

STATE OF NEW YORK INSURANCE DEPARTMENT

REPORT ON EXAMINATION

OF THE

NEW YORK STATE TEACHERS'

RETIREMENT SYSTEM

AS OF

JUNE 30, 2001

DATE OF REPORT:

NOVEMBER 1, 2002

EXAMINER:

DAVID HEE

## TABLE OF CONTENTS

<u>ITEM</u>	<u>PAGE NO.</u>
1. Executive summary	2
2. Scope of examination	3
3. Description of System	4
A. History	4
B. Management	4
4. Significant operating results	6
5. Financial statements	8
A. Statement of assets and liabilities	8
B. Statement of income and disbursements	11
6. Treatment of members	16
7. Schedule D	17
8. Prior report summary and conclusions	18
9. Summary and conclusions	19
Report of the Examining Actuary	



STATE OF NEW YORK  
INSURANCE DEPARTMENT  
25 BEAVER STREET  
NEW YORK, NEW YORK 10004

George E. Pataki  
Governor

Gregory V. Serio  
Superintendent

November 1, 2002

Honorable Gregory V. Serio  
Superintendent of Insurance  
Albany, New York 12257

Sir:

In accordance with instructions contained in Appointment No. 21841, dated March 4, 2002 and annexed hereto, an examination has been made into the condition and affairs of the New York State Teachers' Retirement System, hereinafter referred to as "the System," at its home office located at 10 Corporate Woods Drive, Albany, New York 12211.

Wherever "Department" appears in this report, it refers to the State of New York Insurance Department.

The report indicating the results of this examination is respectfully submitted.

## 1. EXECUTIVE SUMMARY

The examiner's review of a sample of transactions did not reveal any differences which materially affected the System's financial condition as presented in its financial statements contained in the June 30, 2001 filed annual statement. (See item 5 of this report)

The examiner's review of the System's treatment of members did not reveal significant instances which deviated from the New York Insurance Law, Department regulations and circular letters and the operating rules of the System. (See item 6 of this report)

The five years of this examination period have seen normal contribution rates (which is the rate used for most of the benefits) of 0%, and total employer contribution rates (including group life, expenses, et al.) declining to .36% because the investment performance has significantly exceeded the assumed 8% return over several years. However, the investment performance has declined significantly in the last two years of the examination period, to reach a negative rate of return in the last year. As a consequence, increased employer contributions are almost certain to be required soon. (See the actuary's report)

## 2. SCOPE OF EXAMINATION

The prior examination was conducted as of June 30, 1996. This examination covers the period from July 1, 1996 through June 30, 2001. As necessary, the examiner reviewed transactions occurring subsequent to June 30, 2001 but prior to the date of this report (i.e., the completion date of the examination).

The examination comprised a verification of assets and liabilities as of June 30, 2001 to determine whether the System's filed 2001 annual statement fairly presents its financial condition. The examiner reviewed the System's income and disbursements necessary to accomplish such verification and utilized the National Association of Insurance Commissioners' Examiners Handbook or such other examination procedures, as deemed appropriate, in such review and in the review or audit of the following matters:

- History of the System
- Management and control
- System records
- Accounts and records
- Financial statements
- Treatment of members
- Member benefits

The examiner reviewed the corrective actions taken by the System with respect to recommendations contained in the prior report on examination. The results of the examiner's review are contained in item 7 of this report.

This report on examination is confined to financial statements and comments on those matters which involve departures from laws, regulations or rules, or which require explanation or description.

### 3. DESCRIPTION OF THE SYSTEM

#### A. History

The New York State Teachers' Retirement System was created in 1920 to succeed the New York State Teachers' Retirement Fund and a number of local teachers' systems. The System is a public agency, having the powers and privileges of a corporation, in which eligible public school teachers employed outside of New York City are members.

#### B. Management

Control of the administration and operation of the System is vested in a ten member board, known as the "Retirement Board," which sets policy and oversees operations consistent with applicable laws. Three members of the board are elected from the membership. Two members are school administrators who are appointed by the Commissioner of Education. Two present or former local school board members, experienced in the fields of finance and investment, are appointed by the Board of Regents, one of whom must be or have been an executive of an insurance company. The Board of Regents also appoints a present or former bank executive to the board. The ninth member is the Comptroller of the State or his designee. The Retirement Board appoints the tenth member, who must be a retired teacher. The board members normally serve three year terms.

The ten board members and their principal business affiliation, as of June 30, 2001, were as follows:

<u>Name and Residence</u>	<u>Principal Business Affiliation</u>	<u>Year First Elected</u>
Michael R. Corn Clinton, NY	Teacher	1992
Josephine Davenport Hamburg, NY	Retired teacher member	1996
Wanda G. Henton New York, NY	State Comptroller's Representative	1999

<u>Name and Residence</u>	<u>Principal Business Affiliation</u>	<u>Year First Elected</u>
R. Michael Kraus East Aurora, NY	Insurance executive	1992
Richard F. Lindstrom Bonita Springs, FL	Retired bank executive	1985
Lucy P. Martin Manlius, NY	Administrator	1984
Joseph P. McLaughlin Harrison, NY	Teacher	1990
Sheila J. Salenger Ballston Lake, NY	Teacher	1989
Frederick D. Volp Oneida, NY	Administrator	1994
Iris Wolfson Westbury, NY	Public Accountant	1992

The examiner's review of the minutes of the meetings of the board and its committees indicated that meetings were well attended and that each member attended a majority of meetings.

The following is a listing of the principal officers of the System as of June 30, 2001:

<u>Name</u>	<u>Title</u>
Lucy P. Martin	President
George M. Philip	Executive Director and Chief Investment Officer
Wayne Schneider	General Counsel
William S. O'Brien	Director of Administration
Robert L. DeLuca	Director, Member Relations
Lawrence A. Johansen	Actuary
Kenneth Kasper	Director, Internal Audit
Aida M. Brewer	Deputy Commissioner and Treasurer, Division of Treasury, Department of Taxation and Finance (Statutory Custodian)

#### 4. SIGNIFICANT OPERATING RESULTS

Indicated below is significant information concerning the operation of the System during the period under examination as extracted from its filed annual statements. Failure of items to add to the totals shown in any table in this report is due to rounding.

The following tables indicate the financial growth of the System during the period under review:

	<u>June 30,</u> <u>1996</u>	<u>June 30,</u> <u>2001</u>	<u>Increase</u> <u>(Decrease)</u>
Admitted assets	<u>\$52,985,157,735</u>	<u>\$80,409,078,167</u>	<u>\$ 27,423,920,432</u>
Net reserves	\$48,856,876,936	\$87,284,617,665	\$ 38,427,740,729
Benefits due and unpaid	5,911,833	7,701,352	1,789,519
Other liabilities	231,645,270	202,505,358	(29,139,912)
Adjustment for actuarial value of assets	<u>3,890,723,696</u>	<u>(7,085,746,208)</u>	<u>(10,976,469,904)</u>
Net reserves and all other liabilities	<u>\$52,985,157,735</u>	<u>\$80,409,078,167</u>	<u>\$ 27,423,920,432</u>

As of June 30, 2001, the System's invested assets were mainly comprised of stocks (67%) and bonds (23%). It is noted that 8% of the System's assets were comprised of investments in foreign entities.

	<u>Fiscal Year Ended June 30,</u>				
	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Receipts	\$5,761,120,962	\$6,141,143,699	\$6,815,449,739	\$8,391,399,888	\$5,809,990,098
Disbursements	<u>2,309,601,765</u>	<u>2,440,417,207</u>	<u>3,086,791,159</u>	<u>3,904,108,782</u>	<u>4,110,419,859</u>
Net receipts	<u>\$3,451,519,197</u>	<u>\$3,700,726,492</u>	<u>\$3,728,658,580</u>	<u>\$4,487,291,106</u>	<u>\$1,699,570,239</u>



The following table indicates the membership of the System during the period of examination:

	<u>Fiscal Year Ended June 30,</u>				
	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Active members	203,716	209,080	216,267	224,986	234,350
Service pensioners	85,172	87,594	91,013	94,955	100,089
All other pensioners	<u>5,486</u>	<u>5,643</u>	<u>5,775</u>	<u>5,884</u>	<u>6,034</u>
Total	<u>294,374</u>	<u>302,317</u>	<u>313,055</u>	<u>325,825</u>	<u>340,473</u>

## 5. FINANCIAL STATEMENTS

The following statements show the assets and liabilities of the System as of June 30, 2001, as contained in the System's 2001 filed annual statement as compared to the fiscal year ending June 30, 1996, the date of the prior examination; and the comparative statements of income and disbursements for each of the fiscal years under review. The examiner's review of a sample of transactions did not reveal any differences which materially affected the System's financial condition as presented in its financial statements contained in the June 30, 2001 filed annual statement.

### A. STATEMENT OF ASSETS AND LIABILITIES FISCAL YEAR ENDED JUNE 30,

<u>Assets</u>	<u>1996</u>	<u>2001</u>
<u>Ledger Assets</u>		
Book value of real estate	\$ 1,053,117,188	\$ 2,144,769,712
Mortgage loans	2,044,611,717	3,746,039,376
Member loans	82,468,929	140,951,059
Book value of bonds	9,882,457,126	18,197,985,108
Book value of stocks	17,610,836,894	22,273,232,404
Cash in organizations office	612,247	6,473,875
Cash on deposit	(34,248,859)	(15,243,069)
International equities	4,273,955,440	6,037,303,542
International bonds	1,694,140,867	0
Venture capital	50,954,038	0
Alternative investments	0	1,026,899,061
Real estate separate account – commingled	634,907,625	894,972,556
Receivables and other	<u>184,575,500</u>	<u>92,770,703</u>
Total ledger assets	<u>\$37,478,388,712</u>	<u>\$54,546,154,327</u>

	<u>1996</u>	<u>2001</u>
<u>Non-Ledger Assets</u>		
Interest due and accrued on mortgages	\$ 13,115,495	\$ 19,490,950
Interest due and accrued on bonds	115,723,820	160,068,727
Interest due and accrued on international bonds	36,931,050	0
Income due from securities lending	601,581	1,578,221
Income due on commission recapture	0	29,014
Interest due and accrued on member loans	1,789	0
Market value of real estate over book value	0	482,225,333
Market value of real estate separate accounts over book value	0	42,588,910
Prepaid expenses	94,255	479,296
Market value of international equities over book Value	582,620,148	693,029,786
Market value of stocks over book value	14,797,084,668	24,407,320,581
Market value of international bonds over book Value	11,785,359	0
Market value of alternative investments over book Value	0	41,199,040
Contributions receivable	773,616,200	331,328,440
Contributions deferred	206,387,020	53,415,911
Dividends receivable	<u>52,688,391</u>	<u>40,624,574</u>
 Total non-ledger assets	 <u>\$16,590,649,776</u>	 <u>\$26,273,378,783</u>
 Gross assets	 <u>\$54,069,038,488</u>	 <u>\$80,819,533,110</u>
<u>Deduct Assets Not Admitted</u>		
Supplies and equipment	\$ 216,322	\$ 2,221,794
Book value of real estate over market value	13,951,196	0
Book value of real estate separate accounts over market value	88,750,235	0
Book value of bonds over amortized value	333,546	22,479,178
Interest due and accrued on mortgage loans	369,286	160,435
Contributions accrued	773,616,200	331,328,440
Contributions deferred	206,387,020	53,415,911
Prepaid expenses	94,255	303,946
Receivables	<u>162,693</u>	<u>545,239</u>
 Total non-admitted assets	 <u>\$ 1,083,880,753</u>	 <u>\$ 410,454,943</u>
 Total admitted assets	 <u>\$52,985,157,735</u>	 <u>\$80,409,078,167</u>

<u>Liabilities</u>	<u>1996</u>	<u>2001</u>
Accumulated contributions of members	\$ 179,251,741	\$ 84,464,588
Present value of benefits payable on account of beneficiaries now drawing allowances	14,246,540,430	27,525,949,254
Net reserves for benefits provided by the employer and employee for members now in active service	34,431,084,765	41,694,718,493
Contingency reserve	<u>0</u>	<u>17,979,485,330</u>
Total net reserves	\$48,856,876,936	\$87,284,617,665
Benefits due and unpaid	5,911,833	7,701,352
Left with the organization to accumulate at interest and accrued interest thereon	185,636	487,315
Expenses due and accrued	7,126,636	21,815,137
Uncashed checks	623,218	611,319
Unclaimed non-member funds	2,660,799	2,994,553
Life insurance reserve member loans	1,125,055	1,257,714
Unapplied receipts	3,147,709	553,193
Mortgage escrow and guarantee deposits	60,704,846	59,749,925
Stock and bond purchases payable	127,660,066	68,850,904
Deferred compensation	3,559,680	0
Retiree and employee withholdings	16,735,310	33,463,176
Other liabilities	133,972	5,214,346
Unappropriated expense fund balance for future use	<u>7,982,343</u>	<u>7,507,776</u>
Net reserves and all other liabilities	<u>\$49,094,434,039</u>	<u>\$87,494,824,375</u>
Adjustment for actuarial value of assets	<u>\$ 3,890,723,696</u>	<u>\$ (7,085,746,208)</u>
Total adjusted liabilities	<u>\$52,985,157,735</u>	<u>\$80,409,078,167</u>

**B. STATEMENT OF INCOME AND DISBURSEMENTS**  
**FISCAL YEARS ENDED JUNE 30,**

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Ledger assets at end of previous year	<u>\$37,478,388,712</u>	<u>\$40,929,907,909</u>	<u>\$44,630,634,401</u>	<u>\$48,359,292,981</u>	<u>\$52,846,584,087</u>
<u>Income:</u>					
<u>From Members:</u>					
Regular contributions or payments	\$ 125,974,291	\$ 138,909,630	\$ 154,125,561	\$ 164,456,693	\$ 178,250,307
Special contributions or payments	2,375,732	2,372,770	2,109,228	1,624,992	8,247,979
<u>From Employer:</u>					
Apportionment-localities	740,751,016	296,908,773	98,163,441	120,473,019	111,975,928
Supplemental	42,634,615	124,447,518	84,344,409	104,649,114	111,106,797
Reserves from other systems	15,246,976	36,649,462	17,507,484	45,295,092	39,047,740
<u>From Interest:</u>					
Gross interest on mortgage loans	182,070,088	187,115,670	197,717,837	218,536,305	249,412,125
Gross interest on bonds	484,490,286	521,921,510	526,462,243	620,027,696	795,372,059
Gross dividends on stocks	703,654,024	736,049,103	786,318,360	771,771,906	690,542,326
Member loans	5,610,044	6,470,450	7,385,685	7,899,777	8,956,043
Employer contributions	20,258,650	12,935,662	40,169,906	33,580,306	19,859,217

FISCAL YEARS ENDED JUNE 30,

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
<u>From Other Sources:</u>					
Abandoned from uncashed checks	\$ 676	\$ 4,194	\$ 1,514	\$ 0	\$ 0
Alternative investments	12,825,645	25,809,342	35,540,340	30,724,766	49,974,035
Broker rebates	65,947	634,266	1,478,873	801,009	725,737
Interest on NYSERS prepayments	257,898	0	0	0	0
International bonds	135,276,541	75,793,929	147,681,538	(32,591,684)	155,356
International equities	274,602,321	292,164,646	387,259,610	792,813,729	(750,923,302)
Loan delinquency charges	14,538	15,024	14,206	13,494	12,920
Loan service charges	218,490	239,068	235,410	240,210	275,850
Other income	2,047,895	1,184,191	758,722	808,531	4,087,279
Mortgage commitment fees	31,170	37,500	812,500	879,000	1,154,305
Mortgage late charges	282,977	376,314	25,029	87,333	1,970
Mortgage prepayment penalty	3,838,732	285,222	4,016,868	4,456,270	185,057
Pre-retirement workshop fees	30,015	41,345	45,580	47,285	45,115
Profit on interfund stock transfers					
- prior year	0	0	0	31,011,336	0
Public disclosure fees	531	0	0	0	0
Real estate income (net)	59,733,341	81,704,867	111,905,026	102,864,472	143,268,542
Real estate separate accounts	51,930,419	82,511,416	84,147,740	58,051,509	67,708,903
Rental value, occupancy, own building	2,368,130	2,368,130	2,368,130	2,368,130	2,368,130
Securities lending income	11,373,774	15,233,203	16,740,408	20,483,180	25,476,178
Settlements -class action suits	1,086,553	1,498,944	1,957,667	976,191	3,318,188
Stock option premiums	10,926,917	11,153,180	17,447,239	9,183,832	7,042,750
Increase, accrued expenses	1,085,651	0	1,566,621	322,955	126,825
Increase, beneficiary savings account	276,059	0	0	133,284	53,714
Increase, unapplied receipts	0	0	4,548,728	0	0
Increase, other liabilities	3,776,579	0	2,786,210	3,433,800	4,508,842

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Increase, mortgage and real estate deposits	\$ 3,420,605	0	\$ 0	\$ 0	\$ 3,320,694
Increase, stock and bond purchases payable	10,935,339	0	152,272,419	0	29,330,927
Increase, life insurance reserves and member loans	28,722	0	35,489	33,587	39,562
Gross profit on sale of real estate	924,896	53,137,446	31,708,848	0	77,545,231
Gross profit on sale or maturity of bonds	2,651,026	20,434,602	40,952,685	1,958,291	34,397,999
Gross profit on sale of stocks	2,543,570,028	3,055,349,246	3,490,379,653	4,870,459,236	3,407,497,667
Gross profit on sale of mortgages	6,706,813	9,572,147	8,777,501	9,431,402	4,070,849
Gross increase by adjustment on book value of bonds	288,098,857	339,101,792	348,126,258	387,690,069	475,634,249
Gross increase by adjustment on book value of mortgages	<u>9,668,155</u>	<u>8,713,137</u>	<u>7,554,773</u>	<u>6,403,771</u>	<u>5,816,005</u>
Total income	\$ <u>5,761,120,962</u>	\$ <u>6,141,143,699</u>	\$ <u>6,815,449,739</u>	\$ <u>8,391,399,888</u>	\$ <u>5,809,990,098</u>
Increase in funds or accounts by transfers during the year	\$ <u>6,881,183,097</u>	\$ <u>7,359,704,265</u>	\$ <u>7,872,007,505</u>	\$ <u>9,344,397,328</u>	\$ <u>12,094,807,423</u>
Amounts carried forward	\$ <u>50,120,692,771</u>	\$ <u>54,430,755,873</u>	\$ <u>59,318,091,645</u>	\$ <u>66,095,090,197</u>	\$ <u>70,751,381,608</u>

FISCAL YEARS ENDED JUNE 30,

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
<u>Disbursements:</u>					
Payments on account of retirements:					
Annual or other periodic payments	\$ 1,766,103,968	\$ 1,922,127,411	\$ 2,108,538,463	\$ 2,306,168,122	\$ 2,590,209,204
Lump sum payments on account of death after retirement	28,418,882	29,980,973	26,053,361	32,969,302	29,795,436
Supplemental	77,985,476	71,015,777	103,700,595	104,460,383	243,926,441
Payments on account of death from ordinary causes before retirement	25,770,895	24,624,433	24,539,070	34,725,986	25,843,790
Payments on account of resignation	12,683,808	12,460,937	9,662,135	21,835,492	6,092,859
Payments on account of excess contributions	21,813,897	14,474,004	15,852,323	13,897,018	16,513,231
Loan closeouts	5,056,969	3,521,780	3,126,554	3,062,703	4,018,077
Reserves to other systems	11,141,861	11,203,346	9,125,435	2,048,462	10,024,640
Refund of abandoned funds	1,666	2,212	227,865	562,774	526,068
Administrative expenses	25,663,098	23,311,538	27,615,483	28,584,231	30,221,505
Interest and fees, mortgage on System headquarters	413,475	295,325	165,519	0	0
Interest paid on beneficiary savings account	19,007	26,945	35,570	37,886	47,034
Interest paid on death benefits	136,832	224,890	117,411	138,237	239,710
Interest paid on FHA escrows	8,875	4,691	3,072	0	7,114
Investment management fees	28,674,765	32,682,118	38,516,115	50,178,642	55,305,319
Real estate advisory fees	7,029,955	7,168,658	11,000,900	15,053,721	24,005,535
Fair rental value, occupant own building	2,368,130	2,368,130	2,368,130	2,368,130	2,368,130
Decrease, unapplied receipts	1,678,577	1,905,179	0	2,497,032	1,062,456
Decrease, mortgage and real estate deposits	0	4,556,019	1,370,141	1,770,060	0
Decrease, other liabilities	0	1,268,770	0	0	0
Decrease, accrued expenses	0	1,232,718	0	0	0



	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Decrease, beneficiary savings account	\$ 0	\$ 82,868	\$ 78,510	\$ 0	\$ 0
Other expenses	305,318	48,403	255,445	243,730	513,357
Decrease, life insurance reserves and member loans	0	4,701	0	0	0
Decrease, stock and bond purchases payable	0	56,013,031	0	195,334,816	0
Gross loss on sale of real estate	389,659	0	0	3,173,516	0
Gross loss on sale or maturity of bonds	396,605	807,534	195,845	48,290	0
Gross loss on sale of stocks	293,055,821	216,426,930	703,986,914	1,084,879,553	1,063,340,469
Gross decrease by adjustment in book value of bonds	484,226	673,421	256,303	70,696	99,528
Gross decrease by adjustment in book value of stocks	0	0	0	0	6,259,956
Gross decrease by adjustment in book value of mortgages	<u>0</u>	<u>1,904,465</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total disbursements	\$ 2,309,601,765	\$ 2,440,417,207	\$ 3,086,791,159	\$ 3,904,108,782	\$ 4,110,419,859
Decrease in funds or accounts by transfers	<u>6,881,183,097</u>	<u>7,359,704,265</u>	<u>7,872,007,505</u>	<u>9,344,397,328</u>	<u>12,094,807,423</u>
Sum of disbursements and decrease by transfers	\$ <u>9,190,784,862</u>	\$ <u>9,800,121,472</u>	\$ <u>10,958,798,664</u>	\$ <u>13,248,506,110</u>	\$ <u>16,205,227,282</u>
Ledger assets at end of year	<u>\$40,929,907,909</u>	<u>\$44,630,634,401</u>	<u>\$48,359,292,981</u>	<u>\$52,846,584,087</u>	<u>\$54,546,154,326</u>

## 6. TREATMENT OF MEMBERS

The examiner reviewed a sample of various types of retirement benefits to members and beneficiaries. The examiner also reviewed the various controls involved, checked the accuracy of the computations and traced the accounting data to the books of account.

Based upon the sample reviewed, no significant findings were noted.

## 7. SCHEDULE D

A review of Schedule D of the annual statement revealed some omissions on the part of the System in completing the statement. In Part 1 of Schedule D, the System omitted information required, namely the acquisition date and the weighted purchase yield of each of its bond investments. The System omitted such information from the annual statement commencing with the 1999 statement.

The examiner recommends that for future annual statements the System include in Part 1 of Schedule D of the annual statement information regarding the date on which its bond investments were acquired and the weighted purchase yield on the bonds.

The examiner's review of Schedule D also noted the System completely omitted filing Part 5 of Schedule D commencing with the 2001 annual statement. Part 5 discloses information pertaining to investments that that were purchased and completely disposed of during the year.

The examiner recommends that for future annual statements the System complete and file Part 5 of Schedule D of the annual statement.

Commencing with the 2001 annual statement, the System reported the book value of its investment in international equities at cost. Previously, it had incorrectly been using the equity method to report the value of these equities, with the difference between the market value of these securities and the recorded book value reported as a separate annual statement line amount. The result of changing the reported value of its investment in international equities to the cost method was the book value of its investment in international equities decreased by \$1,270,533,893 in 2001. Conversely, the change caused the annual statement line for international equity appreciation to be increased by the identical amount. A reporting error in the book value of its investment in international equities potentially affects the determination of whether such investment exceeds the limitation prescribed by the education law. However, our review indicated that the reporting error did not result in the System exceeding the investment limitation during any year in the examination period.

## 8. PRIOR REPORT SUMMARY AND CONCLUSIONS

Following are the recommendations contained in the prior report on examination and the subsequent actions taken by the System in response to each recommendation:

<u>Item</u>	<u>Description</u>
A	<p>The examiner recommended that the System submit all rate changes of interest paid on member benefits to the Retirement Board prior to their adoption.</p> <p>A review of rate changes and rates utilized during the examination indicated that the System is following this recommendation and has made a formal board resolution setting the most current rate.</p>
B	<p>The examiner recommended that the System maintain a consistent approach with regard to notifying members who are due refunds. The examiner also recommended that the System indicate in the files all attempts of notification and note in cases when an outside servicer is utilized to locate members.</p> <p>A review of a sample of members due refunds indicated that the System has implemented the above recommendations.</p>

## 9. SUMMARY AND CONCLUSIONS

Following are the recommendations and the comment contained in this report:

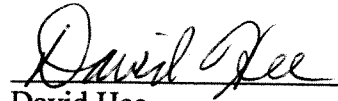
<u>Item</u>	<u>Description</u>	<u>Page No.</u>
A	The examiner recommends that for future annual statements the System include in Part 1 of Schedule D of the annual statement information regarding the date on which its bond investments were acquired and the weighted purchase yield on the bonds.	17
B	The examiner recommends that for future annual statements the System complete and file Part 5 of Schedule D of the annual statement.	17
C	Commencing with the 2001 annual statement, the System reported the book value of its investment in international equities at cost.	17

## ACTUARIAL COMMENTS

Following are the comments contained in the actuary's report:

<u>Item</u>	<u>Description</u>
A	The five years of this examination period have seen normal contribution rates (which is the rate used for most of the benefits) of 0%, and total employer contribution rates (including group life, expenses, et al.) declining to .36% because the investment performance has significantly exceeded the assumed 8% return over several years. However, the investment performance has declined significantly in the last two years of the examination period, to reach a negative rate of return in the last year. As a consequence, increased employer contributions are almost certain to be required soon.
B	The current market turndown has resulted in many stocks in the System's portfolio to have market values significantly less than the cost of these stocks. However, 1319 of the 2000 stocks have market values that exceeded their cost and 454 stocks had market values that exceeded two times their cost. The aggregate result of the entire equity portion of the fund is part of the total fund performance shown in section 7 of the actuarial report, where the most recent year showed a loss, but the past ten-year period still had a substantial gain, with a return of over 12%.

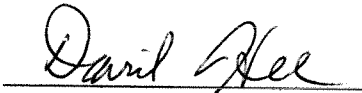
Respectfully submitted,



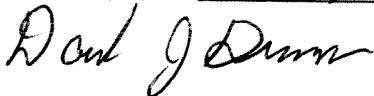
David Hee  
Associate Insurance Examiner

STATE OF NEW YORK    )  
                                  ) SS:  
COUNTY OF NEW YORK )

DAVID HEE, being duly sworn, deposes and says that the foregoing report, subscribed by him, is true to the best of his knowledge and belief.

  
David Hee

Subscribed and sworn to before me  
this 6th day of December, 2002.



DANIEL J. GUMAER  
Notary Public, State of New York  
No. 01GU6058535  
Qualified in Suffolk County  
Commission Expires 05/14/03

APPOINTMENT NO. 21841

STATE OF NEW YORK  
**INSURANCE DEPARTMENT**

I, GREGORY V. SERIO, Superintendent of Insurance of the State of New York, pursuant to the provisions of the Insurance Law, do hereby appoint:

**DAVID HEE**

*as a proper person to examine into the affairs of the*

**NEW YORK STATE TEACHERS' RETIREMENT SYSTEM**

*and to make a report to me in writing of the condition of the said*

**SYSTEM**

*with such other information as he shall deem requisite.*

*In Witness Whereof, I have hereunto subscribed by name  
and affixed the official Seal of the Department  
at the City of New York*

*this 4th day of March, 2002*



**GREGORY V. SERIO**

*Superintendent of Insurance*

*[Handwritten Signature]*  
*Superintendent*

New York State  
Teachers' Retirement System

Report of the Examining Actuary  
Michael J. Lambert

Examination as of June 30, 2001



## Table of Contents

1.	Liabilities in annual statement	1
2.	Actuarial cost method and employer contributions	3
3.	Liabilities in actuarial valuation report and in annual statement	7
4.	Actuarial asset valuation method	9
5.	Funding ratios	12
6.	Unfunded accrued liability	14
7.	Gain and loss	18
8.	Actuarial assumptions	20
9.	Comments	26

1. Liabilities in Annual Statement

Shown below are the plan liabilities as reported in the System's annual statements for the five years under review. These liabilities are somewhat different from the liabilities used for developing plan contribution requirements, as described [later in this report](#). Amounts shown are in millions of dollars.

Year Ending June 30	1997	1998	1999	2000	2001
Accumulated contributions of members	151	135	117	103	84
Present value of benefits ("PVB") for members now in pay status:					
Service retirement	15,755	17,139	18,753	20,862	23,655
Ordinary disability	149	161	174	185	199
Accidental disability	1	1	2	2	2
Accidental death	0	0	0	0	0
Post retirement death > 50,000	0	0	15	17	20
Beneficiary deceased active member	11	12	12	12	11
Beneficiary deceased retired member	195	215	233	259	279
Escalation	3	4	4	4	4
Benefit increase			604 <sup>a</sup>	4,111 <sup>b</sup>	3,355 <sup>b</sup>
Total PVB in pay status	16,115	17,533	19,796	25,452	27,526
PVB for those now in active service:					
Service retirement	33,518	35,101	35,849	38,092	38,978
Ordinary disability	192	194	197	178	181
Accidental disability	0	0	0	0	0
Ordinary death	554	555	863	550	586
Accidental death	0	0	0	0	0
Deferred retirement	1,850	1,928	1,995	1,881	1,934
Withdrawal benefits	117	88	99	104	119
Benefit increase				1,468 <sup>b</sup>	1,104 <sup>b</sup>
Total PVB in active status	36,232	37,867	39,002	42,273	42,902
Less present value ("PV") of prospective contributions	2,822	2,796	3,887	1,183	1,208
Net reserves for active service	33,410	35,071	35,115	41,091	41,695
Contingency reserves	6,402	12,026	19,684	16,768	17,979
Total net reserves	56,077	64,765	74,712	83,414	87,285

Year Ending June 30	1997	1998	1999	2000	2001
Benefits due and unpaid	4	5	6	7	8
Left to accumulate at interest	0	0	0	0	0
Expenses due and accrued	9	12	13	14	22
Other liabilities	239	176	331	135	173
Unappropriated expense fund	8	7	8	8	8
Net reserves and liabilities	56,337	64,966	75,070	83,578	87,495
Excess of admitted assets over reserves and liabilities	0	0	0	0	0
Adjustment for actuarial asset value	7,382	10,108	9,309	4,752	(7,086)
Total statement liabilities	63,719	75,074	84,379	88,330	80,409

<sup>a</sup> Supplementation

<sup>b</sup> Cost of living increases to retirees

## 2. Actuarial Cost Method and Employer Contributions

The ultimate cost of a defined benefit pension plan is the benefits paid. That cost is paid for by employer contributions, any employee contributions, and investment earnings. An actuarial cost method is the technique by which the amount of employer contributions is allocated to time periods.

Beginning with the 1995 fiscal year, the actuarial cost method used has been the Aggregate Cost Method. Under this method, the present value of future employer contributions is determined by subtracting the actuarial value of plan assets and the present value of future employee contributions from the present value of future plan benefits; i.e.,  $PV_{FutureErCont} = PV_{FutureBen} - Assets - PV_{FutureEeCont}$ . The resulting present value of future employer contributions is then 'spread' or allocated to plan years in the future in such a way that the employer contribution for each year is a constant percentage of expected payroll in that year. This is done by dividing the present value of future employer contributions by the present value of expected future payroll. The resulting percentage is called the 'normal cost rate' and is then multiplied by the payroll as of the valuation date to yield the amount of contribution to be made for a plan year; i.e.,

- $NCRate = PV_{FutureErCont} \div PV_{FuturePayroll}$
- $ErCont = NCRate \times Payroll$

The normal cost rate ("NCRate") is the rate developed for most, but not all, of the benefits and expenses the plan will incur. Separate rates are developed for the following:

- Group Life, which is the first \$50,000 of active member death benefit;
- Excess Benefit Plan, which is retirement benefits paid in excess of the Internal Revenue Code Section 415 limits;
- Supplemental Benefits, which are ad-hoc cost-of-living increases for retirees; and
- Expenses, which are the estimated administrative expenses exclusive of investment expenses.

The rates for the above separate items are calculated, essentially, on a one-year term basis; i.e., the expected payout for the following year is divided by the expected payroll base for the year.

Beginning with the 2000 fiscal year, the Supplemental Benefits were no longer determined separately and funded through a separate rate, but were included with the other plan benefits and funded through the normal cost rate. This change was due to Section 532-a(i) of the Education Law, added by Chapter 125 of the Laws of 2000.

The rate for the group life benefit, if calculated based on the normal one-year term basis as described above, would have decreased over the last several years from .13% to around .03%. However, the rate is being held constant at .13% in anticipation of rising payouts in the future.

The Excess Benefit Plan is permitted by Section 538 of the Education Law, which was added by Laws of 1998, Chapter 595. The System has obtained a determination letter from the IRS, indicating that this plan meets the IRS requirements for qualification.

The total Employer Rate is the sum of the normal cost rate and the separate rates described above. For the five years under review, the Employer Rate has been:

<u>As of June 30,</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Normal Cost Rate	0.00%	0.00%	0.00%	0.00%	0.00%
Group Life Rate	.13	.13	.13	.13	.13
Excess Benefit Plan Rate	N/A	N/A	.01	.01	.00
Supplemental Rate	1.09	1.10	.09	N/A	N/A
Expense Rate	.20	.20	.20	.22	.23
Employer Rate	<u>1.42%</u>	<u>1.43%</u>	<u>0.43%</u>	<u>0.36%</u>	<u>0.36%</u>

The actuarial valuation, which is the process whereby the employer contribution is determined, is performed “as of” June 30, the last day of each fiscal year; i.e., the census data, plan provisions and asset values are determined as of the valuation date of June 30. However, the contribution payments based on that valuation date are made more than two years later. For example, for a valuation as of June 30, 2001:

(1) census data and asset values are not completely collected until November 2001;

- (2) valuation process, including the preliminary calculation of the employer contribution rate, is then completed by March 2002;
- (3) gain and loss analysis is completed during the second quarter of 2002;
- (4) the Legislature, which may enact legislation affecting the valuation, usually adjourns in or near June 2002;
- (5) contribution rate is presented to the Retirement Board at its next quarterly meeting in July 2002;
- (6) declared contribution rate will be “applied” to member salaries earned during the fiscal year beginning July 1, 2002 and ending June 30, 2003; and
- (7) contribution will be collected from the school districts beginning in August 2003.

As a result of the lag, the assets used in a valuation will recognize as receivables those employer contributions that were determined as of the previous two valuations but not yet collected.

The participants fall into one of four tiers, based on the date of initial participation, with successively decreasing benefit levels among the tiers. However, the plan provisions and benefit levels do not vary significantly among the tiers, and the valuation is run as a single group, with subtotals determined by tier.

As mentioned above, the normal cost rate is based on total plan liabilities and plan assets. Largely as a result of the significant increase in equity prices in the late 1990’s, the assets held by the System have increased so that the calculated normal cost rate has been negative for each of the five years of the examination period. When the calculated normal cost rate is negative, it is then set to zero.

Calculation of Employer Contributions  
(\$000,000 omitted)

		Valuation Date June 30,				
		1997	1998	1999	2000	2001
Present Value of Benefits						
	Actives	35,950	37,545	42,157	41,610	42,167
	Retirees	16,115	17,533	23,265	25,435	27,506
	Terminated vested	429	454	540	508	540
	TIAA <sup>a</sup> & misc.	10	11	12	10	12
1	Total PVB	52,504	55,543	65,974	67,563	70,225
2	Actuarial value of assets	56,084	64,773	74,711	83,404	87,270
3	PV future employee contributions	2,214	2,422	537 <sup>b</sup>	589	667
4	PV other receivables	608	374	386	338	267
5	PV future normal cost 1 - 2 - 3 - 4	(6,402)	(12,026)	(9,660)	(16,768)	(17,979)
6	PV future compensation	89,141	92,724	97,425	82,682 <sup>c</sup>	88,454
7	Normal cost rate <sup>d</sup> 5 ÷ 6	.00%	.00%	.00%	.00%	.00%
8	Group life rate	.13	.13	.13	.13	.13
9	Excess benefit plan rate	---	---	.01	.01	.00
10	Supplemental rate	1.09	1.10	.09	---	---
11	Expense rate	.20	.20	.20	.22	.23
12	Employer rate 7 + 8 + 9 + 10 + 11	1.42%	1.43%	.43%	.36%	.36%

<sup>a</sup> Teachers Insurance and Annuity Association

<sup>b</sup> Significant decrease from the prior year value due to Chapter 126 of the Laws of 2000, which eliminated the requirement for participants with over ten years of service credit or membership to make their 3% contributions. This affected tier 3 and 4 members only, since tier 1 and 2 members were not required to make contributions.

<sup>c</sup> Decrease from the prior year value due to a change in actuarial assumptions, including assumed future salary increases, adopted by the Retirement Board effective June 30, 2000.

<sup>d</sup> If the calculated normal cost rate is less than zero, it is set equal to zero.

### 3. Liabilities in Actuarial Valuation Report and in Annual Statement

As mentioned in section 1 of this actuarial report, the grouping of liabilities reported in the System's annual statements is slightly different from the grouping used in the calculation of the employer contribution. The liabilities used for the determination of the Employer Rate are shown in the Actuarial Valuation Reports and are the present value, as of the valuation date, of benefits expected to be paid in the future to current plan participants. The table below shows the reconciliation of the components of liabilities shown on page 5 of the annual statements with the liabilities used to develop the Employer Rate.

		(\$000,000 omitted)				
		1997	1998	1999	2000	2001
1	Accumulated contributions of members	151	135	117	103	84
2	Retirees	16,115	17,533	19,796	25,452	27,526
3	Actives	36,231	37,867	39,002	42,273	42,902
4	Benefits due and unpaid	4	5	6	7	8
5	Unclaimed non-member funds	3	3	3	1	3
6	Total liabilities 1 + 2 + 3 + 4 + 5	52,504	55,543	58,924	67,836	70,523
7	PV of death benefit < \$50,000	---	---	(308)	(273)	(298)
8	Benefit improvements	---	---	7,358	---	---
9	Total PV of benefits 6 + 7 + 8	52,504	55,543	65,974	67,563	70,225

Lines 1 through 5 are amounts reported in the annual statements.

As mentioned in section 2 of this actuarial report, the cost of the group life insurance for the first \$50,000 of death benefit is calculated on a one-year term basis; the liability for that benefit is therefore not included in the liabilities used to determine the normal cost rate. The System recognized, beginning with the 1999 annual statement, that



because of the method of determining the cost for that life insurance benefit, the liability for that benefit was not included in the annual statement. Line 7 of the above table is the amount of liability that is included in the annual statement reflecting the first \$50,000 of life insurance benefit. Since that liability is not included in the liabilities used to determine the normal cost rate, as mentioned above, it is subtracted from the annual statement liabilities in the reconciliation above.

A significant amount of legislation that improved benefits was enacted in early 2000. Normally, the costs of the benefit improvements would have been initially recognized in the June 30, 2000 valuation, which would have been completed in early 2001. However, due to the magnitude of the additional liabilities, the cost of the benefit improvements was recognized a year earlier than usual, in the June 30, 1999 valuation, which was completed in early 2000. The 1999 annual statement did not reflect those liabilities, since it had been prepared and submitted earlier. Line 8 of the above table shows the total amount of liabilities due to these benefit improvements. The benefit improvements, which were enacted as part of the Laws of 2000, included the following:

Benefit	Chapter	Liability (\$billion)
Permanent COLA	125	4.7
Article 19 benefit enhancement	126	1.3
Prior service credit	552	.6
Tier equity (Article 15 early retirement benefit)	553	.6
Other		.2
Total		7.4

Line 9 of the previous table is the total present value of benefits used in the valuation to calculate the normal cost rate, as shown in [row 1](#) (Total PVB) of the table Calculation of Employer Contributions in the preceding section.

#### 4. Actuarial Asset Valuation Method

As described earlier in this report, the calculation of the employer contribution amount involves the calculation of the excess (if any) of the present value of future benefits over plan assets. Some of the asset classes can be fairly volatile, and the use of market values for those classes can result in undesirable fluctuations in the calculated cost of the plan. To reduce those fluctuations, the System uses an actuarial asset valuation method which smoothes the peaks and valleys of a market value measurement. The asset classes that are considered more volatile, and for which the smoothing technique is used, are equities, real estate, global bonds and alternative investments. Bonds and mortgages are valued at amortized value, and short-term investments are valued at market.

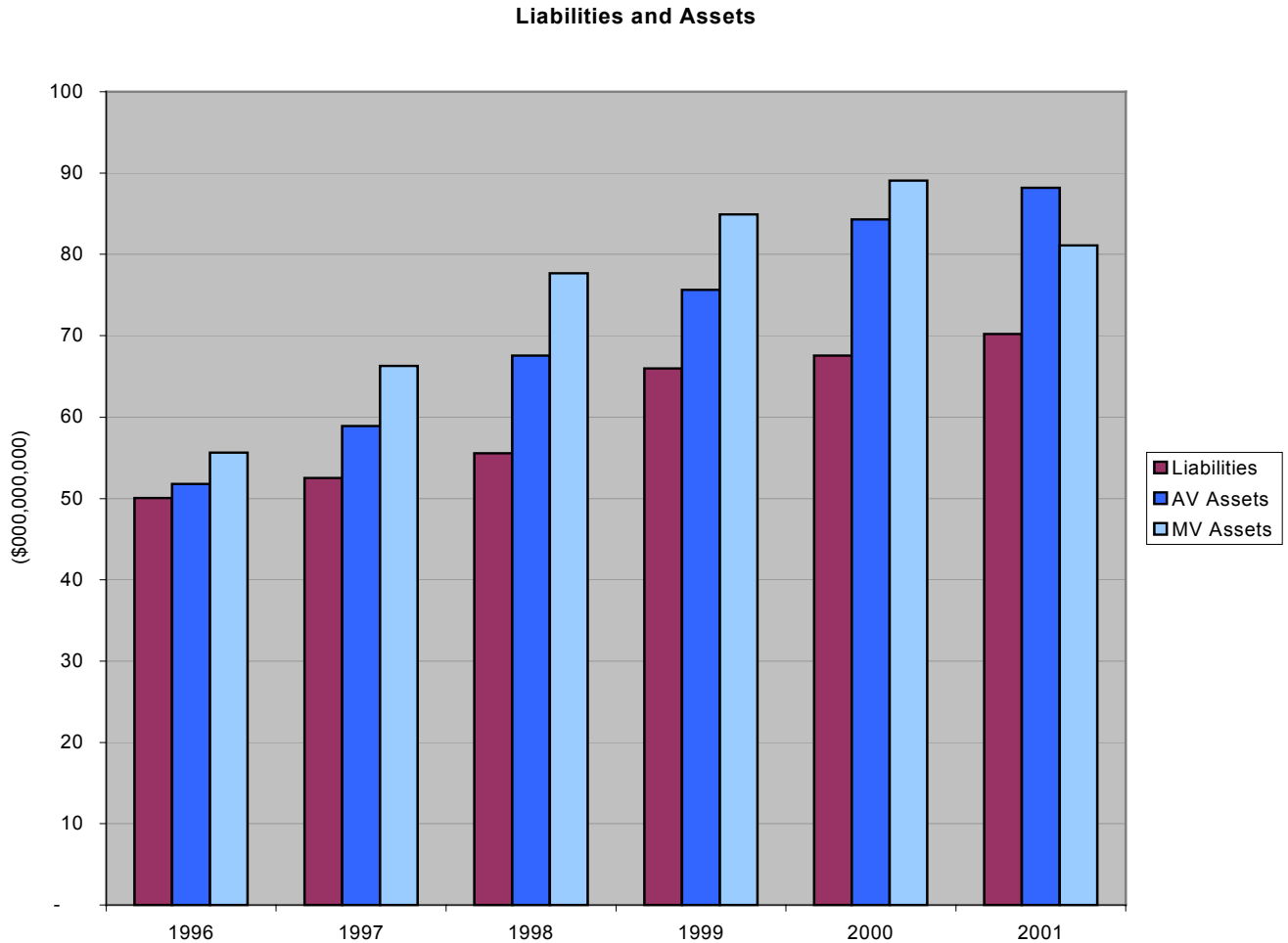
For each of the investment classes for which the smoothing technique is used, the book value is multiplied by the weighted average ratio of the market value to the book value over the five years ending with the valuation date. The result is the actuarial asset value for that class. During the examination period, the classes for which this technique was used represented between 72% and 81% of all plan assets, on a market value basis.

With the relatively rapid increase in equity prices in the late 1990's, the actuarial value of assets lagged behind the market value; in 1998, the actuarial value was 87% of market value. However, with the downturn in equities near the end of the examination period, the actuarial value of assets, being influenced by the trajectory in the preceding five years, 'overshot' the market value of assets in 2001, and was 109% of the market value.

The use of the smoothing technique can have a significant effect on plan costs. In the 1998 valuation, the "smoothing adjustment", or difference between the market value and actuarial value of assets, was over \$10 billion. The total liability with that valuation was \$56 billion and the actuarial value of assets was \$65 billion, so that no contribution was required. However, if, in the 1998 valuation, the liability were higher than both the actuarial value and the market value of assets such that an employer contribution were required, the consequence of using the lower actuarial value of assets instead of market value would have been a higher employer contribution by about 10.9% of payroll, or

about \$980 million. In other years (such as 2001), when the actuarial value of assets exceeds the market value, the employer contribution calculated using the actuarial value would be less than the contribution based on the market value (based on a hypothetical liability which exceeded both asset values).

The following chart illustrates the plan liability, actuarial value of assets and market value of assets for each valuation date from 1996 through 2001.



The chart shows that, for each year of the examination period, both the actuarial value of assets and the market value of assets exceeded plan liabilities. For the years through 2000, the market value exceeded the actuarial value. In 2001 the market value declined significantly, and the actuarial value, being influenced by previous years' values, continued a modest increase.

The table below shows the reconciliation between the admitted assets in the statement and the actuarial value of assets for each of the examination years.

	(\$000,000 omitted)				
	1997	1998	1999	2000	2001
1 Admitted assets	63,719	75,074	84,379	88,330	80,409
2 Smoothing adjustment	7,381	10,108	9,309	4,752	(7,086)
3 Left with System	0	0	0	0	0
4 Expenses due and accrued	9	12	13	14	22
5 Miscellaneous liabilities	236	174	328	134	170
6 Expense fund	8	7	8	8	8
7 Assets for valuation purposes 1 – 2 – 3 – 4 – 5 – 6	56,085	64,773	74,721	83,422	87,295

## 5. Funding Ratios

Attachment B of the System's annual statements provides, as a measure of funding adequacy, the ratio of assets available for active members to the liability attributed to those members.

A common method of determining the liability attributable to active members would be to use the Pension Benefit Obligation ("PBO"). The PBO is the present value of pension benefits resulting from employee service up to the statement date, based on salaries projected to the date of retirement. (PBO thus is different from the annual statement's "Present Value of Benefits for Members now in Active Service," which involves members' total anticipated service as of the date of retirement.) The PBO includes vested benefits for terminated members.

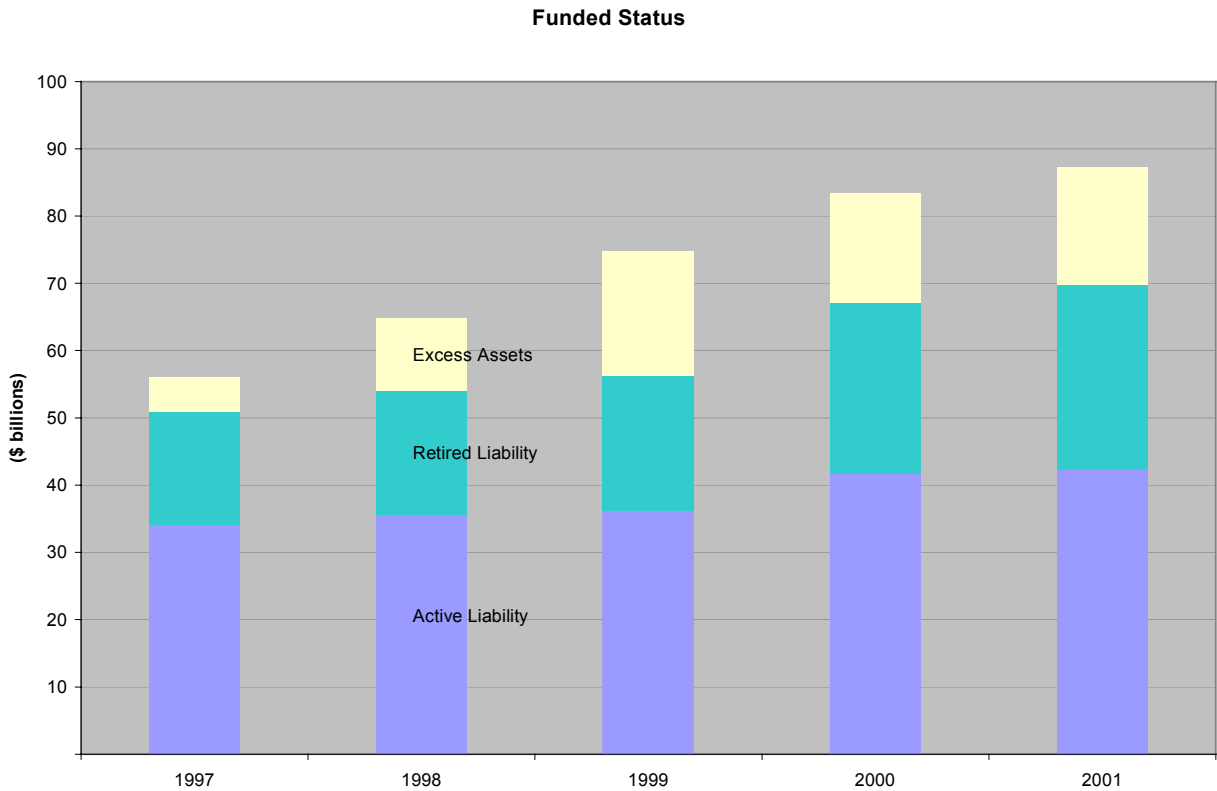
Statement No. 27 of the Government Accounting Standards Board (GASB 27) states that the actuarial cost method used for funding should be used to determine the PBO. However, as mentioned in section 2 of this actuarial report, the System uses the Aggregate Cost Method to develop costs. One of the characteristics of this method is that it does not develop a PBO. Instead, the System develops the liability attributed to active members by subtracting the present value of future normal costs ("PVFNC") from the present value of future benefits; i.e.,  $PVB - PVFNC$ . PVB, in this calculation, is the present value of benefits, based on projected service, for active members. The present value of future normal costs, PVFNC, is based on the normal cost as developed using the Aggregate Cost Method, as described in section 2 of this actuarial report. This approach to developing the liability attributable to active members is an appropriate one.

The 1997 and 1998 Actuarial Value of Assets shown in the table below include the excess of the Actuarial Value of the Group Life Fund over the Present Value of the Group Life Deferred Premiums. Beginning with the 1999 annual statement, the Total Assets excluded the above life insurance values, at the suggestion of the Department.

Funded Status

		(\$000,000 omitted)				
		1997	1998	1999	2000	2001
1	Actuarial value of assets	56,085	64,779	74,721	83,422	87,295
2	Liabilities for retirees	16,533	18,198	19,796	25,452	27,526
3	Acc. cont. of active members	151	135	117	103	84
4	Assets for active members 1 - 2 - 3	39,401	46,446	54,808	57,867	59,685
5	Accrued liability of benefits for active members	34,184	35,628	36,303	41,647	42,207
6	Active member funded status 4 ÷ 5	115%	130%	151%	139%	141%
7	Total funded status 1 ÷ (2 + 3 + 5)	110%	120%	133%	124%	125%

The chart below shows the liability for active members, the liability for retired members, and the excess of actuarial assets over the total plan liability, from the table above.



The excess assets shown in the chart above are based on the Actuarial Value of Assets, which are calculated values that smooth the fluctuations that occur in the market value of assets. A comparison of the two values of assets is [shown](#) in section 4 of this actuarial report.

As discussed further in section 9 of this actuarial report, the excess of assets over liabilities that has existed during the examination period is not likely to persist in the near future.

## 6. Unfunded Accrued Liability

The unfunded accrued liability (“UAL”) of a pension plan refers to the present value of required employer contributions other than normal contributions. The UAL may result from items such as prior service, deferred employer contributions, retirement incentive programs, or change of assumptions.

Generally, the existence and magnitude of the UAL is a function of the actuarial cost method. Under the [Aggregate Cost Method](#), a UAL does not exist. Under other cost methods, a UAL may exist, but the magnitude will differ among the cost methods.

The UAL does not take into consideration the level of plan assets. Hence, the UAL should not be viewed as a measure of the overall funding status of a pension plan. One such measure is [discussed](#) in section 5 of this actuarial report - “Funding Ratios.”

As mentioned above, under the Aggregate Cost Method, a UAL will generally not be generated. However, a modified version of the Aggregate Cost Method may recognize certain components of liability, such as legislated benefit increases, and amortize those liability components separately, generally over a fixed number of years. Those liability components are then subtracted from the total present value of benefits, along with assets and future employee contributions, to yield the present value of future normal cost, i.e., in a “pure” Aggregate Cost Method, we would have

$$PVFutureErCont = PVFutureBen - Assets - PVFutureEeCont;$$

in this modified version, we have

$$PVFutureErCont = PVFutureBen - Assets - PVFutureEeCont - UAL.$$

The modified version would result in an employer contribution that consists of a normal contribution and an amortization payment, rather than only the normal contribution that would be developed by a “pure” Aggregate Cost Method. The UAL consists of one or more components of liability, each one of which is amortized over a specified number of years at a specified interest rate. The practical consequence of this distinction could result in faster or slower funding, depending on the number of years over which the UAL is to be amortized and the present value of future compensation used for spreading the future normal cost.



The method described above is the traditional manner in which additional liability components due to legislation would be handled under a modified Aggregate Cost Method. It is not the method used by the System. The System treats each component of additional liability as a receivable; i.e., as a form of plan assets. The corresponding formula for the present value of future employer contributions is

$$PVFutureErCont = PVFutureBen - (Assets + Rec) - PVFutureEeCont.$$

But this becomes

$$PVFutureErCont = PVFutureBen - Assets - Rec - PVFutureEeCont,$$

and since the receivable amount in this formula is the same as the UAL in the formula on the preceding page, the present value of future employer contributions (and hence the normal contribution) is not changed.

A primary reason the System treats the additional liability components as receivables instead of amounts to be amortized is that the contributions to pay for those liabilities are made by the school districts that make up the System. Each school district can choose to pay its portion of liability faster than the traditional amortization schedule would dictate, and many do so. Therefore, in practice, the additional liability amounts are paid for faster than would be the case if a traditional amortization schedule were followed.

Attachment A of the Annual Statement provides detail on the UAL components (receivables) that are considered in developing the cost of the System. There were seven components as of the June 30, 2001 valuation; all but the first were due to new legislation which provided retirement incentive programs. The table below shows a summary of those components as of June 30, 2001.

Year	Legislation	(\$000 omitted)				
	Chapter	Initial UAL	UAL 7/1/00	Received in year	UAL 6/30/01	Years to go
1990	175	873,712	67,681	19,807	52,230	4
1995	12	58,943	9,858	10,082	0	0
1996	30	98,300	32,168	17,241	18,120	1
1997	41	66,817	27,905	13,169	19,259	2
1998	47	75,224	35,119	10,194	31,568	3
1999	70	59,286	59,286	32,962	28,949	4
2000	86	104,007	---	---	104,007	5
Total			232,017	103,455	254,133	

The UAL as of the end of the year reflects the beginning-of-year UAL, contributions received during the year, interest on those values, and other adjustments made by school districts which can increase or decrease the UAL. The other adjustments can include determining, even a few years after enactment of legislation, that a member or group of members is eligible for a retirement incentive; this would increase the UAL.

As shown in section 2 of this actuarial report, the total present value of future benefits, as of June 30, 2001, was \$70,225 million. The total UAL on that date was \$254 million, or .36% of the PVB.

## 7. Gain and Loss

As described in [section 2](#) of this actuarial report, the required employer contribution is determined each year by the actuarial valuation. Projections of current plan members are made using actuarial assumptions regarding probabilities of retiring, withdrawing, dying or becoming disabled each year in the future. Active member salaries are projected to increase according to assumed increase percentages. Expected benefit payments are calculated for the assumed events of retirement, withdrawal, etc., based on service and salary history at the time of event. The resulting projected liabilities are discounted at the assumed interest rate. That final discounted value is the present value of future benefits, which is then used in determining the normal contribution rate.

Actual experience will rarely match the various assumptions mentioned above. The comparison between actual experience and that predicted by actuarial assumptions is called gain and loss analysis. The comparison is most useful when it measures the gain/loss of individual assumptions. The sum of the individual gain/loss components is the total plan gain/loss.

As discussed further in the next section of this actuarial report, it is important to measure how reliable the assumptions are.

Gain/loss can be expressed in terms of the change in liability resulting from the experience of a specific assumption being different from that which was assumed. For example, if salaries increased more during a year than was predicted by the salary scale assumption (and all other assumptions were exactly realized), and if the resulting plan liability at the new valuation is higher by \$100 million than would be the case if the salary assumption were exactly realized, then there has been a \$100 million loss due to salary scale assumption.

Another way of expressing gain/loss is to indicate what the change in the normal cost rate would be as a result of the liability change mentioned above. This is the manner in which the System presented the results of its gain/loss analysis.

Gain/Loss by Source for Each Year

Source	Change in Normal Cost Rate (%)					
	1996	1997	1998	1999	2000	2001
Net investment gain	-3.87	-5.04	-6.20	-6.94	-5.89	+26
Salary/service	-1.16	-1.18	-.88	-.87	-.88	-.12
New entrants	+.42	+.57	+.59	+.38	+.92	+.84
Withdrawal	+.34	+.38	+.36	+.27	+.42	+.32
Mortality	+.20	+.23	+.25	+.26	+.27	+.31
Retirement	+.08	+.26	+.13	+.16	-.03	+.30
Total change in normal rate	-3.99	-4.78	-5.75	-6.74	-5.19	+1.91

Negative numbers above represent a gain; positive numbers represent a loss. For example, for 2001, the withdrawal component is +.32%. For the year ending June 30, 2001, fewer members withdrew from active service than predicted by the withdrawal assumptions. As a consequence, there will be more members than expected to receive retirement benefits. The resulting additional liability generates an increase in the normal cost rate of .32%.

For another example, in the year ending June 30, 2000, the investment rate of return, based on the actuarial value of assets, was 14.6%, which exceeded the assumed 8%. Plan assets as of June 30, 2000 were therefore greater than they otherwise would have been, and as a result the normal cost rate was less than it otherwise would have been by 5.89%.

As discussed in more detail in section 8 of this actuarial report, some fluctuation in gain/loss by source is to be expected. However, a consistent pattern of gains or losses suggests that the actuarial assumption should be modified. Section 8 of this actuarial report describes the process by which that is accomplished by the System.

## 8. Actuarial Assumptions

Each of the actuarial assumptions can be grouped into one of two categories: demographic or economic. The assumptions that would be considered demographic are mortality, disability, withdrawal and retirement. The economic assumptions are interest and salary scale. Withdrawal and retirement are, to some extent, influenced by economic factors, but they are generally considered to be in the demographic category.

The System conducts an experience study each year to monitor the appropriateness of the assumptions. If the results of an experience study suggest that assumptions be changed, the System will recommend to the Retirement Board (“Board”) that new assumptions be adopted. The assumptions used in the valuations of June 30, 1997, 1998 and 1999 were adopted by the Board on July 27, 1995 (“1995 assumptions”). Based on results of experience studies, new actuarial assumptions were adopted by the Board on October 25, 2000 (“2000 assumptions”) and were used in the 2000 and 2001 valuations.

The mortality assumptions consist of sets of rates for each of three classes of members of the System. Those classes are: (1) active employees; (2) service retirees, deferred service members (those who have terminated employment with a vested right to receive a later service retirement benefit) and beneficiaries of members; and (3) disabled annuitants. Each of the sets contains rates that vary by age and sex.

The experience study based on 1995 – 1999 experience shows that, for active employees, the ratio of actual to expected mortality, using the 1995 assumptions, was, for all ages combined and both sexes, .751. This ratio, being less than one, indicates that the active employee mortality assumptions being used in the 1999 valuation predicted higher mortality rates than actually occurred. The 2000 and 2001 valuations used the mortality rates adopted by the Board as part of the 2000 assumptions. The experience study based on 1996 – 2000 experience, using the 2000 assumptions, showed, for active employees, an average actual to expected mortality ratio of .838. The 2000 assumptions clearly more closely matched actual experience than did the 1995 assumptions.

The disability assumption consists of a set of rates for active members; the rates vary by age and sex.

The withdrawal assumption consists of a set of rates for active members; the rates vary by age, length of service, and sex. The variation by length of service occurs only for the first ten years of service; thereafter, the rates vary only by age and sex.

The retirement assumption, based on the 1995 assumptions and used in the 1997, 1998 and 1999 valuations, consisted of a set of rates for active members; the rates varied by age (55 – 70) and sex. Experience studies began to show that the probability of retirement is much lower for certain classes of members than for others. As a result, the 2000 assumptions for retirement contains two sets of rates: (1) one set of rates for all tier 1 members and for tiers 2, 3 and 4 members who are at least age 62 or have at least 30 years of service, and (2) another set of rates for all other active members (i.e., tiers 2, 3 and 4 members who are less than age 62 and who have less than 30 years of service). Both sets contain rates that vary by age and sex.

The salary increase assumption, or salary scale, consists of a set of rates that vary by age and sex. Each rate shows the expected ratio of salary one year in the future to the current salary.

In both the 1995 and 2000 assumptions, the interest rate assumption was 8.0%. However, the components that make up the interest rate assumption were changed with the 2000 assumptions. The System treats the interest rate assumption as being composed of two components: an inflation component and a real rate of return component. In the 1995 assumptions, the inflation component was 4.5% and the real rate of return was 3.5%. Those components were changed with the 2000 assumptions: inflation was changed to 3.0% and the real rate of return was changed to 5.0%.

The table below summarizes the results of two experience studies performed by the System: the 1995-1999 experience study and the 1997-2001 experience study. In an experience study, actual experience for a period of time for each of several assumptions is measured and compared with the expected experience for each of those assumptions. The results of the study, for a given assumption, are generally expressed in the form of a ratio of actual experience to expected experience. For example, an experience study might determine that 850 deaths actually occurred, when 1000 were expected according to the assumptions. The ratio of actual to expected would be .850. Ratios that deviate significantly from 1.0 indicate that the assumptions may need to be adjusted.

The experience studies determined actual experience, expected experience and the resulting actual-to-expected ratios by quinquennial age group and for all ages combined; the table below shows only the results for all ages combined. For comparison purposes, the ratios shown below are based on approximate weighted averages of the separate male and female results that were presented in the experience studies.

The 1995 assumptions column shows, for each assumption, the ratio of the experience during the 1995-1999 period to that predicted by the 1995 assumptions; this was the last study performed prior to adoption of the 2000 assumptions. The 2000 assumptions column shows the ratio of the experience during the 1997-2001 period to that predicted by the 2000 assumptions. The table does not include experience data for the interest assumption.

### Experience Study Results

Assumption	Class of Member	Ratio of Actual to Expected	
		1995 assump.	2000 assump.
Mortality	Active	.751	.838
Mortality	Service retirees	.974	1.025
Mortality	Disability retirees	1.097	1.131
Disability	Active	1.152	.932
Withdrawal	Active	.927	.994
Retirement	Tier1 and tier 2, 3, 4 with age >= 62 or service >= 30	1.250	1.219
Retirement	Tier 2, 3, 4 with age <62 and service < 30	1.250	1.191
Salary increase	Active	.964	.978

The ratios above indicate that, for most of the assumptions, the change to the 2000 assumptions resulted in a modest shift closer to 1.0; i.e., the 2000 assumptions are somewhat better than the 1995 assumptions at predicting experience.

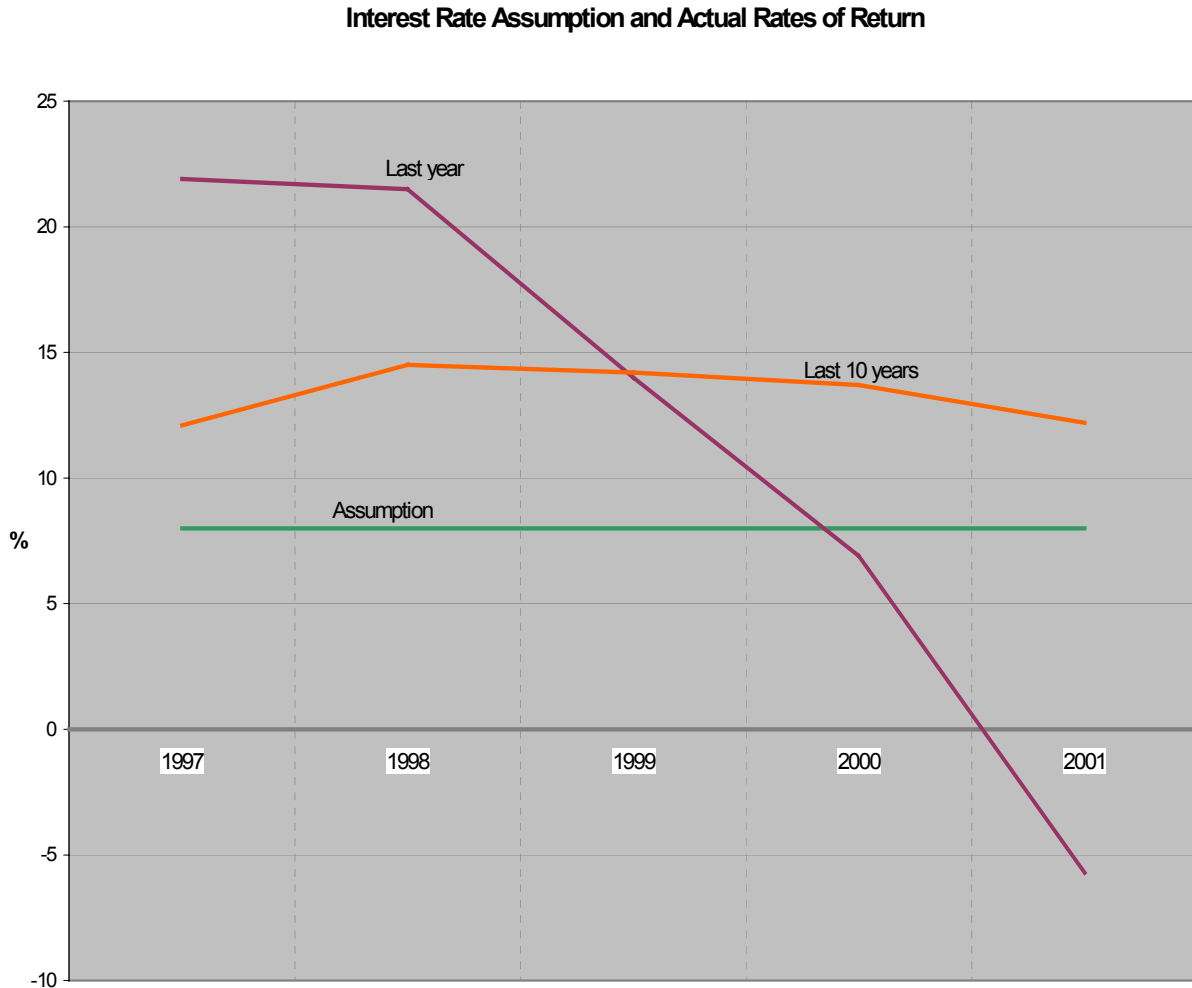
Of all the assumptions, the choice of interest rate assumption probably has the biggest impact on the calculated plan cost. In addition, the actual rate of return that the assumption is designed to predict is probably the most volatile of all the experience factors.

The table below shows, for each year of the examination period, the interest rate assumption, the annualized rates of return over the one-year period and the ten-year period ending on the valuation date. The rates of return are calculated based on the market value of assets.

	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>
Assumption	8.0	8.0	8.0	8.0	8.0
Last year	21.9	21.5	14.0	6.9	-5.7
Last 10 years	12.1	14.5	14.2	13.7	12.2



The graph below illustrates the above numbers.



This graph illustrates the volatility of the interest rate over a (probably atypical) five-year period; the actual annual rate has decreased from almost 22% to -5.7%. However, the benefits provided by this plan to the current participants are payable over a long range in the future, from now to a few decades from now. Therefore, while on a long-term basis the interest rate assumption should not deviate substantially from the average rate of return, on a short term basis significant deviations can be tolerated.

The System maintains an asset allocation policy that is reviewed annually by the Retirement Board. That policy produced a long-term expected investment rate of return of 8.4% at the beginning of the examination period, and 8.5% at the end of the period.

The 8% assumption used for the actuarial valuation appears reasonable in view of the rate produced by the asset allocation policy.

To the extent that a specific assumption deviates from actual experience, there will be a gain or loss; i.e., the actual plan assets will be greater or the actual plan liability will be less than expected (gain), or the actual plan assets will be less or the actual plan liability will be greater (loss) than expected. The mechanics of the actuarial cost method will result in any gain or loss being spread into the future; a loss will result in higher contribution requirements, and a gain will result in lower contribution requirements. Thus, the actuarial cost method is a self-correcting process that causes future contribution rates to be adjusted automatically, based on the current year's gain or loss.

The System conducts an experience study every year, using experience data from the most recent five-year period. The results of each experience study are reviewed, and a determination is made as to whether any of the assumptions should be changed. As mentioned previously, the System has changed assumptions in 1995 and 2000 based on experience study results. Thus the System is monitoring the reasonableness of its assumptions, and making changes in the assumptions, in an appropriate manner.

## 9. Comments

### A. Future Employer Contributions

During the five years of this examination period the System has experienced normal contribution rates (which is the rate used for most of the benefits) of 0%, and total employer contribution rates (including group life, expenses, et al.) declining to .36% because the investment performance has significantly exceeded the assumed 8% return over several years. However, as shown in section 7 of this actuarial report, the investment performance has declined significantly in the last two years of the examination period, and remains low to the date of this report. Section 4 of this actuarial report shows that the market value of assets, and with a lag, the actuarial value of assets, are beginning to decline. As a consequence, employer contributions are almost certain to be required in the near future.

Since the inception of the System in 1921, the average total employer contribution rate has been over 11%, and reached a high of over 23% in the early eighties. The rate dropped to below 5% for the first time in the mid nineties.

In addition, the normal contribution rate for new entrants is about 12%; i.e., the cost for new entrants, if all actuarial assumptions are exactly realized, would be about 12% of pay. This is the level toward which the employer contribution rate will tend to move, if future plan experience does not differ significantly from the actuarial assumptions.

### B. Specific Investment Losses

While much media attention has been focussed on a few very large companies that have misstated earnings and whose valuations are now questionable (e.g., Enron, Worldcom), many companies in the equities holdings of the System have suffered significant losses. And many have experienced significant gains, but this discussion will focus on the issue of losses.

As of June 30, 2001, the total cost of the shares of Enron and Worldcom held by the System was \$200 million, which was .9% of the \$22,273 million cost of equities held by the System. The market value of those two stocks was \$271 million, which was .6%

of the \$46,681 million of market value of equities held by the System. Since June 30, 2001, the market value of those two stocks has declined substantially. While it is possible that the market values of those two companies will improve somewhat in the future, perhaps after reorganization, the scenario presented here is based on the assumption that those two stocks become worthless. Based on the June 30, 2001 valuation, if the value of the two stocks mentioned above were \$0, the annual employer contribution would increase by .3% of payroll, or about \$32 million (ignoring the fact that the plan assets are currently sufficient to eliminate the normal contribution rate).

Many factors will influence the employer contribution rate, and one should not place undue emphasis on the possible effect of two specific stocks (out of 2000 stocks in the System's portfolio).

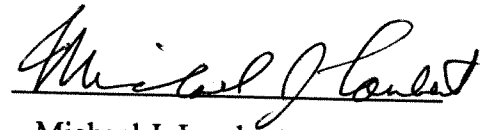
However, the current market downturn, led by the dot-com bust, the terrorist attacks of September 11, 2001, and the recent accounting and reporting problems, has resulted in many stocks in the System's portfolio that, as of June 30, 2001, had market values significantly less than the cost of those stocks. For example, of the 2000 stocks in the portfolio, 72 had market values that were less than 10% of the cost of those stocks. For those 72 stocks, the cost was \$654 million and the market value was \$36 million, for an unrealized loss of \$618 million. For the 153 stocks whose market value was less than 25% of their cost, the cost was \$1,353 million, the market value was \$145 million, and the resulting unrealized loss was \$1,208 million. That loss, by itself, would result in an increase in employer contribution of 1.4% of payroll, or \$142 million.

At the other end of the investment performance spectrum, 1319 of the 2000 stocks had market values that exceed their cost, and 454 stocks had market values that exceeded two times their cost. The unrealized gain from those 454 stocks was \$23,812 million. That is almost equal to the net unrealized gain from all 2000 stocks of \$24,407 million.

The aggregate result of the entire equity portion of the fund is part of the total fund performance [shown](#) in section 7 of this actuarial report, where the most recent year showed a loss, but the past ten-year period still had a substantial gain, with a return of over 12%. An aggregate result of 8.5% is also reflected in the long-term results produced by the System's [asset allocation](#). So, while it is important to be aware of specific

potential poor performers, one should also keep in mind the performance of the fund in the aggregate and on a long-term basis.

Respectfully submitted,

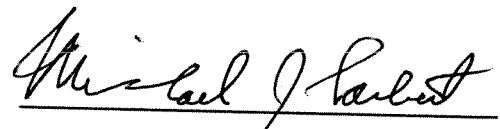


Michael J. Lambert

Principal Actuary

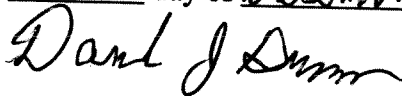
State of New York ) SS  
County of New York

MICHAEL J. LAMBERT, being duly sworn, deposes and says that the foregoing actuarial report, subscribed by him, is true to the best of his knowledge and belief.



Michael J. Lambert

Subscribed and sworn to before me  
this 13th day of December, 2002.



DANIEL J. GUMAER  
Notary Public, State of New York  
No. 01GU6058535  
Qualified in Suffolk County  
Commission Expires 05/14/03