SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO

The Report of the
ANNUAL ACTUARIAL VALUATION
June 30, 1989

(Corrected Report)

GABRIEL, ROEDER, SMITH & COMPANY

OUTLINE OF CONTENTS

Report of Annual Actuarial Valuation of Ohio SERS

GABRIEL, ROEDER, SMITH & COMPANY
Actuaries & Consultants

200 Globe Building • 407 East Fort • Detroit, Michigan 48226 • 313-961-3346

December 29, 1989
(Correction of December 7 Report)

The Board of Trustees
School Employees Retirement System of Ohio
Columbus, Ohio

Ladies and Gentlemen:

Submitted in this report are the results of the June 30, 1989 actuarial valuation of the School Employees Retirement System of Ohio, as amended.

The necessary statistical data on which the valuation was based was furnished by your Director and his staff.

Their cooperation in furnishing the materials needed for this valuation is acknowledged with appreciation.

The financial assumptions used in making the actuarial valuation are shown in the Appendix of this report. The financial assumptions for Basic Benefits were revised for the June 30, 1986 valuation; the assumed premiums for Health Care coverages are changed annually as premiums are changed by health care providers (pages 42 & 43).

Your attention is directed particularly to:

COMMENTS on pages 3A - 3B.
Financial Principles on pages 4-5;
Computed Employer Contribution Rates on pages 25 & 31;
Short Condition Tests on pages 26 & 33;

Respectfully submitted,

Gerald B. Sonnenschein Richard G. Roeder

GBS:ct

FINANCIAL PRINCIPLES

COMMENTS

General Financial Objective. A sound general financial objective for any public employee retirement plan is to establish and receive contributions which, expressed as percents of active member payroll, will remain approximately level from generation to generation of citizens.

- -

In order to determine SERS present financial postion and level contribution rates for the future, annual actuarial valuations are made.

Assumptions concerning future financial experiences are needed for an actuarial valuation. These assumptions are established by the Board after consulting with the actuary.

A program of annual actuarial gain/loss analysis is in operation; these analyses determine the relationship between assumed financial experience and actual experience, for each major risk area.

- -

Statutory Employer Contribution Rate. The 14% of pay rate is now being allocated by SERS policy decision as follows: to Basic Benefits, the rate which will amortize unfunded actuarial accrued liabilities over 40 years, and to Health Care Benefits, the remainder of employer contributions.

- -

BASIC BENEFITS

On the basis of the 1989 valuation and the Basic Benefits and allocated contribution rates then in effect, it is our opinion that the Basic Benefits portion of SERS is in sound condition in accordance with actuarial principles of level cost financing. Supporting information is on page 25 and on page 26.

HEALTH CARE BENEFITS

Act 290 of 1988. A program was established to determine a minimum annual pay for use in calculating employer contribution dollars - - - a health care surcharge. This program recognizes that the percent-of-payroll costs of full health care benefits are significantly higher for SERS because SERS member pays are significantly lower than the member pays in other major Ohio retirement systems. Minimum annual pay for each future year is to be determined by actuarial valuation.

By SERS policy decision such minimum annual pay is to be calculated (1) using the minimum level percent funding method and (2) using for future health care inflation the same inflation assumption used for valuing Basic Benefits.

For the year beginning July 1, 1989 such minimum annual pay has been calculated to be $8,400.

The financial development of Health Care Benefits has been cause for continuing concern.

Initially, beginning in 1974, 0.75% was the contribution rate established for Health Care Benefits, and included in a total Employer Rate then 12.50%. Health Care contribution rates have been increased at various times since 1974. The increases in health care costs have been substantially more than inflation increases (see pages 42 & 43).

The employer contributions now being allocated to health care benefits are sufficient to provide level cost financing of the Health Care Benefits if future health care cost inflation does not exceed general price inflation. Page 31 has supporting information.

Promises Made, and To Be Paid For. As each year is completed, SERS in effect hands an "IOU" to each member then acquiring a year of service credit -- the "IOU" says: "The School Employees Retirement System of Ohio owes you one year's worth of retirement benefits, payments in cash commencing when you qualify for retirement."

The related key financial questions are:

Which generation of taxpayers contributes the money to cover the IOU?

The present taxpayers, who receive the benefit of the member's present year of service?

Or the future taxpayers, who happen to be in Ohio at the time the IOU becomes a cash demand, years and often decades later?

The law governing SERS financing intends that this year's taxpayers contribute the money to cover the IOUs being handed out this year. By following this principle, the employer contribution rate will remain approximately level from generation to generation --- our children and our grandchildren will contribute the same percents of active payroll we contribute now.

(There are systems which have a design for deferring contributions to future taxpayers, lured by a lower contribution rate now and putting aside the consequence that the contribution rate must then relentlessly grow much greater over decades of time -- consume now and let your children face your financial pollution after you retire.)

An inevitable by-product of the level-cost design is the accumulation of reserve assets for decades and the income produced when the assets are invested. Invested assets are a by-product and not the objective. Investment income becomes in effect the 3rd contributor for benefits to employees and is interlocked with the contribution amounts required from employees and employers.

Translated to actuarial terminology, this level-cost objective means that the contribution rates must total at least the following:

Current Cost (the cost of members' service being rendered this year)

... plus ...

Interest on Unfunded Accrued Liabilities (unfunded accrued liabilities are the difference between: liabilities for service already rendered; and the accrued assets of SERS).

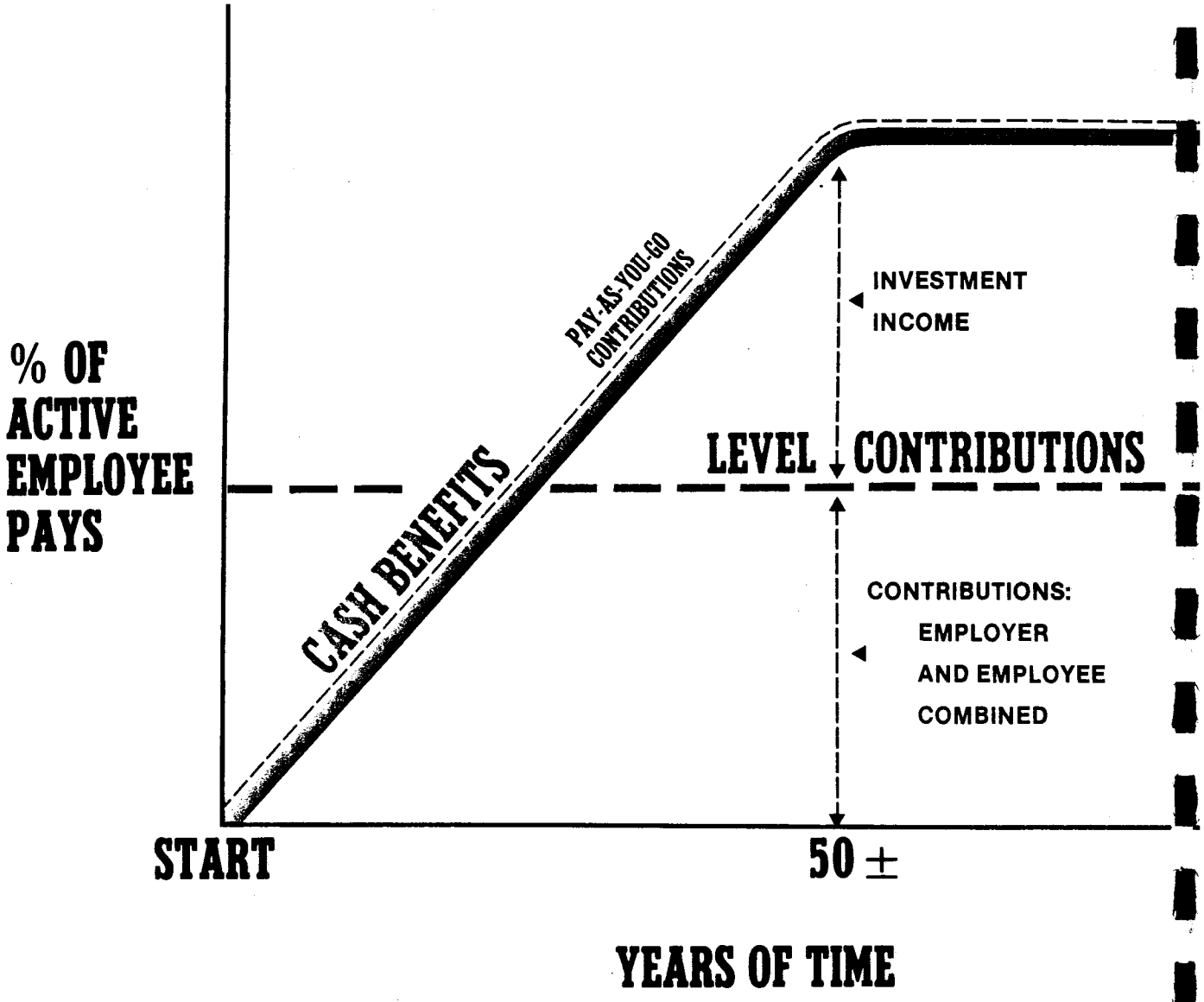
Computing Contributions to Support Fund Benefits. From a given schedule of benefits and from the employee data and asset data furnished him, the actuary determines the contribution rates to support the benefits, by means of an actuarial valuation and a funding method.

An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement.

In making an actuarial valuation, assumptions must be made as to what the above rates will be, for the next year and for decades in the future. The assumptions are established by the Retirement Board after consulting with the actuary.

Reconciling Differences Between Assumed Experience and Actual Experience. Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the wisdom of the assumptions or the skill of the actuary and the millions of calculations he made. The future can be predicted with considerable but not 100% precision, except for inflation which defies reliable prediction.

SERS copes with these continually changing differences by having annual actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continuing adjustments in financial position.



CASH BENEFITS LINE. **This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).**

LEVEL CONTRIBUTION LINE. **Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:**

Economic Risk Areas

- **Rates of investment return**
- **Rates of pay increase**
- **Changes in active member group size**

Non-Economic Risk Areas

- **Ages at actual retirement**
- **Rates of mortality**
- **Rates of withdrawal of active members (turnover)**
- **Rates of disability**

THE ACTUARIAL VALUATION PROCESS

The financing diagram on the opposite page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) and is thus an increasing contribution method; and the level contribution method, which equalizes contributions between the generations.

- -

The actuarial valuation is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

A. Covered Person Data, furnished by plan administrator

   Retired lives now receiving benefits

   Former employees with vested benefits not yet payable

   Active employees

B. + Asset data (cash & investments), furnished by plan administrator

C. + Assumptions concerning future financial experiences in various risk areas, which assumptions are established by the Board of Trustees after consulting with the actuary

D. + The funding method for employer contributions (the long-term planned pattern for employer contributions)

E. + Mathematically combining the assumptions, the funding method, and the data

F. = Determination of:

   Plan financial position and/or

   New Employer Contribution Rate

DATA FURNISHED

Retired members and survivors included in the valuation totaled 45,675. The 42,612 retirants and survivors of retirants as of June 30, 1989 were receiving annual benefits totaling $157,959,905 from the Annuity and Pension Reserve Fund. The 3,063 survivors of deceased active members as of June 30, 1989 were receiving annual benefits totaling $9,865,603 from the Survivor Benefit Fund.

Schedule 1.

Annuity and Pension Reserve Fund
Retirants and Beneficiaries June 30, 1989
Type of Benefit, Annual Amount
and Basic Benefit Actuarial Liabilities

Group	Number	% of Current Total $ Base Allowances	H.B. 204 and 284	Post-Retire. Increases	Current Total $	Actuarial Liabilities*
SUPERANNUATION RETIREMENT						
Straight Life Allowance - Benefit Terminating at Death						
Men	4,952	83.8%	0.8%	15.4%	$21,876,640	$168,828,092
Women	19,554	85.0	0.8	14.2	57,815,762	579,818,857
Totals	24,506				79,692,402	748,646,949
Option II Allowance - Joint and Survivor Benefits						
Men	6,195	88.1	0.3	11.6	35,800,311	417,496,854
Women	4,400	89.2	0.1	10.7	13,835,074	167,642,888
Totals	10,595				49,635,385	585,139,742
Option III Allowance - Life Benefits With Guaranteed Periods						
Men	758	81.6	0.8	17.6	3,061,229	24,176,064
Women	954	82.3	0.8	16.9	2,556,806	25,607,338
Totals	1,712				5,618,035	49,783,402
Allowance to Survivor Beneficiary of Deceased Superannuation Retirant Who Elected Option II - Life Benefit						
Men	317	79.4	3.1	17.5	570,000	3,863,265
Women	2,147	78.7	1.9	19.4	6,113,027	55,688,882
Totals	2,464				6,683,027	59,552,147
Allowance to Survivor Beneficiary of Deceased Superannuation Retirant Who Elected Option III - Guaranteed Period Only						
Men	35	84.9	0.0	15.1	105,234	468,526
Women	96	81.2	0.1	18.7	370,205	1,347,611
Totals	131				475,439	1,816,137

* Includes allowance and lump sum death benefit.

(Schedule 1 completed on page 9)

Schedule 1. - completed

Annuity and Pension Reserve Fund

Retirants and Beneficiaries June 30, 1989

Type of Benefit, Annual Amount

and Basic Benefit Actuarial Liabilities

Group	Number	% of Current Total $ Base Allowances	H.B. 204 and 284	Post-Retire. Increases	Current Total $	Actuarial Liabilities*
Total for Superannuation Allowances Being Paid						
Men	12,257	86.2%	0.5%	13.3%	$ 61,413,414	$ 614,832,801
Women	27,151	85.1	0.8	14.1	80,690,874	830,105,576
Totals	39,408				142,104,288	1,444,938,377
DISABILITY RETIREMENT						
Straight Life Allowance - Benefit Terminating at Death						
Men	1,218	86.3	0.4	13.3	8,572,874	88,715,322
Women	1,986	86.0	0.5	13.5	7,282,743	86,204,305
Totals	3,204				15,855,617	174,919,627
TOTAL BENEFITS BEING PAID FROM ANNUITY AND PENSION RESERVE FUND						
Men	13,475	86.2	0.5	13.3	69,986,288	703,548,123
Women	29,137	85.2	0.7	14.1	87,973,617	916,309,881
Totals	42,612				157,959,905	1,619,858,004

* Includes allowance and lump sum death benefit.

Schedule 2.

Annuity and Pension Reserve Fund

Retirants June 30, 1989

Current Annual Total $ By Attained Ages

Attained Ages	Superannuation No.	Superannuation Annual Total $	Disability No.	Disability Annual Total $	Totals No.	Totals Annual Total $
25-29		$	2	$ 27,203	2	$ 27,203
30-34			15	135,380	15	135,380
35-39			50	544,823	50	544,823
40-44			102	869,887	102	869,887
45-49	7	115,333	183	1,256,537	190	1,371,870
50-54	102	1,606,430	365	2,246,041	467	3,852,471
55-59	435	5,093,674	604	3,219,977	1,039	8,313,651
60-64	5,551	23,794,239	778	3,636,182	6,329	27,430,421
65-69	10,071	39,963,935	610	2,492,350	10,681	42,456,285
70-74	9,037	31,023,886	330	989,303	9,367	32,013,189
75-79	6,384	18,839,328	116	302,785	6,500	19,142,113
80-84	3,303	9,210,320	41	105,873	3,344	9,316,193
85-89	1,318	3,507,865	7	19,195	1,325	3,527,060
90-94	451	1,304,133	1	10,081	452	1,314,214
95-99	122	367,314			122	367,314
100	8	40,665			8	40,665
101	5	15,108			5	15,108
102	2	8,785			2	8,785
103	3	5,217			3	5,217
104	5	19,617			5	19,617
105	3	12,893			3	12,893
106	1	4,633			1	4,633
107	3	7,469			3	7,469
108	2	4,978			2	4,978
Totals	36,813	134,945,822	3,204	15,855,617	40,017	150,801,439

Schedule 3.

Annuity and Pension Reserve Fund

Survivors of Retirants June 30, 1989

Current Annual Total $ By Attained Ages

Attained Ages	Life Annuities		Periods Certain		Totals	
	No.	Annual Total $	No.	Annual Total $	No.	Annual Total $
Under 20	1	$ 2,629	2	$ 5,654	3	$ 8,283
20-24	2	9,460	2	7,865	4	17,325
25-29	1	674	2	7,898	3	8,572
30-34	5	3,050	1	2,971	6	6,021
35-39	6	25,660	3	5,915	9	31,575
40-44	8	7,414	6	25,677	14	33,091
45-49	14	47,499	3	2,247	17	49,746
50-54	19	71,061	2	2,524	21	73,585
55-59	49	164,994	5	13,418	54	178,412
60-64	163	628,179	15	44,164	178	672,343
65-69	394	1,203,301	34	122,763	428	1,326,064
70-74	611	1,600,042	40	162,192	651	1,762,234
75-79	551	1,329,217	15	71,687	566	1,400,904
80-84	371	864,523	1	464	372	864,987
85-89	175	466,769			175	466,769
90-94	77	218,986			77	218,986
95-99	16	38,616			16	38,616
100	1	953			1	953
Totals	2,464	6,683,027	131	475,439	2,595	7,158,466

Schedule 4.

Survivor Benefit Fund

Beneficiaries June 30, 1989

Annual Amounts and
Basic Benefit Actuarial Liabilities

Group	Number	% of Current Total $ Basic Allowances	H.B. 204 and 284	Post-Retire. Increases	Current Total $	Actuarial Liabilities*
Benefits Being Paid From Survivor Benefit Fund						
Men	780	87.9%	0.1%	12.0%	$1,973,399	$15,668,550
Women	2,283	82.5	0.6	16.9	7,892,204	60,845,787
Totals	3,063				9,865,603	76,514,337

* Includes allowance only. Also includes liabilities for beneficiaries in black-out who are not represented in other statistics on this page.

Schedule 5.

Survivor Benefit Fund

Survivors of Deceased Active Members June 30, 1989

Current Annual Total $ By Attained Ages

Attained Ages	No.	Annual Total $
Under 20	29	$ 96,990
20-24	10	55,658
25-29	6	34,791
30-34	18	126,838
35-39	32	185,808
40-44	60	320,586
45-49	73	351,784
50-54	124	547,357
55-59	228	947,472
60-64	431	1,412,260
65-69	621	1,914,322
70-74	577	1,627,966
75-79	427	1,081,321
80-84	276	679,015
85-89	108	316,830
90-94	36	136,886
95-99	7	29,719
Totals	3,063	9,865,603

Active members included in the valuation totaled 91,778, involving an annual payroll totaling $1,055,418,490. The schedules below and on the following 4 pages provide some detail from the data on active members.

Active Members in Valuation June 30, 1989

Groups	Number	Annual Payroll	Average Pay
Men	24,482	$ 409,578,601	$16,730
Women	67,296	645,839,889	9,597
Totals	91,778	1,055,418,490	11,500

- -

Reporting of active members. The persons included as active members in this June 30, 1989 valuation are those who had 4 or more months of credit during the year and were listed as active in SERS records. These 92,072 persons are a reasonable approximation of the persons covered during the year ended June 30; excluding the summer months of July and August. The SERS active members contributing during a month (ignoring July and August) ranged from a high of 92,987 (March) to a low of 87,854 (September). Members who SERS expects to retire from another Ohio System were excluded, reducing the active group to 91,778.

- -

Also included in the valuation were 7,225 inactive members eligible for deferred retirement allowances (including 610 whose retirement applications were pending at June 30), and inactive members eligible for a contribution refund only (including 36,757 who had completed 1 or more years of employment before terminating).

Schedule 6.

School Employees Retirement System of Ohio

TOTAL Active Members as of June 30, 1989

By Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	108							108	$ 614,169
20-24	1,779	90						1,869	15,091,525
25-29	3,913	1,147	175					5,235	59,169,132
30-34	6,127	2,347	1,227	92				9,793	108,437,405
35-39	7,815	3,068	1,538	686	52			13,159	136,569,947
40-44	6,566	4,124	2,616	925	265	23		14,519	157,669,349
45-49	3,835	3,209	3,534	2,022	511	114	15	13,240	153,997,526
50-54	2,722	2,325	3,175	2,807	1,414	253	97	12,793	157,236,018
55-59	1,997	1,691	2,249	2,748	2,030	419	128	11,262	142,163,749
60	337	285	437	324	412	86	33	1,914	25,167,914
61	324	302	318	303	355	102	28	1,732	22,859,389
62	229	220	228	294	283	131	42	1,427	19,344,834
63	186	178	199	217	209	98	23	1,110	14,853,028
64	168	183	141	160	197	74	16	939	11,628,907
65	122	109	105	157	156	60	21	730	9,662,623
66	106	73	78	131	90	40	14	532	6,328,101
67	92	47	67	53	52	23	18	352	3,709,853
68	62	39	47	69	64	21	12	314	3,342,265
69	61	45	36	40	42	21	15	260	2,828,641
70 & Over	118	69	80	71	79	32	41	490	4,744,115
Totals	36,667	19,551	16,250	11,099	6,211	1,497	503	91,778	1,055,418,490

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 45.2 years.

Service: 8.5 years.

Annual Pay: $11,500.

Schedule 7.

School Employees Retirement System of Ohio

MALE Active Members as of June 30, 1989

By Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	43							43	$ 267,619
20-24	789	41						830	7,507,267
25-29	1,464	705	107					2,276	31,958,133
30-34	1,596	1,014	736	55				3,401	56,717,472
35-39	1,437	862	641	394	19			3,353	58,962,057
40-44	1,130	814	483	352	145	13		2,937	54,471,763
45-49	939	616	388	307	236	71	5	2,562	46,212,025
50-54	916	626	424	275	301	177	61	2,780	49,290,657
55-59	891	645	457	353	322	173	92	2,933	50,795,245
60	177	136	118	54	64	35	21	605	10,809,326
61	181	121	69	68	66	25	16	546	9,510,917
62	124	115	78	68	50	45	18	498	8,469,512
63	102	99	66	46	37	25	10	385	6,572,269
64	100	95	56	29	42	14	10	346	5,188,243
65	71	64	37	37	18	18	10	255	3,980,862
66	65	34	21	17	18	13	8	176	2,588,222
67	52	21	24	6	6	8	11	128	1,502,133
68	33	18	13	15	11	5	4	99	1,162,679
69	41	27	11	13	9	6	6	113	1,400,284
70 & Over	74	47	38	17	18	8	14	216	2,211,916
Totals	10,225	6,100	3,767	2,106	1,362	636	286	24,482	409,578,601

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 44.3 years.

Service: 8.2 years.

Annual Pay: $16,730.

Schedule 8.

School Employees Retirement System of Ohio

FEMALE Active Members as of June 30, 1989

By Attained Age and Years of Service

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	65							65	$ 346,550
20-24	990	49						1,039	7,584,258
25-29	2,449	442	68					2,959	27,210,999
30-34	4,531	1,333	491	37				6,392	51,719,933
35-39	6,378	2,206	897	292	33			9,806	77,607,890
40-44	5,436	3,310	2,133	573	120	10		11,582	103,197,586
45-49	2,896	2,593	3,146	1,715	275	43	10	10,678	107,785,501
50-54	1,806	1,699	2,751	2,532	1,113	76	36	10,013	107,945,361
55-59	1,106	1,046	1,792	2,395	1,708	246	36	8,329	91,368,504
60	160	149	319	270	348	51	12	1,309	14,358,588
61	143	181	249	235	289	77	12	1,186	13,348,472
62	105	105	150	226	233	86	24	929	10,875,322
63	84	79	133	171	172	73	13	725	8,280,759
64	68	88	85	131	155	60	6	593	6,440,664
65	51	45	68	120	138	42	11	475	5,681,761
66	41	39	57	114	72	27	6	356	3,739,879
67	40	26	43	47	46	15	7	224	2,207,720
68	29	21	34	54	53	16	8	215	2,179,586
69	20	18	25	27	33	15	9	147	1,428,357
70 & Over	44	22	42	54	61	24	27	274	2,532,199
Totals	26,442	13,451	12,483	8,993	4,849	861	217	67,296	645,839,889

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 45.5 years.

Service: 8.6 years.

Annual Pay: $9,597.

Schedule 9.

School Employees Retirement System of Ohio

Active Members as of June 30, 1989 by Annual Pay

Annual Pay	Number of Active Members			Portion of Total Number	
	Men	Women	Total	This Group	Cumulative
Less than $1,000	749	2,922	3,671	4%	4%
$ 1,000 - $ 1,999	677	3,412	4,089	4	8
2,000 - 2,999	731	4,500	5,231	6	14
3,000 - 3,999	754	3,952	4,706	5	19
4,000 - 4,999	765	3,678	4,443	5	24
5,000 - 5,999	746	3,650	4,396	5	29
6,000 - 6,999	783	3,995	4,778	5	34
7,000 - 7,999	797	4,805	5,602	6	40
8,000 - 8,999	855	4,683	5,538	6	46
9,000 - 9,999	765	4,670	5,435	6	52
10,000 - 11,999	1,165	7,306	8,471	9	61
12,000 - 13,999	942	4,635	5,577	6	67
14,000 - 15,999	1,148	4,049	5,197	6	73
16,000 - 17,999	1,987	3,422	5,409	6	79
18,000 - 19,999	2,646	2,607	5,253	6	85
20,000 - 24,999	4,702	3,572	8,274	9	94
25,000 - 29,999	2,167	806	2,973	3	97
30,000 and over	2,103	632	2,735	3	100
Totals	24,482	67,296	91,778		

REPORTED ASSETS

The accrued assets at June 30, 1989 were reported to be $2,455,238,361 (cost basis).

Fund	Amount
Annuity and Pension Reserve Fund	$1,901,516,884
Survivors Benefit Fund	118,773,300
Employees Savings Fund	627,076,019
Employers Trust Fund	(191,770,713)
Total	2,455,238,361*

* Fund balances will not add to total due to adjustments made after system assets had been reported.

VALUATION ASSETS

The value of accrued assets (cash & investments) as of June 30, 1989 was determined on a market related basis. The method used recognizes 20% of the previously unrecognized gains and losses (both realized and unrealized). The present value of expected future payments for House Bills 284 and 204, $5,207,235, is added to obtain valuation assets.

Derivation of Valuation Assets

(a)	Cost value June 1988	$2,240,799,181
(b)	Cost value June 1989	2,455,238,361
(c)	Realized gains(losses)	26,060,014
(d)	Change in cost value net of (c): (b) - (a) - (c)	188,379,166
(e)	Valuation assets June 1988	2,338,065,974
(f)	Preliminary valuation assets June 1989: (d) + (e)	2,526,445,140
(g)	Market value June 1989	2,815,096,954
(h)	Unrecognized gains(losses): (g) - (f)	288,651,814
(i)	Adjustment toward market value: (.20) times (h)	57,730,363
(j)	Total valuation assets: (f) + (i)	2,584,175,503
(k)	Health reserve as % of cost value assets	5.8719%
(l)	Health care valuation assets: (j) x (k)	151,740,048
(m)	Present value of HB284 and 204 contributions	5,207,235
(n)	Basic benefits valuation assets: (j) + (m) - (l)	2,437,642,690

BASIC BENEFITS

School Employees Retirement System of Ohio

Outline of Benefit Eligibility and Amounts

BASIC BENEFITS

(outline last changed 6/30/89)

Service retirement. A member who (i) has attained age 60 years and has 5 or more years of total service credit, or (ii) has attained age 55 years and has 25 or more years of total service credit, or (iii) has 30 or more years of total service credit, may retire with a service retirement allowance.

Final average salary ("FAS") means the average of the annual earnings for the 3 highest years of compensation.

Service retirement allowance. A retiring member's service allowance is equal to total Ohio service credit times the greater of $86, or 2.1% of FAS (effective October 1, 1988). The allowance is then adjusted by factors based on attained age or years of service as determined in the following schedule:

Attained Birthday	OR	Years of Total Service Credit	Percentage of Base Amount
58		25	75%
59		26	80
60		27	85
61			88
		28	90
62			91
63			94
		29	95
64			97
65		30 or more	100

Maximum allowance is 90% of FAS.

Disability retirement. Upon becoming permanently disabled, after completion of at least 5 years of total service credit, but before attaining age 60, a member will receive a disability allowance computed in the same manner as a service allowance for a 65 year old, based upon the service the member would have had if he remained in employment to age 60. Maximum allowance is 75% of FAS, minimum allowance is 30% of FAS.

Death while eligible to retire. If a member dies in service after becoming eligible to retire with a service allowance and leaves a surviving spouse or other sole dependent beneficiary, the survivor receives the same amount that would have been paid had the member retired the last day of the month of death and elected the 100% joint and survivor form of payment.

Survivor (death-in-service) allowances. Upon the death of a member with at least 1 1/2 years of Ohio service credit and with at least 1/4 year of Ohio contributing service credit within the 2 1/2 years prior to the date of death, the following allowances are payable:

(a) Spouse without dependent child: A monthly allowance, commencing at age 62, or age 50 if the deceased member had 10 or more years of Ohio service credit. Allowance equals 25% of the deceased member's FAS. Minimum monthly allowance is $96, or $106 if deceased member had 10 or more years of Ohio service credit. Allowance terminates upon remarriage before age 62.

(b) Spouse with dependent child: An allowance of 40% of FAS is payable to the spouse of a deceased member while caring for 1 dependent child, with a minimum monthly allowance of $186. Allowance is 50% of FAS if 2 dependent children, or 55% of FAS if 3 dependent children, or 60% of FAS if 4 or more dependent children. Minimum monthly allowance is $236 for 2 or more children. A dependent child is defined to be an unmarried child under the age of 18, or 22 if attending an approved school.

(c) Orphans: A monthly allowance payable to each orphan child of the deceased member who is unmarried and under the age of 18, or 22 if attending an approved school. Allowances equal 25% of the deceased member's FAS for 1 child, an equal share of 40% of FAS if there are 2 children, an equal share of 50% of FAS if there are 3 children, an equal share of 55% of FAS if there are 4 children, or an equal share of 60% of final average salary if there are 5 or more children. Minimum monthly allowance is $96 for 1 child, $186 for 2 children, and $236 for 3 or more children.

(d) Dependent parent's allowance: A monthly allowance is payable to a dependent parent age 65 or more (earlier if mentally or physically incompetent) who received at least one-half support from the member during the 12 month period immediately preceding the member's death. Allowance equals 25% of FAS for 1 parent with a minimum monthly allowance of $96, and 40% of FAS shared equally for 2 parents with minimum monthly allowances totaling $186. If there are other qualified beneficiaries, a dependent parent receives a share of a total allowance indicated as in (b) above counting all qualified beneficiaries.

Death after retirement benefit. A $500 benefit is paid upon the death of each retirant. Upon the death of a disability retirant, a survivor allowance (described earlier) is paid.

Post-retirement increases.

Annual. Each July after June 30, 1971 or the annual anniversary established 12 months after the initial date of retirement, each allowance is increased to be equal to the initial allowance increased by 3.0% for each completed year of retirement; provided, the increased allowance cannot exceed the initial allowance adjusted for increases in the Consumers Price Index.

One time. Effective October 1, 1988 members who retired prior to February 1, 1983 will receive a 2% increase and members who retired from February 1, 1983 to September 1988 will receive a 5% increase.

Deferred benefits. If a member with at least 5 calendar years of contributing service credit leaves service before being eligible for an immediate monthly allowance and does not withdraw any part of his accumulated contributions, he will be entitled to a deferred allowance at age 60. The amount of the allowance is based on his credited service and final average salary at termination of employment.

Member contributions. Each member contributes 8.75% of his pay (increasing to 9% effective July 1, 1989), by payroll deductions. This rate was established by the Board of Trustees effective July 1, 1989. The maximum statutory rate is 10%.

Refund of members' accumulated contributions. In the event a member leaves service before any monthly benefits are payable on his behalf, his accumulated contributions are refunded upon application.

Employer contributions. Employer contributions are expressed as percents of member covered payroll. The maximum statutory rate is 14%. In addition, effective July 1, 1988, employers will pay a health care surcharge for any member whose annual pay is less than a minimum pay, determined by actuarial valuation. The surcharge is equal to 14% of the difference between the minimum pay and the member's pay, and then subject to pro-rate for partial service credit. For the year beginning July 1, 1989 the minimum annual pay is $8,400.

Computed actuarial accrued liabilities are one of the results of the actuarial valuation.

Schedule 10.

BASIC BENEFITS

Actuarial Accrued Liabilities June 30, 1989

Allocations Using Entry Age Actuarial Cost Method

Present Value Of	Entry Age Actuarial Accrued Liabilities
Future monthly benefits and death benefits to present retirants and survivors	$1,696,372,341
Monthly benefits and refunds to present inactive members	51,195,160
Service allowances to present active members	1,778,444,779
Disability allowances to present active members	49,687,805
Death-after-retirement benefit ($500) on behalf of present active members	1,584,793
Survivor benefits on behalf of present active members who die before retiring	48,153,271
Refunds of member contributions of present active members	32,337,117
Benefits for present active members	1,910,207,765
Entry Age Liabilities For Present Covered Persons	3,657,775,266
Valuation Assets	2,437,642,690
Liabilities to be Covered By Future Contributions	1,220,132,576

The Employer Contribution Rate for Basic Benefits has been established by the Board as normal cost plus a 40 year amortization of unfunded actuarial accrued liabilities. Please see page 46 for graph showing relationship between level cost financing and amortization periods.

Schedule 11.

BASIC BENEFITS

COMPOSITION OF EMPLOYER CONTRIBUTION RATE

Established By Statute & Board Action

June 30, 1989

Contributions For	Contributions Expressed as Percents of Payroll
Normal cost:	
Service allowances	10.31%
Disability allowances	0.78
Survivor benefits (SB Fund)	0.56
$500 death benefit	0.02
Total	11.67
Member contributions:	9.00
Less: Future refunds	2.22
Available for allowances	6.78
Employer Normal Cost	4.89
Unfunded Accrued Liabilities	
Minimum level % financing	3.27
Additional amount to fund over 40 years	1.56
Total	4.83
EMPLOYER CONTRIBUTION RATE ALLOCATED TO BASIC BENEFITS	9.72

SHORT CONDITION TEST

If the contributions to SERS are level in concept and soundly executed, the System will pay all promised benefits when due --- the ultimate test of financial soundness. Testing for level contribution rates is the long-term test.

A short condition test is one means of checking a system's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with:

1) Active member contributions on deposit;
2) The liabilities for future benefits to present retired lives;
3) The liabilities for service already rendered by active members.

In a system that has been following the discipline of level percent of payroll financing, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the System. Liability 3 being fully funded is rare.

Schedule 12.

BASIC BENEFITS

Short Condition Test

	Computed Actuarial Accrued Liabilities				Portion of Accrued Liabilities Covered by Assets		
June 30	(1) Member Contr.	(2) Retired Lives	(3) Present Members (Employer Financed Portion)	Valuation Assets	(1)	(2)	(3)
		($ in Millions)					
1982	$324	$ 829	$ 668	$1,116	100%	96%	0%
1983	352	909	726	1,221	100	96	0
1984	396	1,011	759	1,390	100	98	0
1985	433	1,126	846	1,564	100	100	1
1985*	433	1,101	888	1,564	100	100	3
1986	475	1,228	967	1,781	100	100	8
1987	524	1,341	1,034	2,007	100	100	14
1988	577	1,462	1,134	2,205	100	100	15
1988#	577	1,513	1,217	2,205	100	100	9
1989	627	1,696	1,335	2,438	100	100	9

* Revised financial assumptions.
\# Legislated benefit increases.

PENSION BENEFIT OBLIGATION
- BASIC BENEFITS -

The amount shown below as the "pension benefit obligation" is a standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future as a result of employee service to date. The measure is the actuarial present value of credited projected benefits and is intended to (i) help users assess the plan's funding status on a going-concern basis, (ii) assess progress being made in accumulating sufficient assets to pay benefits when due, and (iii) allow for comparisons among public employee retirement plans. The measure is independent of the actuarial funding method used to determine contributions to the plan.

The pension benefit obligation was determined as part of an actuarial valuation of the plan as of June 30, 1989. Significant actuarial assumptions used in determining the pension benefit obligation include (a) a rate of return on the investment of present and future assets of 9.5% per year compounded annually for the period July 1, 1989 through June 30, 1991 and 7.5% per year thereafter, (b) projected salary increases of 4.5% per year compounded annually, attributable to inflation, (c) additional projected salary increases ranging from 0.0% to 3.0% per year attributable to seniority/merit, varying by age, and (d) the assumption that retirement benefits will increase 3% per year after retirement.

At June 30, 1989, the pension benefit obligation was $3,346,562,826, determined as follows:

Pension Benefit Obligation:

Retirees	$1,619,858,004
Survivors currently receiving benefits	76,514,337
Terminated employees not yet receiving benefits	51,195,160
Current employees --	
Accumulated employee contributions including allocated investment income	627,076,019
Employer financed - Vested	919,454,119
Employer financed - Non-vested	52,465,187
Total Pension Benefit Obligation	3,346,562,826

During the year ended June 30, 1989 the plan experienced a net change of $329,475,811 in the basic benefits pension benefit obligation. Of that change, $0 was attributable to amendments and $0 was attributable to changes in assumptions.

CONTRIBUTIONS REQUIRED AND CONTRIBUTIONS MADE

- BASIC BENEFITS -

Employer contribution rates are set by Act of the State Legislature.

The adequacy of these rates is checked annually by actuarial valuation. The actuarial funding method used in making these actuarial valuations is the entry age actuarial method; unfunded actuarial accrued liabilities are amortized as a level percent of the active member payroll, over the period of future years which produces the statutory employer contribution rate. Assuming the amortization period is reasonable, the employer contribution rate so computed, expressed as a percent of active member payroll, is designed to accumulate sufficient assets to pay benefits when due.

The most recent completed actuarial valuation was based upon data as of June 30, 1989.

During the year ended June 30, 1989 contributions totaling $202,678,430 -- $104,772,920 employer, $96,818,734 employee and $1,086,776 from the State -- were made in accordance with contributions determined by State Statute. The employer contributions consisted of $48,011,878 for normal cost and $56,761,042 for amortization of the unfunded actuarial accrued liability. Employer contributions represented 9.58% of covered payroll.

Significant actuarial assumptions used to compute contribution requirements were the same as those used to compute the standardized measure of the pension benefit obligation.

Employer Contribution Comparative Schedule

Fiscal Year 6/30	Valuation Date 6/30	Contribution Rates As Percents of Valuation Payroll	Valuation Payroll	Dollar Contribution For Fiscal Year
1985	1984	8.12%	$737,375,080	$ 75,682,790
1986	1985	8.13	804,230,073	87,450,445
1987	1986	9.00	869,111,274	84,047,360
1988	1987	9.00	931,385,997	96,793,157
1989	1988	9.58	981,837,995	104,772,920

HEALTH CARE BENEFITS

School Employees Retirement System of Ohio

Outline of Benefit Eligibility and Amounts

HEALTH CARE BENEFITS

(outline last changed 6/30/88)

Health Care Insurance. 10 years of service credit required. Health insurance premiums are paid on behalf of each qualified individual receiving a monthly allowance from SERS, qualified survivor of deceased retirant or qualified survivor of deceased employee. Beginning for members retiring July 1, 1989 and later the member will pay a portion of the medical premiums.

Years of Service at Retirement	Member Portion
10-14	75%
15-19	50
20-24	25
25 +	0

This provision will be phased-in over 5 years and will not change once a member has retired. If the retirant or survivor elects to cover his dependents, the monthly retirement allowance is reduced by 50% of the insurance premiums for the dependents. The retired member's reduction will increase from 50% to 70% during a 5 year phase-in period beginning July 1, 1989.

The premiums provide coverages which may be changed from time to time. Effective January 1, 1983 an annual deductible was introduced. The deductible was increased effective January 1, 1985 and January 1, 1988. Second opinion and precertification requirements went into effect January 1, 1987. Effective January 1, 1987 health care is provided to a beneficiary of a deceased retirant only if the beneficiary was the retirant's spouse or dependent child.

Medicare Part B. Each retirant or survivor is reimbursed $24.80 per month for Part B Medicare premiums.

Mail Order Prescriptions. Health benefits include mail order prescription service with SERS paying the excess of the cost of each prescription over the base fee paid by the benefit recipient. The copayment was increased from $1 to $2 effective January 1, 1985 and to $6 effective March 1, 1988.

Schedule 13.

HEALTH CARE BENEFITS

Actuarial Accrued Liabilities June 30, 1989

Allocations Using Entry Age Actuarial Cost Method

Present Value Of	Entry Age Actuarial Accrued Liabilities
Future health benefits to present retirants and survivors	$ 640,130,851
Health benefits to present inactive members	39,000,452
Health benefits to present active members anticipated to retire with service allowance	431,450,388
Health benefits to present active members anticipated to retire with disability allowances	5,987,534
Health benefits to survivors of present active members who die before retiring	10,983,682
Benefits for present active members	448,421,604
Entry Age Liabilities For Present Covered Persons	1,127,552,907
Valuation Assets	151,740,048
Liabilities to be Covered By Future Contributions	975,812,859

The Employer Contribution Rate for Health Care Benefits has been established by the Board as the remainder of employer contributions after providing for contributions for Basic Benefits. Including the health care surcharge contribution, the allocated Health Care contribution is 5.53% of payroll. The contribution amount toward unfunded accrued liabilities is sufficient to provide level cost financing.

Schedule 14.

HEALTH CARE BENEFITS

COMPOSITION OF EMPLOYER CONTRIBUTION RATE

Established By Statute & Board Action

June 30, 1989

Contributions For	Contributions Expressed as Percents of Payroll
Normal cost:	
Service allowances	2.71%
Disability allowances	0.09
Survivor benefits (SB Fund)	0.11
Total	2.91
EMPLOYER CONTRIBUTION RATE ALLOCATED TO HEALTH CARE BENEFITS	5.53
Unfunded Accrued Liabilities: Total	2.62
Minimum level % financing	2.62
Margin for adverse experience	0.00

Schedule 15.

HEALTH CARE BENEFITS

A RELATIVE LEVEL COST INDEX*

Comparative Statement

Valuation As of 6/30	Cost Index*
1983	5.07%
1984	5.43
1985	5.40
1986	6.76
1987	7.69
1988#	6.48
1989	6.37

* Index equals normal cost plus 50 year amortization of unfunded accrued liability (the 50 year period is subjective judgement; there are many other reasonable periods, as illustrated by the graph on page 46).

Benefit changes.

SHORT CONDITION TEST

If the contributions to SERS are level in concept and soundly executed, the System will pay all promised benefits when due --- the ultimate test of financial soundness. Testing for level contribution rates is the long-term test.

A short condition test is one means of checking a system's progress under its funding program. In a short condition test, the plan's present assets (cash and investments) are compared with:

1) The liabilities for future benefits to present retired lives;

2) The liabilities for service already rendered by active members.

In a system that has been following the discipline of level percent of payroll financing, the liabilities for future benefits to present retired lives (liability 1) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 2) will be partially covered by the remainder of present assets. The larger the funded portion of liability 2, the stronger the condition of the System. Liability 2 being fully funded is rare.

Schedule 16.

HEALTH CARE BENEFITS

Short Condition Test

June 30	Computed Actuarial Accrued Liabilities (1) Retired Lives	(2) Present Members	Valuation Assets	Portion of Accrued Liabilities Covered by Assets (1)	(2)
	($ in Millions)				
1982	$243	$193	$86	35%	0%
1983	304	235	103	34	0
1984	361	266	108	30	0
1985	386	295	120	31	0
1985*	391	369	120	31	0
1986	461	404	131	28	0
1987	562	489	137	24	0
1988	623	569	139	22	0
1988#	584	467	139	24	0
1989*	640	488	152	24	0

* Revised financial assumptions.

\# Benefit changes.

Schedule 17.

Composition of Health Care Costs

June 30, 1989

Benefit	Age	Recipient		Combined
		Retiree	Other	
Medical	Under 65	22%	4%	26%
Medical	65 Plus	29	5	34
Medicare B	Under 65	--	--	--
Medicare B	65 Plus	15	2	17
Prescription	Under 65	3	0	3
Prescription	65 Plus	18	2	20
Combined	Under 65	25	4	29
Combined	65 Plus	62	9	71
Combined	All	87	13	100

PENSION BENEFIT OBLIGATION
- HEALTH CARE BENEFITS -

The amount shown below as the "pension benefit obligation" is a standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future as a result of employee service to date. The measure is the actuarial present value of credited projected benefits and is intended to (i) help users assess the plan's funding status on a going-concern basis, (ii) assess progress being made in accumulating sufficient assets to pay benefits when due, and (iii) allow for comparisons among public employee retirement plans. The measure is independent of the actuarial funding method used to determine contributions to the plan.

The pension benefit obligation was determined as part of an actuarial valuation of the plan as of June 30, 1989. Significant actuarial assumptions used in determining the pension benefit obligation include (a) a rate of return on the investment of present and future assets of 9.5% per year compounded annually for the period July 1, 1989 through June 30, 1991 and 7.5% per year thereafter, (b) projected salary increases of 4.5% per year compounded annually, attributable to inflation, (c) additional projected salary increases ranging from 0.0% to 3.0% per year attributable to seniority/merit, varying by age, and (d) the assumption that increases in the cost of heath insurance will average 4.5% per year indefinitely.

At June 30, 1989, the pension benefit obligation was $1,064,706,985, determined as follows:

Pension Benefit Obligation:	
Retirees	$ 589,208,498
Survivors currently receiving benefits	50,922,353
Terminated employees not yet receiving benefits	39,000,452
Current employees --	
Accumulated employee contributions including allocated investment income	--
Employer financed - Vested	371,562,051
Employer financed - Non-vested	14,013,631
Total Pension Benefit Obligation	1,064,706,985

During the year ended June 30, 1989 the plan experienced a net change of $73,840,951 in the basic benefits pension benefit obligation. Of that change, $0 was attributable to amendments and $0 was attributable to changes in assumptions.

CONTRIBUTIONS REQUIRED AND CONTRIBUTIONS MADE
- HEALTH CARE BENEFITS -

Employer contribution rates are set by Act of the State Legislature.

The adequacy of these rates is checked annually by actuarial valuation. The actuarial funding method used in making these actuarial valuations is the entry age actuarial method; unfunded actuarial accrued liabilities are amortized as a level percent of the active member payroll, over the period of future years which produces the statutory employer contribution rate. Assuming the amortization period is reasonable, the employer contribution rate so computed, expressed as a percent of active member payroll, is designed to accumulate sufficient assets to pay benefits when due.

The most recent completed actuarial valuation was based upon data as of June 30, 1989.

During the year ended June 30, 1989 contributions totaling $65,567,976 -- $65,567,976 employer, $0 employee -- were made in accordance with contributions determined by State Statute. The employer contributions consisted of $29,553,324 for normal cost and $36,014,652 for amortization of the unfunded actuarial accrued liability. Employer contributions represented 6.68% of covered payroll.

Significant actuarial assumptions used to compute contribution requirements were the same as those used to compute the standardized measure of the pension benefit obligation.

Employer Contribution Comparative Schedule

Fiscal Year 6/30	Valuation Date 6/30	Contribution Rates As Percents of Valuation Payroll	Valuation Payroll	Dollar Contribution For Fiscal Year
1985	1984	5.88%	$737,375,080	$39,066,642
1986	1985	5.87	804,230,073	43,057,551
1987	1986	5.00	869,111,274	50,986,665
1988	1987	5.00	931,385,997	48,991,823
1989	1988	5.81	981,837,995	65,567,976

APPENDIX

APPENDIX

SUMMARY OF

ASSUMPTIONS USED FOR SERS ACTUARIAL VALUATIONS

Assumptions Adopted by Board of Trustees After Consulting With Actuary

The actuarial assumptions used in making the valuation are shown in this Appendix of the report. The assumptions were revised as set forth in the Gabriel, Roeder, Smith and Company Investigation Report dated July 9, 1986.

ECONOMIC ASSUMPTIONS . . . . . .

The investment return rate used in making the valuations was 7.5% per year, compounded annually (net after administrative expenses), except that the SERS is assumed to earn 9.5% per year for the 2 years from July 1, 1989 through June 30, 1991. The real rate of return is the portion of total investment return which is more than the inflation rate. Based upon an assumed inflation rate of 4.5%, the 7.5% investment return rate translates to an assumed real rate of return of 3% (5% for the 2 years from July 1, 1989 through June 30, 1991).

Pay increase assumptions for individual active members are shown for sample ages in Schedule 18. Part of the assumption for each age is for merit and/or seniority increase, and the other 4.5% recognizes inflation.

The number of active members is assumed to continue at the present number.

Total active member payroll is assumed to increase 4.5% annually, which is the portion of the individual pay increase assumptions attributable to inflation.

Special assumptions for Health Care Coverages are shown in Schedule 22.

NON-ECONOMIC ASSUMPTIONS . . . . . .

The mortality table used in evaluating allowances to be paid and death before retirement benefits was the 1971 Group Annuity Mortality Table projected to 1984 unadjusted for men and set back 1 year for women. Related values are shown in Schedule 21.

The probabilities of retirement with an age and service allowance are shown in Schedule 20.

Eligibility for age and service retirement was assumed to be: age 50 with 30 or more years of service; or age 55 with 25 or more years of service, or age 60 with 5 or more years of service.

The probabilities of withdrawal from service, disablement and death-in-service are shown for sample ages in Schedule 19.

The entry age normal actuarial cost method of valuation was used in determining liabilities and normal cost.

Differences in the past between assumed experience and actual experience ("actuarial gains and losses") become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce payments (principal & interest) which are level percent of payroll contributions.

Employer contribution dollars were assumed to be paid in equal instalments throughout the System fiscal year. Surcharge contributions are assumed to be paid during the calendar year following the end of the applicable plan year.

- -

Present assets were valued on a market related basis, recognizing 20% of previously unrecognized gains and losses each year. See page 19 for detail.

The data about persons now covered and about present assets were furnished by the System's administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

- -

The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (M.A.A.A.).

Schedule 18.

Pay Increase Assumptions for an Individual Member

Sample Ages	Increase Next Year: Merit & Seniority	Base (Economy)	Total
20	3.0%	4.5%	7.5%
25	2.7	4.5	7.2
30	2.3	4.5	6.8
35	2.1	4.5	6.6
40	1.8	4.5	6.3
45	1.5	4.5	6.0
50	1.0	4.5	5.5
55	0.5	4.5	5.0
60	0.0	4.5	4.5
65	0.0	4.5	4.5

Schedule 19.

Separations From Active Employment Before Age & Service Retirement

Sample Ages	Percent of Active Members Separating Within the Next Year: Men: Death	Men: Disability	Men: Other	Women: Death	Women: Disability	Women: Other
20	0.05%	0.00%	13.91%	0.02%	0.00%	11.57%
25	0.06	0.00	10.67	0.03	0.00	8.94
30	0.07	0.01	6.55	0.04	0.00	6.59
35	0.10	0.04	5.43	0.05	0.01	5.82
40	0.15	0.10	4.64	0.07	0.05	5.07
45	0.27	0.18	3.84	0.11	0.08	4.31
50	0.49	0.33	3.06	0.17	0.15	3.55
55	0.78	0.63	2.27	0.25	0.47	2.79
60	1.21	--	2.02	0.41	--	2.46
65	1.95	--	2.02	0.73	--	2.46

Schedule 20.

Probabilities of Age & Service Retirement

Sample Ages	Percent of Eligible Active Members Retiring Within Next Year — Men
50	15%
55	10
60	10
65	40
70	50
75	100

Sample Ages	Percent of Eligible Active Members Retiring Within Next Year — Women
50	12%
55	18
60	25
65	35
70	50
75	100

Schedule 21.

Single Life Retirement Values

Sample Attained Ages	Present Value of $1 Monthly For Life Increasing 3.0% Annually (1st Increase After 1 Year) Men	Women	Future Life Expectancy (Years) Men	Women	Expected Total Lifetime Men	Women
50	$171.18	$191.98	27.53	34.60	77.53	84.60
55	156.74	180.48	23.28	29.92	78.28	84.92
60	140.21	166.28	19.27	25.34	79.27	85.34
65	121.85	149.39	15.55	20.94	80.55	85.94
70	102.90	129.87	12.25	16.79	82.25	86.79
75	84.92	108.66	9.50	13.02	84.50	88.02
80	67.78	88.12	7.17	9.85	87.17	89.85
85	53.37	69.03	5.43	7.24	90.43	92.24

Sample Attained Ages	Portion of Age 60 Lives Still Alive Men	Women	$1,000 Benefit Beginning at Age 60, Increasing 3% Annually
60	100%	100%	$1,000
65	93	97	1,150
70	82	93	1,300
75	67	86	1,450
80	48	73	1,600
85	28	55	1,750

Schedule 22.

Additional Assumptions for Health Care Coverages

Aetna conventional premium rates:

Status	Monthly Rates Reported 1989	1988
Benefit Recipient below age 65	$222.98	$208.00
Spouse below age 65*	48.24	45.00
Benefit recipient above age 65 and eligible for Medicare	45.02	42.00
Spouse above age 65 and eligible for Medicare*	14.79	13.80

* SERS portion - figures represent 30% ultimate SERS subsidy.

Availability of Medicare Coverage: All benefit recipients were assumed to be eligible for Medicare on attainment of age 65, or immediately if retired for disability.

Election of Joint and Survivor Benefits: 25% of eligible women and 60% of eligible men are assumed to elect a joint and survivor form of payment. Survivors of these retirants will receive fully paid health care for the remainder of their lives.

Election of Spouse Health Care Coverage: 25% of women retirants and 50% of men retirants are assumed to elect to cover spouses for health care. The System will pay the premium for dependents less a deduction during the life of the retirant.

Medicare Part B Premium Reimbursement: $24.80 per month.

Mail Order Prescription Service: $27.08 per month effective July 1, 1989 from $24.29.

- -

Premium Increases: Premiums and spouse coverage deductions (except for the fixed reimbursement for the Medicare Part B Premium) are assumed to increase 4.5% annually, which is the inflation rate assumed for other actuarial valuation computations.

Schedule 23.

Health Insurance Premiums

Monthly $ Reported For Annual Actuarial Valuations

Valuation Date 6/30	Benefit Recipient Under 65	Benefit Recipient 65+	Spouse* Under 65	Spouse* 65+	Mail Order Prescription	Medicare B Premiums
1980	$105.36	$31.02	$ 8.13	$ 2.51	$ N.A.	$ 9.60
1981	123.69	36.42	17.87	5.44	N.A.	11.00
1982#	117.82	25.97	57.34	7.74	3.05	12.20
1983@	148.10	35.63	81.09	11.03	6.27	14.60
1984#	148.10	35.63	81.09	11.03	8.83	15.50
1985#	148.10	35.63	81.09	11.03	11.24	15.50
1986#	169.86	35.33	83.38	19.35	14.55	17.90
1987@	202.13	42.04	109.67	26.07	19.40	24.80
1988#@	208.00	42.00	45.00	13.80	24.29	24.80
1989	222.98	45.02	48.24	14.79	27.08	24.80

COMPOUND ANNUAL
RATES OF INCREASE:

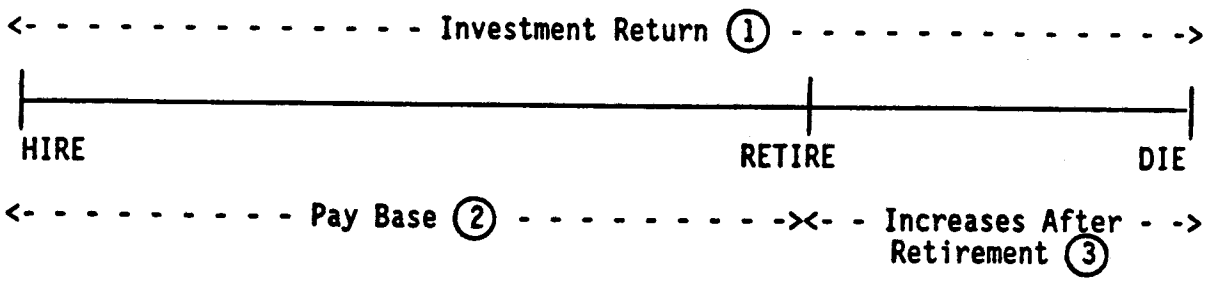
Last Year	7%	7%	7 %	7%	11%	0%
Last 5 Years	9	5	(10)	6	25	10
Since 6/30/80	9	4	22	22	-	11

* Employer portion.

\# Changes in deductible, hospital surcharge or cost containment measures.

@ Changes in deduction for dependent coverage.

RELATIONSHIP OF ECONOMIC ASSUMPTIONS IN COMPUTING CONTRIBUTIONS TO A RETIREMENT SYSTEM



(1) Investment Return. An increase in this assumption reduces computed contributions. The assumption operates over all parts of an employee's lifetime.

(2) Pay Base. An increase in this assumption increases computed contributions. A 1% increase in this assumption, however, does not increase contributions by as much as a 1% increase in Investment Return reduces computed contributions, because the Pay Base assumption operates only over an employee's lifetime to retirement.

(3) Increases After Retirement. An increase in this element increases computed contributions.

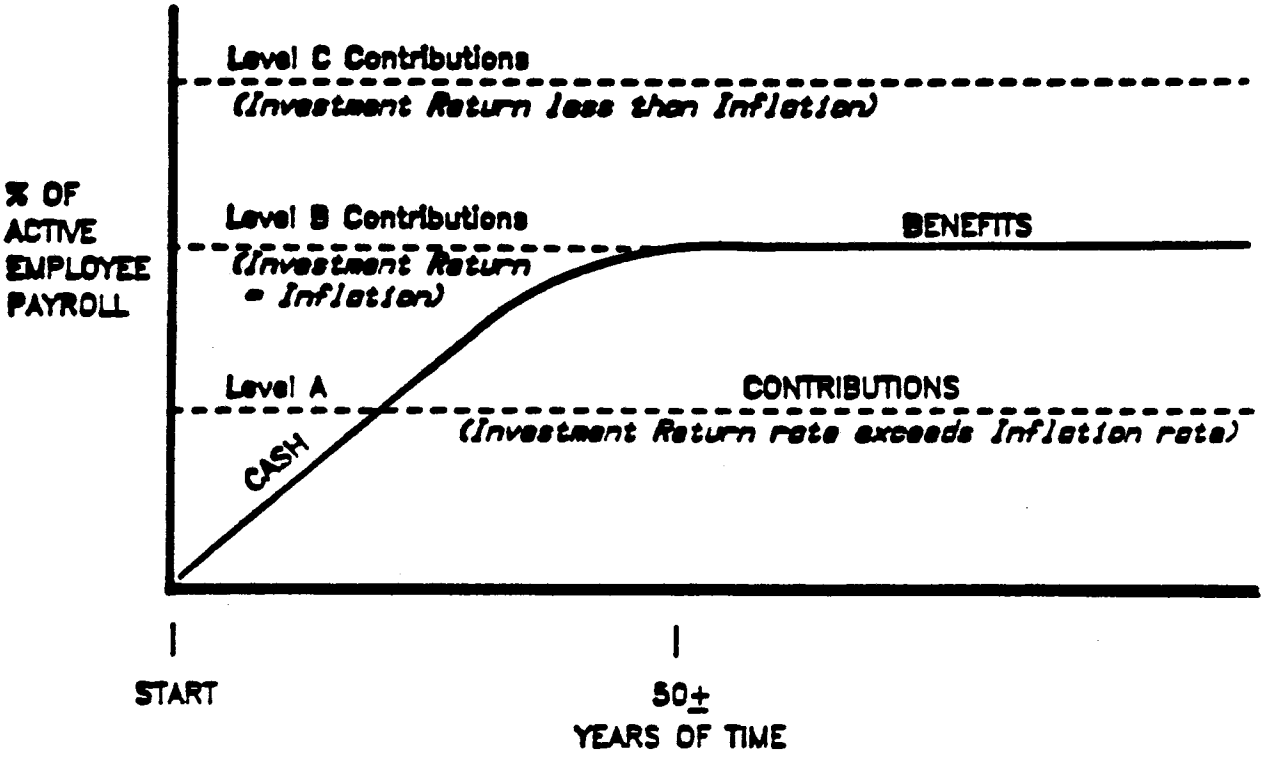
- -

If Investment Return, Pay Base, and Increases After Retirement are each increased by equal amounts, computed contributions remain the same (except in plans using Final Average Pay as a factor in computing benefits; the multi-year average used for Final Average Pay causes computed contributions to decrease slightly).

If Investment Return and Pay Base are increased by equal amounts, with no change in Increases After Retirement, computed contributions decrease - - significantly.

Where benefits are fixed dollar amounts, computed contributions are significantly reduced if Investment Return is increased.

The Importance of the Investment Return Rate Being More Than the Inflation Rate In Order to Achieve Practical Level Contribution Rates



"LEVEL A CONTRIBUTIONS" occur mathematically when the investment return rate from plan assets exceeds the inflation rate. The greater the excess, the lower the Level A line will be.

Historically, it is this assumed condition that has led to the development of and use of "actuarially sound" or "actuarial reserve" financing methods.

"Level B Contributions" occur mathematically when the investment return rate from plan assets equals the inflation rate.

Who would contribute a level rate which is the same as the ultimate contribution rate of "pay-as-you-go" financing?

"Level C Contributions" occur mathematically when the investment return rate from plan assets is less than the inflation rate. The greater the difference, the higher the Level C line would be.

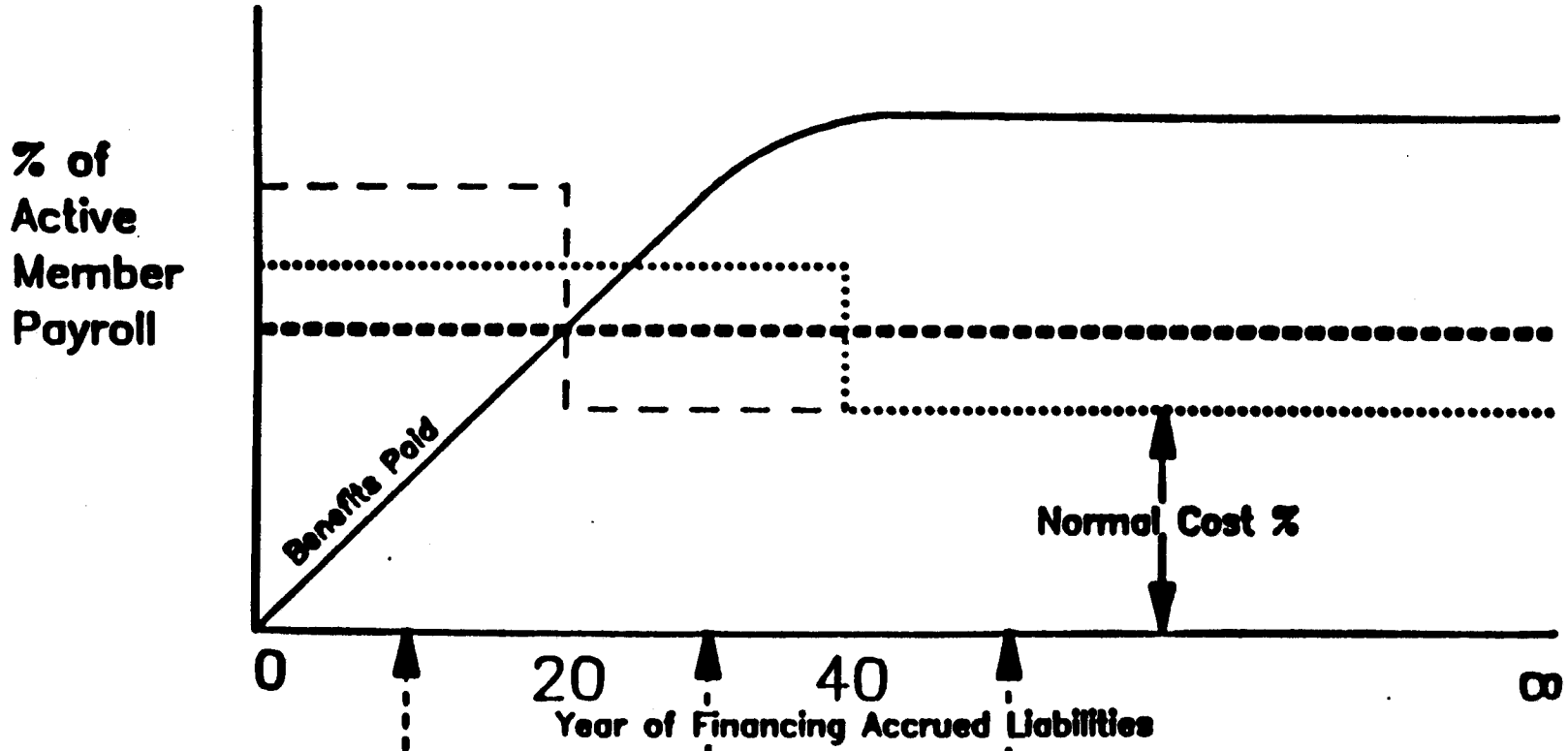
Who would contribute at a rate always more than the benefits paid?

TOTAL CONTRIBUTIONS FOR RETIREMENT BENEFITS
USING ALTERNATE FINANCING FOR ACCRUED LIABILITIES:

•••••• LEVEL % OF PAYROLL

— — — FULL AMORTIZATION OF UAAL OVER 20 YEARS

····· FULL AMORTIZATION OF UAAL OVER 40 YEARS



Total Contributions			
UAAL Over 20 Years	9.7%	5.0%	5.0%
UAAL Over 40 Years	8.0	8.0	5.0
LEVEL PERCENT	7.0	7.0	7.0

Gabriel Roeder, Smith & Co.
Actuaries & Consultants

Exhibit 20 **Basic Series** **Year-by-Year Total Returns (1926-1988)**

Red means a REAL Return less than 3%
[3% > (Total - Inflation)]

Year	Common Stocks	Small Company Stocks	Long-Term Corporate Bonds	Long-Term Government Bonds	Intermediate-Term Government Bonds	U.S. Treasury Bills	Consumer Price Index
1926	0.1162	0.0028	0.0737	0.0777	0.0538	0.0327	-0.0149
1927	0.3749	0.2210	0.0744	0.0893	0.0452	0.0312	-0.0208
1928	0.4361	0.3969	0.0284	0.0010	0.0092	0.0356	-0.0097
1929	-0.0842	-0.5136	0.0327	0.0342	0.0601	0.0475	0.0019
1930	-0.2490	-0.3815	0.0798	0.0466	0.0671	0.0241	-0.0603
1931	-0.4334	-0.4975	-0.0185	-0.0531	-0.0232	0.0107	-0.0952
1932	-0.0819	-0.0539	0.1082	0.1684	0.0881	0.0096	-0.1030
1933	0.5399	1.4287	0.1038	-0.0008	0.0182	0.0030	0.0051
1934	-0.0144	0.2422	0.1384	0.1002	0.0900	0.0016	0.0203
1935	0.4767	0.4019	0.0961	0.0498	0.0701	0.0017	0.0299
1936	0.3392	0.6480	0.0674	0.0751	0.0306	0.0018	0.0121
1937	-0.3503	-0.5801	0.0275	0.0023	0.0156	0.0031	0.0310
1938	0.3112	0.3280	0.0613	0.0553	0.0623	-0.0002	-0.0278
1939	-0.0041	0.0035	0.0397	0.0594	0.0452	0.0002	-0.0048
1940	-0.0978	-0.0516	0.0339	0.0609	0.0296	0.0000	0.0096
1941	-0.1159	-0.0900	0.0273	0.0093	0.0049	0.0006	0.0972
1942	0.2034	0.4451	0.0260	0.0322	0.0194	0.0027	0.0929
1943	0.2590	0.8837	0.0283	0.0208	0.0281	0.0035	0.0316
1944	0.1975	0.5372	0.0473	0.0281	0.0180	0.0033	0.0211
1945	0.3644	0.7361	0.0408	0.1073	0.0222	0.0033	0.0225
1946	-0.0807	-0.1163	0.0172	-0.0010	0.0100	0.0035	0.1817
1947	0.0571	0.0092	-0.0234	-0.0263	0.0091	0.0050	0.0901
1948	0.0550	-0.0211	0.0414	0.0340	0.0185	0.0081	0.0271
1949	0.1879	0.1975	0.0331	0.0645	0.0232	0.0110	-0.0180
1950	0.3171	0.3875	0.0212	0.0006	0.0070	0.0120	0.0579
1951	0.2402	0.0780	-0.0269	-0.0394	0.0036	0.0149	0.0587
1952	0.1837	0.0303	0.0352	0.0116	0.0163	0.0166	0.0088
1953	-0.0099	-0.0649	0.0341	0.0363	0.0323	0.0182	0.0063
1954	0.5262	0.6058	0.0539	0.0719	0.0268	0.0086	-0.0050
1955	0.3156	0.2044	0.0048	-0.0130	-0.0065	0.0157	0.0037
1956	0.0656	0.0428	-0.0681	-0.0559	-0.0042	0.0246	0.0286
1957	-0.1078	-0.1457	0.0871	0.0745	0.0784	0.0314	0.0302
1958	0.4336	0.6489	-0.0222	-0.0610	-0.0129	0.0154	0.0176
1959	0.1196	0.1640	-0.0097	-0.0226	-0.0039	0.0295	0.0150
1960	0.0047	-0.0329	0.0907	0.1378	0.1175	0.0266	0.0148
1961	0.2689	0.3209	0.0482	0.0097	0.0185	0.0213	0.0067
1962	-0.0873	-0.1190	0.0795	0.0689	0.0556	0.0273	0.0122
1963	0.2280	0.2357	0.0219	0.0121	0.0164	0.0312	0.0165
1964	0.1648	0.2352	0.0477	0.0351	0.0404	0.0354	0.0119
1965	0.1245	0.4175	-0.0046	0.0071	0.0102	0.0393	0.0192
1966	-0.1006	-0.0701	0.0020	0.0365	0.0468	0.0476	0.0335
1967	0.2398	0.8357	-0.0495	-0.0919	0.0101	0.0421	0.0304
1968	0.1106	0.3597	0.0257	-0.0026	0.0453	0.0521	0.0472
1969	-0.0850	-0.2505	-0.0809	-0.0508	-0.0074	0.0658	0.0611
1970	0.0401	-0.1743	0.1837	0.1210	0.1686	0.0653	0.0549
1971	0.1431	0.1650	0.1101	0.1323	0.0872	0.0439	0.0336
1972	0.1898	0.0443	0.0726	0.0568	0.0516	0.0384	0.0341
1973	-0.1466	-0.3090	0.0114	-0.0111	0.0460	0.0693	0.0880
1974	-0.2647	-0.1995	-0.0306	0.0435	0.0569	0.0800	0.1220
1975	0.3720	0.5282	0.1464	0.0919	0.0783	0.0580	0.0701
1976	0.2384	0.5738	0.1865	0.1675	0.1287	0.0508	0.0481
1977	-0.0718	0.2538	0.0171	-0.0067	0.0140	0.0512	0.0677
1978	0.0656	0.2346	-0.0007	-0.0116	0.0348	0.0718	0.0903
1979	0.1844	0.4346	-0.0418	-0.0122	0.0409	0.1038	0.1331
1980	0.3242	0.3988	-0.0262	-0.0395	0.0391	0.1124	0.1240
1981	-0.0491	0.1388	-0.0096	0.0185	0.0945	0.1471	0.0894
1982	0.2141	0.2801	0.4379	0.4035	0.2910	0.1054	0.0387
1983	0.2251	0.3967	0.0470	0.0068	0.0741	0.0880	0.0380
1984	0.0627	-0.0667	0.1639	0.1543	0.1402	0.0985	0.0395
1985	0.3216	0.2466	0.3090	0.3097	0.2033	0.0772	0.0377
1986	0.1847	0.0685	0.1985	0.2444	0.1514	0.0616	0.0113
1987	0.0523	-0.0930	-0.0027	-0.0269	0.0290	0.0547	0.0441
1988	0.1681	0.2287	0.1070	0.0967	0.0610	0.0635	0.0442

Past Investment Return and Inflation and Future Investment Return

Inflation Distortions

Inflation's impact on investment return is not even from year to year. A common expectation for Real Investment Return (Total Return minus Inflation) is in the area of 3% to 4% annually.

In the last 25 years Real Return was not only short of that mark, it was actually negative for parts of that period.

		Annual Investment Return (including income) ... REAL RETURN (Total minus Inflation) ...				
		Bonds (Long Term)		Cash		A
No. Years/ Ended December	Inflation (CPI)	US Treasury	Corporate (Sal Bro)	Equivalents (T-Bills)	Stocks (S&P 500)	SAMPLE FUND*
5/1964	1.2%	4.0%	4.5%	1.7%	9.5%	6.5%
5/1969	3.8	-5.9	-6.0	1.2	1.2	-2.0
5/1974	6.6	0.3	0.1	-0.6	-9.0	-4.1
5/1979	8.1	-3.2	-2.3	-1.5	6.6	1.8
5/1984	6.5	3.7	4.6	4.5	8.3	6.3
25/1984	**5.2**	**-0.3**	**0.1**	**1.1**	**3.1**	**1.6**
1/1984	4.0	11.5	12.4	5.9	2.3	7.2
1/1985	3.8	27.2	27.1	3.9	28.4	25.4
1/1986	1.1	23.3	18.7	5.0	17.3	16.7
1/1987	4.4	-7.1	-4.7	1.1	0.8	-1.6
1/1988	4.4	5.3	6.3	2.0	12.4	8.6
25/1988	**5.6**	**0.5**	**1.1**	**1.3**	**4.1**	**2.7**

* 10% Cash Equivalents + 45% Corporate Bonds + 45% Stocks (only one of many reasonable samples).

For most pension plans, Benefit Increases After Retirement have fallen short of keeping up with inflation. The retired life group has been hurt more than the active life group. The investment return necessary for the indexing of benefits after retirement has not been realized (and probably cannot be realized during a period of large inflation).

Changes In Economic Assumptions Within An Economic Environment of Inflation

There is powerful motivation to increase assumed Investment Return used in actuarial calculations, with or without a related increase in Employee Pay Base, because such an assumption change decreases computed contributions. A contribution rate decrease (i) offers relief for employer budget problems and/or (ii) offers a "no-cost" way to provide more Benefit Increases After Retirement.

The wisdom of Investment Return assumed for the future can be determined only by future events. Will the investment record of the next 25 years be the same as the last 25 years? Better? Worse?

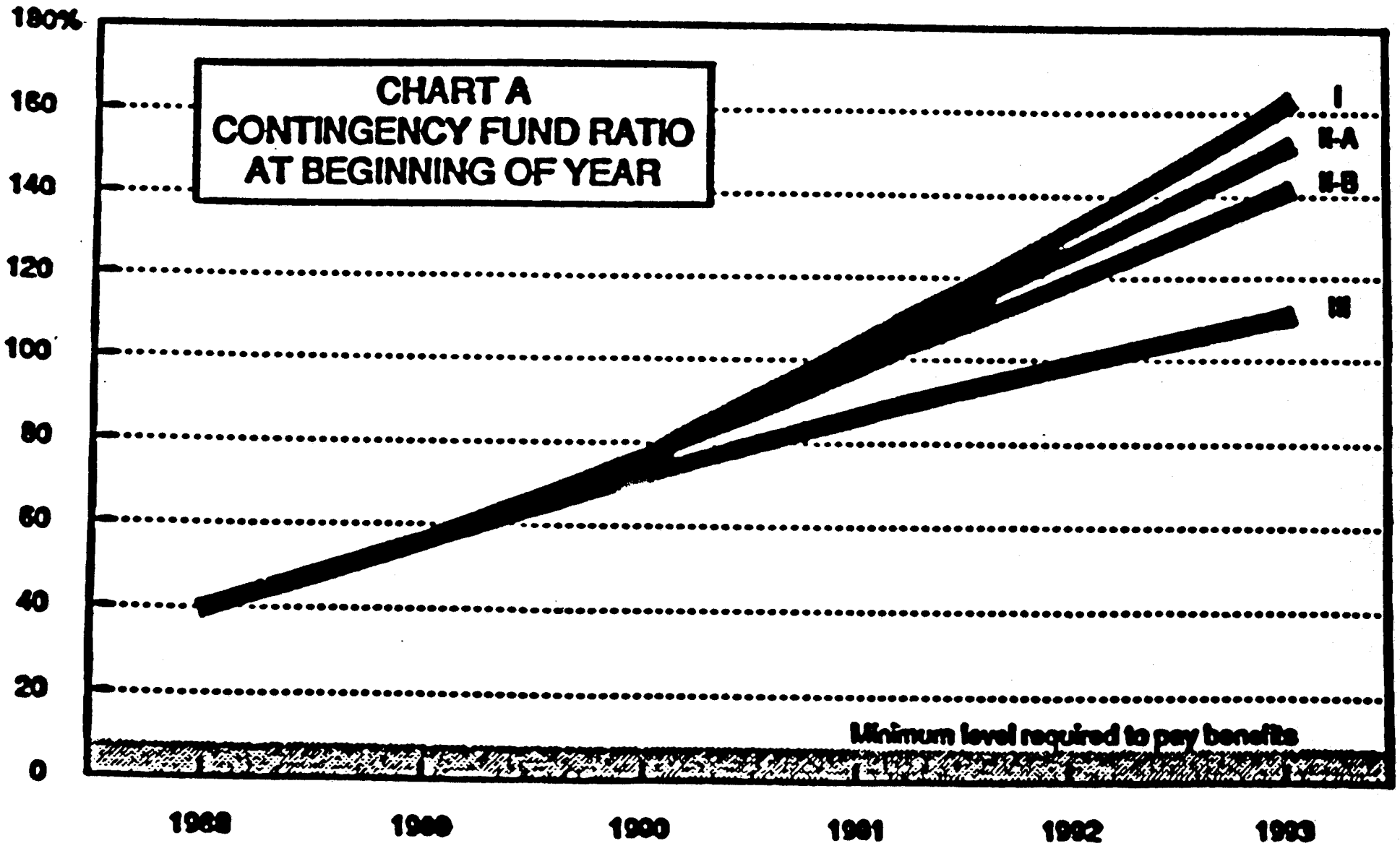


CHART A
CONTINGENCY FUND RATIO
AT BEGINNING OF YEAR
180%
160
140
120
100
80
60
40
20
0
I
II-A
II-B
III
Minimum level required to pay benefits
1988
1989
1990
1991
1992
1993

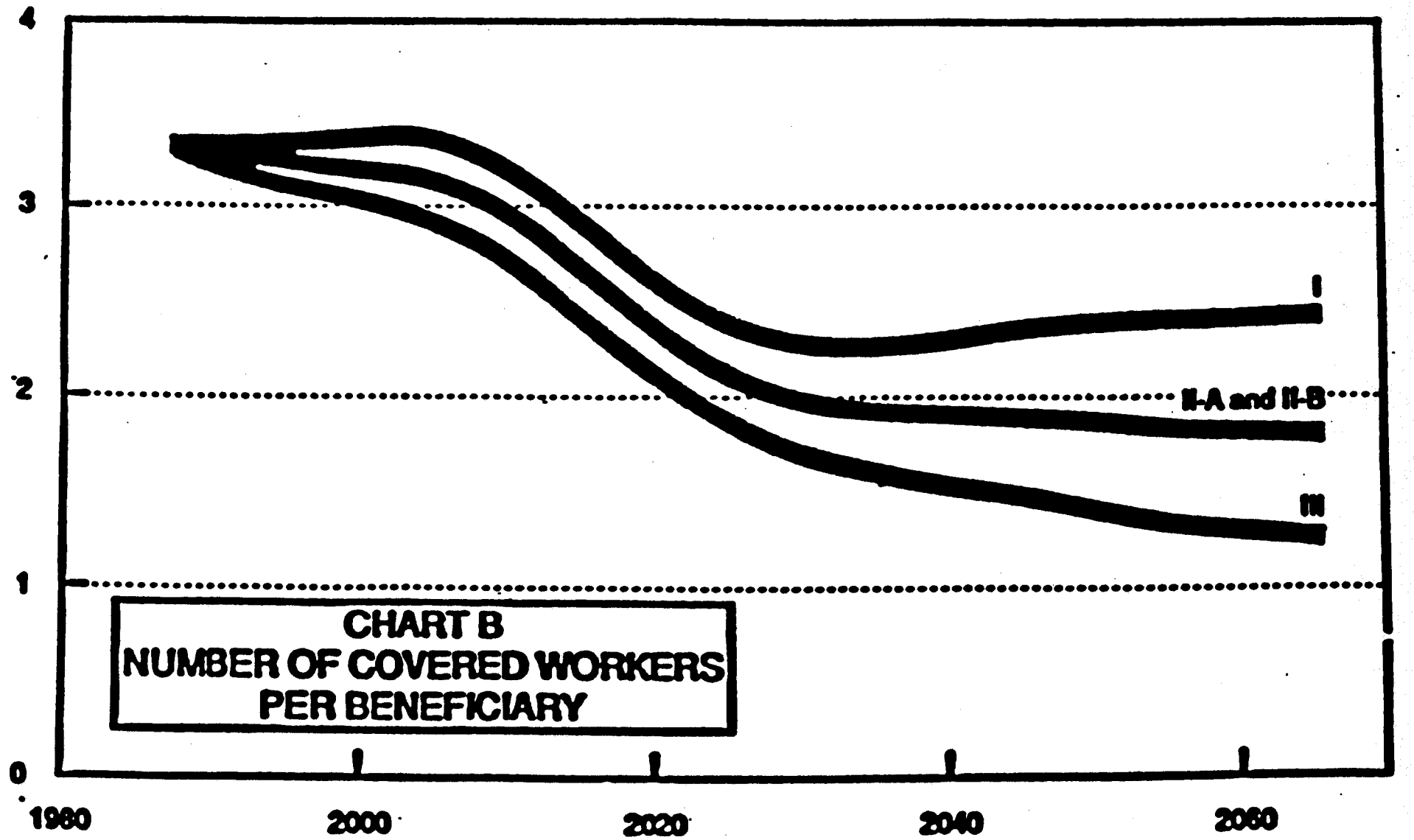


CHART B
NUMBER OF COVERED WORKERS PER BENEFICIARY

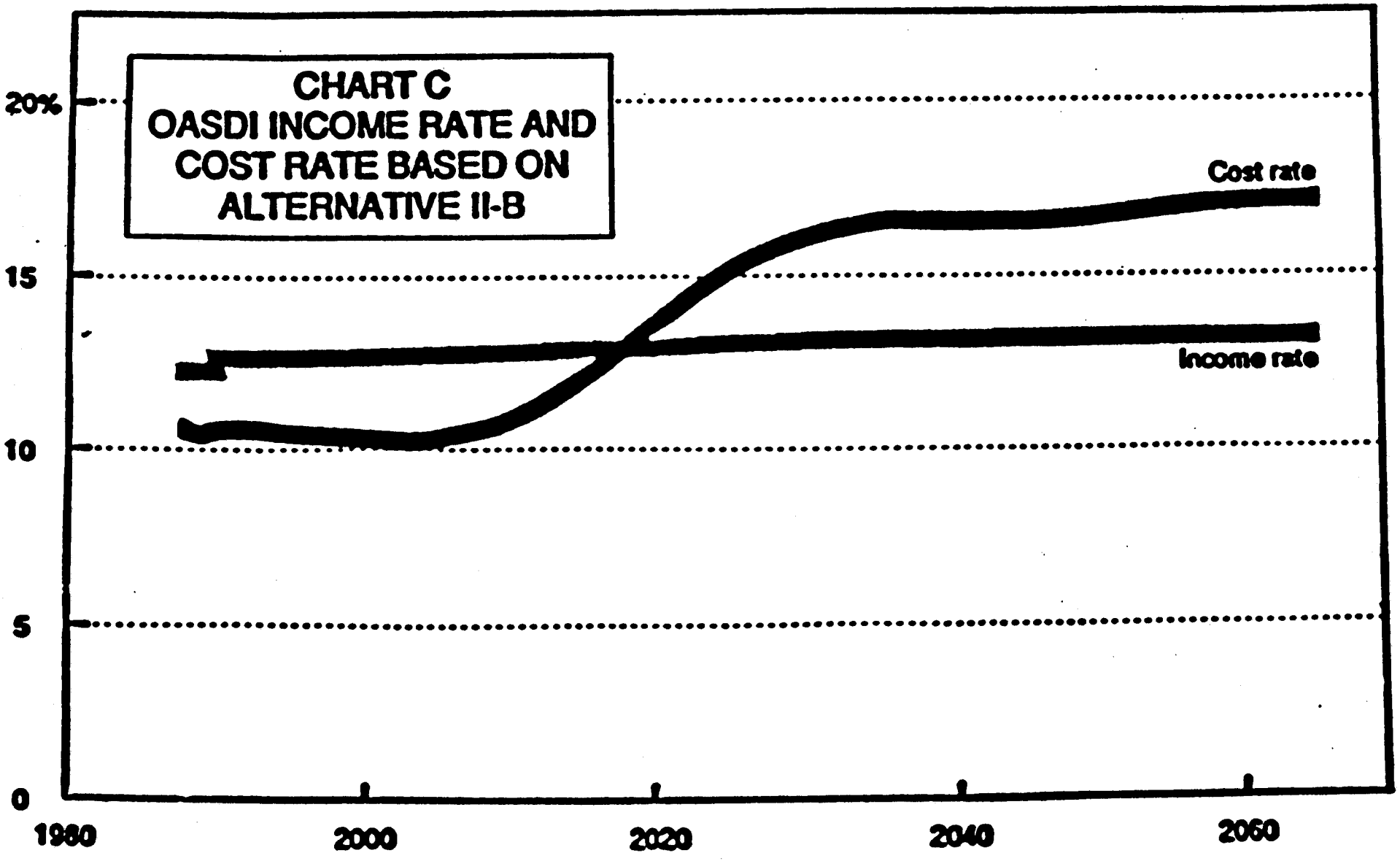


CHART C
OASDI INCOME RATE AND
COST RATE BASED ON
ALTERNATIVE II-B
20%
15
10
5
0
Cost rate
Income rate
1980
2000
2020
2040
2060

TABLE 10.— SELECTED ECONOMIC ASSUMPTIONS BY ALTERNATIVE, CALENDAR YEARS 1960-2065

Calendar year	Average annual percentage increase in— Real GNP[1]	Average annual wage in covered employment	Consumer Price Index[2]	Real-wage differential[3] (percent)	Average annual interest rate[4] (percent)	Average annual unemployment rate[5] (percent)
Past experience:						
1960-64	3.9	3.4	1.3	2.1	3.7	5.7
1965-69	4.4	5.4	3.4	2.0	5.2	3.8
1970-74	2.4	6.3	6.1	.1	6.7	5.4
1975	-1.3	6.7	9.2	-2.5	7.4	8.5
1976	4.9	8.7	5.7	3.0	7.1	7.7
1977	4.7	7.3	6.5	.8	7.1	7.1
1978	5.3	9.7	7.6	2.1	8.2	6.1
1979	2.5	9.8	11.4	-1.6	9.1	5.8
1980	-.2	8.7	13.5	-4.7	11.0	7.1
1981	1.9	9.9	10.3	-.4	13.3	7.6
1982	-2.5	6.5	6.0	.5	12.8	9.7
1983	3.6	[4]4.8	3.0	[4]1.8	11.0	9.6
1984	6.8	[4]6.5	3.4	[4]3.0	12.4	7.5
1985	3.4	[4]4.4	3.5	[4].8	10.8	7.2
1986	2.8	[4]4.1	1.6	[4]2.5	8.0	7.0
1987	3.4	[4]5.8	3.6	[4]2.2	8.4	6.2
Alternative I:						
1988	3.9	6.4	4.0	2.4	8.8	5.5
1989	3.7	6.4	3.8	2.6	9.3	5.2
1990	3.6	5.5	3.0	2.4	8.7	5.0
1991	3.6	5.4	2.8	2.5	7.8	5.0
1992	3.4	5.0	2.5	2.5	6.9	4.9
1993	3.3	4.7	2.3	2.5	6.2	4.9
1994	3.2	4.4	2.1	2.3	5.5	4.8
1995	3.2	4.1	2.0	2.1	4.9	4.7
1996	3.0	4.0	2.0	2.0	4.7	4.7
1997	2.9	4.1	2.0	2.1	4.9	4.7
1998	2.9	4.1	2.0	2.1	5.0	4.7
2000	3.1	4.3	2.0	2.2	5.0	5.0
2010 & later[6]	2.6	4.2	2.0	2.2	5.0	5.0
Alternative II-A:						
1988	3.9	6.4	4.0	2.4	8.8	5.5
1989	3.2	6.0	3.9	2.1	9.3	5.2
1990	3.2	5.5	3.7	1.8	9.0	5.1
1991	3.1	5.1	3.2	1.9	8.2	5.1
1992	2.9	5.0	3.0	2.0	7.5	5.1
1993	2.8	5.0	3.0	2.0	6.7	5.2
1994	2.7	4.9	3.0	1.9	6.2	5.2
1995	2.6	4.7	3.0	1.7	5.8	5.2
1996	2.6	4.7	3.0	1.7	5.6	5.2
1997	2.6	4.8	3.0	1.8	5.6	5.2
1998	2.5	4.7	3.0	1.7	5.6	5.2
2000	2.6	4.8	3.0	1.7	5.5	5.5
2010 & later[6]	2.1	4.7	3.0	1.7	5.5	5.5
Alternative II-B:						
1988	3.8	6.4	4.0	2.4	8.8	5.5
1989	2.6	6.2	4.8	1.4	9.5	5.4
1990	2.6	5.3	4.5	.8	9.4	5.5
1991	2.6	5.5	4.5	1.0	9.1	5.5
1992	2.5	5.6	4.3	1.2	8.6	5.5
1993	2.5	5.8	4.2	1.6	8.0	5.5
1994	2.4	5.6	4.0	1.6	7.4	5.5
1995	2.3	5.5	4.0	1.5	6.9	5.5
1996	2.3	5.5	4.0	1.5	6.6	5.6
1997	2.3	5.6	4.0	1.6	6.4	5.6
1998	2.2	5.4	4.0	1.4	6.2	5.6
2000	2.2	5.4	4.0	1.3	6.0	6.0
2010 & later[6]	1.8	5.3	4.0	1.3	6.0	6.0
Alternative III:						
1988	3.8	5.2	4.0	1.2	8.8	5.5
1989	-.6	4.7	5.4	-.8	9.7	5.9
1990	.9	5.4	5.8	-.4	10.1	6.7
1991	2.4	6.4	6.4	[7]	10.5	6.4
1992	1.2	5.8	6.3	-.5	10.3	6.2
1993	-.7	4.6	5.0	-.3	9.6	7.2
1994	2.7	6.8	5.3	1.5	8.8	6.9
1995	1.9	5.9	5.0	.9	7.9	6.7
1996	1.8	5.9	5.0	.9	7.5	6.6
1997	1.6	6.0	5.0	1.0	7.2	6.5
1998	1.8	5.8	5.0	.8	6.8	6.5
2000	1.7	5.9	5.0	.8	6.5	7.0
2010 & later[6]	1.2	5.8	5.0	.8	6.5	7.0

[1]The real GNP (gross national product) is the value of total output of goods and services, expressed in 1982 dollars.

[2]The Consumer Price Index is the average of the 12 monthly values of the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

[3]The real-wage differential is the difference between the percentage increases, before rounding, in (1) the average annual wage in covered employment, and (2) the average annual Consumer Price Index.

[4]The average annual interest rate is the average of the nominal interest rates, which, in practice, are compounded semiannually, for special public-debt obligations issuable to the trust funds in each of the 12 months of the year.

[5]Through 1998, the rates shown are crude civilian unemployment rates. After 1998, the rates are total rates (including military personnel), adjusted by age and sex based on the estimated total labor force on July 1, 1988.

[6]Preliminary.

[7]The value is for 2010. The annual percentage increase in real GNP is assumed to continue to change after 2010 for each alternative to reflect the dependence of labor force growth on the size and age-sex distribution of the population. The increases for 2065 are 2.7, 1.8, 1.5, and 0.5 percent for alternatives I, II-A, II-B, and III, respectively.

[8]This value is between 0.05 percent and -0.05 percent.

TABLE 11.—SELECTED DEMOGRAPHIC ASSUMPTIONS BY ALTERNATIVE, CALENDAR YEARS 1940-2065

Calendar year	Total fertility rate[1]	Age-sex-adjusted death rate[2] (per 100,000)	Life expectancy[3] At birth		At age 65	
			Male	Female	Male	Female
Past experience:						
1940	2.23	1,532.8	61.4	65.7	11.9	13.4
1945	2.42	1,366.4	62.9	68.4	12.6	14.4
1950	3.03	1,225.3	65.6	71.1	12.8	15.1
1955	3.50	1,134.2	66.7	72.8	13.1	15.6
1960	3.61	1,126.6	66.7	73.2	12.9	15.9
1965	2.88	1,103.6	66.8	73.8	12.9	16.3
1970	2.43	1,041.8	67.1	74.9	13.1	17.1
1975	1.77	934.0	68.7	76.6	13.7	18.0
1976	1.74	923.2	69.1	76.8	13.7	18.1
1977	1.80	898.0	69.4	77.2	13.9	18.3
1978	1.76	892.4	69.6	77.3	13.9	18.3
1979	1.82	884.2	70.0	77.7	14.2	18.6
1980	1.85	878.0	69.9	77.5	14.0	18.4
1981	1.83	853.4	70.4	77.9	14.2	18.6
1982	1.83	827.8	70.8	78.2	14.5	18.8
1983	1.81	835.0	70.9	78.1	14.3	18.6
1984	1.80	826.2	71.1	78.2	14.4	18.7
1985	1.84	830.0	71.1	78.2	14.4	18.6
1986	1.84	821.8	71.2	78.3	14.5	18.7
1987	1.88	808.5	71.5	78.4	14.9	18.7
1988[4]	1.91	801.1	71.6	78.6	14.9	18.8
Alternative I:						
1989	1.92	797.8	71.7	78.6	14.9	18.8
1990	1.93	794.3	71.8	78.7	15.0	18.8
1995	1.99	773.9	72.4	78.9	15.0	18.9
2000	2.05	760.9	72.8	79.1	15.0	18.9
2005	2.11	749.8	73.0	79.3	15.1	18.9
2010	2.17	739.5	73.2	79.5	15.2	19.0
Alternative I: (Cont.)						
2015	2.20	729.9	73.4	79.6	15.3	19.1
2020	2.20	720.7	73.5	79.7	15.3	19.2
2025	2.20	711.7	73.7	79.9	15.4	19.3
2030	2.20	703.0	73.8	80.0	15.5	19.4
2035	2.20	694.4	74.0	80.2	15.6	19.5
2040	2.20	686.1	74.1	80.3	15.7	19.6
2045	2.20	678.0	74.3	80.4	15.8	19.7
2050	2.20	670.2	74.4	80.6	15.9	19.8
2055	2.20	662.5	74.6	80.7	15.9	19.9
2060	2.20	655.1	74.7	80.8	16.0	20.0
2065	2.20	647.8	74.9	81.0	16.1	20.1
Alternatives II-A and II-B:						
1989	1.91	801.9	71.7	78.7	15.0	18.9
1990	1.91	794.5	71.8	78.9	15.1	19.0
1995	1.91	756.3	72.1	79.5	15.4	19.3
2000	1.91	725.1	72.7	80.1	15.6	19.6
2005	1.91	694.5	73.5	80.5	15.8	19.8
2010	1.90	673.2	74.1	80.8	16.0	20.1
2015	1.90	656.6	74.4	81.1	16.2	20.3
2020	1.90	641.1	74.6	81.4	16.4	20.5
2025	1.90	626.3	74.9	81.7	16.6	20.7
2030	1.90	611.9	75.2	82.0	16.8	20.9
2035	1.90	598.1	75.5	82.3	16.9	21.1
2040	1.90	584.8	75.7	82.6	17.1	21.4
2045	1.90	571.9	76.0	82.8	17.3	21.6
2050	1.90	559.5	76.3	83.1	17.5	21.8
2055	1.90	547.5	76.5	83.4	17.7	22.0
2060	1.90	536.0	76.8	83.6	17.8	22.2
2065	1.90	524.8	77.0	83.9	18.0	22.4
Alternative III:						
1989	1.90	806.9	71.8	78.8	15.1	19.0
1990	1.88	796.3	71.9	79.1	15.2	19.1
1995	1.82	754.6	72.3	80.1	15.8	19.8
2000	1.75	735.9	72.0	80.7	16.2	20.4
2005	1.69	682.6	73.2	81.4	16.6	20.8
2010	1.63	623.2	75.0	82.3	17.0	21.2
2015	1.60	587.6	76.0	82.9	17.4	21.6
2020	1.60	561.8	76.5	83.4	17.8	22.0
2025	1.60	539.2	77.0	84.0	18.2	22.5
2030	1.60	517.8	77.4	84.5	18.6	22.9
2035	1.60	497.3	77.9	85.0	18.9	23.3
2040	1.60	477.6	78.4	85.5	19.3	23.7
2045	1.60	458.7	78.8	86.0	19.7	24.1
2050	1.60	440.7	79.3	86.5	20.1	24.5
2055	1.60	423.5	79.8	87.1	20.5	24.9
2060	1.60	407.2	80.3	87.6	20.9	25.4
2065	1.60	391.7	80.8	88.1	21.3	25.8

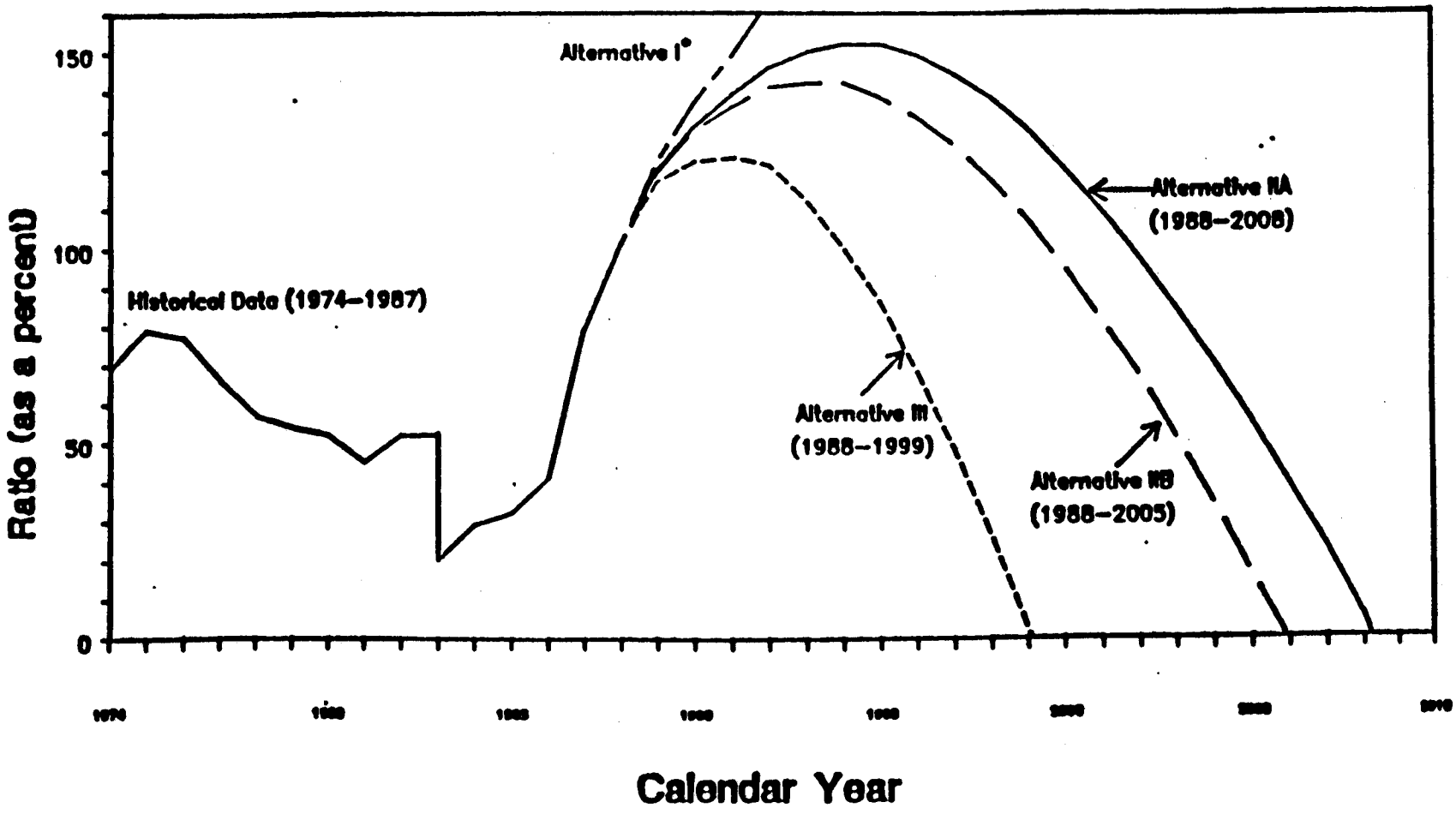
[1]The total fertility rate for any year is the average number of children who would be born to a woman in her lifetime if she were to experience the birthrates by age observed in, or assumed for, the selected year, and if she were to survive the entire child-bearing period. The ultimate total fertility rate is assumed to be reached in 2013.

[2]The age-sex-adjusted death rate is the crude rate that would occur in the enumerated total population as of April 1, 1980, if that population were to experience the death rates by age and sex observed in, or assumed for, the selected year.

[3]The life expectancy for any year is the average number of years of life remaining for a person if that person were to experience the death rates by age observed in, or assumed for, the selected year.

[4]Estimated.

Figure 1
Short Term HI Trust Fund Ratios

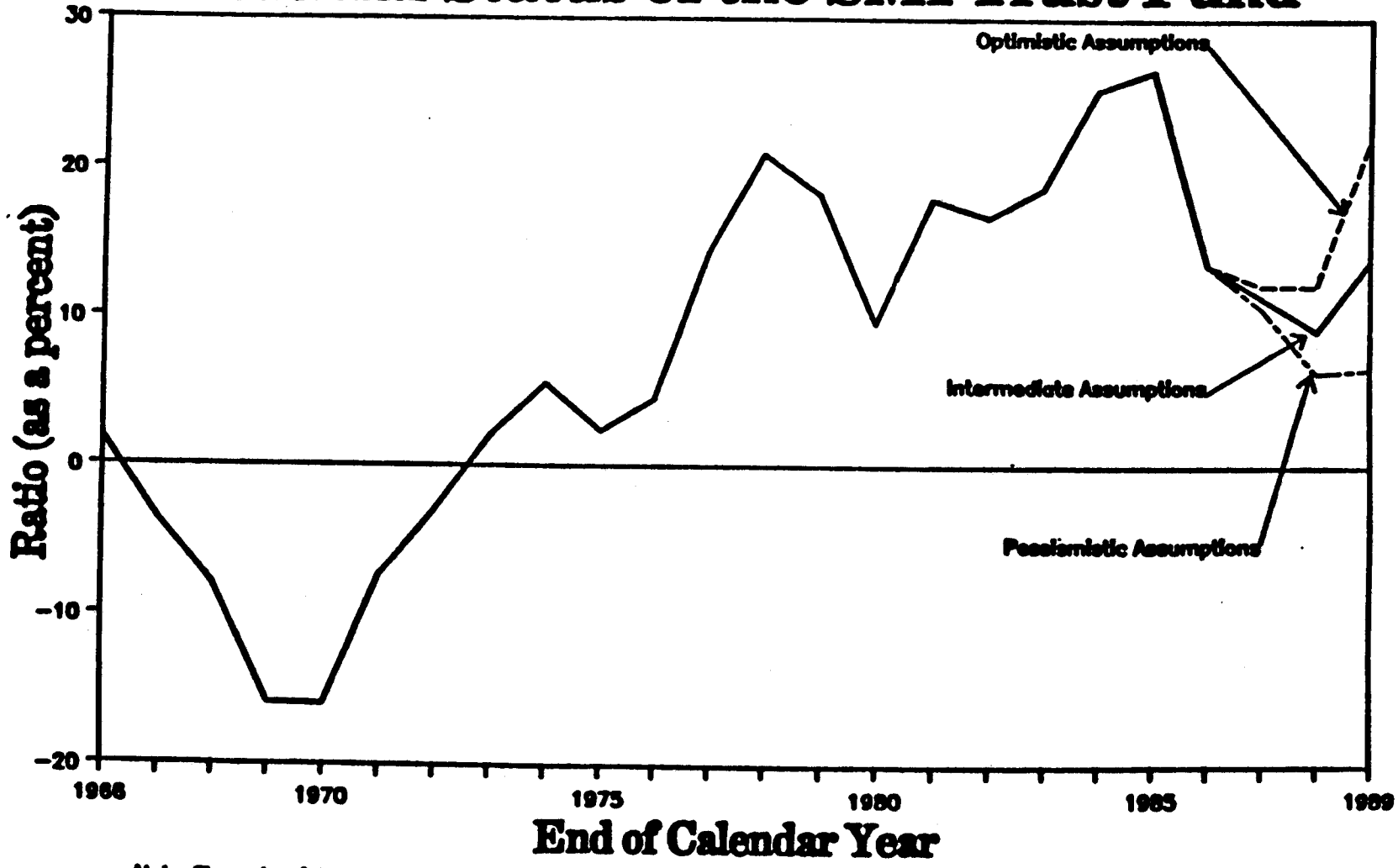


*The trust fund is depleted in 2044 under alternative I.

Note: The trust fund ratio is defined as the ratio of assets at the beginning of the year to disbursements during the year.

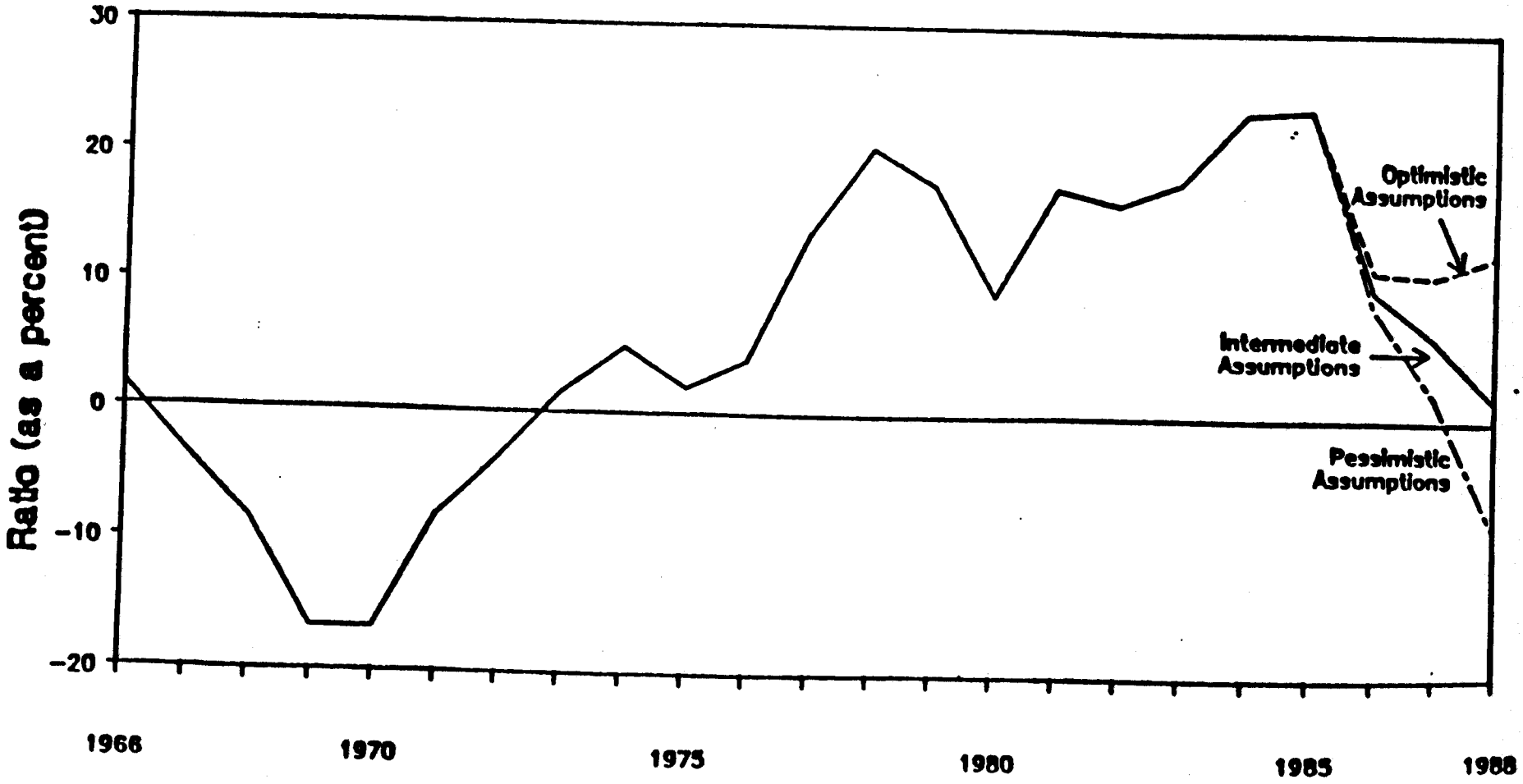
Figure 2

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 incurred expenditures

Figure 4
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 assets less liabilities to the following year incurred expenditures.