Actuarial Status of the Hospital Insurance and Supplementary Medical Insurance Trust Funds

by Roland E. King*

This article, adapted from a summary of the 1983 Annual Reports of the Medicare Boards of Trustees, presents the present and projected future actuarial status of the Hospital Insurance (HI) and Supplementary Medical Insurance (SMI) Trust Funds following the enactment of the Tax Equity and Fiscal Responsibility Act of 1982 and the Social Security Amendments of 1983. Although the Trustees characterize the outlook for the HI Trust Fund as slightly more optimistic than it was a year earlier, they report that the fund may be exhausted sometime between 1988 and 1996 unless benefits under the HI part of Medicare are reduced or financing is improved. The SMI Trust Fund, which is financed by premiums adjusted each year to reflect actual experience and by general revenue contributions, is characterized as actuarially sound. The Trustees note, however, the growing extent to which general revenue financing is becoming the major source of income for the SMI part of Medicare.

This article presents an overview of the information contained in the annual Trustees Reports required under Title XVIII of the Social Security Act—Health Insurance for the Aged and Disabled, commonly known as Medicare. There are two programs under Medicare:

(1) Hospital Insurance (HI), which pays for inpatient hospital care and other related care of those aged 65 or older and of the long-term disabled, and
(2) Supplementary Medical Insurance (SMI), which pays for physicians' services, outpatient hospital services, and other medical expenses of those aged 65 or older and of the long-term disabled.

The HI program is financed primarily by payroll taxes, which are paid by current workers and used to pay benefits to current beneficiaries. The program, however, also maintains a trust fund that provides a small reserve against fluctuations. This type of funding is generally known as pay-as-you-go financing. By contrast, the SMI program is financed on an accrual basis with a contingency margin. This means that the SMI Trust Fund should always contain a somewhat greater amount than the claims that have been incurred by enrollees but not yet paid by the program. The trust funds hold all the income not currently needed to pay benefits and related expenses. The assets of the funds may not be used for any other purpose; however, they may be invested in certain interest-bearing obligations of the U.S. Government.

The Secretaries of the Treasury, Labor, and Health and Human Services serve as Trustees of the HI and SMI Trust Funds. The Secretary of the Treasury is the Managing Trustee. The Administrator of the Health Care Financing Administration, the agency charged with administering the Medicare program, is the Secretary of the Board of Trustees.

Hospital Insurance Trust Fund

As noted earlier, the HI Trust Fund is financed primarily by payroll taxes. The HI contribution rates applicable to taxable earnings in 1981 and later are shown in table 1. Maximum taxable annual earnings are shown for 1981 through 1983. After 1983, the automatic increase provisions in section 230 of the Social Security Act determine the maximum taxable amount.

The Social Security Act was amended in 1982 by the

* Director, Office of Financial and Actuarial Analysis, Bureau of Data Management and Strategy, Health Care Financing Administration.

Table 1.—HI contribution rates and maximum taxable annual earnings under the Social Security program

Calendar year	Maximum taxable annual earnings	HI contribution rate (Percent of taxable earnings)	
		Employees and employers, each	Self-employed
1981	$29,700	1.30	1.30
1982	32,400	1.30	1.30
1983	35,700	1.30	1.30
Changes scheduled in present law:			
1984	Subject to	1.30	2.60
1985	automatic	1.35	2.70
1986 and later	increase	1.45	2.90

Tax Equity and Fiscal Responsibility Act (TEFRA) and in 1983 by Public Law 98-21 (the Social Security Amendments of 1983).[1] The major provisions in these laws that affect the HI program are:

(1) TEFRA has changed the method by which Medicare reimburses hospitals. The previous per diem limits on routine inpatient costs have been replaced by limits on total inpatient costs per admission and limits on increases in total inpatient costs per admission. These limits are effective for cost-reporting periods beginning on or after October 1, 1982. The limits or increases in total inpatient costs per admission expire for cost-reporting periods beginning on or after October 1, 1985.

(2) Medicare coverage has been extended to Federal employees, who are required to pay the hospital insurance portion of the Social Security tax as of January 1, 1983.

(3) Medicare will temporarily cover hospice care for beneficiaries having a life expectancy of 6 months or less. This provision is effective November 1, 1983, and expires October 1, 1986.

(4) Public Law 98-21 has changed the method by which Medicare makes payments to hospitals. Hospitals will no longer be reimbursed on a reasonable-cost basis for their inpatient operating costs but will be paid a prospectively determined price per discharge using diagnosis-related groups. This provision is effective for hospital fiscal years beginning on or after October 1, 1983.

(5) Social Security coverage has been mandated for employees of nonprofit organizations. Terminations of coverage were not permitted as of March 31, 1983. Also, no terminations of coverage by State and local governments or entities have been permitted since April 20, 1983. Such entities now outside the system are permitted to rejoin. This provision became effective upon enactment (April 20, 1983).

(6) Interfund borrowing among the Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) and HI Trust Funds (authorized in 1981) has been extended through 1987 with repayment to be made during 1988-89 in 24 equal monthly payments. Beginning June 1983, loans are repayable when the trust fund ratio of the borrowing fund exceeds 15 percent.

[1] Full summaries of these laws were carried in the July 1983 issue of the **Social Security Bulletin**. See John A. Svahn and Mary Ross, "Social Security Amendments of 1983: Legislative History and Summary of Provisions," pages 3-48, and "Summary of 1982 Legislation Affecting SSI, OASDI, and Medicare," pages 49-60.

Operations of the HI Program

At the end of 1982, 26 million persons aged 65 or older and 3 million disabled persons under age 65 were covered under HI, which is financed primarily by the payroll-tax contributions of 116 million workers. Payroll taxes collected during 1982 amounted to $34.6 billion, accounting for 90.9 percent of all HI income. The remaining income was made up of reimbursements from the general fund of the Treasury for military service credit and benefits for certain uninsured persons (2.7 percent), interest payments to the HI Trust Fund (5.4 percent), and premiums paid by voluntary enrollees and taxes collected from railroad workers (1 percent). Of the $36.1 billion in HI disbursements, $35.6 billion was for benefit payments and $0.5 billion (1.4 percent of the total) was for administrative expenses.

Table 2 provides data on HI Trust Fund operations for calendar years 1970-82. In most years during this period, the HI Trust Fund increased in size. However, the trust fund ratio (the fund at the beginning of the year divided by disbursements during the year) declined every year from its peak of 79 percent in 1975 to 45 percent in 1981. The trust fund ratio increased slightly at the beginning of 1982 primarily because of the increase in the contribution rate in 1981.

Actuarial Status of the Trust Fund

The Board of Trustees has adopted the general financing principle that annual income to the HI program

Table 2.—HI Trust Fund operations, calendar years 1970-82

[Amounts in billions]

Calendar year	Total income	Total disbursements	Interfund borrowing transfers	Net increase in fund	Fund at end of year	Ratio at beginning of year (in percent)
1970	$6.0	$5.3	...	$0.7	$3.2	47
1971	5.7	5.9	...	−.2	3.0	54
1972	6.4	6.5	...	−.1	2.9	47
1973	10.8	7.3	...	3.5	6.5	40
1974	12.0	9.4	...	2.7	9.1	69
1975	13.0	11.6	...	1.4	10.5	79
1976	13.8	13.7	...	.1	10.6	77
1977	15.9	16.0	...	−.2	10.4	66
1978	19.2	18.2	...	1.0	11.5	57
1979	22.8	21.1	...	1.8	13.2	54
1980	26.1	25.6	...	.5	13.7	52
1981	35.7	30.7	...	5.0	18.7	45
1982	38.0	36.1	$−12.4	−10.5	8.2	52

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

should be approximately equal to the annual outlays under the program plus an amount sufficient to maintain a balance in the trust fund equal to one-half year's disbursements. Because of the $12.4 billion loan to the OASI Trust Fund at the end of 1982, the fund was far below this desired level at that time. Projections were made under four sets of assumptions: optimistic, two intermediate sets (Alternatives II-A and II-B), and pessimistic. Under both sets of intermediate assumptions, the trust fund ratio is projected to remain at around 20-30 percent in most years until the late 1980's and then to decline rapidly with complete exhaustion of the fund around 1990.

Under the more optimistic set of assumptions (Alternative I), the trust fund is projected to grow until about 1988, then to decline steadily until the fund is completely exhausted in 1996. Under the more pessimistic set of assumptions (Alternative III), the trust fund is projected to decrease steadily with complete exhaustion of the fund by 1988. Table 3 summarizes the estimated operations of the HI Trust Fund under the four sets of assumptions.

The adequacy of the financing of the HI program on a long-range basis is measured by comparing, on a year-by-year basis, the actual tax rates specified by law with the corresponding total costs of the program, expressed

Table 3.—Estimated operations of the HI Trust Fund during calendar years 1982-96, under alternative sets of assumptions

[Dollar amounts in billions]

Calendar year	Total income	Total disbursements	Interfund borrowing transfers [1]	Net increase in fund	Fund at end of year	Ratio of assets to disbursements (in percent)
Alternative I (optimistic)						
1982 [3]	$38.0	$36.1	$-12.4	$-10.6	$8.2	52
1983	44.8	41.2	...	3.6	11.8	20
1984	46.0	46.2	1.0	0.9	12.6	26
1985	52.0	51.1	1.6	2.5	15.2	25
1986	59.1	55.7	9.1	12.5	27.6	27
1987	63.6	60.5	.7	3.8	31.4	46
1988	68.0	65.9	...	2.1	33.5	48
1989	71.9	70.8	...	1.1	34.6	47
1990	76.8	77.1	...	-.4	34.2	45
1991	80.8	82.4	...	-1.6	32.6	42
1992	86.1	89.1	...	-3.1	29.5	37
1993	90.1	95.8	...	-5.7	23.9	31
1994	95.3	102.8	...	-7.6	16.3	23
1995	99.4	110.2	...	-10.8	5.5	15
1996	104.5	117.6	...	-13.2	(4)	5
Alternative II-A (intermediate)						
1982 [3]	38.0	36.1	-12.4	-10.6	8.2	52
1983	44.7	41.2	...	3.6	11.7	20
1984	45.8	46.5	.6	-.1	11.6	25
1985	51.3	51.8	...	-.5	11.2	22
1986	58.2	57.1	4.8	5.9	17.1	20
1987	61.9	62.6	6.8	6.1	23.2	27
1988	65.7	68.9	.2	-3.0	20.3	34
1989	69.8	75.8	...	-6.0	14.3	27
1990	73.9	83.5	...	-9.6	4.7	17
1991	77.5	91.5	...	-14.0	(5)	5
Alternative II-B (intermediate)						
1982 [3]	36.8	36.1	-12.4	-10.6	8.2	52
1983	44.7	41.2	...	3.5	11.7	20
1984	45.6	46.6	.5	-.5	11.2	25
1985	51.3	52.3	...	-1.0	10.2	21
1986	58.4	58.0	1.1	1.5	11.8	18
1987	62.5	64.1	2.4	.8	12.6	18
1988	66.0	71.0	8.4	3.5	16.1	18
1989	70.0	78.4	...	-8.4	7.8	21
1990	73.9	86.6	...	-12.6	(6)	9
Alternative III (pessimistic)						
1982 [3]	38.0	36.1	-12.4	-10.6	8.2	52
1983	44.4	41.2	...	3.2	11.4	20
1984	44.5	46.8	...	-2.3	9.1	24
1985	50.5	54.1	...	-3.6	5.5	17
1986	58.2	61.9	...	-3.7	1.8	9
1987	62.6	70.5	12.4	4.5	6.3	3
1988	66.5	80.4	...	-13.9	(7)	8

[1] A loan to the OASI trust fund would still be an asset of the HI trust fund. Since these assets are not immediately available for payment of HI benefits, however, they are subtracted from the HI fund balance. A negative amount is a loan to the OASI trust fund. A positive amount is a repayment of principal to the HI trust fund.

[2] Ratio of assets in the trust fund at the beginning of the year to disbursements during the year.

[3] Figures for 1982 represent actual experience.

[4] Trust fund depleted in calendar year 1996.

[5] Trust fund depleted in calendar year 1991.

[6] Trust fund depleted in calendar year 1990.

[7] Trust fund depleted in calendar year 1988.

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

as percentages of taxable payroll. The actuarial balance is defined as the excess of the average tax for the 25-year valuation period (1983-2007) over the average cost of the program expressed as a percentage of taxable payroll. The average tax rate for the 25-year period is 2.87 percent (table 4). The average cost of the program under Alternative II-A is 3.97 percent of taxable payroll; under Alternative II-B, it is 4.11 percent. Table 4 compares the actuarial balance under each of the four sets of assumptions. Chart 1 shows the year-by-year costs as a percentage of taxable payroll for each of the four sets of assumptions and gives the scheduled tax rates. The cost figures in table 4 and chart 1 include amounts for building and maintaining the trust fund at the level of a half year's disbursements as recommended by the Board of Trustees. Chart 1 emphasizes the inadequacy of the financing of the HI program by illustrating the divergence of the program costs and scheduled tax rates under each set of assumptions.

It is noteworthy that under all four sets of assumptions used in the 1983 report, the outlook for the HI Trust Fund is slightly more optimistic than it was in the 1982 report. This improvement is primarily the result of the major legislation enacted during 1982 and 1983 that will help curtail the rapid increase in hospital costs. Table 5 presents a comparison of the projected experience in the 1982 and 1983 reports.

Conclusion

The present financing schedule for the HI program is barely adequate to ensure the payment of benefits through the end of this decade if the assumptions underlying the estimates are realized. The trust fund will be exhausted in 1991 and 1990 under Alternatives II-A and II-B, respectively. Under the more pessimistic assumptions, the fund will be exhausted in 1988. Even under the more optimistic assumption, Alternative I, the present financing schedule will result in the fund being exhausted in 1996. To bring the HI program into close actuarial balance, either disbursements under the program will have to be reduced by 30 percent or financing will have to be increased by 43 percent. Despite the short-term uncertainties, the enactment of TEFRA in 1982 and Public Law 98-21 in 1983 has substantially reduced the long-range deficit of the HI Trust Fund. More importantly, the prospective payments provisions of Public Law 98-21 have made the HI program potentially less vulnerable to excessive rates of growth in the hospital industry by giving the Secretary of Health and Human Services some discretion over the level of payments to hospitals.

The quadrennial Advisory Council on Social Security, appointed by the Secretary, is addressing the financial status of the HI Trust Fund. The Council's report is due by the end of 1983. The Board recommends that Congress study carefully the Advisory Council's recommendations as it takes further action to curtail the rapid growth in the cost of the HI program.

Table 4.—Actuarial balance of the HI program under alternative sets of assumptions

[Figures in percents]

Item	Alternative I	II-A	II-B	III
Average contribution rate, scheduled under present law [1]	2.87	2.87	2.87	2.87
Average cost of the program, for expenditures and for trust fund building and maintenance [2]	3.21	3.97	4.11	5.38
Actuarial balance [3]	-.34	-1.10	-1.24	-2.51

[1] Average for the 25-year period 1983-2007.

[2] Average for the 25-year period 1983-2007, expressed as a percent of taxable payroll. Taxable payroll is adjusted to take into account the lower contribution rates on self-employment income in 1983, on tips, and on multiple-employer "excess wages" compared with the combined employer-employee rate.

[3] The actuarial balance of the HI program is defined as the excess of the average tax rate for the 25-year valuation period over the average cost of the program, expressed as a percent of taxable payroll, for the same period.

Table 5.—Status of the HI Trust Fund in the 1981 and 1982 Trustees Report

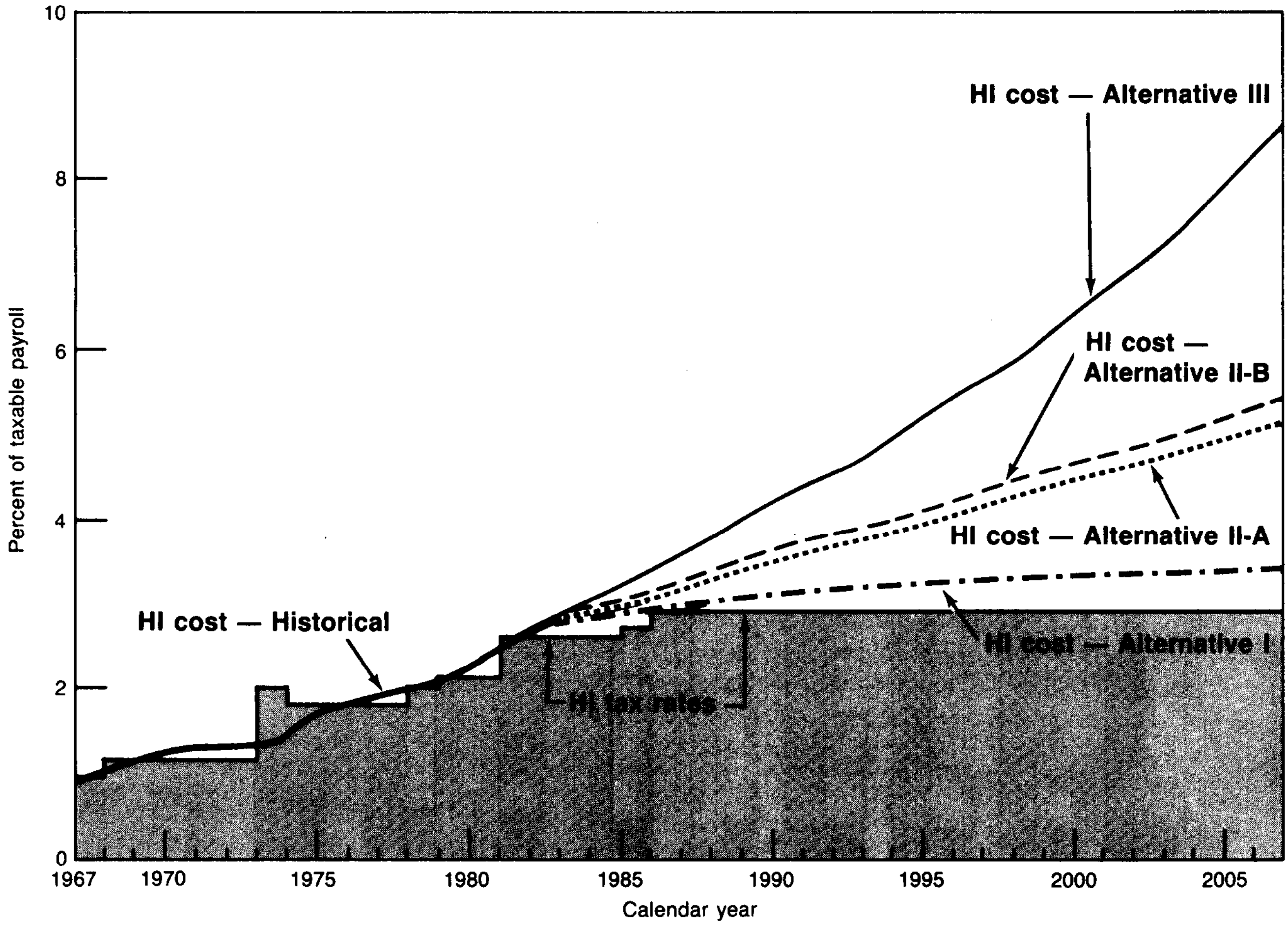
Alternative assumption	Year trust fund exhausted as published in— 1982 report	1983 report	Actuarial balance [1] as published in— 1982 report	1983 report
I (Optimistic)	1991	1996	-0.86	-0.34
II-A (Intermediate)	1989	1991	-1.63	-1.10
II-B (Intermediate)	1987	1990	-2.07	-1.24
III (Pessimistic)	1986	1988	-3.73	-2.51

[1] The actuarial balance of the HI program is defined as the excess of the average tax rate for the 25-year valuation period over the average cost of the program, expressed as a percent of taxable payroll, for the same period.

Supplementary Medical Insurance Trust Fund

Financing for the SMI program is established annually on the basis of standard monthly premium rates (paid by or on behalf of all participants) and monthly actuarial rates determined separately for aged and disabled beneficiaries (on which general revenue contributions are based). Before the 6-month transition period (July 1, 1983, through December 31, 1983), these rates were applicable to the 12-month periods ending June 30. Beginning January 1, 1984, the annual basis will change to calendar year periods. Monthly actuarial rates are equal to one-half the monthly amounts necessary to finance the SMI program. These rates determine the amount to be contributed from general revenues on behalf of each enrollee. Based on the formula in the law, the Government contribution effectively makes up the difference between twice the monthly actuarial rates and the standard monthly premium rate. Chart 2 presents these

Chart 1.—Estimated HI cost and tax rates



values for financing periods since 1974. The extent to which general revenue financing is becoming the major source of income for the program is clearly indicated in this chart.

Standard monthly premium rates and monthly actuarial rates have been announced for periods through December 31, 1983. For the 6-month period ending December 31, 1983 (transitional semester), the standard monthly premium rate is $12.20, and the monthly actuarial rates are $27.00 for the aged and $46.10 for the disabled.

The Social Security Act was amended in 1982 by the Tax Equity and Fiscal Responsibility Act (TEFRA) and in 1983 by the Social Security Amendments of 1983 (Public Law 98-21). The major provisions in these laws that affect the SMI program are:

(1) The premium rate applicable from July 1, 1983, through December 31, 1983, was frozen at the rate that applied in June 1983. Some general revenues will be added from July through December to compensate for keeping the smaller June 1983 premium for that period. For the period January 1984 through December 1985, the monthly SMI premium is set at one-half the actuarial rate for aged enrollees. After December 1985, the premium rate determination procedure will revert to the method used before enactment of this provision and future increases will be effective on a calendar year basis.

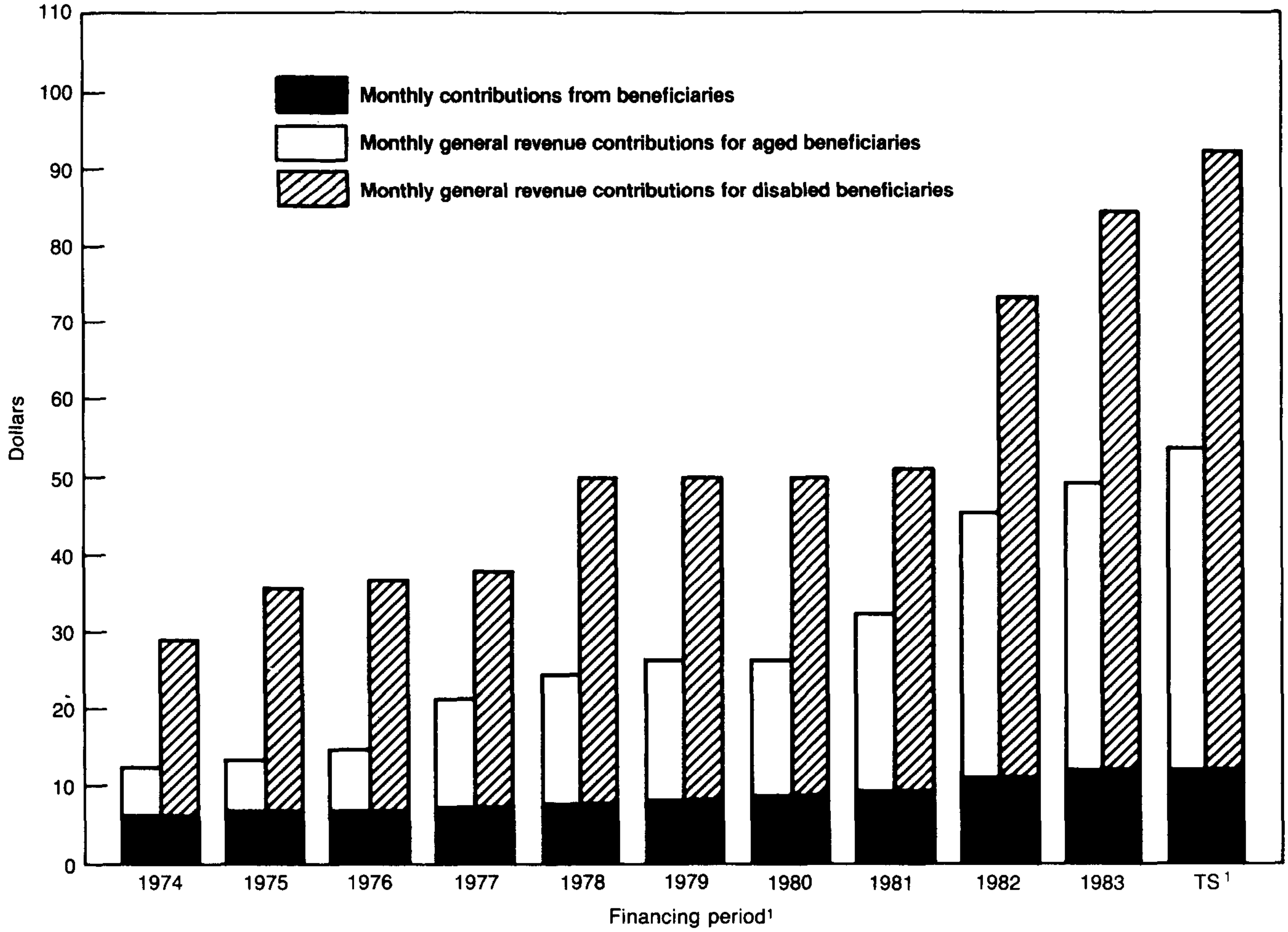
(2) Medicare becomes the secondary payor for employees aged 65 through 69 (and their spouses in the same age group) who are covered under an employer's health plan.

(3) The basis upon which provider-based physicians are reimbursed is to be prescribed in regulations that distinguish between (a) professional component and (b) provider component.

Operations of the SMI Program

In fiscal year 1982, 28.2 million persons were covered under the SMI program. General revenue contributions in that year amounted to $13.3 billion, accounting for 75.6 percent of all SMI income. The remaining income was made up of premiums paid by participants (21.7 percent) and interest payments to the SMI fund (2.7 percent). Of the $15.6 billion in SMI disbursements, $14.8 billion was for benefit payments and $0.8 billion (4.8 percent of the total) was for administrative expenses. The historical operations of the SMI Trust Fund since fiscal year 1977, as well as the projected operations of

Chart 2.—SMI monthly per capita income



[1] For 1983 and earlier, the financing period is July 1 through June 30; for the transitional semester, it is July 1, 1983, through December 31, 1983.

the fund for fiscal years through 1985, for both Alternative II-A and Alternative II-B are shown in table 6. As can be seen, historically income has exceeded disbursements for most years and the trust fund balance is projected to continue to increase through fiscal year 1985. As the report notes, however, the financial status of the program depends on both total net assets and liabilities. It is, therefore, necessary to examine the incurred experience of the program since it is this experience that is used to determine the actuarial rates discussed above and that forms the basis of the concept of actuarial soundness as it relates to the SMI program.

Table 6.—SMI Trust Fund operations, fiscal years 1977–85

[In billions]

Fiscal year	Total income	Total disbursements	Net increase in fund	Fund at end of year
1977	$7.4	$6.3	$1.0	$2.3
1978	9.0	7.4	1.7	4.0
1979	9.8	8.8	1.0	5.0
1980	10.3	10.7	−.5	4.5
1981	12.4	13.2	−.8	3.7
1982	17.6	15.6	2.1	5.8
Alternative II-A:				
1983	19.1	18.3	.7	6.5
1984	22.4	21.3	1.1	7.6
1985	25.3	24.5	.8	8.5
Alternative II-B:				
1983	19.1	18.3	.7	6.5
1984	22.4	21.3	1.1	7.6
1985	25.5	24.6	.9	8.5

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

Actuarial Soundness of the SMI Program

The concept of actuarial soundness, as it applies to the SMI program, is closely related to the concept as it applies to private group insurance. Supplementary Medical Insurance is essentially yearly renewable term insurance intended to be self-supporting from premium income paid by the enrollees and from income contributed from general revenues in proportion to premium payments.

In testing the actuarial soundness of the SMI program, it is not appropriate to look beyond the period for which the enrollee premium rate and level of general revenue financing have been established. The primary tests of actuarial soundness, then, are that (1) income for years for which financing has been established be sufficient to meet the projected benefits and associated administrative expenses incurred for that period and (2) assets be sufficient to cover projected liabilities that will have been incurred by the end of that time but will not yet have been paid. Even if these tests of actuarial soundness are not met, the program can continue to operate if the trust fund remains at a level adequate to permit the payment of claims as presented. To protect against the possibility that cost increases under the program will be higher than assumed, however, assets should be sufficient to cover the impact of a moderate degree of projection error.

The initial tests for actuarial soundness and trust fund adequacy can be viewed by direct examination of absolute dollar levels. In providing an appropriate contingency or margin for error, however, there must be some relative measure. The relative measure or ratio used for this purpose is the ratio of net surplus or deficit to the following year's incurred expenditures. Chart 3 shows this ratio for historical years and for projected years under one set of intermediate assumptions (Alternative II-B), as well as high- and low-cost sensitivity scenarios.

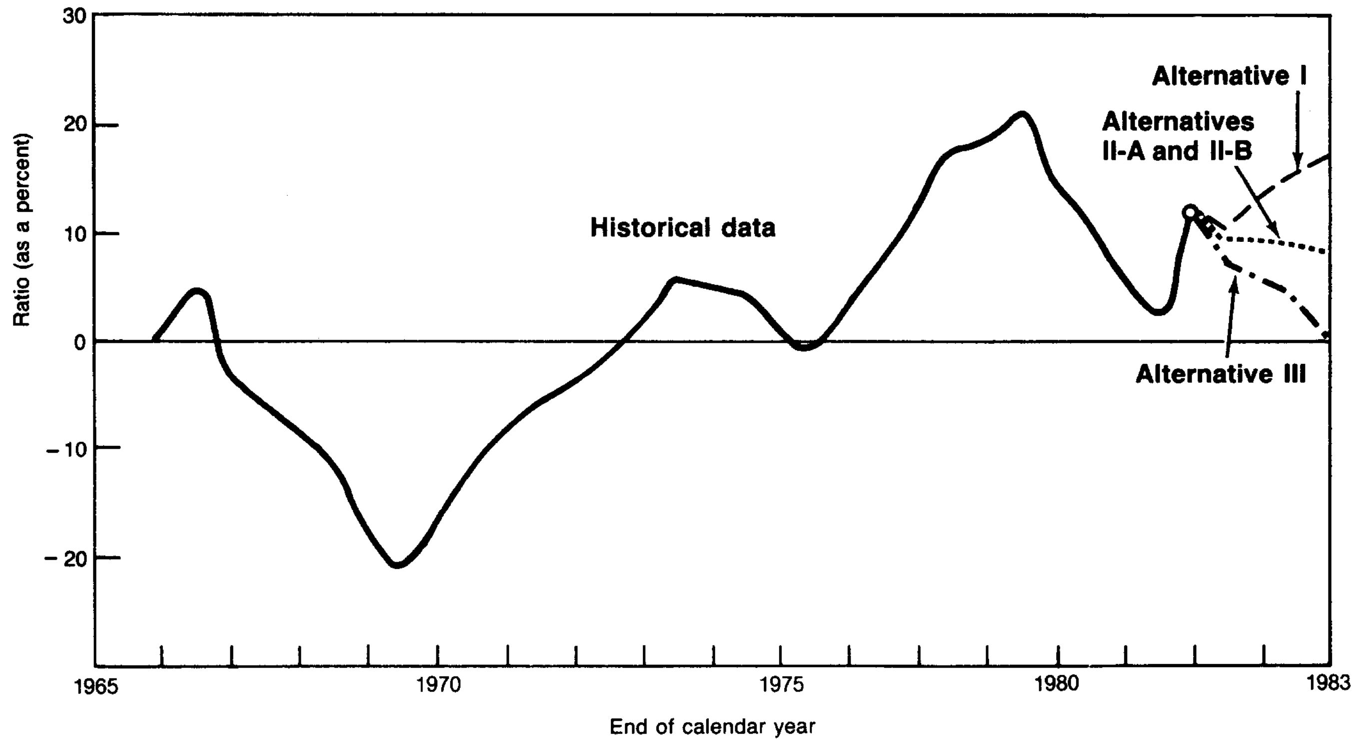
Financing for the 12-month period ending June 30, 1983, was established to maintain assets at the same level relative to program expenditures that existed before June 30, 1982. The resulting excess of assets over liabilities as of June 30, 1983, represents 9.4 percent of the projected incurred expenditures for the following 12-month period.

The actuarial rates for the 6-month period ending December 31, 1983, as implemented, will reduce this excess to a more appropriate level. Under more pessimistic assumptions as to cost increases, assets based on financing already established will be insufficient to cover outstanding liabilities. However, the trust fund would remain positive, allowing claims to be paid.

Conclusion

The financing established through December 1983 is sufficient to cover projected benefit and administrative costs incurred through that period and to build a level of trust fund assets adequate to cover the impact of a moderate degree of projection error. Thus, the SMI program can be said to be actuarially sound.

Chart 3.—Actuarial status of the SMI Trust Fund



Note: The actuarial status of the SMI Trust Fund is measured by the ratio of the end-of-year surplus or deficit to the following year's incurred expenditures.