | .6 | .6 | 2.2 | 5.7 | 2.7 |
| 2020 | 5.5 | .5 | .5 | 2.1 | 5.7 | 2.9 |
| 2025 | 5.5 | .4 | .4 | 2.1 | 5.7 | 2.9 |
| 2030 | 5.5 | .5 | .5 | 2.2 | 5.7 | 2.9 |
| 2035 | 5.5 | .5 | .5 | 2.2 | 5.7 | 2.9 |
| 2040 | 5.5 | .5 | .5 | 2.2 | 5.7 | 2.9 |
| 2045 | 5.5 | .5 | .5 | 2.2 | 5.7 | 2.9 |
| 2050 | 5.5 | .5 | .5 | 2.2 | 5.7 | 2.9 |
| 2055 | 5.5 | .4 | .4 | 2.1 | 5.7 | 2.9 |
| 2060 | 5.5 | .5 | .5 | 2.1 | 5.7 | 2.9 |
| 2065 | 5.5 | .5 | .5 | 2.1 | 5.7 | 2.9 |
| 2070 | 5.5 | .4 | .4 | 2.1 | 5.7 | 2.9 |
| 2075 | 5.5 | .4 | .4 | 2.1 | 5.7 | 2.9 |
| 2080 | 5.5 | .4 | .4 | 2.1 | 5.7 | 2.9 |
| 2085 | 5.5 | .4 | .4 | 2.1 | 5.7 | 2.9 |
| **Low-cost:** | | | | | | |
| 2011 | 9.3 | .6 | 1.0 | 3.2 | 3.2 | 1.6 |
| 2012 | 8.3 | 1.0 | 2.1 | 4.4 | 4.4 | 2.0 |
| 2013 | 7.1 | 1.3 | 2.7 | 5.0 | 5.0 | 3.1 |
| 2014 | 5.9 | 1.4 | 2.7 | 4.7 | 5.1 | 3.6 |
| 2015 | 4.9 | 1.3 | 2.3 | 4.1 | 5.2 | 3.7 |
| 2016 | 4.5 | 1.1 | 1.5 | 3.2 | 5.0 | 3.6 |
| 2017 | 4.5 | .9 | .9 | 2.8 | 5.1 | 3.4 |
| 2018 | 4.5 | .7 | .7 | 2.7 | 5.3 | 3.3 |
| 2019 | 4.5 | .7 | .6 | 2.6 | 5.4 | 3.5 |
| 2020 | 4.5 | .6 | .6 | 2.6 | 5.4 | 3.6 |

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

| Calendar year | Average annual unemployment rate[a] | Annual percentage change[b] in— Labor force[c] | Total employment[d] | Real GDP[e] | Average annual interest rate Nominal[f] | Real[g] |
|---|---|---|---|---|---|---|
| **Low-cost: (Cont.)** | | | | | | |
| 2025 | 4.5 | 0.5 | 0.5 | 2.6 | 5.4 | 3.6 |
| 2030 | 4.5 | .5 | .5 | 2.6 | 5.4 | 3.6 |
| 2035 | 4.5 | .6 | .6 | 2.7 | 5.4 | 3.6 |
| 2040 | 4.5 | .7 | .7 | 2.8 | 5.4 | 3.6 |
| 2045 | 4.5 | .7 | .7 | 2.8 | 5.4 | 3.6 |
| 2050 | 4.5 | .7 | .7 | 2.8 | 5.4 | 3.6 |
| 2055 | 4.5 | .7 | .7 | 2.8 | 5.4 | 3.6 |
| 2060 | 4.5 | .8 | .8 | 2.9 | 5.4 | 3.6 |
| 2065 | 4.5 | .8 | .8 | 2.9 | 5.4 | 3.6 |
| 2070 | 4.5 | .8 | .8 | 2.9 | 5.4 | 3.6 |
| 2075 | 4.5 | .8 | .8 | 2.9 | 5.4 | 3.6 |
| 2080 | 4.5 | .8 | .8 | 2.9 | 5.4 | 3.6 |
| 2085 | 4.5 | .8 | .8 | 2.9 | 5.4 | 3.6 |
| **High-cost:** | | | | | | |
| 2011 | 9.7 | .4 | .4 | 1.8 | 3.1 | 1.2 |
| 2012 | 9.4 | .4 | .7 | 2.6 | 4.7 | .7 |
| 2013 | 8.9 | .5 | 1.1 | 3.0 | 5.4 | 1.9 |
| 2014 | 8.3 | .6 | 1.2 | 2.9 | 5.6 | 2.4 |
| 2015 | 7.7 | .6 | 1.2 | 2.8 | 5.8 | 2.4 |
| 2016 | 7.2 | .6 | 1.2 | 2.7 | 5.7 | 2.6 |
| 2017 | 6.9 | .6 | 1.0 | 2.3 | 5.8 | 2.3 |
| 2018 | 6.7 | .5 | .7 | 1.9 | 5.8 | 2.2 |
| 2019 | 6.6 | .5 | .5 | 1.8 | 5.9 | 2.0 |
| 2020 | 6.5 | .4 | .5 | 1.8 | 5.9 | 2.1 |
| 2025 | 6.5 | .3 | .3 | 1.6 | 5.9 | 2.1 |
| 2030 | 6.5 | .4 | .4 | 1.7 | 5.9 | 2.1 |
| 2035 | 6.5 | .4 | .4 | 1.7 | 5.9 | 2.1 |
| 2040 | 6.5 | .4 | .4 | 1.7 | 5.9 | 2.1 |
| 2045 | 6.5 | .3 | .3 | 1.6 | 5.9 | 2.1 |
| 2050 | 6.5 | .2 | .2 | 1.5 | 5.9 | 2.1 |
| 2055 | 6.5 | .1 | .1 | 1.4 | 5.9 | 2.1 |
| 2060 | 6.5 | .1 | .1 | 1.4 | 5.9 | 2.1 |
| 2065 | 6.5 | .1 | .1 | 1.3 | 5.9 | 2.1 |
| 2070 | 6.5 | .0 | .0 | 1.3 | 5.9 | 2.1 |
| 2075 | 6.5 | .0 | .0 | 1.2 | 5.9 | 2.1 |
| 2080 | 6.5 | -.1 | -.1 | 1.2 | 5.9 | 2.1 |
| 2085 | 6.5 | -.1 | -.1 | 1.2 | 5.9 | 2.1 |

[a] The civilian unemployment rates for 2021 and later are adjusted to the age-sex distribution of the civilian labor force in 2009. All other rates are unadjusted.

[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 concept is used here.

[d] Total of civilian and military employment in the U.S. economy.

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

[f] The average annual nominal interest rate is 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 average annual real interest rate reflects the realized or expected annual real yield for each year on securities issuable in the prior year.

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

## C. PROGRAM-SPECIFIC ASSUMPTIONS AND METHODS

A set of models is used 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. First, certain program parameters are calculated based on formulas described explicitly in the Social Security Act. These program parameters affect the level of payroll taxes collected and the level of benefits paid. 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, are also projected. The following subsections provide descriptions of these program-specific assumptions and methods.

### 1. Automatically Adjusted Program Parameters

The Social Security Act specifies that certain program parameters affecting the determination of OASDI benefits and taxes must be adjusted annually in order to reflect changes in particular economic measures. The law prescribes specific formulas that, when applied to reported statistics, produce automatic revisions in these program parameters and hence in the benefit and tax computations. The law bases these automatic adjustments on measured changes in the national average wage index (AWI) and the CPI.[1] In this section, values are shown for program parameters that are subject to automatic adjustment, from the time that such adjustments became effective through 2020. Projected values for future years are based 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. In each table, projections are shown under the three alternative sets of economic assumptions described in the previous section. Table V.C1 includes:

- The annual percentage increases that have been applied to OASDI benefits under automatic cost-of-living adjustment provisions in the Social Security Act based on increases in the CPI. In December 2009 and December 2010, there were no cost-of-living adjustments. Under all three sets of economic assumptions, cost-of-living adjustments are projected to return for December 2011 and later.

[1] Details of these indexation procedures are published annually in the *Federal Register*, and also at www.socialsecurity.gov/OACT/COLA/index.html.

- The annual levels of and percentage increases in the AWI. Under section 215(b)(3) of the Social Security Act, the AWI for each year after 1950 is used to index the taxable earnings of most workers first becoming eligible for benefits in 1979 or later. This procedure converts a worker's past earnings to approximately equivalent values near the time of the worker's benefit eligibility, and these indexed values are used to calculate the worker's benefit amount. The AWI is also used to adjust most of the other program parameters that are subject to the automatic-adjustment provisions.
- The wage-indexed contribution and benefit base—the maximum amount of earnings for the specified year subject to the OASDI payroll tax and creditable toward benefit computation. The Social Security Act prohibits an increase in this base if there is no cost-of-living adjustment effective for December of the preceding year.
- The wage-indexed retirement earnings test exempt amounts—the annual amount of earnings below which beneficiaries are not subject to benefit withholding. A lower exempt amount applies in years before a beneficiary attains normal retirement age (NRA). A higher amount applies for the year in which the beneficiary attains NRA. The retirement test does not apply beginning with the attainment of NRA. The Social Security Act prohibits an increase in these exempt amounts if there is no cost-of-living adjustment effective for December of the preceding year.

**Table V.C1.—Cost-of-Living Benefit Increases, Average Wage Index, Contribution and Benefit Bases, and Retirement Earnings Test Exempt Amounts, 1975-2020**

| Calendar year | Cost-of-living benefit increase[a] (percent) | Average wage index (AWI)[b] Amount | Average wage index (AWI)[b] Increase (percent) | Contribution and benefit base[c] | Retirement earnings test exempt amount Under NRA[d] | Retirement earnings test exempt amount At NRA[e] |
|---|---|---|---|---|---|---|
| **Historical data:** | | | | | | |
| 1975 | 8.0 | $8,630.92 | 7.5 | $14,100 | $2,520 | $2,520 |
| 1976 | 6.4 | 9,226.48 | 6.9 | 15,300 | 2,760 | 2,760 |
| 1977 | 5.9 | 9,779.44 | 6.0 | 16,500 | 3,000 | 3,000 |
| 1978 | 6.5 | 10,556.03 | 7.9 | 17,700 | 3,240 | 4,000 |
| 1979 | 9.9 | 11,479.46 | 8.7 | 22,900 | 3,480 | 4,500 |
| 1980 | 14.3 | 12,513.46 | 9.0 | 25,900 | 3,720 | 5,000 |
| 1981 | 11.2 | 13,773.10 | 10.1 | 29,700 | 4,080 | 5,500 |
| 1982 | 7.4 | 14,531.34 | 5.5 | 32,400 | 4,440 | 6,000 |
| 1983 | 3.5 | 15,239.24 | 4.9 | 35,700 | 4,920 | 6,600 |
| 1984 | 3.5 | 16,135.07 | 5.9 | 37,800 | 5,160 | 6,960 |
| 1985 | 3.1 | 16,822.51 | 4.3 | 39,600 | 5,400 | 7,320 |
| 1986 | 1.3 | 17,321.82 | 3.0 | 42,000 | 5,760 | 7,800 |
| 1987 | 4.2 | 18,426.51 | 6.4 | 43,800 | 6,000 | 8,160 |
| 1988 | 4.0 | 19,334.04 | 4.9 | 45,000 | 6,120 | 8,400 |
| 1989 | 4.7 | 20,099.55 | 4.0 | 48,000 | 6,480 | 8,880 |
| 1990 | 5.4 | 21,027.98 | 4.6 | 51,300 | 6,840 | 9,360 |
| 1991 | 3.7 | 21,811.60 | 3.7 | 53,400 | 7,080 | 9,720 |
| 1992 | 3.0 | 22,935.42 | 5.2 | 55,500 | 7,440 | 10,200 |
| 1993 | 2.6 | 23,132.67 | .9 | 57,600 | 7,680 | 10,560 |
| 1994 | 2.8 | 23,753.53 | 2.7 | 60,600 | 8,040 | 11,160 |
| 1995 | 2.6 | 24,705.66 | 4.0 | 61,200 | 8,160 | 11,280 |
| 1996 | 2.9 | 25,913.90 | 4.9 | 62,700 | 8,280 | 12,500 |
| 1997 | 2.1 | 27,426.00 | 5.8 | 65,400 | 8,640 | 13,500 |
| 1998 | 1.3 | 28,861.44 | 5.2 | 68,400 | 9,120 | 14,500 |
| 1999 | [f]2.5 | 30,469.84 | 5.6 | 72,600 | 9,600 | 15,500 |
| 2000 | 3.5 | 32,154.82 | 5.5 | 76,200 | 10,080 | 17,000 |
| 2001 | 2.6 | 32,921.92 | 2.4 | 80,400 | 10,680 | 25,000 |
| 2002 | 1.4 | 33,252.09 | 1.0 | 84,900 | 11,280 | 30,000 |
| 2003 | 2.1 | 34,064.95 | 2.4 | 87,000 | 11,520 | 30,720 |
| 2004 | 2.7 | 35,648.55 | 4.6 | 87,900 | 11,640 | 31,080 |
| 2005 | 4.1 | 36,952.94 | 3.7 | 90,000 | 12,000 | 31,800 |
| 2006 | 3.3 | 38,651.41 | 4.6 | 94,200 | 12,480 | 33,240 |
| 2007 | 2.3 | 40,405.48 | 4.5 | 97,500 | 12,960 | 34,440 |
| 2008 | 5.8 | 41,334.97 | 2.3 | 102,000 | 13,560 | 36,120 |
| 2009 | .0 | 40,711.61 | -1.5 | 106,800 | 14,160 | 37,680 |
| **Intermediate:** | | | | | | |
| 2010 | [g].0 | 41,843.71 | 2.8 | [g]106,800 | [g]14,160 | [g]37,680 |
| 2011 | .7 | 43,517.83 | 4.0 | [g]106,800 | [g]14,160 | [g]37,680 |
| 2012 | 1.7 | 45,435.49 | 4.4 | 110,700 | 14,640 | 39,000 |
| 2013 | 1.9 | 47,489.90 | 4.5 | 114,900 | 15,240 | 40,560 |
| 2014 | 2.0 | 49,462.43 | 4.2 | 120,000 | 15,960 | 42,360 |
| 2015 | 2.0 | 51,398.64 | 3.9 | 125,400 | 16,680 | 44,280 |
| 2016 | 2.0 | 53,430.36 | 4.0 | 130,800 | 17,280 | 46,200 |
| 2017 | 2.2 | 55,551.37 | 4.0 | 135,900 | 18,000 | 48,000 |
| 2018 | 2.7 | 57,969.43 | 4.4 | 141,300 | 18,720 | 49,800 |
| 2019 | 2.8 | 60,406.32 | 4.2 | 146,700 | 19,440 | 51,840 |
| 2020 | 2.8 | 62,760.16 | 3.9 | 153,300 | 20,280 | 54,120 |

**Table V.C1.—Cost-of-Living Benefit Increases, Average Wage Index, Contribution and Benefit Bases, and Retirement Earnings Test Exempt Amounts, 1975-2020 (Cont.)**

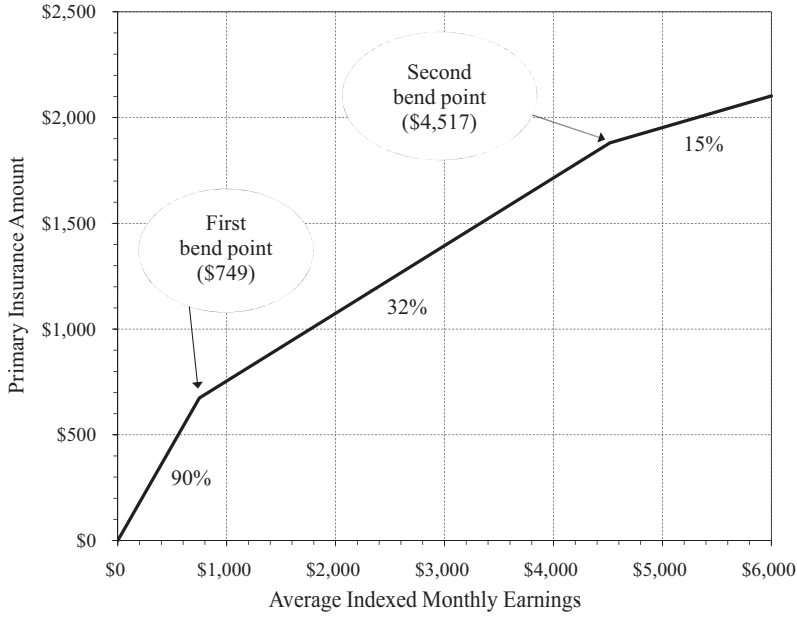
| Calendar year | Cost-of-living benefit increase[a] (percent) | Average wage index (AWI)[b] Amount | Average wage index (AWI)[b] Increase (percent) | Contribution and benefit base[c] | Retirement earnings test exempt amount Under NRA[d] | Retirement earnings test exempt amount At NRA[e] |
|---|---|---|---|---|---|---|
| **Low-cost:** | | | | | | |
| 2010 | [g]0.0 | $41,840.52 | 2.8 | [g]$106,800 | [g]$14,160 | [g]$37,680 |
| 2011 | .6 | 43,599.58 | 4.2 | [g]106,800 | [g]14,160 | [g]37,680 |
| 2012 | 1.2 | 45,522.96 | 4.4 | 110,700 | 14,640 | 39,000 |
| 2013 | 1.3 | 47,535.08 | 4.4 | 115,200 | 15,240 | 40,680 |
| 2014 | 1.4 | 49,370.46 | 3.9 | 120,300 | 15,960 | 42,480 |
| 2015 | 1.5 | 51,143.06 | 3.6 | 125,700 | 16,680 | 44,400 |
| 2016 | 1.6 | 53,057.41 | 3.7 | 130,500 | 17,280 | 46,080 |
| 2017 | 1.7 | 55,112.98 | 3.9 | 135,000 | 17,880 | 47,760 |
| 2018 | 1.8 | 57,323.29 | 4.0 | 140,100 | 18,600 | 49,560 |
| 2019 | 1.8 | 59,503.79 | 3.8 | 145,500 | 19,320 | 51,360 |
| 2020 | 1.8 | 61,577.65 | 3.5 | 151,500 | 20,040 | 53,520 |
| **High-cost:** | | | | | | |
| 2010 | [g].0 | 41,836.85 | 2.8 | [g]106,800 | [g]14,160 | [g]37,680 |
| 2011 | 1.2 | 43,363.65 | 3.6 | [g]106,800 | [g]14,160 | [g]37,680 |
| 2012 | 2.4 | 45,401.07 | 4.7 | 110,400 | 14,640 | 39,000 |
| 2013 | 2.8 | 47,667.29 | 5.0 | 114,600 | 15,240 | 40,440 |
| 2014 | 3.0 | 49,918.31 | 4.7 | 120,000 | 15,960 | 42,360 |
| 2015 | 3.2 | 52,343.69 | 4.9 | 126,000 | 16,680 | 44,520 |
| 2016 | 3.2 | 54,993.37 | 5.1 | 132,000 | 17,520 | 46,560 |
| 2017 | 3.4 | 57,690.56 | 4.9 | 138,300 | 18,360 | 48,840 |
| 2018 | 3.6 | 60,485.28 | 4.8 | 145,200 | 19,320 | 51,360 |
| 2019 | 3.8 | 63,329.45 | 4.7 | 152,400 | 20,280 | 53,880 |
| 2020 | 3.8 | 66,140.81 | 4.4 | 159,900 | 21,240 | 56,400 |

[a] Effective with benefits payable for June in each year 1975-82, and for December in each year after 1982.
[b] See table VI.F6 for projected dollar amounts of the AWI beyond 2020.
[c] Amounts for 1979-81 were specified by Public Law 95-216. The bases are slightly higher after 1989 due to changes in the indexing procedure that were required by Public Law 101-239.
[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, it does not apply beginning with the month of attainment of NRA. In the year of attainment of NRA, the higher exempt amount applies to earnings prior to the month of NRA attainment. Amounts for 1978-82 specified by Public Law 95-216; for 1996-2002, Public Law 104-121.
[f] Originally determined as 2.4 percent, but pursuant to Public Law 106-554, is effectively 2.5 percent.
[g] Actual amount, as determined under automatic-adjustment provisions.

Values for other wage-indexed parameters are shown in table V.C2. The table provides historical values from 1978, when the amount of earnings required for a quarter of coverage was first indexed, through 2010, and also shows projected amounts through 2020. These other wage-indexed program parameters are:

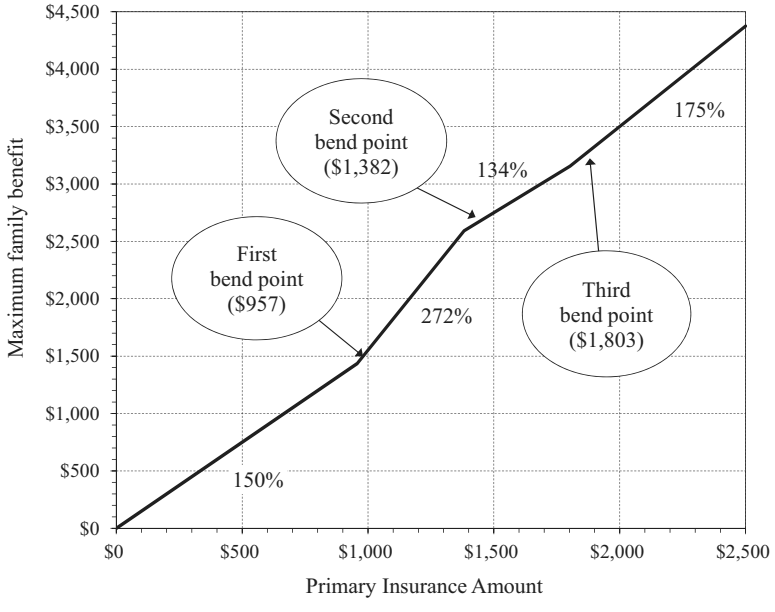
- The bend points in the formula for computing the primary insurance amount (PIA) for workers who reach age 62, become disabled, or die in a given year. As illustrated in figure V.C1, these bend points indicate three ranges in a worker's average indexed monthly earnings (AIME) over which a certain percent factor, 90, 32, or 15 percent, respectively, is applied to determine the worker's PIA.

**Figure V.C1.—Primary-Insurance-Amount Formula for Those Newly Eligible in 2011**




- The bend points in the formula used in the computation of the maximum total amount of monthly benefits payable based on the earnings record of a retired or deceased worker. This formula is a function of the worker's PIA, and, as shown in figure V.C2, relies on four intervals and percentages.

**Figure V.C2.—Maximum-Family-Benefit Formula for Those Newly Eligible in 2011**



- The amount of earnings required in a year to be credited with a quarter of coverage (QC). The number and timing of QCs earned is used to determine an individual's insured status—the basic requirement for benefit eligibility under OASDI.
- The old-law contribution and benefit base—the base that would have been in effect had the 1977 amendments not been enacted. This old-law base is used in determining special-minimum benefits for certain workers who have many years of low earnings in covered employment. Beginning in 1986, the old-law base is also used in the calculation of OASDI benefits for certain workers who are eligible to receive pensions based on noncovered employment. In addition, the old-law base is used for certain purposes under the Railroad Retirement program and the Employee Retirement Income Security Act of 1974.

**Table V.C2.—Values for Selected Wage-Indexed Program Parameters, Calendar Years 1978-2020**

| Calendar year | AIME bend points in PIA formula[a] | | PIA bend points in 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 |

**Table V.C2.—Values for Selected Wage-Indexed Program Parameters, Calendar Years 1978-2020**

| Calendar year | AIME bend points in PIA formula[a] First | AIME bend points in PIA formula[a] Second | PIA bend points in maximum-family-benefit formula[b] First | PIA bend points in maximum-family-benefit formula[b] Second | PIA bend points in maximum-family-benefit formula[b] Third | Earnings required for a quarter of coverage | Old-law contribution and benefit base[c] |
|---|---|---|---|---|---|---|---|
| **Intermediate:** | | | | | | | |
| 2012 | $770 | $4,642 | $984 | $1,421 | $1,853 | $1,130 | $82,200 |
| 2013 | 801 | 4,828 | 1,023 | 1,477 | 1,927 | 1,180 | 85,500 |
| 2014 | 836 | 5,041 | 1,069 | 1,542 | 2,012 | 1,230 | 89,100 |
| 2015 | 874 | 5,269 | 1,117 | 1,612 | 2,103 | 1,290 | 93,300 |
| 2016 | 910 | 5,488 | 1,163 | 1,679 | 2,190 | 1,340 | 96,900 |
| 2017 | 946 | 5,703 | 1,209 | 1,745 | 2,276 | 1,390 | 100,800 |
| 2018 | 983 | 5,928 | 1,257 | 1,814 | 2,366 | 1,450 | 104,700 |
| 2019 | 1,022 | 6,163 | 1,306 | 1,886 | 2,460 | 1,510 | 108,900 |
| 2020 | 1,067 | 6,432 | 1,363 | 1,968 | 2,567 | 1,570 | 113,700 |
| **Low-cost:** | | | | | | | |
| 2012 | 770 | 4,642 | 984 | 1,420 | 1,853 | 1,130 | 82,200 |
| 2013 | 802 | 4,837 | 1,025 | 1,480 | 1,930 | 1,180 | 85,500 |
| 2014 | 838 | 5,051 | 1,071 | 1,545 | 2,016 | 1,230 | 89,400 |
| 2015 | 875 | 5,274 | 1,118 | 1,614 | 2,105 | 1,290 | 93,300 |
| 2016 | 909 | 5,478 | 1,161 | 1,676 | 2,186 | 1,340 | 96,900 |
| 2017 | 941 | 5,674 | 1,203 | 1,736 | 2,264 | 1,390 | 100,200 |
| 2018 | 977 | 5,887 | 1,248 | 1,801 | 2,349 | 1,440 | 104,100 |
| 2019 | 1,014 | 6,115 | 1,296 | 1,871 | 2,440 | 1,490 | 108,000 |
| 2020 | 1,055 | 6,360 | 1,348 | 1,946 | 2,538 | 1,550 | 112,500 |
| **High-cost:** | | | | | | | |
| 2012 | 770 | 4,642 | 984 | 1,420 | 1,852 | 1,130 | 82,200 |
| 2013 | 798 | 4,811 | 1,020 | 1,472 | 1,920 | 1,170 | 85,200 |
| 2014 | 836 | 5,037 | 1,068 | 1,541 | 2,010 | 1,230 | 89,100 |
| 2015 | 877 | 5,289 | 1,121 | 1,618 | 2,111 | 1,290 | 93,600 |
| 2016 | 919 | 5,538 | 1,174 | 1,695 | 2,210 | 1,350 | 97,800 |
| 2017 | 963 | 5,807 | 1,231 | 1,777 | 2,318 | 1,420 | 102,600 |
| 2018 | 1,012 | 6,101 | 1,293 | 1,867 | 2,435 | 1,490 | 108,000 |
| 2019 | 1,062 | 6,401 | 1,357 | 1,959 | 2,554 | 1,560 | 113,100 |
| 2020 | 1,113 | 6,711 | 1,423 | 2,053 | 2,678 | 1,640 | 118,800 |

[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 pertain to the first year a beneficiary becomes eligible for benefits.

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

[c] Contribution and benefit base that would have been determined automatically under the law in effect prior to enactment of the Social Security Amendments of 1977. The bases for years after 1989 were increased slightly by changes to the indexing procedure to determine the base, as required by Public Law 101-239.

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

[e] Amount specified for first year by Social Security Amendments of 1977; amounts for subsequent years subject to automatic-adjustment provisions.

In addition to the program parameters affecting the determination of OASDI benefits that reflect changes in the economy, there are certain legislated changes that have affected, and will affect, benefits. Two such changes are the scheduled increases in the NRA and in the delayed retirement credits. Table V.C3 shows the scheduled changes in these parameters and the resulting effects on benefit levels expressed as a percentage of PIA.

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

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

## 2. Covered Employment

Projections of the total labor force and unemployment rate (see Table V.B2) 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, aged 16 and over, in the U.S. in a calendar year. Total covered workers in a year are the persons who have any OASDI covered earnings (subject to the OASDI payroll tax) at any time during the year. Projected covered employment is the sum of age-sex components, each of which is projected as a ratio to the CPS concept of employment.[1] The projection methodology accounts for changes in the business cycle, changes in non-OASDI covered employment, the increase in coverage of Federal civilian employment as a result of the 1983 Social Security

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

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

Covered-worker rates are defined as the ratio of OASDI covered workers to the Social Security area population. The age-adjusted coverage rate for males age 16 and over is projected to be 69.7, 69.5, and 68.8 percent for 2085 for the low-cost, intermediate, and high-cost assumptions, respectively, compared to the 2009 level of about 66.8 percent. (Age-adjusted covered worker rates are adjusted to the 2009 age distribution of the Social Security area population.) For females, the projected age-adjusted coverage rate changes from 60.3 percent for 2009 to 63.5, 62.8, and 62.1 percent for 2085 for the low-cost, intermediate, and high-cost assumptions, respectively.

### 3. Taxable Payroll and Payroll Tax Revenue

The OASDI taxable payroll (see table VI.F6) is the amount of earnings in a year that, when multiplied by the combined employee-employer payroll tax rate, yields the total amount of payroll taxes due from wages and self-employed income in the year. Taxable payroll is used in estimating OASDI income and in determining income and cost rates and actuarial balances. (See section IV.B.1, Annual Income Rates, Cost Rates, and Balances, for definitions of these terms.) Taxable payroll is computed from taxable earnings, defined as the sum of wages and self-employment earnings subject to the Social Security payroll tax. In computing taxable payroll, wages are adjusted to take into account the "excess wages" earned by workers with multiple jobs whose combined wages exceed the contribution and benefit base. In addition, from 1983 through 2001, taxable payroll includes deemed wage credits for military service. Prior to 1984, the self-employment tax rate was less than the combined employee-employer rate; therefore, taxable self-employment earnings are weighted to reflect this difference in payroll tax rate. Also, prior to 1988, employers were exempt from paying Social Security payroll tax on part of their employees' tips; taxable payroll was thus reduced by half of the amount of tips to take this into account.

The computation of taxable earnings for employees, employers, and the self-employed is based on total earnings in covered employment. Covered earnings are summed from component sectors of the economy, including private, State and local, Federal civilian, and military. Covered earnings for each sector are based on the projected growth of U.S. earnings and a factor that reflects any projected change in coverage (e.g., the increase in coverage in the Federal civilian sector due to mandatory coverage of newly hired employees). The level of taxable earnings reflects only the portion of covered earnings that is at or below the contribution and benefit base. The por-

tion of covered earnings that is taxable (i.e., at or below the base) was about 89.5, 86.8, and 82.8 percent for 1983, 1994, and 2000, respectively. This ratio of taxable earnings to covered earnings rose to about 85.8 percent for 2002, then fell in subsequent years to reach 82.4 percent for 2007. The average annual rate of change in the ratio was about -0.3 percent between 1983 and 2007. Most of this decline was due to a relative increase in wages for high earners.

The ratio rose to 83.5 percent for 2008 and further to 85.2 percent for 2009, largely due to a downturn-induced reduction in the relative amount of wages of high earners. As the economy began to recover, the ratio fell to 84.2 percent for 2010 and is projected to continue to decline until it reaches levels for 2020 of 83.6, 82.9, and 82.1 percent for the low-cost, intermediate, and high-cost assumptions, respectively. After 2020, the taxable-to-covered earnings ratio is approximately constant.

Payroll tax revenue is computed by applying the scheduled tax rates to taxable wages and self-employment income. In addition, the lag between the time the payroll tax liability is incurred and payroll taxes are collected is taken into account. In the case of wages, Federal law requires employers to withhold and deposit payroll taxes with the Treasury on a schedule determined by the amount of payroll tax liability incurred.[1] Federal law requires self-employed workers to make estimated payroll tax payments on their earnings four times during the year and to make up any underestimate on their individual income tax return. The pattern of actual receipts by the Treasury is taken into account when estimating self-employed payroll tax collections.

## 4. Insured Population

Eligibility for worker benefits under the OASDI program requires some minimal level of work in covered employment. A worker satisfies this requirement by his or her accumulation of quarters of coverage (QCs). Prior to 1978, one QC was credited for each calendar quarter in which at least $50 was earned. 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, this amount has been adjusted each year since then according to changes in the AWI. Its value in 2011 is $1,120.

[1] Generally, the higher the amount of liability, the sooner the taxes must be paid—ranging from the middle of the following month for employers with few employees to the next banking day after wages are paid for companies with very large payrolls.

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

Estimates of the fully insured population, as a percentage of the Social Security area population, are made by single year of age and sex starting in 1969. The short-range projections are based on an extrapolation of the historical trend in these rates starting with data in the Continuous Work History Sample (CWHS). The model uses information on quarters of coverage earned due to employment covered by Social Security that is derived from tabulations of the CWHS. The model also uses historical administrative data on beneficiaries in force and estimated historical mortality rates. This information is combined 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, these rates are extrapolated to the future and applied to the historical and projected population to arrive at the fully insured population by age and sex through the end of the short-range period.

The long-range model for projecting the fully insured population as a percentage of the Social Security area population uses 30,000 simulated work histories for each sex and birth cohort. These simulated work histories are constructed from past coverage rates, median earnings, and amounts required for crediting QCs, and are developed in a manner that replicates historical individual variations in tendency to work. Specifically, persons who have recently been out of covered employment are less likely to be in covered employment. This model is designed to produce simulated fully insured percentages that are close to the historical fully insured percentages estimated from the CWHS and the short-range model starting in 1970, and projections from the short-range model through the end of the short-range period.

Estimates of the disability-insured population, as a percentage of the fully insured population, are made by age and sex starting in 1970. Historical values are based on a tabulation of the disability-insured population from the CWHS and estimates of the fully insured population. Through the end of the short-range period, these percentages are projected by modeling the relationship between the historical percentages and labor force participation rates. After the short-range period, these percentages are projected using the same simulated work histories used to project the fully insured percentages in the long-range model. Additional adjustments are made to the long-range model simulation in order to bring the disability-insured percentages in the historical and short-range periods into close agreement with those estimated from the CWHS and the short-range model.

No projections are made of 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 expected 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 is projected to increase from its estimated level of 82.9 for December 31, 2008, to 89.7, 89.8, and 89.8 for December 31, 2085, under alternatives I, II, and III, respectively. The percentage for females is projected to increase significantly, and the percentage for males is projected to decline somewhat. Under alternative II, for example, the percentage for males is projected to decrease slightly during this period from 93.2 to 90.4, and the percentage for females is projected to increase from 74.8 to 89.2.

### 5. Old-Age and Survivors Insurance Beneficiaries

The number of OASI beneficiaries is projected 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 number of beneficiaries is also projected by marital status for selected types of benefits.

For the short-range period, the number of retired-worker beneficiaries is developed by applying award rates to the aged fully insured population reduced by those insured persons entitled to retired-worker, disabled-worker, aged-widow(er)'s, or aged-spouse's benefits, and by applying termination rates to the number of persons already receiving retired-worker benefits.

For the long-range period, the number of retired-worker beneficiaries in current-payment status who were not previously converted from disabled-worker beneficiary status is projected as a percentage of the exposed population, i.e., the fully insured population age 62 and over reduced by persons entitled to or converted from disabled-worker benefits and fully insured persons entitled only to widow(er)'s benefits. For age 62, a linear regression is developed based on the historical relationship between this percentage and the labor force participation rate. The regression coefficients are then used to project this percentage based on the projected labor force participation rate for age 62. The percentage for ages 70 and over is assumed to be nearly 100, because delayed retirement credits cannot be earned after age 70. The percentage for each age 63 through 69 is projected 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. These percentages for ages 62 through 69 are adjusted to reflect changes in the NRA.

For the long-range period, the number of retired-worker beneficiaries previously converted from disabled-worker beneficiary status is calculated using an extension of disabled-worker death rates by age, sex, and duration.

The number of aged-spouse beneficiaries (excluding those who are also receiving a retired-worker benefit) is estimated from the population projected by age and sex. The benefits of aged-spouse beneficiaries are based on the earnings records of their husbands or wives, who are referred to as "earners." In the short-range period, insured aged-spouse beneficiaries are projected in conjunction with the retired-worker beneficiaries. Uninsured aged-spouse beneficiaries are projected by applying award rates to the aged uninsured male or female population and by applying termination rates to the population already receiving such benefits.

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

The number of divorced aged-spouse beneficiaries, by age and sex, is estimated by applying the same factors to the number of divorced persons aged 62 and over in the population, with three differences. First, a factor is applied to reflect the probability that the earner (former spouse) is still alive (otherwise, the person may be entitled to a divorced widow(er)'s benefit). Second, a factor is applied to reflect the probability that the marriage to the former spouse lasted at least 10 years. Third, factor (3) in the previous paragraph is not applied because, effective January 1985, a divorced person is generally no longer required to wait to receive divorced spouse benefits until the earner (former spouse) is receiving benefits.

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, are based on the projected number of children in the population. In the short-range period, the number of entitled children is developed by applying award rates to the number of children in the population for whom both parents are alive, and by applying termination rates to the number of children already receiving benefits.

In the long-range period, the number of entitled children is projected separately by sex of the earner parent. For each age under 18, the number of entitled children is projected from the latest beneficiary data by incorporating changes in the number of children in the population and the ratio of retired workers aged 62 through 71 to the population aged 20 through 71. For student beneficiaries, factors are applied to the number of children aged 18 and 19 in the population that represent the probabilities that the parent is alive, aged 62 or over, insured, and receiving a retired-worker benefit. Another factor is applied that represents the probability that the child is attending a secondary school.

The number of disabled children, aged 18 and over, of retired-worker beneficiaries is projected from the adult population. In the short-range period, award rates are applied to the population, and termination rates are applied to the number of disabled children already receiving benefits. In the long-range period, the number of disabled children is projected in a manner similar to that used for student children except that a factor that reflects the probability of being disabled before age 22 is included.

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

The number of aged-widow(er) beneficiaries (excluding those who are also receiving a retired-worker benefit) is projected from the population by age and sex. In the short-range period, fully insured aged-widow(er) beneficiaries are projected in conjunction with the retired-worker beneficiaries. The number of uninsured aged-widow(er) beneficiaries is projected by applying award rates to the aged uninsured male or female population, and by applying termination rates to the population already receiving such benefits. In the long-range period, uninsured aged-widow(er) beneficiaries are projected by marital status. Four factors are applied to the number of widow(er)s in the population aged 60 and over. These factors represent 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. Also, the same factors are applied to the number of divorced persons aged 60 and over in the population and include additional factors representing the probability that the person's former earner spouse is deceased and that the marriage lasted at least 10 years. The number of insured aged-widow(er) beneficiaries who are ages 60 to 70 is projected in a manner similar to that for uninsured aged-widow(er) beneficiaries. In addition, some insured widow(er)s who had not applied for their retired-worker benefits are assumed to receive widow(er)'s benefits. Insured aged-widow(er) beneficiaries over age 70 are projected by applying termination rates to the population that started receiving such benefits prior to age 70.

In the short-range period, the number of disabled-widow(er) beneficiaries is developed 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. In the long-range period, the number is projected for each age from 50 to NRA 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 projected numbers of children under age 18, and students aged 18 and 19, who are entitled to benefits as survivors of deceased workers, are based on the projected number of children in the population whose mothers or fathers are deceased. In the short-range period, the number of entitled children is developed by applying award rates to the number of orphaned children and by applying termination rates to the number of children already receiving benefits.

In the long-range period, the number of child-survivor beneficiaries is projected in a manner analogous to that for student beneficiaries of retired workers, with the exception that the factor representing the probability that the parent is aged 62 or over is replaced by a factor that represents the probability that the parent is deceased.

The number of disabled-child-survivor beneficiaries, aged 18 and over, is projected from the adult population. In the short-range period, award rates are applied to the population and termination rates are applied to the number of disabled-child-survivor beneficiaries already receiving benefits. In the long-range period, the number of disabled-child-survivor beneficiaries is projected in a manner similar to that for student-child-survivor beneficiaries, with the exception that a factor reflecting the probability of being disabled before age 22 is included.

In the short-range period, the numbers of entitled mother-survivor and father-survivor beneficiaries are developed 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. In the long-range period, the numbers of mother-survivor and father-survivor beneficiaries, assuming they are not remarried, are estimated from the number of child-survivor beneficiaries.

The number of parent-survivor beneficiaries is projected 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. Included among the beneficiaries who receive retired-worker benefits are those persons who receive a residual auxiliary benefit in addition to their retired-worker benefit. Estimates of the number and amount of residual payments are made separately for spouses and widow(er)s.

**Table V.C4.—OASI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1945-2085**
[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 |
| **Intermediate:** | | | | | | | | |
| 2011 | 35,705 | 2,319 | 596 | 4,261 | 156 | 1,911 | 2 | 44,949 |
| 2015 | 41,446 | 2,328 | 676 | 4,203 | 152 | 1,953 | 1 | 50,760 |
| 2020 | 49,860 | 2,287 | 755 | 4,113 | 151 | 2,026 | 1 | 59,194 |
| 2025 | 57,784 | 2,301 | 821 | 3,852 | 139 | 2,032 | 2 | 66,930 |
| 2030 | 64,549 | 2,440 | 851 | 3,602 | 129 | 2,030 | 2 | 73,602 |
| 2035 | 69,256 | 2,334 | 867 | 3,461 | 128 | 2,022 | 2 | 78,069 |
| 2040 | 71,903 | 2,178 | 881 | 3,299 | 125 | 2,002 | 2 | 80,390 |
| 2045 | 73,707 | 2,084 | 894 | 3,147 | 122 | 1,975 | 2 | 81,930 |
| 2050 | 75,808 | 2,087 | 928 | 2,998 | 119 | 1,953 | 2 | 83,894 |
| 2055 | 78,395 | 2,192 | 953 | 2,873 | 117 | 1,938 | 2 | 86,469 |
| 2060 | 81,095 | 2,373 | 972 | 2,783 | 114 | 1,922 | 2 | 89,261 |
| 2065 | 83,622 | 2,555 | 977 | 2,763 | 112 | 1,899 | 2 | 91,930 |
| 2070 | 86,497 | 2,695 | 998 | 2,794 | 109 | 1,876 | 2 | 94,971 |
| 2075 | 89,630 | 2,793 | 1,021 | 2,856 | 107 | 1,851 | 2 | 98,258 |
| 2080 | 92,878 | 2,857 | 1,042 | 2,916 | 104 | 1,828 | 2 | 101,627 |
| 2085 | 96,356 | 2,913 | 1,068 | 2,954 | 102 | 1,809 | 2 | 105,204 |

**Table V.C4.—OASI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1945-2085 (Cont.)**
[In thousands]

| | Retired workers and auxiliaries | | | Survivors | | | | |
|---|---|---|---|---|---|---|---|---|
| Calendar year | Worker[a] | Spouse | Child | Widow-widower | Mother-father | Child | Parent | Total |
| **Low-cost:** | | | | | | | | |
| 2011 | 35,702 | 2,319 | 596 | 4,260 | 157 | 1,911 | 2 | 44,947 |
| 2015 | 41,354 | 2,331 | 681 | 4,197 | 153 | 1,968 | 1 | 50,686 |
| 2020 | 49,431 | 2,301 | 768 | 4,092 | 157 | 2,080 | 1 | 58,830 |
| 2025 | 56,847 | 2,269 | 835 | 3,869 | 136 | 2,168 | 2 | 66,126 |
| 2030 | 62,863 | 2,376 | 880 | 3,647 | 125 | 2,255 | 2 | 72,148 |
| 2035 | 66,715 | 2,237 | 910 | 3,538 | 121 | 2,345 | 2 | 75,869 |
| 2040 | 68,495 | 2,061 | 936 | 3,400 | 118 | 2,420 | 2 | 77,431 |
| 2045 | 69,618 | 1,950 | 964 | 3,262 | 117 | 2,482 | 2 | 78,395 |
| 2050 | 71,239 | 1,930 | 1,018 | 3,123 | 117 | 2,542 | 2 | 79,971 |
| 2055 | 73,452 | 2,008 | 1,060 | 3,007 | 119 | 2,600 | 2 | 82,247 |
| 2060 | 75,734 | 2,146 | 1,093 | 2,924 | 121 | 2,661 | 2 | 84,681 |
| 2065 | 77,804 | 2,258 | 1,115 | 2,902 | 124 | 2,725 | 2 | 86,930 |
| 2070 | 80,199 | 2,308 | 1,157 | 2,923 | 127 | 2,789 | 2 | 89,507 |
| 2075 | 82,807 | 2,330 | 1,202 | 2,963 | 130 | 2,853 | 2 | 92,287 |
| 2080 | 85,905 | 2,346 | 1,251 | 3,008 | 133 | 2,918 | 2 | 95,563 |
| 2085 | 89,818 | 2,383 | 1,316 | 3,049 | 136 | 2,988 | 2 | 99,692 |
| **High-cost:** | | | | | | | | |
| 2011 | 35,710 | 2,319 | 596 | 4,261 | 156 | 1,911 | 2 | 44,955 |
| 2015 | 41,549 | 2,325 | 673 | 4,210 | 150 | 1,940 | 1 | 50,849 |
| 2020 | 50,343 | 2,277 | 744 | 4,141 | 146 | 1,976 | 1 | 59,628 |
| 2025 | 58,911 | 2,354 | 809 | 3,838 | 141 | 1,902 | 2 | 67,956 |
| 2030 | 66,612 | 2,524 | 826 | 3,557 | 130 | 1,819 | 2 | 75,470 |
| 2035 | 72,375 | 2,455 | 831 | 3,384 | 126 | 1,731 | 2 | 80,903 |
| 2040 | 76,091 | 2,323 | 832 | 3,199 | 119 | 1,643 | 2 | 84,209 |
| 2045 | 78,774 | 2,246 | 831 | 3,035 | 111 | 1,558 | 2 | 86,557 |
| 2050 | 81,514 | 2,256 | 845 | 2,879 | 104 | 1,488 | 2 | 89,088 |
| 2055 | 84,533 | 2,385 | 855 | 2,747 | 97 | 1,436 | 2 | 92,055 |
| 2060 | 87,618 | 2,609 | 857 | 2,649 | 90 | 1,384 | 2 | 95,209 |
| 2065 | 90,528 | 2,866 | 845 | 2,620 | 84 | 1,325 | 2 | 98,269 |
| 2070 | 93,860 | 3,108 | 846 | 2,645 | 77 | 1,268 | 2 | 101,805 |
| 2075 | 97,449 | 3,303 | 849 | 2,714 | 71 | 1,213 | 2 | 105,601 |
| 2080 | 100,817 | 3,432 | 846 | 2,791 | 66 | 1,163 | 2 | 109,117 |
| 2085 | 103,723 | 3,511 | 842 | 2,831 | 61 | 1,116 | 2 | 112,085 |

[a] Included among the beneficiaries who receive retired-worker benefits are 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. Costs are reimbursed from the General Fund of the Treasury for most of these individuals.
2. Totals do not necessarily equal the sums of rounded components.

## 6. Disability Insurance Beneficiaries

Benefits are paid from the DI Trust Fund to disabled workers who: (1) satisfy the disability-insured requirements; (2) are unable to engage in substantial gainful activity due to a medically determinable physical or mental impairment severe enough to satisfy the requirements of the program; and (3) have not yet attained NRA. Spouses and children of such disabled workers may

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

The number of disabled-worker beneficiaries in current-payment status (disability prevalence) is projected for each future year. The projections start with the number in current-payment status as of December 2010. The number of new beneficiaries awarded benefits each year (disability incidence) and the number of beneficiaries leaving the disability rolls each year are then projected. Beneficiaries leave the rolls due to death and recovery (disability terminations) and due to conversions from disabled-worker to retired-worker beneficiary status, after which benefits are paid from the OASI Trust Fund. The concepts of disability incidence, termination, and prevalence are described in the remainder of this section.

### *a. Disability Incidence*

The disability incidence rate is determined by dividing the number of new beneficiaries awarded benefits each year by the number of individuals who meet insured requirements but are not yet receiving benefits (the disability-exposed population[1]). The number of newly awarded beneficiaries is projected 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 the disability incidence is lower than in older populations. After 1995, the

[1] The disability-exposed population excludes those receiving benefits, while the disability-insured population includes them. The projections of the disability-insured population are described in section V.C.4 of this report.

gross rate rose relative to the age-sex-adjusted rate, due to the aging of the baby-boom generation into higher ages, where disability incidence increases substantially. After 2023, the gross incidence rate declines relative to the age-sex-adjusted rate as the baby-boom generation moves above the NRA, and is replaced at prime disability ages (50 to NRA) by the lower-birth-rate cohorts of the 1970s. As these smaller cohorts age beyond NRA, 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 2020), incidence rates reflect several factors including: (1) aspects of program administration (such as efforts to reduce the disability backlog and recent changes to how claims are adjudicated); (2) assumed future unemployment rates; and (3) underlying trends in incidence. For this year's report, all three sets of underlying economic assumptions include a gradual economic recovery with unemployment rates gradually declining to their ultimate sustainable levels. During the period of high unemployment, the projected disability incidence rates are estimated to be above the general trend level. The elevated incidence rates are assumed to subside as the economy recovers, and then briefly drop below the general trend level since some of the earlier additional awards would have occurred in a later year. After 2020, age-sex-specific incidence rates are assumed to trend toward the ultimate rates assumed for the long-range projections and to reach these ultimate rates in 2030. 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 NRA.[1] The ultimate incidence rates are assumed to represent the likely average rates of incidence for the future.

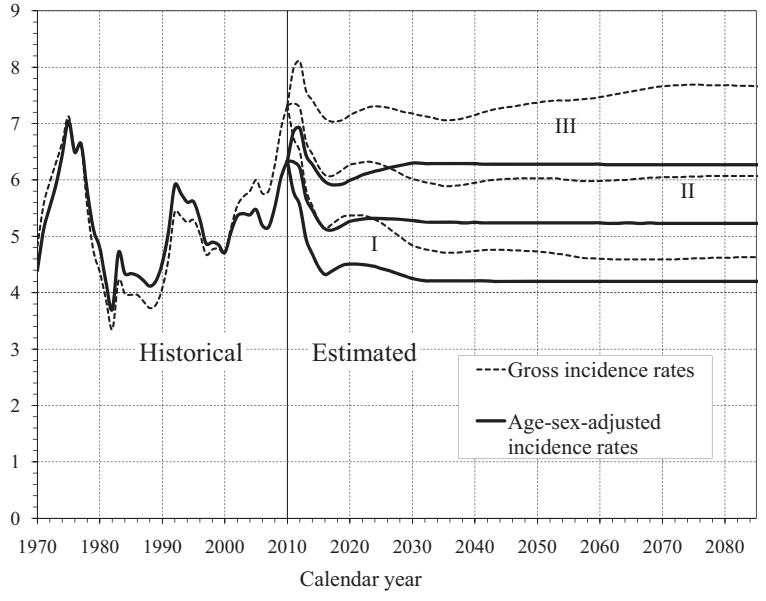
For the intermediate alternative, the ultimate age-sex-adjusted incidence rate (adjusted to the disability-exposed population for the year 2000) for ages through 64 is assumed to be 5.2 awards per thousand exposed population, essentially the same as in last year's report. Figure V.C3 illustrates that the estimated age-sex-adjusted incidence level of 5.2 approximates the average rate for the historical period 1970 through 2010. However, a similar comparison using gross incidence rates gives a different result. The estimated ultimate gross incidence rate is greater than the average gross rate over the

[1] 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 greater reductions in retirement benefits as the NRA rises.

historical period due to the changing age-sex distribution of the disability-exposed population.

The ultimate age-sex-adjusted incidence rates for the low-cost and high-cost alternatives are assumed to be 4.2 and 6.3 awards per thousand exposed, or about 19 percent lower and 21 percent higher than the average for the historical period, respectively. These ultimate assumed age-sex-adjusted incidence rates are the same as in last year's report.

**Figure V.C3.—DI Disability Incidence Rates, 1970-2085**
[Awards per thousand disability-exposed]




### *b. Disability Termination*

Disability benefits may be terminated if a beneficiary dies or recovers from the disabling condition (as indicated by either medical improvement or return to work). The termination rate is the ratio of the number of terminations to the average number of disabled-worker beneficiaries during the year.

Termination rates are projected by age, sex, and reason for termination. In addition, termination rates in the long-range period (post-2020) are assumed to vary by duration of entitlement to disabled-worker benefits.

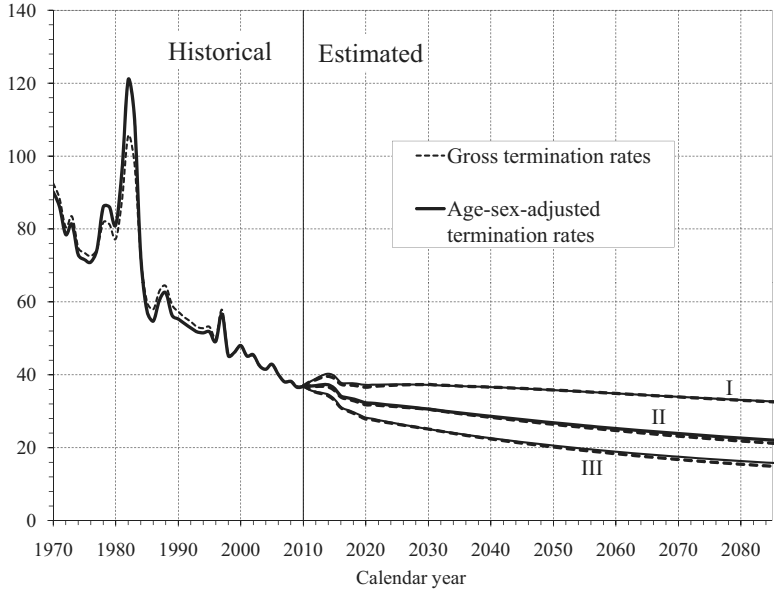
In the short-range period (through 2020), the age-sex-adjusted death rate (adjusted to the 2000 disabled-worker population) under the intermediate assumptions is projected to gradually decline from 26.3 deaths per thousand

beneficiaries in 2010 to about 20.6 per thousand by 2020. The age-sex-adjusted recovery rate under the intermediate assumptions is assumed to rise from a relatively low level of 10.5 per thousand beneficiaries in 2010 (reflecting temporarily lower levels of continuing disability reviews) to 11.7 per thousand beneficiaries by 2020. Under the low-cost and high-cost assumptions, total age-sex-adjusted termination rates due to death and recovery are assumed to increase or decrease, respectively, by roughly 10-15 percent relative to the intermediate assumptions.

For the long-range period (post-2020), death and recovery rates are projected relative to rates by age, sex, and duration of entitlement experienced over the base period 2001-2005. The ultimate age-sex-adjusted recovery rate for disabled workers is assumed to be about 10.7 per thousand beneficiaries. The ultimate age-sex-adjusted recovery rates for the low-cost and high-cost alternatives are assumed to reach about 12.9 and 8.5 recoveries per thousand beneficiaries, respectively. The ultimate recovery rates by age, sex, and duration of entitlement are reached in the twentieth year of the projection period (2030) for all three sets of assumptions. In contrast, death rates by age and sex are assumed to change throughout the long-range period at the same rate as death rates in the general population. From the age-sex-adjusted death rate of 26.3 per thousand beneficiaries in 2010, rates of 19.8, 11.4, and 7.3 per thousand disabled-worker beneficiaries are projected for 2085 under the low-cost, intermediate, and high-cost assumptions, respectively.

Figure V.C4 illustrates gross and age-sex-adjusted total termination rates for disabled-worker beneficiaries for the historical period since 1970, and for the projection period through 2085. In the near term, between 2013 and 2015, recovery terminations are projected to be elevated as the Social Security Administration continues to reduce the pending backlog of continuing disability reviews. As with incidence rates, the age-sex-adjusted termination rate provides an illustration of the real change in the tendency to terminate benefits. Changes in the age-sex distribution of the beneficiary population influence the gross rate. A shift in the beneficiary population to older ages, as when the baby-boom generation moves into pre-retirement ages, results in an increase in gross death termination rates relative to the age-sex-adjusted rates.

**Figure V.C4.—DI Disability Termination Rates, 1970-2085**
[Terminations per thousand disabled-worker beneficiaries]




### *c. Comparison of Incidence, Termination, and Conversion*

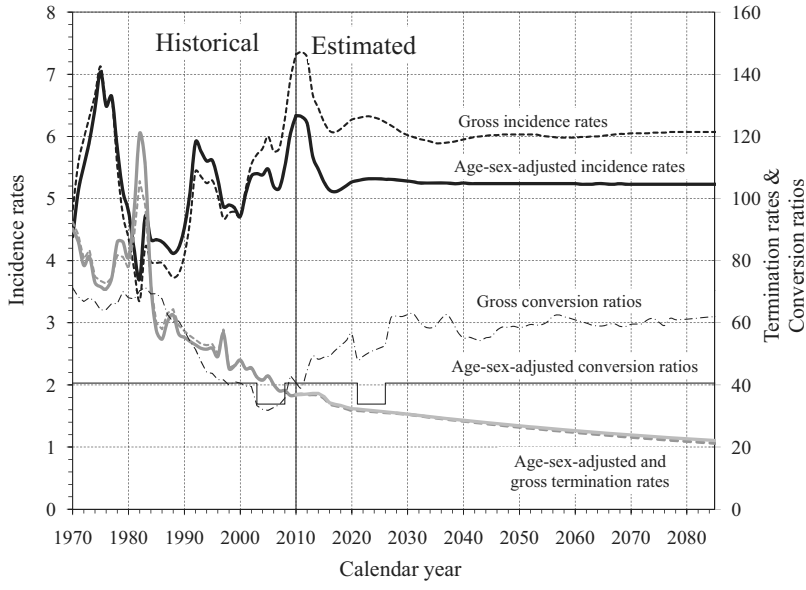
Incidence and termination rates are the foundation for projecting the number of disabled-worker beneficiaries in current-payment status up to the NRA at which time beneficiaries convert to retired-worker status and thereby leave the DI rolls. For disabled-worker beneficiaries reaching NRA in a given year, the disability "conversion" rate is, by definition, 100 percent. For beneficiaries at all other ages this rate is zero. Conversions are simply a transfer of beneficiaries at NRA from the DI Trust Fund account to the OASI Trust Fund account. After conversion, recovery from the disabling condition is no longer considered. Conversions represent a form of exit from the DI rolls and therefore must be accounted for in disabled-worker beneficiary totals.

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

version ratio rises and falls with the changing proportion of all disabled-worker beneficiaries who attain NRA in a given year.

Termination rates have declined and are expected to continue to decline, largely because of declining death rates. Incidence rates have varied widely, and are assumed for the intermediate projection to remain (on an age-sex-adjusted basis) near the middle of the high and low extremes experienced since 1970. The gross conversion ratio is projected to generally increase due to aging of the beneficiary population.

**Figure V.C5.—Comparison of DI Disability Incidence Rates, Termination Rates and Conversion Ratios Under Intermediate Assumptions, 1970-2085**
[Awards per thousand disability-exposed;
terminations and conversions per thousand disabled-worker beneficiaries]




### *d. DI Beneficiaries and Disability Prevalence Rates*

The detailed projections of disabled-worker awards, terminations, and conversions are combined using standard actuarial methods to project the number of disabled workers receiving benefits (i.e., in current-payment status) over the next 75 years. The projected numbers of disabled workers in current-payment status are presented in table V.C5. The number of disabled workers in current-payment status is projected to grow from 8.2 million at the end of 2010, to 11.8 million, 13.7 million, and 14.6 million at the end of 2085, under the low-cost, intermediate, and high-cost assumptions, respec-

tively. Of course, much of this growth is a direct result of the growth and aging of the population described earlier in this chapter. Table V.C5 presents disability prevalence rates on both gross and age-sex-adjusted bases. Auxiliary beneficiary projections are discussed below.

**Table V.C5.—DI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1960-2085**

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

| Calendar year | Disabled-worker beneficiaries | Auxiliary beneficiaries | | Total beneficiaries | Disability prevalence rates | |
|---|---|---|---|---|---|---|
| | | Spouse | Child | | Gross | Age-sex-adjusted |
| **Historical data:** | | | | | | |
| 1960 | 455 | 77 | 155 | 687 | — | — |
| 1965 | 988 | 193 | 558 | 1,739 | — | — |
| 1970 | 1,493 | 283 | 889 | 2,665 | 20 | 18 |
| 1975 | 2,488 | 453 | 1,411 | 4,351 | 29 | 29 |
| 1980 | 2,856 | 462 | 1,359 | 4,677 | 28 | 31 |
| 1985 | 2,653 | 306 | 945 | 3,904 | 24 | 26 |
| 1990 | 3,007 | 266 | 989 | 4,261 | 25 | 28 |
| 1995 | 4,179 | 264 | 1,409 | 5,852 | 33 | 35 |
| 1996 | 4,378 | 224 | 1,463 | 6,065 | 34 | 36 |
| 1997 | 4,501 | 207 | 1,438 | 6,146 | 34 | 36 |
| 1998 | 4,691 | 190 | 1,446 | 6,327 | 35 | 36 |
| 1999 | 4,870 | 176 | 1,468 | 6,514 | 36 | 36 |
| 2000 | 5,036 | 165 | 1,466 | 6,667 | 37 | 37 |
| 2001 | 5,268 | 157 | 1,482 | 6,907 | 38 | 37 |
| 2002 | 5,539 | 152 | 1,526 | 7,217 | 39 | 38 |
| 2003 | 5,869 | 151 | 1,571 | 7,590 | 41 | 39 |
| 2004 | 6,198 | 153 | 1,599 | 7,950 | 43 | 39 |
| 2005 | 6,519 | 157 | 1,633 | 8,309 | 45 | 40 |
| 2006 | 6,807 | 156 | 1,652 | 8,615 | 46 | 40 |
| 2007 | 7,099 | 154 | 1,665 | 8,918 | 48 | 41 |
| 2008 | 7,427 | 155 | 1,692 | 9,273 | 50 | 42 |
| 2009 | 7,788 | 159 | 1,749 | 9,695 | 52 | 43 |
| 2010 | 8,204 | 161 | 1,820 | 10,185 | 54 | 44 |
| **Intermediate:** | | | | | | |
| 2011 | 8,596 | 165 | 1,892 | 10,653 | 56 | 45 |
| 2015 | 9,301 | 160 | 2,017 | 11,478 | 60 | 47 |
| 2020 | 9,650 | 155 | 2,074 | 11,879 | 61 | 47 |
| 2025 | 10,322 | 172 | 2,214 | 12,708 | 63 | 47 |
| 2030 | 10,283 | 189 | 2,292 | 12,764 | 62 | 48 |
| 2035 | 10,296 | 177 | 2,346 | 12,818 | 61 | 48 |
| 2040 | 10,465 | 169 | 2,388 | 13,022 | 61 | 48 |
| 2045 | 10,968 | 184 | 2,433 | 13,585 | 62 | 47 |
| 2050 | 11,312 | 196 | 2,488 | 13,996 | 62 | 48 |
| 2055 | 11,617 | 213 | 2,561 | 14,391 | 62 | 48 |
| 2060 | 11,803 | 223 | 2,636 | 14,661 | 62 | 48 |
| 2065 | 12,188 | 233 | 2,708 | 15,128 | 63 | 48 |
| 2070 | 12,620 | 238 | 2,774 | 15,632 | 64 | 48 |
| 2075 | 12,996 | 242 | 2,835 | 16,073 | 64 | 48 |
| 2080 | 13,367 | 247 | 2,899 | 16,512 | 65 | 49 |
| 2085 | 13,688 | 252 | 2,966 | 16,906 | 65 | 49 |

**Table V.C5.—DI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1960-2085 (Cont.)**

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

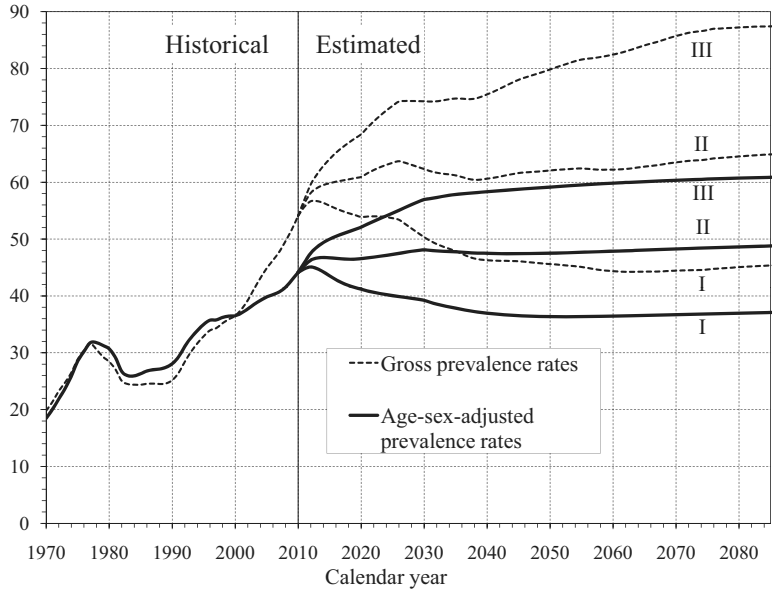
| Calendar year | Disabled-worker beneficiaries | Auxiliary beneficiaries | | Total beneficiaries | Disability prevalence rates | |
|---|---|---|---|---|---|---|
| | | Spouse | Child | | Gross | Age-sex-adjusted |
| **Low-cost:** | | | | | | |
| 2011 | 8,503 | 161 | 1,860 | 10,523 | 56 | 45 |
| 2015 | 8,713 | 145 | 1,870 | 10,728 | 56 | 44 |
| 2020 | 8,592 | 137 | 1,868 | 10,597 | 54 | 41 |
| 2025 | 8,797 | 143 | 1,933 | 10,874 | 54 | 40 |
| 2030 | 8,450 | 148 | 1,981 | 10,580 | 50 | 39 |
| 2035 | 8,241 | 130 | 2,028 | 10,398 | 48 | 38 |
| 2040 | 8,248 | 119 | 2,087 | 10,454 | 46 | 37 |
| 2045 | 8,569 | 126 | 2,161 | 10,857 | 46 | 37 |
| 2050 | 8,808 | 131 | 2,251 | 11,190 | 46 | 36 |
| 2055 | 9,053 | 142 | 2,355 | 11,550 | 45 | 36 |
| 2060 | 9,252 | 147 | 2,475 | 11,873 | 44 | 36 |
| 2065 | 9,646 | 151 | 2,606 | 12,402 | 44 | 37 |
| 2070 | 10,124 | 151 | 2,740 | 13,016 | 44 | 37 |
| 2075 | 10,633 | 154 | 2,872 | 13,660 | 45 | 37 |
| 2080 | 11,219 | 161 | 3,007 | 14,387 | 45 | 37 |
| 2085 | 11,777 | 168 | 3,146 | 15,090 | 45 | 37 |
| **High-cost:** | | | | | | |
| 2011 | 8,691 | 168 | 1,926 | 10,785 | 57 | 46 |
| 2015 | 9,900 | 175 | 2,169 | 12,244 | 64 | 50 |
| 2020 | 10,716 | 172 | 2,275 | 13,163 | 68 | 52 |
| 2025 | 11,763 | 204 | 2,467 | 14,434 | 73 | 55 |
| 2030 | 12,033 | 234 | 2,546 | 14,814 | 74 | 57 |
| 2035 | 12,285 | 229 | 2,571 | 15,085 | 75 | 58 |
| 2040 | 12,615 | 224 | 2,562 | 15,402 | 75 | 58 |
| 2045 | 13,283 | 247 | 2,547 | 16,077 | 78 | 59 |
| 2050 | 13,705 | 264 | 2,543 | 16,513 | 80 | 59 |
| 2055 | 14,032 | 289 | 2,570 | 16,891 | 82 | 60 |
| 2060 | 14,148 | 301 | 2,584 | 17,033 | 82 | 60 |
| 2065 | 14,434 | 317 | 2,578 | 17,328 | 84 | 60 |
| 2070 | 14,695 | 328 | 2,558 | 17,582 | 86 | 60 |
| 2075 | 14,778 | 331 | 2,535 | 17,644 | 87 | 61 |
| 2080 | 14,715 | 328 | 2,516 | 17,558 | 87 | 61 |
| 2085 | 14,596 | 326 | 2,505 | 17,427 | 87 | 61 |

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

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. The patterns depicted for incidence and termination rates in figure V.C5 are helpful for understanding the trend in prevalence rates. Annual incidence and termination rates are not directly comparable and cannot be combined because their denominators differ.

**Figure V.C6.—DI Disability Prevalence Rates, 1970-2085**
[Rate per thousand persons insured for disability benefits]




Prevalence rates have increased primarily because termination rates have declined, and incidence rates at younger ages have increased relative to rates at older ages. Gross prevalence rates have increased more than age-sex-adjusted prevalence rates since the baby-boom generation began to reach ages 50 through NRA, a time of life when incidence rates are relatively high. With this upward shift in the age distribution of the disabled population, gross conversions to retired worker status at NRA have naturally increased as well. In the future, prevalence rates are projected to grow at a slower pace based on assumed stabilization in three factors: the age distribution of the general population, the age distribution of the disability-insured population, and relative incidence rates by age. As these factors gradually stabilize, the declining death termination rate is projected to continue to have a small influence toward higher disability prevalence rates.

As mentioned above in the discussion of incidence and termination rates, the age-sex-adjusted prevalence rate isolates the changing trend in the true likelihood of receiving benefits for the insured population, without reflecting changes in the age distribution of the population. As with incidence rates, gross disability prevalence rates declined relative to the age-sex-adjusted rate when the baby-boom generation reached working age between 1975 and

1995; this trend reflects the lower disability prevalence rates associated with younger ages. Conversely, the gross rate of disability prevalence increases relative to the age-sex-adjusted rate after 1995 due to the aging of the baby-boom generation into ages with higher disability prevalence rates.

The age-sex-adjusted disability prevalence rate for ages through 64 is projected to grow from 44.1 per thousand disability-insured at the end of 2010, to 48.8 per thousand at the end of 2085 under the intermediate assumptions. As mentioned above, the growth in prevalence is expected to slow relative to the historical period.

Under the low-cost and high-cost assumptions, the age-sex-adjusted disability prevalence rate is projected to decrease to 37.1 per thousand and increase to 60.9 per thousand insured workers at the end of 2085, 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, such auxiliary beneficiaries consist of qualifying spouses and children of disabled workers. In the case of spouses, the spouse must either be at least age 62, or have, in his or her care, an eligible child beneficiary who is either under age 16 or disabled prior to age 22. In the case of children, the child must be either: (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.

Projection of auxiliary beneficiaries is based on the projected number of disabled-worker beneficiaries. In the short-range period (2011-20), incidence and termination rates are projected for each category of auxiliary beneficiary. After 2020, the child beneficiaries at ages 18 and under are projected in relation to the projected number of children in the population by applying factors representing the probability that either of their parents is a disabled-worker beneficiary. The remaining categories of children and spouses are projected in a similar manner.

### 7. Average Benefits

Average benefits are projected for each benefit type based on recent historical averages, projected average primary insurance amounts (PIAs), and projected ratios of average benefits to average PIAs. Average PIAs are calculated from projected distributions of beneficiaries by duration from year of initial entitlement, average PIAs at initial entitlement, and increases in PIAs after initial entitlement. The increases in average PIAs after initial entitlement are based on automatic benefit increases, recomputations to reflect additional covered earnings, and other factors. Future average PIAs at initial entitlement are calculated from projected earnings histories, which are devel-

oped using a combination of the actual earnings histories associated with a sample of 2007 initial entitlements and more recent actual earnings levels by age and sex for covered workers.

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

### 8. Benefit Payments

For each type of benefit, benefit payments are calculated as the product of a number of beneficiaries and a corresponding average monthly benefit. In the short-range period, benefit payments are calculated on a quarterly basis. In the long-range period, all benefit payments are calculated on an annual basis, using the number of beneficiaries on December 31. These amounts are adjusted to include retroactive payments to newly awarded beneficiaries and other amounts not reflected in the regular monthly benefit payments.

Lump-sum death payments are calculated as the product of: (1) the number of such payments, which is projected on the basis of the assumed death rates, the projected fully insured population, and the estimated percentage of the fully insured population that would qualify for benefits; and (2) the amount of the lump-sum death payment, which is $255 (not indexed in future years).

### 9. Administrative Expenses

The projection of administrative expenses through 2020 is based on historical experience and the expected growth in average wages. Additionally, the Office of Budget of the Social Security Administration provides estimates for the first several years of the projection. For years after 2020, administrative expenses are assumed to increase because of increases in the number of beneficiaries and increases in the average wage, which will more than offset assumed improvements in administrative productivity. Congressional simplification and rationalization of the Social Security Act could offset these assumed increases.

### 10. Railroad Retirement Financial Interchange

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

railroad employment had been covered under the OASDI program, plus administrative expenses associated with these benefits; and (2) the amount of OASDI payroll tax and income tax that would be received with allowances for interest from railroad workers.

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

### 11. 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.

### 12. Income From Taxation of Benefits

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

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

For the long-range period, the income to the trust funds from taxation of benefits is estimated by applying projected ratios of taxation of OASI and DI benefits to total OASI and DI benefit payments. The income thresholds used for benefit taxation are, by law, constant in the future; therefore, their values in relation to future income and benefit levels will decline. Accordingly, ratios of income from taxation of benefits to the amount of benefits are projected to increase gradually. Ultimate tax ratios for OASI and DI benefits

used in the projection are based on estimates from the Office of Tax Analysis (OTA) in the Department of the Treasury. These estimates from OTA eliminate the current threshold amounts completely for taxation of Social Security benefits. Subsequently, based on recent Current Population Survey data, the Office of the Chief Actuary makes an adjustment to OTA's ultimate ratios for relative changes in the projected 75th year OASDI beneficiary population in the most recent Trustees Report.

# 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. All the financial operations of the OASI and DI programs are handled through these respective funds. 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.A2 and VI.A3 present the historical operations of the separate trust funds since their inception, and table VI.A4 presents the operations of the combined trust funds during the period when they have co-existed.

The primary receipts of these two funds are amounts appropriated to each of them under permanent authority on the basis of payroll tax contributions payable by workers, their employers, and individuals with self-employment income, in work covered by the OASDI program. Federal law requires that all employees in covered employment, and their employers, make payroll tax contributions with respect to their wages. Federal law also requires that employees, and their employers, make payroll tax contributions with respect to cash tips, if the employee's monthly cash tips are at least $20. Federal law requires that all self-employed persons make payroll tax contributions with respect to their covered net earnings from self-employment. In addition to paying the required employer contributions on the wages of covered Federal employees, the Federal Government also 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.

In general, an individual's payroll tax contributions are assessed on wages or net earnings from self-employment, or both wages and net self-employment earnings combined, up to a specified maximum annual amount. Contributions are determined first on the wages and then on any net self-employment earnings, such that the total does not exceed the annual maximum amount. An employee who pays contributions on wages in excess of the annual maximum amount (because of employment with two or more employers) is eligible for a refund of the excess employee contributions.

The monthly benefit amount to which an individual (or his or her spouse and children) may become entitled under the OASDI program is based on the individual's taxable earnings during his or her lifetime. For almost all persons who first become eligible to receive benefits in 1979 or later, the earn-

ings used in the computation of benefits are indexed to reflect increases in average wage levels.

Table VI.A1 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] The maximum amount of earnings on which OASDI contributions are payable in a year, which is also the maximum amount of earnings creditable in that year for benefit-computation purposes, is called the contribution and benefit base. Table VI.A1 also shows the contribution and benefit base for each year through 2011.

**Table VI.A1.—Contribution and Benefit Base and Payroll Tax Contribution Rates**

| Calendar years | Contribution and benefit base | Payroll tax contribution rates (percent) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Employees and employers, each | | | Self-employed | | |
| | | OASDI | OASI | DI | OASDI | OASI | DI |
| 1937-49 | $3,000 | 1.000 | 1.000 | — | — | — | — |
| 1950 | 3,000 | 1.500 | 1.500 | — | — | — | — |
| 1951-53 | 3,600 | 1.500 | 1.500 | — | 2.2500 | 2.2500 | — |
| 1954 | 3,600 | 2.000 | 2.000 | — | 3.0000 | 3.0000 | — |
| 1955-56 | 4,200 | 2.000 | 2.000 | — | 3.0000 | 3.0000 | — |
| 1957-58 | 4,200 | 2.250 | 2.000 | 0.250 | 3.3750 | 3.0000 | 0.3750 |
| 1959 | 4,800 | 2.500 | 2.250 | .250 | 3.7500 | 3.3750 | .3750 |
| 1960-61 | 4,800 | 3.000 | 2.750 | .250 | 4.5000 | 4.1250 | .3750 |
| 1962 | 4,800 | 3.125 | 2.875 | .250 | 4.7000 | 4.3250 | .3750 |
| 1963-65 | 4,800 | 3.625 | 3.375 | .250 | 5.4000 | 5.0250 | .3750 |
| 1966 | 6,600 | 3.850 | 3.500 | .350 | 5.8000 | 5.2750 | .5250 |
| 1967 | 6,600 | 3.900 | 3.550 | .350 | 5.9000 | 5.3750 | .5250 |
| 1968 | 7,800 | 3.800 | 3.325 | .475 | 5.8000 | 5.0875 | .7125 |
| 1969 | 7,800 | 4.200 | 3.725 | .475 | 6.3000 | 5.5875 | .7125 |
| 1970 | 7,800 | 4.200 | 3.650 | .550 | 6.3000 | 5.4750 | .8250 |
| 1971 | 7,800 | 4.600 | 4.050 | .550 | 6.9000 | 6.0750 | .8250 |
| 1972 | 9,000 | 4.600 | 4.050 | .550 | 6.9000 | 6.0750 | .8250 |
| 1973 | 10,800 | 4.850 | 4.300 | .550 | 7.0000 | 6.2050 | .7950 |
| 1974 | 13,200 | 4.950 | 4.375 | .575 | 7.0000 | 6.1850 | .8150 |
| 1975 | 14,100 | 4.950 | 4.375 | .575 | 7.0000 | 6.1850 | .8150 |
| 1976 | 15,300 | 4.950 | 4.375 | .575 | 7.0000 | 6.1850 | .8150 |
| 1977 | 16,500 | 4.950 | 4.375 | .575 | 7.0000 | 6.1850 | .8150 |
| 1978 | 17,700 | 5.050 | 4.275 | .775 | 7.1000 | 6.0100 | 1.0900 |
| 1979 | 22,900 | 5.080 | 4.330 | .750 | 7.0500 | 6.0100 | 1.0400 |
| 1980 | 25,900 | 5.080 | 4.520 | .560 | 7.0500 | 6.2725 | .7775 |
| 1981 | 29,700 | 5.350 | 4.700 | .650 | 8.0000 | 7.0250 | .9750 |
| 1982 | 32,400 | 5.400 | 4.575 | .825 | 8.0500 | 6.8125 | 1.2375 |
| 1983 | 35,700 | 5.400 | 4.775 | .625 | 8.0500 | 7.1125 | .9375 |
| 1984[a] | 37,800 | 5.700 | 5.200 | .500 | 11.4000 | 10.4000 | 1.0000 |
| 1985[a] | 39,600 | 5.700 | 5.200 | .500 | 11.4000 | 10.4000 | 1.0000 |

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

**Table VI.A1.—Contribution and Benefit Base and Payroll Tax Contribution Rates (Cont.)**

| Calendar years | Contribution and benefit base | Payroll tax contribution rates (percent) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Employees and employers, each | | | Self-employed | | |
| | | OASDI | OASI | DI | OASDI | OASI | DI |
| 1986[a] | $42,000 | 5.700 | 5.200 | 0.500 | 11.4000 | 10.4000 | 1.0000 |
| 1987[a] | 43,800 | 5.700 | 5.200 | .500 | 11.4000 | 10.4000 | 1.0000 |
| 1988[a] | 45,000 | 6.060 | 5.530 | .530 | 12.1200 | 11.0600 | 1.0600 |
| 1989[a] | 48,000 | 6.060 | 5.530 | .530 | 12.1200 | 11.0600 | 1.0600 |
| 1990 | 51,300 | 6.200 | 5.600 | .600 | 12.4000 | 11.2000 | 1.2000 |
| 1991 | 53,400 | 6.200 | 5.600 | .600 | 12.4000 | 11.2000 | 1.2000 |
| 1992 | 55,500 | 6.200 | 5.600 | .600 | 12.4000 | 11.2000 | 1.2000 |
| 1993 | 57,600 | 6.200 | 5.600 | .600 | 12.4000 | 11.2000 | 1.2000 |
| 1994 | 60,600 | 6.200 | 5.260 | .940 | 12.4000 | 10.5200 | 1.8800 |
| 1995 | 61,200 | 6.200 | 5.260 | .940 | 12.4000 | 10.5200 | 1.8800 |
| 1996 | 62,700 | 6.200 | 5.260 | .940 | 12.4000 | 10.5200 | 1.8800 |
| 1997 | 65,400 | 6.200 | 5.350 | .850 | 12.4000 | 10.7000 | 1.7000 |
| 1998 | 68,400 | 6.200 | 5.350 | .850 | 12.4000 | 10.7000 | 1.7000 |
| 1999 | 72,600 | 6.200 | 5.350 | .850 | 12.4000 | 10.7000 | 1.7000 |
| 2000 | 76,200 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2001 | 80,400 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2002 | 84,900 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2003 | 87,000 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2004 | 87,900 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2005 | 90,000 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2006 | 94,200 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2007 | 97,500 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2008 | 102,000 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2009 | 106,800 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2010[b] | 106,800 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2011[b] | 106,800 | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |
| 2012 and later | [c] | 6.200 | 5.300 | .900 | 12.4000 | 10.6000 | 1.8000 |

[a] In 1984 only, an immediate credit of 0.3 percent of taxable wages was allowed against the OASDI payroll tax contributions paid by employees. Similar credits of 2.7 percent, 2.3 percent, and 2.0 percent were allowed against the combined OASDI and Hospital Insurance (HI) contributions on net earnings from self-employment in 1984, 1985, and 1986-89, respectively. These credits were offset by reimbursements from the General Fund of the Treasury. Beginning in 1990, self-employed persons are allowed 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 is then applied to net earnings after this deduction, but subject to the OASDI base.

[b] Under Public Law 111-147, most employers were exempt 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. Under Public Law 111-312, the OASDI payroll tax rate is reduced for 2011 by 2 percentage points for employees and for self-employed workers. These temporary reductions in 2010 and 2011 tax revenue due to lower tax rates have been and will be made up by reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds.

[c] Subject to automatic adjustment based on increases in average wages.

The Internal Revenue Service collects all payroll tax contributions and deposits them in the General Fund of the Treasury. The payroll tax contributions are immediately and automatically appropriated to the trust funds on an estimated basis. The exact amount of payroll tax contributions received is not known initially because the OASDI and HI payroll tax contributions and individual income taxes are not separately identified in collection reports received by the Internal Revenue Service. Subsequently, periodic adjustments are made to the extent that the estimates differ from the amounts of payroll tax contributions actually payable as determined from reported earn-

ings. Adjustments are also made to account for any refunds to employees (with more than one employer) who paid payroll tax contributions on wages in excess of the contribution and benefit base.

Various reimbursements from the General Fund of the Treasury are also included in income, 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 Law 111-147.

Beginning in 1984, Federal law subjects up to one-half 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 of benefits subject to taxation from 50 percent to 85 percent. The proceeds from taxation of up to 50 percent of benefits are credited 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] Subsequent adjustments are made based on the actual amounts as shown on annual income tax records. The amounts appropriated from the General Fund of the Treasury are allocated to the OASI and DI Trust Funds on the basis of the income taxes paid on the benefits from each fund.[2]

Another source of income to the trust funds is interest received on investments held by the trust funds. That portion of each trust fund that is not required to meet the current cost of benefits and administration is invested, on a daily basis, primarily in interest-bearing obligations of the U.S. Government (including special public-debt obligations described below). Investments may also be made in obligations guaranteed as to both principal and interest by the United States, including certain Federally sponsored agency obligations that are designated in the laws authorizing their issuance as lawful investments for fiduciary and trust funds under the control and authority of the United States or any officer of the United States. These obligations

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

[2] A special provision applies to benefits paid to nonresident aliens. Under Public Law 103-465, effective for taxable years beginning after 1994, a flat-rate tax, usually 25.5 percent, is withheld from the benefits before they are paid and, therefore, remains in the trust funds. From 1984 to 1994 the flat-rate tax that was withheld was usually 15 percent.

may be acquired 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 on new special obligations will be the average market yield, as of the last business day of a month, on all of the outstanding marketable U.S. obligations that are due or callable more than 4 years in the future. The rate so calculated is rounded to the nearest one-eighth of one percent and applies to new issues in the following month. 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 special issues cannot be bought or sold in the open market, they are nonetheless redeemable at any time at par value and thus bear no risk of fluctuations in principal value due to changes in market yield rates. As in the case of marketable Treasury securities held by the public, all of the investments held by the trust funds are backed by the full faith and credit of the U.S. Government.

The primary expenditures of the OASI and DI Trust Funds are for: (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 does not permit 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 as an additional benefit to disabled persons receiving cash benefits because of their disabilities where such services contributed to their successful rehabilitation; and (2) net costs resulting from the provisions of the Railroad Retirement Act which provide for a system of coordination and financial interchange between the Railroad Retirement program and the Social Security program. Under the latter provisions, an interchange between the Railroad Retirement program's Social Security Equivalent Benefit Account and the trust funds is made on an annual basis in order to place each trust fund in the same position in which it would have been if railroad employment had always been covered under Social Security.

The statements of the operations of the trust funds presented in this report do not carry the net worth of facilities and other fixed capital assets. This is 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, and therefore is not considered in assessing the actuarial status of the trust funds.

**Table VI.A2.— Operations of the OASI Trust Fund, Calendar Years 1937-2010**
[Dollar amounts in billions]

| | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calendar year | Total | Net payroll tax contributions | GF reimbursements[a] | Taxation of benefits | Net interest[b] | Total | Benefit payments[c] | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[d] |
| 1937 . . | $0.8 | $0.8 | — | — | [e] | [e] | [e] | — | — | $0.8 | $0.8 | — |
| 1938 . . | .4 | .4 | — | — | [e] | [e] | [e] | — | — | .4 | 1.1 | 7,660 |
| 1939 . . | .6 | .6 | — | — | [e] | [e] | [e] | — | — | .6 | 1.7 | 8,086 |
| 1940 . . | .4 | .3 | — | — | [e] | $0.1 | [e] | [e] | — | .3 | 2.0 | 2,781 |
| 1941 . . | .8 | .8 | — | — | $0.1 | .1 | $0.1 | [e] | — | .7 | 2.8 | 1,782 |
| 1942 . . | 1.1 | 1.0 | — | — | .1 | .2 | .1 | [e] | — | .9 | 3.7 | 1,737 |
| 1943 . . | 1.3 | 1.2 | — | — | .1 | .2 | .2 | [e] | — | 1.1 | 4.8 | 1,891 |
| 1944 . . | 1.4 | 1.3 | — | — | .1 | .2 | .2 | [e] | — | 1.2 | 6.0 | 2,025 |
| 1945 . . | 1.4 | 1.3 | — | — | .1 | .3 | .3 | [e] | — | 1.1 | 7.1 | 1,975 |
| 1946 . . | 1.4 | 1.3 | — | — | .2 | .4 | .4 | [e] | — | 1.0 | 8.2 | 1,704 |
| 1947 . . | 1.7 | 1.6 | [e] | — | .2 | .5 | .5 | [e] | — | 1.2 | 9.4 | 1,592 |
| 1948 . . | 2.0 | 1.7 | [e] | — | .3 | .6 | .6 | $0.1 | — | 1.4 | 10.7 | 1,542 |
| 1949 . . | 1.8 | 1.7 | [e] | — | .1 | .7 | .7 | .1 | — | 1.1 | 11.8 | 1,487 |
| 1950 . . | 2.9 | 2.7 | [e] | — | .3 | 1.0 | 1.0 | .1 | — | 1.9 | 13.7 | 1,156 |
| 1951 . . | 3.8 | 3.4 | [e] | — | .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 | [e] | 1.9 | 20.6 | 500 |
| 1955 . . | 6.2 | 5.7 | — | — | .5 | 5.1 | 5.0 | .1 | [e] | 1.1 | 21.7 | 405 |
| 1956 . . | 6.7 | 6.2 | — | — | .5 | 5.8 | 5.7 | .1 | [e] | .9 | 22.5 | 371 |
| 1957 . . | 7.4 | 6.8 | — | — | .6 | 7.5 | 7.3 | .2 | [e] | -.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 | [f].6 | 22.1 | 15 |
| 1983 . . | 150.6 | 138.3 | 5.5 | — | 6.7 | 153.0 | 149.2 | 1.5 | 2.3 | -2.4 | 19.7 | 14 |
| 1984 . . | 169.3 | 159.5 | 4.7 | $2.8 | 2.3 | 161.9 | 157.8 | 1.6 | 2.4 | 7.4 | 27.1 | 20 |

**Table VI.A2.— Operations of the OASI Trust Fund, Calendar Years 1937-2010 (Cont.)**
[Dollar amounts in billions]

| Calendar year | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Net payroll tax contributions | GF reimbursements[a] | Taxation of benefits | Net interest[b] | Total | Benefit payments[c] | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[d] |
| 1985 . . | $184.2 | $175.1 | $4.0 | $3.2 | $1.9 | $171.2 | $167.2 | $1.6 | $2.3 | [f]$8.7 | $35.8 | 24 |
| 1986 . . | 197.4 | 189.1 | 1.8 | 3.4 | 3.1 | 181.0 | 176.8 | 1.6 | 2.6 | [f]3.2 | 39.1 | 28 |
| 1987 . . | 210.7 | 201.1 | 1.7 | 3.3 | 4.7 | 187.7 | 183.6 | 1.5 | 2.6 | 23.1 | 62.1 | 30 |
| 1988 . . | 240.8 | 227.7 | 2.1 | 3.4 | 7.6 | 200.0 | 195.5 | 1.8 | 2.8 | 40.8 | 102.9 | 41 |
| 1989 . . | 264.7 | 248.1 | 2.1 | 2.4 | 12.0 | 212.5 | 208.0 | 1.7 | 2.8 | 52.2 | 155.1 | 59 |
| 1990 . . | 286.7 | 266.1 | -.7 | 4.8 | 16.4 | 227.5 | 223.0 | 1.6 | 3.0 | 59.1 | 214.2 | 78 |
| 1991 . . | 299.3 | 272.5 | .1 | 5.9 | 20.8 | 245.6 | 240.5 | 1.8 | 3.4 | 53.7 | 267.8 | 87 |
| 1992 . . | 311.2 | 281.1 | -.1 | 5.9 | 24.3 | 259.9 | 254.9 | 1.8 | 3.1 | 51.3 | 319.2 | 103 |
| 1993 . . | 323.3 | 290.9 | [e] | 5.3 | 27.0 | 273.1 | 267.8 | 2.0 | 3.4 | 50.2 | 369.3 | 117 |
| 1994 . . | 328.3 | 293.3 | [e] | 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 | [e] | 6.5 | 35.7 | 308.2 | 302.9 | 1.8 | 3.6 | 55.5 | 514.0 | 149 |
| 1997 . . | 397.2 | 349.9 | [e] | 7.4 | 39.8 | 322.1 | 316.3 | 2.1 | 3.7 | 75.1 | 589.1 | 160 |
| 1998 . . | 424.8 | 371.2 | [e] | 9.1 | 44.5 | 332.3 | 326.8 | 1.9 | 3.7 | 92.5 | 681.6 | 177 |
| 1999 . . | 457.0 | 396.4 | [e] | 10.9 | 49.8 | 339.9 | 334.4 | 1.8 | 3.7 | 117.2 | 798.8 | 201 |
| 2000 . . | 490.5 | 421.4 | [e] | 11.6 | 57.5 | 358.3 | 352.7 | 2.1 | 3.5 | 132.2 | 931.0 | 223 |
| 2001 . . | 518.1 | 441.5 | [e] | 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 | [e] | 12.5 | 75.2 | 406.0 | 399.8 | 2.6 | 3.6 | 137.8 | 1,355.3 | 300 |
| 2004 . . | 566.3 | 472.8 | [e] | 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 | [e] | 15.6 | 91.8 | 461.0 | 454.5 | 3.0 | 3.5 | 181.3 | 1,844.3 | 361 |
| 2007 . . | 675.0 | 560.9 | [e] | 17.2 | 97.0 | 495.7 | 489.1 | 3.1 | 3.6 | 179.3 | 2,023.6 | 372 |
| 2008 . . | 695.5 | 574.6 | [e] | 15.6 | 105.3 | 516.2 | 509.3 | 3.2 | 3.6 | 179.3 | 2,202.9 | 392 |
| 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 |

[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 Law 111-147.

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

[c] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, amounts are reduced by amount of reimbursement for unnegotiated benefit checks.

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

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

[f] Reflects interfund borrowing and subsequent repayment of loans. In 1982, $17.5 billion was borrowed from the DI and HI Trust Funds and was repaid in 1985 ($4.4 billion) and 1986 ($13.2 billion).

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

**Table VI.A3.— Operations of the DI Trust Fund, Calendar Years 1957-2010**
[Dollar amounts in billions]

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

**Table VI.A3.— Operations of the DI Trust Fund, Calendar Years 1957-2010 (Cont.)**
[Dollar amounts in billions]

| Calendar year | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Net payroll tax contributions | GF reimbursements[a] | Taxation of benefits | Net interest[b] | Total | Benefit payments[c] | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[d] |
| 2005... | $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 |

[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 Law 111-147.

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

[c] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, amounts are reduced by amount of reimbursement for unnegotiated benefit checks.

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

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

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

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

**Table VI.A4.— Operations of the Combined OASI and DI Trust Funds, Calendar Years 1957-2010**
[Dollar amounts in billions]

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

**Table VI.A4.— Operations of the Combined OASI and DI Trust Funds, Calendar Years 1957-2010 (Cont.)**
[Dollar amounts in billions]

| | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Calendar year | Total | Net payroll tax contributions | GF reimbursements[a] | Taxation of benefits | Net interest[b] | Total | Benefit payments[c] | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[d] |
| 2005 . . | $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 |

[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 Law 111-147.

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

[c] Beginning in 1966, includes payments for vocational rehabilitation services furnished to disabled persons receiving benefits because of their disabilities. Beginning in 1983, amounts are reduced by amount of reimbursement for unnegotiated benefit checks.

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

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

[f] Reflects interfund borrowing and subsequent repayment of loans. In 1982, $12.4 billion was borrowed from the HI Trust Fund and was repaid in 1985 ($1.8 billion) and 1986 ($10.6 billion).

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

Tables VI.A5 and VI.A6 show the total assets of the OASI Trust Fund and the DI Trust Fund, respectively, at the end of each of the calendar years 2009 and 2010. These assets are separated by interest rate and year of maturity. Bonds issued to the trust funds in 2010 had an interest rate of 2.875 percent, compared with an interest rate of 3.25 percent for bonds issued in 2009.

**Table VI.A5.—Assets of the OASI Trust Fund, End of Calendar Years 2009 and 2010**
[In thousands]

| | December 31, 2009 | December 31, 2010 |
|---|---|---|
| Obligations sold only to the trust funds (special issues): | | |
| Certificates of indebtedness: | | |
| 2.375 percent, 2011 | — | $69,480,186 |
| 2.875 percent, 2010 | $52,423,996 | — |
| Bonds: | | |
| 2.875 percent, 2012-15 | — | 29,057,724 |
| 2.875 percent, 2016-24 | — | 65,379,888 |
| 2.875 percent, 2025 | — | 160,575,595 |
| 3.250 percent, 2011 | 10,628,270 | — |
| 3.250 percent, 2012 | 10,628,270 | 10,628,270 |
| 3.250 percent, 2013-15 | 31,884,813 | 31,884,813 |
| 3.250 percent, 2016-23 | 85,026,160 | 85,026,160 |
| 3.250 percent, 2024 | 153,311,163 | 153,311,163 |
| 3.500 percent, 2011 | 9,513,751 | — |
| 3.500 percent, 2012-15 | 38,055,004 | 38,055,004 |
| 3.500 percent, 2016-17 | 19,027,504 | 19,027,504 |
| 3.500 percent, 2018 | 86,900,994 | 86,900,994 |
| 4.000 percent, 2011 | 12,075,192 | — |
| 4.000 percent, 2012 | 12,075,193 | 12,075,193 |
| 4.000 percent, 2013-22 | 120,751,920 | 120,751,920 |
| 4.000 percent, 2023 | 142,682,893 | 142,682,893 |
| 4.125 percent, 2010 | 9,423,199 | — |
| 4.125 percent, 2011 | 10,516,946 | 1,398,449 |
| 4.125 percent, 2012-19 | 84,135,568 | 84,135,568 |
| 4.125 percent, 2020 | 106,585,700 | 106,585,700 |
| 4.625 percent, 2010 | 9,167,664 | — |
| 4.625 percent, 2011-15 | 45,838,320 | 45,838,320 |
| 4.625 percent, 2016-18 | 27,502,989 | 27,502,989 |
| 4.625 percent, 2019 | 96,068,657 | 96,068,657 |
| 5.000 percent, 2010 | 12,454,233 | — |
| 5.000 percent, 2011 | 12,454,233 | 12,454,233 |
| 5.000 percent, 2012-21 | 124,542,320 | 124,542,320 |
| 5.000 percent, 2022 | 130,607,701 | 130,607,701 |
| 5.125 percent, 2010 | 11,567,866 | — |
| 5.125 percent, 2011-19 | 104,110,794 | 104,110,794 |
| 5.125 percent, 2020 | 11,567,769 | 11,567,769 |
| 5.125 percent, 2021 | 118,153,469 | 118,153,469 |
| 5.250 percent, 2010 | 9,235,912 | — |
| 5.250 percent, 2011-15 | 46,179,560 | 46,179,560 |
| 5.250 percent, 2016 | 9,235,911 | 9,235,911 |
| 5.250 percent, 2017 | 77,387,242 | 77,387,242 |
| 5.625 percent, 2010 | 9,621,438 | — |
| 5.625 percent, 2011 | 9,621,438 | 9,621,438 |
| 5.625 percent, 2012-15 | 38,485,748 | 38,485,748 |
| 5.625 percent, 2016 | 68,151,331 | 68,151,331 |
| 5.875 percent, 2010 | 6,169,273 | — |
| 5.875 percent, 2011-12 | 12,338,546 | 12,338,546 |
| 5.875 percent, 2013 | 43,258,869 | 43,258,869 |
| 6.000 percent, 2010 | 6,693,627 | — |
| 6.000 percent, 2011 | 6,693,627 | 6,693,627 |
| 6.000 percent, 2012-13 | 13,387,256 | 13,387,256 |
| 6.000 percent, 2014 | 49,952,497 | 49,952,497 |
| 6.500 percent, 2010 | 38,320,240 | — |
| 6.500 percent, 2011-14 | 34,309,584 | 34,309,584 |
| 6.500 percent, 2015 | 58,529,893 | 58,529,893 |
| 6.875 percent, 2010 | 3,975,272 | — |
| 6.875 percent, 2011 | 3,975,272 | 3,975,272 |
| 6.875 percent, 2012 | 37,089,596 | 37,089,596 |
| 7.000 percent, 2010 | 3,371,480 | — |
| 7.000 percent, 2011 | 33,114,324 | 33,114,324 |
| Total investments | 2,318,780,487 | 2,429,513,970 |
| Undisbursed balances | 18,017,594 | -470,689 |
| Total assets | 2,336,798,081 | 2,429,043,281 |

Note: Amounts of special issues are shown at par value. Special issues are always purchased and redeemed at par value. Where equal amounts mature in two or more years at a given interest rate, they are grouped. An undisbursed balance, if negative, represents an extension of credit against securities to be redeemed within the following few days.

**Table VI.A6.—Assets of the DI Trust Fund, End of Calendar Years 2009 and 2010**
[In thousands]

| | December 31, 2009 | December 31, 2010 |
|---|---|---|
| Obligations sold only to the trust funds (special issues): | | |
| Certificates of indebtedness: | | |
| 2.375 percent, 2011 | — | $6,835,145 |
| 2.875 percent, 2010 | $3,735,389 | — |
| Bonds: | | |
| 3.250 percent, 2012 | 877,560 | — |
| 3.250 percent, 2013-14 | 1,755,120 | 1,755,120 |
| 3.250 percent, 2015-16 | 1,755,118 | 1,755,118 |
| 3.250 percent, 2017-20 | 3,510,240 | 3,510,240 |
| 3.500 percent, 2012 | 1,115,127 | — |
| 3.500 percent, 2013-15 | 3,345,381 | 3,345,381 |
| 3.500 percent, 2016-17 | 2,230,256 | 2,230,256 |
| 3.500 percent, 2018 | 11,378,384 | 11,378,384 |
| 4.000 percent, 2012 | 622,572 | — |
| 4.000 percent, 2013-16 | 2,490,288 | 2,490,288 |
| 4.000 percent, 2017-19 | 1,867,713 | 1,867,713 |
| 4.000 percent, 2020-22 | 1,867,716 | 1,867,716 |
| 4.000 percent, 2023 | 14,675,554 | 14,675,554 |
| 4.125 percent, 2012 | 677,385 | — |
| 4.125 percent, 2013-17 | 3,386,925 | 3,386,925 |
| 4.125 percent, 2018-19 | 1,354,772 | 1,354,772 |
| 4.125 percent, 2020 | 12,911,283 | 12,911,283 |
| 4.625 percent, 2011 | 615,351 | — |
| 4.625 percent, 2012 | 855,498 | — |
| 4.625 percent, 2013-15 | 2,566,494 | 2,566,494 |
| 4.625 percent, 2016-18 | 2,566,491 | 2,566,491 |
| 4.625 percent, 2019 | 12,233,881 | 12,233,881 |
| 5.000 percent, 2011 | 476,586 | — |
| 5.000 percent, 2012 | 476,586 | — |
| 5.000 percent, 2013-19 | 3,336,102 | 3,336,102 |
| 5.000 percent, 2020-21 | 953,168 | 953,168 |
| 5.000 percent, 2022 | 14,052,982 | 14,052,982 |
| 5.125 percent, 2011 | 665,131 | — |
| 5.125 percent, 2012 | 665,131 | — |
| 5.125 percent, 2013-17 | 3,325,655 | 3,325,655 |
| 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, 2011 | 1,363,407 | — |
| 5.250 percent, 2012 | 1,363,408 | — |
| 5.250 percent, 2013-16 | 5,453,632 | 5,453,632 |
| 5.250 percent, 2017 | 10,263,256 | 10,263,256 |
| 5.625 percent, 2011 | 1,524,968 | — |
| 5.625 percent, 2012 | 1,524,968 | — |
| 5.625 percent, 2013 | 1,524,968 | 1,524,968 |
| 5.625 percent, 2014-15 | 3,049,934 | 3,049,934 |
| 5.625 percent, 2016 | 8,899,848 | 8,899,848 |
| 5.875 percent, 2011 | 916,286 | — |
| 5.875 percent, 2012 | 916,286 | — |
| 5.875 percent, 2013 | 5,361,805 | 5,361,805 |
| 6.000 percent, 2011 | 695,966 | — |
| 6.000 percent, 2012 | 695,966 | — |
| 6.000 percent, 2013 | 695,967 | 695,967 |
| 6.000 percent, 2014 | 6,057,772 | 6,057,772 |
| 6.500 percent, 2011 | 1,317,108 | — |
| 6.500 percent, 2012 | 1,317,108 | 291,007 |
| 6.500 percent, 2013 | 1,317,108 | 1,317,108 |
| 6.500 percent, 2014 | 1,317,109 | 1,317,109 |
| 6.500 percent, 2015 | 7,374,881 | 7,374,881 |
| 6.875 percent, 2011 | 4,445,520 | — |
| 6.875 percent, 2012 | 4,445,520 | 4,445,520 |
| Total investments | 199,760,403 | 180,023,248 |
| Undisbursed balances | 3,789,242 | -116,407 |
| Total assets | 203,549,645 | 179,906,841 |

Note: Amounts of special issues are shown at par value. Special issues are always purchased and redeemed at par value. Where equal amounts mature in two or more years at a given interest rate, they are grouped. An undisbursed balance, if negative, represents an extension of credit against securities to be redeemed within the following few days.

## *B. HISTORY OF ACTUARIAL BALANCE ESTIMATES*

This appendix chronicles the history of the actuarial balance, which is the principal summary measure of long-range actuarial status, since 1983. The 1983 report was the last report for which the actuarial balance was positive. Actuarial balance is defined in detail in section IV.B.4, Summarized Income Rates, Cost Rates, and Balances. The two basic components of actuarial balance are the summarized income rate and the summarized cost rate. Both rates 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. Also included in the calculation of the actuarial balance are:

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

The current method of calculating the actuarial balance based on present values, though used prior to the 1973 report, was not used for the reports of 1973-87. During that period, a simpler method was used that approximates the results of the present-value approach, called the average-cost method. Under the average-cost method, the sum of the annual cost rates (which are expressed as percentages of taxable payroll) over the 75-year projection period was divided by the total number of years, 75, to obtain the average cost rate per year. The average income rate was calculated similarly, and the difference between the average income rate and the average cost rate was called the actuarial balance.

In 1973, when the average-cost method was first used, the long-range financing of the program was more nearly on a pay-as-you-go basis. Also, based on the long-range demographic and economic assumptions then being used, the annual rate of growth in taxable payroll 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.

As a result of legislation enacted in 1977 and in 1983, substantial increases in the trust funds were estimated to occur well into the 21st century, so that

the program was partially advance funded, rather than being funded on a pay-as-you-go basis. Also, due to reductions in long-range fertility rates and average real-wage growth that were assumed in the reports over the period 1973-87, the annual rate of growth in taxable earnings assumed for the long range became significantly lower than the assumed interest rate. Therefore, during the period 1973-87, the results of the average-cost method and the present-value method 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, of course, does account for the full effect of the assumed interest rates. So, in 1988, the present-value method of calculating the actuarial balance was reintroduced.

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 shows the estimated OASDI actuarial balances, as well as the summarized income and cost rates, for the 1982-2010 reports, along with the estimates for the current report. Values shown are based on the alternative II assumptions, or alternative II-B for years prior to 1991.

**Table VI.B1.—Long-Range OASDI Actuarial Balances[a] as Shown in the Trustees Reports for 1982-2011**
[As a percentage of taxable payroll]

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

[a] Values shown are based on the alternative II assumptions for 1991-2011, and on the alternative II-B assumptions for 1982-90.
[b] Between -0.005 and 0.005 percent of taxable payroll.

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

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

Rebenchmarking of the National Income and Product Accounts and changes in demographic assumptions contributed to the change in the actuarial bal-

ance 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 trust fund target 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 the actuarial balance resulted from changes in economic assumptions and methodology; however, these increases in the balance were partially offset by reductions caused by the change in valuation period and changes in demographic assumptions.

For the 2001 report, increases caused by changes in the demographic starting values, although partially offset by a decrease produced by the change in the valuation period, accounted for most of the changes in the estimated actuarial balance. For the 2002 report, the changes in the valuation period and the demographic assumptions—both decreases in the actuarial balance—were offset by changes in the economic assumptions, while the increase due to disability assumptions was slightly more than offset by the decrease due to changes in the projection methods and data. For the 2003 report, the 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. For 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, the 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. This increase was partially offset by the change in the valuation period; there were also changes in several assumptions, methods, and recent data which had largely offsetting effects.

Section IV.B.7, Reasons for Change in Actuarial Balance From Last Report, describes changes affecting the actuarial balance shown for the 2011 report.

## *C. FISCAL YEAR HISTORICAL DATA AND PROJECTIONS THROUGH 2020*

Tables VI.C1, VI.C2, and VI.C3 present detailed operations of the OASI, DI, and the combined OASI and DI Trust Funds, respectively, for fiscal year 2010, the most recent fiscal year for which complete actual 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 2010**
[In millions]

| | | |
|---|---|---|
| Total assets, September 30, 2009 | | $2,295,835 |
| Receipts: | | |
| Net payroll tax contributions: | | |
| Payroll tax contributions | $553,531 | |
| Payments from the General Fund of the Treasury for payroll tax contributions subject to refund | -1,495 | |
| Net payroll tax contributions | | 552,037 |
| Reimbursements from the general fund: | | |
| Reduction in payroll tax contributions due to P.L. 111-147 | 725 | |
| Reimbursements directed by P.L. 110-246 | 12 | |
| Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968 | [a] | |
| Payroll tax credits due to P.L. 98-21 | [a] | |
| Net general fund reimbursements | | 737 |
| Income based on taxation of benefit payments: | | |
| Withheld from benefit payments to nonresident aliens | 158 | |
| All other, not subject to withholding | 20,910 | |
| Total income from taxation of benefits | | 21,068 |
| Investment income and interest adjustments: | | |
| Interest on investments | 108,600 | |
| Net Interest adjustments[b] | 6 | |
| Net investment income and interest adjustments | | 108,606 |
| Gifts | | [a] |
| Total receipts | | 682,448 |
| Disbursements: | | |
| Benefit payments: | | |
| Monthly benefits and lump-sum death benefits | 572,569 | |
| Reimbursement from the general fund for unnegotiated checks | -57 | |
| Payment for costs of vocational rehabilitation services for disabled beneficiaries | 3 | |
| Net benefit payments | | 572,515 |
| Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account" | | 3,930 |
| Administrative expenses: | | |
| Costs incurred by: | | |
| Social Security Administration | 2,829 | |
| Department of the Treasury | 639 | |
| Offsetting receipts from sales of supplies, materials, etc. | [a] | |
| Miscellaneous reimbursements from the general fund [c] | -5 | |
| Net administrative expenses | | 3,462 |
| Total disbursements | | 579,907 |
| Net increase in assets | | 102,541 |
| Total assets, September 30, 2010 | | 2,398,377 |

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

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

**Table VI.C2.—Operations of the DI Trust Fund, Fiscal Year 2010**
[In millions]

| | | |
|---|---|---|
| Total assets, September 30, 2009 | | $207,777 |
| Receipts: | | |
| Net payroll tax contributions: | | |
| Payroll tax contributions | $93,993 | |
| Payments from the General Fund of the Treasury for payroll tax contributions subject to refund | -254 | |
| Net payroll tax contributions | | 93,739 |
| Reimbursements from the general fund: | | |
| Reduction in payroll tax contributions due to P.L. 111-147 | 123 | |
| Reimbursements directed by P.L. 110-246 | 2 | |
| Payroll tax credits due to P.L. 98-21 | [a] | |
| Net general fund reimbursements | | 125 |
| Income based on taxation of benefit payments: | | |
| Withheld from benefit payments to nonresident aliens | 4 | |
| All other, not subject to withholding | 1,741 | |
| Total income from taxation of benefits | | 1,745 |
| Investment income and interest adjustments: | | |
| Interest on investments | 9,902 | |
| Interest adjustments[b] | 2 | |
| Total investment income and interest adjustments | | 9,904 |
| Total receipts | | 105,513 |
| Disbursements: | | |
| Benefit payments: | | |
| Monthly benefits | 122,899 | |
| Reimbursement from the general fund for unnegotiated checks | -28 | |
| Payment for costs of vocational rehabilitation services for disabled beneficiaries | 64 | |
| Net benefit payments | | 122,935 |
| Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account" | | 462 |
| Administrative expenses: | | |
| Costs incurred by: | | |
| Social Security Administration | 2,802 | |
| Department of the Treasury | 120 | |
| Miscellaneous reimbursements from the general fund[c] | 25 | |
| Total administrative expenses | | 2,947 |
| Total disbursements | | 126,344 |
| Net increase in assets | | -20,831 |
| Total assets, September 30, 2010 | | 186,946 |

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

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

**Table VI.C3.—Operations of the Combined OASI and DI Trust Funds, Fiscal Year 2010**
[In millions]

| | | |
|---|---|---|
| Total assets, September 30, 2009 | | $2,503,612 |
| Receipts: | | |
| Net payroll tax contributions: | | |
| Payroll tax contributions | $647,524 | |
| Payments from the General Fund of the Treasury for payroll tax contributions subject to refund | -1,748 | |
| Net payroll tax contributions | | 645,776 |
| Reimbursements from the general fund: | | |
| Reduction in payroll tax contributions due to P.L. 111-147 | 848 | |
| Reimbursements directed by P.L. 110-246 | 14 | |
| Reimbursement for the costs of payments to uninsured persons who attained age 72 before 1968 | [a] | |
| Payroll tax credits due to P.L. 98-21 | [a] | |
| Net general fund reimbursements | | 862 |
| Income based on taxation of benefit payments: | | |
| Withheld from benefit payments to nonresident aliens | 162 | |
| All other, not subject to withholding | 22,651 | |
| Total income from taxation of benefits | | 22,813 |
| Investment income and interest adjustments: | | |
| Interest on investments | 118,502 | |
| Net Interest adjustments[b] | 8 | |
| Net investment income and interest adjustments | | 118,510 |
| Gifts | | [a] |
| Total receipts | | 787,961 |
| Disbursements: | | |
| Benefit payments: | | |
| Monthly benefits and lump-sum death benefits | 695,469 | |
| Reimbursement from the general fund for unnegotiated checks | -86 | |
| Payment for costs of vocational rehabilitation services for disabled beneficiaries | 66 | |
| Net benefit payments | | 695,449 |
| Financial interchange with the Railroad Retirement "Social Security Equivalent Benefit Account" | | 4,392 |
| Administrative expenses: | | |
| Costs incurred by: | | |
| Social Security Administration | 5,631 | |
| Department of the Treasury | 759 | |
| Offsetting receipts from sales of supplies, materials, etc. | [a] | |
| Miscellaneous reimbursements from the general fund[c] | 20 | |
| Net administrative expenses | | 6,410 |
| Total disbursements | | 706,250 |
| Net increase in assets | | 81,710 |
| Total assets, September 30, 2010 | | 2,585,323 |

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

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

Tables VI.C4, VI.C5, and VI.C6 present estimates of the operations and status of the OASI, DI, and the combined OASI and DI Trust Funds, respectively, during fiscal years (12 months ending on September 30) 2006-20.

**Table VI.C4.—Operations of the OASI Trust Fund, Fiscal Years 2006-20**
[Dollar amounts in billions]

| | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fiscal year | Total | Net payroll tax contributions | GF reimbursements[a] | Taxation of benefits | Net interest | Total | Benefit payments | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[b] |
| **Historical data:** | | | | | | | | | | | | |
| 2006 . | $632.2 | $530.0 | -$0.3 | $15.2 | $87.3 | $455.6 | $449.2 | $2.9 | $3.5 | $176.6 | $1,792.2 | 355 |
| 2007 . | 663.4 | 553.4 | [c] | 16.7 | 93.3 | 488.6 | 481.8 | 3.2 | 3.6 | 174.8 | 1,967.0 | 367 |
| 2008 . | 692.9 | 573.7 | [c] | 16.4 | 102.7 | 509.9 | 503.0 | 3.3 | 3.6 | 183.0 | 2,150.1 | 386 |
| 2009 . | 697.3 | 571.2 | [c] | 19.0 | 107.1 | 551.5 | 544.5 | 3.4 | 3.7 | 145.8 | 2,295.8 | 390 |
| 2010 . | 682.4 | 552.0 | .7 | 21.1 | 108.6 | 579.9 | 572.5 | 3.5 | 3.9 | 102.5 | 2,398.4 | 396 |
| **Intermediate:** | | | | | | | | | | | | |
| 2011 . | 688.8 | 490.2 | 70.2 | 21.2 | 107.3 | 600.3 | 592.6 | 3.7 | 4.0 | 88.5 | 2,486.9 | 400 |
| 2012 . | 742.9 | 587.2 | 25.6 | 22.4 | 107.8 | 625.9 | 618.0 | 3.9 | 4.1 | 117.0 | 2,603.9 | 397 |
| 2013 . | 784.1 | 645.1 | [c] | 26.7 | 112.3 | 660.4 | 652.5 | 3.8 | 4.1 | 123.7 | 2,727.6 | 394 |
| 2014 . | 831.5 | 680.8 | [c] | 31.7 | 119.1 | 701.1 | 693.1 | 3.9 | 4.2 | 130.4 | 2,858.0 | 389 |
| 2015 . | 878.0 | 716.0 | [c] | 35.5 | 126.5 | 745.6 | 737.4 | 4.0 | 4.3 | 132.4 | 2,990.4 | 383 |
| 2016 . | 933.5 | 760.8 | [c] | 39.1 | 133.6 | 793.2 | 785.0 | 4.1 | 4.1 | 140.3 | 3,130.7 | 377 |
| 2017 . | 980.3 | 795.0 | [c] | 43.0 | 142.2 | 844.8 | 836.0 | 4.2 | 4.6 | 135.5 | 3,266.2 | 371 |
| 2018 . | 1,033.9 | 835.9 | — | 46.7 | 151.3 | 900.7 | 891.6 | 4.3 | 4.8 | 133.2 | 3,399.3 | 363 |
| 2019 . | 1,087.9 | 876.0 | — | 50.6 | 161.4 | 964.4 | 955.0 | 4.5 | 4.9 | 123.5 | 3,522.8 | 352 |
| 2020 . | 1,136.3 | 910.2 | — | 54.8 | 171.2 | 1,034.5 | 1,024.8 | 4.6 | 5.1 | 101.8 | 3,624.7 | 341 |
| **Low-cost:** | | | | | | | | | | | | |
| 2011 . | 689.6 | 490.6 | 70.4 | 21.2 | 107.4 | 600.1 | 592.5 | 3.7 | 4.0 | 89.5 | 2,487.9 | 400 |
| 2012 . | 749.9 | 593.9 | 25.8 | 22.3 | 107.9 | 625.0 | 617.1 | 3.9 | 4.0 | 124.9 | 2,612.7 | 398 |
| 2013 . | 794.2 | 654.9 | [c] | 26.5 | 112.7 | 656.5 | 648.7 | 3.8 | 4.1 | 137.7 | 2,750.4 | 398 |
| 2014 . | 846.5 | 694.8 | [c] | 31.3 | 120.4 | 692.6 | 684.6 | 3.9 | 4.1 | 153.9 | 2,904.3 | 397 |
| 2015 . | 896.1 | 732.8 | [c] | 34.8 | 128.4 | 731.7 | 723.5 | 3.9 | 4.2 | 164.4 | 3,068.7 | 397 |
| 2016 . | 955.4 | 778.9 | [c] | 38.1 | 138.4 | 773.7 | 765.8 | 4.0 | 3.9 | 181.7 | 3,250.4 | 397 |
| 2017 . | 1,002.2 | 812.9 | [c] | 41.8 | 147.5 | 820.1 | 811.5 | 4.1 | 4.4 | 182.1 | 3,432.5 | 396 |
| 2018 . | 1,056.7 | 852.3 | — | 45.1 | 159.3 | 869.9 | 861.0 | 4.3 | 4.6 | 186.8 | 3,619.3 | 395 |
| 2019 . | 1,110.5 | 890.9 | — | 48.5 | 171.1 | 923.8 | 914.7 | 4.4 | 4.7 | 186.7 | 3,806.1 | 392 |
| 2020 . | 1,159.5 | 923.9 | — | 52.0 | 183.6 | 981.4 | 972.0 | 4.5 | 4.9 | 178.1 | 3,984.2 | 388 |
| **High-cost:** | | | | | | | | | | | | |
| 2011 . | 687.8 | 489.6 | 69.7 | 21.2 | 107.3 | 600.5 | 592.8 | 3.7 | 4.0 | 87.3 | 2,485.7 | 399 |
| 2012 . | 735.5 | 579.8 | 25.4 | 22.5 | 107.8 | 628.8 | 620.8 | 3.9 | 4.1 | 106.8 | 2,592.4 | 395 |
| 2013 . | 777.5 | 638.1 | [c] | 27.0 | 112.3 | 668.1 | 660.2 | 3.8 | 4.1 | 109.4 | 2,701.8 | 388 |
| 2014 . | 824.4 | 672.7 | [c] | 32.4 | 119.3 | 715.9 | 707.8 | 3.9 | 4.2 | 108.5 | 2,810.2 | 377 |
| 2015 . | 872.7 | 709.5 | [c] | 36.6 | 126.6 | 769.5 | 761.0 | 4.0 | 4.4 | 103.3 | 2,913.5 | 365 |
| 2016 . | 932.8 | 758.1 | [c] | 40.9 | 133.9 | 828.8 | 820.4 | 4.2 | 4.2 | 104.1 | 3,017.6 | 352 |
| 2017 . | 984.9 | 797.8 | [c] | 45.6 | 141.6 | 893.9 | 884.7 | 4.3 | 4.8 | 91.0 | 3,108.6 | 338 |
| 2018 . | 1,042.7 | 842.4 | — | 50.1 | 150.2 | 965.0 | 955.4 | 4.5 | 5.1 | 77.7 | 3,186.3 | 322 |
| 2019 . | 1,098.1 | 886.4 | — | 54.8 | 156.9 | 1,043.7 | 1,033.7 | 4.7 | 5.3 | 54.4 | 3,240.7 | 305 |
| 2020 . | 1,147.8 | 925.3 | — | 60.0 | 162.5 | 1,130.7 | 1,120.2 | 4.8 | 5.6 | 17.1 | 3,257.8 | 287 |

[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 and 111-312.
[b] The "Trust fund ratio" column represents assets at the beginning of a year (which are identical to assets at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.
[c] Between -$50 million and $50 million.

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

**Table VI.C5.—Operations of the DI Trust Fund, Fiscal Years 2006-20**
[Dollar amounts in billions]

| Fiscal year | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Net payroll tax contributions | GF reimbursements[a] | Taxation of benefits | Net interest | Total | Benefit payments | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[b] |
| **Historical data:** | | | | | | | | | | | | |
| 2006 . . | $101.6 | $90.0 | [c] | $1.2 | $10.4 | $92.9 | $90.1 | $2.4 | $0.4 | $8.6 | $201.9 | 208 |
| 2007 . . | 108.4 | 94.0 | [c] | 1.4 | 13.1 | 96.8 | 94.0 | 2.4 | .4 | 11.6 | 213.6 | 209 |
| 2008 . . | 109.8 | 97.4 | [c] | 1.4 | 11.0 | 107.2 | 104.2 | 2.5 | .4 | 2.7 | 216.2 | 199 |
| 2009 . . | 109.7 | 97.0 | [c] | 1.8 | 10.8 | 118.1 | 115.1 | 2.6 | .4 | -8.5 | 207.8 | 183 |
| 2010 . . | 105.5 | 93.7 | $0.1 | 1.7 | 9.9 | 126.3 | 122.9 | 2.9 | .5 | -20.8 | 186.9 | 164 |
| **Intermediate:** | | | | | | | | | | | | |
| 2011 . . | 105.6 | 83.2 | 11.9 | 1.9 | 8.6 | 131.3 | 127.9 | 3.0 | .4 | -25.7 | 161.3 | 142 |
| 2012 . . | 113.3 | 99.7 | 4.3 | 2.0 | 7.3 | 137.5 | 133.8 | 3.2 | .5 | -24.2 | 137.0 | 117 |
| 2013 . . | 117.9 | 109.5 | [c] | 2.4 | 5.9 | 142.8 | 139.0 | 3.3 | .5 | -24.9 | 112.2 | 96 |
| 2014 . . | 123.1 | 115.6 | [c] | 2.8 | 4.6 | 147.6 | 143.7 | 3.5 | .4 | -24.5 | 87.7 | 76 |
| 2015 . . | 128.3 | 121.6 | [c] | 3.1 | 3.6 | 152.6 | 148.5 | 3.6 | .4 | -24.3 | 63.4 | 57 |
| 2016 . . | 135.2 | 129.2 | [c] | 3.4 | 2.6 | 157.9 | 153.7 | 3.8 | .4 | -22.7 | 40.7 | 40 |
| 2017 . . | 140.2 | 135.0 | [c] | 3.7 | 1.5 | 163.6 | 159.2 | 4.0 | .4 | -23.4 | 17.3 | 25 |
| 2018 . . | [d] | 141.9 | — | 4.0 | [d] | 170.0 | 165.4 | 4.3 | .3 | [d] | [d] | 10 |
| 2019 . . | [d] | 148.7 | — | 4.3 | [d] | 177.5 | 172.7 | 4.5 | .3 | [d] | [d] | [d] |
| 2020 . . | [d] | 154.6 | — | 4.6 | [d] | 185.8 | 180.7 | 4.8 | .3 | [d] | [d] | [d] |
| **Low-cost:** | | | | | | | | | | | | |
| 2011 . . | 105.7 | 83.3 | 12.0 | 1.9 | 8.6 | 129.8 | 126.3 | 3.0 | .4 | -24.0 | 162.9 | 144 |
| 2012 . . | 114.5 | 100.8 | 4.4 | 1.9 | 7.4 | 133.7 | 130.0 | 3.2 | .5 | -19.2 | 143.7 | 122 |
| 2013 . . | 119.9 | 111.2 | [c] | 2.3 | 6.4 | 136.6 | 132.8 | 3.3 | .5 | -16.6 | 127.1 | 105 |
| 2014 . . | 126.2 | 118.0 | [c] | 2.7 | 5.6 | 138.5 | 134.6 | 3.5 | .4 | -12.3 | 114.8 | 92 |
| 2015 . . | 132.3 | 124.4 | [c] | 2.9 | 5.0 | 140.5 | 136.5 | 3.6 | .4 | -8.2 | 106.6 | 82 |
| 2016 . . | 140.0 | 132.3 | [c] | 3.1 | 4.6 | 142.9 | 138.7 | 3.8 | .4 | -2.9 | 103.6 | 75 |
| 2017 . . | 146.0 | 138.0 | [c] | 3.3 | 4.6 | 146.1 | 141.8 | 4.0 | .4 | -.2 | 103.5 | 71 |
| 2018 . . | 153.0 | 144.7 | — | 3.5 | 4.8 | 150.0 | 145.5 | 4.2 | .3 | 3.0 | 106.5 | 69 |
| 2019 . . | 160.1 | 151.3 | — | 3.7 | 5.1 | 154.4 | 149.7 | 4.4 | .3 | 5.7 | 112.2 | 69 |
| 2020 . . | 166.4 | 156.9 | — | 4.0 | 5.6 | 159.1 | 154.2 | 4.7 | .3 | 7.3 | 119.5 | 71 |
| **High-cost:** | | | | | | | | | | | | |
| 2011 . . | 105.4 | 83.2 | 11.8 | 1.9 | 8.6 | 132.9 | 129.4 | 3.0 | .4 | -27.4 | 159.5 | 141 |
| 2012 . . | 111.9 | 98.4 | 4.3 | 2.1 | 7.1 | 141.9 | 138.3 | 3.2 | .5 | -30.0 | 129.5 | 112 |
| 2013 . . | 116.4 | 108.4 | [c] | 2.5 | 5.4 | 150.1 | 146.3 | 3.3 | .5 | -33.7 | 95.8 | 86 |
| 2014 . . | 121.1 | 114.2 | [c] | 3.1 | 3.8 | 158.2 | 154.3 | 3.5 | .5 | -37.1 | 58.6 | 61 |
| 2015 . . | 126.1 | 120.5 | [c] | 3.4 | 2.2 | 167.0 | 162.8 | 3.7 | .4 | -40.9 | 17.8 | 35 |
| 2016 . . | [d] | 128.7 | [c] | 3.8 | [d] | 176.3 | 172.0 | 3.9 | .4 | [d] | [d] | 10 |
| 2017 . . | [d] | 135.5 | [c] | 4.3 | [d] | 186.3 | 181.7 | 4.2 | .4 | [d] | [d] | [d] |
| 2018 . . | [d] | 143.1 | — | 4.7 | [d] | 196.9 | 192.1 | 4.5 | .4 | [d] | [d] | [d] |
| 2019 . . | [d] | 150.5 | — | 5.1 | [d] | 208.3 | 203.2 | 4.7 | .3 | [d] | [d] | [d] |
| 2020 . . | [d] | 157.1 | — | 5.5 | [d] | 220.7 | 215.4 | 5.0 | .3 | [d] | [d] | [d] |

[a] Includes reimbursements from the General Fund of the Treasury to the DI Trust Fund for: (1) the cost of noncontributory wage credits for military service before 1957; (2) the cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21; (3) the cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246; and (4) payroll tax revenue forgone under the provisions of Public Laws 111-147 and 111-312.
[b] The "Trust fund ratio" column represents assets at the beginning of a year (which are identical to assets at the end of the prior year shown in the "Amount at end of year" column) as a percentage of cost for the year.
[c] Less than $50 million.
[d] The DI Trust Fund is projected to be exhausted in fiscal years 2018 and 2016 under the intermediate and the high-cost assumptions, respectively. Therefore, certain trust fund operation values from the year of trust fund exhaustion through 2020 are not meaningful under present law and are not shown in this table.

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 2006-20**

[Dollar amounts in billions]

| Fiscal year | Income | | | | | Cost | | | | Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Net payroll tax contributions | GF reimbursements[a] | Taxation of benefits | Net interest | Total | Benefit payments | Administrative costs | RRB interchange | Net increase during year | Amount at end of year | Trust fund ratio[b] |
| **Historical data:** | | | | | | | | | | | | |
| 2006 . . | $733.7 | $620.0 | -$0.3 | $16.4 | $97.7 | $548.5 | $539.3 | $5.3 | $3.8 | $185.2 | $1,994.2 | 330 |
| 2007 . . | 771.8 | 647.4 | [c] | 18.0 | 106.4 | 585.3 | 575.8 | 5.5 | 4.0 | 186.5 | 2,180.6 | 341 |
| 2008 . . | 802.7 | 671.2 | [c] | 17.8 | 113.7 | 617.0 | 607.2 | 5.8 | 4.0 | 185.7 | 2,366.3 | 353 |
| 2009 . . | 807.0 | 668.2 | [c] | 20.8 | 118.0 | 669.7 | 659.6 | 6.0 | 4.1 | 137.3 | 2,503.6 | 353 |
| 2010 . . | 788.0 | 645.8 | .9 | 22.8 | 118.5 | 706.3 | 695.4 | 6.4 | 4.4 | 81.7 | 2,585.3 | 354 |
| **Intermediate:** | | | | | | | | | | | | |
| 2011 . . | 794.4 | 573.4 | 82.1 | 23.0 | 115.9 | 731.6 | 720.5 | 6.7 | 4.4 | 62.9 | 2,648.2 | 353 |
| 2012 . . | 856.2 | 686.9 | 29.9 | 24.4 | 115.1 | 763.5 | 751.8 | 7.1 | 4.5 | 92.8 | 2,740.9 | 347 |
| 2013 . . | 902.0 | 754.6 | [c] | 29.1 | 118.2 | 803.2 | 791.5 | 7.1 | 4.5 | 98.8 | 2,839.7 | 341 |
| 2014 . . | 954.6 | 796.4 | [c] | 34.5 | 123.7 | 848.7 | 836.7 | 7.3 | 4.6 | 106.0 | 2,945.7 | 335 |
| 2015 . . | 1,006.3 | 837.6 | [c] | 38.6 | 130.1 | 898.2 | 885.9 | 7.6 | 4.7 | 108.1 | 3,053.8 | 328 |
| 2016 . . | 1,068.6 | 890.0 | [c] | 42.5 | 136.2 | 951.0 | 938.7 | 7.9 | 4.4 | 117.6 | 3,171.4 | 321 |
| 2017 . . | 1,120.5 | 930.1 | [c] | 46.8 | 143.7 | 1,008.4 | 995.3 | 8.2 | 5.0 | 112.1 | 3,283.5 | 314 |
| 2018 . . | 1,180.2 | 977.8 | — | 50.8 | 151.6 | 1,070.7 | 1,057.1 | 8.6 | 5.1 | 109.4 | 3,392.9 | 307 |
| 2019 . . | 1,240.1 | 1,024.7 | — | 54.9 | 160.5 | 1,141.9 | 1,127.7 | 9.0 | 5.2 | 98.2 | 3,491.1 | 297 |
| 2020 . . | 1,293.1 | 1,064.8 | — | 59.5 | 168.9 | 1,220.2 | 1,205.5 | 9.3 | 5.4 | 72.9 | 3,564.0 | 286 |
| **Low-cost:** | | | | | | | | | | | | |
| 2011 . . | 795.3 | 574.0 | 82.4 | 23.0 | 115.9 | 729.9 | 718.8 | 6.7 | 4.4 | 65.4 | 2,650.8 | 354 |
| 2012 . . | 864.4 | 694.7 | 30.1 | 24.3 | 115.3 | 758.7 | 747.1 | 7.1 | 4.5 | 105.7 | 2,756.5 | 349 |
| 2013 . . | 914.1 | 766.1 | [c] | 28.8 | 119.2 | 793.1 | 781.5 | 7.1 | 4.5 | 121.0 | 2,877.5 | 348 |
| 2014 . . | 972.7 | 812.8 | [c] | 34.0 | 125.9 | 831.1 | 819.2 | 7.3 | 4.5 | 141.6 | 3,019.1 | 346 |
| 2015 . . | 1,028.4 | 857.2 | [c] | 37.7 | 133.4 | 872.2 | 860.1 | 7.6 | 4.6 | 156.1 | 3,175.2 | 346 |
| 2016 . . | 1,095.4 | 911.2 | [c] | 41.2 | 143.0 | 916.6 | 904.5 | 7.8 | 4.3 | 178.8 | 3,354.0 | 346 |
| 2017 . . | 1,148.2 | 950.9 | [c] | 45.1 | 152.1 | 966.2 | 953.3 | 8.1 | 4.8 | 181.9 | 3,536.0 | 347 |
| 2018 . . | 1,209.7 | 997.0 | — | 48.7 | 164.1 | 1,019.9 | 1,006.5 | 8.5 | 4.9 | 189.9 | 3,725.9 | 347 |
| 2019 . . | 1,270.6 | 1,042.2 | — | 52.2 | 176.2 | 1,078.2 | 1,064.4 | 8.8 | 5.0 | 192.4 | 3,918.3 | 346 |
| 2020 . . | 1,325.9 | 1,080.7 | — | 56.0 | 189.2 | 1,140.5 | 1,126.2 | 9.2 | 5.1 | 185.4 | 4,103.7 | 344 |
| **High-cost:** | | | | | | | | | | | | |
| 2011 . . | 793.2 | 572.8 | 81.5 | 23.1 | 115.8 | 733.4 | 722.3 | 6.7 | 4.4 | 59.9 | 2,645.2 | 353 |
| 2012 . . | 847.5 | 678.2 | 29.8 | 24.5 | 114.9 | 770.7 | 759.1 | 7.1 | 4.5 | 76.7 | 2,721.9 | 343 |
| 2013 . . | 893.9 | 746.5 | [c] | 29.6 | 117.8 | 818.2 | 806.5 | 7.1 | 4.6 | 75.6 | 2,797.6 | 333 |
| 2014 . . | 945.5 | 787.0 | [c] | 35.4 | 123.0 | 874.1 | 862.1 | 7.4 | 4.7 | 71.3 | 2,868.9 | 320 |
| 2015 . . | 998.8 | 830.0 | [c] | 40.1 | 128.8 | 936.4 | 923.9 | 7.7 | 4.8 | 62.4 | 2,931.3 | 306 |
| 2016 . . | 1,065.5 | 886.8 | [c] | 44.7 | 134.0 | 1,005.1 | 992.3 | 8.1 | 4.6 | 60.4 | 2,991.6 | 292 |
| 2017 . . | 1,122.4 | 933.3 | [c] | 49.8 | 139.2 | 1,080.2 | 1,066.5 | 8.5 | 5.2 | 42.1 | 3,033.8 | 277 |
| 2018 . . | 1,185.2 | 985.5 | — | 54.8 | 145.0 | 1,161.9 | 1,147.5 | 8.9 | 5.4 | 23.3 | 3,057.1 | 261 |
| 2019 . . | 1,245.2 | 1,036.9 | — | 59.9 | 148.4 | 1,252.0 | 1,237.0 | 9.4 | 5.7 | -6.8 | 3,050.3 | 244 |
| 2020 . . | 1,298.2 | 1,082.4 | — | 65.5 | 150.3 | 1,351.4 | 1,335.6 | 9.8 | 5.9 | -53.2 | 2,997.1 | 226 |

[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 and 111-312.

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

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

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

## *D. LONG-RANGE SENSITIVITY ANALYSIS*

This appendix presents estimates that illustrate the sensitivity of the long-range actuarial status of the OASDI program to changes in selected individual assumptions. The estimates, based on the three alternative sets of assumptions (see sections IV.B, V.A, V.B, and V.C), illustrate the effects of varying all of the principal assumptions simultaneously in order to portray a generally more optimistic or pessimistic future, in terms of the financial status of the OASDI program. In the sensitivity analysis presented in this appendix, the intermediate alternative II projection is used as the reference point, and one assumption at a time is varied within that alternative. The variation used for each individual assumption reflects the levels 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. The income rate varies only slightly with changes in assumptions because the annual payroll tax rate is constant for the entire 75-year valuation period. Therefore, the income rate is not considered in the discussion of the tables. The change in each of the actuarial balances is approximately equal to the change in the corresponding cost rate, but in the opposite direction.

### 1. Total Fertility Rate

Table VI.D1 shows the estimated OASDI income rates, cost rates, and actuarial balances, on the basis of alternative II with various assumptions about the ultimate total fertility rate. The ultimate total fertility rate is assumed to be 1.7, 2.0, and 2.3 children per woman, consistent with alternatives III, II, and I, respectively. The total fertility rate is assumed to change gradually from the 2010 level and reach the various ultimate values in 2035.

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

| Valuation period | Ultimate total fertility rate[a] [b] 1.7 | 2.0 | 2.3 |
|---|---|---|---|
| **Summarized income rate:** | | | |
| 25-year: 2011-35 | 15.01 | 15.01 | 15.02 |
| 50-year: 2011-60 | 14.27 | 14.25 | 14.24 |
| 75-year: 2011-85 | 14.07 | 14.02 | 13.98 |
| **Summarized cost rate:** | | | |
| 25-year: 2011-35 | 15.59 | 15.61 | 15.64 |
| 50-year: 2011-60 | 16.15 | 16.04 | 15.94 |
| 75-year: 2011-85 | 16.67 | 16.25 | 15.84 |
| **Actuarial balance:** | | | |
| 25-year: 2011-35 | -.58 | -.60 | -.62 |
| 50-year: 2011-60 | -1.88 | -1.78 | -1.70 |
| 75-year: 2011-85 | -2.60 | -2.22 | -1.86 |
| **Annual balance for 2085** | -6.50 | -4.24 | -2.43 |
| **Year of combined trust fund exhaustion** | 2036 | 2036 | 2035 |

[a] The total fertility rate for any year is the average number of children who would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, the selected year, and if she were to survive the entire childbearing period. The ultimate total fertility rate is assumed to be reached in 2035.

[b] Ultimate total fertility rates used for this analysis are: 1.7 from the alternative III assumptions, 2.0 from the alternative II assumptions, and 2.3 from the alternative I assumptions. All other assumptions used for this analysis are from alternative II.

For the 25-year period, the cost rate for the three fertility assumptions varies by only about 0.05 percent of taxable payroll. In contrast, the 75-year cost rate varies over a wide range, decreasing from 16.67 to 15.84 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 -2.60 to -1.86 percent.

During the 25-year period, the very slight increases in the working population resulting from increases in fertility are more than offset by decreases in the female labor force and increases in the number of child beneficiaries. Hence, the program cost slightly increases with higher fertility. For the 75-year long-range period, however, changes in fertility have a relatively greater impact 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 0.12 percent of taxable payroll.

## 2. Death Rates

Table VI.D2 shows the estimated 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 2010-85. These assumptions are the same as those used for alternatives I, II, and III, which are described in section V.A.2. The age-sex-adjusted death rates decline at average annual rates of 0.32 percent, 0.78 percent, and 1.31 percent for alternatives I, II, and III, respectively.

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

| Valuation period | Average annual death-rate reduction[a] [b] | | |
|---|---|---|---|
| | 0.32 percent | 0.78 percent | 1.31 percent |
| **Summarized income rate:** | | | |
| 25-year: 2011-35 | 15.01 | 15.01 | 15.01 |
| 50-year: 2011-60 | 14.23 | 14.25 | 14.26 |
| 75-year: 2011-85 | 13.99 | 14.02 | 14.05 |
| **Summarized cost rate:** | | | |
| 25-year: 2011-35 | 15.38 | 15.61 | 15.78 |
| 50-year: 2011-60 | 15.53 | 16.04 | 16.50 |
| 75-year: 2011-85 | 15.53 | 16.25 | 16.90 |
| **Actuarial balance:** | | | |
| 25-year: 2011-35 | -.37 | -.60 | -.77 |
| 50-year: 2011-60 | -1.29 | -1.78 | -2.23 |
| 75-year: 2011-85 | -1.54 | -2.22 | -2.86 |
| **Annual balance for 2085** | -2.75 | -4.24 | -5.58 |
| **Year of combined trust fund exhaustion** | 2037 | 2036 | 2035 |

[a] The average annual death-rate reduction is the average annual geometric rate of decline in the age-sex-adjusted death rate between 2010 and 2085. The overall decreases from the age-sex-adjusted death rate in 2010 to the corresponding rate in 2085 are 22 percent, 45 percent, and 63 percent for alternatives I, II, and III, respectively.
[b] The average annual death-rate reductions used for this analysis are: 0.32 percent from the alternative I assumptions, 0.78 percent from the alternative II assumptions, and 1.31 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 decreases in death rates are assumed to occur gradually. The 25-year cost rate increases from 15.38 percent (for an average annual death-rate reduction of 0.32 percent) to 15.78 percent (for an average annual death-rate reduction of 1.31 percent). The 75-year cost rate increases from 15.53 to 16.90 percent. The actuarial balance decreases from -0.37 to -0.77 percent for the 25-year period, and from -1.54 to -2.86 percent for the 75-year period.

Lower death rates cause both the income (through increased taxable payroll) and the cost of the OASDI program to be higher. 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). Although reductions for people at ages 50 to retirement eligibility age do result in significant increases to the taxable payroll, 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 would not result in significant increases in the numbers of covered workers or beneficiaries. Consequently, if death rates for all ages are lowered by about the same relative amount, cost increases at a rate greater than the rate of growth in payroll, which results in higher cost rates and, therefore, 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 0.13 percent of taxable payroll.

### 3. Net Immigration

Table VI.D3 shows the estimated OASDI income rates, cost rates, and actuarial balances, under alternative II with various assumptions about the magnitude of net immigration. Annual net immigration is assumed to average, over the long-range period, 785,000 persons, 1,075,000 persons, and 1,385,000 persons, consistent with alternatives III, II, and I, respectively.

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

| Valuation period | Average annual net immigration[a] [b] | | |
|---|---|---|---|
| | 785,000 | 1,075,000 | 1,385,000 |
| **Summarized income rate:** | | | |
| 25-year: 2011-35 | 15.04 | 15.01 | 14.98 |
| 50-year: 2011-60 | 14.29 | 14.25 | 14.22 |
| 75-year: 2011-85 | 14.06 | 14.02 | 13.99 |
| **Summarized cost rate:** | | | |
| 25-year: 2011-35 | 15.74 | 15.61 | 15.47 |
| 50-year: 2011-60 | 16.25 | 16.04 | 15.82 |
| 75-year: 2011-85 | 16.50 | 16.25 | 16.00 |
| **Actuarial balance:** | | | |
| 25-year: 2011-35 | -.70 | -.60 | -.49 |
| 50-year: 2011-60 | -1.97 | -1.78 | -1.60 |
| 75-year: 2011-85 | -2.44 | -2.22 | -2.01 |
| **Annual balance for 2085** | -4.66 | -4.24 | -3.88 |
| **Year of combined trust fund exhaustion** | 2035 | 2036 | 2037 |

[a] Net immigration per year is the assumed 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: 785,000 from the alternative III assumptions, 1,075,000 from the alternative II assumptions, and 1,385,000 from the alternative I assumptions. All other assumptions used for this analysis are from alternative II.

For all three periods, the cost rate decreases with increasing rates of net immigration. For the 25-year period, the cost rate decreases from 15.74 percent of taxable payroll (for average annual net immigration of 785,000 persons) to 15.47 percent (for average annual net immigration of 1,385,000 persons). For the 50-year period, it decreases from 16.25 percent to 15.82 percent, and for the 75-year period, it decreases from 16.50 percent to 16.00 percent. The actuarial balance increases from -0.70 to -0.49 percent for the 25-year period, from -1.97 to -1.60 percent for the 50-year period, and from -2.44 to -2.01 percent for the 75-year period.

The cost rate decreases with an increase in net immigration because immigration occurs at relatively young ages, thereby increasing the numbers of covered workers earlier than the numbers of beneficiaries. Increasing average annual net immigration by 100,000 persons improves the long-range actuarial balance by about 0.07 percent of taxable payroll.

## 4. Real-Wage Differential

Table VI.D4 shows the estimated OASDI income rates, cost rates, and actuarial balances, on the basis of alternative II with various assumptions about the real-wage differential. The ultimate real-wage differential is assumed to be 0.6 percentage point, 1.2 percentage points, and 1.8 percentage points, consistent with alternatives III, II, and I, respectively. In each case, the ulti-

mate annual increase in the CPI is assumed to be 2.8 percent (consistent with alternative II), yielding ultimate percentage increases in average annual wages in covered employment of 3.4, 4.0, and 4.6 percent.

For the 25-year period, the cost rate decreases from 16.27 percent (for a real-wage differential of 0.6 percentage point) to 14.96 percent (for a differential of 1.8 percentage points). For the 50-year period, it decreases from 17.02 to 15.09 percent, and for the 75-year period it decreases from 17.33 to 15.19 percent. The actuarial balance increases from -1.11 to -0.09 percent for the 25-year period, from -2.58 to -1.01 percent for the 50-year period, and from -3.10 to -1.36 percent for the 75-year period.

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

| Valuation period | Ultimate percentage increase in wages-CPI[a b] 3.4-2.8 | 4.0-2.8 | 4.6-2.8 |
|---|---|---|---|
| **Summarized income rate:** | | | |
| 25-year: 2011-35 | 15.16 | 15.01 | 14.87 |
| 50-year: 2011-60 | 14.44 | 14.25 | 14.08 |
| 75-year: 2011-85 | 14.23 | 14.02 | 13.83 |
| **Summarized cost rate:** | | | |
| 25-year: 2011-35 | 16.27 | 15.61 | 14.96 |
| 50-year: 2011-60 | 17.02 | 16.04 | 15.09 |
| 75-year: 2011-85 | 17.33 | 16.25 | 15.19 |
| **Actuarial balance:** | | | |
| 25-year: 2011-35 | -1.11 | -.60 | -.09 |
| 50-year: 2011-60 | -2.58 | -1.78 | -1.01 |
| 75-year: 2011-85 | -3.10 | -2.22 | -1.36 |
| **Annual balance for 2085** | -6.00 | -4.24 | -2.71 |
| **Year of combined trust fund exhaustion** | 2033 | 2036 | 2041 |

[a] The first value in each pair is the assumed ultimate annual percentage increase in average wages in covered employment. The second value is the assumed 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 0.6, 1.2, and 1.8 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. This is because higher wages increase taxable payroll immediately, but 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 assumed real-wage differential increases the long-range actuarial balance by about 0.72 percent of taxable payroll.

## 5. Consumer Price Index

Table VI.D5 shows the estimated 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 ultimate annual increase in the CPI is assumed to be 1.8 percent, 2.8 percent, and 3.8 percent, consistent with alternatives I, II, and III, respectively. In each case, the ultimate real-wage differential is assumed to be 1.2 percentage points (consistent with alternative II), yielding ultimate percentage increases in average annual wages in covered employment of 3.0, 4.0, and 5.0 percent.

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

| Valuation period | Ultimate percentage increase in wages-CPI[a b] 3.0-1.8 | 4.0-2.8 | 5.0-3.8 |
|---|---|---|---|
| **Summarized income rate:** | | | |
| 25-year: 2011-35 | 15.06 | 15.01 | 14.97 |
| 50-year: 2011-60 | 14.29 | 14.25 | 14.22 |
| 75-year: 2011-85 | 14.06 | 14.02 | 13.99 |
| **Summarized cost rate:** | | | |
| 25-year: 2011-35 | 15.79 | 15.61 | 15.44 |
| 50-year: 2011-60 | 16.27 | 16.04 | 15.83 |
| 75-year: 2011-85 | 16.50 | 16.25 | 16.02 |
| **Actuarial balance:** | | | |
| 25-year: 2011-35 | -.73 | -.60 | -.48 |
| 50-year: 2011-60 | -1.98 | -1.78 | -1.61 |
| 75-year: 2011-85 | -2.44 | -2.22 | -2.02 |
| **Annual balance for 2085** | -4.54 | -4.24 | -3.97 |
| **Year of combined trust fund exhaustion** | 2035 | 2036 | 2037 |

[a] The first value in each pair is the assumed ultimate annual percentage increase in average wages in covered employment. The second value is the assumed ultimate annual percentage increase in the Consumer Price Index. The difference between the two values is the ultimate real-wage differential.
[b] The ultimate CPI increases of 1.8, 2.8, and 3.8 percent are the same as in alternatives I, II, and III, respectively. The ultimate real-wage differential of 1.2 percentage points is the same as in alternative II. All other assumptions used for this analysis are also from alternative II.

For all three periods, the cost rate decreases with greater assumed rates of increase in the CPI. For the 25-year period, the cost rate decreases from 15.79 (for CPI increases of 1.8 percent) to 15.44 percent (for CPI increases of 3.8 percent). For the 50-year period, it decreases from 16.27 to 15.83 percent, and for the 75-year period, it decreases from 16.50 to 16.02 percent. The actuarial balance increases from -0.73 to -0.48 percent for the 25-year period, from -1.98 to -1.61 percent for the 50-year period, and from -2.44 to -2.02 percent for the 75-year period.

The patterns described above result primarily from the time lag between the effects of the CPI changes on taxable payroll and on benefit payments. When

assuming a greater rate of increase in the CPI (in combination with a constant real-wage differential), the effect on taxable payroll due to a greater rate of increase in average wages is experienced immediately, while the effect on benefits due to a larger COLA is experienced with a lag of about 1 year. Thus, the higher taxable payrolls have a stronger effect than the higher benefits, which results in lower cost rates. Each 1.0-percentage-point increase in the rate of change assumed for the CPI increases the long-range actuarial balance by about 0.21 percent of taxable payroll.

## 6. Real Interest Rate

Table VI.D6 shows the estimated OASDI income rates, cost rates, and actuarial balances, on the basis of alternative II with various assumptions about the annual real interest rate for special public-debt obligations issuable to the trust funds, which are compounded semiannually. The ultimate annual real interest rate is assumed to be 2.1 percent, 2.9 percent, and 3.6 percent, consistent with alternatives III, II, and I, respectively. In each case, the ultimate annual increase in the CPI is assumed to be 2.8 percent (consistent with alternative II), which results in ultimate annual yields of 5.0, 5.8, and 6.5 percent.

**Table VI.D6.—Sensitivity to Varying Real-Interest Assumptions**
[As a percentage of taxable payroll]

| Valuation period | Ultimate annual real interest rate[a] [b] | | |
|---|---|---|---|
| | 2.1 percent | 2.9 percent | 3.6 percent |
| **Summarized income rate:** | | | |
| 25-year: 2011-35 | 14.90 | 15.01 | 15.11 |
| 50-year: 2011-60 | 14.11 | 14.25 | 14.38 |
| 75-year: 2011-85 | 13.87 | 14.02 | 14.17 |
| **Summarized cost rate:** | | | |
| 25-year: 2011-35 | 15.74 | 15.61 | 15.50 |
| 50-year: 2011-60 | 16.21 | 16.04 | 15.89 |
| 75-year: 2011-85 | 16.47 | 16.25 | 16.06 |
| **Actuarial balance:** | | | |
| 25-year: 2011-35 | -.84 | -.60 | -.39 |
| 50-year: 2011-60 | -2.10 | -1.78 | -1.50 |
| 75-year: 2011-85 | -2.60 | -2.22 | -1.89 |
| **Annual balance for 2085** | -4.24 | -4.24 | -4.24 |
| **Year of combined trust fund exhaustion** | 2034 | 2036 | 2037 |

[a] The ultimate real interest rate is defined as the effective annual yield on assets held by the trust funds divided by the annual rate of growth in the CPI.
[b] The ultimate annual real interest rates used for this analysis are: 2.1 percent from the alternative III assumptions, 2.9 percent from the alternative II assumptions, and 3.6 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 15.74 percent (for an ultimate real interest rate of 2.1 percent) to

15.50 percent (for an ultimate real interest rate of 3.6 percent). For the 50-year period, it decreases from 16.21 to 15.89 percent, and for the 75-year period, it decreases from 16.47 to 16.06 percent. The actuarial balance increases from -0.84 to -0.39 percent for the 25-year period, from -2.10 to -1.50 percent for the 50-year period, and from -2.60 to -1.89 percent for the 75-year period. Each 0.5-percentage-point increase in the assumed real interest rate increases the long-range actuarial balance by about 0.24 percent of taxable payroll.

## 7. Disability Incidence Rates

Table VI.D7 shows the estimated 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, incidence rates by age and sex are assumed to vary during the early years of the projection period before attaining ultimate levels in 2030. In comparison to the historical period 1970 through 2010, the ultimate age-sex-adjusted incidence rate is about the same for alternative II, 19 percent lower for alternative I, and 21 percent higher for alternative III.

**Table VI.D7.—Sensitivity to Varying Disability Incidence Assumptions**
[As a percentage of taxable payroll]

| Valuation period | Disability incidence rates based on alternative— I | II | III |
|---|---|---|---|
| **Summarized income rate:** | | | |
| 25-year: 2011-35 | 15.01 | 15.01 | 15.02 |
| 50-year: 2011-60 | 14.25 | 14.25 | 14.26 |
| 75-year: 2011-85 | 14.02 | 14.02 | 14.03 |
| **Summarized cost rate:** | | | |
| 25-year: 2011-35 | 15.39 | 15.61 | 15.82 |
| 50-year: 2011-60 | 15.77 | 16.04 | 16.29 |
| 75-year: 2011-85 | 15.96 | 16.25 | 16.52 |
| **Actuarial balance:** | | | |
| 25-year: 2011-35 | -.38 | -.60 | -.80 |
| 50-year: 2011-60 | -1.52 | -1.78 | -2.04 |
| 75-year: 2011-85 | -1.95 | -2.22 | -2.49 |
| **Annual balance for 2085** | -3.91 | -4.24 | -4.56 |
| **Year of combined trust fund exhaustion** | 2037 | 2036 | 2034 |

For the 25-year period, the cost rate increases with increasing disability incidence rates, from 15.39 percent (for the relatively low rates assumed for alternative I) to 15.82 percent (for the relatively high rates assumed for alternative III). For the 50-year period, it increases from 15.77 to 16.29 percent, and for the 75-year period, it increases from 15.96 to 16.52 percent.

The actuarial balance decreases from -0.38 to -0.80 percent for the 25-year period, from -1.52 to -2.04 percent for the 50-year period, and from -1.95 to -2.49 percent for the 75-year period.

### 8. Disability Termination Rates

Table VI.D8 shows the estimated OASDI income rates, cost rates, and actuarial balances, on the basis of alternative II with various assumptions about future disability termination rates. For all three alternatives, death rates are assumed to decline throughout the long-range period. For alternative II, the age-sex-adjusted[1] death rate is assumed to decline to a level in 2085 that is about 57 percent lower than the level in 2010. For alternative I, the age-sex-adjusted death rate is assumed to decline to a level in 2085 that is about 25 percent lower than the level in 2010. For alternative III, the age-sex-adjusted death rate is assumed to decline to a level in 2085 that is about 72 percent lower than the level in 2010.

For all three alternatives, ultimate recovery-termination rates by age, sex, and duration are assumed to be attained in the twentieth year of the projection period. For alternative II, the age-sex-adjusted[1] recovery rate in 2030 is about 11 recoveries per thousand disabled-worker beneficiaries. For alternative I, the age-sex-adjusted recovery rate in 2030 is about 13 recoveries per thousand disabled-worker beneficiaries. For alternative III, the age-sex-adjusted recovery rate in 2030 is about 9 recoveries per thousand disabled-worker beneficiaries.

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

**Table VI.D8.—Sensitivity to Varying Disability Termination Assumptions**
[As a percentage of taxable payroll]

| Valuation period | Disability termination rates based on alternative— I | II | III |
|---|---|---|---|
| **Summarized income rate:** | | | |
| 25-year: 2011-35 | 15.01 | 15.01 | 15.01 |
| 50-year: 2011-60 | 14.25 | 14.25 | 14.25 |
| 75-year: 2011-85 | 14.02 | 14.02 | 14.02 |
| **Summarized cost rate:** | | | |
| 25-year: 2011-35 | 15.57 | 15.61 | 15.64 |
| 50-year: 2011-60 | 15.99 | 16.04 | 16.08 |
| 75-year: 2011-85 | 16.19 | 16.25 | 16.29 |
| **Actuarial balance:** | | | |
| 25-year: 2011-35 | -.56 | -.60 | -.63 |
| 50-year: 2011-60 | -1.73 | -1.78 | -1.82 |
| 75-year: 2011-85 | -2.17 | -2.22 | -2.26 |
| **Annual balance for 2085** | -4.17 | -4.24 | -4.28 |
| **Year of combined trust fund exhaustion** | 2036 | 2036 | 2035 |

For the 25-year period, the cost rate increases with decreasing disability termination rates, from 15.57 percent (for the relatively high termination rates assumed for alternative I) to 15.64 percent (for the relatively low termination rates assumed for alternative III). For the 50-year period, it increases from 15.99 to 16.08 percent, and for the 75-year period, it increases from 16.19 to 16.29 percent. The actuarial balance decreases from -0.56 to -0.63 percent for the 25-year period, from -1.73 to -1.82 percent for the 50-year period, and from -2.17 to -2.26 percent for the 75-year period.

## E. STOCHASTIC PROJECTIONS

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 are intended to supplement the traditional methods of examining such uncertainty.

### 1. Background

The Trustees Report has traditionally shown estimates using the low-cost and high-cost sets of specified assumptions to reflect the presence of uncertainty. These additional estimates provide a range of possible outcomes for the projections. However, they provide no indication of the probability that actual future experience will be inside or outside the range of these estimates. 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 is subject to further development. Future improvements and refinements are expected to expand, rather than reduce, the indicated range of uncertainty.

### 2. Methodology

Other sections of this report provide estimates of the financial status of the combined OASI and DI Trust Funds using a "deterministic" model. For the deterministic model, certain assumptions are made regarding 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, each of these variables is assumed to reach an ultimate value at a specific point during the long-range period and to maintain that value throughout the remainder of the period. As mentioned above, three deterministic scenarios are developed by assuming separate, specified values for each of these variables. Chapter V contains more details about each of these assumptions.

In contrast, the results of 5,000 independent stochastic simulations are presented in this appendix. Each of the 5,000 simulations is determined by allowing the above variables to vary throughout the long-range period. The fluctuation in each variable is projected by using standard time-series modeling, a method designed to help make inferences based on historical data. Generally, each variable is modeled by an equation that captures a relationship between current and prior years' values of the variable, and introduces

year-by-year random variation as observed in the historical period. For some variables, the equations also reflect relationships with other variables. Parameters for the equations are estimated using historical data for periods between 25 years and 110 years depending on the nature and quality of data available. Each time-series equation is designed so that, in the absence of random variation, the value of the variable would equal the value assumed under the intermediate set of assumptions.[1]

For each simulation, values for most of the variables listed above are determined by using Monte Carlo techniques to randomly assign the year-by-year variations. The one exception is that net other immigration is modeled directly, rather than individually modeling its components, other immigration and other emigration. Each simulation produces an estimate of the financial status of the combined OASI and DI Trust Funds. Results shown in this appendix reflect the distribution of results from 5,000 simulations of the model.

The results from this model should be interpreted with caution and with an understanding of the 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 variables in addition to those mentioned above (such as labor force participation rates, retirement rates, marriage rates, and divorce rates) had been allowed to vary randomly. Furthermore, additional variability could result from incorporating statistical approaches that would more fully model shifts in the long-range central tendencies of the variables. The historical period utilized for most variables does not reflect many substantial shifts. The time-series modeling reflects only what occurred in the historical period. As a result, the variation indicated in this appendix should be viewed as the minimum plausible variation for the future. Substantial shifts, as predicted by many experts and as seen in prior centuries, are not fully reflected in the current model.

## 3. Results

Figure VI.E1 presents simulated probability distributions of the annual trust fund ratios for the combined OASI and DI Trust Funds. The two extreme lines in this figure illustrate the range within which future annual trust fund ratios are estimated to occur 95 percent of the time (i.e., a 95-percent confidence interval). In other words, actual future trust fund ratios in a given year

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

would be expected to exceed the upper bound only 2.5 percent of the time or to fall below the lower bound 2.5 percent of the time. Other lines in the figure display additional confidence intervals (80-percent, 60-percent, 40-percent, and 20-percent) around future annual trust fund ratios. The median estimate for each year indicates the trust fund ratio that this model projects will fall exactly in the middle of possible outcomes for that year. These lines do not represent the results of individual stochastic simulations. Instead, for each given year, they represent the percentile distribution of trust fund ratios based on all stochastic simulations for that year.

The median estimate for each year indicates that the assets of the combined OASI and DI Trust Funds would be exhausted by the end of 2035 with a probability of 50 percent. This exhaustion date is one year earlier than the year of exhaustion (2036) that is projected under the intermediate assumptions. Figure VI.E1 shows that the 95-percent confidence interval for the trust fund ratio in 2025 ranges from 301 to 119 percent of annual cost. In comparison, the 2025 trust fund ratios for the low-cost and high-cost alternatives are each outside this range, at 323 and 113 percent, respectively.

**Figure VI.E1.—Long-Range OASDI Trust Fund Ratios From Stochastic Modeling**

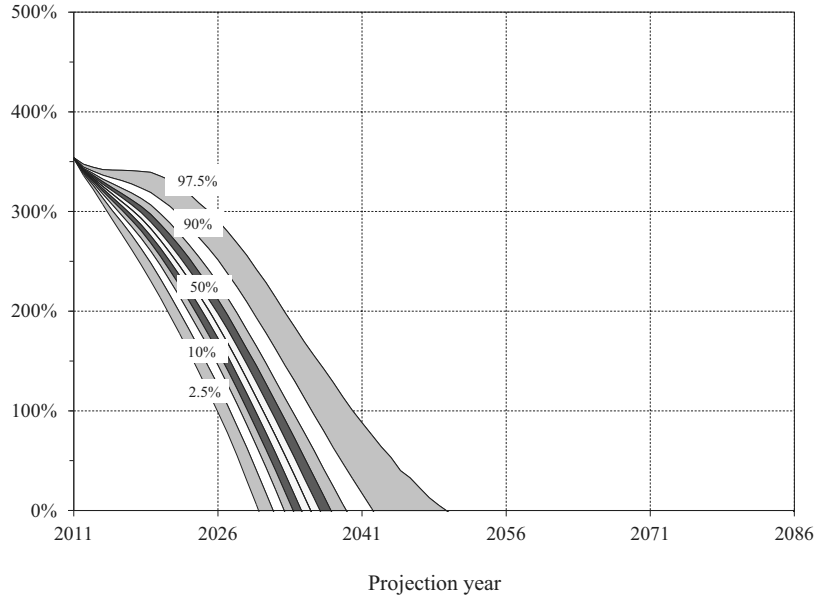


Figure VI.E2 displays the probability distribution of the year-by-year OASDI cost rates (i.e., cost as a percentage of taxable payroll). The range of the cost rates widens as the projections move further into the future, which reflects increasing uncertainty. The income rate under the intermediate assumptions is also included in the figure to give some indication of the patterns of cash flow for the OASDI program. Only the income rate is included, and not the cost rate, because there is relatively little variation in income rates throughout the projection period. The lines in figure VI.E2 display the median set (50th percentile) of estimated annual cost rates and the 95-percent, 80-percent, 60-percent, 40-percent, and 20-percent confidence intervals expected for future annual cost rates. 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. The projected cost rates for the year 2035 are 14.62 percent of payroll for the low-cost alternative and 19.88 percent of payroll for the high-cost alternative. These cost rates are close to the limits of the 95-percent confidence interval (14.50 and 19.74 percent of payroll), as can be seen in figure VI.E2. By 2085, the cost rates for these alternatives, 12.56 and 25.30 percent of payroll, are still close to the limits of the 95-percent confidence interval (11.35 and 24.57 percent of payroll).

**Figure VI.E2.—Long-Range OASDI Cost Rates From Stochastic Modeling**

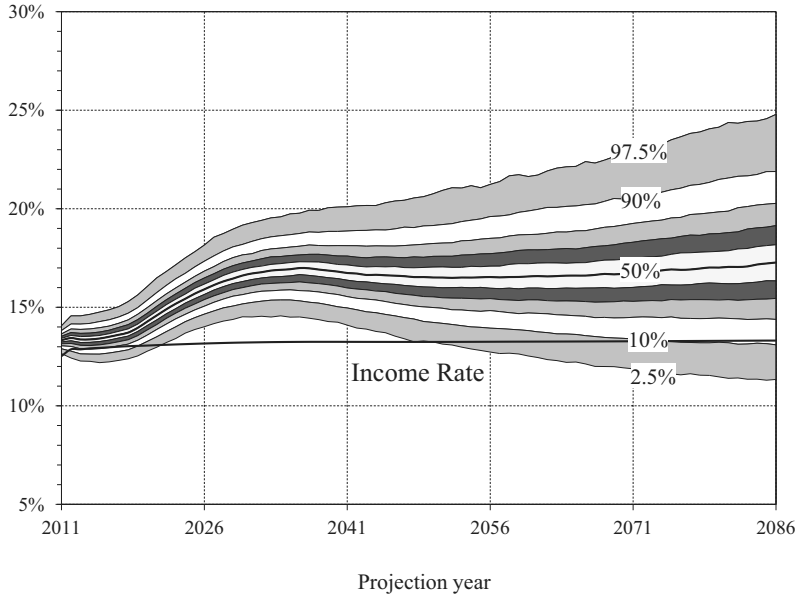


Table VI.E1 displays long-range actuarial estimates that illustrate uncertainty for the combined OASDI program using both the deterministic and stochastic approaches. Actuarial estimates included in the table are for the long-range period, 2011-85. Stochastic estimates are shown for the median (50th percentile) and for the 95-percent and 80-percent confidence intervals. For comparison, deterministic estimates are shown for the intermediate, low-cost, and high-cost assumptions. Each individual stochastic estimate displayed in the table represents the level at that percentile from the distribution of the 5,000 simulations. However, for each given percentile, the stochastic estimates shown for the different long-range actuarial measures are generally not from the same stochastic simulation.

The median stochastic estimates displayed in table VI.E1 are, in general, slightly more optimistic than the intermediate-alternative deterministic estimates. The median estimate of the long-range actuarial balance is -2.14 percent of taxable payroll, about 0.08 percentage point higher than projected under the intermediate assumptions. The median year that cost first exceeds non-interest income (and remains in excess of non-interest income throughout the remainder of the long-range period) is 2016, 6 years later than projected under the intermediate assumptions. The median year that assets first become exhausted is 2035, one year earlier than projected under the intermediate assumptions. The median estimates of the annual cost rate for the 75th year of the projection period are 17.22 percent of taxable payroll and 5.74 percent of gross domestic product (GDP). The comparable estimates using the intermediate assumptions are 17.56 percent of payroll and 6.01 percent of GDP.

The 95-percent confidence interval determined by the stochastic modeling projections can be compared to the range of variation defined by the traditional low-cost and high-cost alternatives. For three measures in table VI.E1 (the actuarial balance, the open group unfunded obligation, and the first year assets become exhausted), the 95-percent stochastic confidence interval is narrower than the range defined by the low-cost and high-cost alternatives. In other words, for these measures, the range defined by the low-cost and high-cost alternatives contains the 95-percent confidence interval of the stochastic modeling projections. For one measure (the first year cost exceeds non-interest income and remains in excess through 2085), the low-cost and high-cost estimates are consistent with the bounds of the 95-percent stochastic confidence interval. For the remaining two measures (the annual costs in the 75th year), one or both of the bounds of the 95-percent stochastic confidence interval fall outside the range defined by the low-cost and high-cost alternatives.

**Table VI.E1.—Long-Range Estimates Relating to the Actuarial Status of the Combined OASDI Program**

[Comparison of deterministic and stochastic results]

| | Traditional deterministic model | | | Stochastic model | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 80-percent confidence interval | | 95-percent confidence interval | |
| | Intermediate | Low-cost | High-cost | Median 50th percentile | 10th percentile | 90th percentile | 2.5th percentile | 97.5th percentile |
| Actuarial balance | -2.22 | 0.29 | -5.59 | -2.14 | -3.46 | -0.85 | -4.26 | -0.22 |
| Open group unfunded obligation (in trillions) | $6.5 | -$1.3 | $17.2 | $6.4 | $11.6 | $2.3 | $15.5 | $0.2 |
| First year cost exceeds non-interest income and remains in excess through 2085 | 2010 | [a] | 2010 | 2016 | 2010 | 2085 | 2010 | [b] |
| First year assets become exhausted[c] | 2036 | [d] | 2029 | 2035 | 2031 | 2042 | 2030 | 2049 |
| Annual cost in 75th year (percent of taxable payroll) | 17.56 | 12.56 | 25.30 | 17.22 | 13.15 | 21.88 | 11.30 | 24.57 |
| Annual cost in 75th year (percent of GDP) | 6.01 | 4.64 | 8.03 | 5.74 | 3.93 | 7.50 | 3.20 | 8.40 |

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

[b] For this percentile, cost does not exceed non-interest income in 2085.

[c] For some stochastic simulations, the first year in which trust fund assets become exhausted does not indicate a permanent exhaustion of assets.

[d] The fund is not estimated to be exhausted within the projection period.

## *F. ESTIMATES FOR OASDI AND HI, SEPARATE AND COMBINED*

In this appendix, long-range actuarial estimates for the OASDI and Hospital Insurance (HI) programs are presented separately and on a combined basis. These estimates facilitate analysis of the adequacy of the income and assets of these programs relative to their cost under current law. Estimates for the Supplementary Medical Insurance (SMI) program are not included in this appendix 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 2011 Medicare Trustees Report.

The emphasis in this appendix on combined operations, while significant, should not obscure the analysis of the financial status of the individual trust funds, which are legally separate and cannot be commingled. In addition, the factors which determine the costs of the OASI, DI, and HI programs differ substantially.

### 1. Estimates as a Percentage of Taxable Payroll

Comparing and combining cost and income rates for the OASDI and HI programs as percentages of taxable payroll require 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 being eliminated altogether for the HI program in 1994; (2) a larger proportion of Federal, State, and local government employees have their wages covered under the HI program; and (3) the earnings of railroad workers are included directly in the HI taxable payroll but not in the OASDI taxable payroll (railroad contributions for the equivalent of OASDI benefits are accounted for in a net interchange that occurs annually between the OASDI and Railroad Retirement programs). As a result, the HI taxable payroll is about 26 percent larger than the OASDI taxable payroll throughout the long-range period. Nonetheless, in this section the separately derived rates for the programs are added to produce combined OASDI and HI rates.

As with the OASI and DI Trust Funds, income to the HI Trust Fund comes primarily from contributions paid by employees, employers, and self-employed persons. Table VI.F1 shows the OASDI and HI contribution rates for employees and their employers that are authorized in the Federal Insurance Contributions Act for these programs.

**Table VI.F1.—Payroll Tax Contribution Rates for the OASDI and HI Programs**
[In percent]

| Calendar years | Employees and employers, each | | Employees only | Self employed | | |
|---|---|---|---|---|---|---|
| | OASDI up to base[a] | HI all earnings[b] | HI over limit[c] | OASDI up to base[a] | HI all earnings[b] | HI over limit[c] |
| 1966 | 3.85 | 0.35 | — | 5.80 | 0.35 | — |
| 1967 | 3.90 | .50 | — | 5.90 | .50 | — |
| 1968 | 3.80 | .60 | — | 5.80 | .60 | — |
| 1969-70 | 4.20 | .60 | — | 6.30 | .60 | — |
| 1971-72 | 4.60 | .60 | — | 6.90 | .60 | — |
| 1973 | 4.85 | 1.00 | — | 7.00 | 1.00 | — |
| 1974-77 | 4.95 | .90 | — | 7.00 | .90 | — |
| 1978 | 5.05 | 1.00 | — | 7.10 | 1.00 | — |
| 1979-80 | 5.08 | 1.05 | — | 7.05 | 1.05 | — |
| 1981 | 5.35 | 1.30 | — | 8.00 | 1.30 | — |
| 1982-83 | 5.40 | 1.30 | — | 8.05 | 1.30 | — |
| 1984[d] | 5.70 | 1.30 | — | 11.40 | 2.60 | — |
| 1985[d] | 5.70 | 1.35 | — | 11.40 | 2.70 | — |
| 1986-87[d] | 5.70 | 1.45 | — | 11.40 | 2.90 | — |
| 1988-89[d] | 6.06 | 1.45 | — | 12.12 | 2.90 | — |
| 1990-2012[e] | 6.20 | 1.45 | — | 12.40 | 2.90 | — |
| 2013 and later | 6.20 | 1.45 | 0.90 | 12.40 | 2.90 | 0.90 |

[a] The payroll tax on earnings for the OASDI program applies to annual earnings up to a contribution and benefit base indexed to the average wage level. The base is $106,800 for 2011.

[b] 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.

[c] Starting in 2013, an additional HI tax of 0.9 percent will be applied for earned income exceeding $200,000 for individuals and $250,000 for married couples filing jointly for Federal income tax. These limits are not indexed after 2013.

[d] In 1984 only, an immediate credit of 0.3 percent of taxable wages was allowed against the OASDI payroll tax contributions paid by employees. Similar credits of 2.7 percent, 2.3 percent, and 2.0 percent were allowed against the combined OASDI and Hospital Insurance (HI) contributions on net earnings from self-employment in 1984, 1985, and 1986-89, respectively. These credits were offset by reimbursements from the General Fund of the Treasury. Beginning in 1990, self-employed persons are allowed 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 is then applied to net earnings after this deduction, but subject to the OASDI base.

[e] Under Public Law 111-147, most employers were exempt 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. Under Public Law 111-312, the OASDI payroll tax rate is reduced for 2011 by 2 percentage points for employees and for self-employed workers. These temporary reductions in 2010 and 2011 tax revenue due to lower tax rates have been and will be made up by reimbursements from the General Fund of the Treasury to the OASI and DI Trust Funds.

Table VI.F2 shows estimated annual income rates and cost rates for the OASDI program, the HI program, and the combined OASDI and HI programs, based on the low-cost, intermediate, and high-cost sets of assumptions (alternatives I, II, and III) described earlier in this report. All of the tax rates shown in table VI.F1 are reflected in the income rates. For the HI program, the additional 0.9 percent tax on employees for relatively high earnings is included by increasing the rate shown. That is, HI taxable payroll represents all earnings subject to the payroll tax for the HI program, and the

effective tax rate included in the income rate is 2.9 percent through 2012 with an increase thereafter based on the portion of the total payroll to which the 0.9 percent applies. These annual rates are intended to indicate the cash-flow operation of the programs. Therefore, income rates exclude interest earned on trust fund assets. Table VI.F2 also shows the differences between income rates and cost rates, called balances. Estimates shown for the combined trust funds are theoretical because no authority currently exists for borrowing by or transfers among these trust funds.

The combined OASDI and HI cost rate is projected to rise generally above current levels under the intermediate and high-cost sets of assumptions, with the greatest increase occurring during the period 2015-30. Under both the intermediate and the high-cost assumptions for the combined programs, annual deficits are projected to occur for each year of the 75-year projection period. Under the intermediate assumptions, the combined cost rate increases by 31 percent from its current level by 2085, while under the high-cost assumptions, the cost rate is projected to more than double by the end of the projection period. Under the low-cost assumptions, the combined cost rate is projected to decrease by 12 percent by the end of the period, with positive annual balances in all years except for 2011-13 and 2023-42.

**Table VI.F2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2011-85**

[As a percentage of taxable payroll[a]]

| | OASDI | | | HI | | | Combined | | |
|---|---|---|---|---|---|---|---|---|---|
| Calendar year | Income rate | Cost rate | Balance | Income rate | Cost rate | Balance | Income rate | Cost rate | Balance |
| **Intermediate:** | | | | | | | | | |
| 2011 . . . . . | 12.52 | 13.35 | -0.82 | 3.14 | 3.79 | -0.65 | 15.66 | 17.13 | -1.47 |
| 2012 . . . . . | 12.87 | 13.23 | -.36 | 3.16 | 3.74 | -.58 | 16.02 | 16.97 | -.95 |
| 2013 . . . . . | 12.87 | 13.18 | -.31 | 3.29 | 3.68 | -.40 | 16.15 | 16.86 | -.71 |
| 2014 . . . . . | 12.92 | 13.18 | -.27 | 3.32 | 3.63 | -.30 | 16.24 | 16.81 | -.57 |
| 2015 . . . . . | 12.94 | 13.24 | -.30 | 3.35 | 3.53 | -.18 | 16.29 | 16.77 | -.49 |
| 2016 . . . . . | 12.97 | 13.33 | -.36 | 3.37 | 3.50 | -.14 | 16.34 | 16.83 | -.49 |
| 2017 . . . . . | 13.00 | 13.46 | -.46 | 3.39 | 3.50 | -.11 | 16.39 | 16.96 | -.57 |
| 2018 . . . . . | 13.03 | 13.62 | -.59 | 3.41 | 3.51 | -.11 | 16.43 | 17.13 | -.69 |
| 2019 . . . . . | 13.04 | 13.88 | -.84 | 3.43 | 3.54 | -.12 | 16.47 | 17.42 | -.95 |
| 2020 . . . . . | 13.06 | 14.20 | -1.14 | 3.45 | 3.61 | -.16 | 16.51 | 17.80 | -1.29 |
| 2025 . . . . . | 13.15 | 15.67 | -2.52 | 3.54 | 4.00 | -.45 | 16.69 | 19.67 | -2.98 |
| 2030 . . . . . | 13.21 | 16.66 | -3.44 | 3.63 | 4.41 | -.78 | 16.84 | 21.07 | -4.23 |
| 2035 . . . . . | 13.24 | 17.01 | -3.77 | 3.70 | 4.77 | -1.07 | 16.94 | 21.78 | -4.84 |
| 2040 . . . . . | 13.25 | 16.95 | -3.71 | 3.76 | 4.99 | -1.23 | 17.01 | 21.94 | -4.93 |
| 2045 . . . . . | 13.24 | 16.79 | -3.54 | 3.82 | 5.08 | -1.26 | 17.07 | 21.87 | -4.80 |
| 2050 . . . . . | 13.24 | 16.69 | -3.44 | 3.89 | 5.11 | -1.22 | 17.13 | 21.79 | -4.66 |
| 2055 . . . . . | 13.25 | 16.72 | -3.47 | 3.96 | 5.10 | -1.14 | 17.21 | 21.82 | -4.60 |
| 2060 . . . . . | 13.26 | 16.80 | -3.55 | 4.03 | 5.10 | -1.07 | 17.29 | 21.90 | -4.61 |
| 2065 . . . . . | 13.27 | 16.87 | -3.60 | 4.10 | 5.11 | -1.01 | 17.36 | 21.98 | -4.61 |
| 2070 . . . . . | 13.27 | 17.00 | -3.73 | 4.16 | 5.11 | -.95 | 17.44 | 22.12 | -4.68 |
| 2075 . . . . . | 13.29 | 17.18 | -3.89 | 4.22 | 5.08 | -.86 | 17.51 | 22.26 | -4.75 |
| 2080 . . . . . | 13.30 | 17.36 | -4.06 | 4.27 | 5.00 | -.73 | 17.57 | 22.37 | -4.79 |
| 2085 . . . . . | 13.31 | 17.56 | -4.24 | 4.32 | 4.90 | -.58 | 17.64 | 22.46 | -4.82 |
| **Low-cost:** | | | | | | | | | |
| 2011 . . . . . | 12.50 | 13.24 | -.74 | 3.14 | 3.67 | -.53 | 15.64 | 16.91 | -1.27 |
| 2012 . . . . . | 12.88 | 13.00 | -.12 | 3.15 | 3.56 | -.41 | 16.03 | 16.56 | -.53 |
| 2013 . . . . . | 12.85 | 12.77 | .08 | 3.28 | 3.44 | -.16 | 16.13 | 16.21 | -.08 |
| 2014 . . . . . | 12.90 | 12.61 | .28 | 3.31 | 3.32 | -.01 | 16.21 | 15.94 | .27 |
| 2015 . . . . . | 12.91 | 12.53 | .38 | 3.33 | 3.16 | .17 | 16.24 | 15.70 | .54 |
| 2016 . . . . . | 12.94 | 12.53 | .41 | 3.35 | 3.08 | .27 | 16.29 | 15.61 | .68 |
| 2017 . . . . . | 12.97 | 12.61 | .36 | 3.37 | 3.01 | .35 | 16.33 | 15.62 | .71 |
| 2018 . . . . . | 12.99 | 12.71 | .28 | 3.38 | 2.97 | .41 | 16.37 | 15.68 | .69 |
| 2019 . . . . . | 13.00 | 12.86 | .14 | 3.40 | 2.94 | .46 | 16.40 | 15.80 | .60 |
| 2020 . . . . . | 13.01 | 13.05 | -.04 | 3.42 | 2.93 | .48 | 16.42 | 15.98 | .44 |
| 2025 . . . . . | 13.07 | 14.02 | -.95 | 3.49 | 2.97 | .52 | 16.56 | 16.99 | -.43 |
| 2030 . . . . . | 13.11 | 14.60 | -1.48 | 3.56 | 2.98 | .57 | 16.67 | 17.58 | -.91 |
| 2035 . . . . . | 13.13 | 14.62 | -1.49 | 3.61 | 2.94 | .67 | 16.73 | 17.56 | -.82 |
| 2040 . . . . . | 13.11 | 14.28 | -1.17 | 3.65 | 2.80 | .85 | 16.77 | 17.08 | -.32 |
| 2045 . . . . . | 13.10 | 13.88 | -.78 | 3.69 | 2.66 | 1.04 | 16.79 | 16.53 | .26 |
| 2050 . . . . . | 13.08 | 13.57 | -.48 | 3.74 | 2.54 | 1.20 | 16.83 | 16.10 | .72 |
| 2055 . . . . . | 13.08 | 13.37 | -.29 | 3.80 | 2.46 | 1.34 | 16.87 | 15.83 | 1.04 |
| 2060 . . . . . | 13.07 | 13.19 | -.12 | 3.85 | 2.44 | 1.41 | 16.92 | 15.63 | 1.29 |
| 2065 . . . . . | 13.06 | 12.97 | .09 | 3.90 | 2.44 | 1.46 | 16.96 | 15.41 | 1.55 |
| 2070 . . . . . | 13.05 | 12.79 | .26 | 3.95 | 2.44 | 1.51 | 17.00 | 15.24 | 1.76 |
| 2075 . . . . . | 13.05 | 12.65 | .40 | 4.00 | 2.43 | 1.57 | 17.04 | 15.08 | 1.97 |
| 2080 . . . . . | 13.04 | 12.56 | .48 | 4.04 | 2.39 | 1.65 | 17.08 | 14.95 | 2.13 |
| 2085 . . . . . | 13.04 | 12.56 | .48 | 4.08 | 2.34 | 1.74 | 17.13 | 14.90 | 2.22 |

**Table VI.F2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2011-85 (Cont.)**
[As a percentage of taxable payroll[a]]

| | OASDI | | | HI | | | Combined | | |
|---|---|---|---|---|---|---|---|---|---|
| Calendar year | Income rate | Cost rate | Balance | Income rate | Cost rate | Balance | Income rate | Cost rate | Balance |
| **High-cost:** | | | | | | | | | |
| 2011 . . . . . | 12.56 | 13.48 | -0.92 | 3.14 | 3.91 | -0.78 | 15.70 | 17.40 | -1.70 |
| 2012 . . . . . | 12.84 | 13.52 | -.68 | 3.16 | 3.93 | -.77 | 16.00 | 17.45 | -1.45 |
| 2013 . . . . . | 12.88 | 13.61 | -.73 | 3.29 | 3.96 | -.66 | 16.17 | 17.57 | -1.40 |
| 2014 . . . . . | 12.94 | 13.78 | -.84 | 3.34 | 3.99 | -.65 | 16.28 | 17.77 | -1.49 |
| 2015 . . . . . | 12.97 | 13.96 | -1.00 | 3.36 | 3.97 | -.60 | 16.33 | 17.93 | -1.60 |
| 2016 . . . . . | 13.00 | 14.16 | -1.16 | 3.39 | 4.02 | -.63 | 16.39 | 18.18 | -1.79 |
| 2017 . . . . . | 13.04 | 14.40 | -1.36 | 3.41 | 4.10 | -.68 | 16.45 | 18.49 | -2.04 |
| 2018 . . . . . | 13.07 | 14.69 | -1.62 | 3.44 | 4.20 | -.76 | 16.51 | 18.89 | -2.38 |
| 2019 . . . . . | 13.09 | 15.05 | -1.96 | 3.46 | 4.32 | -.86 | 16.55 | 19.37 | -2.82 |
| 2020 . . . . . | 13.12 | 15.49 | -2.37 | 3.49 | 4.49 | -1.00 | 16.60 | 19.98 | -3.38 |
| 2025 . . . . . | 13.24 | 17.53 | -4.29 | 3.60 | 5.49 | -1.89 | 16.84 | 23.02 | -6.18 |
| 2030 . . . . . | 13.33 | 19.02 | -5.69 | 3.72 | 6.70 | -2.98 | 17.04 | 25.72 | -8.68 |
| 2035 . . . . . | 13.39 | 19.88 | -6.50 | 3.82 | 7.97 | -4.15 | 17.20 | 27.85 | -10.65 |
| 2040 . . . . . | 13.42 | 20.28 | -6.86 | 3.91 | 9.13 | -5.22 | 17.32 | 29.41 | -12.09 |
| 2045 . . . . . | 13.44 | 20.55 | -7.11 | 3.99 | 9.98 | -5.99 | 17.43 | 30.53 | -13.10 |
| 2050 . . . . . | 13.46 | 20.84 | -7.38 | 4.08 | 10.54 | -6.46 | 17.54 | 31.38 | -13.84 |
| 2055 . . . . . | 13.49 | 21.29 | -7.80 | 4.18 | 10.84 | -6.66 | 17.67 | 32.13 | -14.46 |
| 2060 . . . . . | 13.52 | 21.82 | -8.29 | 4.27 | 10.94 | -6.67 | 17.79 | 32.76 | -14.96 |
| 2065 . . . . . | 13.56 | 22.38 | -8.82 | 4.35 | 10.96 | -6.61 | 17.91 | 33.34 | -15.43 |
| 2070 . . . . . | 13.60 | 23.09 | -9.49 | 4.44 | 10.97 | -6.53 | 18.04 | 34.06 | -16.02 |
| 2075 . . . . . | 13.65 | 23.89 | -10.24 | 4.52 | 10.90 | -6.38 | 18.17 | 34.79 | -16.62 |
| 2080 . . . . . | 13.69 | 24.65 | -10.95 | 4.60 | 10.74 | -6.14 | 18.29 | 35.38 | -17.09 |
| 2085 . . . . . | 13.73 | 25.30 | -11.56 | 4.67 | 10.52 | -5.85 | 18.40 | 35.81 | -17.41 |

[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, including those hired before 1984, all State and local government employees hired after April 1, 1986, and railroad employees. Combined OASDI and HI rates are computed as the sum of the separately derived rates for each program.

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

In table VI.F3, values are summarized over the 25-year, 50-year, and 75-year valuation periods (for which beginning fund balances are included in the summarized income rates, and the cost of accumulating an ending fund balance equal to 100 percent of annual cost by the end of the period is included in the summarized cost rates). Estimates shown for the combined trust funds are theoretical because no authority currently exists for borrowing by or transfers among these trust funds.

**Table VI.F3.—Summarized OASDI and HI Income Rates and Cost Rates for Valuation Periods,[a] Calendar Years 2011-85**
[As a percentage of taxable payroll[b]]

| Valuation period | OASDI | | | HI | | | Combined | | |
|---|---|---|---|---|---|---|---|---|---|
| | Income rate | Cost rate | Actuarial balance | Income rate | Cost rate | Actuarial balance | Income rate | Cost rate | Actuarial balance |
| **Intermediate:** | | | | | | | | | |
| 25-year: | | | | | | | | | |
| 2011-35 . . . . . | 15.01 | 15.61 | -0.60 | 3.64 | 4.14 | -0.50 | 18.65 | 19.75 | -1.09 |
| 50-year: | | | | | | | | | |
| 2011-60 . . . . . | 14.25 | 16.04 | -1.78 | 3.74 | 4.51 | -.78 | 17.99 | 20.55 | -2.56 |
| 75-year: | | | | | | | | | |
| 2011-85 . . . . . | 14.02 | 16.25 | -2.22 | 3.84 | 4.63 | -.79 | 17.87 | 20.88 | -3.01 |
| **Low-cost:** | | | | | | | | | |
| 25-year: | | | | | | | | | |
| 2011-35 . . . . . | 14.93 | 14.14 | .78 | 3.60 | 3.17 | .43 | 18.53 | 17.31 | 1.22 |
| 50-year: | | | | | | | | | |
| 2011-60 . . . . . | 14.14 | 13.90 | .23 | 3.65 | 2.91 | .74 | 17.79 | 16.82 | .97 |
| 75-year: | | | | | | | | | |
| 2011-85 . . . . . | 13.87 | 13.58 | .29 | 3.73 | 2.78 | .95 | 17.60 | 16.36 | 1.24 |
| **High-cost:** | | | | | | | | | |
| 25-year: | | | | | | | | | |
| 2011-35 . . . . . | 15.07 | 17.32 | -2.26 | 3.70 | 5.60 | -1.90 | 18.76 | 22.92 | -4.16 |
| 50-year: | | | | | | | | | |
| 2011-60 . . . . . | 14.37 | 18.74 | -4.37 | 3.84 | 7.50 | -3.66 | 18.21 | 26.24 | -8.03 |
| 75-year: | | | | | | | | | |
| 2011-85 . . . . . | 14.20 | 19.79 | -5.59 | 3.99 | 8.24 | -4.25 | 18.19 | 28.03 | -9.85 |

[a] Income rates include beginning trust fund balances and cost rates include the cost of reaching an ending fund target equal to 100 percent of annual cost by the end of the period.
[b] The taxable payroll for HI is significantly larger than the taxable payroll for OASDI because the HI taxable maximum amount was eliminated beginning 1994, and because HI covers all Federal civilian employees, all State and local government employees hired after April 1, 1986, and railroad employees. Combined OASDI and HI rates are computed as the sum of the separately derived rates for each program.

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

Under the high-cost assumptions, the combined OASDI and HI system is projected to experience large actuarial deficits for the 25-year, 50-year, and 75-year valuation periods. Under the intermediate assumptions, actuarial deficits smaller than those for the high-cost assumptions are projected for all three valuation periods. Under the low-cost assumptions, the combined OASDI and HI system is projected to have a positive actuarial balance for all three valuation periods.

## 2. Estimates as a Percentage of Gross Domestic Product

This section presents long-range projections of the operations of the combined Old-Age and Survivors Insurance and Disability Insurance (OASI and DI) Trust Funds and of the Hospital Insurance (HI) Trust Fund, expressed as a percentage of gross domestic product (GDP). While expressing these fund operations as a percentage of taxable payroll is the most useful approach for assessing the financial status of the programs (see table IV.B1 and section IV.B.1), analyzing them as a percentage of GDP provides an additional perspective on these fund operations in relation to the total value of goods and services produced in the United States.

Table VI.F4 shows estimated income excluding interest, total cost, and the resulting balance of the combined OASI and DI Trust Funds, of the HI Trust Fund, and of the combined OASI, DI, and HI Trust Funds, expressed as percentages of GDP on the basis of each of the three alternative sets of assumptions. Table VI.F4 also shows the estimated GDP on which these percentages are based. For OASDI, income excluding interest consists of payroll tax contributions, proceeds from taxation of benefits, and reimbursements from the General Fund of the Treasury, if any. Cost consists of benefit payments, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. For HI, income excluding interest 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. In computing these percentages, OASDI income and cost are on a cash basis; HI income and cost are on an incurred basis.

The OASDI annual balance (income excluding interest, less cost) as a percentage of GDP is projected to be negative in 2011 and 2012 under all three sets of assumptions. On the basis of the low-cost assumptions, the OASDI annual balance as a percentage of GDP is projected to be positive from 2013 through 2019. After 2019, deficits increase to a peak in 2033 and decrease thereafter. By 2063, the OASDI balance becomes positive, reaching 0.18 percent of GDP in 2085. On the basis of the intermediate assumptions, the OASDI balance is projected to be negative for all years of the projection period. Annual deficits decrease through 2014, increase from 2015 through 2036, decrease from 2037 through 2052, and increase thereafter. On the basis of the high-cost assumptions, the OASDI balance is projected to be negative throughout the projection period, with increasing deficits starting in 2013.

The HI balance as a percentage of GDP is projected to be negative from 2011-14 under the low-cost assumptions, and then positive and increasing thereafter. Under the intermediate assumptions, the HI balance is projected to be negative throughout the projection period. Annual deficits decline through 2018, reach a peak in 2045, and decline thereafter. Under the high-cost assumptions, the HI balance is negative for all years of the projection period. Annual deficits reach a peak in 2056 and decline thereafter.

The combined OASDI and HI annual balance as a percentage of GDP is projected to be negative throughout the projection period under the intermediate and high-cost assumptions. Under the low-cost assumptions, the combined OASDI and HI balance is negative from 2011-13, positive from 2014 through 2023, negative from 2024 through 2040, then positive and rising thereafter. Under the intermediate assumptions, combined OASDI and HI annual deficits decline through 2016, then rise, reaching a peak in 2038. After 2038, annual deficits fluctuate between about 1.7 percent and 1.9 percent of GDP. Combined annual deficits rise after 2013 under the high-cost assumptions.

By 2085, the combined OASDI and HI annual balances as percentages of GDP are projected to range from a positive balance of 0.98 percent for the low-cost assumptions to a deficit of 6.03 percent for the high-cost assumptions. Projected balances differ by a smaller amount for the tenth year, 2020, ranging from a positive balance of 0.21 percent for the low-cost assumptions to a deficit of 1.35 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 0.54 percent, based on the low-cost assumptions, to a deficit of 3.85 percent, based on the high-cost assumptions). The 25-year summarized balance varies by a smaller amount (from a positive balance of 0.49 percent to a deficit of 1.71 percent). Summarized rates are calculated on the present-value basis and include the trust fund balances on January 1, 2011 and the cost of reaching a target trust fund level equal to 100 percent of the following year's annual cost at the end of the period. (See section IV.B.4 for further explanation.)

**Table VI.F4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2011-85**

| | Percentage of GDP | | | | | | | | | GDP in dollars |
|---|---|---|---|---|---|---|---|---|---|---|
| | OASDI | | | HI | | | Combined | | | |
| Calendar year | Income[a] | Cost | Balance | Income[a] | Cost | Balance | Income[a] | Cost | Balance | (billions) |
| **Intermediate:** | | | | | | | | | | |
| 2011 . . . . . | 4.55 | 4.85 | -0.30 | 1.42 | 1.71 | -0.29 | 5.97 | 6.56 | -0.59 | $15,231 |
| 2012 . . . . . | 4.71 | 4.84 | -.13 | 1.44 | 1.71 | -.27 | 6.15 | 6.55 | -.40 | 15,949 |
| 2013 . . . . . | 4.73 | 4.84 | -.12 | 1.51 | 1.69 | -.18 | 6.24 | 6.54 | -.30 | 16,807 |
| 2014 . . . . . | 4.76 | 4.86 | -.10 | 1.54 | 1.68 | -.14 | 6.29 | 6.53 | -.24 | 17,719 |
| 2015 . . . . . | 4.78 | 4.89 | -.11 | 1.55 | 1.64 | -.09 | 6.33 | 6.53 | -.20 | 18,626 |
| 2016 . . . . . | 4.82 | 4.95 | -.13 | 1.57 | 1.63 | -.06 | 6.39 | 6.58 | -.20 | 19,496 |
| 2017 . . . . . | 4.85 | 5.02 | -.17 | 1.59 | 1.64 | -.05 | 6.44 | 6.66 | -.22 | 20,366 |
| 2018 . . . . . | 4.88 | 5.10 | -.22 | 1.60 | 1.65 | -.05 | 6.48 | 6.75 | -.27 | 21,312 |
| 2019 . . . . . | 4.89 | 5.21 | -.31 | 1.61 | 1.67 | -.05 | 6.50 | 6.87 | -.37 | 22,297 |
| 2020 . . . . . | 4.89 | 5.32 | -.43 | 1.62 | 1.70 | -.07 | 6.52 | 7.02 | -.50 | 23,315 |
| 2025 . . . . . | 4.87 | 5.81 | -.94 | 1.65 | 1.86 | -.21 | 6.52 | 7.66 | -1.15 | 29,190 |
| 2030 . . . . . | 4.85 | 6.12 | -1.27 | 1.67 | 2.03 | -.36 | 6.53 | 8.15 | -1.63 | 36,547 |
| 2035 . . . . . | 4.84 | 6.22 | -1.38 | 1.70 | 2.19 | -.49 | 6.53 | 8.40 | -1.87 | 45,934 |
| 2040 . . . . . | 4.81 | 6.16 | -1.35 | 1.72 | 2.27 | -.56 | 6.53 | 8.43 | -1.91 | 57,792 |
| 2045 . . . . . | 4.78 | 6.06 | -1.28 | 1.73 | 2.30 | -.57 | 6.51 | 8.36 | -1.85 | 72,644 |
| 2050 . . . . . | 4.74 | 5.98 | -1.23 | 1.75 | 2.30 | -.55 | 6.49 | 8.28 | -1.78 | 91,063 |
| 2055 . . . . . | 4.71 | 5.95 | -1.23 | 1.77 | 2.28 | -.51 | 6.48 | 8.22 | -1.74 | 113,949 |
| 2060 . . . . . | 4.68 | 5.93 | -1.25 | 1.79 | 2.26 | -.47 | 6.47 | 8.20 | -1.72 | 142,539 |
| 2065 . . . . . | 4.65 | 5.91 | -1.26 | 1.80 | 2.25 | -.45 | 6.46 | 8.16 | -1.71 | 178,452 |
| 2070 . . . . . | 4.62 | 5.92 | -1.30 | 1.82 | 2.24 | -.42 | 6.44 | 8.15 | -1.71 | 223,301 |
| 2075 . . . . . | 4.59 | 5.94 | -1.35 | 1.83 | 2.21 | -.37 | 6.43 | 8.15 | -1.72 | 279,159 |
| 2080 . . . . . | 4.57 | 5.97 | -1.40 | 1.85 | 2.16 | -.32 | 6.42 | 8.13 | -1.71 | 348,661 |
| 2085 . . . . . | 4.55 | 6.01 | -1.45 | 1.86 | 2.11 | -.25 | 6.41 | 8.11 | -1.70 | 435,071 |
| **Summarized rates:** [b] | | | | | | | | | | |
| 25-year: | | | | | | | | | | |
| 2011-35 . . . | 5.55 | 5.77 | -.22 | 1.69 | 1.92 | -.23 | 7.24 | 7.69 | -.45 | |
| 50-year: | | | | | | | | | | |
| 2011-60 . . . | 5.21 | 5.86 | -.65 | 1.71 | 2.07 | -.36 | 6.92 | 7.93 | -1.01 | |
| 75-year | | | | | | | | | | |
| 2011-85 . . . | 5.06 | 5.86 | -.80 | 1.74 | 2.10 | -.36 | 6.80 | 7.96 | -1.16 | |
| **Low-cost:** | | | | | | | | | | |
| 2011 . . . . . | 4.54 | 4.81 | -.27 | 1.42 | 1.66 | -.24 | 5.96 | 6.47 | -.51 | 15,305 |
| 2012 . . . . . | 4.71 | 4.76 | -.04 | 1.44 | 1.63 | -.19 | 6.15 | 6.38 | -.23 | 16,115 |
| 2013 . . . . . | 4.72 | 4.69 | .03 | 1.51 | 1.58 | -.07 | 6.23 | 6.27 | -.05 | 17,091 |
| 2014 . . . . . | 4.75 | 4.65 | .10 | 1.53 | 1.53 | [c] | 6.28 | 6.18 | .10 | 18,081 |
| 2015 . . . . . | 4.78 | 4.64 | .14 | 1.54 | 1.46 | .08 | 6.32 | 6.10 | .22 | 19,036 |
| 2016 . . . . . | 4.82 | 4.66 | .15 | 1.56 | 1.43 | .12 | 6.37 | 6.10 | .28 | 19,901 |
| 2017 . . . . . | 4.85 | 4.72 | .13 | 1.57 | 1.41 | .17 | 6.43 | 6.13 | .30 | 20,740 |
| 2018 . . . . . | 4.89 | 4.78 | .11 | 1.59 | 1.39 | .19 | 6.48 | 6.18 | .30 | 21,607 |
| 2019 . . . . . | 4.91 | 4.86 | .05 | 1.60 | 1.38 | .22 | 6.51 | 6.24 | .27 | 22,512 |
| 2020 . . . . . | 4.92 | 4.93 | -.01 | 1.60 | 1.38 | .23 | 6.52 | 6.31 | .21 | 23,450 |
| 2025 . . . . . | 4.90 | 5.26 | -.36 | 1.63 | 1.38 | .24 | 6.53 | 6.64 | -.11 | 28,795 |
| 2030 . . . . . | 4.89 | 5.45 | -.55 | 1.65 | 1.38 | .27 | 6.54 | 6.83 | -.29 | 35,305 |
| 2035 . . . . . | 4.89 | 5.45 | -.56 | 1.67 | 1.36 | .31 | 6.56 | 6.81 | -.25 | 43,471 |
| 2040 . . . . . | 4.88 | 5.31 | -.43 | 1.69 | 1.30 | .39 | 6.57 | 6.61 | -.04 | 53,734 |
| 2045 . . . . . | 4.87 | 5.15 | -.29 | 1.71 | 1.23 | .48 | 6.57 | 6.38 | .19 | 66,554 |
| 2050 . . . . . | 4.85 | 5.03 | -.18 | 1.72 | 1.17 | .55 | 6.58 | 6.20 | .38 | 82,404 |
| 2055 . . . . . | 4.84 | 4.95 | -.11 | 1.75 | 1.13 | .62 | 6.59 | 6.08 | .51 | 102,054 |
| 2060 . . . . . | 4.83 | 4.88 | -.05 | 1.77 | 1.12 | .65 | 6.60 | 6.00 | .60 | 126,548 |
| 2065 . . . . . | 4.82 | 4.79 | .03 | 1.79 | 1.12 | .67 | 6.62 | 5.91 | .70 | 157,228 |
| 2070 . . . . . | 4.82 | 4.72 | .10 | 1.81 | 1.12 | .69 | 6.63 | 5.84 | .79 | 195,562 |
| 2075 . . . . . | 4.81 | 4.67 | .15 | 1.83 | 1.11 | .72 | 6.64 | 5.78 | .87 | 243,366 |
| 2080 . . . . . | 4.81 | 4.63 | .18 | 1.85 | 1.10 | .76 | 6.66 | 5.73 | .93 | 302,757 |
| 2085 . . . . . | 4.82 | 4.64 | .18 | 1.87 | 1.08 | .80 | 6.69 | 5.72 | .98 | 376,292 |

**Table VI.F4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2011-85 (Cont.)**

| | Percentage of GDP | | | | | | | | | GDP in dollars |
|---|---|---|---|---|---|---|---|---|---|---|
| | OASDI | | | HI | | | Combined | | | |
| Calendar year | Income[a] | Cost | Balance | Income[a] | Cost | Balance | Income[a] | Cost | Balance | (billions) |
| **Low-cost (cont.):** | | | | | | | | | | |
| **Summarized rates:** [b] | | | | | | | | | | |
| 25-year: | | | | | | | | | | |
| 2011-35 . . . | 5.57 | 5.28 | 0.29 | 1.67 | 1.47 | 0.20 | 7.24 | 6.75 | 0.49 | |
| 50-year: | | | | | | | | | | |
| 2011-60 . . . | 5.26 | 5.18 | .09 | 1.69 | 1.35 | .34 | 6.95 | 6.53 | .43 | |
| 75-year | | | | | | | | | | |
| 2011-85 . . . | 5.15 | 5.05 | .11 | 1.72 | 1.29 | .44 | 6.88 | 6.33 | .54 | |
| **High-cost:** | | | | | | | | | | |
| 2011 . . . . . | 4.57 | 4.90 | -.33 | 1.42 | 1.77 | -.35 | 5.98 | 6.67 | -.69 | $15,124 |
| 2012 . . . . . | 4.69 | 4.94 | -.25 | 1.44 | 1.79 | -.35 | 6.13 | 6.73 | -.60 | 15,806 |
| 2013 . . . . . | 4.72 | 4.99 | -.27 | 1.51 | 1.82 | -.31 | 6.24 | 6.81 | -.57 | 16,649 |
| 2014 . . . . . | 4.76 | 5.06 | -.31 | 1.54 | 1.84 | -.30 | 6.30 | 6.91 | -.61 | 17,553 |
| 2015 . . . . . | 4.77 | 5.14 | -.37 | 1.56 | 1.84 | -.28 | 6.33 | 6.98 | -.65 | 18,540 |
| 2016 . . . . . | 4.80 | 5.23 | -.43 | 1.58 | 1.88 | -.30 | 6.38 | 7.11 | -.72 | 19,559 |
| 2017 . . . . . | 4.84 | 5.34 | -.50 | 1.60 | 1.92 | -.32 | 6.44 | 7.26 | -.82 | 20,594 |
| 2018 . . . . . | 4.87 | 5.47 | -.60 | 1.62 | 1.98 | -.36 | 6.48 | 7.44 | -.96 | 21,642 |
| 2019 . . . . . | 4.88 | 5.61 | -.73 | 1.63 | 2.04 | -.41 | 6.51 | 7.65 | -1.14 | 22,749 |
| 2020 . . . . . | 4.87 | 5.76 | -.88 | 1.64 | 2.11 | -.47 | 6.52 | 7.87 | -1.35 | 23,922 |
| 2025 . . . . . | 4.85 | 6.42 | -1.57 | 1.67 | 2.55 | -.87 | 6.52 | 8.96 | -2.45 | 30,533 |
| 2030 . . . . . | 4.82 | 6.89 | -2.06 | 1.70 | 3.07 | -1.37 | 6.53 | 9.96 | -3.43 | 39,025 |
| 2035 . . . . . | 4.80 | 7.13 | -2.33 | 1.73 | 3.62 | -1.89 | 6.53 | 10.75 | -4.22 | 50,039 |
| 2040 . . . . . | 4.76 | 7.20 | -2.44 | 1.76 | 4.11 | -2.35 | 6.52 | 11.31 | -4.79 | 64,037 |
| 2045 . . . . . | 4.72 | 7.21 | -2.49 | 1.78 | 4.44 | -2.66 | 6.49 | 11.65 | -5.16 | 81,581 |
| 2050 . . . . . | 4.67 | 7.22 | -2.56 | 1.79 | 4.63 | -2.84 | 6.46 | 11.86 | -5.40 | 103,352 |
| 2055 . . . . . | 4.62 | 7.29 | -2.67 | 1.81 | 4.71 | -2.89 | 6.43 | 11.99 | -5.56 | 130,363 |
| 2060 . . . . . | 4.57 | 7.37 | -2.80 | 1.83 | 4.69 | -2.86 | 6.40 | 12.06 | -5.66 | 164,102 |
| 2065 . . . . . | 4.52 | 7.46 | -2.94 | 1.84 | 4.64 | -2.80 | 6.36 | 12.10 | -5.74 | 206,444 |
| 2070 . . . . . | 4.47 | 7.59 | -3.12 | 1.86 | 4.58 | -2.73 | 6.33 | 12.18 | -5.85 | 259,064 |
| 2075 . . . . . | 4.43 | 7.76 | -3.32 | 1.87 | 4.50 | -2.63 | 6.30 | 12.26 | -5.96 | 324,238 |
| 2080 . . . . . | 4.39 | 7.91 | -3.51 | 1.88 | 4.38 | -2.51 | 6.27 | 12.29 | -6.02 | 405,035 |
| 2085 . . . . . | 4.36 | 8.03 | -3.67 | 1.88 | 4.25 | -2.36 | 6.24 | 12.27 | -6.03 | 505,453 |
| **Summarized rates:** [b] | | | | | | | | | | |
| 25-year: | | | | | | | | | | |
| 2011-35 . . . | 5.52 | 6.34 | -.83 | 1.71 | 2.59 | -.88 | 7.23 | 8.93 | -1.71 | |
| 50-year: | | | | | | | | | | |
| 2011-60 . . . | 5.15 | 6.72 | -1.57 | 1.74 | 3.40 | -1.66 | 6.89 | 10.12 | -3.23 | |
| 75-year | | | | | | | | | | |
| 2011-85 . . . | 4.98 | 6.94 | -1.96 | 1.77 | 3.66 | -1.89 | 6.75 | 10.60 | -3.85 | |

[a] Income for individual years excludes interest on the trust funds. Interest is implicitly reflected in all summarized values.

[b] Summarized rates are calculated on the present-value basis and include the value of the trust funds on January 1, 2011 and the cost of reaching a target trust fund level equal to 100 percent of annual cost at the end of the period.

[c] Between -0.005 and 0.005 percent of GDP.

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

The difference between trust fund operations expressed as percentages of taxable payroll and those expressed as percentages of GDP can be understood by analyzing the estimated ratios of OASDI taxable payroll to GDP, which are presented in table VI.F5. HI taxable payroll is about 26 percent larger than the OASDI taxable payroll throughout the long-range period (see appendix VI.F.1 for a detailed description of the difference). The cost as a

percentage of GDP is equal to the cost as a percentage of taxable payroll multiplied by the ratio of taxable payroll to GDP.

**Table VI.F5.—Ratio of OASDI Taxable Payroll to GDP, Calendar Years 2011-85**

| Calendar year | Intermediate | Low-cost | High-cost |
|---|---|---|---|
| 2011 | 0.363 | 0.363 | 0.363 |
| 2012 | .366 | .366 | .365 |
| 2013 | .367 | .368 | .367 |
| 2014 | .368 | .369 | .367 |
| 2015 | .369 | .370 | .368 |
| 2016 | .371 | .372 | .369 |
| 2017 | .373 | .374 | .371 |
| 2018 | .375 | .376 | .372 |
| 2019 | .375 | .378 | .373 |
| 2020 | .375 | .378 | .372 |
| 2025 | .370 | .375 | .366 |
| 2030 | .367 | .373 | .362 |
| 2035 | .365 | .372 | .359 |
| 2040 | .363 | .372 | .355 |
| 2045 | .361 | .371 | .351 |
| 2050 | .358 | .371 | .347 |
| 2055 | .356 | .370 | .342 |
| 2060 | .353 | .370 | .338 |
| 2065 | .351 | .369 | .333 |
| 2070 | .348 | .369 | .329 |
| 2075 | .346 | .369 | .325 |
| 2080 | .344 | .369 | .321 |
| 2085 | .342 | .369 | .317 |

Projections of GDP are based on the projected increases in U.S. employment, labor productivity, average hours worked, and the GDP deflator. Projections of taxable payroll reflect the projected 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, projected growth in taxable payroll differs from projected growth in GDP primarily due to the assumed trend in the ratio of wages to total employee compensation—i.e., wages plus fringe benefits. The ratio of earnings to total worker compensation declined at an average annual rate of 0.24 percent for the 40 years from 1969 to 2009. For the 10-year periods 1969-79, 1979-89, 1989-99, and 1999-2009, the average annual rates of change were -0.62, -0.14, 0.13 and -0.33 percent, respectively. Ultimate future annual rates of decline in the ratio of wages to employee compensation are assumed to be 0.0, 0.1, and 0.2 percent for the low-cost, intermediate, and high-cost assumptions, respectively. Another factor in the decline in the ratio of taxable payroll to GDP in most recent years is the decline in the ratio of taxable wages to covered wages, due to the relatively greater increases in wages for persons earning above the contribution and benefit base. Compared to the period 1983-2007, the projected taxable-to-covered wage ratio for 2011-20 is assumed to decline at a slower pace, with no further decline thereafter.

### 3. Estimates in Dollars

This section presents long-range projections in dollars of the operations of the combined OASI and DI Trust Funds and in some cases the HI Trust Fund. Meaningful comparison of current dollar values over long periods of time can be difficult because of the effect of inflation. Some means of removing inflation is thus generally desirable. Several economic series or indices are provided to allow current dollars to be adjusted for changes in prices, wages, and certain other aspects of economic growth during the projection period.

Table VI.F6 presents five indices that may be used to adjust dollar amounts, over time, to produce appropriately comparable values. Any series of values can be adjusted by dividing the value for each year by the corresponding index values for the year.

One of the most common forms of standardization is based on some measure of change in the prices of consumer goods. The Bureau of Labor Statistics, Department of Labor, publishes one such price index, the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W, hereafter referred to as CPI). This index is used to determine annual increases in OASDI monthly benefits payable after the year of initial eligibility. The CPI is assumed to increase ultimately at annual rates of 1.8, 2.8, and 3.8 percent for the low-cost, intermediate, and high-cost sets of assumptions, respectively. Constant-dollar values (those adjusted using the CPI index in table VI.F6) indicate the relative purchasing power of the values over time, and are provided in table VI.F7.

Another type of standardization combines the effects of price inflation and real-wage growth. The wage index presented here is the national average wage index, as defined in section 215(i)(1)(G) of the Social Security Act. This index is used to make annual adjustments to many earnings-related quantities embodied in the Social Security Act, such as the contribution and benefit base. The growth in the average annual wage is assumed to average 3.6, 4.0, and 4.4 percent under the low-cost, intermediate, and high-cost assumptions, respectively, between 2020 and 2085. 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, adjusted for the lower effective tax rate on multiple-employer excess wages. A series of val-

ues, 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 appendix VI.F.2) indicate their relative share of the total output of the economy. No explicit assumptions are made about growth in taxable payroll or GDP. These series are computed reflecting the other more 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. The series of interest-rate factors included here is based on the average of the assumed annual interest rates for special public-debt obligations issuable to the trust funds for each year. This series is slightly different from the interest rates used to create summarized values elsewhere in this report, where the actual yield on currently-held trust fund assets is used for each year. Ultimate nominal interest rates, which in practice are compounded semiannually, are assumed to be approximately 5.4, 5.7, and 5.9 percent for the low-cost, intermediate, and high-cost assumptions, respectively.

**Table VI.F6.—Selected Economic Variables, Calendar Years 2010-85**
[GDP and taxable payroll in billions]

| Calendar year | Adjusted CPI[a] | Average wage index[b] | Taxable payroll[c] | Gross domestic product | Compound interest-rate factor[d] |
|---|---|---|---|---|---|
| **Intermediate:** | | | | | |
| 2010 | 98.78 | $41,843.71 | $5,316 | $14,654 | 0.9700 |
| 2011 | 100.00 | 43,517.83 | 5,532 | 15,231 | 1.0000 |
| 2012 | 101.66 | 45,435.49 | 5,834 | 15,949 | 1.0447 |
| 2013 | 103.59 | 47,489.90 | 6,175 | 16,807 | 1.0978 |
| 2014 | 105.62 | 49,462.43 | 6,527 | 17,719 | 1.1558 |
| 2015 | 107.73 | 51,398.64 | 6,879 | 18,626 | 1.2165 |
| 2016 | 109.89 | 53,430.36 | 7,240 | 19,496 | 1.2792 |
| 2017 | 112.26 | 55,551.37 | 7,600 | 20,366 | 1.3457 |
| 2018 | 115.18 | 57,969.43 | 7,983 | 21,312 | 1.4212 |
| 2019 | 118.40 | 60,406.32 | 8,361 | 22,297 | 1.5036 |
| 2020 | 121.72 | 62,760.16 | 8,738 | 23,315 | 1.5906 |
| 2025 | 139.74 | 75,917.46 | 10,813 | 29,190 | 2.1068 |
| 2030 | 160.43 | 92,292.47 | 13,429 | 36,547 | 2.7904 |
| 2035 | 184.18 | 112,470.97 | 16,780 | 45,934 | 3.6957 |
| 2040 | 211.45 | 137,096.03 | 20,995 | 57,792 | 4.8949 |
| 2045 | 242.76 | 166,774.21 | 26,217 | 72,644 | 6.4832 |
| 2050 | 278.71 | 202,573.04 | 32,624 | 91,063 | 8.5867 |
| 2055 | 319.97 | 245,901.05 | 40,533 | 113,949 | 11.3729 |
| 2060 | 367.35 | 298,355.68 | 50,338 | 142,539 | 15.0631 |
| 2065 | 421.74 | 361,967.60 | 62,568 | 178,452 | 19.9506 |
| 2070 | 484.18 | 439,090.87 | 77,728 | 223,301 | 26.4240 |
| 2075 | 555.87 | 532,980.73 | 96,530 | 279,159 | 34.9978 |
| 2080 | 638.18 | 647,482.90 | 119,865 | 348,661 | 46.3536 |
| 2085 | 732.67 | 787,361.54 | 148,855 | 435,071 | 61.3940 |
| **Low-cost:** | | | | | |
| 2010 | 98.89 | 41,840.52 | 5,318 | 14,661 | .9691 |
| 2011 | 100.00 | 43,599.58 | 5,559 | 15,305 | 1.0000 |
| 2012 | 101.15 | 45,522.96 | 5,897 | 16,115 | 1.0443 |
| 2013 | 102.42 | 47,535.08 | 6,282 | 17,091 | 1.0971 |
| 2014 | 103.82 | 49,370.46 | 6,666 | 18,081 | 1.1540 |
| 2015 | 105.34 | 51,143.06 | 7,044 | 19,036 | 1.2144 |
| 2016 | 106.98 | 53,057.41 | 7,410 | 19,901 | 1.2763 |
| 2017 | 108.76 | 55,112.98 | 7,765 | 20,740 | 1.3419 |
| 2018 | 110.68 | 57,323.29 | 8,134 | 21,607 | 1.4135 |
| 2019 | 112.67 | 59,503.79 | 8,502 | 22,512 | 1.4905 |
| 2020 | 114.70 | 61,577.65 | 8,864 | 23,450 | 1.5717 |
| 2025 | 125.40 | 73,015.00 | 10,794 | 28,795 | 2.0508 |
| 2030 | 137.10 | 87,012.41 | 13,174 | 35,305 | 2.6758 |
| 2035 | 149.89 | 103,819.01 | 16,192 | 43,471 | 3.4913 |
| 2040 | 163.88 | 123,885.72 | 19,993 | 53,734 | 4.5554 |
| 2045 | 179.16 | 147,615.41 | 24,723 | 66,554 | 5.9438 |
| 2050 | 195.88 | 175,713.27 | 30,554 | 82,404 | 7.7554 |
| 2055 | 214.16 | 209,112.12 | 37,788 | 102,054 | 10.1190 |
| 2060 | 234.14 | 248,955.19 | 46,802 | 126,548 | 13.2031 |
| 2065 | 255.98 | 296,404.22 | 58,083 | 157,228 | 17.2272 |
| 2070 | 279.86 | 352,835.43 | 72,166 | 195,562 | 22.4777 |
| 2075 | 305.98 | 420,266.82 | 89,767 | 243,366 | 29.3285 |
| 2080 | 334.52 | 500,987.30 | 111,712 | 302,757 | 38.2673 |
| 2085 | 365.73 | 597,685.57 | 139,010 | 376,292 | 49.9304 |

**Table VI.F6.—Selected Economic Variables, Calendar Years 2010-85 (Cont.)**
[GDP and taxable payroll in billions]

| Calendar year | Adjusted CPI[a] | Average wage index[b] | Taxable payroll[c] | Gross domestic product | Compound interest-rate factor[d] |
|---|---|---|---|---|---|
| **High-cost:** | | | | | |
| 2010 | 98.45 | $41,836.85 | $5,314 | $14,645 | 0.9701 |
| 2011 | 100.00 | 43,363.65 | 5,496 | 15,124 | 1.0000 |
| 2012 | 102.38 | 45,401.07 | 5,776 | 15,806 | 1.0474 |
| 2013 | 105.25 | 47,667.29 | 6,104 | 16,649 | 1.1044 |
| 2014 | 108.41 | 49,918.31 | 6,450 | 17,553 | 1.1668 |
| 2015 | 111.88 | 52,343.69 | 6,823 | 18,540 | 1.2348 |
| 2016 | 115.46 | 54,993.37 | 7,226 | 19,559 | 1.3067 |
| 2017 | 119.38 | 57,690.56 | 7,637 | 20,594 | 1.3829 |
| 2018 | 123.68 | 60,485.28 | 8,055 | 21,642 | 1.4637 |
| 2019 | 128.38 | 63,329.45 | 8,475 | 22,749 | 1.5512 |
| 2020 | 133.26 | 66,140.81 | 8,891 | 23,922 | 1.6448 |
| 2025 | 160.58 | 81,562.75 | 11,181 | 30,533 | 2.1990 |
| 2030 | 193.50 | 101,100.40 | 14,127 | 39,025 | 2.9400 |
| 2035 | 233.16 | 125,769.72 | 17,940 | 50,039 | 3.9306 |
| 2040 | 280.96 | 156,518.55 | 22,733 | 64,037 | 5.2550 |
| 2045 | 338.56 | 194,265.42 | 28,633 | 81,581 | 7.0257 |
| 2050 | 407.96 | 240,635.32 | 35,821 | 103,352 | 9.3930 |
| 2055 | 491.59 | 297,752.07 | 44,613 | 130,363 | 12.5579 |
| 2060 | 592.37 | 367,917.01 | 55,432 | 164,102 | 16.7894 |
| 2065 | 713.80 | 454,431.01 | 68,821 | 206,444 | 22.4466 |
| 2070 | 860.13 | 561,214.67 | 85,218 | 259,064 | 30.0099 |
| 2075 | 1,036.46 | 693,500.40 | 105,300 | 324,238 | 40.1218 |
| 2080 | 1,248.93 | 857,733.04 | 129,967 | 405,035 | 53.6409 |
| 2085 | 1,504.96 | 1,062,040.43 | 160,398 | 505,453 | 71.7153 |

[a] The adjusted CPI is the CPI-W indexed to calendar year 2011.
[b] The average wage index is used to automatically adjust the contribution and benefit base and other wage-indexed program amounts. (See "Average wage index" in the glossary.)
[c] Taxable payroll consists of 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."
[d] The compound interest-rate factor is based on the average of the assumed annual interest rates for special public-debt obligations issuable to the trust funds in the 12 months of the year, under each alternative.

Table VI.F7 shows estimated operations of the combined OASI and DI Trust Funds in constant 2011 dollars (i.e., adjusted by the CPI indexing series as discussed above). The following items are presented in the table: income excluding interest, interest income, total income, total cost, and assets at the end of the year. Income excluding interest consists of payroll tax contributions, income from taxation of benefits, and reimbursements from the General Fund of the Treasury, if any. Cost consists of benefit payments, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. These estimates are based on the low-cost, intermediate, and high-cost sets of assumptions.

**Table VI.F7.—Operations of the Combined OASI and DI Trust Funds, in Constant 2011 Dollars,[a] Calendar Years 2011-85**

[In billions]

| Calendar year | Income excluding interest | Interest income | Total income | Cost | Assets at end of year |
|---|---|---|---|---|---|
| **Intermediate:** | | | | | |
| 2011 | $692.8 | $114.9 | $807.7 | $738.4 | $2,678.2 |
| 2012 | 738.5 | 114.2 | 852.7 | 759.4 | 2,727.9 |
| 2013 | 766.9 | 116.5 | 883.4 | 785.6 | 2,774.8 |
| 2014 | 798.2 | 120.0 | 918.3 | 814.7 | 2,824.9 |
| 2015 | 826.2 | 123.7 | 949.9 | 845.6 | 2,873.8 |
| 2016 | 854.6 | 127.3 | 981.9 | 878.0 | 2,921.3 |
| 2017 | 880.2 | 130.9 | 1,011.2 | 911.4 | 2,959.4 |
| 2018 | 902.9 | 135.5 | 1,038.4 | 943.7 | 2,979.0 |
| 2019 | 921.1 | 139.2 | 1,060.3 | 980.2 | 2,978.1 |
| 2020 | 937.6 | 141.5 | 1,079.1 | 1,019.1 | 2,956.9 |
| 2025 | 1,017.4 | 146.0 | 1,163.5 | 1,212.8 | 2,551.5 |
| 2030 | 1,105.9 | 95.2 | 1,201.1 | 1,394.3 | 1,570.7 |
| 2035[b] | 1,206.5 | 14.1 | 1,220.6 | 1,550.1 | 57.7 |
| **Low-cost:** | | | | | |
| 2011 | 695.0 | 115.0 | 809.9 | 735.9 | 2,683.0 |
| 2012 | 750.8 | 115.3 | 866.1 | 757.9 | 2,760.9 |
| 2013 | 788.0 | 119.3 | 907.3 | 783.1 | 2,850.6 |
| 2014 | 828.0 | 124.9 | 952.9 | 810.0 | 2,955.1 |
| 2015 | 863.3 | 131.1 | 994.5 | 838.1 | 3,068.9 |
| 2016 | 896.2 | 137.7 | 1,033.8 | 867.7 | 3,187.8 |
| 2017 | 925.7 | 144.9 | 1,070.6 | 900.2 | 3,306.1 |
| 2018 | 954.6 | 153.6 | 1,108.2 | 934.0 | 3,423.0 |
| 2019 | 980.9 | 162.1 | 1,143.0 | 970.4 | 3,535.2 |
| 2020 | 1,005.3 | 169.9 | 1,175.2 | 1,008.3 | 3,639.6 |
| 2025 | 1,125.3 | 212.1 | 1,337.4 | 1,207.0 | 4,027.6 |
| 2030 | 1,260.2 | 220.2 | 1,480.4 | 1,402.8 | 4,149.7 |
| 2035 | 1,417.9 | 218.3 | 1,636.1 | 1,579.2 | 4,098.0 |
| 2040 | 1,600.0 | 215.7 | 1,815.7 | 1,742.6 | 4,052.9 |
| 2045 | 1,807.3 | 221.5 | 2,028.8 | 1,914.7 | 4,178.6 |
| 2050 | 2,040.9 | 238.3 | 2,279.2 | 2,115.9 | 4,513.7 |
| 2055 | 2,307.5 | 266.7 | 2,574.2 | 2,359.3 | 5,067.4 |
| 2060 | 2,612.7 | 307.2 | 2,919.9 | 2,637.1 | 5,856.4 |
| 2065 | 2,963.5 | 366.5 | 3,330.0 | 2,943.2 | 7,014.3 |
| 2070 | 3,365.7 | 450.7 | 3,816.4 | 3,299.2 | 8,653.8 |
| 2075 | 3,827.3 | 565.4 | 4,392.7 | 3,710.6 | 10,882.6 |
| 2080 | 4,355.1 | 716.6 | 5,071.7 | 4,194.2 | 13,810.4 |
| 2085 | 4,957.3 | 907.1 | 5,864.4 | 4,774.1 | 17,484.5 |
| **High-cost:** | | | | | |
| 2011 | 690.4 | 114.7 | 805.2 | 741.1 | 2,673.1 |
| 2012 | 724.4 | 113.1 | 837.4 | 762.6 | 2,685.7 |
| 2013 | 747.1 | 114.1 | 861.2 | 789.5 | 2,684.2 |
| 2014 | 769.9 | 116.0 | 885.9 | 819.9 | 2,672.1 |
| 2015 | 790.8 | 117.4 | 908.2 | 851.5 | 2,645.9 |
| 2016 | 813.7 | 118.4 | 932.1 | 886.1 | 2,609.9 |
| 2017 | 834.1 | 119.0 | 953.0 | 920.9 | 2,556.2 |
| 2018 | 851.3 | 118.7 | 969.9 | 956.5 | 2,480.8 |
| 2019 | 864.2 | 116.6 | 980.8 | 993.4 | 2,377.4 |
| 2020 | 875.1 | 112.8 | 987.9 | 1,033.4 | 2,244.9 |
| 2025[b] | 921.6 | 74.9 | 996.5 | 1,220.5 | 1,156.9 |

[a] The adjusted CPI indexing series shown in table VI.F6 is used to adjust from current to constant dollars.
[b] Estimates for later years are not shown because the combined OASI and DI Trust Funds are estimated to become exhausted in 2036 under the intermediate assumptions and in 2029 under the high-cost assumptions.
Note: Totals do not necessarily equal the sums of rounded components.

Figure VI.F1 provides a comparison of annual cost with total annual income (including interest) and annual income excluding interest, for the OASDI program under intermediate assumptions. All values are expressed in constant dollars, consistent with table VI.F7. The difference between the income values for each year is equal to the trust fund interest earnings. The figure illustrates that, under intermediate assumptions: (1) annual cost will exceed non-interest income in each year of the projection period; (2) total annual income, which includes interest earnings on trust fund assets, will be sufficient to cover annual cost for years 2011 through 2022; and (3) total annual income will not be sufficient to cover annual cost for years beginning in 2023. From 2023 through 2035 (the year preceding the year of trust fund exhaustion), annual cost will be covered by drawing down combined trust fund assets.

**Figure VI.F1.—Estimated OASDI Income and Cost in Constant Dollars, Based on Intermediate Assumptions**
[In billions]

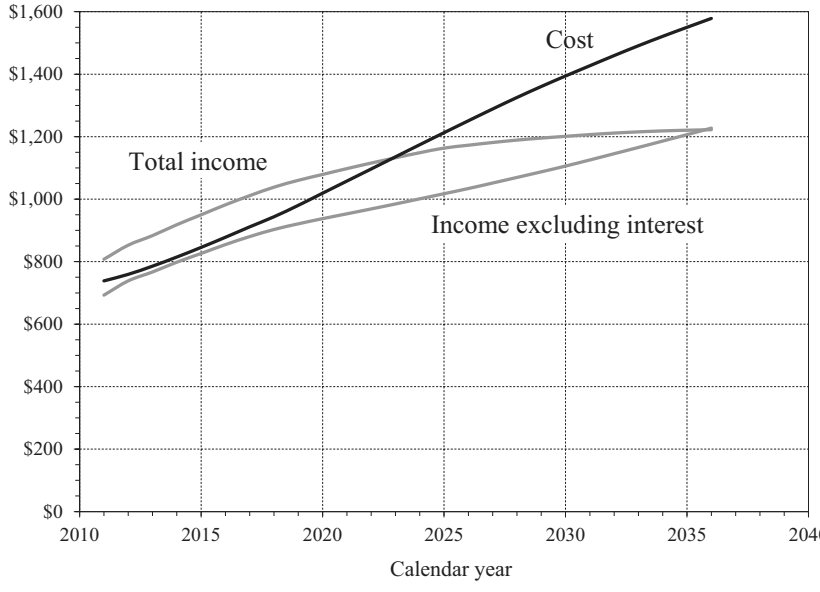



Table VI.F8 shows estimated operations of the combined OASI and DI Trust Funds in current dollars—that is, in dollars unadjusted for price inflation. The following items are presented in the table: income excluding interest, interest income, total income, total cost, and assets at the end of the year. These estimates, based on the low-cost, intermediate, and high-cost sets of

demographic and economic assumptions, are presented to facilitate independent analysis.

**Table VI.F8.—Operations of the Combined OASI and DI Trust Funds, in Current Dollars, Calendar Years 2011-85**
[In billions]

| Calendar year | Income excluding interest | Interest income | Total income | Cost | Assets at end of year |
|---|---|---|---|---|---|
| **Intermediate:** | | | | | |
| 2011 | $692.8 | $114.9 | $807.7 | $738.4 | $2,678.2 |
| 2012 | 750.7 | 116.1 | 866.8 | 772.0 | 2,773.0 |
| 2013 | 794.4 | 120.7 | 915.1 | 813.8 | 2,874.3 |
| 2014 | 843.1 | 126.8 | 969.9 | 860.5 | 2,983.7 |
| 2015 | 890.1 | 133.3 | 1,023.4 | 911.0 | 3,096.1 |
| 2016 | 939.1 | 139.8 | 1,079.0 | 964.8 | 3,210.2 |
| 2017 | 988.1 | 147.0 | 1,135.1 | 1,023.1 | 3,322.2 |
| 2018 | 1,040.0 | 156.1 | 1,196.0 | 1,086.9 | 3,431.3 |
| 2019 | 1,090.6 | 164.8 | 1,255.4 | 1,160.6 | 3,526.1 |
| 2020 | 1,141.2 | 172.2 | 1,313.4 | 1,240.4 | 3,599.1 |
| 2025 | 1,421.8 | 204.0 | 1,625.8 | 1,694.8 | 3,565.5 |
| 2030 | 1,774.2 | 152.7 | 1,926.9 | 2,236.8 | 2,519.9 |
| 2035[a] | 2,222.2 | 26.0 | 2,248.2 | 2,854.9 | 106.2 |
| **Low-cost:** | | | | | |
| 2011 | 695.0 | 115.0 | 809.9 | 735.9 | 2,683.0 |
| 2012 | 759.4 | 116.7 | 876.0 | 766.5 | 2,792.5 |
| 2013 | 807.1 | 122.2 | 929.3 | 802.1 | 2,919.7 |
| 2014 | 859.6 | 129.6 | 989.3 | 840.9 | 3,068.0 |
| 2015 | 909.4 | 138.1 | 1,047.6 | 882.9 | 3,232.7 |
| 2016 | 958.7 | 147.3 | 1,106.0 | 928.3 | 3,410.4 |
| 2017 | 1,006.8 | 157.6 | 1,164.4 | 979.0 | 3,595.8 |
| 2018 | 1,056.6 | 170.0 | 1,226.6 | 1,033.8 | 3,788.6 |
| 2019 | 1,105.2 | 182.6 | 1,287.8 | 1,093.3 | 3,983.1 |
| 2020 | 1,153.1 | 194.8 | 1,347.9 | 1,156.5 | 4,174.5 |
| 2025 | 1,411.1 | 266.0 | 1,677.1 | 1,513.6 | 5,050.6 |
| 2030 | 1,727.7 | 301.9 | 2,029.7 | 1,923.2 | 5,689.3 |
| 2035 | 2,125.3 | 327.2 | 2,452.4 | 2,367.1 | 6,142.6 |
| 2040 | 2,622.0 | 353.4 | 2,975.5 | 2,855.7 | 6,641.8 |
| 2045 | 3,238.1 | 396.9 | 3,634.9 | 3,430.5 | 7,486.6 |
| 2050 | 3,997.7 | 466.8 | 4,464.5 | 4,144.7 | 8,841.4 |
| 2055 | 4,941.6 | 571.2 | 5,512.8 | 5,052.7 | 10,852.2 |
| 2060 | 6,117.2 | 719.3 | 6,836.6 | 6,174.4 | 13,711.9 |
| 2065 | 7,586.0 | 938.1 | 8,524.1 | 7,534.1 | 17,955.2 |
| 2070 | 9,419.3 | 1,261.4 | 10,680.6 | 9,233.3 | 24,218.9 |
| 2075 | 11,710.4 | 1,730.1 | 13,440.5 | 11,353.4 | 33,297.9 |
| 2080 | 14,568.8 | 2,397.2 | 16,966.0 | 14,030.4 | 46,198.8 |
| 2085 | 18,130.5 | 3,317.7 | 21,448.1 | 17,460.6 | 63,946.5 |
| **High-cost:** | | | | | |
| 2011 | 690.4 | 114.7 | 805.2 | 741.1 | 2,673.1 |
| 2012 | 741.6 | 115.8 | 857.4 | 780.8 | 2,749.7 |
| 2013 | 786.3 | 120.1 | 906.4 | 831.0 | 2,825.2 |
| 2014 | 834.7 | 125.7 | 960.4 | 888.8 | 2,896.8 |
| 2015 | 884.7 | 131.3 | 1,016.0 | 952.6 | 2,960.2 |
| 2016 | 939.5 | 136.7 | 1,076.2 | 1,023.0 | 3,013.4 |
| 2017 | 995.7 | 142.0 | 1,137.7 | 1,099.4 | 3,051.7 |
| 2018 | 1,052.9 | 146.7 | 1,199.6 | 1,183.1 | 3,068.3 |
| 2019 | 1,109.5 | 149.7 | 1,259.2 | 1,275.4 | 3,052.1 |
| 2020 | 1,166.2 | 150.3 | 1,316.5 | 1,377.1 | 2,991.5 |
| 2025[a] | 1,479.8 | 120.2 | 1,600.1 | 1,959.9 | 1,857.6 |

[a] Estimates for later years are not shown because the combined OASI and DI Trust Funds are estimated to become exhausted in 2036 under the intermediate assumptions and in 2029 under the high-cost assumptions.

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

Table VI.F9 shows, in current dollars, estimated annual income (excluding interest) and estimated annual 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 described earlier in this report. For OASDI, income excluding interest consists of payroll tax contributions, proceeds from taxation of OASDI benefits, and reimbursements from the General Fund of the Treasury, if any. Cost consists of benefit payments, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries. For HI, income excluding interest 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. Income and cost estimates are shown on a cash basis for the OASDI program and on an incurred basis for the HI program.

Table VI.F9 also shows the difference between income excluding interest and cost, which is called the balance. The balance indicates the size of the difference between non-interest income and cost.

**Table VI.F9.—OASDI and HI Annual Income Excluding Interest, Cost, and Balance in Current Dollars, Calendar Years 2011-85**
[In billions]

| Calendar year | OASDI | | | HI | | | Combined | | |
|---|---|---|---|---|---|---|---|---|---|
| | Income excluding interest | Cost | Balance | Income excluding interest | Cost | Balance | Income excluding interest | Cost | Balance |
| **Intermediate:** | | | | | | | | | |
| 2011 . . . . . | $693 | $738 | -$46 | $216 | $261 | -$45 | $909 | $999 | -$90 |
| 2012 . . . . . | 751 | 772 | -21 | 230 | 272 | -42 | 980 | 1,044 | -64 |
| 2013 . . . . . | 794 | 814 | -19 | 254 | 285 | -31 | 1,048 | 1,099 | -50 |
| 2014 . . . . . | 843 | 861 | -17 | 272 | 297 | -25 | 1,115 | 1,158 | -42 |
| 2015 . . . . . | 890 | 911 | -21 | 289 | 305 | -16 | 1,179 | 1,216 | -37 |
| 2016 . . . . . | 939 | 965 | -26 | 306 | 318 | -12 | 1,245 | 1,283 | -38 |
| 2017 . . . . . | 988 | 1,023 | -35 | 323 | 334 | -10 | 1,311 | 1,357 | -45 |
| 2018 . . . . . | 1,040 | 1,087 | -47 | 341 | 352 | -11 | 1,381 | 1,439 | -58 |
| 2019 . . . . . | 1,091 | 1,161 | -70 | 360 | 372 | -12 | 1,450 | 1,532 | -82 |
| 2020 . . . . . | 1,141 | 1,240 | -99 | 378 | 395 | -17 | 1,519 | 1,636 | -117 |
| 2025 . . . . . | 1,422 | 1,695 | -273 | 480 | 542 | -62 | 1,902 | 2,237 | -335 |
| 2030 . . . . . | 1,774 | 2,237 | -463 | 611 | 743 | -132 | 2,386 | 2,980 | -594 |
| 2035 . . . . . | 2,222 | 2,855 | -633 | 779 | 1,004 | -225 | 3,001 | 3,859 | -858 |
| 2040 . . . . . | 2,781 | 3,560 | -778 | 991 | 1,315 | -323 | 3,773 | 4,874 | -1,101 |
| 2045 . . . . . | 3,472 | 4,401 | -929 | 1,258 | 1,673 | -415 | 4,731 | 6,074 | -1,343 |
| 2050 . . . . . | 4,321 | 5,444 | -1,123 | 1,593 | 2,092 | -499 | 5,914 | 7,536 | -1,622 |
| 2055 . . . . . | 5,371 | 6,777 | -1,406 | 2,016 | 2,594 | -578 | 7,387 | 9,371 | -1,984 |
| 2060 . . . . . | 6,674 | 8,459 | -1,785 | 2,549 | 3,223 | -674 | 9,223 | 11,682 | -2,459 |
| 2065 . . . . . | 8,300 | 10,554 | -2,254 | 3,221 | 4,015 | -795 | 11,520 | 14,569 | -3,049 |
| 2070 . . . . . | 10,318 | 13,216 | -2,898 | 4,063 | 4,993 | -930 | 14,381 | 18,209 | -3,828 |
| 2075 . . . . . | 12,825 | 16,583 | -3,758 | 5,119 | 6,163 | -1,044 | 17,944 | 22,746 | -4,802 |
| 2080 . . . . . | 15,940 | 20,810 | -4,870 | 6,439 | 7,540 | -1,101 | 22,379 | 28,350 | -5,971 |
| 2085 . . . . . | 19,814 | 26,132 | -6,318 | 8,092 | 9,172 | -1,080 | 27,906 | 35,303 | -7,398 |
| **Low-cost:** | | | | | | | | | |
| 2011 . . . . . | 695 | 736 | -41 | 217 | 254 | -37 | 912 | 990 | -78 |
| 2012 . . . . . | 759 | 767 | -7 | 232 | 262 | -30 | 991 | 1,029 | -37 |
| 2013 . . . . . | 807 | 802 | 5 | 257 | 270 | -13 | 1,064 | 1,072 | -8 |
| 2014 . . . . . | 860 | 841 | 19 | 276 | 277 | -1 | 1,136 | 1,118 | 18 |
| 2015 . . . . . | 909 | 883 | 27 | 293 | 278 | 15 | 1,202 | 1,161 | 41 |
| 2016 . . . . . | 959 | 928 | 30 | 310 | 285 | 25 | 1,268 | 1,213 | 55 |
| 2017 . . . . . | 1,007 | 979 | 28 | 326 | 292 | 34 | 1,333 | 1,271 | 62 |
| 2018 . . . . . | 1,057 | 1,034 | 23 | 343 | 301 | 42 | 1,400 | 1,335 | 65 |
| 2019 . . . . . | 1,105 | 1,093 | 12 | 360 | 311 | 49 | 1,465 | 1,404 | 61 |
| 2020 . . . . . | 1,153 | 1,156 | -3 | 376 | 323 | 53 | 1,529 | 1,480 | 50 |
| 2025 . . . . . | 1,411 | 1,514 | -102 | 468 | 398 | 70 | 1,879 | 1,911 | -32 |
| 2030 . . . . . | 1,728 | 1,923 | -196 | 582 | 489 | 94 | 2,310 | 2,412 | -102 |
| 2035 . . . . . | 2,125 | 2,367 | -242 | 726 | 592 | 135 | 2,852 | 2,959 | -107 |
| 2040 . . . . . | 2,622 | 2,856 | -234 | 907 | 696 | 211 | 3,530 | 3,552 | -22 |
| 2045 . . . . . | 3,238 | 3,431 | -192 | 1,135 | 817 | 318 | 4,373 | 4,247 | 126 |
| 2050 . . . . . | 3,998 | 4,145 | -147 | 1,421 | 965 | 457 | 5,419 | 5,109 | 310 |
| 2055 . . . . . | 4,942 | 5,053 | -111 | 1,783 | 1,155 | 628 | 6,725 | 6,208 | 517 |
| 2060 . . . . . | 6,117 | 6,174 | -57 | 2,241 | 1,418 | 823 | 8,358 | 7,592 | 765 |
| 2065 . . . . . | 7,586 | 7,534 | 52 | 2,817 | 1,763 | 1,054 | 10,403 | 9,297 | 1,106 |
| 2070 . . . . . | 9,419 | 9,233 | 186 | 3,544 | 2,193 | 1,351 | 12,963 | 11,426 | 1,537 |
| 2075 . . . . . | 11,710 | 11,353 | 357 | 4,459 | 2,710 | 1,749 | 16,169 | 14,063 | 2,106 |
| 2080 . . . . . | 14,569 | 14,030 | 538 | 5,609 | 3,321 | 2,287 | 20,178 | 17,352 | 2,826 |
| 2085 . . . . . | 18,130 | 17,461 | 670 | 7,052 | 4,047 | 3,005 | 25,183 | 21,508 | 3,675 |

**Table VI.F9.—OASDI and HI Annual Income Excluding Interest, Cost, and Balance in Current Dollars, Calendar Years 2011-85 (Cont.)**
[In billions]

| Calendar year | OASDI | | | HI | | | Combined | | |
|---|---|---|---|---|---|---|---|---|---|
| | Income excluding interest | Cost | Balance | Income excluding interest | Cost | Balance | Income excluding interest | Cost | Balance |
| **High-cost:** | | | | | | | | | |
| 2011 . . . . . | $690 | $741 | -$51 | $214 | $267 | -$53 | $905 | $1,008 | -$104 |
| 2012 . . . . . | 742 | 781 | -39 | 228 | 283 | -56 | 969 | 1,064 | -95 |
| 2013 . . . . . | 786 | 831 | -45 | 252 | 303 | -51 | 1,038 | 1,134 | -96 |
| 2014 . . . . . | 835 | 889 | -54 | 271 | 323 | -53 | 1,105 | 1,212 | -107 |
| 2015 . . . . . | 885 | 953 | -68 | 289 | 341 | -52 | 1,174 | 1,294 | -120 |
| 2016 . . . . . | 939 | 1,023 | -84 | 309 | 367 | -58 | 1,249 | 1,390 | -142 |
| 2017 . . . . . | 996 | 1,099 | -104 | 330 | 396 | -66 | 1,326 | 1,495 | -170 |
| 2018 . . . . . | 1,053 | 1,183 | -130 | 350 | 428 | -78 | 1,403 | 1,611 | -208 |
| 2019 . . . . . | 1,109 | 1,275 | -166 | 371 | 464 | -93 | 1,481 | 1,739 | -259 |
| 2020 . . . . . | 1,166 | 1,377 | -211 | 392 | 505 | -113 | 1,559 | 1,882 | -324 |
| 2025 . . . . . | 1,480 | 1,960 | -480 | 510 | 777 | -267 | 1,990 | 2,737 | -747 |
| 2030 . . . . . | 1,883 | 2,687 | -805 | 665 | 1,199 | -534 | 2,548 | 3,886 | -1,338 |
| 2035 . . . . . | 2,401 | 3,567 | -1,166 | 867 | 1,811 | -944 | 3,269 | 5,378 | -2,110 |
| 2040 . . . . . | 3,050 | 4,611 | -1,560 | 1,125 | 2,630 | -1,505 | 4,176 | 7,241 | -3,065 |
| 2045 . . . . . | 3,848 | 5,883 | -2,035 | 1,450 | 3,623 | -2,174 | 5,298 | 9,507 | -4,209 |
| 2050 . . . . . | 4,822 | 7,466 | -2,644 | 1,855 | 4,788 | -2,933 | 6,677 | 12,254 | -5,577 |
| 2055 . . . . . | 6,018 | 9,498 | -3,480 | 2,364 | 6,134 | -3,770 | 8,382 | 15,632 | -7,249 |
| 2060 . . . . . | 7,497 | 12,094 | -4,598 | 3,003 | 7,696 | -4,693 | 10,500 | 19,791 | -9,291 |
| 2065 . . . . . | 9,331 | 15,402 | -6,071 | 3,805 | 9,579 | -5,774 | 13,136 | 24,981 | -11,845 |
| 2070 . . . . . | 11,590 | 19,675 | -8,085 | 4,806 | 11,878 | -7,072 | 16,396 | 31,553 | -15,157 |
| 2075 . . . . . | 14,372 | 25,152 | -10,780 | 6,052 | 14,591 | -8,539 | 20,424 | 39,743 | -19,318 |
| 2080 . . . . . | 17,799 | 32,034 | -14,235 | 7,601 | 17,749 | -10,148 | 25,399 | 49,783 | -24,383 |
| 2085 . . . . . | 22,030 | 40,576 | -18,546 | 9,525 | 21,463 | -11,938 | 31,555 | 62,039 | -30,484 |

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

Table VI.F10 shows projected future benefit amounts payable upon retirement at either the normal retirement age (NRA) or age 65, for workers attaining age 65 in 2011 and subsequent years. Illustrative benefit levels are shown for workers with four separate pre-retirement earnings patterns. All estimates are based on the intermediate assumptions in this report. Benefit amounts are shown in constant 2011 dollars (adjusted to 2011 levels by the CPI indexing series shown in table VI.F6). Benefit amounts are also shown as percentages of the career-average relative earnings level for each case, wage indexed to the year prior to retirement. These percentages thus represent the benefit "replacement rate" of the career-average level of earnings.

The NRA was 65 for individuals who reached age 62 before 2000, was then increased to age 66 during the period 2000-05 (at a rate of 2 months per year as workers attained age 62), and is scheduled to increase to age 67 during the period 2017-22 (also by 2 months per year as workers attain age 62). Thus, for the illustrative cases shown in table VI.F10, the benefit levels shown for

retirement at 65 are lower than the levels shown for retirement at NRA, primarily because of the actuarial reduction for early (pre-NRA) retirement.

Four different pre-retirement earnings patterns are represented in table VI.F10. Three of these cases are workers with scaled-earnings patterns,[1] reflecting low, medium, and high career-average levels of pre-retirement earnings starting at age 21. The fourth case is the steady maximum earner. The three scaled-earnings cases have earnings patterns that reflect differences by age in the probability of work and in average earnings levels experienced by insured workers during the period 1991-2007. The general, career-average level of earnings for the scaled cases is set relative to the national average wage index (AWI) so that benefit levels are consistent with levels for "steady-earnings" cases presented in the 2000 and earlier Trustees Reports. For the scaled medium earner, the general, career-average earnings level is set at about equal to the AWI. For the scaled low and high earners, the general, career-average earnings level is set at about 45 percent and 160 percent of the AWI, respectively. The steady maximum earner is assumed to have earnings at (or above) the contribution and benefit base for each year starting at age 22 and prior to retirement.

As noted above, the scaled-earnings cases were constructed so that their career-average earnings levels are consistent with those of the corresponding steady low, average, and high earners presented in the 2000 and earlier Trustees Reports. As a result, values in this table are essentially comparable to those in earlier reports. Scaled-earnings cases are now used instead of steady-earnings cases because they more accurately illustrate the differences in benefit levels under the wide variety of reform proposals considered in recent years.

[1] More details on scaled-earnings patterns are provided in Actuarial Note Number 2010.3, which may be found at www.socialsecurity.gov/OACT/NOTES/ran3/an2010-3.html.

**Table VI.F10.—Annual Scheduled Benefit Amounts[a] for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2011-85**

| Year attain age 65[b] | Retirement at normal retirement age | | | Retirement at age 65 | | |
|---|---|---|---|---|---|---|
| | Age at retirement | Constant 2011 dollars[c] | Percent of earnings | Age at retirement | Constant 2011 dollars[c] | Percent of earnings |
| **Scaled low earnings:[d]** | | | | | | |
| 2011 | 66:0 | $11,041 | 57.3 | 65:0 | $10,398 | 55.2 |
| 2015 | 66:0 | 11,201 | 53.2 | 65:0 | 10,454 | 50.6 |
| 2020 | 66:2 | 12,441 | 55.0 | 65:0 | 11,473 | 51.4 |
| 2025 | 67:0 | 13,317 | 55.4 | 65:0 | 11,543 | 49.1 |
| 2030 | 67:0 | 14,040 | 55.1 | 65:0 | 12,168 | 48.9 |
| 2035 | 67:0 | 14,868 | 55.0 | 65:0 | 12,884 | 48.8 |
| 2040 | 67:0 | 15,782 | 55.0 | 65:0 | 13,680 | 48.8 |
| 2045 | 67:0 | 16,756 | 55.1 | 65:0 | 14,522 | 48.8 |
| 2050 | 67:0 | 17,756 | 55.2 | 65:0 | 15,390 | 48.9 |
| 2055 | 67:0 | 18,789 | 55.2 | 65:0 | 16,284 | 48.9 |
| 2060 | 67:0 | 19,864 | 55.3 | 65:0 | 17,216 | 49.0 |
| 2065 | 67:0 | 20,996 | 55.3 | 65:0 | 18,196 | 49.0 |
| 2070 | 67:0 | 22,186 | 55.3 | 65:0 | 19,228 | 49.0 |
| 2075 | 67:0 | 23,444 | 55.2 | 65:0 | 20,318 | 49.0 |
| 2080 | 67:0 | 24,787 | 55.2 | 65:0 | 21,482 | 48.9 |
| 2085 | 67:0 | 26,230 | 55.1 | 65:0 | 22,732 | 48.9 |
| **Scaled medium earnings:[e]** | | | | | | |
| 2011 | 66:0 | 18,204 | 42.5 | 65:0 | 17,134 | 40.9 |
| 2015 | 66:0 | 18,464 | 39.5 | 65:0 | 17,238 | 37.5 |
| 2020 | 66:2 | 20,505 | 40.8 | 65:0 | 18,913 | 38.1 |
| 2025 | 67:0 | 21,958 | 41.1 | 65:0 | 19,031 | 36.4 |
| 2030 | 67:0 | 23,136 | 40.9 | 65:0 | 20,048 | 36.2 |
| 2035 | 67:0 | 24,508 | 40.8 | 65:0 | 21,237 | 36.2 |
| 2040 | 67:0 | 26,009 | 40.8 | 65:0 | 22,542 | 36.2 |
| 2045 | 67:0 | 27,615 | 40.9 | 65:0 | 23,931 | 36.2 |
| 2050 | 67:0 | 29,264 | 40.9 | 65:0 | 25,363 | 36.3 |
| 2055 | 67:0 | 30,961 | 41.0 | 65:0 | 26,832 | 36.3 |
| 2060 | 67:0 | 32,734 | 41.0 | 65:0 | 28,371 | 36.3 |
| 2065 | 67:0 | 34,598 | 41.0 | 65:0 | 29,983 | 36.3 |
| 2070 | 67:0 | 36,560 | 41.0 | 65:0 | 31,686 | 36.3 |
| 2075 | 67:0 | 38,631 | 41.0 | 65:0 | 33,480 | 36.3 |
| 2080 | 67:0 | 40,843 | 40.9 | 65:0 | 35,397 | 36.3 |
| 2085 | 67:0 | 43,222 | 40.9 | 65:0 | 37,458 | 36.3 |
| **Scaled high earnings:[f]** | | | | | | |
| 2011 | 66:0 | 24,127 | 35.2 | 65:0 | 22,717 | 33.9 |
| 2015 | 66:0 | 24,469 | 32.7 | 65:0 | 22,839 | 31.1 |
| 2020 | 66:2 | 27,178 | 33.8 | 65:0 | 25,060 | 31.6 |
| 2025 | 67:0 | 29,102 | 34.0 | 65:0 | 25,220 | 30.1 |
| 2030 | 67:0 | 30,662 | 33.8 | 65:0 | 26,578 | 30.0 |
| 2035 | 67:0 | 32,473 | 33.8 | 65:0 | 28,146 | 30.0 |
| 2040 | 67:0 | 34,470 | 33.8 | 65:0 | 29,875 | 30.0 |
| 2045 | 67:0 | 36,598 | 33.8 | 65:0 | 31,719 | 30.0 |
| 2050 | 67:0 | 38,783 | 33.9 | 65:0 | 33,610 | 30.0 |
| 2055 | 67:0 | 41,031 | 33.9 | 65:0 | 35,561 | 30.1 |
| 2060 | 67:0 | 43,383 | 33.9 | 65:0 | 37,599 | 30.1 |
| 2065 | 67:0 | 45,849 | 33.9 | 65:0 | 39,737 | 30.1 |
| 2070 | 67:0 | 48,450 | 33.9 | 65:0 | 41,990 | 30.1 |
| 2075 | 67:0 | 51,197 | 33.9 | 65:0 | 44,369 | 30.1 |
| 2080 | 67:0 | 54,128 | 33.9 | 65:0 | 46,911 | 30.0 |
| 2085 | 67:0 | 57,278 | 33.8 | 65:0 | 49,641 | 30.0 |

**Table VI.F10.—Annual Scheduled Benefit Amounts[a] for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2011-85 (Cont.)**

| Year attain age 65[b] | Retirement at normal retirement age | | | Retirement at age 65 | | |
|---|---|---|---|---|---|---|
| | Age at retirement | Constant 2011 dollars[c] | Percent of earnings | Age at retirement | Constant 2011 dollars[c] | Percent of earnings |
| **Steady maximum earnings:[g]** | | | | | | |
| 2011 | 66:0 | $28,879 | 28.6 | 65:0 | $27,004 | 27.6 |
| 2015 | 66:0 | 29,797 | 26.3 | 65:0 | 27,659 | 25.0 |
| 2020 | 66:2 | 33,250 | 27.0 | 65:0 | 30,544 | 25.2 |
| 2025 | 67:0 | 35,813 | 27.2 | 65:0 | 30,806 | 24.0 |
| 2030 | 67:0 | 37,778 | 27.1 | 65:0 | 32,508 | 23.9 |
| 2035 | 67:0 | 40,025 | 27.0 | 65:0 | 34,442 | 23.8 |
| 2040 | 67:0 | 42,442 | 27.0 | 65:0 | 36,524 | 23.8 |
| 2045 | 67:0 | 45,060 | 27.1 | 65:0 | 38,780 | 23.9 |
| 2050 | 67:0 | 47,682 | 27.2 | 65:0 | 41,038 | 23.9 |
| 2055 | 67:0 | 50,354 | 27.3 | 65:0 | 43,338 | 24.0 |
| 2060 | 67:0 | 53,242 | 27.3 | 65:0 | 45,827 | 24.0 |
| 2065 | 67:0 | 56,271 | 27.3 | 65:0 | 48,433 | 24.0 |
| 2070 | 67:0 | 59,459 | 27.3 | 65:0 | 51,179 | 24.0 |
| 2075 | 67:0 | 62,831 | 27.2 | 65:0 | 54,080 | 24.0 |
| 2080 | 67:0 | 66,436 | 27.2 | 65:0 | 57,183 | 24.0 |
| 2085 | 67:0 | 70,302 | 27.2 | 65:0 | 60,510 | 23.9 |

[a] Annual scheduled benefit amounts are the total for the 12-month period starting with the month of retirement.
[b] Assumed to attain age 65 in January of the year.
[c] The adjustment for constant dollars is made using the adjusted CPI indexing series shown in table VI.F6.
[d] Career-average earnings at about 45 percent of the national average wage index (AWI).
[e] Career-average earnings at about 100 percent of the AWI.
[f] Career-average earnings at about 160 percent of the AWI.
[g] Earnings for each year equal to the contribution and benefit base.

## *G. ANALYSIS OF BENEFIT DISBURSEMENTS FROM THE OASI TRUST FUND WITH RESPECT TO DISABLED BENEFICIARIES*

***(Required by section 201(c) of the Social Security Act)***

Effective January 1957, monthly benefits have been payable from the OASI Trust Fund to disabled children aged 18 and over of retired and deceased workers in those cases for which the disability began before age 18. The age before which disability is required to have begun was subsequently changed to age 22. Effective February 1968, reduced monthly benefits have been payable from the OASI Trust Fund 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.

On December 31, 2010, about 996,000 persons were receiving monthly benefits from the OASI Trust Fund because of their disabilities or the disabilities of children. This total includes approximately 27,000 mothers and fathers (wives or husbands under normal retirement age of retired-worker beneficiaries and widows or widowers of deceased insured workers) who met all other qualifying requirements and were receiving unreduced benefits solely because they had disabled-child beneficiaries (or disabled children aged 16 or 17) in their care. Benefits paid from the OASI Trust Fund to the persons described above totaled $8,854 million in calendar year 2010. Table VI.G1 shows these and similar figures for selected calendar years during 1960-2010, and estimated experience for 2011-20 based on the intermediate set of assumptions.

**Table VI.G1.—Benefit Disbursements From the OASI Trust Fund With Respect to Disabled Beneficiaries**

[Beneficiaries in thousands; benefit payments in millions]

| Calendar year | Disabled beneficiaries, end of year | | | Amount of benefit payments[a] | | |
|---|---|---|---|---|---|---|
| | Total | Children[b] | Widows-widowers[c] | Total | Children[b] | Widows-widowers[d] |
| **Historical data:** | | | | | | |
| 1960 | 117 | 117 | — | $59 | $59 | — |
| 1965 | 214 | 214 | — | 134 | 134 | — |
| 1970 | 316 | 281 | 36 | 301 | 260 | $41 |
| 1975 | 435 | 376 | 58 | 664 | 560 | 104 |
| 1980 | 519 | 460 | 59 | 1,223 | 1,097 | 126 |
| 1985 | 594 | 547 | 47 | 2,072 | 1,885 | 187 |
| 1990 | 662 | 613 | 49 | 2,882 | 2,649 | 233 |
| 1991 | 687 | 627 | 61 | 3,179 | 2,875 | 304 |
| 1992 | 715 | 643 | 72 | 3,459 | 3,079 | 380 |
| 1993 | 740 | 659 | 81 | 3,752 | 3,296 | 456 |
| 1994 | 758 | 671 | 86 | 3,973 | 3,481 | 492 |
| 1995 | 772 | 681 | 91 | 4,202 | 3,672 | 531 |
| 1996 | 782 | 687 | 94 | 4,410 | 3,846 | 565 |
| 1997 | 789 | 693 | 96 | 4,646 | 4,050 | 596 |
| 1998 | 797 | 698 | 99 | 4,838 | 4,210 | 627 |
| 1999 | 805 | 702 | 102 | 4,991 | 4,336 | 655 |
| 2000 | 811 | 707 | 104 | 5,203 | 4,523 | 680 |
| 2001 | 817 | 712 | 105 | 5,520 | 4,802 | 718 |
| 2002 | 823 | 717 | 106 | 5,773 | 5,024 | 749 |
| 2003 | 827 | 722 | 105 | 5,950 | 5,184 | 764 |
| 2004 | 828 | 723 | 105 | 6,099 | 5,316 | 781 |
| 2005 | 836 | 728 | 108 | 6,458 | 5,556 | 843 |
| 2006 | 840 | 732 | 108 | 6,741 | 5,852 | 885 |
| 2007 | 851 | 744 | 107 | 7,051 | 6,181 | 867 |
| 2008 | 922 | 813 | 109 | 7,685 | 6,776 | 905 |
| 2009 | 969 | 857 | 112 | 8,592 | 7,618 | 971 |
| 2010 | 996 | 879 | 117 | 8,854 | 7,848 | 1,004 |
| **Estimates under the intermediate assumptions:** | | | | | | |
| 2011 | 1,016 | 897 | 120 | 9,156 | 8,112 | 1,039 |
| 2012 | 1,035 | 914 | 121 | 9,461 | 8,390 | 1,065 |
| 2013 | 1,054 | 932 | 122 | 9,865 | 8,759 | 1,098 |
| 2014 | 1,071 | 949 | 122 | 10,283 | 9,154 | 1,121 |
| 2015 | 1,088 | 966 | 122 | 10,724 | 9,572 | 1,143 |
| 2016 | 1,102 | 982 | 120 | 11,171 | 10,003 | 1,158 |
| 2017 | 1,116 | 997 | 118 | 11,628 | 10,446 | 1,172 |
| 2018 | 1,128 | 1,012 | 116 | 12,122 | 10,926 | 1,185 |
| 2019 | 1,141 | 1,027 | 114 | 12,698 | 11,477 | 1,210 |
| 2020 | 1,154 | 1,041 | 113 | 13,319 | 12,062 | 1,246 |

[a] Beginning in 1966, this includes payments for vocational rehabilitation services.

[b] This also includes certain mothers and fathers (see text).

[c] In 1984 and later years, only disabled widows and widowers aged 50-59 are included because disabled widows and widowers age 60 and older would be 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, this reflects 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) as compared to the higher nondisabled widow's and widower's benefits that would otherwise be payable. In 1984 and later years, only benefit payments to disabled widows and widowers aged 50-59 are included (see footnote c).

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

Total benefit payments from the OASI Trust Fund with respect to disabled beneficiaries are estimated to increase from $9,156 million in calendar year 2011 to $13,319 million in calendar year 2020, based on the intermediate assumptions.

In calendar year 2010, 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 latter fund to all children and spouses of disabled-worker beneficiaries) totaled $133,100 million. Of this amount, $8,854 million or 6.7 percent represented payments from the OASI Trust Fund. Table VI.G2 presents these and similar figures for selected calendar years during 1960-2010 and estimates for calendar years 2011-20.

**Table VI.G2.—Benefit Disbursements Under the OASDI Program With Respect to Disabled Beneficiaries**
[Amounts in millions]

| Calendar year | Total[a] | DI Trust Fund[b] | OASI Trust Fund | |
|---|---|---|---|---|
| | | | Amount[c] | Percentage of total |
| **Historical data:** | | | | |
| 1960 | $627 | $568 | $59 | 9.4 |
| 1965 | 1,707 | 1,573 | 134 | 7.9 |
| 1970 | 3,386 | 3,085 | 301 | 8.9 |
| 1975 | 9,169 | 8,505 | 664 | 7.2 |
| 1980 | 16,738 | 15,515 | 1,223 | 7.3 |
| 1985 | 20,908 | 18,836 | 2,072 | 9.9 |
| 1990 | 27,717 | 24,835 | 2,882 | 10.4 |
| 1991 | 30,877 | 27,698 | 3,179 | 10.3 |
| 1992 | 34,583 | 31,124 | 3,459 | 10.0 |
| 1993 | 38,378 | 34,626 | 3,752 | 9.8 |
| 1994 | 41,730 | 37,757 | 3,973 | 9.5 |
| 1995 | 45,140 | 40,937 | 4,202 | 9.3 |
| 1996 | 48,615 | 44,205 | 4,410 | 9.1 |
| 1997 | 50,358 | 45,712 | 4,646 | 9.2 |
| 1998 | 53,062 | 48,224 | 4,838 | 9.1 |
| 1999 | 56,390 | 51,399 | 4,991 | 8.9 |
| 2000 | 60,204 | 55,001 | 5,203 | 8.6 |
| 2001 | 65,157 | 59,637 | 5,520 | 8.5 |
| 2002 | 71,493 | 65,721 | 5,773 | 8.1 |
| 2003 | 76,902 | 70,952 | 5,950 | 7.7 |
| 2004 | 84,350 | 78,251 | 6,099 | 7.2 |
| 2005 | 91,843 | 85,386 | 6,458 | 7.0 |
| 2006 | 99,186 | 92,446 | 6,741 | 6.8 |
| 2007 | 106,197 | 99,147 | 7,051 | 6.6 |
| 2008 | 114,061 | 106,376 | 7,685 | 6.7 |
| 2009 | 127,000 | 118,407 | 8,592 | 6.8 |
| 2010 | 133,100 | 124,245 | 8,854 | 6.7 |
| **Estimates under the intermediate assumptions:** | | | | |
| 2011 | 138,529 | 129,373 | 9,156 | 6.6 |
| 2012 | 144,750 | 135,289 | 9,461 | 6.5 |
| 2013 | 149,924 | 140,060 | 9,865 | 6.6 |
| 2014 | 155,163 | 144,880 | 10,283 | 6.6 |
| 2015 | 160,490 | 149,766 | 10,724 | 6.7 |
| 2016 | 166,181 | 155,010 | 11,171 | 6.7 |
| 2017 | 172,313 | 160,685 | 11,628 | 6.7 |
| 2018 | 179,168 | 167,046 | 12,122 | 6.8 |
| 2019 | 187,329 | 174,632 | 12,698 | 6.8 |
| 2010 | 196,120 | 182,801 | 13,319 | 6.8 |

[a] Beginning in 1966, includes payments for vocational rehabilitation services.
[b] Benefit payments to disabled workers and their children and spouses.
[c] Benefit payments to disabled children aged 18 and over, to certain mothers and fathers (see text), and to disabled widows and widowers (see footnote d, table VI.G1).

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

## *H. GLOSSARY*

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

**Actuarial deficit.** A negative actuarial balance.

**Administrative expenses.** Expenses incurred by the Social Security Administration and the Department of the Treasury in administering the OASDI program and the provisions of the Internal Revenue Code relating to the collection of contributions. Such administrative expenses are paid from the OASI and DI Trust Funds.

**Advance tax transfers.** Amounts representing the estimated total OASDI tax contributions for a given month. From May 1983 through November 1990, such amounts were credited to the OASI and DI Trust Funds at the beginning of each month. The trust funds reimbursed the General Fund of the Treasury for the associated loss of interest. Advance tax transfers are no longer made unless needed in order to pay benefits.

**Alternatives I, II, or III.** See "Assumptions."

**Annual balance.** The difference between the income rate and the cost rate for a given year.

**Assets.** Treasury notes and bonds, other securities guaranteed by the Federal Government, certain Federally sponsored agency obligations, and cash, held by the trust funds for investment purposes.

**Assumptions.** Values relating to future trends in certain key factors that affect the balance in the trust funds. Demographic assumptions include fertility, mortality, net immigration, marriage, and divorce. Economic assumptions include unemployment rates, average earnings, inflation, interest rates, and productivity. Program-specific assumptions include retirement patterns, and disability incidence and termination rates. Three sets of demographic, economic, and program-specific assumptions are presented in this report:

- 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 characterized as a low-cost set—it assumes relatively rapid economic growth, low inflation, and favorable (from the standpoint of program financing) demographic and program-specific conditions.
- Alternative III is characterized as a high-cost set—it assumes relatively slow economic growth, high inflation, and unfavorable (from the standpoint of program financing) demographic and program-specific conditions.

See tables V.A1, V.B1, and V.B2.

**Automatic cost-of-living benefit increase.** The annual increase in benefits, effective for December, reflecting the increase, if any, in the cost of living. A benefit increase is applicable only after a beneficiary becomes eligible for benefits. In general, the benefit increase equals the percentage increase in the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) measured from the third quarter of the previous year to the third quarter of the current year. If there is no increase in the CPI-W, there is no cost-of-living benefit increase. See table V.C1.

**Auxiliary benefits.** Monthly benefits payable to a spouse or child of a retired or disabled worker, or to a survivor of a deceased worker.

**Average indexed monthly earnings—AIME.** The measure of lifetime earnings used in determining the primary insurance amount (PIA) for most workers who attain age 62, become disabled, or die after 1978. A worker's actual past earnings are adjusted by changes in the average wage index, in order to bring them up to their approximately equivalent value at the time of retirement or other eligibility for benefits.

**Average wage index—AWI.** A series that generally increases with the average amount of total wages for each year after 1950, including wages in noncovered employment and wages in covered employment in excess of the OASDI contribution and benefit base. (See Title 20, Chapter III, section 404.211(c) of the Code of Federal Regulations for a more precise definition.) These average wage amounts are used to index the taxable earnings of most workers first becoming eligible for benefits in 1979 or later, and for automatic adjustments in the contribution and benefit base, bend points, earnings test exempt amounts, and other wage-indexed amounts. See table V.C1.

**Award.** An administrative determination that an individual is entitled to receive a specified type of OASDI benefit. Awards can represent not only new entrants to the benefit rolls but also persons already on the rolls who become entitled to a different type of benefit. Awards usually result in the immediate payment of benefits, although payments may be deferred or withheld depending on the individual's particular circumstances.

**Baby boom.** The period from the end of World War II (1946) through 1965 marked by unusually high birth rates.

**Bend points.** The dollar amounts defining the AIME or PIA brackets in the benefit formulas. For the bend points for years 1979 and later, see table V.C2.

**Beneficiary.** A person who has been awarded benefits on the basis of his or her own or another's earnings record. The benefits may be either in current-payment status or withheld.

**Benefit award.** See "Award."

**Benefit payments.** The amounts disbursed for OASI and DI benefits by the Department of the Treasury in specified periods.

**Benefit termination.** See "Termination."

**Best estimate assumptions.** See "Assumptions."

**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 of whom serve automatically 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 the other two members to serve as public representatives.

**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 on this basis.

**Closed group unfunded obligation.** This measure is computed like the open group unfunded obligation except that individuals under the age of 15 (or not yet born) are excluded. In other words, only persons who attain age 15 or older during the first year of the projection period are included in the calculations.

**Constant dollars.** Amounts adjusted by the CPI to the value of the dollar in a particular year.

**Consumer Price Index—CPI.** An official measure of inflation in consumer prices. In this report, all references to the CPI relate 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 VI.A1. See "HI contribution base."

**Contributions.** See "Payroll tax contributions."

**Cost.** The cost for a year includes scheduled benefit payments, administrative expenses, financial interchange with the Railroad Retirement program, and payments for vocational rehabilitation services for disabled beneficiaries.

**Cost-of-living adjustment.** See "Automatic cost-of-living benefit increase."

**Cost rate.** The cost rate for a year is the ratio of the cost of the program to the taxable payroll for the year.

**Covered earnings.** Earnings in employment covered by the OASDI program.

**Covered employment.** All employment for which earnings are creditable for Social Security purposes. The program covers almost all employment. Some exceptions are:

- State and local government employees whose employer has not elected to be covered under Social Security and who are participating in an employer-provided pension plan.
- Current Federal civilian workers hired before 1984 who have not elected to be covered.
- Self-employed workers earning less than $400 in a calendar year.

**Covered worker.** A person who has earnings creditable for Social Security purposes on the basis of services for wages in covered employment and/or on the basis of income from covered self-employment.

**Creditable earnings.** Wage or self-employment earnings posted to a worker's earnings record, upon which eligibility for and amount of benefits on that worker's record is based. The contribution and benefit base determines 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.

**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 are applicable for January benefits 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."

**Deterministic 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.

**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 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 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 the individual's 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 Retirement, Survivors, and Disability Insurance, and for Hospital Insurance. Workers and their employers 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 position it would have been in if railroad employment had always been covered under Social Security.

**Fiscal year.** The accounting year of the United States Government. Since 1976, a fiscal year is the 12-month period ending September 30. For example, fiscal year 2011 began October 1, 2010, and will end September 30, 2011.

**Full advance funding.** A financing method in which contributions are established to match the full cost of future benefits as these costs are incurred through current service. Such financing methods also provide for amortization over a fixed period of any financial obligation that is incurred at the beginning of the program (or subsequent modification) as a result of granting credit for past service.

**General Fund of the Treasury.** Funds held by the Treasury of the United States, other than receipts collected for a specific purpose (such as Social Security) and maintained in a separate account for that purpose.

**General fund reimbursements.** Payments from the General Fund of the Treasury to the trust funds for specific purposes defined in the law, including:

- The cost of noncontributory wage credits for military service before 1957, and periodic adjustments of previous determinations.
- The cost in 1971-82 of deemed wage credits for military service performed after 1956.
- The cost of benefits to certain uninsured persons who attained age 72 before 1968.
- The cost of payroll tax credits provided to employees in 1984 and self-employed persons in 1984-89 by Public Law 98-21.
- The cost in 2009-17 of excluding certain self-employment earnings from SECA taxes under Public Law 110-246.
- Payroll tax revenue forgone under the provisions of Public Laws 111-147 and 111-312.

The general fund also reimburses the trust funds for various other items, including interest on checks which are not negotiated 6 months after the month of issue and costs incurred in performing certain legislatively mandated activities not directly related to administering the OASI and DI programs.

**Gross domestic product—GDP.** The total dollar value of all goods and services produced by labor and property located in the United States, regardless of who supplies the labor or property.

**HI contribution base.** Annual dollar amount above which earnings in employment covered under the HI program are not taxable. (Also referred to as maximum contribution base, taxable maximum, and maximum taxable.) Beginning in 1994, the HI contribution base was eliminated.

**High-cost assumptions.** See "Assumptions."

**Hospital Insurance (HI) Trust Fund.** See "Trust fund."

**Immigration.** See "Legal immigration" and "Other immigration."

**Income.** Income for a given year is the sum of tax revenue on a cash basis (payroll tax contributions and income from the taxation of scheduled benefits), reimbursements from the General Fund of the Treasury, if any, and interest credited to the trust funds.

**Income rate.** Ratio of non-interest income to the OASDI taxable payroll for the year.

**Infinite horizon.** The period extending into the indefinite future.

**Inflation.** An increase in the general price level of goods and services.

**Insured status.** The state or condition of having sufficient quarters of coverage to meet the eligibility requirements for retired-worker or disabled-worker benefits, or to permit the worker's spouse and children or survivors to establish eligibility for benefits in the event of his or her disability, retirement, or death. See "Quarters of coverage."

**Interest.** A payment in exchange for the use of money during a specified period.

**Interest rate.** Interest rates on new public-debt obligations issuable to Federal trust funds (see "Special public-debt obligation") are determined monthly. Such rates are set equal to the average market yield on all outstanding marketable U.S. securities not due or callable until after 4 years from the date the rate is determined. See table V.B2 for historical and assumed future interest rates on new special-issue securities. The effective interest rate for a trust fund is the ratio of the interest earned by the fund over a given period of time to the average level of assets held by the fund during the period. The effective rate of interest thus represents a measure of the overall average interest earnings on the fund's portfolio of assets.

**Interfund borrowing.** The borrowing of assets by a trust fund (OASI, DI, or HI) from another of the trust funds when the first fund is in danger of exhaustion. Interfund borrowing was permitted by the Social Security Act only during 1982 through 1987; all amounts borrowed were to be repaid prior to the end of 1989. The only exercise of this authority occurred in 1982, when the OASI Trust Fund borrowed assets from the DI and HI Trust Funds. The final repayment of borrowed amounts occurred in 1986.

**Intermediate assumptions.** See "Assumptions."

**Legal emigration.** Legal emigration for a given year consists of those legal permanent residents and native-born citizens who leave the Social Security area during the year.

**Legal immigration.** Consistent with the definition used by the Department of Homeland Security, legal immigration for a given year consists of foreign-born individuals who are granted legal permanent resident status during the year.

**Life expectancy.** Average remaining number of years expected prior to death. Period life expectancy is calculated for a given year using the actual or expected death rates at each age for that year. Cohort life expectancy, sometimes referred to as generational life expectancy, is calculated for individuals at a specific age in a given year using actual or expected death rates from the years in which the individuals would actually reach each succeeding age if they survive.

**Long range.** The next 75 years. Long-range actuarial estimates are made for this period because it is approximately the maximum remaining lifetime of current Social Security participants.

**Low-cost assumptions.** See "Assumptions."

**Lump-sum death benefit.** A lump sum, generally $255, payable on the death of a fully or currently insured worker. The lump sum is payable to the surviving spouse of the worker, under most circumstances, or to the worker's children.

**Maximum family benefit.** The maximum monthly amount that can be paid on a worker's earnings record. Whenever the total of the individual monthly benefits payable to all the beneficiaries entitled on one earnings record exceeds the maximum, each dependent's or survivor's benefit is proportionately reduced to bring the total within the maximum. Benefits payable to divorced spouses or surviving divorced spouses are not reduced under the family maximum provision.

**Medicare.** A nationwide, Federally administered health insurance program authorized in 1965 to cover the cost of hospitalization, medical care, and some related services for most people age 65 and over. In 1972, coverage was extended to people receiving Social Security Disability Insurance payments for 2 years and people with End-Stage Renal Disease. In 2006, prescription drug coverage was also added. Medicare consists of two separate but coordinated programs—Hospital Insurance (HI, Part A) and Supplementary Medical Insurance (SMI). The SMI program is composed of three separate accounts—the Part B Account, the Part D Account, and the Transitional Assistance Account. Almost all persons who are aged 65 and over or disabled and who are entitled to HI are eligible to enroll in Part B and Part D on a voluntary basis by paying monthly premiums. Health insurance protection is available to Medicare beneficiaries without regard to income.

**Military service wage credits.** Credits recognizing that military personnel receive wages in kind (such as food and shelter) in addition to their basic pay and other cash payments. Noncontributory wage credits of $160 were provided for each month of active military service from September 16, 1940, through December 31, 1956. For years after 1956, the basic pay of military personnel is covered under the Social Security program on a contributory basis. In addition to the contributory credits for basic pay, noncontributory wage credits of $300 were granted for each calendar quarter, from January 1957 through December 1977, in which a person received pay for military service. Noncontributory wage credits of $100 were granted for each $300 of military wages, up to a maximum credit of $1,200 per calendar year, from January 1978 through December 2001.

**National average wage index—AWI.** See "Average wage index—AWI."

**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 discretionary increases in the base under the 1977 amendments had not been enacted. The Social Security Amendments of 1972 provided for automatic annual indexing of the contribution and benefit base. The Social Security Amendments of 1977 provided ad hoc increases to the bases for 1979-81, with subsequent bases updated in accordance with the normal indexing procedure. See table V.C2.

**Open group unfunded obligation.** This measure is computed as the excess of the present value of the projected cost of the program over a specified time period (for example the next 75 years or the infinite horizon) over the sum of: (1) the value of trust fund assets at the beginning of the period; and (2) the present value of the projected non-interest income of the program, assuming scheduled tax rates and benefit levels.

**Other emigration.** Other emigration for a given year consists of individuals from the other-immigrant population who leave the Social Security area during the year or who adjust status to become legal permanent residents during the year.

**Other immigration.** Other immigration for a given year consists of individuals who enter the Social Security area and stay 6 months or more but without legal permanent resident status, such as undocumented immigrants and temporary workers and students.

**Outgo.** See "Disbursements."

**Par value.** The value printed on the face of a bond. For both public and special issues held by the trust funds, par value is also the redemption value at maturity.

**Partial advance funding.** A financing method in which contributions are established to provide a substantial accumulation of trust fund assets, thereby generating additional interest income to the trust funds and reducing the need for payroll tax increases in periods when costs are relatively high. (Higher general contributions or additional borrowing may be required, however, to support the payment of such interest.) While substantial, the trust fund buildup under partial advance funding is much smaller than it would be with full advance funding.

**Pay-as-you-go financing.** A financing method in which contributions are established to produce just as much income as required to pay current benefits, with trust fund assets built up only to the extent needed to prevent exhaustion of the fund by random economic fluctuations.

**Payment cycling.** Beneficiaries who applied for benefits before May 1, 1997, are paid on the third of the month. Persons applying for OASDI benefits after April 1997 generally are paid on the second, third, or fourth Wednesday of the month following the month for which payment is due. The particular Wednesday payment date is based on the earner's date of birth. For those born on the first through tenth, the benefit payment day is the second Wednesday of the month; for those born on the eleventh through the twentieth, the benefit payment day is the third Wednesday of the month; and for those born after the twentieth of the month, the payment day is the fourth Wednesday of the month.

**Payroll tax contributions.** The amount based on a percent of earnings, up to an annual maximum, that must be paid by:

- employers and employees on wages from employment under the Federal Insurance Contributions Act,
- the self-employed on net earnings from self-employment under the Self-Employment Contributions Act, and
- States on the wages of State and local government employees covered under the Social Security Act through voluntary agreements under section 218 of the Act.

Also referred to as payroll taxes.

**Population in the Social Security area.** See "Social Security area population."

**Present value.** The equivalent value, at the present time, of a future stream of payments (either income or cost). The present value of a future stream of payments may be thought of as the lump-sum amount that, if invested today,

together with interest earnings would be just enough to meet each of the payments as they fell due. Present values are used widely in calculations involving financial transactions over long periods of time to account for the time value of money (interest). For the purpose of present-value calculations for this report, values are discounted by the effective yield on trust fund assets.

**Primary insurance amount—PIA.** The monthly amount payable to a retired worker who begins to receive benefits at normal retirement age or (generally) to a disabled worker. This amount, which is related to the worker's average monthly wage or average indexed monthly earnings, is also the amount used as a base for computing all types of benefits payable on the basis of one 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 2011, a worker receives one quarter of coverage (up to a total of four) for each $1,120 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, somewhat 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 payable to either the OASI or DI Trust Fund, with a corresponding reduction in the rate for the other fund, so that the total OASDI payroll tax rate is not changed.

**Real-wage differential.** The difference between the percentage increases in: (1) the average annual wage in covered employment; and (2) the average annual Consumer Price Index. See table V.B1.

**Recession.** A period of adverse economic conditions; in particular, two or more successive calendar quarters of negative growth in gross domestic product.

**Retired-worker benefit.** A monthly benefit payable to a fully insured retired worker aged 62 or older or to a person entitled under the transitionally insured status provision in the law.

**Retirement earnings test.** See "Earnings test."

**Retirement eligibility age.** The age (62) at which a fully insured individual first becomes eligible to receive retired-worker benefits.

**Retirement test.** See "Earnings test."

**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. Short-range actuarial estimates are prepared for this period to comply with the mandated short-range test of financial adequacy. The Social Security Act requires estimates for 5 years; estimates are prepared 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 20 titles, of which four 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 considered solvent over any period for which the trust funds maintain a positive level of assets throughout the period.

**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.A5 and VI.A6 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° 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. Distributions of potential outcomes are derived from a large number of simulations, each of which reflects random variation in the variable(s).

**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 is earning 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. For purposes of evaluating 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 used in determining summarized cost rates is 100 percent of annual cost. Accordingly, the adjusted summarized cost rate is equal to the ratio of: (1) the sum of the present value of the cost during the period plus the present value of the targeted ending trust fund level; to (2) the present value of the taxable payroll during the projection period.

**Summarized income rate.** The ratio of the present value of scheduled noninterest income to the present value of taxable payroll for the years in a given period, expressed as a percentage. For purposes of evaluating the financial adequacy of the program, the summarized income rate is adjusted to include assets on hand at the beginning of the period. Accordingly, the adjusted summarized income rate equals the ratio of: (1) the sum of the trust fund balance at the beginning of the period plus the present value of non-interest income

during the period; to (2) the present value of the taxable payroll for the years in the period.

**Supplemental Security Income—SSI.** A Federally administered program (often with State supplementation) of cash assistance for needy aged, blind, or disabled persons. The General Fund of the Treasury funds SSI and the Social Security Administration administers it.

**Supplementary Medical Insurance (SMI) Trust Fund.** See "Trust fund."

**Survivor benefit.** Benefit payable to a survivor of a deceased worker.

**Sustainable solvency.** Sustainable solvency for the financing of the program is achieved when the program has positive trust fund ratios throughout the 75-year projection period and these ratios are stable or rising at the end of the period.

**Taxable earnings.** Wages and/or self-employment income, in employment covered by the OASDI and/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 of net earnings from self-employment.

**Taxable wages.** See "Taxable earnings."

**Taxation of benefits.** During 1984-93, up to one-half of an individual's or a couple's OASDI benefits was potentially subject to Federal income taxation under certain circumstances. The revenue derived from this provision was allocated 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 maximum portion of OASDI benefits potentially subject to taxation was increased to 85 percent. The additional revenue derived from taxation of benefits in excess of one-half, up to 85 percent, is allocated to the HI Trust Fund.

**Taxes.** See "Payroll tax contributions" and "Taxation of benefits."

**Termination.** Cessation of payment of a specific type of benefit because the beneficiary is no longer entitled to receive it. 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.** Summarized income rates and cost rates are calculated for each of 66 valuation periods within the full 75-year long-range projection period. The first of these periods consists of the next 10 years. Each succeeding period becomes longer by 1 year, culminating with the period consisting of the next 75 years. The long-range test is met if, for each of the 66 valuation periods, the actuarial balance is not less than zero or is negative by, at most, a specified percentage of the summarized cost rate for the same time period. The percentage allowed for a negative actuarial balance is 0 percent for the 10-year period, grading uniformly to 5 percent for the full 75-year period. The criterion for meeting the test is less stringent for the longer periods in recognition of the greater uncertainty associated with estimates for more distant years. The test is applied to OASI and DI separately, as well as combined, 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, then it must be projected to remain at or above 100 percent throughout the 10-year projection period;
- Alternatively, if the fund ratio is initially less than 100 percent, it must be projected to reach a level of at least 100 percent within 5 years (and not be depleted at any time during this period) and then remain at or above 100 percent throughout the remainder of the 10-year period.

These conditions apply to each trust fund separately, as well as to the combined funds, and are evaluated 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 in which are deposited the payroll taxes received under the Federal Insurance Contributions Act and the Self-Employment Contributions Act, as well as 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. Funds not withdrawn for current monthly or service benefits, the financial interchange, and administrative expenses are invested in interest-bearing securities backed by the full faith and credit of the U.S. Government, as required by law; 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 and 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 and their spouses and children and for providing rehabilitation services to the disabled.
- **Hospital Insurance (HI).** The trust fund used for paying part of the costs of inpatient hospital services and related care for aged and disabled individuals who meet the eligibility requirements. Also known as Medicare Part A.
- **Supplementary Medical Insurance (SMI).** The Medicare trust fund composed of the Part B Account, the Part D Account, and the Transitional Assistance Account. The Part B Account pays for a portion of the costs of physicians' services, outpatient hospital services, and other related medical and health services for voluntarily enrolled aged and disabled individuals. The Part D Account pays private plans to provide prescription drug coverage, beginning in 2006. The Transitional Assistance Account paid for transitional assistance under the prescription drug card program in 2004 and 2005.

**Trust fund ratio.** A measure of trust fund adequacy. Defined as the assets 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 could be paid solely with the assets at the beginning of the year.

**Unfunded obligation.** See "Open group unfunded obligation" and "Closed group unfunded obligation".

**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 is 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 enable them to return to gainful employment. Reimbursement from the trust funds for the costs of such services is made only in those cases in which the services contributed to the successful rehabilitation of the beneficiaries.

**Year of exhaustion.** The year in which a trust fund would become unable to pay benefits when due because the assets of the fund were depleted.

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## *STATEMENT OF ACTUARIAL OPINION*

It is my opinion that: (1) the techniques and methodology used herein to evaluate the financial and actuarial status of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds are based upon sound principles of actuarial practice and are generally accepted within the actuarial profession; and (2) the assumptions used and the resulting actuarial estimates are, individually and in the aggregate, reasonable for the purpose of evaluating the financial and actuarial status of the trust funds, taking into consideration the past experience and future expectations for the population, the economy, and the program.



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