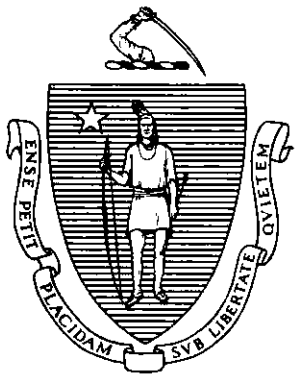
Commonwealth of Massachusetts

Division of Public Employee Retirement Administration



INVESTMENT REPORT

MASSACHUSETTS CONTRIBUTORY RETIREMENT SYSTEMS FOR PUBLIC EMPLOYEES

DECEMBER 31, 1988

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Secretary of Administration
and Finance

JOHN J. McGLYNN
Commissioner
Public Employee Retirement Administration

MASSACHUSETTS CONTRIBUTORY RETIREMENT SYSTEMS FOR PUBLIC EMPLOYEES

INVESTMENT REPORT

December 31, 1984 through December 31, 1988

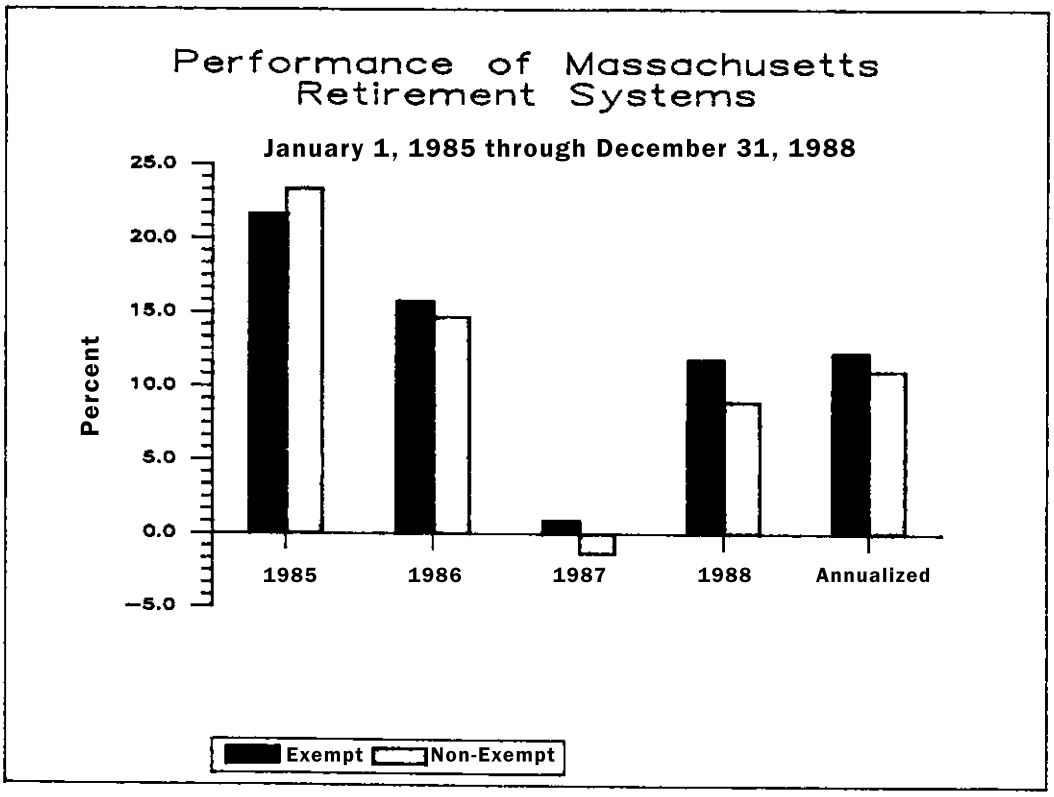
This investment report provides board members, employees, retirees, taxpayers and other interested parties a review of the investment performance of the Massachusetts Contributory Retirement Systems for 1988. PERA has now analyzed the investment performance of the systems over a four-year period, 1985, 1986, 1987 and 1988. Consequently, performance results now exist for a significant period of time and valid judgements can be made regarding the relative performance of the boards. Although this period has been generally marked by positive financial markets, the stock market fall in the fourth quarter of 1987 severely tested board members as well as money managers. The 1988 investment performance indicates that in general the Massachusetts Retirement Systems have recovered from the fourth quarter of 1987 and are well positioned for the future.

Since 1983 when greater investment flexibility was established for Massachusetts Retirement Boards, investment performance has improved and asset growth accelerated. Total market value for Massachusetts systems on 12/31/83 was $4.6 billion. By 12/31/88 that value had increased by more than 113% to $9.8 billion. Although a number of factors, including increased employee and employer contributions, assisted in this growth, progress would not have been possible without prudent management of assets and diversification of investments. The professional investment of retirement system assets, resulting from the retention of money managers, has been the most significant development in the investment of public pension money in Massachusetts. In last year's report, PERA noted a trend indicating that the investment return of systems with money managers was in general higher than systems which invested according to the legal list. In 1988 this trend continued as managed systems returned 11.76% and legal list systems returned 8.95%, a difference of 281 basis points. It should come as no surprise that as of 12/31/88 more than $9.2 billion of the $9.8 billion in total assets were invested according to the prudent person standard, and today 96 of the 106 systems have investment managers.

Due to this change in management practices, the responsibilities of the board members have changed. However, at all times, the duty to act in a prudent manner, solely for the benefit of employees, retirees and beneficiaries, remains constant. The fiduciary duty imposed by Chapter 32 must be met in the hiring, monitoring and retention of investment managers. The highest standards of prudence must be observed in the selection, oversight and removal of investment managers. The same high standards must be met regarding

the involvement of the board with other parties as well, including consultants and brokers. The courts in applying ERISA have found standards of prudence violated as a result of negligence in monitoring a manager's performance, as a result of failure to independently investigate a manager's qualifications, and also failure to terminate a manager when it is clear such action is warranted [Whitfield v. Cohen, 9 EBC 1739 (S.D.N.Y. 1988)]. Clearly the duty of the board does not diminish when an investment manager is hired. The board must play an active role in overseeing the manager and in the establishment of investment guidelines and objectives. The board must also monitor the manager's compliance with contractual guidelines and act when the manager deviates from those guidelines.

The relationship of a retirement board to money manager is that of client to professional. Although the goal of each is similar with respect to the investment performance of the fund, the interests of the two parties are not shared interests. Often the client must distinguish between the reality of portfolio performance and the illusion created by managers, consultants, brokers and other service providers. The board is responsible to members of the retirement system; therefore, managers, consultants, and brokers can never fully share in that responsibility. In short, a healthy skepticism will contribute more to the effective oversight of the portfolio than any other single factor.



In 1988 the Massachusetts Contributory Retirement Systems achieved a rate of return of 11.52%. On an annualized basis the return for the 1985-1988 period was 12.28%, 428 basis points above the 8% investment rate of return used in recent actuarial valuations of the systems. In fact 102 of the 106 systems achieved a rate of return in excess of 8% for that period resulting in an actuarial gain. Finally, during 1988 a composite index of the S&P 500, Shearson-Lehman Government Corporate and T-bills, weighted in the same manner as the allocation of the Massachusetts retirement systems returned 11.33%.

The remainder of this report sets forth the performance figures and comparative statistics for the 106 Massachusetts Contributory Retirement Systems and the Pension Reserve Investment Trust Fund. PERA would like to thank the members and employees of the Massachusetts Contributory Retirement Boards as well as the investment managers and custodian banks employed by the boards for their cooperation in providing PERA with the information needed to publish this report. We look forward to the continued assistance of the boards and their staff in the development and dissemination of important investment information.

The Division of Public Employee Retirement Administration
Pension Investment Advisory Unit

Massachusetts Contributory Retirement Systems for Public Employees

Investment Report

1985-1988

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MASSACHUSETTS CONTRIBUTORY RETIREMENT SYSTEMS
FOR PUBLIC EMPLOYEES

	1988 RETURN	RANK		1985-1988 ANNUALIZED RETURN	RANK
SWAMPSCOTT	14.25	1	WEYMOUTH	16.19	1
MARLBOROUGH	14.11	2	WOBURN	14.87	2
MINUTEMAN REG VO	13.87	3	TAUNTON	14.83	3
NEEDHAM	13.83	4	PRIM BOARD	14.59	4
SHREWSBURY	13.81	5	NEEDHAM	14.53	5
MASS HOUSING FIN	13.80	6	NORFOLK CTY	14.47	6
GLOUCESTER	13.68	7	WAKEFIELD	14.47	7
NEWTON	13.60	8	HOLYOKE	14.47	8
MONTAGUE	13.56	9	WELLESLEY	13.85	9
SAUGUS	13.50	10	MASS PORT AUTH	13.81	10
NORTHBRIDGE	13.50	11	HAVERHILL	13.71	11
MILTON	13.49	12	BRAINTREE	13.57	12
PRIM BOARD	13.43	13	SHREWSBURY	13.56	13
NORFOLK CTY	13.42	14	GLOUCESTER	13.48	14
GARDNER	13.41	15	STATE	13.42	15
HAVERHILL	13.40	16	MINUTEMAN REG VO	13.22	16
WAKEFIELD	13.34	17	DEDHAM	13.21	17
WEYMOUTH	13.33	18	MASS TURNPIKE AU	13.14	18
FAIRHAVEN	13.29	19	STATE TEACHERS	13.07	19
HOLYOKE	12.85	20	ANDOVER	12.88	20
EASTHAMPTON	12.83	21	WORCESTER CTY	12.88	21
PEABODY	12.77	22	ESSEX COUNTY	12.84	22
BOSTON	12.73	23	CAMBRIDGE	12.71	23
STATE	12.67	24	MILTON	12.67	24
STATE TEACHERS	12.54	25	PEABODY	12.51	25
WELLESLEY	12.46	26	MIDDLESEX CTY	12.51	26
CHICOPEE	12.42	27	STONEHAM	12.48	27
WATERTOWN	12.25	28	NATICK	12.41	28
WORCESTER	12.22	29	ARLINGTON	12.34	29
DUKES CTY	12.01	30	MELROSE	12.29	30
MALDEN	11.98	31	EASTHAMPTON	12.25	31
ESSEX CTY	11.87	32	PLYMOUTH CTY	12.22	32
READING	11.71	33	BOSTON	12.16	33
LYNN	11.62	34	HINGHAM	12.09	34
HAMPDEN CTY	11.37	35	GARDNER	12.08	35
MASS PORT AUTH	11.34	36	WORCESTER	12.07	36
NORTHAMPTON	11.28	37	PLYMOUTH	12.04	37
NORWOOD	11.22	38	LEXINGTON	12.04	38
MIDDLESEX CTY	11.16	39	FAIRHAVEN	12.00	39
AMESBURY	10.95	40	FALL RIVER	11.86	40
BELMONT	10.95	41	HAMPDEN CTY	11.81	41
NATICK	10.91	42	SWAMPSCOTT	11.71	42

MASSACHUSETTS CONTRIBUTORY RETIREMENT SYSTEMS
FOR PUBLIC EMPLOYEES

	1988 RETURN	RANK		1985-1988 ANNUALIZED RETURN	RANK
HINGHAM	10.89	43	WINCHESTER	11.61	43
SOMERVILLE	10.79	44	NORTHBRIDGE	11.59	44
MASS TURNPIKE AU	10.78	45	WALTHAM	11.56	45
MASS WATER RESOU	10.66	46	ADAMS	11.53	46
BEVERLY	10.64	47	MEDFORD	11.50	47
TAUNTON	10.64	48	BERKSHIRE CTY	11.31	48
WEST SPRINGFIELD	10.63	49	LOWELL	11.26	49
MARBLEHEAD	10.61	50	WATERTOWN	11.22	50
BRAINTREE	10.59	51	MAYNARD	11.21	51
DANVERS	10.57	52	NEWTON	11.21	52
CONCORD	10.48	53	READING	11.14	53
PLYMOUTH CTY	10.46	54	FRAMINGHAM	11.11	54
FITCHBURG	10.40	55	LYNN	11.01	55
MELROSE	10.35	56	NORWOOD	11.00	56
NEWBURYPORT	10.32	57	MARLBOROUGH	11.00	57
ARLINGTON	10.23	58	WESTFIELD	10.94	58
ANDOVER	10.18	59	SALEM	10.92	59
WINTHROP	10.05	60	LEOMINSTER	10.92	60
LEOMINSTER	10.03	61	SOMERVILLE	10.92	61
MEDFORD	10.00	62	CHELSEA	10.90	62
DEDHAM	9.98	63	BROCKTON	10.89	63
BROOKLINE	9.81	64	PITTSFIELD	10.83	64
HULL	9.79	65	SAUGUS	10.80	65
FALMOUTH	9.76	66	SOUTHBRIDGE	10.78	66
WINCHESTER	9.62	67	WEBSTER	10.73	67
NORTH ATTLEBORO	9.60	68	METHUEN	10.69	68
LEXINGTON	9.57	69	EVERETT	10.67	69
FRAMINGHAM	9.55	70	BEVERLY	10.63	70
PITTSFIELD	9.54	71	FALMOUTH	10.56	71
BLUE HILLS REG V	9.51	72	WINTHROP	10.52	72
FRANKLIN COUNTY	9.51	73	CHICOPEE	10.51	73
CHELSEA	9.43	74	ATHOL	10.46	74
NORTH ADAMS	9.31	75	SPRINGFIELD	10.38	75
REVERE	9.26	76	ATTLEBORO	10.35	76
BERKSHIRE CTY	9.17	77	CONCORD	10.30	77
BARNSTABLE CTY	9.14	78	CLINTON	10.29	78
ATHOL	9.00	79	HAMPSHIRE CTY	10.29	79
STONEHAM	8.63	80	MONTAGUE	10.16	80
WORCESTER CTY	8.59	81	DANVERS	10.14	81
WOBURN	8.56	82	BELMONT	9.97	82
SPRINGFIELD	8.54	83	NORTH ATTLEBORO	9.94	83
GREENFIELD	8.34	84	AMESBURY	9.80	84
PLYMOUTH	8.33	85	MALDEN	9.80	85

MASSACHUSETTS CONTRIBUTORY RETIREMENT SYSTEMS
FOR PUBLIC EMPLOYEES

	1988 RETURN	RANK		1985-1988 ANNUALIZED RETURN	RANK
HAMPSHIRE CTY	8.25	86	NORTH ADAMS	9.77	86
METHUEN	8.16	87	DUKES CTY	9.77	87
GREATER LAWRENCE	8.13	88	FITCHBURG	9.74	88
BROCKTON	8.12	89	HULL	9.58	89
WESTFIELD	8.11	90	GREENFIELD	9.58	90
MILFORD	8.05	91	BROOKLINE	9.55	91
NEW BEDFORD	8.04	92	WEST SPRINGFIELD	9.54	92
CAMBRIDGE	7.91	93	BRISTOL CTY	9.46	93
SOUTHBRIDGE	7.82	94	LAWRENCE	9.39	94
CLINTON	7.81	95	BLUE HILLS REG V	9.33	95
MAYNARD	7.72	96	NORTHAMPTON	9.23	96
BRISTOL CTY	7.70	97	NEWBURYPORT	9.22	97
SALEM	7.39	98	BARNSTABLE CTY	8.94	98
LOWELL	7.32	99	MARBLEHEAD	8.92	99
WALTHAM	7.18	100	REVERE	8.85	100
WEBSTER	7.10	101	NEW BEDFORD	8.74	101
ATTLEBORO	6.92	102	FRANKLIN CTY	8.63	102
EVERETT	6.85	103	QUINCY	8.05	103
ADAMS	6.55	104	MASS HOUSING FIN	7.83	104
FALL RIVER	6.41	105	MILFORD	7.60	105
QUINCY	6.36	106	MASS WATER RESOU	7.57	106
LAWRENCE	5.44	107	GREATER LAWRENCE	6.17	107

As of December 4, 1989

79 systems	Are investing pursuant to a "legal list" waiver from PERA.
2 systems	Are investing pursuant to a statutory "legal list" waiver (State Employees' and Teachers' Systems).
15 systems	Are participating in PRIT.
10 systems	Continue investing with the "legal list" standard.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #1

	1985-1988 Annualized		1988		1987		1986		1985	
	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank
ADAMS	11.53	46	6.55	104	5.35	3	9.14	102	26.30	14
AMESBURY	9.80	84	10.95	40	0.23	67	10.19	89	18.62	85
ANDOVER	12.88	20	10.18	59	0.95	62	15.15	36	26.79	13
ARLINGTON	12.34	29	10.23	58	3.11	28	16.64	18	20.13	68
ATHOL	10.46	74	9.00	79	3.72	20	9.82	94	19.90	71
ATTLEBORO	10.35	76	6.92	102	2.48	34	12.91	63	19.87	73
BARNSTABLE COUNTY	8.94	98	9.14	78	-5.48	104	12.69	64	21.15	58
BELMONT	9.97	82	10.95	41	-2.90	94	9.59	97	23.88	27
BERKSHIRE COUNTY	11.31	48	9.17	77	1.83	46	13.25	57	21.92	52
BEVERLY	10.63	70	10.64	47	-0.71	77	12.97	61	20.71	62
BLUE HILLS REG VO	9.33	95	9.51	72	3.09	29	13.35	54	11.67	104
BOSTON	12.16	33	12.73	23	-3.78	97	16.12	24	25.65	17
BRAINTREE	13.57	12	10.59	51	5.18	4	16.41	21	22.88	36
BRISTOL COUNTY	9.46	93	7.70	97	-1.20	82	11.43	79	21.05	59
BROCKTON	10.89	63	8.12	89	1.63	50	12.47	67	22.38	46
BROOKLINE	9.55	91	9.81	64	0.95	60	11.78	76	16.24	97
CAMBRIDGE	12.71	23	7.91	93	-2.86	93	16.69	16	31.96	2
CHELSEA	10.90	62	9.43	74	-1.82	86	13.48	52	24.06	24
CHICOPEE	10.51	73	12.42	27	-0.18	70	10.53	87	20.23	66
CLINTON	10.29	78	7.81	95	-5.31	103	12.45	68	28.89	4
CONCORD	10.30	77	10.48	53	3.68	21	10.67	86	16.77	96
DANVERS	10.14	81	10.57	52	1.70	49	9.84	93	19.13	84
DEDHAM	13.21	17	9.98	63	3.61	22	12.67	65	27.93	8
DUKES COUNTY	9.77	87	12.01	30	-4.55	100	10.68	85	22.68	41
EASTHAMPTON	12.25	31	12.83	21	1.99	42	14.07	46	20.94	60
ESSEX COUNTY	12.84	22	11.87	32	-1.19	81	17.16	12	25.17	19
EVERETT	10.67	69	6.85	103	0.98	58	13.56	50	22.43	45

Massachusetts Contributory Retirement Systems
for Public Employees

Table #1

	1985-1988 Annualized		1988		1987		1986		1985	
	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank
FAIRHAVEN	12.00	39	13.29	19	4.19	14	9.68	95	21.53	55
FALL RIVER	11.86	40	6.41	105	1.94	43	15.35	33	25.14	20
FALMOUTH	10.56	71	9.76	66	2.30	38	12.41	71	18.37	88
FITCHBURG	9.74	88	10.40	55	1.32	54	12.41	70	15.35	99
FRAMINGHAM	11.11	54	9.55	70	2.63	33	13.56	49	19.37	81
FRANKLIN COUNTY	8.63	102	9.51	73	-0.24	71	7.73	105	18.34	89
GARDNER	12.08	35	13.41	15	3.16	26	12.94	62	19.45	80
GLOUCESTER	13.48	14	13.68	7	-0.45	74	16.57	19	25.69	16
GREATER LAWRENCE	6.17	107	8.13	88	1.71	48	7.28	106	7.69	106
GREENFIELD	9.58	90	8.34	84	0.30	66	13.19	58	17.23	93
HAMPDEN COUNTY	11.81	41	11.37	35	2.03	41	13.89	47	20.78	61
HAMPSHIRE COUNTY	10.29	79	8.25	86	4.40	12	11.73	77	17.17	95
HAVERHILL	13.71	11	13.40	16	2.87	31	16.80	14	22.71	40
HINGHAM	12.09	34	10.89	43	0.95	61	15.32	34	22.28	47
HOLYOKE	14.47	8	12.85	20	4.23	13	14.15	45	27.88	9
HULL	9.58	89	9.79	65	0.57	64	11.36	80	17.28	91
LAWRENCE	9.39	94	5.44	107	-2.18	89	12.24	72	23.67	31
LEOMINSTER	10.92	60	10.03	61	2.47	35	12.21	74	19.64	77
LEXINGTON	12.04	38	9.57	69	-0.91	79	15.67	31	25.47	18
LOWELL	11.26	49	7.32	99	3.74	19	14.50	43	20.21	67
LYNN	11.01	55	11.62	34	-1.95	87	12.20	75	23.66	32
MALDEN	9.80	85	11.98	31	-2.94	95	9.38	99	22.27	48
MARBLEHEAD	8.92	99	10.61	50	-3.24	96	7.88	104	21.90	53
MARLBOROUGH	11.00	57	14.11	2	-0.71	76	9.91	90	21.89	54
MASS PORT AUTH	13.81	10	11.34	36	3.93	17	18.68	9	22.18	50
*MASS WATER RESOUC	7.57	106	10.66	46	6.32	1	5.78	107		107
MASS. HOUSING FIN	7.83	104	13.80	6	-0.90	78	9.39	98	9.58	105

* Funds became active in 1986
NOTE: A blank return signifies that the asset class was not active during the period.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #1

	1985-1988 Annualized		1988		1987		1986		1985	
	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank
MASS. TURNPIKE AU	13.14	18	10.78	45	3.15	27	16.90	13	22.68	42
MAYNARD	11.21	51	7.72	96	1.10	56	9.91	91	27.80	10
MEDFORD	11.50	47	10.00	62	1.41	51	15.12	37	20.35	64
MELROSE	12.29	30	10.35	56	2.11	39	16.48	20	21.15	57
METHUEN	10.69	68	8.16	87	1.87	45	13.51	51	20.03	70
MIDDLESEX COUNTY	12.51	26	11.16	39	2.06	40	14.89	39	22.92	35
MILFORD	7.60	105	8.05	91	-4.86	102	8.98	103	19.66	76
MILTON	12.67	24	13.49	12	4.46	9	10.93	82	22.53	43
MINUTEMAN REG VO	13.22	16	13.87	3	4.49	8	22.05	1	13.17	103
MONTAGUE	10.16	80	13.56	9	4.86	5	9.15	101	13.28	102
NATICK	12.41	28	10.91	42	-0.09	69	14.56	42	25.80	15
NEEDHAM	14.53	5	13.83	4	4.67	6	20.76	4	19.58	78
NEW BEDFORD	8.74	101	8.04	92	-6.31	105	13.68	48	21.48	56
NEWBURYPORT	9.22	97	10.32	57	-1.62	84	9.18	100	20.08	69
NEWTON	11.21	52	13.60	8	-3.83	98	14.33	44	22.46	44
NORFOLK COUNTY	14.47	6	13.42	14	4.14	15	17.47	11	23.77	29
NORTH ADAMS	9.77	86	9.31	75	-2.33	90	9.84	92	23.80	28
NORTH ATTLEBORO	9.94	83	9.60	68	0.57	65	12.66	66	17.64	90
NORTHAMPTON	9.23	96	11.28	37	-6.82	106	12.44	69	22.07	51
NORTHBRIDGE	11.59	44	13.50	11	3.78	18	10.34	88	19.33	82
NORWOOD	11.00	56	11.22	38	2.83	32	13.30	56	17.17	94
PEABODY	12.51	25	12.77	22	-0.41	73	15.77	29	23.23	34
PITTSFIELD	10.83	64	9.54	71	-1.81	85	13.05	60	24.07	23
PLYMOUTH	12.04	37	8.33	85	-2.04	88	15.73	30	28.32	5
PLYMOUTH COUNTY	12.22	32	10.46	54	-1.30	83	16.71	15	24.66	21
PRIM BOARD	14.59	4	13.43	13	3.25	24	19.94	7	22.76	38
QUINCY	8.05	103	6.36	106	-4.66	101	13.30	55	18.62	86

Massachusetts Contributory Retirement Systems
for Public Employees

Table #1

	1985-1988 Annualized		1988		1987		1986		1985	
	Return	Rank	Return	Rank	Return	Rank	Return	Rank	Return	Rank
READING	11.14	53	11.71	33	-2.77	91	10.73	84	26.85	12
REVERE	8.85	100	9.26	76	2.40	36	9.66	96	14.44	101
SALEM	10.92	59	7.39	98	2.99	30	14.57	41	19.46	79
SAUGUS	10.80	65	13.50	10	3.98	16	11.50	78	14.53	100
SHREWSBURY	13.56	13	13.81	5	4.42	11	19.33	8	17.28	92
SOMERVILLE	10.92	61	10.79	44	-7.08	107	13.14	59	29.94	3
SOUTHBRIDGE	10.78	66	7.82	94	-2.85	92	16.06	25	23.91	26
SPRINGFIELD	10.38	75	8.54	83	-1.18	80	14.91	38	20.45	63
STATE	13.42	15	12.67	24	1.89	44	16.17	23	24.10	22
STATE TEACHERS	13.07	19	12.54	25	0.96	59	16.03	27	24.01	25
STONEHAM	12.48	27	8.63	80	2.37	37	16.38	22	23.69	30
SWAMPSCOTT	11.71	42	14.25	1	-3.90	99	10.87	83	27.94	7
TAUNTON	14.83	3	10.64	48	6.06	2	20.07	5	23.41	33
WAKEFIELD	14.47	7	13.34	17	4.43	10	21.13	3	19.76	74
WALTHAM	11.56	45	7.18	100	1.40	52	16.65	17	22.20	49
WATERTOWN	11.22	50	12.25	28	1.29	55	12.23	73	19.89	72
WEBSTER	10.73	67	7.10	101	3.36	23	13.46	53	19.71	75
WELLESLEY	13.85	9	12.46	26	3.23	25	17.91	10	22.73	39
WEST SPRINGFIELD	9.54	92	10.63	49	1.07	57	11.20	81	15.79	98
WESTFIELD	10.94	58	8.11	90	0.77	63	15.59	32	20.29	65
WEYMOUTH	16.19	1	13.33	18	4.53	7	20.02	6	28.19	6
WINCHESTER	11.61	43	9.62	67	0.01	68	15.27	35	22.77	37
WINTHROP	10.52	72	10.05	60	-0.24	72	14.67	40	18.51	87
WOBURN	14.87	2	8.56	82	-0.50	75	21.69	2	32.44	1
WORCESTER	12.07	36	12.22	29	1.78	47	15.81	28	19.25	83
WORCESTER COUNTY	12.88	21	8.59	81	1.40	53	16.05	26	27.06	11

Massachusetts Contributory Retirement Systems for Public Employees

Table #1 Discussion

Table #1 indicates:

the 1985-1988 annualized rate of return of each system and the system's ranking;

the 1988 rate of return of each system and the system's ranking;

the 1987 rate of return of each system and the system's ranking;

the 1986 rate of return of each system and the system's ranking; and

the 1985 rate of return of each system and the system's ranking.

Performance is evaluated by the Division of Public Employee Retirement Administration in accordance with Bank Administration Institute Standards which are those generally accepted in the investment community. Rates of returns include interest and dividends and the increase or decrease in the market value of securities. Performance has been calculated quarterly on a fully accrued basis and all returns are time-weighted. Returns indicated in this report may differ from previous PERA reports due to a more accurate treatment of quarterly returns. Such disparities are measured in tenths, hundredths, and thousandths, and may impact on a system's ranking reported in prior years. This is the first year returns are recorded on a fully accrued basis. This is also the first year that short term returns exclude uninvested assets which are reflected in total return figures.

PERA's staff reviews the accounting records of the retirement systems and enters information regarding purchases, sales, interest, dividends, receipts and disbursements into a computer using software designed to track this information. The retirement systems have had the opportunity to audit this information. PERA's report reflects all the information forwarded to this Division by November 6, 1989.

This table lists the performance for the 106 contributory retirement systems as well as the Pension Reserve Investment Trust Fund, a state sponsored pool retirement systems may elect to join. The Massachusetts Water Resources Authority Retirement System was not in existence on January 1, 1985, and 1985 investment performance is not included in this report. Annualized performance data for this system is for the three year period beginning January 1, 1986. Systems participating in the PRIT Fund receive an additional dividend for their investment pursuant to Chapter 32, s. 22B of the General Laws. This state appropriation was not considered an additional dividend for the PRIT Fund.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #2

	1985-1988 Cumulative Return	Rank	1984 Market Value	1984 Rank	1988 Market Value	1988 Rank	Date of Waiver/ PRIT	Investment Manager(s)
Adams	54.73	46	1,969,727.16	100	4,276,481.94	95	5/89	E.R. Taylor Inv.
Amesbury	45.37	84	3,432,515.72	90	7,157,285.61	87	4/85	Richard Morse
Andover	62.38	20	5,941,113.50	74	12,767,385.52	67	8/89	Hawthorne Associates
Arlington	59.27	29	19,456,532.20	29	34,204,637.75	29	3/85	Constitution Capital Mgmt.
Athol	48.86	74	1,853,579.49	101	3,268,411.94	101	6/85	+ Multiple Advisors
Attleboro	48.29	76	6,823,593.49	68	12,327,583.55	68	4/85	+ Multiple Advisors
Barnstable County	40.83	98	29,637,193.64	16	51,584,465.05	18	7/89	+ Multiple Advisors
Belmont	46.27	82	10,321,135.85	49	15,893,775.69	58	3/85	+ Oppenheimer Capital
Berkshire County	53.49	48	8,574,229.64	57	16,072,172.28	57		+
Beverly	49.80	70	10,115,394.69	50	17,564,625.73	54	8/89	+ Multiple Advisors
Blue Hills Reg Vo	42.90	95	1,277,505.58	104	2,223,947.93	105	4/85	David L. Babson
Boston	58.26	33	423,744,021.00	4	755,968,722.26	4	2/85	+ Multiple Advisors
Braintree	66.38	12	10,754,755.15	47	26,972,467.08	36	4/85	+ 1838 Investment Advisors
Bristol County	43.54	93	27,984,757.37	17	47,581,325.41	20	3/85	+ Multiple Advisors
Brockton	51.23	63	31,391,928.11	15	55,887,124.40	15	3/85	+ Multiple Advisors
Brookline	44.03	91	24,876,676.68	21	38,584,833.48	26	6/86	+ Multiple Advisors
Cambridge	61.39	23	51,938,113.94	8	96,355,509.69	7		+ APT Financial Services
Chelsea	51.25	62	8,373,842.75	59	13,937,588.35	62	8/89	+ BayBank Inc.
Chicopee	49.13	73	19,286,361.03	30	29,195,778.98	31	6/86	+ Multiple Advisors
Clinton	47.97	78	2,497,090.24	95	4,176,813.87	97		+
Concord	48.02	77	6,004,684.39	73	10,042,783.09	74	5/86	+ Multiple Advisors
Danvers	47.13	81	11,457,726.31	44	17,930,263.80	52	4/85	+ Richard Morse
Dedham	64.24	17	5,372,444.97	78	9,608,505.43	77	6/88	+ PRIM Board
Dukes County	45.17	87	2,484,233.89	96	4,192,326.83	96		
Easthampton	58.75	31	2,335,419.30	97	5,039,625.73	92	4/85	Nrthmptn Inst. for Savings
Essex County	62.11	22	23,700,879.31	23	40,370,100.04	23	5/85	+ Freedom Capital Mgmt.
Everett	50.01	69	13,193,788.20	39	18,192,363.30	50	2/85	BayBank Inc.

+ Appendix I contains footnotes to Table #2.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #2

	1985-1988 Cumulative Return	Rank	1984 Market Value	1984 Rank	1988 Market Value	1988 Rank	Date of Waiver/ PRIT	Investment Manager(s)
Fairhaven	57.34	39	2,529,433.64	94	4,344,784.35	93	7/86	PRIM Board
Fall River	56.58	40	25,489,672.52	20	48,622,044.50	19	8/85	BayBank Inc.
Falmouth	49.40	71	4,980,179.81	81	8,698,836.57	82	4/85	State Street Bank
Fitchburg	45.05	88	9,900,061.14	53	19,305,451.36	47	4/85	First Safety Fund Nat'l Bank
Framingham	52.42	54	15,929,241.36	32	28,935,394.96	33		+
Franklin County	39.27	102	5,292,301.98	80	9,550,757.72	78	12/85	+ Freedom Capital Mgmt.
Gardner	57.83	35	4,239,443.26	84	7,528,612.93	85	5/85	+ PRIM Board
Gloucester	65.81	14	7,295,192.12	65	13,842,955.49	63	4/85	Freedom Capital Mgmt.
Greater Lawrence	27.05	106	1,083,680.22	105	1,890,605.66	106	7/86	+ Shawmut/Arlington Trust
Greenfield	44.18	90	3,674,597.60	88	6,556,467.76	90	7/86	+ Multiple Advisors
Hampden County	56.30	41	21,933,175.13	25	39,600,938.00	24	4/85	+ Multiple Advisors
Hampshire County	47.96	79	15,132,784.63	35	24,851,087.37	38	4/85	+ Constitution Capital Mgmt.
Haverhill	67.19	11	13,648,995.52	38	28,799,511.12	34	7/85	+ Multiple Advisors
Hingham	57.85	34	6,198,079.44	72	9,840,011.38	75	12/86	+ Constitution Capital Mgmt.
Holyoke	71.69	8	19,853,191.27	28	36,335,432.40	28	12/85	+ Multiple Advisors
Hull	44.20	89	2,791,757.32	92	4,283,070.18	94	7/85	Fort Hill
Lawrence	43.17	94	17,085,202.61	31	29,195,636.83	32	1/86	Nat'l Investment Services
Leominster	51.36	60	6,764,744.82	69	13,041,127.99	66	4/85	First Safety Fund Nat'l Bank
Lexington	57.58	38	10,026,746.06	52	19,267,489.81	49	1/89	Wellington Mgmt. Co.
Lowell	53.24	49	23,603,104.53	24	39,117,952.06	25	9/89	+ Multiple Advisors
Lynn	51.84	55	25,664,505.38	19	55,241,079.94	16	3/85	de Burlo Group
Malden	45.37	85	14,553,491.13	36	21,909,227.71	45	3/85	de Burlo Group
Marblehead	40.72	99	8,070,072.74	62	10,958,844.36	72	4/85	de Burlo Group
Marlborough	51.78	57	5,875,278.80	76	11,463,234.83	71	6/88	+ Freedom Capital Mgmt.
Mass Port Auth	67.79	10	33,294,770.55	14	63,898,567.08	13	2/85	+ Multiple Advisors
* Mass Water Resouc	24.46	107	35,031.12	107	3,431,237.45	100	2/88	+ Boston Company
Mass. Housing Fin	35.18	104	4,561,699.87	83	8,256,117.57	84	6/87	PRIM Board

* Funds became active in 1986
\+ Appendix I contains footnotes to Table #2.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #2

	1985-1988 Cumulative Return	Rank	1984 Market Value	Rank	1988 Market Value	Rank	Date of Waiver/ PRIT	Investment Manager(s)
Mass. Turnpike Au	63.87	18	24,633,396.36	22	52,943,208.37	17		
Maynard	52.98	51	2,234,567.81	98	3,776,399.84	99		+
Medford	54.55	47	15,232,369.85	34	28,530,438.00	35	3/85	Constitution Capital Mgmt.
Melrose	59.00	30	8,371,546.64	60	14,279,359.43	61	4/85	+ Multiple Advisors
Methuen	50.11	68	6,619,172.74	70	13,660,375.03	64	10/86	+ David L. Babson
Middlesex County	60.22	26	80,487,342.84	5	149,179,436.95	5	3/85	+ Multiple Advisors
Milford	34.05	105	4,647,818.71	82	8,751,079.18	81	1/89	BayBank Inc.
Milton	61.14	24	7,895,116.94	63	14,704,374.71	59	7/86	PRIM Board
Minuteman	64.34	16	540,051.35	106	1,602,946.79	107	7/85	PRIM Board
Montague	47.26	80	1,616,110.52	103	2,665,292.72	104	3/86	+ PRIM Board
Natick	59.69	28	9,612,899.85	55	18,581,354.31	50	3/85	United Investment Council
Needham	72.05	5	10,069,021.25	51	24,826,470.54	40	3/85	+ PRIM Board
New Bedford	39.79	101	26,806,278.26	18	47,198,705.27	21	6/89	+ Multiple Advisors
Newburyport	42.29	97	3,415,248.46	91	6,567,218.82	89	3/85	Richard Morse
Newton	52.97	52	52,627,047.02	7	79,824,823.39	11	3/85	+ Multiple Advisors
Norfolk County	71.72	6	50,989,157.64	9	93,735,173.71	8	11/85	PRIM Board
North Adams	45.18	86	4,002,319.68	87	7,161,193.85	86	3/85	de Burlo Group
North Attleboro	46.07	83	4,177,716.71	85	8,445,786.32	83	2/87	+ Multiple Advisors
Northampton	42.33	96	5,929,407.71	75	8,922,660.23	80	4/85	de Burlo Group
Northbridge	55.09	44	1,708,871.75	102	2,964,953.09	103	4/85	+ PRIM Board
Norwood	51.82	56	12,233,944.40	42	24,841,936.90	39	3/85	+ Multiple Advisors
Peabody	60.23	25	14,172,004.51	37	26,868,501.59	37	7/85	+ Freedom Capital Mgmt.
Pittsfield	50.86	64	15,418,671.05	33	24,593,855.16	41	12/86	+ Freedom Capital Mgmt.
Plymouth	57.59	37	8,543,961.35	58	16,153,793.62	56	2/89	State Street Bank
Plymouth County	58.62	32	43,070,065.00	12	84,984,841.20	9	5/85	+ Multiple Advisors
PRIM Board	72.44	4	494,803,177.00	3	2,403,171,491.23	3	10/84	+ Multiple Advisors
Quincy	36.28	103	37,398,851.20	13	60,635,191.30	14	5/85	+ Multiple Advisors

+ Appendix I contains footnotes to Table #2.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #2

	1985-1988 Cumulative Return	Rank	1984 Market Value	Rank	1988 Market Value	Rank	Date of Waiver/ PRIT	Investment Manager(s)
Reading	52.57	53	7,059,491.49	67	11,852,493.08	70	6/85	+ PRIM Board
Revere	40.41	100	11,134,867.63	45	20,767,992.51	46	5/85	+ Fort Hill
Salem	51.37	59	12,857,686.66	40	24,536,472.63	42	4/85	+ Multiple Advisors
Saugus	50.70	65	5,320,006.55	79	9,787,739.47	76	7/86	PRIM Board
Shrewsbury	66.32	13	5,428,893.85	77	10,590,474.30	73	2/85	+ PRIM Board
Somerville	51.34	61	20,589,396.65	26	40,449,727.23	22		+
Southbridge	50.63	66	2,653,342.30	93	3,958,172.49	98	11/89	Freedom Capital Mgmt.
Springfield	48.46	75	50,698,307.90	10	79,593,942.32	12	5/85	+ BayBank Inc.
State	65.50	15	1,906,229,111.00	2	3,226,581,649.14	1	12/83	+ Multiple Advisors
State Teachers	63.47	19	2,082,212,078.31	1	3,203,117,848.39	2	12/83	+ Multiple Advisors
Stoneham	60.08	27	6,465,637.61	71	12,223,033.53	69	7/85	+ Multiple Advisors
Swampscott	55.73	42	3,662,608.10	89	6,338,547.82	91	3/85	de Burlo Group
Taunton	73.88	3	11,903,763.47	43	23,238,997.54	43	6/85	U.S. Trust Co.
Wakefield	71.70	7	8,292,784.34	61	14,576,453.29	60	7/85	PRIM Board
Waltham	54.91	45	20,551,169.21	27	38,002,021.30	27	2/85	BayBank Inc.
Watertown	52.99	50	10,484,636.54	48	17,701,506.09	53	3/85	+ Multiple Advisors
Webster	50.35	67	2,178,138.15	99	3,041,475.02	102		+
Wellesley	68.00	9	10,902,829.58	46	32,552,944.56	30	2/85	Standish, Ayer & Wood
West Springfield	43.96	92	7,512,204.01	64	9,382,018.02	79	2/86	Shawmut First Bank & Trust
Westfield	51.48	58	9,879,277.44	54	19,279,673.98	48	4/85	+ Multiple Advisors
Weymouth	82.26	1	12,751,171.03	41	21,990,701.24	44	10/84	PRIM Board
Winchester	55.15	43	7,161,297.27	66	13,320,445.01	65	5/86	Tucker Anthony/R.L. Day
Winthrop	49.19	72	4,026,010.81	86	6,738,246.38	88	3/85	Constitution Capital Mgmt.
Woburn	74.09	2	9,066,032.99	56	16,466,296.38	55	3/88	David L. Babson
Worcester	57.74	36	63,278,049.69	6	115,413,846.68	6	5/86	+ Multiple Advisors
Worcester County	62.35	21	45,642,279.60	11	84,358,793.42	10		

+ Appendix I contains footnotes to Table #2.

Massachusetts Contributory Retirement Systems for Public Employees

Table #2 Discussion

Table #2 indicates:

the 1985-1988 cumulative rate of return of each system and the system's ranking (for Massachusetts Water Resources the 1986-1988 cumulative return is indicated);

the December 31, 1984 market value of each system and the system's ranking (for Massachusetts Water Resources Authority, State Employees' and Teachers' the December 31, 1985 market value is indicated);

the December 31, 1988 market value including accrued income of each system and the system's ranking;

the date, if any, that the system was waived from statutory investment restrictions as authorized by Chapter 661 and/or the date the system joined the Pension Reserve Investment Trust Fund; and

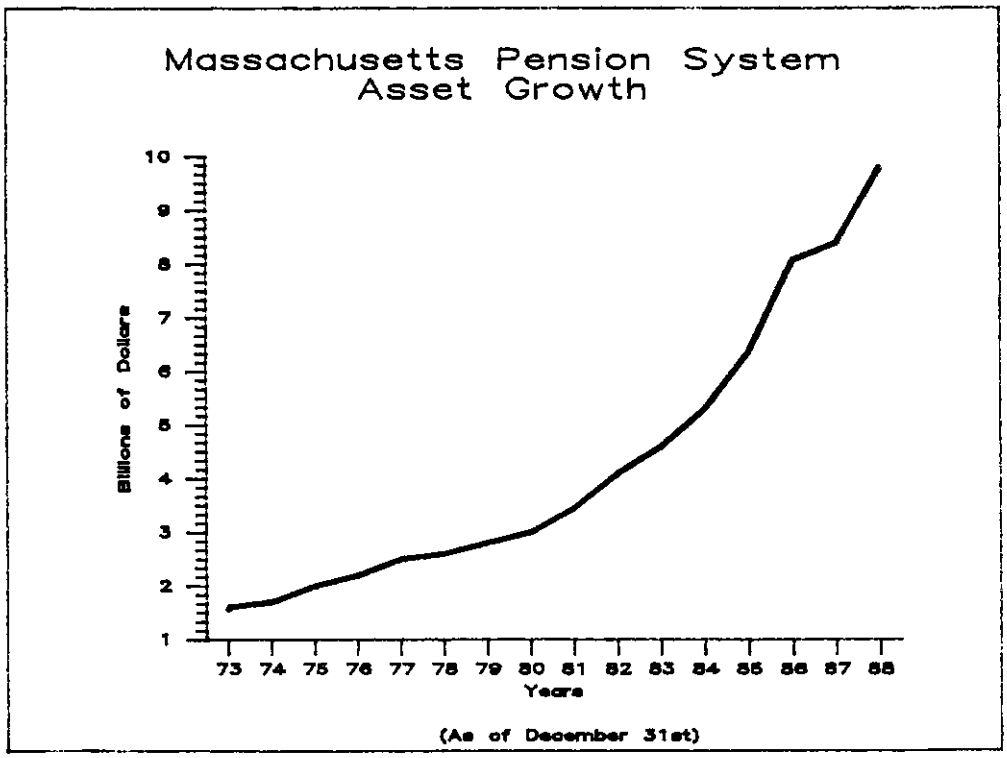
the investment manager(s) listed for each system on the system's annual statement filed with the Division of Public Employee Retirement Administration.

It should be noted that the market value for the PRIT Fund includes the market value of the participating and purchasing systems.

At the end of this report is Appendix 1 which contains footnotes to Table #2.

Asset Growth

The Commonwealth's pension assets continued to grow in 1988, and the rate of asset growth matched the 17% growth nation-wide of public pension assets, totaling more than $9.8 billion on December 31, 1988.



Massachusetts Contributory Retirement Systems
for Public Employees

Table #3

	1988 Equity				1988 Fixed Income				1988 Short Term			
	Return	Rank	Alloc	Rank	Return	Rank	Alloc	Rank	Return	Rank	Alloc	Rank
ADAMS	-3.46	106	12.66	97	7.64	64	50.69	56	8.05	30	34.39	9
AMESBURY	23.26	9	17.79	91	8.00	50	52.93	52	7.03	90	23.92	19
ANDOVER	18.10	31	5.00	107	9.91	9	89.78	1	7.57	60	5.22	88
ARLINGTON	19.23	23	22.21	79	7.06	76	75.29	5	8.60	15	2.48	103
ATHOL	18.95	25	13.48	95	7.30	70	59.26	27	8.36	18	28.56	14
ATTLEBORO	10.07	86	28.90	64	5.37	91	58.53	29	7.21	80	12.57	60
BARNSTABLE COUNTY	10.32	84	49.89	26	9.21	17	0.99	90	7.95	36	47.50	3
BELMONT	15.74	46	33.59	54	6.99	77	53.47	50	8.16	27	11.11	64
BERKSHIRE COUNTY	13.42	70	11.68	98	8.20	46	47.26	62	8.79	10	41.05	6
BEVERLY	11.63	79	47.51	28	10.56	6	34.60	77	7.77	51	17.89	35
BLUE HILLS REG VO	14.74	51	19.53	87	8.58	35	68.02	15	6.31	103	12.37	62
BOSTON	17.93	33	50.76	25	8.77	30	31.61	79	6.67	96	17.78	36
BRAINTREE	24.19	5	11.10	100	8.79	27	46.08	64	7.49	64	42.92	4
BRISTOL COUNTY	3.72	101	38.29	40	8.04	49	41.83	69	7.76	52	19.75	28
BROCKTON	15.80	45	31.02	57	5.95	87	34.61	76	6.59	97	31.35	12
BROOKLINE	14.40	53	28.95	63	8.12	48	57.77	35	7.28	73	14.91	53
CAMBRIDGE	7.10	95	51.22	24	9.48	15	35.99	73	7.19	81	12.79	57
CHELSEA	14.21	56	23.18	78	6.75	82	68.43	14	7.04	88	8.40	73
CHICOPEE	18.69	28	35.84	49	10.18	7	44.76	66	9.48	5	18.70	30
CLINTON	7.09	96	60.45	20	12.46	2	7.61	87	7.89	40	31.94	11
CONCORD	16.19	42	29.40	60	7.92	53	53.99	48	8.37	17	16.59	44
DANVERS	23.42	8	18.18	90	7.49	68	61.62	20	7.28	72	19.79	27
DEDHAM	9.61	87	94.66	9	9.10	20	0.00	103	5.01	106	3.16	98
DUKES COUNTY	13.87	60	51.43	23	8.78	29	31.00	81	8.88	9	17.57	38
EASTHAMPTON	30.23	1	16.63	92	9.18	18	64.99	16	7.57	59	18.39	33
ESSEX COUNTY	18.40	30	34.77	53	9.03	21	48.94	61	7.75	54	16.12	47
EVERETT	8.28	89	28.51	66	5.66	89	61.54	21	8.20	22	9.95	67

Massachusetts Contributory Retirement Systems
for Public Employees

Table #3

	1988 Equity				1988 Fixed Income				1988 Short Term			
	Return	Rank	Alloc	Rank	Return	Rank	Alloc	Rank	Return	Rank	Alloc	Rank
FAIRHAVEN	13.68	67	88.86	16		94	0.00	106	6.26	104	11.14	63
FALL RIVER	8.26	90	22.17	80	5.50	90	60.59	24	7.96	35	17.24	41
FALMOUTH	13.18	73	36.21	48	7.74	59	61.24	22	8.23	21	2.55	100
FITCHBURG	16.99	37	18.47	89	8.70	33	52.78	53	7.76	53	10.69	65
FRAMINGHAM	12.37	78	30.21	58	8.20	45	60.54	25	9.03	7	10.19	66
FRANKLIN COUNTY	10.90	82	20.25	83	8.90	24	69.44	13	7.25	76	5.11	89
GARDNER	13.59	69	87.22	17		95	0.00	97	9.76	4	12.78	58
GLOUCESTER	24.04	6	39.45	35	8.41	39	55.28	43	7.07	83	5.26	86
GREATER LAWRENCE	8.23	92	25.61	74	7.36	69	35.08	75	8.18	24	39.32	7
GREENFIELD	10.59	83	36.98	46	7.10	73	40.46	71	7.74	55	22.70	21
HAMPDEN COUNTY	22.34	11	26.25	72	8.36	41	58.15	31	8.03	31	15.60	50
HAMPSHIRE COUNTY	18.43	29	11.47	99	7.07	75	63.79	18	8.65	13	23.62	20
HAVERHILL	25.04	4	26.40	70	8.83	25	58.09	32	7.15	82	15.51	51
HINGHAM	15.43	48	28.80	65	8.49	36	56.09	42	8.65	14	15.11	52
HOLYOKE	19.87	16	37.89	41	7.97	52	49.58	58	8.33	19	12.53	61
HULL	22.03	12	26.08	73	6.87	78	49.32	59	7.24	77	24.23	18
LAWRENCE	-0.29	104	35.46	50	7.69	60	57.81	34	7.66	58	6.67	80
LEOMINSTER	14.57	52	20.16	84	8.82	26	53.98	49	7.87	43	25.78	16
LEXINGTON	13.02	74	10.86	101	8.78	28	75.02	7	8.37	16	6.76	79
LOWELL	-5.31	107	6.20	104	8.47	37	72.46	8	7.07	84	22.38	22
LYNN	17.15	36	28.36	67	7.80	57	57.33	37	8.71	11	14.63	54
MALDEN	18.02	32	39.68	33	7.08	74	53.43	51	8.16	26	3.35	97
MARBLEHEAD	13.19	72	40.45	31	7.90	54	45.14	65	7.92	38	13.10	56
MARLBOROUGH	19.42	18	34.89	52	7.99	51	57.46	36	6.85	93	3.49	96
MASS PORT AUTH	17.41	34	39.88	32	7.62	65	51.68	55	7.50	63	9.30	69
*MASS WATER RESOUC	19.35	20	37.05	45	4.42	92	34.12	78	7.27	74	27.00	15
MASS. HOUSING FIN	13.77	63	98.64	2		96	0.00	93	7.52	62	1.14	105

* Funds became active in 1986
NOTE: A blank return signifies that the asset class was not active during the period.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #3

	1988 Equity				1988 Fixed Income				1988 Short Term			
	Return	Rank	Alloc	Rank	Return	Rank	Alloc	Rank	Return	Rank	Alloc	Rank
MASS. TURNPIKE AU	25.53	3	5.84	106	9.86	10	78.28	4	7.87	42	15.87	48
MAYNARD	6.94	97	46.26	29	8.74	31	10.67	85	12.18	1	42.52	5
MEDFORD	19.39	19	14.76	93	7.69	61	64.51	17	7.82	47	15.65	49
MELROSE	19.76	17	20.75	82	7.81	56	58.91	28	8.90	8	20.34	25
METHUEN	15.51	47	27.94	68	6.28	84	54.85	44	6.41	102	17.21	42
MIDDLESEX COUNTY	19.18	24	29.13	61	7.82	55	54.69	45	7.56	61	16.18	46
MILFORD	8.24	91	74.01	18	9.67	12	4.93	89	7.68	57	21.07	24
MILTON	13.72	64	96.57	5		97	0.00	98	7.91	39	2.76	99
MINUTEMAN REG VO	13.80	62	100.28	1		98	0.00	100	9.82	3	0.00	107
MONTAGUE	13.90	59	91.79	15		99	0.00	99	7.44	66	8.21	74
NATICK	29.52	2	25.56	75	6.65	83	70.22	12	8.23	20	3.63	95
NEEDHAM	13.91	58	92.70	13		100	0.00	95	10.15	2	7.28	77
NEW BEDFORD	8.43	88	47.70	27	7.25	71	26.94	82	8.14	28	25.36	17
NEWBURYPORT	16.02	43	35.13	51	8.34	42	46.28	63	7.07	85	18.59	31
NEWTON	20.75	14	38.50	39	9.15	19	43.78	67	8.70	12	18.35	34
NORFOLK COUNTY	13.68	68	97.47	4		101	0.00	94	6.46	100	2.53	101
NORTH ADAMS	11.16	81	38.93	38	7.51	66	54.12	47	8.17	25	5.59	84
NORTH ATTLEBORO	14.82	50	39.51	34	6.84	79	57.97	33	7.81	48	2.51	102
NORTHAMPTON	16.36	40	37.34	44	6.80	81	57.05	38	7.85	44	4.63	90
NORTHBRIDGE	13.35	71	98.50	3	11.64	3	0.00	96	7.33	69	1.46	104
NORWOOD	16.48	39	37.35	42	7.74	58	56.66	39	7.94	37	5.53	85
PEABODY	20.69	15	39.04	36	8.94	23	52.49	54	6.51	99	8.47	72
PITTSFIELD	15.88	44	23.79	77	7.20	72	59.76	26	8.19	23	17.24	40
PLYMOUTH	-0.78	105	14.58	94	10.16	8	72.18	9	4.51	107	0.14	106
PLYMOUTH COUNTY	16.84	38	9.39	102	9.77	11	84.63	2	7.34	68	3.64	94
PRIM BOARD	17.32	35	59.48	21	9.58	14	35.59	74	6.23	105	5.65	83
QUINCY	4.56	100	18.76	88	6.20	86	6.31	88	7.04	89	82.74	1

NOTE: A blank return signifies that the asset class was not active during the period.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #3

	1988 Equity				1988 Fixed Income				1988 Short Term			
	Return	Rank	Alloc	Rank	Return	Rank	Alloc	Rank	Return	Rank	Alloc	Rank
READING	19.26	21	92.50	14	1.59	93	0.00	104	6.71	95	7.50	76
REVERE	23.89	7	19.59	86	6.83	80	21.09	84	7.80	50	59.73	2
SALEM	1.86	102	6.04	105	7.51	67	71.48	11	7.88	41	22.34	23
SAUGUS	13.70	66	95.47	6		102	0.00	105	7.30	71	4.53	92
SHREWSBURY	13.97	57	95.41	7		103	0.00	107	9.12	6	4.59	91
SOMERVILLE	11.17	80	71.10	19	13.91	1	10.39	86	7.70	56	18.51	32
SOUTHBRIDGE	1.16	103	12.91	96	8.34	43	54.53	46	7.04	87	32.57	10
SPRINGFIELD	14.36	54	31.07	56	5.88	88	61.74	19	7.23	79	9.19	70
STATE	12.65	75	93.14	12		104	0.00	101	7.80	49	6.86	78
STATE TEACHERS	12.49	76	93.65	10		105	0.00	102	7.83	45	6.35	82
STONEHAM	10.11	85	26.38	71	8.19	47	60.86	23	7.26	75	12.68	59
SWAMPSCOTT	21.42	13	37.35	43	9.00	22	41.97	68	6.42	101	19.35	29
TAUNTON	15.30	49	29.03	62	8.69	34	39.84	72	7.01	91	31.13	13
WAKEFIELD	13.84	61	94.76	8		106	0.00	92	6.52	98	5.24	87
WALTHAM	7.86	93	36.22	47	6.23	85	56.21	40	7.40	67	7.58	75
WATERTOWN	23.19	10	26.56	69	8.42	38	56.09	41	7.82	46	17.26	39
WEBSTER	4.70	98	38.99	37	11.03	5	24.56	83	8.11	29	36.45	8
WELLESLEY	14.27	55	52.24	22	11.10	4	31.51	80	6.96	92	16.28	45
WEST SPRINGFIELD	18.77	27	19.84	85	8.71	32	72.09	10	8.00	33	9.48	68
WESTFIELD	7.71	94	29.70	59	8.22	44	50.23	57	6.71	94	20.23	26
WEYMOUTH	13.71	65	93.51	11		107	0.00	91	7.04	86	6.49	81
WINCHESTER	12.43	77	33.12	55	8.39	40	49.26	60	8.01	32	17.62	37
WINTHROP	18.84	26	24.16	76	7.69	63	58.41	30	7.46	65	17.18	43
WOBURN	19.26	22	8.59	103	7.69	62	81.66	3	7.23	78	9.04	71
WORCESTER	16.35	41	45.43	30	9.28	16	40.56	70	7.31	70	14.18	55
WORCESTER COUNTY	4.63	99	21.19	81	9.66	13	75.08	6	7.97	34	3.72	93

NOTE: A blank return signifies that the asset class was not active during the period.

Massachusetts Contributory Retirement Systems for Public Employees

Table #3 Discussion

Table #3 indicates:

the 1988 equity rate of return of each system and the system's ranking;

the December 31, 1988 equity allocation of each system and the ranking of this allocation;

the 1988 fixed income rate of return of each system and the system's ranking;

the December 31, 1988 fixed income allocation of each system and the ranking of this allocation;

the 1988 short term rate of return of each system and the system's ranking; and

the December 31, 1988 short term allocation of each system (excluding uninvested assets) and the ranking of this allocation.

Retirement systems that continue to invest pursuant to Chapter 32 and statutory restrictions are authorized to invest as follows provided all securities appear on the "legal list":

in fixed income obligations of the U.S Government and its agencies;

up to 20% in fixed income obligations of railroad companies;

up to 35% in fixed income obligations of telephone companies;

up to 50% in fixed income obligations of public service companies;

up to 15% in miscellaneous fixed income obligations;

up to 25% in equities of banks and insurance companies; and

in deposit accounts at Massachusetts chartered and federally chartered institutions.

Retirement systems which have been authorized by PERA to invest without being subject to the "legal list" restrictions invest pursuant to the following guidelines set by PERA:

up to 40% in equity investments:

75% of equity investments must be in companies with $100 million in outstanding equity; not more

than 5% of equity investments may be in any one company; equities must be traded on a U.S. stock exchange or over the counter; turnover of the equity portfolio is limited to 50% per year; real estate investments are included within the 40% committed to equities and may not exceed 5%; and venture capital is included within the 40% committed to equities and is limited to between 3% and 5%

between 40% and 80% allocated to fixed income investments:

fixed income investments must have a minimum quality rating of BAA; 75% of fixed income investments must be rated A or better; no more than 5% may be invested in the fixed income securities of one company; investments shall only be made in issues with an outstanding par of $50 million at the time of purchase; and turnover of fixed income investments is limited to 100%

up to 40% in cash and short term investments:

in money market funds; commercial paper; certificates of deposit; and repurchase agreements.

PERA regulations authorize retirement systems to invest pursuant to supplementary regulations which authorize investments other than those outlined here.

Systems that have joined the PRIT Fund hold shares of the PRIT fund which are considered equities and cash and short term investments authorized under statutory restrictions. To see the performance of each asset class for these systems, see the performance of the PRIT Fund. To see the asset allocation of these systems, see the asset allocation of the PRIT Fund. The State Employees' Retirement System and the Teachers' Retirement System hold shares of the Treasurer's Fixed Income Securities Trust Fund, the Treasurer's Management Trust (an equity fund), and the PRIT Fund which are all considered equities.

In 1988, the standard indices returned the following:

Standard and Poor's 500 stock index returned 16.61%

Keefe, Bruyette & Woods, Inc. bank stock index returned 25.89%

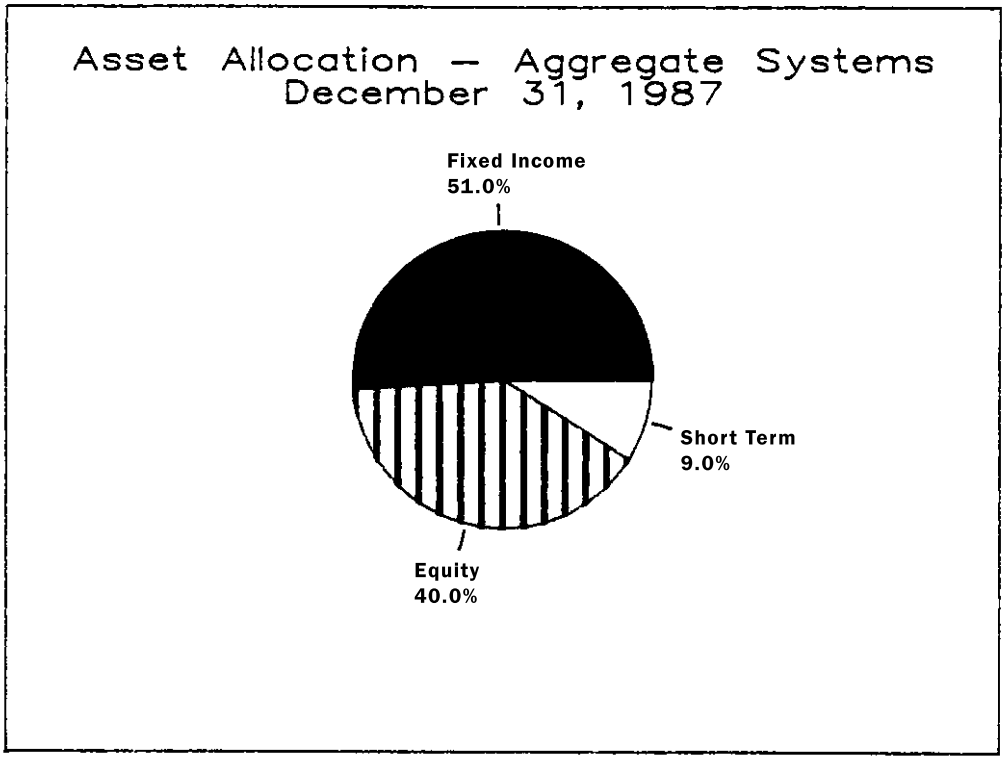
Europe, Australia, Far East index returned 28.30%

Shearson Lehman Government/Corporate bond index returned 7.59%

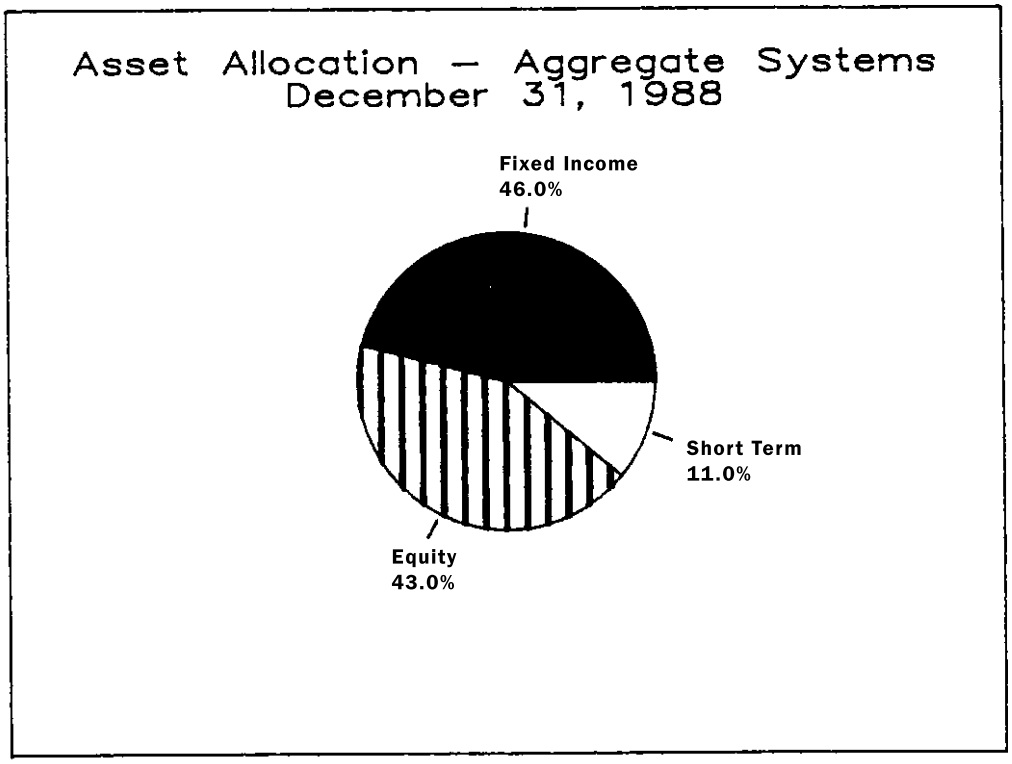
Salomon Brother High-Grade Long-Term bond index returned 10.70%

U.S Treasury bill returned 6.88%

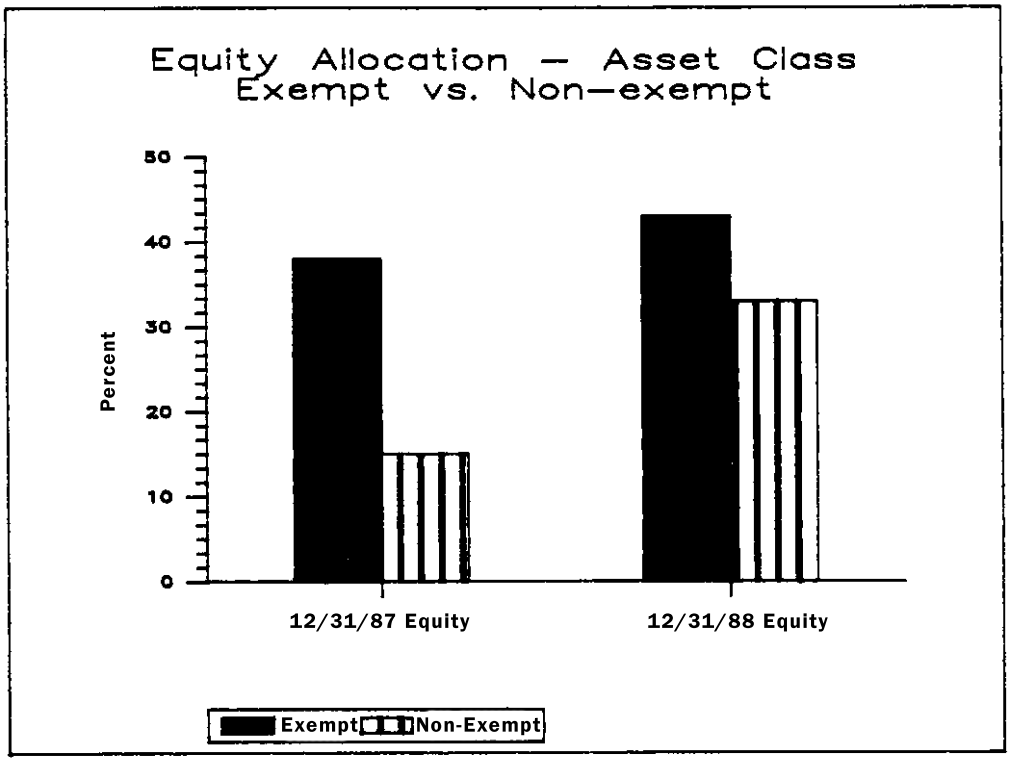
Asset Allocation



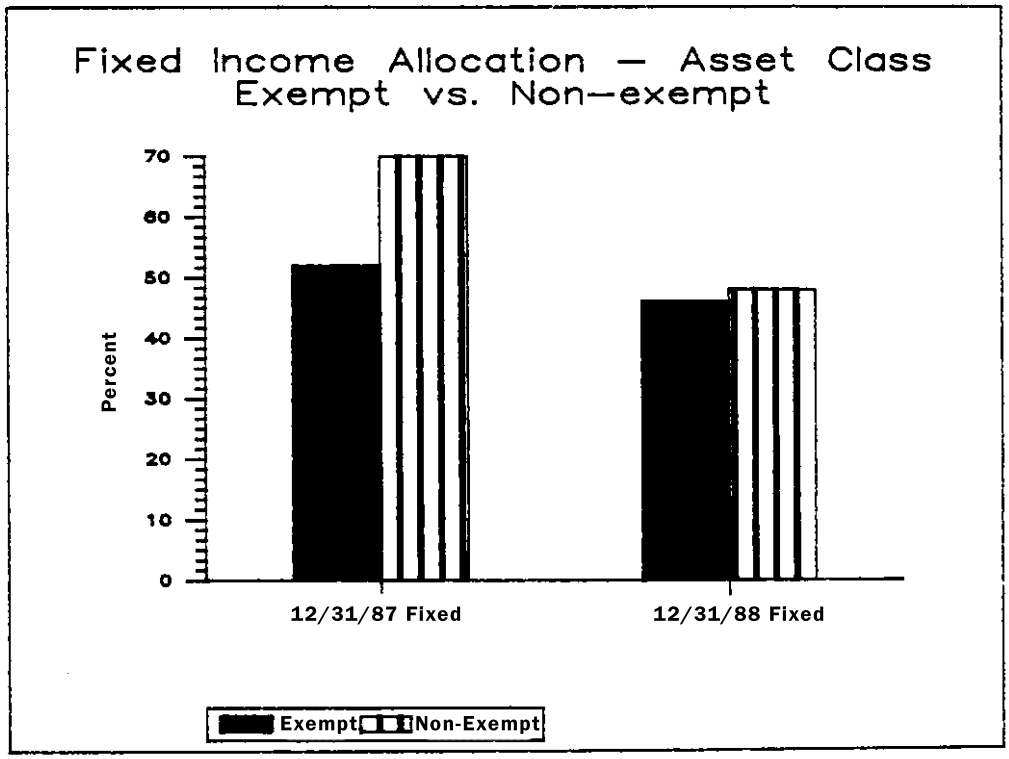
During 1988 the retirement systems increased their allocation to equities and short term instruments and decreased their fixed income allocation. The major shift was a 5% decrease in fixed income allocation, while equity allocation increased 3% and short term allocation increased by 2%.



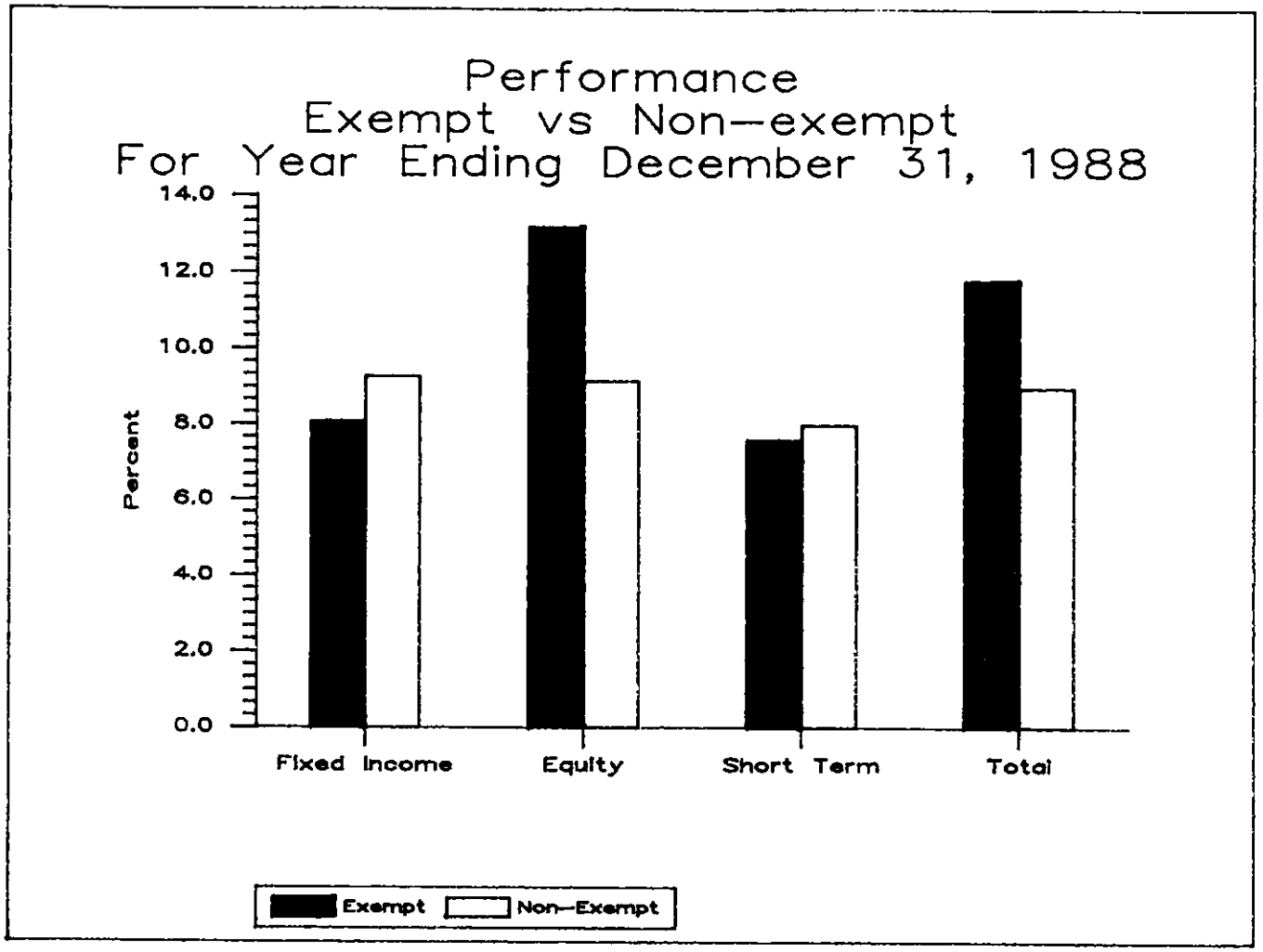
Equity Allocation / Fixed Income Allocation



Both exempt and non-exempt systems increased their equity allocation and decreased their fixed income allocation in 1988, committing more of their assets to equities which have traditionally outperformed other asset classes. This shift was most dramatic in the non-exempt systems, who increased their equity allocation from 15% to 33% and decreased their fixed income allocation from 70% to 48%. Exempt systems continued to commit more assets to equities, increasing their equity allocation from 38% to 43%, and decreasing their fixed income allocation from 52% to 46%.



1988 Performance - Exempt vs. Non-exempt



An analysis of the performance by asset class in 1988 reveals that the non-exempt systems outperformed the exempt systems in fixed income and short term investments, but significantly trailed the exempt systems in equity performance. This increased performance in addition to a larger equity allocation contributed to the exempt systems once again outperforming the non-exempt systems in total return. The exempt systems total return for 1988 of 11.76% outperformed the median state system return of 11%, and was 281 basis points ahead of the non-exempt return of 8.95%.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #4

	1985-1988 Annualized Return	Rank	1985-1988 Equity Annualized Return	Rank	1985-1988 Fixed Income Annualized Return	Rank	1985-1988 Short Term Annualized Return	Rank
ADAMS	11.53	46	1.54	106	13.09	20	6.69	92
AMESBURY	9.80	84	20.06	20	10.82	76	6.56	97
ANDOVER	12.88	20	9.48	96	13.71	14	7.22	75
ARLINGTON	12.34	29	16.30	55	11.37	68	8.07	35
ATHOL	10.46	74	22.37	10	9.73	92	8.15	31
ATTLEBORO	10.35	76	18.16	33	9.66	93	6.85	87
BARNSTABLE COUNTY	8.94	98	10.38	93	7.93	101	8.29	24
BELMONT	9.97	82	10.53	92	11.94	56	8.34	23
BERKSHIRE COUNTY	11.31	48	17.11	46	12.73	30	8.00	37
BEVERLY	10.63	70	15.47	63	12.53	36	7.92	43
BLUE HILLS REG VO	9.33	95	16.17	57	8.41	100	6.60	95
BOSTON	12.16	33	16.70	50	12.32	41	7.72	53
BRAINTREE	13.57	12	19.38	24	12.74	29	7.33	71
BRISTOL COUNTY	9.46	93	10.87	91	10.64	79	8.23	28
BROCKTON	10.89	63	14.42	70	12.00	55	6.38	102
BROOKLINE	9.55	91	28.43	3	10.20	87	7.92	42
CAMBRIDGE	12.71	23	14.31	71	12.54	35	7.12	81
CHELSEA	10.90	62	13.44	74	11.63	62	5.53	105
CHICOPEE	10.51	73	20.54	17	10.57	80	8.95	10
CLINTON	10.29	78	12.76	81	12.07	52	7.14	78
CONCORD	10.30	77	8.12	100	11.45	65	7.02	84
DANVERS	10.14	81	17.91	35	10.31	86	7.40	68
DEDHAM	13.21	17	16.51	51	13.03	23	4.65	106
DUKES COUNTY	9.77	87	13.78	73	9.11	96	9.05	7
EASTHAMPTON	12.25	31	20.58	16	13.14	17	8.85	14
ESSEX COUNTY	12.84	22	21.17	14	12.88	26	8.06	36
EVERETT	10.67	69	16.32	53	10.37	85	8.09	32

Massachusetts Contributory Retirement Systems
for Public Employees

Table #4

	1985-1988 Annualized Return	Rank	1985-1988 Equity Annualized Return	Rank	1985-1988 Fixed Income Annualized Return	Rank	1985-1988 Short Term Annualized Return	Rank
FAIRHAVEN	12.00	39	18.60	31	10.53	81	6.18	104
FALL RIVER	11.86	40	16.13	58	12.25	45	8.91	11
FALMOUTH	10.56	71	6.39	102	11.73	60	7.79	49
FITCHBURG	9.74	88	15.16	67	13.45	15	8.69	16
FRAMINGHAM	11.11	54	19.08	27	11.05	72	8.58	17
FRANKLIN COUNTY	8.63	102	5.88	104	11.23	70	6.70	91
GARDNER	12.08	35	13.13	80	21.83	6	8.88	13
GLOUCESTER	13.48	14	22.72	9	12.18	47	8.39	22
GREATER LAWRENCE	6.17	107	3.90	105	4.66	103	7.26	73
GREENFIELD	9.58	90	11.65	89	10.40	83	7.00	85
HAMPDEN COUNTY	11.81	41	29.76	1	10.53	82	7.84	47
HAMPSHIRE COUNTY	10.29	79	27.01	5	10.74	78	8.19	30
HAVERHILL	13.71	11	22.99	7	14.40	12	7.03	83
HINGHAM	12.09	34	18.05	34	12.27	44	7.99	39
HOLYOKE	14.47	8	29.60	2	12.15	50	7.54	59
HULL	9.58	89	15.19	65	12.09	51	8.41	21
LAWRENCE	9.39	94	1.18	107	12.17	48	6.86	86
LEOMINSTER	10.92	60	19.20	26	13.09	21	7.88	44
LEXINGTON	12.04	38	20.09	19	11.94	57	7.87	46
LOWELL	11.26	49	21.18	13	12.31	42	7.18	76
LYNN	11.01	55	12.43	84	12.45	37	8.09	33
MALDEN	9.80	85	11.83	88	12.04	54	7.36	69
MARBLEHEAD	8.92	99	12.74	82	11.00	73	9.57	3
MARLBOROUGH	11.00	57	17.24	43	8.78	97	6.73	90
MASS PORT AUTH	13.81	10	17.40	40	12.76	28	8.08	34
*MASS WATER RESOUC	7.57	106	19.35	25	5.93	102	6.46	99
MASS. HOUSING FIN	7.83	104	9.14	98	12.55	34	7.81	48

* Funds became active in 1986

Massachusetts Contributory Retirement Systems
for Public Employees

Table #4

	1985-1988 Annualized Return	Rank	1985-1988 Equity Annualized Return	Rank	1985-1988 Fixed Income Annualized Return	Rank	1985-1988 Short Term Annualized Return	Rank
MASS. TURNPIKE AU	13.14	18	9.15	97	15.26	10	7.46	66
MAYNARD	11.21	51	14.05	72	10.01	89	8.25	27
MEDFORD	11.50	47	17.39	41	11.38	67	7.74	51
MELROSE	12.29	30	18.30	32	12.43	39	8.28	25
METHUEN	10.69	68	17.17	44	10.81	77	6.37	103
MIDDLESEX COUNTY	12.51	26	17.11	45	12.39	40	9.32	5
MILFORD	7.60	105	11.17	90	8.59	99	7.53	61
MILTON	12.67	24	28.02	4	21.73	7	6.66	93
MINUTEMAN REG VO	13.22	16	13.27	77		104	7.99	38
MONTAGUE	10.16	80	18.99	30	19.06	8	7.49	63
NATICK	12.41	28	21.77	12	10.99	75	7.44	67
NEEDHAM	14.53	5	17.67	38	37.34	2	8.50	19
NEW BEDFORD	8.74	101	8.52	99	10.08	88	7.58	56
NEWBURYPORT	9.22	97	17.03	47	11.54	63	7.24	74
NEWTON	11.21	52	15.76	62	12.05	53	7.73	52
NORFOLK COUNTY	14.47	6	20.84	15	22.74	5	7.51	62
NORTH ADAMS	9.77	86	12.59	83	12.23	46	9.04	8
NORTH ATTLEBORO	9.94	83	13.28	76	10.00	90	7.57	57
NORTHAMPTON	9.23	96	12.09	86	10.38	84	10.83	1
NORTHBRIDGE	11.59	44	13.38	75	16.75	9	8.21	29
NORWOOD	11.00	56	15.90	61	11.43	66	7.46	65
PEABODY	12.51	25	23.12	6	11.50	64	7.14	79
PITTSFIELD	10.83	64	17.56	39	12.44	38	7.98	40
PLYMOUTH	12.04	37	11.98	87	13.06	22	2.06	107
PLYMOUTH COUNTY	12.22	32	15.97	60	12.62	33	8.47	20
PRIM BOARD	14.59	4	17.31	42	13.29	16	8.88	12
QUINCY	8.05	103	16.07	59	8.71	98	8.27	26

NOTE: A blank return signifies that the asset class was not active during the period.

Massachusetts Contributory Retirement Systems
for Public Employees

Table #4

	1985-1988 Annualized Return	Rank	1985-1988 Equity Annualized Return	Rank	1985-1988 Fixed Income Annualized Return	Rank	1985-1988 Short Term Annualized Return	Rank
READING	11.14	53	13.24	78	12.68	32	8.56	18
REVERE	8.85	100	15.41	64	12.68	31	7.62	55
SALEM	10.92	59	14.80	68	12.97	24	7.48	64
SAUGUS	10.80	65	7.92	101	42.57	1	7.04	82
SHREWSBURY	13.56	13	16.44	52	32.33	4	7.54	60
SOMERVILLE	10.92	61	22.82	8	9.18	95	7.92	41
SOUTHBRIDGE	10.78	66	15.17	66	12.27	43	6.40	101
SPRINGFIELD	10.38	75	19.06	28	11.12	71	6.78	88
STATE	13.42	15	10.11	94		105	6.74	89
STATE TEACHERS	13.07	19	9.67	95		106	6.41	100
STONEHAM	12.48	27	19.05	29	12.87	27	7.35	70
SWAMPSCOTT	11.71	42	16.31	54	11.64	61	9.48	4
TAUNTON	14.83	3	21.95	11	13.10	19	7.57	58
WAKEFIELD	14.47	7	16.97	48	35.53	3	7.66	54
WALTHAM	11.56	45	16.30	56	11.26	69	8.96	9
WATERTOWN	11.22	50	19.57	22	9.64	94	7.13	80
WEBSTER	10.73	67	14.69	69	10.99	74	7.76	50
WELLESLEY	13.85	9	13.20	79	14.37	13	9.82	2
WEST SPRINGFIELD	9.54	92	5.94	103	9.95	91	9.26	6
WESTFIELD	10.94	58	17.90	36	11.86	58	7.16	77
WEYMOUTH	16.19	1	17.75	37		107	6.47	98
WINCHESTER	11.61	43	20.43	18	13.13	18	7.30	72
WINTHROP	10.52	72	12.16	85	11.74	59	6.65	94
WOBURN	14.87	2	19.51	23	14.46	11	6.57	96
WORCESTER	12.07	36	19.60	21	12.17	49	7.88	45
WORCESTER COUNTY	12.88	21	16.84	49	12.93	25	8.77	15

NOTE: A blank return signifies that the asset class was not active during the period.

Massachusetts Contributory Retirement Systems for Public Employees

Table #4 Discussion

Table #4 indicates:

the 1985-1988 annualized rate of return of each system and the system's ranking (for Massachusetts Water Resources Authority the 1986-1988 annualized rate of return is indicated);

the 1985-1988 annualized equity rate of return of each system and the system's ranking (for Massachusetts Water Resources Authority, State Employee's and Teachers' the 1986-1988 annualized equity rate of return is indicated);

the 1985-1988 annualized fixed income rate of return of each system and the system's ranking (for Massachusetts Water Resources Authority the 1986-1988 annualized fixed income rate of return is indicated); and

the 1985-1988 annualized short term rate of return of each system and the system's ranking (for Massachusetts Water Resources Authority, State Employee's and Teachers' the 1986-1988 annualized short term rate of return is indicated).

Systems participating in the PRIT Fund hold shares of the PRIT Fund which are considered equities. To see the performance of each asset class for these systems, see the performance of the PRIT Fund. The performance of these systems prior to joining the PRIT Fund is reflected in this table.

The State Employees' Retirement System and the Teachers' Retirement System held shares of the Treasurer's Fixed Income Securities Trust Fund, the Treasurer's Management Trust (an equity fund), and the PRIT Fund which are all considered equities.

For 1985-1988, the standard indices returned the following:

Standard and Poor's 500 stock index returned 17.59%

Keefe, Bruyette & Woods, Inc. bank stock index returned 13.16%

Europe, Australia, Far East index returned 43.41%

Shearson Lehman Government/Corporate bond index returned 11.47%

Salomon Brother High-Grade Long-Term bond index returned 14.55%

U.S Treasury bill returned 6.69%

Massachusetts Contributory Retirement Systems
for Public Employees

Table #5

Investment Manager	1988 Return	1988 Rank1	1988 Rank2	1985-1988 Annualized Return	1985-1988 Annualized Rank1	1985-1988 Annualized Rank2	Market Value	1988 Rank1	1988 Rank2
PRIT	13.51	1	10	14.28	1	9	$ 217,574,095	1	5
Freedom Capital	12.36	2	28	12.43	2	28	$ 81,081,557	5	11
de Burlo	11.34	3	36	10.27	6	80	$ 126,425,330	3	6
Constitution Capital	10.18	4	59	12.07	3	36	$ 83,752,682	4	11
Alex Brown	9.81	5	64	11.99	4	40	$ 24,382,501	7	43
Fort Hill	8.45	6	84				$ 80,938,187	6	11
BayBank	7.32	7	99	11.52	5	47	$ 196,737,955	2	5

Table #5 Discussion

Table #5 indicates:

the 1988 rate of return for each investment manager, the manager's ranking and the ranking each investment manager would receive if integrated with Table #1; and

the 1985-1988 annualized rate of return for each investment manager, the manager's ranking and the ranking each investment manager would receive if integrated with Table #1 (Fort Hill was not the sole manager to three or more systems prior to 1988, so a 1985-1988 annualized rate of return is not indicated);

the December 31, 1988 market value of each investment manager, the manager's ranking and the ranking each investment manager would receive if integrated with Table #2.

Appendix 2 contains systems included in the performance of each investment manager. Rank1 denotes the ranking among the managers. Rank2 denotes the ranking of the managers in comparison to the retirement systems. Manager performance is included for those managers managing three or more retirement systems.

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Table #6

Investment Manager	Equity Return	Equity Rank1	Equity Rank2	Equity Alloc	Equity Rank1	Equity Rank2	Fixed Income Return	Fixed Income Rank1	Fixed Income Rank2	Fixed Income Alloc	Fixed Income Rank1	Fixed Income Rank2
Alex Brown	10.12	7	85	46.26	2	29	10.54	1	7	29.64	7	82
BayBank	10.79	6	83	29.49	5	60	5.84	6	89	60.17	2	26
Constitution Capital	19.69	2	18	19.58	7	87	7.43	4	69	67.47	1	16
de Burlo	16.51	4	39	33.70	4	54	7.54	3	66	54.15	3	47
Fort Hill	17.44	3	34	27.82	6	69	6.16	5	87	31.93	6	79
Freedom Capital	20.23	1	16	36.98	3	46	8.89	2	25	51.20	4	56
PRIT	13.73	5	64	56.85	1	22				34.01	5	79

Table #6 Discussion

Table #6 indicates:

the 1988 return on the equity portion of the investment manager's portfolio, the manager's ranking and the ranking each investment manager would receive if integrated with Table #3;

the December 31, 1988 percentage of the investment manager's assets invested in equities, the manager's ranking and the ranking each investment manager would receive if integrated with Table #3;

the 1988 return on the fixed income portion of the investment manager's portfolio, the manager's ranking and the ranking each investment manager would receive if integrated with Table #3 (systems participating in the PRIT Fund hold shares which are treated as equities; see the performance for the PRIT Fund for the fixed income performance); and

the December 31, 1988 percentage of the investment manager's assets invested in fixed income securities, the manager's ranking and the ranking each investment manager would receive if integrated with Table #3. (Fixed income allocation for systems participating in the PRIT Fund is based on the PRIT Fund allocation.)

Appendix 2 contains systems included in the performance of each investment manager. Rank1 denotes the ranking among the managers. Rank2 denotes the ranking of the managers in comparison to the retirement systems.

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Table #7

Investment Manager	1985-1988 Annualized Equity Return	Rank1	Rank2	1985-1988 Annualized Fixed Income Return	Rank1	Rank2
Alex Brown	15.48	5	63	11.86	2	58
BayBank	17.45	3	40	11.34	5	69
Constitution Capital	17.25	4	43	11.79	3	59
de Burio	13.07	6	81	11.56	4	63
Freedom Capital	20.99	1	15	12.13	1	51
PRIT	18.25	2	33			

Table #7 Discussion

Table #7 indicates:

the 1985-1988 annualized return on the equity portion of the investment manager's portfolio, the manager's ranking and the ranking each investment manager would receive if integrated with Table #4 (Fort Hill was not the sole manager to three or more systems prior to 1988, so a 1985-1988 annualized equity rate of return is not indicated); and

the 1985-1988 annualized return on the fixed income portion of the investment manager's portfolio, the manager's ranking and the ranking each investment manager would receive if integrated with Table #4. (Fort Hill was not the sole manager to three or more systems prior to 1988, so a 1985-1988 annualized fixed income rate of return is not indicated; systems participating in the PRIT Fund hold shares which are treated as equities; see the performance for the PRIT Fund for the fixed income performance)

Appendix 2 contains systems included in the performance of each investment manager. Rank1 denotes the ranking among the managers. Rank2 denotes the ranking of the managers in comparison to the retirement systems.

Massachusetts Contributory Retirement Systems for Public Employees

Appendix 1

(+) Those managers of systems who have qualified to manage under a "waiver" from the "legal list" restrictions are listed in Table #2. Five retirement systems which were not waived at the end of 1988 indicated on their annual statement the name of an investment advisor. Beverly, Maynard and Webster listed their investment manager as Alex Brown & Sons. The Chelsea Retirement System listed PaineWebber Inc. as its investment manager, and New Bedford listed MacKay Shields as its investment manager through May 31, 1988.

Athol	Multiple Advisors	Shawmut/Worcester County PaineWebber Properties, Inc. (real estate)
Attleboro	Multiple Advisors	BayBank Inc. PaineWebber Properties, Inc. (real estate)
Barnstable County	Multiple Advisors	Aetna Capital Mgmt. Boston Company Aetna Capital Mgmt. (real estate) Aetna Capital Mgmt. (international)
Belmont	(+) The system received its original "legal list" waiver on March 26, 1985 with the de Burlo Group as investment advisor. The system purchased shares of the PRIT Fund on May 24, 1989. Belmont changed its investment advisor and a new waiver was granted on June 30, 1989 with Oppenheimer Capital as investment advisor.	
Berkshire County	(+) The system purchased shares of the PRIT Fund on February 23, 1987.	
Beverly	Multiple Advisors	Aetna Capital Mgmt. Massachusetts Financial Services Aetna Capital Mgmt. (real estate) Aetna Capital Mgmt. (international)
Boston	Multiple Advisors	Avatar Associates Back Bay Advisors Bear Stearns, Inc. Boston Company Constitution Capital Mgmt. Criterion Investment Mgmt. Eagle Asset Mgmt.

	Multiple Advisors	Loomis Sayles & Co. Massachusetts Financial Services Richmond Capital Mgmt. Siebel Capital Mgmt. State Street Bank & Trust Wellington Mgmt. Co. (formerly Thorndike, Doran, Paine & Lewis) Heitman Advisory Corp. (real estate) JMB Institutional Realty (real estate) Metric Institutional Realty (real estate) Schroder Real Estate Capital (real estate) Oechsle International Advisors Warburg Investment Mgmt. International Ltd.

A waiver granted to Boston on February 21, 1985 with Capitol Bank as investment advisor was withdrawn December 7, 1988.

Braintree

(+) The system received its original "legal list" waiver on April 1, 1985 with the Shawmut Bank of Boston as investment advisor. On September 9, 1986 the system changed its investment advisor. 1838 Investment Advisors, formerly Drexel Burnham Lambert, has served Braintree as investment advisor since September 9, 1986.

Bristol County

(+) The system received its original "legal list" waiver on March 25, 1985 with the de Burlo Group as investment advisor. Bristol County changed investment advisors in September 1988 and has been granted waivers with the following investment advisors:

Multiple Advisors	Aetna Capital Mgmt. BayBank Aetna Capital Mgmt. (real estate) Aetna Capital Mgmt. (international)

Brockton

Multiple Advisors	Fort Hill Freedom Capital Mgmt. Corp. Loomis Sayles & Company Marathon Investment Mgmt.

Brookline	Multiple Advisors	State Street Research State Street Research (international)
	The system purchased shares of the PRIT Fund on September 29, 1989.	
Cambridge	(+) The system received a partial waiver on May 19, 1988 with APT Financial Services as real estate advisor.	
Chelsea	(+) The system received a "legal list" waiver on March 4, 1987 with Keystone Investment Management Corporation as investment advisor. In April 1988 Chelsea withdrew its waiver and invested under the "legal list" standard. A new waiver was granted on August 24, 1989 with BayBank as investment advisor.	
Chicopee	Multiple Advisors	Federal Street Financial Advisers Freedom Capital Mgmt. Corp. (formerly Tucker Anthony Mgmt. Corp.) Leonard Management Group
Clinton	(+) In its 1986 annual statement Clinton listed Alex Brown as investment advisor. Its 1987 and 1988 annual statements do not list an investment advisor.	
Concord	Multiple Advisors	Constitution Capital Mgmt. Frank Russell Trust Company
Danvers	(+) The system purchased shares of the PRIT Fund on August 18, 1987.	
Dedham	(+) In its 1986 and 1987 annual statement Dedham listed Aetna as its investment advisor. On June 1, 1988 Dedham transferred into the PRIT Fund.	
Essex County	(+) Tucker Anthony Mgmt. Corp., investment advisor to Essex County since May 6, 1985, has changed its name to Freedom Capital Mgmt. Corp.	
Framingham	(+) The system purchased shares of the PRIT Fund on November 28, 1986.	
Franklin County	(+) The system received its original "legal list" waiver on December 2, 1985 with the de Burlo Group as investment advisor. The waiver was revoked on January 27, 1988 when the system terminated its investment advisor. A new waiver was granted on March 31, 1988 with Freedom Capital Mgmt. Corp. (formerly Tucker Anthony Mgmt. Corp.) as investment advisor.	

Gardner	(+) The system received a "legal list" waiver on May 21, 1985 with the Shawmut Bank of Boston as investment advisor. On December 1, 1986 Gardner transferred into the PRIT Fund.	
Greater Lawrence Sanitary District Authority	(+) Arlington Trust Co., the advisor to Greater Lawrence since July 29, 1986, is now known as Shawmut/Arlington Trust.	
Greenfield	(+) The system purchased shares of the PRIT Fund on February 25, 1987. Greenfield was granted a partial waiver on April 17, 1989 for real estate investments, and the system currently invests with the following investment advisors:	
	Muliple Advisors	Bank of New England - West PaineWebber Properties, Inc. (real estate)
Hampden County	(+) The system received its original "legal list" waiver on April 11, 1985 with Rollert & Sullivan as its investment advisor. The waiver was revoked on July 31, 1985 when the system terminated its investment advisor. Hampden County was granted an investment waiver in August 1985, and the system currently invests with the following investment advisors:	
	Muliple Advisors	Boston Company Freedom Capital Mgmt. Corp.
Hampshire County	(+) The system received its original "legal list" waiver on April 11, 1985 with Bank of New England - West as investment advisor. On October 26, 1989 Hampshire County changed investment advisors, and the system currently invests with Constitution Capital Management as investment advisor.	
Haverhill	Multiple Advisors	Boston Company Lehndorff & Babson (real estate) Babson-Stewart Ivory (international)
Hingham	(+) The system purchased shares of the PRIT Fund on May 1, 1986.	
Holyoke	Multiple Advisors	David L. Babson Company Freedom Capital Mgmt. Corp. (formerly Tucker Anthony Mgmt. Corp.) Leonard Management Group

A waiver granted to Holyoke on December 6, 1985 with Ray Depelteau as investment advisor was withdrawn in January 1988 when Mr. Depelteau left the retirement system.

Lowell

(+) The system received a "legal list" waiver on June 6, 1985 with BayBank as investment advisor. The waiver was revoked on November 13, 1985 when the system terminated its investment advisor and Lowell invested under the "legal list" standard. The system purchased shares of the PRIT Fund on July 10, 1987. In 1989 Lowell was granted investment waivers with the following investment advisors:

Multiple Advisors	Consistent Asset Mgmt. Constitution Capital Mgmt. J.L. Kaplan Associates One Federal Asset Mgmt. Shurgard Realty Advisors (real estate)

Marlborough

(+) Tucker Anthony Mgmt. Corp., investment advisor to Marlborough since June 23, 1988, has changed its name to Freedom Capital Mgmt. Corp.

Mass Port Authority

Multiple Advisors	Wellington Mgmt. Co. (formerly Thorndike, Doran Paine & Lewis) Wellington Mgmt. Co. (international)

Mass Water Resources Authority

(+) The system purchased shares of the PRIT Fund on January 6, 1988.

Melrose	Multiple Advisors	Constitution Capital Mgmt. Lehndorff & Babson (real estate)

Methuen

(+) The system purchased shares of the PRIT Fund on April 1, 1988.

Middlesex County	Multiple Advisors	Boston Company Constitution Capital Mgmt. Gardner & Preston Moss, Inc. Income Research & Mgmt. Oppenheimer Capital Siebel Capital Mgmt.

A waiver granted to Middlesex County with Putnam Advisory Co. as investment advisor on March 6, 1986 was withdrawn September 1, 1989.

Montague	(+) The system received a "legal list" waiver on March 5, 1986 with Gardner & Preston Moss, Inc. as investment advisor. On July 1, 1986 Montague transferred into the PRIT Fund.	
Needham	(+) The system received a "legal list" waiver on March 12, 1985 with Fort Hill as investment advisor. On July 1, 1985 Needham transferred into the PRIT Fund.	
New Bedford	(+) The system received its original "legal list" waiver on August 2, 1985 with Shawmut/Bristol County as investment advisor. On October 9, 1986 New Bedford withdrew its waiver and invested under the "legal list" standard. In 1989 New Bedford was granted waivers with the following investment advisors:	
	Multiple Advisors	Aetna Capital Mgmt. Massachusetts Financial Services Aetna Capital Mgmt. (real estate) Aetna Capital Mgmt. (international) Lombard Odier (international)
Newton	(+) The system received its original "legal list" waiver on March 4, 1985 with Standish, Ayer & Wood as investment advisor. On March 19, 1987 Newton changed its investment advisor to the following investment advisors:	
	Multiple Advisors	Boston Company 1838 Investment Advisors (formerly Drexel Burnham Lambert) Freedom Capital Mgmt. Corp. (formerly Tucker Anthony Mgmt. Corp.) Loomis, Sayles & Company
North Attleboro	Multiple Advisors	Keystone Investment Mgmt. Corp. PaineWebber Properties, Inc. (real estate)
Northbridge	(+) The system received its original "legal list" waiver on April 4, 1985 with Shawmut/Worcester County as investment advisor. On January 1, 1988 Northbridge transferred into the PRIT Fund.	

Norwood	Multiple Advisors	Constitution Capital Mgmt. Dean Witter Dividend Growth Securities, Inc. Manufacturers Life Insurance Equity Fund A MFS Lifetime Capital Growth Trust Dean Witter Realty Yield Plus L.P. (real estate)
	The system purchased shares of the PRIT Fund on August 13, 1987.	
Peabody	(+) Tucker Anthony Mgmt. Corp., investment advisor to Peabody since July 8, 1985, has changed its name to Freedom Capital Mgmt. Corp.	
Pittsfield	(+) The waiver granted the system on December 11, 1986 with Lawrence Grizey as investment advisor was withdrawn on January 15, 1988 with the retirement of Mr. Grizey. Pittsfield withdrew its waiver with the de Burlo Group in May 1989 and a new waiver was granted on June 15, 1989 with Freedom Capital Mgmt. Corp. as investment advisor.	
Plymouth County	(+) The system received a partial waiver from the "legal list" restrictions allowing 50% of the portfolio to be invested under a "prudent person" standard rather than under the "legal list" limitations. In 1989 Plymouth County was granted partial waivers with regard to real estate and international investments, and currently invest with the following investment advisors:	
	Multiple Advisors	John McLellan (partial waiver) Lehndorff & Babson (real estate) Metric Institutional Realty (real estate) Shurgard Realty Advisors (real estate) Babson-Stewart Ivory (international)
Quincy	(+) The system received its original "legal list" waiver on May 22, 1985 with South Shore Bank as investment advisor. Quincy withdrew this waiver in January 1989, and in February 1989 was granted waivers with the following investment advisors:	
	Multiple Advisors	Mass Financial Services M.D. Sass Investors Co.

Reading	(+) The system received its original "legal list" waiver on June 30, 1985 with the de Burlo Group as its investment advisor. Reading transferred into the PRIT Fund on June 1, 1988.	
Revere	(+) The system received a partial waiver from the "legal list" restrictions on May 14, 1985 with Fort Hill as investment advisor. On March 27, 1987 Revere received a full waiver with Fort Hill continuing as their investment advisor.	
Salem	Multiple Advisors	Freedom Capital Mgmt. Corp. Shawmut Bank of Boston PaineWebber Properties, Inc. (real estate)
Shrewsbury	(+) The system received a "legal list" waiver on February 12, 1985 with BayBank as the system's investment advisor. On July 1, 1985 Shrewsbury transferred into the PRIT Fund.	
Somerville	(+) In its 1986 annual statement Somerville listed Alex Brown as investment advisor. Its 1987 and 1988 annual statements do not list an investment advisor.	
Springfield	(+) The system received its original "legal list" waiver on May 6, 1985 with the Bank of New England - West as investment advisor. Springfield changed its investment advisor and a new waiver was granted on October 13, 1987 with BayBank as investment advisor.	
Stoneham	Multiple Advisors	David L. Babson Co. Lehndorff & Babson (real estate)
Watertown	Multiple Advisors	Boston Company Gardner & Preston Moss, Inc. Lehndorff & Babson (real estate)
Westfield	Multiple Advisors	Bank of New England - West PaineWebber Properties, Inc. (real estate)
Worcester	Multiple Advisors	Bank of New England - Worcester Frank Russell Trust Company Mechanics Bank
	The system purchased shares of the PRIT Fund on December 30, 1986. A waiver granted Worcester, with Trident Investment Mgmt. as investment advisor on May 5, 1986, was voided in April 1989 when the system terminated the investment advisor.	

The State Employees' and Teachers' Retirement Systems hold units in two trusts: the Treasurer's Management Trust (TMT) for equities and the Treasurer's Fixed Income Securities Trust (TFIST) for fixed income investments. The managers for the respective trusts are as follows:

TMT	Multiple Advisors	Bailaird, Biehl & Kaiser, Ltd.
		Capital Guardian
		Constitution Capital Mgmt.
		Gardner & Preston Moss
		Guinness Mahon
		Hagler, Mastrovita and Hewitt
		J.M. Hartwell Company
		Independence Investment
		Invesco Capital Mgmt.
		Keystone Investment Management Corp.
		Manufacturers Life Insurance Co.
		Massachusetts Financial Services
		New Enterprise Association IV
		One Federal Asset Management
		Scudder, Stevens & Clark
		Standish, Ayer & Wood
		State Street Bank & Trust
		State Street Research & Management
		Wellington Mgmt. Co.
		Trinity Investment Management
		Wellington International Investors
	Real Estate	Copley Real Estate Fund
		Franklin Real Estate Income Fund
		First Chicago Investment Advisors
		John Hancock Real Estate Limited Partnership
		Lehndorff & Babson Property Fund II
		Lehndorff & Babson Property Fund III
		Narragansett Capital Partnership
		Pru-Bache Security Inc.
		Public Storage Institution Fund II
		Sierra Capital Realty Trust VII
		Sierra Capital Realty Trust VIII
		State Street Real Estate Fund IV
		State Street Real Estate Fund V
	Venture Capital/LBO	Beta Partnership Ltd.
		Clayton & Dubilier Association II
		Clayton & Dubilier Association III
		Frontenac Venture Limited Partnership
		John Hancock Venture Capital Management
		Prudential Limited
		TA Associates
		Vista III Limited Partnership
		WCAS Capital Partners

TFIST	Multiple Advisors	Delphi Capital Preservation Fiduciary Trust Company International Gardner & Preston Moss Loomis, Sayles & Co., Inc. Miller Anderson and Sherrard Pacific Investment Management Company Pension Investment Division of the State Treasury Standish, Ayer & Wood WR Lazard & Co., Inc.

The managers for the PRIT Fund are as follows:

Multiple Advisors	Alliance Capital Baring America Baring International Bear Stearns Boston Company Lazard Freres Lehman Management Co., Inc. M.D. Sass Investors N.M. Rothschild Oechsle International Advisors One Federal Asset Management Putnam Advisory Company Schroeder Capital Management Scudder, Stevens & Clark State Street International Trinity U.S. Trust Internal - PRIM Staff
Real Estate	American Properties Team Aldrich Eastman & Waltch Bank of Boston Boston Financial Group Copley Real Estate Advisors Heitman Advisory Corp. J.M.B. Institutional Realty Corp. John Hancock Property Investors Corp. Lomas & Nettleton Massachusetts Mutual Trust Company of the West
Venture Capital/LBO	Advent International Network Fund APA Ventures III Commonwealth Bio Ventures II Davis Venture Partners Forstmann Little Golder, Thoma & Cressey Invexco Ltd. Partnership John Hancock Venture Capital Management, Inc. Kohlberg, Kravis & Roberts Mass Technology Development Corp.

Venture Capital	M.M.G. Patricof European Buy-in Fund Morgan Holland Fund II Schroder U.K. Buy-out Fund II Smith Offshore Southern California Ventures T.A. Associates Venture Capital Fund of New England Vista III Limited Partnership Weintraub Entertainment Group

Massachusetts Contributory Retirement Systems for Public Employees

Appendix 2

The systems included in the performance of each investment manager are as follows:

Alex, Brown and Sons	Beverly, Clinton, Maynard, Somerville, and Webster for 1985 and 1986; Beverly, Maynard, and Webster for 1987 and 1988.
BayBank	Attleboro, Everett, Fall River, and Waltham for 1985, 1986 and 1987; Attleboro, Everett, Fall River, Springfield and Waltham for 1988.
Constitution Capital Management	Arlington, Medford, Melrose, Middlesex County, Norwood, and Winthrop for 1985; Arlington, Medford, Melrose, Norwood, and Winthrop for 1986; Arlington, Hingham, Medford, Melrose, Norwood, and Winthrop for 1987; Arlington, Medford, Melrose and Winthrop for 1988.
de Burlo Group	Belmont, Bristol County, Franklin County, Lynn, Malden, Marblehead, North Adams, Northampton, Reading, and Swampscott for 1985 and 1986; Belmont, Bristol County, Franklin County, Lynn, Malden, Marblehead, North Adams, Northampton, Pittsfield, Reading, and Swampscott for 1987; Belmont, Lynn, Malden, Marblehead, North Adams, Northampton and Swampscott for 1988.
Fort Hill	Brockton, Hull and Revere for 1988.

Freedom Capital Mgmt. Co.	Essex County, Gloucester, and Peabody for 1985; Chicopee, Essex County, Gloucester, and Peabody for 1986 and 1987; Essex County, Gloucester, and Peabody for 1988.
PRIM Board	Minuteman, Needham, Norfolk County, Shrewsbury, Wakefield, and Weymouth for 1985; Fairhaven, Gardner, Milton, Minuteman, Montague, Needham, Norfolk County, Saugus, Shrewsbury, Wakefield, and Weymouth for 1986; Fairhaven, Gardner, MHFA, Milton, Minuteman, Montague, Needham, Norfolk County, Saugus, Shrewsbury, Wakefield, and Weymouth for 1987; Fairhaven, Gardner, MHFA, Milton, Minuteman, Montague, Needham, Norfolk County, Northbridge, Saugus, Shrewsbury, Wakefield, and Weymouth for 1988.

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