

SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO

The Report of the
ANNUAL ACTUARIAL VALUATION
June 30, 1987

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Report of Annual Actuarial Valuation of Ohio SERS

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November 30, 1987

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, 1987 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 44 & 45).

Your attention is directed particularly to:

COMMENTS on pages 3A - 3B.
Financial Principles on pages 4-5;
Computed Employer Contribution Rates on pages 25 & 32;
Short Condition Tests on pages 26 & 34;

Respectfully submitted,


Gerald B. Sonnenschein


Richard G. Roeder

GBS:jmg

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 position 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.

The statutory employer contribution rate is 14% of pay. An SERS policy decision is now allocating 9% to Basic Benefits and 5% to Health Care Benefits.

BASIC BENEFITS

On the basis of the 1987 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, which shows a decline in the amortization period for unfunded accrued liabilities, and on page 26, which shows an increase in reserve strength.

HEALTH CARE BENEFITS

The financial development of this program is 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 44 & 45).

The 5% contribution allocated to health care benefits is not sufficient to cover either current cash benefit outgo, 6.0% of pay, or to provide level cost financing of the Health Care Benefits.

To provide level cost financing of the Health Care Benefits requires some combination of increased contributions and/or decreased health benefits.

FINANCIAL PRINCIPLES

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.

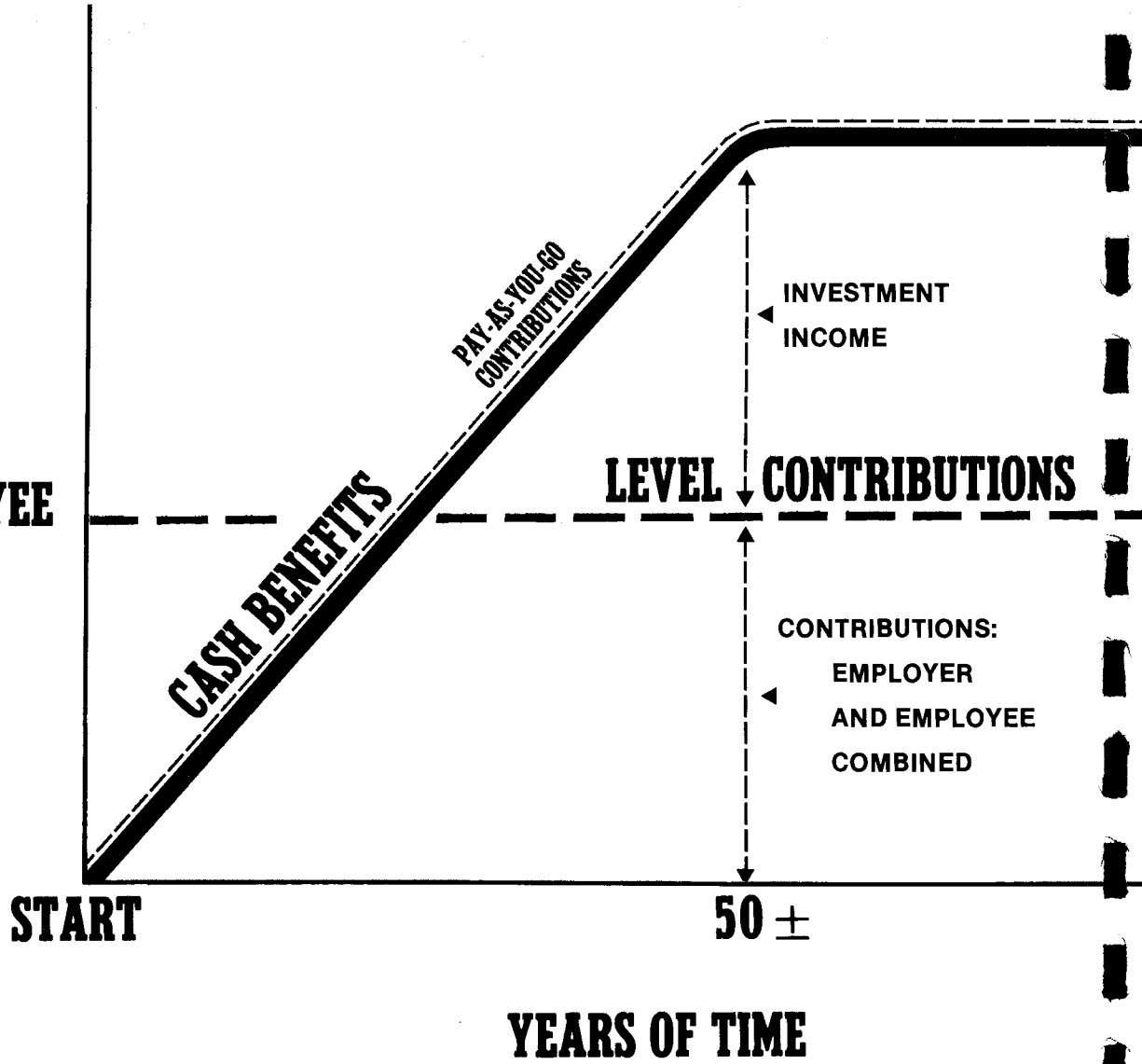
An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases;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

**% OF
ACTIVE
EMPLOYEE
PAYS**



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 42,670. The 39,727 retirants and survivors of retirants as of June 30, 1987 were receiving annual benefits totaling \$128,071,312 from the Annuity and Pension Reserve Fund. The 2,943 survivors of deceased active members as of June 30, 1987 were receiving annual benefits totaling \$8,679,084 from the Survivor Benefit Fund.

Schedule 1.

Annuity and Pension Reserve Fund
Retirants and Beneficiaries June 30, 1987
Type of Benefit, Annual Amount
and Basic Benefit Actuarial Liabilities

| Group | Number | % of Current Total \$ | | | Current Total \$ | Actuarial Liabilities* |
|--|---------------|-----------------------|------------------|------------------------|-------------------|------------------------|
| | | Base Allowances | H.B. 204 and 284 | Post-Retire. Increases | | |
| <u>SUPERANNUATION RETIREMENT</u> | | | | | | |
| Straight Life Allowance - Benefit Terminating at Death | | | | | | |
| Men | 5,014 | 84.6% | 1.1% | 14.3% | \$19,120,316 | \$144,891,060 |
| Women | <u>18,072</u> | 85.5 | 1.2 | 13.3 | <u>46,587,351</u> | <u>455,442,007</u> |
| Totals | <u>23,076</u> | | | | <u>65,707,667</u> | <u>600,333,067</u> |
| Option II Allowance - Joint and Survivor Benefits | | | | | | |
| Men | 5,882 | 88.3 | 0.4 | 11.3 | 28,568,907 | 322,278,859 |
| Women | <u>3,799</u> | 89.3 | 0.3 | 10.4 | <u>10,289,066</u> | <u>122,327,324</u> |
| Totals | <u>9,681</u> | | | | <u>38,857,973</u> | <u>444,606,183</u> |
| Option III Allowance - Life Benefits With Guaranteed Periods | | | | | | |
| Men | 824 | 82.8 | 1.1 | 16.1 | 2,898,677 | 22,659,620 |
| Women | <u>927</u> | 83.2 | 1.0 | 15.8 | <u>2,226,228</u> | <u>22,021,406</u> |
| Totals | <u>1,751</u> | | | | <u>5,124,905</u> | <u>44,681,026</u> |
| Allowance to Survivor Beneficiary of Deceased Superannuation Retirant Who Elected Option II - Life Benefit | | | | | | |
| Men | 235 | 80.9 | 2.4 | 16.7 | 397,895 | 2,901,171 |
| Women | <u>1,884</u> | 80.0 | 2.8 | 17.2 | <u>4,821,509</u> | <u>42,679,760</u> |
| Totals | <u>2,119</u> | | | | <u>5,219,404</u> | <u>45,580,931</u> |
| Allowance to Survivor Beneficiary of Deceased Superannuation Retirant Who Elected Option III - Guaranteed Period Only | | | | | | |
| Men | 24 | 87.7 | 0.0 | 12.3 | 64,847 | 351,368 |
| Women | <u>89</u> | 82.6 | 0.1 | 17.3 | <u>299,883</u> | <u>1,270,090</u> |
| Totals | <u>113</u> | | | | <u>364,730</u> | <u>1,621,458</u> |

* 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, 1987

Type of Benefit, Annual Amount
and Basic Benefit Actuarial Liabilities

| <u>Group</u> | <u>Number</u> | <u>% of Current Total \$</u> | | | <u>Current Total \$</u> | <u>Actuarial Liabilities*</u> |
|--|---------------|------------------------------|-------------------------|-------------------------------|-------------------------|-------------------------------|
| | | <u>Base Allowances</u> | <u>H.B. 204 and 284</u> | <u>Post-Retire. Increases</u> | | |
| Total for Superannuation Allowances Being Paid | | | | | | |
| Men | 11,979 | 86.5% | 0.7% | 12.3% | \$ 51,050,642 | \$ 493,082,078 |
| Women | 24,771 | 85.6 | 1.2 | 13.2 | 64,224,037 | 643,740,587 |
| Totals | 36,750 | | | | 115,274,679 | 1,136,822,665 |

DISABILITY RETIREMENT

Straight Life Allowance - Benefit Terminating at Death

| | | | | | | |
|--------|-------|------|-----|------|------------|-------------|
| Men | 1,169 | 86.3 | 0.7 | 13.0 | 6,995,093 | 70,617,721 |
| Women | 1,808 | 86.3 | 0.8 | 12.9 | 5,801,540 | 67,034,865 |
| Totals | 2,977 | | | | 12,796,633 | 137,652,586 |

TOTAL BENEFITS BEING PAID FROM ANNUITY AND PENSION RESERVE FUND

| | | | | | | |
|--------|--------|------|-----|------|-------------|---------------|
| Men | 13,148 | 86.5 | 0.7 | 12.3 | 58,045,735 | 563,699,799 |
| Women | 26,579 | 85.7 | 1.2 | 13.1 | 70,085,577 | 710,775,452 |
| Totals | 39,727 | | | | 128,071,312 | 1,274,475,251 |

* Includes allowance and lump sum death benefit.

Schedule 2.

Annuity and Pension Reserve Fund

Retirants June 30, 1987

Current Annual Total \$ By Attained Ages

| Attained Ages | Superannuation | | Disability | | Totals | |
|------------------|----------------|--------------------|------------|--------------------|--------|--------------------|
| | No. | Annual Total \$ | No. | Annual Total \$ | No. | Annual Total \$ |
| 25-29 | | \$ | 1 | \$ 3,444 | 1 | \$ 3,444 |
| 30-34 | | | 14 | 126,575 | 14 | 126,575 |
| 35-39 | | | 44 | 424,828 | 44 | 424,828 |
| 40-44 | | | 91 | 642,064 | 91 | 642,064 |
| 45-49 | 6 | 58,120 | 153 | 937,250 | 159 | 995,370 |
| 50-54 | 83 | 1,103,179 | 354 | 1,824,724 | 437 | 2,927,903 |
| 55-59 | 415 | 3,870,190 | 616 | 2,775,271 | 1,031 | 6,645,461 |
| 60-64 | 5,697 | 19,890,179 | 773 | 3,258,932 | 6,470 | 23,149,111 |
| 65-69 | 9,770 | 32,958,510 | 549 | 1,827,638 | 10,319 | 34,786,148 |
| 70-74 | 8,520 | 25,497,730 | 251 | 647,788 | 8,771 | 26,145,518 |
| 75-79 | 5,518 | 14,487,606 | 97 | 233,114 | 5,615 | 14,720,720 |
| 80-84 | 2,824 | 7,292,581 | 27 | 72,499 | 2,851 | 7,365,080 |
| 85-89 | 1,126 | 2,940,235 | 6 | 13,048 | 1,132 | 2,953,283 |
| 90-94 | 441 | 1,235,746 | 1 | 9,460 | 442 | 1,245,206 |
| 95-99 | 93 | 278,835 | | | 93 | 278,835 |
| 100 | 4 | 10,074 | | | 4 | 10,074 |
| 101 | 6 | 14,875 | | | 6 | 14,875 |
| 102 | 3 | 14,121 | | | 3 | 14,121 |
| 103 | 5 | 15,394 | | | 5 | 15,394 |
| 104 | 2 | 8,688 | | | 2 | 8,688 |
| 105 | 2 | 5,212 | | | 2 | 5,212 |
| 106 | 2 | 4,668 | | | 2 | 4,668 |
| 107 | 1 | 4,589 | | | 1 | 4,589 |
| Totals | 34,518 | 109,690,532 | 2,977 | 12,796,635 | 37,495 | 122,487,167 |

Schedule 3.

Annuity and Pension Reserve Fund

Survivors of Retirants June 30, 1987

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 | \$ 8,055 | 1 | \$ 4,487 | 2 | \$ 12,542 |
| 20-24 | | | 1 | 2,261 | 1 | 2,261 |
| 25-29 | | | 1 | 810 | 1 | 810 |
| 30-34 | 6 | 3,481 | 2 | 4,440 | 8 | 7,921 |
| 35-39 | 7 | 23,767 | 2 | 11,784 | 9 | 35,551 |
| 40-44 | 7 | 6,730 | 4 | 11,485 | 11 | 18,215 |
| 45-49 | 7 | 6,872 | 4 | 7,300 | 11 | 14,172 |
| 50-54 | 19 | 51,249 | 3 | 2,443 | 22 | 53,692 |
| 55-59 | 51 | 194,360 | 5 | 11,369 | 56 | 205,729 |
| 60-64 | 166 | 510,344 | 15 | 76,472 | 181 | 586,816 |
| 65-69 | 355 | 959,426 | 39 | 113,897 | 394 | 1,073,323 |
| 70-74 | 523 | 1,197,493 | 24 | 65,435 | 547 | 1,262,928 |
| 75-79 | 455 | 975,451 | 11 | 51,956 | 466 | 1,027,407 |
| 80-84 | 302 | 727,561 | | | 302 | 727,561 |
| 85-89 | 162 | 396,575 | 1 | 594 | 163 | 397,169 |
| 90-94 | 48 | 137,981 | | | 48 | 137,981 |
| 95-99 | 10 | 20,071 | | | 10 | 20,071 |
| Totals | 2,119 | \$5,219,416 | 113 | \$364,733 | 2,232 | \$5,584,149 |

Schedule 4.

Survivor Benefit Fund

Beneficiaries June 30, 1987

Annual Amounts and
Basic Benefit Actuarial Liabilities

| <u>Group</u> | <u>Number</u> | <u>% of Current Total \$</u> | | | <u>Current Total \$</u> | <u>Actuarial Liabilities*</u> |
|--|---------------|------------------------------|-----------------------------|-----------------------------------|-----------------------------|-----------------------------------|
| | | <u>Basic Allowances</u> | <u>H.B. 204 and 284</u> | <u>Post-Retire. Increases</u> | | |
| Benefits Being Paid From Survivor Benefit Fund | | | | | | |
| Men | 704 | 88.6% | 0.1% | 11.3% | \$1,634,342 | \$13,563,245 |
| Women | <u>2,239</u> | 83.2 | 0.8 | 16.0 | <u>7,044,742</u> | <u>53,357,541</u> |
| Totals | <u>2,943</u> | | | | <u>8,679,084</u> | <u>66,920,786</u> |

* 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, 1987

Current Annual Total \$ By Attained Ages

| <u>Attained Ages</u> | <u>No.</u> | <u>Annual Total \$</u> |
|--------------------------|------------|----------------------------|
| Under 20 | 29 | \$ 88,919 |
| 20-24 | 9 | 26,902 |
| 25-29 | 8 | 35,179 |
| 30-34 | 18 | 91,131 |
| 35-39 | 36 | 181,298 |
| 40-44 | 58 | 292,802 |
| 45-49 | 79 | 344,128 |
| 50-54 | 111 | 439,943 |
| 55-59 | 256 | 873,691 |
| 60-64 | 438 | 1,355,650 |
| 65-69 | 619 | 1,708,040 |
| 70-74 | 557 | 1,418,161 |
| 75-79 | 372 | 861,882 |
| 80-84 | 238 | 604,329 |
| 85-89 | 81 | 232,472 |
| 90-94 | 29 | 110,379 |
| 95-99 | <u>5</u> | <u>14,159</u> |
| Totals | 2,943 | \$8,679,065 |

Active members included in the valuation totaled 89,534, involving an annual payroll totaling \$931,385,997. The schedules below and on the following 4 pages provide some detail from the data on active members.

Active Members in Valuation June 30, 1987

| <u>Groups</u> | <u>Number</u> | <u>Annual Payroll</u> | <u>Average Pay</u> |
|---------------|---------------|-----------------------|--------------------|
| Men | 24,358 | \$368,287,289 | \$15,120 |
| Women | 65,176 | 563,098,708 | 8,640 |
| Totals | 89,534 | \$931,385,997 | \$10,403 |

Reporting of active members. The persons included as active members in this June 30, 1986 valuation are those who had any covered pay in May and were listed as active in SERS records. These 89,534 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 ranged from a high of 90,396 (November) to a low of 84,728 (September).

Also included in the valuation were 7,412 inactive members eligible for deferred retirement allowances (including 68 whose retirement applications were pending at June 30), and 100,155 inactive members eligible for a contribution refund only.

Schedule 6.

School Employees Retirement System of Ohio

TOTAL Active Members as of June 30, 1987

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 | 138 | | | | | | | 138 | \$ 750,440 |
| 20-24 | 2,247 | 107 | | | | | | 2,354 | 19,154,165 |
| 25-29 | 4,117 | 1,494 | 95 | | | | | 5,706 | 59,250,691 |
| 30-34 | 6,032 | 2,287 | 971 | 81 | | | | 9,371 | 95,385,897 |
| 35-39 | 7,591 | 3,245 | 1,190 | 523 | 21 | | | 12,570 | 117,322,075 |
| 40-44 | 6,049 | 4,028 | 2,208 | 696 | 188 | 14 | | 13,183 | 126,826,121 |
| 45-49 | 3,836 | 3,593 | 3,398 | 1,683 | 399 | 145 | 14 | 13,068 | 134,669,932 |
| 50-54 | 2,894 | 2,337 | 2,935 | 3,028 | 719 | 212 | 93 | 12,218 | 134,482,704 |
| 55-59 | 2,087 | 1,914 | 2,537 | 2,590 | 1,482 | 443 | 147 | 11,200 | 129,316,189 |
| 60 | 340 | 299 | 373 | 512 | 391 | 109 | 38 | 2,062 | 24,235,587 |
| 61 | 291 | 240 | 317 | 400 | 309 | 86 | 38 | 1,681 | 20,285,372 |
| 62 | 253 | 198 | 327 | 302 | 238 | 97 | 37 | 1,452 | 17,545,529 |
| 63 | 164 | 165 | 247 | 237 | 195 | 95 | 38 | 1,141 | 14,486,629 |
| 64 | 162 | 96 | 194 | 227 | 166 | 72 | 21 | 938 | 11,353,716 |
| 65 | 128 | 74 | 110 | 152 | 112 | 64 | 29 | 669 | 7,918,144 |
| 66 | 86 | 67 | 98 | 135 | 79 | 44 | 15 | 524 | 5,633,645 |
| 67 | 71 | 61 | 79 | 86 | 53 | 25 | 21 | 396 | 4,345,815 |
| 68 | 49 | 44 | 43 | 47 | 41 | 16 | 11 | 251 | 2,535,622 |
| 69 | 40 | 17 | 37 | 45 | 30 | 21 | 13 | 203 | 2,281,195 |
| 70 & Over | 75 | 57 | 77 | 77 | 61 | 35 | 27 | 409 | 3,606,529 |
| Totals | 36,650 | 20,323 | 15,236 | 10,821 | 4,484 | 1,478 | 542 | 89,534 | \$931,385,997 |

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

Age: 45.0 years.

Service: 8.3 years.

Annual Pay: \$10,403.

Schedule 7.

School Employees Retirement System of Ohio

FEMALE Active Members as of June 30, 1987

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 | 75 | | | | | | | 75 | \$ 424,826 |
| 20-24 | 1,158 | 65 | | | | | | 1,223 | 8,759,693 |
| 25-29 | 2,501 | 662 | 25 | | | | | 3,188 | 26,237,180 |
| 30-34 | 4,420 | 1,289 | 349 | 44 | | | | 6,102 | 45,340,663 |
| 35-39 | 6,109 | 2,396 | 703 | 236 | 13 | | | 9,457 | 68,094,113 |
| 40-44 | 4,894 | 3,374 | 1,846 | 427 | 67 | 10 | | 10,618 | 85,895,247 |
| 45-49 | 2,846 | 3,014 | 3,009 | 1,413 | 161 | 51 | 6 | 10,500 | 94,511,025 |
| 50-54 | 1,842 | 1,870 | 2,519 | 2,681 | 470 | 64 | 35 | 9,481 | 90,628,323 |
| 55-59 | 1,081 | 1,321 | 2,116 | 2,150 | 1,219 | 250 | 36 | 8,173 | 79,937,328 |
| 60 | 163 | 187 | 283 | 400 | 345 | 51 | 18 | 1,447 | 14,403,065 |
| 61 | 118 | 139 | 234 | 310 | 250 | 52 | 19 | 1,122 | 11,385,964 |
| 62 | 110 | 93 | 250 | 232 | 177 | 65 | 11 | 938 | 9,236,027 |
| 63 | 64 | 69 | 189 | 175 | 159 | 61 | 19 | 736 | 8,075,748 |
| 64 | 66 | 58 | 146 | 161 | 135 | 37 | 9 | 612 | 5,978,260 |
| 65 | 46 | 40 | 75 | 121 | 78 | 41 | 13 | 414 | 4,156,287 |
| 66 | 43 | 29 | 73 | 107 | 63 | 28 | 6 | 349 | 3,311,485 |
| 67 | 23 | 31 | 44 | 68 | 41 | 13 | 9 | 229 | 2,179,806 |
| 68 | 14 | 23 | 32 | 33 | 34 | 7 | 7 | 150 | 1,441,548 |
| 69 | 12 | 7 | 26 | 33 | 21 | 14 | 4 | 117 | 1,159,253 |
| 70 & Over | 32 | 20 | 47 | 64 | 36 | 28 | 18 | 245 | 1,942,867 |
| Totals | 25,617 | 14,687 | 11,966 | 8,655 | 3,269 | 772 | 210 | 65,176 | \$563,098,708 |

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

Age: 45.4 years.

Service: 8.4 years.

Annual Pay: \$8,640.

Schedule 8.

School Employees Retirement System of Ohio

MALE Active Members as of June 30, 1987

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 | 63 | | | | | | | 63 | \$ 325,614 |
| 20-24 | 1,089 | 42 | | | | | | 1,131 | 10,394,472 |
| 25-29 | 1,616 | 832 | 70 | | | | | 2,518 | 33,013,511 |
| 30-34 | 1,612 | 998 | 622 | 37 | | | | 3,269 | 50,045,234 |
| 35-39 | 1,482 | 849 | 487 | 287 | 8 | | | 3,113 | 49,227,962 |
| 40-44 | 1,155 | 654 | 362 | 269 | 121 | 4 | | 2,565 | 40,930,874 |
| 45-49 | 990 | 579 | 389 | 270 | 238 | 94 | 8 | 2,568 | 40,158,907 |
| 50-54 | 1,052 | 467 | 416 | 347 | 249 | 148 | 58 | 2,737 | 43,854,381 |
| 55-59 | 1,006 | 593 | 421 | 440 | 263 | 193 | 111 | 3,027 | 49,378,861 |
| 60 | 177 | 112 | 90 | 112 | 46 | 58 | 20 | 615 | 9,832,522 |
| 61 | 173 | 101 | 83 | 90 | 59 | 34 | 19 | 559 | 8,899,408 |
| 62 | 143 | 105 | 77 | 70 | 61 | 32 | 26 | 514 | 8,309,502 |
| 63 | 100 | 96 | 58 | 62 | 36 | 34 | 19 | 405 | 6,410,881 |
| 64 | 96 | 38 | 48 | 66 | 31 | 35 | 12 | 326 | 5,375,456 |
| 65 | 82 | 34 | 35 | 31 | 34 | 23 | 16 | 255 | 3,761,857 |
| 66 | 43 | 38 | 25 | 28 | 16 | 16 | 9 | 175 | 2,322,160 |
| 67 | 48 | 30 | 35 | 18 | 12 | 12 | 12 | 167 | 2,166,009 |
| 68 | 35 | 21 | 11 | 14 | 7 | 9 | 4 | 101 | 1,094,074 |
| 69 | 28 | 10 | 11 | 12 | 9 | 7 | 9 | 86 | 1,121,942 |
| 70 & Over | 43 | 37 | 30 | 13 | 25 | 7 | 9 | 164 | 1,663,662 |
| Totals | 11,033 | 5,636 | 3,270 | 2,166 | 1,215 | 706 | 332 | 24,358 | \$368,287,289 |

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

Age: 44.0 years.

Service: 8.0 years.

Annual Pay: \$15,120.

Schedule 9.

School Employees Retirement System of Ohio
Active Members as of June 30, 1987 by Annual Pay

| <u>Annual Pay</u> | <u>Number of Active Members</u> | | | <u>Portion of Total Number</u> | |
|---------------------|---------------------------------|--------------|--------------|--------------------------------|-------------------|
| | <u>Men</u> | <u>Women</u> | <u>Total</u> | <u>This Group</u> | <u>Cumulative</u> |
| Less than \$1,000 | 831 | 2,881 | 3,712 | 4% | 4% |
| \$ 1,000 - \$ 1,999 | 694 | 3,918 | 4,612 | 5 | 9 |
| 2,000 - 2,999 | 744 | 4,782 | 5,526 | 6 | 15 |
| 3,000 - 3,999 | 854 | 3,867 | 4,721 | 5 | 21 |
| 4,000 - 4,999 | 847 | 3,964 | 4,811 | 5 | 26 |
| 5,000 - 5,999 | 888 | 3,914 | 4,802 | 5 | 31 |
| 6,000 - 6,999 | 882 | 5,057 | 5,939 | 7 | 38 |
| 7,000 - 7,999 | 925 | 5,304 | 6,229 | 7 | 45 |
| 8,000 - 8,999 | 843 | 5,344 | 6,187 | 7 | 52 |
| 9,000 - 9,999 | 753 | 4,442 | 5,195 | 6 | 58 |
| 10,000 - 11,999 | 992 | 5,695 | 6,687 | 7 | 65 |
| 12,000 - 13,999 | 1,126 | 4,565 | 5,691 | 6 | 72 |
| 14,000 - 15,999 | 1,956 | 3,912 | 5,868 | 7 | 78 |
| 16,000 - 17,999 | 2,892 | 2,999 | 5,891 | 7 | 85 |
| 18,000 - 19,999 | 2,660 | 1,942 | 4,602 | 5 | 90 |
| 20,000 - 24,999 | 3,682 | 1,800 | 5,482 | 6 | 96 |
| 25,000 - 29,999 | 1,385 | 463 | 1,848 | 2 | 98 |
| 30,000 and over | <u>1,404</u> | <u>327</u> | <u>1,731</u> | 2 | 100 |
| Totals | 24,358 | 65,176 | 89,534 | | |

REPORTED ASSETS

The accrued assets at June 30, 1987 were reported to be \$2,062,983,466 (cost basis).

| Fund | Amount |
|----------------------------------|----------------------|
| Annuity and Pension Reserve Fund | \$1,793,538,273 |
| Survivors Benefit Fund | 110,021,635 |
| Employees Savings Fund | 524,262,202 |
| Employers Trust Fund | <u>(364,838,644)</u> |
| Total | 2,062,983,466 |

VALUATION ASSETS

The value of accrued assets (cash & investments) as of June 30, 1987 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, \$6,701,353, is added to obtain valuation assets.

Derivation of Valuation Assets

| | |
|---|-----------------|
| (a) Cost value June 1986 | \$1,876,240,825 |
| (b) Cost value June 1987 | 2,062,983,466 |
| (c) Realized gains(losses) | 28,297,865 |
| (d) Change in cost value net of (c): (b) - (a) - (c) | 158,444,776 |
| (e) Valuation assets June 1986 | 1,904,597,706 |
| (f) Preliminary valuation assets June 1987: (d) + (e) | 2,063,042,482 |
| (g) Market value June 1987 | 2,435,652,250 |
| (h) Unrecognized gains(losses): (g) - (f) | 372,609,768 |
| (i) Adjustment toward market value: (.20) times (h) | 74,521,954 |
| (j) Total valuation assets: (f) + (i) | 2,137,564,436 |
| (k) Health reserve as % of cost value assets | 6.4295% |
| (l) Health care valuation assets: (j) x (k) | 137,434,620 |
| (m) Present value of HB284 and 204 contributions | 6,701,353 |
| (n) Basic benefits valuation assets: (j) + (m) - (l) | 2,006,831,169 |

BASIC BENEFITS

School Employees Retirement System of Ohio

Outline of Benefit Eligibility and Amounts

BASIC BENEFITS

(outline last changed 6/30/87)

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 2.0% of FAS. The allowance is then adjusted by factors based on attained age or years of service as determined in the following schedule:

| <u>Attained Birthday</u> | OR | <u>Years of Total Service Credit</u> | <u>Percentage of Base Amount</u> |
|------------------------------|----|--|--------------------------------------|
| 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.

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, by payroll deductions. This rate was established by the Board of Trustees effective July 1, 1983. 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%. The present 14% employer rate was established by the Board of Trustees effective July 1, 1983.

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

Schedule 10.

BASIC BENEFITS

Actuarial Accrued Liabilities June 30, 1987

Allocations Using Entry Age Actuarial Cost Method

| <u>Present Value Of</u> | <u>Entry Age Actuarial Accrued Liabilities</u> |
|---|--|
| Future monthly benefits and death benefits to present retirants and survivors | \$1,341,396,036 |
| ----- | |
| Monthly benefits and refunds to present inactive members | 43,953,477 |
| ----- | |
| Service allowances to present active members | 1,408,533,370 |
| Disability allowances to present active members | 38,356,510 |
| Death-after-retirement benefit (\$500) on behalf of present active members | 1,676,335 |
| Survivor benefits on behalf of present active members who die before retiring | 39,182,781 |
| Refunds of member contributions of present active members | <u>26,267,969</u> |
| Benefits for present active members | 1,514,016,965 |
| ----- | |
| Entry Age Liabilities For Present Covered Persons | 2,899,366,478 |
| ----- | |
| Valuation Assets | 2,006,831,169 |
| ----- | |
| Liabilities to be Covered By Future Contributions | 892,535,309 |

The Employer Contribution Rate for Basic Benefits has been established by the Board as 9% of payroll. After subtracting the normal cost, the remaining Employer Contribution Rate is sufficient to amortize the unfunded accrued liabilities over a 34 year period (next whole year). A year ago the corresponding figure (based upon the same 9% allocation) was 38 years (please see page 48 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

& COMPUTED AMORTIZATION PERIOD

June 30, 1987

| Contributions For | Contributions Expressed as Percents of Payroll |
|---|---|
| Normal cost: | |
| Service allowances | 9.87% |
| Disability allowances | 0.75 |
| Survivor benefits (SB Fund) | 0.55 |
| \$500 death benefit | 0.02 |
| Total | 11.19 |
| Member contributions: | 8.75 |
| Less: Future refunds | 2.13 |
| Available for allowances | 6.62 |
| Employer Normal Cost | 4.57 |
| | |
| EMPLOYER CONTRIBUTION RATE ALLOCATED TO BASIC BENEFITS | 9.00 |
| | |
| Unfunded Accrued Liabilities Over 34 future years | 4.43 |

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

| <u>June 30</u> | <u>Computed Actuarial Accrued Liabilities</u> | | | <u>Valuation Assets</u> | <u>Portion of Accrued Liabilities Covered by Assets</u> | | |
|----------------|---|---|--|-------------------------|---|------------|------------|
| | <u>(1) Member Contr.</u> | <u>(2) Retired Lives (\$ in Millions)</u> | <u>(3) Present Members (Employer Financed Portion)</u> | | <u>(1)</u> | <u>(2)</u> | <u>(3)</u> |
| 1981* | \$298 | \$ 713 | \$ 586 | \$1,017 | 100% | 100% | 18% |
| 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 |

* Revised financial assumptions.

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, 1987. 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, 1987 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, 1987, the unfunded pension benefit obligation was \$715,614,216, determined as follows:

Pension Benefit Obligation:

| | |
|---|----------------------|
| Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits | \$1,385,349,513 |
| Current employees -- | |
| Accumulated employee contributions including allocated investment income | 524,262,202 |
| Employer financed - Vested | 720,253,203 |
| Employer financed - Non-vested | <u>16,093,325</u> |
| Total Pension Benefit Obligation | 2,645,958,243 |
| Net assets available for benefits, at cost (market value was \$2,279,052,086) | <u>1,930,344,027</u> |
| Unfunded Pension Benefit Obligation | 715,614,216 |

During the year ended June 30, 1987 the plan experienced a net change of \$134,760,597 in the basic benefits pension benefit obligation.

REQUIRED SUPPLEMENTARY INFORMATION

ANALYSIS OF FUNDING PROGRESS

- BASIC BENEFITS -

(\$ amounts in Millions)

| Fiscal Year | (1) Net Assets Available for Benefits | (2) Pension Benefit Obligation (PBO) | (3) Percent Funded (1)/(2) | (4) Unfunded PBO (2)-(1) | (5) Annual Covered Payroll | (6) Unfunded PBO as a Percentage of Covered Payroll (4)/(5) |
|-------------|--|---|-------------------------------|-----------------------------|-------------------------------|--|
| 1985 | \$1,556 | \$2,257 | 68.9% | \$701 | \$804 | 87.2% |
| 1986 | 1,747 | 2,511 | 69.6 | 764 | 869 | 87.9 |
| 1987 | 1,930 | 2,646 | 72.9 | 716 | 931 | 76.9 |

Analysis of the dollar amounts of net assets available for benefits, pension benefit obligation, and unfunded pension benefit obligation in isolation can be misleading. Expressing the net assets available for benefits as a percentage of the pension benefit obligation provides one indication of the plan's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the system is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded pension benefit obligation and annual covered payroll are both affected by inflation. Expressing the unfunded pension benefit obligation as a percentage of annual covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

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, 1987.

During the year ended June 30, 1987 contributions totaling \$170,215,119 -- \$84,047,360 employer, \$84,848,170 employee and \$1,319,589 from the State -- were made in accordance with contributions determined by State Statute. The employer contributions consisted of \$39,892,207 for normal cost and \$44,155,153 for amortization of the unfunded actuarial accrued liability. Employer contributions represented 9% 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

| <u>Fiscal Year</u> <u>6/30</u> | <u>Valuation Date</u> <u>6/30</u> | <u>Contribution Rates</u> <u>As Percents of</u> <u>Valuation Payroll</u> | <u>Valuation</u> <u>Payroll</u> | <u>Dollar Contribution</u> <u>For Fiscal Year</u> |
|-----------------------------------|--------------------------------------|--|------------------------------------|--|
| 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 |

HEALTH CARE BENEFITS

School Employees Retirement System of Ohio
Outline of Benefit Eligibility and Amounts

HEALTH CARE BENEFITS

(outline last changed 6/30/87)

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. If the retirant or survivor elects to cover his dependents, the monthly retirement allowance is reduced. Effective January 1, 1988 the reduction is \$75 per month before Medicare eligibility and \$23 per month after Medicare eligibility.

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. Second opinion and pre-certification 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 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.

Schedule 13.

HEALTH CARE BENEFITS

Actuarial Accrued Liabilities June 30, 1987

Allocations Using Entry Age Actuarial Cost Method

| <u>Present Value Of</u> | <u>Entry Age Actuarial Accrued Liabilities</u> |
|--|--|
| Future health benefits to present retirants and survivors | \$ 562,163,872 |
| ----- | ----- |
| Health benefits to present inactive members | 56,892,603 |
| ----- | ----- |
| Health benefits to present active members anticipated to retire with service allowance | 408,222,697 |
| Health benefits to present active members anticipated to retire with disability allowances | 7,653,404 |
| Health benefits to survivors of present active members who die before retiring | <u>16,039,783</u> |
| Benefits for present active members | 431,915,884 |
| ----- | ----- |
| Entry Age Liabilities For Present Covered Persons | 1,050,972,359 |
| ----- | ----- |
| Valuation Assets | 137,434,620 |
| ----- | ----- |
| Liabilities to be Covered By Future Contributions | 913,537,739 |

The Employer Contribution Rate for Health Care Benefits has been established by the Board as 5% of payroll. After subtracting the normal cost, the remaining Employer Contribution Rate is applied toward unfunded accrued liabilities. The contribution amount toward unfunded accrued liabilities is insufficient to provide level cost financing.

Schedule 14.

HEALTH CARE BENEFITS
 COMPOSITION OF EMPLOYER CONTRIBUTION RATE
 Established By Statute & Board Action
 & COMPUTED AMORTIZATION PERIOD
 June 30, 1987

| Contributions For | Contributions Expressed as Percents of Payroll |
|---|---|
| Normal cost: | |
| Service allowances | 3.65% |
| Disability allowances | 0.13 |
| Survivor benefits (SB Fund) | <u>0.24</u> |
| Total | 4.02 |
| ----- | |
| EMPLOYER CONTRIBUTION RATE ALLOCATED TO HEALTH CARE BENEFITS | 5.00 |
| ----- | |
| Unfunded Accrued Liabilities | 0.98 |

Schedule 15.

HEALTH CARE BENEFITS

A RELATIVE LEVEL COST INDEX*

Comparative Statement

| Valuation As of <u>6/30</u> | Cost Index* |
|-----------------------------------|----------------|
| 1983 | 5.07% |
| 1984 | 5.43 |
| 1985 | 5.40 |
| 1986 | 6.76 |
| 1987 | 7.69 |

* 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 48).

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

| <u>June 30</u> | <u>Computed Actuarial Accrued Liabilities</u> | | <u>Valuation Assets</u> | <u>Portion of Accrued Liabilities Covered by Assets</u> | |
|----------------|---|--------------------------------|-------------------------|---|------------|
| | <u>(1) Retired Lives</u> | <u>(2) Present Members</u> | | <u>(1)</u> | <u>(2)</u> |
| | (\$ in Millions) | | | | |
| 1981* | \$246 | \$182 | \$ 71 | 29% | 0% |
| 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 |

* Revised financial assumptions.

Schedule 17.

Composition of Health Care Costs

June 30, 1987

| <u>Benefit</u> | <u>Age</u> | <u>Recipient</u> | | <u>Combined</u> |
|----------------|------------|------------------|--------------|-----------------|
| | | <u>Retiree</u> | <u>Other</u> | |
| Medical | Under 65 | 22% | 6% | 28% |
| Medical | 65 Plus | 28 | 7 | 35 |
| Medicare B | Under 65 | -- | -- | -- |
| Medicare B | 65 Plus | 15 | 3 | 18 |
| Prescription | Under 65 | 2 | 1 | 3 |
| Prescription | 65 Plus | 14 | 2 | 16 |
| Combined | Under 65 | 24 | 7 | 31 |
| Combined | 65 Plus | 57 | 12 | 69 |
| Combined | All | 81 | 19 | 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, 1987. 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, 1987 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 health insurance will average 4.5% per year.

At June 30, 1987, the unfunded pension benefit obligation was \$873,060,982, determined as follows:

Pension Benefit Obligation:

| | |
|---|--------------------|
| Retirees and beneficiaries currently receiving benefits and terminated employees not yet receiving benefits | \$ 619,056,475 |
| Current employees -- | |
| Accumulated employee contributions including allocated investment income | -- |
| Employer financed - Vested | 368,256,032 |
| Employer financed - Non-vested | <u>18,387,914</u> |
| Total Pension Benefit Obligation | 1,005,700,421 |
| Net assets available for benefits, at cost (market value was \$156,600,164) | <u>132,639,439</u> |
| Unfunded Pension Benefit Obligation | 873,060,982 |

During the year ended June 30, 1987 the plan experienced a net change of \$176,124,829 in the health care pension benefit obligation.

REQUIRED SUPPLEMENTARY INFORMATION

ANALYSIS OF FUNDING PROGRESS

- HEALTH CARE BENEFITS -

(\$ amounts in Millions)

| <u>Fiscal Year</u> | <u>(1) Net Assets Available for Benefits</u> | <u>(2) Pension Benefit Obligation (PBO)</u> | <u>(3) Percent Funded (1)/(2)</u> | <u>(4) Unfunded PBO (2)-(1)</u> | <u>(5) Annual Covered Payroll</u> | <u>(6) Unfunded PBO as a Percentage of Covered Payroll (4)/(5)</u> |
|--------------------|--|---|---|---|---|--|
| 1985 | \$120 | \$ 656 | 18.3% | \$536 | \$804 | 66.7% |
| 1986 | 129 | 830 | 15.5 | 701 | 869 | 80.7 |
| 1987 | 133 | 1,006 | 13.2 | 873 | 931 | 93.8 |

Analysis of the dollar amounts of net assets available for benefits, pension benefit obligation, and unfunded pension benefit obligation in isolation can be misleading. Expressing the net assets available for benefits as a percentage of the pension benefit obligation provides one indication of the plan's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the system is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded pension benefit obligation and annual covered payroll are both affected by inflation. Expressing the unfunded pension benefit obligation as a percentage of annual covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

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, 1987.

During the year ended June 30, 1987 contributions totaling \$50,986,665 -- \$50,986,665 employer, \$0 employee -- were made in accordance with contributions determined by State Statute. The employer contributions consisted of \$31,288,066 for normal cost and \$19,698,659 for amortization of the unfunded actuarial accrued liability. Employer contributions represented 5% 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

| <u>Fiscal Year</u> <u>6/30</u> | <u>Valuation Date</u> <u>6/30</u> | <u>Contribution Rates</u> <u>As Percents of</u> <u>Valuation Payroll</u> | <u>Valuation</u> <u>Payroll</u> | <u>Dollar Contribution</u> <u>For Fiscal Year</u> |
|-----------------------------------|--------------------------------------|--|------------------------------------|--|
| 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 |

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 4 years from July 1, 1987 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 4 years from July 1, 1987 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.

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

| <u>Sample Ages</u> | <u>Increase Next Year</u> | | |
|------------------------|----------------------------------|---------------------------|--------------|
| | <u>Merit & Seniority</u> | <u>Base (Economy)</u> | <u>Total</u> |
| 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

| <u>Sample Ages</u> | <u>Percent of Active Members Separating Within the Next Year</u> | | | | | |
|------------------------|--|-------------------|--------------|--------------|-------------------|--------------|
| | <u>Men</u> | | | <u>Women</u> | | |
| | <u>Death</u> | <u>Disability</u> | <u>Other</u> | <u>Death</u> | <u>Disability</u> | <u>Other</u> |
| 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

| <u>Sample Ages</u> | <u>Percent of Eligible Active Members Retiring Within Next Year</u> | |
|------------------------|---|-----|
| | <u>Men</u> | |
| 50 | | 15% |
| 55 | | 10 |
| 60 | | 10 |
| 65 | | 40 |
| 70 | | 50 |
| 75 | | 100 |

| <u>Sample Ages</u> | <u>Percent of Eligible Active Members Retiring Within Next Year</u> | |
|------------------------|---|-----|
| | <u>Women</u> | |
| 50 | | 12% |
| 55 | | 18 |
| 60 | | 25 |
| 65 | | 35 |
| 70 | | 50 |
| 75 | | 100 |

Schedule 21.

Single Life Retirement Values

| <u>Sample Attained Ages</u> | <u>Present Value of \$1 Monthly For Life Increasing 3.0% Annually (1st Increase After 1 Year)</u> | | <u>Future Life Expectancy (Years)</u> | | <u>Expected Total Lifetime</u> | |
|-------------------------------------|---|--------------|---|--------------|------------------------------------|--------------|
| | <u>Men</u> | <u>Women</u> | <u>Men</u> | <u>Women</u> | <u>Men</u> | <u>Women</u> |
| | 50 | \$171.18 | \$191.98 | 27.53 | 34.60 | 77.53 |
| 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 |

| <u>Sample Attained Ages</u> | <u>Portion of Age 60 Lives Still Alive</u> | | <u>\$1,000 Benefit Beginning at Age 60, Increasing 3% Annually</u> |
|-------------------------------------|--|--------------|--|
| | <u>Men</u> | <u>Women</u> | |
| 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:

| <u>Status</u> | <u>Monthly Rates Reported</u> | |
|---|-------------------------------|-------------|
| | <u>1987</u> | <u>1986</u> |
| Benefit Recipient below age 65 | \$202.13 | \$169.86 |
| Spouse below age 65* | 109.67 | 83.38 |
| Benefit recipient above age 65 and eligible for Medicare | 42.04 | 35.33 |
| Spouse above age 65 and eligible for Medicare* | 26.07 | 19.35 |
| Mail order prescription service | 19.40 | 14.55 |

* System portion.

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: \$24.80 per effective January 1, 1988, from \$17.90.

Premium Increases: Premiums and spouse coverage deductions 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 | | Spouse* | | Mail Order Prescription | Medicare B Premiums |
|---------------------------|-------------------|---------|----------|---------|----------------------------|------------------------|
| | Under 65 | 65+ | Under 65 | 65+ | | |
| 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 |

COMPOUND ANNUAL
RATES OF INCREASE:

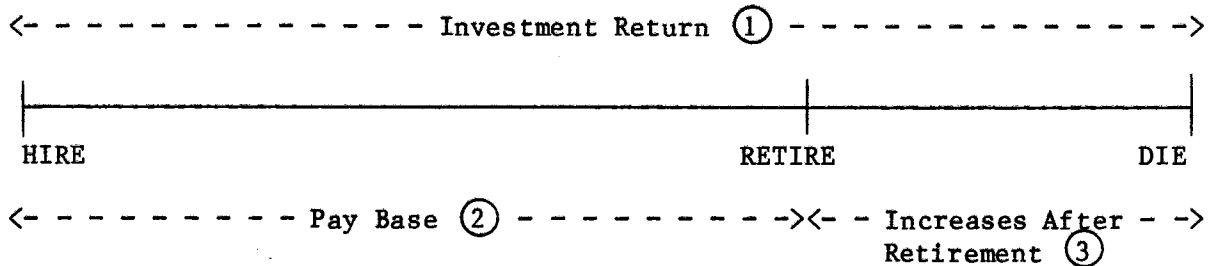
| | | | | | | |
|---------------|-----|-----|-----|-----|-----|-----|
| Last Year | 19% | 19% | 32% | 35% | 33% | 39% |
| Last 5 Years | 11 | 10 | 14 | 27 | 45 | 15 |
| Since 6/30/80 | 10 | 4 | 45 | 40 | - | 15 |

* 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



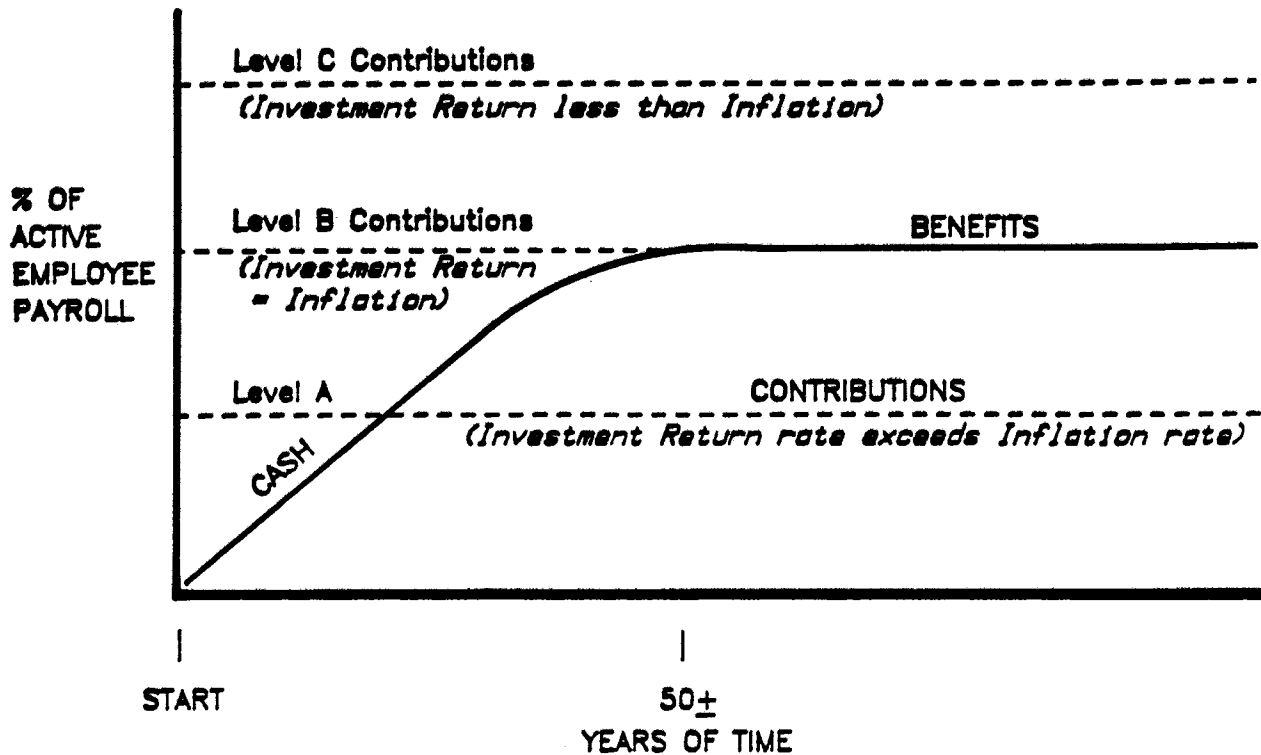
- ① Investment Return. An increase in this assumption reduces computed contributions. The assumption operates over all parts of an employee's lifetime.
- ② Pay Base. An increase in this assumption increases computed contributions. A 1% increase in this assumption, however, does not increase contributions 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.

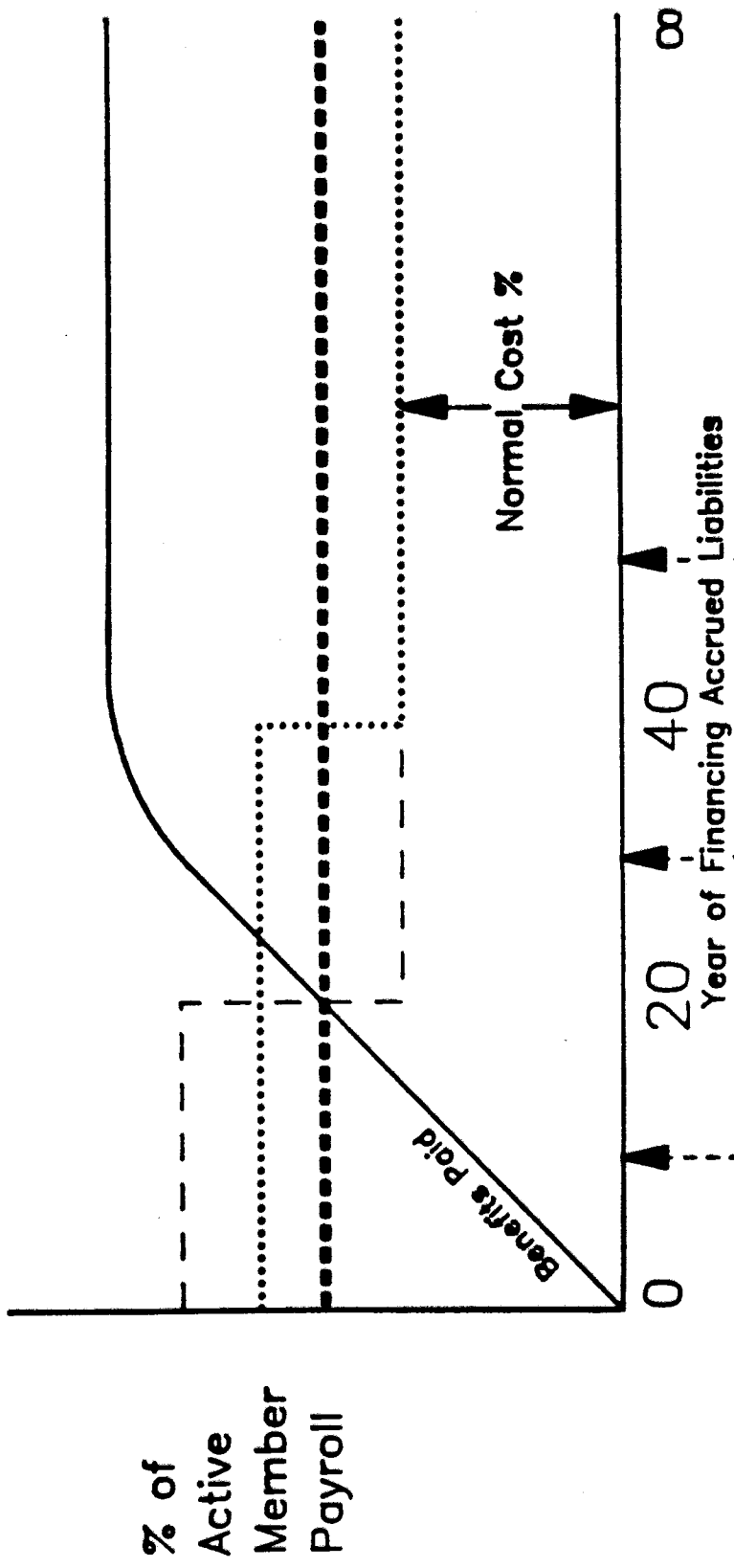
Who would contribute at a rate always more than the benefits paid?

**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 | 9.77% |
| UAAL Over 40 Years | 8.0 |
| LEVEL PERCENT | 7.0 |

EXHIBIT 4

**BASIC SERIES: YEAR-BY-YEAR TOTAL RETURNS
1926-1986**

| <u>Year</u> | <u>Common Stocks</u> | <u>Small Stocks</u> | <u>Long-Term Corporate Bonds</u> | <u>Long-Term Government Bonds</u> | <u>U.S. Treasury Bills</u> | <u>Consumer Price Index</u> |
|-------------|--------------------------|-------------------------|--|---|--------------------------------|-------------------------------------|
| 1926 | 0.1162 | 0.0028 | 0.0737 | 0.0777 | 0.0327 | -0.0189 |
| 1927 | 0.3749 | 0.2210 | 0.0744 | 0.0893 | 0.0312 | -0.0208 |
| 1928 | 0.4361 | 0.3969 | 0.0284 | 0.0010 | 0.0324 | -0.0097 |
| 1929 | -0.0842 | -0.5136 | 0.0327 | 0.0342 | 0.0475 | 0.0019 |
| 1930 | -0.2490 | -0.3815 | 0.0798 | 0.0466 | 0.0241 | -0.0603 |
| 1931 | -0.4334 | -0.0975 | -0.0185 | -0.0531 | 0.0107 | -0.0952 |
| 1932 | -0.0019 | -0.0539 | 0.1082 | 0.1684 | 0.0096 | -0.1030 |
| 1933 | 0.5399 | 1.4287 | 0.1838 | -0.0008 | 0.0030 | 0.0051 |
| 1934 | -0.0144 | 0.2422 | 0.1384 | 0.1002 | 0.0016 | 0.0203 |
| 1935 | 0.0767 | 0.4019 | 0.0961 | 0.0498 | 0.0017 | 0.0299 |
| 1936 | 0.3392 | 0.6480 | 0.0674 | 0.0751 | 0.0018 | 0.0121 |
| 1937 | -0.3503 | -0.5801 | 0.0275 | 0.0023 | 0.0031 | 0.0310 |
| 1938 | 0.3112 | 0.3280 | 0.0613 | 0.0553 | -0.0002 | -0.0278 |
| 1939 | -0.0041 | 0.0035 | 0.0397 | 0.0594 | 0.0002 | -0.0048 |
| 1940 | -0.0978 | -0.0516 | 0.0339 | 0.0609 | 0.0000 | 0.0096 |
| 1941 | -0.1159 | -0.0900 | 0.0273 | 0.0093 | 0.0006 | 0.0972 |
| 1942 | 0.2034 | 0.4451 | 0.0260 | 0.0322 | 0.0027 | 0.0929 |
| 1943 | 0.2590 | 0.8837 | 0.0283 | 0.0208 | 0.0035 | 0.0316 |
| 1944 | 0.1975 | 0.5372 | 0.0473 | 0.0281 | 0.0033 | 0.0211 |
| 1945 | 0.3644 | 0.7361 | 0.0408 | 0.1073 | 0.0033 | 0.0225 |
| 1946 | -0.0807 | -0.1163 | 0.0172 | -0.0010 | 0.0035 | 0.1817 |
| 1947 | 0.0571 | 0.0092 | -0.0234 | -0.0263 | 0.0050 | 0.0901 |
| 1948 | 0.0550 | -0.0211 | 0.0414 | 0.0340 | 0.0081 | 0.0271 |
| 1949 | 0.1879 | 0.1975 | 0.0331 | 0.0645 | 0.0110 | -0.0180 |
| 1950 | 0.3171 | 0.3875 | 0.0212 | 0.0006 | 0.0120 | 0.0579 |
| 1951 | 0.2402 | 0.0780 | -0.0269 | -0.0394 | 0.0149 | 0.0587 |
| 1952 | 0.1837 | 0.0303 | 0.0352 | 0.0116 | 0.0168 | 0.0088 |
| 1953 | -0.0099 | -0.0649 | 0.0341 | 0.0363 | 0.0182 | 0.0062 |
| 1954 | 0.5262 | 0.6058 | 0.0539 | 0.0719 | 0.0086 | -0.0050 |
| 1955 | 0.3156 | 0.2044 | 0.0048 | -0.0130 | 0.0157 | 0.0037 |
| 1956 | 0.0656 | 0.0428 | -0.0681 | -0.0559 | 0.0246 | 0.0286 |
| 1957 | -0.1078 | -0.1457 | 0.0871 | 0.0745 | 0.0314 | 0.0302 |
| 1958 | 0.4336 | 0.6489 | -0.0222 | -0.0610 | 0.0154 | 0.0176 |
| 1959 | 0.1195 | 0.1640 | -0.0097 | -0.0226 | 0.0295 | 0.0150 |
| 1960 | 0.0047 | -0.0329 | 0.0907 | 0.1378 | 0.0266 | 0.0148 |
| 1961 | 0.2689 | 0.3209 | 0.0482 | 0.0097 | 0.0213 | 0.0067 |
| 1962 | -0.0873 | -0.1190 | 0.0795 | 0.0689 | 0.0273 | 0.0122 |
| 1963 | 0.2280 | 0.2357 | 0.0219 | 0.0121 | 0.0312 | 0.0165 |
| 1964 | 0.1648 | 0.2352 | 0.0477 | 0.0351 | 0.0354 | 0.0119 |
| 1965 | 0.1245 | 0.4175 | -0.0046 | 0.0071 | 0.0393 | 0.0192 |
| 1966 | -0.1006 | -0.0701 | 0.0020 | 0.0365 | 0.0476 | 0.0335 |
| 1967 | 0.2398 | 0.8357 | -0.0495 | -0.0919 | 0.0421 | 0.0304 |
| 1968 | 0.1106 | 0.3597 | 0.0257 | -0.0026 | 0.0521 | 0.0472 |
| 1969 | -0.0850 | -0.2505 | -0.0809 | -0.0508 | 0.0658 | 0.0611 |
| 1970 | 0.0401 | -0.1743 | 0.1837 | 0.1210 | 0.0653 | 0.0549 |
| 1971 | 0.1431 | 0.1650 | 0.1101 | 0.1323 | 0.0439 | 0.0336 |
| 1972 | 0.1898 | 0.0443 | 0.0726 | 0.0568 | 0.0384 | 0.0341 |
| 1973 | -0.1466 | -0.3090 | 0.0114 | -0.0111 | 0.0693 | 0.0880 |
| 1974 | -0.2647 | -0.1995 | -0.0306 | 0.0435 | 0.0800 | 0.1220 |
| 1975 | 0.3720 | 0.5282 | 0.1464 | 0.0919 | 0.0580 | 0.0701 |
| 1976 | 0.2384 | 0.5738 | 0.1865 | 0.1875 | 0.0508 | 0.0481 |
| 1977 | -0.0718 | 0.2538 | 0.0171 | -0.0067 | 0.0512 | 0.0677 |
| 1978 | 0.0656 | 0.2346 | -0.0007 | -0.0116 | 0.0718 | 0.0903 |
| 1979 | 0.1844 | 0.4346 | -0.0418 | -0.0122 | 0.1038 | 0.1331 |
| 1980 | 0.3242 | 0.3988 | -0.0262 | -0.0395 | 0.1124 | 0.1240 |
| 1981 | -0.0491 | 0.1388 | -0.0096 | 0.0185 | 0.1471 | 0.0894 |
| 1982 | 0.2141 | 0.2801 | 0.4379 | 0.4035 | 0.1054 | 0.0387 |
| 1983 | 0.2251 | 0.3967 | 0.0470 | 0.0068 | 0.0880 | 0.0380 |
| 1984 | 0.0627 | -0.0667 | 0.1639 | 0.1543 | 0.0985 | 0.0395 |
| 1985 | 0.3216 | 0.2466 | 0.3090 | 0.3097 | 0.0772 | 0.0377 |
| 1986 | 0.1847 | 0.0685 | 0.1985 | 0.2444 | 0.0616 | 0.0113 |

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INVESTMENT RETURN & INFLATION

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 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.

| No. of Years/ Ended December | Inflation (CPI) | Annual Investment Return (including income) ...REAL RETURN (Total minus Inflation)... | | | | |
|---------------------------------------|--------------------|--|-----------|-----------|-----------|--------|
| | | Bonds (Long) | | Cash | Stocks | A |
| | | US | Corp | Equiv | (S&P 500) | Sample |
| | | Treas | (Sal Bro) | (T-Bills) | | 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 |
| ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| 1/1985 | 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 |
| 5/1986 | 3.3 | 18.3 | 19.1 | 5.3 | 16.6 | 16.6 |
| 10/1986 | 6.6 | 3.1 | 3.4 | 2.5 | 7.2 | 5.0 |
| 25/1986 | 5.4 | 0.8 | 1.3 | 1.2 | 3.9 | 2.5 |

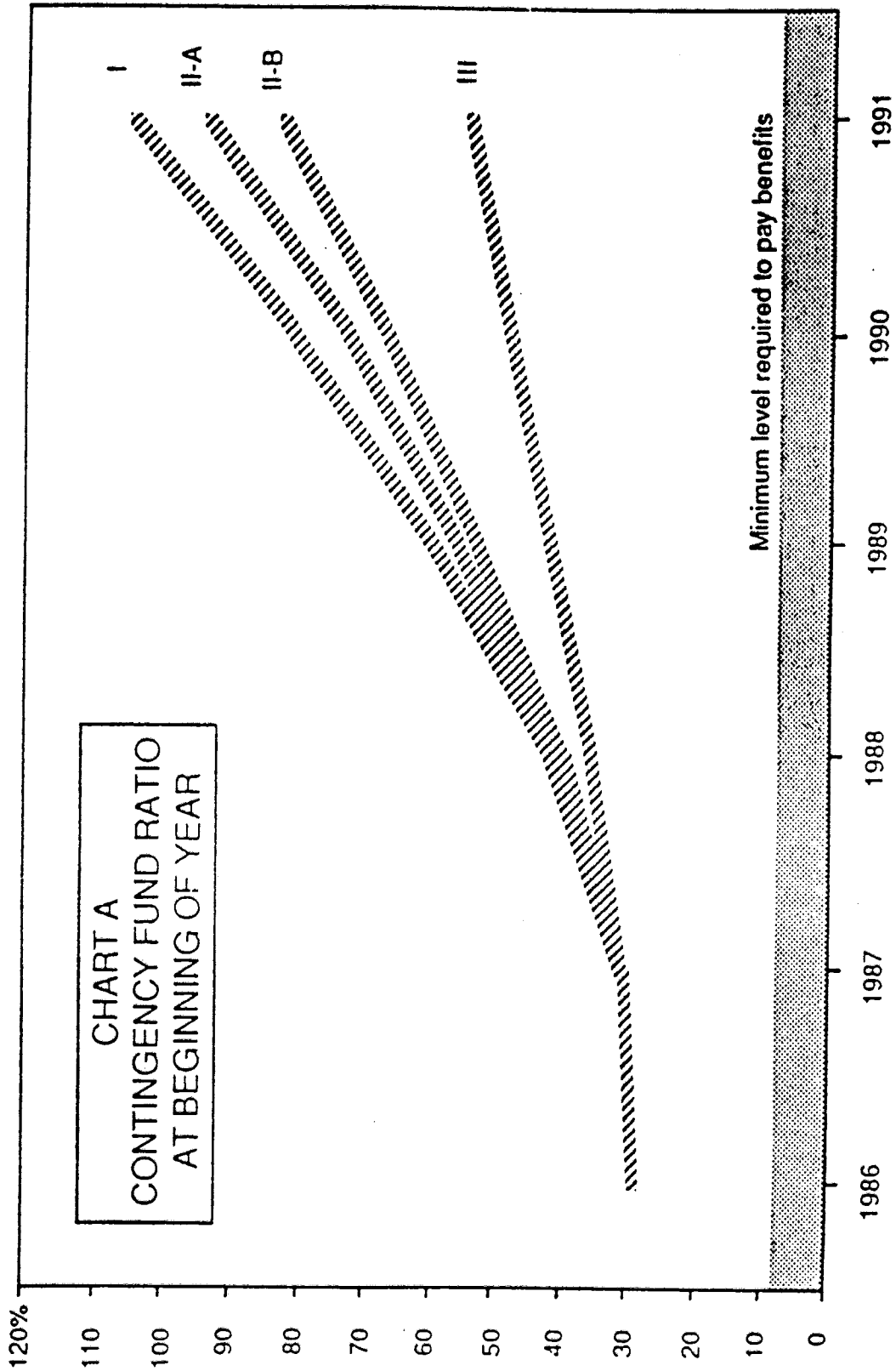
* 10% Cash Equiv + 45% Corp Bonds + 45% Stocks (only one of many reasonable samples).

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

Excerpts From
 THE 1987 ANNUAL REPORTS
 OF
 THE SOCIAL SECURITY ADMINISTRATION



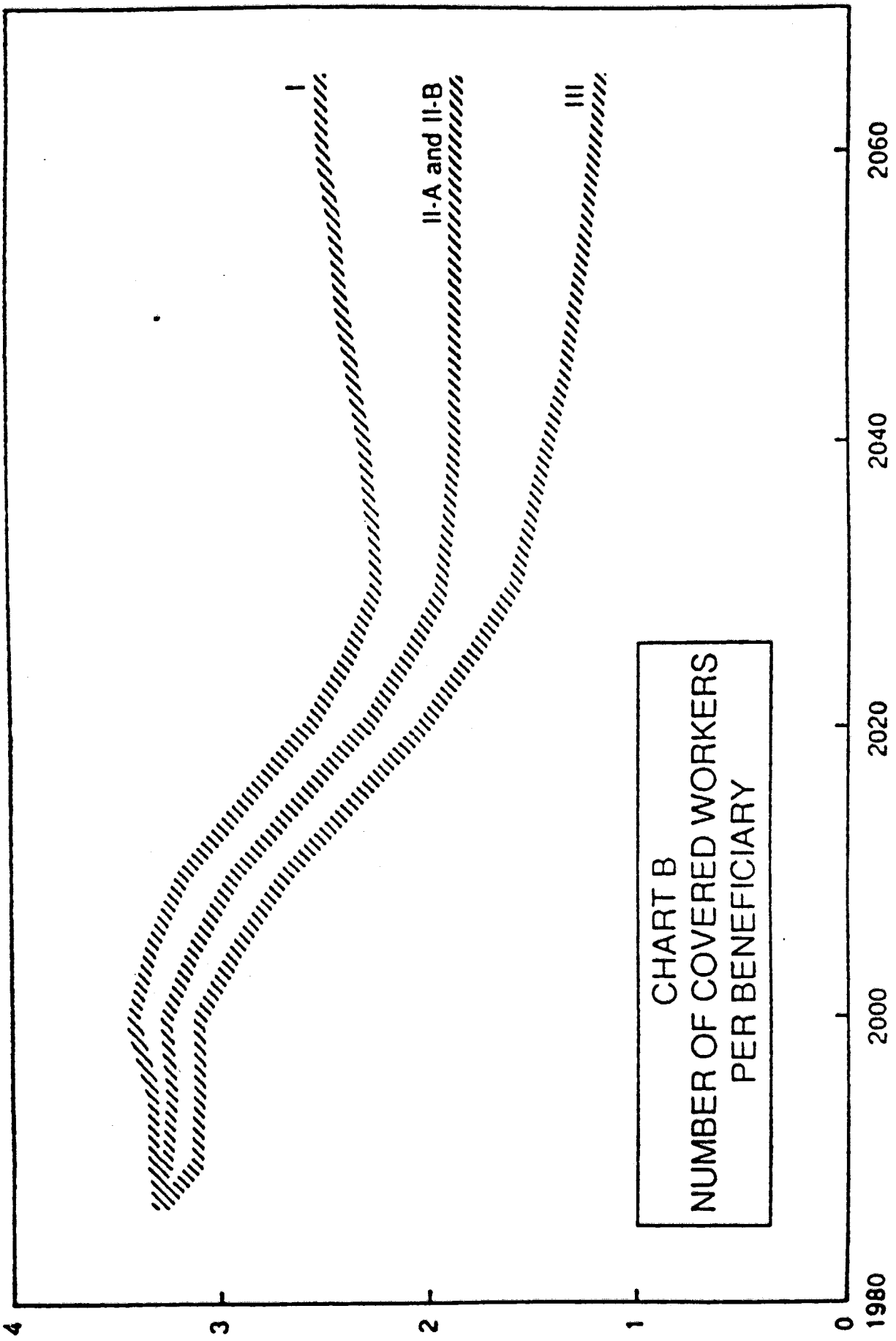


CHART B
 NUMBER OF COVERED WORKERS
 PER BENEFICIARY

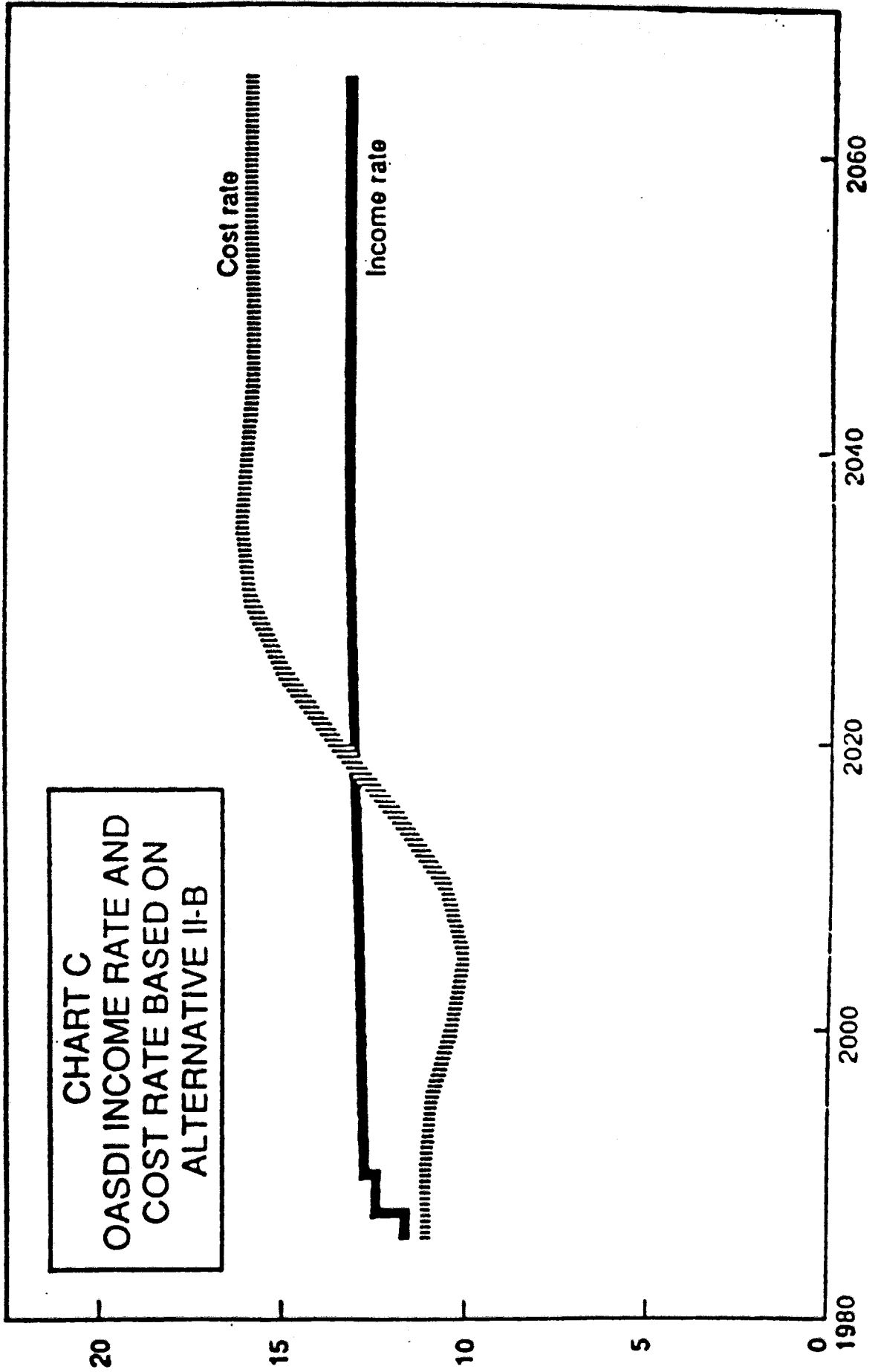


TABLE 10.—SELECTED ECONOMIC ASSUMPTIONS BY ALTERNATIVE, CALENDAR YEARS
1980-2060

| Calendar year | Average annual percentage increase in— | | | Real-wage differential ¹ (percent) | Average annual interest rate ² (percent) | Average annual unemployment rate ³ (percent) |
|------------------------|--|-------------------------------------|-----------------------------------|--|--|--|
| | Real GNP ¹ | Average wages in covered employment | Consumer Price Index ² | | | |
| Past experience | | | | | | |
| 1960-64 | 3.9 | 3.4 | 1.3 | 2.1 | 3.7 | 5.7 |
| 1965-69 | 4.2 | 5.4 | 3.4 | 2.0 | 5.2 | 3.8 |
| 1970-74 | 2.4 | 6.3 | 6.1 | .2 | 6.7 | 5.4 |
| 1975 | -1.3 | 6.7 | 9.1 | -2.5 | 7.4 | 6.5 |
| 1976 | 4.9 | 6.5 | 5.7 | 2.8 | 7.1 | 7.7 |
| 1977 | 4.7 | 7.2 | 6.5 | .7 | 7.1 | 7.1 |
| 1978 | 5.3 | 6.6 | 7.6 | 2.0 | 6.2 | 6.1 |
| 1979 | 2.5 | 6.2 | 11.4 | -2.2 | 9.1 | 5.9 |
| 1980 | -2 | 9.1 | 13.5 | -4.4 | 11.0 | 7.2 |
| 1981 | 1.9 | 6.3 | 10.3 | -1.0 | 13.3 | 7.6 |
| 1982 | -2.5 | 6.6 | 6.0 | .6 | 12.8 | 9.7 |
| 1983 | 3.6 | 5.0 | 3.0 | 2.0 | 11.0 | 6.6 |
| 1984 | 6.4 | 5.9 | 3.4 | 2.4 | 12.4 | 7.5 |
| 1985 | 2.7 | 4.1 | 3.5 | .6 | 10.6 | 7.2 |

TABLE 10.—SELECTED ECONOMIC ASSUMPTIONS BY ALTERNATIVE, CALENDAR YEARS
1980-2060 (Cont.)

| Calendar year | Average annual percentage increase in— | | | Real-wage differential ¹ (percent) | Average annual interest rate ² (percent) | Average annual unemployment rate ³ (percent) |
|-------------------------|--|-------------------------------------|-----------------------------------|--|--|--|
| | Real GNP ¹ | Average wages in covered employment | Consumer Price Index ² | | | |
| Alternative I | | | | | | |
| 1986 | 2.7 | 4.4 | 1.6 | 2.9 | 8.0 | 7.0 |
| 1987 | 3.5 | 4.7 | 2.6 | 2.1 | 7.4 | 6.9 |
| 1988 | 4.2 | 5.3 | 3.1 | 2.2 | 6.9 | 6.6 |
| 1989 | 4.1 | 5.5 | 3.0 | 2.5 | 7.0 | 6.1 |
| 1990 | 4.0 | 5.1 | 2.7 | 2.4 | 6.7 | 5.7 |
| 1991 | 4.0 | 4.6 | 2.2 | 2.4 | 6.0 | 5.2 |
| 1992 | 3.3 | 4.3 | 2.0 | 2.3 | 5.3 | 5.0 |
| 1993 | 3.0 | 4.1 | 2.0 | 2.1 | 4.7 | 4.9 |
| 1994 | 3.0 | 4.2 | 2.0 | 2.2 | 4.6 | 4.9 |
| 1995 | 3.0 | 4.1 | 2.0 | 2.1 | 4.8 | 4.9 |
| 1996 | 3.0 | 4.3 | 2.0 | 2.3 | 4.9 | 4.8 |
| 2000 | 3.2 | 4.6 | 2.0 | 2.6 | 5.0 | 5.0 |
| 2010 & later | *2.8 | 4.5 | 2.0 | 2.5 | 5.0 | 5.0 |
| Alternative II-A | | | | | | |
| 1986 | 2.6 | 3.9 | 1.6 | 2.3 | 8.0 | 7.0 |
| 1987 | 2.9 | 4.9 | 3.0 | 1.9 | 7.5 | 7.0 |
| 1988 | 3.5 | 5.1 | 3.6 | 1.5 | 7.1 | 6.8 |
| 1989 | 3.6 | 5.4 | 3.6 | 1.9 | 7.5 | 6.4 |
| 1990 | 3.6 | 5.2 | 3.2 | 2.0 | 7.2 | 6.0 |
| 1991 | 3.4 | 5.1 | 3.0 | 2.1 | 6.6 | 5.7 |
| 1992 | 2.9 | 5.0 | 3.0 | 2.0 | 6.1 | 5.5 |
| 1993 | 2.6 | 4.7 | 3.0 | 1.7 | 5.6 | 5.4 |
| 1994 | 2.6 | 4.9 | 3.0 | 1.9 | 5.5 | 5.4 |
| 1995 | 2.6 | 4.8 | 3.0 | 1.8 | 5.5 | 5.4 |
| 1996 | 2.6 | 4.9 | 3.0 | 1.9 | 5.6 | 5.3 |
| 2000 | 2.6 | 5.1 | 3.0 | 2.1 | 5.5 | 5.5 |
| 2010 & later | *2.2 | 5.0 | 3.0 | 2.0 | 5.5 | 5.5 |
| Alternative II-B | | | | | | |
| 1986 | 2.6 | 3.8 | 1.6 | 2.3 | 8.0 | 7.0 |
| 1987 | 2.3 | 4.3 | 3.2 | 1.1 | 7.6 | 7.1 |
| 1988 | 3.0 | 5.2 | 4.5 | .7 | 7.5 | 7.1 |
| 1989 | 2.9 | 5.2 | 4.3 | .8 | 8.1 | 6.9 |
| 1990 | 3.0 | 5.8 | 4.5 | 1.3 | 8.2 | 6.6 |
| 1991 | 3.0 | 5.9 | 4.3 | 1.6 | 7.8 | 6.2 |
| 1992 | 2.6 | 5.6 | 4.0 | 1.6 | 7.3 | 6.0 |
| 1993 | 2.3 | 5.4 | 4.0 | 1.4 | 6.8 | 5.9 |
| 1994 | 2.3 | 5.5 | 4.0 | 1.5 | 6.5 | 5.9 |
| 1995 | 2.3 | 5.4 | 4.0 | 1.4 | 6.3 | 5.8 |
| 1996 | 2.3 | 5.6 | 4.0 | 1.6 | 6.2 | 5.8 |
| 2000 | 2.1 | 5.6 | 4.0 | 1.6 | 6.0 | 6.0 |
| 2010 & later | *1.7 | 5.5 | 4.0 | 1.5 | 6.0 | 6.0 |
| Alternative III | | | | | | |
| 1986 | 2.5 | 3.3 | 1.6 | 1.7 | 8.0 | 7.0 |
| 1987 | -1.2 | 2.6 | 3.4 | -9 | 7.6 | 7.9 |
| 1988 | 1.2 | 5.2 | 5.4 | -3 | 7.9 | 9.0 |
| 1989 | 1.8 | 5.8 | 6.0 | -2 | 9.1 | 8.5 |
| 1990 | -3 | 5.0 | 5.7 | -7 | 9.5 | 9.6 |
| 1991 | 3.7 | 6.8 | 5.0 | 1.8 | 9.0 | 8.7 |
| 1992 | 2.4 | 5.9 | 5.0 | .9 | 8.3 | 8.2 |
| 1993 | 2.2 | 5.8 | 5.0 | .8 | 7.7 | 7.8 |
| 1994 | 2.2 | 6.0 | 5.0 | 1.0 | 7.4 | 7.4 |
| 1995 | 2.2 | 5.9 | 5.0 | .9 | 7.1 | 7.1 |
| 1996 | 2.1 | 6.1 | 5.0 | 1.1 | 6.8 | 6.9 |
| 2000 | 1.5 | 6.1 | 5.0 | 1.1 | 6.5 | 7.0 |
| 2010 & later | *1.2 | 6.0 | 5.0 | 1.0 | 6.5 | 7.0 |

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

²The 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).

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

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

⁵Through 1996, the rates shown are crude civilian unemployment rates. After 1996, the rates are total rates (including military personnel), adjusted by age and sex based on the estimated total labor force on July 1, 1986.

*Preliminary.

⁶This 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 2060 are 3.1, 2.1, 1.7, and 0.5 percent for alternatives I, II-A, II-B, and III, respectively.

TABLE 11.—SELECTED DEMOGRAPHIC ASSUMPTIONS BY ALTERNATIVE, CALENDAR YEARS
1940-2060

| 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 | 1,583.2 | 61.4 | 65.7 | 11.9 | 13.4 | |
| 1950..... | 3.03 | 1,275.5 | 65.6 | 71.1 | 12.8 | 15.1 | |
| 1960..... | 3.61 | 1,182.8 | 66.7 | 73.2 | 12.9 | 15.9 | |
| 1970..... | 2.43 | 1,097.2 | 67.1 | 74.9 | 13.1 | 17.1 | |
| 1975..... | 1.77 | 985.4 | 68.7 | 76.6 | 13.7 | 18.0 | |
| 1976..... | 1.74 | 974.5 | 69.1 | 76.8 | 13.7 | 18.1 | |
| 1977..... | 1.80 | 948.0 | 69.4 | 77.2 | 13.9 | 18.3 | |
| 1978..... | 1.76 | 942.3 | 69.6 | 77.3 | 13.9 | 18.3 | |
| 1979..... | 1.82 | 912.4 | 70.0 | 77.7 | 14.2 | 18.6 | |
| 1980..... | 1.85 | 926.8 | 69.9 | 77.5 | 14.0 | 18.4 | |
| 1981..... | 1.83 | 900.6 | 70.4 | 77.9 | 14.2 | 18.6 | |
| 1982..... | 1.83 | 872.9 | 70.8 | 78.2 | 14.5 | 18.8 | |
| 1983..... | 1.81 | 880.7 | 70.9 | 78.7 | 14.3 | 18.6 | |
| 1984..... | 1.80 | 874.6 | 71.1 | 78.2 | 14.4 | 18.7 | |
| 1985..... | 1.84 | 872.7 | 71.1 | 78.3 | 14.5 | 18.6 | |
| 1986 ⁴ | 1.84 | 859.4 | 71.4 | 78.5 | 14.6 | 18.7 | |
| Alternative I: | | | | | | | |
| 1987..... | 1.86 | 854.3 | 71.5 | 78.6 | 14.6 | 18.8 | |
| 1990..... | 1.91 | 838.9 | 71.8 | 78.8 | 14.7 | 18.9 | |
| 1995..... | 2.01 | 816.4 | 72.2 | 79.2 | 14.8 | 19.0 | |
| 2000..... | 2.10 | 797.9 | 72.6 | 79.4 | 14.8 | 19.2 | |
| 2010..... | 2.28 | 772.8 | 73.0 | 79.8 | 15.0 | 19.4 | |
| 2020..... | 2.30 | 752.6 | 73.3 | 80.1 | 15.2 | 19.7 | |
| 2030..... | 2.30 | 733.5 | 73.6 | 80.4 | 15.4 | 19.9 | |
| 2040..... | 2.30 | 715.4 | 73.9 | 80.7 | 15.6 | 20.1 | |
| 2050..... | 2.30 | 698.2 | 74.2 | 81.0 | 15.8 | 20.4 | |
| 2060..... | 2.30 | 681.9 | 74.5 | 81.3 | 16.0 | 20.6 | |
| Alternatives II-A and II-B: | | | | | | | |
| 1987..... | 1.85 | 846.1 | 71.6 | 78.7 | 14.7 | 18.9 | |
| 1990..... | 1.86 | 808.4 | 72.3 | 79.3 | 14.9 | 19.2 | |
| 1995..... | 1.90 | 755.3 | 73.2 | 80.1 | 15.3 | 19.7 | |
| 2000..... | 1.93 | 717.1 | 73.9 | 80.8 | 15.6 | 20.1 | |
| 2010..... | 1.99 | 678.4 | 74.6 | 81.4 | 16.0 | 20.6 | |
| 2020..... | 2.00 | 648.0 | 75.1 | 82.0 | 16.3 | 21.0 | |
| 2030..... | 2.00 | 619.5 | 75.7 | 82.6 | 16.7 | 21.5 | |
| 2040..... | 2.00 | 592.8 | 76.2 | 83.1 | 17.0 | 21.9 | |
| 2050..... | 2.00 | 567.6 | 76.7 | 83.7 | 17.4 | 22.4 | |
| 2060..... | 2.00 | 544.0 | 77.1 | 84.2 | 17.7 | 22.8 | |
| Alternative III: | | | | | | | |
| 1987..... | 1.83 | 837.9 | 71.8 | 78.8 | 14.7 | 18.9 | |
| 1990..... | 1.79 | 779.2 | 72.8 | 79.7 | 15.2 | 19.5 | |
| 1995..... | 1.74 | 700.8 | 74.2 | 81.1 | 15.8 | 20.3 | |
| 2000..... | 1.69 | 647.2 | 75.2 | 82.0 | 16.3 | 21.0 | |
| 2010..... | 1.61 | 582.1 | 76.5 | 83.3 | 17.1 | 21.9 | |
| 2020..... | 1.60 | 528.0 | 77.6 | 84.5 | 17.9 | 22.8 | |
| 2030..... | 1.60 | 479.6 | 78.7 | 85.7 | 18.7 | 23.7 | |
| 2040..... | 1.60 | 436.3 | 79.8 | 86.8 | 19.6 | 24.6 | |
| 2050..... | 1.60 | 397.5 | 80.9 | 87.9 | 20.4 | 25.5 | |
| 2060..... | 1.60 | 362.7 | 82.0 | 89.0 | 21.2 | 26.4 | |

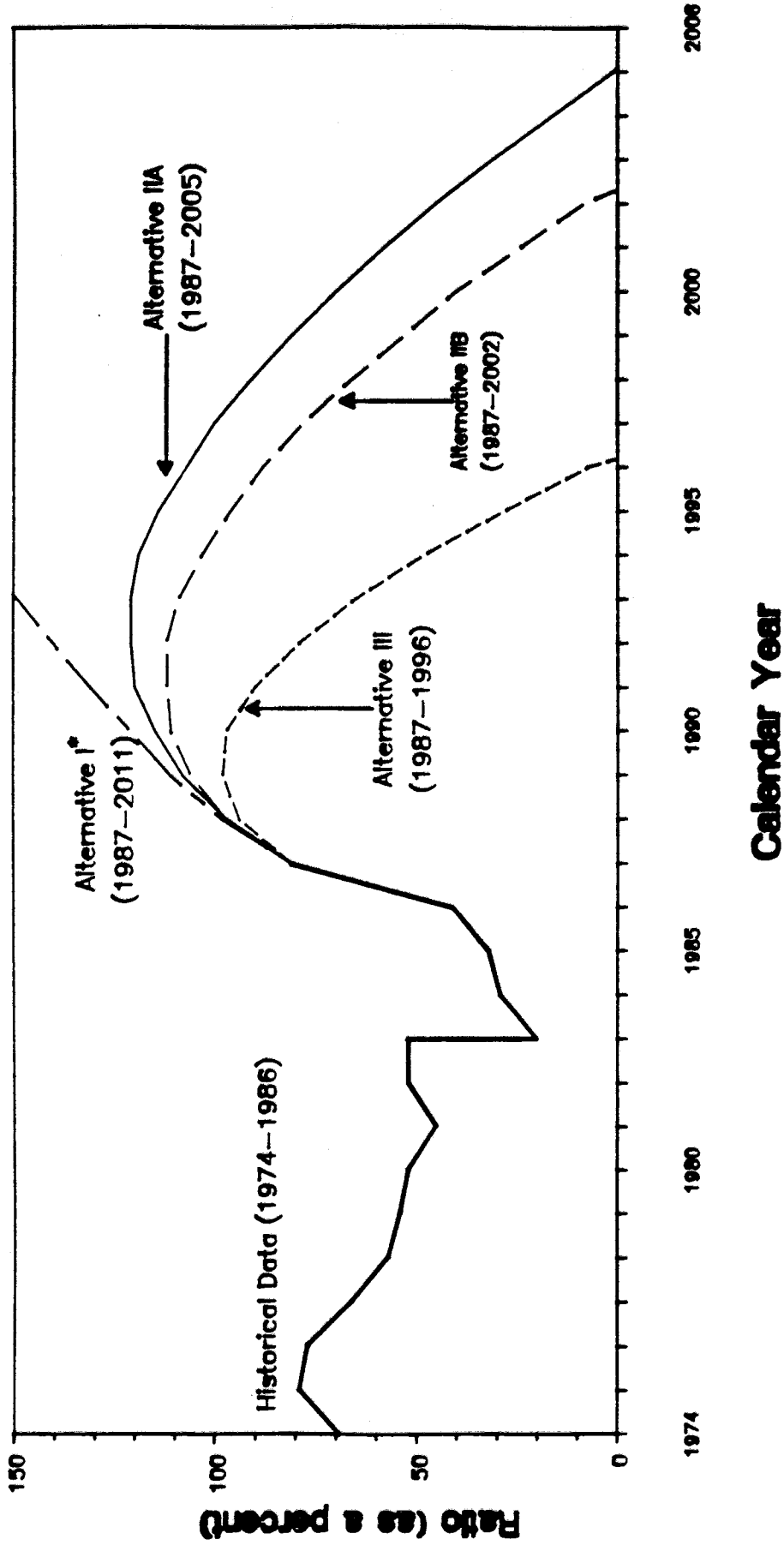
¹The total fertility rate for any year is the average number of children who would be born to a woman in her lifetime if she were to experience the birth rates by age observed in, or assumed for, the selected year, and if she were to survive the entire child-bearing period. The ultimate total fertility rate is assumed to be reached in 2011.

²The 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.

³The 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.

⁴Estimated.

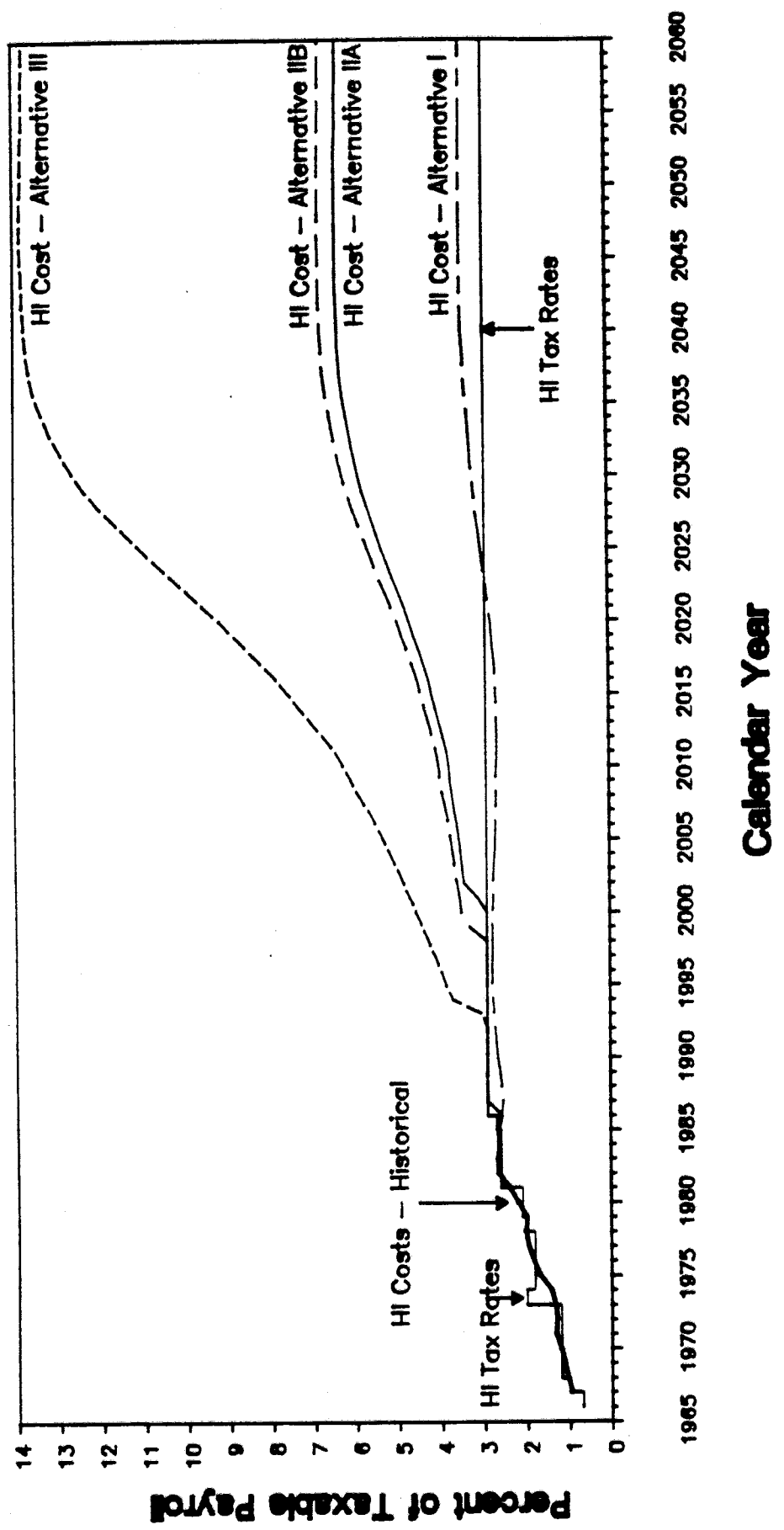
Figure 1 Short Term HI Trust Fund Ratios



*The trust fund remains solvent under alternative I during this 25--year projection period.

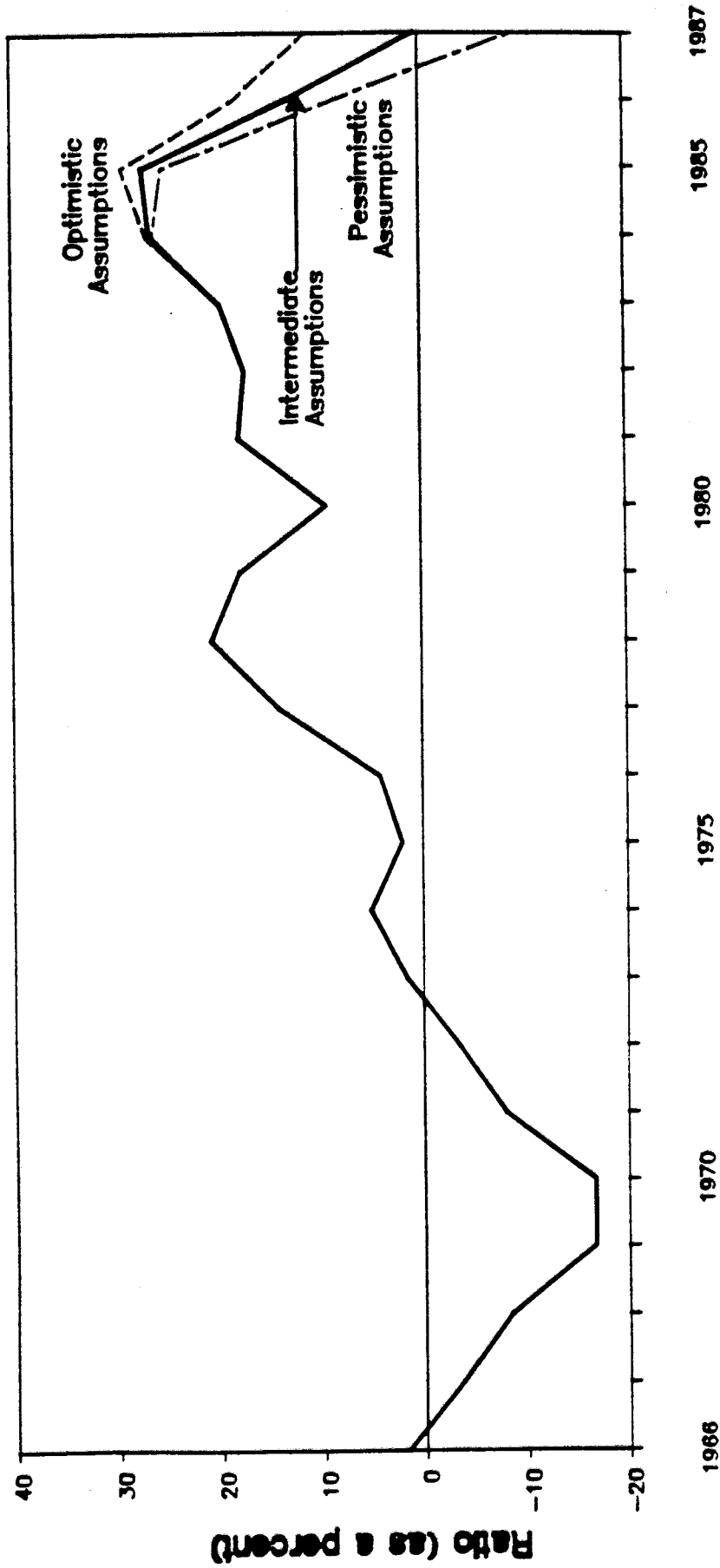
Note: The trust fund ratio is defined as the ratio of assets at the beginning of the year to disbursements during the year.

Figure 2
Estimated HI Cost and Tax Rates



Note: HI projected cost includes an allowance for maintaining the trust fund balance at the level of at least a half-year's outgo after accounting for the offsetting effect of interest earnings. Under alternative I, maintenance amounts are included only in the last 25-year projection period.

Figure 4
Actuarial Status of the SMI Trust Fund



End of Calendar Year

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.