Actuarial Status of the OASI and DI Trust Funds*

This article presents the "Summary of the 1991 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds." The Board reports the Old-Age and Survivors Insurance (OASI) Trust Fund, by itself, and the combined OASI and Disability Insurance (DI) Trust Funds meet the short-range test of financial adequacy, based on intermediate assumptions. However, under conditions that are more pessimistic than the intermediate assumptions, the DI Trust Fund would be depleted during the next 10 years. Under intermediate assumptions, the long-range 75-year estimates, excluding the effects of interest income, indicate the OASDI program will experience about 26 years of positive annual balances, with annual deficits indefinitely thereafter. Including interest, the trust funds would continue to grow, in dollars, for another decade, before steadily declining to exhaustion 50 years from now.

*Adapted from the **1991 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds,** Social Security Administration, May 17, 1991. Single copies of the report may be obtained from the Office of Public Inquiries, Room 4100 Annex, Social Security Administration, 6401 Security Boulevard, Baltimore, Maryland 21235.

During calendar year 1990, the combined assets of the Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) Trust Funds increased by $62.3 billion, continuing the growth that began in 1983 when the Social Security Amendments of 1983 were enacted. The 1990 growth in assets consisted of increases of $59.1 billion in the OASI Trust Fund and $3.2 billion in the DI Trust Fund. Both of these increases were significantly larger than the corresponding increases in the previous calendar year, which amounted to $52.2 billion and $1.0 billion, for the OASI and DI Trust Funds, respectively.

The combined trust funds are expected to continue growing for many years into the future. Based on intermediate assumptions, the combined trust funds are estimated to reach a level of about 4 times annual outgo in the next 25 years. Even if future experience is very adverse, the combined funds are estimated to increase to over 1-1/2 times annual outgo during the next 15 years. However, the estimates of trust fund growth during the next several years are lower than the estimates in the 1990 Annual Report of the Board of Trustees, due largely to the recession that began in 1990.

Estimates of the operations of the trust funds during the next 75 years are shown in the 1991 Annual Report for three alternative sets of assumptions. One set—alternative II—is referred to as intermediate and represents the Board's best estimate of the future course of the population and the economy. Another set—alternative I—is more optimistic, and the third—alternative III—is more pessimistic than alternative II. In the annual reports of 1981-90, estimates of trust fund operations during the next 75 years were shown for four alternative sets of assumptions. Two of the four sets were intermediate assumptions designated as alternatives II-A and II-B. (The two intermediate sets used the same assumptions for population growth, but alternative II-A used more robust economic assumptions than alternative II-B.)

All of the estimates under the full range of assumptions are useful in assessing the financial status of the OASDI program. In the 1991 report, specific tests of the financial adequacy of the trust funds are based on the alternative II assumptions. In previous reports, when there were two intermediate sets of assumptions, such tests were based on the alternative II-B assumptions. Comparisons of intermediate estimates in the 1991 report with corresponding estimates in the 1990 report are also based on the alternative II-B estimates in the 1990 report.

A new test of the financial adequacy of the trust funds, for both the short range and the long range, is introduced in this report. The test applies to each fund separately, as well as to the combined funds, based on intermediate assumptions. The short-range test of financial adequacy is met if, over the next 10 years, the fund's assets at the beginning of each year are at least as large as the following year's outgo. If the fund's assets are less than the following year's outgo at the beginning of any of the first 5 years, but reach at least 100 percent of the next year's outgo by the beginning of the 6th year, and remain at or above 100 percent throughout the remainder of the 10-year period, the fund still meets the short-range test, if estimated assets are sufficient to pay estimated benefits when due during the entire 10-year period.

Due to the expected growth in the OASI fund over the next 10 years, both the OASI Trust Fund, by itself, and the combined OASI and DI Trust Funds meet the short-range test of financial adequacy, which is based on intermediate assumptions. However, the DI fund does not meet the short-range test; and, under conditions that are more pessimistic than the intermediate assumptions, the DI fund would be depleted during the next 10 years. Thus, the estimates indicate a need to

strengthen the financial position of the DI fund. Because of the growth in the OASI fund, a reallocation of contribution rates between OASI and DI could make the DI fund financially adequate in the short-range without causing the OASI fund to fail the short-range test for financial adequacy.

Under the intermediate assumptions, the long-range 75-year estimates, excluding the effects of interest income, indicate that the OASDI program will experience about 26 years of positive annual balances, with annual deficits indefinitely thereafter. Including interest, the trust funds would continue to grow, in dollars, for another decade, before steadily declining to exhaustion 50 years from now.

Over the next 75 years, the program has an actuarial deficit of 1.08 percent of taxable payroll, based on the intermediate assumptions. This deficit takes account of future income and outgo over the next 75 years and the combined assets of the OASI and DI Trust Funds at the beginning of the projection period. Also, in this year's report, the cost of reaching and maintaining a "target" trust fund level of 100 percent of expenditures by the end of the 75-year projection period is reflected in the actuarial deficit.

The cost of the target trust fund level increases the 75-year actuarial deficit by an estimated 0.16 percent of taxable payroll. The resulting deficit of 1.08 percent of taxable payroll is 0.17 percent larger than the deficit of 0.91 percent of taxable payroll shown in the 1990 report under alternative IIB. Thus, without this change to include the cost of a 100-percent target trust fund level, the actuarial deficit for the next 75 years, under this year's intermediate assumptions, would be nearly the same as the actuarial deficit under the alternative II-B assumptions in last year's report. There were, however, other changes from last year's estimated deficit for the OASDI program which were largely offsetting, as shown in the preceding tabulation (as a percentage of taxable payroll).

Shown in last year's report under alternative II-B:		
Income rate		13.04
Cost rate		13.95
Actuarial balance		-.91
Changes in actuarial balance due to changes in:		
Legislation	+0.17	
Valuation period	-.05	
Demographic assumptions	+.04	
Economic assumptions	-.11	
Disability assumptions	-.01	
Methods	-.06	
Subtotal for above changes	-.01	
Cost of reaching ending trust fund target	-.16	
Total change in actuarial balance		-.17
Shown in Trustees' Report under alternative II:		
Actuarial balance		-1.08
Income rate		13.11
Cost rate		14.19

Note: Totals may not equal sums of components, due to rounding.

The actuarial deficit of 1.08 percent of taxable payroll results from an actuarial income rate of 13.11 percent of taxable payroll (including beginning trust fund balances) and an actuarial cost rate of 14.19 percent of taxable payroll (including the ending trust fund target of 100 percent of annual expenditures). The estimated long-range deficit is, therefore, 7.6 percent of the estimated cost rate.

The program has traditionally been considered to be adequately financed over the next 75 years when the long-range actuarial balance is within 5 percent of the long-range cost rate. The new long-range test for close actuarial balance requires that, if the actuarial balance over the next 75 years is a deficit, the deficit must be no more than 5 percent of the cost rate over the 75-year period and, in addition, that any actuarial deficit for the first 11 years, the first 12 years, and so forth, up to the first 75 years, be no more than a specified percentage of the cost rate for the same period. The specified percentage is 5 percent for the full 75-year period and is decreased uniformly for shorter periods, approaching zero as the duration of the time periods approaches the first 10 years.

The new test, while more complicated than prior tests, is also more stringent. It can reveal situations in which the 75-year actuarial balance may be satisfactory, but temporary depletion of a trust fund occurs within the 75-year period.

Chart 1 shows the OASDI actuarial balance, under the intermediate assumptions, as a percentage of the summarized cost rate for each valuation period beginning with the 11-year period that ends in 2001 and culminating with the 75-year period that ends in 2065. As shown in chart 1, the OASDI program fails to meet the

new long-range test for the 58-year period from 1991 through 2048 and for all longer periods through the 75-year, 1991-2065 period because the actuarial deficits for those periods are in excess of the allowable margins. The program, therefore, is not in close actuarial balance. The Board of Trustees recommends continued extensive study of possible ways to address the long-range deficits, in addition to consideration of ways to strengthen the financial status of the DI program.

During the first part of the long-range projection period, the combined OASI and DI Trust Funds are expected to accumulate rapidly to a peak fund ratio of 418 percent of annual outgo in the year 2015, based on the intermediate assumptions (see chart 6, which appears later in this summary). Thereafter, the fund ratio is estimated to decline until the combined funds are exhausted in 2041, or 2 years earlier than estimated in last year's report. Thus, according to the intermediate estimates, the OASDI program would have enough funds (on a combined basis) to cover expenditures for the next 50 years into the future.

For OASI and DI, separately, the long-range actuarial balances, based on the intermediate assumptions, are deficits of 0.82 percent and 0.27 percent of taxable payroll, respectively. Chart 1 shows that each fund is not in close actuarial balance. The estimated DI balances are deficits for all of the long-range periods from the first 11 years (1991-2001) through the full 75 years (1991-2065). Because of the pattern and magnitude of the long-range DI deficits, consideration should be given to possible ways of strengthening the financial position of the DI program in the long range, as well as in the short range.

The appointment of an Advisory Council on Social Security was announced by the Secretary of Health and Human Services in June 1989. Under the Social Security Act, the Advisory Council is to study and review the status of the Social Security cash benefit and Medicare programs. An Interim Report on Social Security and the Federal Budget was issued by the Council in July 1990. The Council is scheduled to submit its final report and recommendations to the Secretary of Health and Human Services later this year, for consideration by the Board of Trustees.

A Social Security Panel of Technical Experts, convened by the Council, reviewed the estimates of the finanacial status of the OASDI program that were presented in the 1990 Annual Report. In general, the Panel found the work done in preparing the estimates to be sound, professional, and highly

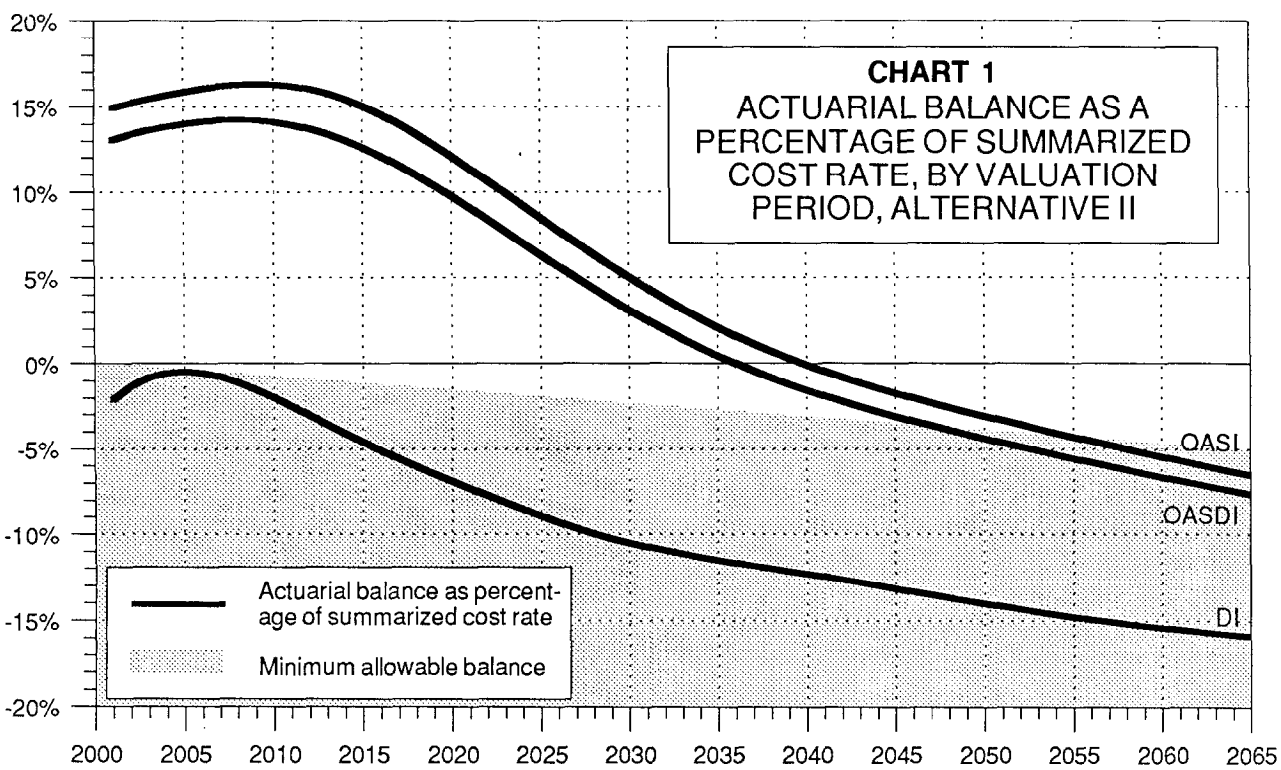


CHART 1
ACTUARIAL BALANCE AS A PERCENTAGE OF SUMMARIZED COST RATE, BY VALUATION PERIOD, ALTERNATIVE II

competent. The Panel recommended some changes in the economic assumptions and the adoption of the new test of the financial condition of the trust funds. A working group of other technical experts co-chaired by the two former public trustees also made recommendations to the Board of Trustees on measures of the financial condition of the trust funds and tests of the funds' financial adequacy. The 1991 Annual Report reflects consideration of the reports of both the Advisory Council's Panel of Technical Experts and the Trustees working group.

Program Description

The OASDI program consists of two separate parts which pay monthly benefits to workers and their families:

(1) Old-Age and Survivors Insurance (OASI) pays benefits after a worker retires and to survivors after a worker dies.

(2) Disability Insurance (DI) pays benefits after a worker becomes disabled.

The Board of Trustees of the trust funds is required by law to report annually to the Congress on the financial condition of the funds and on estimated future results. The Board is composed of five members, three of whom serve in an ex officio capacity: the Secretaries of the Treasury, Labor, and Health and Human Services. The other members, representing the public, are Stanford G. Ross and David M. Walker, who are serving 4-year terms that began on October 2, 1990.

Most OASDI revenue consists of contributions paid by employees, their employers, and the self-employed. (Additional contributions are paid into a separate trust fund for the Hospital Insurance (HI) part of Medicare. This summary focuses on OASDI and does not discuss Medicare.) The contribution rates are established by law. Contributions are paid on earnings not exceeding the earnings base—$53,400 in 1991 (for HI, the base was increased to $125,000 in 1991). The earnings base (for both OASDI and HI) will rise in the future as average wages increase. Employees and employers pay contributions at the same rate. The rate paid on self-employment income is equal to the combined rate for employees and employers. The current and scheduled future OASI and DI contribution rates for both employees and employers are shown in the following tabulation below (as percentages):

Year	Total	DI	OASI
1990-99	6.20	0.60	5.6
2000 and later	6.20	.71	5.49

Since 1984, a portion (not more than one-half) of OASDI benefits received by higher income beneficiaries is subject to Federal income taxation. The revenues collected as a result of this provision are transferred from the general fund of the Treasury to the trust funds.

The outgo of the OASI and DI Trust Funds consists of benefit payments and administrative expenses. Trust fund assets may not be used for any other purposes.

During periods when outgo temporarily exceeds income, trust fund assets are used to meet the shortfall. In the event of recurring shortfalls, the trust funds can allow time for legislation to be enacted to restore balance to the program. The assets of the trust funds are invested in U.S. Government securities bearing rates of interest based on those for long-term securities issued to the general public.

Recent Results

During 1990, about 133 million workers made contributions to the OASDI program. At the end of December 1990, 39.8 million persons were receiving monthly benefits under the OASDI program. Administrative expenses represented about 0.9 percent of benefit payments in calendar year 1990.

Income to the OASI and DI Trust Funds in calendar year 1990 was $315.4 billion, while outgo was $253.1 billion. Thus, the assets of the combined funds increased by $62.3 billion during the calendar year. A summary of the OASDI financial operations in calendar year 1990 is shown in the following tabulation (in billions):

Trust fund assets at end of calendar year 1989	$163.0
Income during year:	
Total income	315.4
Contributions	296.1
Revenue from taxation of benefits	5.0
Net interest	17.2
Outgo during year:	
Total outgo	253.1
Benefit payments	247.8
Administrative expenses	2.3
Transfer to Railroad Retirement program	3.0
Net increase in assets during year	62.3
Trust fund assets at end of calendar year 1990	225.3

Actuarial Estimates

The annual report contains 75-year estimates of each fund's financial operations and status. Because precise prediction of the future is impossible, alternative sets of assumptions, representing a reasonable range of possible future experience, are used to make short-range and long-range estimates. Future experience could, however, fall outside the range indicated by these assumptions.

Future OASDI income and outgo will depend on a variety of economic and demographic factors, including economic growth, inflation, unemployment, fertility, and mortality. These factors affect the levels of workers' earnings and OASDI benefits, as well as the numbers of people making contributions and receiving benefits.

As noted above, the estimates in the 1991 report were prepared using three alternative sets of assumptions. Based on these alternative sets of assumptions, several measures are used to assess the actuarial status of the OASDI funds. Short-range measures usually focus on the adequacy of reserves available to pay benefits. Long-range measures usually focus on the balance between income and outgo during the projections period as well as the adequacy of the reserves.

The **contingency fund ratio** is the usual measure of the OASDI program's ability to pay benefits on time in the near future. This ratio is the amount in the trust funds at the beginning of the year divided by that year's expenditures. Thus, if the trust fund ratio is 50 percent, the amount in the fund represents about 6 months' outgo. A ratio of at least 8 to 9 percent is required to pay benefits at the beginning of each month. At the beginning of 1991, the fund ratio for OASDI was about 82 percent.

In analyzing the actuarial status of OASDI for the next 75 years, several different measures are commonly used. The annual **income rate** is the combined OASDI employee-employer contribution rate scheduled in the law, plus the income from taxation of benefits, expressed as a percentage of taxable payroll. The annual **cost rate** is the annual outgo expressed as a percentage of taxable payroll. The annual balance, which is the difference between the annual income rate and the annual cost rate, measures the adequacy of current funding in each year of the long-range projection period (not including accumulated assets that are also available in the trust funds). If the difference is negative, the annual balance is a deficit. The level and pattern of annual positive balances and annual deficits during various periods of time within the next 75 years measure the financial strength of the program over such periods.

If a trust fund becomes exhausted during the projection period, the year in which the exhaustion occurs is an important measure of the financial condition of the fund.

Summarized income and cost rates over a long-range projection period can be compared directly to measure the adequacy of the program's overall level of financing during the period. The income and cost rates are summarized over the period using present value calculation. The use of present value calculations appropriately discounts the future value of projected trust fund income or outgo by the assumed interest rate, thereby reflecting the full effect of interest. The summarized rates also take account of beginning trust fund assets and the cost of the ending target of 1 year's expenditures in trust fund assets.

The **actuarial balance** for a specified period, is the difference between the estimated summarized income rate and the estimated summarized cost rate for the period. If this actuarial balance is negative, the program is said to have an actuarial deficit. Such a deficit is a warning that future changes may be needed in the program's financing or benefit provisions.

Short-Range Financing (1991-2000)

Estimates for the next 10 years are used to assess the adequacy of OASDI financing in the short range. In this period, the numbers of persons receiving OASDI benefits can be estimated fairly accurately. Changes in the national economy, however, which are difficult to predict, can have major effects on income and outgo.

The actuarial estimates shown in the 1991 report indicate that the assets of the OASI and DI Trust Funds, if combined, would be sufficient to pay OASDI benefits on time throughout the first 10 years and for many years thereafter, based on all three sets of assumptions. The contingency fund ratio for the combined funds is estimated to reach at least 100 percent by the beginning of 1993 and at least 150 percent by the beginning of 1996 under alternative II. The OASI fund, by itself, can also operate satisfactorily for many years into the future. The OASI fund is expected to reach at least 100 percent of annual outgo by the beginning of 1992 and at least 150 percent by the beginning of 1995, under intermediate assumptions. The DI fund by itself, however, is not expected to reach 100 percent

in the next 10 years (nor in the next 75). Under the adverse conditions assumed for alternative III, the DI fund is estimated to be exhausted in 1997.

Chart 2 shows the combined assets of the OASI and DI Trust Funds at the end of 1990 and the estimated assets at the end of each year 1991-2000, on the basis of all three sets of assumptions. The assets of the combined funds are estimated to increase each year.

Chart 3 shows the OASDI contingency fund ratio for 1990 and the estimated OASDI ratios for 1991-2000, on the basis of all three sets of assumptions. The fund ratios for the combined trust funds are estimated to increase each year.

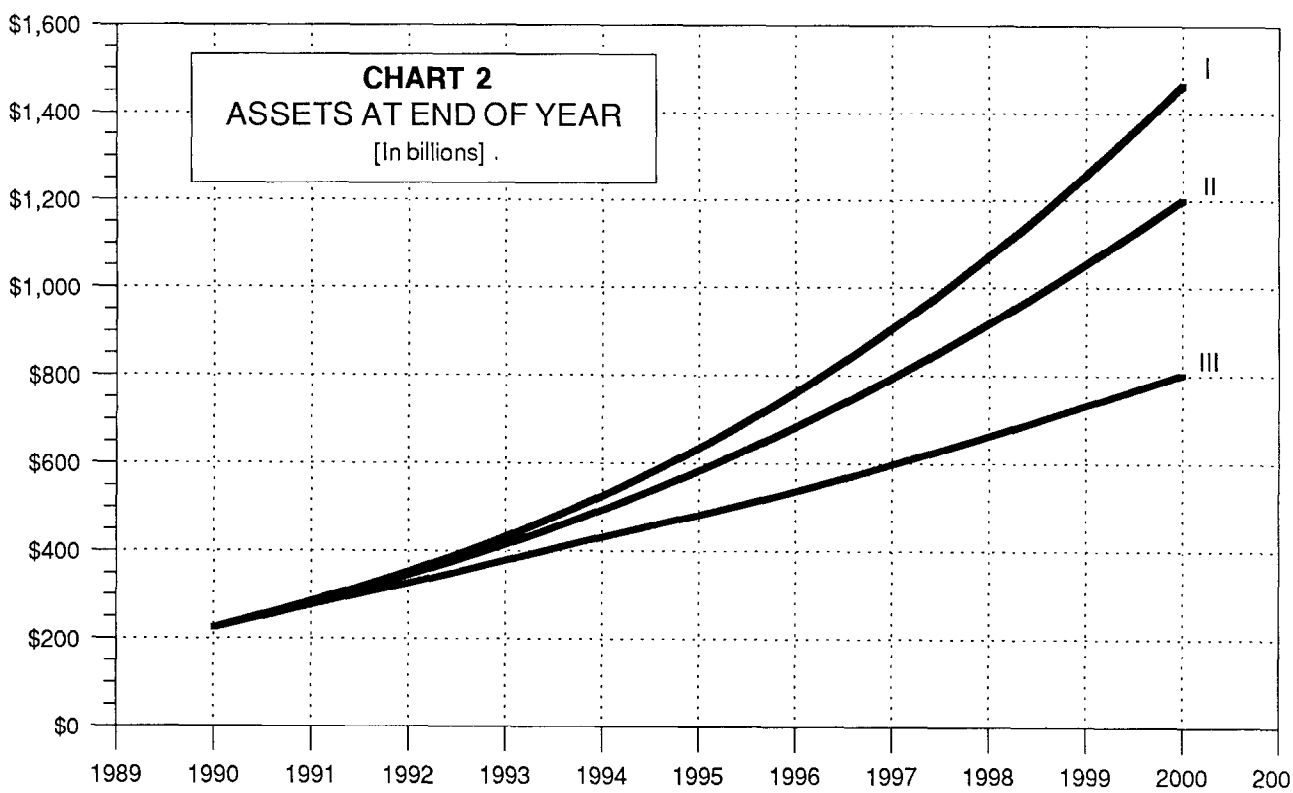
Long-Range Financing (1991-2065)

Long-range 75-year estimates for OASDI, although sensitive to variations in the assumptions, indicate the trend and general range of the program's future financial status. During this long-range period, income and outgo are greatly affected by demographic as well as economic 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 numbers of workers involved in these projections, however, depend largely on future birth rates, which are subject to more variability and, to a lesser extent, future rates of immigration.

Several important demographic trends are anticipated, which will raise the proportion of the aged in the population during the next 75 years. First, because of the large number of persons born in the 2 decades after World War II, rapid growth is expected in the aged population beginning around the year 2010. Second, assumed declines in death rates would increase the numbers of aged persons more gradually, but on a steady and permanent basis. At the same time, birth rates, which began to decline in the 1960's and are assumed to remain relatively low in the future, would hold down the numbers of young people.

Increases in net immigration, resulting from the Immigration Act of 1990, will contribute to larger numbers of young people, partially offsetting the lower fertility rates.

Chart 4 shows the long-range trend in the number of covered workers per OASDI beneficiary. (The term "beneficiary" includes not only



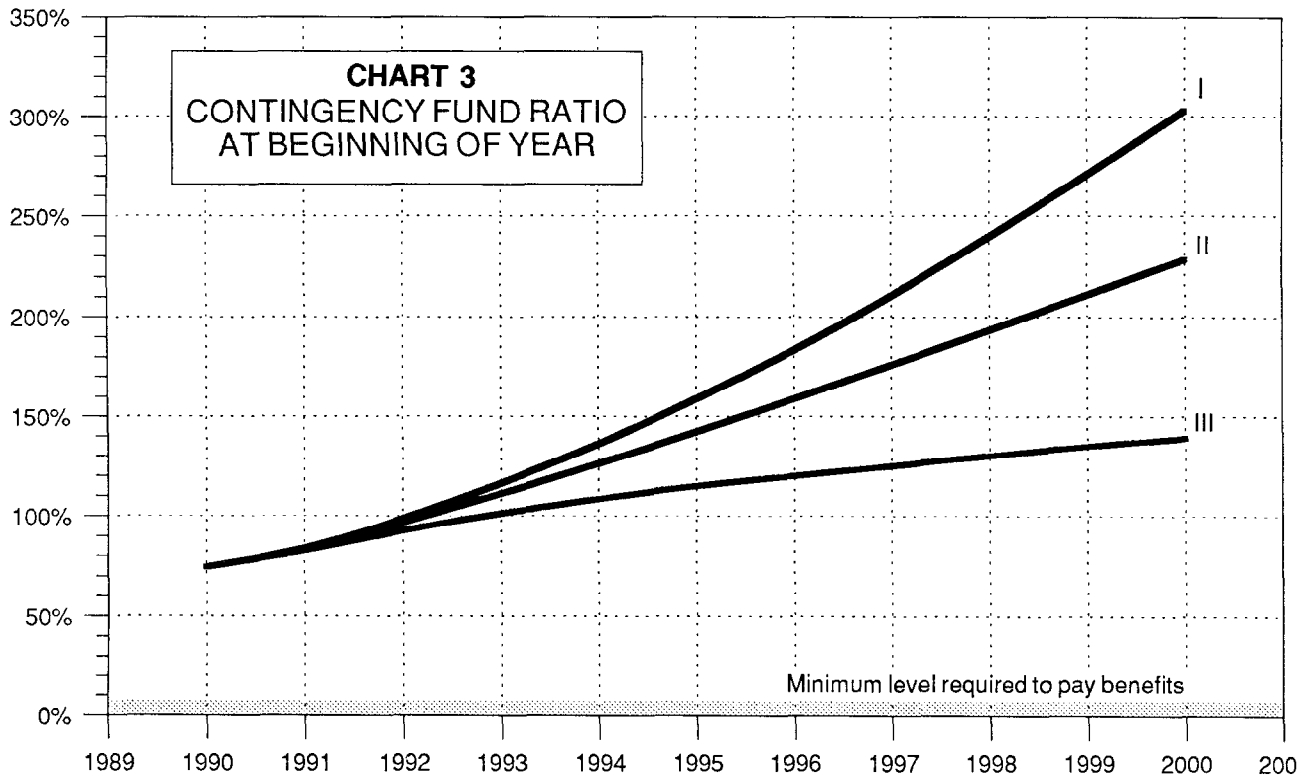
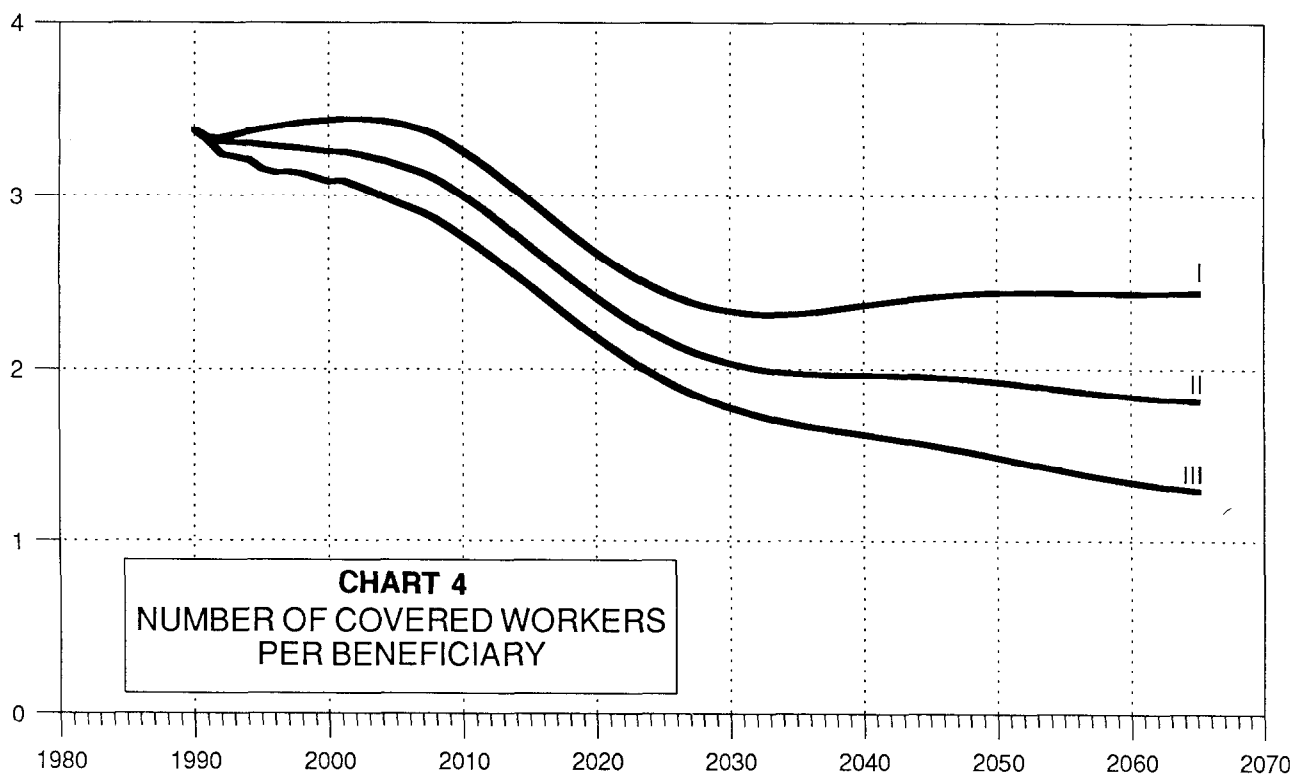
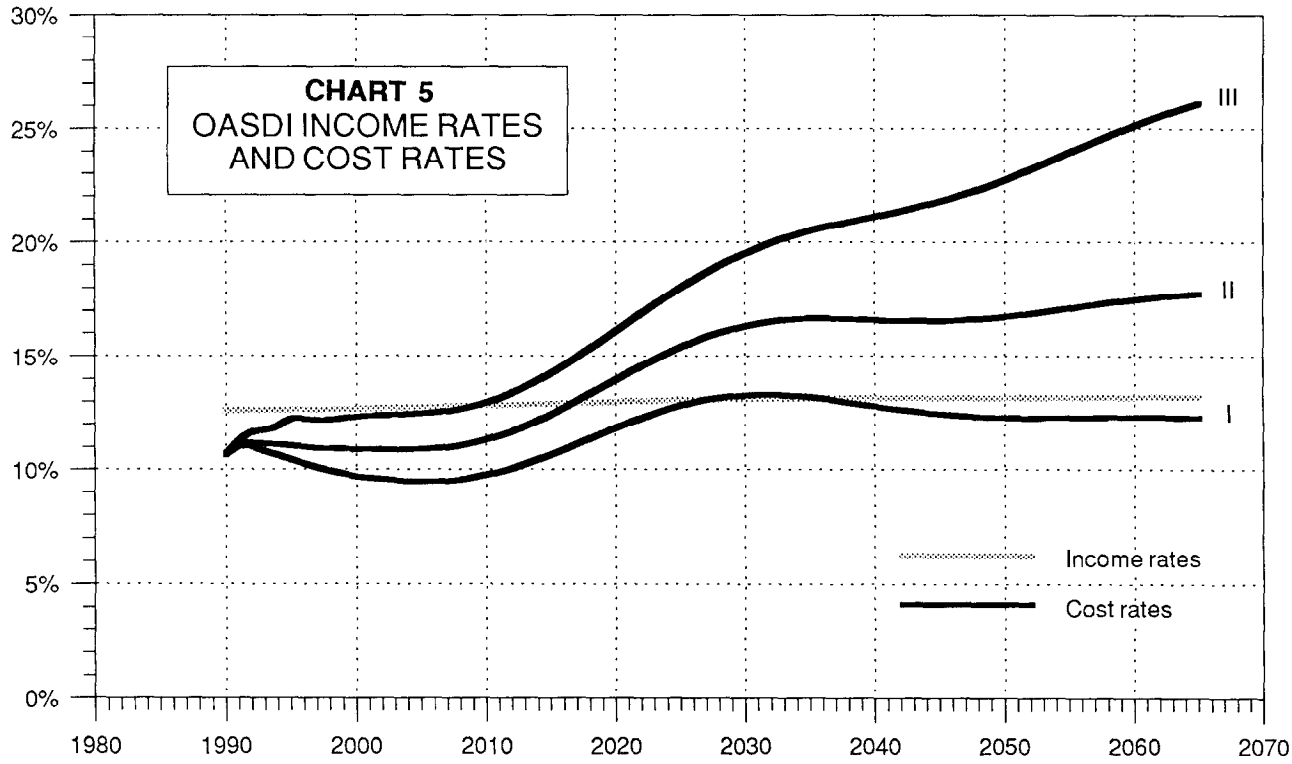


CHART 3
CONTINGENCY FUND RATIO
AT BEGINNING OF YEAR
350%
300%
250%
200%
150%
100%
50%
0%
I
II
III
Minimum level required to pay benefits
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001


4
3
2
1
0
I
II
III
CHART 4
NUMBER OF COVERED WORKERS
PER BENEFICIARY
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070



retired workers, but also disabled workers, spouses, children, and survivor beneficiaries.) Based on the intermediate assumptions, this ratio is estimated to decline gradually from 3.4 in 1990 to 3.0 in 2010. From 2010 to 2030, the estimated ratio falls rapidly to 2.0 as the number of beneficiaries increases more rapidly than the number of covered workers. After 2030, the ratio is estimated to decline gradually.

Chart 5 shows the estimated OASDI income and cost rates for the long-range projection period. During the first 20-25 years of this period, the estimates indicate that the income rate will generally exceed the cost rate, resulting in substantial positive balances each year. The reverse is true by 2017 for the intermediate assumptions and by 2010 for the more pessimistic assumptions, with the cost rate exceeding the income rate, thus resulting in substantial deficits. For the more optimistic assumptions, the cost rate exceeds the income rate only temporarily, from 2026 through 2037.

These positive balances and deficits do not reflect interest earnings, which result in trust fund growth continuing for about 10 years after the first annual deficits occur, under the intermediate assumptions. The cost rate is estimated to increase rapidly after the first half of the 75-year projection period, primarily because the number of beneficiaries is projected to increase more rapidly than the number of covered workers.

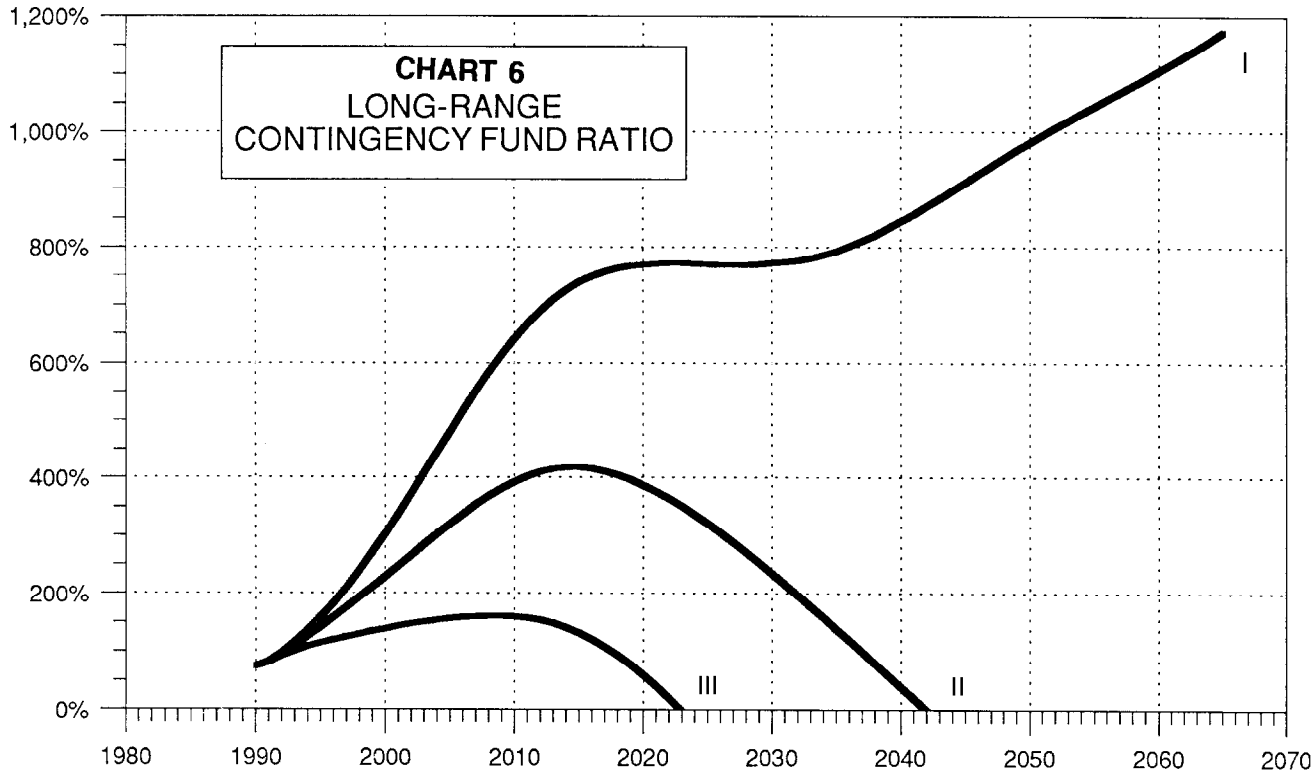
Chart 6 shows the projected OASDI contingency fund ratios for the 75-year period. The ratio rises steadily and reaches 418 percent in 2015, based on the intermediate assumptions; then the ratio declines until the combined funds are exhausted in 2041. The importance of the trust funds' accumulation of reserves is emphasized by Chart 6. As the chart shows, the buildup in the reserves will be needed later on to pay benefits to the increasing numbers of retired persons who were born in the high birth-rate years from the mid-1940's to the mid-1960's.

The table below presents a comparison of the annual income and cost rates for the 75-year long-range projection period, based on the three sets of assumptions. The figures are expressed as percentages of taxable payroll.

Assumptions	Income rate	Cost rate	Actuarial balance
More optimistic	13.00	11.65	1.34
Intermediate	13.11	14.19	-1.08
More pessimistic	13.25	17.37	-4.12

Note: Income rate, cost rate, and actuarial balance are defined in the text.

The long-range OASDI actuarial deficit of 1.08 percent of taxable payroll, based on the intermediate assumptions, results from an income rate of 13.11 percent of



taxable payroll over the 75-year period (including beginning trust fund balances) and a cost rate of 14.19 percent over the period. In the absence of other changes, the long-range actuarial balance will tend to worsen slowly in future annual reports, as the valuation period moves forward and additional distant year deficits are included in the valuation. The actuarial deficits in the later years of the 75-year projection period are caused primarily by the demographic trends described above, in combination with a flat contribution rate schedule.

The pattern of positive balances in the first third of the next 75 years and deficits thereafter, under the intermediate assumptions, results in a positive actuarial balance of 1.47 percent of taxable payroll for the next 25 years, an actuarial deficit of 0.21 percent for the next 50 years, and the 1.08-percent deficit for the entire 75 years. Summarized deficits for the second and third 25-year subperiods are significantly larger than the actuarial deficits for the 50-year and 75-year valuation periods, respectively, because these subperiods do not include the relatively more favorable annual balances for earlier years. The summarized balances, not taking account of funds on hand at the beginning of the subperiod nor the cost of an ending trust fund target of 100 percent of annual expenditures, are a positive balance of 1.49 percent of taxable payroll for the first 25 years, a deficit of 2.37 percent for the second 25 years, and a deficit of 3.88 percent for the third 25 years, under the intermediate assumptions.