CONCLUSION

The financing of the supplementary medical insurance program has been established through December 1986, by the setting of standard monthly premium rates (paid by or on behalf of each enrollee) of $15.50 for calendar year 1986 and of actuarial rates that determine the amount to be contributed from general revenue on behalf of each enrollee. General revenue contributions are expected to account for 72.8 percent of all SMI income during calendar year 1986.

Under both sets of intermediate assumptions used in this report, disbursements are projected to exceed income during fiscal year 1986 and fiscal year 1987. Income is composed of premiums paid by the participants, general revenue contributions and interest earned by the trust fund. As a result, the assets in the trust fund on a cash basis are projected to decrease from $10.6 billion at the end of fiscal year 1985 to an estimated $8.7 billion at the end of fiscal year 1986 and then to decrease to an estimated $6.1 billion at the end of fiscal year 1987.

Program assets exceeded liabilities by approximately $7,196 million at the end of December 1985 representing 25.3 percent of the projected incurred expenditures for the following 12-month period. The financing for calendar year 1986 was established to reduce assets to a more appropriate level. Assets are projected to exceed liabilities at the end of December 1986 by $2,993 million under alternative A, and by $2,998 million under alternative B, representing 9.3 percent of the projected incurred expenditures. 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 should remain positive

allowing claims to be paid. Hence, the financing established through December 1986 is sufficient to cover projected benefit and administrative costs incurred through that time period, and to maintain a level of trust fund assets adequate to cover the impact of a moderate degree of projection error.

Although the supplementary medical insurance program is financially sound, the Board notes with concern the rapid growth in the cost of the program. The Board recommends that Congress continue to work to curtail the rapid growth in the supplementary medical insurance program.

APPENDIX A

ACTUARIAL METHODOLOGY AND PRINCIPAL ASSUMPTIONS FOR COST ESTIMATES FOR THE SUPPLEMENTARY MEDICAL INSURANCE PROGRAM

1. ESTIMATES FOR AGED AND DISABLED (EXCLUDING ESRD) ENROLLEES

a. Introduction

Estimates for aged and disabled enrollees--excluding disabled persons with end stage renal disease (ESRD)—are prepared by establishing, as accurately as possible, reasonable charges incurred per enrollee in a recent year (the 12-month period ending June 30, 1984, for this report) and projecting these charges through the estimating period. The per enrollee charges are then converted to reimbursement amounts by subtracting the per enrollee values of the deductible and coinsurance. Aggregate reimbursement amounts are calculated by multiplying the per enrollee reimbursement amounts by the projected enrollment. In order to estimate cash disbursements, an allowance is made for the delay between receipt of service and payment therefor.

Disabled persons with ESRD have per enrollee costs which are higher and quite different in nature from those of most other disabled persons. Hence, program costs for them have been excluded from the analysis in this section and are included in a later section.

b. Establishing a Projection Base

(1) Physician Services

Reimbursement amounts for physician services (and relatively small amounts for other services) are paid through organizations acting for the Health Care Financing Administration, referred to as carriers. The carriers determine whether billed services are covered under the program and determine the reasonable charges for the services. A record of the amount reimbursed after reduction for coinsurance and the deductible is transmitted to the central office in the form of a "payment record."

Payment records for 0.1 percent of aged beneficiaries and 1.0 percent of disabled beneficiaries are tabulated by date of service, thus providing a data base which is constructed on an incurred basis. Certain minor adjustments are made to the tabulated sample data to correct for biases and random fluctuation inherent in the sampling process. Having the data on an incurred basis is necessary to meet the statutory requirement that the program be financed on this basis.

As a check on the validity of the projection base, incurred reimbursement amounts are compared with cash expenditures reported by the carriers through an independent reporting system. In a program with continuously increasing incurred reimbursement amounts, cash payments are expected to be slightly lower than incurred expenses (except in the first year of coverage of a service or group of beneficiaries, when the difference should be substantial). These differences between cash and incurred reimbursement amounts occur because of the lag between receipt of services and payment therefor.

(2) Institutional and Other Services

Reimbursement amounts for institutional services under the supplementary medical insurance program are paid by the same fiscal intermediaries that pay for hospital insurance services. The principal institutional services covered under the supplementary medical insurance program are outpatient hospital care services.

Reimbursements for institutional services occur in two stages. Provider bills are submitted to the intermediaries, and interim payments are made on the basis of these bills. The bills are then submitted to the central office, and tabulations for a sample of beneficiaries are prepared in a manner parallel to that for payment records.

At the close of a provider's accounting period, a cost report is submitted and lump-sum payments or recoveries are made to correct for the difference between interim payments made to the provider and the retroactively determined reasonable cost for providing covered services (net of coinsurance and deductible amounts). The amounts of these retroactive settlements are reported on a cash basis, and approximations are necessary to allocate these payments to the time of service.

Group practice plans, which are not reimbursed through carriers, are reimbursed directly by the Health Care Financing Administration on a reasonable cost or on a capitation basis. Comprehensive data on such direct reimbursements are available on a cash basis. Certain approximations must be made to allocate expenses to the period when services were rendered.

(3) Summary of Historical Data

Table A1 summarizes the incurred reimbursement amounts per enrollee for the various services for each of the 12-month periods ending June 30, through 1984. Also shown are average enrollment figures for these years. In order to analyze the historical trends in prices and use of services, these reimbursement amounts are converted to the reasonable charges or reasonable costs on which reimbursement was based. This process is necessary largely because the fixed deductible becomes a smaller percentage of charges each year and thus causes reimbursement to rise faster than charges or costs. Table A2 shows the reasonable charges or costs per enrollee corresponding to the reimbursement values shown in table A1.

c. Per Enrollee Increases

(1) Physician Services

Per enrollee charges for physician services are affected by a variety of factors. One factor, increase in average charge per service, can be identified explicitly. Others can be recognized only by the fact that the explicitly quantifiable factor does not explain all of the increase in per enrollee charges year-to-year.

Increases in average charge per service are one of the most important elements creating increasing charges per enrollee. The physician fee component of the consumer price index provides an estimate of the historical increases in average charge per service. Increases in this index are shown in the first column of table A3.

Table A1.--INCURRED REIMBURSEMENT AMOUNTS PER ENROLLEE: HISTORICAL

Year ending June 30,	Average enrollment (millions)	All services	Physician	Inpatient radiology and pathology*	Outpatient hospital	Home health agency	Group practice prepayment plan	Independent lab
Aged:								
1967	17.750	$62.42	$59.03		$1.41	$0.79	$0.89	$0.30
1968	18.038	80.04	72.56	$1.89	2.40	1.49	1.35	0.35
1969	18.833	93.71	79.06	6.57	4.23	1.92	1.54	0.40
1970	19.312	99.90	82.84	7.14	5.93	2.00	1.51	0.48
1971	19.664	106.26	87.80	7.21	7.56	1.68	1.40	0.61
1972	20.043	114.22	94.82	6.77	8.58	1.61	1.66	0.78
1973	20.428	122.37	100.94	6.99	9.45	2.17	1.88	0.94
1974	20.988	134.39	109.97	7.46	11.36	2.03	2.36	1.21
1975	21.504	160.26	127.48	8.75	15.48	3.84	3.07	1.64
1976	22.089	188.61	145.29	10.91	21.30	5.21	3.87	2.03
1977	22.605	221.39	167.01	12.23	28.72	6.54	4.42	2.47
1978	23.133	254.18	192.23	14.77	33.42	6.82	4.02	2.92
1979	23.693	289.47	217.51	16.36	40.55	6.87	4.87	3.31
1980	24.287	340.75	256.25	18.74	47.09	7.59	7.05	4.03
1981	24.826	404.02	301.85	22.95	56.72	8.04	9.12	5.34
1982	25.363	461.51	354.21	24.18	65.24	0.50	10.98	6.40
1983	25.873	551.03	427.84	22.38	79.35	0.77	13.42	7.27
1984	26.433	626.22	482.95	17.53	99.17	0.99	16.70	8.88
Disabled (excluding ESRD):								
1974	1.638	116.68	89.92	7.54	13.91	3.46	1.09	0.76
1975	1.816	149.50	117.03	8.44	17.34	3.58	1.86	1.25
1976	2.018	178.87	138.01	10.07	21.72	5.13	2.20	1.74
1977	2.231	220.44	161.39	13.06	36.46	4.79	2.41	2.33
1978	2.423	256.26	188.34	14.20	42.79	5.54	2.47	2.92
1979	2.563	301.58	223.27	17.10	50.52	5.13	2.05	3.51
1980	2.641	363.50	268.34	19.80	60.75	6.08	4.35	4.18
1981	2.687	434.91	316.91	23.17	77.17	7.22	5.29	5.15
1982	2.685	516.26	371.13	24.42	107.88	0.00	6.35	6.48
1983	2.628	629.45	460.02	23.64	130.07	0.00	7.60	8.12
1984	2.593	685.70	519.93	18.95	128.38	0.00	8.60	9.84

* Includes services on payment records and those using combined billing; amounts shown are for April 1968 and later when combined billings were authorized. Inpatient radiology and pathology charges were reimbursed at 100 percent through September 30, 1982.

Table A2.—INCURRED REASONABLE CHARGES OR COSTS PER ENROLLEE: HISTORICAL

Year ending June 30,	Average enrollment (millions)	All services	Physician	Inpatient radiology and pathology*	Outpatient hospital	Home health agency	Group practice prepayment plan	Independent lab
Aged:								
1967	17.750	$108.49	$102.61		$2.45	$1.37	$1.54	$0.52
1968	18.038	128.18	117.25	$1.89	3.88	2.41	2.18	0.57
1969	18.833	145.53	126.06	6.57	6.74	3.06	2.46	0.64
1970	19.312	154.02	131.18	7.14	9.39	3.16	2.39	0.76
1971	19.664	162.51	137.67	7.21	11.85	2.63	2.20	0.95
1972	20.043	173.14	146.82	6.77	13.28	2.49	2.57	1.21
1973	20.428	186.61	157.47	6.99	14.74	3.01	2.93	1.47
1974	20.988	204.66	171.41	7.46	17.70	2.53	3.68	1.88
1975	21.504	237.11	193.12	8.75	23.45	4.65	4.65	2.49
1976	22.089	272.61	215.25	10.91	31.55	6.17	5.73	3.00
1977	22.605	313.97	242.45	12.23	41.69	7.59	6.42	3.59
1978	23.133	355.04	274.77	14.77	47.77	7.80	5.75	4.18
1979	23.693	399.63	306.79	16.36	57.19	7.75	6.87	4.67
1980	24.287	464.08	356.07	18.74	65.44	8.44	9.79	5.60
1981	24.826	542.39	413.20	22.95	77.65	8.80	12.49	7.31
1982	25.363	626.20	486.20	26.10	89.55	0.50	15.07	8.78
1983	25.873	746.24	582.39	26.91	108.01	0.77	18.27	9.89
1984	26.433	842.13	649.72	23.59	133.42	0.99	22.47	11.94
Disabled (excluding ESRD):								
1974	1.638	171.12	135.64	7.54	20.99	4.17	1.64	1.14
1975	1.816	212.55	170.19	8.44	25.22	4.17	2.71	1.82
1976	2.018	250.88	198.08	10.07	31.18	5.89	3.16	2.50
1977	2.231	303.92	227.40	13.06	51.38	5.40	3.40	3.28
1978	2.423	350.39	262.78	14.20	59.70	6.18	3.45	4.08
1979	2.563	407.60	307.59	17.10	69.60	5.65	2.83	4.83
1980	2.641	485.54	364.91	19.80	82.61	6.62	5.92	5.68
1981	2.687	574.77	426.06	23.17	103.75	7.76	7.11	6.92
1982	2.685	688.17	499.39	26.36	145.16	0.00	8.54	8.72
1983	2.628	837.63	614.46	28.43	173.74	0.00	10.15	10.85
1984	2.593	910.46	690.36	25.16	170.46	0.00	11.42	13.06

* Includes services on payment records and those using combined billing; amounts shown are for April 1968 and later when combined billings were authorized. Inpatient radiology and pathology charges were reimbursed at 100 percent through September 30, 1982.

Table A3.--COMPONENTS OF INCREASES IN TOTAL RECOGNIZED CHARGES PER ENROLLEE FOR PHYSICIAN SERVICES: HISTORICAL

Year ending June 30,	Increase Due to Price Changes				Increase Due to Residual Factors			Total increase in recognized charges per enrollee
	Increase in physician fee component of CPI	Reduction due to fee screens: Cumulative effect	Reduction due to fee screens: Yearly changes	Net increase in reasonable charges	Gross residual factors	Effect of denials	Net residual factors	
Aged:								
1967	7.6	-2.6						
1968	5.9	-3.6	-0.6	5.3	10.4	-1.4	9.0	14.3
1969	6.2	-5.0	-1.4	4.8	3.1	-0.4	2.7	7.5
1970	6.7	-7.5	-2.8	3.9	3.3	-3.1	0.2	4.1
1971	7.5	-10.1	-3.0	4.5	3.7	-3.2	0.5	5.0
1972	5.2	-11.2	-1.2	4.0	2.2	0.4	2.6	6.6
1973	2.6	-11.7	-0.4	2.2	5.7	-0.6	5.1	7.3
1974	5.0	-13.2	-1.7	3.3	6.1	-0.6	5.5	8.8
1975	12.8	-16.2	-3.6	9.2	3.8	-0.3	3.5	12.7
1976	11.4	-18.6	-2.9	8.5	2.9	0.1	3.0	11.5
1977	10.2	-19.5	-1.0	9.2	3.3	0.1	3.4	12.6
1978	8.9	-19.4	0.5	9.4	3.8	0.1	3.9	13.3
1979	8.6	-20.0	-0.6	8.0	3.9	-0.3	3.6	11.6
1980	11.5	-22.1	-2.3	9.2	6.8	0.1	6.9	16.1
1981	11.1	-24.5	-2.8	8.3	7.0	0.7	7.7	16.0
1982	9.9	-23.9	1.5	11.4	5.8	0.5	6.3	17.7
1983	8.2	-23.4	1.6	9.8	10.1	-0.1	10.0	19.8
1984	7.5	-23.6	0.9	8.4	3.8	-0.6	3.2	11.6
Disabled (excluding ESRD):								
1974	5.0	-13.2						
1975	12.8	-16.2	-2.5	10.3	15.5	-0.3	15.2	25.5
1976	11.4	-18.6	-2.6	8.8	7.5	0.1	7.6	16.4
1977	10.2	-19.5	-0.7	9.5	5.2	0.1	5.3	14.8
1978	8.9	-19.4	0.7	9.6	5.9	0.1	6.0	15.6
1979	8.6	-20.0	-0.2	8.4	8.9	-0.3	8.6	17.0
1980	11.5	-22.1	-2.2	9.3	9.2	0.1	9.3	18.6
1981	11.1	-24.5	-2.7	8.4	7.7	0.7	8.4	16.8
1982	9.9	-23.9	1.4	11.3	5.4	0.5	5.9	17.2
1983	8.2	-23.4	1.9	10.1	13.0	-0.1	12.9	23.0
1984	7.5	-23.6	1.2	8.7	4.3	-0.6	3.7	12.4

Bills submitted to the carriers during a specified 12-month period, the fee screen year, are subject by statute to certain limitations on the level of fees to be recognized by the program for reimbursement purposes. Prior to the passage of Public Law 98-369, the fee screen year was the 12-month period ending July 30. Public Law 98-369 changed the fee screen year to the 12-month period ending September 30, effective on October 1, 1985. The fee level recognized for a particular service by a physician is subject to reduction if it exceeds the median charge that the physician assessed for the same service in the base period. Public Law 98-369 changed the base period from the preceding calendar year to the preceding 12-month period ending March 31. This median charge is called the "customary" charge. Fees are subject to further reduction if they exceed the "prevailing" charges for the locality. The prevailing charge is defined as the 75th percentile of customary charges for a particular service in a particular locality. Since July 1, 1975, the rate of increase in prevailing charges has been limited further by the application of an "economic index." The customary and prevailing charge limits maintained by the carriers are called "fee screens." Reasonable charges are charges on which reimbursement is based, after they have been reduced by the fee screens.

The average reduction in submitted fees has increased almost every year due both to administrative actions and to differentials in the rate of increase in fees between the period in which the fee screens are established and the period in which the screens are applied. The result is that the net increase in per enrollee charges due to price changes (i.e., the increase in fee levels recognized for reimbursement purposes) has been less than the increase in submitted fees. The second column of table A3 shows the reduction of charges due to the impact of the fee screen operation to date. The year-to-year changes in this impact are shown in the third column.

Charges also have increased each year as a result of more physician visits per enrollee, greater use of specialists and more expensive techniques, and other factors. The fifth column of table A3 shows the increase in charges per enrollee resulting from these residual causes. Because the measurement of increased recognized charges per service is subject to error, this error is included implicitly under residual causes.

The proportion of charges that has been denied as non-covered care has increased in most years. To the extent that this increase in denials reflects the effect of administrative actions defining covered services, it will cause a non-recurring distorting effect on the increase due to net residual factors. The gross residual factor is adjusted for the impact of changes in denials as shown in the sixth column of table A3. The seventh column shows the net increases due to residual factors. That column is used in the projection to indicate the amount of cost increases to be expected in the future from residual causes.

The last column of table A3 shows the total increase in charges per enrollee for physician services. It includes the effect of all the items discussed above.

Projected increases in total recognized charges per enrollee are shown in table A4. Column 1 of table A4 shows the projected average increase in customary charges in each of the fee screen years ending September 30, 1985 through September 30, 1989. As described above, each of these increases depends on the increases in fees actually submitted during the base period. Thus, this column represents actual and projected average increases in physicians' fees for year ending March 31, 1984 through year ending March 31, 1988, respectively. In principle, further adjustments should be made for the fact that, of necessity, some

Table A4.—COMPONENTS OF INCREASES IN TOTAL RECOGNIZED CHARGES PER ENROLLEE FOR PHYSICIAN SERVICES: PROJECTED
(In percent)

Physician fee screen year*	Increase before effect of economic index	Reduction due to economic index	Net increase in reasonable charges	Gross residual factors	Effects of denials	Net residual factors	Total increase in recognized charges per enrollee
Alternative A:							
Aged:							
1985	7.7	-6.7	1.0	5.2	0.0	5.2	6.2
1986	6.4	-3.2	3.2	7.9	0.0	7.9	11.1
1987	6.3	0.7	7.0	3.6	0.0	3.6	10.6
1988	5.6	-1.3	4.3	3.4	0.0	3.4	7.7
1989	5.9	-1.5	4.4	3.4	0.0	3.4	7.8
Disabled (excluding ESRD):							
1985	7.7	-6.7	1.0	6.6	0.0	6.6	7.6
1986	6.4	-3.2	3.2	9.1	0.0	9.1	12.3
1987	6.3	0.7	7.0	4.6	0.0	4.6	11.6
1988	5.6	-1.3	4.3	4.4	0.0	4.4	8.7
1989	5.9	-1.5	4.4	4.4	0.0	4.4	8.8
Alternative B:							
Aged:							
1985	7.7	-6.7	1.0	5.2	0.0	5.2	6.2
1986	6.4	-3.2	3.2	7.9	0.0	7.9	11.1
1987	6.4	0.6	7.0	3.6	0.0	3.6	10.6
1988	6.0	-1.5	4.5	3.4	0.0	3.4	7.9
1989	6.2	-1.5	4.7	3.5	0.0	3.5	8.2
Disabled (excluding ESRD):							
1985	7.7	-6.7	1.0	6.6	0.0	6.6	7.6
1986	6.4	-3.2	3.2	9.1	0.0	9.1	12.3
1987	6.4	0.6	7.0	4.6	0.0	4.6	11.6
1988	6.0	-1.5	4.5	4.4	0.0	4.4	8.9
1989	6.2	-1.5	4.7	4.4	0.0	4.4	9.1

*The physician fee screen year is the 12-month period ending September 30.

fees are not screened in exactly the manner described (e.g., when new categories of services arise for which there is no historical data base). The impact on year-to-year increases in reasonable charges of this factor is treated as negligible. The effects of the economic index on the average charge increase is shown in column 2. The projected net increase in reasonable charges is shown in column 3; this compares with the corresponding historical data shown in column 4 of table A3.

The projection of residual factors assumes no further changes in the proportion of claims denied consistent with the very small changes observed in the last few years (see table A3).

(2) Institutional and Other Services

The historical and projected increases in charges or costs per enrollee for institutional and other services are shown in table A5. The year-to-year changes in some services have been quite erratic. Because these series provide only a rough indication of future trends in costs, identical series of increase factors are used for alternative A and alternative B.

d. Projected Charges and Costs

Table A6 shows projections of per enrollee incurred charges and costs based on the assumptions in tables A4 and A5. Table A7 shows the total reimbursement amounts per enrollee that result from subtracting the average amounts of copayment per enrollee from the total covered charges in table A6. The aggregate reimbursement amounts shown are derived by multiplying average enrollment by average reimbursement per enrollee.

Table A5.—INCREASES IN RECOGNIZED CHARGES AND COSTS PER ENROLLEE FOR INSTITUTIONAL AND OTHER SERVICES
(In Percent)

Physician fee screen year 1/	Inpatient radiology and pathology	Outpatient hospital	Home health agency	Group practice prepayment plan	Independent lab
Aged:					
Historical					
1968		58.4	75.9	41.6	9.6
1969	-13.1 2/	73.7	27.0	12.8	12.3
1970	8.7	39.3	3.3	-2.8	18.7
1971	1.0	26.2	-16.8	-7.9	25.0
1972	-6.1	12.1	-5.3	16.8	27.4
1973	3.2	11.0	20.9	14.0	21.5
1974	6.7	20.1	-15.9	25.6	27.9
1975	17.3	32.5	83.8	26.4	32.4
1976	24.7	34.5	32.7	23.2	20.5
1977	12.1	32.1	23.0	12.0	19.7
1978	20.8	14.6	2.8	-10.4	16.4
1979	10.8	19.7	-0.6	19.5	11.7
1980	14.5	14.4	8.9	42.5	19.9
1981	22.5	18.6	4.3	27.6	30.5
1982	13.7	15.3	-94.3	20.7	20.1
1983	3.1	20.6	54.0	21.2	12.6
1984	-12.3	23.5	28.6	23.0	20.7
Projected:					
1985	3.4	18.3	9.9	16.5	64.6
1986	10.1	34.8	9.9	19.5	7.7
1987	10.1	14.2	9.8	19.9	7.5
1988	10.7	14.1	11.2	19.1	8.8
1989	10.2	15.0	9.4	15.0	7.9
Disabled (excluding ESRD):					
Historical:					
1975	11.9	20.2	0.0	65.2	59.6
1976	19.3	23.6	41.2	16.6	37.4
1977	29.7	64.8	-8.3	7.6	31.2
1978	8.7	16.2	14.4	1.5	24.4
1979	20.4	16.6	-8.6	-18.0	18.4
1980	15.8	18.7	17.2	109.2	17.6
1981	17.0	25.6	17.2	20.1	21.8
1982	13.8	39.9	-100.0	20.1	26.0
1983	7.9	19.7	0.0	18.9	24.4
1984	-11.5	-1.9	0.0	12.5	20.4
Projected:					
1985	3.8	17.6	0.0	17.9	61.8
1986	10.4	34.8	0.0	17.9	8.3
1987	10.7	14.3	0.0	20.8	9.0
1988	11.8	14.2	0.0	19.4	8.3
1989	9.9	15.1	0.0	15.4	7.3

1/ Through June 30, 1984, the physician fee screen year is the 12-month period ending on June 30. Thereafter, the physician fee screen year is the 12-month period ending September 30.
2/ Percentage change over prior year annualized value.

Table A6.—INCURRED REASONABLE CHARGES OR COSTS PER ENROLLEE: PROJECTED

Physician fee screen year*	All services	Physician	Inpatient radiology and pathology	Outpatient hospital	Home health agency	Group practice prepayment plan	Independent lab
Alternative A:							
Aged:							
1985	936.61	697.75	24.45	161.39	1.11	27.19	24.72
1986	1,080.38	775.62	26.92	217.50	1.22	32.50	26.62
1987	1,205.13	858.11	29.63	248.48	1.34	38.96	28.61
1988	1,320.30	924.98	32.80	283.50	1.49	46.41	31.12
1989	1,448.61	997.84	36.16	326.02	1.63	53.38	33.58
Disabled (excluding ESRD):							
1985	1,025.44	754.44	26.21	204.43	0.00	14.08	26.28
1986	1,196.38	846.83	28.93	275.56	0.00	16.60	28.46
1987	1,343.46	945.39	32.03	314.96	0.00	20.06	31.02
1988	1,481.28	1,028.38	35.80	359.55	0.00	23.95	33.60
1989	1,635.45	1,118.58	39.34	413.84	0.00	27.63	36.06
Alternative B:							
Aged:							
1985	936.61	697.75	24.45	161.39	1.11	27.19	24.72
1986	1,080.31	775.55	26.92	217.50	1.22	32.50	26.62
1987	1,205.10	858.08	29.63	248.48	1.34	38.96	28.61
1988	1,321.60	926.28	32.80	283.50	1.49	46.41	31.12
1989	1,452.96	1,002.19	36.16	326.02	1.63	53.38	33.58
Disabled (excluding ESRD):							
1985	1,025.44	754.44	26.21	204.43	0.00	14.08	26.28
1986	1,196.30	846.75	28.93	275.56	0.00	16.60	28.46
1987	1,343.43	945.36	32.03	314.96	0.00	20.06	31.02
1988	1,482.73	1,029.83	35.80	359.55	0.00	23.95	33.60
1989	1,640.34	1,123.47	39.34	413.84	0.00	27.63	36.06

*The physician fee screen year is the 12-month period ending September 30.

Table A7.—INCURRED REIMBURSEMENT AMOUNTS: PROJECTED

Physician fee screen year*	Average enrollment (millions)	Reimbursement amounts	
		Per enrollee	Aggregate (millions)
Alternative A:			
Aged:			
1985	27.076	707.01	19,143
1986	27.720	822.11	22,789
1987	28.328	922.13	26,122
1988	28.886	1,014.75	29,312
1989	29.463	1,117.77	32,933
Disabled (excluding ESRD):			
1985	2.598	782.14	2,032
1986	2.623	919.18	2,411
1987	2.638	1,037.15	2,736
1988	2.650	1,148.30	3,043
1989	2.680	1,272.39	3,410
Alternative B:			
Aged:			
1985	27.076	707.01	19,143
1986	27.720	822.08	22,788
1987	28.328	922.09	26,121
1988	28.886	1,015.82	29,343
1989	29.463	1,121.30	33,037
Disabled (excluding ESRD):			
1985	2.598	782.14	2,032
1986	2.623	919.18	2,411
1987	2.638	1,036.77	2,735
1988	2.650	1,149.43	3,046
1989	2.680	1,276.49	3,421

*The physician fee screen year is the 12-month period ending September 30.

2. ESTIMATES FOR PERSONS SUFFERING FROM END STAGE RENAL DISEASE

Certain persons suffering from end stage renal disease have been eligible to enroll for SMI coverage since July 1973 (under Section 299I of Public Law 92-603). For analytical purposes, those enrollees suffering from ESRD who are also eligible as disability insurance beneficiaries are included in this section because their per enrollee costs are both higher and different in nature from those of most other disabled persons.

The estimates assume that charges for SMI ESRD services under Medicare will increase at an average of 5.5 percent per year over the projection period (October 1, 1984 through September 30, 1989). The estimates also assume a continued increase in enrollment. The historical and projected enrollment and costs are shown in table A8.

3. SUMMARY OF AGGREGATE REIMBURSEMENT AMOUNTS ON A CASH BASIS

Table A9 shows aggregate historical and projected reimbursement amounts on a cash basis, by type of beneficiary. The difference between reimbursement amounts on a cash basis and incurred reimbursement amounts results from the lag between the time of service and the time of payment.

4. ADMINISTRATIVE EXPENSE

The ratio of administrative expenses to benefit payments has been approximately 5 percent in recent years and is projected to decline in future years. Projections of administrative costs are based on estimates of changes in average annual wages.

Table A8.—INCURRED REIMBURSEMENT AMOUNTS FOR END STAGE RENAL DISEASE

Physician fee Screen Year*	Disabled ESRD and ESRD only			ESRD Only
		Reimbursement amounts		Reimbursement amounts
	Average enrollment (thousands)	Per enrollee	Aggregate (millions)	Aggregate (millions)
1974	12	$11,333	$ 136	$ 96
1975	18	11,778	212	144
1976	24	12,125	291	190
1977	29	12,621	366	229
1978	32	13,938	446	273
1979	38	14,158	538	322
1980	44	14,727	648	408
1981	49	15,735	771	471
1982	54	15,870	857	468
1983	59	16,000	944	492
1984	65	15,585	1,013	474
1985	73	16,301	1,190	528
1986	78	17,385	1,356	588
1987	84	18,536	1,557	663
1988	90	19,567	1,761	731
1989	96	20,948	2,011	806

*Through June 30, 1984, the physician fee screen year is the 12-month period ending June 30. Thereafter, the physician fee screen year is the 12-month period ending September 30.

Table A9.--AGGREGATE REIMBURSEMENT AMOUNTS ON A CASH BASIS
(In millions)

Fiscal years*	Aged	Disabled (excluding ESRD)	Disabled ESRD and ESRD only	Total
Historical:				
1967	664			664
1968	1,390			1,390
1969	1,645			1,645
1970	1,979			1,979
1971	2,035			2,035
1972	2,255			2,255
1973	2,391			2,391
1974	2,538	197	139	2,874
1975	3,296	261	208	3,765
1976	4,045	344	283	4,672
T.Q.	1,080	110	79	1,269
1977	5,016	494	357	5,867
1978	5,798	617	437	6,852
1979	6,943	784	532	8,259
1980	8,495	988	661	10,144
1981	10,370	1,189	786	12,345
1982	12,404	1,467	935	14,806
1983	14,783	1,702	1,002	17,487
1984	16,845	1,670	958	19,473
1985	19,074	1,732	1,002	21,808
Projected:				
Alternative A:				
1986	22,106	2,336	1,313	25,755
1987	25,058	2,627	1,525	29,210
1988	28,622	2,973	1,730	33,325
1989	32,292	3,344	1,974	37,610
Alternative B:				
1986	22,105	2,336	1,313	25,754
1987	25,057	2,626	1,525	29,208
1988	28,646	2,976	1,730	33,352
1989	32,380	3,353	1,974	37,707

* For 1967 through 1976, fiscal years cover the interval from July 1 through June 30; the three month interval from July 1, 1976, through September 30, 1976, is labeled "T.Q.," the transition quarter; fiscal years 1977-1989 cover the interval from October 1 through September 30.

APPENDIX B

Statement of Actuarial Assumptions and Bases Employed in Determining the Monthly Actuarial Rates and the Standard Monthly Premium Rate for the Supplementary Medical Insurance Program Beginning January 1986*

1. Actuarial Status of the Supplementary Medical Insurance Trust Fund

The law requires that the SMI program be financed on an incurred basis; that is, program income during the calendar year for which the actuarial rates are effective must be sufficient to pay for services furnished during that year (including associated administrative costs) even though payment for some of these services will not be made until after the close of the year. The portion of income required to cover benefits not paid until after the close of the calendar year is added to the trust fund until needed. Thus, the assets in the trust fund at any time should be no less than benefit and administrative cost incurred but not yet paid.

Because the rates are established prospectively, they are subject to projection error. As a result, the income to the program may not equal incurred costs. Therefore, trust fund assets should be maintained at a level that is adequate to cover a moderate degree of projection error in addition to the amount of incurred but unpaid expenses. Table 1 summarizes the estimated actuarial status of the trust fund as of the end of the financing period for periods from 1984 through 1985.

* This statement appeared in the Federal Register of September 30, 1985. Projections shown in this statement differ from the projections shown in the rest of the report because of changes in assumptions since the rates were announced.

TABLE 1—ESTIMATED ACTUARIAL STATUS OF THE SMI TRUST FUND AS OF THE END OF THE FINANCING PERIODS, JANUARY 1, 1984—DECEMBER 31, 1985 (In Millions of Dollars)

Financing Period Ending	Assets	Liabilities	Assets Less Liabilities
December 31, 1984	$ 9,698	$3,090	$6,608
December 31, 1985	11,436	3,586	7,850

2. Monthly Actuarial Rate for Enrollees Age 65 and Older

The monthly actuarial rate is one-half the monthly projected cost of benefits and administrative expenses for each enrollee age 65 and older, adjusted to allow for interest earnings on assets in the trust fund and a contingency margin. The contingency margin is an amount appropriate to provide for a moderate degree of projection error and to amortize unfunded liabilities.

The monthly actuarial rate for enrollees age 65 and older for calendar year 1986 was determined by projecting per-enrollee cost for the 12-month periods ending June 30, 1986, and June 30, 1987, by type of service. Although the actuarial rates are now applicable for calendar years, projections of per-enrollee costs were determined on a July to June period, consistent with the July 1 annual fee screen update used for benefits prior to the passage of section 2306(b) of Pub. L. 98-369. The values for the 12-month period ending June 30, 1983, were established from program data. Subsequent periods were projected using a combination of program data and data from external sources. The projection factors used are shown in Table 2. These per-enrollee values

are then adjusted to apply to a calendar year period. The projected values for financing periods from July 1, 1983, through December 31, 1986, are shown in Table 3.

The projected monthly rate required to pay for one-half of the total of benefits and administrative costs for enrollees age 65 and over for calendar year 1986 is $33.86. The monthly actuarial rate of a $31.00 provides an adjustment for interest earnings and -$1.65 for a contingency margin. Based on current estimates, it appears that the assets are more than sufficient to cover the amount of incurred but unpaid expenses and to provide for a moderate degree of projection error. Thus, a negative margin is needed to reduce assets to a more appropriate level.

3. Monthly Actuarial Rate for Disabled Enrollees

Disabled enrollees are those persons enrolled in SMI because of entitlement to disabiltiy benefits for not less than 24 months or because of entitlement to Medicare under the end-stage renal disease program. Projected monthly costs for disabled enrollees (other than those suffering from end-stage renal disease) are prepared in a fashion exactly parallel to projections for the aged, using appropriate actuarial assumptions (see Table 2). Costs for the end-stage renal disease program are projected differently because of the complex demographic problems involved. The combined results for all disabled enrollees are shown in Table 4.

The projected monthly rate required to pay for one-half of the total of benefits and administrative costs for disabled enrollees for calendar year 1986 is $60.24. The monthly actuarial rate of $40.80 provides an adjustment for interest earnings and -$14.29 for a contingency margin. As in the determination of the monthly actuarial rate for disabled enrollees, a negative margin is needed to reduce the surplus to a more appropriate level.

TABLE 2--PROJECTION FACTORS 1/
12-MONTH PERIODS ENDING JUNE 30 OF 1984-1987
(In percent)

12-month period ending June 30	Physicians' services		Radiology and pathology	Outpatient hospital services	Home health agency services	Group practice prepayment plans	Independent lab services
	Fees 2/	Residual 3/					
Aged:							
1984	7.2	4.3	-12.3	20.8	28.2	28.6	12.8
1985	0.7	3.0	1.2	7.5	17.1	19.1	97.5
1986	5.1	3.6	9.6	14.8	9.7	19.8	9.6
1987	4.8	3.7	10.7	14.9	8.8	19.8	10.2
Disabled:							
1984	7.2	5.7	-11.6	-0.7	0.0	26.3	16.2
1985	0.7	4.3	1.6	11.3	0.0	27.5	114.9
1986	5.1	5.7	11.7	17.2	0.0	31.6	9.6
1987	4.8	5.7	8.9	15.1	0.0	30.4	9.4

1/ All values are per enrollee.
2/ As recognized for payment under the program.
3/ Increase in the number of services received per enrollee and greater relative use of more expensive services.

TABLE 3--DERIVATION OF MONTHLY ACTUARIAL RATE FOR ENROLLEES AGE 65 AND OVER
FINANCING PERIODS ENDING DECEMBER 31, 1983 THROUGH DECEMBER 31, 1986

	Financing Periods			
	July 1, 1983 through December 31, 1983	July 1, 1984 through December 31, 1984	January 1, 1985 through December 31, 1985	January 1, 1986 through December 31, 1986
Covered services (at level recognized):				
Physicians' reasonable charges	$26.37	$27.59	$29.33	$31.90
Radiology and pathology	1.02	.99	1.04	1.15
Outpatient hospital and other institutions	5.18	5.61	6.25	7.18
Home health agencies	.04	.04	.05	.06
Group practice prepayment plans	.97	1.12	1.34	1.61
Independent lab	.45	.69	.96	1.06
Total services	34.02	36.05	38.98	42.95
Cost-Sharing:				
Deductible	-2.50	-2.52	-2.53	-2.54
Coinsurance	-6.29	-6.61	-7.09	-7.86
Total benefits	25.24	26.93	29.36	32.55
Administrative expenses	1.19	1.19	1.28	1.31
Incurred expenditures	26.43	28.12	30.64	33.86
Value of interest	-.65	-.65	-1.19	-1.21
Contingency margin for projection error and to amortize the surplus or deficit	1.22	1.73	1.55	-1.65
Monthly actuarial rate	$27.00 1/	$29.20	$31.00	$31.00

1/ This rate, although originally promulgated for the 12-month period ending June 30, 1984, was modified by Pub. L. 98-21 to apply only to the 6-month period ending December 31, 1983.

TABLE 4--DERIVATION OF MONTHLY ACTUARIAL RATE FOR DISABLED ENROLLEES
FINANCING PERIODS ENDING DECEMBER 31, 1983 THROUGH DECEMBER 31, 1986

	Financing Periods			
	July 1, 1983 through December 31, 1983	January 1, 1984 through December 31, 1984	January 1, 1985 through December 31, 1985	January 1, 1986 through December 31, 1986
Covered services (at level recognized):				
Physicians' reasonable charges	$33.88	$35.92	$38.79	$42.77
Radiology and pathology	1.06	1.03	1.10	1.21
Outpatient hospital and other institutions	19.21	21.56	25.24	27.88
Home health agencies	.00	.00	.00	.00
Group practice prepayment plans	0.49	0.59	0.77	1.01
Independent lab	0.79	1.11	1.44	1.58
Total services	55.43	60.21	67.34	74.45
Cost-Sharing:				
Deductible	-2.30	-2.34	-2.35	-2.36
Coinsurance	-10.63	-11.47	-12.79	-14.19
Total benefits	42.50	46.40	52.20	57.90
Administrative expenses	1.97	2.05	2.28	2.34
Incurred expenditures	44.47	48.45	54.48	60.24
Value of interest and other income	-3.61	-3.67	-5.62	-5.15
Contingency margin for projection error and to amortize the surplus or deficit	5.24	9.52	3.84	-14.29
Monthly actuarial rate	$46.10 1/	$54.30	$52.70	$40.80

1/ This rate, although originally promulgated for the 12-month period ending June 30, 1984, was modified by Pub. L. 98-21 to apply only to the 6-month period ending December 31, 1983.

4. Sensitivity Testing

Several factors contribute to uncertainty about future trends in medical care costs. In view of this, it seems appropriate to test the adequacy of the rates announced here using alternative assumptions. The most unpredictable factors that contribute significantly to future costs are outpatient hospital costs, physician residual (as defined in Table 2), and increases in physician fees as constrained by the program's reasonable charge screens and economic index. Two alternative sets of assumptions and the results of those assumptions are shown in Table 5. One set represents increases that are lower and is, therefore, more optimistic than the current estimate. The other set represents increases that are higher and is, therefore, more pessimistic than the current version. The values for the alternative assumptions were determined from a study on the average historical error in the respective increase factors. All assumptions not shown in Table 5 are the same as in Table 2.

Table 5 indicates that, under the assumptions used in preparing this report, the monthly actuarial rates will result in an excess of assets over liabilities of $5,799 million by the end of December 1986. This amounts to 19.4 percent of the estimated total incurred expenditures for the following year. Assumptions which are somewhat more pessimistic (and, therefore, test the adequacy of the assets to accommodate projection errors), produce a surplus of $2,422 million by the end of December 1986, which amounts to 7.4 percent of the estimated total incurred expenditures for the following year. Under fairly optimistic assumptions, the monthly actuarial rates will result in a surplus of $8,983 by the end of December 1986, which amounts to 32.8 percent of the estimated total incurred expenditures for the following year.

TABLE 5--PROJECTION FACTORS AND THE ACTUARIAL STATUS OF THE SMI TRUST FUND UNDER ALTERNATIVE SETS OF ASSUMPTIONS FOR FINANCING PERIODS THROUGH DECEMBER 31, 1986

	This Projection			Low Cost Projection			High Cost Projection		
	12-month periods ending June 30,			12-month periods ending June 30,			12-month periods ending June 30,		
	1985	1986	1987	1985	1986	1987	1985	1986	1987
Projection factors (in percent): 1/									
Physician services - fees 2/									
Aged	0.7	5.1	4.8	0.2	4.6	4.1	1.2	5.6	5.5
Disabled	0.7	5.1	4.8	0.2	4.6	4.1	1.2	5.6	5.5
Physician services - Residual 3/									
Aged	3.0	3.6	3.7	1.5	1.9	1.4	4.5	5.3	6.0
Disabled	4.3	5.7	5.7	0.3	0.7	0.7	8.3	10.7	10.7
Outpatient hospital services									
Aged	7.5	14.8	14.9	2.5	7.8	4.9	12.5	21.8	24.9
Disabled	11.3	17.2	15.1	3.3	7.2	5.1	19.3	27.2	25.1

	As of December 31,			As of December 31,			As of December 31,		
	1984	1985	1986	1984	1985	1986	1984	1985	1986
Actuarial status (in millions):									
Assets	$9,698	$11,436	$9,892	$9,698	$12,276	$12,600	$9,698	$10,573	$7,013
Liabilities	$3,090	$3,586	$4,093	$2,832	$3,240	$3,617	$3,350	$3,938	$4,591
Assets less liabilities	$6,608	$7,850	$5,799	$6,866	$9,036	$8,983	$6,348	$6,635	$2,422
Ratio of assets less liabilities to expenditures (in percent) 4/	28.1	29.5	19.4	30.4	36.5	32.8	26.0	23.2	7.4

1/ All All values are per enrollee.
2/ As recognized for payment under the program.
3/ Increase in the number of services received per enrollee and greater relative use of more expensive services.
4/ Ratio of assets less liabilities at the end of the year to total incurred expenditures during the following year, expressed as a percent.

5. Standard Premium Rate

For calendar years 1984 through 1987, the law provides that the standard monthly premium rate for both aged and disabled enrollees shall be 50 pecent of the monthly actuarial rate for enrollees age 65 and older. Therefore, the standard monthly premium rate for both aged and disabled enrollees for calendar year 1986 is $15.50 which is 50 percent of the monthly actuarial rate for this period ($31.00).

APPENDIX C

STATEMENT OF ACTUARIAL OPINION

It is my opinion that (1) the methodology used herein is based upon sound principles of actuarial practice and (2) all the assumptions used and the resulting cost estimates are in the aggregate reasonable for the purpose of evaluating the actuarial and financial status of the Federal Supplementary Medical Insurance Trust Fund, taking into account the experience and expectations of the program.

Roland E. King
Fellow of the Society of Actuaries
Member of the American Academy of Actuaries
Chief Actuary,
Health Care Financing Administration

○