

SCHOOL EMPLOYEES RETIREMENT SYSTEM OF OHIO

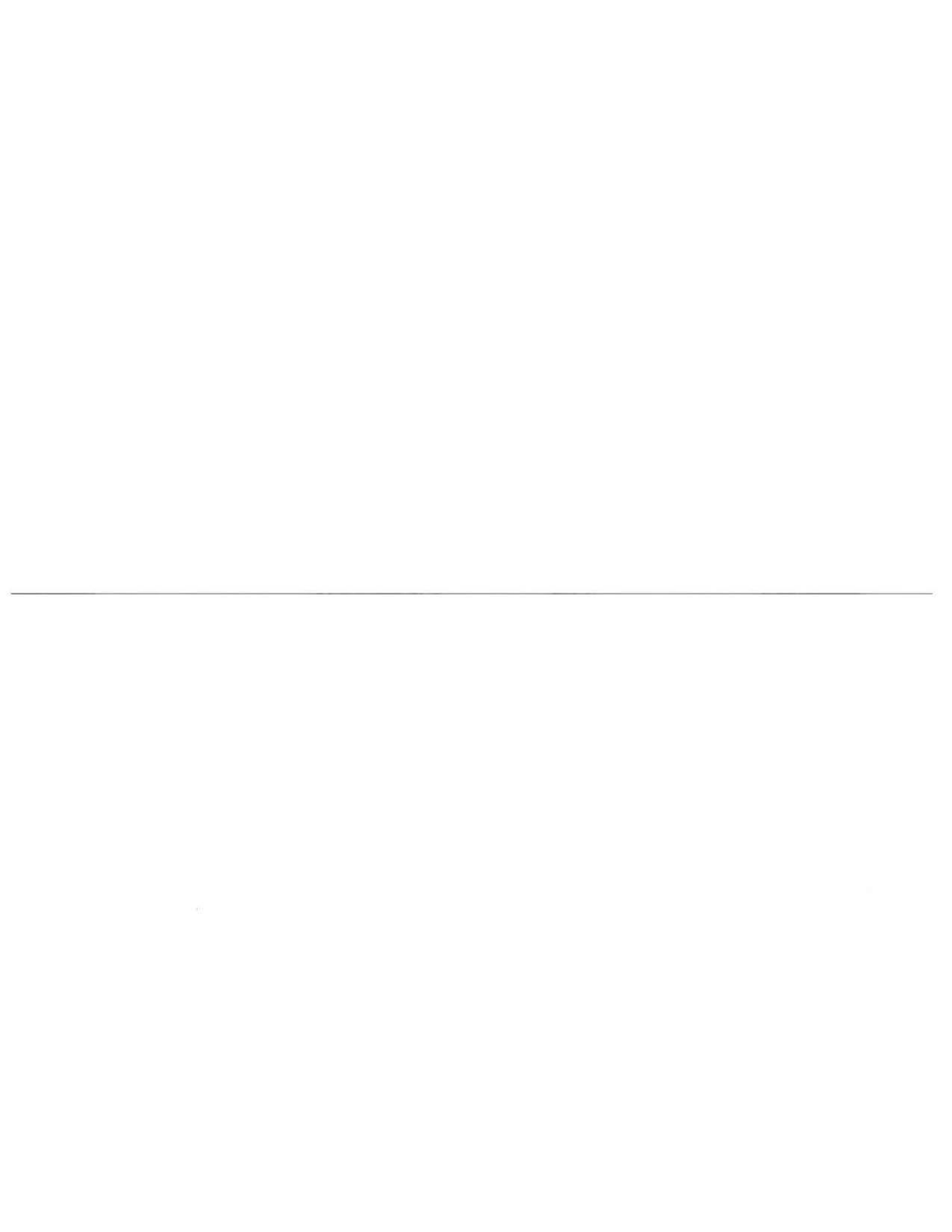
The Report of the
ANNUAL BASIC BENEFITS ACTUARIAL VALUATION
June 30, 1997



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Report of Annual Basic Benefits Actuarial Valuation of Ohio SERS

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December 5, 1997

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

Ladies and Gentlemen:

Presented in this report are the results of the annual basic benefits actuarial valuation of the School Employees Retirement System of Ohio.

The date of the valuation was June 30, 1997.

The valuation was based upon data, furnished by the Executive Director and the SERS staff, concerning active, inactive and retired members along with pertinent financial information. The complete cooperation of the SERS staff in furnishing materials requested is hereby acknowledged with appreciation.

Your attention is directed particularly to the comments on page 3 and the presentation of contribution rates on page 28. Also note that the valuation asset method was changed from that used in the previous valuation.

To the best of our knowledge, this report is complete and accurate. The valuation was performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems.

The valuation was prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the system, and on actuarial assumptions that are, in the aggregate, internally consistent and reasonably based on the actual experience of the system.

Respectfully submitted,

Thomas J. Cavanaugh, F.S.A.
Senior Consultant & Actuary

Michael L. Falco, A.S.A.
Actuary

TJC/ks

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.

Statutory Employer Contribution Rate. The 14% of pay rate is now being allocated by SERS policy decision as follows: to Basic Benefits including the Medicare Part-B supplement, the rate which will amortize unfunded actuarial accrued liabilities over 24 years, and to Health Care Benefits, the remainder of employer contributions. Health Care Benefits are covered in a separate valuation report.

On the basis of the 1997 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 28 and on page 29.

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 by the plan sponsor, the actuary determines the contribution rates to support the benefits, by means of an actuarial valuation and a funding method.

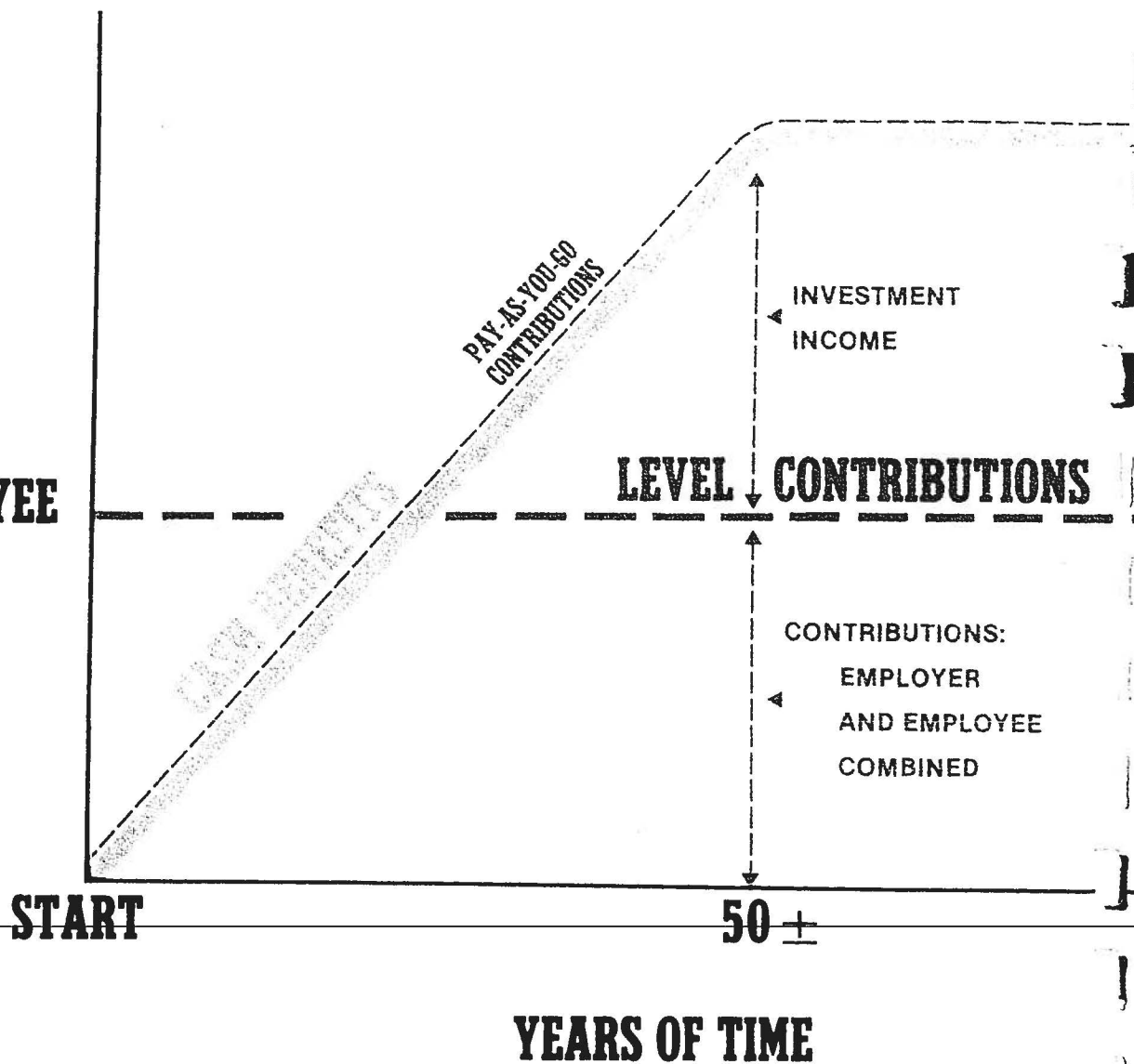
An actuarial valuation has a number of ingredients such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases;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



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

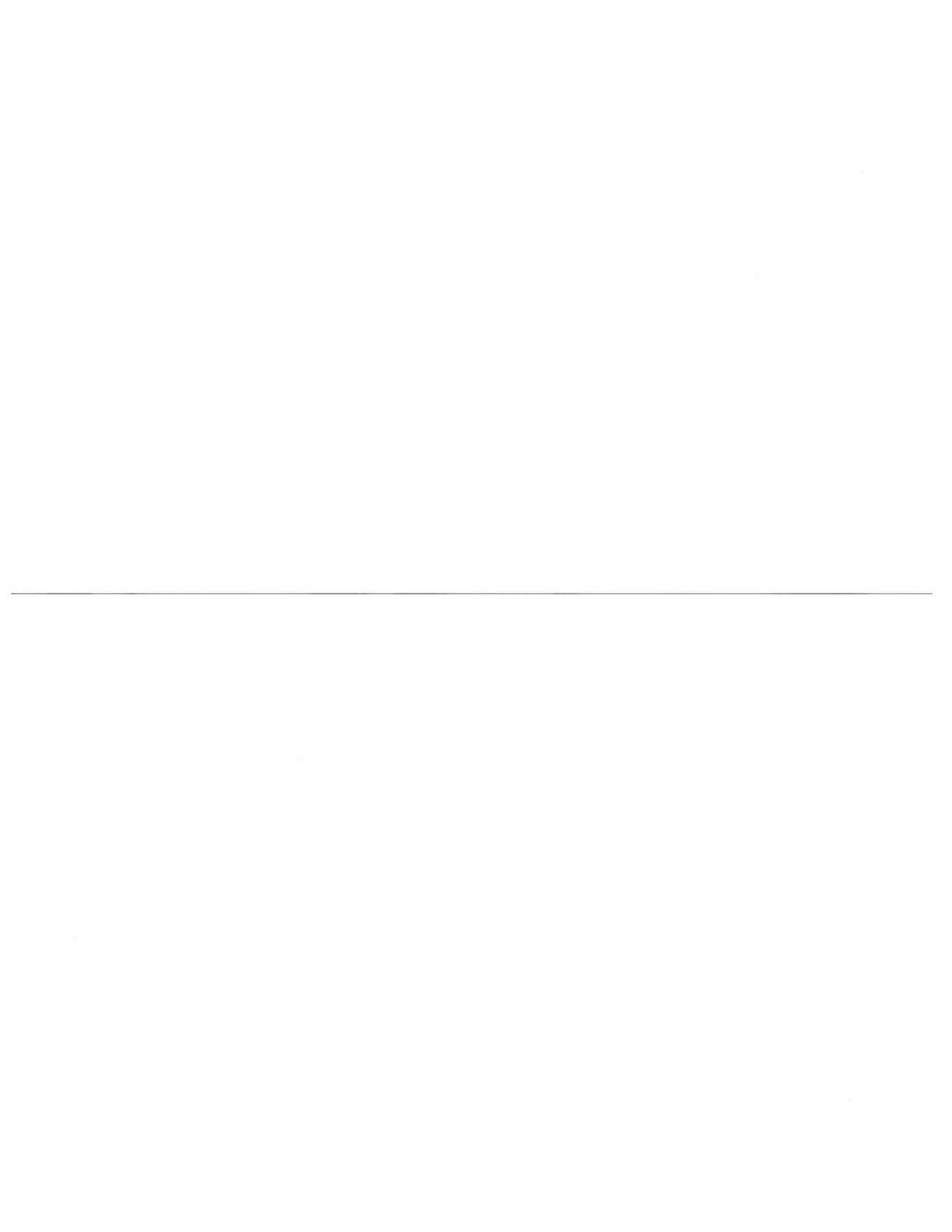
D. + The funding method for employer contributions (the long-term planned pattern for employer contributions)

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 54,554. The 51,072 retirants and survivors of retirants as of June 30, 1997 were receiving annual benefits totaling \$290,872,247 from the Annuity and Pension Reserve Fund. The 3,482 survivors of deceased active members as of June 30, 1997 were receiving annual benefits totaling \$14,513,455 from the Survivor Benefit Fund.

Schedule 1.

Annuity and Pension Reserve Fund
Retirants and Beneficiaries June 30, 1997
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		
<i>SUPERANNUATION RETIREMENT</i>						
Straight Life Allowance - Benefit Terminating at Death						
Men	4,256	78.8%	0.1%	21.1%	\$29,981,555	\$226,157,959
Women	<u>23,375</u>	80.7	0.2	19.1	<u>107,241,667</u>	<u>989,393,781</u>
Totals	27,631				137,223,222	1,215,551,740
Option II Allowance - Joint and Survivor Benefits						
Men	6,593	82.8	0.0	17.2	57,764,059	632,324,908
Women	<u>6,734</u>	86.8	0.0	13.2	<u>36,915,195</u>	<u>421,992,098</u>
Totals	13,327				94,679,254	1,054,317,006
Option III Allowance - Life Benefits With Guaranteed Periods						
Men	562	76.0	0.2	23.8	3,135,480	23,225,820
Women	<u>976</u>	77.9	0.2	21.9	<u>3,791,741</u>	<u>34,488,140</u>
Totals	1,538				6,927,221	57,713,960
Allowance to Survivor Beneficiary of Deceased Superannuation Retirant Who Elected Option II - Life Benefit						
Men	613	75.0	0.4	24.6	1,552,362	11,131,958
Women	<u>3,238</u>	72.2	0.5	27.3	<u>13,619,108</u>	<u>112,995,503</u>
Totals	3,851				15,171,470	124,127,461
Allowance to Survivor Beneficiary of Deceased Superannuation Retirant Who Elected Option III - Guaranteed Period Only						
Men	27	81.9	0.0	18.1	169,531	740,696
Women	<u>57</u>	80.9	0.0	19.1	<u>313,344</u>	<u>1,099,571</u>
Totals	84				482,875	1,840,267

* Includes allowance and lump sum death benefit, but excludes Medicare Part-B supplement.

(Schedule 1 completed on page 9)

Schedule 1. - completed

Annuity and Pension Reserve Fund
Retirants and Beneficiaries June 30, 1997
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		
Total for Superannuation Allowances Being Paid						
Men	12,051	81.1%	0.1%	18.8%	\$92,602,987	\$893,581,341
Women	<u>34,380</u>	81.3	0.2	18.5	<u>161,881,055</u>	<u>1,559,969,093</u>
Totals	46,431				254,484,042	2,453,550,434
DISABILITY RETIREMENT						
Straight Life Allowance - Benefit Terminating at Death						
Men	1,560	84.3	0.1	15.6	17,278,859	147,120,563
Women	<u>3,081</u>	84.8	0.1	15.1	<u>19,109,346</u>	<u>184,130,028</u>
Totals	4,641				36,388,205	331,250,591
TOTAL BENEFITS BEING PAID FROM ANNUITY AND PENSION RESERVE FUND						
Men	13,611	81.6%	0.1%	18.3%	109,881,846	1,040,701,904
Women	<u>37,461</u>	81.7	0.2	18.1	<u>180,990,401</u>	<u>1,744,099,121</u>
Totals	51,072				290,872,247	2,784,801,025

* Includes allowance and lump sum death benefit, but excludes Medicare Part-B supplement.

Schedule 2.

Annuity and Pension Reserve Fund

Retirants June 30, 1997

Current Annual Total \$ By Attained Ages

Attained Ages	Superannuation		Disability		Totals	
	No.	Annual Total \$	No.	Annual Total \$	No.	Annual Total \$
Under 20						
20 - 24						
25 - 29			1	\$11,727	1	\$11,727
30 - 34			18	252,670	18	252,670
35 - 39			76	1,045,762	76	1,045,762
40 - 44			181	2,520,699	181	2,520,699
45 - 49	11	\$255,926	286	3,519,411	297	3,775,337
50 - 54	132	2,859,011	479	4,699,127	611	7,558,138
55 - 59	755	10,483,154	830	7,348,439	1,585	17,831,593
60 - 64	4,623	35,007,185	990	7,563,734	5,613	42,570,919
65 - 69	8,839	58,422,536	763	4,905,133	9,602	63,327,669
70 - 74	10,011	56,759,692	526	2,710,582	10,537	59,470,274
75 - 79	8,816	41,273,112	335	1,354,347	9,151	42,627,459
80 - 84	5,610	21,603,822	119	346,560	5,729	21,950,382
85 - 89	2,712	8,923,548	29	82,393	2,741	9,005,941
90 - 94	792	2,597,358	7	24,598	799	2,621,956
95 - 99	171	555,744	1	3,024	172	558,767
100	7	29,310			7	29,310
101	6	21,266			6	21,266
102	5	12,577			5	12,577
103	2	8,042			2	8,042
104	1	3,540			1	3,540
105 & over	3	13,873			3	13,873
Totals	42,496	\$238,829,697	4,641	\$36,388,205	47,137	\$275,217,902

Schedule 3.

Annuity and Pension Reserve Fund

Survivors of Retirants June 30, 1997

Current Annual Total \$ By Attained Ages

Attained Ages	Life Annuities		Periods Certain		Totals	
	No.	Annual Total \$	No.	Annual Total \$	No.	Annual Total \$
Under 20	3	\$20,403	2	\$11,469	5	\$31,872
20 - 24	1	889			1	889
25 - 29	5	34,361	1	2,774	6	37,135
30 - 34	1	2,951	2	15,721	3	18,672
35 - 39	6	7,500	3	14,933	9	22,434
40 - 44	17	22,964	3	22,470	20	45,433
45 - 49	29	129,709	6	34,225	35	163,935
50 - 54	42	194,719	3	19,496	45	214,214
55 - 59	55	269,765	1	875	56	270,640
60 - 64	150	908,065	12	48,323	162	956,388
65 - 69	367	2,157,766	13	85,141	380	2,242,907
70 - 74	749	3,478,032	21	133,136	770	3,611,168
75 - 79	907	3,380,569	12	68,661	919	3,449,229
80 - 84	843	2,602,184	3	16,240	846	2,618,424
85 - 89	487	1,408,062	1	2,271	488	1,410,333
90 - 94	143	403,333	1	7,142	144	410,475
95 - 99	40	127,201			40	127,201
100	3	12,095			3	12,095
101	1	5,225			1	5,225
102						
103	1	3,355			1	3,355
104						
105 & over	1	2,322			1	2,322
Totals	3,851	\$15,171,470	84	\$482,875	3,935	\$15,654,345

Schedule 4.

Survivor Benefit Fund

Beneficiaries June 30, 1997

Annual Amounts and
Basic Benefit Actuarial Liabilities

Group	Number	% of Current Total \$			Current Total \$	Actuarial Liabilities*
		Base Allowances	H.B. 204 and 284	Post-Retire. Increases		
Benefits Being Paid From Survivor Benefit Fund						
Men	1,097	85.8%	0.0%	14.2%	\$3,670,804	\$26,985,124
Women	<u>2,385</u>	78.4	0.2	21.4	<u>10,842,651</u>	<u>79,456,651</u>
Totals	3,482				14,513,455	106,441,775

* Includes allowance only but excludes Medicare Part-B supplement. Also includes liabilities for beneficiaries in blackout who are not represented in other statistics on this page.

Schedule 5.

Survivor Benefit Fund

Survivors of Deceased Active Members June 30, 1997

Current Annual Total \$ By Attained Ages

Attained Ages	Totals	
	No.	Annual Total \$
Under 20	34	\$173,804
20 - 24	9	44,601
25 - 29	5	41,260
30 - 34	8	52,899
35 - 39	22	215,545
40 - 44	61	556,996
45 - 49	72	483,439
50 - 54	112	640,826
55 - 59	224	1,214,742
60 - 64	402	1,916,800
65 - 69	627	2,670,649
70 - 74	659	2,467,462
75 - 79	576	1,965,105
80 - 84	383	1,243,736
85 - 89	196	557,569
90 - 94	83	239,788
95 - 99	6	19,741
100	2	5,207
101		
102		
103	1	3,286
104		
105 & over		
Totals	3,482	\$14,513,455

Active members included in the valuation totaled 103,739, involving an annual payroll totaling \$1,551,608,733. The schedules below and on the following 4 pages provide some detail from the data on active members.

Active Members in Valuation June 30, 1997

<u>Groups</u>	<u>Number</u>	<u>Annual Payroll</u>	<u>Average Pay</u>
Men	26,594	\$551,294,521	\$20,730
Women	<u>77,145</u>	<u>1,000,314,212</u>	\$12,967
Totals	103,739	\$1,551,608,733	\$14,957

Also included in the valuation were 6,893 inactive members eligible for deferred retirement allowances, 56,567 inactive members eligible for a contribution refund only (including 19,304 who had completed 1 or more years of employment before terminating), and 3,684 re-employed retirants with accumulated contributions of \$5,002,976.

Schedule 6.

School Employees Retirement System of Ohio

TOTAL Active Members as of June 30, 1997

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	461							461	\$1,744,100
20-24	2,243	36						2,279	17,047,365
25-29	3,510	622	26					4,158	48,834,664
30-34	5,033	1,582	703	77				7,395	97,494,656
35-39	8,554	3,252	1,685	1,013	100			14,604	195,172,372
40-44	8,545	4,977	2,888	1,476	776	71		18,733	269,643,493
45-49	5,457	4,525	3,964	2,099	942	481	41	17,509	280,764,568
50-54	3,076	2,675	3,165	2,915	1,729	603	124	14,287	242,312,359
55-59	1,968	1,617	2,146	2,498	2,436	1,193	226	12,084	206,722,223
60	284	283	344	393	468	338	72	2,182	37,198,251
61	237	220	298	294	353	291	59	1,752	30,335,104
62	218	178	252	278	329	278	70	1,603	27,257,149
63	208	152	196	209	246	217	70	1,298	21,657,972
64	151	129	176	175	208	164	53	1,056	17,057,266
65	130	120	114	164	169	166	61	924	14,541,351
66	142	84	94	101	126	123	55	725	10,716,668
67	120	76	97	90	89	96	41	609	8,526,821
68	129	78	69	51	68	71	43	509	6,504,606
69	108	53	57	42	46	55	31	392	4,563,270
70 & Over	294	198	183	117	123	145	119	1,179	13,514,475
Totals	40,868	20,857	16,457	11,992	8,208	4,292	1,065	103,739	\$1,551,608,733

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

Age: 46.1 years.

Service: 9.1 years.

Annual Pay: \$14,957.

Schedule 7.

School Employees Retirement System of Ohio

MALE Active Members as of June 30, 1997

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	243							243	\$1,013,531
20-24	968	15						983	7,702,853
25-29	1,265	267	8					1,540	21,214,424
30-34	1,268	577	334	43				2,222	42,447,507
35-39	1,385	776	719	578	58			3,516	79,081,573
40-44	1,499	809	771	675	491	37		4,282	99,021,038
45-49	1,282	780	713	550	412	257	12	4,006	94,669,821
50-54	995	583	573	452	291	211	72	3,177	75,181,596
55-59	854	540	578	360	269	162	106	2,869	63,491,959
60	137	130	110	81	51	42	22	573	12,322,803
61	134	98	107	59	38	30	25	491	10,188,806
62	128	86	103	60	46	27	27	477	9,782,062
63	117	72	70	50	44	28	15	396	7,811,086
64	80	76	73	35	33	15	10	322	6,202,919
65	64	64	46	45	19	12	8	258	4,560,545
66	77	52	46	19	16	16	9	235	3,737,298
67	66	44	42	18	19	14	9	212	3,344,959
68	72	43	29	10	8	4	5	171	2,169,723
69	63	33	20	12	3	3	1	135	1,472,443
70 & Over	161	132	98	40	17	20	18	486	5,877,575
Totals	10,858	5,177	4,440	3,087	1,815	878	339	26,594	\$551,294,521

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: 8.8 years.

Annual Pay: \$20,730.

Schedule 8.

School Employees Retirement System of Ohio

FEMALE Active Members as of June 30, 1997

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	218							218	730,569
20-24	1,275	21						1,296	9,344,512
25-29	2,245	355	18					2,618	27,620,240
30-34	3,765	1,005	369	34				5,173	55,047,149
35-39	7,169	2,476	966	435	42			11,088	116,090,799
40-44	7,046	4,168	2,117	801	285	34		14,451	170,622,455
45-49	4,175	3,745	3,251	1,549	530	224	29	13,503	186,094,747
50-54	2,081	2,092	2,592	2,463	1,438	392	52	11,110	167,130,763
55-59	1,114	1,077	1,568	2,138	2,167	1,031	120	9,215	143,230,264
60	147	153	234	312	417	296	50	1,609	24,875,448
61	103	122	191	235	315	261	34	1,261	20,146,298
62	90	92	149	218	283	251	43	1,126	17,475,087
63	91	80	126	159	202	189	55	902	13,846,886
64	71	53	103	140	175	149	43	734	10,854,347
65	66	56	68	119	150	154	53	666	9,980,806
66	65	32	48	82	110	107	46	490	6,979,370
67	54	32	55	72	70	82	32	397	5,181,862
68	57	35	40	41	60	67	38	338	4,334,883
69	45	20	37	30	43	52	30	257	3,090,827
70 & Over	133	66	85	77	106	125	101	693	7,636,900
Totals	30,010	15,680	12,017	8,905	6,393	3,414	726	77,145	\$1,000,314,212

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

Age: 46.3 years.

Service: 9.2 years.

Annual Pay: \$12,967.

Schedule 9.

School Employees Retirement System of Ohio

Active Members as of June 30, 1997 by Annual Pay

Annual Pay	Number of Active Members			Portion of Total Number	
	Men	Women	Total	Group	Cumulative
Less than \$1,000	948	2,528	3,476	3%	3%
\$1,000 - 1,999	924	2,569	3,493	3	6
2,000 - 2,999	838	3,228	4,066	4	10
3,000 - 3,999	723	3,571	4,294	4	14
4,000 - 4,999	653	3,252	3,905	4	18
5,000 - 5,999	629	3,494	4,123	4	22
6,000 - 6,999	639	3,216	3,855	4	26
7,000 - 7,999	633	3,160	3,793	4	30
8,000 - 8,999	662	3,352	4,014	4	34
9,000 - 9,999	677	3,960	4,637	5	39
10,000 - 11,999	1,354	8,288	9,642	9	48
12,000 - 13,999	1,192	7,501	8,693	8	56
14,000 - 15,999	989	6,092	7,081	7	63
16,000 - 17,999	894	4,389	5,283	5	68
18,000 - 19,999	963	3,641	4,604	4	72
20,000 - 24,999	3,700	7,127	10,827	11	83
25,000 - 29,999	4,067	4,393	8,460	8	91
30,000 and over	6,109	3,384	9,493	9	100
Totals	26,594	77,145	103,739		

REPORTED ASSETS

The accrued assets at June 30, 1997 were reported to be \$6,367,402,990 (market basis).

<u>Fund</u>	<u>Amount</u>
Annuity and Pension Reserve Fund	\$2,883,867,855
Survivors Benefit Fund	112,160,399
Employees Savings Fund	1,176,684,610
Employers Trust Fund	<u>2,194,690,126</u>
Total	\$6,367,402,990

VALUATION ASSETS

The value of accrued assets (cash & investments) as of June 30, 1997 was determined on a market related basis. The asset valuation method recognizes assumed investment income (line E3 on the following page) fully each year. Differences between actual and assumed investment income (line E4 on the following page) are phased in over a closed 4 year period. During periods when investment performance exceeds the assumed rate, the valuation assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, the valuation assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, actuarial value will become equal to market value.

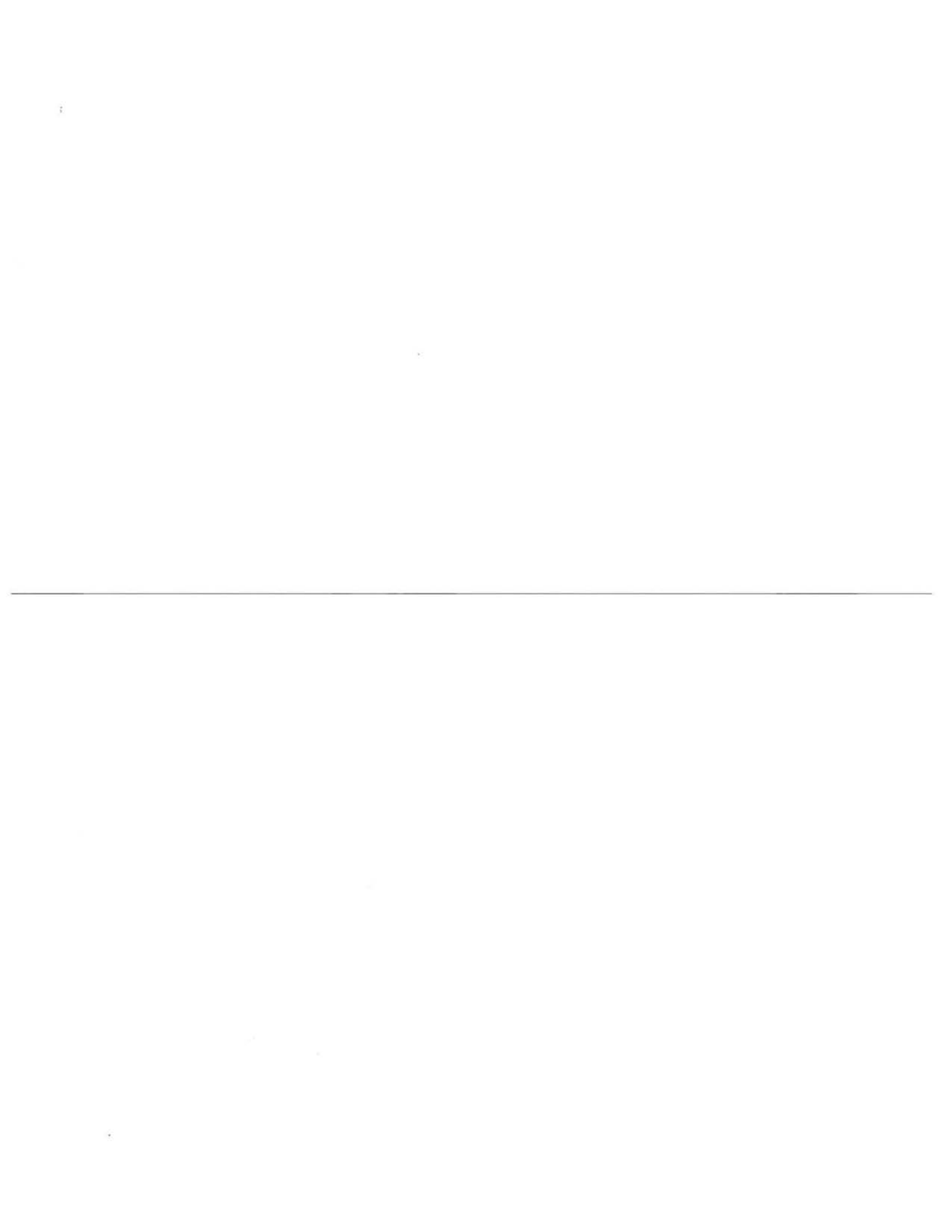
School Employees Retirement System of Ohio

Development of Valuation Assets

Valuation Date June 30:	1995	1996	1997	1998	1999	2000
A. Actuarial Value Beginning of Year	\$4,090,085,283	\$4,465,519,128	\$4,964,211,345			
B. Market Value End of Year	4,696,137,781	5,421,677,579	6,367,402,990			
C. Market Value Beginning of Year	4,067,751,812	4,696,137,781	5,421,677,579			
D. Cash Flow						
D1. Contributions	364,273,680	379,004,837	407,426,273			
D2. Benefit payments	(381,638,967)	(403,181,051)	(432,820,102)			
D3. Administrative Expenses	<u>(9,869,845)</u>	<u>(9,948,711)</u>	<u>(19,580,518)</u>			
D4. Net	(27,235,132)	(34,124,925)	(44,974,347)			
E. Investment Income						
E1. Market Total: B.-C.-D4.*	633,287,630	759,664,723	990,699,758			
E2. Assumed Rate	7.75%	7.75%	8.25%			
E3. Amount for Immediate Recognition	325,796,093	354,704,103	428,080,459			
E4. Amount for Phased-In Recognition	307,491,537	404,960,620	562,619,299			
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.25*E4.	76,872,884	101,240,155	140,654,825			
F2. First Prior Year	0	76,872,884	101,240,155	140,654,825		
F3. Second Prior Year	0	0	76,872,884	101,240,155	140,654,825	
F4. Third Prior Year	<u>0</u>	<u>0</u>	<u>0</u>	<u>76,872,884</u>	<u>101,240,155</u>	<u>140,654,825</u>
F5. Total Recognized Investment Gain	76,872,884	178,113,039	318,767,864	318,767,864	241,894,980	140,654,825
G. Actuarial Value End of Year: A.+D4.+E3.+F5.	\$4,465,519,128	\$4,964,211,345	\$5,666,085,321			
H. Difference Between Market & Actuarial Values	230,618,653	457,466,234	701,317,669	382,549,805	140,654,825	0
I. Health Reserve as % of Cost Value Assets	3.1885%	2.7816%				
J. Health Casre Valuation Assets: G.xI.	142,383,077	138,084,503	146,383,823			
K. Present Value of HB284 and 204 Contributions	2,233,251	1,878,486	1,546,651			
L. Basic Benefits Valuation Assets: G.-J.+K.	\$4,325,369,302	\$4,828,005,328	\$5,521,248,149			

*(B.-A.-D4. in 1995)

BASIC BENEFITS



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

BASIC BENEFITS

(outline last changed 6/30/97)

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:

<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		28	88
62		29	90
63		29	91
64		29	94
65		29	95
		30 or more	97
			100

Maximum allowance is 90% of FAS.

Disability retirement. Upon becoming permanently disabled, after completion of at least 5 years of total service credit, an allowance is paid as described below.

For those who were active members prior to July 29, 1992 and did not elect the benefit structure outlined below, the annual disability allowance is equal to a service retirement allowance if the member has attained age 60. For a member below age 60, the allowance is 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, with a maximum allowance of 75% of FAS and a minimum allowance of 30% of FAS.

For those who become active members after July 28, 1992 and for those who were active members prior to July 29, 1992 who so elected, an allowance is paid equal to the greater of (i) 45% of FAS, or (ii) the lesser of 60% of FAS or total service credit multiplied by 2.1% of FAS. The allowance terminates upon the earliest of

- a) the date the member is granted a service retirement benefit, or
- b) the later of the date the member attains age 65 or the date the disability allowance has been paid for the minimum duration in accordance with the following schedule:

<u>Age at Disability</u>	<u>Minimum Benefit Duration in Months</u>
60 and earlier	60
61	60
62	48
63	48
64	36
65	36
66	24
67	24
68	24
69 and older	12

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 55.

(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 the percentage increase in the Consumer Price Index for each completed year of retirement; provided, the increased allowance cannot exceed the initial allowance adjusted for annual increases in the Consumers Price Index which exceed 3.0%.

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.

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

Member contributions. Each member contributes 9% of his pay 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 for both basic and health care benefits is 14%. Whatever portion is not needed to finance basic benefits is available for health care benefits.

Re-Employed Retirants

Eligibility. Effective July 1, 1991, service retirees of SERS, or service or disability retirees of one of the other four Ohio retirement systems who are employed in a SERS-covered position are required to contribute to a money purchase annuity, a type of defined contribution plan.

Benefits. On termination of employment a re-employed retirant is eligible to receive an annuity having a reserve equal to the amount of his accumulated contributions, and an equal amount of employer contributions, plus interest to the effective date of retirement. Interest is granted on the re-employed retirant's prior fiscal year account balance, calculated using the investment return rate used for SERS actuarial valuations, compounded annually. The effective date of retirement is the first day of the month after the latest of the following:

- a. the last day for which compensation was paid; or
- b. attainment of age sixty-five; or
- c. if a re-employed retirant has previously received a re-employed retirant benefit, completion of a period of twelve months since the effective date of that benefit.

Re-employed Retirant Annuity.

The re-employed retirant must elect to receive his benefit as a monthly annuity for life or as a lump sum payment discounted to the present value using the current actuarial assumption rate of interest, except that if his monthly annuity would be less than \$25.00, he must elect to receive the lump sum payment.

Benefits payable upon death. If a re-employed retirant dies while employed, a lump sum payment of the monthly annuity, discounted to the present value using the current actuarial assumption rate of interest, will be paid to his beneficiary.

Monthly benefits are payable as a cash refund annuity, a life annuity providing that a lump sum payment will be made to a beneficiary in an amount equal to the excess, if any, of the lump sum payment the re-employed retirant would have received at the effective date of retirement over the sum of the annuity payment received by the re-employed retirant to the date of death.

Member contributions. Each re-employed retirant is required to contribute 9% of his pay by payroll deductions. The maximum statutory rate is 10%.

Employer contributions. Employer contributions are expressed as percents of member covered payroll. Employers are required to contribute 14% of payroll; the statutory maximum is 14%.

Other benefits. Re-employed retirant members of SERS are not eligible to receive any of the other benefits provided to regular SERS members.

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

Schedule 10.

BASIC BENEFITS

Actuarial Accrued Liabilities June 30, 1997

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, including Medicare Part-B supplement	\$2,996,028,254
-----	-----
Monthly benefits and refunds to present inactive members, including Medicare Part-B supplement	149,222,426
-----	-----
<u>Service allowances to present active members</u>	<u>2,911,956,402</u>
Disability allowances to present active members	338,869,794
Death-after-retirement benefit (\$500) on behalf of present active members	1,159,629
Survivor benefits on behalf of present active members who die before retiring	44,253,400
Medicare Part-B supplement	35,728,832
Refunds of member contributions of present active members	<u>27,418,832</u>
Benefits for present active members	3,359,386,889
-----	-----
Entry Age Liabilities For Present Covered Persons	6,504,637,569
-----	-----
Valuation Assets	5,521,248,149
-----	-----
Liabilities to be Covered By Future Contributions	983,389,420

The Employer Contribution Rate for Basic Benefits has been established by the Board as normal cost plus a 24 year amortization of unfunded actuarial accrued liabilities. Please see pages 40 and 41 for a graph showing the relationship between level cost financing and amortization periods.

Schedule 11.

BASIC BENEFITS

COMPOSITION OF EMPLOYER CONTRIBUTION RATE

Established By Statute & Board Action

June 30, 1997

<u>Contributions For</u>	<u>Contributions Expressed as Percents of Payroll</u>
Normal cost:	
Service allowances	9.63%
Disability allowances	2.34
Survivor benefits (SB Fund)	0.28
\$500 death benefit	0.02
Medicare Part-B supplement	<u>0.16</u>
Total	12.43%
Member contributions:	9.00%
Less: Future refunds	<u>1.56</u>
Available for allowances	7.44%

Employer Normal Cost	4.99%
Unfunded Accrued Liabilities	
Minimum level % financing	2.41%
Additional amount to fund over 24 years	<u>1.62</u>
Total	4.03%

EMPLOYER CONTRIBUTION RATE ALLOCATED TO BASIC BENEFITS	9.02%

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

June 30	<u>Computed Actuarial Accrued Liabilities</u>			Valuation <u>Assets</u>	<u>Portion of Accrued Liabilities Covered by Assets</u>		
	(1) Member <u>Contr.</u>	(2) Retired <u>Lives</u>	(3) Present Members (Employer Financed <u>Portion)</u>		(1)	(2)	(3)
		(\$ in Millions)					
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
1990	684	1,872	1,447	2,686	100	100	9
1991	749	2,025	1,491	3,015	100	100	16
1991*	749	1,973	1,624	3,015	100	100	18
1992	816	2,123	1,754	3,331	100	100	22
1993	889	2,261	1,902	3,673	100	100	27
1994	961	2,426	1,994	3,952	100	100	28
1995	1,034	2,700	2,105	4,310	100	100	27
1996	1,105	2,886	2,193	4,766	100	100	35
1996*@	1,105	2,790	2,234	4,777	100	100	39
1997	1,177	2,996	2,332	5,402	100	100	53
1997@	1,177	2,996	2,332	5,521	100	100	58

* Revised assumptions.

Legislated benefit increases.

@ Revised asset valuation method.

School Employees Retirement System of Ohio

Supplemental Disclosure Information

June 30, 1997

Actuarial Accrued Liability

The actuarial accrued liability is a measure intended to (i) help users assess the System's funding status on a going-concern basis, and (ii) assess progress being made in accumulating sufficient assets to pay benefits when due. For the years ending June 30, 1996 and prior, the actuarial value of assets was determined on a market related basis that recognized 20% of the previously unrecognized and unanticipated gains and losses (both realized and unrealized). Beginning with the June 30, 1997 actuarial valuation, the 20% recognition of gains and losses will be increased to 25% recognition. Allocation of the actuarial present value of projected benefits between past and future service was based on service using the entry age actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the System's annual required contribution between entry age and assumed exit age. Entry age was established by subtracting credited service from current age on the valuation date.

The entry age actuarial accrued liability was determined as part of an actuarial valuation of the plan as of June 30, 1997. Significant actuarial assumptions used in determining the entry age actuarial accrued liability include (a) a rate of return on the investment of present and future assets of 8.25% per year compounded annually, (b) projected salary increases of 4.25% per year compounded annually, attributable to inflation, (c) additional projected salary increases of 1.0% to 5.0% per year, depending on age, attributable to seniority/merit, and (d) the assumption that benefits will increase 3.0% per year after retirement on a simple basis. At June 30, 1997, the unfunded actuarial accrued liability of the plan was determined as follows:

Actuarial Accrued Liability

Active members	\$3,359,386,889
Retirees and survivors currently receiving benefits	2,996,028,254
Terminated members not yet receiving benefits, including re-employed retirants	149,222,426
Total Actuarial Accrued Liability	6,504,637,569
Actuarial Value of Assets	<u>5,521,248,149</u>
Unfunded Actuarial Accrued Liability	\$ 983,389,420

During the year ended June 30, 1997, the plan experienced a net change of \$375,857,033 in the actuarial accrued liability. Of the change, \$0 was attributable to plan amendments and \$0 was attributable to a change in actuarial assumptions.

School Employees Retirement System of Ohio

Supplemental Disclosure Information

June 30, 1997

(continued)

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, 1997.

During the year ended June 30, 1997 contributions totaling \$310,133,796 -- \$163,562,317 employer, \$146,156,369 employee and \$415,110 from the State -- were made in accordance with contributions determined by State Statute. The employer contributions consisted of \$69,366,022 for normal cost and \$94,196,295 for amortization of the unfunded actuarial accrued liability. Employer contributions represented 11.08% of valuation payroll.

Schedule of Employer Contributions

Fiscal Year 7-1/6-30	Valuation Date 6-30	Annual Required Contribution	Percentage Contributed
1991-92	1991	\$113,268,331	100%
1992-93	1992	117,959,733	100
1993-94	1993	119,849,473	100
1994-95	1994	128,603,843	100
1995-96	1995	150,103,657	100
1996-97	1996	144,487,949	100
1997-98	1997	139,955,108	

School Employees Retirement System of Ohio
 Supplemental Disclosure Information
 June 30, 1997

(continued)
 (\$ in Thousands)

Schedule of Funding Progress

Plan Year Ended	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL) Entry Age	(3) Percent Funded (1)/(2)	(4) Unfunded AAL (2)-(1)	(5) Annual Covered Payroll	(6) Unfunded AAL as a Percentage of Covered Payroll (4)/(5)
06/30/91#	\$3,015,432	\$4,346,128	69.4%	\$1,330,696	\$1,176,203	113.1%
06/30/92	3,331,392	4,693,284	71.0	1,361,892	1,244,301	109.5
06/30/93	3,672,662	5,051,534	72.7	1,378,872	1,312,700	105.0
06/30/94	3,951,856	5,381,465	73.4	1,429,609	1,360,887	105.0
06/30/95@	4,310,487	5,839,027	73.8	1,528,540	1,429,559	106.9
06/30/96##*	4,777,498	6,128,781	78.0	1,351,283	1,475,873	91.6
06/30/97*	5,521,248	6,504,638	84.9	983,390	1,551,609	63.4

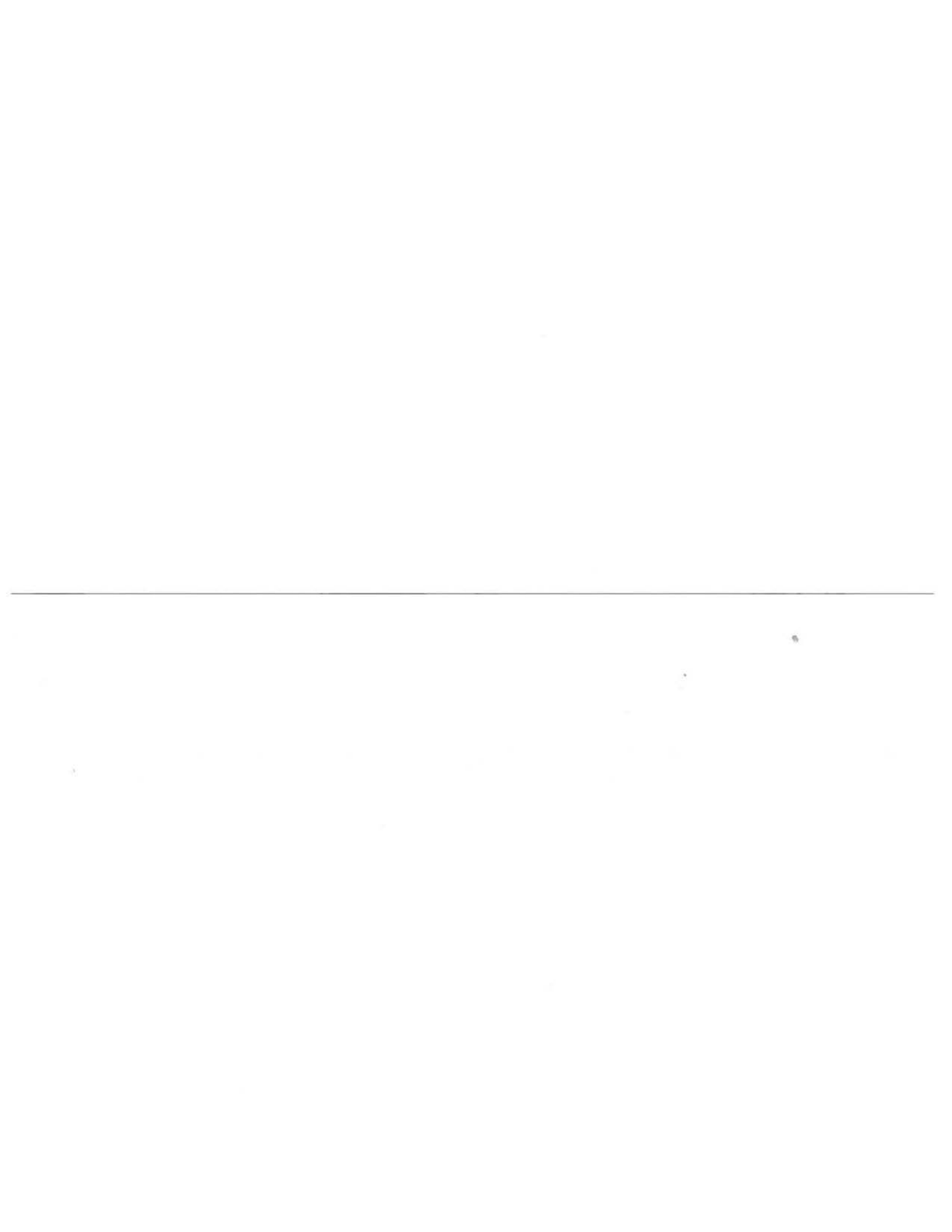
After change in actuarial assumptions.

* After change in asset method.

@ Includes Medicare Part B Supplement for this year and future years.

Analysis of the dollar amounts of actuarial value of assets, actuarial accrued liability, or unfunded actuarial accrued liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial accrued liability provides one indication of the plan's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the plan is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Usually expressing the unfunded actuarial accrued liability 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.

APPENDIX



APPENDIX

SUMMARY OF

ASSUMPTIONS USED FOR SERS BASIC BENEFITS 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 April 11, 1996.

ECONOMIC ASSUMPTIONS

The investment return rate used in making the valuations was 8.25% per year, compounded annually (net after expenses). 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 4.25%, the 8.25% investment return rate translates to an assumed real~~ rate of return of 4%.

Pay increase assumptions for individual active members are shown for sample ages in Schedule 13. Part of the assumption for each age is for merit and/or seniority increase, and the other 4.25% recognizes inflation.

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

Total active member payroll is assumed to increase 4.25% annually, which is the portion of the individual pay increase assumptions attributable to inflation.

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 set back 1 year for men and women. Related values are shown in Schedule 16. For disability retirement, impaired longevity was recognized by use of special mortality tables.

The probabilities of retirement with an age and service allowance are shown in Schedule 15.

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 14. For withdrawal, rates during the first three years of employment are assumed to be 1,000%, 330% and 250% (respectively) for men, and 825%, 230% and 175% for women, of those shown. Ninety percent of vested members withdrawing from service are assumed to take a refund of their contributions. It is assumed that 80% of active members are married, and men are 3 years older than their spouses.

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 installments throughout the System fiscal year.

Accrued assets (cash & investments) are valued by a market-related method. Assumed investment income is fully recognized each year. Differences between actual and assumed investment income are phased in over a closed 4 year period.

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 13.

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	5.0%	4.25%	9.25%
25	4.7	4.25	8.95
30	4.3	4.25	8.55
35	4.1	4.25	8.35
40	3.8	4.25	8.05
45	3.5	4.25	7.75
50	2.4	4.25	6.65
55	1.5	4.25	5.75
60	1.0	4.25	5.25
65	1.0	4.25	5.25

Schedule 14.

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	0.02%	0.00%	6.09%	0.01%	0.00%	8.04%
25	0.03	0.02	6.09	0.01	0.03	8.04
30	0.04	0.10	4.60	0.02	0.03	6.31
35	0.05	0.33	4.15	0.03	0.03	4.92
40	0.08	0.36	3.42	0.04	0.14	3.95
45	0.13	0.49	3.35	0.05	0.15	3.15
50	0.24	0.80	3.06	0.08	0.48	2.67
55	0.39	1.10	2.50	0.13	0.81	2.66
60	0.60	2.75	2.20	0.21	3.25	2.66
65	0.98	0.00	2.20	0.36	0.00	2.66

Schedule 15.

Probabilities of Age & Service Retirement

<u>Sample Ages</u>	<u>Percent of Eligible Active Members Retiring Within Next Year</u>	
	<u>Men</u>	
50	30%	
55	20	
60	15	
65	35	
70	25	
75	100	

<u>Sample Ages</u>	<u>Percent of Eligible Active Members Retiring Within Next Year</u>	
	<u>Women</u>	
50	24%	
55	18	
60	30	
65	30	
70	38	
75	100	

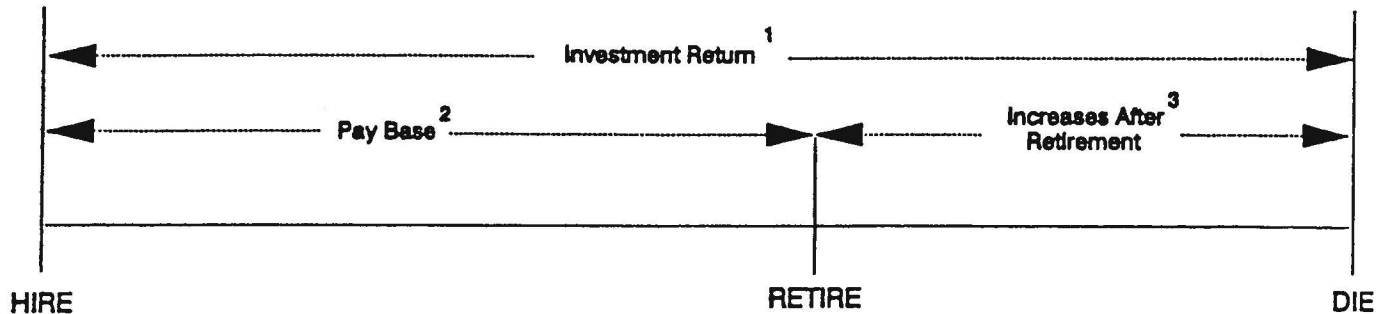
Schedule 16.

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	\$161.10	\$176.42	28.41	34.60	78.41
55	149.08	166.93	24.11	29.92	79.11	84.92
60	135.04	154.91	20.05	25.34	80.05	85.34
65	118.98	140.26	16.27	20.94	81.27	85.94
70	101.77	122.94	12.87	16.79	82.87	86.79
75	85.06	103.72	10.02	13.02	85.02	88.02
80	68.71	84.80	7.59	9.85	87.59	89.85
85	54.82	66.94	5.74	7.24	90.74	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	84	93	1,300
75	69	86	1,450
80	51	73	1,600
85	32	55	1,750

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. However, a 1% increase in this assumption, coupled with a 1% increase in Investment Return reduces computed contributions. This is because the Pay Base assumption operates only over an employee's working lifetime, while the Investment Return assumption operates over the employee's entire lifetime, and therefore has a greater effect.

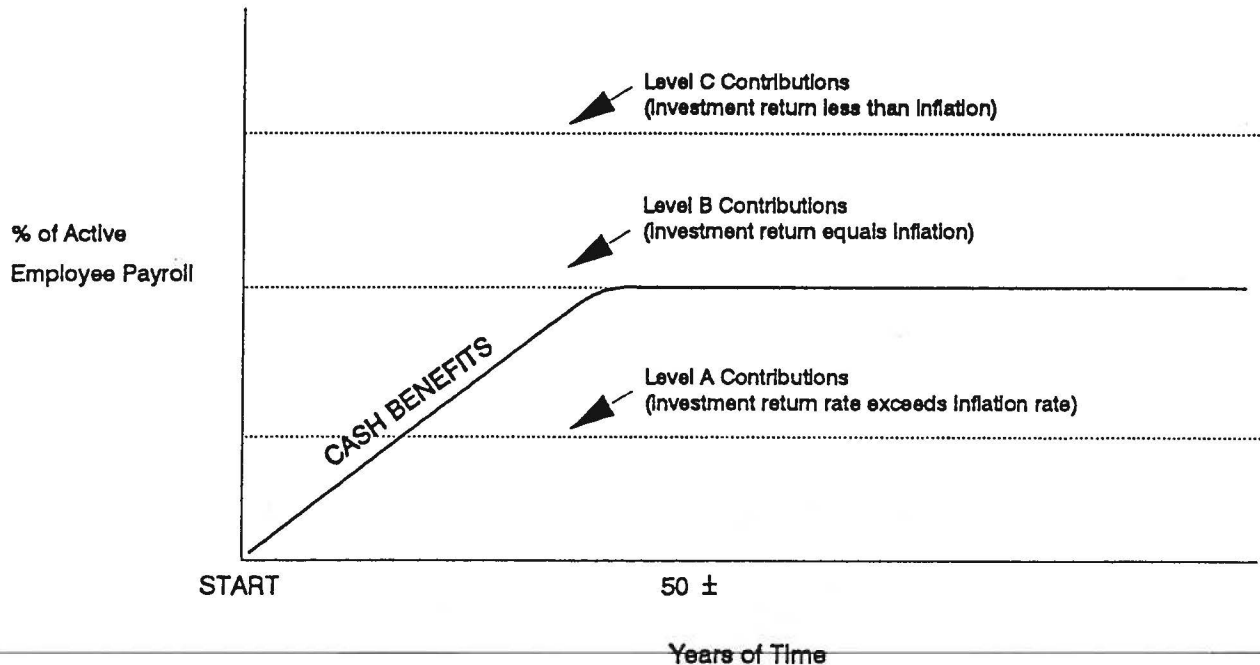
3. Increases After Retirement.

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 — sometimes significantly. The decreases represent the projected devaluation of an employee's benefits following retirement.

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.

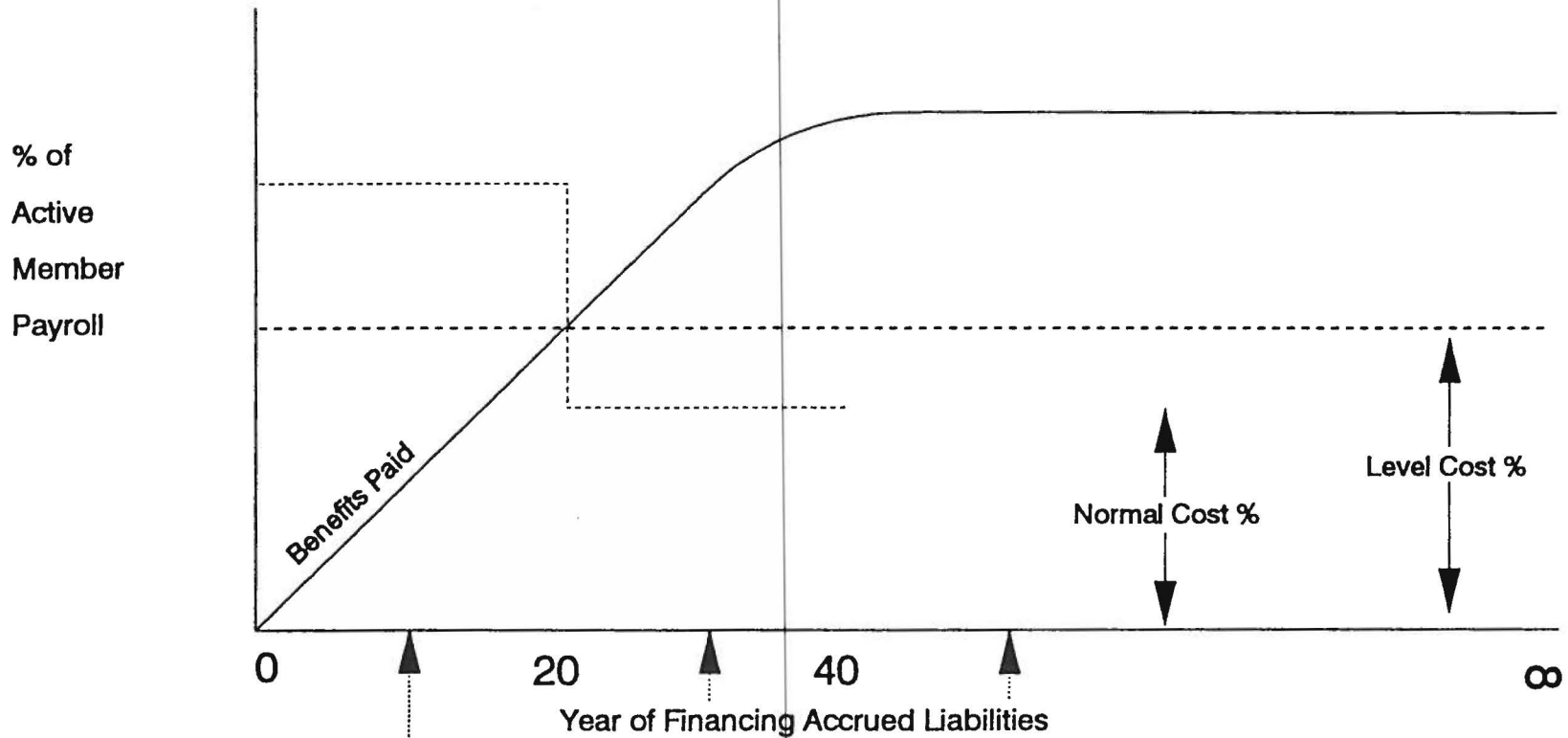
Who would contribute a level rate which is the same as the ultimate contribution rate of "pay-as-you-go" financing?

"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 40 YEARS
- FULL AMORTIZATION OF UAAL OVER 20 YEARS



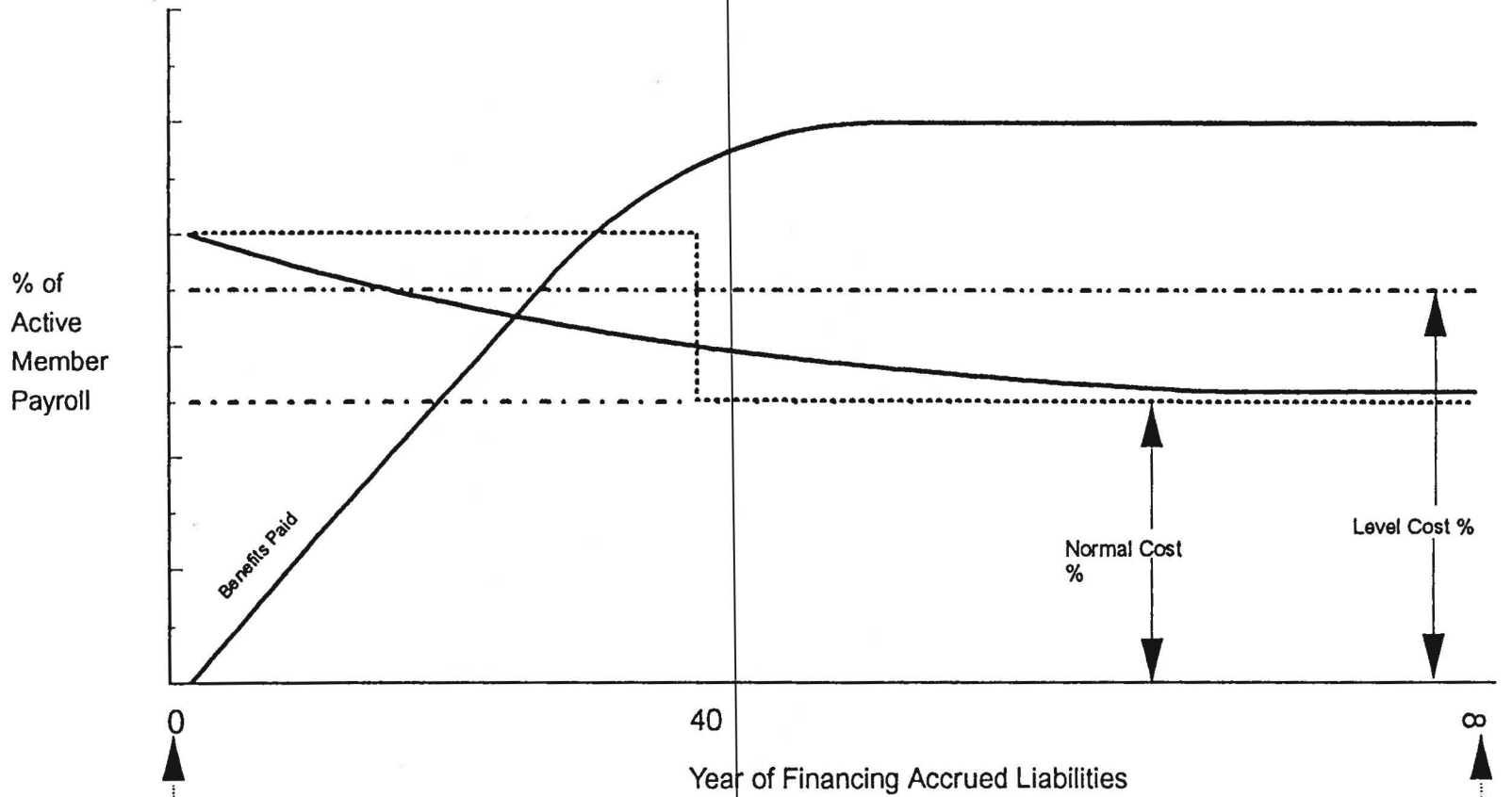
Total Contributions

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

TOTAL CONTRIBUTIONS FOR RETIREMENT BENEFITS

USING ALTERNATE FINANCING FOR ACCRUED LIABILITIES ("UAAL"):

- NORMAL COST PORTION
- LEVEL % OF PAYROLL
- COMPLETE AMORTIZATION OF UAAL OVER 40 YEARS ("CLOSED" AMORTIZATION)
- _____ PERPETUAL AMORTIZATION OF UAAL OVER 40 FUTURE YEARS ("OPEN" AMORTIZATION)



Total Contributions	0	40	∞
LEVEL PERCENT	7.0%	7.0%	7.0%
UAAL: 40 Years Closed	8.0	5.0	5.0
UAAL: 40 Years Open	8.0	5.0	5.0

Gabriel, Roeder, Smith & Co.
Actuaries & Consultants

Basic Series

Year-by-Year Total Returns (1926-1996)

For a type of investment,
Red means a REAL Return less than 3%
[(Total - inflation) < 3%]

For inflation,
RED means a purchasing power loss

Year	Large Company Stocks	Small Company Stocks	Long-Term Corporate Bonds	Long-Term Government Bonds	Intermediate Term Government Bonds	U.S. Treasury Bills	Inflation
1926	11.62	0.28	7.37	7.77	5.38	3.27	-1.49
1927	37.49	22.10	7.44	8.93	4.52	3.12	-2.08
1928	43.61	39.69	2.84	6.10	0.92	3.56	-0.97
1929	-8.42	-51.36	3.27	1.17	6.01	4.75	0.20
1930	-24.90	-38.15	7.98	4.66	6.72	2.41	-6.03
1931	-43.34	-49.75	-1.85	-5.31	-2.32	1.07	-9.52
1932	-8.19	-5.39	10.32	16.84	8.81	0.96	-10.30
1933	53.99	142.87	10.38	-0.07	1.83	0.30	0.51
1934	-1.44	24.22	13.84	10.03	9.00	0.16	2.03
1935	47.67	40.19	9.61	4.98	7.01	0.17	2.99
1936	33.92	64.80	6.74	7.52	3.06	0.18	1.21
1937	-35.03	-58.01	2.75	0.23	1.56	0.31	3.10
1938	31.12	32.80	6.13	5.53	6.23	-0.02	-2.78
1939	-0.41	0.35	3.97	5.94	4.52	0.02	-0.48
1940	-9.78	-5.16	3.39	6.09	2.96	0.00	0.96
1941	-11.59	-9.00	2.73	0.93	0.50	0.06	9.72
1942	20.34	44.51	2.60	3.22	1.94	0.27	9.29
1943	25.90	88.37	2.83	2.08	2.81	0.35	3.16
1944	19.75	53.72	4.73	2.81	1.60	0.33	2.11
1945	36.44	73.61	4.08	10.73	2.22	0.33	2.25
1946	-8.07	-11.63	1.72	-0.10	1.00	0.35	18.16
1947	5.71	0.92	-2.34	-2.62	0.91	0.50	9.01
1948	5.50	-2.11	4.14	3.40	1.85	0.81	2.71
1949	18.79	19.75	3.31	6.45	2.32	1.10	-1.80
1950	31.71	38.75	2.12	0.06	0.70	1.20	5.79
1951	24.02	7.80	-2.69	-3.93	0.36	1.49	5.87
1952	18.37	3.03	3.52	1.16	1.63	1.66	0.88
1953	-0.99	-6.49	3.41	3.64	3.23	1.82	0.62
1954	52.62	60.58	5.39	7.19	2.68	0.86	-0.50
1955	31.56	20.44	0.48	-1.29	-0.65	1.57	0.37
1956	6.56	4.28	-6.81	-5.59	-0.42	2.46	2.86
1957	-10.78	-14.57	8.71	7.46	7.84	3.14	3.02
1958	43.36	64.89	-2.22	-6.09	-1.29	1.54	1.76
1959	11.96	16.40	-0.97	-2.26	-0.39	2.95	1.50
1960	0.47	-3.29	9.07	13.78	11.76	2.66	1.48
1961	26.89	32.09	4.82	0.97	1.85	2.13	0.67
1962	-8.73	-11.90	7.95	6.89	5.56	2.73	1.22
1963	22.80	23.57	2.19	1.21	1.64	3.12	1.65
1964	16.48	23.52	4.77	3.51	4.04	3.54	1.19
1965	12.45	41.75	-0.46	0.71	1.02	3.93	1.92
1966	-10.06	-7.01	0.20	3.65	4.69	4.76	3.35
1967	23.98	83.57	-4.95	-9.18	1.01	4.21	3.04
1968	11.06	35.97	2.57	-0.26	4.54	5.21	4.72
1969	6.50	-25.05	-8.09	-5.07	-0.74	6.58	6.11
1970	4.01	-17.43	18.37	12.11	16.86	6.52	5.49
1971	14.31	16.50	11.01	13.23	8.72	4.39	3.36
1972	18.98	4.43	7.26	5.69	5.16	3.64	3.41
1973	-14.66	-30.90	1.14	-1.11	4.61	6.93	8.80
1974	-26.47	-19.95	-3.06	4.35	5.69	8.00	12.20
1975	37.20	52.82	14.64	9.20	7.83	5.80	7.01
1976	23.84	57.38	18.65	16.75	12.87	5.08	4.81
1977	7.18	25.38	1.71	-0.69	1.41	5.12	6.77
1978	6.56	23.46	-0.07	-1.18	3.49	7.18	9.03
1979	18.44	43.46	-4.18	-1.23	4.09	10.38	13.31
1980	32.42	39.88	-2.62	-3.95	3.91	11.24	12.40
1981	-4.91	13.88	-0.96	1.86	9.45	14.71	8.94
1982	21.41	28.01	43.79	40.36	29.10	10.54	3.87
1983	22.51	39.67	4.70	0.65	7.41	8.80	3.80
1984	6.27	-6.67	16.39	15.48	14.02	9.85	3.55
1985	32.16	24.66	30.09	30.97	20.33	7.72	3.77
1986	18.47	6.85	19.85	24.53	15.14	6.16	1.13
1987	5.23	-9.30	-0.27	-2.71	2.90	5.47	4.41
1988	16.81	22.87	10.70	9.67	6.10	6.35	4.42
1989	31.49	10.18	16.23	18.11	13.29	8.37	4.65
1990	-3.17	-21.56	6.78	6.18	9.73	7.61	6.11
1991	30.55	44.63	19.89	19.30	15.46	5.60	3.06
1992	7.67	23.35	9.39	8.05	7.19	3.51	2.90
1993	9.99	20.98	13.19	18.24	11.24	2.90	2.75
1994	1.31	3.11	-5.76	-7.77	-5.74	3.90	2.67
1995	37.43	34.46	27.20	31.67	16.80	5.60	2.54
1996	23.07	17.62	1.40	-0.93	2.10	5.21	3.32

Investment Return and Inflation: Past and Future

Inflation Distortions

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

Over the last 25 years Real Return was within that range, however, for lengthy parts of that period it was actually negative.

Annual Investment Return (Including Income) ... REAL RETURN (Remainder after Inflation) ...

No. Years Ended December	Inflation (CPI)	Cash Equiv. (T Bills)	Bonds (Long Term)		Stocks (S & P 500)	Sample Fund		
			US Treasury	Corporate (Sol. Bro)		A	B	C
5/1970	4.5	1.0	-4.3	-3.2	-1.1	-2.2	-1.6	-1.3
5/1975	6.9	-1.0	-0.7	-0.8	-3.5	-1.2	-1.7	-2.1
5/1980	9.2	-1.3	-6.9	-6.2	4.3	-2.6	-0.4	1.3
5/1985	4.8	5.2	11.5	12.3	9.4	10.7	10.2	9.8
5/1990	4.1	2.6	6.4	6.1	8.6	6.7	7.2	7.6
5/1995	2.8	1.5	10.0	9.1	13.4	10.0	10.8	11.3
1/1991	3.1	2.4	15.7	16.3	26.7	17.8	20.0	21.5
1/1992	2.9	0.6	5.1	6.3	4.7	4.9	4.7	4.6
1/1993	2.8	0.1	15.0	10.1	7.0	9.6	8.6	7.6
1/1994	2.7	1.2	-10.2	-8.3	-1.4	-5.8	-4.3	-3.0
1/1995	2.5	3.0	28.5	24.1	34.0	26.3	27.9	28.9
1/1996	3.3	1.8	-4.1	-1.8	19.2	4.2	8.5	11.9
25/1996	5.6	1.3	3.2	3.4	6.5	4.4	5.0	5.5

Sample Funds (Only three of many reasonable samples)

	A	B	C
Cash: T-Bills	10 %	10 %	10 %
Bonds: US	30	20	10
Bonds: Corp	30	20	15
Stock	30	50	65

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 high 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 benefit increases.

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?



