MISSOURI STATE EMPLOYEES' RETIREMENT SYSTEM

Annual Actuarial Valuation

June 30, 2001

After Economic Assumption Changes

Gabriel, Roeder, Smith & Company

Missouri State Employees' Retirement System

Annual Actuarial Valuation as of June 30, 2001

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October 11, 2001

Board of Trustees
Missouri State Employees'
Retirement System
907 Wildwood Drive
Jefferson City, Missouri 65102

Re: Valuation as of June 30, 2001

Presented in this report are the results of the annual actuarial valuation of the Missouri State Employees' Retirement System. The purpose of the valuation was to measure the System's funding progress and to determine the level cost employer contribution rate for the fiscal year beginning July 1, 2002.

The date of the valuation was June 30, 2001.

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

Your attention is directed particularly to the presentation of contribution rates on page 7 and the comments on page 12.

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 and who have significant experience in performing valuations for public retirement systems.

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

The actuarial calculations were made by qualified actuaries in accordance with generally accepted actuarial procedures and methods. The calculations are based on the provisions of the System scheduled to be in effect as of July 1, 2002, and on actuarial assumptions that are, individually and in the aggregate, internally consistent and reasonably based on the actual experience of the System.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

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NLJ:BLA:dks

Financial Principles

Promises Made, and Eventually Paid. As each year is completed, MOSERS in effect hands an "IOU" to each member then acquiring a year of service credit --- the "IOU" says: "The Missouri State Employees' Retirement System owes you certain retirement benefits -- payments in cash commencing when you qualify for retirement."

The related key financial question is, 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 Missouri at the time the IOU becomes a cash demand?

The law governing MOSERS financing intends that over the long-term, current taxpayers contribute the money to cover the IOUs being handed out to current employees. 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.)

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 2nd and largest contributor*** for benefits to employees, and is directly related to the contribution amount required from the employer.

In actuarial terminology, the minimum level percent of payroll contribution rate consists of:

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

... plus ...

Interest on Unfunded Actuarial Accrued Liabilities (unfunded actuarial accrued liabilities are the difference between: actuarial liabilities for members' service already rendered; and the actuarial value of MOSERS' accrued assets).

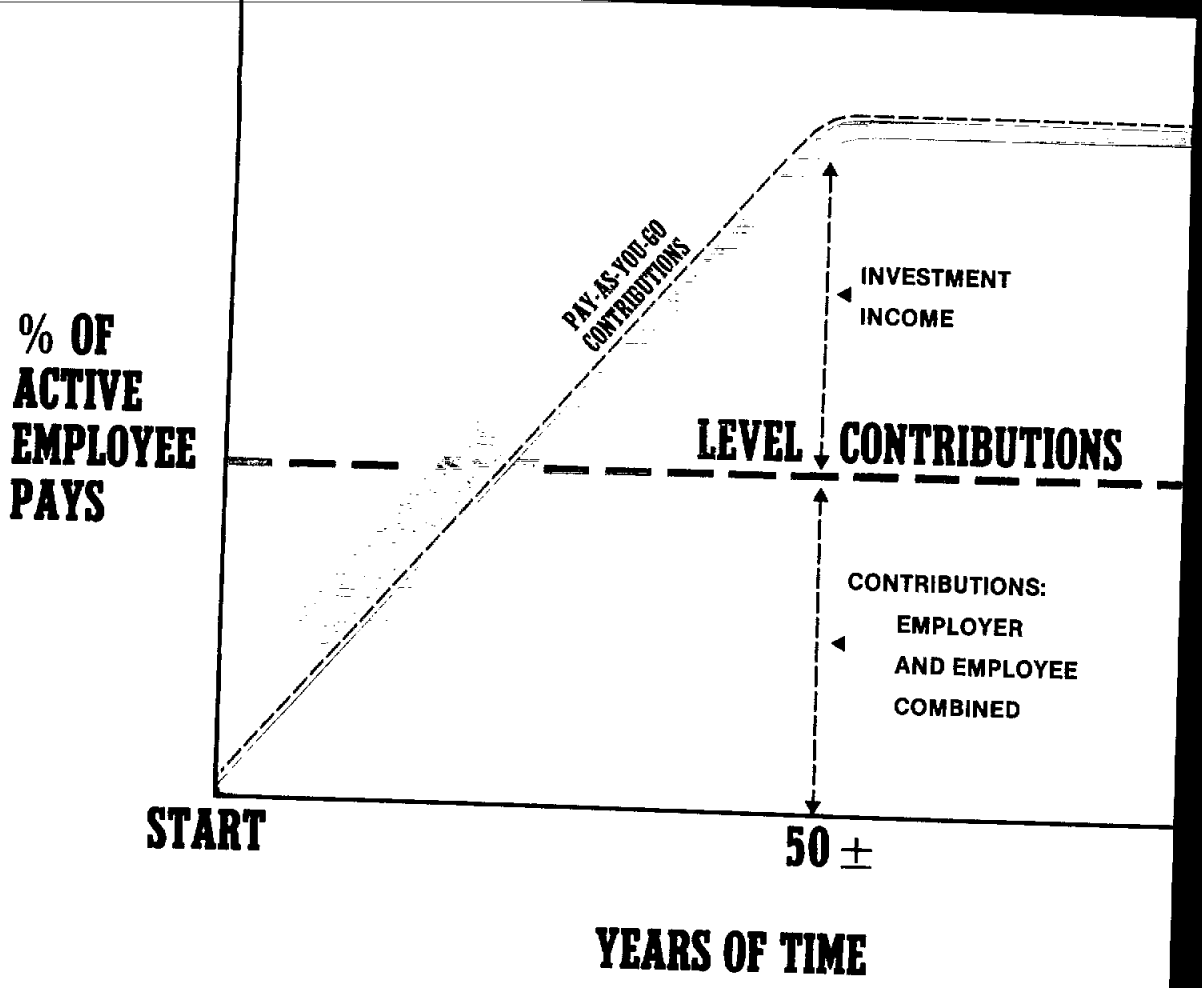
Computing Contributions To Support Funded Benefits. From a given schedule of benefits and from the employee data and asset data provided, the actuary determines the contribution rates to support the benefits, by means of ***an actuarial valuation and a funding method.***

An actuarial valuation has a number of ingredients such as: the rate of investment income 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 salary increases; and the assumed age or ages at actual retirement.

In an actuarial valuation, assumptions are made as to what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the plan can indicate the degree of accuracy of the assumptions.

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 those who developed the assumptions, or the skill of the actuary and the many calculations made. The future cannot be predicted with precision.

MOSERS 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,*** and contribution rates.



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

An ***actuarial valuation*** is the mathematical process by which actuarial present values and contribution rates are determined. The flow of activity constituting the valuation may be summarized as follows:

A. ***Census Data***, furnished by the system administrative staff, including:

Retired lives now receiving benefits

Former employees with vested benefits not yet payable

Active employees

\+ B. ***Benefit Provisions*** governing future payments from the Retirement System.

\+ C. ***Asset data*** (cash & investments), furnished by the system administrative staff.

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

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

\+ F. ***Mathematically combining the assumptions, the funding method, and the data.***

= G. Determination of:

Plan financial position and

The employer contribution rate.

Meaning Of "Unfunded Actuarial Accrued Liabilities"

"*Actuarial accrued liabilities*" are ***the portion of the present value of plan promises to pay benefits in the future which are not covered by future normal cost contributions*** --- a liability has been established ("accrued") because the service has been rendered but the resulting monthly cash benefit may not be payable until years in the future. Actuarial accrued liabilities are the result of complex mathematical calculations, which are made annually by the plan's actuary.

If "actuarial accrued liabilities" at any time exceed the actuarial value of the plan's accrued assets, the difference is "***unfunded actuarial accrued liabilities***." This is the common condition. If the plan's assets equaled the plan's "actuarial accrued liabilities," the plan would be termed "fully funded."

Each time a plan adds a new benefit which applies to service already rendered, an "actuarial accrued liability" is created, which is also an "unfunded actuarial accrued liability" because the plan can't print instant cash to cover the value of the new benefit promises. Payment for such unfunded actuarial accrued liabilities is spread over a period of years, commonly in the 20-35 year range.

Unfunded actuarial accrued liabilities can occur in another way: if actual financial experience is less favorable than assumed financial experience, the difference is added to unfunded actuarial accrued liabilities. In plans where benefits are directly related to an employee's pay near time of retirement, unfunded actuarial accrued liabilities increase when unexpected rates of pay increase create additional actuarial accrued liabilities which are not offset by favorable experience in other areas.

The existence of unfunded actuarial accrued liabilities is not bad, but the changes from year to year in amount of unfunded actuarial accrued liabilities are important and should be monitored.

Unfunded actuarial accrued liabilities are not a bill payable immediately but it is important that policy-makers prevent the amount from becoming unreasonably high and ***it is vital for plans to have a sound method for making payments toward them*** so that they will be controlled.

Valuation Results

Computed Employer Contribution Rate

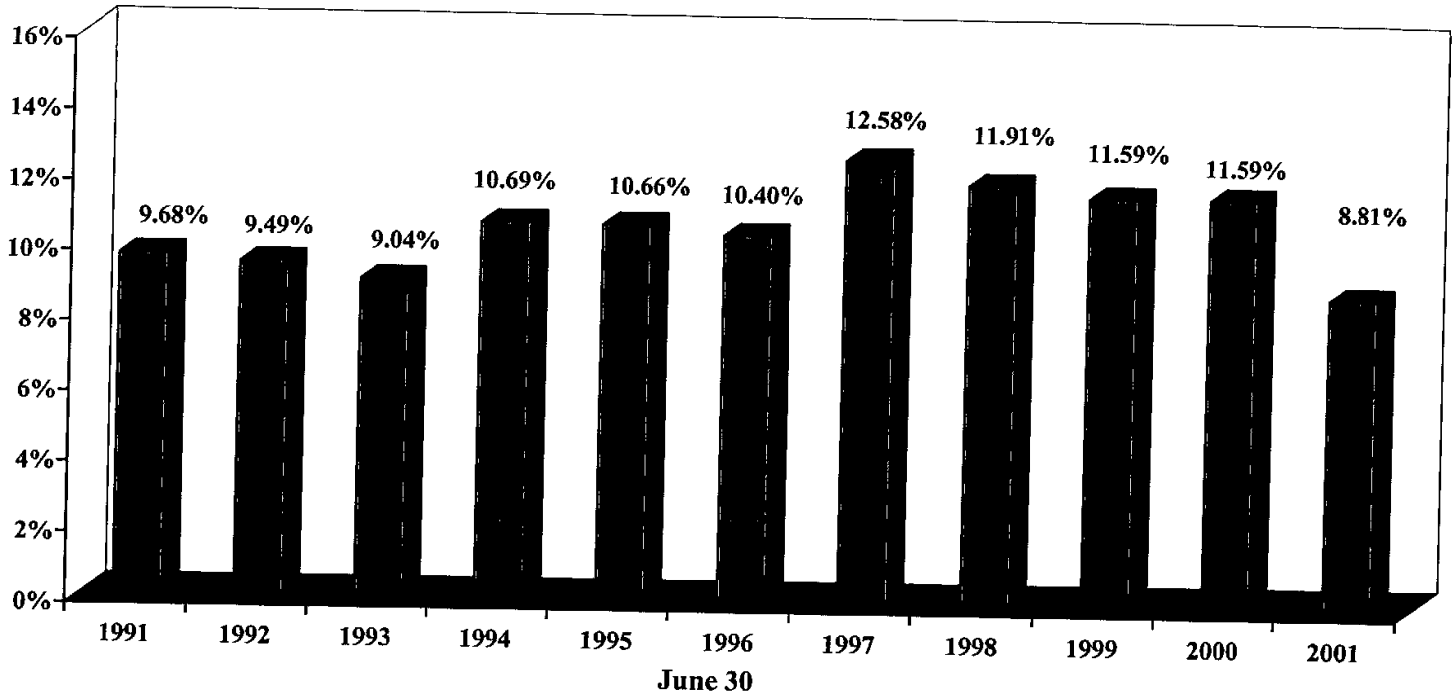
Expressed as Percents of Active Member Payroll

June 30, 2001

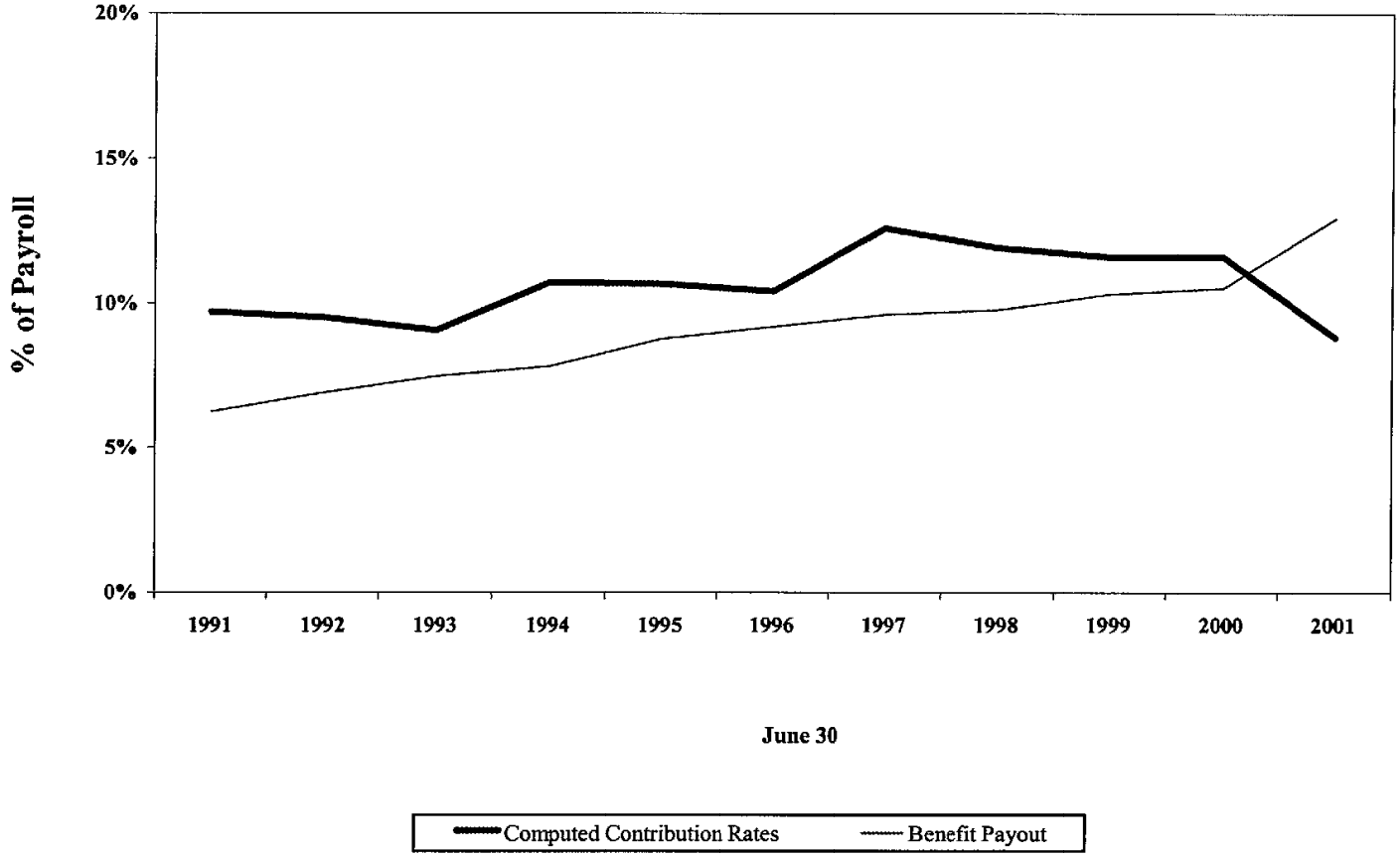
Contributions for	Contribution Expressed as Percents of Payroll
Normal Cost	
Service retirement benefits	7.25 %
Disability benefits	0.33
Survivor benefits	0.31
Administrative expenses	0.33
Total	8.22
Unfunded Actuarial Accrued Liabilities(UAAL) (34 year level percent-of-payroll amortization*)	0.59
TOTAL COMPUTED EMPLOYER CONTRIBUTION RATE	**8.81 %**

* *This corresponds to an amortization factor of 18.785021. Amortization period a year ago was 35 years.*

Missouri State Employees' Retirement System
Computed Contribution Rates



Missouri State Employees' Retirement System
Contribution Rates Vs. Benefit Payout



Actuarial Present Values June 30, 2001

Actuarial Present Value, June 30, for	(1) Actuarial Present Value	(2) Portion covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1) - (2)
Active Members			
Service retirement benefits based on service rendered before and likely to be rendered after valuation date	$ 3,557,693,598	$ 750,916,948	$ 2,806,776,650
Disability benefits likely to be paid present active members who become totally and permanently disabled	98,231,695	43,624,338	54,607,357
Survivor benefits likely to be paid to widows and children of present active members who die before retiring	139,544,260	42,140,703	97,403,557
Separation benefits likely to be paid present active members			
Refunds of member contributions	0		
Deferred benefits	453,899,877		
Total	453,899,877	211,788,332	242,111,545
Active Member Totals	$ 4,249,369,430	$ 1,048,470,321	$ 3,200,899,109
Members on Leave of Absence & LTD			
Service retirement benefits based on service rendered before the valuation date			72,261,737
Terminated Vested Members			
Service retirement benefits based on service rendered before the valuation date			295,728,370
Retired Lives			2,496,277,500
TOTAL ACTUARIAL ACCRUED LIABILITY			$ 6,065,166,716
ACTUARIAL VALUE OF ASSETS			5,881,232,850
UNFUNDED ACTUARIAL ACCRUED LIABILITY			$ 183,933,866

Derivation of Experience Gain (Loss)

Year Ended June 30, 2001

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain (loss) for the year ended June 30, 2001 is shown below.

	Funded Benefits $Millions
(1) UAAL* at start of year	$703.8
(2) Normal cost from last valuation	158.5
(3) Actual employer contributions	215.8
(4) Interest accrual: (1) x .085 + [(2) - (3)] x (.085 / 2)	57.4
(5) Expected UAAL before changes: (1) + (2) - (3) + (4)	704.0
(6) Change from any changes in benefits, assumptions, or methods	(779.6)
(7) Expected UAAL after changes: (5) + (6)	(75.6)
(8) Actual UAAL at end of year	183.9
(9) Gain(loss): (7) - (8)	(259.5)
(10) Gain (loss) as percent of actuarial accrued liabilities at start of year ($5,921)	(4.4) %

* *Unfunded actuarial accrued liability.*

Valuation Date June 30	Actuarial Gain (Loss) As a % of Beginning Accrued Liabilities
1994	2.9 %
1995	0.6
1996	0.4
1997	5.5
1998	5.5
1999	4.7
2000	2.7
2001	(4.4)

Actuarial Valuation as of June 30, 2001
Comments

The contribution rate for the fiscal year beginning July 1, 2002 was computed to be 8.81% of payroll, based upon an amortization period for the unfunded actuarial accrued liabilities (UAAL) of 34 years. This represents a decrease of (2.78)% in the rate computed for the fiscal year beginning July 1, 2001. Of this change, (2.38)% is attributable to changes in actuarial assumptions, (0.89)% is attributable to the release of the actuarial value of assets funding margin, (0.22)% is attributable to changing the asset valuation method smoothing period from 3 years to 5 years and 0.71% is attributable to plan experience for the year ending June 30, 2001. Revised economic assumptions were adopted by the Board of Trustees at its September 20, 2001 meeting. Additional detail regarding experience gains and losses will be presented in a separate report.

There were no changes in benefit provisions that affected this year's valuation, since the back DROP is expected to be cost neutral and the Regional Colleges Retirement Plan (RCRP) only applies to future hires.

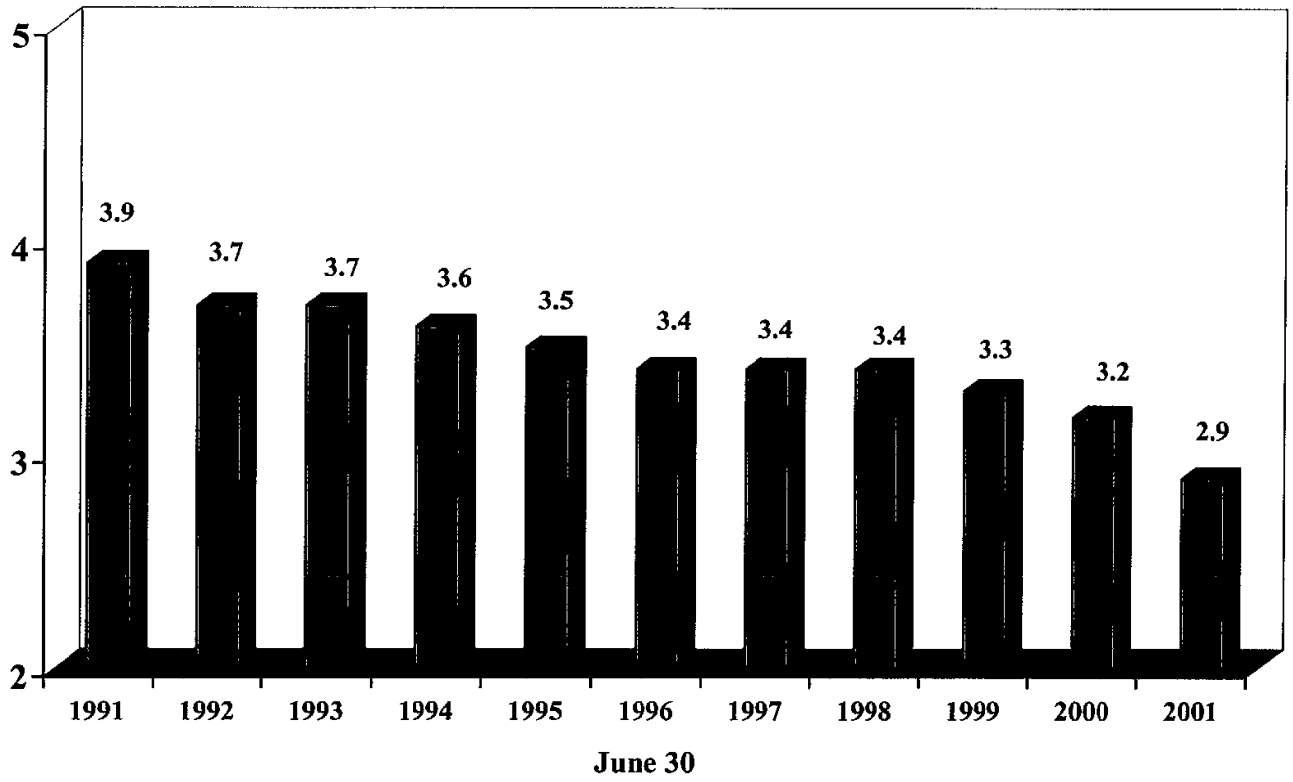
Active and retired member data was reported as of May 31, 2001. It was brought forward to June 30, 2001 by adding one month of service for all active members and the June COLA for certain retired members, and otherwise making no other adjustments. It is expected that this procedure resulted in a slight overstatement of total liabilities as of June 30, 2001. Financial information continues to be reported as of June 30. This procedure was instituted to provide sufficient time for the Board of Trustees to certify the appropriate contribution rate prior to the October 1 statutory deadline.

Comparative Schedule

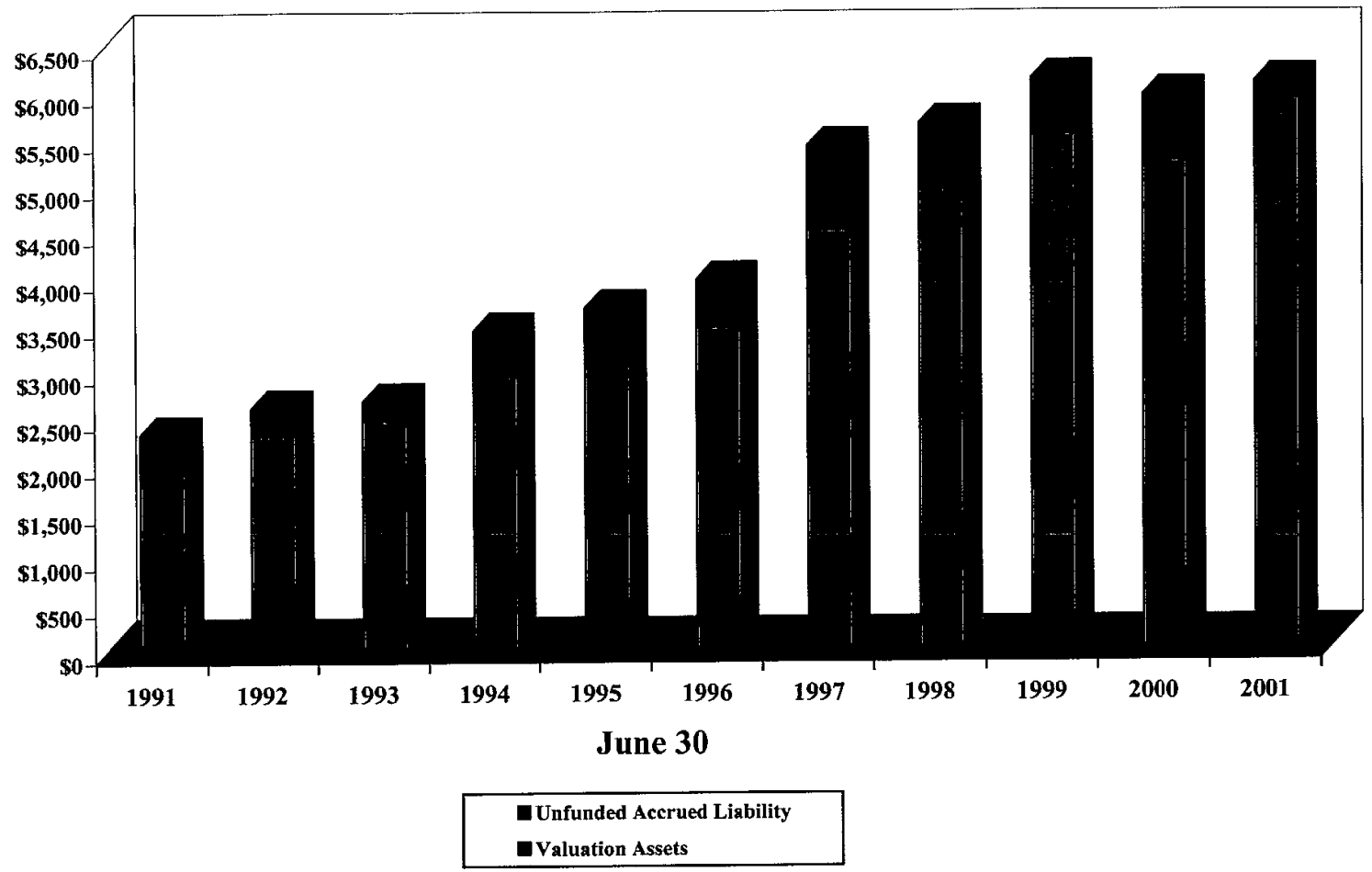
Valuation Date June 30	Active Members				Retired Lives				Accrued Liability	Valuation Assets	UAAL
		Payroll	Average Salary		Number		Annual Benefits				
	Number	$ Millions	$	% Incr.	Retired	Active/ Retired	$ Million	% of Payroll			
									----------million----------		
1989 (2)	43,787	$895	$20,444	4.0 %	11,090	4.0	$52.6	5.9 %	$1,782	$1,418	$364
1990 (1)	46,834	994	21,229	3.8	11,495	4.1	57.3	5.8	1,861	1,587	274
1991 (2)	46,725	1,028	21,995	3.6	11,995	3.9	64.0	6.2	2,053	1,793	260
1992 (1)(2)	46,616	1,030	22,101	0.5	12,552	3.7	71.0	6.9	2,291	1,991	300
1993	47,954	1,063	22,172	0.3	13,115	3.7	79.4	7.5	2,447	2,237	210
1994	49,436	1,125	22,754	2.6	13,651	3.6	87.4	7.8	2,559	2,425	134
1994 (2)	49,436	1,125	22,754	2.6	13,651	3.6	96.2 (est.)	8.6 (est.)	2,919	2,425	494
1995	50,524	1,199	23,730	4.3	14,384	3.5	104.9	8.8	3,151	2,649	502
1996 (1)	51,425	1,268	24,650	3.9	15,004	3.4	116.2	9.2	3,440	2,928	512
1997	52,737	1,360	25,782	4.6	15,609	3.4	128.5	9.4	3,770	3,454	316
1997 (1)(2)(3)	52,737	1,360	25,782	4.6	15,609	3.4	130.4 (est.)	9.6 (est.)	4,484	3,581	903
1998	54,544	1,460	26,762	3.8	16,251	3.4	142.4	9.8	4,919	4,211	708
1999	56,158	1,565	27,860	4.1	17,117	3.3	159.0	10.2	5,385	4,909	476
1999 (2)	56,158	1,565	27,860	4.1	17,117	3.3	161.3 (est.)	10.3 (est.)	5,506	4,909	597
2000	57,774	1,684	29,143	4.6	18,196	3.2	177.0	10.5	5,960	5,512	449
2000 (1)	57,774	1,684	29,143	4.6	18,196	3.2	177.0	10.5	5,921	5,217	704
2001 (3)	58,431	1,758	30,090	3.3	20,237	2.9	227.4	12.9	6,476	5,881	595
2001 (1)	58,431	1,758	30,090	3.3	20,237	2.9	227.4	12.9	6,065	5,881	184

(1) After changes in assumptions.
(2) After changes in benefit provisions.
(3) After changes in asset valuation method.

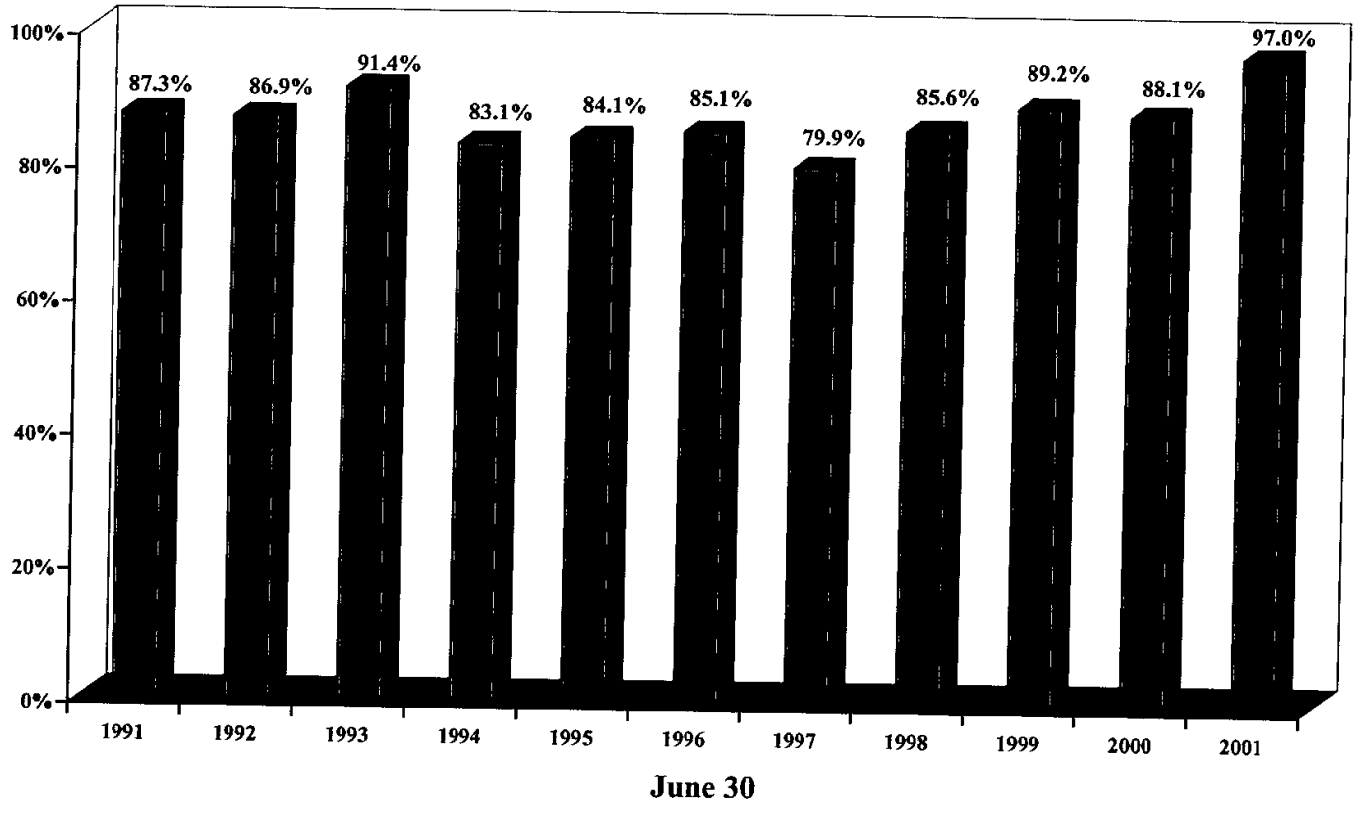
Number of Active Members Per Benefit Recipient



Missouri State Employees' Retirement System
Actuarial Value of Assets and Actuarial Accrued Liabilities



Actuarial Value of Assets as Percents of Accrued Liabilities (Funded Ratio)



Data Used In Valuations

Missouri State Employees' Retirement System
Summary of Benefit Provisions Evaluated
June 30, 2001 Actuarial Valuation

MSEP (Missouri State Employees' Plan)	**MSEP 2000** (Missouri State Employees' Plan 2000)
PARTICIPATION	
Participants include: All MOSERS members, vested former members, retirees and survivors who first became members prior to July 1, 2000 and who do **not** elect to transfer to the MSEP 2000 plan. Election is made at the time benefits commence.	Participants include: (1) All new employees who first become members on or after July 1, 2000, except full-time teaching and senior administrative personnel of the regional colleges and universities hired on or after July 1, 2002 who will be participants in the Regional Colleges Retirement Plan. (2) MSEP active members and vested former members who elect to transfer to the MSEP 2000 plan prior to retirement. (3) MSEP retirees who elect to transfer to the MSEP 2000 plan during the election window from July 1, 2000 through July 1, 2001, and their survivors.

MSEP	MSEP 2000
NORMAL RETIREMENT ELIGIBILITY (unreduced benefits)	
Members of the General Assembly: Age 55 with completion of at least 3 full biennial assemblies.	*Members of the General Assembly:* The earlier of attaining: (1) Age 55 with completion of at least 2 full biennial assemblies. (2) Age 50 with completion of at least 2 full biennial assemblies and with age plus credited service equal to 80 or more.
Statewide Elected Officials: The earliest of attaining: (1) Age 65 with at least 4 years of credited service. (2) Age 60 with at least 15 years of credited service. (3) Age 50 with age plus credited service equal to 80 or more.	*Statewide Elected Officials:* The earlier of attaining: (1) Age 55 with at least 4 years of credited service as a statewide elected official. (2) Age 50 with age plus credited service equal to 80 or more.
General Employees: The earliest of attaining: (1) Age 65 and active with at least 4 years of credited service. (2) Age 65 with at least five years of credited service. (3) Age 60 with at least 15 years of credited service. (4) Age 50 with age plus credited service equal to 80 or more.	*General Employees:* The earlier of attaining: (1) Age 62 with at least 5 years of credited service. (2) Age 50 with age plus credited service equal to 80 or more.
Uniform Water Patrol Employees: The earliest of attaining: (1) Age 55 and active with at least 4 years of credited service. (2) Age 55 with at least 5 years of credited service. (3) Age 50 with age plus credited service equal to 80 or more.	
AVERAGE COMPENSATION USED FOR BENEFIT DETERMINATION The average annual compensation of a member for the three consecutive years of service during which pay was highest (overtime pay is included for purposes of determining Average Compensation). Lump sum payments are excluded, but unused sick leave may be converted to additional credited service (usable only for benefit computation, not eligibility).	The average annual pay of a member for the three consecutive years of service during which pay was highest (overtime pay is included for purposes of determining Average Pay). A lump sum payment is included unless it is for unused vacation or sick leave. However, unused sick leave may be converted to additional credited service (usable only for benefit computation, not eligibility).

MSEP	MSEP 2000
BENEFIT AMOUNT	
Members of the General Assembly: $150 per month per biennial assembly served.	***Members of the General Assembly:*** 1/24 of pay times first 24 years of credited service as a member of the General Assembly.
Statewide Elected Officials: (1) Less than 12 years of credited service: 1.6% of Average Compensation times years of credited service. (2) 12 or more years of credited service: 50% of pay of the highest elected position held prior to retirement.	***Statewide Elected Officials:*** 1/24 of pay (of the highest elected position held prior to retirement) times the first 12 years of credited service as a statewide elected official.
General Employees: 1.6% of Average Compensation times years of credited service. 2.1% of Average Compensation times years of credited service for any period of non-social security covered employment transferred from the Public School Retirement System.	***General Employees:*** Life Benefit: 1.7% of Average Pay times years of credited service. Temporary Benefit: If member retires between ages 50 and 62 with age plus credited service equal to 80 or more, a temporary benefit is payable until the attainment of the minimum age at which reduced social security benefits are payable, in the amount of 0.8% of Average Pay times years of credited service. Non- Social Security Covered Service: 2.5% of Average Pay times years of credited service for any period of non-social security covered employment transferred from the Public School Retirement System.
Uniformed Water Patrol Employees: 2.13% of Average Compensation times years of credited service.	

MSEP	MSEP 2000

EARLY RETIREMENT FOR GENERAL EMPLOYEES:

Eligibility:

Age 55 with at least 10 years of credited service.

Amount:

(1) Less than 15 years of service: Normal retirement amount actuarially reduced for years younger than age 65.

(2) 15 years but less than 20 years of service, and less than the number of years of service necessary for age and service to total 80: Normal retirement amount actuarially reduced for years younger than age 60.

(3) 20 or more years of service, but less than the number of years of service necessary for age and service to total 80: Normal retirement amount reduced for years younger than the 80 and out eligibility date.

Eligibility:

Age 57 with at least 5 years of credited service.

Amount:

Normal retirement amount reduced by ½% for each month that retirement precedes eligibility for normal retirement.

VESTED DEFERRED BENEFITS

Benefits for employees who terminate prior to eligibility for an immediate benefit are considered to be vested in accordance with the following schedule (benefits commence at the age the individual would have been eligible for early or normal retirement, considering years of credited service).

Years of Service	General Assembly	Statewide Elected Officials	General Employees
4		100%	
5			100%
6 (3 assemblies)	100%		

Benefits for employees who terminate prior to eligibility for an immediate benefit are considered to be vested in accordance with the following schedule (benefits commence at age 57).

Years of Service	General Assembly	Statewide Elected Officials	General Employees
4 (2 assemblies)	100%	100%	
5			100%

MSEP	MSEP 2000
DEATH PRIOR TO RETIREMENT	
(1) The spouse shall receive a benefit computed as if the member had been normal retirement age on the date of death and elected the joint and 100% survivor optional form of payment, provided the member had at least 5 years of credited service and was married for at least two consecutive years immediately prior to the date of death. If no eligible spouse survives, 50% of the member's life income annuity will be paid to eligible children. If the death is duty related, the service requirement is waived, and the minimum spouse benefit is 50% of current pay.	The spouse shall receive a benefit computed as if the member had been normal retirement age on the date of death and elected the joint and 100% survivor option form of payment, provided the member had at least 5 years of credited service (2 full assemblies for a member of the General Assembly, 4 years of credited service for a statewide elected official). If no eligible spouse survives, 80% of the member's life income annuity will be paid to eligible children. If the death is duty related, the service requirement is waived, and the minimum spouse benefit is 50% of current pay.
(2) For members of the General Assembly, the spouse receives 50% of the benefit the member would have received if the member had been normal retirement age on the date of death, provided the member had served in at least 3 biennial assemblies, and was married for at least two consecutive years immediately prior to the date of death. If the death is duty related, the service requirement is waived, and the minimum spouse benefit is 50% of current pay.	

MSEP	MSEP 2000
DEATH AFTER RETIREMENT	
50% of the benefit the retired member was receiving on the date of death (the normal form of payment), or the benefit payable under the joint and survivor or period certain form of payment, if the member elected an optional form of payment at time of retirement and provided the member was married for at least two consecutive years prior to the date of retirement. Effective July 1, 2000, a member who is not married at retirement but marries thereafter may designate a spouse as beneficiary upon completion of one year of marriage. Additionally, a member may designate a new spouse as beneficiary upon completion of one year of marriage in the event of the death of the spouse the member was married to at the date of retirement (this provision does not apply to period certain annuities).	The benefit payable under the joint and survivor or period certain form of payment, if the member elected an optional form of payment at time of retirement. A member who is not married at retirement but marries thereafter may designate a spouse as beneficiary upon completion of one year of marriage. Additionally, a member may designate a new spouse as beneficiary upon completion of one year of marriage in the event of the death of the spouse the member was married to at the date of retirement (this provision does not apply to period certain annuities).
DISABILITY (RECIPIENTS OF LTD BENEFITS)	
Normal retirement benefits become payable at the time the member is eligible for normal retirement, and are computed based on: i) the service that would have accrued to the member if active employment had continued; and ii) the member's rate of pay at the time of disability (If the member retires on or after August 28, 1999, the member's rate of pay is based on the rate of pay at the time of disability indexed to the time of benefit commencement). An exception is Uniformed Water Patrol employees who are eligible for an immediate occupational disability benefit equal to 50% of pay at time of disability.	Normal retirement benefits become payable at the time the member is eligible for normal retirement, and are computed based on: i) the service that would have accrued to the member if active employment had continued; and ii) the member's rate of pay at the time of disability indexed to the time of benefit commencement. The annual percentage increase in the pay used to compute benefits is the lesser of: i) 80% of the CPI increase and ii) 5%.

POST-RETIREMENT BENEFIT ADJUSTMENTS

MSEP

Benefits are increased to retired members (including survivors) annually in accordance with the following formulas:

Increase in CPI	Formula 1 Benefit Increase	Formula 2 Benefit Increase
5.00% or less	4%	80% of CPI increase
5.01% - 6.24%	80% of CPI increase	80% of CPI increase
6.25% or more	5%	5%

Members first hired prior to August 28, 1997 receive COLAs based on Formula 1 until an aggregate increase of 65% is reached. At that point subsequent COLAs based on Formula 2 are granted.

Members first hired on or after August 28, 1997 receive COLAs based solely on Formula 2.

Statewide Elected Officials with 12 or more years of service have their benefit adjusted annually based on the increase in the pay for an active statewide elected official in the member's highest elected position.

Members who are fully vested and work beyond age 65 will have their monthly benefit increased upon retirement. The percentage increase in benefit is equal to all COLAs for the years between age 65 and date of retirement, not to exceed 65%.

MSEP 2000

Benefits are increased to retired members (including survivors) annually in accordance with the following:

Members of the General Assembly: Benefit is adjusted annually based on the increase in the pay for an active member of the General Assembly.

Statewide Elected Officials: Benefit is adjusted annually based on the increase in the pay for an active statewide elected official in the retired member's highest elected position.

General Employees: Annual benefit percentage increase equal to the lesser of: i) 80% of the CPI increase, and
ii) 5%.

MSEP	MSEP 2000
POP-UP PROVISION Benefits to members who choose a survivor form of payment and whose spouse precedes the member in death, will "pop-up" or revert to the amount the member would have received had he/she not elected a survivor option.	Same.
PORTABILITY Purchase/Transfer Provisions (in addition to military). Effective August 28, 1999, a member may purchase up to four years of non-federal full-time Missouri public service, provided the member is not vested in another retirement system for that same service.	Purchase/Transfer Provisions (in addition to military). A member may purchase up to four years of non-federal full-time Missouri public service, provided the member is not vested in another retirement system for that same service. Local vested service credit granted after 10 years of state service if the other retirement plan agrees to transfer assets equal to the accrued liability to MOSERS.
MEMBER CONTRIBUTIONS. None.	Same.
BACK DROP. See following page.	Same.

MSEP	MSEP 2000
BACK DROP To be eligible to participate in the back DROP, a member must have been eligible to retire under normal age and/or service conditions for at least two years. A retroactive starting date is established for back DROP purposes which is the later of: 1) the member's normal retirement date or 2) five years prior to the annuity starting date under the retirement plan selected by the member. The back DROP period for the accumulation of the back DROP account is from the retroactive starting date to the annuity starting date. This results in a back DROP period of two to five years depending upon the individual situation. A theoretical back DROP account is accumulated that includes 90% of the value of the benefit payments that would have been paid during the back DROP period had the member retired at the retroactive starting date with their respective option election. These payments include applicable post-retirement benefit increases. The member is paid the resulting lump sum value of the back DROP account as of the annuity starting date or as three equal annual installments beginning at the annuity starting date. The annuity benefit payable from the actual retirement date is computed with years of service and average pay as of the retroactive starting date for the back DROP. Post-retirement benefit increases that occurred during the back DROP period are applied in the calculation of the monthly annuity.	Same.

Retirants & Beneficiaries as of June 30, 2001
Tabulated by Year of Retirement

Year of Retirement	No.	Total Annual Benefits	Average Monthly Benefit
2001	897	$13,407,660	$1,246
2000	2,534	38,544,972	1,268
1999	1,473	17,970,312	1,017
1998	1,436	17,786,124	1,032
1997	1,266	15,316,704	1,008
1996	1,130	13,603,708	1,003
1995	1,281	15,070,704	980
1994	935	9,485,679	845
1993	1,028	11,449,380	928
1992	849	9,233,316	906
1991	855	9,938,964	969
1990	667	7,604,784	950
1989	659	6,966,180	881
1988	703	7,482,336	887
1987	583	5,144,616	735
1986	522	4,040,088	645
1985	455	3,469,716	635
1984	370	2,805,756	632
1983	399	3,110,760	650
1982	398	3,025,728	634
1981	322	2,423,856	627
1980	232	1,674,756	602
1979	190	1,269,048	557
1978	185	1,217,832	549
1977	180	1,197,096	554
1976	193	1,135,464	490
1975	123	833,688	565
1974	117	632,676	451
1973	98	584,796	497
1972	52	334,500	536
1971	31	196,248	528
1970	28	164,328	489
1969	16	115,464	601
1968	11	39,288	298
1967	6	37,428	520
1966	6	42,960	597
1965	4	15,912	332
1964 & PRIOR	3	19,848	551
Totals	**20,237**	**$227,392,675**	**$936**

Benefits Payable June 30, 2001

Tabulated by Option and Type of Benefit

MSEP Benefits

Type of Benefit	No.	Annual Funded Benefits
Service Retirement		
Life Annuity	4,709	$ 39,318,598
50% Joint and Survivor	11	116,286
75% Joint and Survivor	2,020	28,674,329
100% Joint and Survivor	4,783	56,728,518
5 Year Certain and Life	124	983,972
10 Year Certain and Life	94	753,320
Survivor Beneficiary	1,312	9,069,187
Total	13,053	135,644,211
Disability Retirement	39	156,702
Death-in-Service	1,047	6,609,293
Grand Total	**14,139**	**$ 142,410,206**

MSEP 2000 Benefits

Type of Benefit	No.	Annual Funded Benefits
Service Retirement		
Life Annuity	4,741	$ 59,291,228
50% Joint and Survivor	54	643,464
75% Joint and Survivor	520	9,465,159
100% Joint and Survivor	603	13,660,070
5 Year Certain and Life	57	704,435
10 Year Certain and Life	101	975,268
Survivor Beneficiary	22	242,845
Total	6,098	84,982,469
Disability Retirement	0	0
Death-in-Service	0	0
Grand Total	**6,098**	**$ 84,982,469**

Total Benefits Payable June 30, 2001

Tabulated by Attained Ages of Benefit Recipients

Attained Ages	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Totals	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20					71	$ 149,473	71	$ 149,473
20-24					10	52,994	10	52,994
25-29					3	12,132	3	12,132
30-34					14	63,084	14	63,084
35-39					22	107,703	22	107,703
40-44			1	$ 1,680	45	260,140	46	261,820
45-49			4	11,304	105	677,508	109	688,812
50-54	772	$ 18,972,979	9	41,578	172	1,296,801	953	20,311,358
55-59	1,599	30,943,166	11	39,025	192	1,628,600	1,802	32,610,791
60-64	2,894	36,769,208	14	63,115	274	2,267,501	3,182	39,099,824
65-69	3,812	40,616,374			365	2,679,301	4,177	43,295,675
70-74	3,268	35,236,848			376	2,343,733	3,644	37,580,581
75-79	2,553	25,711,071			356	2,334,353	2,909	28,045,424
80-84	1,691	14,388,406			224	1,243,521	1,915	15,631,927
85-89	835	6,040,532			112	582,765	947	6,623,297
90-94	320	2,174,740			31	198,466	351	2,373,206
95	14	96,259			3	12,552	17	108,811
96	23	124,070			2	4,446	25	128,516
97	14	100,103			1	648	15	100,751
98	9	66,288			1	912	10	67,200
99	7	39,037					7	39,037
100	4	28,043			1	1,284	5	29,327
101	2	7,524					2	7,524
109					1	3,408	1	3,408
Totals	**17,817**	**$ 211,314,648**	**39**	**$ 156,702**	**2,381**	**$ 15,921,325**	**20,237**	**$ 227,392,675**

Average age at Retirement: 61.5 years.

Average age now: 69.9 years.

Summary of Member Data Included in Valuation

June 30, 2001

Active Members

Valuation Group	Number	Payroll	Group Averages		
			Salary	Age(yrs.)	Service(yrs.)
Regular State Employees	53,300	$ 1,534,316,418	$ 28,786	42.8	9.3
Elected Officials	6	568,761	94,794	44.1	4.1
Legislative Clerks	104	2,714,311	26,099	52.2	13.1
Legislators	184	6,166,959	33,516	50.8	9.6
Uniformed Water Patrol	85	3,243,019	38,153	37.5	12.1
Conservation Department	1,523	56,400,770	37,033	42.5	13.0
Contract Employees	3,229	154,780,031	47,934	49.7	13.9
Total in Funding Program	**58,431**	**$ 1,758,190,269**	**$ 30,090**	**43.2**	**9.7**
Administrative Law Judges	57	$ 4,855,229	$ 85,179	48.1	8.7
Other Judges	381	40,299,785	105,774	52.3	10.7

Retired Lives

Type of Benefit Payment	No.	Annual Benefit	Group Averages	
			Benefit	Age(yrs.)
Retirement	17,817	$ 211,314,648	$ 11,860	70.4
Disability	39	156,702	4,018	57.0
Survivor of Active Member	1,047	6,609,293	6,313	58.7
Survivor of Retired Member	1,334	9,312,032	6,981	72.6
Total in Funding Program	**20,237**	**$ 227,392,675**	**$ 11,236**	**69.9**
Administrative Law Judges	24	$ 791,682	$ 32,987	74.0
Other Judges	381	15,693,881	41,191	75.2

This valuation also includes 11,750 terminated vested members, 194 members on leave and 994 members on long-term disability.

Active Members in Funding Program as of June 30, 2001

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	72							72	$ 1,162,286
20-24	2,047	23						2,070	41,045,337
25-29	4,749	798	11					5,558	135,745,447
30-34	3,982	2,402	545	36				6,965	189,814,792
35-39	3,060	1,950	1,572	717	58			7,357	214,040,249
40-44	2,954	1,726	1,617	1,320	882	76		8,575	259,586,182
45-49	2,653	1,734	1,620	1,207	1,364	840	56	9,474	304,773,415
50-54	2,101	1,543	1,494	1,160	1,164	1,163	343	8,968	296,200,616
55-59	1,271	1,024	995	806	721	476	403	5,696	190,379,994
60	164	145	174	111	94	67	88	843	28,220,469
61	134	100	161	89	61	40	53	638	20,806,964
62	108	98	102	67	52	49	84	560	19,434,870
63	73	85	82	45	46	31	56	418	14,790,808
64	55	70	62	44	25	30	43	329	11,374,756
65	30	44	58	51	27	15	27	252	8,909,503
66	23	35	42	24	17	11	18	170	5,958,382
67	19	13	31	20	10	5	16	114	3,884,493
68	12	14	19	14	8	4	7	78	2,813,298
69	8	16	16	9	9	5	6	69	2,200,363
70 & Over	36	39	38	33	30	18	31	225	7,048,044
Totals	**23,551**	**11,859**	**8,639**	**5,753**	**4,568**	**2,830**	**1,231**	**58,431**	**$ 1,758,190,269**

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

Age: 43.2 years.

Service: 9.7 years.

Annual Pay: $30,090

Development of Actuarial Value of Assets

Valuation Date:	2000	2001	2002	2003	2004	2005
A. Actuarial Value Beginning of Year	$ 4,908,820,033	$ 5,216,897,196				
B. Market Value End of Year	5,549,890,634	5,432,767,672				
C. Market Value Beginning of Year	5,123,673,058	5,549,890,634				
D. Cash Flow						
D1. Contributions	207,790,451	217,836,340				
D2. Benefit Payments	(179,710,320)	(217,894,335)				
D3. Administrative Expenses	(5,487,531)	(5,749,965)				
D4. Net	22,592,600	(5,807,960)				
E. Investment Income						
E1. Market Total: B - C - D4	403,624,976	(111,315,002)				
E2. Assumed Rate	8.5%	8.5%				
E3. Amount for Immediate Recognition: E2*(A+D4*.5)	418,209,888	443,189,423				
E4. Amount for Phased-In Recognition: E1 - E3	(14,584,912)	(554,504,425)				
F. Phased-In Recognition of Investment Income						
F1. Current Year: 0.2 * E4	(4,861,637)	(110,900,885)				
F2. First Prior Year	47,899,294	(4,861,637)	$ (110,900,885)			
F3. Second Prior Year	119,054,438	47,899,293	(4,861,638)	$ (110,900,885)		
F4. Third Prior Year					$ (110,900,885)	
F5. Fourth Prior Year						$ (110,900,885)
F6. Total Recognized Investment Gain: Sum(F1:F5)	162,092,095	(67,863,229)	(115,762,523)	(110,900,885)	(110,900,885)	(110,900,885)
G. Adjustment	(294,817,420)	294,817,420				
H. Actuarial Value End of Year: A + D4 + E3 + F6 + G Minimum 80% of B, Maximum 120% of B	5,216,897,196	5,881,232,850				
I. Difference Between Market & Actuarial Values: H - B	332,993,438	(448,465,178)				
J. Recognized Rate of Return	5.80%	12.85%				
K. Market Value Rate of Return	7.86%	(2.01)%				
L. Actuarial Value as a % of Market Value: H / B	94%	108%				

The actuarial value of assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased in over a closed 5-year period. During periods when investment performance exceeds the assumed rate, the actuarial value of assets will tend to be less than market value. During periods when investment performance is less than assumed, the actuarial value will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, the actuarial value will become equal to market value.

Asset Summary

June 30, 2001

	Market Value	Actuarial Value
1. Assets at June 30, 2000	$ 5,549,890,634	$5,216,897,196
2. Contributions and Transfers in	217,836,340	217,836,340
3. Investment Increment*	(111,315,002)	670,143,614
4. Benefit Payments and Transfers out	217,894,335	217,894,335
5. Administrative and Misc. Expenses	5,749,965	5,749,965
6. Assets at June 30, 2001 (1) + (2) + (3) - (4) - (5)	$5,432,767,672	$5,881,232,850
7. Investment Increment/Mean Assets**	(2.01)%	12.85%

* *Net of investment expenses.*

** *Based on the approximation formula: I /[.5 x (A+B-I)], where*

I = Investment Increment
A = Beginning of year asset value
B = End of year asset value

Cash Flow Projection

Missouri State Employees' Retirement System

The Nature of Actuarial Projections

Regular actuarial valuations measure the Retirement System's present financial position and contributions adequacy by calculating and financing the liabilities created by the present benefit program. This process involves discounting to present values the future benefit payments on behalf of present active and retired members and their survivors. However, valuations do not produce information regarding future changes in the makeup of the covered group or the amounts of benefits to be paid or investment income to be received--actuarial projections do.

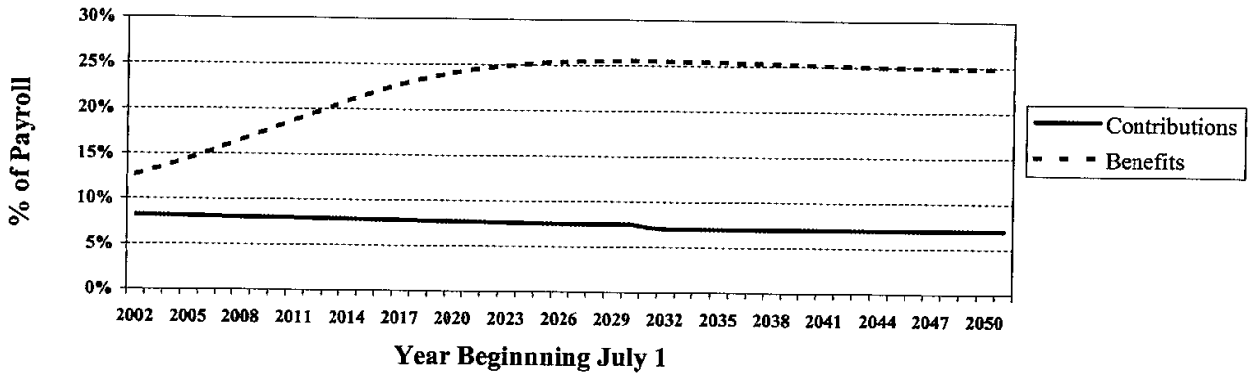
Whereas valuations provide a snapshot of the retirement system as of a given date, projections provide a moving picture. Projected active and retired groups are developed from year to year by the application of assumptions regarding pre-retirement withdrawal from service, retirements, deaths, disabilities, and the addition of new members. Projected information regarding the retired life group leads to assumed future benefit payout. Combining future benefit payments with assumed contributions and expected investment earnings produces the net cash flow of the System each year, and thus end of year asset levels.

Projections are used for many purposes. Among them are (i) developing cash flow patterns for investment policy and asset mix consideration, (ii) exploring the effect of alternative assumptions about future experience, (iii) analyzing the impact on system funding progress of changes in the workforce, and (iv) examining the potential effect of changes in benefits on system financial activity.

Projection results are useful in demonstrating changing relationships among key elements affecting system financial activity. For example: how benefits payable and system assets will grow in future decades. Projections are not predictions of specific future events and do not provide numeric precision in absolute terms. For instance, cash flow projected to occur 10 years in the future will not be exact (except by coincidence), but understanding the changed relationships between future benefit payout and future investment income can be very useful.

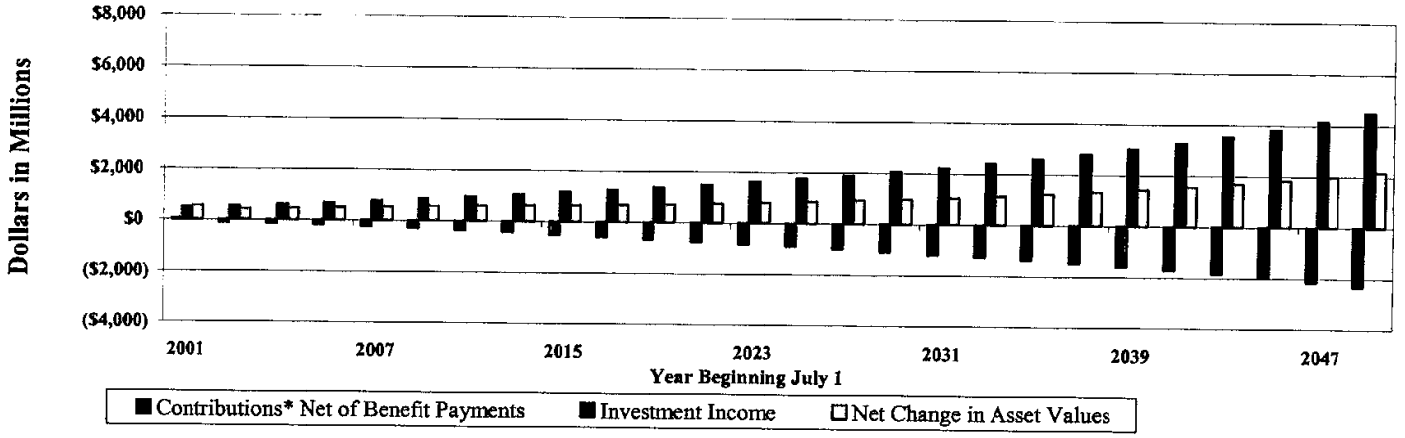
Missouri State Employees' Retirement System
50 Year Cash Flow Projection Based on Valuation Assumptions

Projected Contributions* and Benefits
Expressed as Percents of Active Member Payroll



**Does not include contributions for administrative expenses.*

Net Change in Asset Values



Missouri State Employees' Retirement System
Fifty Year Cash Flow Projection (in Thousands)

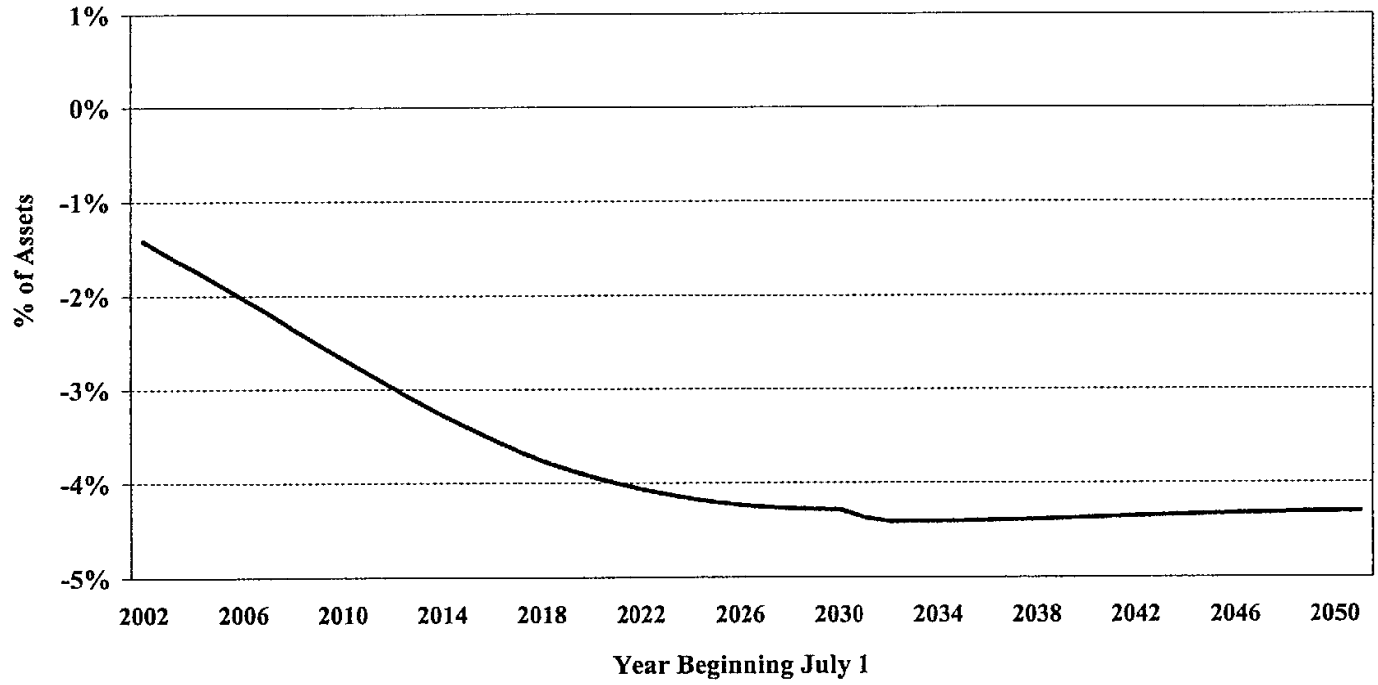
Year Ended June 30	Assets BOY	Contributions*			Benefits	Investment Income	Assets EOY	
		Normal	UAAL	Total			Inflated	2002 $
2002	$5,881,233	$144,444	$10,801	$155,245	$238,965	$496,346	$6,293,859	$6,293,859
2003	6,293,859	149,953	11,213	161,166	260,646	530,750	6,725,129	6,466,470
2004	6,725,129	155,519	11,629	167,148	282,913	566,716	7,176,080	6,634,689
2005	7,176,080	161,176	12,052	173,228	307,964	604,242	7,645,586	6,796,898
2006	7,645,586	166,966	12,485	179,451	334,825	643,272	8,133,474	6,952,527
2007	8,133,474	172,886	12,928	185,814	364,040	683,770	8,639,018	7,100,643
2008	8,639,018	178,963	13,383	192,346	395,837	725,668	9,161,195	7,240,226
2009	9,161,195	185,228	13,851	199,079	429,520	768,908	9,699,662	7,370,946
2010	9,699,662	191,707	14,336	206,043	465,290	813,453	10,253,868	7,492,401
2011	10,253,868	198,438	14,839	213,277	503,414	859,247	10,822,978	7,604,081
2012	10,822,978	205,415	15,361	220,776	543,707	906,228	11,406,275	7,705,671
2013	11,406,275	212,650	15,902	228,552	586,175	954,334	12,002,986	7,796,911
2014	12,002,986	220,160	16,463	236,623	630,168	1,003,528	12,612,969	7,878,023
2015	12,612,969	227,953	17,046	244,999	675,667	1,053,800	13,236,101	7,949,259
2016	13,236,101	236,064	17,652	253,716	722,507	1,105,145	13,872,455	8,010,997
2017	13,872,455	244,514	18,284	262,798	770,555	1,157,580	14,522,278	8,063,705
2018	14,522,278	253,315	18,942	272,257	819,278	1,211,145	15,186,402	8,108,144
2019	15,186,402	262,484	19,628	282,112	868,170	1,265,937	15,866,281	8,145,324
2020	15,866,281	272,042	20,343	292,385	917,632	1,322,061	16,563,095	8,176,009
2021	16,563,095	281,999	21,087	303,086	967,264	1,379,636	17,278,553	8,201,134
2022	17,278,553	292,349	21,861	314,210	1,017,523	1,438,786	18,014,026	8,221,366
2023	18,014,026	303,103	22,665	325,768	1,068,472	1,499,628	18,770,950	8,237,323
2024	18,770,950	314,263	23,500	337,763	1,120,147	1,562,279	19,550,845	8,249,584
2025	19,550,845	325,850	24,366	350,216	1,172,741	1,626,864	20,355,184	8,258,634
2026	20,355,184	337,879	25,266	363,145	1,226,042	1,693,517	21,185,804	8,265,037
2027	21,185,804	351,656	26,296	377,952	1,280,251	1,762,445	22,045,950	8,269,806
2028	22,045,950	366,003	27,369	393,372	1,335,499	1,833,866	22,937,689	8,273,377
2029	22,937,689	380,929	28,485	409,414	1,391,737	1,907,955	23,863,321	8,276,195
2030	23,863,321	396,452	29,646	426,098	1,449,104	1,984,905	24,825,220	8,278,652
2031	24,825,220	412,584	9,582	422,166	1,507,640	2,064,012	25,803,758	8,274,011
2032	25,803,758	429,330	0	429,330	1,567,735	2,144,937	26,810,290	8,266,113
2033	26,810,290	446,710	0	446,710	1,629,782	2,228,594	27,855,812	8,258,141
2034	27,855,812	464,754	0	464,754	1,693,695	2,315,514	28,942,385	8,250,257
2035	28,942,385	483,499	0	483,499	1,759,626	2,405,868	30,072,126	8,242,594
2036	30,072,126	502,977	0	502,977	1,827,700	2,499,829	31,247,232	8,235,273
2037	31,247,232	523,218	0	523,218	1,898,001	2,597,587	32,470,036	8,228,409
2038	32,470,036	544,258	0	544,258	1,970,591	2,699,334	33,743,037	8,222,123
2039	33,743,037	566,127	0	566,127	2,045,637	2,805,278	35,068,805	8,216,511
2040	35,068,805	588,853	0	588,853	2,123,478	2,915,627	36,449,807	8,211,611
2041	36,449,807	612,471	0	612,471	2,204,324	3,030,580	37,888,534	8,207,437
2042	37,888,534	637,015	0	637,015	2,288,483	3,150,338	39,387,404	8,203,965
2043	39,387,404	662,522	0	662,522	2,376,067	3,275,105	40,948,964	8,201,174
2044	40,948,964	689,032	0	689,032	2,467,254	3,405,088	42,575,830	8,199,037
2045	42,575,830	716,587	0	716,587	2,562,342	3,540,501	44,270,576	8,197,503
2046	44,270,576	745,229	0	745,229	2,661,554	3,681,555	46,035,806	8,196,507
2047	46,035,806	775,007	0	775,007	2,765,015	3,828,469	47,874,267	8,195,998
2048	47,874,267	805,971	0	805,971	2,872,924	3,981,467	49,788,781	8,195,923
2049	49,788,781	838,171	0	838,171	2,985,462	4,140,787	51,782,277	8,196,231
2050	51,782,277	871,658	0	871,658	3,102,869	4,306,667	53,857,733	8,196,865
2051	53,857,733	906,485	0	906,485	3,225,344	4,479,355	56,018,229	8,197,770

* *Does not include contributions for administrative expenses.*

Missouri State Employees' Retirement System

50 Year Cash Flow Projection

Projected Net External Cash Flow Expressed as a Percent of Assets



Net External Cash Flow equals: i) Contributions to the plan, less ii) Benefits paid by the plan. A negative Net External Cash Flow means that benefits are being partly funded by investment income --- a natural consequence of advance funding.

Missouri State Employees' Retirement System
Fifty Year Cash Flow Projection
Analysis of Projected Net Cash Flow

Year Ended	External Cash Flow		Net External Cash Flow		Year Ended	External Cash Flow		Net External Cash Flow	
June 30	Inflow*	Outflow	$	% of Assets	June 30	Inflow*	Outflow	$	% of Assets
2002	$155,245	$238,965	$ (83,720)	(1.42)%	2027	$377,952	$1,280,251	$ (902,299)	(4.26)%
2003	161,166	260,646	(99,480)	(1.58)%	2028	393,372	1,335,499	(942,127)	(4.27)%
2004	167,148	282,913	(115,765)	(1.72)%	2029	409,414	1,391,737	(982,323)	(4.28)%
2005	173,228	307,964	(134,736)	(1.88)%	2030	426,098	1,449,104	(1,023,006)	(4.29)%
2006	179,451	334,835	(155,384)	(2.03)%	2031	422,166	1,507,640	(1,085,474)	(4.37)%
2007	185,814	364,040	(178,226)	(2.19)%	2032	429,330	1,567,735	(1,138,405)	(4.41)%
2008	192,346	395,837	(203,491)	(2.36)%	2033	446,710	1,629,782	(1,183,072)	(4.41)%
2009	199,079	429,520	(230,441)	(2.52)%	2034	464,754	1,693,695	(1,228,941)	(4.41)%
2010	206,043	465,290	(259,247)	(2.67)%	2035	483,499	1,759,626	(1,276,127)	(4.41)%
2011	213,277	503,414	(290,137)	(2.83)%	2036	502,977	1,827,700	(1,324,723)	(4.41)%
2012	220,776	543,707	(322,931)	(2.98)%	2037	523,218	1,898,001	(1,374,783)	(4.40)%
2013	228,552	586,175	(357,623)	(3.14)%	2038	544,258	1,970,591	(1,426,333)	(4.39)%
2014	236,623	630,168	(393,545)	(3.28)%	2039	566,127	2,045,637	(1,479,510)	(4.38)%
2015	244,999	675,667	(430,668)	(3.41)%	2040	588,853	2,123,478	(1,534,625)	(4.38)%
2016	253,716	722,507	(468,791)	(3.54)%	2041	612,471	2,204,324	(1,591,853)	(4.37)%
2017	262,798	770,555	(507,757)	(3.66)%	2042	637,015	2,288,483	(1,651,468)	(4.36)%
2018	272,257	819,278	(547,021)	(3.77)%	2043	662,522	2,376,067	(1,713,545)	(4.35)%
2019	282,112	868,170	(586,058)	(3.86)%	2044	689,032	2,467,254	(1,778,222)	(4.34)%
2020	292,385	917,632	(625,247)	(3.94)%	2045	716,587	2,562,342	(1,845,755)	(4.34)%
2021	303,086	967,264	(664,178)	(4.01)%	2046	745,229	2,661,554	(1,916,325)	(4.33)%
2022	314,210	1,017,523	(703,313)	(4.07)%	2047	775,007	2,765,015	(1,990,008)	(4.32)%
2023	325,768	1,068,472	(742,704)	(4.12)%	2048	805,971	2,872,924	(2,066,953)	(4.32)%
2024	337,763	1,120,147	(782,384)	(4.17)%	2049	838,171	2,985,462	(2,147,291)	(4.31)%
2025	350,216	1,172,741	(822,525)	(4.21)%	2050	871,658	3,102,869	(2,231,211)	(4.31)%
2026	363,145	1,226,042	(862,897)	(4.24)%	2051	906,485	3,225,344	(2,318,859)	(4.31)%

The portion of investment income needed to pay benefits (the negative external cash flow) increases gradually and begins to level off at the end of the amortization of the unfunded accrued liabilities. After this period, it then approaches the assumed rate of 4.33% (1.085/1.040, minus 1). The remainder of the expected investment income is needed to preserve the purchasing power of the trust fund.

* *Does not include contributions for administrative expenses.*

Appendix

Appendix

Summary of Assumptions Used

for the June 30, 2001 Actuarial Valuation

----------*Economic Assumptions*----------

The investment return rate used in the valuations was 8.5% per year, compounded annually (net after investment expenses). This assumption is used to account for the fact that equal amounts of money payable at different points in time in the future do not have the same value presently.

Pay increase assumptions for individual active members are shown for sample ages on page 40. Part of the assumption for each age is for merit and/or seniority increase, and the other 4.0% recognizes wage inflation. This assumption is used to project a member's current salary to the salaries upon which benefits will be based.

The active member payroll is assumed to increase 4.0% annually, which is the portion of the individual pay increase assumptions attributable to inflation.

The annual cost-of-living adjustment (COLA) is assumed to be 4.00%, on a compounded basis, when a minimum COLA of 4% is in effect. The annual COLA is assumed to be 2.8 %, on a compounded basis, when no minimum COLA is in effect.

The number of active members is assumed to decline gradually by approximately 4-5% over the next 25 years due to certain new hires on or after July 1, 2002 participating in the Regional Colleges Retirement Plan. Active and retired member data is reported as of May 31. It is assumed for valuation purposes that there is no turnover among members and no new entrants during the month of June.

----------*Non-Economic Assumptions*----------

The mortality table, for post-retirement mortality, used in evaluating allowances to be paid was the 1971 Group Annuity Mortality Table, projected to the year 2000, with a 1 year setback for men and a 7 year age setback for women. Related values are shown on page 41. This assumption is used to measure the probabilities of each benefit payment being made after retirement.

Appendix

Summary of Assumptions Used

for the June 30, 2001 Actuarial Valuation (continued)

The probabilities of age and service retirement are shown on page 41. No adjustments have been made for any potential emerging effect caused by the back DROP. It is assumed that each member will be granted one half year of service credit for unused leave upon retirement and military service purchases.

The probabilities of withdrawal from service, disability and death-in-service are shown for sample ages on page 40. For disability retirement, impaired longevity was recognized by use of special mortality tables.

The entry age normal actuarial cost method of valuation was used in determining liabilities and normal cost. The normal cost was based on the benefit provisions affecting new employees (MSEP 2000). Differences in the past between assumed experience and actuarial 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 percents of payroll contributions.

Employer contribution dollars were assumed to be ***paid in equal installments*** throughout the employer's fiscal year.

The asset valuation method fully recognizes expected investment return and averages unanticipated market return over a five-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.

It is assumed that among active members 80% are married at retirement, 70% of those dying in active service are married, and men are 3 years older than their spouses.

The liabilities for active members were based on MSEP benefits, except for male General Employees with an age at hire of 35 years or less, all female General Employees, all Contract Employees, all Elected and all General Assembly who were assumed to elect MSEP 2000.

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

Separations From Active Employment Before Service Retirement
& Individual Pay Increase Assumptions
June 30, 2001

Sample Ages	Years of Service	Percent of Active Members - Separating within the Next Year - Withdrawal Men	Withdrawal Women	Death* Men	Death* Women	Disability Men	Disability Women	Pay Increase Assumptions - For An Individual Employee - Merit & Seniority**	Base (Economy)	Increase Next Year
	0	25.2%	24.7%							
	1	17.1	17.7							
	2	14.4	14.4							
	3	12.8	12.8							
	4	12.0	12.0							
20	5+	12.0	11.0	.04%	.03%	.00%	.00%	2.7%	4.0%	6.7%
25		12.0	11.0	.05	.04	.05	.03	2.6	4.0	6.6
30		8.8	8.9	.06	.04	.12	.04	2.2	4.0	6.2
35		6.2	6.0	.08	.06	.16	.13	1.9	4.0	5.9
40		4.6	4.9	.12	.08	.21	.21	1.4	4.0	5.4
45		3.5	4.3	.19	.11	.29	.25	1.2	4.0	5.2
50		2.8	3.6	.35	.17	.41	.41	0.7	4.0	4.7
55		2.4	2.9	.59	.31	.77	.85	0.7	4.0	4.7
60		2.4	2.9	.90	.54	1.40	1.50	0.0	4.0	4.0
65		2.4	2.9	1.44	.83	-	-	0.0	4.0	4.0

* *2% of the deaths in active service are assumed to be duty related.*

** *does not apply to members of the General Assembly.*

Single Life Retirement Values
June 30, 2001

Sample Attained Ages	Present Value of $1/Month the First Year Increasing 4.0% / 2.8% Yearly				Future Life Expectancy (Years)			
	Service		Disability		Service		Disability	
	Men	Women	Men	Women	Men	Women	Men	Women
40	202.23	212.07	135.46	156.68	38.46	44.22	19.70	26.02
45	191.81	204.06	126.32	150.16	33.73	39.41	17.50	23.70
50	179.47	194.06	116.10	142.75	29.17	34.67	15.35	21.39
55	165.25	182.08	106.06	135.11	24.82	30.06	13.43	19.18
60	148.90	168.25	97.62	126.74	20.70	25.67	11.87	17.01
65	130.43	152.36	90.66	117.09	16.82	21.50	10.56	14.82
70	110.79	134.27	82.12	105.05	13.32	17.57	9.13	12.50
75	91.75	114.73	70.79	89.33	10.36	13.99	7.49	10.00
80	73.37	95.50	56.17	71.93	7.83	10.91	5.66	7.62
85	57.86	76.89	42.26	56.17	5.89	8.29	4.08	5.66

Percent of Eligible Active Members Retiring Next Year

Retirement Ages	Percent	
	Men	Women
50	25.0%	20.0%
51	25.0	19.5
52	21.0	18.5
53	17.0	16.0
54	12.5	12.5
55	6.5	6.7
56	6.5	6.7
57	6.5	6.7
58	6.5	6.7
59	6.5	8.3
60	9.5	12.0
61	13.0	16.5
62	29.0	28.0
63	24.0	18.0
64	30.0	33.0
65	40.0	50.0
66	32.0	27.0
67	26.0	27.0
68	23.0	27.0
69	23.0	27.0
70	23.0	27.0
71	23.0	27.0
72	23.0	27.0
73	23.0	27.0
74	23.0	27.0
75 & over	100.0	100.0

Summary of Assumptions Used
June 30, 2001
Miscellaneous and Technical Assumptions

Pay Increase Timing:	Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.
Decrement Timing:	Decrements of all types are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.
Benefit Service:	Exact fractional service is used to determine the amount of the benefit payable.
Decrement Relativity:	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
Decrement Operation:	Disability and turnover decrements do not operate during the first 5 years of service. They also do not operate during retirement eligibility.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form for MSEP 2000 with 50% continuing to an eligible surviving spouse for MSEP.
Loads:	Active accrued liabilities and reported active member payroll were reduced by 3.5% to adjust for the overstatement that would otherwise have occurred as a result of a non-recurring additional payroll period in the year ended June 30, 2001.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

Supplemental Disclosure Information
June 30, 2001

Actuarial Accrued Liability

The actuarial accrued liability is a measure intended to (i) help users assess the plan's funding status on a going-concern basis, and (ii) assess progress being made in accumulating sufficient assets to pay benefits when due. The actuarial value of assets is based on a method that fully recognizes expected investment return and averages unanticipated market return over a three-year period. 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 System as of June 30, 2001. 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 8.5% per year compounded annually, (b) projected salary increases of 4.0% per year compounded annually, attributable to inflation, (c) additional projected salary increases ranging from 0.0% to 2.7% per year, depending on age, attributable to seniority/merit, and (d) the assumption that benefits will increase after retirement (i) at 4.00% per year for approximately the first 12 years, 3.1% for the 13th year and 2.8% per year thereafter, or (ii) at 2.8% per year, depending upon date of hire and benefit election.

At June 30, 2001, the unfunded actuarial accrued liability of the System was determined as follows:

Actuarial Accrued Liability of System:	$ in Thousands
Active members(34,900 vested, 23,531 non-vested)	$ 3,200,899
Retirees and beneficiaries currently receiving benefits (20,237 vested)	2,496,278
Terminated members not yet receiving benefits (11,750 vested)	367,990
Total Actuarial Accrued Liability	6,065,167
Actuarial Value of Assets	5,881,233
Unfunded Actuarial Accrued Liability	$ 183,934

During the year ended June 30, 2001, the System experienced a net change of $144,483 thousand in the actuarial accrued liability. Of the change, $0 thousand was attributable to plan amendments and $(779,551) thousand was attributable to changes in actuarial assumptions and methods.

Supplemental Disclosure Information
June 30, 2001

(continued)

Contributions Required and Contributions Made

The System's funding policy provides for periodic employer contributions at actuarially determined rates that, expressed as percentages of annual covered payroll, are designed to accumulate sufficient assets to pay benefits when due. In developing the annual required contribution shown below, the normal cost and actuarial accrued liability are determined using the entry age actuarial cost method. The unfunded actuarial accrued liability is being amortized on a closed basis as a level percent of payroll over a period of 34 years. The corresponding amortization factor is 18.785021.

During the year ended June 30, 2001 contributions totaling $215,750,128 were made by the employer.

Schedule of Employer Contributions

Fiscal Year 7-1/6-30	Valuation Date 6/30	Annual Required Contribution		
		Percent	Dollar Amount	Percentage Contributed
1991-92	1990	9.65 %	$ 100,672,145	100 %
1992-93	1991	9.68	102,988,219	100
1993-94	1992	9.49	106,681,308	100
1994-95	1993	9.04	108,902,372	100
1995-96	1994	10.69	137,007,112	100
1996-97	1995	10.66	146,383,371	100
1997-98	1996	10.40	152,090,687	100
1998-99	1997	12.58	197,909,834	100
1999-00	1998	11.91	202,330,547	100
2000-01	1999	11.59	215,750,128	100
2001-02	2000	11.59		
2002-03	2001	8.81		

Supplemental Disclosure Information
June 30, 2001

(concluded)

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)
6/30/1990 *	$1,587,114,827	$1,861,365,216	85.3 %	$274,250,389	$ 994,228,494	27.6 %
6/30/1991 #	1,793,370,043	2,052,600,760	87.4	259,230,717	1,027,719,059	25.2
6/30/1992 #*	1,991,215,165	2,291,583,890	86.9	300,368,725	1,030,240,894	29.2
6/30/1993	2,236,558,739	2,447,222,060	91.4	210,663,321	1,063,246,615	19.8
6/30/1994 #	2,425,134,504	2,919,456,425	83.1	494,321,921	1,124,862,008	43.9
6/30/1995	2,649,077,134	3,150,796,580	84.1	501,719,446	1,198,938,042	41.8
6/30/1996 *	2,927,896,643	3,440,126,483	85.1	512,229,840	1,267,605,000	40.4
6/30/1997 #*@	3,580,974,502	4,484,047,801	79.9	903,073,299	1,359,656,666	66.4
6/30/1998	4,210,635,094	4,918,887,183	85.6	708,252,089	1,459,712,203	48.5
6/30/1999 #	4,908,820,033	5,505,968,629	89.2	597,148,596	1,564,551,532	38.2
6/30/2000 *	5,216,897,196	5,920,684,192	88.1	703,786,996	1,683,697,080	41.8
6/30/2001 *@	5,881,232,850	6,065,166,716	97.0	183,933,866	1,758,190,269	10.5

 # After changes in benefit provisions.

** After a change in assumptions.*

@ After a change in asset method.

Analysis of the dollar amounts of the 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.

Glossary

Actuarial Accrued Liability. The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. A series of payments is called an actuarial equivalent of another series of payments if the two series have the same actuarial present value.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Actuarial value of assets. Also referred to as funding value of assets, smoothed market value of assets, or valuation assets.

Valuation assets recognize assumed investment return fully each year. Differences between actual and assumed investment return are phased in over a closed 5-year period. This treatment helps remove the timing of investment activities from the valuation process. During periods when investment performance exceeds the assumed rate, valuation assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, valuation assets will tend to be greater than market value. If assumed rates are exactly realized for 4 consecutive years, valuation assets will become equal to market value.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

(continued on next page)

Glossary

(concluded)

Plan Termination Liability. The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a "going concern" basis and is not normally determined in a routine actuarial valuation.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and actuarial value of assets. Sometimes referred to as "unfunded accrued liability."

The existence of unfunded actuarial accrued liabilities is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liabilities do not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liabilities and the trend in their amount (after due allowance for devaluation of the dollar).

Valuation Payroll. Active member payroll that is intended to reflect the annual salary considered as covered compensation for Retirement System benefits.

Financing Unfunded Actuarial Accrued Liabilities Which Were Calculated Using an Inflation Assumption of 4.00% and an Investment Return Assumption of 8.50% Compounded Annually

Level % of Payroll Amortization:
Closed Amortization Completed in 34 Years

Year	Active Employee Payroll	Unfunded Actuarial Accrued Liability	UAAL Adjusted for Inflation	Annual Contributions		UAAL as % of Payroll
				Dollars	% of Payroll	
	----------$ in millions----------					
1	$1,758	$184	$184	$10	0.59 %	10.46 %
2	1,829	189	181	11	0.59	10.32
3	1,902	193	179	11	0.59	10.17
4	1,978	198	176	12	0.59	10.02
5	2,057	203	173	12	0.59	9.86
6	2,139	207	170	13	0.59	9.70
7	2,225	212	167	13	0.59	9.52
8	2,314	216	164	14	0.59	9.34
9	2,406	220	161	14	0.59	9.15
10	2,502	224	157	15	0.59	8.95
11	2,603	228	154	15	0.59	8.75
12	2,707	231	150	16	0.59	8.53
13	2,815	234	146	17	0.59	8.31
14	2,928	236	142	17	0.59	8.08
15	3,045	238	138	18	0.59	7.83
16	3,166	240	133	19	0.59	7.58
17	3,293	241	129	19	0.59	7.31
18	3,425	241	124	20	0.59	7.04
19	3,562	240	119	21	0.59	6.75
20	3,704	239	113	22	0.59	6.45

Financing Unfunded Actuarial Accrued Liabilities Which Were Calculated Using an Inflation Assumption of 4.00% and an Investment Return Assumption of 8.50% Compounded Annually

Level % of Payroll Amortization:
Closed Amortization Completed in 34 Years
(concluded)

Year	Active Employee Payroll	Unfunded Actuarial Accrued Liability	UAAL Adjusted for Inflation	Annual Contributions		UAAL as % of Payroll
				Dollars	% of Payroll	
	----------$ in millions----------					
21	$3,852	$236	$108	$23	0.59 %	6.13 %
22	4,007	233	102	24	0.59	5.80
23	4,167	228	96	25	0.59	5.46
24	4,333	221	90	26	0.59	5.11
25	4,507	213	83	27	0.59	4.73
26	4,687	204	76	28	0.59	4.35
27	4,875	192	69	29	0.59	3.94
28	5,070	178	62	30	0.59	3.52
29	5,272	162	54	31	0.59	3.08
30	5,483	143	46	32	0.59	2.62
31	5,703	122	38	34	0.59	2.14
32	5,931	97	29	35	0.59	1.64
33	6,168	69	20	37	0.59	1.11
34	6,415	36	10	38	0.59	0.57
35	6,671	(0)	(0)	0	0.00	0.00

Basic Series

Year-by-Year Total Returns (1926-2000)

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	0.10	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	1.80	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	13.76	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	-8.50	-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	3.84	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	3.95
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	7.81	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	-5.14	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
1997	33.36	22.78	12.95	15.85	8.38	5.26	1.70
1998	28.58	-7.31	10.76	13.06	10.21	4.86	1.61
1999	21.04	29.79	-7.45	-8.96	-1.77	4.68	2.68
2000	-9.11	-3.59	12.87	21.48	12.59	5.89	3.39

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