111th Congress, 2d Session — — — — — — — — — — — — — — House Document 111-137

THE 2010 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS

COMMUNICATION

FROM

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

TRANSMITTING

THE 2010 ANNUAL REPORT OF THE BOARD OF TRUSTEES OF THE FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND FEDERAL DISABILITY INSURANCE TRUST FUNDS

August 9, 2010.—Referred to the Committee on Ways and Means and ordered to be printed

---

U.S. GOVERNMENT PRINTING OFFICE

57-811 WASHINGTON: 2010

LETTER OF TRANSMITTAL

BOARD OF TRUSTEES OF THE
FEDERAL OLD-AGE AND SURVIVORS INSURANCE AND
FEDERAL DISABILITY INSURANCE TRUST FUNDS,
Washington, D.C., August 5, 2010

The Honorable Nancy Pelosi
Speaker of the House of Representatives
Washington, D.C.

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

Dear Madam Speaker and Mr. President:

We have the honor of transmitting to you the 2010 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, the 70th 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.*

Vacant, *Public Trustee.*

Vacant, *Public Trustee.*

Jason J. Fichtner, *Associate Commissioner, Office of Retirement Policy, Social Security Administration, and Acting Secretary, Board of Trustees.*

CONTENTS

I. INTRODUCTION **1**

II. OVERVIEW **2**

A. HIGHLIGHTS 2
B. TRUST FUND FINANCIAL OPERATIONS IN 2009 5
C. ASSUMPTIONS ABOUT THE FUTURE 7
D. PROJECTIONS OF FUTURE FINANCIAL STATUS 8
E. CONCLUSION. 20

III. FINANCIAL OPERATIONS OF THE TRUST FUNDS AND LEGISLATIVE CHANGES IN THE LAST YEAR **22**

A. OPERATIONS OF THE OLD-AGE AND SURVIVORS INSURANCE (OASI) AND DISABILITY INSURANCE (DI) TRUST FUNDS, IN CALENDAR YEAR 2009 22
1. OASI Trust Fund. 22
2. DI Trust Fund 26
3. OASI and DI Trust Funds, Combined 28
B. SOCIAL SECURITY AMENDMENTS SINCE THE 2009 REPORT 33

IV. ACTUARIAL ESTIMATES. **35**

A. SHORT-RANGE ESTIMATES 35
1. Operations of the OASI Trust Fund. 36
2. Operations of the DI Trust Fund 39
3. Operations of the Combined OASI and DI Trust Funds 42
4. Factors Underlying Changes in 10-Year Trust Fund Ratio Estimates From the 2009 Report. 44
B. LONG-RANGE ESTIMATES 46
1. Annual Income Rates, Cost Rates, and Balances 47
2. Comparison of Workers to Beneficiaries 52
3. Trust Fund Ratios 56
4. Summarized Income Rates, Cost Rates, and Balances 59
5. Additional Measures of OASDI Unfunded Obligations 63
6. Test of Long-Range Close Actuarial Balance 66
7. Reasons for Change in Actuarial Balance From Last Report . . 71

V. ASSUMPTIONS AND METHODS UNDERLYING ACTUARIAL ESTIMATES 76

A. DEMOGRAPHIC ASSUMPTIONS AND METHODS 77
1. Fertility Assumptions 78
2. Mortality Assumptions 78
3. Immigration Assumptions 80
4. Total Population Estimates 85
5. Life Expectancy Estimates 88

B. ECONOMIC ASSUMPTIONS AND METHODS 92
1. Productivity Assumptions 93
2. Price Inflation Assumptions 94
3. Average Earnings Assumptions 95
4. Assumed Real-Wage Differentials 98
5. Labor Force and Unemployment Projections 100
6. Gross Domestic Product Projections 103
7. Interest Rates 103

C. PROGRAM-SPECIFIC ASSUMPTIONS AND METHODS . . . 107
1. Automatically Adjusted Program Parameters 107
2. Covered Employment 114
3. Taxable Payroll and Payroll Tax Revenue 115
4. Insured Population 116
5. Old-Age and Survivors Insurance Beneficiaries 118
6. Disability Insurance Beneficiaries 124
7. Average Benefits 135
8. Benefit Payments 135
9. Administrative Expenses 135
10. Railroad Retirement Financial Interchange 136
11. Military Service Transfers 136
12. Income From Taxation of Benefits 136

VI. APPENDICES 138
A. HISTORY OF OASI AND DI TRUST FUND OPERATIONS. . 138
B. HISTORY OF ACTUARIAL BALANCE ESTIMATES 151
C. FISCAL YEAR HISTORICAL DATA AND PROJECTIONS THROUGH 2019 156
D. LONG-RANGE SENSITIVITY ANALYSIS 162
1. Total Fertility Rate 162
2. Death Rates. 164
3. Net Immigration 165
4. Real-Wage Differential 166
5. Consumer Price Index 168
6. Real Interest Rate 169
7. Disability Incidence Rates 170
8. Disability Termination Rates 171
E. STOCHASTIC PROJECTIONS. 173
1. Background. 173
2. Methodology. 173
3. Results 174
F. ESTIMATES FOR OASDI AND HI, SEPARATE AND COMBINED. 179
1. Estimates as a Percentage of Taxable Payroll. 179
2. Estimates as a Percentage of Gross Domestic Product 185
3. Estimates in Dollars. 190
G. ANALYSIS OF BENEFIT DISBURSEMENTS FROM THE OASI TRUST FUND WITH RESPECT TO DISABLED BENEFICIARIES 203
H. GLOSSARY 207

LIST OF TABLES 224

LIST OF FIGURES 228

INDEX. 230

STATEMENT OF ACTUARIAL OPINION. 235

THE 2010 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 positions, which are currently vacant, are for members of the public, appointed by the President and subject to confirmation by the Senate. 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 2010, is the 70th such report.

II. OVERVIEW

A. HIGHLIGHTS

The report's major findings are summarized below.

In 2009

At the end of 2009, about 53 million people were receiving benefits: 36 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 156 million people had earnings covered by Social Security and paid payroll taxes. Total expenditures in 2009 were $686 billion. Total income was $807 billion ($689 billion in tax revenue and $118 billion in interest earnings), and assets held in special issue U.S. Treasury securities grew to $2.5 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 over the next 10 years under the intermediate assumptions, falling below 100 percent of annual cost by the beginning of 2013 and continuing to decline until the trust fund is exhausted in 2018. Therefore, the DI Trust Fund does not satisfy the short-range test of financial adequacy. The combined assets of the OASI and DI Trust Funds are projected to grow from $2,540 billion at the beginning of 2010, or 355 percent of annual cost, to $3,774 billion at the beginning of 2019, or 309 percent of annual cost in that year under the intermediate assumptions. Combined assets were projected for last year's report to be 360 percent of annual cost at the beginning of 2010 and 327 percent at the beginning of 2019.

Long-Range Results

Under the intermediate assumptions, OASDI cost generally increases more rapidly than tax income through 2035 because the retirement of the baby-boom generation increases the number of beneficiaries much faster than subsequent relatively low-birth-rate generations increase the labor force. From 2035 to 2050, the cost rate declines somewhat due principally to the aging of the already retired baby-boom generation. Thereafter, increases in life expectancy generally cause OASDI cost to again increase relative to tax income, but more slowly than prior to 2035. Annual cost is projected to exceed tax income in 2010 and 2011, to be less than tax income in 2012 through 2014, then to exceed tax income in 2015 and remain higher throughout the remain-

der of the long-range period. Interest earnings on trust fund assets alone will be sufficient to cover the annual difference between cost and tax revenue until 2025. The dollar level of the Trust Funds is projected to be drawn down beginning in 2025 until assets are exhausted in 2037. Individually, the DI fund is projected to be exhausted in 2018 and the OASI fund in 2040. For the 75-year projection period, the actuarial deficit is 1.92 percent of taxable payroll, 0.08 percentage point smaller than in last year's report. The open group unfunded obligation for OASDI over the 75-year period is $5.4 trillion in present value and is $0.1 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 $5.7 trillion due to the change in the valuation date.

The OASDI annual cost rate is projected to increase from 13.09 percent of taxable payroll in 2010 to 16.73 percent in 2035 and to 17.43 percent in 2084, a level that is 4.12 percent of taxable payroll more than the projected income rate for 2084. For last year's report, the OASDI cost for 2084 was estimated at 17.73 percent, or 4.39 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 6.1 percent in 2035, then to decline to 5.9 percent by 2050, and to remain between 5.9 and 6.0 percent through 2084.

Conclusion

Under the long-range intermediate assumptions, annual cost for the OASDI program is projected to exceed tax income in 2010 and 2011, to be less than tax income in 2012 through 2014, then to exceed tax income in 2015 and remain higher throughout the remainder of the long-range period. The combined OASI and DI Trust Funds are projected to increase in dollar level through 2024, and then to decline and become exhausted and thus unable to pay scheduled benefits in full on a timely basis in 2037. However, the DI Trust Fund is projected to become exhausted in 2018, so some action will be needed in the next few years. 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 1.84 percentage points,[1] scheduled benefits could be reduced during the period in a manner equivalent to an immediate and permanent reduction of 12.0 percent, general revenue transfers equivalent to $5.4 trillion in present value could be made during the period, or some combination of approaches could be adopted. Significantly larger changes would be required to maintain solvency beyond 75 years.

The projected trust fund shortfalls should be addressed in a timely way so that necessary changes can be phased in gradually and workers can be given time to plan for them. Implementing changes sooner will allow the needed revenue increases or benefit reductions to be spread over more generations. Social Security plays a critical role in the lives of 54 million beneficiaries and 155 million covered workers and their families in 2010. With informed discussion, creative thinking, and timely legislative action, present and future Congresses and Presidents can ensure that Social Security continues to protect future generations.

[1] The necessary tax rate increase differs from the 1.92 percent actuarial deficit for two reasons. First, the necessary tax rate is that required to maintain solvency throughout the period, but not to 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 that is paid in wages.

B. TRUST FUND FINANCIAL OPERATIONS IN 2009

The table below shows the income, expenditures, and assets for the OASI, the DI, and the combined OASDI Trust Funds in calendar year 2009.

Table II.B1.—Summary of 2009 Trust Fund Financial Operations
(In billions)

	OASI	DI	OASDI
Assets at the end of 2008	$2,202.9	$215.8	$2,418.7
Total income in 2009	698.2	109.3	807.5
Net contributions	570.4	96.9	667.3
Taxation of benefits	19.9	2.0	21.9
Interest	107.9	10.5	118.3
Total expenditures in 2009	564.3	121.5	685.8
Benefit payments	557.2	118.3	675.5
Railroad Retirement financial interchange	3.7	.4	4.1
Administrative expenses	3.4	2.7	6.2
Net increase in assets in 2009	133.9	-12.2	121.7
Assets at the end of 2009	2,336.8	203.5	2,540.3

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

In 2009, net contributions accounted for 83 percent of total trust fund income. Net 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 2009. The tax rates scheduled under current law for 2009 and later are shown in table II.B2.

Table II.B2.—Tax Rates for 2009 and Later

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

Three percent of OASDI Trust Fund income 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 2009, the combined trust fund assets earned interest at an effective annual rate of 4.9 percent. More than 98 percent of expenditures from the combined OASDI

Trust Funds in 2009 were retirement, survivor, and disability benefits totaling $675.5 billion. The financial interchange with the Railroad Retirement program resulted in a net payment of $4.1 billion from the combined OASDI Trust Funds, or about 0.6 percent of total expenditures. The administrative expenses of the Social Security program were $6.2 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 $121.7 billion in 2009 because income to the combined funds exceeded expenditures. At the end of 2009, the combined assets of the OASI and the DI Trust Funds were 355 percent of estimated expenditures for 2010, up from an actual level of 353 percent at the end of 2008.

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 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, 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 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 2034	2.0	2.3	1.7
Average annual percentage reduction in total age-sex-adjusted death rates from 2034 to 2084	.77	.35	1.24
Average annual net immigration (in thousands) for years 2010-84	1,065	1,370	780
Productivity (total U.S. economy), starting in 2020	1.7	2.0	1.4
Average annual percentage change in average wage in covered employment from 2019 to 2084	4.0	3.6	4.4
Consumer Price Index (CPI), starting in 2014	2.8	1.8	3.8
Average annual real-wage differential (percent) for years 2020-84	1.2	1.8	.6
Unemployment rate (percent), starting in 2019	5.5	4.5	6.5
Annual trust fund real interest rate (percent), starting in 2020	2.9	3.6	2.1

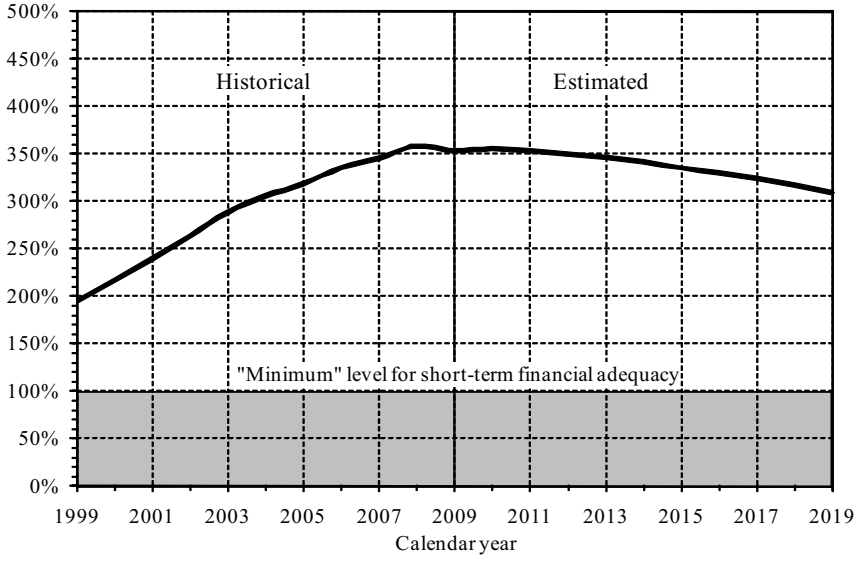
[a] See chapter V for details, including historical values and projected values.

D. PROJECTIONS OF FUTURE FINANCIAL STATUS

Short-Range Actuarial Estimates

For the short range (2010-2019), 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]



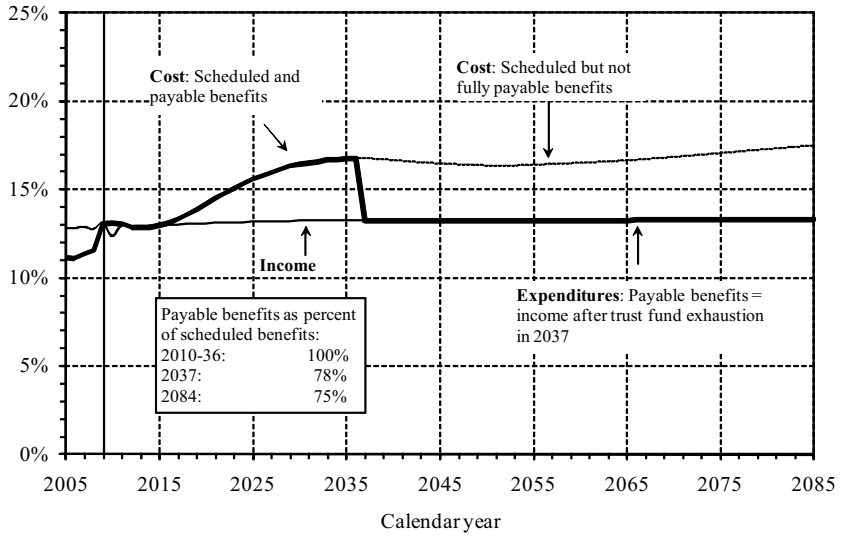
Long-Range Actuarial Estimates

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 and as percentages of taxable payroll and gross domestic product (GDP)). Considering 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, the OASDI cost rate is projected to remain relatively stable for the next 5 years, and then to increase rapidly before leveling off starting in about 2035. The projected income rate is stable at about 13 percent throughout the 75-year period except for a dip in 2010 due to the economic recession and to an expected $25 billion downward adjustment to 2010 income that corrects for excess payroll tax revenue credited to the Trust Funds in earlier years. The cost rate is projected to exceed the income rate in 2010 and 2011 because of the severity of the recent recession. The cost rate falls below the income rate in 2012 through 2014 as the economy recovers, then rises above the income rate again beginning in 2015. After 2015, the difference between the cost rate and the income rate grows rapidly through 2035.

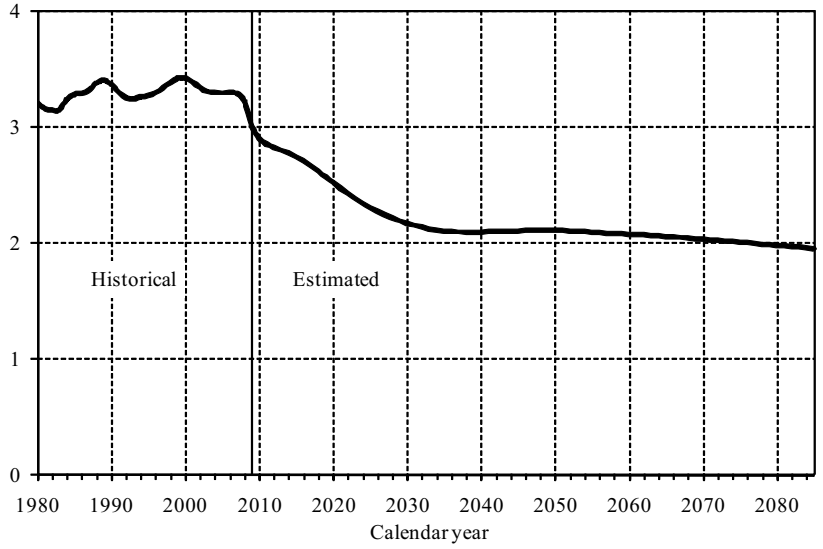
For 2010 through 2024, trust fund income, including interest income, is more than is needed to cover costs, so trust fund assets will continue to grow. Beginning in 2025, trust fund assets will diminish until they become exhausted in 2037. Tax revenues are projected to be sufficient to support expenditures at a level of 78 percent of scheduled benefits after trust fund exhaustion in 2037, declining to 75 percent of scheduled benefits in 2084.

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 3.0 workers for every OASDI beneficiary in 2009. This ratio had been extremely stable, remaining between 3.2 and 3.4 from 1974 through 2008, and is lower for 2009 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 relatively low-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 maximum projected trust fund ratios for the OASI, DI, and combined funds appear in table II.D1. The year in which the maximum projected trust fund ratio is attained and the year in which the assets are projected to be exhausted are shown as well.

Table II.D1.—Projected Maximum Trust Fund Ratios Attained and Trust Fund Exhaustion Dates
[Under the Intermediate Assumptions]

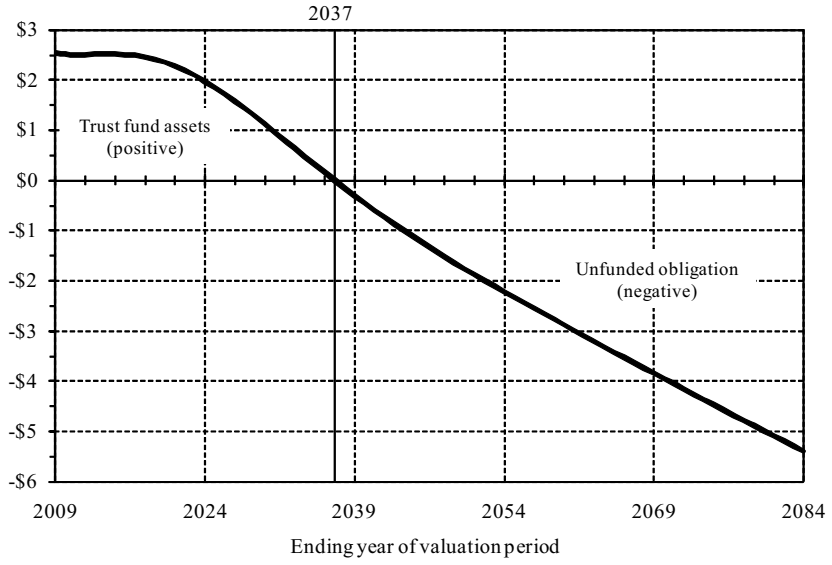
	OASI	DI	OASDI
Maximum trust fund ratio (percent)	403	158	355
Year attained	2012	2010	2010
Year of trust fund exhaustion	2040	2018	2037

The actuarial balance is a measure of the program's financial status for the 75-year valuation period as a whole. It is essentially the difference between income and cost of the program expressed as a percentage of taxable payroll over 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. This measure should be viewed only as a rough indication of the amount of change that is needed over the 75-year period as a whole, because the effects of future changes are unlikely to follow this pattern. In this report, the actuarial

balance under the intermediate assumptions is a deficit of 1.92 percent of taxable payroll for the combined OASI and DI Trust Funds. The actuarial deficit was 2.00 percent in the 2009 report and has been in the range of 1.70 percent to 2.23 percent for the prior 15 reports. 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 2.06 percent of payroll.

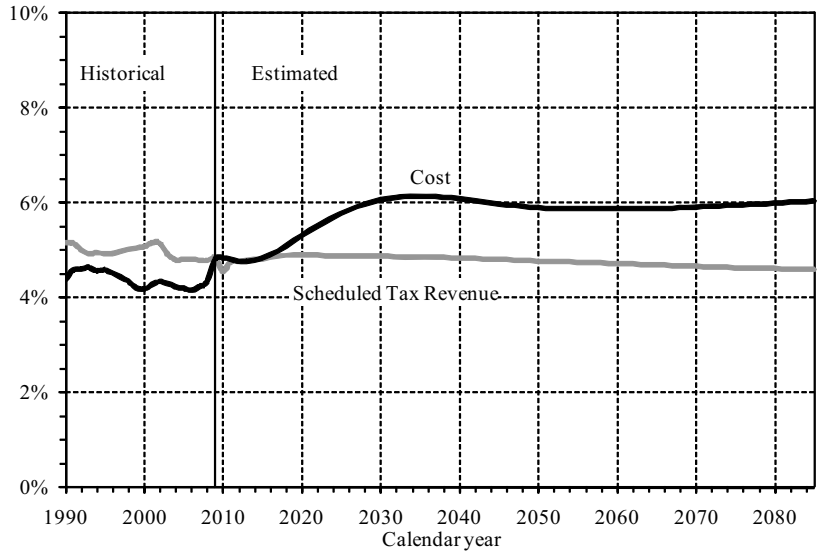
Another way to illustrate the financial shortfall of the OASDI program is to examine the cumulative value of income less cost, in present value. Figure II.D4 shows the present value of cumulative OASDI income less cost from the inception of the program through each of the next 75 years. The balance of the combined trust funds is $2.5 trillion in 2010. This cumulative amount declines after 2010 in present value, but continues to be positive, indicating trust fund assets, or reserves, through 2036. However, after 2036 this cumulative amount becomes negative, which means that the OASDI Trust Funds have a net unfunded obligation through each year after 2036. Through the end of 2084, the combined funds have a present-value unfunded obligation of $5.4 trillion. This unfunded obligation represents 1.8 percent of future taxable payroll and 0.6 percent of future GDP through the end of the 75-year projection period. The 0.14 percentage point difference between the unfunded obligation as a share of taxable payroll (1.78 percent) and the actuarial balance (1.92 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 OASDI Income Less Cost, Based on Present Law Tax Rates and Scheduled Benefits
[Present value as of January 1, 2010, in trillions]



Another important way to look at Social Security's future is to view its annual cost and tax 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 grow from 4.8 percent in 2010 to about 6.1 percent in 2035, then to decline to 5.9 percent by 2050, and to remain between 5.9 and 6.0 percent through 2084. Social Security's scheduled tax revenue is projected to increase from its current level of about 4.6 percent of GDP to about 4.9 percent of GDP for 2019, as the economy recovers. Thereafter, tax income as a percent of GDP declines gradually, reaching about 4.6 percent by 2084. Income from payroll taxes declines generally in relation to GDP in the future because an increasing share of employee compensation is assumed to be provided in fringe benefits, especially for health care, making wages a declining share of GDP.

Figure II.D5.—OASDI Cost and Scheduled Tax Revenue as a Percentage of GDP



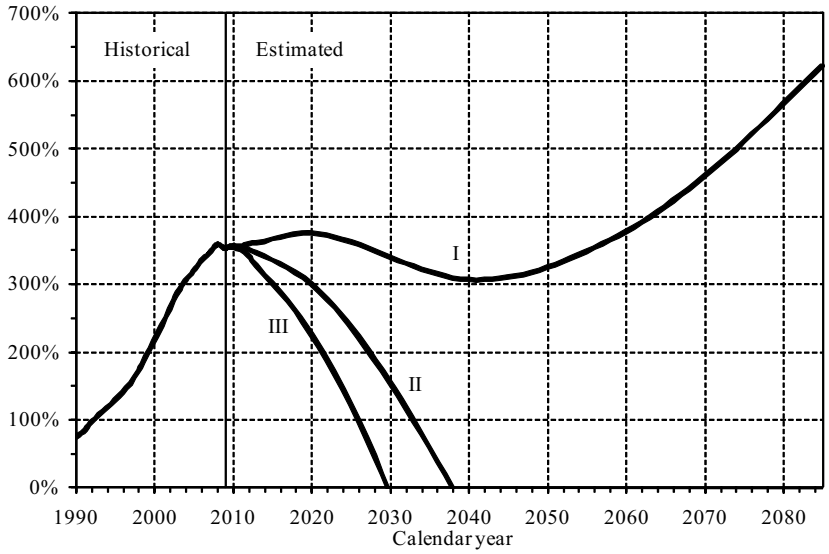
Figures II.D2, II.D4, and II.D5 show that the program's financial condition is worsening at the end of the projection period. Overemphasis on summary measures alone for a 75-year period can lead to incorrect perceptions and to policy prescriptions that do not achieve sustainable solvency. Thus, careful consideration of the trends in annual deficits and unfunded obligations toward the end of the 75-year period is important. In addition, summary measures for a time period that extends to the infinite horizon are 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 $16.1 trillion in present value, 3.3 percent of future taxable payroll, or 1.2 percent of future GDP. These calculations of the shortfall indicate that much larger changes may be required to achieve solvency beyond the 75-year period as compared to changes needed to balance 75-year period summary measures. The measured unfunded obligation over the infinite horizon is increased from $15.1 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 $15.9 trillion due to the change in the valuation date. Expressed as a percentage of taxable payroll, the measured unfunded obligation over the infinite horizon decreased from 3.4 percent in last year's report to 3.3 percent

for this year's report. As a percentage of GDP, the measured unfunded obligation over the infinite horizon is the same as was estimated for last year's report, at 1.2 percent.

Uncertainty of the Projections

Significant uncertainty surrounds the intermediate assumptions. The Trustees utilize several methods to help illustrate that uncertainty. One approach is the use of low-cost (alternative I) and high-cost (alternative III) 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 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]

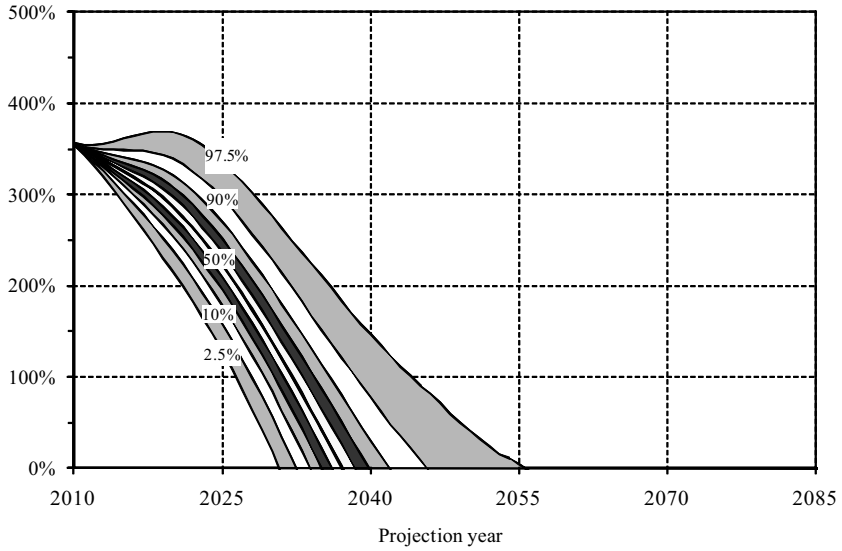


In Appendix D, this report also provides long-range sensitivity analysis for the OASDI program, by varying one parameter at a time. These estimates provide further illustrations of the uncertainty surrounding projections into the future, but do not provide any measure of the probability that future outcomes will fall within or outside the ranges shown.

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 before the end of the 75-year period (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.—Annual Trust Fund Ratios



Changes From Last Year's Report

The long-range OASDI actuarial deficit of 1.92 percent of taxable payroll for this year's report is smaller than the deficit of 2.00 percent of taxable payroll shown in last year's report under intermediate assumptions. 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, are the main reason for the decrease in the deficit. This effect for legislative changes is partially offset by the change in the valuation period. Finally, changes in several assumptions, methods, and recent data had largely offsetting effects. For example, the negative effects of lower historical and projected levels of death rates and near-term higher disability prevalence roughly offset the positive effects that resulted from updating the samples used to project future average benefit levels and the model used to project labor force participation rates. Also, the near-term negative effects on employment of the slightly deeper recession than assumed last year are offset by higher than expected real growth in the average earnings level. For a detailed description of the specific changes identified in table II.D2 below, see section IV.B7 on page 71.

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	12.08	1.93	14.02
Cost rate	13.76	2.25	16.02
Actuarial balance	**-1.68**	**-.32**	**-2.00**
Changes in actuarial balance due to changes in:			
Legislation / Regulation	+.12	+.02	+.14
Valuation period[a]	-.05	-.01	-.06
Demographic data and assumptions	-.05	.00	-.05
Economic data and assumptions	-.01	.00	.00
Disability assumptions	+.01	-.02	-.02
Methods and programmatic data	+.04	+.03	+.07
Total change in actuarial balance	+.06	+.02	+.08
Shown in this report:			
Actuarial balance	**-1.62**	**-.30**	**-1.92**
Income rate	12.09	1.92	14.01
Cost rate	13.71	2.22	15.93

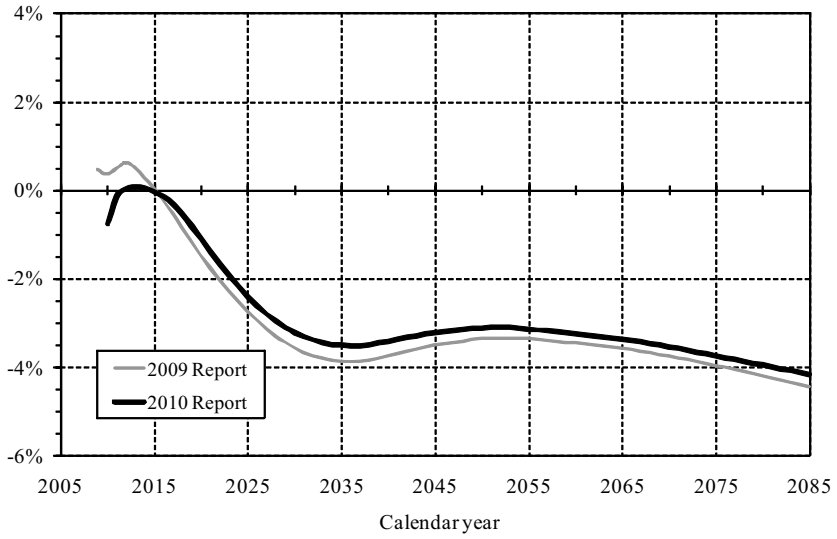
[a] In changing from the valuation period of last year's report, which was 2009-83, to the valuation period of this report, 2010-84, the relatively large negative annual balance for 2084 is included. This change in the valuation period results in a larger long-range actuarial deficit. The fund balance at the end of 2009, 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 $5.3 trillion (present discounted value as of January 1, 2009) to $5.4 trillion (present discounted value as of January 1, 2010). 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 2084. Legislative changes, changes in methods, revisions in assumptions, and updated data decreased the measured unfunded obligation by about $0.3 trillion.

This year's projections of annual balances (noninterest income minus cost) are lower than those in last year's report through 2015 and then become higher throughout the remainder of the 75-year projection period. See figure II.D8.

Figure II.D8.—OASDI Annual Balances: 2009 and 2010 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 tax income in 2010 and 2011 due to the economic recession and to an expected downward adjustment to 2010 income that corrects for excess payroll tax revenue credited to the Trust Funds in earlier years. Annual cost is projected to be less than tax income in 2012 through 2014, and then to exceed tax income beginning in 2015. Thereafter, annual deficits will increase generally through the remainder of the 75-year projection period. Social Security's combined trust funds are projected to allow full payment of scheduled benefits on a timely basis until the trust funds become exhausted in 2037. At that time, annual tax income to the trust funds is projected to equal about 78 percent of program cost. By 2084, annual tax income is projected to be about 75 percent as large as the annual cost of the OASDI program.

Separately, the OASI and DI funds are projected to have sufficient funds to pay full benefits on time until 2040 and 2018, respectively. Given that the DI fund is projected to become exhausted in 2018, some action will almost certainly be needed in the next few years. 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 1.92 percent of taxable payroll—0.08 percentage point smaller than the 2.00 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 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 14.24 percent. Alternatively, changes could be made that are equivalent to reducing scheduled benefits by about 12.0 percent. Other ways of reducing the deficit include transfers of general revenue or some combination of approaches.

If no substantial action is taken until the combined trust funds become exhausted in 2037, then changes necessary to make Social Security solvent over the next 75 years will be concentrated on fewer years and fewer generations:

- For example, payroll taxes could be raised to finance scheduled benefits fully in every year starting in 2037. In this case, the payroll tax would be increased to about 16.1 percent at the point of trust fund exhaustion in 2037 and continue rising generally thereafter, reaching about 16.7 percent in 2084.
- Similarly, benefits could be reduced to the level that is payable with scheduled tax rates in each year beginning in 2037. Under this scenario, scheduled benefits would be reduced 22 percent at the point of trust fund exhaustion in 2037, with reductions reaching 25 percent in 2084.

Either of these actions would eliminate the shortfall for the 75-year period as a whole by specifically eliminating annual deficits after trust fund exhaustion. 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 scheduled tax revenue after 2084. As a result, ensuring solvency of the system beyond 2084 would likely require further changes beyond those expected to be needed for 2084.

The projected trust fund shortfalls should be addressed in a timely way so that necessary changes can be phased in gradually and workers can be given time to plan for them. Implementing changes sooner will allow the needed revenue increases or benefit reductions to be spread over more generations. Social Security plays a critical role in the lives of 54 million beneficiaries and 155 million covered workers and their families in 2010. With informed discussion, creative thinking, and timely legislative action, present and future Congresses and Presidents can ensure that Social Security continues to protect future generations.

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

- www.socialsecurity.gov/oact/tr/2010/index.html
- www.cms.gov/ReportsTrustFunds/
- www.treas.gov/offices/economic-policy/social_security.shtml

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 2009

This section presents detailed information on the operations of the OASI and DI Trust Funds[1] during calendar year 2009. Chapter IV provides projections for calendar years 2010 through 2085.

1. OASI Trust Fund

A statement of the income and disbursements of the Federal Old-Age and Survivors Insurance Trust Fund in calendar year 2009, and of the assets of the fund at the beginning and end of the calendar year, is presented in table III.A1. As shown in the table, total trust fund receipts in 2009 amounted to $698.2 billion, while disbursements totaled $564.3 billion, resulting in an increase in trust fund assets during 2009 of $133.9 billion. Details of the various components of trust fund income and disbursements are discussed in the following paragraphs.

Included in total receipts during calendar year 2009 were $572.5 billion in employment tax contributions. These contributions were partially offset by transfers totaling $2.1 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 contributions thus amounted to $570.4 billion in 2009, a decrease of 0.7 percent from the corresponding amount in 2008. This decrease in OASI tax contributions is due to the net effect of decreased earnings and the increase in the contribution and benefit base. (Table VI.A1 shows the tax rates and contribution and benefit bases in effect for past years.)

Income based on taxation of benefits amounted to $19.9 billion in 2009. 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.

---

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

Table III.A1.—Operations of the OASI Trust Fund, Calendar Year 2009
[In millions]

Total assets, December 31, 2008		$2,202,886
Receipts:		
Contributions:		
Employment taxes	$572,538	
Payments from the General Fund of the Treasury for contributions subject to refund	-2,146	
Net contributions		570,392
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	156	
All other, not subject to withholding	19,774	
Total income from taxation of benefits		19,930
Reimbursement from the general fund for costs of payments to uninsured persons who attained age 72 before 1968		[a]
Investment income and interest adjustments:		
Interest on investments	107,982	
Interest adjustments[b]	-95	
Total investment income and interest adjustments		107,886
Gifts		[a]
Total receipts		698,208
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death benefits	557,160	
Transfer to the DI Trust Fund to correct a trust fund allocation error made on payments to certain dually entitled disabled beneficiaries	62	
Reimbursement from the general fund for unnegotiated checks	-59	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	3	
Net benefit payments		557,166
Transfer to the Railroad Retirement "Social Security Equivalent Benefit Account"		3,690
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,685	
Department of the Treasury	758	
Offsetting receipts from sales of supplies, materials, etc.	[a]	
Miscellaneous reimbursements from the general fund [c]	-4	
Net administrative expenses		3,439
Total disbursements		564,295
Net increase in assets		133,912
Total assets, December 31, 2009		2,336,798

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

[b] Includes (1) interest on transfers between the trust fund and the general fund account for the Supplemental Security Income program due to adjustments in the allocation of administrative expenses, (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.

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. Accordingly, a transfer of about $3 thousand was made in 2009, reflecting costs incurred in fiscal year 2008.

The OASI Trust Fund was credited with interest netting $107.9 billion, which consisted of (1) interest earned on the investments of the trust fund, (2) interest on transfers between the trust fund and the general fund account for the Supplemental Security Income program due to adjustments in the allocation of administrative expenses, (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 $98 thousand, consisted of gifts received under the provisions authorizing the deposit of money gifts or bequests in the trust funds.

Of the $564.3 billion in total OASI disbursements, $557.2 billion was for net benefit payments, including the reimbursable costs of vocational rehabilitation services.[1] As described in the 2008 report, in 2007 there was a transfer of $5.6 billion from the OASI Trust Fund to the DI Trust Fund to correct a long-standing, but small, error in the allocation between the trust funds of the cost for certain benefit payments. The error related to payments to certain dually-entitled disabled adult children that had been made entirely from the DI Trust Fund, even though a portion should have been paid from the OASI Trust Fund. In 2009, a relatively small ($0.1 billion) transfer was made to correct previous estimates of this error and to correct ongoing errors in fiscal year 2009. Excluding the $0.1 billion interfund transfer due to the trust fund allocation error, net benefit payments would have been $557.1 billion. This adjusted amount represents an increase of 9.5 percent over the corresponding amount in calendar year 2008. This increase is due primarily to (1) an increase in the total number of beneficiaries and (2) an increase in the average benefit amount. The increase in the average benefit amount in 2009 was due in large part to the automatic cost-of-living benefit increase of 5.8 percent which became effective for December 2008 under the automatic-adjustment provisions in section 215(i) of the Social Security Act.

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 a transfer of $3.7 billion to the Social Security Equivalent Benefit Account from the OASI Trust Fund was required in June 2009.

---

[1] Vocational rehabilitation services are furnished to disabled widow(er) beneficiaries and to those children of retired or deceased workers who were receiving 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.

The remaining $3.4 billion of disbursements from the OASI Trust Fund represented net administrative expenses. The expenses of administering the OASDI and Medicare programs are allocated and charged directly to each of the various trust funds through which those programs are financed, on the basis of provisional estimates. Similarly, the expenses allocated for administering the Supplemental Security Income program are charged directly to the General Fund of the Treasury on a provisional basis. Periodically, as actual experience develops and is analyzed, adjustments to the allocations of administrative expenses for prior periods are made through interfund transfers and transfers between the OASI 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 2009, 78 percent of OASI net administrative expenses represented the cost of administering the program. Such costs are charged to the trust fund by the Social Security Administration ($2.7 billion in 2009). In addition, the Department of the Treasury charges directly to the trust fund certain expenses ($0.8 billion in 2009) that it incurs in helping to administer the OASI program. In addition a relatively small adjustment ($454 thousand in 2009) to administrative expenses is an offset representing income from the sale of excess supplies and equipment.

Finally, certain net reimbursements are made from the General Fund of the Treasury for administrative costs incurred by the Social Security Administration in performing certain 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 and with the provision of information to participants in certain pension plans. Such reimbursements totaled $4 million in 2009.

The assets of the OASI Trust Fund at the end of calendar year 2009 totaled $2,336.8 billion, consisting of $2,318.8 billion in U.S. Government obligations and cash totaling $18.0 billion. The effective annual rate of interest earned by the assets of the OASI Trust Fund during calendar year 2009 was 4.8 percent, as compared to 5.1 percent earned during calendar year 2008. 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 2008 and 2009.

The trust fund assets can be invested only in securities that are backed by the full faith and credit of the United States Government, as required by law.

Those 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, 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, 2009, with an interest rate of 3.25 percent, were selected so that the maturity dates of the total portfolio of special issues were spread evenly over the 15-year period 2010-24. The amount of bonds purchased on June 30, 2009 is 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 2009, 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 2009
[In millions]

Total assets, December 31, 2008		$215,773
Receipts:		
Contributions:		
Employment taxes	$97,229	
Payments from the General Fund of the Treasury for contributions subject to refund	-364	
Net contributions		96,865
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	4	
All other, not subject to withholding	1,951	
Total income from taxation of benefits		1,955
Investment income and interest adjustments:		
Interest on investments	10,357	
Interest adjustments[a]	106	
Total investment income and interest adjustments		10,463
Total receipts		109,283
Disbursements:		
Benefit payments:		
Monthly benefits	118,329	
Transfer from the OASI Trust Fund to correct a trust fund allocation error made on payments to certain dually entitled disabled beneficiaries	-62	
Reimbursement from the general fund for unnegotiated checks	-30	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	79	
Net benefit payments		118,315
Transfer to the Railroad Retirement "Social Security Equivalent Benefit Account"		448
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,561	
Department of the Treasury	141	
Miscellaneous reimbursements from the general fund[b]	40	
Total administrative expenses		2,743
Total disbursements		121,506
Net increase in assets		-12,223
Total assets, December 31, 2009		203,550

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

Net contributions amounted to $96.9 billion, a decrease of 0.7 percent from the amount in the preceding calendar year. This decrease is attributable to the same factors, insofar as they apply to the DI program, which accounted for the change in contributions to the OASI Trust Fund.

Of the $121.5 billion in total disbursements, $118.3 billion was for net benefit payments. Excluding the $0.1 billion interfund transfer, net benefit pay-

ments would have been $118.4 billion. This adjusted amount represents an increase of 11.3 percent over the corresponding amount in calendar year 2008. 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: (1) an increase in the total number of beneficiaries and (2) an increase in the average benefit amount. The increase in the average benefit amount in 2009 was due in large part to the automatic cost-of-living benefit increase of 5.8 percent. The increase in the number of DI beneficiaries from 2008 to 2009 was more pronounced than the corresponding increase in the number of OASI beneficiaries, due to the impact of the economic slowdown on applications for disability benefits. Disability applications for 2009 were nearly 260 thousand above the level for 2008.

Total DI disbursements, which started to exceed non-interest income in 2005, continue to exceed such income in 2009. In 2009, DI disbursements exceeded total DI income (including interest), the first time DI assets have declined on an annual basis since 1993.

The assets of the DI Trust Fund at the end of calendar year 2009 totaled $203.5 billion, consisting of $199.8 billion in U.S. Government obligations and cash totaling $3.8 billion. The effective annual rate of interest earned by the assets of the DI Trust Fund during calendar year 2009 was 5.0 percent, as compared to 5.2 percent earned during calendar year 2008. 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 2008 and 2009.

3. OASI and DI Trust Funds, Combined

A statement of the operations of the income and disbursements 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 covering OASI and DI separately.

Table III.A3.—Operations of the Combined OASI and DI Trust Funds, Calendar Year 2009
[In millions]

Total assets, December 31, 2008		$2,418,658
Receipts:		
Contributions:		
Employment taxes	$669,768	
Payments from the General Fund of the Treasury for contributions subject to refund	-2,511	
Net contributions		667,257
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	159	
All other, not subject to withholding	21,725	
Total income from taxation of benefits		21,884
Reimbursement from the general fund for costs of payments to uninsured persons who attained age 72 before 1968		[a]
Investment income and interest adjustments:		
Interest on investments	118,338	
Interest adjustments[b]	11	
Total investment income and interest adjustments		118,349
Gifts		[a]
Total receipts		807,490
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death payments	675,488	
Reimbursement from the general fund for unnegotiated checks	-88	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	82	
Net benefit payments		675,482
Transfer to the Railroad Retirement "Social Security Equivalent Benefit Account"		4,137
Administrative expenses:		
Costs incurred by:		
Social Security Administration	5,247	
Department of the Treasury	899	
Offsetting receipts from sales of supplies, materials, etc.	[a]	
Miscellaneous reimbursements from the general fund[c]	36	
Net administrative expenses		6,182
Total disbursements		685,801
Net increase in assets		121,689
Total assets, December 31, 2009		2,540,348

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

[b] Includes (1) interest on transfers between the trust funds and the general fund account for the Supplemental Security Income program due to adjustments in the allocation of administrative expenses, (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.

To provide a context for estimates of future trust fund income and expenditures provided later in this report, table III.A4 compares estimates of contributions and benefit payments for calendar year 2009, from the 2005-09 Trustees Reports, to the corresponding actual amounts for 2009.[1]

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

Table III.A4.—Comparison of Actual Calendar Year 2009 Trust Fund Operations With Estimates Made in Prior Reports[a]
[Amounts in billions]

	Net contributions[b]		Net benefit payments	
	Amount	Difference from actual (percent)	Amount	Difference from actual (percent)
OASI Trust Fund:				
Estimate in 2005 report	$611.3	7.2	$524.1	-5.9
Estimate in 2006 report	620.9	8.9	535.9	-3.8
Estimate in 2007 report	623.2	9.3	532.9	-4.3
Estimate in 2008 report	618.3	8.4	538.3	-3.4
Estimate in 2009 report	579.0	1.5	554.7	-.4
Actual amount	570.4	—	[c] 557.1	—
DI Trust Fund:				
Estimate in 2005 report	103.8	7.2	109.7	-7.3
Estimate in 2006 report	105.4	8.9	110.4	-6.8
Estimate in 2007 report	105.8	9.3	110.0	-7.1
Estimate in 2008 report	105.0	8.4	111.7	-5.6
Estimate in 2009 report	98.3	1.5	117.7	-.6
Actual amount	96.9	—	[c] 118.4	—
OASI and DI Trust Funds, combined:				
Estimate in 2005 report	715.1	7.2	633.8	-6.2
Estimate in 2006 report	726.4	8.9	646.2	-4.3
Estimate in 2007 report	729.0	9.3	642.9	-4.8
Estimate in 2008 report	723.3	8.4	650.0	-3.8
Estimate in 2009 report	677.3	1.5	672.4	-.5
Actual amount	667.3	—	675.5	—

[a] The estimates shown are based on the intermediate assumptions.
[b] "Actual" contributions for 2009 reflect adjustments for prior calendar years (see Appendix A on page 140 for description of these adjustments). "Estimated" contributions also include such adjustments, but on an estimated basis.
[c] Excludes interfund transfer to correct a trust fund allocation error made on payments to certain disabled beneficiaries. The transfer amounted to $0.1 billion from OASI to DI.

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 unanticipated at the time the earlier estimates were completed can contribute to such differences.

At the end of calendar year 2009, about 52.5 million persons were receiving monthly benefits under the OASDI program. Of these persons, about 42.8 million and 9.7 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 2.9 percent and 4.6 percent, respectively, during the calendar year, reflecting increases in the insured population and effects of the economic downturn. The estimated dis-

tributions of benefit payments in calendar years 2008 and 2009, 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 2008 and 2009
[Amounts in millions]

	Calendar year 2008		Calendar year 2009	
	Amount	Percentage of total	Amount	Percentage of total
Total OASDI benefit payments	$615,357	100.0	$675,488	100.0
OASI benefit payments	509,056	82.7	557,160	82.5
DI benefit payments	106,301	17.3	118,329	17.5
OASI benefit payments, total	509,056	100.0	557,160	100.0
Monthly benefits:				
Retired workers and auxiliaries	409,503	80.4	451,578	81.1
Retired workers	383,999	75.4	424,044	76.1
Spouses	22,022	4.3	23,613	4.2
Children	3,482	.7	3,922	.7
Survivors of deceased workers	99,348	19.5	105,380	18.9
Aged widows and widowers	78,747	15.5	83,572	15.0
Disabled widows and widowers	1,945	.4	2,067	.4
Parents	23	[a]	23	[a]
Children	17,041	3.3	18,071	3.2
Widowed mothers and fathers caring for child beneficiaries	1,592	.3	1,647	.3
Uninsured persons generally aged 72 before 1968	[b]	[a]	[b]	[a]
Lump-sum death payments	205	[a]	201	[a]
DI benefit payments, total	106,301	100.0	118,329	100.0
Disabled workers	98,104	92.3	109,549	92.6
Spouses	534	.5	586	.5
Children	7,664	7.2	8,194	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 charged to the OASI and DI Trust Funds in calendar year 2009 totaled $6.2 billion. This amount represented 0.9 percent of contribution income and 0.9 percent of expenditures. Corresponding percentages 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 Contribution Income and of Total Expenditures, Calendar Years 2005-09

Calendar year	OASI Trust Fund		DI Trust Fund		OASI and DI Trust Funds, combined	
	Contribution income	Total expenditures	Contribution income	Total expenditures	Contribution income	Total expenditures
2005	0.6	0.7	2.7	2.6	0.9	1.0
2006	.6	.7	2.6	2.5	.9	1.0
2007	.5	.6	2.6	2.5	.8	.9
2008	.6	.6	2.6	2.3	.9	.9
2009	.6	.6	2.8	2.3	.9	.9

Changes in the invested assets of the OASI and DI funds between the end of 2008 and the end of 2009 are a result of the acquisition and disposition of securities during calendar year 2009. 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 2009
[In millions]

	OASI Trust Fund	DI Trust Fund	OASI and DI Trust Funds, combined
Invested assets, December 31, 2008	$2,203,404	$215,810	$2,419,213
Acquisitions:			
Special issues:			
Certificates of indebtedness	635,837	101,647	737,484
Bonds[a]	302,107	9,653	311,760
Total acquisitions	937,944	111,300	1,049,244
Dispositions:			
Special issues:			
Certificates of indebtedness	663,636	105,655	769,291
Bonds	158,932	21,694	180,626
Total dispositions	822,567	127,349	949,916
Net increase in invested assets	115,377	-16,049	99,328
Invested assets, December 31, 2009	2,318,780	199,760	2,518,541

[a] Amounts shown were purchased on June 30, 2009. The interest rate on such purchases was 3.25 percent.

Note: All investments are shown at par value.

B. SOCIAL SECURITY AMENDMENTS SINCE THE 2009 REPORT

Since the 2009 report was transmitted to Congress on May 12, 2009, several laws were enacted that are expected to have financial effects on the OASDI program.

The No Social Security Benefits for Prisoners Act of 2009, Public Law 111-117, was enacted on December 16, 2009. It amends the Social Security Act to prohibit retroactive payments to individuals during periods for which such individuals are prisoners, probation or parole violators, or fugitive felons. These retroactive benefits will not be paid until the beneficiary is no longer a prisoner, probation or parole violator, or fugitive felon. This law is estimated to have a negligible financial effect on the OASDI program over the short-range and long-range periods.

The Social Security Disability Applicants' Access to Professional Representation Act of 2010, Public Law 111-142, was enacted on February 27, 2010. It includes a provision to permanently extend attorney fee withholding procedures to certain qualified non-attorney representatives. This law is estimated to have a negligible financial effect on the OASDI program over the short-range and long-range periods.

The Hiring Incentives to Restore Employment (HIRE) Act, Public Law 111-147, was enacted on March 18, 2010. It exempts most employers from paying the employer share of OASDI tax on wages paid after the date of enactment and before January 1, 2011 to certain qualified individuals hired and employed after February 3, 2010. This law has no direct financial effect on the OASDI program because the tax amounts not paid by employers will instead be transferred from the General Fund of the Treasury to the OASDI Trust Funds. However, a small increase in total employment is expected to result for 2010 due to this tax incentive. This law is estimated to have a negligible financial effect on the OASDI program over the short-range and long-range periods.

The Patient Protection and Affordable Care Act, Public Law 111-148, was enacted on March 23, 2010. The Health Care and Education Reconciliation Act of 2010, Public Law 111-152, was enacted on March 30, 2010. These two laws result in numerous changes in the way health care will be utilized and paid for in the United States. The main impact of these two laws on the financial status of the OASDI program is an expected increase in the share of employee compensation that will be paid in wages covered and taxed by the OASDI program. Premiums paid by employees and employers for employer-sponsored group health insurance are excluded from OASDI coverage and

thus are not subject to the payroll tax. This exclusion is not altered by the new laws. However, under these new laws, a combination of federal subsidies for individual insurance through the health benefit exchanges, penalties for being uninsured or not offering coverage, an excise tax on employer-sponsored group health insurance cost, and anticipated competitive premiums from health benefit exchanges are expected to slow the rate of growth in the total cost of employer-sponsored group health insurance. Most of this cost reduction is assumed to result in an increase in the share of employee compensation that will be provided in wages that will be subject to the Social Security payroll tax. These two laws together are estimated to have a significant financial effect 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. See sections IV.A4 and IV.B7 of this report for further discussion 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 shortfall) of the OASI and DI Trust Funds are projected in dollars for 10 years and as a percentage of taxable payroll, as a percentage of gross domestic product, and in present-value dollars over the 75-year period. In addition, a variety of measures of the adequacy of current program financing are discussed. This report carefully 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. Since assumptions related to these factors are subject to uncertainty, the estimates presented in this section are prepared under three sets of assumptions, to show a range of possible outcomes. The intermediate set of assumptions, designated as alternative II, reflects the Trustees' best estimate of future experience; the low-cost alternative I is more optimistic and the high-cost alternative III is more pessimistic for the trust funds' future financial outlook. The intermediate estimates are shown first in the tables in 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 (2010-19) are presented first, followed by estimates and measures of actuarial status for the long range (2010-84) and over the infinite horizon. As an additional illustration of uncertainty, estimated 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 and is generally assessed using 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. Thus, the trust fund ratio represents the proportion of a year's cost which could be paid solely with the assets at the beginning of a year. A trust fund ratio of 100 percent of annual program cost is generally assumed to provide a reasonable "contingency reserve." During periods when trust fund income exceeds disbursements, the excess is held in the trust funds. To the extent that trust fund assets exceed 100 percent of annual cost, the excess is dedicated to advance fund a portion of the Social Security program's future financial obligations. During periods when trust fund disbursements exceed income, as might happen during an economic recession, trust

fund assets are used to meet the shortfall. In the event of recurring shortfalls for an extended period, the trust funds can allow time for the development, enactment, and implementation of legislation to restore financial stability 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 of the operations and financial status of the OASI Trust Fund for the period 2010-19, based on the assumptions described in chapter V. 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. Also, 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 2019. 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).

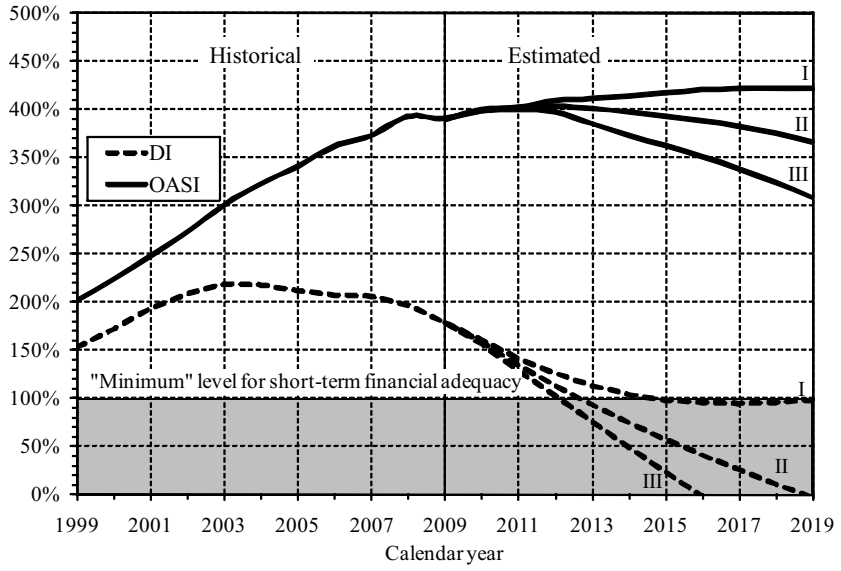
After an estimated decline in trust fund income from 2009 to 2010 due to the economic recession and to an expected $25 billion downward adjustment to 2010 income that corrects for excess payroll tax revenue credited to the Trust Funds in earlier years, the estimated income shown in table IV.A1 increases annually under each set of assumptions throughout the remainder of the short-range projection period. The estimated increases in income reflect increases in estimated OASDI taxable earnings and growth in interest earn-

[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 been 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.

ings on the invested assets of the trust fund. For each alternative, employment is assumed to decrease in 2010 and is assumed to increase in every year thereafter through 2019. The number of persons with taxable earnings would increase on the basis of alternatives I, II, and III from 156 million during calendar year 2009 to about 179 million, 175 million, and 171 million, respectively, in 2019. The total annual amount of taxable earnings is projected to increase in every year through 2019 for each alternative. Total earnings increase from $5,288 billion in 2009 to $8,787 billion, $8,869 billion, and $9,133 billion in 2019, 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) increases in average earnings in covered employment (reflecting both real growth and price inflation), (3) increases in the contribution and benefit base during the period 2010-19 under the automatic-adjustment provisions, and (4) recovery from the economic recession.

Growth in interest earnings represents a significant component of the overall increase in trust fund income during this period. Although the effective interest rates payable on trust fund investments are projected to temporarily decline from current levels through 2011, the continuing rapid increase in OASI assets will result in a corresponding net increase in interest income. By 2019, interest income to the OASI Trust Fund is projected to be about 17 percent of total trust fund income on the basis of the intermediate assumptions, as compared to 15 percent in 2009.

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



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

Table IV.A1.—Operations of the OASI Trust Fund, Calendar Years 2005-19[a]
[Dollar amounts in billions]

	Income				Cost				Assets		
Calendar year	Total[b]	Net contributions	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:											
2005 . .	$604.3	$506.9	$13.8	$84.0	$441.9	$435.4	$3.0	$3.6	$162.4	$1,663.0	340
2006 . .	642.2	534.8	15.6	91.8	461.0	454.5	3.0	3.5	181.3	1,844.3	361
2007 . .	675.0	560.9	17.2	97.0	495.7	489.1	3.1	3.6	179.3	2,023.6	372
2008 . .	695.5	574.6	15.6	105.3	516.2	509.3	3.2	3.6	179.3	2,202.9	392
2009 . .	698.2	570.4	19.9	107.9	564.3	557.2	3.4	3.7	133.9	2,336.8	390
Intermediate:											
2010 . .	686.1	553.4	23.9	108.9	586.2	578.4	3.8	3.9	99.9	2,436.7	399
2011 . .	741.9	604.8	25.1	112.0	607.5	599.7	3.9	3.9	134.4	2,571.1	401
2012 . .	789.7	641.7	27.9	120.1	638.3	630.2	4.1	4.0	151.4	2,722.6	403
2013 . .	845.1	682.3	31.5	131.3	680.4	672.2	4.2	4.0	164.7	2,887.3	400
2014 . .	902.4	724.3	34.8	143.3	728.1	719.7	4.3	4.1	174.2	3,061.5	397
2015 . .	958.9	765.5	38.2	155.2	780.1	771.4	4.4	4.3	178.8	3,240.3	392
2016 . .	1,018.8	809.3	41.9	167.6	836.2	827.3	4.6	4.4	182.6	3,422.9	388
2017 . .	1,078.0	851.5	45.9	180.7	896.9	887.5	4.7	4.7	181.1	3,603.9	382
2018 . .	1,136.9	893.8	49.5	193.7	962.1	952.3	4.9	4.9	174.8	3,778.8	375
2019 . .	1,193.0	934.3	53.3	205.4	1,032.0	1,021.8	5.0	5.1	161.0	3,939.7	366
Low-cost:											
2010 . .	688.9	555.9	23.9	109.2	585.9	578.2	3.8	3.9	103.0	2,439.8	399
2011 . .	752.0	613.9	25.1	113.1	607.0	599.1	3.9	3.9	145.1	2,584.9	402
2012 . .	799.9	651.4	27.6	120.9	632.4	624.4	4.1	4.0	167.5	2,752.4	409
2013 . .	854.1	691.8	31.0	131.3	669.1	661.0	4.2	3.9	185.0	2,937.4	411
2014 . .	909.6	732.9	33.9	142.7	709.4	701.1	4.2	4.0	200.2	3,137.6	414
2015 . .	964.0	772.6	36.8	154.6	752.2	743.7	4.3	4.1	211.8	3,349.4	417
2016 . .	1,020.7	813.6	40.0	167.1	798.1	789.5	4.5	4.1	222.6	3,572.0	420
2017 . .	1,075.3	851.4	43.3	180.6	847.6	838.6	4.6	4.4	227.7	3,799.6	421
2018 . .	1,130.7	889.4	46.3	194.9	900.3	891.0	4.7	4.6	230.4	4,030.0	422
2019 . .	1,184.1	925.9	49.4	208.8	956.6	947.0	4.9	4.7	227.6	4,257.6	421
High-cost:											
2010 . .	683.7	551.4	23.9	108.5	586.4	578.6	3.8	3.9	97.3	2,434.1	398
2011 . .	735.0	598.0	25.2	111.8	608.1	600.3	3.9	3.9	126.9	2,560.9	400
2012 . .	790.8	639.0	28.2	123.6	645.7	637.7	4.1	4.0	145.1	2,706.0	397
2013 . .	852.2	681.7	32.6	137.9	703.6	695.3	4.2	4.1	148.6	2,854.6	385
2014 . .	913.4	726.9	36.6	149.9	765.4	756.7	4.4	4.3	148.1	3,002.7	373
2015 . .	974.1	772.6	40.6	160.9	828.8	819.7	4.6	4.6	145.2	3,147.9	362
2016 . .	1,038.0	821.0	45.0	172.1	897.8	888.3	4.8	4.7	140.3	3,288.2	351
2017 . .	1,099.3	866.9	49.7	182.7	972.8	962.7	4.9	5.2	126.5	3,414.6	338
2018 . .	1,160.8	914.4	54.2	192.2	1,054.0	1,043.4	5.1	5.5	106.9	3,521.5	324
2019 . .	1,220.5	961.8	59.0	199.7	1,141.7	1,130.6	5.3	5.8	78.8	3,600.3	308

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

[b] "Total Income" column includes transfers made between the OASI Trust Fund and the General Fund of the Treasury that are not included in the separate components of income shown. These transfers consist of payments for (1) the cost of noncontributory wage credits for military service before 1957 and (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968. In December 2005, $350 million was transferred from the OASI Trust Fund to the General Fund of the Treasury for the cost of pre-1957 military service wage credits, and a similar transfer of $90 million is projected to occur in December 2010. After 2010 such transfers are estimated to be less than $500,000 in each year.

[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.

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

Rising expenditures during 2010-19 reflect automatic benefit increases as well as the upward trend in the number of beneficiaries and in the average monthly earnings underlying benefits payable by the program. The growth in the number of beneficiaries in the past and the expected growth in the future 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 would substantially 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 2010-19 under the three sets of assumptions are shown in table IV.A2, together with values for actual experience during 2005-09. Income is projected to increase steadily after 2010 under each alternative, reflecting most of the same factors described previously in connection with the OASI Trust Fund. DI Trust Fund assets are projected to continue to decrease in 2010 under each alternative. Under the low-cost assumptions, assets would begin to increase again after reaching a low point in 2015. 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 2015.

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 2009-19, the projected annual average growth rate in the number of DI disabled-worker beneficiaries is roughly 0.8, 2.0, and 3.2 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 incidence 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 comparable to those projected prior to last year's report.[1]

The proportion of disabled-worker beneficiaries whose benefits terminate in a given year has also fluctuated in the past. Over the last 20 years, the rates of benefit termination due to death and the proportion converting to retirement benefits (at attainment of NRA) have declined very gradually. This trend is attributable, in part, to the lower average age of new beneficiaries. Declines in mortality for the general population have also led to improved mortality experience among the disabled-worker beneficiaries. In addition, conversions to old-age benefits were at a temporarily reduced level for years 2003 through 2008 due to the gradual increase in the 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 throughout the 1970s and early 1980s. Projected rates of recovery terminations in this year's report are temporarily elevated in years 2013-18 due to an assumed increase in funding for the purpose of reducing the backlog of continuing disability reviews (CDRs). 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 2018. 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.

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

Table IV.A2.—Operations of the DI Trust Fund, Calendar Years 2005-19[a]
[Dollar amounts in billions]

	Income				Cost				Assets		
Calendar year	Total[b]	Net contri-butions	Taxa-tion of benefits	Net interest	Total	Benefit pay-ments	Admin-istra-tive costs	RRB inter-change	Net increase during year	Amount at end of year	Trust fund ratio[c]
Historical data:											
2005 . .	$97.4	$86.1	$1.1	$10.3	$88.0	$85.4	$2.3	$0.3	$9.4	$195.6	212
2006 . .	102.6	90.8	1.2	10.6	94.5	91.7	2.3	.4	8.2	203.8	207
2007 . .	109.9	95.2	1.4	13.2	98.8	95.9	2.5	.4	11.1	214.9	206
2008 . .	109.8	97.6	1.3	11.0	109.0	106.0	2.5	.4	.9	215.8	197
2009 . .	109.3	96.9	2.0	10.5	121.5	118.3	2.7	.4	-12.2	203.5	178
Intermediate:											
2010 . .	105.2	94.0	2.0	9.3	128.4	125.0	2.9	.5	-23.2	180.3	158
2011 . .	112.9	102.7	2.2	8.0	134.2	130.4	3.2	.6	-21.3	159.0	134
2012 . .	118.4	109.0	2.5	6.9	141.1	137.1	3.4	.5	-22.7	136.3	113
2013 . .	124.4	115.9	2.9	5.7	147.0	143.0	3.5	.5	-22.6	113.7	93
2014 . .	130.7	123.0	3.1	4.5	153.2	149.0	3.7	.5	-22.5	91.2	74
2015 . .	137.0	130.0	3.4	3.6	159.9	155.6	3.9	.5	-23.0	68.2	57
2016 . .	143.7	137.4	3.7	2.6	167.0	162.4	4.1	.5	-23.3	44.9	41
2017 . .	150.1	144.6	4.0	1.5	174.4	169.6	4.3	.5	-24.3	20.6	26
2018 . .	[d]	151.8	4.3	[d]	182.1	177.1	4.6	.4	[d]	[d]	11
2019 . .	[d]	158.6	4.6	[d]	190.3	185.0	4.8	.4	[d]	[d]	[d]
Low-cost:											
2010 . .	105.6	94.4	1.9	9.3	126.3	122.9	2.9	.5	-20.7	182.9	161
2011 . .	114.6	104.2	2.1	8.3	130.1	126.3	3.2	.6	-15.4	167.4	141
2012 . .	120.5	110.6	2.4	7.5	133.8	129.9	3.4	.5	-13.3	154.1	125
2013 . .	127.1	117.5	2.7	7.0	136.6	132.6	3.5	.5	-9.5	144.6	113
2014 . .	133.9	124.5	2.8	6.6	139.3	135.2	3.6	.5	-5.4	139.3	104
2015 . .	140.6	131.2	3.0	6.4	142.2	137.9	3.8	.5	-1.6	137.6	98
2016 . .	147.8	138.2	3.2	6.5	145.4	141.0	4.0	.5	2.4	140.1	95
2017 . .	154.8	144.6	3.4	6.9	149.2	144.6	4.2	.4	5.7	145.7	94
2018 . .	162.1	151.0	3.6	7.4	153.2	148.4	4.4	.4	8.8	154.6	95
2019 . .	169.1	157.2	3.8	8.1	157.6	152.7	4.6	.4	11.5	166.1	98
High-cost:											
2010 . .	104.8	93.6	2.0	9.2	130.6	127.2	2.9	.5	-25.8	177.8	156
2011 . .	111.5	101.5	2.3	7.7	138.4	134.6	3.2	.6	-26.8	150.9	128
2012 . .	117.4	108.5	2.6	6.3	148.6	144.6	3.4	.5	-31.2	119.8	102
2013 . .	123.4	115.8	3.1	4.5	160.0	155.8	3.6	.5	-36.5	83.2	75
2014 . .	129.8	123.4	3.5	2.9	171.2	166.8	3.8	.5	-41.4	41.9	49
2015 . .	[d]	131.2	3.9	[d]	182.3	177.7	4.0	.5	[d]	[d]	23
2016 . .	[d]	139.4	4.3	[d]	193.7	188.9	4.3	.5	[d]	[d]	[d]
2017 . .	[d]	147.2	4.7	[d]	205.6	200.5	4.5	.5	[d]	[d]	[d]
2018 . .	[d]	155.3	5.1	[d]	218.1	212.7	4.8	.5	[d]	[d]	[d]
2019 . .	[d]	163.3	5.6	[d]	231.2	225.6	5.1	.5	[d]	[d]	[d]

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

[b]"Total Income" column includes transfers made between the DI Trust Fund and the General Fund of the Treasury that are not included in the separate components of income shown. These transfers consist of payments for the cost of noncontributory wage credits for military service before 1957. In particular, a transfer was made in December 2007 in the amount of $7.7 million from the General Fund of the Treasury to the DI Trust Fund. After 2009 such transfers are estimated to be less than $500,000 in each year.

[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]The DI Trust Fund is projected to become exhausted in 2018 and 2015 under the intermediate and the high-cost assumptions, respectively. Accordingly, certain trust fund operation values from the year of trust fund exhaustion through 2019 are not meaningful under present law and are not shown in this table.

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

At the beginning of calendar year 2009, the assets of the DI Trust Fund represented 178 percent of annual expenditures. During 2009, DI expenditures exceeded income, and the trust fund ratio for the beginning of 2010 decreased to about 158 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 94 percent at the beginning of 2017 before increasing to 98 percent at the beginning of 2019. Under the high-cost assumptions, the assets of the DI Trust Fund would decline steadily, dipping below the level of annual expenditures during 2012 and becoming completely depleted in 2015.

Assets of the DI Trust Fund were greater than annual expenditures at the beginning of 2010. Under all three alternatives, however, the DI Trust Fund does not satisfy the Trustees' short-range test of financial adequacy. The DI Trust Fund is projected to be exhausted by the end of 2018 and 2015 for 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 2010-19 for the three alternatives are shown in table IV.A3, together with figures on actual experience in 2005-09. Because income and cost for the OASI Trust Fund represent 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.

While combining the operations of the OASI and DI Trust Funds permits an assessment of the short-range test for the two programs on a combined basis, in practice assets from one trust fund cannot be shared 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. The value of the combined OASI and DI Trust Funds in that year shown in table IV.A3 shows that sufficient OASI assets would be available to pay DI benefits through 2019, but only with legislation to permit this action.

Table IV.A3.—Operations of the Combined OASI and DI Trust Funds, Calendar Years 2005-19[a]

[Dollar amounts in billions]

	Income				Cost				Assets		
Calendar year	Total[b]	Net contributions	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:											
2005 . .	$701.8	$592.9	$14.9	$94.3	$529.9	$520.7	$5.3	$3.9	$171.8	$1,858.7	318
2006 . .	744.9	625.6	16.9	102.4	555.4	546.2	5.3	3.8	189.5	2,048.1	335
2007 . .	784.9	656.1	18.6	110.2	594.5	584.9	5.5	4.0	190.4	2,238.5	345
2008 . .	805.3	672.1	16.9	116.3	625.1	615.3	5.7	4.1	180.2	2,418.7	358
2009 . .	807.5	667.3	21.9	118.3	685.8	675.5	6.2	4.1	121.7	2,540.3	353
Intermediate:											
2010 . .	791.3	647.4	25.8	118.1	714.6	703.4	6.8	4.4	76.7	2,617.0	355
2011 . .	854.8	707.5	27.3	120.0	741.7	730.1	7.1	4.5	113.1	2,730.1	353
2012 . .	908.1	750.7	30.4	127.0	779.3	767.4	7.5	4.5	128.7	2,858.8	350
2013 . .	969.5	798.2	34.4	137.0	827.4	815.2	7.7	4.5	142.1	3,001.0	346
2014 . .	1,033.0	847.2	38.0	147.8	881.3	868.7	8.0	4.6	151.7	3,152.7	341
2015 . .	1,095.9	895.5	41.6	158.8	940.1	927.0	8.3	4.8	155.8	3,308.5	335
2016 . .	1,162.5	946.7	45.6	170.2	1,003.2	989.7	8.7	4.8	159.3	3,467.8	330
2017 . .	1,228.1	996.1	49.9	182.2	1,071.3	1,057.1	9.0	5.2	156.8	3,624.6	324
2018 . .	1,293.3	1,045.5	53.8	194.0	1,144.2	1,129.4	9.4	5.4	149.1	3,773.7	317
2019 . .	1,355.2	1,092.9	57.9	204.4	1,222.2	1,206.8	9.9	5.6	132.9	3,906.6	309
Low-cost:											
2010 . .	794.6	650.3	25.8	118.5	712.3	701.1	6.8	4.4	82.3	2,622.7	357
2011 . .	866.7	718.1	27.2	121.3	737.1	725.4	7.1	4.5	129.6	2,752.3	356
2012 . .	920.4	762.0	30.0	128.4	766.2	754.3	7.5	4.5	154.3	2,906.5	359
2013 . .	981.2	809.3	33.7	138.3	805.7	793.6	7.6	4.4	175.5	3,082.0	361
2014 . .	1,043.4	857.4	36.8	149.3	848.6	836.3	7.9	4.5	194.8	3,276.8	363
2015 . .	1,104.6	903.8	39.8	161.0	894.4	881.7	8.1	4.6	210.2	3,487.0	366
2016 . .	1,168.5	951.8	43.2	173.6	943.5	930.5	8.4	4.6	225.0	3,712.0	370
2017 . .	1,230.1	996.0	46.7	187.4	996.8	983.2	8.8	4.8	233.3	3,945.4	372
2018 . .	1,292.8	1,040.5	49.9	202.4	1,053.5	1,039.5	9.1	4.9	239.2	4,184.6	374
2019 . .	1,353.3	1,083.2	53.2	216.9	1,114.2	1,099.7	9.5	5.1	239.1	4,423.7	376
High-cost:											
2010 . .	788.5	645.0	25.9	117.7	717.0	705.9	6.8	4.4	71.5	2,611.8	354
2011 . .	846.5	699.5	27.4	119.6	746.5	734.9	7.1	4.5	100.0	2,711.9	350
2012 . .	908.2	747.5	30.9	129.8	794.3	782.3	7.5	4.5	113.9	2,825.8	341
2013 . .	975.6	797.5	35.7	142.4	863.6	851.2	7.8	4.6	112.1	2,937.8	327
2014 . .	1,043.3	850.3	40.1	152.8	936.5	923.5	8.2	4.8	106.7	3,044.5	314
2015 . .	1,110.0	903.8	44.4	161.7	1,011.1	997.4	8.6	5.1	98.8	3,143.4	301
2016 . .	1,179.9	960.4	49.3	170.3	1,091.5	1,077.2	9.0	5.3	88.4	3,231.8	288
2017 . .	1,246.2	1,014.1	54.5	177.6	1,178.4	1,163.3	9.5	5.7	67.7	3,299.5	274
2018 . .	1,312.6	1,069.7	59.4	183.5	1,272.0	1,256.1	9.9	6.0	40.6	3,340.1	259
2019 . .	1,376.7	1,125.1	64.6	187.0	1,372.9	1,356.2	10.4	6.3	3.8	3,343.9	243

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

[b] "Total Income" column includes transfers made between the OASI and DI Trust Funds and the General Fund of the Treasury that are not included in the separate components of income shown. These transfers consist of payments for (1) the cost of noncontributory wage credits for military service before 1957 and (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968.

[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.

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

4. Factors Underlying Changes in 10-Year Trust Fund Ratio Estimates From the 2009 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 2009 report, the trust fund ratio for OASI was estimated to reach 394 percent at the beginning of 2018—the tenth projection year from that report. Based on the change in the short-range valuation period alone, from 2009-18 to 2010-19, the estimated ratio for the tenth year (now 2019) would be 11 percentage points lower, or 383 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 (2019) to 366 percent.

The enactment of health care reform legislation resulted in a 1 percentage point decrease in the OASI 2019 trust fund ratio. 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 9 percentage points. The cumulative net effects of changes in economic data and assumptions, reflecting revised estimates of the effects of the economic recession that started in December 2007, resulted in a reduction in the trust fund ratio of 2 percentage points by the beginning of 2019. A decrease in the 2019 trust fund ratio of 2 percentage points resulted from the combined effects of incorporating recent programmatic data including the further correction of the trust fund allocation error described in section III.A. Finally, there were several relatively minor changes in the short-range projection methodology since the 2009 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 was to decrease the ending trust fund ratio by about 2 percentage points.

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 for the DI Trust Fund and the OASI and DI funds combined under the intermediate assumptions are theoretical because the DI Trust Fund is projected to be depleted during 2018. The 43 percentage point decrease in the DI trust fund ratio by the beginning of 2019 (compared with the ratio at the beginning of 2018 in last year's report) is largely caused by updates to programmatic and economic data and assumptions, most of which are attributable to temporarily higher disability incidence and lower payroll tax receipts due to the recession. The remainder of the change results from the combined effects of

enactment of the health reform legislation, the change in the valuation period, and several minor changes in methodology.

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 2018	394	40	338
Change in trust fund ratio due to changes in:			
Legislation	-1	-1	-1
Valuation period	-11	-15	-11
Demographic data and assumptions	-9	[a]	-8
Economic data and assumptions	-2	-4	-2
Programmatic data and assumptions	-2	-24	-5
Projection methods and data	-2	1	-1
Total change in trust fund ratio	-28	-43	-29
Trust fund ratio shown in this report for calendar year 2019[b]	366	-3	309

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

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 like 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, particular attention should be paid to the level and trend of the annual balances at the end of the long-range period.

The next measure discussed 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. Particular attention should be paid to the level and year of maximum trust fund ratio, to the year of exhaustion of the funds, and to the stability of the trust fund ratio in cases where the ratio remains positive at 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 discussed in this section summarize the total income and cost over valuation periods that extend through 75 years and to 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 a comparison of covered workers to beneficiaries, a generational decomposition of the infinite horizon unfunded obligation, the test of long-range close actuarial balance, and the reasons for 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 is considered to 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 indication of this stability is achieving 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 sum of the income from payroll taxes and the income from taxation of benefits, expressed as a percentage of OASDI taxable payroll for the year. The OASDI taxable payroll consists of the total earnings that are 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 transfers from the trust funds to the Railroad Retirement program under the financial-interchange provisions, 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.[2]

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 about 11 percent of taxable payroll in recent years to 11.45 percent for 2084, 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 due to the effects of the recent economic recession, remains fairly stable through 2015 as the economic recovery through this period roughly offsets the effects of the aging population. From about 2015 to 2035, the cost rate rises rapidly because 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," and that did apply, before 1984, to net earnings from self-employment and, before 1988, to income from tips.

[2] In this context, the term balance does not represent the assets of the trust funds, which are sometimes referred to as the balance in the trust funds.

retirement of the baby-boom generation will increase the number of beneficiaries much faster than subsequent relatively low-birth-rate generations will increase the labor force. From 2035 to 2050, the cost rate declines somewhat as the baby-boom generation ages, causing an increase in the average age of beneficiaries. 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 cost rate rises slowly because of the projected reductions in death rates, reaching 15.17 percent of taxable payroll for 2084.

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 2010 through 2013, then rises until it peaks in 2033 at 12.73 percent of payroll. The cost rate then generally declines gradually, reaching 10.79 percent of payroll for 2084, at which point the income rate reaches 11.19 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 22.18 percent of payroll for 2084, 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 2010, positive from 2011 through 2017, and then negative thereafter. This annual deficit rises rapidly, reaching 3.23 percent of taxable payroll by 2035, and generally rises thereafter (except for the period 2038-52), reaching 3.72 percent of taxable payroll for 2084.

Under the low-cost assumptions, the projected OASI annual balance is negative in 2010, positive from 2011 through 2020, and then becomes negative, with the annual deficit peaking at 1.46 percent of taxable payroll for 2033. Then the annual deficit declines until 2063, when the OASI annual balance becomes positive, reaching a surplus of 0.40 percent of payroll in 2084. Under the high-cost assumptions, in contrast, the OASI balance is projected to be negative in 2010, positive for only 3 years (through 2013), and to be negative thereafter, with a deficit of 1.69 percent for 2020, 6.06 percent for 2050, and 10.33 percent of payroll for 2084.

Table IV.B1.—Annual Income Rates, Cost Rates, and Balances, Calendar Years 1990-2085

[As a percentage of taxable payroll]

Calendar year	OASI Income rate[a]	OASI Cost rate	OASI Balance	DI Income rate[a]	DI Cost rate	DI Balance	OASDI Income rate[a]	OASDI Cost rate	OASDI Balance
Historical data:									
1990	11.47	9.66	1.82	1.18	1.09	0.10	12.66	10.74	1.91
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	10.79	9.35	1.44	1.81	1.68	.12	12.60	11.03	1.56
2004	10.74	9.27	1.46	1.79	1.78	.02	12.53	11.05	1.48
2005	10.96	9.31	1.65	1.84	1.85	-.02	12.79	11.16	1.63
2006	10.96	9.18	1.78	1.83	1.88	-.05	12.79	11.06	1.73
2007	11.03	9.46	1.57	1.84	1.88	-.04	12.87	11.34	1.53
2008	10.90	9.53	1.37	1.83	2.01	-.19	12.73	11.55	1.18
2009	11.19	10.70	.49	1.87	2.30	-.43	13.07	13.00	.06
Intermediate:									
2010	10.57	10.74	-.16	1.76	2.35	-.60	12.33	13.09	-.76
2011	11.07	10.68	.39	1.84	2.36	-.52	12.91	13.04	-.12
2012	11.03	10.52	.52	1.84	2.32	-.49	12.87	12.84	.03
2013	11.06	10.54	.52	1.84	2.28	-.44	12.90	12.82	.08
2014	11.08	10.63	.45	1.84	2.24	-.39	12.92	12.86	.06
2015	11.10	10.77	.33	1.84	2.21	-.37	12.94	12.98	-.04
2016	11.12	10.92	.20	1.84	2.18	-.34	12.96	13.10	-.14
2017	11.14	11.14	.01	1.85	2.17	-.32	12.99	13.30	-.32
2018	11.17	11.39	-.22	1.85	2.16	-.31	13.01	13.55	-.53
2019	11.18	11.68	-.50	1.85	2.15	-.31	13.03	13.84	-.81
2020	11.20	11.99	-.79	1.85	2.16	-.31	13.05	14.15	-1.10
2025	11.28	13.28	-2.00	1.85	2.25	-.40	13.13	15.54	-2.40
2030	11.34	14.20	-2.86	1.85	2.20	-.35	13.19	16.41	-3.21
2035	11.37	14.60	-3.23	1.85	2.13	-.28	13.22	16.73	-3.50
2040	11.38	14.54	-3.17	1.85	2.10	-.25	13.23	16.64	-3.41
2045	11.37	14.31	-2.94	1.85	2.13	-.28	13.23	16.44	-3.22
2050	11.37	14.16	-2.80	1.86	2.17	-.31	13.23	16.33	-3.11
2055	11.37	14.17	-2.80	1.86	2.20	-.34	13.23	16.37	-3.14
2060	11.39	14.29	-2.90	1.86	2.19	-.34	13.24	16.48	-3.24
2065	11.40	14.41	-3.02	1.86	2.20	-.35	13.25	16.62	-3.36
2070	11.41	14.58	-3.17	1.86	2.23	-.37	13.27	16.81	-3.54
2075	11.42	14.79	-3.36	1.86	2.24	-.38	13.28	17.03	-3.75
2080	11.44	15.00	-3.56	1.86	2.25	-.39	13.30	17.25	-3.95
2085	11.45	15.21	-3.76	1.86	2.26	-.40	13.31	17.47	-4.16
First year balance becomes negative and remains negative through 2085			2018			2005			2015
Low-cost:									
2010	10.54	10.65	-.11	1.75	2.30	-.55	12.29	12.95	-.66
2011	11.09	10.54	.56	1.85	2.26	-.41	12.94	12.79	.14
2012	11.02	10.26	.76	1.83	2.17	-.34	12.86	12.44	.42
2013	11.05	10.23	.82	1.84	2.09	-.25	12.88	12.31	.57
2014	11.06	10.23	.83	1.84	2.01	-.17	12.90	12.24	.66
2015	11.07	10.29	.78	1.84	1.95	-.11	12.91	12.24	.67
2016	11.09	10.37	.72	1.84	1.89	-.05	12.93	12.26	.67
2017	11.11	10.53	.59	1.84	1.85	-.01	12.95	12.38	.57
2018	11.14	10.71	.42	1.84	1.82	.02	12.98	12.54	.44
2019	11.14	10.93	.21	1.84	1.80	.04	12.98	12.73	.25

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.):									
2020	11.16	11.15	[b]	1.84	1.78	0.06	13.00	12.93	0.06
2025	11.22	12.06	-.84	1.84	1.76	.08	13.06	13.82	-.76
2030	11.25	12.62	-1.36	1.84	1.67	.17	13.09	14.28	-1.19
2035	11.27	12.70	-1.43	1.84	1.57	.26	13.10	14.28	-1.17
2040	11.26	12.40	-1.14	1.84	1.52	.31	13.09	13.92	-.83
2045	11.24	11.95	-.71	1.84	1.52	.31	13.08	13.48	-.40
2050	11.22	11.62	-.40	1.84	1.52	.31	13.06	13.15	-.09
2055	11.22	11.42	-.20	1.84	1.52	.32	13.06	12.94	.12
2060	11.21	11.30	-.09	1.84	1.50	.34	13.05	12.80	.25
2065	11.21	11.15	.06	1.84	1.49	.35	13.05	12.64	.41
2070	11.20	11.00	.20	1.84	1.49	.35	13.04	12.49	.55
2075	11.20	10.88	.32	1.84	1.50	.34	13.04	12.38	.66
2080	11.19	10.80	.39	1.84	1.51	.33	13.03	12.31	.72
2085	11.20	10.80	.40	1.84	1.52	.32	13.03	12.32	.72
First year balance becomes negative and remains negative through 2085			[c]			[c]			[c]
High-cost:									
2010	10.61	10.82	-.21	1.76	2.41	-.65	12.37	13.23	-.85
2011	11.04	10.78	.27	1.84	2.45	-.61	12.88	13.23	-.35
2012	11.04	10.68	.36	1.84	2.46	-.62	12.88	13.14	-.26
2013	11.08	10.91	.17	1.84	2.48	-.64	12.92	13.39	-.47
2014	11.10	11.13	-.03	1.85	2.49	-.64	12.95	13.62	-.67
2015	11.12	11.33	-.21	1.85	2.49	-.65	12.97	13.83	-.86
2016	11.15	11.56	-.41	1.85	2.49	-.64	13.00	14.05	-1.05
2017	11.18	11.86	-.69	1.85	2.51	-.65	13.03	14.37	-1.34
2018	11.21	12.19	-.99	1.86	2.52	-.67	13.06	14.71	-1.65
2019	11.22	12.55	-1.33	1.86	2.54	-.68	13.08	15.09	-2.01
2020	11.25	12.94	-1.69	1.86	2.57	-.71	13.11	15.50	-2.40
2025	11.35	14.67	-3.32	1.87	2.79	-.92	13.22	17.47	-4.25
2030	11.44	16.05	-4.61	1.87	2.81	-.94	13.31	18.85	-5.54
2035	11.50	16.90	-5.40	1.87	2.77	-.90	13.37	19.67	-6.30
2040	11.53	17.27	-5.74	1.87	2.76	-.89	13.40	20.03	-6.62
2045	11.55	17.42	-5.87	1.87	2.84	-.97	13.42	20.26	-6.84
2050	11.57	17.63	-6.06	1.88	2.94	-1.06	13.44	20.57	-7.12
2055	11.60	18.02	-6.42	1.88	3.02	-1.14	13.48	21.04	-7.57
2060	11.63	18.56	-6.93	1.88	3.06	-1.18	13.51	21.62	-8.11
2065	11.67	19.17	-7.50	1.88	3.11	-1.23	13.55	22.28	-8.72
2070	11.72	19.91	-8.20	1.89	3.17	-1.28	13.60	23.08	-9.48
2075	11.77	20.78	-9.01	1.89	3.19	-1.30	13.66	23.97	-10.31
2080	11.82	21.60	-9.78	1.89	3.19	-1.30	13.71	24.79	-11.08
2085	11.86	22.31	-10.45	1.89	3.17	-1.29	13.75	25.49	-11.74
First year balance becomes negative and remains negative through 2085			2014			2005			2010

[a] Income rates are modified to include certain transfers 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, returning 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 2.35 percent for 2010 due to the economic recession, generally declines to 2.10 percent for 2039, and increases gradually thereafter to 2.26 percent for 2084. The income rate increases only very slightly from 1.84 percent of taxable payroll for 2011 to 1.86 percent for 2084. The annual deficit is 0.52 percent in 2011 and reaches 0.40 percent for 2084.

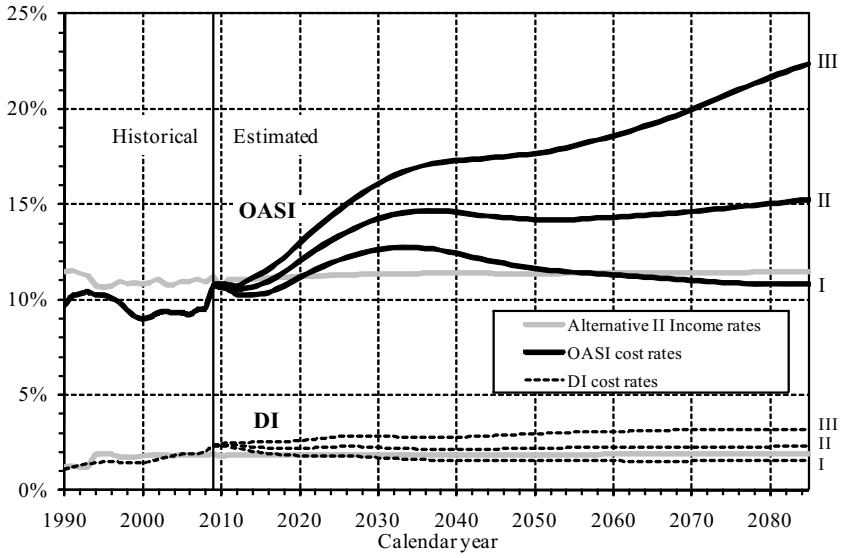
Under the low-cost assumptions, the DI cost rate generally declines from 2.30 percent of payroll for 2010 to 1.52 percent for 2084. The annual balance is negative for the first 8 years and is positive throughout the remainder of the long-range period. For the high-cost assumptions, the DI cost rate rises much more, reaching 3.18 percent for 2084. The annual deficit is 0.65 percent in 2010 and reaches 1.29 percent for 2084.

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, because alternatives I and III define a reasonably wide range of demographic and economic conditions, the resulting estimates delineate a reasonable range for consideration of potential future program costs.

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 generally rises from about 4.8 percent of GDP currently to a peak of 6.1 percent in 2035. Then OASDI cost as a percent of GDP is projected to decline to a low of 5.9 percent in 2055 and increase slowly thereafter, reaching a level around 6.0 percent by 2084. 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 expected to remain relatively stable for the next 5 years, as the economy recovers. Between 2015 and 2035, the cost rate is expected to rise rapidly 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. Because the baby-boom generation had low fertility rates relative to their parents, and those low fertility rates are expected to persist, the ratio of beneficiaries to workers is expected to rise rapidly and reach a permanently higher level after the baby-boom generation retires. After 2035, the ratio of beneficiaries to workers 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	64,975	7,564	—	7,564	8.6	12
1960	72,293	13,740	522	14,262	5.1	20
1965	80,437	18,509	1,648	20,157	4.0	25
1970	92,788	22,618	2,568	25,186	3.7	27
1975	100,164	26,998	4,125	31,123	3.2	31
1980	112,623	30,384	4,734	35,117	3.2	31
1985	120,201	32,763	3,874	36,636	3.3	30
1990	133,040	35,255	4,204	39,459	3.4	30
1995	140,818	37,364	5,731	43,096	3.3	31
2000	154,481	38,556	6,606	45,162	3.4	29
2001	154,798	38,888	6,780	45,668	3.4	30
2002	154,220	39,117	7,060	46,176	3.3	30
2003	154,417	39,315	7,438	46,753	3.3	30
2004	156,159	39,558	7,810	47,368	3.3	30
2005	158,511	39,961	8,172	48,133	3.3	30
2006	160,944	40,435	8,428	48,863	3.3	30
2007	163,057	40,863	8,739	49,603	3.3	30
2008	162,485	41,355	9,065	50,420	3.2	31
2009	156,021	42,385	9,475	51,860	3.0	33
Intermediate:						
2010	155,170	43,527	9,967	53,494	2.9	34
2015	168,734	50,078	11,454	61,533	2.7	36
2020	175,961	57,978	11,885	69,863	2.5	40
2025	180,105	65,561	12,624	78,185	2.3	43
2030	184,128	72,196	12,756	84,952	2.2	46
2035	188,600	76,930	12,824	89,754	2.1	48
2040	193,550	79,493	13,041	92,533	2.1	48
2045	198,564	80,997	13,551	94,548	2.1	48
2050	203,425	82,715	14,034	96,749	2.1	48
2055	208,147	85,123	14,502	99,624	2.1	48
2060	213,052	88,021	14,822	102,843	2.1	48
2065	218,064	90,965	15,239	106,204	2.1	49
2070	223,144	94,241	15,733	109,974	2.0	49
2075	228,171	97,761	16,177	113,938	2.0	50
2080	233,014	101,329	16,616	117,945	2.0	51
2085	237,784	105,031	17,022	122,053	1.9	51

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

Calendar year	Covered workers[a] (in thousands)	Beneficiaries[b] (in thousands) OASI	DI	OASDI	Covered workers per OASDI beneficiary	OASDI beneficiaries per 100 covered workers
Low-cost:						
2010	155,853	43,525	9,923	53,448	2.9	34
2015	173,296	49,987	10,592	60,580	2.9	35
2020	180,241	57,530	10,510	68,040	2.6	38
2025	185,449	64,645	10,711	75,356	2.5	41
2030	190,463	70,593	10,511	81,103	2.3	43
2035	196,411	74,529	10,381	84,911	2.3	43
2040	203,547	76,301	10,467	86,768	2.3	43
2045	211,541	77,108	10,839	87,947	2.4	42
2050	220,029	78,336	11,230	89,566	2.5	41
2055	229,003	80,338	11,645	91,983	2.5	40
2060	238,494	82,864	12,006	94,870	2.5	40
2065	248,722	85,347	12,500	97,847	2.5	39
2070	259,817	88,044	13,112	101,157	2.6	39
2075	271,509	90,979	13,769	104,748	2.6	39
2080	283,584	94,334	14,497	108,830	2.6	38
2085	295,972	98,447	15,216	113,663	2.6	38
High-cost:						
2010	154,769	43,529	10,012	53,541	2.9	35
2015	164,564	50,189	12,318	62,507	2.6	38
2020	171,634	58,562	13,357	71,919	2.4	42
2025	174,766	66,715	14,581	81,296	2.1	47
2030	177,903	74,193	15,004	89,198	2.0	50
2035	181,081	79,935	15,220	95,155	1.9	53
2040	184,009	83,497	15,503	99,001	1.9	54
2045	186,237	85,877	16,082	101,959	1.8	55
2050	187,692	88,245	16,584	104,829	1.8	56
2055	188,470	91,126	17,038	108,164	1.7	57
2060	189,146	94,409	17,224	111,634	1.7	59
2065	189,635	97,764	17,452	115,215	1.6	61
2070	189,588	101,536	17,686	119,222	1.6	63
2075	189,096	105,585	17,728	123,313	1.5	65
2080	188,243	109,281	17,648	126,929	1.5	67
2085	187,225	112,411	17,516	129,927	1.4	69

[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 2009 level of 33 beneficiaries per 100 covered workers, this ratio is estimated to rise to 46 by 2030 and 48 by 2035 under 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, reaching 51 under the intermediate assumptions, and 69 under the high-cost assumptions. Under the low-cost assumptions, this ratio rises to 43 by 2035 and then declines to

38 by 2085. The significance of these numbers can be seen by comparing 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. Because 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 (and because average benefits rise at about the same rate as average earnings), it is to be expected that 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

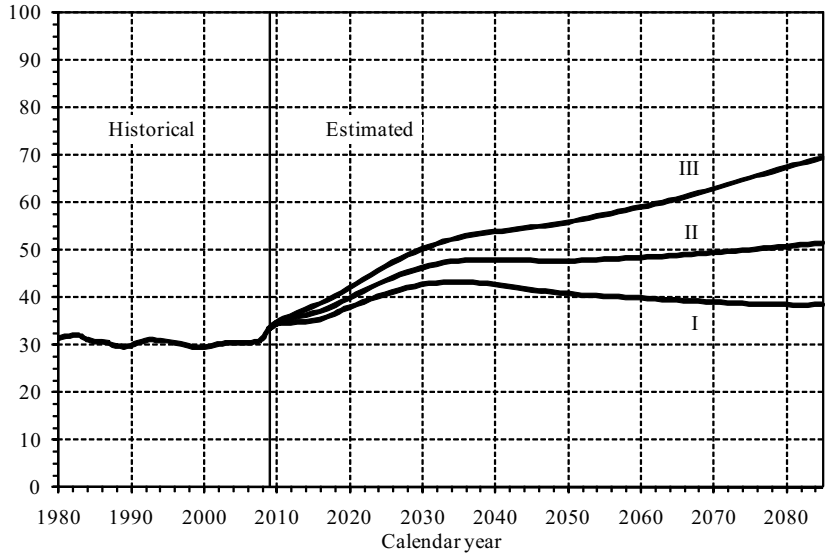


Table IV.B2 also shows the number of covered workers per OASDI beneficiary, which was about 3.0 in 2009. Under the low-cost assumptions, this ratio declines to 2.3 by 2035, and then generally rises throughout the remainder of the period, reaching 2.6 in 2085. Under the intermediate assumptions, this ratio declines generally throughout the long range period, reaching 2.1 in 2035 and 1.9 in 2085, while under the high-cost assumptions, this ratio decreases steadily to 1.4 in 2085.

3. Trust Fund Ratios

Trust fund ratios are useful indicators of the adequacy of the financial resources of the Social Security program at any point in time. 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. Therefore, exhaustion of the assets in either fund during a year would mean there are no longer sufficient assets in the fund to pay 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 indicates 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 achieves 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 rises slightly from 399 percent at the beginning of 2010, reaching a peak of 403 percent at the beginning of 2012. Thereafter, the OASI trust fund ratio declines steadily, with the OASI Trust Fund becoming exhausted in 2040. The DI trust fund ratio has been declining steadily since 2003, and is estimated to continue to decline from 158 percent at the beginning of 2010 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 355 percent for 2010, with the combined funds becoming exhausted in 2037. In last year's report, the peak trust fund ratio for the combined funds was estimated to be 369 percent for 2012 and the year of exhaustion was estimated to be 2037.

Under the intermediate assumptions, OASDI cost is projected to exceed non-interest income in 2010 and 2011 due to increased benefits and reduced tax revenue as a result of the economic recession, and to an expected $25 billion

downward adjustment to 2010 income that corrects for excess payroll tax revenue credited to the Trust Funds in earlier years. For 2012-14, however, non-interest income will exceed cost as the economy recovers. OASDI cash flow, excluding interest, will then become negative in 2015 due to demographic trends. Throughout the period 2010 through 2024, trust fund income, including interest income, is more than is needed to cover costs, so combined trust fund assets will continue to grow. Beginning in 2025, combined trust fund assets will diminish until assets are exhausted in 2037.

Based on the low-cost assumptions, the trust fund ratio for the DI program increases from 2017 through the end of the long-range projection period, and reaches the extremely high level of 1,799 percent for 2085. At the end of the long-range period, the DI trust fund ratio is rising by 36 percentage points per year. For the OASI program, the trust fund ratio rises to a peak of 422 percent for 2018, drops to a low of 282 percent for 2048, and rises thereafter to a level of 457 percent for 2085. At the end of the period, the OASI trust fund ratio is rising by 8 percentage points per year. For the OASDI program, the trust fund ratio peaks at 376 percent for 2019, falls to 306 percent for 2041, and increases thereafter, reaching 622 percent for 2085. Because the trust fund ratios are large and increasing at the end of the long-range period, 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. Thus, under the low-cost assumptions, each program would achieve sustainable solvency.

In contrast, under the high-cost assumptions, the OASI trust fund ratio is estimated to peak at 400 percent for 2011, thereafter declining to fund exhaustion by the end of 2032. The DI trust fund ratio is estimated to decline from 156 percent for 2010 to fund exhaustion by the end of 2015. The combined OASI and DI trust fund ratio is estimated to decline from 354 percent for 2010 to fund exhaustion by the end of 2029.

Thus, because large, persistent annual deficits are projected under all but the low-cost assumptions, it is likely that income will eventually need to be increased, program costs will need to be reduced, or both, in order to prevent exhaustion of the trust funds.

Even under the high-cost assumptions, however, the combined OASI and DI funds on hand plus their estimated future income would be able to cover their combined cost for 19 years (until 2029). Under the intermediate assumptions, the combined starting funds plus estimated future income would be able to cover cost for 27 years (until 2037). The program would be able to cover cost for the foreseeable future under the more optimistic low-cost assumptions. In the 2009 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 2010-85
[In percent]

Calendar year	Intermediate			Low-cost			High-cost		
	OASI	DI	OASDI	OASI	DI	OASDI	OASI	DI	OASDI
2010	399	158	355	399	161	357	398	156	354
2011	401	134	353	402	141	356	400	128	350
2012	403	113	350	409	125	359	397	102	341
2013	400	93	346	411	113	361	385	75	327
2014	397	74	341	414	104	363	373	49	314
2015	392	57	335	417	98	366	362	23	301
2016	388	41	330	420	95	370	351	[a]	288
2017	382	26	324	421	94	372	338	[a]	274
2018	375	11	317	422	95	374	324	[a]	259
2019	366	[a]	309	421	98	376	308	[a]	243
2020	356	[a]	299	419	102	375	292	[a]	226
2025	293	[a]	237	397	130	363	192	[a]	122
2030	208	[a]	154	361	178	340	66	[a]	[a]
2035	110	[a]	59	324	269	318	[a]	[a]	[a]
2040	5	[a]	[a]	296	388	307	[a]	[a]	[a]
2045	[a]	[a]	[a]	284	513	310	[a]	[a]	[a]
2050	[a]	[a]	[a]	283	643	324	[a]	[a]	[a]
2055	[a]	[a]	[a]	290	784	348	[a]	[a]	[a]
2060	[a]	[a]	[a]	302	946	377	[a]	[a]	[a]
2065	[a]	[a]	[a]	321	1,116	414	[a]	[a]	[a]
2070	[a]	[a]	[a]	347	1,284	459	[a]	[a]	[a]
2075	[a]	[a]	[a]	380	1,455	510	[a]	[a]	[a]
2080	[a]	[a]	[a]	418	1,624	566	[a]	[a]	[a]
2085	[a]	[a]	[a]	457	1,799	622	[a]	[a]	[a]
Trust fund is estimated to become exhausted in	2040	2018	2037	[b]	[b]	[b]	2032	2015	2029

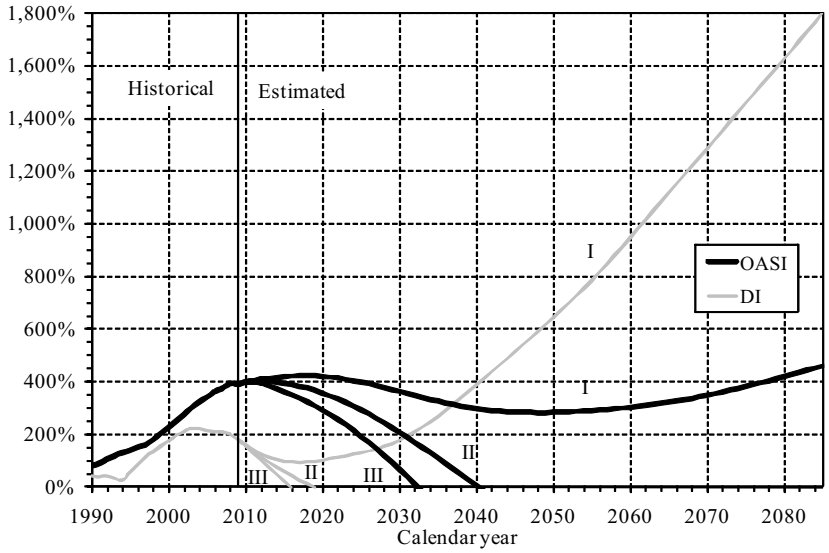
[a]The trust fund is estimated to be exhausted by the beginning of this year. The last line of the table shows the specific year of trust fund exhaustion.

[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 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 and the projected income from the taxation of scheduled benefits expressed as a percentage of taxable payroll. The current combined payroll tax rate of 12.4 percent is scheduled to 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, benefits 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 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.

It may be noted that the payroll tax income expressed as a percentage of taxable payroll, as shown in table IV.B4, is slightly smaller than the actual tax rates in effect for each period. This is because all OASDI income and cost amounts are computed on a cash basis and are thus attributed to the year in which they are intended to be received by or expended from the fund, while taxable payroll is attributed to the year in which earnings are paid. Because

earnings are paid to workers before the corresponding payroll taxes are credited to the funds, payroll tax income for a given year reflects taxes paid from a combination of the taxable payrolls for that year and prior years, when payroll was smaller. 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 would indicate that estimated cost for the period could be met, on average, 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, signals the likelihood of continuing cash-flow deficits, and implies that the current-law level of financing is not sustainable.

The values in table IV.B4 show that 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 1.12 percent of taxable payroll under the low-cost assumptions, -0.25 percent under the intermediate assumptions, and -1.86 percent under the high-cost assumptions. Thus, 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 0.55 percent under the low-cost assumptions, but would have deficits of 1.45 percent under the intermediate assumptions and 4.00 percent under the high-cost assumptions. Thus, 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 0.59 percent of taxable payroll under the low-cost assumptions, -1.92 percent under the intermediate assumptions, and -5.26 percent under the high-cost assumptions.

Assuming the Trustees' intermediate assumptions are realized, 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 14.24 percent. Solvency for this period could also be restored if scheduled benefits for this period were reduced by 12.0 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 14.38 percent for all earnings during this period or a decrease in scheduled benefits of 12.8 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. It may be noted that the indicated increase in the payroll tax rate is somewhat larger than the actuarial deficit of 1.92 percent of payroll due to a reduction in the tax base, reflecting the assumed response of employers and employees to an increase in taxes.

Large annual deficits projected under current law for the end of the long-range period, which exceed 4 percent of payroll under the intermediate assumptions (see table IV.B1), indicate that the annual cost will very likely continue to exceed tax revenue after 2084. 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 infinite horizon, the actuarial deficit is estimated to be 3.3 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 15.9 percent. This shortfall could also be eliminated if all current and future benefits were immediately reduced by 20.7 percent. It may be noted that the indicated increase in the payroll tax rate is larger than the infinite horizon actuarial deficit of 3.3 percent of payroll due to the assumed response of employers and employees to an increase in taxes.

As may be concluded from table IV.B4, the financial condition of the DI program is substantially weaker 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 relative weakness of the OASI program in the long-term occurs because increases in longevity have a greater impact on retirement and survivor benefits than on disability benefits.

Table IV.B4.—Components of Summarized Income Rates and Cost Rates, Calendar Years 2010-84

[As a percentage of taxable payroll]

	Summarized income rate				Summarized cost rate			
Valuation period	Payroll tax	Taxation of benefits	Beginning fund balance	Total	Cost	Ending target fund	Total	Actuarial balance
OASI:								
Intermediate:								
2010-34.	10.57	0.64	1.78	12.98	12.41	0.53	12.93	0.05
2010-59.	10.58	.71	1.01	12.30	13.25	.21	13.46	-1.17
2010-84.	10.58	.74	.77	12.09	13.58	.13	13.71	-1.62
Low-cost:								
2010-34.	10.57	.59	1.77	12.92	11.45	.46	11.90	1.02
2010-59.	10.58	.62	1.00	12.19	11.66	.18	11.84	.36
2010-84.	10.58	.62	.74	11.95	11.49	.10	11.59	.36
High-cost:								
2010-34.	10.57	.70	1.76	13.03	13.53	.62	14.15	-1.12
2010-59.	10.58	.82	.99	12.40	15.28	.28	15.55	-3.16
2010-84.	10.58	.90	.76	12.25	16.41	.17	16.58	-4.33
DI:								
Intermediate:								
2010-34.	1.79	.05	.15	2.00	2.22	.08	2.30	-.30
2010-59.	1.80	.05	.09	1.94	2.19	.03	2.22	-.28
2010-84.	1.80	.06	.07	1.92	2.20	.02	2.22	-.30
Low-cost:								
2010-34.	1.79	.04	.15	1.99	1.84	.06	1.90	.09
2010-59.	1.80	.04	.09	1.93	1.70	.02	1.73	.20
2010-84.	1.80	.04	.06	1.90	1.65	.01	1.67	.24
High-cost:								
2010-34.	1.79	.06	.15	2.01	2.64	.10	2.74	-.73
2010-59.	1.80	.07	.09	1.95	2.75	.05	2.79	-.84
2010-84.	1.80	.07	.07	1.94	2.84	.02	2.86	-.93
OASDI:								
Intermediate:								
2010-34.	12.36	.69	1.93	14.99	14.63	.60	15.23	-.25
2010-59.	12.37	.76	1.10	14.23	15.44	.25	15.68	-1.45
2010-84.	12.38	.80	.83	14.01	15.78	.14	15.93	-1.92
Low-cost:								
2010-34.	12.37	.63	1.92	14.91	13.29	.51	13.80	1.12
2010-59.	12.37	.66	1.08	14.12	13.37	.20	13.57	.55
2010-84.	12.38	.66	.81	13.85	13.14	.11	13.26	.59
High-cost:								
2010-34.	12.36	.76	1.91	15.04	16.18	.72	16.90	-1.86
2010-59.	12.37	.89	1.08	14.35	18.02	.32	18.34	-4.00
2010-84.	12.38	.98	.83	14.18	19.25	.20	19.44	-5.26

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 tax income over the long-range period, minus the amount of trust fund assets at the beginning of the projection period, amounts to $5.4 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 tax income minus cost, plus starting trust fund assets, minus the present value of the ending target trust fund, amounts to -$5.8 trillion for the OASDI program. The actuarial balance—this amount expressed as a percentage of taxable payroll for the period—is therefore -1.92 percent.

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

Item	OASI	DI	OASDI
Present value as of January 1, 2010 (in billions):			
A. Payroll tax revenue	$32,218	$5,471	$37,689
B. Taxation of benefits revenue	2,256	174	2,430
C. Tax income (A + B)	34,474	5,644	40,118
D. Cost	41,369	6,696	48,065
E. Cost minus tax income (D - C)	6,895	1,052	7,947
F. Trust fund assets at start of period	2,337	204	2,540
G. Open group unfunded obligation (E - F)	4,558	848	5,406
H. Ending target trust fund[a]	384	57	441
I. Income minus cost, plus assets at start of period, minus ending target trust fund (C - D + F - H = - G - H)	-4,942	-905	-5,847
J. Taxable payroll	304,530	304,530	304,530
Percent of taxable payroll:			
Actuarial balance (100 × I ÷ J)	-1.62	-.30	-1.92

[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 2010 to 2084 for this report) for the evaluation of the long-run financial status of the OASDI program on an open group basis (i.e., including

taxes and cost for past, current, and future participants through the year 2084). 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 $5.4 trillion. The open group measure indicates 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 2084.

Table IV.B6 also presents the 75-year unfunded obligation as percentages of future OASDI taxable payroll and GDP through 2084. The 75-year unfunded obligation as a percentage of taxable payroll is less than the actuarial deficit, because it excludes the ending target trust fund value (see table IV.B5).

However, there are limitations on what can be conveyed using summarized measures alone. For example, overemphasis on summary measures (such as the actuarial balance and open group unfunded obligation) for the 75-year period can lead to incorrect perceptions and policies that fail to address financial sustainability for the more distant future. 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 to 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 $16.1 trillion, which is $10.7 trillion larger than for the 75-year period. The $10.7 trillion increment reflects a significant financing gap projected for OASDI for years after 2084. Of course, the degree of uncertainty associated with estimates beyond 2084 is substantial.

The $16.1 trillion infinite horizon open group unfunded obligation amounts to 3.3 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, 2010; 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]	$16.1	3.3	1.2
Unfunded obligation for 1935 through 2084[b]	5.4	1.8	.6

[a] Present value of future cost less future taxes, reduced by the amount of trust fund assets at the beginning of 2010. Expressed as percentage of payroll and GDP for the period 2010 through the infinite horizon.
[b] Present value of future cost less future taxes through 2084, reduced by the amount of trust fund assets at the beginning of 2010. Expressed as percentage of payroll and GDP for the period 2010 through 2084.

Notes:
1. The present values of future taxable payroll for 2010-84 and for 2010 through the infinite horizon are $304.5 trillion and $482.6 trillion, respectively.
2. The present values of GDP for 2010-84 and for 2010 through the infinite horizon are $838.2 trillion and $1,395.4 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 $15.1 trillion in present value. If the assumptions, methods, starting values, and the law had all remained unchanged, the change in the valuation date to one year later would have increased the unfunded obligation by about $0.7 trillion to $15.9 trillion. The net effects of changes in law, data, methods, and other assumptions increased the infinite horizon unfunded obligation by about $0.3 trillion in present value.

The infinite horizon unfunded obligation is 0.1 percentage point lower than 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 an increase in the assumed average real wage growth through 2084 reflecting health care legislation, near-term economic and disability assumptions reflecting the recent economic recession, lower mortality rates, and revisions in labor force projections. 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 $16.1 trillion into components for past, current, and future participants. The present value of future cost less future taxes over the next 100 years for all current participants (individuals who attain age 15 or older in 2010) equals $20.0 trillion. Subtracting the current value of the trust fund gives a closed group unfunded obligation of $17.4 trillion, which represents the shortfall of lifetime contributions for all past and current participants relative to the cost of benefits for them. Future participants, on the other hand, are scheduled to

pay $1.3 trillion more into the system than the cost of benefits for them. The total unfunded obligation, $16.1 trillion, is the sum of the unfunded obligation for current and past participants ($17.4 trillion) and the present value of cost less taxes for future participants (-$1.3 trillion).

This accounting makes clear that if some generations receive benefits with a present value exceeding the present value of their contributions, other generations must receive benefits with a present value less than the present value of their contributions. 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 $16.1 trillion in present value, 3.3 percent of future taxable payroll, or 1.2 percent of future GDP.

Table IV.B7.—Present Values of OASDI Cost Less Tax Revenue and Unfunded Obligations for Program Participants, Based on Intermediate Assumptions

[Present values as of January 1, 2010; 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 taxes for current participants . . .	$20.0	4.1	1.4
Less current trust fund (tax accumulations minus expenditures to date for past and current participants) . . .	2.5	.5	.2
Equals unfunded obligation for past and current participants[a] . . .	17.4	3.6	1.2
Plus present value of cost less taxes for future participants over the infinite horizon . . .	-1.3	-.3	-.1
Equals unfunded obligation for all participants through the infinite horizon. . . .	16.1	3.3	1.2

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

Notes:
1. The present value of future taxable payroll for 2010 through the infinite horizon is $482.6 trillion.
2. The present value of GDP for 2010 through the infinite horizon is $1,395.4 trillion.
3. Totals do not necessarily equal the sums of rounded components.

6. Test of Long-Range Close Actuarial Balance

The test of long-range close actuarial balance applies to a set of 66 separate valuation periods beginning with the first 10-year period, and including the periods of the first 11 years, the first 12 years, etc., 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 is expected to 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 effectively plan for their retirement.

Table IV.B8 presents a comparison of the estimated 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, based on the intermediate estimates. Values are shown for only 14 of the valuation periods: those of length 10 years, 15 years, and continuing in 5-year increments through 75 years. 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 27 years under the intermediate estimates. For valuation periods of greater than 27 years, the estimated actuarial balance is less than the minimum allowable. For the full 75-year long-range period, the estimated actuarial balance reaches -11.84 percent of the summarized cost rate, for a shortfall of 6.84 percent from the minimum allowable balance of -5.0 percent of the summarized cost rate. Thus, although the OASI program satisfies the test of short-range financial adequacy (as discussed earlier on page 36), 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 -13.40 percent of the summarized cost rate, for a shortfall of 8.40 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 42), 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. This difference occurs primarily because 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, 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 24 years under the intermediate estimates. For valuation periods of greater than 24 years, the estimated actuarial balance is below the minimum allowable balance. The size of the shortfall from the minimum allowable balance rises gradually, reaching 7.05 percent of the summarized cost rate for the full 75-year long-range valuation period. Thus, although the OASDI program satisfies the short-range test of financial adequacy, it is out of long-range close actuarial balance.

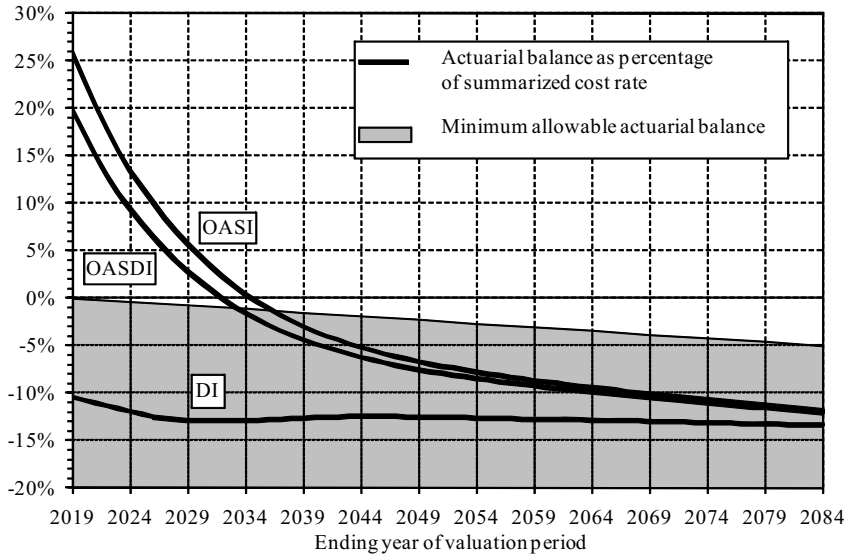
The OASI and DI programs, both separate and combined, were also found to be out of close actuarial balance in last year's report. The estimated deficits for the OASI, DI, and combined OASDI programs in this report are smaller when compared to those shown in last year's report for the longer valuation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

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

	Rates (percentage of taxable payroll)			Values expressed as a percentage of cost rate	
Valuation period	Summarized income rate	Summarized cost rate	Actuarial balance	Actuarial balance	Minimum allowable actuarial balance
OASI:					
10-year: 2010-19	15.29	12.14	3.15	25.99	0.00
15-year: 2010-24	13.97	12.30	1.66	13.51	-.38
20-year: 2010-29	13.34	12.63	.71	5.64	-.77
25-year: 2010-34	12.98	12.93	.05	.39	-1.15
30-year: 2010-39	12.75	13.15	-.40	-3.04	-1.54
35-year: 2010-44	12.59	13.28	-.69	-5.23	-1.92
40-year: 2010-49	12.46	13.36	-.90	-6.70	-2.31
45-year: 2010-54	12.37	13.41	-1.04	-7.78	-2.69
50-year: 2010-59	12.30	13.46	-1.17	-8.66	-3.08
55-year: 2010-64	12.24	13.51	-1.27	-9.42	-3.46
60-year: 2010-69	12.19	13.56	-1.37	-10.09	-3.85
65-year: 2010-74	12.15	13.61	-1.46	-10.71	-4.23
70-year: 2010-79	12.12	13.66	-1.54	-11.29	-4.62
75-year: 2010-84	12.09	13.71	-1.62	-11.84	-5.00
DI:					
10-year: 2010-19	2.20	2.46	-.26	-10.49	.00
15-year: 2010-24	2.09	2.37	-.28	-11.97	-.38
20-year: 2010-29	2.03	2.34	-.30	-12.90	-.77
25-year: 2010-34	2.00	2.30	-.30	-12.91	-1.15
30-year: 2010-39	1.98	2.27	-.29	-12.64	-1.54
35-year: 2010-44	1.96	2.25	-.28	-12.49	-1.92
40-year: 2010-49	1.95	2.23	-.28	-12.52	-2.31
45-year: 2010-54	1.95	2.23	-.28	-12.64	-2.69
50-year: 2010-59	1.94	2.22	-.28	-12.76	-3.08
55-year: 2010-64	1.93	2.22	-.29	-12.87	-3.46
60-year: 2010-69	1.93	2.22	-.29	-12.99	-3.85
65-year: 2010-74	1.93	2.22	-.29	-13.13	-4.23
70-year: 2010-79	1.92	2.22	-.29	-13.27	-4.62
75-year: 2010-84	1.92	2.22	-.30	-13.40	-5.00
OASDI:					
10-year: 2010-19	17.50	14.60	2.90	19.83	.00
15-year: 2010-24	16.05	14.68	1.38	9.39	-.38
20-year: 2010-29	15.38	14.96	.41	2.75	-.77
25-year: 2010-34	14.99	15.23	-.25	-1.61	-1.15
30-year: 2010-39	14.73	15.42	-.69	-4.45	-1.54
35-year: 2010-44	14.55	15.53	-.98	-6.28	-1.92
40-year: 2010-49	14.42	15.59	-1.17	-7.54	-2.31
45-year: 2010-54	14.31	15.64	-1.32	-8.47	-2.69
50-year: 2010-59	14.23	15.68	-1.45	-9.24	-3.08
55-year: 2010-64	14.17	15.73	-1.56	-9.91	-3.46
60-year: 2010-69	14.12	15.77	-1.66	-10.50	-3.85
65-year: 2010-74	14.07	15.82	-1.75	-11.05	-4.23
70-year: 2010-79	14.04	15.87	-1.84	-11.57	-4.62
75-year: 2010-84	14.01	15.93	-1.92	-12.05	-5.00

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

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]



7. Reasons for Change in Actuarial Balance From Last Report

The estimated effects of various changes from last year's report to this report on the long-range actuarial balance under the intermediate assumptions are listed (by category) 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	12.08	1.93	14.02
Cost rate	13.76	2.25	16.02
Actuarial balance	**-1.68**	**-.32**	**-2.00**
Changes in actuarial balance due to changes in:			
Legislation / Regulation	+.12	+.02	+.14
Valuation period[a]	-.05	-.01	-.06
Demographic data and assumptions	-.05	.00	-.05
Economic data and assumptions	-.01	.00	.00
Disability assumptions	+.01	-.02	-.02
Methods and programmatic data	+.04	+.03	+.07
Total change in actuarial balance	+.06	+.02	+.08
Shown in this report:			
Actuarial balance	**-1.62**	**-.30**	**-1.92**
Income rate	12.09	1.92	14.01
Cost rate	13.71	2.22	15.93

[a] In changing from the valuation period of last year's report, which was 2009-83, to the valuation period of this report, 2010-84, the relatively large negative annual balance for 2084 is included. This change in the valuation period results in a larger long-range actuarial deficit. The fund balance at the end of 2009, 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, five laws have been enacted that are expected to have financial effects on the OASDI program (see section III.B). Two of these laws, the Patient Protection and Affordable Care Act and the Health Care and Education Reconciliation Act of 2010, are together estimated to increase the long-range OASDI actuarial balance by 0.14 percent of taxable payroll. These two laws affect the Social Security program by increasing the share of employee compensation that will be paid in wages covered by Social Security, resulting in increases in the rate of growth in average real covered earnings. The other three laws, the Hiring Incentives to Restore Employment Act, the No Social Security Benefits for Prisoners Act of 2009, and the Social Security Disability Applicants' Access to Professional Representation Act of 2010, are each estimated to change the long-range actuarial balance by a negligible amount (less than 0.005 percent of taxable payroll).

In changing from the valuation period of last year's report, which was 2009-83, to the valuation period of this report, 2010-84, the relatively large negative annual balance for 2084 is included. This change results in a

decrease in the long-range OASDI actuarial balance of 0.06 percent of taxable payroll. (Note that the trust fund assets at the end of 2009, 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 valuation for 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 reduce the long-range OASDI actuarial balance by 0.05 percent of taxable payroll. The source contributing most to this reduction is the inclusion of final mortality data for 2006, which results in slightly lower starting death rates and faster near-term declines in death rates than in last year's report. These lower death rates result in a decrease in the long-range OASDI actuarial balance of 0.05 percent of taxable payroll. Final data on legal immigration for 2008 are also included in this year's report. These data show a lower percentage of immigrants being female, which results in slightly fewer births in the projection period. The effect of including these immigration data for 2008 is a decrease in the long-range OASDI actuarial balance of 0.01 percent of taxable payroll. Offsetting the effect of the immigration change are assumed higher birth rates during the first 24 years of the projection period. Birth rates for this period are projected to be higher than in last year's report, based on preliminary birth data for 2007 and 2008. These changes in birth rates result in an increase in the long-range OASDI actuarial balance of 0.01 percent of taxable payroll.

The ultimate economic assumptions are unchanged from those in last year's report, except for the assumed share of employee compensation that is paid in wages covered under Social Security. For last year's report, the share of employee compensation paid in wages was assumed to decline at a constant rate of 0.2 percent per year throughout the 75-year projection period, which reflected the average projected growth rate in pension and health insurance costs that are not subject to the Social Security payroll tax. This assumption was consistent with the constant real wage differential of 1.1 percentage point shown in last year's report. For this year's report, this assumption was changed in two steps: first, the projected growth rates of various components of compensation were refined so that they are allowed to change over time, rather than being held constant at a summarized average rate; second, those growth rates were updated to reflect the estimated effects of legislation enacted since last year's report. The first step of this change results in a small reduction in the long-range OASDI actuarial balance of 0.01 percent of taxable payroll. The second step increases the long-range OASDI actuarial balance by an estimated 0.14 percent of taxable payroll, as described in the preceding paragraph discussing the effects of laws enacted since the prior

year's report. For additional details of this change, see sections V.B3 and V.B4 of this report.

Updating starting values, changes in near-term economic growth rate assumptions, and the first step of the change in the projected share of employee compensation that is paid in the form of wages subject to OASDI payroll tax have a combined negligible effect on the long-range OASDI actuarial balance. In last year's report, the recession was projected to reach a bottom in the first half of 2009 and to return to full-employment levels in 2015. For this year's report, we now know that the recession actually did reach bottom in the second quarter of 2009, but with higher unemployment and lower wages and OASDI taxable earnings than were projected last year. Furthermore, the recovery to a stable full-employment path for the economy is now projected to be completed in 2018 rather than 2015. The deeper and longer-lasting trough in economic activity results in lower employment and taxable earnings over the short-range period and lower cost beginning in the latter half of the short-range period.

This report includes new starting data and changes in near-term disability assumptions that combine to reduce the long-range OASDI actuarial balance by 0.02 percent of taxable payroll. In the early portion of the projection period, higher disability incidence rates and lower termination rates are assumed, reflecting the deeper recession and slower recovery than was assumed in last year's report. As a result, the number of disabled-worker beneficiaries is now projected to be about 100,000 higher at the end of 2010 and about 300,000 higher at the end of 2015 than in last year's report.

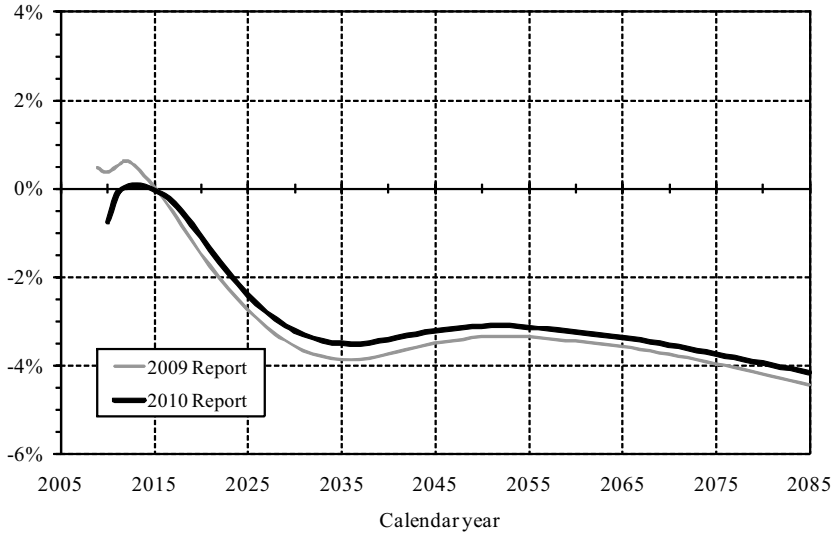
Several methodological improvements and updates of program-specific data are included in this report. These changes to programmatic data and methods have partially offsetting effects and combine to increase the long-range OASDI actuarial balance by 0.07 percent of taxable payroll. One significant change was made to the method for calculating death rates for 2007-09, years following the year of final data. Death rates at very old ages for these years were lowered to make the trend in population more consistent with the trend indicated by Social Security administrative records for this time period. These reductions result in slightly lower death rates at older ages throughout the projection period. This mortality change results in a decrease in the long-range OASDI actuarial balance of about 0.08 percent of taxable payroll. Another significant change is related 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 2004 sample to a 2006 sample. The update of this sample results in an increase in the long-range OASDI actuarial balance of about 0.10 percent of taxable payroll. A

third significant change is an update to the labor force participation model to account for more recent data and more significant factors affecting participation. This methodological improvement changes the composition of the projected labor force, with fewer teenage and more female and older workers. This improvement results in an increase in the long-range OASDI actuarial balance of about 0.05 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 0.06 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 increase the actuarial balance by 0.14 percent of payroll. Thus, the actuarial balance changes from -2.00 percent of taxable payroll in last year's report to -1.92 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: 2009 and 2010 Trustees Reports
[As a percentage of taxable payroll, based on intermediate assumptions]



The annual balance for 2010 in this report is 1.13 percent of payroll lower than was projected in last year's report due to a deeper recession and slower

recovery than had been expected, and to an expected $25 billion downward adjustment to 2010 income that corrects for excess payroll tax revenue credited to the Trust Funds in earlier years. However, over the next 5 years, the difference between the annual balances in the two reports declines rapidly as the economy recovers and the share of employee compensation that is paid in taxable wages declines more slowly due to the recent health care legislation. For the period 2016 through 2083, the annual balances in this report are higher than those in last year's report by an average amount of about 0.27 percent of taxable payroll. This increase is mainly due to the health care legislation enacted in March 2010, the updated sample used for the projection of average benefit levels for workers who will become eligible in the future, and the updated modeling of labor force participation. By the end of last year's 75-year projection period (2083), the difference in the annual balances is 0.26 percent of payroll. The annual deficit for 2083 is 4.08 percent of taxable payroll in this report compared to 4.34 percent for 2083 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 and the level and distribution of earnings. Similarly, program cost will depend on how these factors affect the size and composition of the beneficiary population and the general level of benefits.

Basic assumptions are developed for several of these factors based on analysis of historical trends and conditions, and on expected future conditions. These factors include fertility, mortality, immigration, marriage, divorce, productivity, inflation, average earnings, unemployment, 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, interest rates, and program-specific factors. All factors included in any consistent set of assumptions are interrelated directly or indirectly. It is also important to note that these interrelationships can, and do, change over time.

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.

Because projections of these factors and their interrelationships are inherently uncertain, 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. In terms of 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. The probability is very low that all the factors and interactions would differ in the same direction from those expected for long periods of time. 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 also have a very low probability. This report also includes a stochastic projection that provides a probability distribution of possible future outcomes that is centered around the intermediate assumptions. These possible outcomes are discussed in Appendix E.

Although these three sets of demographic and economic assumptions have been developed to provide a broad range of possible outcomes, the resulting

estimates should be interpreted with care. The estimates are not intended to be specific predictions of the future financial status of the OASDI program, but rather they are intended to be indicators of the expected trend and 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 move from recently experienced levels or trends, toward long-range ultimate values, generally over the next 25 years. Ultimate values or trends reached by the end of the 75-year long-range period are generally maintained at these levels or trends for extrapolations beyond 75 years.

The assumed ultimate values, which are generally reached within the first 25 years (and apply thereafter through the end of the 75-year long-range period) for both the demographic and the economic factors, 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. The rationales for selecting these assumptions are discussed in the following three sections.

[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, submit a request via our Internet request form 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/TR10/index.html.

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 are applied to the total number of women, for all marital statuses, in the midyear population at each age.

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, reaching 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 2.12 in 2006.

These variations in the total fertility rate resulted from changes in many factors, including social attitudes, economic conditions, and birth-control practices. 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 for 2007 and 2008, the total fertility rate is assumed to remain at a level of 2.12 children per woman for 2007 and decrease to 2.09 for both 2008 and 2009. These levels are slightly higher than those estimated in last year's report for the intermediate assumptions. For all three alternatives, the total fertility rate is then assumed to follow a gradual trend toward the selected ultimate level, which is reached in 2034.

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

[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.

death rates, probabilities of death by single year of age and sex were calculated.

Historical death rates (for years 1900-2006) used in developing estimates for this report 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 2006. Death rates by cause of death at all ages for years 1979-2006 were produced by the NCHS.

The total age-sex-adjusted death rate[2] declined at an average rate[3] of 1.09 percent per year between 1900 and 2006. Between 1979 and 2006, 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 0.89 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 0.78 percent per year between 1900 and 2006. Between 1982 and 2006, the age-sex-adjusted death rate for these ages declined at an average annual rate of 0.69 percent.

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 2034 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.

After 2006, 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 1986 and 2006, to the ultimate

---

[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.

annual percentage reductions by age group, sex, and cause of death assumed for 2034 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 1986 and 2006.

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 slightly 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 2006 and a new method of estimating death rates for years between the final data year and the Trustees Report year.

After adjustment for changes in the age-sex distribution of the population, the resulting total death rates are projected to decline at ultimate average annual rates of about 0.35 percent, 0.77 percent, and 1.24 percent between 2034 and 2084 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 0.32 percent, 0.70 percent, and 1.17 percent between 2034 and 2084 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 and developments 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 1,000,000 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, reaching about 1,200,000 for 2005 and 2006. For 2007 and 2008, 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.

For the intermediate alternative, the remaining backlog of pending applications is assumed to be eliminated by the end of 2010, and thereafter legal

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

immigration is assumed to be 1,000,000 persons per year. 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 are the same ratios used in last year's report. Combining the annual legal immigration and emigration assumptions results in ultimate net legal immigration of 750,000 persons per year under the intermediate alternative. 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 9.7 million persons as of January 1, 2000, increasing to about 12.8 million persons as of January 1, 2006. 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 average number of persons entering the other-immigrant population in the period 2000 through 2006 is estimated to have been about 1.5 million per year. During the same period, the number of other immigrants who left the Social Security area or adjusted status to become LPRs is estimated to have averaged about 960,000 per year. Thus, annual net other immigration during this time period is estimated to have averaged approximately 540,000 persons.

For the intermediate assumptions, annual other immigration is assumed to continue at the level of 1.5 million persons throughout the projection period. For the low- and high-cost scenarios, future annual other immigration is assumed to average 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. The annual number of other immigrants who leave the Social Security area is estimated based on modeled departures, disaggregated into two groups, for the period 2000-05. The first departing group is set at fixed annual numbers of departures, by age and sex, which remain constant throughout the projection period. This first group is directly related to the number of other immigrants who are assumed to have recently entered the Social Security area. 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

Security area. 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 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 decreased from a level averaging about 590,000 per year in the period 2000 through 2003, to about 465,000 in 2006, which reflects an increase in the number of other immigrants adjusting to LPR status as a result of the effort to reduce the backlog of applications for LPR status. Under the intermediate assumptions, the backlog of applications is expected to be eliminated in 2010 and net other immigration in 2011 is projected to be about 425,000 persons. After 2011, net other immigration is projected to decline steadily to about 275,000 in 2068 and to remain fairly stable thereafter. The decline in net other immigration is attributable to the increasing number of other immigrants residing in the Social Security area. This increase in the number of other immigrants results in an increase in the number who emigrate out of the area based on the rates of departure described above. All other components of other immigration and emigration are set at fixed levels after 2010, 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 about 315,000 persons. Net other immigration is estimated to average about 410,000 persons per year under the low-cost assumptions and 220,000 persons per year under the high-cost assumptions.

The total level of net immigration (legal and other combined) is estimated to average 1,065,000 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 1,370,000 persons per year. Under the high-cost assumptions, total net immigration is estimated to average 780,000 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 the U.S. borders could be tightened in the future.

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	375,000
1985	1.83	984.2	303.6	5,777.6	435,000	375,000
1990	2.07	931.2	289.4	5,451.1	500,000	550,000
1995	1.98	913.9	277.3	5,397.5	575,000	550,000
1996	1.98	900.4	266.1	5,367.2	665,000	550,000
1997	1.97	885.1	253.6	5,332.5	570,000	550,000
1998	2.00	878.3	246.9	5,325.2	490,000	550,000
1999	2.01	884.4	245.0	5,387.5	520,000	550,000
2000	2.05	875.7	243.4	5,328.3	670,000	625,000
2001	2.03	867.4	243.6	5,260.7	795,000	495,000
2002	2.03	863.7	242.8	5,236.6	730,000	550,000
2003	2.06	851.6	241.5	5,148.2	575,000	685,000
2004	2.06	820.2	235.2	4,940.6	750,000	505,000
2005	2.07	822.3	236.3	4,949.3	870,000	440,000
2006	2.12	799.6	233.9	4,783.5	910,000	465,000
2007[f]	2.12	806.4	229.8	4,866.8	800,000	555,000
2008[f]	2.09	797.6	226.5	4,819.6	830,000	480,000
2009[f]	2.09	789.1	223.3	4,773.5	810,000	445,000
Intermediate:						
2010	2.08	784.4	220.7	4,754.2	780,000	435,000
2015	2.07	755.8	208.2	4,611.7	750,000	400,000
2020	2.05	723.8	196.7	4,435.7	750,000	375,000
2025	2.03	692.1	185.9	4,256.6	750,000	355,000
2030	2.01	661.8	175.8	4,084.5	750,000	335,000
2035	2.00	633.4	166.4	3,922.1	750,000	315,000
2040	2.00	606.8	157.7	3,769.8	750,000	300,000
2045	2.00	581.9	149.5	3,627.4	750,000	290,000
2050	2.00	558.6	141.8	3,494.1	750,000	285,000
2055	2.00	536.8	134.6	3,369.2	750,000	280,000
2060	2.00	516.4	127.9	3,252.0	750,000	280,000
2065	2.00	497.2	121.7	3,141.8	750,000	280,000
2070	2.00	479.1	115.8	3,038.1	750,000	275,000
2075	2.00	462.1	110.2	2,940.4	750,000	275,000
2080	2.00	446.1	105.1	2,848.2	750,000	275,000
2085	2.00	431.0	100.2	2,761.1	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:						
2010	2.10	789.7	222.4	4,785.3	910,000	535,000
2015	2.14	785.0	217.4	4,782.1	960,000	565,000
2020	2.18	773.4	212.2	4,725.7	960,000	515,000
2025	2.22	759.7	207.0	4,652.1	960,000	475,000
2030	2.27	745.6	201.9	4,574.6	960,000	440,000
2035	2.30	731.7	197.0	4,497.1	960,000	415,000
2040	2.30	718.1	192.3	4,421.3	960,000	390,000
2045	2.30	705.0	187.8	4,347.9	960,000	375,000
2050	2.30	692.3	183.4	4,276.8	960,000	365,000
2055	2.30	680.1	179.1	4,207.9	960,000	355,000
2060	2.30	668.2	175.0	4,141.1	960,000	350,000
2065	2.30	656.6	171.1	4,076.4	960,000	350,000
2070	2.30	645.5	167.2	4,013.6	960,000	350,000
2075	2.30	634.7	163.5	3,952.7	960,000	345,000
2080	2.30	624.2	159.9	3,893.6	960,000	345,000
2085	2.30	614.0	156.5	3,836.2	960,000	345,000
High-cost:						
2010	2.07	779.0	219.0	4,723.1	660,000	335,000
2015	1.99	725.5	200.1	4,425.3	560,000	240,000
2020	1.92	671.7	183.9	4,106.9	560,000	240,000
2025	1.84	621.6	169.4	3,805.8	560,000	235,000
2030	1.76	576.0	156.3	3,532.0	560,000	225,000
2035	1.70	535.0	144.4	3,285.8	560,000	215,000
2040	1.70	498.0	133.5	3,064.9	560,000	210,000
2045	1.70	464.7	123.6	2,866.8	560,000	205,000
2050	1.70	434.6	114.5	2,688.6	560,000	205,000
2055	1.70	407.3	106.2	2,527.8	560,000	205,000
2060	1.70	382.6	98.7	2,382.4	560,000	210,000
2065	1.70	360.1	91.7	2,250.5	560,000	210,000
2070	1.70	339.6	85.4	2,130.4	560,000	210,000
2075	1.70	320.9	79.5	2,020.8	560,000	210,000
2080	1.70	303.7	74.1	1,920.5	560,000	210,000
2085	1.70	287.9	69.1	1,828.4	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 2034.

[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 legalized under the Immigration Reform and Control Act of 1986.

[e] Net other annual immigration is estimated to have averaged 375,000 persons over the period 1980-89 and 550,000 persons over the period 1990-99.

[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 2009 through 2085. The starting Social Security area population for January 1, 2008, is based on the Census Bureau's estimate of the residents of the 50 States and D.C., and U.S. Armed Forces overseas, with several adjustments. These adjustments reflect mortality assumptions for the aged population since 2000 that are consistent with Medicare and Social Security data, estimates of the net undercount in the 2000 census, and the inclusion of U.S. citizens living abroad (including residents of U.S. territories) and 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	54,466	92,841	12,811	160,118	0.138	0.725
1960	73,076	99,818	17,278	190,172	.173	.905
1965	80,052	104,805	19,070	203,927	.182	.946
1970	80,864	112,996	20,899	214,759	.185	.901
1975	78,776	122,579	23,254	224,609	.190	.832
1980	74,929	134,110	26,196	235,236	.195	.754
1985	73,401	144,851	29,122	247,374	.201	.708
1990	75,154	153,316	31,981	260,452	.209	.699
1995	79,541	160,871	34,339	274,751	.213	.708
2000	82,650	170,059	35,419	288,128	.208	.694
2005	84,321	180,063	37,017	301,401	.206	.674
2009[c]	85,846	187,571	39,925	313,343	.213	.671
Intermediate:						
2010	86,074	189,513	40,674	316,262	.215	.669
2015	87,723	195,790	47,078	330,592	.240	.688
2020	90,392	199,420	54,936	344,748	.275	.729
2025	93,082	201,463	63,837	358,383	.317	.779
2030	95,169	204,227	71,602	370,998	.351	.817
2035	96,981	208,988	76,335	382,304	.365	.829
2040	98,626	215,058	78,896	392,580	.367	.825
2045	100,399	221,423	80,414	402,236	.363	.817
2050	102,417	226,812	82,451	411,680	.364	.815
2055	104,616	231,349	85,353	421,319	.369	.821
2060	106,691	235,610	89,081	431,381	.378	.831
2065	108,569	240,713	92,597	441,879	.385	.836
2070	110,379	245,869	96,338	452,585	.392	.841
2075	112,252	250,604	100,411	463,267	.401	.849
2080	114,226	255,192	104,354	473,772	.409	.857
2085	116,240	259,520	108,380	484,140	.418	.866
Low-cost:						
2010	86,124	189,588	40,672	316,383	.215	.669
2015	88,815	197,138	46,949	332,902	.238	.689
2020	93,273	202,021	54,465	349,760	.270	.731
2025	98,538	205,271	62,803	366,612	.306	.786
2030	104,001	209,208	69,784	382,992	.334	.831
2035	109,582	215,580	73,591	398,754	.341	.850
2040	114,800	224,016	75,207	414,024	.336	.848
2045	119,977	233,449	75,910	429,337	.325	.839
2050	125,456	242,583	77,344	445,383	.319	.836
2055	131,197	251,644	79,808	462,650	.317	.839
2060	137,139	261,017	83,115	481,271	.318	.844
2065	143,153	271,837	86,110	501,100	.317	.843
2070	149,155	283,549	89,166	521,870	.314	.840
2075	155,209	295,789	92,413	543,411	.312	.837
2080	161,435	308,336	95,938	565,709	.311	.835
2085	167,879	320,742	100,243	588,865	.313	.836

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:						
2010	86,027	189,441	40,677	316,145	0.215	0.669
2015	86,671	194,503	47,226	328,400	.243	.688
2020	87,619	196,925	55,496	340,039	.282	.727
2025	87,857	197,802	65,078	350,737	.329	.773
2030	86,753	199,436	73,781	359,971	.370	.805
2035	85,071	202,634	79,616	367,321	.393	.813
2040	83,514	206,408	83,298	373,220	.404	.808
2045	82,393	209,808	85,776	377,976	.409	.802
2050	81,654	211,605	88,507	381,766	.418	.804
2055	81,223	211,857	91,864	384,944	.434	.817
2060	80,535	211,364	95,954	387,853	.454	.835
2065	79,531	211,267	99,880	390,678	.473	.849
2070	78,518	210,603	104,169	393,290	.495	.867
2075	77,702	208,835	108,928	395,465	.522	.894
2080	77,076	206,751	113,149	396,975	.547	.920
2085	76,510	204,586	116,703	397,799	.570	.944

[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. It is thus closely related to the age-sex-adjusted death rate that is 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.

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. Cohort life expectancy is shown in table V.A4 for those born on January 1 of each calendar year and for those attaining age 65 on January 1 of each calendar year.

Tables V.A3 and V.A4 present historical and projected life expectancy calculated on both period and cohort bases. 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	79.5	16.1	19.1
2002	74.2	79.5	16.2	19.1
2003	74.4	79.6	16.3	19.2
2004	74.8	80.0	16.7	19.5
2005	74.8	80.0	16.7	19.5
2006	75.1	80.2	17.0	19.7
2007[b] . . .	75.2	80.1	17.0	19.6
2008[b] . . .	75.4	80.2	17.1	19.6
2009[b] . . .	75.6	80.3	17.2	19.7

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
2010	75.8	80.4	17.3	19.7	75.7	80.3	17.2	19.7	75.9	80.5	17.3	19.8
2015	76.5	80.8	17.6	19.9	76.0	80.4	17.3	19.6	77.0	81.2	18.0	20.2
2020	77.1	81.2	18.0	20.2	76.3	80.5	17.5	19.7	78.0	82.0	18.6	20.8
2025	77.7	81.7	18.3	20.5	76.5	80.7	17.6	19.8	79.0	82.8	19.2	21.4
2030	78.3	82.2	18.7	20.8	76.8	80.9	17.8	19.9	79.9	83.6	19.8	22.0
2035	78.8	82.7	19.0	21.1	77.0	81.1	17.9	20.1	80.7	84.4	20.4	22.6
2040	79.3	83.1	19.3	21.4	77.3	81.4	18.0	20.2	81.5	85.1	21.0	23.1
2045	79.8	83.6	19.6	21.7	77.5	81.6	18.2	20.3	82.3	85.8	21.5	23.6
2050	80.3	84.0	19.9	22.0	77.8	81.8	18.3	20.4	83.1	86.5	22.0	24.1
2055	80.8	84.4	20.2	22.3	78.0	82.0	18.4	20.6	83.8	87.1	22.5	24.6
2060	81.2	84.8	20.5	22.6	78.3	82.1	18.5	20.7	84.5	87.7	22.9	25.0
2065	81.7	85.2	20.7	22.9	78.5	82.3	18.7	20.8	85.1	88.3	23.4	25.4
2070	82.1	85.6	21.0	23.1	78.7	82.5	18.8	20.9	85.8	88.8	23.8	25.8
2075	82.5	86.0	21.2	23.4	78.9	82.7	18.9	21.0	86.4	89.3	24.3	26.2
2080	82.9	86.3	21.5	23.6	79.1	82.9	19.0	21.1	86.9	89.8	24.7	26.6
2085	83.3	86.7	21.7	23.9	79.3	83.0	19.1	21.3	87.5	90.3	25.1	27.0

[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 age 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	70.1	76.1	12.7	14.7	69.8	75.8	12.7	14.7	70.4	76.6	12.7	14.7
1945	71.9	77.7	13.0	15.4	71.4	77.2	13.0	15.4	72.4	78.4	13.0	15.4
1950	73.1	79.0	13.1	16.2	72.5	78.2	13.1	16.2	73.9	79.9	13.1	16.2
1955	73.8	79.6	13.1	16.7	73.0	78.6	13.1	16.7	74.9	80.9	13.1	16.7
1960	74.6	80.1	13.2	17.4	73.5	78.9	13.2	17.4	76.0	81.6	13.2	17.4
1965	75.5	80.7	13.5	18.0	74.1	79.3	13.5	18.0	77.2	82.5	13.5	18.0
1970	76.6	81.5	13.8	18.5	75.0	79.8	13.8	18.5	78.7	83.7	13.8	18.5
1975	77.6	82.3	14.2	18.7	75.7	80.3	14.2	18.7	79.9	84.7	14.2	18.7
1980	78.5	83.0	14.7	18.8	76.3	80.8	14.7	18.8	81.2	85.6	14.7	18.8
1985	79.2	83.6	15.4	19.0	76.8	81.2	15.3	19.0	82.2	86.5	15.4	19.0
1990	79.9	84.1	15.9	19.2	77.2	81.5	15.9	19.2	83.1	87.3	16.0	19.3
1995	80.6	84.7	16.5	19.5	77.6	81.8	16.4	19.3	84.1	88.0	16.6	19.6
1996	80.7	84.8	16.7	19.5	77.7	81.9	16.6	19.4	84.3	88.2	16.8	19.7
1997	80.8	84.9	16.8	19.6	77.7	81.9	16.7	19.4	84.4	88.3	16.9	19.8
1998	80.9	85.0	16.9	19.6	77.8	82.0	16.8	19.4	84.6	88.4	17.1	19.9
1999	81.0	85.1	17.1	19.7	77.9	82.0	16.9	19.5	84.7	88.6	17.3	20.0
2000	81.1	85.2	17.2	19.8	77.9	82.1	17.0	19.5	84.9	88.7	17.4	20.1
2001	81.2	85.2	17.3	19.9	78.0	82.1	17.1	19.6	85.0	88.8	17.6	20.2
2002	81.3	85.3	17.4	19.9	78.0	82.1	17.1	19.6	85.2	88.9	17.7	20.3
2003	81.4	85.4	17.5	20.0	78.1	82.2	17.2	19.6	85.3	89.0	17.9	20.4
2004	81.5	85.5	17.6	20.1	78.1	82.2	17.3	19.7	85.5	89.2	18.0	20.6
2005	81.6	85.5	17.7	20.1	78.1	82.2	17.3	19.7	85.6	89.3	18.1	20.7
2006	81.7	85.6	17.8	20.2	78.2	82.3	17.4	19.7	85.8	89.4	18.3	20.8
2007	81.8	85.7	17.9	20.2	78.3	82.3	17.4	19.7	85.9	89.5	18.4	20.9
2008	81.9	85.8	18.0	20.3	78.3	82.4	17.5	19.8	86.1	89.7	18.6	21.0
2009	82.0	85.9	18.0	20.4	78.4	82.4	17.5	19.8	86.2	89.8	18.7	21.1
2010	82.1	86.0	18.1	20.4	78.4	82.5	17.5	19.8	86.4	89.9	18.9	21.2
2015	82.6	86.4	18.5	20.8	78.7	82.7	17.7	19.9	87.1	90.5	19.5	21.9
2020	83.0	86.8	18.8	21.1	78.9	82.9	17.8	20.1	87.7	91.1	20.2	22.5
2025	83.4	87.1	19.2	21.4	79.1	83.1	18.0	20.2	88.4	91.6	20.8	23.1
2030	83.8	87.5	19.5	21.7	79.4	83.3	18.1	20.3	89.0	92.1	21.4	23.7
2035	84.2	87.8	19.8	22.0	79.6	83.4	18.2	20.4	89.5	92.6	22.0	24.2
2040	84.6	88.1	20.1	22.3	79.8	83.6	18.4	20.6	90.1	93.0	22.5	24.8
2045	85.0	88.5	20.4	22.6	80.0	83.8	18.5	20.7	90.6	93.5	23.0	25.3
2050	85.3	88.8	20.7	22.9	80.2	84.0	18.6	20.8	91.1	93.9	23.5	25.7
2055	85.7	89.1	21.0	23.2	80.4	84.1	18.7	20.9	91.6	94.4	24.0	26.2
2060	86.0	89.3	21.2	23.5	80.6	84.3	18.9	21.0	92.1	94.8	24.5	26.6
2065	86.3	89.6	21.5	23.7	80.8	84.5	19.0	21.2	92.6	95.2	24.9	27.0
2070	86.7	89.9	21.8	24.0	81.0	84.6	19.1	21.3	93.0	95.6	25.3	27.4
2075	87.0	90.2	22.0	24.2	81.2	84.8	19.2	21.4	93.5	96.0	25.8	27.8
2080	87.3	90.4	22.3	24.5	81.4	84.9	19.3	21.5	93.9	96.4	26.2	28.2
2085	87.6	90.7	22.5	24.7	81.6	85.1	19.5	21.6	94.3	96.8	26.6	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 age 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 on January 1 of the calendar year is based on a combination of actual and estimated death rates for birth years 1940 through 2006. For birth years after 2006, these values are based solely on estimated death rates.

[c] Age 65 cohort life expectancy for those attaining age 65 on January 1 of calendar years 1940 though 2006 are either based on actual death rates or on a combination of actual and estimated death rates. After 2006 these values are based solely on estimated death rates.

B. ECONOMIC ASSUMPTIONS AND METHODS

The basic economic assumptions are embodied in three alternatives that are designed to provide a reasonable range of effects on Social Security's financial status. The intermediate assumptions reflect the Trustees' consensus expectation of an underlying general trend toward moderate economic growth throughout the projection period and the expected levels of various economic parameters. The low-cost assumptions represent a more optimistic outlook and assume relatively strong economic growth and relatively optimistic levels for other parameters. The high-cost assumptions represent a relatively pessimistic scenario, with weak economic growth in the short-range period and relatively pessimistic levels for other parameters. For this report, all three sets of assumptions include a gradual recovery from the recession that started in December 2007.

Actual economic data was available through the fourth quarter of 2009 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) above the long-term sustainable trend level. Economic growth subsequently weakened with the level of output reaching the sustainable trend level by the first quarter of 2008, and a bottom in the economic cycle for the second quarter of 2009. The actual growth rate in real GDP was positive for the third quarter of 2009 and strongly positive for the fourth quarter. For the intermediate and low-cost alternatives, the current recession was projected to be followed by a recovery period with economic growth sufficient to return output to the sustainable trend level, but not beyond that level. For the high-cost alternative, the economy is assumed to experience a longer period of slow growth before returning to the sustainable level of output. Under all three sets of assumptions the economy is assumed to reach and maintain a sustainable, potential trend level of output by the end of 2019. 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 (NBER). Access date March 3, 2009. http://www.nber.org/cycles/dec2008.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 1968 to 2008, annual increases in total productivity averaged 1.7 percent, the result of average annual increases of 1.7, 1.3, 1.5, and 2.2 percent for the 10-year periods 1968-78, 1978-88, 1988-98, and 1998-2008, respectively. For 2009, the estimated annual change in productivity is 2.5 percent.

It is most 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 also averaged 1.7 percent over the last five complete economic cycles (measured from peak to peak), covering the 41-year period from 1966 to 2007. 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 2009 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 3.7 percent for 2010 and 1.6 percent for 2011. Thereafter, the annual change is assumed to average 1.5 percent through 2019. The annual rate is assumed to reach its ultimate value of 1.7 percent in 2020 when the economy has fully recovered. For the low-cost assumptions, the annual change in productivity is assumed to be 4.2 percent for 2010 and 1.7 percent for 2011. The annual change is assumed to average 1.6 percent over the 2011 to 2019 period, and reach its ultimate value of 2.0 percent thereafter. For the high-cost assumptions, the annual change in productivity is assumed to be 3.3 percent for 2010 and 1.4 percent for 2011. The annual change is assumed

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

to average 1.4 percent over the 2011 to 2019 period, and remain at that value 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 4.6 percent for the 40 years from 1968 to 2008, the result of average annual increases of 6.5, 6.0, 3.2, and 2.8 percent for the 10-year periods 1968-78, 1978-88, 1988-98, and 1998-2008, respectively. The GDP deflator increased at an average annual rate of 4.1 percent from 1968 to 2008, the result of average annual increases of 6.3, 5.2, 2.5, and 2.4 percent for the same respective 10-year periods. For 2009, the annual change was -0.7 percent for the CPI and is estimated to be 1.2 percent for the GDP deflator.

The ultimate annual increases in the CPI are assumed 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 2009 report, and reflect a belief that future inflationary shocks will likely be offset by succeeding periods of relatively slow inflation due to persistent international competition, and that future monetary policy will be similar to that of the last 20 years with its strong emphasis on holding the growth rate in prices to relatively low levels.

For the intermediate assumptions, the annual change in the CPI is assumed to be 2.0 percent for 2010. As the economy moves on a path toward full employment, the annual change is assumed to increase gradually from 1.7 percent in 2011 to the ultimate growth rate of 2.8 percent in 2014 and later. Because the actual level of the CPI in the third quarter of 2009 was below the level of the CPI in the third quarter of 2008, there was no automatic cost-of-living benefit increase for December 2009. Because the assumed level of the CPI in the third quarter of 2010 is still below the level of the CPI in the third quarter of 2008, no automatic cost-of-living benefit increase is projected for 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 average 1.5 percent for 2010 and 2011. The annual change in the CPI is assumed to increase from 1.6 percent for 2012 to its ultimate assumed annual change of 1.8 percent for 2013 and later. For the high-cost assumptions, the

annual change in the CPI is assumed to average 2.3 percent for 2010 and 2011. The annual change in the CPI is assumed to increase from 4.3 percent for 2012 to 4.4 percent for 2013, then decrease to its ultimate assumed annual change of 3.8 percent for 2014 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. For the 2010 report, the ultimate annual increase in the GDP deflator is assumed to be equal to the annual increases in the CPI minus a 0.3, 0.4, and 0.5 percentage point price differential 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, for the 2010 report, 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 are the same ultimate price differentials and GDP deflator growth rates assumed for the 2009 report.

The price differential is estimated to be -1.8 percentage points for 2009. Under the intermediate assumptions, the price differential is projected to be 0.7 percentage point for 2010. This swing in the price differential is due to the decline in oil prices for 2009 and the projected rise to a higher level for 2010. 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 after 2010 as the economy recovers. The price differential is assumed to be 0.3 percentage point in 2011 and 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 and 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 in certain circumstances, the automatic cost-of-living benefit increases.

Average U.S. earnings is defined as the ratio of the sum of total U.S. wage and salary disbursements and proprietor income to the sum of total U.S. mili-

tary 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. Assumed future growth rates in productivity and the GDP deflator are discussed in the previous two sections.

The average annual change in average hours worked was -0.3 percent over the last 40 years, and -0.7, -0.1, 0.3, and -0.6 percent for the 10-year periods 1968-78, 1978-88, 1988-98, and 1998-2008, 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.

For the 2010 report, 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 2009 report.

The average annual change in the ratio of earnings to compensation was -0.2 percent from 1968 to 2008. 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.

For the 2009 report, the assumed ultimate annual rates of change in the ratio of wages to employee compensation were -0.1, -0.2, and -0.3 percent for the low-cost, intermediate, and high-cost assumptions, respectively. For each alternative, a constant ultimate annual rate of change in the ratio of wages to employee compensation was assumed. For this year's report, this assumption was changed in two steps: first, the projected growth rates of various components of compensation were refined so that they are allowed to change over time, rather than being held constant at a summarized average rate; second, these projected "baseline" growth rates were updated to reflect the estimated effects of legislation since last year's report.

In the first step, specific annual baseline assumptions were made for the growth in the pension and health insurance components of compensation. The share of employee compensation used for pension costs that are exempt

from the payroll tax is assumed to increase as life expectancy and potential time in retirement increase. The share of employee compensation used to pay for the cost of employer-sponsored group health insurance, which is exempt from the payroll tax, is now assumed to vary annually, consistent with trends assumed for components of health care cost in the national economy. Together, these changes result in somewhat slower growth in non-taxable components of compensation early and late in the 75-year projection period, and faster growth in the middle of the period, than assumed for last year's report. However, the average annual decrease in the ratio of wages to compensation over the 75-year period is unchanged at 0.2 percent for the intermediate assumptions.

In the second step, the annual baseline rates of change in the ratio of wages to employee compensation were adjusted to reflect new legislation. In March 2010, the Patient Protection and Affordable Care Act and the Health Care and Education Reconciliation Act became law. This new legislation is not assumed to affect future growth in total economic output or total compensation. However, this legislation is assumed to affect the components of compensation and, in particular, the annual growth rates in employer-sponsored group health insurance. Compared to the baseline, the projected average annual growth rate for the total cost of employer-sponsored group health insurance is lower, and the average annual rate of decline in the ratio of wages to compensation is correspondingly lower by about 0.1 percent. Most of this change is due to the assumption that an excise tax on employer-sponsored group health insurance, effective beginning in 2018, will lead to slower growth in the total cost of employer-sponsored group health insurance. Such effect of the excise tax on employer-sponsored group health insurance is expected to increase over time because the threshold premium levels above which the tax applies are indexed by all-items CPI, which is assumed to grow slower than the cost of providing health insurance. These projections for annual percent changes in employer-sponsored group health insurance cost on a year-by-year basis are consistent with national health estimates from the Office of the Actuary at the Centers for Medicare and Medicaid Services.

For the 2010 report, 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 0.810 for 2009 to 0.742 for 2084. The ratio of compensation to GDP is assumed to be stable at 0.648 after 2019.

The projected average annual growth rate in average U.S. earnings from 2019 to 2084 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. Thus, the assumed average annual growth rates in the average covered wage from 2019 to 2084 are 3.6, 4.0, and 4.4 percent for the low-cost, intermediate, and high-cost assumptions, respectively. For the intermediate assumptions, the annual rate of change in the average covered wage is assumed to be -0.6 percent for 2009, which reflects the recession low point. As the economy recovers, the annual rate of change in the average covered wage is assumed to average 4.5 percent from 2010 to 2012 and 4.4 percent from 2013 to 2019. Thereafter, the assumed average annual rate of change in the average covered wage is 4.0 percent.

4. Assumed Real-Wage Differentials

For simplicity, 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 1969 through 2008, the real-wage differential averaged 0.8 percentage point, the result of averages of 0.8, 0.3, 1.1, and 0.8 percentage points for the 10-year periods 1969-78, 1979-88, 1989-98, and 1999-2008, respectively.

For the years 2020-84, 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 0.0 percentage point for 2009. For the intermediate assumptions, the real-wage differential is projected to be 3.1 percentage points for 2010 and to average 2.3 percentage points from 2011 to 2013, reflecting the economic recovery. Thereafter, the real-wage differential is assumed to gradually

decline to 1.3 percentage points in 2019 and to average 1.2 percentage points from 2019 to 2084. For the low-cost assumptions, the real-wage differential is projected to be 3.6 percentage points for 2010 and to average 2.2 percentage points from 2010 to 2019 and 1.8 percentage points from 2019 to 2084. For the high-cost assumptions, the real-wage differential is projected to be 2.4 percentage points for 2010, to vary between 1.4 and 1.8 percentage points between 2011 and 2016, and then to decline to 0.8 percentage point by 2019 and to average 0.6 percentage point from 2019 to 2084.

Table V.B1.—Principal Economic Assumptions

	Annual percentage change[a] in—						
Calendar year	Productivity (Total U.S. economy)	Earnings as a percent of compensation	Average hours worked	GDP price index	Average annual wage in covered employment	Consumer Price Index	Real-wage differ-ential[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
1999	2.8	.1	.5	1.5	4.9	2.2	2.7
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	.4
2004	2.4	.7	.0	2.8	4.7	2.6	2.1
2005	1.5	-.4	-.2	3.3	3.6	3.5	.1
2006	.8	.5	.0	3.3	4.7	3.2	1.5
2007	1.5	.2	-.4	2.9	4.7	2.9	1.8
2008	1.4	-.2	-.5	2.1	2.0	4.1	-2.1
2009	2.5	-.9	-1.2	1.2	-.6	-.7	.0
Intermediate:							
2010	3.7	.2	-.4	1.3	5.1	2.0	3.1
2011	1.6	.1	.4	1.4	3.8	1.7	2.2
2012	1.5	.2	.4	1.9	4.7	2.3	2.4
2013	1.5	.1	.2	2.3	4.8	2.7	2.2
2014	1.4	-.2	.1	2.4	4.6	2.8	1.8
2015	1.4	-.2	.0	2.4	4.3	2.8	1.5
2016	1.3	.0	.0	2.4	4.4	2.8	1.6
2017	1.5	.0	.0	2.4	4.3	2.8	1.5
2018	1.5	.1	.0	2.4	4.2	2.8	1.4
2019	1.5	-.1	.0	2.4	4.1	2.8	1.3
2015 to 2020. . . .	1.5	.0	.0	2.4	4.2	2.8	1.4
2020 to 2084. . . .	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:							
2010	4.2	0.2	-0.3	1.2	5.5	1.8	3.6
2011	1.7	.1	.5	.9	3.6	1.1	2.5
2012	1.4	.3	.5	1.3	4.2	1.6	2.6
2013	1.4	.1	.3	1.5	4.1	1.8	2.3
2014	1.4	-.1	.2	1.5	3.9	1.8	2.1
2015	1.3	-.2	.1	1.5	3.6	1.8	1.8
2016	1.6	.1	.1	1.5	3.9	1.8	2.1
2017	1.8	.1	.1	1.5	3.7	1.8	1.9
2018	1.9	.2	.1	1.5	3.7	1.8	1.9
2019	1.9	.0	.1	1.5	3.8	1.8	2.0
2015 to 2020. . . .	1.8	.1	.1	1.5	3.7	1.8	1.9
2020 to 2084. . . .	2.0	.0	.1	1.5	3.6	1.8	1.8
High-cost:							
2010	3.3	.2	-.5	1.3	4.6	2.1	2.4
2011	1.4	.1	.3	2.0	4.1	2.5	1.7
2012	1.2	.2	.3	3.8	6.1	4.3	1.7
2013	1.5	.0	.1	3.9	6.2	4.4	1.8
2014	1.5	-.2	.0	3.3	5.5	3.8	1.7
2015	1.5	-.3	-.1	3.3	5.2	3.8	1.4
2016	1.3	.0	-.1	3.3	5.2	3.8	1.4
2017	1.2	.0	-.1	3.3	4.7	3.8	.9
2018	1.3	.0	-.1	3.3	4.7	3.8	.9
2019	1.4	-.1	-.1	3.3	4.6	3.8	.8
2015 to 2020. . . .	1.3	-.1	-.1	3.3	4.7	3.8	.9
2020 to 2084. . . .	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 unrounded annual percentage change in the average annual wage in covered employment less the unrounded annual percentage change in the Consumer Price Index. For rows with a range of years listed, the value is the average of unrounded annual values of the differential.

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 subgroup 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 size of 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 2019. Thereafter, the labor force is projected to increase by 0.5 percent per year between 2019 and 2050, and by 0.4 percent 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 using demographic and economic assumptions specific to each alternative. However, the participation rates are not highly sensitive to most of the demographic and economic assumptions. Accordingly, the projected labor force participation rates do not vary substantially into the future and across alternatives.

Historically, labor force participation rates have been influenced substantially by 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. The overall decline was facilitated by the large numbers of workers entering the labor force from the baby-boom generation, and from the female population in general, during this period. This increasing supply of labor allowed employers to offer early-retirement options that were attractive. Between the mid-1980s and about 1995, participation rates roughly stabilized for males and increased for females. Since 1995, however, participation rates for both sexes at ages 50 and over have generally risen significantly. This rise reflects a decrease in early-out options and relatively strong economic growth.

For the future, changes in available benefit levels from Social Security and increases in the normal retirement age are expected to encourage work at older ages. Some of these factors are modeled directly. However, other factors, such as the trend away from private defined-benefit pension plans (that often provide incentives to retire) toward defined-contribution plans, are expected to provide additional upward pressure on labor force participation rates. In addition to this shift in private pensions, the aging of the population is expected to both increase the demand for workers and, through improved health associated with greater life expectancy, improve the ability of the older population to work. Longer life expectancy will also increase the assets needed to live comfortably through retirement years, thus encouraging workers to stay employed longer. In order to account for these effects, which are directly or indirectly related to increases in life expectancy, projected participation rates for prime age and older males and females are adjusted upward in relation to assumed increases in life expectancy. For the intermediate pro-

jections, this adjustment for changes related to life expectancy adds about 1.6 percent to the total labor force by 2084.

For men age 16 and over, the projected age-adjusted labor force participation rates for 2084 are 73.0, 72.1, and 71.2 percent for the low-cost, intermediate, and high-cost assumptions, respectively, compared to the 2008 level of 73.0 percent. (Age-adjusted labor force participation rates are adjusted to the 2008 age distribution of the civilian noninstitutional U.S. population.) These rates reflect the net effect of increases due to assumed improvements in life expectancy and decreases due to higher assumed disability prevalence rates and an increasing proportion of males who never marry. For women age 16 and over, the projected age-adjusted labor force participation rates for 2084 are 61.0, 60.4, and 59.6 percent, for the low-cost, intermediate, and high-cost assumptions, respectively, compared to the 2008 level of 59.5 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 2019, total civilian rates are presented without adjustment for the changing age-sex distribution of the population. For years after 2019, unemployment rates are presented as age-sex-adjusted rates (using the age-sex distribution of the 2008 civilian labor force). Age-sex-adjusted rates allow for more meaningful comparisons across longer time periods. The effect of this adjustment through 2019 is small.

The total civilian unemployment rate reflects the projected levels of unemployment for various age-sex subgroups of the population. The unemployment rate for each subgroup is projected based on a specification (consistent with Okun's Law[1]) 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 2019. The ultimate assumed unemployment rates are 4.5, 5.5, and 6.5 percent for the low-cost, intermediate, and high-cost

[1] Okun's Law is an empirical relationship between the change in the aggregate unemployment rate and the percentage change in real GDP.

assumptions, respectively. These values are the same as those assumed for the 2009 report.

6. Gross Domestic Product Projections

The real growth rate in GDP equals the combined growth rates for total employment, productivity, and average hours worked. 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. For the 40-year period from 1968 to 2008, the average growth rate in real GDP was 3.0 percent, combining the approximate growth rates of 1.5, 1.7, and -0.3 percent for its components—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 2009 to 2019, the approximate sum of component growth rates of 1.1 percent for total employment, 1.7 percent for productivity, and 0.1 percent for average hours worked. This projected average annual growth in real GDP of 3.0 percent can also be separated into an underlying sustainable trend rate of change of 2.3 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 10.0 percent in 2009 to its assumed ultimate level of 5.5 percent in 2018. After 2019, no economic cycles are projected. Accordingly, the projected annual growth rate in real GDP is determined by the projected full-employment growth rate for total employment and the assumed full-employment growth rates for 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, annual growth in real GDP is projected to average 3.5 percent over the decade ending in 2019. The relatively faster growth is due mostly to higher assumed rates of growth for employment and worker productivity. For the high-cost assumptions, annual growth in real GDP is projected to average 2.4 percent for the decade ending in 2019.

7. Interest Rates

The 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 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, 1969-2008, and for each of the 10-year subperiods, 1969-78, 1979-88, 1989-98, and 1999-2008. For the 40-year period, the real interest rate averaged 2.8 percent per year. For the four 10-year subperiods, the real interest rates averaged 0.3, 4.5, 4.3, and 2.2 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 2009 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 3.6 percent for 2008, which means that assets newly invested in 2008 would increase by 3.6 percent a year later, with interest. Because average prices actually declined from 2008 to 2009 by 0.7 percent, the purchasing power of assets invested in 2008 actually increased by about 4.4 percent a year later. Therefore, the annual real interest rate for 2009 is 4.4 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 6.1 percent in 2014 before declining to the ultimate assumed level of 5.7 percent for 2019. For the low-cost assumptions, the average annual nominal interest rate is assumed to reach an ultimate level of about 5.4 percent for 2018. For the high-cost assumptions, it is assumed to peak at 7.0 percent for 2013, and then decline to an ultimate rate of about 5.9 percent by 2018.

Table V.B2.—Additional Economic Factors

Calendar year	Average annual unemployment rate[a]	Annual percentage change[b] in— Labor force[c]	Total employment[d]	Real GDP[e]	Average annual interest rate Nominal[f]	Real[g]
Historical data:						
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
1999	4.2	1.2	1.5	4.8	5.9	3.4
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	2.1	4.7	1.9
2008	5.8	.8	-.5	.4	3.6	.6
2009	9.3	-.1	-3.7	-2.4	2.9	4.4
Intermediate:						
2010	10.0	-.2	-.9	2.3	3.4	.9
2011	9.5	.7	1.2	3.3	4.5	1.7
2012	8.6	1.1	2.0	4.0	5.6	2.2
2013	7.7	1.1	2.1	3.9	6.0	2.9
2014	7.0	1.1	1.9	3.5	6.1	3.2
2015	6.3	.9	1.6	3.1	5.9	3.3
2016	5.8	.9	1.4	2.7	5.9	3.1
2017	5.6	.8	1.0	2.5	5.8	3.1
2018	5.5	.6	.7	2.2	5.8	3.0
2019	5.5	.5	.5	2.1	5.7	3.0
2020	5.5	.5	.5	2.2	5.7	2.9
2025	5.5	.4	.4	2.1	5.7	2.9
2030	5.5	.5	.5	2.1	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	2.1	5.7	2.9
2055	5.5	.4	.4	2.1	5.7	2.9
2060	5.5	.4	.4	2.1	5.7	2.9
2065	5.5	.4	.4	2.1	5.7	2.9
2070	5.5	.4	.4	2.1	5.7	2.9
2075	5.5	.4	.4	2.1	5.7	2.9
2080	5.5	.4	.4	2.1	5.7	2.9
2085	5.5	.4	.4	2.1	5.7	2.9
Low-cost:						
2010	9.8	.0	-.6	3.2	3.6	1.1
2011	9.0	.9	1.8	4.2	4.5	2.5
2012	7.8	1.4	2.7	4.6	5.3	2.9
2013	6.7	1.5	2.6	4.5	5.5	3.5
2014	5.7	1.4	2.4	4.0	5.5	3.7
2015	4.9	1.2	2.1	3.6	5.5	3.7
2016	4.5	1.1	1.5	3.2	5.4	3.7
2017	4.5	.9	.9	2.8	5.3	3.6
2018	4.5	.5	.5	2.5	5.4	3.6
2019	4.5	.4	.4	2.4	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.)						
2020	4.5	0.7	0.7	2.7	5.4	3.6
2025	4.5	.5	.5	2.6	5.4	3.6
2030	4.5	.6	.6	2.7	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	.8	.8	2.9	5.4	3.6
2050	4.5	.8	.8	2.9	5.4	3.6
2055	4.5	.8	.8	2.9	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:						
2010	10.1	-.4	-1.2	1.5	3.2	.8
2011	9.8	.5	.8	2.6	4.9	.7
2012	9.3	.7	1.2	2.8	6.9	.6
2013	8.8	.7	1.3	2.9	7.0	2.5
2014	8.1	.7	1.5	3.0	6.5	3.2
2015	7.5	.7	1.3	2.8	6.4	2.7
2016	7.1	.7	1.2	2.4	6.2	2.6
2017	6.8	.6	.9	2.0	6.0	2.4
2018	6.6	.6	.8	2.0	5.9	2.2
2019	6.5	.6	.7	2.0	5.9	2.1
2020	6.5	.4	.4	1.7	5.9	2.1
2025	6.5	.3	.3	1.6	5.9	2.1
2030	6.5	.4	.4	1.6	5.9	2.1
2035	6.5	.4	.4	1.7	5.9	2.1
2040	6.5	.3	.3	1.6	5.9	2.1
2045	6.5	.2	.2	1.5	5.9	2.1
2050	6.5	.1	.1	1.4	5.9	2.1
2055	6.5	.1	.1	1.3	5.9	2.1
2060	6.5	.0	.0	1.3	5.9	2.1
2065	6.5	.0	.0	1.3	5.9	2.1
2070	6.5	.0	.0	1.2	5.9	2.1
2075	6.5	-.1	-.1	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 2020 and later are adjusted to the age-sex distribution of the civilian labor force in 2008. 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, in practice, are compounded 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.

C. PROGRAM-SPECIFIC ASSUMPTIONS AND METHODS

The demographic and economic assumptions and methods described in the previous sections are used in a set of models to project future income and cost under the OASDI program. In some cases, the economic assumptions result in the direct calculation of program parameters as described in the following subsection. These parameters affect the level of payroll taxes collected and the level of benefits paid and are calculated using formulas described explicitly in the Social Security Act. In other cases, the combination of demographic and economic assumptions are used indirectly to drive more complicated models that project the numbers of future workers covered under OASDI and the levels of their covered earnings, as well as the numbers of future beneficiaries and the expected levels of their benefits. The following subsections provide brief descriptions of the derivations of these program-specific factors.

1. Automatically Adjusted Program Parameters

The Social Security Act specifies that certain program parameters affecting the determination of OASDI benefits and taxes are to be adjusted annually 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. These automatic adjustments are based 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 2019. 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, as well as the AWI series and the values of many of the wage-indexed program parameters. In each table, the 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, there was no cost-of-living adjustment. Under all three sets of economic

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

assumptions, no cost-of-living adjustment is projected for December of 2010. Cost-of-living adjustments are projected to return for December 2011 and later.

- 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 that are 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, 1975-2019

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
Intermediate:						
2009	[g].0	41,067.93	-.6	[g]106,800	[g]14,160	[g]37,680
2010	.0	43,083.76	4.9	[g]106,800	[g]14,160	[g]37,680
2011	1.2	44,686.82	3.7	106,800	14,160	37,680
2012	2.4	46,758.30	4.6	113,700	15,120	40,200
2013	2.7	48,977.62	4.7	118,200	15,720	41,640
2014	2.8	51,215.47	4.6	123,600	16,440	43,680
2015	2.8	53,396.92	4.3	129,300	17,160	45,720
2016	2.8	55,737.60	4.4	135,300	18,000	47,760
2017	2.8	58,103.49	4.2	141,000	18,720	49,800
2018	2.8	60,522.33	4.2	147,300	19,560	51,960
2019	2.8	63,017.19	4.1	153,600	20,400	54,240

Table V.C1.—Cost-of-Living Benefit Increases, Average Wage Index, Contribution and Benefit Bases, and Retirement Earnings Test Exempt Amounts, 1975-2019 (Cont.)

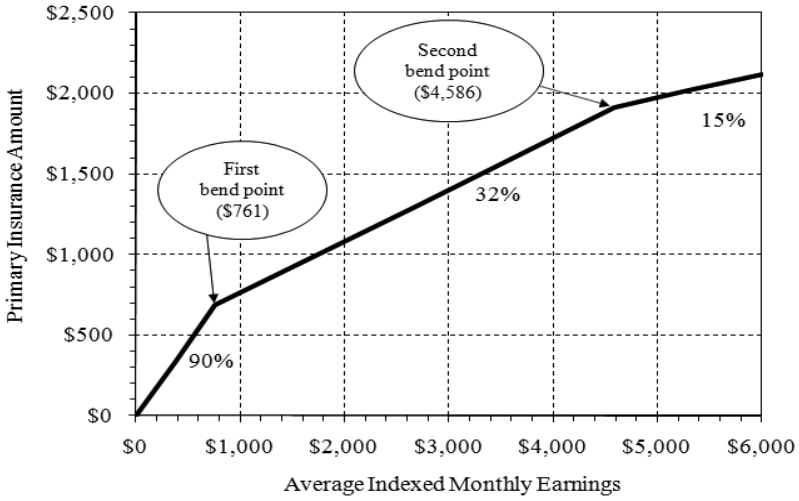
Calendar year	Cost-of-living benefit increase[a] (percent)	Average wage index (AWI)[b] Amount	Average wage index (AWI)[b] Increase (percent)	Contribution and benefit base[c]	Retirement earnings test exempt amount: Under NRA[d]	Retirement earnings test exempt amount: At NRA[e]
Low-cost:						
2009	[g]0.0	$41,067.59	-0.6	[g]$106,800	[g]$14,160	[g]$37,680
2010	.0	43,233.23	5.3	[g]106,800	[g]14,160	[g]37,680
2011	.4	44,759.07	3.5	106,800	14,160	37,680
2012	1.7	46,620.50	4.2	114,300	15,120	40,320
2013	1.8	48,494.23	4.0	118,200	15,720	41,760
2014	1.8	50,372.83	3.9	123,300	16,320	43,440
2015	1.8	52,169.53	3.6	128,100	17,040	45,240
2016	1.8	54,201.02	3.9	133,200	17,640	47,040
2017	1.8	56,224.83	3.7	137,700	18,240	48,720
2018	1.8	58,334.76	3.8	143,100	18,960	50,520
2019	1.8	60,532.75	3.8	148,500	19,680	52,440
High-cost:						
2009	[g].0	41,067.51	-.6	[g]106,800	[g]14,160	[g]37,680
2010	.0	42,879.81	4.4	[g]106,800	[g]14,160	[g]37,680
2011	2.2	44,589.32	4.0	106,800	14,160	37,680
2012	4.6	47,228.82	5.9	113,400	15,000	39,960
2013	4.3	50,100.69	6.1	117,900	15,600	41,640
2014	3.8	52,867.76	5.5	124,800	16,560	44,040
2015	3.8	55,603.42	5.2	132,300	17,520	46,800
2016	3.8	58,469.81	5.2	139,800	18,480	49,320
2017	3.8	61,242.02	4.7	147,000	19,440	51,840
2018	3.8	64,147.61	4.7	154,500	20,520	54,600
2019	3.8	67,083.66	4.6	161,700	21,480	57,120

[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 2019.
[c] Amounts for 1979-81 were specified by Public Law 95-216. The bases for years after 1989 were increased slightly by changes to the indexing procedure, as 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 2019. These other wage-indexed program parameters are:

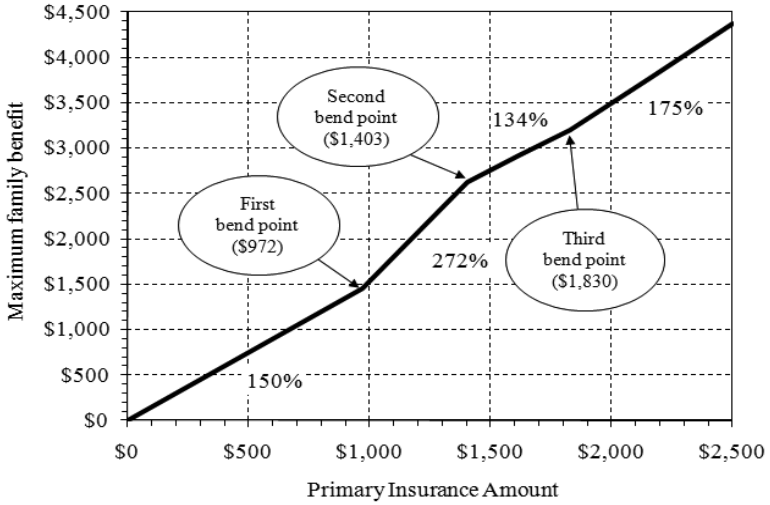
- The bend points in the formula for computing the primary insurance amount (PIA) for workers who reach age 62, become disabled, or die in a given year. As illustrated in figure V.C1, these bend points indicate three ranges in a worker's average indexed monthly earnings (AIME) over which a certain percent 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 2010



- Bend points in the formula used to compute the maximum total amount of monthly benefits payable on the basis of the earnings 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 2010



- 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, it 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 1978-2019

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

Table V.C2.—Values for Selected Wage-Indexed Program Parameters, Calendar Years 1978-2019

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		
Intermediate:							
2011	$756	$4,556	$966	$1,394	$1,818	$1,120	$79,200
2012	793	4,780	1,013	1,463	1,908	1,170	84,600
2013	823	4,958	1,051	1,517	1,979	1,210	87,600
2014	861	5,188	1,100	1,587	2,070	1,270	91,800
2015	901	5,434	1,152	1,663	2,169	1,330	96,000
2016	943	5,682	1,205	1,739	2,268	1,390	100,500
2017	983	5,924	1,256	1,813	2,364	1,450	104,700
2018	1,026	6,184	1,311	1,892	2,468	1,510	109,500
2019	1,069	6,446	1,367	1,973	2,573	1,570	114,000
Low-cost:							
2011	756	4,556	966	1,394	1,818	1,120	79,200
2012	796	4,797	1,017	1,468	1,914	1,170	84,900
2013	824	4,966	1,053	1,520	1,982	1,210	87,900
2014	858	5,172	1,096	1,583	2,064	1,260	91,500
2015	893	5,380	1,141	1,646	2,147	1,310	95,100
2016	927	5,589	1,185	1,710	2,230	1,360	98,700
2017	960	5,788	1,227	1,771	2,310	1,410	102,300
2018	998	6,013	1,275	1,840	2,400	1,470	106,200
2019	1,035	6,238	1,322	1,909	2,489	1,520	110,400
High-cost:							
2011	756	4,556	966	1,394	1,818	1,120	79,200
2012	789	4,757	1,008	1,456	1,899	1,160	84,000
2013	821	4,947	1,049	1,514	1,974	1,210	87,600
2014	869	5,240	1,111	1,603	2,091	1,280	92,700
2015	922	5,559	1,178	1,701	2,218	1,360	98,400
2016	973	5,866	1,243	1,795	2,341	1,430	103,800
2017	1,023	6,169	1,308	1,888	2,462	1,510	109,200
2018	1,076	6,487	1,375	1,985	2,589	1,580	114,600
2019	1,127	6,795	1,440	2,079	2,712	1,660	120,300

[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), and thus 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 number of persons who have any OASDI covered earnings (subject to the OASDI payroll tax) at any time during the year. For those aged 16 and over, projected covered employment is the sum of age-sex components, each of which is projected as a ratio to the CPS concept of employment. 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. The projection methodology accounts for changes in the business cycle, the quarterly pattern of growth in employment within each year, changes in non-OASDI covered employment, the increase in coverage of Federal civilian employment as a result of the 1983 Social Security Amendments, and changes in the num-

ber 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 71.3, 69.8, and 68.2 percent for 2084 for the low-cost, intermediate, and high-cost assumptions, respectively, compared to the 2008 level of about 70.6 percent. (Age-adjusted covered worker rates are adjusted to the 2008 age distribution of the Social Security area population.) For females, the projected age-adjusted coverage rate changes from 62.8 percent for 2008 to 64.7, 63.5, and 62.0 percent for 2084 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 tax rate, yields the total amount of 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 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; thus taxable self-employment earnings were weighted to reflect this difference in tax rate. Also, prior to 1988, employers were exempt from paying Social Security 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 for 2002, then fell in subsequent years to reach 82.3 for 2007. The average annual rate of change in the ratio was about -0.4 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 85.3 for 2009, largely due to a recession-induced reduction in the relative amount of wages of high earners. The taxable earnings ratio is projected to decline as the economy recovers, reaching levels for 2019 of 83.6, 82.8, and 82.1 percent for the low-cost, intermediate, and high-cost assumptions, respectively. After 2019, 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, taking into account the lag between the time the tax liability is incurred and taxes are collected. In the case of wages, employers are required to deposit withholding taxes with the Treasury on a schedule determined by the amount of tax liability incurred. (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.) Self-employed workers are required to make estimated tax payments on their earnings four times during the year, as well as making up any under-estimate on their individual income tax return. The pattern of actual receipts by the Treasury is taken into account when estimating self-employed tax collections.

4. Insured Population

Eligibility for benefits under the OASDI program requires some minimal level of work in covered employment. This requirement is established by a worker's 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. Since then, this amount has been adjusted each year according to changes in the AWI. Its value in 2010 is $1,120.

There are three types of insured status that can be acquired by a worker under the OASDI program. Each of these statuses is determined by the number and recency of QCs earned. Fully insured status is acquired by any worker whose 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. Disability insured status is acquired by any fully insured worker over age 30 who has accumulated 20 QCs during the 40-quarter period ending with the current quarter; any 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; and any fully insured worker under age 24 who has accumulated six QCs during the 12-quarter period ending with the current quarter. Currently insured status is acquired by any worker who 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.

Historical estimates of the fully insured population, as a percentage of the Social Security area population, are made by age and sex for each birth cohort beginning with 1900. These percentages are based on 30,000 simulated work histories for each sex and birth cohort, which are constructed from past coverage rates, median earnings, and amounts required for crediting QCs. These work histories are developed in a model that assumes that persons who have recently been out of covered employment are likely to remain out of covered employment. This model is aligned such that the simulated fully insured percentages reproduce fairly closely the fully insured percentages estimated from the Continuous Work History Sample from 1970 to date. The fully insured population for future years is projected using this model, reflecting estimated future coverage rates, median earnings, and amounts required for crediting QCs.

Historical estimates of the disability insured population, as a percentage of the fully insured population, are made by age and sex for each birth cohort beginning with 1900. These percentages are based on the same simulated work histories used to project the fully insured percentages. Additional

adjustments are made to bring the simulated disability insured percentages into close agreement with those estimated from the Continuous Work History Sample. The principal adjustment is for periods of disability (which are not explicitly taken into account in the model). These periods (which reduce the normally applicable QC requirements) have a negligible effect on fully insured status at retirement age, but a substantial effect on disability insured status. The disability insured population for future years is projected using this model, reflecting projections of the fully insured population.

Projections of the currently insured population are not made. This is 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.

Under this procedure, 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 82.5 for December 31, 2007, to 90.3, 90.0, and 89.8 for December 31, 2085, under alternatives I, II, and III, respectively. The percentage for females is projected to increase significantly, while that 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 90.6, while that for females is projected to increase from 74.2 to 89.5.

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. In 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 less 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 not previously converted from disabled-worker beneficiary status is projected as a percentage of the exposed population, i.e., the aged fully insured population less 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. As the NRA increases, the number of retired-worker beneficiaries not automatically converted from disabled-worker beneficiary status as a percentage of the exposed population is gradually adjusted downward.

For the long-range period, the number of retired-worker beneficiaries previously converted from disabled-worker beneficiaries is calculated separately in a manner consistent with the calculation of disabled-worker beneficiaries.

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 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 is estimated by applying the same factors to the number of divorced persons aged 62 and over in the population, with three differences. First, an additional factor is required to reflect the probability that the person's former earner spouse is still alive (otherwise, the person may be entitled to a divorced widow(er)'s benefit). Second, a factor is required to reflect the probability that the marriage to the earner spouse lasted at least 10 years. Third, factor (3) above is not applied

because, effective January 1985, a divorced person is generally no longer required to wait to receive benefits until the former earner 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. The number of entitled children is projected for each age under 18 from the latest beneficiary data by reflecting 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, representing the probabilities that the parent is alive, aged 62 or over, insured, and receiving a retired-worker benefit. Another factor is applied representing 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, disabled children are projected in a manner similar to that for student children with the inclusion of a factor reflecting the probability of being disabled before age 22.

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, 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 care who are already receiving benefits. In the long-range period, young-spouse beneficiaries with a child in their care are projected as a proportion of the number of child beneficiaries of retired workers, taking into account 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) beneficia-

ries are projected in conjunction with the retired-worker beneficiaries. Uninsured aged-widow(er) 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-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. In addition, some insured widow(er)s who had not applied for their retired-worker benefits are assumed to receive widow(er)'s benefits. Also, the same factors are applied to the number of divorced persons aged 60 and over in the population, with additional factors representing the probability that the person's former earner spouse is deceased and that the marriage lasted at least 10 years.

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 factor representing the probability that the parent is aged 62 or over 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, disabled-child-survivor beneficiaries are projected in a manner similar to that for student-child-survivor beneficiaries, with the inclusion of a factor reflecting the probability of being disabled before age 22.

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, 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, mother-survivor and father-survivor beneficiaries, assuming they are not remarried, are estimated from the number of child-survivor beneficiaries, taking into account projected changes in average family size.

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 persons who also receive a residual benefit consisting of the excess of an auxiliary benefit over their retired-worker benefit. Estimates of the number and amount of such 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
1986	22,985	3,086	450	4,927	350	1,878	9	33,685
1987	23,444	3,090	439	4,983	329	1,837	8	34,129
1988	23,862	3,088	432	5,013	318	1,809	7	34,529
1989	24,331	3,095	422	5,057	312	1,782	6	35,004
1990	24,841	3,104	421	5,098	304	1,777	6	35,551
1991	25,293	3,106	425	5,142	301	1,792	5	36,064
1992	25,762	3,115	431	5,187	294	1,808	5	36,603
1993	26,109	3,098	436	5,207	289	1,837	5	36,981
1994	26,412	3,069	440	5,218	283	1,865	4	37,292
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
Intermediate:								
2010	34,603	2,350	575	4,314	157	1,914	2	43,914
2015	41,236	2,343	673	4,310	147	1,936	1	50,646
2020	49,413	2,274	747	4,268	141	1,969	2	58,813
2025	56,969	2,224	812	4,193	130	1,946	2	66,275
2030	63,440	2,278	849	4,160	124	1,934	2	72,786
2035	68,027	2,186	865	4,150	122	1,929	2	77,281
2040	70,592	2,055	878	4,090	120	1,916	2	79,652
2045	72,296	1,959	887	3,999	116	1,892	2	81,150
2050	74,201	1,927	915	3,879	114	1,867	2	82,905
2055	76,703	2,030	941	3,767	111	1,849	2	85,402
2060	79,537	2,180	964	3,687	109	1,832	2	88,310
2065	82,354	2,349	974	3,678	107	1,809	2	91,272
2070	85,447	2,507	995	3,742	104	1,786	2	94,583
2075	88,761	2,623	1,019	3,838	101	1,762	2	98,106
2080	92,154	2,713	1,041	3,941	99	1,742	2	101,692
2085	95,693	2,801	1,068	4,020	97	1,725	2	105,405

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:								
2010	34,599	2,350	575	4,314	157	1,914	2	43,911
2015	41,115	2,346	676	4,301	149	1,953	1	50,542
2020	48,864	2,245	752	4,275	141	2,050	2	58,329
2025	55,850	2,180	823	4,224	129	2,093	2	65,301
2030	61,516	2,204	875	4,220	121	2,171	2	71,108
2035	65,205	2,077	903	4,237	117	2,260	2	74,801
2040	66,899	1,913	927	4,188	115	2,339	2	76,383
2045	67,860	1,789	948	4,091	114	2,400	2	77,204
2050	69,232	1,732	994	3,960	115	2,452	2	78,486
2055	71,282	1,809	1,032	3,838	116	2,503	2	80,581
2060	73,699	1,912	1,072	3,747	119	2,563	2	83,113
2065	76,018	2,014	1,097	3,723	122	2,627	2	85,602
2070	78,523	2,088	1,136	3,761	125	2,691	2	88,326
2075	81,266	2,127	1,179	3,823	128	2,752	2	91,275
2080	84,468	2,169	1,228	3,892	130	2,817	2	94,707
2085	88,398	2,228	1,290	3,962	133	2,885	2	98,897
High-cost:								
2010	34,607	2,350	575	4,315	157	1,913	2	43,918
2015	41,378	2,340	669	4,319	146	1,919	1	50,773
2020	50,094	2,312	744	4,260	142	1,892	2	59,446
2025	58,319	2,280	802	4,159	132	1,807	2	67,500
2030	65,744	2,373	826	4,093	123	1,719	2	74,879
2035	71,417	2,326	831	4,052	119	1,639	2	80,386
2040	75,036	2,231	830	3,979	113	1,561	2	83,752
2045	77,631	2,166	826	3,895	105	1,483	2	86,107
2050	80,188	2,156	837	3,792	98	1,417	2	88,490
2055	83,145	2,295	847	3,699	92	1,367	2	91,446
2060	86,366	2,484	852	3,632	85	1,316	2	94,737
2065	89,573	2,727	845	3,629	79	1,261	2	98,115
2070	93,117	2,987	847	3,702	73	1,206	2	101,932
2075	96,886	3,199	851	3,812	67	1,154	2	105,970
2080	100,300	3,363	849	3,936	62	1,109	2	109,621
2085	103,209	3,484	845	4,029	57	1,066	2	112,693

[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 satisfy the disability insured requirements, who 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 who have not yet attained NRA. Spouses and children of such disabled workers may also

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

The number of disabled workers receiving benefits in a given year (i.e., in current-payment status) is projected using standard actuarial methods that reflect future new benefit awards, terminations due to death and recovery, and conversions from disabled-worker to retired-worker beneficiary status after which benefits are paid from the OASI Trust Fund.

The prevalence of disability results from the likelihood of becoming disabled (incidence) as well as the likelihood that disability ceases (termination). Disability prevalence is expressed as the ratio of the number of disabled-worker beneficiaries in current-payment status to the disability insured population. This ratio is referred to as the disability prevalence rate. The balance of this section describes the methods and assumptions used for projecting the number of disabled-worker beneficiaries. Incidence rates and termination rates are the key factors in these projections. This section describes these rates as well as the projected beneficiary population and prevalence rates.

a. Disability Incidence

The number of new benefit awards each year divided by the number of individuals who meet insured requirements but are not yet receiving benefits (the disability exposed population) is referred to as the disability incidence rate. New awards are projected for each year by applying assumed age-sex-specific disability incidence rates to the projected disability exposed population by age and sex. Projections of the disability insured population are described in section V.C.4 of this report.

For the first 10 years of the projection period (through 2019) 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 to briefly drop below the general trend level on the assumption that some of the earlier additional awards will be cases that would have applied in a later year. After 2019, 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 2029. 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 5.3 awards per thousand exposed population. This level is about 2 percent higher than the average rate for the historical period 1970 through 2009. 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. For the 2010 report, the ultimate assumed age-sex-adjusted incidence rates are essentially the same as in last year's report.

Historical incidence rates and assumed incidence rates under the three alternatives are illustrated in figure V.C3. Incidence rates have varied substantially during the historical period since 1970. This variation is attributed to a variety of demographic and economic factors, along with the effects of changes due to legislation and program administration.[2] The solid lines in figure V.C3 show the incidence rate, age-sex adjusted to the distribution of the disability exposed population for 2000. Such adjustment facilitates meaningful comparisons over long periods of time by focusing on the likelihood of becoming disabled, and excluding the effects of a changing distribution of the population toward ages where disability is inherently more or less likely.

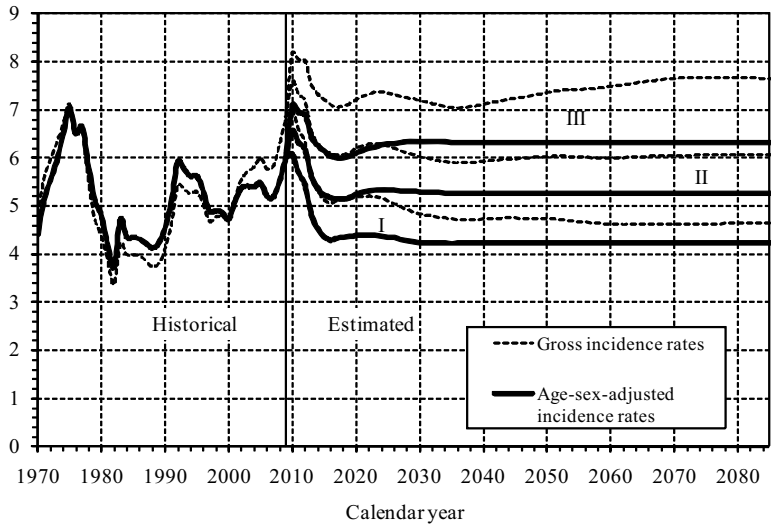
Gross (unadjusted) incidence rates are also shown in figure V.C3 in dashed lines. Unadjusted rates are influenced by the changing age-sex distribution of the exposed population over time. The gross incidence rate fell substantially below the age-sex-adjusted rate between 1975 and 1995 as the baby-boom generation swelled the size of the younger working-age population, where disability incidence is low. After 1995, the gross rate rose relative to the age-sex-adjusted rate, reflecting 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 smaller cohorts born in the 1970s. As these

[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.

[2] A more detailed discussion of the recent history of the DI program is presented in Actuarial Study 118, "Social Security Disability Insurance Program Worker Experience," June 2005. This study may be found at www.socialsecurity.gov/OACT/NOTES/s2000s.html.

smaller cohorts age past NRA, by about 2050, the gross incidence rate returns to a higher relative level under the intermediate assumptions. Thereafter, the gross rate remains higher, reflecting the persistently higher average age of the working-age population, which is largely due to lower birth rates since 1965.

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, in the long-range period (post-2019) termination rates are also assumed to vary by duration of entitlement to disabled-worker benefits.

In the short-range period (through 2019), the age-sex-adjusted death rate (adjusted to the 2000 disabled-worker population) under the intermediate assumptions is projected to gradually decline from 27.2 deaths per thousand beneficiaries in 2009 to about 22.6 per thousand by 2019.[1] The age-sex-adjusted recovery rate under the intermediate assumptions is assumed to rise from a relatively low level of 9.1 per thousand beneficiaries in 2009 (reflecting temporarily lower levels of continuing disability reviews) to 11.6 per thousand beneficiaries by 2019. Under low-cost and high-cost assumptions, total age-sex-adjusted termination rates due to death and recovery are assumed to increase or decrease, respectively, roughly 10-14 percent relative to the intermediate assumptions.

For the long-range period (post-2019), death and recovery rates are projected relative to rates by age, sex, and duration of entitlement over the base period 1996-2000.[2] The ultimate age-sex-adjusted recovery rate for disabled workers is assumed to be about 10.9 per thousand beneficiaries. Ultimate age-sex-adjusted recovery rates for low-cost and high-cost alternatives are assumed to reach about 13.2 and 8.7 recoveries per thousand beneficiaries, respectively. For all three sets of assumptions, the ultimate recovery rates are reached in the twentieth year of the projection period (2029). 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 27.2 per thousand beneficiaries in 2009, rates of 19.4, 11.0, and 7.0 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 2018, recovery terminations are projected to be elevated as SSA works down the current 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. The gross rate is influenced by changes in the age-sex distribution of the beneficiary population. A shift in the beneficiary population to older ages, as when the baby-boom generation

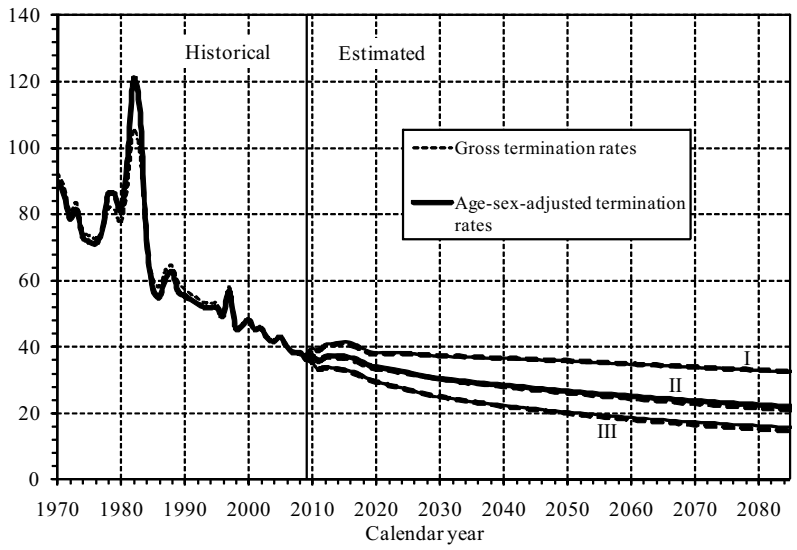
---

[1] Projections are developed separately for the short range (through 2019) and for the long range (after 2019). While short-range assumptions vary within the 10-year short-range period, the full phase-in to the ultimate assumptions is not achieved until 2029. Death rates differ in this regard as explained in the text.

[2] The termination rate analysis was based on work presented in Actuarial Study 118, "Social Security Disability Insurance Program Worker Experience," June 2005. This study may be found at www.socialsecurity.gov/OACT/NOTES/s2000s.html.

moves into pre-retirement ages, results in an increase in the gross death termination rate as long as death rates by age and sex are constant or declining.

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



c. Comparison of Incidence, Termination, and Conversion

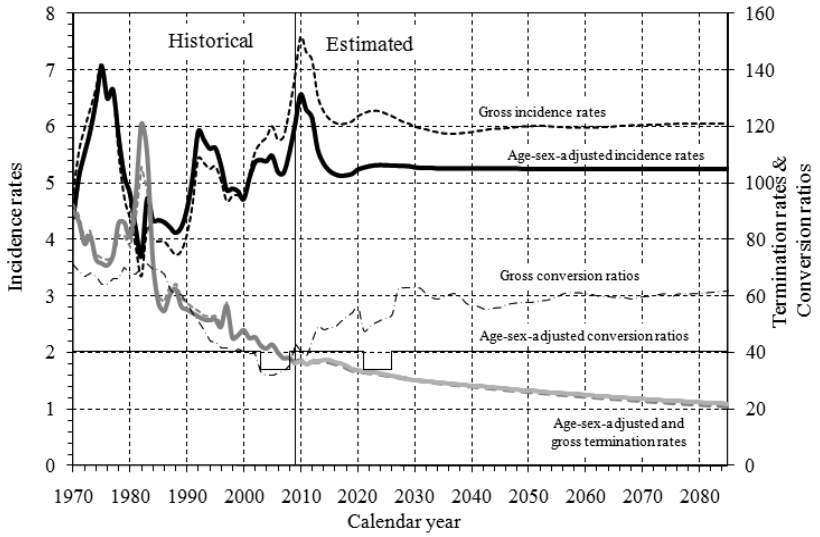
Incidence and termination rates are the foundation for projecting the number of disabled-worker beneficiaries in current-payment status up to the NRA at which time beneficiaries are converted to retired-worker status and thereby leave the DI rolls. For disabled-worker beneficiaries reaching NRA in a 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 conversion 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 fall, largely because of declines in death rates. Incidence rates have varied widely and are assumed for the intermediate projection (on an age-sex-adjusted basis) to remain 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 7.8 million at the end of 2009, to 12.0 million, 13.8 million, and 14.7 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 disability insured]

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
1986	2,725	301	965	3,991	25	27
1987	2,782	291	968	4,041	25	27
1988	2,826	281	963	4,070	25	27
1989	2,891	271	962	4,124	25	27
1990	3,007	266	989	4,261	25	28
1991	3,191	266	1,052	4,509	26	29
1992	3,464	271	1,151	4,886	28	31
1993	3,721	273	1,255	5,249	30	33
1994	3,958	271	1,350	5,579	32	34
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	49	41
2009	7,788	159	1,749	9,695	51	43

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

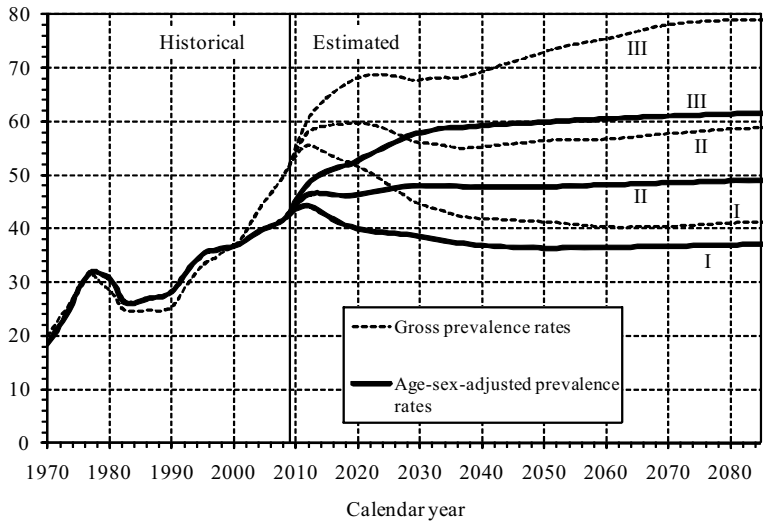
[Beneficiaries in thousands; prevalence rates per thousand disability insured]

Calendar year	Disabled-worker beneficiaries	Auxiliary beneficiaries		Total beneficiaries	Disability prevalence rates	
		Spouse	Child		Gross	Age-sex-adjusted
Intermediate:						
2010	8,227	165	1,847	10,240	54	44
2015	9,290	168	2,034	11,492	59	46
2020	9,669	158	2,096	11,923	60	46
2025	10,312	179	2,202	12,692	58	47
2030	10,281	183	2,282	12,746	56	48
2035	10,317	175	2,346	12,838	55	48
2040	10,518	170	2,397	13,085	55	48
2045	10,985	175	2,444	13,604	56	48
2050	11,398	187	2,499	14,084	56	48
2055	11,760	209	2,571	14,540	57	48
2060	11,997	214	2,645	14,856	57	48
2065	12,348	222	2,715	15,286	57	48
2070	12,768	232	2,780	15,781	58	49
2075	13,150	235	2,841	16,226	58	49
2080	13,513	242	2,904	16,659	59	49
2085	13,842	248	2,971	17,060	59	49
Low-cost:						
2010	8,129	162	1,816	10,107	53	44
2015	8,547	151	1,857	10,555	54	43
2020	8,495	136	1,861	10,493	52	40
2025	8,680	145	1,906	10,732	48	39
2030	8,376	139	1,963	10,477	45	38
2035	8,225	126	2,028	10,380	43	38
2040	8,279	116	2,100	10,496	42	37
2045	8,585	117	2,178	10,879	42	36
2050	8,883	123	2,266	11,272	41	36
2055	9,178	137	2,367	11,683	41	36
2060	9,420	138	2,488	12,047	40	36
2065	9,795	142	2,620	12,556	40	37
2070	10,276	146	2,753	13,175	40	37
2075	10,808	150	2,886	13,844	41	37
2080	11,394	157	3,019	14,570	41	37
2085	11,965	164	3,157	15,286	41	37
High-cost:						
2010	8,325	169	1,879	10,373	55	45
2015	10,038	186	2,211	12,435	64	51
2020	10,913	183	2,349	13,445	68	53
2025	11,972	217	2,503	14,692	69	55
2030	12,207	234	2,572	15,013	68	58
2035	12,420	234	2,590	15,244	68	59
2040	12,747	231	2,578	15,555	69	59
2045	13,341	243	2,557	16,140	71	59
2050	13,824	258	2,552	16,635	73	60
2055	14,203	289	2,577	17,069	74	60
2060	14,362	294	2,587	17,242	75	60
2065	14,593	307	2,577	17,476	77	61
2070	14,823	323	2,555	17,701	78	61
2075	14,875	324	2,531	17,730	79	61
2080	14,799	326	2,511	17,637	79	61
2085	14,676	324	2,500	17,500	79	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).

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



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 simply be combined because their denominators differ.

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, where 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, reflecting 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 42.6 per thousand disability insured at the end of 2009, to 49.1 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 37.0 per thousand and increase to 61.5 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.

The projection of auxiliary beneficiaries is generally based on the projected number of disabled-worker beneficiaries. In the short-range period (2010-19), incidence and termination rates are projected for each category of auxiliary beneficiary. After 2019, 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 since the year of initial entitlement, reflecting 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 developed using a combination of the actual earnings histories associated with a sample of 2006 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 2019 is based on historical experience and the expected growth in average wages. Additionally, estimates for the first several years of the projection are provided by the Office of Budget of the Social Security Administration. For years after 2019, 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.

10. Railroad Retirement Financial Interchange

Railroad workers are covered under a separate multi-tiered plan, the first tier being very similar to OASDI coverage. An annual financial interchange between the Railroad Retirement fund and the OASI and DI 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 0.04 percent of taxable payroll to the OASDI program.

11. Military Service Transfers

Beginning in 1966, the OASI and DI Trust Funds were reimbursed 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 transfer in 1983 to include all future costs attributable to the wage credits. The amendments also require adjustments to that 1983 transfer every fifth year, beginning with 1985, to account for actual data.

12. Income From Taxation of Benefits

Under present law, the OASI and DI Trust Funds are credited with the additional income taxes attributable to the taxation of up to the first 50 percent of OASI and DI benefit payments. (The remainder of the income taxes attributable to 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, income to the trust funds from such taxation 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, income to the trust funds from such taxation is estimated by applying projected ratios of taxation of OASI and DI benefits to total OASI and DI benefit payments. Because the income thresholds used for benefit taxation are, by law, constant in the future, 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 information from the Office of Tax Analysis (OTA) in the Department of the Treasury, by eliminating the current threshold amounts completely for taxation of Social Security benefits in its tax model. Subsequently, based on recent Current Population Survey data, the Office of the Chief Actuary makes a downward 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 contributions payable by workers, their employers, and individuals with self-employment income, in work covered by the OASDI program. All employees, and their employers, in covered employment are required to pay contributions with respect to their wages. Employees, and their employers, are also required to pay contributions with respect to cash tips, if the individual's monthly cash tips amount to at least $20. All self-employed persons are required to pay 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 contributions, or taxes, are computed on wages or net earnings from self-employment, or both wages and net self-employment earnings combined, up to a specified maximum annual amount. The 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 per-

sons who first become eligible to receive benefits in 1979 or later, the earnings used in the computation of benefits are indexed to reflect increases in average wage levels.

The contribution, or tax, rates applicable under current law in each calendar year and the allocation of these rates between the OASI and DI Trust Funds are shown in table VI.A1.[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. The contribution and benefit base for each year through 2010 is also shown in table VI.A1.

Table VI.A1.—Contribution and Benefit Base and Contribution Rates

Calendar years	Contribution and benefit base	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
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

[1] The contribution rates for the Hospital Insurance (HI) program, and for the OASDI and HI programs combined, are shown in table VI.F1.

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

Calendar years	Contribution and benefit base	Contribution rates (percent)					
		Employees and employers, each			Self-employed		
		OASDI	OASI	DI	OASDI	OASI	DI
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	106,800	6.200	5.300	.900	12.4000	10.6000	1.8000
2011 and later	[b]	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 contributions paid by employees, which resulted in an effective contribution rate of 5.4 percent. The appropriations of contributions to the trust funds, however, were based on the combined employee-employer rate of 11.4 percent, as if the credit for employees did not apply. 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. 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] Subject to automatic adjustment based on increases in average wages.

All contributions are collected by the Internal Revenue Service and deposited in the General Fund of the Treasury. The contributions are immediately and automatically appropriated to the trust funds on an estimated basis. The exact amount of contributions received is not known initially because the OASDI and HI contributions and individual income taxes are not separately identified in collection reports received by the Internal Revenue Service. Periodic adjustments are subsequently made to the extent that the estimates are found to differ from the amounts of contributions actually payable as determined from reported earnings. Adjustments are also made to account for any refunds to employees (with more than one employer) who paid contributions on wages in excess of the contribution and benefit base.

Beginning in 1984, up to one-half of an individual's or couple's OASDI benefits was subject to Federal income taxation under certain circumstances. Effective for taxable years beginning after 1993, the maximum percentage of

benefits subject to taxation was increased 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 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.

---

[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.

Income is also affected by provisions of the Social Security Act for (1) transfers between the General Fund of the Treasury and the OASI and DI Trust Funds for any adjustments to prior payments for the cost arising from the granting of noncontributory wage credits for military service prior to 1957, according to periodic determinations, and (2) the receipt of unconditional money gifts or bequests made for the benefit of the trust funds or any activity financed through the funds.

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, transfers between the Railroad Retirement program's Social Security Equivalent Benefit Account and the trust funds are 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 net worth of facilities and other fixed capital assets is not carried in the statements of the operations of the trust funds presented in this report. 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 1937-2009
[Dollar amounts in billions]

	Income				Expenditures				Assets		
Calendar year	Total[a]	Net contri-butions[b]	Taxa-tion of benefits	Net interest[c]	Total	Benefit pay-ments[d]	Admin-istra-tive costs	RRB inter-change	Net increase during year	Amount at end of year	Trust fund ratio[e]
1937 . .	$0.8	$0.8	—	[f]	[f]	[f]	—	—	$0.8	$0.8	—
1938 . .	.4	.4	—	[f]	[f]	[f]	—	—	.4	1.1	7,660
1939 . .	.6	.6	—	[f]	[f]	[f]	—	—	.6	1.7	8,086
1940 . .	.4	.3	—	[f]	$0.1	[f]	[f]	—	.3	2.0	2,781
1941 . .	.8	.8	—	$0.1	.1	$0.1	[f]	—	.7	2.8	1,782
1942 . .	1.1	1.0	—	.1	.2	.1	[f]	—	.9	3.7	1,737
1943 . .	1.3	1.2	—	.1	.2	.2	[f]	—	1.1	4.8	1,891
1944 . .	1.4	1.3	—	.1	.2	.2	[f]	—	1.2	6.0	2,025
1945 . .	1.4	1.3	—	.1	.3	.3	[f]	—	1.1	7.1	1,975
1946 . .	1.4	1.3	—	.2	.4	.4	[f]	—	1.0	8.2	1,704
1947 . .	1.7	1.6	—	.2	.5	.5	[f]	—	1.2	9.4	1,592
1948 . .	2.0	1.7	—	.3	.6	.6	$0.1	—	1.4	10.7	1,542
1949 . .	1.8	1.7	—	.1	.7	.7	.1	—	1.1	11.8	1,487
1950 . .	2.9	2.7	—	.3	1.0	1.0	.1	—	1.9	13.7	1,156
1951 . .	3.8	3.4	—	.4	2.0	1.9	.1	—	1.8	15.5	698
1952 . .	4.2	3.8	—	.4	2.3	2.2	.1	—	1.9	17.4	681
1953 . .	4.4	3.9	—	.4	3.1	3.0	.1	—	1.3	18.7	564
1954 . .	5.6	5.2	—	.4	3.7	3.7	.1	[f]	1.9	20.6	500
1955 . .	6.2	5.7	—	.5	5.1	5.0	.1	[f]	1.1	21.7	405
1956 . .	6.7	6.2	—	.5	5.8	5.7	.1	[f]	.9	22.5	371
1957 . .	7.4	6.8	—	.6	7.5	7.3	.2	[f]	-.1	22.4	300
1958 . .	8.1	7.6	—	.6	8.6	8.3	.2	$0.1	-.5	21.9	259
1959 . .	8.6	8.1	—	.5	10.3	9.8	.2	.3	-1.7	20.1	212
1960 . .	11.4	10.9	—	.5	11.2	10.7	.2	.3	.2	20.3	180
1961 . .	11.8	11.3	—	.5	12.4	11.9	.2	.3	-.6	19.7	163
1962 . .	12.6	12.1	—	.5	14.0	13.4	.3	.4	-1.4	18.3	141
1963 . .	15.1	14.5	—	.5	14.9	14.2	.3	.4	.1	18.5	123
1964 . .	16.3	15.7	—	.6	15.6	14.9	.3	.4	.6	19.1	118
1965 . .	16.6	16.0	—	.6	17.5	16.7	.3	.4	-.9	18.2	109
1966 . .	21.3	20.6	—	.6	19.0	18.3	.3	.4	2.3	20.6	96
1967 . .	24.0	23.1	—	.8	20.4	19.5	.4	.5	3.7	24.2	101
1968 . .	25.0	23.7	—	.9	23.6	22.6	.5	.4	1.5	25.7	103
1969 . .	29.6	27.9	—	1.2	25.2	24.2	.5	.5	4.4	30.1	102
1970 . .	32.2	30.3	—	1.5	29.8	28.8	.5	.6	2.4	32.5	101
1971 . .	35.9	33.7	—	1.7	34.5	33.4	.5	.6	1.3	33.8	94
1972 . .	40.1	37.8	—	1.8	38.5	37.1	.7	.7	1.5	35.3	88
1973 . .	48.3	46.0	—	1.9	47.2	45.7	.6	.8	1.2	36.5	75
1974 . .	54.7	52.1	—	2.2	53.4	51.6	.9	.9	1.3	37.8	68
1975 . .	59.6	56.8	—	2.4	60.4	58.5	.9	1.0	-.8	37.0	63
1976 . .	66.3	63.4	—	2.3	67.9	65.7	1.0	1.2	-1.6	35.4	54
1977 . .	72.4	69.6	—	2.2	75.3	73.1	1.0	1.2	-2.9	32.5	47
1978 . .	78.1	75.5	—	2.0	83.1	80.4	1.1	1.6	-5.0	27.5	39
1979 . .	90.3	87.9	—	1.8	93.1	90.6	1.1	1.4	-2.9	24.7	30
1980 . .	105.8	103.5	—	1.8	107.7	105.1	1.2	1.4	-1.8	22.8	23
1981 . .	125.4	122.6	—	2.1	126.7	123.8	1.3	1.6	-1.3	21.5	18
1982 . .	125.2	123.7	—	.8	142.1	138.8	1.5	1.8	[g] .6	22.1	15
1983 . .	150.6	138.3	—	6.7	153.0	149.2	1.5	2.3	-2.4	19.7	14
1984 . .	169.3	164.1	$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 1937-2009 (Cont.)

[Dollar amounts in billions]

	Income				Expenditures				Assets		
Calendar year	Total[a]	Net contributions[b]	Taxation of benefits	Net interest[c]	Total	Benefit payments[d]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[e]
1985 . .	$184.2	$177.0	$3.2	$1.9	$171.2	$167.2	$1.6	$2.3	[g]$8.7	$35.8	24
1986 . .	197.4	190.7	3.4	3.1	181.0	176.8	1.6	2.6	[g]3.2	39.1	28
1987 . .	210.7	202.7	3.3	4.7	187.7	183.6	1.5	2.6	23.1	62.1	30
1988 . .	240.8	229.8	3.4	7.6	200.0	195.5	1.8	2.8	40.8	102.9	41
1989 . .	264.7	250.2	2.4	12.0	212.5	208.0	1.7	2.8	52.2	155.1	59
1990 . .	286.7	267.5	4.8	16.4	227.5	223.0	1.6	3.0	59.1	214.2	78
1991 . .	299.3	272.6	5.9	20.8	245.6	240.5	1.8	3.4	53.7	267.8	87
1992 . .	311.2	281.0	5.9	24.3	259.9	254.9	1.8	3.1	51.3	319.2	103
1993 . .	323.3	290.9	5.3	27.0	273.1	267.8	2.0	3.4	50.2	369.3	117
1994 . .	328.3	293.3	5.0	29.9	284.1	279.1	1.6	3.4	44.1	413.5	130
1995 . .	342.8	304.6	5.5	32.8	297.8	291.6	2.1	4.1	45.0	458.5	139
1996 . .	363.7	321.6	6.5	35.7	308.2	302.9	1.8	3.6	55.5	514.0	149
1997 . .	397.2	349.9	7.4	39.8	322.1	316.3	2.1	3.7	75.1	589.1	160
1998 . .	424.8	371.2	9.1	44.5	332.3	326.8	1.9	3.7	92.5	681.6	177
1999 . .	457.0	396.4	10.9	49.8	339.9	334.4	1.8	3.7	117.2	798.8	201
2000 . .	490.5	421.4	11.6	57.5	358.3	352.7	2.1	3.5	132.2	931.0	223
2001 . .	518.1	441.5	11.9	64.7	377.5	372.3	2.0	3.3	140.6	1,071.5	247
2002 . .	539.7	455.2	12.9	71.2	393.7	388.1	2.1	3.5	146.0	1,217.5	272
2003 . .	543.8	456.1	12.5	75.2	406.0	399.8	2.6	3.6	137.8	1,355.3	300
2004 . .	566.3	472.8	14.6	79.0	421.0	415.0	2.4	3.6	145.3	1,500.6	322
2005 . .	604.3	506.9	13.8	84.0	441.9	435.4	3.0	3.6	162.4	1,663.0	340
2006 . .	642.2	534.8	15.6	91.8	461.0	454.5	3.0	3.5	181.3	1,844.3	361
2007 . .	675.0	560.9	17.2	97.0	495.7	489.1	3.1	3.6	179.3	2,023.6	372
2008 . .	695.5	574.6	15.6	105.3	516.2	509.3	3.2	3.6	179.3	2,202.9	392
2009 . .	698.2	570.4	19.9	107.9	564.3	557.2	3.4	3.7	133.9	2,336.8	390

[a] Includes payments from the General Fund of the Treasury to the trust funds (1) in 1947-51 and in 1966 and later, costs of noncontributory wage credits for military service performed before 1957; (2) in 1971-82, costs of deemed wage credits for military service performed after 1956; and (3) in 1968 and later, costs of benefits to certain uninsured persons who attained age 72 before 1968. Differences in past year total income and sum of individual column amounts are due to these payments. OASI historical payments from the General Fund of the Treasury may be found at www.socialsecurity.gov/OACT/STATS/table4a1.html.

[b] Beginning in 1983, includes transfers from the General Fund of the Treasury representing contributions that would have been paid on deemed wage credits for military service in 1957 through 2001, if such credits were considered to be covered wages.

[c] 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. The amount shown for 1985 includes an interest adjustment of $88 million on unnegotiated checks issued before April 1985.

[d] 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.

[e] 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.

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

[g] 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 1957-2009
[Dollar amounts in billions]

	Income				Expenditures				Assets		
Calendar year	Total [a]	Net contributions [b]	Taxation of benefits	Net interest [c]	Total	Benefit payments [d]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio [e]
1957 . .	$0.7	$0.7	—	[f]	$0.1	$0.1	[f]	—	$0.6	$0.6	—
1958 . .	1.0	1.0	—	[f]	.3	.2	[f]	—	.7	1.4	249
1959 . .	.9	.9	—	[f]	.5	.5	$0.1	[f]	.4	1.8	284
1960 . .	1.1	1.0	—	$0.1	.6	.6	[f]	[f]	.5	2.3	304
1961 . .	1.1	1.0	—	.1	1.0	.9	.1	[f]	.1	2.4	239
1962 . .	1.1	1.0	—	.1	1.2	1.1	.1	[f]	-.1	2.4	206
1963 . .	1.2	1.1	—	.1	1.3	1.2	.1	[f]	-.1	2.2	183
1964 . .	1.2	1.2	—	.1	1.4	1.3	.1	[f]	-.2	2.0	159
1965 . .	1.2	1.2	—	.1	1.7	1.6	.1	[f]	-.4	1.6	121
1966 . .	2.1	2.0	—	.1	1.9	1.8	.1	[f]	.1	1.7	82
1967 . .	2.4	2.3	—	.1	2.1	2.0	.1	[f]	.3	2.0	83
1968 . .	3.5	3.3	—	.1	2.5	2.3	.1	[f]	1.0	3.0	83
1969 . .	3.8	3.6	—	.2	2.7	2.6	.1	[f]	1.1	4.1	111
1970 . .	4.8	4.5	—	.3	3.3	3.1	.2	[f]	1.5	5.6	126
1971 . .	5.0	4.6	—	.4	4.0	3.8	.2	[f]	1.0	6.6	140
1972 . .	5.6	5.1	—	.4	4.8	4.5	.2	[f]	.8	7.5	140
1973 . .	6.4	5.9	—	.5	6.0	5.8	.2	[f]	.5	7.9	125
1974 . .	7.4	6.8	—	.5	7.2	7.0	.2	[f]	.2	8.1	110
1975 . .	8.0	7.4	—	.5	8.8	8.5	.3	[f]	-.8	7.4	92
1976 . .	8.8	8.2	—	.4	10.4	10.1	.3	[f]	-1.6	5.7	71
1977 . .	9.6	9.1	—	.3	11.9	11.5	.4	[f]	-2.4	3.4	48
1978 . .	13.8	13.4	—	.3	13.0	12.6	.3	[f]	.9	4.2	26
1979 . .	15.6	15.1	—	.4	14.2	13.8	.4	[f]	1.4	5.6	30
1980 . .	13.9	13.3	—	.5	15.9	15.5	.4	[f]	-2.0	3.6	35
1981 . .	17.1	16.7	—	.2	17.7	17.2	.4	[f]	-.6	3.0	21
1982 . .	22.7	22.0	—	.5	18.0	17.4	.6	[f]	[g] -.4	2.7	17
1983 . .	20.7	18.0	—	1.6	18.2	17.5	.6	[f]	2.5	5.2	15
1984 . .	17.3	15.9	$0.2	1.2	18.5	17.9	.6	[f]	-1.2	4.0	35
1985 . .	19.3	17.2	.2	.9	19.5	18.8	.6	[f]	[g] 2.4	6.3	27
1986 . .	19.4	18.4	.2	.8	20.5	19.9	.6	$0.1	[g] 1.5	7.8	38
1987 . .	20.3	19.7	[f]	.6	21.4	20.5	.8	.1	-1.1	6.7	44
1988 . .	22.7	22.0	.1	.6	22.5	21.7	.7	.1	.2	6.9	38
1989 . .	24.8	24.0	.1	.7	23.8	22.9	.8	.1	1.0	7.9	38
1990 . .	28.8	28.5	.1	.9	25.6	24.8	.7	.1	3.2	11.1	40
1991 . .	30.4	29.1	.2	1.1	28.6	27.7	.8	.1	1.8	12.9	39
1992 . .	31.4	30.1	.2	1.1	32.0	31.1	.8	.1	-.6	12.3	40
1993 . .	32.3	31.2	.3	.8	35.7	34.6	1.0	.1	-3.4	9.0	35
1994 . .	52.8	51.4	.3	1.2	38.9	37.7	1.0	.1	14.0	22.9	23
1995 . .	56.7	54.4	.3	2.2	42.1	40.9	1.1	.1	14.6	37.6	55
1996 . .	60.7	57.3	.4	3.0	45.4	44.2	1.2	[f]	15.4	52.9	83
1997 . .	60.5	56.0	.5	4.0	47.0	45.7	1.3	.1	13.5	66.4	113
1998 . .	64.4	59.0	.6	4.8	49.9	48.2	1.6	.2	14.4	80.8	133
1999 . .	69.5	63.2	.7	5.7	53.0	51.4	1.5	.1	16.5	97.3	152
2000 . .	77.9	71.1	.7	6.9	56.8	55.0	1.6	.2	21.1	118.5	171
2001 . .	83.9	74.9	.8	8.2	61.4	59.6	1.7	[f]	22.5	141.0	193
2002 . .	87.4	77.3	.9	9.2	67.9	65.7	2.0	.2	19.5	160.5	208
2003 . .	88.1	77.4	.9	9.7	73.1	70.9	2.0	.2	15.0	175.4	219
2004 . .	91.4	80.3	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 1957-2009 (Cont.)

[Dollar amounts in billions]

	Income				Expenditures				Assets		
Calendar year	Total [a]	Net contributions[b]	Taxation of benefits	Net interest[c]	Total	Benefit payments[d]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[e]
2005 . .	$97.4	$86.1	$1.1	$10.3	$88.0	$85.4	$2.3	$0.3	$9.4	$195.6	212
2006 . .	102.6	90.8	1.2	10.6	94.5	91.7	2.3	.4	8.2	203.8	207
2007 . .	109.9	95.2	1.4	13.2	98.8	95.9	2.5	.4	11.1	214.9	206
2008 . .	109.8	97.6	1.3	11.0	109.0	106.0	2.5	.4	.9	215.8	197
2009 . .	109.3	96.9	2.0	10.5	121.5	118.3	2.7	.4	-12.2	203.5	178

[a] Includes payments from the General Fund of the Treasury to the trust funds (1) beginning in 1966 and later, costs of noncontributory wage credits for military service performed before 1957, and (2) in 1971-82, costs of deemed wage credits for military service performed after 1956. Differences in past year total income and sum of individual column amounts are due to these payments. DI historical payments from the General Fund of the Treasury may be found at www.socialsecurity.gov/OACT/STATS/table4a2.html.

[b] Beginning in 1983, includes transfers from the General Fund of the Treasury representing contributions that would have been paid on deemed wage credits for military service in 1957 through 2001, if such credits were considered to be covered wages.

[c] 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. The amount shown for 1985 includes an interest adjustment of $14.8 million on unnegotiated checks issued before April 1985.

[d] 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.

[e] 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.

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

[g] Reflects interfund borrowing and subsequent repayment of loans. In 1982, $5.1 billion was loaned to the OASI Trust Funds 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 1957-2009
[Dollar amounts in billions]

	Income				Expenditures				Assets		
Calendar year	Total[a]	Net contributions[b]	Taxation of benefits	Net interest[c]	Total	Benefit payments[d]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[e]
1957 . .	$8.1	$7.5	—	$0.6	$7.6	$7.4	$0.2	[f]	$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	[f]	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	—	.7	20.9	20.1	.4	.5	2.5	22.3	95
1967 . .	26.4	25.4	—	.9	22.5	21.4	.5	.5	3.9	26.3	99
1968 . .	28.5	27.0	—	1.0	26.0	25.0	.6	.5	2.5	28.7	101
1969 . .	33.3	31.5	—	1.3	27.9	26.8	.6	.5	5.5	34.2	103
1970 . .	37.0	34.7	—	1.8	33.1	31.9	.6	.6	3.9	38.1	103
1971 . .	40.9	38.3	—	2.0	38.5	37.2	.7	.6	2.4	40.4	99
1972 . .	45.6	42.9	—	2.2	43.3	41.6	.9	.7	2.3	42.8	93
1973 . .	54.8	51.9	—	2.4	53.1	51.5	.8	.8	1.6	44.4	80
1974 . .	62.1	58.9	—	2.7	60.6	58.6	1.1	.9	1.5	45.9	73
1975 . .	67.6	64.3	—	2.9	69.2	67.0	1.2	1.0	-1.5	44.3	66
1976 . .	75.0	71.6	—	2.7	78.2	75.8	1.2	1.2	-3.2	41.1	57
1977 . .	82.0	78.7	—	2.5	87.3	84.7	1.4	1.2	-5.3	35.9	47
1978 . .	91.9	88.9	—	2.3	96.0	93.0	1.4	1.6	-4.1	31.7	37
1979 . .	105.9	103.0	—	2.2	107.3	104.4	1.5	1.5	-1.5	30.3	30
1980 . .	119.7	116.7	—	2.3	123.6	120.6	1.5	1.4	-3.8	26.5	25
1981 . .	142.4	139.4	—	2.2	144.4	141.0	1.7	1.6	-1.9	24.5	18
1982 . .	147.9	145.7	—	1.4	160.1	156.2	2.1	1.8	[g] .2	24.8	15
1983 . .	171.3	156.3	—	8.3	171.2	166.7	2.2	2.3	.1	24.9	14
1984 . .	186.6	180.1	$3.0	3.4	180.4	175.7	2.3	2.4	6.2	31.1	21
1985 . .	203.5	194.1	3.4	2.7	190.6	186.1	2.2	2.4	[g] 11.1	42.2	24
1986 . .	216.8	209.1	3.7	3.9	201.5	196.7	2.2	2.7	[g] 4.7	46.9	29
1987 . .	231.0	222.4	3.2	5.3	209.1	204.1	2.4	2.6	21.9	68.8	31
1988 . .	263.5	251.8	3.4	8.2	222.5	217.1	2.5	2.9	41.0	109.8	41
1989 . .	289.4	274.2	2.5	12.7	236.2	230.9	2.4	2.9	53.2	163.0	57
1990 . .	315.4	296.1	5.0	17.2	253.1	247.8	2.3	3.0	62.3	225.3	75
1991 . .	329.7	301.7	6.1	21.9	274.2	268.2	2.6	3.5	55.5	280.7	82
1992 . .	342.6	311.1	6.1	25.4	291.9	286.0	2.7	3.2	50.7	331.5	96
1993 . .	355.6	322.1	5.6	27.9	308.8	302.4	3.0	3.4	46.8	378.3	107
1994 . .	381.1	344.7	5.3	31.1	323.0	316.8	2.7	3.5	58.1	436.4	117
1995 . .	399.5	359.0	5.8	35.0	339.8	332.6	3.1	4.1	59.7	496.1	128
1996 . .	424.5	378.9	6.8	38.7	353.6	347.1	3.0	3.6	70.9	567.0	140
1997 . .	457.7	406.0	7.9	43.8	369.1	362.0	3.4	3.7	88.6	655.5	154
1998 . .	489.2	430.2	9.7	49.3	382.3	375.0	3.5	3.8	107.0	762.5	171
1999 . .	526.6	459.6	11.6	55.5	392.9	385.8	3.3	3.8	133.7	896.1	194
2000 . .	568.4	492.5	12.3	64.5	415.1	407.6	3.8	3.7	153.3	1,049.4	216
2001 . .	602.0	516.4	12.7	72.9	438.9	431.9	3.7	3.3	163.1	1,212.5	239
2002 . .	627.1	532.5	13.8	80.4	461.7	453.8	4.2	3.6	165.4	1,378.0	263
2003 . .	631.9	533.5	13.4	84.9	479.1	470.8	4.6	3.7	152.8	1,530.8	288
2004 . .	657.7	553.0	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 1957-2009 (Cont.)

[Dollar amounts in billions]

	Income				Expenditures				Assets		
Calendar year	Total[a]	Net contributions[b]	Taxation of benefits	Net interest[c]	Total	Benefit payments[d]	Administrative costs	RRB interchange	Net increase during year	Amount at end of year	Trust fund ratio[e]
2005 . .	$701.8	$592.9	$14.9	$94.3	$529.9	$520.7	$5.3	$3.9	$171.8	$1,858.7	318
2006 . .	744.9	625.6	16.9	102.4	555.4	546.2	5.3	3.8	189.5	2,048.1	335
2007 . .	784.9	656.1	18.6	110.2	594.5	584.9	5.5	4.0	190.4	2,238.5	345
2008 . .	805.3	672.1	16.9	116.3	625.1	615.3	5.7	4.0	180.2	2,418.7	358
2009 . .	807.5	667.3	21.9	118.3	685.8	675.5	6.2	4.1	121.7	2,540.3	353

[a] Includes payments from the General Fund of the Treasury to the trust funds (1) beginning in 1966 and later, costs of noncontributory wage credits for military service performed before 1957; (2) in 1971-82, costs of deemed wage credits for military service performed after 1956; and (3) in 1968 and later, costs of benefits to certain uninsured persons who attained age 72 before 1968. Differences in past year total income and sum of individual column amounts are due to these payments. OASDI historical payments from the General Fund of the Treasury may be found at www.socialsecurity.gov/OACT/STATS/table4a3.html.

[b] Beginning in 1983, includes transfers from the General Fund of the Treasury representing contributions that would have been paid on deemed wage credits for military service in 1957 through 2001, if such credits were considered to be covered wages.

[c] 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. The amount shown for 1985 includes an interest adjustment of $102.8 million on unnegotiated checks issued before April 1985.

[d] 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.

[e] 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.

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

[g] 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 2008 and 2009. These assets are separated by interest rate and year of maturity. Bonds issued to the trust funds in 2009 had an interest rate of 3.25 percent, compared with an interest rate of 4 percent for bonds issued in 2008.

Table VI.A5.—Assets of the OASI Trust Fund, End of Calendar Years 2008 and 2009
[In thousands]

	December 31, 2008	December 31, 2009
Obligations sold only to the trust funds (special issues):		
Certificates of indebtedness:		
2.750 percent, 2009	$68,361,774	—
2.875 percent, 2010	—	$52,423,996
3.750 percent, 2009	7,420,648	—
3.875 percent, 2009	4,440,134	—
Bonds:		
3.250 percent, 2011-12	—	21,256,540
3.250 percent, 2013-15	—	31,884,813
3.250 percent, 2016-23	—	85,026,160
3.250 percent, 2024	—	153,311,163
3.500 percent, 2010	9,513,751	—
3.500 percent, 2011-15	47,568,755	47,568,755
3.500 percent, 2016-17	19,027,504	19,027,504
3.500 percent, 2018	86,900,994	86,900,994
4.000 percent, 2009	4,526,627	—
4.000 percent, 2010	12,075,192	—
4.000 percent, 2011	12,075,192	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, 2009	10,516,946	—
4.125 percent, 2010	10,516,946	9,423,199
4.125 percent, 2011-19	94,652,514	94,652,514
4.125 percent, 2020	106,585,700	106,585,700
4.625 percent, 2009	9,167,664	—
4.625 percent, 2010-15	55,005,984	55,005,984
4.625 percent, 2016-18	27,502,989	27,502,989
4.625 percent, 2019	96,068,657	96,068,657
5.000 percent, 2009	12,454,234	—
5.000 percent, 2010-11	24,908,466	24,908,466
5.000 percent, 2012-21	124,542,320	124,542,320
5.000 percent, 2022	130,607,701	130,607,701
5.125 percent, 2009	11,567,865	—
5.125 percent, 2010-19	115,678,660	115,678,660
5.125 percent, 2020	11,567,769	11,567,769
5.125 percent, 2021	118,153,469	118,153,469
5.250 percent, 2009	9,235,912	—
5.250 percent, 2010-15	55,415,472	55,415,472
5.250 percent, 2016	9,235,911	9,235,911
5.250 percent, 2017	77,387,242	77,387,242
5.625 percent, 2009	9,621,438	—
5.625 percent, 2010-11	19,242,876	19,242,876
5.625 percent, 2012-15	38,485,748	38,485,748
5.625 percent, 2016	68,151,331	68,151,331
5.875 percent, 2009	6,169,273	—
5.875 percent, 2010-12	18,507,819	18,507,819
5.875 percent, 2013	43,258,869	43,258,869
6.000 percent, 2009	6,693,627	—
6.000 percent, 2010-11	13,387,254	13,387,254
6.000 percent, 2012-13	13,387,256	13,387,256
6.000 percent, 2014	49,952,497	49,952,497
6.500 percent, 2009	11,008,650	—
6.500 percent, 2010	38,320,240	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, 2009	3,975,271	—
6.875 percent, 2010-11	7,950,544	7,950,544
6.875 percent, 2012	37,089,596	37,089,596
7.000 percent, 2009	3,371,480	—
7.000 percent, 2010	3,371,480	3,371,480
7.000 percent, 2011	33,114,324	33,114,324
7.250 percent, 2009	27,311,591	—
Total investments	2,203,403,639	2,318,780,487
Undisbursed balances	-518,033	18,017,594
Total assets	2,202,885,606	2,336,798,081

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 2008 and 2009
[In thousands]

	December 31, 2008	December 31, 2009
Obligations sold only to the trust funds (special issues):		
Certificates of indebtedness:		
2.750 percent, 2009	$7,743,419	—
2.875 percent, 2010	—	$3,735,389
Bonds:		
3.250 percent, 2012-14	—	2,632,680
3.250 percent, 2015-16	—	1,755,118
3.250 percent, 2017-20	—	3,510,240
3.500 percent, 2010	1,115,128	—
3.500 percent, 2011	1,115,128	—
3.500 percent, 2012-15	4,460,508	4,460,508
3.500 percent, 2016-17	2,230,256	2,230,256
3.500 percent, 2018	11,378,384	11,378,384
4.000 percent, 2010	622,572	—
4.000 percent, 2011	622,572	—
4.000 percent, 2012-16	3,112,860	3,112,860
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, 2010	677,386	—
4.125 percent, 2011	677,386	—
4.125 percent, 2012-17	4,064,310	4,064,310
4.125 percent, 2018-19	1,354,772	1,354,772
4.125 percent, 2020	12,911,283	12,911,283
4.625 percent, 2010	855,497	—
4.625 percent, 2011	855,497	615,351
4.625 percent, 2012-15	3,421,992	3,421,992
4.625 percent, 2016-18	2,566,491	2,566,491
4.625 percent, 2019	12,233,881	12,233,881
5.000 percent, 2010	476,586	—
5.000 percent, 2011-19	4,289,274	4,289,274
5.000 percent, 2020-21	953,168	953,168
5.000 percent, 2022	14,052,982	14,052,982
5.125 percent, 2010	665,131	—
5.125 percent, 2011-17	4,655,917	4,655,917
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, 2010	1,363,407	—
5.250 percent, 2011	1,363,407	1,363,407
5.250 percent, 2012-16	6,817,040	6,817,040
5.250 percent, 2017	10,263,256	10,263,256
5.625 percent, 2010	1,524,968	—
5.625 percent, 2011-13	4,574,904	4,574,904
5.625 percent, 2014-15	3,049,934	3,049,934
5.625 percent, 2016	8,899,848	8,899,848
5.875 percent, 2010	916,286	—
5.875 percent, 2011-12	1,832,572	1,832,572
5.875 percent, 2013	5,361,805	5,361,805
6.000 percent, 2010	695,966	—
6.000 percent, 2011-12	1,391,932	1,391,932
6.000 percent, 2013	695,967	695,967
6.000 percent, 2014	6,057,772	6,057,772
6.500 percent, 2010	1,317,108	—
6.500 percent, 2011-13	3,951,324	3,951,324
6.500 percent, 2014	1,317,109	1,317,109
6.500 percent, 2015	7,374,881	7,374,881
6.875 percent, 2010	4,445,520	—
6.875 percent, 2011-12	8,891,040	8,891,040
7.000 percent, 2009	2,608,382	—
Total investments	215,809,564	199,760,403
Undisbursed balances	-36,763	3,789,242
Total assets	215,772,801	203,549,645

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 principal summary measure of long-range actuarial status, namely the actuarial balance, 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. Conceptually, 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 tax 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.

It should be noted that 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. Instead, a simpler method that approximates the results of the present-value approach, called the average-cost method, was used during that period. 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 similarly calculated, 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, because of 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 reports 1982-2009, along with the estimates for the current report. The 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 1982-2010
[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

[a] Values shown are based on the alternative II assumptions for 1991-2010, 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 balance for 1987. Various changes in assumptions and methods for the 1988

report had roughly offsetting effects on the actuarial balance. In 1989 and 1990, changes in economic assumptions accounted for most of the changes in the estimated actuarial balance.

In 1991, the effect of legislation, changes in economic assumptions, and the introduction of the cost of reaching and maintaining an ending 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 assump-

tions. 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.

Changes affecting the actuarial balance shown for the 2010 report are described in section IV.B.7 Reasons for Change in Actuarial Balance From Last Report.

C. FISCAL YEAR HISTORICAL DATA AND PROJECTIONS THROUGH 2019

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 2009, 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 2009
[In millions]

Total assets, September 30, 2008		$2,150,052
Receipts:		
Contributions:		
Employment taxes	$573,375	
Payments from the General Fund of the Treasury for contributions subject to refund	-2,146	
Net contributions		571,228
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	153	
All other, not subject to withholding	18,814	
Total income from taxation of benefits		18,967
Reimbursement from the general fund for costs of payments to uninsured persons who attained age 72 before 1968		[a]
Investment income and interest adjustments:		
Interest on investments	107,226	
Net Interest adjustments[b]	-95	
Net investment income and interest adjustments		107,131
Gifts		[a]
Total receipts		697,326
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death benefits	544,478	
Transfer to the DI Trust Fund to correct a trust fund allocation error made on payments to certain dually entitled disabled beneficiaries	62	
Reimbursement from the general fund for unnegotiated checks	-59	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	3	
Net benefit payments		544,484
Transfer to the Railroad Retirement "Social Security Equivalent Benefit Account"		3,690
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,607	
Department of the Treasury	767	
Offsetting receipts from sales of supplies, materials, etc.	[a]	
Miscellaneous reimbursements from the general fund[c]	-4	
Net administrative expenses		3,369
Total disbursements		551,542
Net increase in assets		145,784
Total assets, September 30, 2009		2,295,835

[a] Between -$0.5 and $0.5 million.
[b] Includes (1) interest on transfers between the trust fund and the general fund account for the Supplemental Security Income program due to adjustments in the allocation of administrative expenses, (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 2009
[In millions]

Total assets, September 30, 2008		$216,239
Receipts:		
Contributions:		
Employment taxes	$97,372	
Payments from the General Fund of the Treasury for contributions subject to refund	-364	
Net contributions		97,008
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	4	
All other, not subject to withholding	1,837	
Total income from taxation of benefits		1,841
Investment income and interest adjustments:		
Interest on investments	10,726	
Interest adjustments[a]	107	
Total investment income and interest adjustments		10,832
Total receipts		109,681
Disbursements:		
Benefit payments:		
Monthly benefits	115,087	
Transfer from the OASI Trust Fund to correct a trust fund allocation error made on payments to certain dually entitled disabled beneficiaries	-62	
Reimbursement from the general fund for unnegotiated checks	-30	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	78	
Net benefit payments		115,073
Transfer to the Railroad Retirement "Social Security Equivalent Benefit Account"		448
Administrative expenses:		
Costs incurred by:		
Social Security Administration	2,439	
Department of the Treasury	142	
Miscellaneous reimbursements from the general fund[b]	42	
Total administrative expenses		2,623
Total disbursements		118,144
Net increase in assets		-8,462
Total assets, September 30, 2009		207,777

[a] Includes (1) interest on transfers between the trust fund and the general fund account for the Supplemental Security Income program due to adjustments in the allocation of administrative expenses, (2) interest arising from the revised allocation of administrative expenses among the trust funds, and (3) interest on certain reimbursements to the trust fund.
[b] 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 2009
[In millions]

Total assets, September 30, 2008		$2,366,291
Receipts:		
Contributions:		
Employment taxes	$670,747	
Payments from the General Fund of the Treasury for contributions subject to refund	-2,511	
Net contributions		668,236
Income based on taxation of benefit payments:		
Withheld from benefit payments to nonresident aliens	156	
All other, not subject to withholding	20,651	
Total income from taxation of benefits		20,807
Reimbursement from the general fund for costs of payments to uninsured persons who attained age 72 before 1968		[a]
Investment income and interest adjustments:		
Interest on investments	117,952	
Net Interest adjustments[b]	11	
Net investment income and interest adjustments		117,963
Gifts		[a]
Total receipts		807,007
Disbursements:		
Benefit payments:		
Monthly benefits and lump-sum death benefits	659,565	
Reimbursement from the general fund for unnegotiated checks	-89	
Payment for costs of vocational rehabilitation services for disabled beneficiaries	81	
Net benefit payments		659,557
Transfer to the Railroad Retirement "Social Security Equivalent Benefit Account"		4,137
Administrative expenses:		
Costs incurred by:		
Social Security Administration	5,046	
Department of the Treasury	909	
Offsetting receipts from sales of supplies, materials, etc.	[a]	
Miscellaneous reimbursements from the general fund[c]	38	
Net administrative expenses		5,992
Total disbursements		669,686
Net increase in assets		137,321
Total assets, September 30, 2009		2,503,612

[a] Between -$0.5 and $0.5 million.
[b] Includes (1) interest on transfers between the trust funds and the general fund account for the Supplemental Security Income program due to adjustments in the allocation of administrative expenses, (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 and DI programs.

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

Estimates of the operations and status of the OASI, DI and the combined OASI and DI Trust Funds during fiscal years (12 months ending on September 30) 2005-19 are presented in tables VI.C4, VI.C5 and VI.C6, respectively.

Table VI.C4.—Operations of the OASI Trust Fund, Fiscal Years 2005-19
[Dollar amounts in billions]

	Income				Cost				Assets		
Fiscal year	Total[a]	Net contributions	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:											
2005 . .	$600.0	$503.0	$15.3	$81.7	$436.9	$430.4	$2.9	$3.6	$163.1	$1,615.6	332
2006 . .	632.2	530.0	15.2	87.3	455.6	449.2	2.9	3.5	176.6	1,792.2	355
2007 . .	663.4	553.4	16.7	93.3	488.6	481.8	3.2	3.6	174.8	1,967.0	367
2008 . .	692.9	573.8	16.4	102.7	509.9	503.0	3.3	3.6	183.0	2,150.1	386
2009 . .	697.3	571.2	19.0	107.1	551.5	544.5	3.4	3.7	145.8	2,295.8	390
Intermediate:											
2010 . .	684.6	553.5	22.4	108.6	580.7	573.1	3.7	3.9	103.9	2,399.7	395
2011 . .	729.4	594.8	24.7	110.0	602.1	594.3	3.9	3.9	127.3	2,527.0	399
2012 . .	774.8	631.9	27.2	115.7	630.3	622.3	4.0	4.0	144.5	2,671.5	401
2013 . .	829.7	673.5	30.6	125.5	669.6	661.4	4.2	4.0	160.1	2,831.6	399
2014 . .	885.0	714.0	34.0	137.0	716.0	707.6	4.3	4.1	168.9	3,000.5	395
2015 . .	940.7	753.6	37.3	149.8	766.9	758.2	4.4	4.3	173.8	3,174.3	391
2016 . .	1,005.6	803.4	40.9	161.3	821.9	813.0	4.5	4.4	183.7	3,358.0	386
2017 . .	1,061.1	842.4	44.8	173.9	881.6	872.2	4.7	4.7	179.5	3,537.6	381
2018 . .	1,120.7	884.5	48.6	187.7	945.5	935.8	4.8	4.9	175.2	3,712.8	374
2019 . .	1,176.5	925.1	52.3	199.1	1,014.3	1,004.1	5.0	5.1	162.3	3,875.0	366
Low-cost:											
2010 . .	685.7	554.7	22.4	108.6	580.6	572.9	3.7	3.9	105.2	2,401.0	395
2011 . .	738.9	603.5	24.7	110.8	601.7	593.8	3.9	3.9	137.3	2,538.3	399
2012 . .	784.5	640.9	27.0	116.7	625.8	617.8	4.0	4.0	158.8	2,697.1	406
2013 . .	839.0	683.2	30.1	125.7	659.7	651.6	4.1	3.9	179.3	2,876.4	409
2014 . .	893.1	722.6	33.2	137.3	699.2	690.9	4.2	4.0	193.9	3,070.4	411
2015 . .	945.9	761.1	36.1	148.7	741.3	732.9	4.3	4.1	204.6	3,274.9	414
2016 . .	1,008.6	808.6	39.2	160.8	786.4	777.8	4.4	4.1	222.2	3,497.2	416
2017 . .	1,059.2	843.3	42.5	173.4	835.1	826.1	4.6	4.4	224.1	3,721.3	419
2018 . .	1,114.9	881.3	45.5	188.1	886.9	877.7	4.7	4.6	228.0	3,949.3	420
2019 . .	1,167.9	917.5	48.6	201.8	942.3	932.8	4.8	4.7	225.6	4,175.0	419
High-cost:											
2010 . .	683.5	552.5	22.4	108.5	580.9	573.2	3.7	3.9	102.6	2,398.5	395
2011 . .	722.2	588.0	24.8	109.5	602.6	594.8	3.9	3.9	119.5	2,518.0	398
2012 . .	773.0	629.1	27.4	116.6	636.0	628.0	4.0	4.0	137.1	2,655.0	396
2013 . .	835.4	672.6	31.5	131.3	688.8	680.5	4.2	4.1	146.6	2,801.6	385
2014 . .	895.8	715.9	35.6	144.3	749.7	741.1	4.4	4.3	146.1	2,947.7	374
2015 . .	954.5	759.4	39.6	155.5	812.7	803.6	4.5	4.6	141.8	3,089.5	363
2016 . .	1,024.5	814.1	43.9	166.6	880.2	870.8	4.7	4.7	144.3	3,233.8	351
2017 . .	1,082.8	856.9	48.5	177.4	953.9	943.8	4.9	5.2	128.9	3,362.7	339
2018 . .	1,144.7	903.6	53.1	188.0	1,033.4	1,022.9	5.1	5.5	111.3	3,474.0	325
2019 . .	1,205.3	951.4	57.8	196.1	1,119.5	1,108.5	5.3	5.8	85.7	3,559.7	310

[a] "Total Income" column includes transfers made between the OASI Trust Fund and the General Fund of the Treasury that are not included in the separate components of income shown. These transfers consist of payments for (1) the cost of noncontributory wage credits for military service before 1957 and (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968. In December 2005, $350 million was transferred from the OASI Trust Fund to the General Fund of the Treasury for the cost of pre-1957 military service wage credits, and a similar transfer of $90 million is projected to occur in December 2010. After December 2010 such transfers are estimated to be less than $500,000 in each year.
[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.

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

Table VI.C5.—Operations of the DI Trust Fund, Fiscal Years 2005-19
[Dollar amounts in billions]

	Income				Cost				Assets		
Fiscal year	Total[a]	Net contributions	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:											
2005 . .	$96.8	$85.4	$1.2	$10.2	$86.4	$83.7	$2.3	$0.3	$10.4	$193.3	212
2006 . .	101.6	90.0	1.2	10.4	92.9	90.1	2.4	.4	8.6	201.9	208
2007 . .	108.4	94.0	1.4	13.1	96.8	94.0	2.4	.4	11.6	213.6	209
2008 . .	109.8	97.4	1.4	11.0	107.2	104.2	2.5	.4	2.7	216.2	199
2009 . .	109.7	97.0	1.8	10.8	118.1	115.1	2.6	.4	-8.5	207.8	183
Intermediate:											
2010 . .	105.8	94.0	1.9	9.9	126.6	123.1	2.9	.5	-20.8	187.0	164
2011 . .	111.7	101.0	2.1	8.6	132.9	129.2	3.2	.6	-21.3	165.7	141
2012 . .	117.2	107.3	2.4	7.5	139.5	135.6	3.4	.5	-22.3	143.5	119
2013 . .	123.4	114.4	2.8	6.3	145.7	141.7	3.5	.5	-22.3	121.2	98
2014 . .	129.4	121.2	3.1	5.1	151.7	147.5	3.6	.5	-22.2	99.0	80
2015 . .	135.4	128.0	3.3	4.0	158.3	153.9	3.8	.5	-22.9	76.0	63
2016 . .	143.1	136.4	3.6	3.1	165.2	160.7	4.0	.5	-22.1	53.9	46
2017 . .	149.1	143.1	3.9	2.1	172.5	167.8	4.3	.5	-23.5	30.5	31
2018 . .	155.3	150.2	4.2	.9	180.2	175.2	4.5	.4	-24.8	5.6	17
2019 . .	[c]	157.1	4.5	[c]	188.2	183.0	4.8	.4	[c]	[c]	3
Low-cost:											
2010 . .	105.9	94.2	1.9	9.9	125.3	121.9	2.9	.5	-19.3	188.4	166
2011 . .	113.3	102.5	2.1	8.7	129.2	125.4	3.2	.6	-15.9	172.5	146
2012 . .	119.1	108.8	2.3	7.9	133.0	129.1	3.4	.5	-14.0	158.5	130
2013 . .	125.8	116.0	2.6	7.2	136.1	132.1	3.5	.5	-10.2	148.3	116
2014 . .	132.3	122.7	2.8	6.7	138.6	134.5	3.6	.5	-6.4	141.9	107
2015 . .	138.6	129.2	3.0	6.4	141.5	137.3	3.7	.5	-2.8	139.1	100
2016 . .	146.9	137.3	3.1	6.5	144.6	140.2	3.9	.5	2.4	141.5	96
2017 . .	153.2	143.2	3.4	6.6	148.2	143.6	4.1	.4	5.0	146.4	95
2018 . .	160.4	149.6	3.5	7.2	152.2	147.5	4.3	.4	8.2	154.6	96
2019 . .	167.3	155.8	3.7	7.8	156.5	151.6	4.6	.4	10.8	165.4	99
High-cost:											
2010 . .	105.6	93.8	1.9	9.9	127.9	124.5	2.9	.5	-22.3	185.5	162
2011 . .	110.5	99.8	2.2	8.4	136.8	133.1	3.2	.6	-26.3	159.2	136
2012 . .	116.4	106.8	2.6	7.1	146.1	142.2	3.4	.5	-29.7	129.5	109
2013 . .	122.6	114.2	3.0	5.4	157.3	153.2	3.5	.5	-34.6	94.9	82
2014 . .	128.7	121.6	3.4	3.7	168.4	164.1	3.7	.5	-39.7	55.2	56
2015 . .	134.6	129.0	3.8	1.9	179.5	175.0	4.0	.5	-44.9	10.3	31
2016 . .	[c]	138.2	4.2	[c]	190.9	186.1	4.2	.5	[c]	[c]	5
2017 . .	[c]	145.5	4.6	[c]	202.6	197.7	4.5	.5	[c]	[c]	[c]
2018 . .	[c]	153.4	5.0	[c]	214.9	209.7	4.8	.5	[c]	[c]	[c]
2019 . .	[c]	161.6	5.5	[c]	227.9	222.3	5.0	.5	[c]	[c]	[c]

[a] "Total Income" column includes transfers made between the DI Trust Fund and the General Fund of the Treasury that are not included in the separate components of income shown. These transfers consist of payments for the cost of noncontributory wage credits for military service before 1957. In particular, a transfer was made in December 2007 in the amount of $7.7 million from the General Fund of the Treasury to the DI Trust Fund. After 2009 such transfers are estimated to be less than $500,000 in each year.
[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] The DI Trust Fund is projected to be exhausted in fiscal years 2019 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 2019 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 2005-19

[Dollar amounts in billions]

	Income				Cost				Assets		
Fiscal year	Total[a]	Net contributions	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:											
2005 . .	$696.8	$588.4	$16.5	$91.8	$523.3	$514.2	$5.2	$3.9	$173.5	$1,808.9	313
2006 . .	733.7	620.0	16.4	97.7	548.5	539.3	5.3	3.8	185.2	1,994.2	330
2007 . .	771.8	647.4	18.0	106.4	585.3	575.8	5.5	4.0	186.5	2,180.6	341
2008 . .	802.7	671.2	17.8	113.7	617.0	607.2	5.8	4.1	185.7	2,366.3	353
2009 . .	807.0	668.2	20.8	118.0	669.7	659.6	6.0	4.1	137.3	2,503.6	353
Intermediate:											
2010 . .	790.3	647.5	24.3	118.5	707.3	696.2	6.6	4.4	83.1	2,586.7	354
2011 . .	841.1	695.8	26.9	118.5	735.1	723.5	7.1	4.5	106.0	2,692.7	352
2012 . .	892.0	739.2	29.6	123.2	769.8	757.8	7.4	4.5	122.2	2,814.9	350
2013 . .	953.1	787.9	33.4	131.8	815.3	803.1	7.6	4.5	137.8	2,952.8	345
2014 . .	1,014.4	835.2	37.1	142.1	867.7	855.1	7.9	4.6	146.7	3,099.4	340
2015 . .	1,076.1	881.6	40.7	153.8	925.2	912.2	8.2	4.8	150.9	3,250.3	335
2016 . .	1,148.7	939.8	44.6	164.4	987.1	973.7	8.6	4.8	161.6	3,412.0	329
2017 . .	1,210.2	985.5	48.8	175.9	1,054.1	1,040.0	9.0	5.2	156.1	3,568.0	324
2018 . .	1,276.1	1,034.7	52.8	188.6	1,125.7	1,111.0	9.3	5.4	150.3	3,718.4	317
2019 . .	1,337.8	1,082.1	56.8	198.8	1,202.5	1,187.2	9.8	5.6	135.3	3,853.7	309
Low-cost:											
2010 . .	791.7	648.9	24.3	118.5	705.8	694.8	6.6	4.4	85.8	2,589.5	355
2011 . .	852.2	706.0	26.8	119.5	730.8	719.3	7.1	4.5	121.4	2,710.8	354
2012 . .	903.6	749.7	29.3	124.6	758.8	746.9	7.4	4.5	144.8	2,855.6	357
2013 . .	964.8	799.2	32.7	132.9	795.7	783.7	7.6	4.4	169.1	3,024.7	359
2014 . .	1,025.4	845.4	36.0	144.0	837.8	825.5	7.8	4.5	187.6	3,212.3	361
2015 . .	1,084.5	890.3	39.0	155.2	882.8	870.1	8.1	4.6	201.7	3,414.0	364
2016 . .	1,155.5	945.9	42.3	167.3	930.9	918.0	8.4	4.6	224.6	3,638.6	367
2017 . .	1,212.4	986.6	45.8	180.0	983.3	969.8	8.7	4.8	229.1	3,867.7	370
2018 . .	1,275.3	1,030.9	49.1	195.3	1,039.1	1,025.1	9.0	4.9	236.2	4,103.9	372
2019 . .	1,335.2	1,073.2	52.3	209.6	1,098.8	1,084.3	9.4	5.1	236.4	4,340.3	373
High-cost:											
2010 . .	789.1	646.3	24.3	118.4	708.7	697.7	6.6	4.4	80.3	2,583.9	353
2011 . .	832.6	687.8	27.0	117.9	739.4	727.9	7.1	4.5	93.2	2,677.2	349
2012 . .	889.5	735.9	30.0	123.6	782.1	770.2	7.4	4.5	107.4	2,784.5	342
2013 . .	958.0	786.8	34.5	136.7	846.1	833.7	7.7	4.6	111.9	2,896.5	329
2014 . .	1,024.5	837.5	39.0	148.0	918.1	905.2	8.1	4.8	106.4	3,002.9	315
2015 . .	1,089.1	888.4	43.4	157.4	992.3	978.7	8.5	5.1	96.9	3,099.8	303
2016 . .	1,166.5	952.3	48.0	166.2	1,071.1	1,056.9	8.9	5.3	95.4	3,195.2	289
2017 . .	1,229.6	1,002.5	53.2	173.9	1,156.5	1,141.5	9.4	5.7	73.0	3,268.2	276
2018 . .	1,296.3	1,057.0	58.1	181.1	1,248.3	1,232.5	9.8	6.0	48.0	3,316.2	262
2019 . .	1,361.6	1,113.0	63.3	185.4	1,347.4	1,330.8	10.3	6.3	14.3	3,330.4	246

[a] "Total Income" column includes transfers made between the OASI and DI Trust Funds and the General Fund of the Treasury that are not included in the separate components of income shown. These transfers consist of payments for (1) the cost of noncontributory wage credits for military service before 1957 and (2) the cost of benefits to certain uninsured persons who attained age 72 before 1968.

[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.

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. Because the annual payroll tax rate is constant for the entire 75-year valuation period, the income rate varies only slightly with changes in assumptions and, therefore, 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 2009 level and to reach the various ultimate values in 2034.

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: 2010-34	14.98	14.99	14.99
50-year: 2010-59	14.25	14.23	14.22
75-year: 2010-84	14.06	14.01	13.96
Summarized cost rate:			
25-year: 2010-34	15.21	15.23	15.26
50-year: 2010-59	15.79	15.68	15.58
75-year: 2010-84	16.35	15.93	15.52
Actuarial balance:			
25-year: 2010-34	-.23	-.25	-.27
50-year: 2010-59	-1.54	-1.45	-1.36
75-year: 2010-84	-2.29	-1.92	-1.56
Annual balance for 2084	-6.37	-4.12	-2.30
Year of combined trust fund exhaustion	2038	2037	2037

[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 2034.
[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 16.35 to 15.52 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 0.04 percent of taxable payroll, the 75-year actuarial balance varies over a much wider range, from -2.29 to -1.56 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 2009-84. 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 0.33 percent, 0.79 percent, and 1.32 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]		
	0.33 percent	0.79 percent	1.32 percent
Summarized income rate:			
25-year: 2010-34	14.99	14.99	14.99
50-year: 2010-59	14.22	14.23	14.25
75-year: 2010-84	13.98	14.01	14.04
Summarized cost rate:			
25-year: 2010-34	15.06	15.23	15.42
50-year: 2010-59	15.24	15.68	16.17
75-year: 2010-84	15.29	15.93	16.61
Actuarial balance:			
25-year: 2010-34	-.07	-.25	-.43
50-year: 2010-59	-1.02	-1.45	-1.92
75-year: 2010-84	-1.30	-1.92	-2.58
Annual balance for 2084	-2.70	-4.12	-5.52
Year of combined trust fund exhaustion	2040	2037	2036

[a] The average annual death-rate reduction is the average annual geometric rate of decline in the age-sex-adjusted death rate between 2009 and 2084. The overall decreases from the age-sex-adjusted death rate in 2009 to the corresponding rate in 2084 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 0.33 percent from the alternative I assumptions, 0.79 percent from the alternative II assumptions, and 1.32 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 15.06 percent (for an average annual death-rate reduction of 0.33 percent) to 15.42 percent (for an average annual death-rate reduction of 1.32 percent). The 75-year cost rate increases from 15.29 to 16.61 percent. The actuarial balance decreases from -0.07 to -0.43 percent for the 25-year period, and from -1.30 to -2.58 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, thereby resulting 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, 780,000 persons, 1,065,000 persons, and 1,370,000 persons, consistent with for 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]		
	780,000	1,065,000	1,370,000
Summarized income rate:			
25-year: 2010-34	15.01	14.99	14.96
50-year: 2010-59	14.27	14.23	14.20
75-year: 2010-84	14.04	14.01	13.97
Summarized cost rate:			
25-year: 2010-34	15.36	15.23	15.10
50-year: 2010-59	15.88	15.68	15.48
75-year: 2010-84	16.16	15.93	15.69
Actuarial balance:			
25-year: 2010-34	-.34	-.25	-.14
50-year: 2010-59	-1.62	-1.45	-1.28
75-year: 2010-84	-2.12	-1.92	-1.72
Annual balance for 2084	-4.52	-4.12	-3.75
Year of combined trust fund exhaustion	2037	2037	2039

[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 780,000 from the alternative III assumptions, 1,065,000 from the alternative II assumptions, and 1,370,000 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 15.36 percent of taxable payroll (for average annual net immigration of 780,000 persons) to 15.10 percent (for average annual net immigration of 1,370,000 persons). For the 50-year period, it decreases from 15.88 percent to 15.48 percent, and for the 75-year period, it decreases from 16.16 percent to 15.69 percent. The actuarial balance increases from -0.34 to -0.14 percent for the 25-year period, from -1.62 to -1.28 percent for the 50-year period, and from -2.12 to -1.72 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 15.86 percent (for a real-wage differential of 0.6 percentage point) to 14.61 percent (for a differential of 1.8 percentage points). For the 50-year period, it decreases from 16.61 to 14.76 percent, and for the 75-year period it decreases from 16.95 to 14.90 percent. The actuarial balance increases from -0.73 to +0.24 percent for the 25-year period, from -2.20 to -0.70 percent for the 50-year period, and from -2.74 to -1.09 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: 2010-34	15.13	14.99	14.85
50-year: 2010-59	14.41	14.23	14.06
75-year: 2010-84	14.21	14.01	13.82
Summarized cost rate:			
25-year: 2010-34	15.86	15.23	14.61
50-year: 2010-59	16.61	15.68	14.76
75-year: 2010-84	16.95	15.93	14.90
Actuarial balance:			
25-year: 2010-34	-.73	-.25	+.24
50-year: 2010-59	-2.20	-1.45	-.70
75-year: 2010-84	-2.74	-1.92	-1.09
Annual balance for 2084	-5.82	-4.12	-2.59
Year of combined trust fund exhaustion	2034	2037	2046

[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 are not affected by changes in wages, but only in prices. Each 0.5-percentage-point increase in the assumed real-wage differential increases the long-range actuarial balance by about 0.69 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: 2010-34	15.03	14.99	14.94
50-year: 2010-59	14.27	14.23	14.20
75-year: 2010-84	14.04	14.01	13.98
Summarized cost rate:			
25-year: 2010-34	15.39	15.23	15.06
50-year: 2010-59	15.89	15.68	15.46
75-year: 2010-84	16.15	15.93	15.68
Actuarial balance:			
25-year: 2010-34	-.36	-.25	-.12
50-year: 2010-59	-1.62	-1.45	-1.26
75-year: 2010-84	-2.12	-1.92	-1.71
Annual balance for 2084	-4.39	-4.12	-3.82
Year of combined trust fund exhaustion	2036	2037	2039

[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 15.39 (for CPI increases of 1.8 percent) to 15.06 percent (for CPI increases of 3.8 percent). For the 50-year period, it decreases from 15.89 to 15.46 percent, and for the 75-year period, it decreases from 16.15 to 15.68 percent. The actuarial balance increases from -0.36 to -0.12 percent for the 25-year period, from -1.62 to -1.26 percent for the 50-year period, and from -2.12 to -1.71 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, thereby resulting in lower cost rates. The effect of each 1.0-percentage-point increase in the rate of change assumed for the CPI is an increase in the long-range actuarial balance of 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), resulting 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: 2010-34	14.87	14.99	15.08
50-year: 2010-59	14.09	14.23	14.36
75-year: 2010-84	13.85	14.01	14.15
Summarized cost rate:			
25-year: 2010-34	15.36	15.23	15.12
50-year: 2010-59	15.86	15.68	15.53
75-year: 2010-84	16.16	15.93	15.74
Actuarial balance:			
25-year: 2010-34	-.49	-.25	-.04
50-year: 2010-59	-1.77	-1.45	-1.17
75-year: 2010-84	-2.30	-1.92	-1.58
Annual balance for 2084	-4.12	-4.12	-4.12
Year of combined trust fund exhaustion	2036	2037	2039

[a] The ultimate real interest rate is defined to be 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 15.36 percent (for an ultimate real interest rate of 2.1 percent) to

15.12 percent (for an ultimate real interest rate of 3.6 percent). For the 50-year period, it decreases from 15.86 to 15.53 percent, and for the 75-year period, it decreases from 16.16 to 15.74 percent. The actuarial balance increases from -0.49 to -0.04 percent for the 25-year period, from -1.77 to -1.17 percent for the 50-year period, and from -2.30 to -1.58 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 2029. In comparison to the historical period 1970 through 2009, the ultimate age-sex-adjusted incidence rate is 2 percent higher 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: 2010-34	14.98	14.99	14.99
50-year: 2010-59	14.23	14.23	14.24
75-year: 2010-84	14.00	14.01	14.01
Summarized cost rate:			
25-year: 2010-34	15.01	15.23	15.46
50-year: 2010-59	15.41	15.68	15.96
75-year: 2010-84	15.64	15.93	16.22
Actuarial balance:			
25-year: 2010-34	-.02	-.25	-.47
50-year: 2010-59	-1.18	-1.45	-1.72
75-year: 2010-84	-1.64	-1.92	-2.20
Annual balance for 2084	-3.78	-4.12	-4.44
Year of combined trust fund exhaustion	2040	2037	2036

For the 25-year period, the cost rate increases with increasing disability incidence rates, from 15.01 percent (for the relatively low rates assumed for alternative I) to 15.46 percent (for the relatively high rates assumed for alternative III). For the 50-year period, it increases from 15.41 to 15.96 percent, and for the 75-year period, it increases from 15.64 to 16.22 percent.

The actuarial balance decreases from -0.02 to -0.47 percent for the 25-year period, from -1.18 to -1.72 percent for the 50-year period, and from -1.64 to -2.20 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 60 percent lower than the level in 2009. For alternative I, the age-sex-adjusted death rate is assumed to decline to a level in 2085 that is about 29 percent lower than the level in 2009. For alternative III, the age-sex-adjusted death rate is assumed to decline to a level in 2085 that is about 74 percent lower than the level in 2009.

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 2029 is about 11 recoveries per thousand disabled-worker beneficiaries. For alternative I, the age-sex-adjusted recovery rate in 2029 is about 13 recoveries per thousand disabled-worker beneficiaries. For alternative III, the age-sex-adjusted recovery rate in 2029 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: 2010-34	14.99	14.99	14.99
50-year: 2010-59	14.23	14.23	14.23
75-year: 2010-84	14.01	14.01	14.01
Summarized cost rate:			
25-year: 2010-34	15.19	15.23	15.27
50-year: 2010-59	15.63	15.68	15.73
75-year: 2010-84	15.87	15.93	15.97
Actuarial balance:			
25-year: 2010-34	-.21	-.25	-.29
50-year: 2010-59	-1.40	-1.45	-1.50
75-year: 2010-84	-1.86	-1.92	-1.96
Annual balance for 2084	-4.03	-4.12	-4.16
Year of combined trust fund exhaustion	2038	2037	2037

For the 25-year period, the cost rate increases with decreasing disability termination rates, from 15.19 percent (for the relatively high termination rates assumed for alternative I) to 15.27 percent (for the relatively low termination rates assumed for alternative III). For the 50-year period, it increases from 15.63 to 15.73 percent, and for the 75-year period, it increases from 15.87 to 15.97 percent. The actuarial balance decreases from -0.21 to -0.29 percent for the 25-year period, from -1.40 to -1.50 percent for the 50-year period, and from -1.86 to -1.96 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. It is intended to supplement the traditional methods of examining such uncertainty and to illustrate the potential value of stochastic techniques.

1. Background

The Trustees Report has traditionally shown additional 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.

It should be noted that this model is subject to further development. Future improvements and refinements are expected to be more likely 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 assuming separate, specified values for each of these variables. More details about each of these assumptions can be found in section V.

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 reflected in the historical period. For some variables, the equations additionally reflect relationships with other variables. Parameters for the equations are estimated using historical data for periods between 20 years and 110 years depending on the nature and quality of data available. Each time-series equation is designed such 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 of the model, 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 rather than individually modeling 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 model simulations.

The results from this model should be interpreted with caution and with an understanding of the inherent 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. In addition, results would differ if random variations had been applied to additional variables (such as labor force participation rates, retirement rates, marriage rates, and divorce rates) besides those mentioned above. 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 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

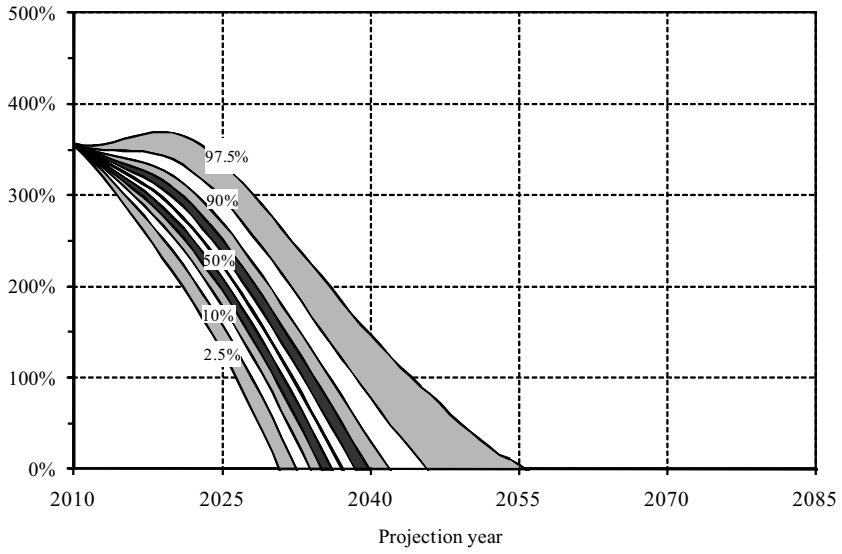
Simulated probability distributions of the annual trust fund ratios for the combined OASI and DI Trust Funds are shown in figure VI.E1. The two extreme lines in this figure illustrate the range within which future annual trust fund ratios are estimated to occur 95 percent of the time (i.e., a 95-percent confidence interval). In other words, actual future trust fund ratios in a given year would be expected to exceed the upper bound only 2.5 percent of

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

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 is projected by this model to fall exactly in the middle of possible outcomes for that year. It is important to note that 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 2037 with a probability of 50 percent. This exhaustion date is the same as the year of exhaustion projected under the intermediate assumptions. Figure VI.E1 shows that the 95-percent confidence interval for the trust fund ratio in 2025 ranges from 336 to 129 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 363 and 122 percent, respectively. By 2084, the range represented by the low-cost and high-cost projections increases substantially beyond the boundaries of the 95-percent stochastic confidence interval, as seen from the values for the open group unfunded obligation in table VI.E1. This increased variation of the alternatives relative to the stochastic confidence interval is also seen in the positive trust fund ratio for the low-cost scenario for 2084.

Figure VI.E1.—Annual Trust Fund Ratios



The probability distribution of the year-by-year OASDI cost rates (i.e., cost as a percentage of taxable payroll) is shown in figure VI.E2. The range of the cost rates widens as the projections move further into the future, reflecting increasing uncertainty. The income rate under the intermediate assumptions is also included in the figure in order to give some indication of the patterns of cash flow for the OASDI program. Only this income rate is included because of the relatively small 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. It is important to note that 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 for the low-cost and high-cost alternatives described earlier are 14.28 percent of payroll and 19.67 percent of payroll, respectively. These are close to the limits of the 95-percent confidence interval (14.55 and 19.17 percent of payroll), as can be seen in figure VI.E2. By 2084, the cost rates for these alternatives, 12.31 and 25.36 percent of payroll, are still close to the limits of the 95-percent confidence interval (13.04 and 24.35 percent of payroll).

Figure VI.E2.—Annual Cost Rates

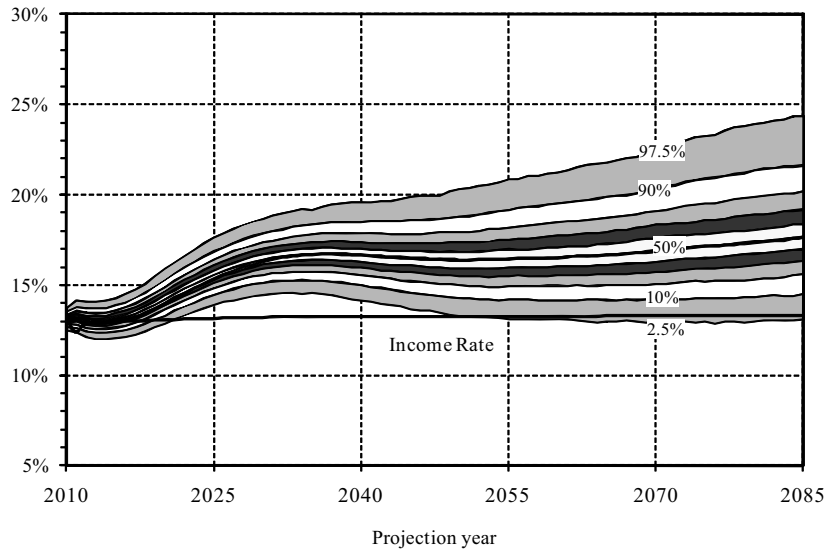


Table VI.E1 displays long-range actuarial estimates that illustrate uncertainty for the combined OASDI program using both the deterministic and stochastic approaches. Actuarial estimates included in the table are for the long-range period, 2010-84. Stochastic estimates are shown for the median (50th 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.

Median stochastic estimates for the actuarial measures displayed in table VI.E1 are, in general, slightly more pessimistic for the combined OASI and DI Trust Funds than the deterministic estimates projected under the intermediate assumptions. The median estimate of the long-range actuarial balance is -2.01 percent of taxable payroll, about 0.09 percentage point lower than projected under the intermediate assumptions. The median year for which cost first exceeds tax income and remains in excess of tax income throughout the remainder of the long-range period is 2016. This is 1 year later than projected under the intermediate assumptions. The median year for which assets first become exhausted is 2037. This is the same year as projected under the intermediate assumptions. The median estimates of the annual cost rate for the 75th year of the projection period are 17.62 percent of taxable payroll and 6.05 percent of gross domestic product (GDP). The comparable estimates using the intermediate assumptions are 17.43 percent of payroll and 6.02 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 four of the measures in table VI.E1 (the actuarial balance, the open group unfunded obligation, the first year assets become exhausted, and the annual cost in the 75th year of the projection period expressed as a percentage of payroll), the 95-percent stochastic confidence interval is narrower than the range defined by the low-cost and high-cost alternatives. That is, 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. In contrast, for one of the measures in the table (the annual cost in the 75th year of the projection period expressed as a percentage of GDP), the 95-percent stochastic confidence interval includes the estimates under the low-cost and high-cost alternatives. For the remaining measure in the table (the first year cost exceeds tax income and remains in excess through 2084), the low-cost estimate of a

surplus in 2084 and the high-cost estimate of a deficit in all of the projection years are consistent with the bounds of the 95-percent stochastic confidence interval.

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	
	Interme-diate	Low-cost	High-cost	Median 50th percentile	10th percentile	90th percentile	2.5th percentile	97.5th percentile
Actuarial balance	-1.92	0.59	-5.26	-2.01	-3.12	-1.00	-3.75	-0.51
Open group unfunded obligation (in trillions)	$5.4	-$2.2	$15.5	$5.7	$9.5	$2.7	$11.8	$1.2
First year cost exceeds tax income and remains in excess through 2084 . .	2015	[a]	2010	2016	2010	2058	2010	[b]
First year assets become exhausted[c]	2037	[d]	2029	2037	2032	2045	2030	2055
Annual cost in 75th year (percent of taxable payroll)	17.43	12.31	25.36	17.62	14.41	21.59	13.04	24.35
Annual cost in 75th year (percent of GDP).	6.02	4.59	8.12	6.05	4.83	7.54	4.30	8.52

[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 tax income in 2084.

[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. Estimates for the HI program shown in this appendix reflect the effects of the Patient Protection and Affordable Care Act of 2010 and the Health Care and Education Reconciliation Act of 2010. For more information on Medicare estimates see the 2010 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, combined OASDI and HI rates shown in this section are computed by adding the separately derived rates for the programs.

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. The OASDI and HI contribution rates for employees and their employers that are authorized in the Federal Insurance Contributions Act for these programs are shown in table VI.F1.

Table VI.F1.—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	HI over limit[b]	OASDI up to base[a]	HI all earnings	HI over limit[b]
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[c]	5.70	1.30	—	11.40	2.60	—
1985	5.70	1.35	—	11.40	2.70	—
1986-87	5.70	1.45	—	11.40	2.90	—
1988-89	6.06	1.45	—	12.12	2.90	—
1990-2012	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 2010.
[b] 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.
[c] See footnote a under table VI.A1 in the appendix titled "History of OASI and DI Trust Fund Operations" for a description of tax credits allowed against the combined OASDI and HI taxes on net earnings from self-employment in 1984-89.

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 generally rise 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, 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 33 percent from its current level by 2084, 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 11 percent by the end of the period, with positive annual balances in all years except for 2010-11 and 2025-38.

Table VI.F2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2010-85

[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:									
2010	12.33	13.09	-0.76	3.17	3.66	-0.49	15.50	16.75	-1.25
2011	12.91	13.04	-.12	3.18	3.63	-.46	16.09	16.67	-.58
2012	12.87	12.84	.03	3.19	3.55	-.36	16.06	16.40	-.33
2013	12.90	12.82	.08	3.31	3.47	-.16	16.21	16.29	-.08
2014	12.92	12.86	.06	3.33	3.41	-.09	16.25	16.28	-.03
2015	12.94	12.98	-.04	3.35	3.33	.02	16.28	16.30	-.02
2016	12.96	13.10	-.14	3.37	3.31	.06	16.33	16.41	-.09
2017	12.99	13.30	-.32	3.39	3.31	.07	16.38	16.62	-.24
2018	13.01	13.55	-.53	3.40	3.35	.06	16.42	16.89	-.47
2019	13.03	13.84	-.81	3.42	3.39	.03	16.45	17.23	-.78
2020	13.05	14.15	-1.10	3.44	3.46	-.02	16.49	17.61	-1.12
2025	13.13	15.54	-2.40	3.53	3.87	-.34	16.66	19.41	-2.74
2030	13.19	16.41	-3.21	3.62	4.31	-.69	16.81	20.71	-3.90
2035	13.22	16.73	-3.50	3.69	4.68	-.99	16.91	21.40	-4.49
2040	13.23	16.64	-3.41	3.75	4.89	-1.14	16.98	21.54	-4.56
2045	13.23	16.44	-3.22	3.81	4.99	-1.18	17.04	21.43	-4.39
2050	13.23	16.33	-3.11	3.88	5.00	-1.13	17.10	21.34	-4.24
2055	13.23	16.37	-3.14	3.95	4.99	-1.04	17.18	21.36	-4.18
2060	13.24	16.48	-3.24	4.02	4.99	-.98	17.26	21.48	-4.22
2065	13.25	16.62	-3.36	4.08	5.00	-.92	17.34	21.62	-4.28
2070	13.27	16.81	-3.54	4.15	5.01	-.86	17.41	21.82	-4.40
2075	13.28	17.03	-3.75	4.21	4.99	-.78	17.49	22.02	-4.53
2080	13.30	17.25	-3.95	4.26	4.92	-.66	17.56	22.18	-4.62
2085	13.31	17.47	-4.16	4.31	4.83	-.52	17.62	22.30	-4.68
Low-cost:									
2010	12.29	12.95	-.66	3.17	3.53	-.36	15.46	16.48	-1.02
2011	12.94	12.79	.14	3.17	3.45	-.28	16.11	16.25	-.14
2012	12.86	12.44	.42	3.19	3.27	-.08	16.04	15.71	.34
2013	12.88	12.31	.57	3.30	3.13	.17	16.18	15.45	.73
2014	12.90	12.24	.66	3.31	3.03	.29	16.21	15.26	.95
2015	12.91	12.24	.67	3.33	2.89	.44	16.24	15.13	1.11
2016	12.93	12.26	.67	3.34	2.82	.53	16.27	15.08	1.19
2017	12.95	12.38	.57	3.36	2.77	.59	16.31	15.15	1.16
2018	12.98	12.54	.44	3.37	2.75	.63	16.35	15.28	1.07
2019	12.98	12.73	.25	3.39	2.73	.66	16.37	15.46	.91
2020	13.00	12.93	.06	3.40	2.74	.67	16.40	15.67	.73
2025	13.06	13.82	-.76	3.47	2.79	.68	16.53	16.61	-.08
2030	13.09	14.28	-1.19	3.54	2.83	.71	16.63	17.11	-.48
2035	13.10	14.28	-1.17	3.59	2.80	.79	16.69	17.07	-.38
2040	13.09	13.92	-.83	3.63	2.68	.95	16.72	16.60	.13
2045	13.08	13.48	-.40	3.67	2.55	1.12	16.75	16.03	.72
2050	13.06	13.15	-.09	3.72	2.44	1.27	16.78	15.59	1.19
2055	13.06	12.94	.12	3.77	2.38	1.39	16.83	15.32	1.51
2060	13.05	12.80	.25	3.83	2.36	1.46	16.88	15.16	1.72
2065	13.05	12.64	.41	3.88	2.37	1.51	16.93	15.01	1.92
2070	13.04	12.49	.55	3.93	2.37	1.56	16.97	14.86	2.11
2075	13.04	12.38	.66	3.98	2.36	1.61	17.01	14.74	2.27
2080	13.03	12.31	.72	4.02	2.33	1.69	17.05	14.64	2.41
2085	13.03	12.32	.72	4.06	2.29	1.78	17.10	14.61	2.49

Table VI.F2.—OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2010-85 (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:									
2010	12.37	13.23	-0.85	3.17	3.78	-0.61	15.55	17.01	-1.46
2011	12.88	13.23	-.35	3.18	3.82	-.64	16.07	17.05	-.98
2012	12.88	13.14	-.26	3.20	3.85	-.66	16.08	17.00	-.92
2013	12.92	13.39	-.47	3.32	3.85	-.52	16.24	17.24	-.99
2014	12.95	13.62	-.67	3.35	3.86	-.52	16.29	17.48	-1.19
2015	12.97	13.83	-.86	3.37	3.84	-.47	16.34	17.67	-1.33
2016	13.00	14.05	-1.05	3.39	3.90	-.51	16.39	17.95	-1.56
2017	13.03	14.37	-1.34	3.42	3.99	-.57	16.45	18.36	-1.91
2018	13.06	14.71	-1.65	3.44	4.11	-.67	16.50	18.82	-2.32
2019	13.08	15.09	-2.01	3.46	4.24	-.78	16.54	19.33	-2.80
2020	13.11	15.50	-2.40	3.48	4.41	-.93	16.59	19.92	-3.33
2025	13.22	17.47	-4.25	3.60	5.45	-1.85	16.82	22.91	-6.10
2030	13.31	18.85	-5.54	3.71	6.68	-2.97	17.02	25.53	-8.52
2035	13.37	19.67	-6.30	3.81	8.01	-4.21	17.17	27.68	-10.50
2040	13.40	20.03	-6.62	3.89	9.15	-5.26	17.29	29.18	-11.88
2045	13.42	20.26	-6.84	3.98	9.97	-5.99	17.40	30.23	-12.83
2050	13.44	20.57	-7.12	4.07	10.47	-6.40	17.51	31.04	-13.53
2055	13.48	21.04	-7.57	4.16	10.71	-6.55	17.63	31.75	-14.12
2060	13.51	21.62	-8.11	4.25	10.78	-6.53	17.76	32.40	-14.64
2065	13.55	22.28	-8.72	4.34	10.80	-6.46	17.89	33.07	-15.19
2070	13.60	23.08	-9.48	4.42	10.81	-6.39	18.02	33.89	-15.87
2075	13.66	23.97	-10.31	4.51	10.77	-6.26	18.16	34.73	-16.57
2080	13.71	24.79	-11.08	4.58	10.63	-6.04	18.29	35.42	-17.13
2085	13.75	25.49	-11.74	4.65	10.43	-5.77	18.40	35.91	-17.51

[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 2010-84

[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:									
2010-34	14.99	15.23	-0.25	3.64	3.94	-0.30	18.63	19.18	-0.55
50-year:									
2010-59	14.23	15.68	-1.45	3.72	4.35	-.63	17.96	20.04	-2.08
75-year:									
2010-84	14.01	15.93	-1.92	3.83	4.49	-.66	17.84	20.42	-2.58
Low-cost:									
25-year:									
2010-34	14.91	13.80	1.12	3.60	2.99	.61	18.52	16.79	1.72
50-year:									
2010-59	14.12	13.57	.55	3.64	2.78	.86	17.76	16.35	1.41
75-year:									
2010-84	13.85	13.26	.59	3.72	2.67	1.05	17.56	15.92	1.64
High-cost:									
25-year:									
2010-34	15.04	16.90	-1.86	3.69	5.39	-1.70	18.73	22.29	-3.56
50-year:									
2010-59	14.35	18.34	-4.00	3.83	7.32	-3.49	18.18	25.67	-7.49
75-year:									
2010-84	14.18	19.44	-5.26	3.97	8.08	-4.11	18.15	27.52	-9.37

[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, 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.

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. The estimated GDP on which these percentages are based is also shown in table VI.F4. For OASDI, income excluding interest consists of payroll-tax contributions and proceeds from taxation of benefits. Cost consists of benefit payments, administrative expenses, net transfers from the trust funds to 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) and proceeds from taxation of OASDI benefits. 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 2010 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 2011 through 2020. After 2020, deficits increase to a peak in 2032 and decrease thereafter. By 2052, the OASDI balance becomes positive, reaching 0.27 percent of GDP in 2084. On the basis of the intermediate assumptions the OASDI balance is projected to be positive for 2012-14, and negative for all other years of the projection period. Annual deficits start in 2015, increase 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 2010-12 under the low-cost assumptions, and then positive and generally

increasing thereafter. Under the intermediate assumptions, the HI balance is projected to be negative from 2010-14, positive from 2015-19, and negative thereafter. Annual deficits start in 2020, increase through 2044, and decline steadily 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 2010-11, positive from 2012 through 2025, negative from 2026 through 2037, then positive and steadily rising thereafter. Under the intermediate assumptions, combined OASDI and HI annual deficits decline through 2015, then rise, reaching a peak in 2038. After 2038, annual deficits fluctuate between about 1.6 percent and 1.8 percent of GDP. Combined annual deficits rise steadily after 2012 under the high-cost assumptions.

By 2084, the combined OASDI and HI annual balances as percentages of GDP are projected to range from a positive balance of 1.08 percent for the low-cost assumptions to a deficit of 6.10 percent for the high-cost assumptions. Projected balances differ by a smaller amount for the tenth year, 2019, ranging from a positive balance of 0.41 percent for the low-cost assumptions to a deficit of 1.12 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 0.71 percent, based on the low-cost assumptions, to a deficit of 3.69 percent, based on the high-cost assumptions). The 25-year summarized balance varies by a smaller amount (from a positive balance of 0.70 percent to a deficit of 1.47 percent). Summarized rates are calculated on the present-value basis including the trust fund balances on January 1, 2010, 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 2010-85

	Percentage of GDP									
	OASDI			HI			Combined			GDP in dollars
Calendar year	Income[a]	Cost	Balance	Income[a]	Cost	Balance	Income[a]	Cost	Balance	(billions)
Intermediate:										
2010	4.56	4.84	-0.28	1.44	1.66	-0.22	6.00	6.50	-0.50	$14,775
2011	4.75	4.80	-.04	1.45	1.66	-.21	6.20	6.46	-.25	15,465
2012	4.77	4.76	.01	1.47	1.63	-.17	6.24	6.39	-.15	16,382
2013	4.78	4.75	.03	1.53	1.61	-.07	6.31	6.36	-.04	17,411
2014	4.80	4.78	.02	1.55	1.59	-.04	6.35	6.36	-.02	18,446
2015	4.81	4.83	-.02	1.56	1.55	.01	6.37	6.38	-.01	19,472
2016	4.84	4.90	-.05	1.58	1.55	.03	6.42	6.45	-.03	20,485
2017	4.86	4.98	-.12	1.59	1.56	.03	6.45	6.54	-.08	21,507
2018	4.88	5.08	-.20	1.60	1.58	.03	6.49	6.66	-.17	22,510
2019	4.89	5.20	-.30	1.61	1.60	.01	6.50	6.80	-.29	23,524
2020	4.89	5.30	-.41	1.62	1.63	-.01	6.51	6.93	-.42	24,607
2025	4.87	5.77	-.89	1.65	1.80	-.16	6.52	7.57	-1.05	30,797
2030	4.86	6.05	-1.18	1.67	1.99	-.32	6.54	8.04	-1.50	38,555
2035	4.85	6.14	-1.29	1.70	2.15	-.45	6.55	8.29	-1.74	48,369
2040	4.83	6.08	-1.25	1.72	2.24	-.52	6.55	8.32	-1.77	60,794
2045	4.80	5.97	-1.17	1.74	2.27	-.54	6.54	8.24	-1.70	76,335
2050	4.77	5.89	-1.12	1.76	2.27	-.51	6.53	8.16	-1.63	95,661
2055	4.74	5.87	-1.12	1.78	2.25	-.47	6.52	8.11	-1.59	119,636
2060	4.71	5.87	-1.15	1.80	2.23	-.44	6.51	8.10	-1.59	149,631
2065	4.69	5.88	-1.19	1.81	2.22	-.41	6.50	8.10	-1.60	187,168
2070	4.66	5.90	-1.24	1.83	2.21	-.38	6.49	8.11	-1.62	234,061
2075	4.63	5.94	-1.31	1.85	2.19	-.34	6.48	8.13	-1.65	292,476
2080	4.61	5.98	-1.37	1.86	2.15	-.29	6.47	8.13	-1.66	365,033
2085	4.60	6.03	-1.44	1.87	2.10	-.22	6.47	8.13	-1.66	455,253
Summarized rates: [b]										
25-year:										
2010-34 . . .	5.57	5.66	-.09	1.69	1.83	-.14	7.26	7.49	-.23	
50-year:										
2010-59 . . .	5.23	5.76	-.53	1.71	2.01	-.29	6.94	7.77	-.82	
75-year										
2010-84 . . .	5.09	5.79	-.70	1.74	2.04	-.30	6.83	7.83	-1.00	
Low-cost:										
2010	4.54	4.78	-.24	1.44	1.61	-.17	5.98	6.39	-.41	14,890
2011	4.76	4.71	.05	1.45	1.58	-.13	6.21	6.29	-.07	15,649
2012	4.78	4.62	.16	1.47	1.51	-.04	6.24	6.13	.12	16,580
2013	4.80	4.58	.21	1.53	1.45	.08	6.32	6.03	.29	17,576
2014	4.82	4.57	.25	1.54	1.41	.13	6.36	5.98	.38	18,559
2015	4.83	4.58	.25	1.55	1.35	.20	6.38	5.93	.46	19,521
2016	4.87	4.62	.25	1.57	1.32	.25	6.43	5.94	.50	20,441
2017	4.89	4.67	.22	1.58	1.30	.28	6.47	5.98	.49	21,329
2018	4.91	4.75	.17	1.59	1.29	.30	6.50	6.04	.46	22,192
2019	4.93	4.83	.10	1.60	1.29	.31	6.53	6.12	.41	23,071
2020	4.93	4.90	.02	1.61	1.29	.32	6.53	6.19	.34	24,057
2025	4.92	5.20	-.29	1.63	1.31	.32	6.54	6.51	.03	29,583
2030	4.91	5.36	-.45	1.65	1.32	.33	6.57	6.68	-.12	36,348
2035	4.91	5.35	-.44	1.67	1.30	.37	6.59	6.66	-.07	44,789
2040	4.91	5.22	-.31	1.69	1.25	.44	6.60	6.47	.13	55,441
2045	4.90	5.05	-.15	1.71	1.19	.52	6.61	6.23	.37	68,773
2050	4.89	4.92	-.03	1.73	1.14	.59	6.62	6.05	.56	85,326
2055	4.88	4.84	.04	1.75	1.10	.65	6.63	5.94	.69	105,860
2060	4.87	4.78	.09	1.78	1.10	.68	6.65	5.88	.77	131,443
2065	4.87	4.71	.15	1.80	1.10	.70	6.67	5.81	.85	163,441
2070	4.86	4.66	.20	1.82	1.10	.72	6.68	5.76	.93	203,535
2075	4.86	4.61	.25	1.84	1.09	.75	6.70	5.71	.99	253,561
2080	4.86	4.59	.27	1.86	1.08	.78	6.72	5.67	1.05	315,714
2085	4.87	4.60	.27	1.89	1.06	.82	6.75	5.66	1.09	392,795

Table VI.F4.—OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2010-85 (Cont.)

	Percentage of GDP									GDP in dollars (billions)
	OASDI			HI			Combined			
Calendar year	Income[a]	Cost	Balance	Income[a]	Cost	Balance	Income[a]	Cost	Balance	
Low-cost (cont.):										
Summarized rates: [b]										
25-year:										
2010-34 . . .	5.60	5.18	0.42	1.68	1.40	0.28	7.28	6.58	0.70	
50-year:										
2010-59 . . .	5.30	5.09	.21	1.70	1.30	.40	6.99	6.38	.61	
75-year										
2010-84 . . .	5.19	4.97	.22	1.73	1.24	.49	6.92	6.21	.71	
High-cost:										
2010	4.57	4.89	-.32	1.44	1.72	-.28	6.02	6.61	-.59	14,667
2011	4.74	4.86	-.13	1.45	1.74	-.29	6.19	6.61	-.42	15,350
2012	4.75	4.85	-.10	1.47	1.77	-.30	6.22	6.62	-.40	16,381
2013	4.76	4.93	-.17	1.54	1.78	-.24	6.29	6.71	-.41	17,511
2014	4.78	5.03	-.25	1.55	1.79	-.24	6.33	6.82	-.49	18,636
2015	4.79	5.11	-.32	1.57	1.79	-.22	6.36	6.90	-.54	19,789
2016	4.82	5.21	-.39	1.59	1.83	-.24	6.41	7.04	-.63	20,941
2017	4.84	5.34	-.50	1.60	1.87	-.27	6.45	7.21	-.77	22,070
2018	4.86	5.47	-.61	1.62	1.93	-.32	6.48	7.41	-.93	23,245
2019	4.86	5.61	-.75	1.63	2.00	-.37	6.49	7.60	-1.12	24,488
2020	4.86	5.75	-.89	1.64	2.07	-.44	6.49	7.82	-1.33	25,718
2025	4.84	6.39	-1.55	1.67	2.53	-.86	6.51	8.92	-2.41	32,760
2030	4.82	6.83	-2.01	1.70	3.07	-1.36	6.52	9.90	-3.37	41,802
2035	4.80	7.06	-2.26	1.73	3.65	-1.92	6.53	10.71	-4.18	53,411
2040	4.77	7.13	-2.36	1.76	4.13	-2.37	6.53	11.26	-4.73	68,159
2045	4.73	7.14	-2.41	1.78	4.46	-2.68	6.51	11.59	-5.09	86,564
2050	4.68	7.16	-2.48	1.80	4.63	-2.83	6.48	11.79	-5.31	109,432
2055	4.64	7.24	-2.60	1.82	4.68	-2.86	6.45	11.92	-5.46	137,686
2060	4.59	7.35	-2.76	1.83	4.65	-2.82	6.43	12.00	-5.57	173,017
2065	4.55	7.47	-2.93	1.85	4.61	-2.76	6.40	12.08	-5.68	217,204
2070	4.50	7.64	-3.14	1.86	4.55	-2.69	6.37	12.20	-5.83	271,938
2075	4.47	7.84	-3.37	1.87	4.48	-2.60	6.34	12.32	-5.98	339,702
2080	4.43	8.01	-3.58	1.89	4.37	-2.49	6.31	12.38	-6.07	423,609
2085	4.39	8.15	-3.75	1.89	4.25	-2.35	6.29	12.39	-6.10	527,853
Summarized rates: [b]										
25-year:										
2010-34 . . .	5.52	6.20	-.68	1.71	2.50	-.79	7.23	8.70	-1.47	
50-year:										
2010-59 . . .	5.16	6.60	-1.44	1.74	3.33	-1.59	6.91	9.93	-3.03	
75-year										
2010-84 . . .	5.00	6.86	-1.85	1.77	3.61	-1.83	6.77	10.46	-3.69	

[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 including the value of the trust funds on January 1, 2010, and the cost of reaching a target trust fund level equal to 100 percent of annual cost at the end of the period.

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

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 2010-85

Calendar year	Intermediate	Low-cost	High-cost
2010	0.369	0.369	0.370
2011	.368	.368	.368
2012	.370	.372	.369
2013	.371	.372	.368
2014	.371	.374	.369
2015	.372	.374	.370
2016	.374	.376	.371
2017	.374	.377	.372
2018	.375	.379	.372
2019	.376	.379	.371
2020	.375	.379	.371
2025	.371	.377	.366
2030	.369	.375	.362
2035	.367	.375	.359
2040	.365	.375	.356
2045	.363	.374	.352
2050	.361	.374	.348
2055	.358	.374	.344
2060	.356	.373	.340
2065	.354	.373	.336
2070	.351	.373	.331
2075	.349	.373	.327
2080	.347	.373	.323
2085	.345	.373	.320

Projections of GDP are based on the projected increases in U.S. employment, labor productivity, average hours worked, and the GDP implicit price 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 0.22 percent for the 40 years from 1968 to 2008. For the 10-year periods 1968-78, 1978-88, 1988-98, and 1998-2008, the average annual rates of change were -0.63, -0.16, 0.11 and -0.19 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 2010-19 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.

Analysts select the index that provides the most useful standard for adjusting dollar amounts, over time, in order to produce appropriately comparable values. Table VI.F6 presents five such indices for adjustment. Adjustment of any series of values is accomplished 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. One such price index is the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W, hereafter referred to as CPI), which is published by the Bureau of Labor Statistics, Department of Labor. This is the index 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. Constant-dollar values 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 average annual wage is assumed to increase ultimately by 3.6, 4.0, and 4.4 percent under the low-cost, intermediate, and high-cost assumptions, respectively. 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 values, divided by the taxable payroll, indicates the percentage of payroll that each value represents, and thus the extent to which the series of values increases or decreases as a percent of payroll over time.

The GDP index adjusts for the growth in the aggregate amount of goods and services produced in the United States. Values adjusted by GDP (see 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 2009-85
[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:					
2009	98.03	$41,067.93	$5,273	$14,256	0.9671
2010	100.00	43,083.76	5,459	14,775	1.0000
2011	101.66	44,686.82	5,690	15,465	1.0456
2012	104.00	46,758.30	6,069	16,382	1.1047
2013	106.79	48,977.62	6,454	17,411	1.1723
2014	109.78	51,215.47	6,852	18,446	1.2444
2015	112.85	53,396.92	7,243	19,472	1.3195
2016	116.01	55,737.60	7,656	20,485	1.3981
2017	119.26	58,103.49	8,052	21,507	1.4810
2018	122.60	60,522.33	8,446	22,510	1.5674
2019	126.03	63,017.19	8,834	23,524	1.6581
2020	129.56	65,464.98	9,226	24,607	1.7540
2025	148.74	79,200.41	11,431	30,797	2.3231
2030	170.76	96,312.61	14,215	38,555	3.0769
2035	196.05	117,373.41	17,746	48,369	4.0753
2040	225.07	143,066.89	22,198	60,794	5.3976
2045	258.40	174,083.99	27,713	76,335	7.1490
2050	296.66	211,536.51	34,504	95,661	9.4686
2055	340.58	256,839.61	42,876	119,636	12.5409
2060	391.01	311,681.52	53,269	149,631	16.6101
2065	448.90	378,209.64	66,177	187,168	21.9996
2070	515.37	458,871.71	82,183	234,061	29.1378
2075	591.68	557,029.59	102,035	292,476	38.5922
2080	679.28	676,754.77	126,624	365,033	51.1142
2085	779.86	822,998.71	157,169	455,253	67.6993
Low-cost:					
2009	98.20	41,067.59	5,274	14,256	.9650
2010	100.00	43,233.23	5,500	14,890	1.0000
2011	101.12	44,759.07	5,761	15,649	1.0453
2012	102.73	46,620.50	6,161	16,580	1.1012
2013	104.58	48,494.23	6,543	17,576	1.1627
2014	106.46	50,372.83	6,934	18,559	1.2277
2015	108.38	52,169.53	7,309	19,521	1.2962
2016	110.33	54,201.02	7,695	20,441	1.3672
2017	112.31	56,224.83	8,050	21,329	1.4412
2018	114.33	58,334.76	8,404	22,192	1.5197
2019	116.39	60,532.75	8,753	23,071	1.6025
2020	118.49	62,648.10	9,119	24,057	1.6901
2025	129.54	74,338.99	11,138	29,583	2.2052
2030	141.63	88,638.49	13,641	36,348	2.8773
2035	154.84	105,809.55	16,792	44,789	3.7542
2040	169.29	126,345.96	20,777	55,441	4.8984
2045	185.08	150,688.00	25,750	68,773	6.3913
2050	202.35	179,545.87	31,910	85,326	8.3393
2055	221.23	213,867.25	39,559	105,860	10.8810
2060	241.87	254,789.09	49,080	131,443	14.1973
2065	264.44	303,529.46	60,976	163,441	18.5243
2070	289.11	361,540.51	75,869	203,535	24.1702
2075	316.08	430,887.51	94,488	253,561	31.5368
2080	345.57	513,905.28	117,698	315,714	41.1487
2085	377.81	613,437.97	146,619	392,795	53.6900

Table VI.F6.—Selected Economic Variables, Calendar Years 2009-85 (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:					
2009	97.93	$41,067.51	$5,273	$14,256	0.9688
2010	100.00	42,879.81	5,422	14,667	1.0000
2011	102.46	44,589.32	5,642	15,350	1.0495
2012	106.89	47,228.82	6,043	16,381	1.1228
2013	111.59	50,100.69	6,449	17,511	1.2029
2014	115.89	52,867.76	6,878	18,636	1.2827
2015	120.29	55,603.42	7,313	19,789	1.3656
2016	124.86	58,469.81	7,768	20,941	1.4514
2017	129.61	61,242.02	8,200	22,070	1.5399
2018	134.53	64,147.61	8,645	23,245	1.6317
2019	139.65	67,083.66	9,096	24,488	1.7290
2020	144.95	69,972.93	9,534	25,718	1.8324
2025	174.67	86,323.23	11,986	32,760	2.4498
2030	210.48	107,085.62	15,141	41,802	3.2753
2035	253.62	133,249.31	19,181	53,411	4.3789
2040	305.62	165,832.14	24,260	68,159	5.8544
2045	368.27	205,894.53	30,495	86,564	7.8271
2050	443.76	255,196.20	38,106	109,432	10.4644
2055	534.73	315,826.99	47,377	137,686	13.9904
2060	644.35	390,378.51	58,802	173,017	18.7045
2065	776.44	482,347.64	72,883	217,204	25.0069
2070	935.61	595,869.20	90,065	271,938	33.4331
2075	1,127.41	736,528.90	111,100	339,702	44.6984
2080	1,358.53	911,214.93	136,902	423,609	59.7595
2085	1,637.03	1,128,606.16	168,729	527,853	79.8955

[a] The adjusted CPI is the CPI-W indexed to calendar year 2010.
[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 2010 dollars (i.e., adjusted by the CPI indexing series as discussed above). Items included in the table are: 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 and income from taxation of benefits. Cost consists of benefit payments, administrative expenses, net transfers from the OASI and DI Trust Funds to the Railroad Retirement program under the financial-interchange provisions, 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 2010 Dollars,[a] Calendar Years 2010-85

[In billions]

Calendar year	Income excluding interest	Interest income	Total income	Cost	Assets at end of year
Intermediate:					
2010	$673.2	$118.1	$791.3	$714.6	$2,617.0
2011	722.8	118.1	840.8	729.6	2,685.4
2012	751.0	122.1	873.1	749.3	2,748.8
2013	779.7	128.2	907.9	774.8	2,810.3
2014	806.4	134.6	941.0	802.8	2,871.9
2015	830.4	140.7	971.1	833.0	2,931.8
2016	855.4	146.7	1,002.1	864.8	2,989.2
2017	877.0	152.8	1,029.8	898.3	3,039.3
2018	896.7	158.3	1,054.9	933.3	3,078.1
2019	913.1	162.2	1,075.3	969.8	3,099.8
2020	929.1	164.8	1,094.0	1,007.4	3,101.9
2025	1,009.3	159.2	1,168.5	1,194.0	2,798.5
2030	1,098.2	115.2	1,213.4	1,365.7	1,948.0
2035[b]	1,196.9	44.3	1,241.2	1,514.2	623.3
Low-cost:					
2010	676.0	118.5	794.6	712.3	2,622.7
2011	737.1	120.0	857.1	728.9	2,721.7
2012	770.9	125.0	895.9	745.8	2,829.2
2013	806.1	132.2	938.3	770.5	2,947.1
2014	839.9	140.2	980.1	797.1	3,078.0
2015	870.7	148.6	1,019.3	825.3	3,217.5
2016	901.8	157.3	1,059.1	855.2	3,364.6
2017	928.4	166.9	1,095.3	887.5	3,512.8
2018	953.7	177.0	1,130.7	921.5	3,660.0
2019	976.3	186.4	1,162.7	957.3	3,800.7
2020	1,000.2	195.6	1,195.8	995.3	3,933.9
2025	1,122.5	235.0	1,357.6	1,188.2	4,478.8
2030	1,261.1	254.0	1,515.1	1,375.8	4,816.5
2035	1,421.1	267.5	1,688.6	1,548.1	5,066.9
2040	1,607.0	285.4	1,892.4	1,708.5	5,420.6
2045	1,819.2	318.1	2,137.3	1,874.9	6,070.0
2050	2,060.0	369.9	2,429.9	2,073.5	7,084.7
2055	2,334.6	443.3	2,777.9	2,313.8	8,513.2
2060	2,648.5	539.9	3,188.4	2,597.2	10,385.0
2065	3,008.2	666.0	3,674.2	2,913.7	12,831.8
2070	3,422.0	830.1	4,252.1	3,277.8	16,014.6
2075	3,896.7	1,041.2	4,937.8	3,699.4	20,104.1
2080	4,438.9	1,308.4	5,747.3	4,192.7	25,273.9
2085	5,058.4	1,639.4	6,697.9	4,780.7	31,664.4
High-cost:					
2010	670.8	117.7	788.5	717.0	2,611.8
2011	709.5	116.7	826.2	728.6	2,646.8
2012	728.2	121.5	849.6	743.1	2,643.5
2013	746.7	127.6	874.3	773.9	2,632.6
2014	768.4	131.9	900.2	808.1	2,627.1
2015	788.3	134.4	922.7	840.5	2,613.1
2016	808.6	136.4	945.0	874.2	2,588.2
2017	824.5	137.0	961.5	909.2	2,545.7
2018	839.3	136.4	975.6	945.5	2,482.7
2019	851.9	133.9	985.8	983.1	2,394.5
2020	862.0	129.4	991.4	1,019.8	2,278.5
2025 [b]	907.2	79.9	987.1	1,198.5	1,249.7

[a] The adjustment from current to constant dollars is by the adjusted CPI indexing series shown in table VI.F6.

[b] Estimates for later years are not shown because the combined OASI and DI Trust Funds are estimated to become exhausted in 2037 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, as shown in table VI.F7. The difference between the income values for each year is equal to the trust fund interest earnings. Thus the figure illustrates the fact that, under intermediate assumptions, combined OASDI cost will be payable from (1) current tax income alone from 2012 through 2014, (2) current tax income plus amounts from the trust funds that are less than annual interest income for years 2010, 2011, and 2015 through 2024, and (3) current tax income plus amounts from the trust funds that are greater than annual interest income for years 2025 through 2036 (the year preceding the year of trust fund exhaustion).

Figure VI.F1.—Estimated OASDI Income and Cost in Constant Dollars, Based on Intermediate Assumptions
[In billions]

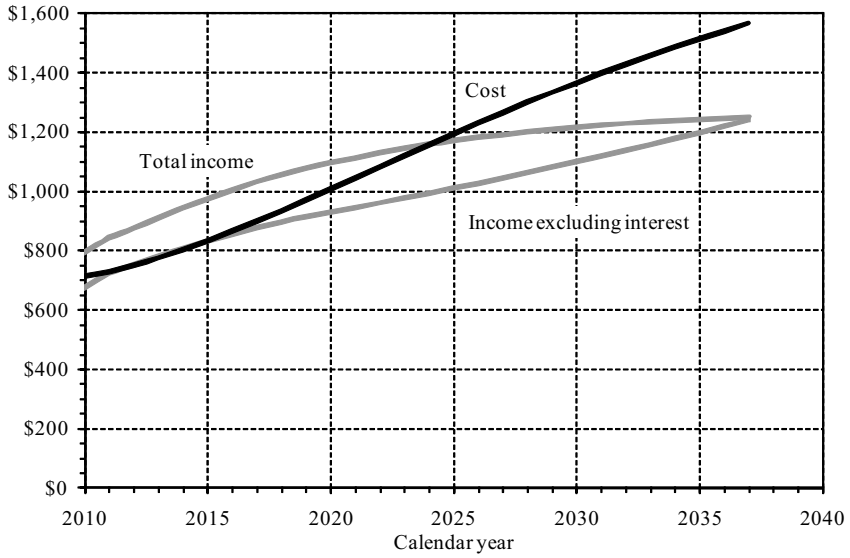


Table VI.F8 shows estimated operations of the combined OASI and DI Trust Funds in current dollars—that is, in dollars unadjusted for price inflation. Items included in the table are: income excluding interest, interest income, total income, total cost, and assets at the end of the year. These estimates, 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 2010-85

[In billions]

Calendar year	Income excluding interest	Interest income	Total income	Cost	Assets at end of year
Intermediate:					
2010	$673.2	$118.1	$791.3	$714.6	$2,617.0
2011	734.8	120.0	854.8	741.7	2,730.1
2012	781.1	127.0	908.1	779.3	2,858.8
2013	832.6	137.0	969.5	827.4	3,001.0
2014	885.2	147.8	1,033.0	881.3	3,152.7
2015	937.1	158.8	1,095.9	940.1	3,308.5
2016	992.3	170.2	1,162.5	1,003.2	3,467.8
2017	1,045.9	182.2	1,228.1	1,071.3	3,624.6
2018	1,099.3	194.0	1,293.3	1,144.2	3,773.7
2019	1,150.8	204.4	1,355.2	1,222.2	3,906.6
2020	1,203.8	213.5	1,417.3	1,305.2	4,018.7
2025	1,501.3	236.8	1,738.0	1,775.9	4,162.5
2030	1,875.3	196.6	2,072.0	2,332.1	3,326.4
2035[a]	2,346.6	86.8	2,433.4	2,968.5	1,222.0
Low-cost:					
2010	676.0	118.5	794.6	712.3	2,622.7
2011	745.3	121.3	866.7	737.1	2,752.3
2012	792.0	128.4	920.4	766.2	2,906.5
2013	843.0	138.3	981.2	805.7	3,082.0
2014	894.2	149.3	1,043.4	848.6	3,276.8
2015	943.6	161.0	1,104.6	894.4	3,487.0
2016	994.9	173.6	1,168.5	943.5	3,712.0
2017	1,042.7	187.4	1,230.1	996.8	3,945.4
2018	1,090.4	202.4	1,292.8	1,053.5	4,184.6
2019	1,136.4	216.9	1,353.3	1,114.2	4,423.7
2020	1,185.1	231.7	1,416.9	1,179.3	4,661.2
2025	1,454.2	304.5	1,758.6	1,539.3	5,801.9
2030	1,786.0	359.8	2,145.8	1,948.5	6,821.5
2035	2,200.4	414.3	2,614.6	2,397.1	7,845.8
2040	2,720.5	483.2	3,203.7	2,892.4	9,176.5
2045	3,367.0	588.8	3,955.8	3,470.1	11,234.5
2050	4,168.4	748.5	4,916.9	4,195.8	14,335.9
2055	5,164.7	980.8	6,145.5	5,118.7	18,833.8
2060	6,405.9	1,305.9	7,711.8	6,281.7	25,118.4
2065	7,954.9	1,761.1	9,716.0	7,704.8	33,932.0
2070	9,893.2	2,399.8	12,293.0	9,476.3	46,299.6
2075	12,316.7	3,290.9	15,607.6	11,693.0	63,545.4
2080	15,339.5	4,521.5	19,861.0	14,488.9	87,339.7
2085	19,111.5	6,194.0	25,305.5	18,062.0	119,632.5
High-cost:					
2010	670.8	117.7	788.5	717.0	2,611.8
2011	727.0	119.6	846.5	746.5	2,711.9
2012	778.4	129.8	908.2	794.3	2,825.8
2013	833.2	142.4	975.6	863.6	2,937.8
2014	890.4	152.8	1,043.3	936.5	3,044.5
2015	948.2	161.7	1,110.0	1,011.1	3,143.4
2016	1,009.7	170.3	1,179.9	1,091.5	3,231.8
2017	1,068.6	177.6	1,246.2	1,178.4	3,299.5
2018	1,129.1	183.5	1,312.6	1,272.0	3,340.1
2019	1,189.7	187.0	1,376.7	1,372.9	3,343.9
2020	1,249.5	187.6	1,437.1	1,478.2	3,302.8
2025 [a]	1,584.6	139.5	1,724.1	2,093.4	2,182.9

[a] Estimates for later years are not shown because the combined OASI and DI Trust Funds are estimated to become exhausted in 2037 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 and proceeds from taxation of OASDI benefits. Cost consists of benefit payments, administrative expenses, net transfers from the trust funds to 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) and proceeds from the taxation of OASDI benefits. 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 tax income and cost.

Table VI.F9.—OASDI and HI Annual Income Excluding Interest, Cost, and Balance in Current Dollars, Calendar Years 2010-85

[In billions]

Calendar year	OASDI			HI			Combined		
	Income excluding interest	Cost	Balance	Income excluding interest	Cost	Balance	Income excluding interest	Cost	Balance
Intermediate:									
2010	$673	$715	-$41	$213	$246	-$33	$886	$960	-$74
2011	735	742	-7	225	257	-32	959	999	-39
2012	781	779	2	241	268	-27	1,022	1,047	-25
2013	833	827	5	267	279	-13	1,099	1,107	-8
2014	885	881	4	285	292	-7	1,170	1,174	-3
2015	937	940	-3	304	302	2	1,241	1,242	-1
2016	992	1,003	-11	323	318	5	1,315	1,321	-6
2017	1,046	1,071	-25	342	335	7	1,388	1,406	-18
2018	1,099	1,144	-45	361	355	6	1,460	1,499	-39
2019	1,151	1,222	-71	379	376	3	1,530	1,599	-68
2020	1,204	1,305	-101	398	401	-2	1,602	1,706	-104
2025	1,501	1,776	-275	507	556	-49	2,008	2,332	-324
2030	1,875	2,332	-457	645	769	-123	2,521	3,101	-580
2035	2,347	2,968	-622	822	1,042	-220	3,168	4,010	-842
2040	2,937	3,694	-758	1,046	1,364	-319	3,982	5,058	-1,076
2045	3,665	4,557	-892	1,327	1,736	-409	4,992	6,293	-1,301
2050	4,563	5,636	-1,073	1,681	2,169	-489	6,244	7,805	-1,561
2055	5,673	7,018	-1,344	2,126	2,689	-563	7,799	9,706	-1,907
2060	7,054	8,781	-1,726	2,689	3,343	-654	9,744	12,123	-2,380
2065	8,771	10,996	-2,225	3,397	4,162	-765	12,168	15,158	-2,990
2070	10,903	13,812	-2,909	4,285	5,176	-891	15,188	18,988	-3,800
2075	13,552	17,374	-3,822	5,398	6,400	-1,002	18,950	23,774	-4,824
2080	16,837	21,843	-5,006	6,788	7,842	-1,054	23,624	29,685	-6,060
2085	20,920	27,455	-6,535	8,528	9,551	-1,023	29,448	37,006	-7,558
Low-cost:									
2010	676	712	-36	215	239	-25	891	952	-61
2011	745	737	8	227	247	-20	973	984	-12
2012	792	766	26	243	250	-6	1,035	1,016	19
2013	843	806	37	268	255	13	1,111	1,061	51
2014	894	849	46	286	261	25	1,180	1,109	71
2015	944	894	49	303	263	40	1,246	1,157	89
2016	995	944	51	320	270	50	1,315	1,213	102
2017	1,043	997	46	337	278	59	1,380	1,274	105
2018	1,090	1,054	37	353	287	66	1,443	1,341	103
2019	1,136	1,114	22	369	298	71	1,506	1,412	94
2020	1,185	1,179	6	386	310	76	1,571	1,490	82
2025	1,454	1,539	-85	481	387	95	1,936	1,926	9
2030	1,786	1,948	-162	600	480	120	2,386	2,429	-42
2035	2,200	2,397	-197	749	584	165	2,950	2,981	-31
2040	2,720	2,892	-172	938	692	246	3,659	3,584	74
2045	3,367	3,470	-103	1,176	817	359	4,543	4,287	256
2050	4,168	4,196	-27	1,476	970	506	5,645	5,166	479
2055	5,165	5,119	46	1,856	1,170	686	7,020	6,288	732
2060	6,406	6,282	124	2,336	1,443	893	8,742	7,725	1,017
2065	7,955	7,705	250	2,941	1,796	1,145	10,896	9,501	1,395
2070	9,893	9,476	417	3,706	2,238	1,468	13,599	11,714	1,885
2075	12,317	11,693	624	4,670	2,775	1,895	16,987	14,468	2,519
2080	15,340	14,489	851	5,882	3,412	2,470	21,221	17,900	3,321
2085	19,111	18,062	1,049	7,405	4,170	3,235	26,516	22,232	4,285

Table VI.F9.—OASDI and HI Annual Income Excluding Interest, Cost, and Balance in Current Dollars, Calendar Years 2010-85 (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:									
2010	$671	$717	-$46	$212	$252	-$41	$883	$970	-$87
2011	727	747	-20	223	268	-45	950	1,014	-64
2012	778	794	-16	241	290	-49	1,019	1,084	-65
2013	833	864	-30	269	311	-42	1,102	1,175	-73
2014	890	937	-46	290	334	-45	1,180	1,271	-91
2015	948	1,011	-63	311	354	-44	1,259	1,365	-107
2016	1,010	1,092	-82	333	383	-50	1,342	1,474	-132
2017	1,069	1,178	-110	354	413	-59	1,423	1,592	-169
2018	1,129	1,272	-143	376	449	-73	1,505	1,721	-216
2019	1,190	1,373	-183	399	489	-90	1,589	1,862	-273
2020	1,250	1,478	-229	421	533	-112	1,670	2,012	-341
2025	1,585	2,093	-509	547	828	-281	2,131	2,921	-790
2030	2,015	2,855	-840	712	1,282	-570	2,727	4,137	-1,410
2035	2,564	3,772	-1,208	925	1,949	-1,023	3,490	5,721	-2,231
2040	3,251	4,858	-1,607	1,198	2,816	-1,618	4,449	7,674	-3,225
2045	4,093	6,179	-2,086	1,539	3,857	-2,317	5,632	10,036	-4,403
2050	5,123	7,838	-2,714	1,967	5,064	-3,097	7,090	12,901	-5,811
2055	6,384	9,969	-3,585	2,501	6,441	-3,939	8,886	16,410	-7,524
2060	7,946	12,715	-4,769	3,174	8,050	-4,876	11,119	20,765	-9,645
2065	9,878	16,235	-6,357	4,016	10,002	-5,987	13,894	26,237	-12,344
2070	12,250	20,789	-8,538	5,064	12,382	-7,318	17,314	33,171	-15,857
2075	15,171	26,625	-11,454	6,368	15,217	-8,849	21,539	41,842	-20,303
2080	18,762	33,936	-15,174	7,987	18,520	-10,533	26,750	52,456	-25,707
2085	23,196	43,002	-19,806	9,999	22,407	-12,408	33,195	65,410	-32,214

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 2010 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. The benefit amounts are shown in constant 2010 dollars (adjusted to 2010 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, 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 for 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 1991-2006. 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 that were shown in the 2000 and earlier Trustees Reports. For the scaled medium earner, the general, career-average earnings level is 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 prior to retirement starting at age 22.

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 that were illustrated in the 2000 and earlier Trustees Reports. As a result, values in this table for benefits under the present-law Social Security benefit formula are essentially comparable to those in earlier reports. Scaled-earnings cases are now being 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 are provided on scaled-earnings patterns in the Social Security Administration Actuarial Note Number 2009.3, which may be found at www.socialsecurity.gov/OACT/NOTES/ran3/an2009-3.html.

Table VI.F10.—Annual Scheduled Benefit Amounts[a] for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2010-85

	Retirement at normal retirement age			Retirement at age 65		
Year attain age 65[b]	Age at retirement	Constant 2010 dollars[c]	Percent of earnings	Age at retirement	Constant 2010 dollars[c]	Percent of earnings
Scaled low earnings:[d]						
2010	66:0	$10,729	56.3	65:0	$10,164	55.0
2015	66:0	11,271	54.4	65:0	10,519	51.5
2020	66:2	12,229	55.2	65:0	11,280	51.5
2025	67:0	13,055	55.4	65:0	11,313	49.1
2030	67:0	13,763	55.1	65:0	11,925	48.9
2035	67:0	14,578	55.0	65:0	12,633	48.8
2040	67:0	15,474	55.0	65:0	13,408	48.8
2045	67:0	16,425	55.1	65:0	14,235	48.8
2050	67:0	17,411	55.2	65:0	15,091	48.9
2055	67:0	18,430	55.2	65:0	15,973	48.9
2060	67:0	19,491	55.2	65:0	16,891	48.9
2065	67:0	20,603	55.3	65:0	17,856	48.9
2070	67:0	21,775	55.3	65:0	18,872	49.0
2075	67:0	23,014	55.2	65:0	19,945	48.9
2080	67:0	24,336	55.2	65:0	21,091	48.9
2085	67:0	25,752	55.1	65:0	22,319	48.9
Scaled medium earnings:[e]						
2010	66:0	17,676	41.7	65:0	16,752	40.8
2015	66:0	18,590	40.4	65:0	17,341	38.2
2020	66:2	20,159	40.9	65:0	18,586	38.2
2025	67:0	21,517	41.1	65:0	18,647	36.4
2030	67:0	22,675	40.8	65:0	19,652	36.2
2035	67:0	24,023	40.8	65:0	20,817	36.2
2040	67:0	25,497	40.7	65:0	22,098	36.2
2045	67:0	27,071	40.8	65:0	23,460	36.2
2050	67:0	28,694	40.9	65:0	24,866	36.3
2055	67:0	30,371	40.9	65:0	26,321	36.3
2060	67:0	32,115	41.0	65:0	27,833	36.3
2065	67:0	33,950	41.0	65:0	29,423	36.3
2070	67:0	35,883	41.0	65:0	31,099	36.3
2075	67:0	37,923	40.9	65:0	32,865	36.3
2080	67:0	40,099	40.9	65:0	34,752	36.3
2085	67:0	42,435	40.9	65:0	36,777	36.2
Scaled high earnings:[f]						
2010	66:0	23,430	34.6	65:0	22,212	33.8
2015	66:0	24,625	33.4	65:0	22,979	31.6
2020	66:2	26,713	33.9	65:0	24,630	31.6
2025	67:0	28,519	34.0	65:0	24,713	30.1
2030	67:0	30,053	33.8	65:0	26,047	30.0
2035	67:0	31,838	33.8	65:0	27,590	30.0
2040	67:0	33,795	33.8	65:0	29,286	30.0
2045	67:0	35,881	33.8	65:0	31,094	30.0
2050	67:0	38,029	33.9	65:0	32,955	30.0
2055	67:0	40,249	33.9	65:0	34,885	30.1
2060	67:0	42,566	33.9	65:0	36,892	30.1
2065	67:0	44,997	33.9	65:0	38,996	30.1
2070	67:0	47,557	33.9	65:0	41,216	30.1
2075	67:0	50,259	33.9	65:0	43,558	30.1
2080	67:0	53,143	33.9	65:0	46,058	30.0
2085	67:0	56,239	33.8	65:0	48,741	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 2010-85 (Cont.)

	Retirement at normal retirement age			Retirement at age 65		
Year attain age 65[b]	Age at retirement	Constant 2010 dollars[c]	Percent of earnings	Age at retirement	Constant 2010 dollars[c]	Percent of earnings
Steady maximum earnings:[g]						
2010	66:0	$27,955	28.3	65:0	$26,292	27.7
2015	66:0	29,954	26.9	65:0	27,797	25.4
2020	66:2	32,639	27.2	65:0	29,987	25.3
2025	67:0	35,046	27.3	65:0	30,147	24.0
2030	67:0	36,986	27.1	65:0	31,824	23.9
2035	67:0	39,199	27.0	65:0	33,731	23.8
2040	67:0	41,572	27.1	65:0	35,773	23.9
2045	67:0	44,144	27.1	65:0	37,992	23.9
2050	67:0	46,723	27.2	65:0	40,212	23.9
2055	67:0	49,392	27.2	65:0	42,513	24.0
2060	67:0	52,241	27.3	65:0	44,964	24.0
2065	67:0	55,222	27.3	65:0	47,533	24.0
2070	67:0	58,363	27.3	65:0	50,234	24.0
2075	67:0	61,683	27.2	65:0	53,092	24.0
2080	67:0	65,228	27.2	65:0	56,143	24.0
2085	67:0	69,031	27.2	65:0	59,415	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 this 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, 2009, about 969,000 persons were receiving monthly benefits from the OASI Trust Fund because of their disabilities or the disabilities of children. This total includes 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 this trust fund to the persons described above totaled $8,592 million in calendar year 2009. Table VI.G1 shows these and similar figures for selected calendar years during 1960-2009, and estimated experience for 2010-19 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
1986	614	565	49	2,219	2,022	197
1987	629	580	49	2,331	2,128	203
1988	640	591	48	2,518	2,307	211
1989	651	602	49	2,680	2,459	221
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	7,687	6,778	905
2009	969	857	112	8,592	7,618	971
Estimates under the intermediate assumptions:						
2010	985	871	114	8,825	7,834	986
2011	1,000	885	115	9,004	8,006	993
2012	1,014	899	116	9,315	8,293	1,015
2013	1,028	913	116	9,743	8,688	1,046
2014	1,041	927	115	10,201	9,121	1,068
2015	1,053	939	113	10,685	9,580	1,091
2016	1,063	952	111	11,179	10,058	1,106
2017	1,072	963	108	11,688	10,552	1,121
2018	1,080	974	106	12,214	11,064	1,134
2019	1,089	985	104	12,769	11,593	1,159

[a] Beginning in 1966, includes payments for vocational rehabilitation services.

[b] Also includes certain mothers and fathers (see text).

[c] In 1984 and later years, 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, 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 $8,808 million in calendar year 2010 to $12,741 million in calendar year 2019, based on the intermediate assumptions.

In calendar year 2009, 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 $127,000 million. Of this amount, $8,592 million or 6.8 percent represented payments from the OASI Trust Fund. These and similar figures for selected calendar years during 1960-2009 and estimates for calendar years 2010-19 are presented in table VI.G2.

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	[d] 92,446	6,741	6.8
2007	106,197	[e] 99,147	7,051	6.6
2008	114,063	[e] 106,376	7,687	6.7
2009	127,000	[e] 118,407	8,592	6.8

Table VI.G2.—Benefit Disbursements Under the OASDI Program With Respect to Disabled Beneficiaries (Cont.)

[Amounts in millions]

Calendar year	Total[a]	DI Trust Fund[b]	OASI Trust Fund	
			Amount[c]	Percentage of total
Estimates under the intermediate assumptions:				
2010	$133,884	$125,060	$8,825	6.6
2011	139,479	130,475	9,004	6.5
2012	146,482	137,167	9,315	6.4
2013	152,740	142,997	9,743	6.4
2014	159,219	149,019	10,201	6.4
2015	166,283	155,598	10,685	6.4
2016	173,652	162,473	11,179	6.4
2017	181,338	169,650	11,688	6.4
2018	189,372	177,157	12,214	6.4
2019	197,844	185,076	12,769	6.5

[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).

[d] Excludes reimbursement of $0.7 billion for excess amounts of voluntary income tax withholding in 1999-2005.

[e] Excludes interfund transfers to correct a trust fund allocation error made on payments to certain disabled beneficiaries. These transfers amounted to $3.3 billion in 2007, $0.3 billion in 2008, and $0.1 billion in 2009 from OASI to DI.

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. Reimbursements were made from the trust funds to 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 in 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 amount of 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 other two members are appointed by the President to serve as public representatives.

Cash flow. The cash flow for the OASI and DI Trust Funds is defined generally as actual or projected revenue and costs reflecting the levels of tax rates and benefits scheduled in the law. Net cash flow is the difference between tax revenue 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). Historical values for the CPI-W are published by the Bureau of Labor Statistics, Department of Labor.

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. 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.

Generally, employers withhold contributions from wages, add an equal amount of contributions, and pay both on a current basis. Also referred to as taxes.

Cost. The cost for a year is defined to include scheduled benefit payments, administrative expenses, net transfers from the trust funds to the Railroad Retirement program under the financial-interchange provisions, and payments for vocational rehabilitation services for disabled beneficiaries; it excludes transfers under the interfund borrowing provisions.

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. Almost all employment is covered under the program. 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 maximum amount of creditable earnings for each worker in a calendar year is determined by the contribution and benefit base.

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, net transfers from the trust funds to the Railroad Retirement program under the financial-interchange provisions, and payments for vocational rehabilitation services for disabled beneficiaries; excludes transfers under the interfund borrowing provisions.

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 pays taxes (usually as a result of working for more than one employer during a year). Employee 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 taxes on the wages of employed persons to provide for Retirement, Survivors, and Disability Insurance, and for Hospital Insurance. The tax is paid in equal amounts by workers and their employers.

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 2010 began October 1, 2009, and will end September 30, 2010.

Full advance funding. A financing scheme in which taxes or 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 liability 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. Transfers from the General Fund of the Treasury to the trust funds for specific purposes defined in the law, such as:

- Payments corresponding to the employee-employer taxes on deemed wage credits for military personnel.

- Interest on checks which are not negotiated 6 months after the month of issue. (For checks issued before October, 1989, the principal was returned to the trust funds as a general fund reimbursement; since that time, the principal amount is automatically returned to the issuing fund when the check is uncashed after a year.)
- Administrative expenses incurred as a result of furnishing information on deferred vested benefits to pension plan participants, as required by the Employee Retirement Income Security Act of 1974 (Public Law 93-406).

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 liability basis (payroll-tax contributions and income from the taxation of scheduled benefits) and interest credited to the trust funds.

Income rate. Ratio of income from tax revenue on a liability basis (payroll-tax contributions and income from the taxation of scheduled benefits) to the OASDI taxable payroll for the year.

Infinite horizon. The period extending into the indefinite future.

Inflation. An increase in the volume of money and credit relative to available goods, resulting in an increase in the general price level.

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 residence 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 tax 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 residence 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 scheme in which taxes are scheduled 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 taxes 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 scheme in which taxes are scheduled 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, however, 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 taxes. A tax levied on the gross wages of workers. See tables VI.A1 and VI.F1.

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 widely used 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 2010, 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 tax rates. An increase in the 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 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 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 because of the 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. The Old-Age, Survivors, and Disability Insurance program is authorized by title II of the Social Security Act.

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 balance 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. Because a trust fund level of about 1 year's cost is considered to be an adequate reserve for unforeseen contingencies, 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 tax 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 the total income from taxes

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. SSI is funded through the General Fund of the Treasury and administered by the Social Security Administration.

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 tax rate, it yields the total amount of 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 "Contributions."

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 taxes received under the Federal Insurance Contributions Act and the Self-Employment Contributions Act, as well as 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 transfers of Federal general revenues. Funds not withdrawn for current monthly or service benefits, the financial interchange, and administrative expenses are invested in interest-bearing Federal securities, 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 a 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 check is administratively cancelled by the Department of the Treasury, and the issuing trust fund is reimbursed 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.

II. OVERVIEW

II.B1 Summary of 2009 Trust Fund Financial Operations 5
II.B2 Tax Rates for 2009 and Later 5
II.C1 Long-Range Values of Key Demographic and Economic Assumptions for the 75-year Projection Period. 7
II.D1 Projected Maximum Trust Fund Ratios Attained and Trust Fund Exhaustion Dates 11
II.D2 Reasons for Change in the 75-Year Actuarial Balance, Based on Intermediate Assumptions 18

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

III.A1 Operations of the OASI Trust Fund, Calendar Year 2009 23
III.A2 Operations of the DI Trust Fund, Calendar Year 2009. 27
III.A3 Operations of the Combined OASI and DI Trust Funds, Calendar Year 2009 29
III.A4 Comparison of Actual Calendar Year 2009 Trust Fund Operations With Estimates Made in Prior Reports 30
III.A5 Distribution of Benefit Payments by Type of Beneficiary or Payment, Calendar Years 2008 and 2009 31
III.A6 Administrative Expenses as a Percentage of Contribution Income and of Total Expenditures, Calendar Years 2005-09 . . 32
III.A7 Trust Fund Investment Transactions, Calendar Year 2009 32

IV. ACTUARIAL ESTIMATES

IV.A1 Operations of the OASI Trust Fund, Calendar Years 2005-19 . 38
IV.A2 Operations of the DI Trust Fund, Calendar Years 2005-19 . . . 41
IV.A3 Operations of the Combined OASI and DI Trust Funds, Calendar Years 2005-19 43
IV.A4 Reasons for Change in Trust Fund Ratios at the Beginning of the Tenth Year of Projection 45
IV.B1 Annual Income Rates, Cost Rates, and Balances, Calendar Years 1990-2085 49
IV.B2 Covered Workers and Beneficiaries, Calendar Years 1945-2085 53
IV.B3 Trust Fund Ratios, Calendar Years 2010-85 58

IV.B4 Components of Summarized Income Rates and Cost Rates, Calendar Years 2010-84 62
IV.B5 Components of 75-Year Actuarial Balance Under Intermediate Assumptions 63
IV.B6 Unfunded OASDI Obligations for 1935 (Program Inception) Through the Infinite Horizon, Based on Intermediate Assumptions 65
IV.B7 Present Values of OASDI Cost Less Tax Revenue and Unfunded Obligations for Program Participants, Based on Intermediate Assumptions 66
IV.B8 Comparison of Long-Range Actuarial Balances With the Minimum Allowable in the Test for Close Actuarial Balance, Based on Intermediate Assumptions 69
IV.B9 Reasons for Change in the 75-Year Actuarial Balance, Based on Intermediate Assumptions 71

V. ASSUMPTIONS AND METHODS UNDERLYING ACTUARIAL ESTIMATES

V.A1 Principal Demographic Assumptions, Calendar Years 1940-2085 84
V.A2 Social Security Area Population as of July 1 and Dependency Ratios, Calendar Years 1950-2085 87
V.A3 Period Life Expectancy 90
V.A4 Cohort Life Expectancy 91
V.B1 Principal Economic Assumptions 99
V.B2 Additional Economic Factors 105
V.C1 Cost-of-Living Benefit Increases, Average Wage Index, Contribution and Benefit Bases, and Retirement Earnings Test Exempt Amounts, 1975-2019. 109
V.C2 Values for Selected Wage-Indexed Program Parameters, Calendar Years 1978-2019 112
V.C3 Legislated Changes in Normal Retirement Age and Delayed Retirement Credits, for Persons Reaching Age 62 in Each Year 1986 and Later. 114
V.C4 OASI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1945-2085 123
V.C5 DI Beneficiaries With Benefits in Current-Payment Status at the End of Calendar Years 1960-2085 131

VI. APPENDICES

A. HISTORY OF OASI AND DI TRUST FUND OPERATIONS

VI.A1 Contribution and Benefit Base and Contribution Rates 139
VI.A2 Operations of the OASI Trust Fund, Calendar Years 1937-2009 143
VI.A3 Operations of the DI Trust Fund, Calendar Years 1957-2009 145
VI.A4 Operations of the Combined OASI and DI Trust Funds, Calendar Years 1957-2009 147
VI.A5 Assets of the OASI Trust Fund, End of Calendar Years 2008 and 2009 149
VI.A6 Assets of the DI Trust Fund, End of Calendar Years 2008 and 2009 150

B. HISTORY OF ACTUARIAL BALANCE ESTIMATES

VI.B1 Long-Range OASDI Actuarial Balances as Shown in the Trustees Reports for 1982-2010 153

C. FISCAL YEAR HISTORICAL DATA AND PROJECTIONS THROUGH 2019

VI.C1 Operations of the OASI Trust Fund, Fiscal Year 2009. 156
VI.C2 Operations of the DI Trust Fund, Fiscal Year 2009 157
VI.C3 Operations of the Combined OASI and DI Trust Funds, Fiscal Year 2009 158
VI.C4 Operations of the OASI Trust Fund, Fiscal Years 2005-19 . . . 159
VI.C5 Operations of the DI Trust Fund, Fiscal Years 2005-19 160
VI.C6 Operations of the Combined OASI and DI Trust Funds, Fiscal Years 2005-19 161

D. LONG-RANGE SENSITIVITY ANALYSIS

VI.D1 Sensitivity to Varying Fertility Assumptions 163
VI.D2 Sensitivity to Varying Death-Rate Assumptions 164
VI.D3 Sensitivity to Varying Net-Immigration Assumptions 166
VI.D4 Sensitivity to Varying Real-Wage Assumptions 167
VI.D5 Sensitivity to Varying CPI-Increase Assumptions 168
VI.D6 Sensitivity to Varying Real-Interest Assumptions 169
VI.D7 Sensitivity to Varying Disability Incidence Assumptions. 170
VI.D8 Sensitivity to Varying Disability Termination Assumptions . . . 172

E. STOCHASTIC PROJECTIONS

VI.E1 Long-Range Estimates Relating to the Actuarial Status of the Combined OASDI Program 178

F. ESTIMATES FOR OASDI AND HI, SEPARATE AND COMBINED

VI.F1 Contribution Rates for the OASDI and HI Programs. 180
VI.F2 OASDI and HI Annual Income Rates, Cost Rates, and Balances, Calendar Years 2010-85 182
VI.F3 Summarized OASDI and HI Income Rates and Cost Rates for Valuation Periods, Calendar Years 2010-84 184
VI.F4 OASDI and HI Annual and Summarized Income, Cost, and Balance as a Percentage of GDP, Calendar Years 2010-85. . . . 187
VI.F5 Ratio of OASDI Taxable Payroll to GDP, Calendar Years 2010-85 189
VI.F6 Selected Economic Variables, Calendar Years 2009-85 192
VI.F7 Operations of the Combined OASI and DI Trust Funds, in Constant 2010 Dollars, Calendar Years 2010-85 194
VI.F8 Operations of the Combined OASI and DI Trust Funds, in Current Dollars, Calendar Years 2010-85 196
VI.F9 OASDI and HI Annual Income Excluding Interest, Cost, and Balance in Current Dollars, Calendar Years 2010-85 198
VI.F10 Annual Scheduled Benefit Amounts for Retired Workers With Various Pre-Retirement Earnings Patterns Based on Intermediate Assumptions, Calendar Years 2010-85 201

G. ANALYSIS OF BENEFIT DISBURSEMENTS FROM THE OASI TRUST FUND WITH RESPECT TO DISABLED BENEFICIARIES

VI.G1 Benefit Disbursements From the OASI Trust Fund With Respect to Disabled Beneficiaries 204
VI.G2 Benefit Disbursements Under the OASDI Program With Respect to Disabled Beneficiaries 205

II. OVERVIEW

II.D1	Short-Range OASDI Trust Fund Ratio	8
II.D2	OASDI Income, Cost, and Expenditures as Percentages of Taxable Payroll	10
II.D3	Number of Covered Workers Per OASDI Beneficiary	11
II.D4	Cumulative OASDI Income Less Cost, Based on Present Law Tax Rates and Scheduled Benefits	13
II.D5	OASDI Cost and Scheduled Tax Revenue as a Percentage of GDP	14
II.D6	Long-Range OASDI Trust Fund Ratios Under Alternative Assumptions	16
II.D7	Annual Trust Fund Ratios	17
II.D8	OASDI Annual Balances: 2009 and 2010 Trustees Reports	19

IV. ACTUARIAL ESTIMATES

IV.A1	Short-Range OASI and DI Trust Fund Ratios	37
IV.B1	Long-Range OASI and DI Annual Income Rates and Cost Rates	52
IV.B2	Number of OASDI Beneficiaries Per 100 Covered Workers	55
IV.B3	Long-Range OASI and DI Trust Fund Ratios	59
IV.B4	Test of Long-Range Close Actuarial Balance	70
IV.B5	OASDI Annual Balances: 2009 and 2010 Trustees Reports	74

V. ASSUMPTIONS AND METHODS UNDERLYING ACTUARIAL ESTIMATES

V.C1	Primary-Insurance-Amount Formula for Those Newly Eligible in 2010	111
V.C2	Maximum-Family-Benefit Formula for Those Newly Eligible in 2010	111
V.C3	DI Disability Incidence Rates, 1970-2085	127
V.C4	DI Disability Termination Rates, 1970-2085	129
V.C5	Comparison of DI Disability Incidence Rates, Termination Rates and Conversion Ratios Under Intermediate Assumptions, 1970-2085	130
V.C6	DI Disability Prevalence Rates, 1970-2085	133

VI. APPENDICES

VI.E1 Annual Trust Fund Ratios 175
VI.E2 Annual Cost Rates 176
VI.F1 Estimated OASDI Income and Cost in Constant Dollars, Based on Intermediate Assumptions 195

A

Actuarial balance 9, 11, 46, 115, 151, 162
Actuarial balance, long-range test 69
Actuarial deficit 3, 11, 20, 60, 184
Actuarial estimates, LR 46
Actuarial estimates, SR 35
Adjusted program amounts 107
Administrative expenses 5, 31, 47, 135, 142, 156, 185, 193
Advance tax transfers 56, 144
Amendments 33
Annual balance 18, 46, 71
Assets 2, 5, 8, 25, 35, 47, 142, 156, 169, 179, 191
Assumptions 2, 8, 47, 76, 92, 107, 151, 162, 180, 185, 190, 203
Automatic cost-of-living benefit increase 39, 94, 107
Auxiliary benefits 117
Average benefits 135
Average earnings assumptions 95
Average indexed monthly earnings (AIME) 110
Average wage index 107, 190
Award 118

B

Baby-boom generation 2, 20, 39, 48, 52, 101, 126
Bend points 110
Beneficiaries, DI 124
Beneficiary 10, 39, 52, 76, 108, 154, 163, 185, 193, 203
Beneficiary, OASI 118
Benefit payments 5, 36, 47, 135, 142, 156, 168, 185, 193, 205
Benefit termination 7, 40
Best estimate 7, 20, 35, 76
Board of Trustees 35, 92, 138

C

Close actuarial balance 46, 66
Closed group unfunded obligation 66, 209
Constant dollars 195
Consumer Price Index 94, 168, 190, 208
Contribution and benefit base 37, 95, 108, 139, 190, 208
Contributions 5, 138, 156, 179, 185, 193, 207
Cost 2
Cost rate 3, 9, 47, 115, 179
Cost-of-living adjustment 107
Covered earnings 5, 107, 189
Covered employment 7, 37, 95, 114, 138, 167

Covered worker 54, 114, 165
Creditable earnings 210
Current dollars 190
Current-payment status 39, 125, 129, 130, 131, 208

D
Deemed wage credit 47, 115
Delayed retirement credit 113
Demographic assumptions 7, 18, 35, 47, 77, 101, 107, 151, 191, 207
Deterministic model 173, 178, 211
DI beneficiaries 124
Disability 138, 165, 203
Disability conversion ratio 129
Disability incidence rate 76, 125, 127, 165, 170, 207
Disability Insurance Trust Fund 209
Disability prevalence rate 125, 131, 133
Disability termination rate 171
Disabled-worker benefit 127, 211
Disbursements 22, 23, 24, 27, 29, 35, 156, 157, 158, 204, 205

E
Earnings 2, 5, 36, 47, 95, 108, 138, 152, 179, 189, 190, 207
Earnings test 95, 108, 208
Economic assumptions 7, 18, 35, 44, 47, 92, 101, 107, 151, 191, 207
Excess wages 47, 115, 191
Expenditures 5, 7, 26, 32, 35, 39, 42, 142, 143, 145, 147, 211

F
Federal Insurance Contributions Act 179, 209
Fertility assumptions 78
Financial interchange 5, 136, 142
Fiscal year 81, 144, 156
Full advance funding 212

G
General Fund of the Treasury 38, 39, 140, 207
General fund reimbursement 212
Gross domestic product 3, 52, 76, 93, 103, 185
Gross domestic product projections 103

H
High-cost assumptions 7, 15, 35, 36, 48, 76, 92, 128, 162, 177, 180, 185, 190, 207
Hospital Insurance program 139, 179, 215
Hospital Insurance Trust Fund 185

I

Immigration 7, 76, 77, 80, 84, 165, 173, 207, 213
Immigration assumptions 80
Income rate 3, 9, 47, 179
Inflation 7, 76, 94, 190, 207
Inflation assumptions 94
Insured population 7, 116
Insured status 112
Interest 36, 104, 141, 151, 156, 180, 185, 191, 207
Interest rate 37, 76, 151, 169, 191, 207
Interest rate projections 103
Interfund borrowing 144, 210
Intermediate assumptions 7, 35, 37, 39, 48, 76, 128, 162, 181, 185, 190, 194, 195, 196, 203, 207

L

Labor force projections 100
Legal immigration 81, 85, 214
Life expectancy 2, 20, 76, 88, 100, 214
Life expectancy estimates 88
Long range 9, 46, 77, 92, 118, 151, 179, 185, 190
Low-cost assumptions 7, 15, 35, 48, 76, 92, 128, 162, 177, 180, 190, 207
Lump-sum death payment 135

M

Medicare 79, 215
Military service 38, 47, 95, 115, 136, 138, 212

N

National average wage index 107, 190
Normal retirement age 108, 124, 199, 210

O

OASI beneficiaries 118
Old-Age and Survivors Insurance Trust Fund 138, 209
Old-law base 112
Open group unfunded obligation 3, 9, 18, 46, 63, 177, 209, 215
Other immigration 81, 166, 216

P

Par value 141
Partial advance funding 216
Pay-as-you-go financing 151
Payroll taxes 2, 21, 61, 107, 115, 154, 162, 179, 193
Population estimates 85
Population in the Social Security area 37, 55, 85, 114, 166
Present value 151
Primary insurance amount (PIA) 110
Productivity assumptions 93

Q

Quarters of coverage 116

R

Railroad Retirement 47, 112, 136, 142, 156, 179, 185, 193, 210
Reallocation of tax rates 217
Real-wage differential 98, 166
Recession 35
Retired-worker benefit 118, 165, 203
Retirement age 40, 108, 199, 210
Retirement earnings test 95, 108
Retirement eligibility age 1, 165

S

Self-employment 47, 94, 115, 138, 180, 209
Self-Employment Contributions Act 209, 218
Sensitivity analysis 162
Short range 8, 35, 92, 118
Social Security Act 107, 141, 190, 203, 209
Social Security amendments 33
Solvency 14, 46, 218
Special public-debt obligation 39, 106, 141, 169, 191
Stochastic projections 173
Substantial gainful activity 124, 211
Summarized balance 186
Summarized income and cost rates 60, 151, 162, 183, 207
Supplemental Security Income 156
Supplementary Medical Insurance program 179, 215
Survivor benefit 2, 6, 121, 208

T

Taxable earnings 36, 55, 108, 138, 152, 189, 208
Taxable payroll 3, 9, 20, 47, 94, 115, 151, 163, 179, 185, 190, 210
Taxable self-employment income 138, 220
Taxable wages 116, 140, 220
Taxation of benefits 5, 47, 136, 185, 193, 213
Taxes 5, 107, 138, 180, 210
Termination 40, 76
Termination rate 7, 40, 118, 171, 207
Test of short-range financial adequacy 36, 67, 218
Total fertility rate 78, 162
Trust fund financial operations 5, 22, 36, 138
Trust fund ratio 8, 35, 46, 56, 144, 159, 222

U

Unemployment projections 100
Unfunded obligation 3, 9, 12, 14, 18, 46, 63, 66, 177, 209, 215, 222
Unnegotiated check 144, 156

V

Valuation period 11, 46, 151, 162, 183, 207
Vocational rehabilitation 47, 142, 157, 185, 193, 205, 210

Y

Year of exhaustion 9, 11, 21, 46, 58

STATEMENT OF ACTUARIAL OPINION

It is my opinion that (1) the techniques and methodology used herein to evaluate the financial and actuarial status of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds are based upon sound principles of actuarial practice and are generally accepted within the actuarial profession; and (2) the assumptions used and the resulting actuarial estimates are, individually and in the aggregate, reasonable for the purpose of evaluating the financial and actuarial status of the trust funds, taking into consideration the past experience and future expectations for the population, the economy, and the program.

Stephen C. Goss,

Associate of the Society of Actuaries,
Member of the American Academy of Actuaries,
Chief Actuary, Social Security Administration