



New York State and Local  
Employees' Retirement System  
Police and Fire Retirement System  
Public Employees' Group Life Insurance Plan

**Thomas P. DiNapoli, Comptroller**

# **ANNUAL REPORT TO THE COMPTROLLER ON ACTUARIAL ASSUMPTIONS**

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July 2007

## Part 1 EXECUTIVE SUMMARY

This report summarizes the most recent actuarial experience and includes my recommendation that we continue using our existing actuarial assumptions for the April 1, 2007 valuation except for the local 20 year retirement rates. I recommend that we change the local 20 year retirement rates to reproduce the experience from 2001-2005.

The April 1, 2007 valuation reflects the following overall experience:

1. An actual market rate of return for FYE 2007 of 12.6%; 5 year average = 10.1%; and 10 year average of 9.8%
2. Present value of benefits of \$137.1 billion in ERS and \$25.8 billion in PFRS
3. Total net assets of \$133.0 billion in ERS and \$23.5 billion in PFRS
4. Total actuarial assets of \$121.1 billion in ERS and \$21.4 billion in PFRS
5. Annual salaries (4/1/06 through 3/31/07) total \$22.0 billion in ERS and \$2.8 billion in PFRS

The April 1, 2007 valuation will be used to generate employer contributions for FYE 2009, with local employers paying their bill on February 1, 2009. The ERS contribution rates (without amortized payment) will average approximately 8.5% of payroll (a reduction of approximately 1% from last year). As a reference, the new entrant employer rate of a regular member is approximately 11%. New members contribute 3% of their salary for their first ten years.

The average employer contribution in PFRS (without amortized payments) will average approximately 15.8% of payroll (a decrease of approximately 0.8% from last year). The new entrant rate for an average member in PFRS is approximately 20%. Almost all members of PFRS are non-contributory.

Looking into the future, if our investments return 8% annually, ERS rates should continue to decline and PFRS rates should remain fairly constant as we utilize the investment gains of the past two years. Thereafter, rates should begin to increase toward their "normal" new entrant levels.

At the July 26, 2007 meeting of the Comptroller's Actuarial Advisory Committee, the above recommendations were unanimously approved.

Teri E. Landin  
Retirement Systems Actuary  
Dated: July, 2007

## PART II

### INTEREST ASSUMPTIONS

The funds of the Retirement System are invested within limitations set by the asset allocation policy and statute. Policy and statutes have changed over the years and there has been a corresponding shift in the composition of our portfolio. The changing structure of the portfolio is shown in Table 1.

In the last ten years, the size of the invested portfolio has increased from \$74.8 billion to \$154.6 billion. The fixed income investments are purchased and held primarily under a “buy and hold” strategy, which is why the actuarial rate of returns for these investments use amortized cost values.

<b>Table I</b>				
<b>Distribution of Investments of the Common Retirement Fund</b>				
<b>Dollar Amounts and Percentage of Portfolio</b>				
Fiscal Year Ending March 31 (in Millions of Dollars)				
<b>Type of Asset</b>	<b>1997</b>		<b>2007</b>	
	<b>Amount</b>	<b>Percent</b>	<b>Amount</b>	<b>Percent</b>
Government Bonds	\$20,607	25.2	\$13,912	9.0
Treasury Inflation Protection Securities	N/A	N/A	9,800	6.3
Corporate Bonds	5,210	6.4	9,824	6.4
Mortgages	1,506	1.8	890	0.8
Money Market	3,374	4.1	8,551	5.5
Equity Real Estate	2,492	3.1	6,753	4.4
Domestic Equities	38,787	47.61	65,297	42.2
International Equities	7,542	9.2	24,822	16.1
Absolute Return Strategy	--	--	4,613	3.0
Private Equity Investments	2,123	2.6	10,113	6.5
<b>TOTAL</b>	<b>\$81,641</b>	<b>100.0</b>	<b>\$154,575</b>	<b>100.0</b>

**Table II** shows the rate of return by investment over the last ten years. The total return on fixed income investments has generally been declining. Common stocks are more volatile than bonds and mortgages. The yield shown for non-fixed income investments fluctuates much more as a result of changes in market values.

<b>Table II</b>				
<b>Retirement System's Rate of Investment Return</b>				
<b>By Type of Asset</b>				
<b>Type of Asset</b>	<b>1998</b>	<b>2001</b>	<b>2004</b>	<b>2007</b>
Government Bonds	8.2%	8.3%	8.6%	5.4%
Corporate Bonds	8.2	7.3	6.2	5.7
Mortgages	8.3	7.9	6.2	8.3
Money Market	5.9	5.8	1.8	5.5
Domestic Equities*	14.7	-26.2	57.7	10.6
International Investments*	18.9	77.5	26.0	19.8
Equity Real Estate	47.2	-18.9	39.1	31.7
Private Equity Investments	42.0	-5.2	21.1	28.7
Absolute Return Strategy	--	--	--	9.8
*Time-weighted rate				

**Table III** contains general historical market segment returns for equities and fixed income. The equity returns were compiled from the Ibbotson/Sinquefeld Monthly Returns. The fixed income information was obtained from the Leuthold Group.

<b>Table III</b>		
<b>General Historical Returns</b>		
<b>Calendar Years</b>	<b>Equities</b>	<b>Fixed Income</b>
1926-29	19.19%	4.31%
1930-39	-0.05	3.62
1940-49	9.17	2.62
1950-59	19.35	3.55
1960-69	7.81	5.43
1970-79	5.86	8.70
1980-89	17.55	11.70
1990-99	18.26	7.99
2000-06	1.14	5.82
Inception (1926-2006)	10.43	6.18

**Table IV** displays the Retirement System's rate of investment earnings on investments that we actuarially smooth (equities, international investments, private equity investments and equity real estate) and amortized cost investments (mortgages and bonds) for each of the last ten years.

<b>Table IV</b>			
<b>Recent Retirement System's Returns</b>			
Fiscal Year Ending 3/31	Assets to be Smoothed	Amortized Cost Investments	Total Portfolio
1998	40.8	8.2	30.4
1999	10.5	9.0	10.0
2000	26.9	7.6	21.5
2001	-21.1	7.9	-11.6
2002	0.4	9.5	3.3
2003	-19.3	7.7	-10.1
2004	40.4	7.7	28.5
2005	10.9	5.9	9.2
2006	19.3	6.0	15.9
2007	15.5	5.5	12.8
*The 2007 time-weighted rate of return on a market basis was 12.6%			

The rate of return on fixed income investments generally exhibits a declining pattern. We expect this rate of return to continue to decline based on our current holdings. The long term Treasury Bonds are slightly above 5%, so with additional purchases of fixed income investments, the fixed portfolio's rate of return should not increase.

Assuming that the current asset allocation strategy is approximately 70% non-fixed and 30% fixed income investments, we recommend continuation of the 8% actuarial rate of return for the April 1, 2007 valuation. We also recommend that we continue phasing in our five year smoothing method for our non-fixed income assets (in 2004 we did a restart) and retain amortized cost value for fixed income assets.

**PART III**

**SALARY ASSUMPTIONS**

The current components of our salary scale assumptions are as follows:

	<b>ERS</b>	<b>PFRS</b>
Inflation (CPI)	3.0%	3.0%
Productivity and Merit (approx)	2.4	3.7
<b>TOTAL</b>	<b>5.4%</b>	<b>6.7%</b>

The salary scale tables vary by age and result in an expected one-year increase on our population of 5.4% for ERS and 6.7% for PFRS.

Selected values showing the expected one year increase at various ages:

<b>AGE</b>	<b>ERS</b>	<b>PFRS</b>
25	9.24%	16.25%
30	7.76	9.99
35	6.62	6.89
40	5.87	5.90
45	5.40	5.76
50	5.01	5.81
55	4.75	6.09
60	4.59	6.87

Since inflation has the same effect on all public employees, the same inflation factor should be used for the ERS and PFRS salary scales. Recent national experience is detailed in Table V.

<b>TABLE V</b>			
<b>Comparison of Annual Rates of Increase of Average Consumer Price Index and Calendar Year Wages</b>			
<b>Year</b>	<b>(1) CPI (U.S. City Average)</b>	<b>(2) Wages</b>	<b>(3) Column (2) Minus Column (1)</b>
1971	4.30%	5.02%	0.72%
1972	3.30	9.80	6.50
1973	6.23	6.26	0.03
1974	10.97	5.94	(-) 5.03
1975	9.14	7.47	(-) 1.67
1976	5.77	6.90	1.13
1977	6.45	5.99	(-) 0.46
1978	7.66	7.94	0.28
1979	11.26	8.75	(-) 2.51
1980	13.52	9.01	(-) 4.51
1981	10.37	10.07	(-) 0.30
1982	6.13	5.51	(-) 0.62
1983	3.22	4.87	1.65
1984	4.26	5.88	1.62
1985	3.57	1.04	(-) 2.53
1986	1.92	2.97	1.05
1987	3.65	6.38	2.73
1988	4.08	4.93	0.85
1989	4.80	3.96	(-) 0.84
1990	5.39	4.62	(-) 0.77
1991	4.27	3.73	(-) 0.54
1992	3.01	5.15	2.14
1993	2.95	0.86	(-) 2.09
1994	2.56	2.68	0.12
1995	2.83	4.01	1.18
1996	2.95	4.89	1.94
1997	2.29	5.84	3.55
1998	1.56	5.23	3.67
1999	2.21	5.57	3.49
2000	3.36	5.53	2.17
2001	2.85	2.39	(-) 0.46
2002	1.58	1.01	(-) 0.57
2003	2.28	2.45	0.17
2004	2.66	4.65	1.99
2005	3.39	3.66	0.27
2006	3.23	4.10*	0.87
Wages shown are the calendar year average wages used in the Social Security calculations.			
*Estimated			

Inflation (as represented by the Consumer Price Index) has ranged from 1.4% to more than 10%. However, inflation over the past 10 years has averaged 2.5%.

A general economic theory states that the excess of the increase in total wages (excluding merit increases) over the increase in inflation is an indication of the increase in productivity. Although the above table shows that, nationally, inflation often has been greater than general wage increases, long-term experience and the System's own experience suggest that wage increases will exceed inflation.

The following chart shows: (1) actual average salary increase percentages for full-time members, including merit and productivity increases (2) the increase in the consumer price index and (3) the automatic COLA increases.

<b>Fiscal Year Annual Salary Increases Compared to CPI</b>				
<b>Fiscal Year Ending 3/31</b>	<b>Salary Increases</b>		<b>CPI</b>	<b>COLA</b>
	<b>ERS</b>	<b>PFRS</b>		
1981	8.1%	7.7%	10.6%	
1982	13.0	12.0	6.8	
1983	12.2	9.6	3.6	
1984	9.1	9.7	4.7	
1985	9.9	9.7	3.7	
1986	8.2	8.5	2.3	
1987	8.5	8.4	3.0	
1988	10.2 *	9.2	3.9	
1989	5.8	9.8	4.9	
1990	8.3	8.1	5.3	
1991	7.3	10.8	4.9	
1992	2.9	4.3	3.2	
1993	4.6	5.7	3.1	
1994	6.1	9.5	2.6	
1995	4.9	5.4	2.9	
1996	3.0	5.1	2.8	
1997	3.5	4.7	2.8	
1998	4.5	8.5	1.4	
1999	6.0*	8.8	1.7	
2000	3.8	4.4	3.7	
2001	7.5	4.5	3.0	1.5
2002	4.3	14.9	1.5	1.0
2003	5.4	1.6	3.0	1.6
2004	3.7	8.3	1.7	1.0
2005	4.8	4.9	3.2	1.6
2006	4.8	9.3	3.4	1.7
2007	6.1	5.8	2.8	1.4

NOTE: The CPI in the above chart is by fiscal year, while the CPI in Table V is by average calendar year.  
\*This includes an extra payroll (27th) for most State employees.



Since the State is such a large employer in the ERS (more than 40% of salaries), a further breakdown of negotiated salary increases for its two largest unions is as follows:

<b>Negotiated Salary Increases for State Union Employees</b>		
<b>Fiscal Year Ending 3/31</b>	<b>CSEA</b>	<b>PEF</b>
1972	6.0%	6.0%
1973	4.0	4.0
1974	6.5	6.5
1975	5.5	5.5
1976	0.0	0.0
1977	0.0	0.0
1978	5.0 + 4.0 (9.2%)	5.0 + 4.0 (9.2%)
1979	5.0	5.0
1980	7.0	7.0
1981	7.0	7.0
1982	6.4	7.0
1983	9.0	9.0
1984	5.0 + 4.76 (10%)	8.0
1985	5.0 + 4.76 (10%)	8.0
1986	5.0	5.0
1987	5.5	5.0
1988	6.0	5.0
1989	5.0	5.0
1990	5.0	5.0
1991	5.5	5.5
1992	0.0	0.0
1993	0.0	0.0
1994	4.0	4.0
1995	4.0 + 1.25	4.0 + 1.25
1996	0.0	0.0
1997	\$550 bonus	\$550 bonus
1998	\$700 bonus, 3.5%	\$700 bonus, 3.5%
1999	3.5	3.5
2000	\$500 bonus, 3.0%	\$500 bonus, 3.0%
2001	3.0	3.0
2002	3.5	3.5
2003	3.5	3.5
2004	--	--
2005	\$800 bonus, 2.5%	\$800 bonus, 2.5%
2006	2.75	2.75
2007	3.0	3.0
2008	\$800	\$800

In addition to negotiated raises, there are other payments which increase salary. These include awards, longevity payments, evaluation increases and promotions.

Actual average individual salary increases for the ERS and the PFRS (State and Local) have been as follows:

<b>Average Annual Salary Increase Compared to CPI</b>			
<b>Year</b>	<b>ERS</b>	<b>PFRS</b>	<b>CPI</b>
4/1/71 - 3/31/76	8.3%	10.7%	6.9%
4/1/76 - 3/31/81	7.3	8.7	9.6
4/1/81 - 3/31/86	10.2	9.8	4.2
4/1/86 - 3/31/91	8.0	9.3	4.4
4/1/91 - 3/31/96	4.3	6.0	2.9
4/1/96 - 3/31/01	5.0	6.2	2.5
4/1/01 - 3/31/06	4.6	7.8	2.6
4/1/06 - 3/31/07	6.1	5.8	2.8

Reviewing the above information, I recommend maintaining the salary scale from tables by age for an overall increase of 5.4% for ERS and 6.7% for PFRS.

**PART IV  
DEMOGRAPHIC ASSUMPTIONS**

Summary of the 2006- 2007 One Year Experience Studies - ERS:

	FYE 07	FYE 06
Accidental Death	0.105	0.530
Ordinary Death	0.839	0.877
Withdrawal: 0-1 Yr	0.962	0.993
Withdrawal: 1-2 Yrs	1.041	1.050
Withdrawal: 2-3 Yrs	0.991	1.148
Withdrawal: 3-4	1.153	1.203
Withdrawal: 4 -<5 Yrs	1.147	1.015
Withdrawal: 5 -<10 Yrs	0.905	0.903
Withdrawal: 10+ Yrs	0.987	0.928
Tier 1,2 Ordinary Disability	0.819	0.864
Tier 3,4 Ordinary Disability	0.979	1.070
Tier 1,2 Accidental Disability	0.504	1.445
Tier 3,4 Accidental Disability	0.906	1.587
Tier 1 Regular Retirement	1.016	0.963
Tier 2,3,4 Regular Retirement	0.894	0.893
Aggregate Service	1.098	1.165
Aggregate Disability	1.119	1.116
Male Beneficiaries	0.954	0.963
Female Beneficiaries	1.112	1.176

Summary of the 2006 -2007 One Year Experience Studies – Police and Fire

	FYE 07	FYE 06
Accidental Death	1.618	0.813
Ordinary Death	0.609	0.988
Withdrawal:	0.908	0.812
Ordinary Disability	0.997	0.774
Perf of Duty Disability	1.019	0.913
Accidental Disability	0.981	1.232
Service Retirement		
20 Yr Tier 1	0.732	0.716
20 Yr Tier 2	1.166	1.335
384e Tier 1 (add'l 60ths)	1.730	0.734
384e Tier 2 (add'l 60ths)	1.147	1.143
State Police Tier 1	0.655	1.312
State Police Tier 2	0.630	0.797
Police/Fire Service	1.074	1.182
Police/Fire Disability	0.787	1.200

New demographic tables were adopted two years ago which utilized our experience from FYE 2001-2005. We did make several adjustments to the experience at that time. The adjustments were:

- 1 Reduced the accidental death rates
2. Anticipated smaller improvements in PFRS disability retiree mortality
- 3 Anticipated fewer retirements in the 20 year retirement rates.

The anticipated reduction in the local 20 year plans retirement rates has not materialized. Therefore I suggest that we change the local 20 year retirement rates to reproduce the full experience of 2001-2005.

I recommend that we continue to use the remaining demographic tables.

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