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Contents

Appendixes

Appendixes

Chapter 10
Actuarial Cost Estimates and Analysis and Statistical Information for OASDI and Medicare

The preceding chapters described the provisions of the Old-Age, Survivors, and Disability Insurance (OASDI) and Medicare systems, the methods of making actuarial cost estimates for them, and the general concepts underlying these cost estimates. In this chapter, the results of these actuarial cost estimates are presented so that the subject may be seen in actual practice, as well as in theory. Data on the general operations of the program are then given, along with illustrative information on the amount of survivor insurance in force under OASDI.[1]

Because of the considerable number of tables presenting statistical data in this chapter, all numbered tables appear in Appendix 10-1.

Actuarial Cost Estimates Made at the Enactment of the 1977 and 1983 Amendments

Year-by-Year Costs

Table 10.1 shows the year-by-year sources of additional resources (income or reduction in growth of outgo) resulting from the 1983 Act in 1983–89, according to the various changes made. The grand total is

1. The data presented here are taken from various official published sources (such as Trustees Reports and congressional committee reports) or else have been obtained directly from the Office of the Actuary, Social Security Administration, and the Office of the Actuary, Health Care Financing Administration. The Annual Statistical Supplements of the Social Security Bulletin give considerable amounts of data about the OASDI and Medicare programs, while the annual "Program Statistics—Medicare and Medicaid Data Book," issued by HCFA, gives even more detailed information about those programs.

$166 billion, according to the intermediate (Alternative II-B) estimate made at the time of enactment. At first glance, it would seem that this amount is on the low side as compared with what the National Commission on Social Security Reform (NCSSR) had recommended—namely, $150–200 billion. However, the latter range of figures as to the amount "needed" was based on more inflationary economic assumptions as to wage and price trends than the estimate of $166 billion. If the latter figure were adjusted to be on the same economic assumptions as the NCSSR used, it would be about $185 billion, or quite close to the top of the "needed" range. Moreover, when the additional resources arising were estimated on the pessimistic assumptions of the 1983 Trustees Report, the result was $221 billion.

Table 10.2 shows the estimated cost of OASI, DI, and HI separately, as percentages of taxable payroll for selected future years, as well as the average long-range costs according to the official estimates (intermediate or Alternative II-B basis) as contained in the 1984 Trustees Reports. It should be noted that the cost estimates made at the time of enactment of the very important 1983 amendments (as contained, in essence, in the 1983 Trustees Reports) were not much different (at least, when costs are measured relative to payroll) from the estimates in the 1984 Trustees Reports.

The OASI costs are estimated to remain about level until 2015, as the population aged 62 and over increases slowly in absolute numbers, but not relative to the size of the population at the working ages. But after 2010, the cost rises sharply as the survivors of the larger numbers of births in years after the end of World War II reach retirement age. The ultimate cost is about 40 percent higher than the cost in the near future.

The DI costs are estimated to rise somewhat more rapidly in the next 30 years than the OASI ones, because the DI system will reach relative maturity much more rapidly. The ultimate DI cost is about 50 percent greater than the cost in the near future.

The HI costs are estimated to increase steadily to 5.6 percent of taxable payroll by 2010 (as compared with a combined employer-employee tax rate then of 2.9 percent). This results largely because of the assumption that hospital costs will continue to rise more rapidly than earnings in covered employment. The HI cost estimates are, in general, carried out for only 25 years into the future—as compared with 75 years for the OASDI estimates. However, a special 75-year estimate is available, based on the assumption that, after 25 years, costs per unit of service will increase at the same rate as does the general wage level. The ultimate cost shown on this basis is about 9½ percent of taxable payroll (or somewhat more than triple the ultimate

combined employer-employee tax rate). It seems very likely that higher HI tax rates will be needed than are now scheduled, at least because of the higher proportion of aged persons in the population.

Table 10.3 compares the intermediate estimates of the cost rates and the tax rates for OASDI and HI for various future years. OASDI shows substantial balances (excess of income rate over cost rate) beginning in 1990 and running through the 2010s; this results from the combination of the favorable demographic situation then and the ultimate tax rate going into effect in 1990. However, if economic conditions are substantially less favorable over the long run than is assumed in the intermediate estimate (i.e., wage increases do not exceed price increases by 1½ percent per year, and unemployment is higher), these excesses will not occur to such an extent. HI shows increasingly large deficits over the years, and this clearly shows the extent of its impending financing crisis.

Progress of the Trust Funds

Table 10.4 presents the estimated progress of the OASI Trust Fund in the near future according to the intermediate-cost estimate in the 1984 Trustees Report. Table 10.5 shows corresponding information for the DI Trust Fund. The OASI Trust Fund is shown to increase from $24 billion at the end of 1984 to $343 billion at the end of 1993. Comparing the fund balance under OASI at the beginning of the year with the outgo in the year, the fund ratio for 1984 is 20 percent; it would rise slowly to 29 percent in 1988 and then rapidly thereafter from the effect of the tax-rate increase then and again in 1990. It is important to note that these balances do not reflect the negative aspect of the loans from the HI and DI Trust Funds. If they did so, on a net assets basis, the balances in the first few years would be much lower.

The 1984 Trustees Report estimated the DI Trust Fund to increase from $3.9 billion at the end of 1984 to $46 billion at the end of 1993. The fund ratio would be 23 percent during 1984–86 and then increase steadily to 66 percent in 1993.

Considering the combined OASI and DI Trust Funds, the fund balance was estimated, under the intermediate-cost assumptions, to grow steadily over the years. It would reach a peak of $21 trillion in 2045 and would then decrease to $7 trillion in 2060, the end of the valuation period. In that year, outgo would exceed income by $2.4 trillion—so that the fund balance would be exhausted in 2063.

Table 10.6 shows the estimated progress over the short range of the HI Trust Fund. The fund would grow from $13 billion at the end of

1984 (actually, $25 billion if the loan to the OASI Trust Fund is considered to be an asset) to $27 billion at the end of 1987 (after repayment of the loan), and then decrease steadily, becoming exhausted in 1991—a clear indication of impending financial problems. The fund ratio would remain at about 25–35 percent during 1984–88 but then fall off rapidly (see Table 10.7).

Actuarial Balances

Congress has, since the 1950 amendments, consistently enunciated the principle that, according to the intermediate-cost estimate, the OASDI and HI programs should be self-supporting from payroll taxes on covered workers and their employers and, since the 1983 Act, for OASDI also from the income taxes on part of the benefits. Of course, it would be only a coincidence that an exact balance would result. Generally, there has been a small deficiency in comparing the level-cost of the benefits with the level-equivalent of the contributions, under the intermediate-cost estimate, as of the time the legislation was enacted. This, as discussed later, was not the case in connection with the 1977 Act,[2] but was essentially so for the 1983 Act (and in fact a small surplus was present).

Congress has quite properly considered that the long-range actuarial cost estimates are not precise and that a reasonable range of variation may be present. Accordingly, the principle has been established that the OASDI and HI systems are considered to be actuarially sound if they are in reasonably close actuarial balance (provided the year-by-year projections indicate that the balance in each trust fund will never become negative or, in other words, that there will always be money available to pay the benefits). Congress—or at least the congressional committees which deal with OASDI and HI legislation—has used a "rule of thumb" for determining whether this condition is satisfied.

This rule initially set a maximum on the actuarial imbalance of 0.30 percent of taxable payroll for OASDI (0.25 percent for OASI alone). This limit was reduced to 0.10 percent in 1965, when the period over which the estimates were made was reduced from an infinite one to 75 years. In the consideration of the 1973 amendments, the congressional committees decided that the limit might be as much as 0.50 percent, or about 5 percent of the average long-range cost of the system.

2. The bill passed by the Senate was in close actuarial balance, but that passed by the House was not (although it did substantially reduce the actuarial imbalance under the then-existing law).

The corresponding limit for the HI program was set at 0.10 percent of taxable payroll initially, but this limit has been considerably exceeded for many years.

Table 10.8 presents information about the actuarial balance of the OASDI and HI programs after the enactment of the 1977 Act as contrasted with the situation just before then. Largely, although not entirely, because of the "coupling" problem (as discussed in Appendix 3-4), the OASDI system then had a lack of actuarial balance of 8.20 percent of taxable payroll. This deficiency was, of course, impossibly large if the long-range viability of the system were to be maintained. The 1977 Act reduced this imbalance to 1.46 percent of payroll—a relative reduction of 81 percent, but still at a level far above previously accepted limits. The deficiency represented 12 percent of the level equivalent of the OASDI tax schedule. Considering OASI and DI separately, the actuarial imbalances were 1.08 percent of payroll and 0.38 percent of payroll, respectively (or 11 percent and 18 percent, respectively, of the level equivalent of the tax schedule).

The actuarial imbalance of the HI system was slightly decreased by the 1977 Act, dropping from 1.16 percent of taxable payroll to 1.01 percent. This legislation did not affect the HI-benefit provisions, but rather changed the financing provisions to reflect what had been done to strengthen the financing of the OASDI system. Specifically, the sharp ad hoc increases in the earnings base in 1979–81 applied to both OASDI and HI. For HI, this meant additional income (without any increase in benefit liabilities), and this was largely counterbalanced by reducing the HI tax rates scheduled for future years by a small amount. In essence, it could be said that such decreases in HI tax rates were transferred to the OASDI tax schedule.

More details are shown in Table 10.9 on how the OASDI system was brought into a much more favorable actuarial position by the 1977 Act. The decoupling alone reduced the actuarial imbalance by 4.85 percent of taxable payroll, or by 59 percent relatively. Other benefit changes reduced costs somewhat (e.g., elimination of the monthly earnings test after the initial year of claim and correction of the procedure in applying increases in the CPI to benefits which were actuarially reduced because of early retirement). Increased tax rates reduced the deficiency by 1.14 percent of payroll, and the net effect over the long range of the ad hoc increases in the taxable earnings base in 1979–81 accounted for a reduction of 0.53 percent of payroll. However, slightly offsetting the cost reduction due to decoupling and other benefit-tightening changes and the increased financing was the liberalization of the earnings test, which accounted for an increase in cost of 0.11 percent of payroll.

As to the HI system, the 1977 Act provided additional income due to the higher earnings bases that had a level equivalent of 0.25 percent of taxable payroll. On the other hand, the revised tax schedule had lower tax rates, which represented a level-equivalent loss of 0.10 percent of payroll. As a result, the actuarial deficiency decreased by 0.15 percent of payroll.

Table 10.10 shows how the 1983 Act eliminated the long-range lack of actuarial balance which still remained in OASDI after the passage of the 1977 Act. This was done by a number of changes—increasing payroll taxes, making benefits subject to income taxes in some cases (and putting the proceeds in the trust funds), extending coverage to almost all the types of employment not previously covered, delaying the COLAs, and increasing the Normal Retirement Age. About one third of the previous imbalance was met by the increase in the NRA, another one third by the income taxation of benefits, and the remainder by delaying the COLAs and the extensions of coverage.

Actuarial Cost Estimates from the 1992 Trustees Reports

Year-by-Year Costs

Table 10.11 shows the estimated cost of OASI, DI, and HI separately, as percentages of taxable payroll for selected future years, as well as the average long-range costs according to the official estimates (intermediate or Alternative II basis) as contained in the 1992 Trustees Report.

The OASI costs are estimated to remain about level until 2010, as the population aged 62 and over increases slowly in absolute numbers, but not relative to the size of the population at the working ages. But after 2010, the cost rises sharply as the survivors of the larger numbers of births in years after the end of World War II reach retirement age. The ultimate cost is about 60 percent higher than the cost in the near future (and about 10 percent higher than as estimated in 1984—see Table 10.2).

The DI costs are estimated to rise somewhat more rapidly in the next 30 years than the OASI ones, because the DI system will reach relative maturity much more rapidly. The ultimate DI cost is about 80 percent greater than the cost in the near future (and about 30 percent higher than as estimated in 1984).

The HI costs are estimated to increase steadily to 4.9 percent of taxable payroll by 2010 (as compared with a combined employer-

employee tax rate then of 2.9 percent). This results largely because of the assumption that hospital costs will continue to rise more rapidly than will earnings in covered employment. The ultimate cost is about 11.3 percent of taxable payroll (or almost four times the ultimate combined employer-employee tax rate). This ultimate cost is 20 percent higher than was estimated in 1984—despite in large part of the favorable cost effects of the Diagnosis-Related-Groups method of reimbursing hospitals. It seems certain that higher HI tax rates will be needed in the long run than are now scheduled, at least because of the higher proportion of aged persons in the population.

Table 10.12 compares the intermediate estimates of the cost rates and the income rates for OASDI and HI for various future years. OASDI shows substantial positive balances (excess of income rate over cost rate) beginning in 1990 and running through the 2010s; this results from the favorable demographic situation then. However, if economic conditions are substantially less favorable over the long run than is assumed in the intermediate estimate (i.e., wage increases do not exceed price increases by 1.1 percent per year, and unemployment is higher), these excesses will not occur. HI shows increasingly large deficits over the years, and this clearly shows the extent of its impending financing crisis.

Progress of the Trust Funds

Table 10.13 presents the estimated progress of the OASI Trust Fund in the future according to the intermediate-cost estimate in the 1992 Trustees Report. Table 10.14 shows corresponding information for the DI Trust Fund. The OASI Trust Fund is shown to increase from $268 billion at the end of 1991 to a peak of $7.4 trillion in 2027 and then to decline rapidly until being exhausted in 2042. The peak for the combined OASDI Trust Funds is $5.6 trillion (in 2023).

The DI Trust Fund is estimated to decrease from its peak of $13 billion at the end of 1991 until being exhausted in 1997 (18 years earlier than was shown in the 1991 Trustees Report).

Table 10.15 shows the progress over the short range of the HI Trust Fund according to the intermediate-cost estimate. The fund grows from $115 billion at the end of 1991 to $154 billion at the end of 1995 and then decreases steadily, becoming exhausted in 2002. There is thus a clear indication of impending financial problems.

A serious financial crisis confronted the OASDI system in 1983. The OASI Trust Fund would have run out of money in mid-1983 unless legislative action were taken. And this was despite legislatively authorized loans to this trust fund from the DI and HI Trust Funds

that were made in late 1982. Actually, Congress limited the amount of the loans so that it would be forced to take action early in 1983 (which it did).

The 1983 Amendments had the basic purpose of assuring the fiscal solvency of the OASDI system through the 1980s (including the repayment of the loans that the OASI Trust Fund had received). The financing of the program in that period was established on the basis of the pessimistic estimate (Alternative III).

It is now of interest to compare the actual trust-fund balances at the end of 1989 (from Tables 10.13, 10.14, and 10.15) with the intermediate estimates thereof made at the time that the 1983 Amendments were enacted (from Document WMCP: 98-13, House Ways and Means Committee, September 8, 1983) as shown in the following table (dollars in billions). Thus by no means did another financing crisis occur in the 1980s—as some people in 1983–84 predicted would happen.

Trust Fund	*Actual*	*Estimated*	*Difference*	*Actual as Percent of Estimated*
OASI	$155.1	$73.6	+$81.5	211%
DI	7.9	16.8	−8.9	47
OASDI	163.0	90.3	+72.7	181
HI	85.6	3.4	+82.2	2,518

However, the foregoing figures do indicate that the experience of the DI Trust Fund in the 1980s was not so favorable as had been estimated in 1983 and that it will likely need additional financing in the near future. This can readily be done by reallocating a little more of the OASDI tax rate to DI (in 1983, the reverse sort of allocation was done, because the DI experience had appeared to be favorable from a cost standpoint in the early 1980s).

If the actual OASDI experience is compared with the pessimistic estimates made in 1983, an even more favorable picture is shown. The actual balance of the OASDI Trust Funds at the end of 1989 was $101.1 billion larger than the estimate (a ratio of actual to estimated of 263 percent).

Future Fund Ratios

Table 10.16 presents the estimated fund ratios (fund balance at the beginning of the year as a percentage of the disbursements for the year) for the OASDI and HI programs, for the low-cost, intermediate-cost, and high-cost estimates (Alternatives I, II, and III respectively) in the 1992 Trustees Report.

For OASDI the fund ratio rises indefinitely for the low-cost estimate, while for the intermediate-cost estimate it peaks at 335 percent in 2014 and then falls to zero in 2037. Even under the high-cost estimate, the fund ratio rises for a number of years, peaking in 2000–05 at about 145 percent, but it becomes exhausted in 2022.

The situation for the HI Trust Fund is much less favorable. For each of the three estimates, the fund ratio rises for several years, then peaks, and eventually drops to zero. The peak years and the exhaustion years are as shown:

Estimate	*Peak Year*	*Peak Value*	*Exhaustion Year*
High-cost	1993	145%	2000
Intermediate-cost	1993	149	2002
Low-cost	1994	154	2009

Historical Summary of Actuarial Balances

Table 10.17 presents a historical summary of the actuarial balance of the combined OASDI program over selected past years, while Table 10.18 gives corresponding data separately for OASI and DI (for 1956 and after, when DI was first operating).

Through 1972, the actuarial balance of OASDI was invariably maintained within the limits considered acceptable in the past (or else such balance was achieved in the next amendatory legislation—for example, for OASI in the 1954 Act). However, in 1973, a much larger deficiency than was previously considered acceptable was allowed in the legislation. The subsequent estimates in the trustees reports showed a worsening situation, because of the "coupling" problem over the long range.

The 1977 Act reduced the long-range actuarial imbalance of the OASDI program significantly, and it was stabilized thereafter at about 1½ to 2 percent of taxable payroll, until the 1983 Act eliminated it, showing a surplus of 0.03 percent of taxable payroll. Each Trustees Report after the 1983 one tended to show a gradually higher lack of actuarial balance (and this was despite the fact that changing back from the average-cost basis to the level-financing [or present-value] basis in 1988 resulted in a slightly better situation as to actuarial balance). Part of this change resulted from the valuation date being one year later each time (the new 75-year period includes one new long-distant year—of high cost—and excludes one current year—of low cost. The remainder of the change was the result of "tightening up" the various assumptions, especially the disability ones, to recognize

recent experience. It may properly be said that OASDI is no longer in reasonably close long-range actuarial balance. Accordingly, in the author's opinion, the substantial long-range actuarial deficit should be eliminated by legislative changes, such as increasing the tax rate scheduled for 2020 and after or raising the Normal Retirement Age beyond the age 67 now ultimately scheduled (or a combination of these two changes), or shifting the financing basis to a pay-as-you-go one, as proposed by Senator Moynihan (as described in Chapter 5).

The DI program showed a steadily increasing estimated level-cost after 1960, rising from about 0.4 percent of payroll to 1.15 percent of payroll just before the 1972 amendments were enacted. In part, this was because of liberalization of its benefit provisions in 1958 and 1960, but later because of its developing adverse experience. However, these increasing-cost elements were taken into account at the several times when legislation was enacted thereafter, and the system was maintained in close actuarial balance.

The level-cost of the DI system under the 1972 Act rose to 1.31 percent of payroll, due to the higher benefit level. In later years, the level-cost was estimated at ever-higher figures; this was due to the "coupling" problem and to the unfavorable developing disability experience. As a result of decoupling, by the 1977 Act, the level-cost fell from 3.68 percent of payroll to 2.49 percent. Further decreases were shown in the 1978–82 Trustees Reports, recognizing the favorable disability experience after 1975. Thus, in the 1982 Trustees Report, the level-cost was 1.50 percent of payroll, or 40 percent lower relatively than it was estimated to be when the 1977 Act was enacted (about 0.20 percent of payroll was due to the effect of the 1980 Act, so that the real decrease due to revised assumptions was 32 percent).

To summarize the long-range cost situation of the DI system as indicated by the various official actuarial cost estimates over the years, there have been several different times when higher disability assumptions had to be made because of the adverse experience developing (1964, 1966, 1969, and then each year from 1972 through 1977). However, the 1978–82 estimates moved in the other direction.[3] Largely as a result, the tax allocation from the combined employer-employee rate in the law as it was just before the 1983 Act rose from 0.5 percent of payroll initially to 1.5 percent for 1979, but decreased to 1.12 percent for 1980 and then rose to 2.2 percent ultimately. Part of this increase was due to benefit liberalizations in the DI program, and part

3. For a detailed analysis of the DI experience and of the assumptions used in the cost estimates in the trustees reports, see Robert J. Myers, *Actuarial Condition of Disability Insurance—1978*, Subcommittee on Social Security, Committee on Ways and Means, House of Representatives, February 1, 1979.

was due to an expansion in the general OASDI benefit level, but most of it was due to the adverse disability experience. However, it appeared that these DI allocations were excessive, so the 1983 Act provided for lower allocations in all years (in fact, retroactive to January 1, 1983). The attempt was made then to have both OASI and DI be in long-range actuarial balance.

As mentioned previously, after 1983 the DI experience turned somewhat worse financially, so the benefit costs increased significantly, with resultant larger actuarial imbalances for the DI portion of the program.

Table 10.19 presents the long-range level-costs of the OASDI program and the actuarial balances for each of the three estimates in the 1992 Trustees Report. The level equivalents of the payroll tax rates and the receipts from the income taxation of benefits, and the amounts needed to build up a fund ratio of 100 percent at the end of the valuation period, differ only slightly among the three estimates (for OASDI, ranging from 13.04 percent of taxable payroll for Alternative I to 13.32 percent for Alternative III). The only cause of difference is the value of the income taxes and the fund buildup (because the payroll tax portion is merely the tax rates in the law and the value of the beginning fund balance is virtually the same for all three estimates—about 0.22 percent). The actuarial balance for OASDI ranges from a surplus of 1.09 percent on taxable payroll for the low-cost estimate (Alternative I) to a deficit of 4.89 percent for the high-cost estimate (Alternative III).

The estimated level or average long-range benefit cost of the HI program (measured over a 25-year valuation period for the reports up to 1985, and then over a 75-year period) has increased significantly since the program was enacted in 1965. As shown by Table 10.20, it rose from 1.2 percent of payroll initially to 2.2 percent for the estimate made in 1971 and to 2.6 percent for the estimate made in 1972, which took into account the extension of the program to disabled beneficiaries. The rising trend in the late 1960s occurred primarily because the estimates initially under-estimated both the extent of hospital utilization that occurred and the rising trend of hospital costs.

It should especially be noted that part of the estimated increase in the cost of HI was dampened in the 1969 estimates when a basic change in the cost-estimating procedure was instituted. Previously, the very conservative assumption had been made that the maximum taxable earnings base would remain unchanged in the future at the level prevailing at the time the estimate was made. This was assumed despite the fact that increasing-earnings assumptions were made in connection with the projected future trend of hospital costs. Thus, it

might be said that these assumptions were inconsistent and resulted in an overstatement of costs. However, this was done to have a margin of safety and also, to some degree, because changes in the earnings base were under the jurisdiction of Congress, not the actuaries.

In 1969, it was decided to shift the methodology and to assume that the earnings base would increase in the future to the same extent as the assumed increases in earnings. This was done, in part, to recognize that sufficient operating experience had accumulated so that a better fix on costs could be obtained and thus the need for an arbitrarily obtained margin of safety was lessened. Also, it appeared very likely that automatic-adjustment provisions applicable to the earnings base would soon be enacted (as they were in 1972). The net effect was to show a lower level-cost, by about 0.7 percent of taxable payroll.

As a result of the rapidly rising hospital costs after 1965 (as analyzed in more detail later in this chapter) and of the somewhat higher hospital utilization actually experienced as compared with the initial assumptions, the actuarial balance of the program deteriorated during 1966–72.[4] However, as hospital costs tended to stabilize during the price controls of the early 1970s and as the financing provisions were strengthened through increases in the tax rates and the earnings base, the estimated balance was brought to "acceptable" levels in 1972–74. This favorable situation was particularly due to the earnings base being raised so much more rapidly than the general level of earnings in 1973 and 1974. Such action produces more tax income without increasing benefit amounts (unlike the situation under OASDI).

The cost estimates made for HI after 1975 showed significant actuarial imbalances, as the hospital-cost increases experienced (and as seemed likely over the future) were taken into account. The cost estimates made in 1977–79 showed an actuarial imbalance of slightly more than 1.0 percent of taxable payroll. However, with the high inflation thereafter, the actuarial imbalance rose to 2.1 percent of taxable payroll in the 1982 Trustees Report. Legislative changes (such as covering all federal employees for HI, restrictions on hospital reimbursement, and raising the self-employed tax rate to the combined employer-employee rate) resulted in a reduction in the actuarial de-

4. It is important to note that, before the 1991 report, HI costs were measured in a slightly different manner from OASDI costs. The former previously included an addition each year to build up and maintain the trust-fund balance at a level of six months' outgo (before the 1981 report, one year's outgo, and in the 1990 report not included at all) over the valuation period. The latter do not follow such a procedure; rather, they are merely the outgo in the year as related to the taxable payroll for that year. In both 1991 and 1992 reports an allowance is made in the actuarial-balance determinations for a buildup to a fund ratio of 100 percent at the end of the 75-year valuation period.

ficiency in the 1983 Trustees Report—despite continuing high increases in hospital costs.

In the 1985 HI report, the actuarial imbalance measured over a 25-year period decreased to 0.68 percent of taxable payroll (from 1.37 percent in the 1984 report). The decrease was largely a result of the anticipated favorable cost effect of the new DRG reimbursement basis for hospitals. However, in the 1985 report, a shift was made to a 75-year valuation period (the same as for OASDI), and this resulted in the actuarial imbalance being shown as 2.79 percent. In the subsequent reports, the actuarial imbalance increased slowly.

The HI system has an actuarial deficiency under the intermediate-cost estimate (Alternative II) in the 1992 Trustees Report amounting to 4.20 percent of taxable payroll. The corresponding figures for the low-cost (Alternative I) and high-cost (Alternative III) estimates are 1.34 percent and 9.45 percent respectively.[5]

Table 10.21 presents the estimated average-costs as percentages of taxable payroll of OASDI benefits by type according to the intermediate-cost estimate in the 1991 Trustees Report. In the OASI portion of the system, the primary benefits (for retired workers) represented 78 percent of the total benefit cost, while spouse's benefits were 5 percent, widowed spouse's benefits were 13 percent, and survivor benefits for younger persons were 4 percent. About 3 percent of the cost of the spouse's benefits was with respect to husband's benefits, whereas for widowed spouse's benefits, only 2 percent of the cost was for widowers. The cost of the primary benefits for disabled workers represented 92 percent of the benefit cost of the DI program.

The administrative expenses of the OASDI system over the long run in the intermediate-cost estimate in the 1992 Trustees Report are 0.14 percent of taxable payroll, or 1.0 percent of the total average-cost. The administrative-cost ratio relative to benefit outgo is 0.7 percent for OASI and 2.9 percent for DI. These relatively low ratios reflect the low cost of administering such an extensive social insurance system (although, as with all other large group insurance and pension systems, a sizable amount of administrative expenses is borne by employers in their record-keeping and reporting procedures).

The estimated average long-range cost of the HI program, expressed as percentages of taxable payroll, is divided as shown in the following table for the intermediate estimate in the 1991 Trustees Re-

5. It is assumed in the 1991 HI report that taxable earnings will increase each year at about the same rates as assumed in the OASDI cost estimates (about 6 percent in the 1990s, grading down to 5.1 percent ultimately, for the intermediate estimate). It is also assumed that hospital inpatient costs will increase at a much more rapid rate (about 9–11 percent annually in the 25-year valuation period, but thereafter at a lower rate until being at the same rate as taxable earnings, for the intermediate-cost estimate).

port (partially estimated by the author). The division of the total benefit cost of 6.09 percent of taxable payroll between types of benefit is as follows (as estimated by the author): hospital, 5.44 percent; skilled nursing facility, 0.29 percent; and home health care, 0.36 percent. The administrative expenses represent only 1.1 percent of the total cost of the program.

Persons aged 65 and and over	5.43%
Disabled persons	0.63
Persons with chronic kidney disease	0.03
Total benefits	6.09
Administrative expenses	0.07
Effect of size of fund*	0.08
Total cost	6.25%

*This item represents the cost of attaining a trust-fund balance at the end of the valuation period equal to 100 percent of the next year's expenditures.

Projections of Covered Workers and Beneficiaries

An excellent indication of the cost aspects of OASDI may be obtained from the projections of covered workers and beneficiaries in the 1992 Trustees Report, as shown in Table 10.22. According to the intermediate-cost estimate, the number of covered workers (i.e., those with any earnings credits in the particular calendar year) will increase from about 132 million in 1990 to 148 million in 2070, or a rise of only 23 percent. On the other hand, the total number of monthly beneficiaries will increase from 39.5 million in 1990 to 91.8 million in 2070, or a rise of 132 percent.

To put it another way—and one that is widely used—there is currently about one beneficiary for every 3.3 active workers. This ratio is estimated to be 1 to 1.8 in 75 years, thus indicating the long-range financing problems present. These ratios, however, are somewhat misleading, because "beneficiaries" include not only retired and disabled insured workers but also auxiliary and survivor beneficiaries.[6] More meaningful is the ratio of covered workers to worker beneficiaries, which is 4.8 to 1 in 1990 and is estimated to be 2.1 to 1 in 75 years, according to the intermediate-cost estimate.

Under both the low and high estimates, the numbers of beneficiaries are not much different than under the intermediate estimate.

6. The public press frequently uses "beneficiaries" to mean only retired workers and then paints a bleak cost picture by envisaging, ultimately, two workers being required to support one retired worker.

The relative spread 75 years from now is 3 percent lower for the low-cost estimate and 8 percent higher for the high-cost estimate; this is the result of a number of counterbalancing factors (such as differences in mortality, disability, and fertility rates). However, because of the assumed lower fertility rates in the future than in the past, the numbers of covered workers differ considerably among the three estimates. For 2070 the spread around the intermediate estimate is about 25–30 percent relatively in each direction. Because of the counteracting trends, the ratios of covered workers, per worker beneficiary vary greatly among the three estimates. The range resulting for the year 2070 is from 2.9 to 1 for the low-cost estimate to 1.4 to 1 for the high-cost one.

Effect of Varying Economic and Demographic Assumptions for OASDI Cost Estimates

When automatic-adjustment provisions were incorporated into the OASDI system in 1972, dynamic economic assumptions about future earnings changes and future price-level changes (which determine the benefit level) were necessarily used in the actuarial cost estimates. These assumptions were extremely important, and the results were very sensitive for what appear to be small differences therein. This, in essence, was due to their compounding nature over the many years involved in the cost estimates, especially because of the "coupled" nature of the computations used in determining the initial benefit amounts. As discussed in Appendix 3-4, the method adopted in the 1972 Act was faulty (even though it followed the procedure used in the ad hoc adjustments legislated in the 1950s and early 1960s, which had been successfully made), unless prices rose about 1½ to 2 percent per year and earnings rose about 4 percent per year.

The official cost estimates in 1972 used the assumptions, over the long range, of 5-percent annual increases in earnings and 2¾-percent annual increases in prices (plus, in essence, an additional ⅜ percent per year until 2010). In 1974, this approach was changed slightly, with the long-range assumptions being 5 percent for earnings and 3 percent for prices in all years after 1980 and with grading in from the current situation to 1980. The validity of these assumptions over the long range was discussed in Chapter 4. First, illustrative data are presented to show the effect of varying these assumptions as they were involved in the 1974 cost estimates.[7]

7. Also see Geoffrey N. Calvert, *New Realistic Projections of Social Security Benefits and Taxes* (New York: Alexander and Alexander, December 1973) for an analysis of this matter.

Effect of Varying Assumptions in 1974 Estimates

The long-range average-cost of the benefit payments and administrative expenses under the economic assumptions in the 1974 intermediate-cost estimate (ultimately, increases of 5 percent in earnings and 3 percent in prices) was 13.89 percent of taxable payroll. For the assumption of 7 percent for earnings increases and 5 percent for price rises (the same "real earnings" differential), the average-cost was 17.05 percent of payroll, or 23 percent higher. Similarly, for an assumption of 5 percent/4 percent, the average-cost was 20.59 percent of payroll, or 48 percent higher. The results under these alternative economic assumptions are clear evidence of the instability and faulty nature of the initial-benefit computation method under the 1972 Act. Thus, the decoupling accomplished by the 1977 Act was essential.[8]

Effect of Varying Economic Assumptions in 1992 Estimates

The 1992 Trustees Report used an ultimate assumption of 5.1-percent annual wage increases and 4-percent annual CPI increases in the intermediate-cost estimate. The corresponding assumptions for the low and high estimates were 4.7 percent/3 percent and 5.6 percent/5 percent, respectively.

The effect of varying these assumptions can be seen by considering data for the intermediate-cost estimate for various combinations of annual CPI and wage increases. For a particular assumed ultimate rate of the real-wage differential, the long-range cost measured as a percentage of taxable payroll becomes slightly smaller as the CPI increase assumed is larger. Such decrease is about 0.2 percent of payroll for each 1-percent increase in the CPI.

Similarly, for a particular assumed ultimate rate of CPI increase (4 percent), the cost decreases as the wage increase assumed is higher. Such decrease is about 1½ percent of payroll for each 1-percent increase in the wage change. Quite obviously, when the cost of the outgo decreases, any actuarial imbalance decreases.

In summary, the long-range average cost of the OASDI program tends to increase as the spread between wage increases and CPI increases narrows (and further if the latter become larger than the former). If the "real-wage" difference is constant, but the level of both

8. Some economic assumptions produced instability in the other direction (i.e., lower costs, which means inadequate, deliberalized benefit levels). For example, for a 5-percent/2-percent assumption, the average-cost was only 10.06 percent of payroll, or 28 percent lower than in the official cost estimate.

wage and CPI increases changes, the cost remains relatively stable. However, with a higher absolute level of both wage and CPI increases, the cost tends to decrease slightly. Thus, it can be seen that the decoupling accomplished by the 1977 Act had a very considerable stabilizing effect, even under varying economic conditions.

Effect of Varying Demographic Assumptions in 1992 Estimates

The intermediate-cost estimate in the 1992 Trustees Report assumed that the ultimate total fertility rate in 2015 and after would be at the level of 1.9. This would mean that zero population growth would not then prevail insofar as fertility is concerned (which would require a fertility rate of 2.06) and that, accordingly, the size of the total population would eventually, after some decades, decrease unless net immigration makes up for the shortfall. It was also assumed that fertility in the 25 years before 2025 would gradually change from the present rate of about 2.05 to the ultimate rate of 1.9. These assumptions seem somewhat too conservative (i.e., low) to the author, because over the long run it would seem that the population of the country will not decline to extinction, or have to depend on immigration to prevent this and because fertility is currently so much higher.

Alternative ultimate total-fertility-rate assumptions of 1.6 and 2.2 were made, keeping all other assumptions the same as in the intermediate-cost estimate. The long-range average-cost was estimated at 15.11 percent of taxable payroll for the 1.6 fertility rate and at 14.17 percent for the 2.2 rate, compared with the cost of 14.63 percent in the intermediate-cost estimate. These are differences of only about 3 percent relatively, so it can be seen that the variability of this factor does not have nearly so great an effect on costs of the OASDI program as do economic factors.

Moreover, as might be anticipated, the current costs under the three fertility assumptions are virtually identical for the next 25 years and then begin to diverge.

A similar sensitivity analysis was made for variations in the mortality assumptions. With all other elements in the intermediate-cost estimate held fixed, a mortality improvement of 17 percent on the average from 1990 to 2066 reduced the average long-range cost from 14.63 percent of taxable payroll under the intermediate estimate (which included a 35-percent mortality improvement) to 14.17 percent (or a relative decrease of only 3 percent). Similarly, a 52-percent mortality improvement increased the cost to only 15.11 percent (or a relative increase of only 3 percent).

Past Operations

Considerable financial and statistical data are published in the quarterly issues and the annual statistical supplements of the *Social Security Bulletin* and in the quarterly and annual statistical issues of the *Health Care Financing Review*. The Board of Trustees of the OASI and DI Trust Funds issues an annual report giving details on past operations of the funds, investment activities, and estimates of future operations. Similar reports are issued for both the HI and SMI programs. The following section gives certain summary data on the operations of OASDI and Medicare since their establishment, because this should prove helpful in understanding the programs.

Data on OASDI Coverage and Benefits Experience

Covered Workers and Earnings

Table 10.23 presents information on the number of workers covered by the program (i.e., in employment yielding earnings on which contributions are payable), the number of covered employers, the number of persons who have insured status (regardless of whether currently in covered employment), and the amount of earnings in covered employment (both total and taxable, after the effect of the earnings base). The number of covered workers is shown on the basis of the number with covered employment at any time during the year. The number actively at work in an average week during the year (disregarding, however, the effect of the maximum taxable earnings base, which results in many persons not having their wages taxable toward the end of the year) is, of course, lower. Some 25 percent more persons are in covered employment during a calendar year than at a given time in the year as a result of the movement in and out of the covered labor force.

The total number of persons who possess insured status, either fully or currently, is presently 29 percent higher than the number of persons working in the year, which gives an indication of the extent of turnover of employment and the maintenance of benefit protection after employment has ceased. Those with disability insured status represent only about 73 percent of the total insured population, reflecting the effect of the more stringent requirement as to recency of employment.

The proportion of the total covered earnings that was taxable de-

creased steadily from about 92 percent in the late 1930s and early 1940s to 80 percent in 1950 (because the earnings base was held fixed at $3,000, while earnings steadily rose)—see Table 3.4. The increase in the base to $3,600 for 1951 caused this proportion to rise to 85 percent for wages, but the inclusion of the self-employed in the coverage of the system then resulted in an overall proportion of 81 percent. In the succeeding years, this ratio remained at about 80 percent, as the base was regularly increased to match the rise in the general earnings level. Between changes in the base, the ratio declined until the increased base became effective. For example, the ratio fell from 79.3 percent in 1959 (the first year that the $4,800 base was in effect) to 71.3 percent in 1965 (the last year for the $4,800 base), and then it rose to 80.0 percent in 1966 (when the base became $6,600).

This stability in the relative size of the earnings base was destroyed by the 1972 and 1973 amendments. The base legislated for 1974 was $13,200, as compared with $10,800 in 1973 and $9,000 in 1972. As a result, the proportion of the total covered payroll that was taxable increased to 81.8 percent for 1973 and to 85.3 percent for 1974, which ratio would, in the absence of ad hoc legislated changes, be maintained relatively constant in the future as a result of the automatic-adjustment provisions. If the earnings base had been kept at the same relative level in 1974 as it had been in 1951–72, it would have been $11,100 instead of $13,200.

The proportion of the total covered payroll that was taxed decreased slowly during 1974–78, falling to 84.3 percent. This occurred because earnings were rising at an accelerating pace, and the adjustment of the earnings base is made on the basis of wage changes for a few years earlier.

The 1977 Act increased the earnings bases for 1979–81 by establishing specified bases for those years that would be larger than the automatic-adjustment provisions were likely to produce. It was expected in 1977 that the $29,700 base for 1981 would cover about 91 percent of total earnings in covered employment. Because of the much larger increases in earnings levels which occurred than were estimated in 1977, this proportion taxable for 1981 was 89.3 percent. Thereafter, the proportion remained at about 89 percent through 1987 and then decreased to 86.4 percent in 1989. In 1990, the proportion increased to about 88 percent (author's estimate) as a result of the legislated adjustment for the effect of deferred compensation (as is discussed in Appendix 2-8).

Looking at the matter in another way, when the 1977 Act was enacted, it was thought that the base in 1981 would have been $21,900 if the ad hoc increase to $29,700 had not been provided (a 36-percent

relative rise). It has been determined that the 1981 base would actually have been $22,200 if the automatics had been allowed to operate.

In 1951–72, the proportion of all persons with covered earnings at least as high as the maximum amount taxable (and creditable for benefit purposes) generally varied between 25 and 35 percent. This proportion decreased to 20 percent in 1973 and then to 14 percent in 1974, as a result of the base then being increased more rapidly than the general earnings level. By 1978, the proportion was 15 percent, but it fell to 7½ percent in 1981, as a result of the ad hoc increases in the earnings bases in 1979–81, and it was about 6 percent in 1983 and after. When the program began in the late 1930s, the earnings base was relatively high ($3,000), and this proportion was only 3 percent.

Beneficiaries and Average Benefits

Table 10.24 shows the number of monthly beneficiaries in current-payment status at the end of each year, the number of deaths for which lump-sum payments were awarded each year, and the average old-age benefit (for only the retired worker, without considering supplements for auxiliary beneficiaries).

The data for beneficiaries in current-payment status are on an accounting basis, rather than an accrual basis. Some persons are included who should not be, such as terminations or suspensions because of employment that were reported late. Others are omitted who properly should be included, such as (1) reinstatements to the roll when termination of employment was reported late, (2) awards in the process of adjudication, (3) claims that will be filed subsequently, and (4) some beneficiaries who are paid their OASDI benefit directly by the Railroad Retirement Board (which is reimbursed therefor by the OASDI Trust Funds). In the second and third cases, payments will actually be made for the particular month, even though the persons are not shown in the statistics to be in current-payment status then. In balance, the data for benefits in current-payment status tend to understate the number of persons for whom payments in respect to the particular month are made, such payments being made at the beginning of the next month or in subsequent months. Persons receiving benefits both as a worker and as a spouse or survivor are classified as worker beneficiaries.

The number of monthly beneficiaries has increased steadily over the years, reaching 40.6 million at the end of 1991. The number of disabled-worker beneficiaries reached a peak of 2.9 million at the end of 1978 and decreased steadily thereafter, to 2.6 million at the end of 1983; this resulted from the tightening up in the DI program as to both

awards and reviews of persons on the roll. However, thereafter the number of disabled-worker beneficiaries gradually rose and reached 3.2 million at the end of 1991. The auxiliary beneficiaries of disabled workers decreased from 2.0 million at the end of 1978 to 1.2 million at the end of 1983 (also due to the gradual phasing-out of child school-attendance benefits) and remained at about that level thereafter.

The transitional-noninsured beneficiaries, a closed group of persons who are at least aged 72, declined from a peak of 729,000 at the end of 1966 to 5,000 at the end of 1991 (when almost all of them were at least age 96).

In the last 15 years, the number of auxiliary beneficiaries of old-age beneficiaries has tended to level off; this is probably due to more persons qualifying for benefits on their own earnings record and to the phasing-out of child school-attendance benefits. For the same reason, the number of survivor beneficiaries leveled off during 1977–81 and thereafter. The retired-worker beneficiary roll has steadily increased in recent years (note that disabled-worker beneficiaries are reclassified as old-age beneficiaries when they reach age 65).

Another indication of the turnaround of the disability experience, from being very unfavorable from a cost standpoint in the early 1970s to being relatively better after 1975, and especially in 1978 and after, and then turning around in 1983, is the number of awards. Thus, in 1968–70, the annual awards averaged about 340,000. Each year thereafter, the number of awards increased steadily, reaching 592,000 in 1975 (a rise of 74 percent). Then, a decline set in, and the number of awards dropped to 299,000 in 1982. Then, in 1983, the trend once again reversed (as public reaction to the stricter administration occurred), and the awards per year averaged about 415,000 in 1986–89 (although rising gradually) and were 473,000 in 1990 and 536,000 in 1991.

As shown in Table 10.25, the 3,187,000 children in current-payment status at the end of 1990 included 600,000 disabled "children" aged 18 and over and 89,000 student beneficiaries (down from 793,000 at the end of 1980). The 3,367,000 spouse beneficiaries consisted of 3,101,000 spouses of retired workers and 266,000 spouses of disabled workers. About 101,000 of the 5,415,000 widow(er) beneficiaries qualified on the basis of disability. Only 6,000 of the beneficiaries were receiving dependent parent's benefits (a slowly decreasing category over the years).

The number of beneficiaries aged 65 and over at the end of 1990 numbered about 30.0 million, representing 75 percent of all beneficiaries and 94 percent of the total population in the country at those ages (after making allowance for beneficiaries living abroad). If per-

sons aged 65 or over who are eligible for benefits but not receiving them because of the earnings test are also counted, the latter percentage would probably increase to about 97 percent.

The number of deceased workers for whom lump-sum death payments are made annually was about 1½ million in 1978–80. This was two thirds of all the deaths in the country. It then fell off to about 800,000 as a result of the 1981 legislation which restricted such payments to spouses living with the deceased worker or to persons immediately eligible for spouse or child-survivor benefits.

The average old-age benefit for retired workers in current-payment status at the end of 1991 was $629 per month. It should be noted that this figure is not truly representative of the benefits payable to retired workers who have been in the system continuously for many years and who retire at age 65 or over. Such average benefit, first awarded at the end of 1991 was probably about $850 a month (not counting any auxiliary benefits).

The average benefits for those in current-payment status for December 1991 are as shown below. In considering these figures, it should be kept in mind that, if persons are eligible for both a primary benefit (retirement or disability) and a larger auxiliary benefit (spouse's, widow's, widower's, parent's, or child's), they are classified as primary beneficiaries and the total combined benefit is considered in determining the average. Of course, if the primary benefit is larger than the secondary benefit, only it is considered. Persons eligible for more than one secondary benefit are classified on the basis of the largest one.

Retired workers	$629
Spouses of retired workers	325
Children of retired workers	273
Disabled workers	609
Spouses of disabled workers	153
Children of disabled workers	168
Widows and widowers	580
Parents	506
Widowed mothers and fathers	424
Survivor children	420

Such average benefits may also be stated for certain typical family groups as shown in the table on the next page for December 1991. In contrast with the average benefit for retired workers of $629 as of the end of 1991, it is of interest to note the benefit for steady workers retiring at age 65 then. Such benefit was $481 for a worker with low earnings (45 percent of the nationwide average wage) in all past years,

and similarly $794 for an average-wage worker and $1,088 for a maximum-earnings worker.

Retired worker alone (i.e., no auxiliary benefit payable)	$ 615
Retired worker and wife, aged 62 or over	1,066
Disabled worker, wife, and children	1,056
Widowed mother and two children	1,221
Aged widow, aged 60 or over	584

Beneficiaries Abroad

A substantial number of persons living outside the United States receive OASDI monthly benefits, either based on their own earnings record or as auxiliaries or survivors. At the end of 1990, there were 346,000 foreign beneficiaries, or 0.87 percent of the total, living in about 130 countries. Their benefits were somewhat lower, on the average, so that the rate of benefit payments abroad was only 0.60 percent of the total payments. About half of the beneficiaries living abroad are entitled on the earnings record of a citizen. These foreign beneficiaries were highly concentrated in a few countries; about 56 percent were in Canada, Italy, Mexico, and the Philippines, with roughly 21 percent being in Canada and 17 percent in Mexico.

Early-Retirement Beneficiaries

About 69 percent of the retired workers receiving OASDI benefits at the end of 1991 had first claimed early-retirement benefits before age 65 and were thus receiving actuarially reduced benefits. This proportion was 65 percent for male workers and 73 percent for female workers.

The average benefit for those who had actuarially reduced benefits in current-payment status at the end of 1991 was about 28 percent lower than for those who first claimed benefits at age 65 or over. About half of this differential is due to the actuarial reduction, and the remainder is due to the generally lower earnings of those who retire early.

At the beginning of 1992, 50 percent of all persons aged 62–64 who had fully insured status were actually receiving OASDI primary benefits. Such proportion was higher for women than for men—57 percent versus 48 percent. It had risen steadily in the past, being only 35 percent in 1963 (when the effect of men being able to claim benefits before age 65, as a result of the 1961 Act, was first fully apparent). Next, considering persons aged 65–69, where the earnings

test is applicable, 87 percent of the fully insured at the start of 1992 were on the benefit roll (rather surprisingly, 90 percent for men and only 83 percent for women). This proportion had been as low as 61 percent in 1955, 76 percent in 1960, 80 percent in 1965 and 89 percent in 1983.

Detailed Categories of Beneficiaries

Table 10.26 presents data for the more important family groups, showing the numbers of families and beneficiaries in current-payment status at the end of 1990 and the corresponding average family benefits. The average benefit for a retired worker with no eligible auxiliaries was $588 per month, while that for a worker with an eligible spouse was $1,022, or 74 percent larger. This difference results not only because of the effect of the wife's benefit but also because men have higher primary benefits, on the average, than women (as well as because married men tend to have larger primary benefits than other men).

At the end of 1990, the average benefit for disabled workers, without considering supplementary benefits for spouses and children, was slightly lower ($587 versus $603) than that for old-age beneficiaries. The qualifying requirements for disability benefits eliminate many irregularly employed persons, who nonetheless at age 62 can qualify for old-age benefits. Also, the average old-age benefit is pulled down because about 68 percent of such beneficiaries are receiving reduced benefits because of early retirement. On the other hand, the disabled tend to have had lower earnings than other steady workers.

The relatively high benefits for young-survivor families at the end of 1990 were noteworthy. For example, the average monthly benefit for a widowed mother and two or more children was $1,069. These payments fulfill a real social purpose that is often not recognized, because the public generally considers only the old-age aspects of the program. It is also noteworthy that among the survivor families with children, about 16 percent of the total are those of deceased female workers.

Data on Medicare Coverage and Benefits Experience

Persons Eligible for Benefits

Table 10.27 shows the numbers of persons eligible for benefits under HI and SMI at various past dates. Virtually all persons aged 65

and over were covered automatically by HI when it went into operation in July 1966. The 200,000 not covered consisted primarily of persons covered by the Federal Employees Health Benefits program and a few short-term nonresident aliens. The number of persons aged 65 and over covered by HI increased from 19.1 million in mid-1966 to 31.1 million in mid-1991. As of then, only 146,000 of the persons aged 65 or over eligible for HI benefits were from the uninsured, blanketed-in group, which had originally numbered about 3 million. As of the beginning of 1991, the number of uninsured persons aged 65 or over who had voluntarily opted to participate in HI on a basis of paying premiums supposed to meet the full cost was about 130,000. The number of persons aged 65 and over who elected to enroll in SMI increased from 17.7 million at the start of the program in 1966 to 30.3 million in mid-1991.

Disabled beneficiaries who have been on the benefit roll for at least two years are automatically covered for HI benefits and are eligible to enroll under SMI. When such persons were first protected, in July 1973, about 1.7 million were under HI, and of these, about 1.6 million were under SMI. In mid-1990, about 3.4 million disabled beneficiaries were under HI, and 3.0 million were under SMI. About 78 percent of the disabled eligibles were disabled workers; 19 percent were disabled-child beneficiaries aged 18 or over; and 3 percent were disabled widow and widower beneficiaries.

In July 1973, about 6,400 persons with end-stage renal disease (ESRD) were deemed to be eligible for Medicare solely because of their ailment. Such persons qualify for HI without charge (other than the cost-sharing provisions) and may elect SMI at the standard premium rate payable by all other enrollees (because of the "bargain element," almost all such individuals elect SMI). The number of ESRD cases increased rapidly and reached about 58,000 in mid-1989.

About 91.6 percent of those aged 65 and over who were covered by HI as of July 1967 actually enrolled.[9] In recent years, this proportion has been about 97 percent.

A somewhat lower proportion of the eligible disability beneficiaries enrolled in SMI—namely, 91 percent when the program began operations in July 1973. This proportion has changed little over the years. This lower participation results entirely from the experience for disabled workers, because the proportion for the disabled-widow

9. Persons in outlying areas such as Puerto Rico are not so likely to enroll in SMI because medical care is much less costly there. Even more so, persons in foreign countries who are OASDI beneficiaries are not likely to enroll in SMI because they have no benefit protection while residing there.

and disabled-child categories is about the same as that for the aged. Only about 90 percent of the eligible disabled workers elect SMI; this lower participation probably reflects the fact that many such persons had health care available without cost from the Veterans Administration because they were veterans or that some such persons had continuing private health insurance coverage from their previous employment or from their spouse's current employment.

The vast majority of those who enroll in SMI do so quite promptly. In February 1991, 96.9 percent paid the standard premium rate. Another 1.2 percent had a 10-percent surcharge, 0.6 percent had a 20-percent surcharge, and 0.4 percent had a 30-percent surcharge. A few enrollees had as much as a 220-percent surcharge (this being the maximum possible then). The average overall premium rate was 101.0 percent of the standard rate.

Proportion of Beneficiaries Utilizing Services

About 21 to 22 percent of both the aged and disabled beneficiaries receive HI benefits in the course of a year (and this proportion has prevailed at all times over the years). The corresponding figure for SMI for aged beneficiaries was 36 percent in 1967, the first full calendar year of operation; it increased to 50 percent in 1974 (and was 42 percent then for the disabled), and it increased further since then, being 79 percent for the aged in 1989 and 76 percent for the disabled. This increasing trend over the years was the result of the initial deductible being more readily met as medical prices rise.[10]

Inpatient hospital admissions represented about 300 per thousand eligible aged persons per year at the inception of the program and increased to 404 per thousand in 1983, but then decreased to about 330 per thousand in 1987–88.[11] The corresponding rate for the disabled was somewhat higher, being 375 per thousand in 1988.

The admission rate for skilled nursing facilities was about 25 per thousand in 1968–69, and then it decreased to about 20 per thousand in 1971–85 and to about 15 per thousand in 1986–88, as a result of tightening, administratively, the requirements to be met for this benefit. The rate for the disabled was only about 6 to 7 per thousand in all years.

The average duration of hospitalization per discharge was about

10. The increase in the deductible from $50 to $60 in 1973 and from $60 to $75 in 1982 naturally temporarily reversed this trend.

11. Such admission rates are higher than the proportions of persons receiving HI benefits, because of some persons being admitted more than once during a year.

13 days in 1966–68, but it decreased thereafter to 10 days in 1978–80 and to 8 days in 1985–89 for the aged (and usually only slightly higher for the disabled).

In 1987, the average daily charge in hospitals was $929 for the aged and $996 for the disabled. Reimbursement from HI (which reflects the effects of the inpatient deductible, the DRG basis, and noncovered services) represented 54 percent of total charges for the aged and 56 percent for the disabled.

Benefit Payments by Type

Hospital benefits represent the vast majority of the benefits paid under the HI program. Home health benefits were only about 1 percent of the total until 1973, but have since risen to about 5 percent for the aged and 3 percent for the disabled; much of the increase was due to paying for these benefits from HI, rather than SMI, after the three-day prior-hospitalization requirement was eliminated. Likewise, SNF benefits are currently about 6 percent of the total for the aged, although they were as much as 8 to 9 percent in 1967–69; the corresponding proportion for the disabled is 2½ percent.

The HI program paid about 80 percent of the hospital charges of the covered individuals, on the average, in 1966–68. Since then, this proportion decreased, until, for 1989, it was 55 percent (about the same for both the aged and the disabled). This decreasing trend was largely the result of the reduction in the average duration of hospitalization, because then the effect of the initial deductible is relatively greater, and of the legislated controls on hospital-cost increases. The current 45-percent remainder reflects the effect of the cost-sharing provisions (about one quarter of the differential), noncovered services such as the cost of stays after HI benefits are no longer available, a private room, or television, and the excess of charges over the reimbursement of the HI program on a cost basis. It is important to note that the last item is not paid by the beneficiaries, but rather is absorbed by the hospitals (i.e., spread over all other payors).

SMI benefit outgo consists predominantly of physician benefits. Such proportion, however, has been decreasing over the years, from about 95 percent initially to 67 percent in 1989 (69 percent for the aged, but only 50 percent for the disabled). At the same time, outpatient hospital services have played an increasing role, rising from only 2 percent to 17 percent (15 percent for the aged, but as much as 33 percent for the disabled). The foregoing trend reflects both the increasing use of outpatient hospital services and the more rapidly

rising cost of such services since they have not been controlled as much by Medicare as have physicians' fees. Home health services accounted for about 1½ percent of the total SMI costs until 1982, when the law was changed so that almost all HH services are paid by the HI program; in 1989, only 0.2 percent of SMI expenditures went for HH services. Independent laboratory services account for about 3 percent. The remaining 13 percent was for other services, such as ancillary services by hospitals and SNFs, renal dialysis by limited-care facilities, services of hospital-based physicians with charges on a daily rate, ambulances, rental of medical equipment, and prosthetic devices.

The SMI program, in the early years, paid about 73 percent of the cost of medical services furnished to enrollees who had at least enough such costs to meet the initial deductible.[12] The 27-percent remainder occurred because of the effect of the initial deductible and the subsequent 20-percent coinsurance. By 1989, this proportion had risen to about 79 percent, probably due to the decreased effect of the static $75 initial deductible in the face of rising medical costs.

An interesting feature that can be observed about the SMI experience is that, in general, the per capita costs for the low-income sections of the country are lower than those for the high-income ones. This can be viewed as meaning that the government contributions are not equally spread on a per capita basis over all sections of the nation, but rather are devoted to a greater extent to the high-income states. This is the reverse of the usual result under federal grant programs, where the low-income states generally receive proportionately more as a result of a weighted matching formula. This result under SMI is not necessarily inequitable or preferential, because the sources of general revenues tend to be more concentrated in the wealthier states.

It is often asserted that Medicare covers only about 40–45 percent of the health-care costs of persons aged 65 and over. This low proportion results from counting in such noncovered items as custodial-nursing-home care (which has substantial cost, and is really not primarily a "health-care" item), prescription and other drugs, and dental care. Actually, in all years throughout the period 1975–88, the cost-sharing payments made by beneficiaries, plus their balance-billing payments (amounts in excess of Medicare-recognized charges) represented only 17 percent of the total Medicare costs. In other words, Medicare paid 83 percent of the total costs of covered health-care

12. As used here, "cost" means the amount determined as "reasonable charges," except for outpatient hospital and home health services, for which the basis is the actual billing.

services. If the SMI premiums are also included, then the proportion of the total Medicare costs met out-of-pocket by the beneficiaries (including therein insurance payments by Medigap policies) was about 24 percent in all years.

Physician Assignment Rates

Physicians and certain suppliers of health services (ambulance services and medical supply stores) have a choice of two reimbursement methods. They can either bill the patient directly (although submitting the bill to Medicare, for payment of the benefit to the individual) or take an assignment and accept for reimbursement purposes whatever amount the Medicare system decides is the "reasonable" charge. For purposes of analysis of the experience in this area, it is appropriate to disregard claims from hospital-based physicians and group practice prepayment (HMO) plans, because such claims are, by definition, considered in the assignment category. The resulting net assignment rate is indicative of physician and supplier satisfaction with SMI reimbursement methods and, conversely, of how many beneficiaries are spared from administrative participation in the program.

The net assignment rate based on the number of claims rose from 58.8 percent in 1968 to 61.5 percent in 1969. Then, such rate decreased steadily until it reached a plateau of about 51 percent in 1976–79, with a slow rise thereafter, to 54 percent in early 1984, and then with more rapid rises to 80 percent in 1989 (undoubtedly, due to the financial and other pressures placed on physicians to accept assignments). Great variation by states occurs. A factor tending to make the rate high, which was probably effective in the beginning, was the greater assurance of the physician receiving payment and the simpler administration involved. In the 1970s, however, these elements were apparently more than offset by physician dissatisfaction with SMI reimbursement bases as these were gradually tightened and moved further and further from true customary and prevailing charges.

Another indication of the extent of the gradual restrictions introduced in recognizing physicians' customary and prevailing charges can be seen from the proportion of physician claims reduced because of determinations as to recognized charges by the Medicare system. The reduction rate for assigned claims, on the basis of the number of bills, was 22 percent in mid-1969, rising steadily to about 82 percent in 1981 and after. The reduction rate for nonassigned claims has been even higher, about 85 percent in 1981 and after. (Note that this statistic is somewhat misleading because it relates to bills on which a

reduction was made in at least one of the several charges for services there reported. The proportion of reductions is significantly lower when based on separate charges for each service rendered.) Reductions due to the recognized-charge procedure averaged about 11 percent in the early 1970s and about 25 percent in the 1980s. In 1988, the average reduction was about 30 percent for assigned cases and 25 percent for nonassigned cases.

Hospital Cost Trends and Effects on HI

The cost of the HI program depends to a considerable extent on the trend of the average daily per capita hospital cost experienced. This per capita cost is obtained by dividing the total reported hospital costs incurred in a year by the total reported inpatient days for the year. Such cost with respect to insured beneficiaries (i.e., not including those blanketed-in at the start of the program) was used in the automatic adjustments of the HI cost-sharing provisions, after adjustment for final cost settlements, until the DRG method of reimbursing hospitals was instituted. Per capita costs experienced in the past up through 1984 are shown in the following table. It will be observed that these rates of increase for 1967–83 are considerably higher than those assumed for the future in the 1984 HI cost estimates.

Year	*Cost*	*Increase*	*Year*	*Cost*	*Increase*
1966	$ 40.01*	—	1976	$141.41	16.1%
1967	44.76	15.9%†	1977	160.69	13.6
1968	51.07	14.1	1978	180.80	12.5
1969	57.65	12.9	1979	202.48	12.0
1970	65.35	13.4	1980	232.42	14.8
1971	74.74	14.4	1981	270.95	16.6
1972	81.84	9.5	1982	316.81	16.9
1973	88.77	8.5	1983	356.55	12.5
1974	101.36	14.2	1984	438.25	22.9
1975	121.77	20.1			

*The 1966 cost is for only the last six months of the year. The cost actually used in the determination of the cost-sharing provisions in 1966–70 differed by a few cents from this figure, which is based on final data.

†Annualized rate of increase, taking into account that the 1966 figure relates only to the last six months of the year.

Further indication of general hospital cost trends relative to those for wages and prices can be seen from Table 10.28, which shows such data for the years immediately preceding the enactment of Medicare as well as subsequent ones. This table also gives similar data for phy-

sicians' fees, the principal component of the cost of the SMI program.

Over the past 35 years, hospital costs have increased far more rapidly than the general price level, the general wage level, or physician fees. In fact, on the average, hospital costs rose about twice as fast as either wages or physician fees, and this was as true in 1967–91, when all elements increased greatly, as it had been previously, when the economy was more stable. As yet, no diminution in the large differential increase of hospital costs over other economic elements is evident.

The large increases in hospital costs after 1965 that are shown in Table 10.28 were, of course, the major reason that the cost estimates made for the HI program when it was enacted were too low and, as a result, additional financing was required. If the trend that actually occurred in the general price level or the general wage level after 1965 had been known then, the trend of hospital costs could have been well estimated, and the appropriate financing could more nearly have been provided in the initial legislation.

Physician-Fee Trends and Effect of SMI

In 1956–82, although physicians' fees increased more rapidly than the general price level, they rose at only about the same rate as general wages, and this was equally the case in both halves of the period. This analysis thus refutes the commonly held belief that there was then a crisis in health care delivery because physicians' fees had risen exorbitantly since Medicare was enacted. It certainly seems not unreasonable that physicians' fees should rise parallel to wages generally. However, in 1974–77, physicians' fees did rise much more rapidly than wages—in part, at least in 1974–75, to catch up for 1972–73 (when the reverse was the case due to price controls on such fees being more restrictive than wage controls).

Following 1981, the situation changed significantly. Physicians' fees increased much more than wages generally (and of course even more than the CPI). For 1983–91 the average annual rate of increase in physicians' fees was about 1¾ times that in prices and 1½ times that in wages. The more rapidly increasing trend of physicians' fees than had been thought likely had its effect on the SMI financial experience. Another factor, of course, was the somewhat higher actual utilization of services than had originally been anticipated.

The per capita cost of the Medicare program for ESRD cases is, quite naturally, very high. The average annual reimbursement amount under HI and SMI was about $24,700 per capita in 1990 for the 144,000 beneficiaries involved, on the average, during the year. Of these 144,000 cases, about 65,000 are "ESRD only" cases, the remain-

der being persons who were qualified for Medicare by reason of age or disability. About 9,000 covered kidney transplants are performed each year. New ESRD cases numbered about 43,000 in 1990 (of these, 25 percent were under age 45, 14 percent were aged 45–54, 22 percent were aged 55–64, and 39 percent were aged 65 or over).

In 1990, about 100,000 persons were admitted to the hospice-benefits program. The average number of days per admission was about 50, at an average daily cost of $85. Thus the total annual cost was about $425 million. This cost has been increasing rapidly since the program began in 1984 and is expected to triple by 1995. Of course, some of this cost is offset by savings in other areas (such as inpatient-hospital costs).

Data on Operations of Trust Funds

OASI Trust Fund

Table 10.29 shows the past progress of the OASI Trust Fund. Tax income has grown steadily over the years—as a result of the increasing size of the labor force, increases in coverage by legislative enactments, rising general earnings levels, the increasing tax schedule, and the raising of the maximum taxable earnings base by legislative enactments. Benefit payments, too, have risen steadily and significantly over the years as a result of the gradual maturing of the system and the various factors that affected the rise in the tax income.

Although tax income was considerably higher than benefit outgo in the early years of operation, these two elements were closely in balance during the period 1954–65. However, beginning in 1966, tax income exceeded benefit outgo in every year until 1975. The level trend in the size of the fund in 1954–65 was, in part, due to the desires of the economic planners to avoid a growth in the trust fund as being a "fiscal drag." Similarly, the rising trend in 1966–74 was to the liking of the economic planners because this served as a brake on inflation (through a tax which was more popular than most taxes). After 1974, the fund balance decreased steadily, falling from its peak of $37.8 billion at the end of 1974 to $22.8 billion at the end of 1980; it would have been even lower if it had not been for legislation in 1980 which allocated money from the DI Trust Fund to the OASI Trust Fund retroactively to the beginning of the year.

The fund balance decreased slightly in 1981, despite the reallocated tax rate. It would have fallen sharply in 1982—to only about $7½ billion, or an amount insufficient to meet the benefit payments

for January 1983—if it had not been for the loans from the DI and HI Trust Funds. The balance in the fund fell slightly in 1983 (to slightly less than $20 billion), despite such loans, the delay in the COLA for June, and the payment of $17½ billion from the General Fund for past military-service wage credits. Following 1983, the balance grew steadily and significantly, reaching $268 billion in 1991.

Measuring the trust-fund balance at the end of the year in relation to outgo for benefits (including the RR financial interchange) and administrative expenses for the following year gives a good indication of its relative size. In the mid-1950s, this ratio was about 400 percent. By the mid-1960s, it had fallen to about 100 percent, and this level was maintained until 1970. Afterward, as discussed previously, this ratio decreased as the benefit level was expanded. It was only 75 percent as of the beginning of 1973, and it decreased steadily thereafter until reaching 12 percent at the beginning of 1984. Thereafter the ratio increased steadily and was 96 percent at the beginning of 1992.

Administrative expenses have risen for the same reasons that tax income and benefit outgo have grown. In most years before 1970, these administrative expenses were only 2 to 3 percent of benefit outgo. Thereafter this ratio decreased steadily and reached 1.0 percent in 1983 and 0.7 percent in 1991.

DI Trust Fund

Table 10.30 gives similar information for the DI portion of the program. The trust-fund balance grew slowly but steadily from its inception in 1957, reaching a peak of $2.4 billion in 1961 and then declining slowly to a low of $1.6 billion in 1965. The amendatory legislation of that year and subsequent higher allocations to DI caused the balance to increase rapidly since then—to $8.1 billion at the end of 1974. The DI Trust Fund leveled off in 1974, despite the increased allocation to it and the higher taxable earnings base, as a result of the worsening benefit experience. Then, the fund balance fell precipitously, reaching only $3.4 billion at the end of 1977.

The increased allocation of the OASDI tax to the DI system as a result of the 1977 Act reversed this trend, and the fund balance at the end of 1979 was $5.6 billion, while at the end of 1980, it was only $3.6 billion (due to the reallocation of the OASDI tax rate, mentioned previously). It then decreased further, to $3.0 billion at the end of 1981 (as a result of the tax-rate reallocation) and to $2.7 billion at the end of 1982 (as a result of the loan to the OASI Trust Fund). The balance rose in 1983, to $5.2 billion at the end of the year (in part, due to the payment of $2.2 billion from the General Fund for mili-

tary-service wage credits). Thereafter, the balance slowly increased and was $12.9 billion at the end of 1991.

Administrative expenses for the DI Trust Fund have naturally been higher than for OASI (because of the problems involved in determining disability) and were about 5 percent of the benefit outgo in 1965–72, but only about 3 to 4 percent in 1973 and after (and 2.9 percent in 1991). The administrative-expense rate for OASI and DI combined in 1991 was only 1.0 percent.

HI Trust Fund

The past operations of the HI Trust Fund are presented in Table 10.31. The trust-fund balance increased from its inception in 1966 to $3.2 billion in 1970, with a small decrease for 1971–72, when the tax rate was insufficient on a long-range basis. The corrective action in this respect taken in the 1972 amendments resulted in a sharp increase in the year-end balance, to $6.5 billion in 1973 and $9.1 billion in 1974. Thereafter, the fund balance grew slowly, reaching $18.7 billion at the end of 1981. The balance available for benefits fell sharply at the end of 1982 (due to the loan of $12.4 billion to the OASI Trust Fund) and was only $8.2 billion; the total real assets were $20.6 billion, because such loan is properly considered as an asset. In 1983, the fund balance rose, to $12.9 billion at the end of the year as to assets available and to $25.3 billion on a total-assets basis. Thereafter, a steady increase occurred, and the fund balance was $115 billion at the end of 1991. But, as pointed out previously, financial troubles lie ahead for the HI Trust Fund!

Administrative expenses were about 3 to 3½ percent of benefit outgo in the early years of operation, but in recent years they have been only about 1½ percent (due to the explosive growth of the benefit outgo, which rose far more rapidly than the general price and wage levels), and only 1.4 percent in 1991.

SMI Trust Fund

Table 10.32 shows the operations of the SMI Trust Fund since it began in 1966. Its balance rose to about $400 million in 1967–68 and then fell precipitously to only $57 million in mid-1970 (as a result of the grossly inadequate premium rate promulgated for fiscal year 1970 in 1968, as discussed in Chapter 8). Since then, adequate premium rates have been promulgated, and the experience has been favorable, so that the trust-fund balance has steadily increased and was $17.9 billion at the end of 1991.

The administrative expenses of the SMI program represented about 12½ percent of the benefit outgo in the years up to 1975. Thereafter, this ratio decreased, until it was 3.3 percent for 1991. This considerably higher ratio than for HI is due in part to the fact that SMI must handle many relatively small benefit payments.

As indicated in Chapter 4, the financing of SMI is on a different basis than that of OASI, DI, or HI, because it is on a year-by-year incurred-cost basis, rather than on a long-range basis. Thus, the financial status of SMI is best measured by comparing the fund on hand at the end of the period to which a particular premium rate is applicable, with the benefits incurred but unpaid then, plus the administrative expenses applicable thereto. Table 10.33 presents such data for various dates back to June 30, 1967, along with estimates as to what may be the case for 1993.

The incurred deficit for SMI increased steadily after the inception of the program in 1966 until it reached $237 million on June 30, 1969. This was the result of the slightly inadequate premium rates, both in the initial law and subsequently promulgated, as discussed earlier in this chapter. Then, in the next year, the deficit jumped to $496 million as the trust fund was almost exhausted, which was the result of the politically inspired freezing of the premium rate for fiscal year 1970. Thereafter, adequate premium rates were promulgated, and the deficit lessened gradually, until being eliminated in 1974.

After 1974, surpluses occurred, reaching a peak of $7.0 billion in 1986, but subsequently these were reduced (by intentionally promulgating slightly inadequate premium rates). The surplus was only $1.1 billion at the start of 1988, but then it increased to $11.7 billion at the beginning of 1992 (as a result of the promulgation of increased actuarial rates). It is estimated to decrease to $6.4 billion at the beginning of 1993. In any event, it can properly be said that, of the four trust funds, SMI is the only one to be actuarially sound under the strictest possible standards.

Total Benefits since Inception

Up through the end of 1991, the total OASDI payments to beneficiaries (exclusive of the benefits portion of the RR financial interchange payments) amounted to the staggering sum of $3,190 billion. The corresponding figures for HI and SMI were $696 billion and $351 billion. Although OASDI benefits have been payable for the last 54 years, 81 percent of them have been made in the last 15 years and 37 percent in the last 5 years. This is an indication of both the maturing of the system and the effect of inflationary conditions.

Types of Investments

As indicated above, most assets of these trust funds are invested in federal government securities. The following analysis considers the assets available for investment and for payment of disbursements.

On June 30, 1990, the $941,962 million of assets of the OASI Trust Fund were distributed as follows:[13] cash balance of −$221 million and special-issue bonds maturing in 15 equal blocks of $13,012.2 million during 1991–2005, with annual coupon rates of 8⅜ to 10¾ percent (semiannual payments). The DI Trust Fund had assets of $10,961 million: cash balance of −$70 million; $250.7 million of marketable treasury bonds, maturing at various times in 1992–2017, with annual coupon rates of 3½ to 11¾ percent; and special-issue bonds maturing in 15 equal blocks of $718.7 million during 1991–2005, with annual coupon rates of 8⅜ to 10¾ percent.

The $96,235 million of assets of the HI Trust Fund as of June 30, 1990, were entirely invested in special-issue bonds maturing in 15 equal blocks of $6,415.7 million in 1991–2005, with annual coupon rates of 8¼ to 13¾ percent. Similarly, the SMI Trust Fund had assets of $14,872 million, which was invested entirely in special-issue bonds maturing in 15 equal blocks of $991.4 million during 1991–2005, with annual coupon rates of 8¾ to 13¾ percent.

At times in the past, the trust funds have held investments in federally sponsored agency obligations. For example, as of September 30, 1982, the OASI Trust Fund had $455 million of participation certificates of the Government National Mortgage Association (at interest rates of 5.1 to 6.45 percent).

The effective interest rate earned by the assets of the trust funds for the year ended June 30, 1991 was 9.2 percent for OASI, 9.3 percent for DI, 9.5 percent for HI, and 9.6 percent for SMI. The average year-end interest rate of the investments of the OASI Trust Fund increased significantly over the years up to the early 1980s—from about 2.2 percent in 1943–51 to 2.5 percent in 1956, 3.0 percent in 1963, 4.0 percent in 1968, 5.2 percent in 1970, 6.1 percent in 1974, 7.4 percent in 1979, 11.1 percent in 1983, and 8.8 percent in 1991.

The interest rate applicable to new special issues for the four trust funds has fluctuated greatly (see Table 10.34). It rose from 2⅝ percent in June 1960 to a level of somewhat over 7 percent in 1970. Following this, the rate fell to about 6 percent during 1971–72 and then rose steadily until peaking at somewhat over 13 percent in 1981

13. Analyses of the investments of the trust funds are best made as of June 30, because investments made during each 12-month period ending June 30 are in short-term certificates that are redeemed and reinvested on that date.

(maximum of 15.25 percent in October). The rate fell slowly at first, not being under 10 percent until December 1985. Thereafter, the rate dropped rapidly and was at a level of 8–9 percent in almost all of 1986–90 (8⅜ percent in December 1990). In 1991, the rate decreased further, to 8⅛ percent in January–June and 7⅜ percent in December and remained at that level for the next six months, but dropped to 6⅝ percent in September.

Amount of Life Insurance under OASDI

An interesting concept is the estimated amount of life insurance in force as survivor benefits under OASDI.

Such amount of life insurance in force as survivor benefits is defined as the total for all insured workers of (1) the lump-sum death payment and (2) the present value, at a specified interest rate, of the monthly survivor benefits available if death of the insured worker occurred at the valuation date. In other words, the concept represents the total life insurance protection currently available to all insured workers, as distinct from the total liability that will be entered into, on their behalf, in any given year. This is similar to the concept in private life insurance of totaling the face amounts of all policies in force, even though it is obviously recognized that by no means will all insured persons die at any one time (or even within any particular year).

The estimates developed are "net" estimates in the sense that the amounts of insurance are adjusted to allow for the effect of employment by survivor beneficiaries on the benefits payable to them and to allow for possible "forfeiture" of part or all of the benefits payable to widows in cases where they have earned old-age benefits in their own right (i.e., based on their own earnings credits).

Table 10.35 presents a historical series of figures on the amount of life insurance in force as survivor benefits under OASDI from 1940 to 1984, as of the beginning of the year. It will be noted that the higher the interest rate used, the lower is the amount of insurance in force (because of the greater discounting of future payments). Unfortunately, the Social Security Administration has not made annual estimates of this element since 1978, and the author has believed it wise to extend these estimates only through 1984.

In an analysis such as this, it is quite proper to use an interest rate in the neighborhood of 3 percent as representing a "real" interest rate—that is, substantially on a net basis after taking into account the inflation element. Or, to put it another way, a relatively low interest rate (considering the higher interest rates currently), in essence, takes

into account and counter-balances any possible future benefit increases that may be made due to general price and wage inflation. Thus, under the automatic-adjustment provisions of the 1972 Act, it seems realistic to use interest rates which are consistent with the assumed future increases in benefits due to changes in the CPI.

The amount of life insurance in force as survivor benefits increased from only about $40 billion in 1940 to about $170 billion in 1951 and then to about $680 billion in 1966, $2.0 trillion in 1974, and $3.1 trillion in 1978. There was a sharp increase in the amount of such life insurance in force as a result of the 1967 Act, under which survivor benefits were made available to female insured workers on a much more liberal basis (by requiring only the same insured-status conditions as for men, instead of requiring either proof of dependency or recent attachment to covered employment). Some of the increase after 1974 reflects the Supreme Court decision in 1975 requiring equal treatment for widowers as compared with widows. It is very important to note that the amount of life insurance in force in 1979 was significantly lower than in 1978. This is the result of the decoupling procedure introduced by the 1977 Act, first effective in 1979, which reduced survivor benefits greatly for young insured workers (see Table 2.11 and the discussion thereof).

The Social Security Administration estimate of such amount of life insurance at the beginning of 1992 was $10.8 trillion: $6.5 trillion for child survivor benefits; $1.1 trillion for mother's and father's benefits; $3.2 trillion for surviving widows, widowers, and parents.

Comparison with Private Insurance

It may be of interest to make a comparison of life insurance in force as survivor benefits under OASDI with life insurance in force in private insurance companies. Such a comparison is not entirely valid, because of the numerous variables affecting benefit receipt under the Social Security program, nor is it especially meaningful, because of the different types of insurance (e.g., most of the survivor insurance under OASDI is on young lives who have relatively small probabilities of death, whereas under private insurance much of the protection is on middle-aged and older lives).

In any event, keeping in mind these differences and qualifications, it is interesting that over the years, the amount of life insurance in force as survivor benefits under OASDI has closely paralleled the amount in force in private insurance companies in the United States. During 1973–78, after OASDI had been significantly expanded in 1969–72, the private insurance coverage ran somewhat behind

OASDI, but in 1979 the situation was reversed, for the reason mentioned previously. However, at the beginning of 1992 the amount of life insurance in force in private insurance companies was again slightly lower than that under OASDI; $10.1 trillion versus $10.8 trillion.

At the beginning of 1978, private insurance in force amounted to $2.58 trillion,[14] compared with $3.10 trillion under OASDI. The corresponding figures for 1979 and subsequently were much closer, and in fact were reversed—for 1984, $4.2 trillion for OASDI and $5.0 trillion for private insurance.

At the beginning of 1970, private insurance in force amounted to $1.28 trillion, compared with $1.10 trillion under OASDI. In 1960, the corresponding figures were $542 billion for private insurance and $503 billion for OASDI, whereas in 1951 (after the 1950 Act had updated the program) they were $234 billion and $170 billion. In 1940 the comparison was not nearly so close: about $112 billion under private insurance and $37 billion under OASDI.

An Individual Case

Finally, an example of the amount of life insurance in force under OASDI for a hypothetical case may be of interest. The case selected is a "maximum" one for 1992, although by no means unlikely. Consider a man aged 29 (or under) in 1992 who has a wife aged 29 and newborn twins and who had maximum covered earnings in 1990 and 1991 (namely, $51,300 and $53,400). The potential monthly survivor benefits, disregarding any automatic benefit increases, are $2,229 while the children are under age 16; $1,912 while the children are in high school, before age 19; and finally $911 to the widow at age 60 (if not remarried). No allowance is made for the effect of the earnings test if any beneficiary is employed or for the widow having a benefit based on her own earnings. The present value of these survivor benefits at 2 percent interest (thus allowing for the automatic future CPI increases) is the amazingly large amount of $508,300.[15] Somewhat lower figures result for older workers, for those with older children, and for those with lower earnings, but nonetheless the amount of survivor protection available is very significant.

14. From *Life Insurance Fact Book, 1984* (Washington, D.C.: American Council of Life Insurance, 1984).

15. It is assumed that the children are not subject to mortality, that the widow does not remarry or have a benefit on her own earnings, and that her mortality is that of the U.S. Total Female Life Table for 1969–71.

Appendix 10-1

Actuarial Cost Estimates and Statistics for OASDI and Medicare

TABLE 10.1. Estimated Amounts of Changes in OASDI Tax Income, General Fund Transfers, and Benefit Payments That Would Result from 1983 Act Based on Intermediate (Alternative II-B) Assumptions, 1983–1989 (in billions)

Provision	*Calendar Year*							*Total, 1983–1989*
	1983	*1984*	*1985*	*1986*	*1987*	*1988*	*1989*	
Increase tax rate on covered wages and salaries	—	$ 8.6	$ 0.3	—	—	$14.5	$16.0	$39.4
Increase tax rate on covered self-employment earnings	—	1.1	3.1	$ 3.0	$ 3.2	3.7	4.4	18.5
Cover all federal elected officials and political appointees	—	*	*	*	*	*	*	0.1
Cover new federal employees	—	0.2	0.7	1.2	1.8	2.4	3.1	9.3
Cover all nonprofit employees	—	1.3	1.5	1.8	2.1	2.6	3.0	12.4
Total for new coverage	—	1.5	2.2	3.0	3.9	5.0	6.1	21.8
Prohibit state and local government terminations	—	0.1	0.2	0.4	0.6	0.8	1.1	3.2
Accelerate collection of state and local taxes	—	0.6	*	*	0.1	0.1	0.1	1.0
Modify General Fund financing basis for noncontributory military-service credits	$18.4	−0.4	−0.4	−0.3	−0.4	−0.4	−0.4	16.1
Provide reimbursements from General Fund for unnegotiated checks	1.3	0.1	0.1	0.1	0.1	0.1	0.1	1.6
Delay benefit increases six months	3.2	5.2	5.4	5.5	6.2	6.7	7.3	39.4
Continue benefits on remarriage	—	†	†	†	†	†	†	−0.1
Modify indexing of deferred survivor benefits	—	†	†	†	†	†	†	†

TABLE 10.1 (continued)

Provision	Calendar Year							Total, 1983–1989
	1983	1984	1985	1986	1987	1988	1989	
Raise disabled widow(er)'s benefits to 71.5 percent of the PIA	—	−0.2	−0.2	−0.2	−0.2	−0.3	−0.3	−1.4
Pay divorced spouses whether or not worker has retired	—	—	†	†	†	†	†	−0.1
Replace 90-percent factor in benefit formula with variable percentage, for individuals receiving pensions from noncovered employment	—	—	—	‡	‡	‡	0.1	0.1
Offset spouse's benefits by up to two thirds of noncovered government pension	—	†	†	†	†	†	†	†
Expand use of death certificates to stop benefits	—	‡	‡	‡	‡	‡	‡	0.1
Impose five-year residency requirement for certain aliens	—	—	‡	‡	‡	‡	‡	0.1
Tax one half of benefits for high-income beneficiaries	—	2.6	3.2	3.9	4.7	5.6	6.7	26.6
All other miscellaneous and technical changes	—	†	†	†	†	†	†	−0.1
Total for all changes	22.8	19.2	13.9	15.3	18.0	35.8	41.2	166.2

*New additional taxes of less than $50 million.
†Additional benefits of less than $50 million.
‡Reduction in benefits of less than $50 million.

Note: Estimates shown for each provision include the effects of interaction with all preceding provisions. Totals do not always equal the sum of components due to rounding. Positive figures represent additional income or reductions in benefits. Negative figures represent reductions in income or increases in benefits.

TABLE 10.2. Estimated Cost of OASDI and HI Benefits and Administrative Expenses under 1983 Act, as Percentage of Taxable Payroll, Intermediate Estimate in 1984 Trustees Reports

Calendar Year	*OASI*	*DI*	*OASDI*	*HI*	*OASDI-HI*
1985	10.06%	1.09%	11.15%	2.83%	13.98%
1990	10.02	1.00	11.02	3.45	14.47
1995	9.71	1.02	10.73	4.13	14.86
2000	9.01	1.07	10.08	4.70	14.78
2010	8.95	1.44	10.40	5.65	16.05
2020	11.31	1.61	12.92	6.99	19.91
2030	13.36	1.65	15.01	8.65	23.66
2040	13.59	1.63	15.22	9.37	24.58
2055	13.77	1.65	15.42	9.46	24.89
Average-cost*	11.51	1.45	12.95	6.92	n.a.

*Arithmetic average of the year-by-year costs (for OASDI for 1984–2058 and for HI for 1984–2008).

TABLE 10.3. Estimated Cost Rates, Income Rates, and Balances for OASDI and HI Programs, as Percentage of Taxable Payroll, Intermediate Estimate in 1984 Trustees Reports

	OASDI				*HI*		
Calendar Year	*Cost Rate**	*Income Rate†*		*Net Balance‡*	*Cost Rate**	*Income Rate†*	*Net Balance‡*
1985	11.15%	11.60%	(0.20)%	0.45%	2.83%	2.70%	−0.13%
1990	11.02	12.68	(0.28)	1.66	3.45	2.90	−0.55
1995	10.73	12.79	(0.39)	2.07	4.13	2.90	−1.23
2000	10.08	12.79	(0.39)	2.70	4.70	2.90	−1.80
2010	10.40	12.83	(0.43)	2.43	5.65	2.90	−2.75
2020	12.92	12.96	(0.56)	0.04	6.99	2.90	−4.09
2030	15.01	13.09	(0.69)	−1.91	8.65	2.90	−5.75
2040	15.22	13.14	(0.74)	−2.07	9.37	2.90	−6.47
2055	15.42	13.17	(0.77)	−2.25	9.46	2.90	−6.56
Average§	12.95	12.90	(0.56)	−0.06	6.92	2.89	−4.03

*For benefits and administrative expenses.

†Combined employer-employee tax rate plus (for OASDI only) the income taxes on benefits expressed as a percentage of taxable payroll (the latter quantity being shown in parentheses).

‡Income rate minus cost rate.

§Arithmetic average of the year-by-year data (for OASDI for 1984–2058 and HI for 1984–2008).

TABLE 10.4. Estimated Progress of OASI Trust Fund under 1983 Act, Intermediate Estimate in 1984 Trustees Reports (in billions)

Calendar Year	*Net Income**	*Net Disbursements†*	*Repayment of Loans‡*	*Net Increase in Fund*	*Fund at End of Year§*
1984	$167.2	$163.0	—	$ 4.2	$ 23.9 (20%)
1985	184.7	175.2	—	9.6	33.4 (21)
1986	201.7	189.5	$5.5	6.7	40.1 (25)
1987	219.7	205.2	6.9	7.6	47.7 (27)
1988	252.8	221.1	5.1	26.6	74.3 (29)
1989	274.8	236.6	—	38.2	112.5 (39)
1990	300.0	252.4	—	47.6	160.0 (53)
1991	322.4	268.4	—	54.0	214.1 (68)
1992	345.4	285.0	—	60.5	274.5 (83)
1993	370.6	302.3	—	68.3	342.8 (99)

*Taxes, interest on fund, and reimbursements from the General Fund for additional cost of noncontributory credits for military service and of payments to noninsured persons aged 72 and over and for the transfer of income-tax receipts on benefits.

†Benefit payments, administrative expenses, and Railroad Retirement financial interchange.

‡Loan repayment to DI and HI Trust Funds.

§Figures in parentheses are fund ratios (i.e., trust-fund balance at beginning of year, including advance tax transfers for January, as percentage of disbursements for year).

TABLE 10.5. Estimated Progress of DI Trust Fund under 1983 Act, Intermediate Estimate in 1984 Trustees Reports (in billions)

Calendar Year	*Net Income**	*Net Disbursements†*	*Repayment of Loans‡*	*Net Increase in Fund*	*Fund at End of Year§*
1984	$17.2	$18.5	—	−$1.3	$ 3.9 (23%)
1985	18.4	18.9	—	−0.5	3.4 (22)
1986	19.9	19.9	—	—	3.5 (24)
1987	21.5	21.0	—	0.5	4.0 (27)
1988	24.4	22.3	$5.1	7.2	11.2 (31)
1989	26.4	23.6	—	2.8	13.9 (38)
1990	31.8	25.1	—	6.7	20.6 (45)
1991	34.5	26.7	—	7.8	28.4 (53)
1992	37.0	28.5	—	8.5	37.0 (60)
1993	39.8	30.5	—	9.3	46.3 (66)

*Taxes, interest on fund, and reimbursement from the General Fund for additional cost of noncontributory credits for military service and for the transfer of income-tax receipts on benefits.

†Benefit payments, administrative expenses, and Railroad Retirement financial interchange.

‡Loan repayment from OASI Trust Fund.

§Figures in parentheses are fund ratios (i.e., trust-fund balance at beginning of year, including advance tax transfers for January, as percentage of disbursements for year).

TABLE 10.6. Estimated Progress of HI Trust Fund under 1983 Act, Intermediate Estimate in 1984 Trustees Reports (in billions)

Calendar Year	*Net Income**	*Net Disbursements*†	*Repayment of Loans*‡	*Net Increase in Fund*	*Fund at End of Year*§
1984	$46.3	$ 46.1	—	$ 0.2	$13.1 (28%)
1985	52.5	52.7	—	−0.2	12.9 (25)
1986	60.3	58.7	$5.5	7.1	20.0 (22)
1987	65.1	65.5	6.9	6.6	26.6 (31)
1988	69.6	73.1	—	−3.5	23.1 (36)
1989	73.7	81.1	—	−7.4	15.7 (28)
1990	77.6	89.8	—	−12.2	3.5 (17)
1991	81.2	99.4	—	−18.2	‖ (4)
1992	84.7	109.2	—	−24.5	‖
1993	88.1	120.2	—	−32.0	‖

*Taxes, Railroad Retirement financial interchange, contributions from General Fund (for noninsured persons blanketed-in), and interest on fund.

†Benefit payments and administrative expenses.

‡Loan repayment from OASI Trust Fund.

§Figures in parentheses are fund ratios (i.e., trust-fund balance at beginning of year as percentage of disbursements for year).

‖Fund exhausted in year.

TABLE 10.7. Estimated Fund Ratios* for OASDI and HI Trust Funds under 1983 Act, Various Alternative Estimates in 1984 Trustees Reports

Calendar Year	*Alternative I*		*Alternative II-B*		*Alternative III*	
	OASDI	*HI*	*OASDI*	*HI*	*OASDI*	*HI*
1984	21%	28%	21%	28%	21%	28%
1985	23	26	21	25	20	24
1986	28	26	25	22	19	19
1987	31	48	27	31	18	15
1988	41	51	29	36	18	6
1989	61	50	41	28	19	8
1990	84	48	54	17	25	†
1991	109	43	69	4	34	†
1992	138	37	85	†	42	†
1993	164	29	101	†	49	†

*Fund balance at beginning of year, plus (for OASDI only) advance tax transfers for January, as percentage of disbursements for year.

†Fund exhausted in previous year.

TABLE 10.8. Actuarial Balance of OASDI and HI Systems as of Time of Enactment of 1977 Amendments, Intermediate Estimate, as Percentages of Taxable Payroll

Level Equivalent	*OASI*	*DI*	*HI*
Law prior to amendments			
Expenditures	15.51%	3.68%	3.96%
Tax income*	9.45	1.55	2.80
Actuarial balance†	−6.06	−2.14	−1.16
Law after amendments			
Expenditures	11.09%	2.49%	3.71%
Tax income*	10.01	2.11	2.70
Actuarial balance†	−1.08	−0.38	−1.01

*Adjusted to reflect the lower tax rate for the self-employed, compared with the combined employer-employee rate, and for other factors.

†Item 2 minus item 1. A negative figure indicates the extent of lack of actuarial balance.

TABLE 10.9. Changes in OASDI Long-Range Actuarial Balance as Percentages of Taxable Payroll,* as Result of 1977 Act, Intermediate Estimate, by Type of Change

Change	*OASI*	*DI*	*OASDI*
Actuarial balance before amendments	−6.06%	−2.14%	−8.20%
Decoupling by wage indexing†	+3.75	+1.10	+4.85
Government pension offset	+0.04	—	+0.04
Change in earnings test‡	−0.11	—	−0.11
Change in increases of actuarially reduced benefits	+0.24	—	+0.24
Miscellaneous benefit changes	−0.03	—	−0.03
Change in earnings base	+0.45	+0.08	+0.53
Change in self-employed rate to 1½ times employee rate	+0.08	+0.02	+0.10
Change in employer-employee tax rates	+0.57	+0.57	+1.14
Actuarial balance after amendments	−1.08	−0.38	−1.46

*Adjusted to reflect the lower tax rate for the self-employed, compared with combined employer-employee rate, and other factors.

†Includes also the 5-percent reduction of the benefit level from that under previous law for 1979, the frozen $122 minimum PIA, and the 3-percent delayed-retirement credit.

‡Includes the increased cost for the reduction of the exempt age to 70 and for the ad hoc increases in the exempt amounts for those aged 65 and over and the decreased cost due to eliminating the monthly test after the initial year of claim.

TABLE 10.10. Changes in OASDI Long-Range Actuarial Balance as Percentages of Taxable Payroll,* as Result of 1983 Act, Intermediate (Alternative II-B) Estimate, by Type of Change

	Effect, as Percent of Taxable Payroll		
Provision	*OASI*	*DI*	*OASDI*
Old law			
Average-cost rate	13.04%	1.34%	14.38%
Average-tax rate	10.13	2.17	12.29
Actuarial balance	−2.92	+0.83	−2.09
*Changes in amendments**			
Cover new federal employees	+0.26	+0.02	+0.28
Cover all nonprofit employees	+0.09	+0.01	+0.10
Prohibit state and local termination	+0.06	+0.00	+0.06
Delay benefit increases six months	+0.28	+0.03	+0.30
Eliminate "windfall" benefits	+0.04	+0.00	+0.04
Increase delayed-retirement credits	−0.10	—	−0.10
Taxation of benefits	+0.56	+0.05	+0.61
Accelerate tax-rate increase	+0.03	—	+0.03
Increase tax rate on self-employment	+0.17	+0.02	+0.19
Adjust self-employment income	−0.02	−0.00	−0.03
Change DI tax-rate allocation	+0.81	−0.81	—
Continue benefits on remarriage	−0.00	−0.00	−0.00
Pay divorced spouses of nonretired workers	−0.01	−0.00	−0.01
Modify indexing of widow(er) benefits	−0.05	—	−0.05
Raise disabled-widow(er)'s benefits	−0.01	—	−0.01
Modify military credits financing	+0.01	+0.00	+0.01
Reimburse unnegotiated checks	+0.00	+0.00	+0.00
Tax certain salary reduction plans	+0.03	+0.00	+0.03
Modify public-pension offset	−0.00	−0.00	−0.00
Suspend auxiliary benefits for certain aliens	+0.00	+0.00	+0.00
Modify earnings test at ages 65 and over	−0.01	—	−0.01
All other provisions of Titles I and III	−0.00	−0.00	−0.00
Raise normal retirement age to 67	+0.83	−0.12	+0.71
Total effect of all provisions	+2.89	−0.80	+2.09
New law			
Actuarial balance	−0.03	+0.03	−0.00
Average-income rate	11.47	1.42	12.89
Average-cost rate	11.50	1.39	12.89

*The values for each of the individual provisions listed represent the effect over old law and do not take into account interaction with other provisions, except that the values for raising the NRA to 67 do allow for interaction with all of the foregoing changes.

Note: Individual estimates may not add to totals due to rounding and/or interaction among proposals.

TABLE 10.11. Estimated Cost of OASDI and HI Benefits and Administrative Expenses, as Percentage of Taxable Payroll, Intermediate Estimate, 1992 Trustees Report

Calendar Year	*OASI*	*DI*	*OASDI*	*HI*	*OASDI-HI*
1991	10.09%	1.17%	11.27%	2.64%	13.91%
1995	10.10	1.32	11.42	3.18	14.60
2000	9.74	1.50	11.24	3.76	15.00
2010	9.88	1.78	11.66	4.87	16.53
2020	12.29	1.96	14.25	6.58	20.83
2030	14.54	2.03	16.58	8.62	25.20
2040	14.85	2.01	16.86	9.71	26.57
2050	14.86	2.15	17.02	10.13	27.15
2065	15.98	2.16	18.14	11.27	29.41
Average-cost*	11.73	1.89	14.63	7.10	21.63

*Determined on a present-value basis for the period 1992–2066.

TABLE 10.12. Estimated Cost Rates, Income Rates, and Actuarial Balances for OASDI and HI Programs, as Percentage of Taxable Payroll, Intermediate Estimate, 1992 Trustees Report

	OASDI			*HI*		
Calendar Year	*Cost Rate**	*Income Rate*†	*Net Balance*‡	*Cost Rate**	*Income Rate*†	*Net Balance*‡
1991	11.27%	12.63%	1.36%	2.64%	2.90%	.26%
1995	11.42	12.63	1.22	3.18	2.90	−.28
2000	11.24	12.64	1.40	3.76	2.90	−.86
2010	11.66	12.82	1.16	4.87	2.90	−1.97
2020	14.25	12.99	−1.27	6.58	2.90	−3.68
2030	16.58	13.12	−3.46	8.62	2.90	−5.72
2040	16.86	13.15	−3.71	9.71	2.90	−6.81
2050	17.02	13.17	−3.85	10.13	2.90	−7.23
2065	18.14	13.23	−4.91	11.27	2.90	−8.37
Average§	14.63	13.16	−1.46	7.10	2.90	−4.20

*For benefits and administrative expenses.

†Combined employer-employee tax rate, plus (for OASDI only) the income taxes on benefits, expressed as a percentage of taxable payroll (the latter quantity being shown in parentheses).

‡Income rate minus cost rate.

§Determined on a present-value basis for the period 1992–2066.

TABLE 10.13. Estimated Progress of OASI Trust Fund, Intermediate Estimate, 1992 Trustees Report (in billions)

Calendar Year	*Net Income**	*Net Disbursements*†	*Net Increase in Fund*	*Fund at End of Year*
1989	$ 264.7	$ 212.5	$ 52.2	$ 155.1
1990	286.7	227.5	59.1	214.2
1991	299.3	245.6	53.7	267.8
1992	307.3	260.0	47.3	315.2
1993	329.9	273.3	56.6	371.8
1994	352.3	287.8	64.5	436.3
1995	375.2	302.9	72.3	508.6
1996	402.0	319.7	82.2	590.9
1997	429.5	337.3	92.2	683.0
1998	459.6	355.7	103.9	786.9
1999	492.1	375.4	116.7	903.7
2000	518.4	396.3	122.1	1,025.8
2010	997.4	708.4	289.0	3,124.1
2020	1,772.5	1,487.0	285.4	6,319.5
2030	2,777.4	2,913.0	−135.6	7,223.1
2040	4,040.5	4,980.5	−1,069.3	1,731.8
2042	4,331.0	5,494.1	−1,163.1	‡

*Taxes, interest on fund, and reimbursements from the General Fund (1) for additional cost of (a) noncontributory credits for military service and (b) payments to noninsured persons aged 72 and over; (2) for the transfer of income-tax receipts on benefits.

†Benefit payments, administrative expenses, and Railroad Retirement financial interchange.

‡Fund exhausted in year.

TABLE 10.14. Estimated Progress of DI Trust Fund, Intermediate-Cost Estimate, 1992 Trustees Report (in billions)

Calendar Year	*Net Income**	*Net Disbursements†*	*Net Increase in Fund*	*Fund at End of Year*
1989	$24.8	$23.8	$ 1.0	$ 7.9
1990	28.8	25.6	3.2	11.1
1991	30.4	28.6	1.8	12.9
1992	31.1	31.4	−.3	12.6
1993	33.1	33.8	−.8	11.8
1994	35.0	36.6	−1.6	10.2
1995	36.8	39.7	−2.9	7.3
1996	38.8	43.3	−4.4	2.9
1997	40.9	47.1	−6.3	‡

*Taxes, interest on fund, and reimbursements from the General Fund (1) for additional cost of noncontributory credits for military service and (2) for the transfer of income-tax receipts on benefits.

†Benefit payments, administrative expenses, and Railroad Retirement financial interchange.

‡Fund exhausted in year.

TABLE 10.15. Estimated Progress of HI Trust Fund, Intermediate-Cost Estimate, 1992 Trustees Report (in billions)

Calendar Year	*Net Income**	*Net Disbursements†*	*Net Increase in Fund*	*Fund at End of Year*
1989	$ 76.7	$ 60.8	$ 15.9	$ 85.6
1990	80.4	67.0	13.4	98.9
1991	88.8	72.6	16.3	115.2
1992	92.7	79.4	13.3	128.5
1993	98.5	86.4	12.1	140.7
1994	104.4	95.5	8.9	149.6
1995	110.1	105.5	4.6	154.2
1996	116.2	117.4	−1.1	153.0
1997	122.1	129.2	−7.0	146.0
1998	128.1	141.6	−13.5	132.5
1999	133.9	155.2	−21.3	111.2
2000	139.8	170.0	−30.2	81.0
2001	145.5	184.5	−39.0	42.0
2002	149.0	200.3	−51.3	‡

*Taxes, Railroad Retirement financial interchange, contributions from General Fund (for uninsured persons blanketed-in), and interest on fund.

†Benefit payments and administrative expenses.

‡Fund exhausted in year.

TABLE 10.16. Estimated Fund Ratios* for OASDI and HI Trust Funds, Various Alternative Estimates in 1992 Trustees Reports

Calendar Year	*Alternative I*		*Alternative II*		*Alternative III*	
	OASDI	*HI*	*OASDI*	*HI*	*OASDI*	*HI*
1990	75%	128%	75%	128%	75%	128%
1991	82	136	82	136	82	136
1992	97	145	96	145	96	145
1993	109	151	107	149	104	145
1994	124	154	118	147	112	137
1995	142	154	130	142	118	125
1996	162	149	142	131	124	111
1997	184	144	154	118	127	91
1998	209	138	167	103	129	68
1999	235	131	180	85	132	42
2000	263	124	193	65	134	14
2010	560	†	318	†	118	†
2020	668	†	300	†	†	†
2030	654	†	138	†	†	†
2040	696	†	†	†	†	†
2050	800	†	†	†	†	†
2065	946	†	†	†	†	†

*Fund balance at beginning of year as percentage of disbursements for the year.
†Fund exhausted in a previous year.

TABLE 10.17. Actuarial Balance of Combined OASDI* Program under Various Acts for Various Estimates on an Intermediate-Cost Basis

Legislation	*Date of Estimate*	*Level or Average Equivalent*†		
		Benefit Costs‡	*Taxes*§	*Actuarial Balance*‖
1935	1935	5.36%	5.36%	0.00%
1939	1939	5.22	5.30	+0.08
1939 (as amended in 1940s)	1950	4.45	3.98	−0.47
1950	1950	6.20	6.10	−0.10
1950	1952	5.49	5.90	+0.41
1952	1952	6.00	5.90	−0.10
1952	1954	6.62	6.05	−0.57
1954	1954	7.50	7.12	−0.38
1954	1956	7.45	7.29	−0.16
1956	1956	7.85	7.72	−0.13
1958	1958	8.76	8.52	−0.24
1960	1960	8.98	8.68	−0.30
1961	1961	9.35	9.05	−0.30
1961 (perpetuity)	1964	9.36	9.12	−0.24
1961 (75 years)	1964	9.09	9.10	+0.01
1965	1965	9.49	9.42	−0.07
1967	1967	9.72	9.73	+0.01
1969	1969	9.96	9.88	−0.08
1971	1971	10.27	10.17	−0.10
1971 (level earnings)	1972	10.16	10.21	+0.05
1971 (dynamic)	1972	8.96	10.29	+1.33
July 1972	1972	9.77	9.84	+0.07
October 1972	1972	10.63	10.63	0.00
October 1972	1973	10.95	10.63	−0.32
December 1973	1973	11.39	10.88	−0.51
December 1973	1975	16.26	10.94	−5.32
December 1973	1977	19.19	10.99	−8.20
1977	1977	13.59	12.13	−1.46

TABLE 10.17 (continued)

Legislation	Date of Estimate	Level or Average Equivalent†		
		Benefit Costs‡	Taxes§	Actuarial Balance‖
1977	1978	13.55	12.15	−1.40
1980	1980	13.74	12.22	−1.52
1980	1982	14.09	12.27	−1.82
1983	1983	12.84	12.87	+0.03
1983	1986	13.40	12.96	−0.44
1983	1989	13.72	13.02	−0.70
1983	1990	13.95	13.04	−0.91
1983	1991	14.19	13.11	−1.08
1983	1992	14.63	13.16	−1.46

*The DI program was inaugurated in the 1956 Act, so that all figures for previous legislation are for the OASI program only.

†Expressed as a percentage of taxable payroll.

‡Including adjustments (a) to reflect the lower contribution rate for the self-employed compared with the combined employer-employee rate for legislation prior to 1983, (b) for the interest earnings on the existing trust fund, (c) for administrative expense costs, (d) for Railroad Retirement financial-interchange transactions, and (e) for reimbursement of military wage credit costs. Beginning with the 1991 estimate, includes allowance for having a fund ratio of at least 100 percent at the end of the valuation period (a level-equivalent equal to 0.16 percent of payroll in the 1992 estimate).

§Includes not only payroll taxes but also the value of the interest on the fund balance at the beginning of the valuation period (in the estimates before 1971 and after 1990) and income taxes on benefits (in the estimates after 1982). The former had a level-equivalent equal to 0.22 percent of payroll in the 1991 estimate, while the latter had a level-equivalent of 0.56 percent of payroll.

‖A negative figure indicates the extent of lack of actuarial balance. A positive figure indicates more than sufficient financing, according to the particular estimate.

Note: The figures for the 1950 Act and for the 1952 Act according to the 1952 estimates have been revised, as compared with those presented originally, to place them on a comparable basis with the later figures (because these figures as previously presented did not include an adjustment to reflect the lower contribution rate for the self-employed compared with the combined employer-employee rate).

TABLE 10.18. Actuarial Balance of OASI and DI Programs under Various Acts for Various Estimates on an Intermediate-Cost Basis

		*Old-Age and Survivors Insurance** *Level or Average Equivalent*†			*Disability Insurance** *Level or Average Equivalent*†		
Legislation	*Date of Estimate*	*Benefit Costs*‡	*Taxes*§	*Actuarial Balance*‖	*Benefit Costs*‡	*Taxes*§	*Actuarial Balance*‖
1956	1956	7.43%	7.23%	−0.20%	0.42%	0.49%	+0.07%
1956	1958	7.90	7.33	−0.57	0.35	0.50	+0.15
1958	1958	8.27	8.02	−0.25	0.49	0.50	+0.01
1958	1960	8.38	8.18	−0.20	0.35	0.50	+0.15
1960	1960	8.42	8.18	−0.24	0.56	0.50	−0.06
1961	1961	8.79	8.55	−0.24	0.56	0.50	−0.06
1961 (perpetuity)	1964	8.72	8.62	−0.10	0.64	0.50	−0.14
1961 (75 years)	1964	8.46	8.60	+0.14	0.63	0.50	−0.13
1965	1965	8.82	8.72	−0.10	0.67	0.70	+0.03
1965	1966	7.91	8.80	+0.89	0.85	0.70	−0.15
1967	1967	8.77	8.78	+0.01	0.95	0.95	0.00
1967	1969	7.76	8.93	+1.17	0.96	0.95	−0.01
1969	1969	8.86	8.78	−0.08	1.10	1.10	0.00
1969	1970	8.55	8.84	+0.29	1.05	1.10	+0.05
1971	1971	9.13	9.07	−0.06	1.14	1.10	−0.04
1971 (level earnings)	1972	8.98	9.11	+0.13	1.18	1.10	−0.08
1971 (dynamic)	1972	7.81	9.19	+1.38	1.15	1.10	−0.05
July 1972	1972	8.51	8.60	+0.09	1.26	1.24	−0.02
October 1972	1972	9.32	9.31	−0.01	1.31	1.32	+0.01
October 1972	1973	9.41	9.32	−0.09	1.54	1.31	−0.23
December 1973	1973	9.81	9.38	−0.43	1.58	1.50	−0.08
December 1973	1975	13.29	9.41	−3.88	2.97	1.53	−1.44

TABLE 10.18 (continued)

Legislation	Date of Estimate	Old-Age and Survivors Insurance* Level or Average Equivalent† Benefit Costs‡	Taxes§	Actuarial Balance‖	Disability Insurance* Level or Average Equivalent† Benefit Costs‡	Taxes§	Actuarial Balance‖
December 1973	1977	15.51	9.45	−6.06	3.68	1.54	−2.14
1977	1977	11.10	10.02	−1.08	2.49	2.11	−0.38
1977	1979	11.47	10.05	−1.41	1.92	2.13	+0.21
1980	1980	12.24	10.08	−2.16	1.50	2.14	+0.64
1980	1982	12.59	10.11	−2.48	1.50	2.16	+0.66
1983	1983	11.46	11.45	−0.01	1.38	1.41	+0.04
1983	1986	11.81	11.52	−0.29	1.59	1.44	−0.15
1983	1989	12.13	11.60	−0.53	1.59	1.41	−0.17
1983	1990	12.31	11.62	−0.69	1.64	1.42	−0.22
1983	1991	12.51	11.69	−0.82	1.69	1.42	−0.27
1983	1992	12.74	11.73	−1.01	1.89	1.43	−0.46

*The DI program was inaugurated in the 1956 Act; data for OASI for previous years may be found in Table 10.17.

†Expressed as a percentage of taxable payroll.

‡Including adjustments (a) to reflect the lower contribution rate for the self-employed compared with the combined employer-employee rate for legislation prior to 1983, (b) for the interest earnings on the existing trust fund, (c) for administrative expense costs, (d) for Railroad Retirement financial-interchange transactions, and (e) for reimbursement of military wage credit costs. Beginning with the 1991 estimate, includes allowance for having a fund ratio of 100 percent at the end of the valuation period.

§Includes not only payroll taxes but also income taxes on benefits (in the estimates after 1982) and (for the estimates before 1971 and after 1990) the value of the interest on the fund balance at the beginning of the valuation period.

‖A negative figure indicates the extent of lack of actuarial balance. A positive figure indicates more than sufficient funding, according to the particular estimate.

TABLE 10.19. Average OASDI Costs* and Actuarial Balances as Percentages of Taxable Payroll, 1992 Trustees Report

Program	*Low-Cost Estimate (I)*	*Intermediate-Cost Estimate (II)*	*High-Cost Estimate (III)*
Average cost of benefits and administrative expenses and fund buildup			
OASI	10.50%	12.74%	15.58%
DI	1.45	1.89	2.63
OASDI	11.94	14.63	18.21
Actuarial balance†			
OASI	1.11%	−1.01%	−3.71%
DI	−0.02	−0.46	−1.18
OASDI	1.09	−1.46	−4.89

*Determined on a present-value basis for the period 1991–2066.

†A negative figure indicates the extent of lack of actuarial balance. A positive figure indicates more than sufficient financing.

TABLE 10.20. Actuarial Balance of HI Program under Various Acts for Various Estimates on an Intermediate-Cost Basis

		*Level or Average Equivalent**		
Legislation	*Date of Estimate*	*Benefit Costs*†	*Taxes*	*Actuarial Balance*‡
1965	1965	1.23%	1.23%	0.00%
1967	1968	1.38	1.41	+0.03
1967	1969	1.79	1.50	−0.29
1969	1970	2.76	1.52	−1.24
1969	1970§	2.04	1.56	−0.48
1971	1971§	2.20	1.58	−0.62
1971	1972§	2.21	1.60	−0.61
1972	1972	2.61	2.63	+0.02
1973	1973	2.67	2.63	−0.04
1973	1977	3.96	2.80	−1.16
1977	1977	3.71	2.70	−1.01
1977	1978	3.86	2.74	−1.12
1977	1980	3.80	2.81	−0.99
1977	1981	4.28	2.84	−1.44
1977	1982	4.93	2.86	−2.07
1983	1983	4.11	2.87	−1.24
1983	1984	4.25	2.88	−1.37
1983	1985	3.57	2.89	−0.68
1983	1985‖	5.69	2.90	−2.79
1983	1988‖	5.27	2.90	−2.37
1983	1990‖	6.16	2.90	−3.26
1983	1991‖	6.25	2.90	−3.35
1983	1992‖	7.10	2.90	−4.20

*Expressed as a percentage of taxable payroll.

†Including adjustments (a) to reflect the lower contribution rate for the self-employed compared with the combined employer-employee rate for legislation prior to 1983, (b) for the interest earnings on the existing trust fund, (c) for administrative expense costs, (d) for Railroad Retirement financial-interchange transactions, and (e) for reimbursement of military wage credit costs. Beginning with the 1991 estimate, includes allowance for having a fund ratio of 100 percent at the end of the valuation period (previously, only 50 percent).

‡A negative figure indicates the extent of lack of actuarial balance. A positive figure indicates more than sufficient financing, according to the particular estimates.

§This estimate assumes that the maximum taxable earnings base will be kept up to date in the future with the rises in earnings assumed in projecting hospital costs. The preceding estimates which are not footnoted assumed that such base would remain unchanged in the future at the level prescribed in the law in existence at the date of the estimate.

‖Based on a 75-year valuation period (all previous figures were for a 25-year period).

TABLE 10.21. Estimated Average-Costs of OASDI Benefit Payments and Administrative Expenses as Percentages of Taxable Payroll, by Type of Benefit, Intermediate Estimate, 1991 Trustees Report*

Item	*OASI*	*DI*	*OASDI*
Primary benefits	9.53%	1.47%	11.00%
Spouse's benefits	0.58	0.04	0.62
Widow(er)'s benefits	1.57	†	1.57
Parent's benefits	‡	†	‡
Child's benefits	0.47	0.11	0.58
Mother's and father's benefits	0.09	†	0.09
Lump-sum death payments	0.01	†	0.01
Total benefits	12.25	1.62	13.87
Administrative expenses	0.09	0.05	0.14
RR financial interchange§	0.03	‡	0.03
Net total average-cost	12.37	1.67	14.04

*Estimated by author. Does not include the allowance for having a fund ratio of 100 percent at the end of the valuation period.

†This type of benefit is not payable under this program.

‡Less than 0.005 percent.

§This item is taken as an addition (or offset, as the case may be) to the benefit and administrative costs.

TABLE 10.22. Comparison of OASDI Beneficiaries and Covered Workers, 1992 Trustees Report (in millions of persons)

Calendar Year	Covered Workers*	Beneficiaries†		Beneficiaries per 100 Workers	
		Workers‡	Total	Worker Beneficiaries‡	Total Beneficiaries
Actual data					
1945	46.4	0.5	1.1	1	2
1950	48.3	1.8	2.9	4	6
1960	72.5	8.5	14.3	12	20
1970	93.1	14.8	25.2	16	27
1980	112.2	22.4	35.1	20	31
1990	133.1	27.8	39.5	21	30
1991	132.4	28.5	40.2	22	30
Low-cost estimate (I)					
1995	139.2	30.0	42.5	22	30
2000	148.0	31.4	44.1	21	30
2010	159.4	37.4	49.9	23	31
2020	166.1	50.4	62.7	30	38
2030	172.4	61.0	74.1	35	43
2070	216.2	74.4	88.7	34	41
Intermediate-cost estimate (II)					
1995	136.9	30.4	42.8	22	31
2000	143.8	32.5	45.4	23	31
2010	153.5	39.6	52.3	26	34
2020	157.2	53.4	65.9	34	42
2020	158.1	65.0	78.1	41	49
2070	163.2	78.3	91.8	48	56
High-cost estimate (III)					
1995	136.3	30.7	43.1	23	32
2000	140.8	33.7	46.8	24	33
2010	148.2	42.3	55.7	29	38
2020	149.5	57.2	70.1	38	47
2030	146.1	70.0	83.4	48	57
2070	122.6	86.3	98.7	70	81

*Workers with taxable earnings at some time during the year.

†Persons with monthly benefits in current-payment status for June for total beneficiaries and for December for workers.

‡Retired and disabled workers.

TABLE 10.23. Covered Workers, Covered Employers, Insured Persons, and Covered Earnings under OASDI, by Years (in millions of persons and billions of dollars)

Year	Covered Workers in Year*	Covered Employers in Year	Insured Persons		Covered Earnings§		
			Total†	Disability‡	Total	Taxable	Taxable Percent
1937	32.9	2.42	‖	‖	32.2	29.6	92.0%
1940	35.4	2.50	22.9	‖	35.7	33.0	92.4
1945	46.4	2.61	31.9	‖	71.6	62.9	88.0
1950	48.3	3.35	40.1	‖	109.8	87.5	79.7
1955	65.2	4.91	70.2	31.9	196.1	157.5	80.3
1960	72.5	5.67	76.7	46.4	265.2	207.0	78.0
1965	80.7	6.09	92.8	53.3	351.7	250.7	71.3
1970	93.1	5.69	105.0	72.4	531.6	415.6	78.2
1971	93.3	5.76	108.1	74.5	559.7	427.0	76.3
1972	96.2	5.71	110.6	76.1	617.9	484.1	78.1
1973	99.8	5.76	113.4	77.8	686.7	561.8	81.8
1974	101.3	5.75	116.5	80.4	746.7	636.8	85.3
1975	100.2	5.72	119.9	83.3	787.6	664.7	84.4
1976	102.6	5.84	122.9	85.3	874.7	737.7	84.3
1977	105.8	5.92	125.9	87.0	960.1	816.6	85.0
1978	110.6	n.a.	128.9	89.3	1,092.6	915.6	83.8
1979	112.7	n.a.	133.3	93.7	1,222.2	1,067.0	87.3
1980	113.0	n.a.	137.0	98.0	1,328.8	1,180.7	88.9
1981	113.0	n.a.	140.0	100.5	1,450.9	1,294.1	89.2
1982	111.8	n.a.	142.4	102.4	1,516.6	1,365.3	90.0
1983	112.1	n.a.	144.5	104.0	1,615.2	1,454.1	90.0
1984	116.3	n.a.	146.0	105.0	1,800.8	1,608.8	89.3
1985	119.8	n.a.	148.2	106.7	1,936.8	1,722.6	88.9
1986	122.9	n.a.	150.7	109.3	2,081.8	1,844.4	88.6
1987	125.5	n.a.	153.1	111.4	2,237.8	1,959.6	87.6
1988	129.6	n.a.	155.4	113.5	2,437.4	2,091.3	85.8
1989	132.1	n.a.	158.0	116.1	2,592.7	2,242.8	86.5
1990	133.6	n.a.	160.4	118.0	2,719.9	2,368.6	87.1
1991	n.a.	n.a.	162.7	119.8	n.a.	n.a.	n.a.
1992	n.a.	n.a.	164.8	121.7	n.a.	n.a.	n.a.

*Workers (including self-employed persons in 1951 and after and persons in the armed forces in 1957 and after) with earnings in covered employment (see note).

†Persons who are either fully or currently insured at beginning of year, including retired persons (for 1992, only about 2 million persons were currently insured but not fully insured).

‡Persons who would be eligible for a "disability freeze" if they met the definition of disability; excludes all persons aged 65 and over, and all persons aged 62 to 64 who are entitled to old-age benefits.

§Total earnings in covered employment represents the total earnings of persons in the specified employments covered by the program, where such earnings are subject to the taxes (or would be except for the effect of the maximum taxable earnings base).

‖Not applicable under the law then in effect.

Note: Coverage under the Railroad Retirement system is not included in the data.

TABLE 10.24. Beneficiaries and Average Old-Age Benefits, by Years (beneficiaries and average old-age benefit as of end of year; beneficiaries and lump-sum payments in thousands)

	Monthly Beneficiaries								
Year	*Old-Age (retired worker)*	*Auxiliaries of Old-Age Beneficiaries*	*Disabled Workers*	*Auxiliaries of Disabled Workers*	*Survivors*	*Transitional Non-insured*	*Total*	*Lump-Sum Death Payments*	*Average Old-Age Benefit*[†]
1940	112	36	—	—	74	—	222	61	$ 22.60
1945	518	173	—	—	597	—	1,288	179	24.19
1950	1,771	555	—	—	1,152	—	3,477	200	43.86
1955	4,474	1,314	—	—	2,173	—	7,961	567	61.90
1960	8,061	2,538	455	232	3,558	—	14,845	779	74.04
1965	11,101	3,076	988	751	4,951	—	20,867	990	83.92
1970	13,352	3,215	1,493	1,172	6,469	534	26,235	1,220	118.10
1975	16,588	3,553	2,489	1,863	7,368	224	32,085	1,335	207.18
1980	19,583	3,660	2,861	1,821	7,601	93	35,619	1,553	341.41
1981	20,195	3,664	2,777	1,680	7,615	76	36,006	1,305	385.97
1982	20,764	3,599	2,604	1,370	7,442	63	35,840	797	419.25
1983	21,419	3,553	2,569	1,244	7,250	51	36,085	806	440.77
1984	21,907	3,529	2,597	1,225	7,181	40	36,479	825	460.60
1985	22,432	3,526	2,657	1,251	7,161	32	37,058	823	478.62
1986	22,987	3,538	2,727	1,266	7,165	25	37,708	809	488.50
1987	23,440	3,530	2,786	1,259	7,156	19	38,190	810	512.70
1988	23,858	3,518	2,830	1,244	7,163	14	38,627	840	536.77
1989	24,327	3,516	2,895	1,233	7,170	10	39,151	830	566.85
1990	24,838	3,523	3,011	1,255	7,197	7	39,832	831	602.56
1991	25,289	3,530	3,195	1,318	7,255	5	40,591	848	629.32

*Represents number of deceased workers for whom claim was awarded in the year.

[†]Including effect of actuarial reduction for retirement at ages 62 to 64 (for women, beginning in 1956; for men, beginning in 1961).

TABLE 10.25. OASDI Monthly Beneficiaries in Current-Payment Status at End of 1990, by Category and Age Group (in thousands)

Category	*Number*
Retired workers	24,838
Ages 62–64	(2,498)
Ages 65 and over	(22,340)
Disabled workers	3,011
Under age 62	(2,480)
Ages 62–64	(531)
Spouses of retired workers	3,101
Under age 62	(76)
Ages 62–64	(444)
Ages 65 and over	(2,581)
Spouses of disabled workers	266
Under age 62	(199)
Ages 62–64	(37)
Ages 65 and over	(30)
*Widowed spouses**	5,415
Under age 62	(534)
Ages 62–64	(470)
Ages 65 and over	(4,412)
Children of retired workers	422
Under age 18	(236)
Disabled, ages 18 and over†	(174)
Students, age 18	(12)
Children of disabled workers	989
Under age 18	(928)
Disabled, ages 18 and over†	(37)
Students, age 18	(24)
Children of deceased workers	1,776
Under age 18	(1,334)
Disabled, ages 18 and over†	(389)
Students, age 18	(53)
Dependent parents	6
Ages 62–64	(.1)
Ages 65 and over	(5.9)
Transitional noninsured, ages 72 and over	7
Total beneficiaries	39,832

*Includes 70,000 disabled widowed spouses under age 62 and 31,000 disabled widowed spouses aged 62–64, and also 304,000 widowed spouses with eligible children (295,000 under age 62; 8,000 aged 62–64; and 1,000 aged 65 and over).

†Of the 600,000 disabled children of retired, disabled, and deceased workers, 538,000 are aged 18–61, 17,000 are aged 62–64, and 45,000 are aged 65 and over.

TABLE 10.26. Number of OASDI Families and Beneficiaries in Current-Payment Status and Average Monthly Benefit, for Selected Family Groups at End of 1990

Family Classification	*Families** *(thousands)*	*Beneficiaries (thousands)*	*Average Family Benefit*
Retired-worker families			
Worker only	21,621	21,621	$ 588
Men	9,789	9,789	672
Women	11,833	11,833	519
Worker and spouse aged 62 or over	2,951 (29)	5,901	1,022
Worker, spouse, and children	135 (1)	453	1,109
Worker and children	204 (25)	438	942
Disabled-worker families			
Worker only	2,377	2,377	571
Men	1,454	1,454	644
Women	922	922	456
Worker and spouse aged 62 or over	64 (1)	129	965
Worker, spouse, and children	200 (5)	805	1,027
Worker and children	378 (118)	953	926
Survivor families			
Widow or widower only	4,875 (32)	4,875	557
Widowed spouse and children	385 (16)	1,021	1,069
Disabled widowed spouse only	94 (2)	94	390
Disabled widowed spouse with children	5 (0)	11	842
Children only	851 (181)	1,121	554
Transitional noninsured, aged 72 or over	7 (6)	7	167
Total†	31,160 (13,171)	39,832	n.a.

*Figures in parentheses are the number of cases where the insured worker is female.
†Total slightly exceeds sum of individual items above because some minor family classifications are not shown.

TABLE 10.27. Persons Eligible for Benefits under HI and SMI, as of Middle of Year (in millions)

	Persons Aged 65 or Over		*Disabled Beneficiaries*	
Year	*HI*	*SMI*	*HI*	*SMI*
1966	19.0	17.7	*	*
1967	19.2	17.9	*	*
1968	19.5	18.4	*	*
1969	19.8	19.1	*	*
1970	20.1	19.5	*	*
1971	20.4	19.9	*	*
1972	20.8	20.2	*	*
1973	21.2	20.7	1.7	1.6
1974	21.6	21.2	1.9	1.7
1975	22.1	21.8	2.2	1.9
1976	22.6	22.3	2.4	2.2
1977	23.1	22.9	2.6	2.4
1978	23.6	23.4	2.8	2.5
1979	24.2	24.0	2.9	2.6
1980	24.7	24.6	3.0	2.7
1981	25.1	25.1	3.0	2.7
1982	25.8	25.6	3.0	2.7
1983	26.3	26.1	2.9	2.7
1984	26.8	26.7	2.9	2.7
1985	27.2	27.3	3.0	2.7
1986	27.9	27.8	3.0	2.7
1987	28.4	28.3	3.1	2.8
1988	28.8	28.7	3.1	2.8
1989	29.4	29.2	3.2	2.9
1990	29.9	29.5	3.3	2.9

*Medicare was not then applicable to disabled beneficiaries.

TABLE 10.28. Average Annual Rates of Increase in Hospital Costs and Physician Fees in Comparison with Rates of Increase of Prices and Wages

	Increase over Previous Year			
Year	*Hospital Costs*	*Physician Fees*	*Prices*	*Wages*
1956	4.5%	3.1%	1.4%	7.0%
1957	7.7	4.3	3.5	3.1
1958	8.6	3.4	2.8	0.9
1959	6.8	3.3	0.8	5.0
1960	6.8	2.5	1.6	3.9
1961	8.5	2.6	1.1	2.0

TABLE 10.28 (continued)

Year	Increase over Previous Year			
	Hospital Costs	*Physician Fees*	*Prices*	*Wages*
1962	5.3	2.9	1.1	5.0
1963	5.6	2.2	1.2	2.5
1964	7.0	2.5	1.3	4.1
1965	7.9	3.6	1.7	1.8
1966	7.6	5.8	2.9	6.0
1967	15.9	7.1	2.9	5.6
1968	14.1	5.6	4.2	6.9
1969	12.9	6.9	5.4	5.8
1970	13.4	7.5	5.9	5.0
1971	14.4	6.9	4.3	5.0
1972	9.5	3.1	3.3	9.8
1973	8.5	3.3	6.2	6.3
1974	14.2	9.2	11.0	5.9
1975	20.1	12.3	9.1	7.5
1976	16.1	11.3	5.8	6.9
1977	13.6	9.3	6.5	6.0
1978	12.5	8.3	7.6	7.9
1979	12.0	9.2	11.5	8.7
1980	14.8	10.6	13.5	9.0
1981	16.6	11.0	10.2	10.1
1982	16.9	9.4	6.0	5.5
1983	12.5	7.7	3.0	4.9
1984	22.9	7.0	3.4	5.9
1985	5.9	5.8	3.5	4.3
1986	5.7	7.2	1.5	3.0
1987	6.9	7.3	3.6	6.4
1988	8.9	7.2	4.0	4.9
1989	10.7	10.6	4.8	4.0
1990	10.9	7.1	5.2	5.0
1991	9.4	6.0	4.2	4.1
Average for 1956–66	6.9	3.3	1.8	3.8
Average for 1967–82	14.1	8.2	7.1	7.0
Average for 1983–91	10.4	7.3	4.1	5.0

Sources of data:

1. Hospital costs: For 1956–66, based on data from American Hospital Association with regard to total hospital expense per patient-day. For 1967–84, based on average daily cost data used for determining HI initial deductibles. For 1985 and after, based on hospital-room component of Consumer Price Index for all urban consumers.
2. Physician fees: Physicians' fee component of the Consumer Price Index for all urban consumers.
3. Prices: Consumer Price Index (for all items) for urban wage and clerical workers.
4. Wages: Series used to index OASDI earnings records (see Table 2.18); author's estimate for 1991.

TABLE 10.29. Progress of OASI Trust Fund, 1937–1991 (in millions)

Year	*Taxes**	*Benefit Payments*†	*Administrative Expenses*‡	*Railroad Financial Interchange*§	*Interest on Fund*	*Fund at End of Year*‖
1937	$ 765	$ 1	—	—	$ 2	$ 766
1938	360	10	—	—	15	1,132
1939	580	14	—	—	27	1,724
1940	325	35	$ 26	—	43	2,031
1945	1,285	274	30	—	134	7,121
1950	2,671	961	61	—	257	13,721
1955	5,713	4,968	119	+$ 7	454	21,663
1960	10,866	10,677	203	−318	516	20,324
1965	16,017	16,737	328	−436	593	18,235
1970	30,705	28,798	471	−579	1,515	32,454
1971	34,211	33,415	514	−613	1,667	33,789
1972	38,256	37,124	674	−724	1,794	35,318
1973	46,416	45,745	647	−783	1,928	36,487
1974	52,528	51,623	865	−909	2,159	37,777
1975	57,241	58,518	896	−982	2,364	36,987
1976	63,976	65,705	959	−1,212	2,301	35,388
1977	70,185	73,121	981	−1,208	2,227	32,491
1978	76,085	80,361	1,115	−1,589	2,008	27,520
1979	88,476	90,574	1,113	−1,448	1,797	24,660
1980	103,996	105,083	1,154	−1,442	1,845	22,824
1981	123,302	123,803	1,307	−1,585	2,060	21,490
1982	124,353	138,806	1,519	−1,793	845	22,088#
1983	143,878	149,221	1,528	−2,251	6,706	19,672#
1984	167,062	157,841	1,638	−2,404	2,266	27,117#

TABLE 10.29 (continued)

Year	*Taxes**	*Benefit Payments*†	*Administrative Expenses*‡	*Railroad Financial Interchange*§	*Interest on Fund*	*Fund at End of Year*‖
1985	182,369	167,248	1,592	−2,310	1,871	35,842#
1986	194,325	176,813	1,601	−2,585	3,069	39,081#
1987	206,047	183,567	1,524	−2,557	4,690	62,149
1988	233,202	195,454	1,776	−2,790	7,568	102,899
1989	252,668	207,971	1,673	−2,845	11,985	155,063
1990	270,290	222,987	1,563	−2,969	16,362	214,197
1991	278,457	240,467	1,792	−3,375	20,829	267,849

*The figures for 1937–40 embody certain artificial, nonsignificant fluctuations because of the method of making appropriations then. Also includes transfers from the General Fund for military-service wage credits (small amounts in 1946–51, moderate amounts in 1966–82 (with $542 million in 1982), and $11.0 billion in 1983 (an additional $6.5 billion in interest on these past credits is included in the interest column) and for reimbursement of costs of transitional-noninsured benefits (beginning in 1968; with a level of about $300 million per year in the early 1970s, decreasing to $25 million in 1990. Beginning in 1984, includes income from taxation of benefits (about $3 billion per year).

†Beginning in 1966, includes a very small amount of expenditures for rehabilitation services (about $7 million per year in 1980–83, but nothing after 1985.

‡No figures are shown for 1937–39, because then the estimated administrative expenses were deducted from the estimated tax receipts to yield the net contributions. The figures for 1957 and subsequent years embody certain artificial, nonsignificant fluctuations because of the method of reimbursements between the trust funds.

§A positive figure indicates payment to the trust fund from the Railroad Retirement Account, and a negative figure indicates the reverse.

‖Not including amounts in the Railroad Retirement Account to the credit of this trust fund. In millions, these amount to $377 in 1953, $284 in 1954, $163 in 1955, $60 in 1956, and nothing thereafter.

#Includes effect of loans from HI and DI Trust Funds amounting to $17,519 million for 1982–84, $13,155 million for 1985, and nothing thereafter.

TABLE 10.30. Progress of DI Trust Fund, 1957–1991 (in millions)

Year	*Taxes*†	*Benefit Payments**	*Administrative Expenses*	*Railroad Financial Interchange*‡	*Interest on Fund*	*Fund at End of Year*
1957	$ 702	$ 57	$ 3	—	$ 7	$ 649
1958	966	249	12	—	25	1,379
1959	891	457	50	+$22	40	1,825
1960	1,010	568	36	+ 5	53	2,289
1965	1,188	1,573	90	− 24	59	1,606
1970	4,497	3,085	164	− 10	277	5,614
1971	4,670	3,782	205	− 13	361	6,645
1972	5,158	4,502	233	− 24	414	7,457
1973	5,984	5,764	190	− 20	458	7,927
1974	6,880	6,957	217	− 22	500	8,109
1975	7,534	8,505	256	− 29	502	7,354
1976	8,336	10,055	285	− 26	422	5,745
1977	9,266	11,547	399	—	304	3,370
1978	13,555	12,599	325	− 30	256	4,226
1979	15,232	13,786	371	− 30	358	5,630
1980	13,385	15,515	368	+ 12	485	3,629
1981	16,906	17,192	436	− 29	172	3,049
1982	22,169	17,376	590	− 26	546	2,691§
1983	19,112	17,524	625	− 28	1,569	5,195§
1984	16,135	17,898	626	− 22	1,174	3,959§
1985	18,430	18,827	608	− 43	870	6,321§
1986	18,637	19,853	600	− 68	803	7,780
1987	19,655	20,519	849	− 57	645	6,658
1988	22,100	21,695	737	− 61	600	6,864
1989	24,088	22,911	754	− 88	707	7,905
1990	27,908	24,829	707	− 80	883	11,079
1991	29,327	27,695	794	− 82	1,063	12,898

*Beginning in 1966, includes a small amount of expenditures for rehabilitation services ($38 million in 1989 and $32 million in 1990).

†Includes transfers from the General Fund for military-service wage credits (small amounts in 1966–80, with $174 million in 1982 and $1.6 billion in 1983 (an additional $0.6 billion in interest on the past credits is included in the interest column). Beginning in 1984, includes income from taxation of benefits (about $200 million per year).

‡A positive figure indicates payment to the trust fund from the Railroad Retirement Account, and a negative figure indicates the reverse.

§Includes effect of loan to OASI Trust Fund amounting to $5,081 million for 1982–84, $2,541 million for 1985, and nothing thereafter.

TABLE 10.31. Progress of HI Trust Fund, 1966–1991 (in millions)

Year	*Taxes**	*Payments from General Fund†*	*Benefit Payments*	*Administrative Expenses*	*Interest on Fund*	*Fund at End of Year*
1966	$ 1,901	$ 26	$ 891	$107	$ 31	$ 944
1967	3,250	301	3,353	77	51	1,073
1968	4,246	1,022	4,179	99	74	2,083
1969	4,607	617	4,739	118	116	2,505
1970	5,020	863	5,124	157	161	3,202
1971	5,097	503	5,751	149	195	3,034
1972	5,779	381	6,319	184	182	2,935
1973	10,090	451	7,057	232	281	6,467
1974	11,029	471	9,101	271	523	9,119
1975	11,695	621	11,315	266	664	10,517
1976	13,020	‡	13,340	339	746	10,605
1977	14,269	803	15,737	283	784	10,442
1978	17,721	688	17,682	496	805	11,477
1979	21,149	734	20,623	450	942	13,228
1980	24,251	697	25,064	512	1,149	13,749
1981	33,464	659	30,342	384	1,603	18,748
1982	35,168	808	35,631	513	2,022	8,164§
1983	41,100	878	39,337	540	2,593	12,858§
1984	42,922	752	43,257	629	3,046	15,691§
1985	47,269	766	47,580	834	3,362	20,499§
1986	55,081	566	49,758	664	3,619	39,957
1987	59,148	447	49,496	793	4,469	53,732
1988	62,934	475	52,517	815	5,830	69,640
1989	68,889	515	60,011	792	7,317	85,558
1990	71,509	413	66,239	758	8,451	98,933
1991	78,724	605	71,549	1,021	9,510	115,202

*Includes transfers from the general fund for military-service wage credits (gradually increasing amounts in 1966–82, amounting to $207 million in 1982, and $3,456 million in 1983). Also includes the transfer from the RR Account of the HI taxes with respect to railroad workers ($367 million in 1990) and the premiums for voluntary enrollees ($122 million in 1990).

†For the benefit costs and related administration expenses with respect to noninsured persons eligible for HI benefits.

‡No transfer, because dates of transfer were changed from December to March. (As a result, transfer in 1977 was for a 15-month period.)

§Includes effect of loan to OASI Trust Fund amounting to $12,437 million for 1982–84, $10,613 million for 1985, and nothing thereafter.

TABLE 10.32. Progress of SMI Trust Fund, 1966–1991 (in millions)

Year	*Enrollee Premiums*	*Payments from General Fund*	*Benefit Payments*	*Administrative Expenses*	*Interest on Fund*	*Fund at End of Year*
1966	$ 322	—	$ 128	$ 74	$ 2	$ 122
1967	640	$ 933	1,197	110	24	412
1968	832	858	1,518	183	21	421
1969	914	907	1,865	196	18	199
1970	1,096	1,093	1,975	238	12	188*
1971	1,302	1,313	2,117	260	24	450
1972	1,382	1,389	2,325	290	37	643
1973	1,550	1,705	2,526	318	57	1,111
1974	1,804	2,225	3,318	410	95	1,506
1975	1,918	2,648	4,273	462	106	1,444
1976	2,060	3,810	5,080	542	106	1,799
1977	2,247	5,386	6,038	467	172	3,099
1978	2,470	6,287	7,252	503	299	4,400
1979	2,719	6,645	8,708	557	404	4,902
1980	3,011	7,455	10,635	610	408	4,530
1981	3,458†	10,408†	13,113	915	361	4,730†
1982	3,961†	13,167†	15,455	772	599	6,230
1983	4,236	14,861	18,106	878	727	7,070
1984	5,167	17,054	19,661	891	959	9,698
1985	5,613	18,250	22,947	933	1,243	10,924
1986	5,722	17,802	26,239	1,060	1,141	8,291
1987	6,717†	21,382†	30,820	920	875	5,524†
1988	9,453†	28,381†	33,970	1,260	861	8,990
1989	12,263‡	30,852	38,294	1,489	1,219	13,541
1990	11,320	33,035	42,468	1,519	1,558	15,482
1991	11,934	37,602	47,229	1,541	1,688	17,935

*The fund balance fell to a minimum of $57 million on June 30, 1970.

†Premiums withheld from OASDI benefit checks for December 1981 (and the matching payments from the General Fund) were credited to the trust fund in that month, instead of (as is customary) in January 1982. The same situation occurred for 1987–88. The data shown have been adjusted to allow for this unusual situation (as though the transactions had occurred at the customary time).

‡Includes the effect of the Medicare Catastrophic Coverage Act of 1988.

TABLE 10.33. Surplus or Deficit in SMI Program on Incurred-Cost Basis, as of June 30 in 1967–1983 and as of January 1 in 1984–1993 (dollar figures in millions)

Year	*Total Liabilities**	*Assets on Hand*†	*Surplus (+) or Deficit (−)*	*Ratio of Assets to Liabilities*	*Ratio of Surplus to Next Year's Outgo*
1967	$ 433	$ 510	+$77	118%	+5%
1968	499	395	−104	79	−5
1969	622	385	−237	94	−11
1970	568	72	−496	13	−21
1971	634	312	−322	49	−13
1972	638	478	−160	75	−6
1973	803	739	−64	92	−2
1974	1,043	1,267	+224	121	+5
1975	1,264	1,491	+227	118	+4
1976	1,396	1,325	−71	95	−1
1977	1,733	2,261	+528	130	+7
1978	2,201	3,834	+1,633	190	+18
1979	2,566	4,882	+2,316	174	+22
1980	3,090	4,657	+1,567	151	+12
1981	3,225	3,801	+576	118	+4
1982	3,008	5,535	+2,527	184	+14
1983	3,181	6,782	+3,601	213	+18
1984	3,340	7,071	+3,731	212	+18
1985	3,963	9,700	+5,737	245	+24
1986	3,950	10,924	+6,974	277	+25
1987	4,337	8,291	+3,954	191	+12
1988	4,459§	5,524	+1,065	124	+3
1989	5,192	8,993	+3,801	173	+10
1990	5,361	13,556	+8,195	253	+19
1991	5,253	15,482	+10,229	295	+21
1992	6,197	17,935	+11,738	289	+21
1993	7,190‡	13,574	+6,384	189	+10

*For benefits incurred but unpaid (and for the accompanying administrative expenses). Includes a small amount of premiums collected in advance and government contributions with respect thereto.

†Includes a small amount of premiums due and uncollected and government contributions due and unpaid.

‡Projected estimates, shown in 1992 Trustees Report.

§Adjusted to exclude premiums and government contributions which were paid on December 31, 1987 instead of on the customary January 3 of the year.

TABLE 10.34. Interest Rates Applicable to Special-Issues Investments of OASI, DI, HI, and SMI Trust Funds

Year	*For June Issues*	*Average Rate for Year*
1951	2.125%	2.188%
1952	2.250	2.250
1953	2.375	2.354
1954	2.250	2.302
1955	2.250	2.292
1956	2.500	2.469
1957	2.500	2.500
1958	2.500	2.562
1959	2.625	2.625
1960	2.625	2.917
1961	3.750	3.812
1962	3.750	3.854
1963	3.875	3.906
1964	4.125	4.135
1965	4.125	4.198
1966	4.875	4.948
1967	4.750	4.958
1968	5.625	5.490
1969	6.500	6.594
1970	7.625	7.260
1971	6.125	5.979
1972	5.750	5.927
1973	6.625	6.646
1974	7.625	7.490
1975	7.375	7.396
1976	7.500	7.146
1977	7.125	7.083
1978	8.250	8.198
1979	8.750	9.115
1980	9.750	11.000
1981	13.000	13.333
1982	13.250	12.781
1983	10.750	11.031
1984	13.750	12.396
1985	10.375	10.781
1986	8.375	7.990
1987	8.625	8.396
1988	9.250	8.823
1989	8.750	8.656
1990	8.750	8.625
1991	8.125	7.958
1992	7.375	n.a.

TABLE 10.35. Estimated Amount of Life Insurance in Force as Survivor Benefits under OASDI, as of Beginning of Year (in billions)

Year	*Act Valued*	*Interest Rate*	*Amount of Insurance*
1940	1939	3%	$ 37
1951	1950	3	170
1953	1952	3	298
1955	1954	3	345
1957	1956	3	416
1959	1958	3	460
1961	1960	3	547
1962	1961	3	585
1966	1961	3	685
1966	1961	3.5	655
1966	1965	3.5	700
1968	1967	3.5	930
1970	1969	3.5	1,100
1972	1971	3.5	1,310
1973	1972	6	1,760*
1974	1973	6	2,040*
1975	1973	6.6	2,269*
1976	1973	6.6	2,556*
1977	1973	6.6	2,829*
1978	1977	6.6	3,100*
1979†	1977	6.6	2,700*
1980†	1977	6.6	3,000*
1981†	1977	6.6	3,400*
1982†	1977	6.6	3,800*
1983†	1977	6.6	4,100*
1984†	1983	6.6	4,200*

*Also includes the effect of the automatic-adjustment provisions (an assumed 2¾-percent annual increase in benefit amounts for 1973 and 1974 estimates and an assumed 4 percent ultimately, although more in the early years, for the estimates for years after 1974).

†Rough estimates by author.