
Actuarial Status of the OASI and DI Trust Funds

by Harry C. Ballantyne*

This article summarizes the current financial and actuarial status of the Old-Age, Survivors, and Disability Insurance (OASDI) program. The results presented are from the 1984 Trustees Report and are similar to the results in the 1983 report. This year's estimates show that the Social Security Amendments of 1983 restored the financial soundness of the OASDI program. According to the actuarial estimates, benefits can be paid on time throughout the 1980's and for many years thereafter. Because trust fund levels are projected to be relatively low through 1987, however, the program could again experience financial difficulties in the near future if economic conditions become worse than anticipated under the pessimistic (Alternative III) assumptions. After 1987, the program's ability to withstand economic downturns is projected to improve. On the basis of intermediate (Alternative II-B) assumptions, the OASDI program is in long-range close actuarial balance. This actuarial balance reflects substantial year-by-year surpluses during the first half of the 75-year projection period that are slightly outweighed by substantial deficits later on.

Two separate Social Security trust funds are used to pay cash benefits to workers and their families. Benefits for retired workers and their families and for survivors of deceased workers are paid by the Old-Age and Survivors Insurance (OASI) Trust Fund, and benefits for disabled workers and their families are paid by the Disability Insurance (DI) Trust Fund. These two parts of the Social Security program—OASI and DI—are collectively referred to as OASDI.

The Social Security program is financed essentially on a pay-as-you-go basis. That is, as taxes are paid into the program, they are used to pay benefits to beneficiaries. The trust funds hold all assets not currently needed to pay benefits and administrative expenses. The trust funds may not be used for any other purposes.

The Secretaries of the Treasury, Labor, and Health and Human Services currently serve as trustees of the Social Security trust funds. They report annually to the Congress on each fund's condition and projected financial operations.

This article, adapted from the 1984 Trustees Report,¹

*Chief Actuary, Social Security Administration.

¹ 1984 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds, Social Security Administration, April 5, 1984. Single copies of the report can be obtained from the Office of Public Inquiries, Room 4100 Annex, Social Security Administration, 6401 Security Boulevard, Baltimore, Maryland 21235.

presents a summary of the current financial and actuarial status of the OASI and DI Trust Funds. All figures are on a calendar-year basis, and are for the OASDI program as it is now structured.

OASDI Income and Trust Funds

Most OASDI revenue comes from payroll taxes paid by employees, their employers, and the self-employed. (Additional payroll taxes go into a separate trust fund for the Hospital Insurance (HI) part of Medicare. This article focuses on OASDI and does not discuss Medicare except in the context of interfund borrowing.)

Table 1 shows the payroll tax rates for employers and employees as established by law. Taxes at these rates are paid on each worker's earnings up to \$37,800 in 1984. In future years, the Social Security earnings base will rise as average wages increase. The combined employee-employer rates are twice the rates shown. For the self-employed, the OASDI tax rate is the same as the combined employee-employer rate.

For 1984 only, an immediate credit of 0.3 percent of taxable wages (equal to the 1984 tax rate increase for employees) is allowed against the taxes paid by employees. Similarly, certain credits are also allowed against taxes on net earnings from self-employment in 1984-89.

Table 1.—Schedule of OASDI tax rates: Contribution rates payable by employer and employee (each)

[Percent of taxable earnings]

Calendar year	OASDI	OASI	DI
1984-87	5.70	5.200	0.500
1988-89	6.06	5.530	.530
1990-99	6.20	5.600	.600
2000 and later	6.20	5.490	.710

Beginning in 1990, self-employed persons will be allowed to deduct from their net self-employment earnings an amount equal to such income multiplied by one-half of the Social Security tax rate for the self-employed. Then half of the Social Security tax liability will be deductible in computing Federal income taxes for the self-employed. The effect of this procedure will be to place self-employed persons in roughly the same position as employees in regard to their Social Security and Federal income taxes.

The trust funds serve as a contingency reserve to absorb temporary fluctuations in OASDI income and outgo. When income exceeds outgo, the trust funds increase. When outgo exceeds income, the trust funds are drawn down. The assets of the trust funds are generally invested in U.S. Government securities bearing rates of interest similar to those for long-term securities issued to the general public.

The exact timing of income and outgo can be important under pay-as-you-go financing. In order to match OASDI income with outgo more closely, the Treasury advances each month's payroll tax receipts to the trust funds at the beginning of the month, when cash benefits are paid. The trust funds pay interest to the Treasury for such advance payments. The net effect is to make income in each month available when benefits are paid in the same month.

Commencing in 1984, the taxation of Social Security benefits provides another significant source of OASDI income. The proceeds from this tax are transferred from the general fund of the Treasury to the trust funds in advance—on an estimated basis—at the beginning of each calendar quarter. The trust funds do not pay interest to the Treasury for such advance payments.

The law permits limited interfund borrowing among the OASI, DI, and HI funds through 1987. Any loans, including those already made in 1982, must be repaid with interest before 1990.

Operations of the Trust Funds

Table 2 presents a summary of 1983 financial operations for the OASI and DI Trust Funds, including cash income (revenue), outgo (disbursements), and changes in assets during 1983. The financial results for 1982 are shown for comparative purposes.

Table 2.—Financial operations of the OASI and DI Trust Funds, calendar years 1982 and 1983

[In billions]

Item	1983 OASDI results	Comparative 1982 results
Assets at beginning of year	\$24.8	\$24.5
Income in year, total	171.3	147.9
Tax contributions	156.3	145.7
Net interest	8.3	1.4
General fund of Treasury	6.7	.9
Outgo in year, total	171.2	160.1
Benefit payments	166.7	156.2
Administrative expenses ¹	2.2	2.1
Transfer to Railroad Retirement Account	2.3	1.8
Interfund loans: amounts received	12.4
Net increase in assets1	.2
Assets at end of year	24.9	24.8

¹ Administrative expenses for OASDI in 1983 were 1.3 percent of outgo.

² Less than \$0.05 billion.

Note: Components may not add to totals due to rounding.

Income to the OASDI program during 1983 exceeded outgo slightly, as various provisions of the Social Security Amendments of 1983 began to strengthen the financing of the program.

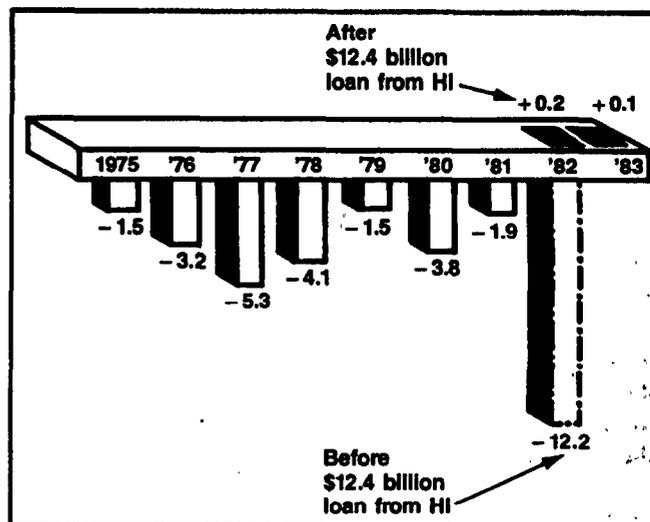
Chart 1 shows that 1983 was the first year since 1974 that the combined OASI and DI funds increased without resorting to borrowing. (The 1982 increase of \$0.2 billion reflects the effect of the \$12.4 billion loan from the HI fund. Without this loan, OASDI assets would have decreased by about \$12 billion.)

Actuarial Projections

As required by law, the annual Trustees Reports contain projections of each fund's estimated financial

Chart 1.—Change in OASDI funds, 1975-1983

[In billions of dollars]



operation and status. For the OASDI program, these estimates extend over the next 75 years. The projections after the first few years are presented as percentages of taxable payroll. Because precise prediction of the future is not possible, even in the short range, both short- and long-range estimates are made using various sets of reasonable assumptions to indicate the trend and general range of future costs.

No single measure can fully describe the actuarial status of the OASDI funds. Short-range measures usually focus on the adequacy of reserves available to pay benefits despite temporary adverse conditions without legislative action. Long-range measures usually focus instead on the balance between income and outgo during the projection period.

Assumptions Used

Future OASDI income and outgo will depend on mortality, fertility, unemployment, inflation, and other economic and demographic factors. Demographic factors affect the number of persons paying Social Security taxes and receiving benefits, and economic factors affect the levels of wages and Social Security benefits.

This year's projections again were prepared using four sets of assumptions regarding these factors. Alternative I reflects a relatively optimistic view of the external factors that determine Social Security costs. Alternatives II-A and II-B are based on intermediate sets of assumptions as to future experience. Alternative II-A assumes future economic performance resembling the experience in periods of robust economic growth. Alternative II-B, which assumes lower economic growth, represents the "most likely" experience. Alternative III reflects a more pessimistic view of the factors that will determine Social Security costs.

Table 3 shows selected values of several of the assumptions used in the four basic projections and describes these assumptions more fully. There is no assurance that experience will actually fall within the range of any of these assumptions. However, it is not considered likely that average actual experience will lie outside the range of the assumptions.

Measures of Short-Range Actuarial Status

The fund ratio at the beginning of a year is the fund at the end of the prior year, plus advance tax transfers for January, expressed as a percentage of that year's expenditures. For example, a fund ratio of 25 percent means that the amount in the fund is one-fourth of annual outgo (enough to pay benefits for about 3 months in the absence of any income). At the beginning of 1984, the fund ratio for OASDI was 21 percent. (Of course, the actual ratio for any year will not be known until the year is completed and the amount of expenditures is

Table 3.—Economic and demographic assumptions used under the four alternatives

Calendar year	Percentage increase over previous year in average annual—			Average unemployment rate (percent)	Total fertility rate ²
	Real GNP ¹	Wages in covered employment	Consumer Price Index		
Alternative I (optimistic)					
1983.....	3.3	4.2	3.0	9.6	1.9
1984.....	6.1	6.1	3.9	7.7	1.9
1985.....	4.8	5.5	3.8	7.0	1.9
1990.....	3.2	4.8	2.6	5.0	2.0
2000.....	3.7	4.6	2.0	5.0	2.2
2010 and later ...	3.0	4.5	2.0	5.0	2.3
Alternative II-A (intermediate)					
1983.....	3.3	4.2	3.0	9.6	1.9
1984.....	5.4	6.0	4.4	7.8	1.9
1985.....	4.0	5.8	4.6	7.3	1.9
1990.....	3.5	5.4	3.3	5.6	1.9
2000.....	3.1	5.1	3.0	5.5	2.0
2010 and later ...	2.4	5.0	3.0	5.5	2.0
Alternative II-B (intermediate)					
1983.....	3.3	4.2	3.0	9.6	1.9
1984.....	4.9	5.9	4.7	7.9	1.9
1985.....	3.6	6.1	5.3	7.5	1.9
1990.....	3.0	5.6	4.0	6.2	1.9
2000.....	2.6	5.6	4.0	6.0	2.0
2010 and later ...	2.0	5.5	4.0	6.0	2.0
Alternative III (pessimistic)					
1983.....	3.3	4.2	3.0	9.6	1.8
1984.....	3.4	5.2	5.2	8.2	1.8
1985.....	.4	5.0	5.7	9.0	1.8
1990.....	2.7	6.3	5.0	7.3	1.8
2000.....	2.0	6.1	5.0	7.0	1.7
2010 and later ...	1.4	6.0	5.0	7.0	1.6

¹ Gross national product (GNP—the total output of goods and services) expressed in constant dollars. The percentage increase in real GNP is assumed to change after the year 2010. The values for the year 2060 are 3.2 percent, 2.3 percent, 1.9 percent, and 0.7 percent for Alternatives I, II-A, II-B, and III, respectively.

² The number of children who would be born to a woman in her lifetime (assuming that she survives the childbearing years) based on the birth rates at each age in the year shown.

known. Before the year is completed, the ratio can only be estimated.)

A fund ratio below 8 percent would represent less than 1 month's benefit outgo, and thus would usually imply inability to pay benefits on time. In practice, to assure payment of benefits in the short range, higher levels of about 12–14 percent would be needed because OASDI income and outgo fluctuate during the year, and because unforeseen changes in the economy may cause the trust funds to decline unexpectedly.

A new "stabilizer" provision was included in the 1983 amendments to help avoid the need for hasty legislative action to assure payment of benefits on time. Under the stabilizer provision, if the trust fund ratio falls below specified thresholds, annual benefit increases will be based on the lower of wage or price increases, instead of on price increases alone, with provision for "catch-up" benefit increases later.

Trust fund ratios for purposes of this stabilizer provision, and for determining repayment of interfund loans, follow definitions different from the one used throughout this article, as described earlier.

Measures of Long-Range Actuarial Status

The cost rate is the annual outgo as a percentage of taxable payroll. Also, the total income rate (or simply the income rate) is the combined OASDI employee-employer payroll tax rate scheduled in the law, plus the rate of income from the taxation of benefits, expressed as a percentage of taxable payroll. Over time, the average income rate and cost rate can be compared directly to measure the adequacy of financing.

For the entire long-range projection period of 75 years, the actuarial balance is the difference between the average income rate and the average cost rate. If this actuarial balance is positive, the system is said to have an actuarial surplus, and if negative, an actuarial deficit. Such a deficit is a warning that long-range financing may need to be strengthened, although it does not give a complete picture without the other measures of financing discussed here.

The program is said to be in close actuarial balance over the long-range period if the average income rate is 95-105 percent of the average cost rate, based on intermediate assumptions.

Short-Range Financing (1984-1988)

Projections over the next 5 years are used by the Congress and the Administration to monitor OASDI financing. In this short-range picture, the number of persons receiving OASDI benefits can be forecast closely. However, changes in the national economy can have major effects on outgo and income and are difficult to predict.

The 1984 Trustees Report shows that, based on all four projections, OASDI benefits can be paid on time throughout the next 5-year period.

Chart 2 shows the year-by-year surpluses projected during 1984-88 based on the Alternative II-B assumptions. The amounts shown are lower than they would otherwise be because of repayment during 1986-87 of the \$12.4 billion owed to the HI fund.

Chart 3 shows the projected progress of the OASDI fund ratio based on all four sets of assumptions during 1984-90. As of January 1, 1984, the ratio was 21 percent for OASDI. For the next few years, the OASDI fund ratio is projected to remain low, eventually heading upward past 25 percent between 1985 and 1990. After 1987, OASDI reserves are projected to increase more rapidly, reflecting higher payroll tax rates. Thus, during the next few years, margins of safety are thin; thereafter the funds are less vulnerable to the adverse effects of an economic downturn.

Chart 2.—Increase in OASDI funds, 1984-88, based on Alternative II-B assumptions

[In billions of dollars]

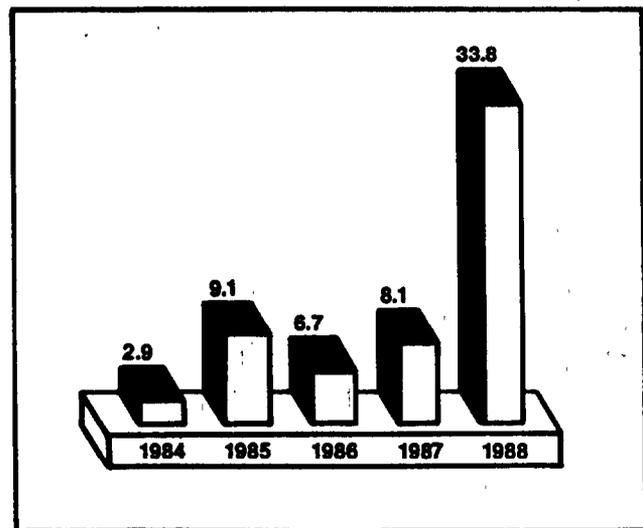
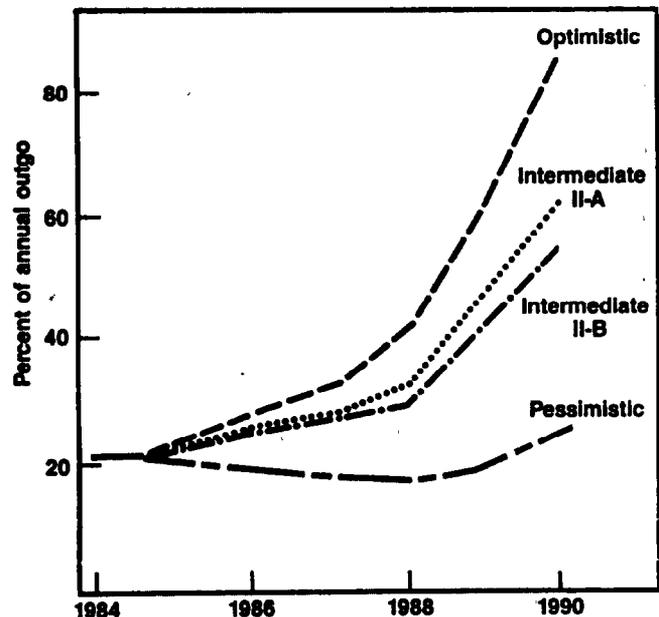


Chart 3. — OASDI fund ratio at January 1, 1984-90



The stabilizer provision of the 1983 amendments is not expected to affect the automatic benefit increase for December 1984, even on the basis of very pessimistic assumptions. Thus, the 1984 cost-of-living increase in OASDI benefits will almost certainly be based on the full increase in the Consumer Price Index, even if the applicable wage increase is less.

Based on all four sets of assumptions, the \$12.4 billion owed to the HI fund would be fully repaid by 1987 or 1988. Repayment is projected to be more prompt where it could make a difference in the ability of the HI fund to pay benefits on time.

Long-Range Financing (1984-2058)

Long-range estimates—over the next 75 years—although sensitive to variations in the assumptions, give the best available indication of the trend and general range of the program's future cost. In this long-range period, Social Security income and outgo should tend to respond largely to demographic conditions. Most of the beneficiaries during the next 75 years have already been born, so that their numbers are projected mainly from the present population. The number of workers involved in these projections, however, depends on future birth rates, which are subject to more variability. Several important long-range demographic trends, already under way, are anticipated to raise the proportion of the aged in the population in the next 75 years:

- Because of the large number of persons born shortly after World War II, rapid growth is expected in the aged population after the turn of the century.
- At the same time, low birth rates would hold down the number of young persons.
- Projected declines in mortality rates also would increase the number of aged persons.

Chart 4 shows the increases in life expectancies that are anticipated, based on the intermediate assumptions. (Life expectancy is the average number of years of life remaining, based on the death rates at each age in the year shown. Rates are based on Census data through 1980, projected beyond 1980 on the basis of the intermediate assumptions.)

Chart 5 illustrates total fertility rates experienced from 1940 to 1980 and projected over future years for the three sets of demographic assumptions. The post-World War II baby boom can be clearly seen, followed

Chart 4.—Life expectancies (in years) at age 65, projected based on intermediate assumptions, 1940-2060

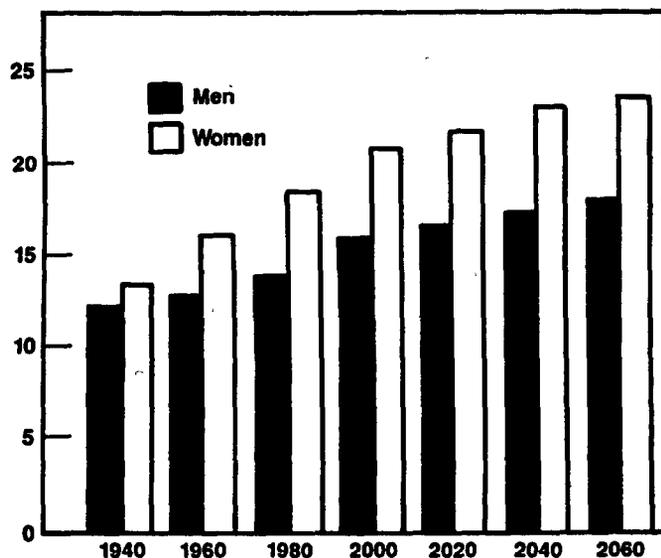
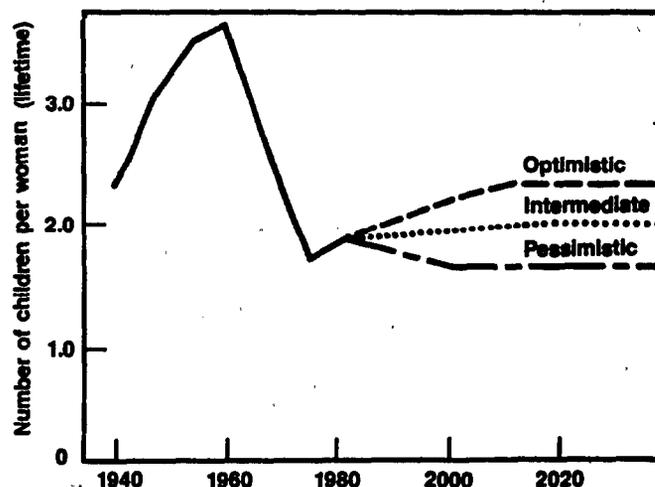


Chart 5.— Total fertility rate, 1940-2040



by the historically low fertility rates of recent years.

Chart 6 shows the long-range trend in the number of OASDI beneficiaries for each 100 covered workers, based on the three sets of demographic assumptions. ("Beneficiaries" includes not only retired workers, but also disabled workers, spouses, children, and survivor beneficiaries.) This ratio has risen from 20 in 1960 to 30 currently. It is estimated to reach a level of about 50 by the middle of the next century, as the number of beneficiaries increases more rapidly than the number of OASDI-covered workers.

Chart 7 shows the trend in the estimated annual OASDI cost rate (outgo as a percentage of taxable payroll) on the basis of each of the four sets of assumptions during the next 75 years. All four projections show that the cost rate increases substantially after the turn of the century. Based on Alternatives I, II-A, and II-B, the outgo in relation to taxable payroll is fairly level or decreasing after 2030, while based on Alternative III, the

Chart 6.— Number of OASDI beneficiaries per 100 workers, 1980-2060

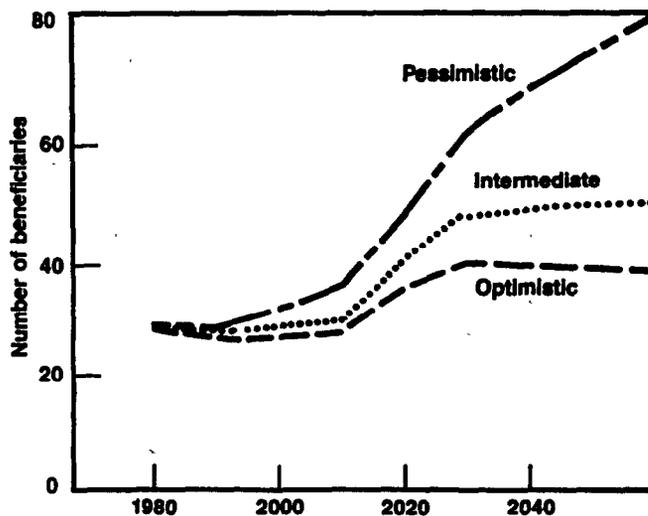
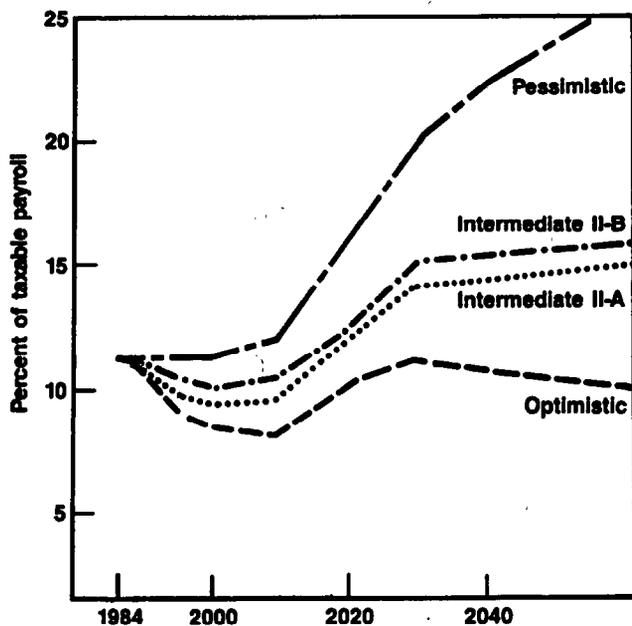


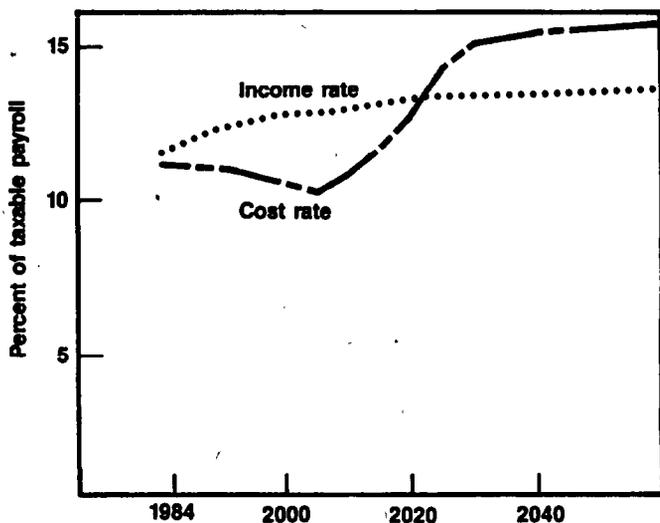
Chart 7. — Estimated long-range OASDI cost rate as a percent of taxable payroll, 1984-2060



outgo is still increasing at the end of the 75-year period.

Chart 8 shows the estimated OASDI cost rates and income rates over the next 75 years based on the Alternative II-B assumptions. During the first half of this

Chart 8. — Income rate and cost rate projected by Alternative II-B assumptions, 1984-2060



period, the projection shows that income will generally exceed outgo, developing a substantial surplus each year. After about 2020 the reverse is true, with outgo exceeding income and thus generating substantial deficits. Over the entire period, such surpluses and deficits are approximately in balance.

After 1990, when the scheduled employee-employer payroll tax rate has leveled off at 12.4 percent, the income rate continues to rise slightly as a result of the income from taxation of OASDI benefits—from 12.7 percent in 1990 to 13.2 percent in 2060 based on the Alternative II-B assumptions.

Table 4 compares the estimated OASDI cost rates and income rates for the next 75 years on the basis of the four sets of assumptions. The estimated average annual cost rate for the entire 75-year projection period exceeds the average annual income rate for the period by 0.06 percent of taxable payroll based on Alternative II-B. Thus, based on Alternative II-B, the OASDI program is in close actuarial balance, although the slight surplus of 0.02 percent of payroll shown in the 1983 report has now been replaced by the slight deficit of 0.06 percent.

Conclusion

The estimates shown in the 1984 OASDI Trustees Report reaffirm the conclusion in the 1983 report that the Social Security Amendments of 1983 restored the financial soundness of the OASDI program. During this decade, the program is estimated to be adequately financed based on all four sets of actuarial assumptions. Over the next 75 years, the program is estimated to be financially sound on the basis of all but the most pessimistic of the assumptions used.

Table 4.—Estimated 75-year average OASDI cost rates, income rates, and actuarial balance, as a percentage of taxable payroll

Alternative assumptions	Income rate	Cost rate ¹	Actuarial balance ²
I—optimistic	12.76	10.01	2.75
II-A—intermediate	12.86	12.21	.65
II-B—intermediate	12.90	12.95	-.06
III—pessimistic	13.10	17.22	-4.12

¹ Cost rate is the estimated outgo as a percentage of taxable payroll.

² Actuarial balance is the difference between the income rate and the cost rate before rounding.