



# Milliman USA

*Consultants and Actuaries*

INVESTMENT PERFORMANCE REVIEW

for

**The Ohio Retirement Study Council**

**For the period ending June 30, 2001**

October 10, 2001

The following analysis was prepared by Milliman USA, Inc. utilizing secondary data from statements provided by the plan trustee and/or custodian, Milliman USA computer software and selected information in the Milliman USA database. Reasonable care has been taken to assure the accuracy of the data contained herein, and all written comments are objectively stated and are based on facts gathered in good faith. Milliman USA disclaims responsibility, financial or otherwise, for the accuracy or completeness of this report.

**OHIO RETIREMENT STUDY COUNCIL**  
Comparative Performance Study

**TABLE OF CONTENTS**

Executive Summary and Explanation of Results	a – h
Performance Summary	1 – 2
SECTION I        Total Fund	3 - 9
SECTION II       Domestic Equity	10 -14
SECTION III      Fixed Income	15 -19
SECTION IV      International	20 -22
SECTION V       Real Estate	23 -24
SECTION VI      Individual Funds vs. Target Policies	25 -52
APPENDIX        Actual vs. Benchmark Asset Allocation	

**OHIO RETIREMENT STUDY COUNCIL**  
Comparative Performance Study  
Period ending 6/30/2001  
Executive Summary and Explanation of Exhibits

Milliman USA is pleased to present to the Council the most recent results of our ongoing, semi-annual comparative study of the performance of the five Ohio Statewide pension funds pursuant to Section 171.04 of the Revised Code. This is the fifth report prepared by Milliman USA pursuant to this authority. The purpose of this comparative report is to provide the framework for dialogue with the retirement systems to assist the Council in meeting its oversight responsibilities. The legislature guarantees the defined benefit pension benefits that are paid to participants and determines maximum contribution rates. Underscoring the importance of investment results is the fact that the majority of the benefits paid are typically funded by investment income. This report reflects investment performance for all five retirement systems over the seven and one half-year period beginning January 1, 1994 and ending June 30, 2001

Our findings may be summarized as follows:

- The most recent twelve months (7/1/00 – 6/30/01) was a difficult period for all of the funds. All experienced negative results, ranging from -4.59% (HPRS and PERS) to -6.98% (SERS) and compared to a broad universe of public retirement systems, all of the Statewide funds were in the third and fourth quartiles
- Longer term, with the exception of HPRS, the funds have exceeded their actuarial interest-rate assumptions over the measurement period.
- Also longer term, OP&F is the only fund that had results that were ahead of it's own benchmark for the seven and one half-year measurement period (1/1/94 – 6/30/01), outperforming it by 0.27%. HPRS had the worst results relative to benchmark, underperforming by 4.08%.
- SERS has had the best results over the full measurement period, achieving an average return of 10.9%.
- HPRS' 7.49% average long-term results are troublesome, particularly if they persist into the future. The fund has, however, shown modest signs of improvement in the past year (the -4.59% return referenced above compares favorably to the -5.70% benchmark return for the period 7/1/00 to 6/30/01).

An important value of this type of report is its ability to provide an “apples to apples” comparison of the systems' investment results. Such a comparison is possible, since all of the Systems are subject to the same investment standards and restrictions and have been so from their inception. In light of the fact that rate

of return calculations are extremely sensitive to time period differences, it is critical that any comparative study be done with a consistent time frame, as was done in this report.

As is common practice when examining pension fund results we make reference throughout the first three sections of the report, to such things as quartile rankings and universe comparisons. The universes used for comparative purposes are those of the Wilshire Cooperative Universe Service. The comparisons are formulated by pooling data from a wide range of investment consulting firms and they provide a statistically valid measure of results relative to a large sample.

Before presenting this comparative data, we wish to caution against jumping to conclusions, particularly in volatile markets, regarding the investment performance of any of the systems based on a single performance report. Any investment program, no matter how sound, can expect to encounter unfavorable investment environments. It is important that the systems' long term results be reviewed for reasonableness and not judged on short-term performance, whether favorable or unfavorable. Because of the long-term nature of the systems' obligations, it is also important that the funds not be managed with near-term results in mind. Such market timing is a recipe for disaster.

Over the long term, it is reasonable for the Council to expect to see emerging investment performance reflecting the systems' investment policies and to make judgments regarding whether those policies are being effectively implemented. While reasonable people could disagree over the definition of long term, it is generally accepted that five years (twenty quarters) is a sufficient time period to provide meaningful analysis of such things as the value added (or subtracted) by deviations from policy targets and active vs. passive investment strategies. Our plan is to include such analysis when the systems have had five years to operate under the "prudent person" standard, which would be following the second quarter of 2002.

Several academic studies have concluded that more than 90% of the variability in returns on investment performance is attributable to the asset allocation between fixed income investments, equity investments, cash equivalents, and other investments. Ten percent or less of a portfolio's performance can be attributed to relative performance within a given asset class due to superior security selection and/or market timing. Consequently, we will focus a significant amount of attention on performance relative to the asset allocation of each of the funds.



The report begins with a table that summarizes the data that are analyzed further in the body of the document. Each system's results are displayed for periods ending 6/30/01, and broken out for the most recent quarter (4/1/01 – 6/30/01), two quarters (1/1/01 – 6/30/01), three quarters (10/1/00 – 6/30/01), one year (7/1/00 – 6/30/01), three years (7/1/98 – 6/30/01) and five years (7/1/96 –

6/30/01). Here, as in the rest of the report, results for periods of one year or less are for that period (not annualized) and returns for periods of more than one year are annual compound returns for that period.

The Summary Table (pages 1&2) shows that for the seven and one half-year, since-inception measurement period (“Incept Ret” at the far right of the table), SERS had the highest total return (10.90% per year) and HPRS had the lowest total return (7.49% per year). Total Return, here and throughout the report, is defined as the return for the entire fund, including all asset classes.

For the five years ending 6/30/2001, SERS again had the highest total return (10.52% per year) and HPRS had the lowest total return (5.86% per year). For the twelve months ending 6/30/2001, all of the funds experienced negative returns. The smallest loss was experienced by HPRS and PERS (-4.59%) and the greatest loss was produced by SERS (-6.98%).

For the first half of this year (2 Qtrs. on the table and the period since our last report), all of the funds again suffered losses. HPRS produced the smallest loss of all the funds with a return of -2.61%. SERS had the greatest six-month loss – a total return of -3.07%.

Page 2 also includes a summary of the returns of the various benchmarks utilized by the funds. These may be used as reference points to compare the asset class results of the various funds. For example, for the seven and one half-year measurement period, the broad equity market, as defined by the Russell 3000 Index, returned 15.09% per year. None of the funds experienced equity performance that outperformed this index for the period.

In order to put performance in the proper context, it is important to understand the historical evolution of the investment restrictions imposed on the funds by statute. Prior to 1993 and the passage of S.B. 43, the investment authority of the funds was severely limited. Only 35% of each fund’s assets could be invested in common stock and individual stock purchases were limited to domestic securities specified by a legal list. S.B. 43 expanded the legal list to include American Depository Receipts (ADRs), commingled stock investment funds, derivative instruments and real estate investment trusts (REITs). More importantly, the act permitted the funds to invest up to 50% of their total assets in U.S. stock and 10% in foreign stocks, bonds, and other obligations.

In March 1997, S.B. 82 abolished the legal list and adopted the “prudent person rule.” The funds’ investment authority under this act is expanded to allow any individual investment, so long as the overall portfolio is diversified. This allows for responses to changes in the economy and investment markets and reliance on professional investment managers and economic advisors to guide the decision making process. Along with this expansion of investment authority, however, comes the requirement of prudence and diligence in the development

of guidelines, benchmarks, and objectives, and importantly, mandates ongoing monitoring by those with fiduciary responsibility.

The majority of pension assets, in both the public and private sector, are managed with “prudent person” guidelines, which is to say largely without minimums or maximums placed on individual asset classes or securities. This approach, currently in place in the Ohio systems, is the optimal way to manage fund assets. It gives each fund the ability to develop an asset allocation strategy that is likely to maximize expected return while minimizing risk, all relative to the need to fund future obligations. Such an approach is fully consistent with the primary mandate of any pension fund – management that is in the best interest of plan participants.

The remainder of the report is divided into sections. **Section I** (pp. 3-9) provides additional analysis of the Total Fund results for each system. Pages 3 and 4 compare the Total Fund results to a broad universe of Total Funds – 944 other funds including those of public, corporate and multiemployer pension plans – over a seven-year measurement period. Here and elsewhere in the report, the “floating bars” define the universe against which the performance is being compared. The top of the bar is the 5<sup>th</sup> percentile, the higher dotted line is the 25<sup>th</sup> percentile (bottom of the first quartile), the solid line is the median, the lower dotted line is the 75<sup>th</sup> percentile (bottom of the third quartile) and the bottom of the bar is the 95<sup>th</sup> percentile. The table below the graph defines the quartile marks and the table at the bottom of the page displays each fund’s return for that period and the relevant ranking in the universe. At the very bottom of the page is the return and rank of a hypothetical portfolio of 50% stocks (Wilshire 5000) and 50% bonds (Lehman Aggregate Bond Index).

Pages 5 through 8 are similar to pages 3 and 4. This time, however, the Total Fund results are compared to a universe comprised solely of the 130 Public Retirement Systems in the universe (pp. 5-6) and again (pp. 7-8) to funds with assets in excess of \$1 Billion (25 funds). The percentile rankings vary a bit, depending on the universe chosen, but the relative results are similar: SERS has the best long-term relative rankings, followed by OP&F and STRS.

In sections I-V, each of which compares all five funds’ results for either the Total Fund or a particular asset class, there are both cumulative and consecutive period comparisons. The cumulative period graphs (pp. 3, and 5, for example) show quarter (4/1/01-6/30/01), one year (7/1/00 – 6/30/01), two year (7/1/99 – 6/30/01), three year (7/1/98 – 6/30/01), four year (7/1/97 – 6/30/01), five year (7/1/96 – 6/30/01), six year (7/1/95 – 6/30/01) and seven year (7/1/94 – 6/30/01) periods ending 6/30/01. The consecutive period graphs (pp. 4, 6 and 8, for example), on the other hand, look at the twelve months ending 6/30/95, the twelve months ending 6/30/96, etc. This second group of graphs can be useful for examining trends in performance. For example, both PERS and HPRS have

had relatively poor Total Fund results over the measurement period. An examination of the consecutive performance comparison on page 6, however, shows that PERS, after two particularly bad years in 1996 (94<sup>th</sup> percentile vs. other Public Funds) and 1997 (97<sup>th</sup> percentile), showed improvement in relative performance in 1998, 1999 and 2000. HPRS, on the other hand, exhibits a very different picture. After a good relative year in 1996 (37<sup>th</sup> percentile), results were in the fourth quartile of the Public Fund universe for the 12-month periods ending in June of 97, 98, 99 and 2000.

The most recent twelve months was a difficult year in relative terms for all of the Funds. Compared, again, to a broad universe of public retirement systems, all of the Statewide funds were in the third and fourth quartiles.

Page 9 provides the first analysis of risk. The seven and one half-year results of each Total Fund are displayed in risk-return space. The vertical axis shows the fund's return and the horizontal axis shows the fund's risk (defined as annualized quarterly standard deviation of returns) for the period. The diagonal line is the Capital Market Line, drawn by connecting the risk/return point of US T-bills (the theoretical risk-free rate) and the risk/return point of that hypothetical 50% stock, 50% bond portfolio defined above. This line is included because, theoretically, an investor could, using a combination of index funds and T-bills, have risk/return performance that is on the line. This analysis allows us to compare the two funds with the lowest return for the period (PERS and HPRS) and note that PERS' low return was achieved with the lowest risk (volatility) while HPRS return was achieved with the higher risk (volatility) of the two for the period.

Whenever risk and return are compared, a Sharpe Ratio is calculated for each fund or asset class being examined. This ratio, developed by the Nobel Prize-winning economist William Sharpe, is a measure of risk-adjusted return. It is designed to measure the expected return per unit of risk and is calculated by dividing the portfolio's return in excess of the risk-free T-bill rate by the variability of the portfolio's returns. While the absolute Sharpe Ratio number is not particularly meaningful, when comparing two funds or a fund and a benchmark, the Higher Sharpe Ratio is the better risk-adjusted return. HPRS stands out from the rest of the funds with respect to this comparison. All of the other funds have Sharpe Ratios within 8/100 of 0.50. The Sharpe Ratio for HPRS is 0.23. One could conclude from this comparison that on a risk-adjusted basis HPRS has done roughly half as well as the rest of the systems.

**Section II** focuses on US Equity results. The analysis is similar to the Total Fund analysis described above, with comparisons to a broad equity universe (pages 10 and 11) and to the equity returns of Public Funds (pages 12 and 13).

When compared to equity portfolios in the universe of Public Retirement Funds (pages 12-13), the Ohio systems, with the exception of HPRS, tend to be in or near the third quartile over the past five years (prior to 1997 and the adoption of

the “prudent person” standard, equity universe comparisons are not particularly relevant). The SERS equity results are just below the median fund (57<sup>th</sup> percentile) and none of the large funds are below the third quartile (75<sup>th</sup> percentile). HPRS equity results for the past five years are in the 97<sup>th</sup> percentile.

Page 14 is a risk-return analysis of domestic equity portfolios for all of the funds. The Capital Market Line is drawn, this time, between T-bills and the Wilshire 5000, the proxy for the total US stock market. As noted above, here, and in every case where risk-return analysis is performed, a Sharpe Ratio is calculated, providing a means of comparing returns adjusted for risk. SERS, OP&F and STRS have enjoyed the best risk-adjusted equity results over the seven-year period. SERS, in particular, had “above the line” risk-adjusted equity results and a Sharpe Ratio greater than the broad-market Wilshire 5000 index.

**Section III** is an analysis of Fixed Income results. Each fund is compared, using an analytical framework similar to previous sections, to a broad universe of fixed income portfolios (pages 15 and 16) and to a Public Fund fixed income universe (pages 17 and 18). Compared to the broad fixed income universe, all of the funds’ fixed income returns are near or above the median for the past seven years(7/1/94 – 6/30/01). STRS had particularly strong (21<sup>st</sup> percentile vs. public funds) fixed income results over the full measurement period (1/1/94 – 6/30/01) and OP&F has had superior results (14<sup>th</sup> percentile) for the most recent three years (7/1/98 – 6/30/01).

The risk/return analysis on page 19 shows that three of the funds’ fixed income portfolios (STRS, PERS and OP&F) have enjoyed risk-adjusted returns (as measured by Sharpe Ratio) greater than the bond market as defined by the Lehman Aggregate Index. SERS has had the lowest Sharpe Ratio for the seven-year period (7/1/94 – 6/30/01). HPRS, with the lowest absolute fixed income results, also had the lowest risk in this asset class.

**Section IV** analyzes International Equity results. In this case, six and seven-year comparisons are not meaningful, since two of the funds have not had allocations to this asset class for that length of time. All funds have at least five years of history, however, so comparisons over that time period are valid.

On page 20 we see that over the five years ending 6/30/01(7/1/96 – 6/30/01) all of the funds have had International Equity returns that are below the median International Equity portfolio in our universe. On an absolute basis, these range from 6.78% (SERS) to 2.78% (STRS). HPRS had the best International Equity return for the most recent 12 months (-17.07%, in a down market for international investing).

On a risk/return basis (page 22), for the five-year common measurement period, the results are quite disparate. Only two funds, SERS and HPRS, had returns for



that period that were in excess of T-bills. On the other hand, only STRS underperformed the generic EAFE international benchmark for the period.

**Section V** looks at Real Estate. For the seven-year period (7/1/94 – 6/30/01), four of the funds' returns have been at or near the broad benchmark NCREIF (11.33%) annualized return. The exception is HPRS, whose return of 8.33% per year is well below the other funds. Returns for the most recent twelve months (7/1/00 – 6/30/01) show PERS and HPRS ahead of the other funds in this asset class.

We have not included a risk/return analysis for real estate. While institutional investors in real property compute and report quarterly returns, these returns are based on appraisals and are not appropriately compared with other investments which actually trade on a daily basis. An annualized quarterly standard deviation of returns for real estate is, in our judgement, a meaningless number.

Recognizing the importance of asset allocation in the determination of long-term investment results, **Section VI** is a departure from the rest of the document. Instead of comparing the funds to one another, this section provides a comparison of each fund's total return to its own asset allocation policy benchmark. Five exhibits are included for each fund. First we lay out the asset allocation of the fund in a pie chart. Second, we trace the asset allocation of the fund over the past 10 quarters (3/31/99 – 6/30/01). Third, we describe the custom benchmark that has been used to measure relative results. Fourth, we display the total fund's return compared to its custom benchmark (Policy Index). For reference, each asset class is then compared to a broad market index. (In order to be consistent, we use the same broad indexes for all funds. Many of the funds have individual asset class policy benchmarks which differ from these indexes.) Finally, we display the five-year total fund results in risk-return space compared to the custom benchmark.

The inclusion of this fund-by-fund analysis is an acknowledgement of the importance of comparing each fund to its own set of objectives. While it is valid to look at each of the state pension funds in relation to each other and in comparison to a universe of other funds, conclusions must not be drawn without reference to the unique nature of each fund. It is not sufficient to look at page 1 of the report and rank the funds in order of their long-term returns. For example, part of the difference between the 10.90% compound return for SERS over the measurement period (1/1/94 – 6/30/01) and the 8.36% compound return for PERS over the same period can be explained by the fact that the policy benchmark for SERS had a return of 11.37% (p. 48) for the period compared to the PERS policy benchmark return of 8.95% (p. 35). In the preparation of this section of the report, each fund office was contacted to confirm that the custom policy benchmark was appropriate.

When each fund is compared to its own asset allocation policies and actuarial interest rate assumptions (as of the most recent valuation) for the seven and one half-year measurement period, the following picture emerges: (funds are listed below in ascending order by their average annual return for the entire period)

Fund	Annual Return	Benchmark Annual Return	Actuarial Interest Rate	Valuation Date
HPRS	7.49%	11.66%	8.00%	12/31/00
PERS	8.36%	8.95%	7.75%	12/31/00
STRS	9.81%	10.66%	7.75%	7/1/00
OP&F	9.95%	9.68%	8.25%	1/1/00
SERS	10.90%	11.37%	8.25%	6/30/00

Most of the funds, when viewed in this manner, are within range of their target policies' returns for the measurement period. The exception, with respect to performance vs. benchmark, is HPRS, whose annual results are more than 400 basis points below the target policy benchmark return for the measurement period.

Again with the exception of HPRS, the funds have exceeded their actuarial interest-rate assumptions over the measurement period. With long U.S. Treasury bonds yielding less than 6% and stock market returns unlikely to be as predictable as they were in the 90s, however, this might be a good time to reexamine benchmarks and assumptions.

Another observation could be made from these long-term results. If you accept the premise that a fund's return can be divided into three basic components: 1) benchmark (market) return, 2) deviations from the benchmark and 3) security selection, only OP&F, whose results are slightly ahead of its benchmark for the period, has enjoyed any added value from active fund management over the past seven and one half years.

**OHIO RETIREMENT STUDY COUNCIL**  
**Performance Summary Table**  
**Quarter Ending 6/30/01**

Manager	1 Qtr	2 Qtrs	3 Qtrs	1 Year	3 Yrs	5 Yrs	Since 6/30/95	Incept Date	Incept Ret
<b>HPRS</b>									
Total Return	4.59	-2.61	-6.65	-4.59	0.45	5.86	7.55	12/31/93	7.49
Equity	8.02	-5.73	-15.97	-12.95	-5.20	3.76	7.46	12/31/93	9.51
Fixed Income	0.76	3.66	8.13	11.19	6.35	7.31	6.94	12/31/93	6.52
Cash & Equiv	1.50	2.95	4.34	5.97	5.35	5.43	5.45	3/31/94	5.35
Real Estate	3.33	3.95	9.78	14.51	9.44	9.10	8.87	12/31/93	8.03
International Equity	1.19	-10.95	-11.32	-17.07	2.46	5.81	6.95	3/31/95	6.77
<b>PERS</b>									
Total Return	3.08	-2.67	-4.43	-4.59	4.69	8.34	8.53	12/31/93	8.36
Equity	6.66	-5.67	-12.50	-12.27	3.03	11.61	13.07	12/31/93	11.89
Fixed Income	0.78	4.45	8.61	11.81	6.40	7.57	7.15	12/31/93	7.19
Cash & Equiv	1.12	2.45	4.20	5.94	5.67	5.68	5.71	12/31/93	5.52
Real Estate	4.72	6.70	11.94	16.46	10.82	11.67	10.85	12/31/93	11.17
International Equity	-0.61	-13.75	-17.57	-24.25	1.45	4.35		12/31/95	2.99
<b>OP&amp;F</b>									
Total Return	3.82	-2.63	-4.84	-4.88	4.15	9.47	10.43	12/31/93	9.95
Equity	7.65	-3.86	-8.84	-6.73	4.28	12.93	14.76	12/31/93	13.87
Fixed Income	0.98	4.72	9.70	13.11	6.92	7.96	7.53	12/31/93	7.03
Cash & Equiv	1.13	2.66	4.33	5.91	5.58			9/30/96	5.14
Real Estate	1.80	7.50	10.20	11.90	11.81	12.03	12.53	12/31/93	11.17
International Equity	0.08	-13.92	-20.26	-27.38	0.01	4.51	6.57	9/30/94	6.02
<b>SERS</b>									
Total Return	4.00	-3.07	-7.53	-6.98	5.33	10.52	11.53	12/31/93	10.90
Equity	7.40	-6.78	-16.38	-15.63	3.80	13.16	15.05	12/31/93	14.65
Fixed Income	0.80	4.23	9.02	12.29	6.49	7.74	7.31	12/31/93	6.68
Cash & Equiv	1.50	4.14	6.43	9.09	6.55	6.13	6.06	12/31/93	5.81
Real Estate	3.30	4.33	8.19	11.55	11.23	11.64	11.48	12/31/93	11.07
International Equity	0.90	-8.89	-13.17	-17.95	2.02	6.78	9.19	9/30/94	8.32

**OHIO RETIREMENT STUDY COUNCIL**  
**Performance Summary Table**  
**Quarter Ending 6/30/01**

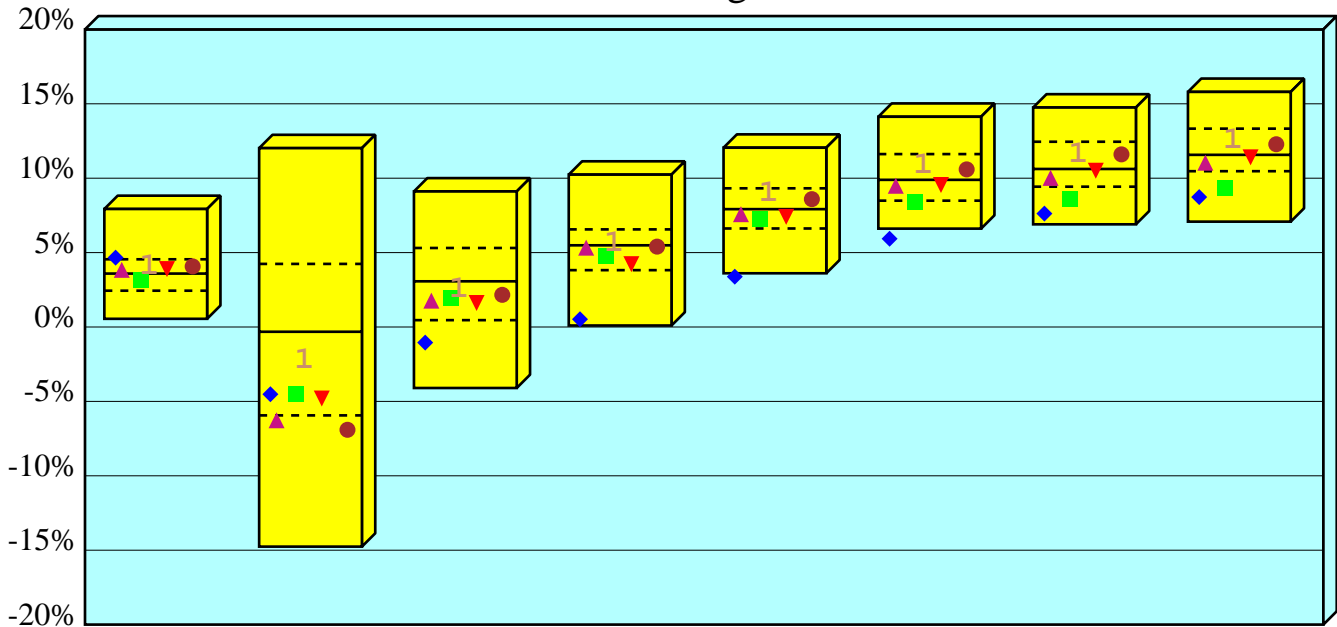
Manager	1 Qtr	2 Qtrs	3 Qtrs	1 Year	3 Yrs	5 Yrs	Since 6/30/95	Incept Date	Incept Ret
<b>STRS</b>									
Total Return	3.77	-2.93	-5.86	-6.34	5.26	9.42	9.95	12/31/93	9.81
Equity	6.68	-5.76	-12.67	-12.67	3.33	12.10	13.36	12/31/93	13.12
Fixed Income	0.67	3.86	8.36	11.82	6.48	8.38	7.68	12/31/93	7.56
Cash & Equiv	1.08	2.53	4.26	6.06	5.77	5.72	5.74	12/31/93	5.32
Real Estate	2.17	3.72	8.31	12.51	12.16	13.02	12.09	12/31/93	11.16
International Equity	2.42	-7.48	-11.76	-18.33	3.41	2.78	4.72	12/31/93	4.58
								<b>Since</b>	
<b>Indices</b>									
Russell 1000	6.31	-7.05	-15.57	-14.96	4.24	14.28	16.19	12/31/93	15.57
Russell 2000	14.28	6.86	-0.53	0.57	5.28	9.60	11.86	12/31/93	11.09
Russell 3000	6.88	-6.12	-14.57	-13.94	4.24	13.75	15.72	12/31/93	15.09
Standard & Poors 500	5.86	-6.69	-14.01	-14.83	3.91	14.47	16.33	12/31/93	15.86
S&P 500 Equal Wtd	8.62	3.80	8.01	14.69	8.11	15.03	16.28	12/31/93	15.78
S&P 600 Small Cap	13.70	6.24	7.58	11.13	7.49	12.54	14.68	12/31/93	12.90
S&P MidCap 400	13.16	0.99	-2.89	8.95	14.34	18.53	19.03	12/31/93	16.91
Wilshire 5000	7.48	-5.78	-15.52	-15.32	3.52	13.07	15.17	12/31/93	14.60
LB Aggregate	0.56	3.60	7.97	11.23	6.25	7.48	7.06	12/31/93	6.72
SB Broad Inv Grade	0.51	3.61	7.97	11.26	6.23	7.47	7.05	12/31/93	6.74
MSCI EAFE (Net)	-1.05	-14.61	-16.91	-23.61	-1.25	2.89	4.55	12/31/93	5.02
MSCI Em Mkts Free (G	4.01	-1.64	-14.74	-25.82	1.49	-6.40	-4.07	12/31/93	-4.67
MSCI World Ex-US (Ne	-0.78	-14.68	-17.56	-23.84	-0.97	3.22	4.84	12/31/93	5.24
LB Mortgage	1.01	3.77	7.79	11.28	6.73	7.63	7.34	12/31/93	7.04
NCREIF	2.23	4.56	7.78	11.00	11.81	12.71	11.92	12/31/93	10.95
Wilshire RE Funds	2.21	3.99	6.59	7.76	10.26	11.86	10.31	12/31/93	9.04

# OHIO RETIREMENT STUDY COUNCIL

## Cumulative Performance Comparison

### Total Returns of Total Fund Portfolios

#### Periods Ending 6/01



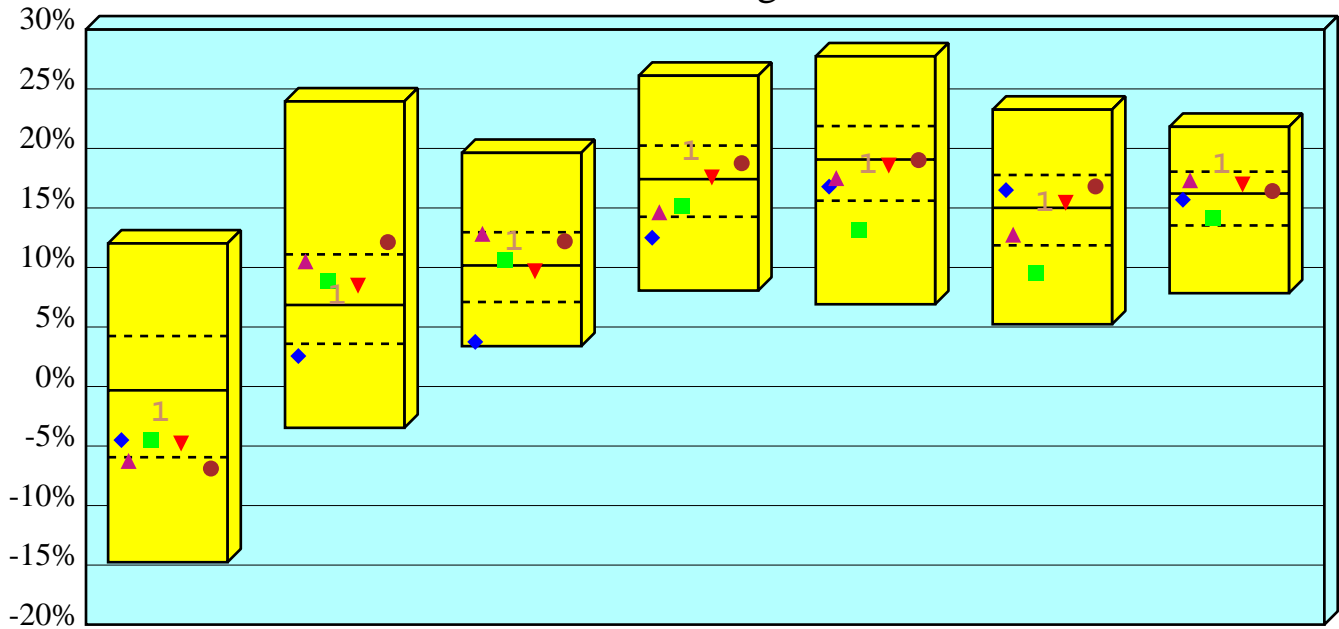
	Last Qtr	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	7.93	12.02	9.11	10.24	12.05	14.13	14.75	15.80
1st Qt	4.55	4.24	5.31	6.56	9.32	11.62	12.45	13.33
Median	3.59	-0.32	3.07	5.49	7.92	9.89	10.62	11.57
3rd Qt	2.44	-5.94	0.46	3.82	6.62	8.49	9.43	10.47
Low	0.55	-14.76	-4.10	0.10	3.61	6.61	6.90	7.08
<b>◆</b> HPRS Return	4.59	-4.59	-1.12	0.45	3.31	5.86	7.55	8.66
Rank	24	66	85	93	95	97	90	91
<b>■</b> PERS Return	3.08	-4.59	1.87	4.69	7.19	8.34	8.53	9.30
Rank	66	66	64	62	66	77	84	87
<b>▼</b> OP&F Return	3.82	-4.88	1.54	4.15	7.33	9.47	10.43	11.33
Rank	41	67	67	69	64	57	55	55
<b>●</b> SERS Return	4.00	-6.98	2.09	5.33	8.52	10.52	11.53	12.21
Rank	38	80	61	52	38	39	40	41
<b>▲</b> STRS Return	3.77	-6.34	1.70	5.26	7.51	9.42	9.95	10.97
Rank	43	77	65	54	60	59	67	62
<b>1</b> 50/50 Index Return	4.02	-2.29	2.50	5.60	8.94	10.79	11.53	12.50
Rank	37	56	57	49	31	36	40	35

# OHIO RETIREMENT STUDY COUNCIL

## Consecutive Performance Comparison

### Total Returns of Total Fund Portfolios

#### Years Ending



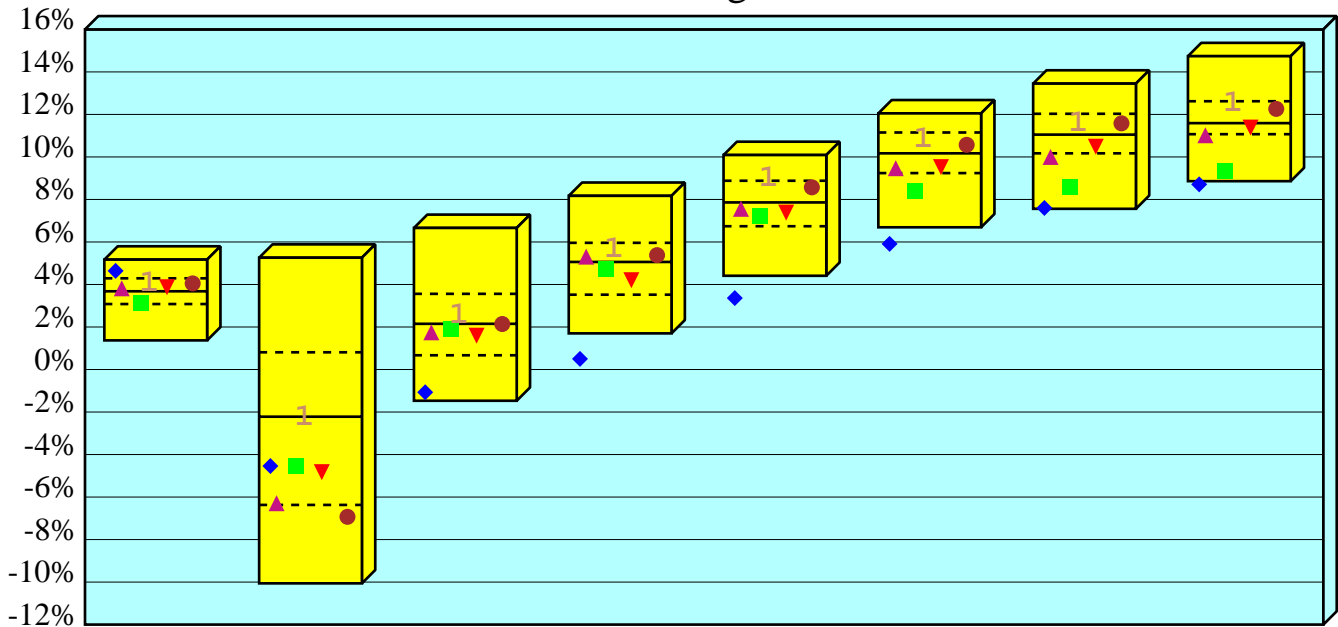
	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	12.02	23.95	19.63	26.11	27.74	23.26	21.82
1st Qt	4.24	11.10	12.96	20.24	21.88	17.77	18.05
Median	-0.32	6.85	10.17	17.42	19.07	15.01	16.21
3rd Qt	-5.94	3.59	7.10	14.26	15.61	11.86	13.53
Low	-14.76	-3.47	3.39	8.06	6.91	5.23	7.84
<b>◆ HPRS</b>							
Return	-4.59	2.47	3.66	12.41	16.70	16.41	15.60
Rank	66	81	93	84	68	37	57
<b>■ PERS</b>							
Return	-4.59	8.78	10.56	15.04	13.09	9.48	14.04
Rank	66	36	46	69	83	84	71
<b>▼ OP&amp;F</b>							
Return	-4.88	8.38	9.59	17.47	18.47	15.34	16.88
Rank	67	39	56	49	55	47	38
<b>● SERS</b>							
Return	-6.98	12.04	12.11	18.67	18.93	16.72	16.33
Rank	80	21	31	37	51	33	47
<b>▲ STRS</b>							
Return	-6.34	10.43	12.74	14.55	17.42	12.67	17.24
Rank	77	28	26	72	63	70	34
<b>1 50/50 Index</b>							
Return	-2.29	7.53	12.09	19.59	18.50	15.29	18.55
Rank	56	44	31	29	54	47	21

# OHIO RETIREMENT STUDY COUNCIL

## Cumulative Performance Comparison

### Total Returns of Total Fund Public Funds

#### Periods Ending 6/01



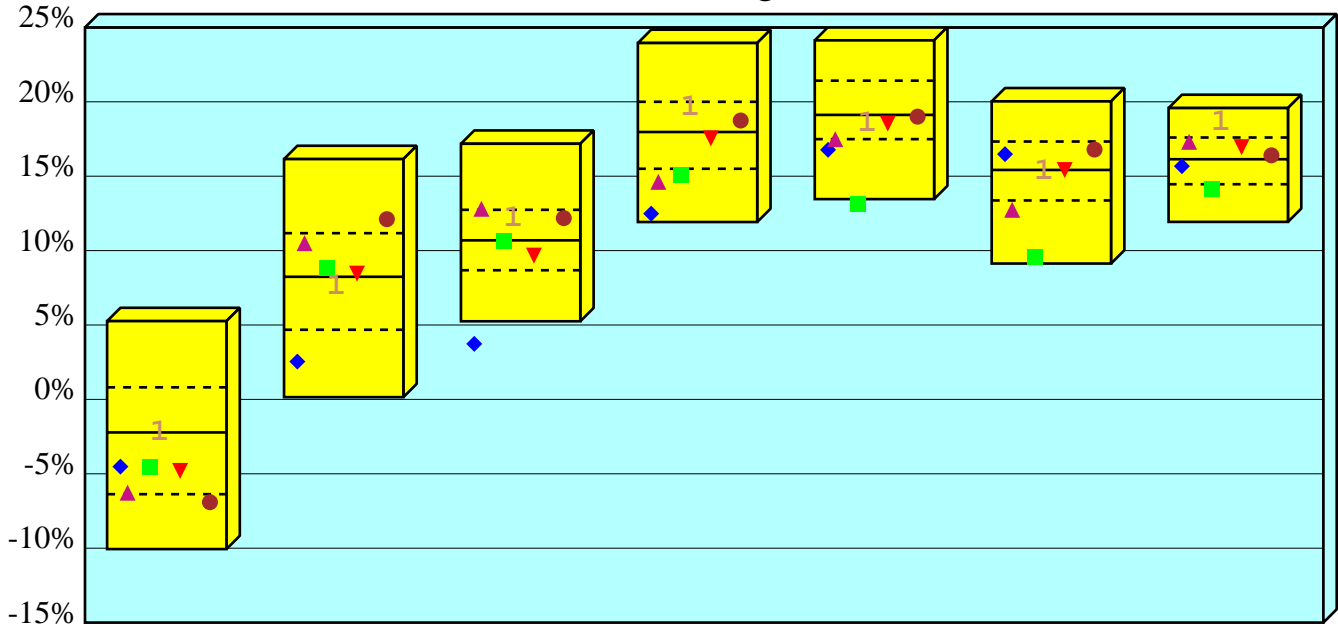
	Last Qtr	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	5.17	5.26	6.66	8.17	10.09	12.05	13.45	14.74
1st Qt	4.29	0.81	3.56	5.96	8.88	11.15	12.03	12.62
Median	3.68	-2.22	2.15	5.06	7.86	10.17	11.05	11.59
3rd Qt	3.08	-6.37	0.67	3.52	6.74	9.24	10.17	11.07
Low	1.37	-10.06	-1.47	1.70	4.41	6.69	7.56	8.86
◆ HPRS Return	4.59	-4.59	-1.12	0.45	3.31	5.86	7.55	8.66
Rank	14	65	92	97	100	100	95	97
■ PERS Return	3.08	-4.59	1.87	4.69	7.19	8.34	8.53	9.30
Rank	75	65	55	58	70	87	91	93
▼ OP&F Return	3.82	-4.88	1.54	4.15	7.33	9.47	10.43	11.33
Rank	46	67	62	66	65	65	63	61
● SERS Return	4.00	-6.98	2.09	5.33	8.52	10.52	11.53	12.21
Rank	38	80	51	40	30	35	28	32
▲ STRS Return	3.77	-6.34	1.70	5.26	7.51	9.42	9.95	10.97
Rank	48	73	59	44	59	66	76	75
1 50/50 Index Return	4.02	-2.29	2.50	5.60	8.94	10.79	11.53	12.50
Rank	38	50	43	36	23	28	28	26

# OHIO RETIREMENT STUDY COUNCIL

## Consecutive Performance Comparison

### Total Returns of Total Fund Public Funds

#### Years Ending



	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	5.26	16.15	17.18	23.95	24.13	20.03	19.58
1st Qt	0.81	11.17	12.74	20.00	21.42	17.33	17.60
Median	-2.22	8.24	10.69	17.97	19.12	15.42	16.14
3rd Qt	-6.37	4.68	8.68	15.50	17.49	13.37	14.46
Low	-10.06	0.15	5.25	11.92	13.46	9.13	11.93
<b>◆</b> HPRS							
Return	-4.59	2.47	3.66	12.41	16.70	16.41	15.60
Rank	65	88	100	94	85	37	61
<b>■</b> PERS							
Return	-4.59	8.78	10.56	15.04	13.09	9.48	14.04
Rank	65	42	54	78	97	94	81
<b>▼</b> OP&F							
Return	-4.88	8.38	9.59	17.47	18.47	15.34	16.88
Rank	67	49	68	57	62	54	35
<b>●</b> SERS							
Return	-6.98	12.04	12.11	18.67	18.93	16.72	16.33
Rank	80	19	34	40	53	33	44
<b>▲</b> STRS							
Return	-6.34	10.43	12.74	14.55	17.42	12.67	17.24
Rank	73	29	25	81	77	80	29
<b>I</b> 50/50 Index							
Return	-2.29	7.53	12.09	19.59	18.50	15.29	18.55
Rank	50	55	34	27	59	56	17

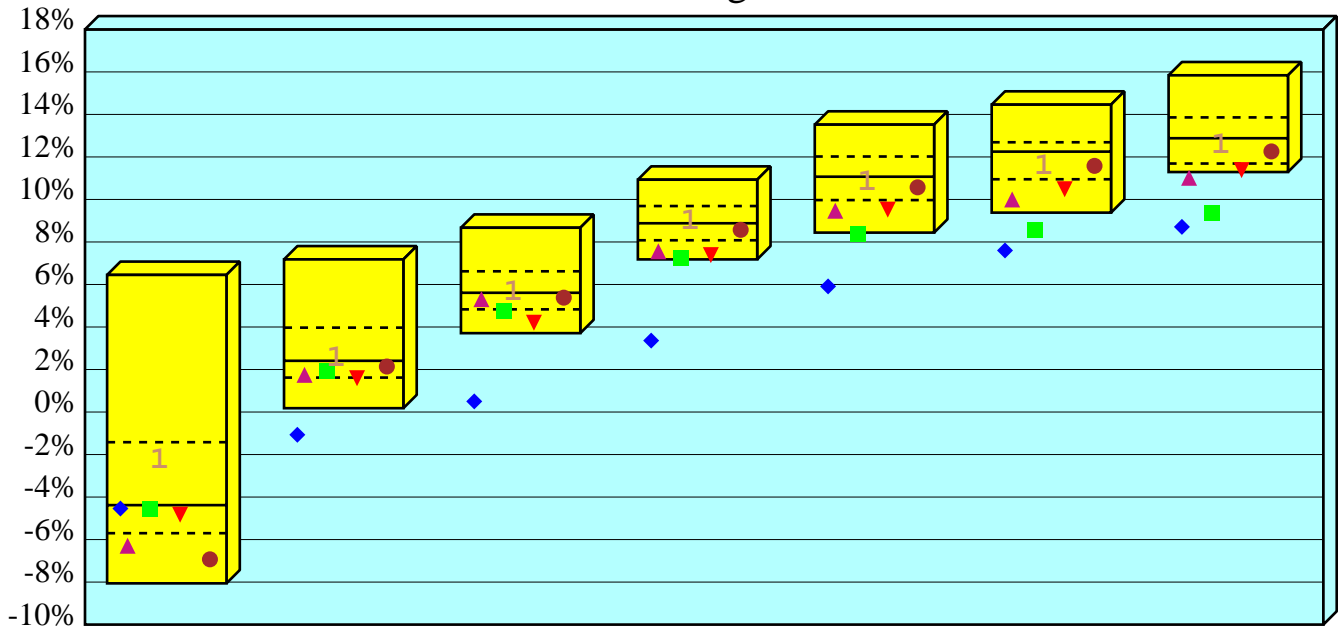


# OHIO RETIREMENT STUDY COUNCIL

## Total Returns of Total Fund Portfolios

### Total Market Value Over 1 Billion

#### Periods Ending 6/01



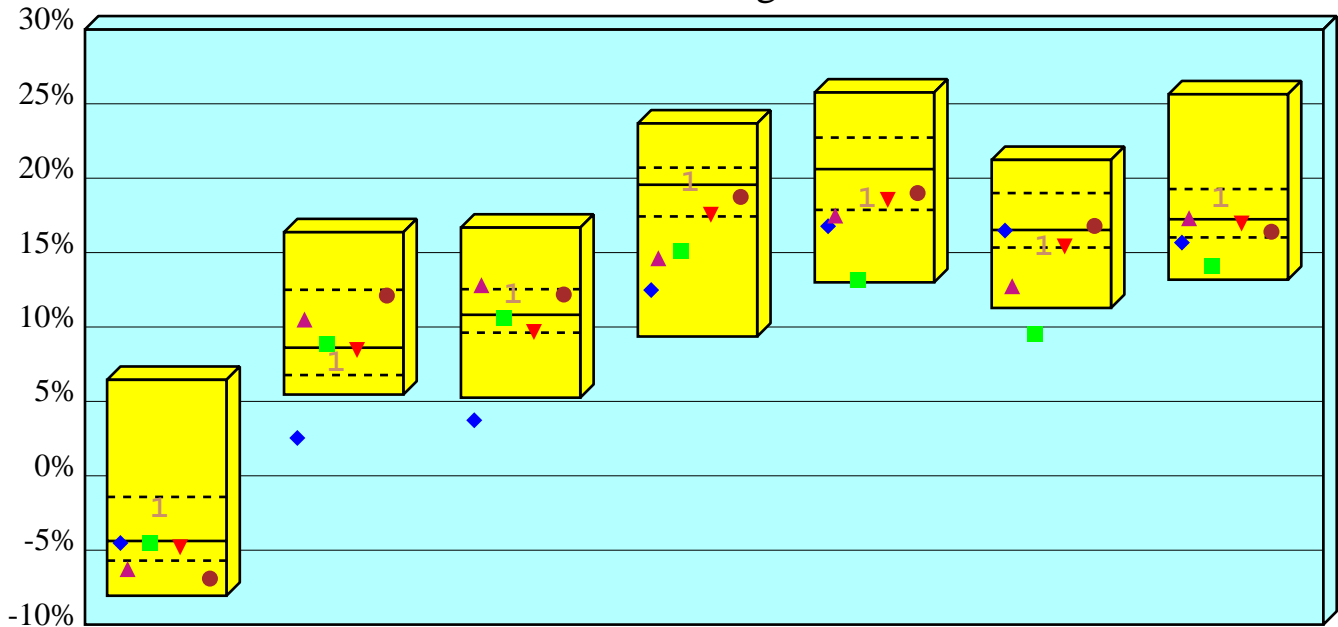
	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	6.45	7.18	8.67	10.93	13.52	14.46	15.84
1st Qt	-1.42	3.97	6.62	9.69	12.02	12.69	13.86
Median	-4.38	2.41	5.61	8.88	11.07	12.25	12.88
3rd Qt	-5.70	1.62	4.83	8.08	9.97	10.95	11.69
Low	-8.06	0.18	3.71	7.18	8.44	9.38	11.29
<b>◆</b> HPRS							
Return	-4.59	-1.12	0.45	3.31	5.86	7.55	8.66
Rank	53	99	100	100	100	99	100
<b>■</b> PERS							
Return	-4.59	1.87	4.69	7.19	8.34	8.53	9.30
Rank	53	68	78	92	95	95	99
<b>▼</b> OP&F							
Return	-4.88	1.54	4.15	7.33	9.47	10.43	11.33
Rank	53	75	81	88	81	83	87
<b>●</b> SERS							
Return	-6.98	2.09	5.33	8.52	10.52	11.53	12.21
Rank	88	65	56	60	64	57	57
<b>▲</b> STRS							
Return	-6.34	1.70	5.26	7.51	9.42	9.95	10.97
Rank	78	71	62	88	85	91	95
<b>I</b> 50/50 Index							
Return	-2.29	2.50	5.60	8.94	10.79	11.53	12.50
Rank	31	46	53	46	53	57	57

# OHIO RETIREMENT STUDY COUNCIL

## Total Returns of Total Fund Portfolios

### Total Market Value Over 1 Billion

#### Years Ending

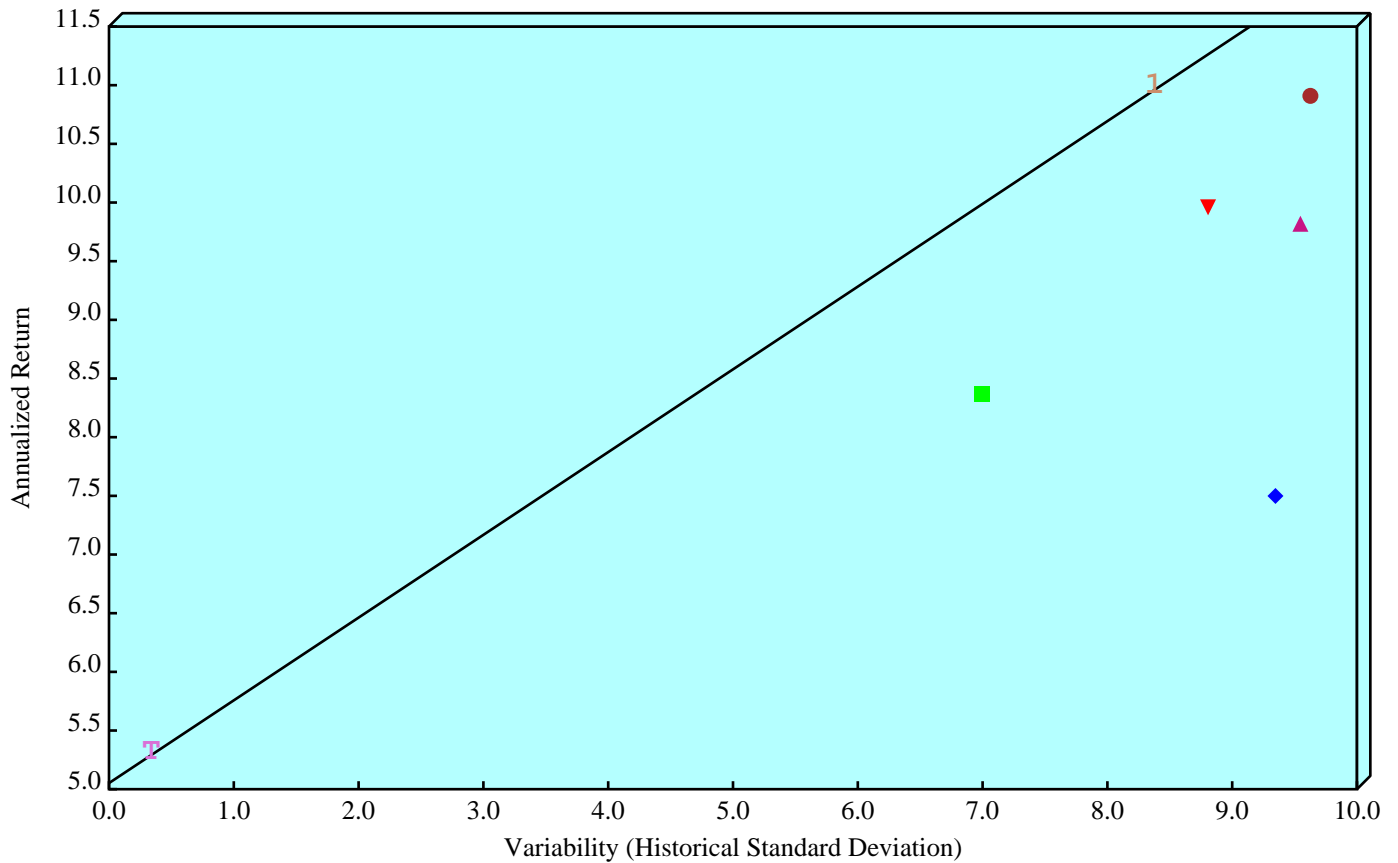


	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	6.45	16.37	16.68	23.68	25.76	21.23	25.64
1st Qt	-1.42	12.50	12.54	20.71	22.73	19.00	19.27
Median	-4.38	8.61	10.82	19.56	20.61	16.52	17.24
3rd Qt	-5.70	6.77	9.62	17.43	17.87	15.34	16.02
Low	-8.06	5.46	5.25	9.36	13.00	11.28	13.18
<b>◆</b> HPRS							
Return	-4.59	2.47	3.66	12.41	16.70	16.41	15.60
Rank	53	100	95	88	81	53	75
<b>■</b> PERS							
Return	-4.59	8.78	10.56	15.04	13.09	9.48	14.04
Rank	53	43	59	78	92	95	83
<b>▼</b> OP&F							
Return	-4.88	8.38	9.59	17.47	18.47	15.34	16.88
Rank	53	56	75	68	67	75	53
<b>●</b> SERS							
Return	-6.98	12.04	12.11	18.67	18.93	16.72	16.33
Rank	88	25	37	56	53	42	64
<b>▲</b> STRS							
Return	-6.34	10.43	12.74	14.55	17.42	12.67	17.24
Rank	78	40	19	78	78	91	50
<b>I</b> 50/50 Index							
Return	-2.29	7.53	12.09	19.59	18.50	15.29	18.55
Rank	31	62	37	46	67	75	35

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly Total Return Market Line Analysis

Periods from 12/93 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
◆ HPRS	7.49	9.40	2.17	0.23
■ PERS	8.36	7.05	3.04	0.43
▼ OP&F	9.95	8.86	4.63	0.52
● SERS	10.90	9.68	5.58	0.58
▲ STRS	9.81	9.60	4.49	0.47
1 50/50 Index	10.99	8.42	5.67	0.67
T 91-Day Treasury Bill	5.32	0.38	0.00	0.00

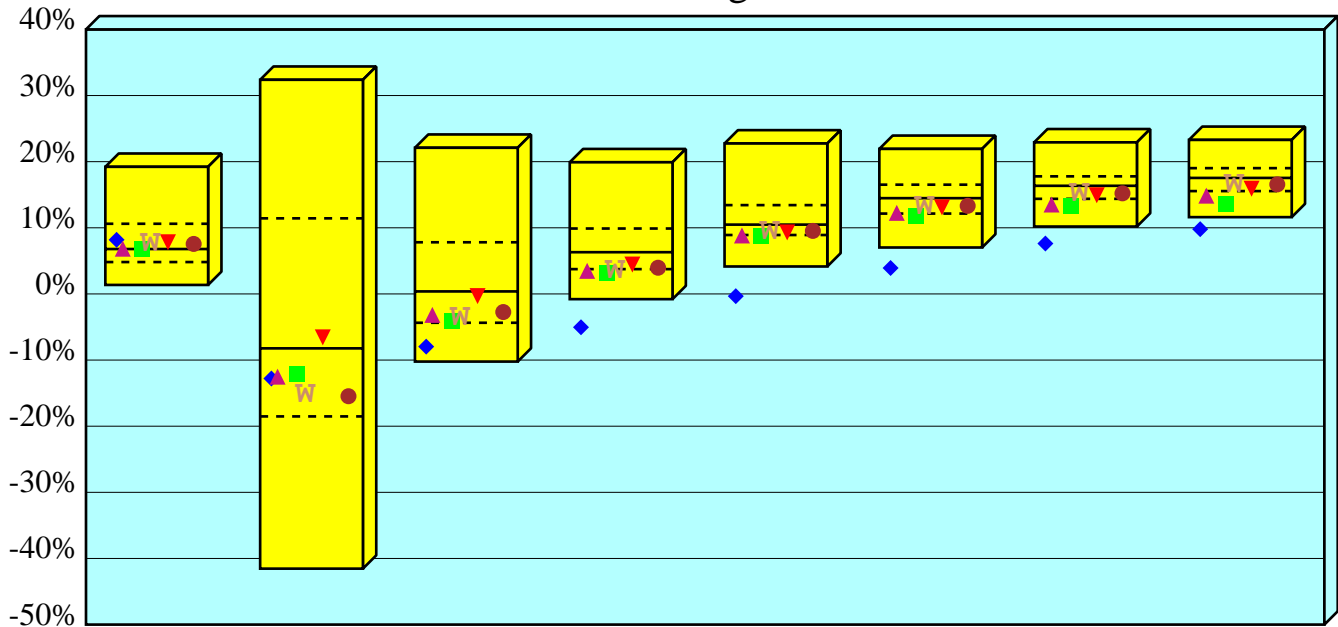
Sharpe Ratio = Reward / Variability

# OHIO RETIREMENT STUDY COUNCIL

## Cumulative Performance Comparison

### Total Returns of Equity Portfolios

#### Periods Ending 6/01



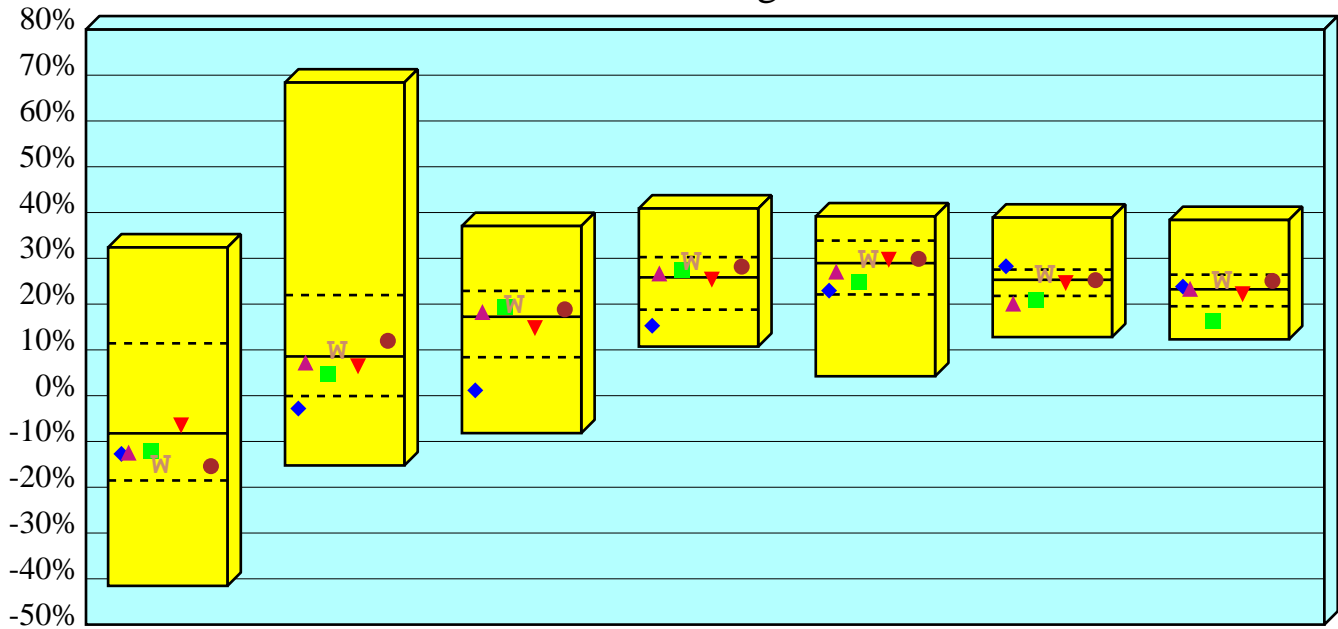
	Last Qtr	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	19.22	32.38	22.10	19.91	22.75	21.93	22.92	23.29
1st Qt	10.61	11.43	7.81	9.89	13.43	16.52	17.78	19.02
Median	6.79	-8.23	0.38	6.31	10.48	14.48	16.35	17.54
3rd Qt	4.82	-18.52	-4.36	3.75	8.91	12.15	14.38	15.55
Low	1.36	-41.54	-10.23	-0.79	4.15	7.02	10.19	11.61
<b>◆ HPRS Domestic Equity</b>								
Return	8.02	-12.95	-8.13	-5.20	-0.50	3.76	7.46	9.63
Rank	38	56	91	98	98	98	98	98
<b>■ PERS Domestic Equity</b>								
Return	6.66	-12.27	-4.22	3.03	8.59	11.61	13.07	13.50
Rank	51	55	72	81	77	79	86	89
<b>▼ OP&amp;F Domestic Equity</b>								
Return	7.65	-6.73	-0.49	4.28	9.14	12.93	14.76	15.75
Rank	41	46	55	66	72	67	71	71
<b>● SERS Domestic Equity</b>								
Return	7.40	-15.63	-2.90	3.80	9.37	13.16	15.05	16.40
Rank	43	69	64	74	70	66	67	65
<b>▲ STRS Domestic Equity</b>								
Return	6.68	-12.67	-3.33	3.33	8.68	12.10	13.36	14.70
Rank	51	56	66	79	76	76	83	82
<b>W Wilshire 5000</b>								
Return	7.48	-15.32	-3.69	3.52	9.34	13.07	15.17	16.49
Rank	42	68	68	78	70	67	66	64

# OHIO RETIREMENT STUDY COUNCIL

## Consecutive Performance Comparison

### Total Returns of Equity Portfolios

#### Years Ending



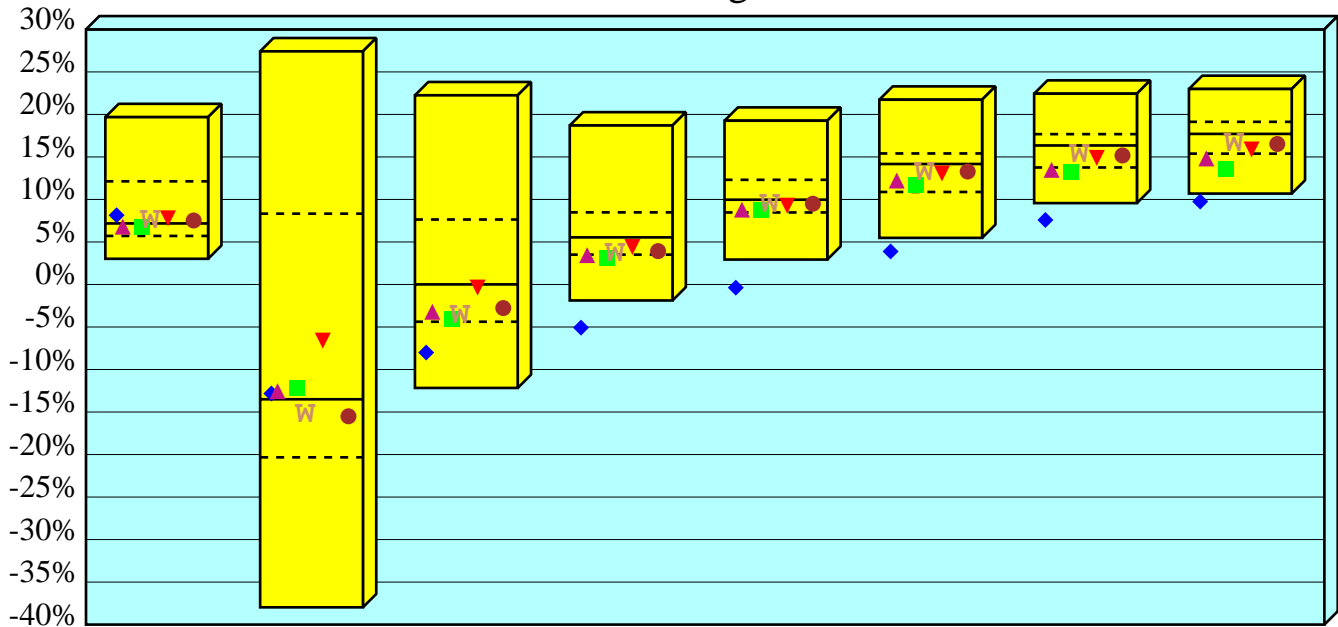
	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	32.38	68.39	37.05	40.88	39.16	38.89	38.37
1st Qt	11.43	21.97	22.88	30.26	33.87	27.54	26.43
Median	-8.23	8.57	17.24	25.84	28.95	25.31	23.23
3rd Qt	-18.52	-0.08	8.40	18.79	22.11	21.79	19.53
Low	-41.54	-15.24	-8.18	10.72	4.24	12.80	12.30
<b>◆</b> HPRS Domestic Equity							
Return	-12.95	-3.04	0.93	15.04	22.71	28.03	23.59
Rank	56	78	86	87	73	22	48
<b>■</b> PERS Domestic Equity							
Return	-12.27	4.57	19.22	27.13	24.57	20.63	16.13
Rank	55	68	43	45	67	80	88
<b>▼</b> OP&F Domestic Equity							
Return	-6.73	6.18	14.52	25.11	29.45	24.35	21.92
Rank	46	65	58	52	47	57	58
<b>●</b> SERS Domestic Equity							
Return	-15.63	11.75	18.63	27.95	29.65	25.00	24.83
Rank	69	42	45	42	46	52	41
<b>▲</b> STRS Domestic Equity							
Return	-12.67	7.01	18.04	26.47	26.87	19.88	23.11
Rank	56	61	47	47	59	82	50
<b>W</b> Wilshire 5000							
Return	-15.32	9.52	19.60	28.87	29.31	26.23	24.73
Rank	68	47	42	38	48	34	41

# OHIO RETIREMENT STUDY COUNCIL

## Cumulative Performance Comparison

### Total Returns of Equity Public Funds

#### Periods Ending 6/01



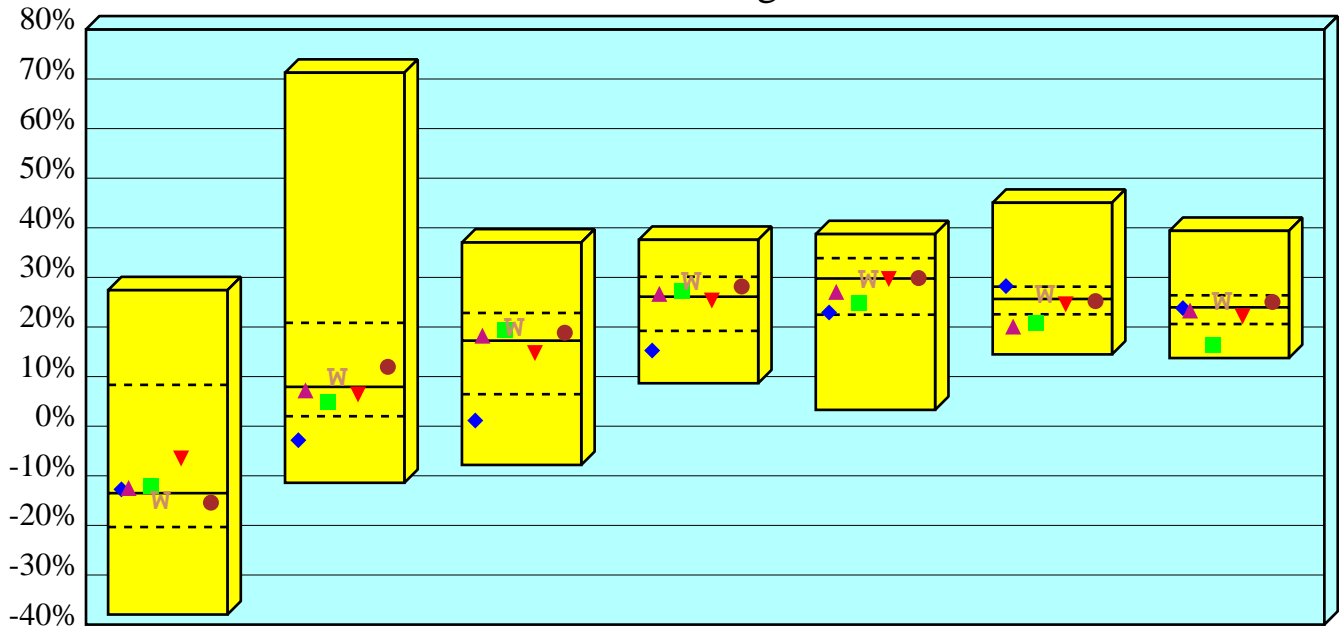
	Last Qtr	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	19.68	27.42	22.25	18.70	19.26	21.73	22.44	22.99
1st Qt	12.13	8.33	7.64	8.48	12.31	15.41	17.68	19.13
Median	7.18	-13.50	0.01	5.54	9.97	14.17	16.35	17.71
3rd Qt	5.71	-20.33	-4.38	3.51	8.47	10.88	13.76	15.39
Low	3.02	-37.97	-12.17	-1.88	2.93	5.48	9.57	10.69
<b>◆ HPRS Domestic Equity</b>								
Return	8.02	-12.95	-8.13	-5.20	-0.50	3.76	7.46	9.63
Rank	42	48	87	97	98	97	98	97
<b>■ PERS Domestic Equity</b>								
Return	6.66	-12.27	-4.22	3.03	8.59	11.61	13.07	13.50
Rank	53	45	69	78	73	69	81	86
<b>▼ OP&amp;F Domestic Equity</b>								
Return	7.65	-6.73	-0.49	4.28	9.14	12.93	14.76	15.75
Rank	45	38	52	57	66	58	66	68
<b>● SERS Domestic Equity</b>								
Return	7.40	-15.63	-2.90	3.80	9.37	13.16	15.05	16.40
Rank	48	68	62	71	64	57	62	62
<b>▲ STRS Domestic Equity</b>								
Return	6.68	-12.67	-3.33	3.33	8.68	12.10	13.36	14.70
Rank	53	47	63	76	72	62	79	80
<b>W Wilshire 5000</b>								
Return	7.48	-15.32	-3.69	3.52	9.34	13.07	15.17	16.49
Rank	47	67	64	74	64	58	62	62

# OHIO RETIREMENT STUDY COUNCIL

## Consecutive Performance Comparison

### Total Returns of Equity Public Funds

#### Years Ending

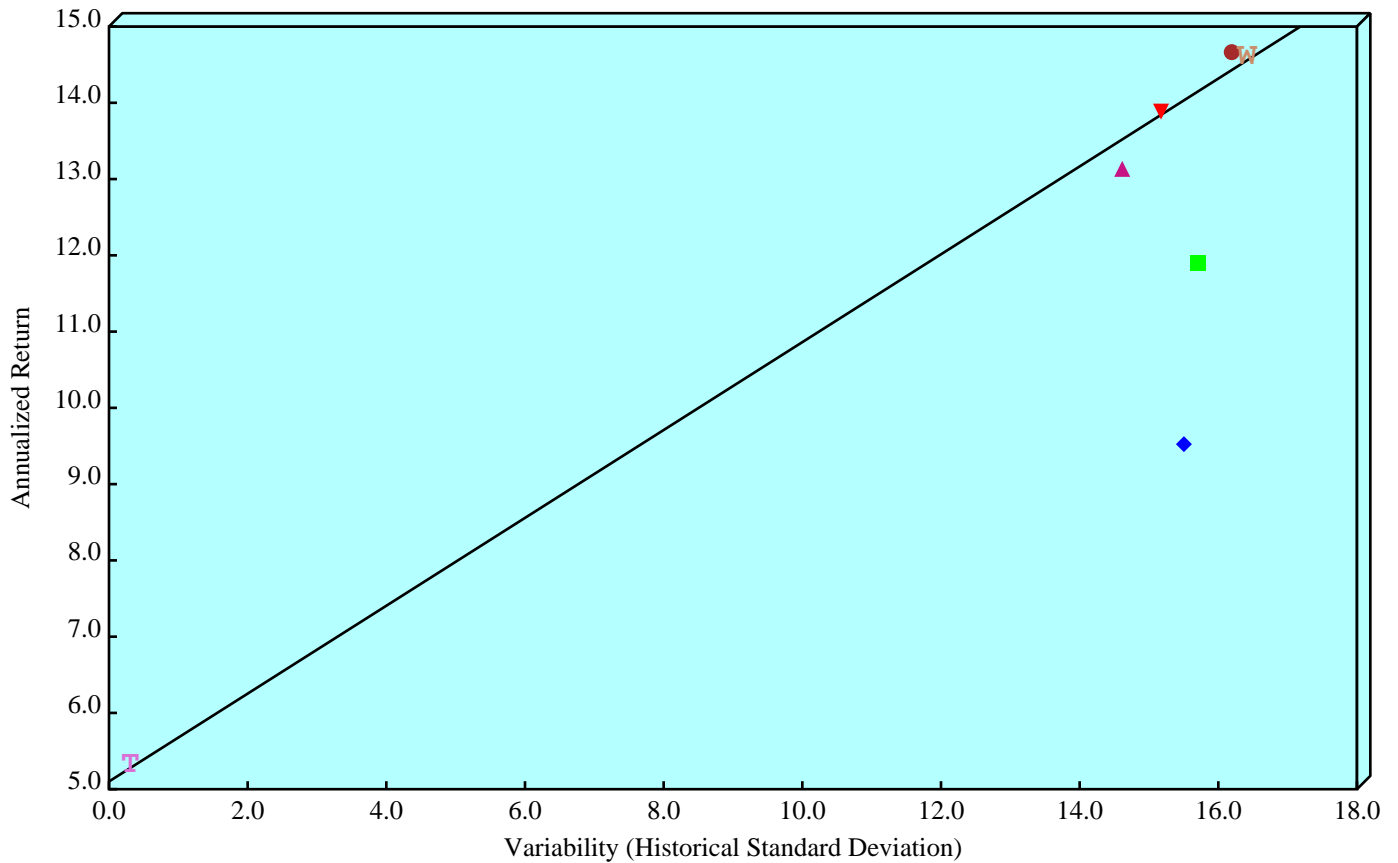


	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	27.42	71.27	37.04	37.58	38.73	45.05	39.39
1st Qt	8.33	20.84	22.83	30.13	33.88	28.13	26.39
Median	-13.50	7.93	17.25	26.11	29.78	25.65	23.96
3rd Qt	-20.33	2.01	6.45	19.22	22.48	22.56	20.60
Low	-37.97	-11.41	-7.81	8.66	3.29	14.48	13.74
<b>◆ HPRS Domestic Equity</b>							
Return	-12.95	-3.04	0.93	15.04	22.71	28.03	23.59
Rank	48	81	84	89	74	25	54
<b>■ PERS Domestic Equity</b>							
Return	-12.27	4.57	19.22	27.13	24.57	20.63	16.13
Rank	45	70	43	45	71	83	90
<b>▼ OP&amp;F Domestic Equity</b>							
Return	-6.73	6.18	14.52	25.11	29.45	24.35	21.92
Rank	38	66	59	53	52	63	65
<b>● SERS Domestic Equity</b>							
Return	-15.63	11.75	18.63	27.95	29.65	25.00	24.83
Rank	68	39	45	42	51	59	43
<b>▲ STRS Domestic Equity</b>							
Return	-12.67	7.01	18.04	26.47	26.87	19.88	23.11
Rank	47	61	47	48	65	86	57
<b>W Wilshire 5000</b>							
Return	-15.32	9.52	19.60	28.87	29.31	26.23	24.73
Rank	67	44	40	37	53	37	44

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly Equity Return Market Line Analysis

Periods from 12/93 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
◆ HPRS	9.51	15.60	4.20	0.27
■ PERS	11.89	15.81	6.57	0.42
▼ OP&F	13.87	15.27	8.55	0.56
● SERS	14.65	16.29	9.33	0.57
▲ STRS	13.12	14.71	7.80	0.53
■ Wilshire 5000	14.60	16.49	9.28	0.56
■ 91-Day Treasury Bill	5.32	0.38	0.00	0.00

Sharpe Ratio = Reward / Variability

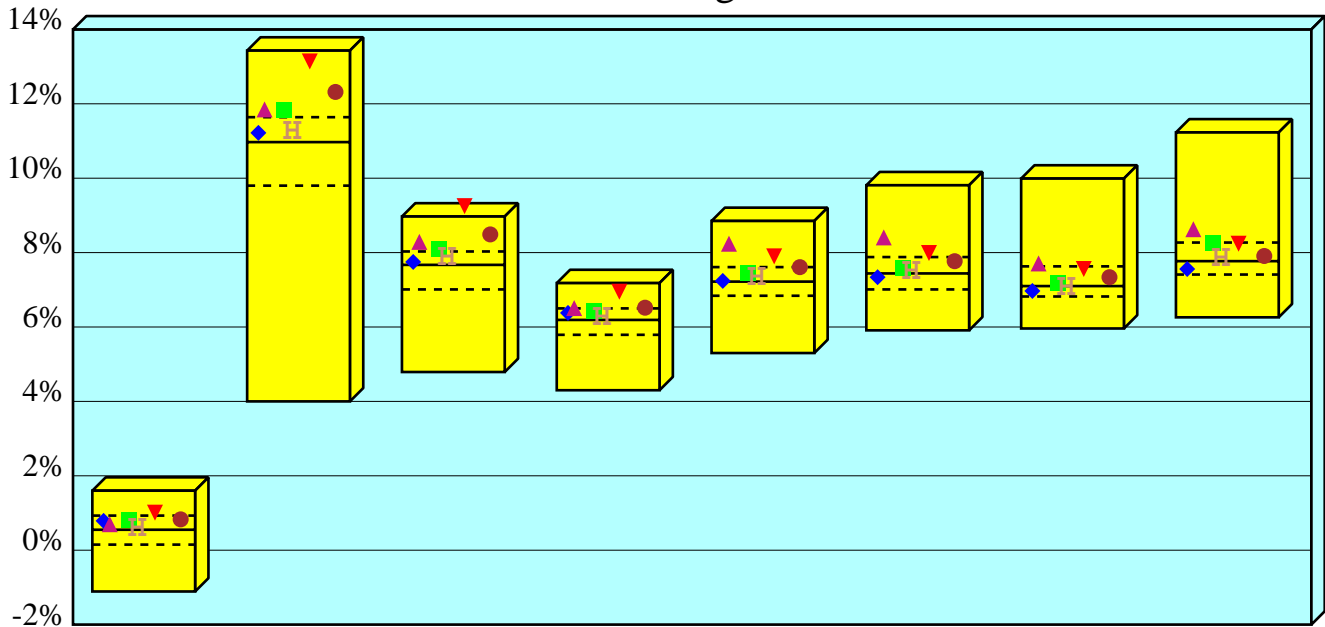


# OHIO RETIREMENT STUDY COUNCIL

## Cumulative Performance Comparison

### Total Returns of Fixed Income Portfolios

#### Periods Ending 6/01



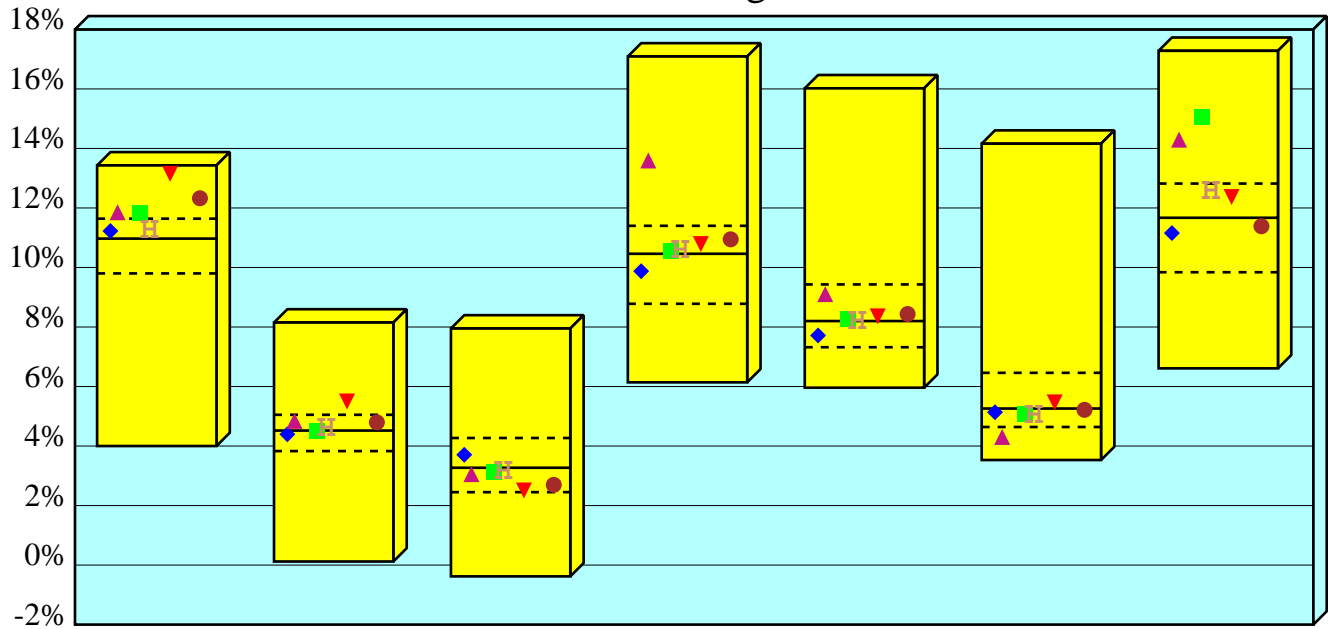
	Last Qtr	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	1.60	13.43	8.97	7.18	8.85	9.81	9.99	11.23
1st Qt	0.93	11.64	8.03	6.50	7.61	7.88	7.63	8.27
Median	0.55	10.97	7.67	6.19	7.22	7.44	7.10	7.77
3rd Qt	0.15	9.80	7.01	5.79	6.84	7.01	6.82	7.41
Low	-1.11	4.00	4.79	4.30	5.30	5.91	5.96	6.26
<b>◆ HPRS Domestic Fixed Income</b>								
Return	0.76	11.19	7.72	6.35	7.21	7.31	6.94	7.53
Rank	35	43	45	36	51	59	65	68
<b>■ PERS Domestic Fixed Income</b>								
Return	0.78	11.81	8.08	6.40	7.41	7.57	7.15	8.24
Rank	33	19	22	32	37	40	47	26
<b>▼ OP&amp;F Domestic Fixed Income</b>								
Return	0.98	13.11	9.22	6.92	7.87	7.96	7.53	8.21
Rank	23	6	4	6	16	22	28	26
<b>● SERS Domestic Fixed Income</b>								
Return	0.80	12.29	8.46	6.49	7.58	7.74	7.31	7.88
Rank	32	13	10	26	27	30	36	43
<b>▲ STRS Domestic Fixed Income</b>								
Return	0.67	11.82	8.26	6.48	8.21	8.38	7.68	8.60
Rank	40	19	16	27	11	13	23	17
<b>H LB Aggregate</b>								
Return	0.56	11.23	7.84	6.25	7.31	7.48	7.06	7.83
Rank	49	40	33	44	42	46	54	47

# OHIO RETIREMENT STUDY COUNCIL

## Consecutive Performance Comparison

### Total Returns of Fixed Income Portfolios

#### Years Ending



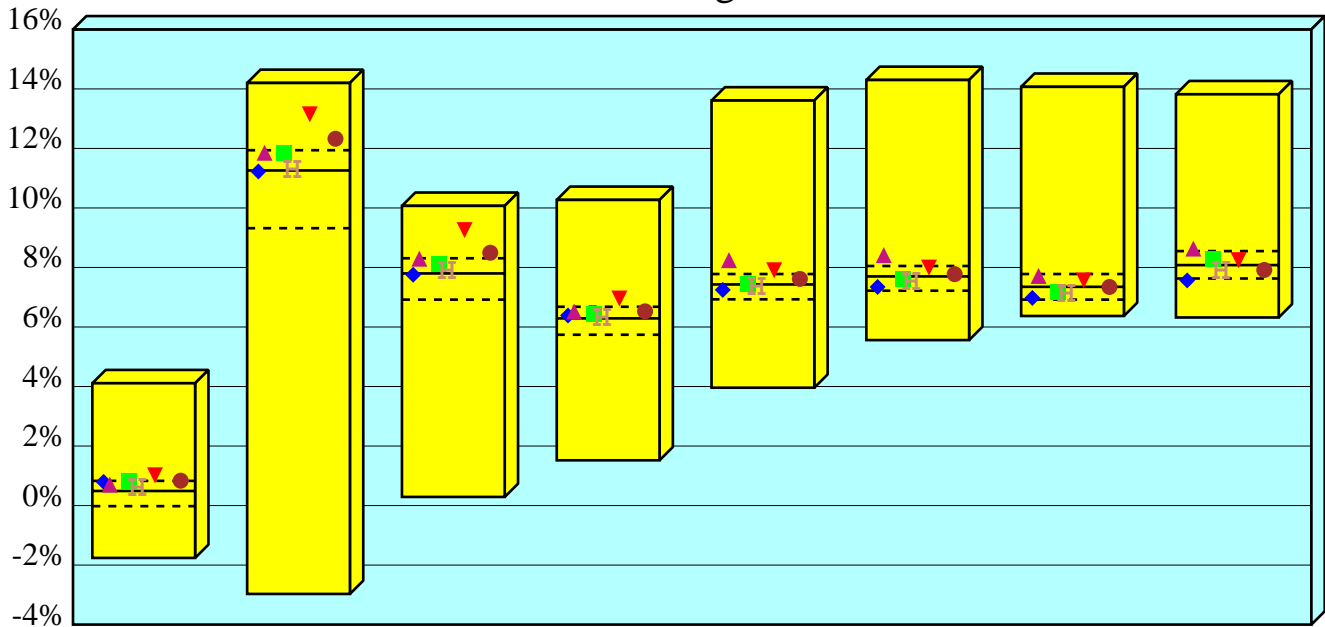
	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	13.43	8.15	7.95	17.09	16.02	14.16	17.28
1st Qt	11.64	5.05	4.27	11.40	9.43	6.46	12.82
Median	10.97	4.52	3.27	10.46	8.20	5.26	11.67
3rd Qt	9.80	3.83	2.45	8.78	7.32	4.64	9.84
Low	4.00	0.12	-0.38	6.14	5.96	3.53	6.61
<b>◆ HPRS Domestic Fixed Income</b>							
Return	11.19	4.36	3.67	9.84	7.68	5.10	11.12
Rank	43	57	40	60	65	57	62
<b>■ PERS Domestic Fixed Income</b>							
Return	11.81	4.48	3.10	10.51	8.22	5.05	15.01
Rank	19	51	56	49	49	59	10
<b>▼ OP&amp;F Domestic Fixed Income</b>							
Return	13.11	5.46	2.47	10.75	8.32	5.43	12.33
Rank	6	15	74	42	46	45	36
<b>● SERS Domestic Fixed Income</b>							
Return	12.29	4.76	2.66	10.91	8.40	5.18	11.35
Rank	13	38	70	37	44	53	59
<b>▲ STRS Domestic Fixed Income</b>							
Return	11.82	4.81	3.02	13.56	9.07	4.27	14.26
Rank	19	35	59	9	30	87	12
<b>■ LB Aggregate</b>							
Return	11.23	4.56	3.13	10.54	8.16	5.01	12.55
Rank	40	47	55	48	51	61	31

# OHIO RETIREMENT STUDY COUNCIL

## Cumulative Performance Comparison

### Total Returns of Fixed Income Public Funds

#### Periods Ending 6/01



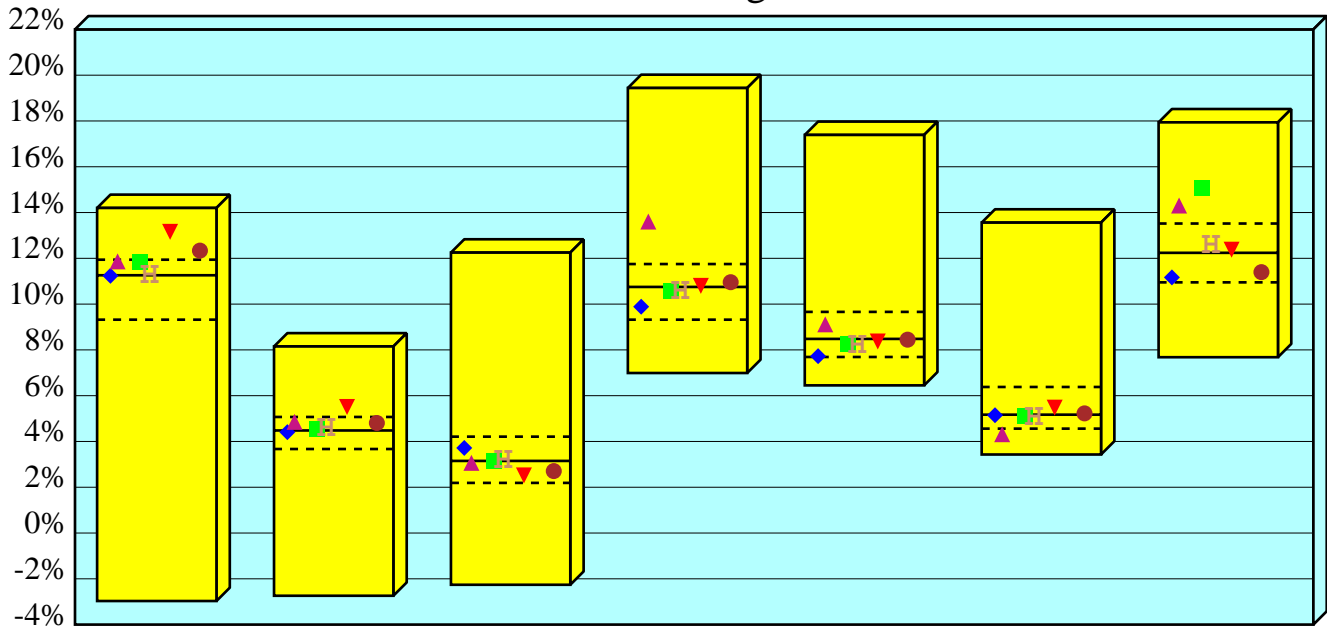
	Last Qtr	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	4.11	14.20	10.07	10.27	13.61	14.30	14.07	13.82
1st Qt	0.83	11.94	8.31	6.68	7.78	8.05	7.78	8.55
Median	0.49	11.26	7.80	6.29	7.43	7.70	7.35	8.08
3rd Qt	-0.02	9.32	6.92	5.74	6.93	7.22	6.92	7.63
Low	-1.76	-2.97	0.29	1.52	3.96	5.56	6.37	6.32
<b>◆ HPRS Domestic Fixed Income</b>								
Return	0.76	11.19	7.72	6.35	7.21	7.31	6.94	7.53
Rank	30	53	57	45	64	73	73	81
<b>■ PERS Domestic Fixed Income</b>								
Return	0.78	11.81	8.08	6.40	7.41	7.57	7.15	8.24
Rank	29	28	32	43	56	63	65	37
<b>▼ OP&amp;F Domestic Fixed Income</b>								
Return	0.98	13.11	9.22	6.92	7.87	7.96	7.53	8.21
Rank	21	7	6	14	24	30	37	39
<b>● SERS Domestic Fixed Income</b>								
Return	0.80	12.29	8.46	6.49	7.58	7.74	7.31	7.88
Rank	27	15	17	36	41	46	53	58
<b>▲ STRS Domestic Fixed Income</b>								
Return	0.67	11.82	8.26	6.48	8.21	8.38	7.68	8.60
Rank	37	27	27	37	20	21	35	21
<b>H LB Aggregate</b>								
Return	0.56	11.23	7.84	6.25	7.31	7.48	7.06	7.83
Rank	46	53	47	53	62	66	71	62

# OHIO RETIREMENT STUDY COUNCIL

## Consecutive Performance Comparison

### Total Returns of Fixed Income Public Funds

#### Years Ending

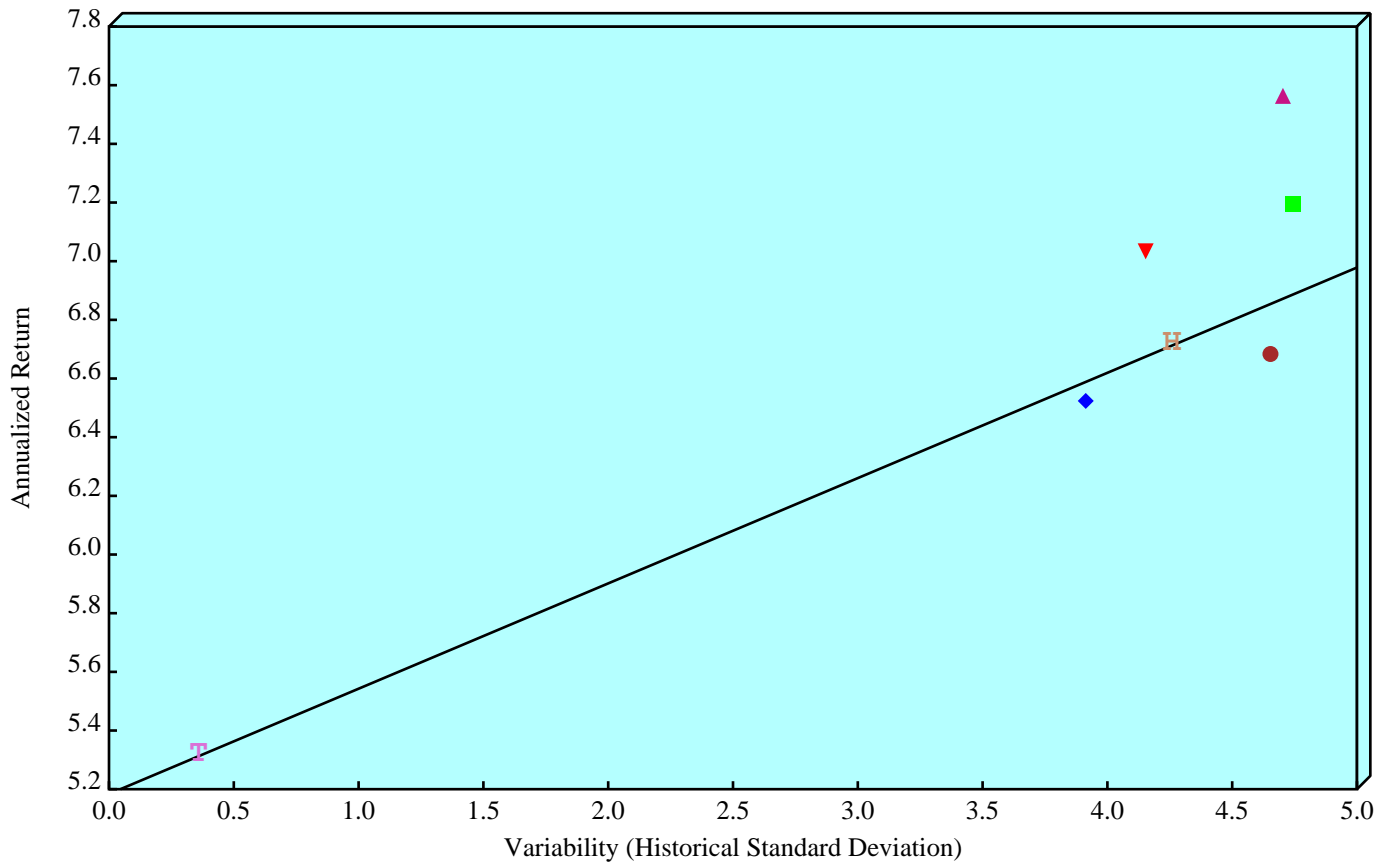


	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	14.20	8.15	12.25	19.44	17.39	13.56	17.94
1st Qt	11.94	5.07	4.21	11.75	9.66	6.38	13.52
Median	11.26	4.48	3.15	10.75	8.48	5.17	12.24
3rd Qt	9.32	3.67	2.19	9.32	7.69	4.56	10.95
Low	-2.97	-2.74	-2.26	6.99	6.45	3.43	7.68
<b>◆ HPRS Domestic Fixed Income</b>							
Return	11.19	4.36	3.67	9.84	7.68	5.10	11.12
Rank	53	57	35	70	76	54	72
<b>■ PERS Domestic Fixed Income</b>							
Return	11.81	4.48	3.10	10.51	8.22	5.05	15.01
Rank	28	50	52	58	61	57	13
<b>▼ OP&amp;F Domestic Fixed Income</b>							
Return	13.11	5.46	2.47	10.75	8.32	5.43	12.33
Rank	7	16	71	50	56	41	47
<b>● SERS Domestic Fixed Income</b>							
Return	12.29	4.76	2.66	10.91	8.40	5.18	11.35
Rank	15	37	67	46	52	49	69
<b>▲ STRS Domestic Fixed Income</b>							
Return	11.82	4.81	3.02	13.56	9.07	4.27	14.26
Rank	27	33	55	14	36	83	19
<b>H LB Aggregate</b>							
Return	11.23	4.56	3.13	10.54	8.16	5.01	12.55
Rank	53	47	51	57	62	58	41

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly Fixed Income Return Market Line Analysis

Periods from 12/93 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
◆ HPRS	6.52	3.94	1.20	0.30
■ PERS	7.19	4.77	1.87	0.39
▼ OP&F	7.03	4.18	1.71	0.41
● SERS	6.68	4.68	1.36	0.29
▲ STRS	7.56	4.73	2.24	0.47
■ LB Aggregate	6.72	4.28	1.41	0.33
■ 91-Day Treasury Bill	5.32	0.38	0.00	0.00

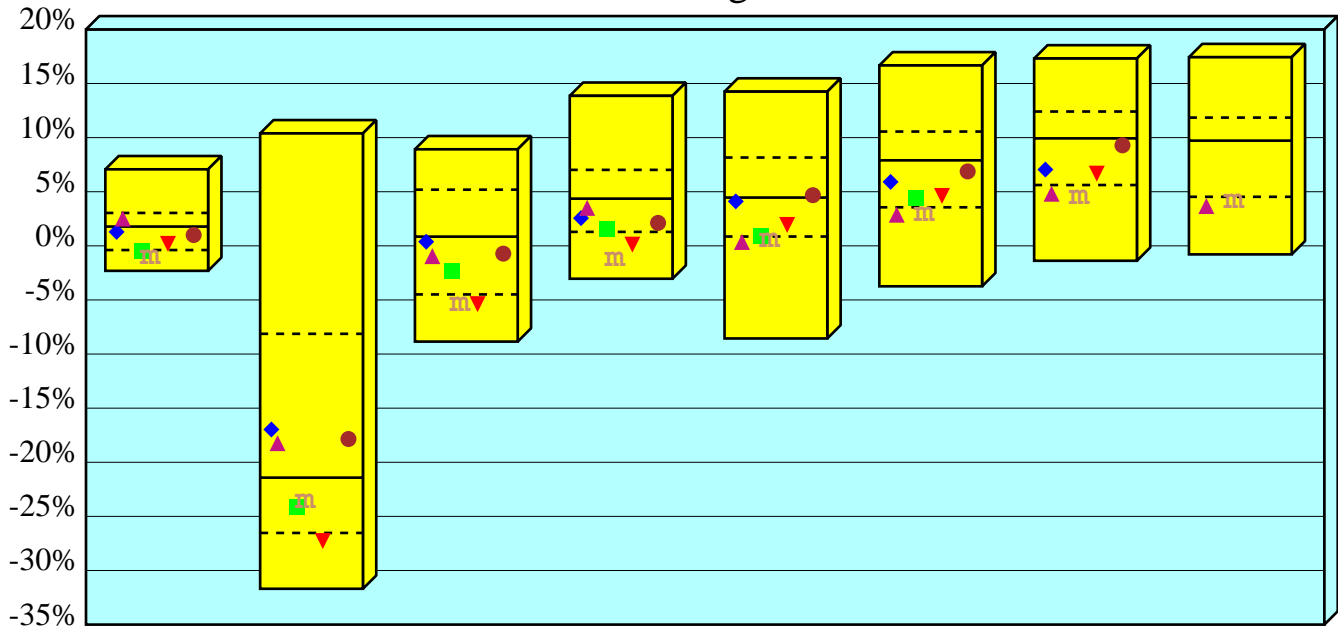
Sharpe Ratio = Reward / Variability

# OHIO RETIREMENT STUDY COUNCIL

## Cumulative Performance Comparison

### Total Returns of International Equity Portfolios

#### Periods Ending 6/01



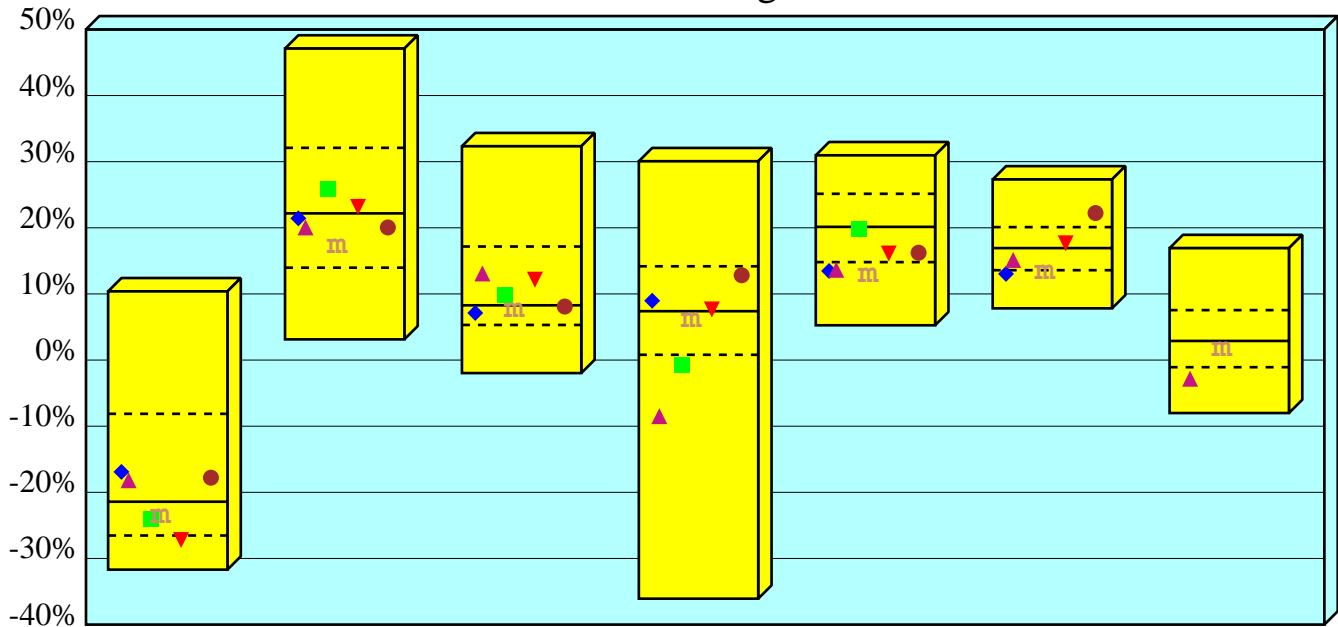
	Last Qtr	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	7.07	10.39	8.92	13.86	14.25	16.67	17.31	17.43
1st Qt	3.04	-8.13	5.19	7.02	8.16	10.56	12.41	11.85
Median	1.78	-21.42	0.85	4.36	4.46	7.90	9.93	9.72
3rd Qt	-0.39	-26.53	-4.49	1.29	0.86	3.56	5.62	4.53
Low	-2.31	-31.69	-8.85	-3.04	-8.56	-3.74	-1.38	-0.79
<b>◆ HPRS Intn'l Equity</b>								
Return	1.19	-17.07	0.28	2.46	4.01	5.81	6.95	
Rank	54	38	57	58	53	62	66	
<b>■ PERS Intn'l Equity</b>								
Return	-0.61	-24.25	-2.41	1.45	0.84	4.35		
Rank	78	63	67	73	76	68		
<b>▼ OP&amp;F Intn'l Equity</b>								
Return	0.08	-27.38	-5.49	0.01	1.83	4.51	6.57	
Rank	70	81	80	79	67	66	67	
<b>● SERS Intn'l Equity</b>								
Return	0.90	-17.95	-0.82	2.02	4.58	6.78	9.19	
Rank	59	38	64	66	49	60	53	
<b>▲ STRS Intn'l Equity</b>								
Return	2.42	-18.33	-1.05	3.41	0.26	2.78	4.72	3.58
Rank	36	38	64	52	82	81	81	80
<b>m MSCI EAFE (Net)</b>								
Return	-1.05	-23.61	-5.39	-1.25	0.54	2.89	4.55	4.13
Rank	86	62	80	88	78	79	81	76

# OHIO RETIREMENT STUDY COUNCIL

## Consecutive Performance Comparison

### Total Returns of International Equity Portfolios

#### Years Ending

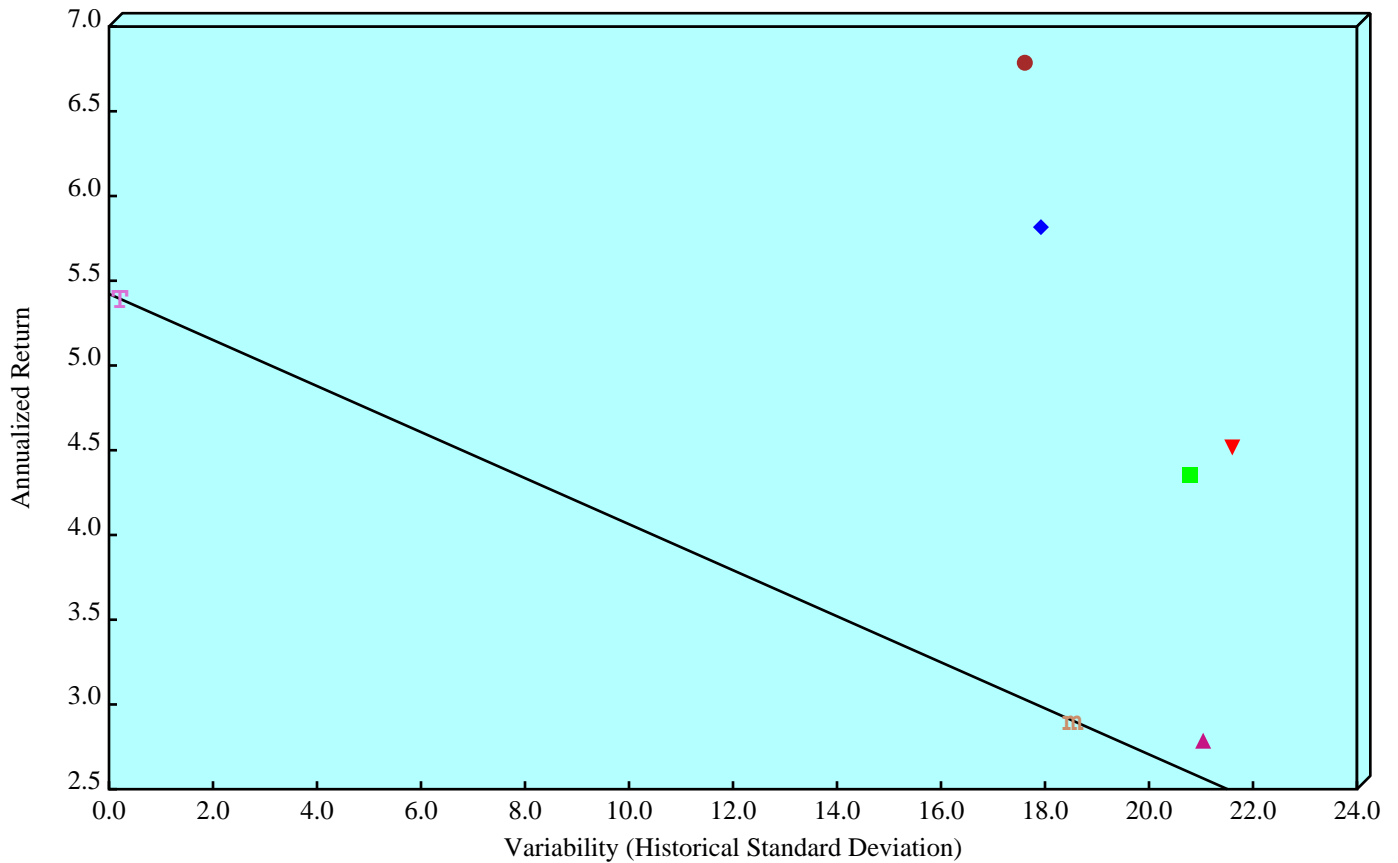


	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	10.39	47.10	32.33	30.06	30.96	27.31	16.92
1st Qt	-8.13	32.09	17.17	14.18	25.14	20.10	7.55
Median	-21.42	22.18	8.28	7.39	20.14	16.93	2.89
3rd Qt	-26.53	13.97	5.31	0.80	14.81	13.59	-1.08
Low	-31.69	3.13	-1.97	-36.08	5.26	7.82	-8.01
<b>◆</b> HPRS Intn'l Equity							
Return	-17.07	21.27	6.96	8.81	13.31	12.87	
Rank	38	52	61	41	80	81	
<b>■</b> PERS Intn'l Equity							
Return	-24.25	25.72	9.63	-0.95	19.62		
Rank	63	36	43	76	53		
<b>▼</b> OP&F Intn'l Equity							
Return	-27.38	23.00	11.99	7.49	15.95	17.49	
Rank	81	48	36	49	70	44	
<b>●</b> SERS Intn'l Equity							
Return	-17.95	19.89	7.93	12.66	16.07	22.07	
Rank	38	55	53	30	70	13	
<b>▲</b> STRS Intn'l Equity							
Return	-18.33	19.90	12.94	-8.64	13.49	14.98	-2.98
Rank	38	55	34	83	78	64	82
<b>m</b> MSCI EAFE (Net)							
Return	-23.61	17.18	7.59	6.09	12.84	13.28	1.66
Rank	62	64	57	57	85	78	59

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly International Equity Return Market Line Analysis

### Periods from 6/96 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
◆ HPRS	5.81	18.05	0.43	0.02
■ PERS	4.35	20.92	-1.03	-0.05
▼ OP&F	4.51	21.73	-0.87	-0.04
● SERS	6.78	17.74	1.40	0.08
▲ STRS	2.78	21.17	-2.61	-0.12
■ MSCI EAFE (Net)	2.89	18.64	-2.49	-0.13
■ 91-Day Treasury Bill	5.38	0.31	0.00	0.00

Sharpe Ratio = Reward / Variability

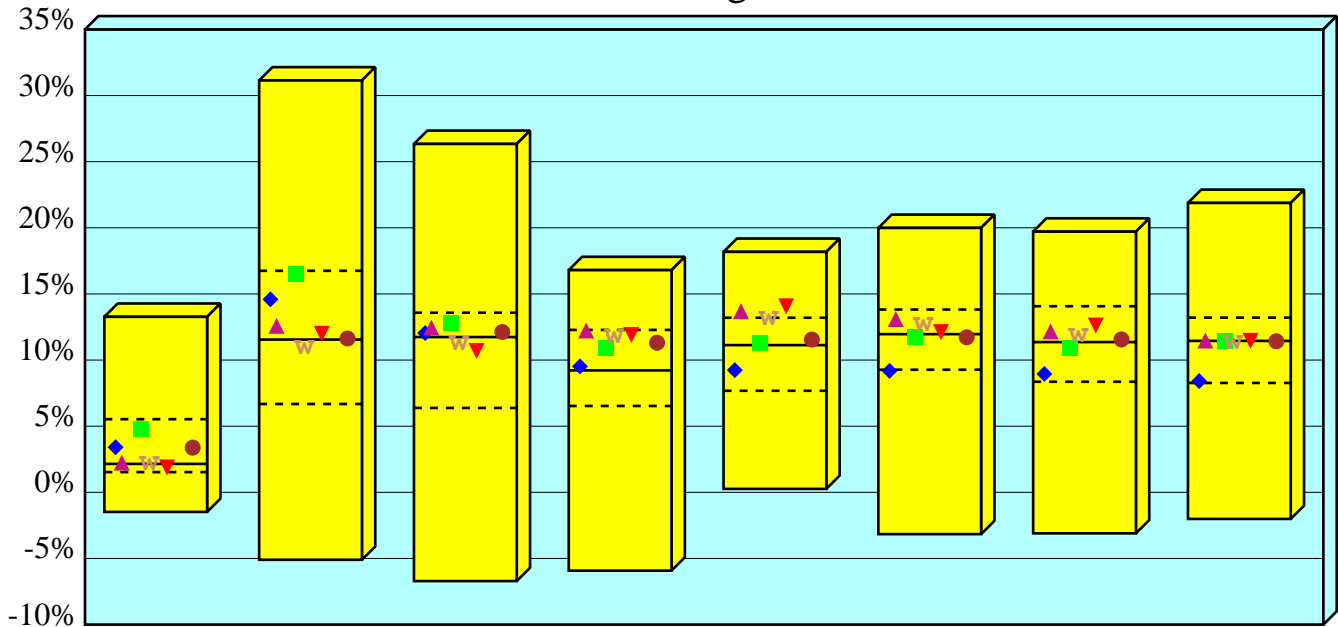


# OHIO RETIREMENT STUDY COUNCIL

## Cumulative Performance Comparison

### Total Returns of Real Estate Portfolios

#### Periods Ending 6/01



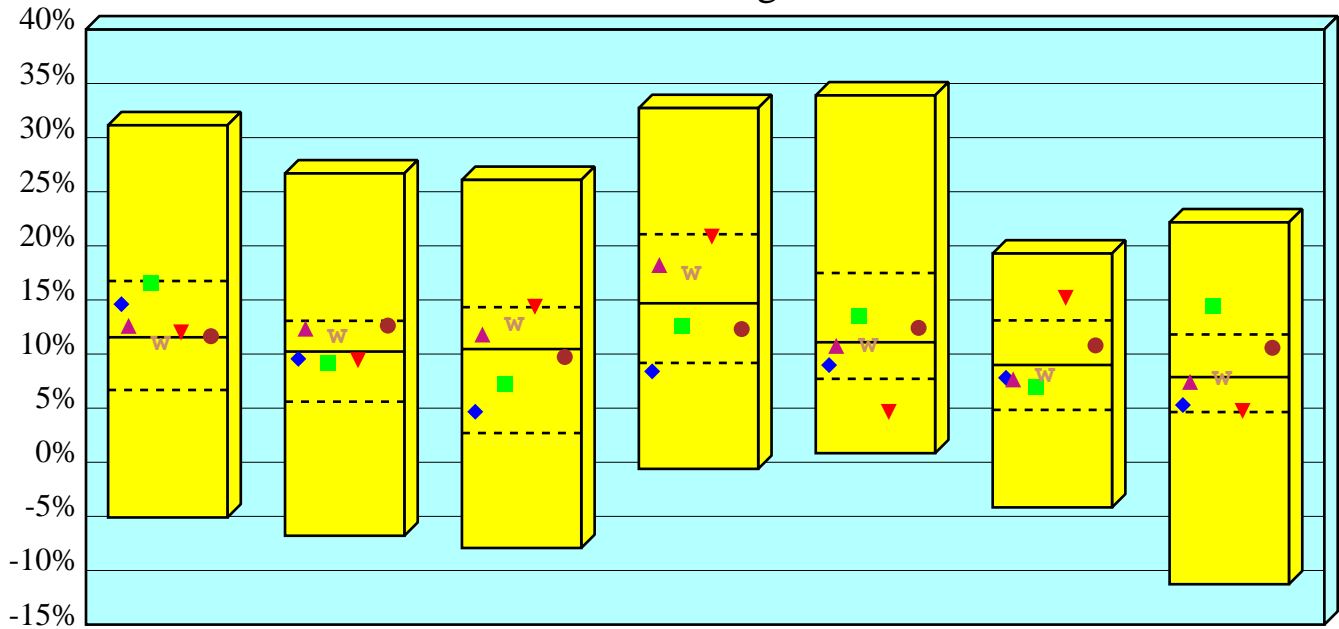
	Last Qtr	Last Year	Last 2 Years	Last 3 Years	Last 4 Years	Last 5 Years	Last 6 Years	Last 7 Years
High	13.27	31.14	26.34	16.80	18.18	19.99	19.71	21.88
1st Qt	5.53	16.75	13.58	12.28	13.20	13.82	14.07	13.21
Median	2.15	11.55	11.74	9.22	11.13	11.96	11.36	11.45
3rd Qt	1.53	6.68	6.38	6.53	7.68	9.27	8.36	8.27
Low	-1.48	-5.10	-6.71	-5.92	0.26	-3.16	-3.10	-2.01
<b>◆ HPRS Real Estate</b>								
Return	3.33	14.51	11.96	9.44	9.16	9.10	8.87	8.33
Rank	33	29	45	49	61	76	68	73
<b>■ PERS Real Estate</b>								
Return	4.72	16.46	12.70	10.82	11.23	11.67	10.85	11.34
Rank	26	25	36	38	49	53	55	50
<b>▼ OP&amp;F Real Estate</b>								
Return	1.80	11.90	10.60	11.81	13.98	12.03	12.53	11.37
Rank	66	44	60	27	16	47	41	50
<b>● SERS Real Estate</b>								
Return	3.30	11.55	12.04	11.23	11.47	11.64	11.48	11.34
Rank	33	50	44	33	48	53	48	50
<b>▲ STRS Real Estate</b>								
Return	2.17	12.51	12.38	12.16	13.62	13.02	12.09	11.40
Rank	49	38	39	26	19	36	43	50
<b>w NCREIF</b>								
Return	2.23	11.00	11.32	11.81	13.19	12.71	11.92	11.33
Rank	47	55	53	27	25	37	47	50

# OHIO RETIREMENT STUDY COUNCIL

## Consecutive Performance Comparison

### Total Returns of Real Estate Portfolios

#### Years Ending



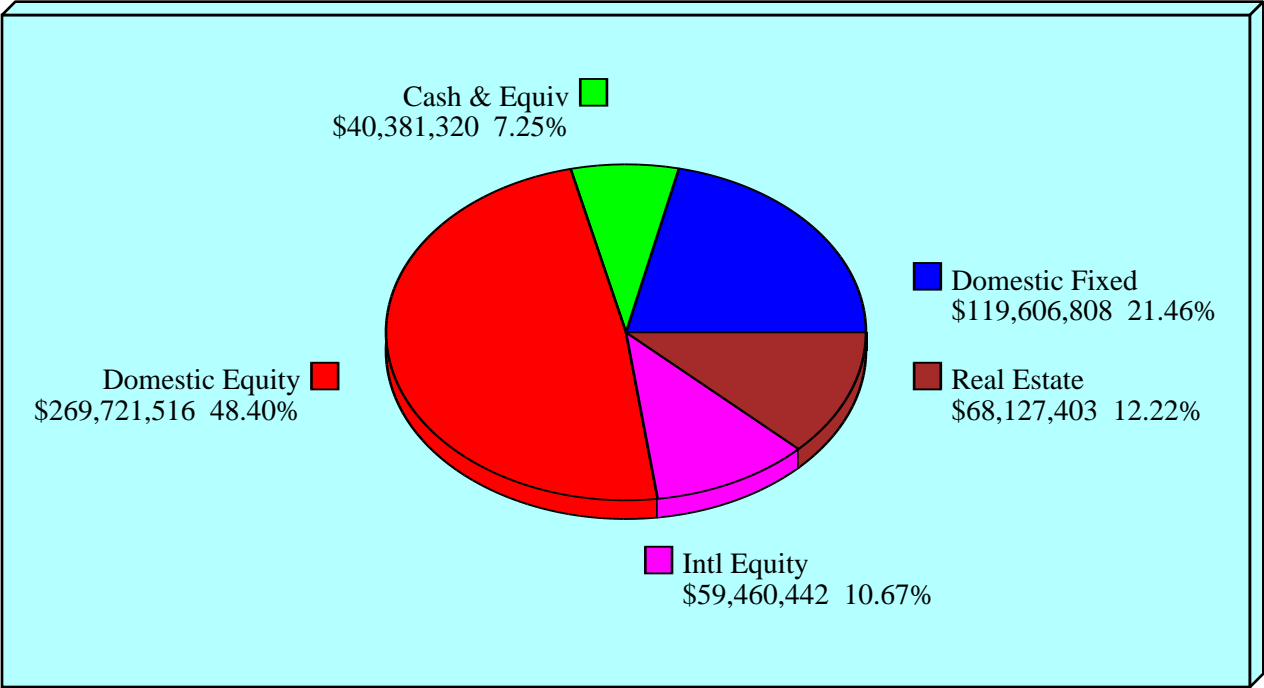
	6/01	6/00	6/99	6/98	6/97	6/96	6/95
High	31.14	26.69	26.09	32.73	33.90	19.29	22.17
1st Qt	16.75	13.07	14.33	21.07	17.49	13.11	11.81
Median	11.55	10.23	10.46	14.69	11.09	8.99	7.87
3rd Qt	6.68	5.60	2.70	9.18	7.71	4.84	4.64
Low	-5.10	-6.79	-7.92	-0.61	0.84	-4.17	-11.27
<b>◆ HPRS Real Estate</b>							
Return	14.51	9.46	4.57	8.30	8.88	7.71	5.19
Rank	29	53	69	79	67	59	71
<b>■ PERS Real Estate</b>							
Return	16.46	9.07	7.15	12.47	13.44	6.82	14.35
Rank	25	56	63	62	38	63	13
<b>▼ OP&amp;F Real Estate</b>							
Return	11.90	9.33	14.27	20.75	4.55	15.09	4.64
Rank	44	54	25	26	88	16	75
<b>● SERS Real Estate</b>							
Return	11.55	12.53	9.63	12.21	12.32	10.70	10.48
Rank	50	27	57	63	43	38	35
<b>▲ STRS Real Estate</b>							
Return	12.51	12.25	11.71	18.13	10.66	7.56	7.33
Rank	38	30	43	36	54	60	56
<b>w NCREIF</b>							
Return	11.00	11.63	12.79	17.45	10.81	8.07	7.80
Rank	55	36	35	39	53	58	50

# OHIO RETIREMENT STUDY COUNCIL

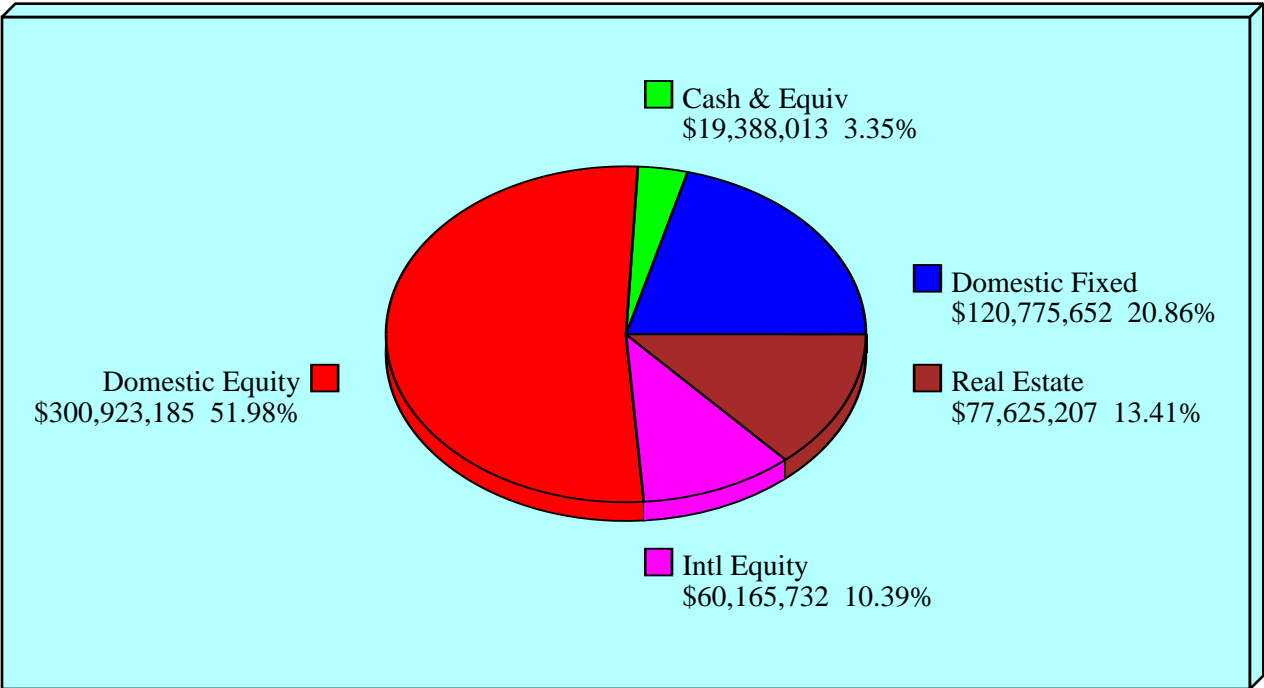
## Asset Allocation

### HPRS

March 31, 2001      \$557,297,489



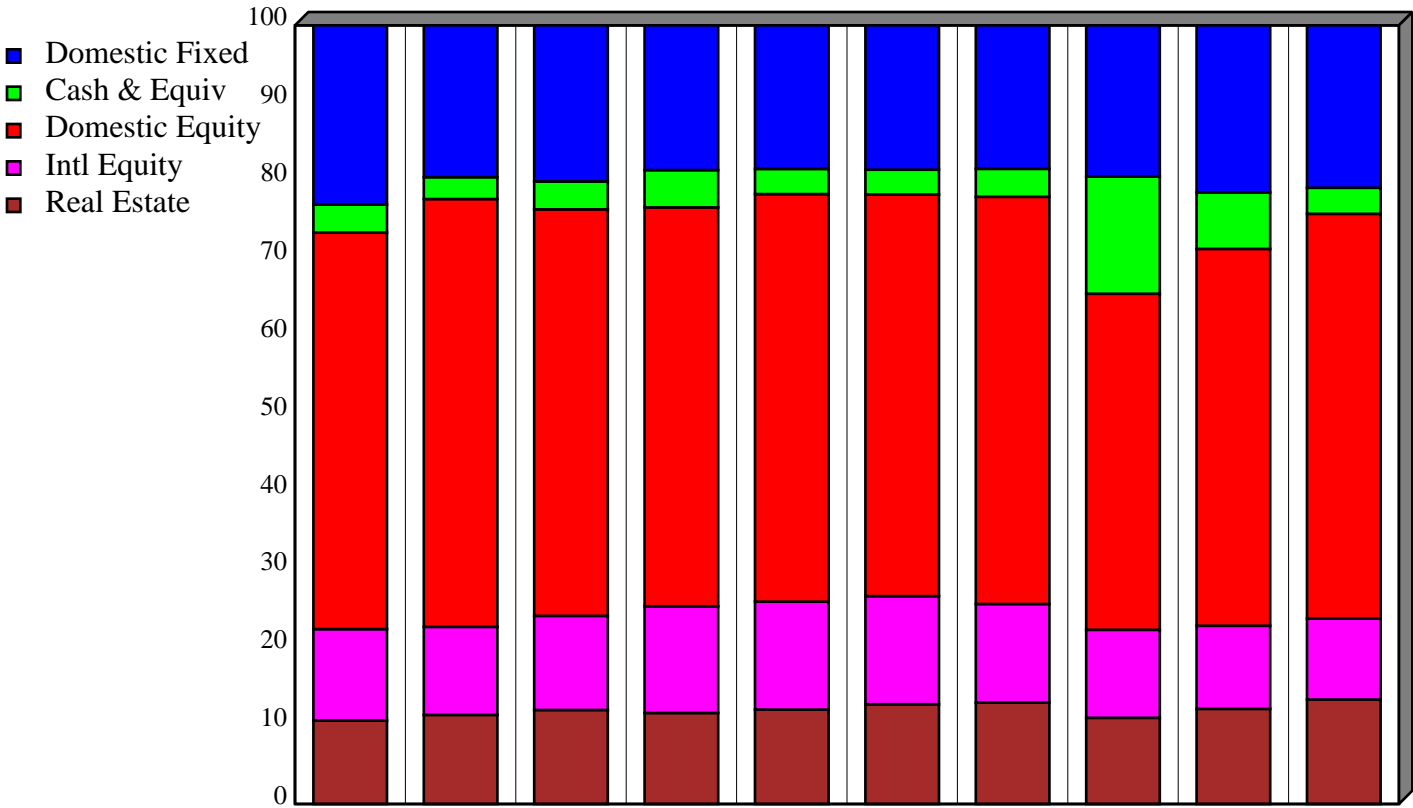
June 30, 2001      \$578,877,789



# OHIO RETIREMENT STUDY COUNCIL

## Asset Allocation

### HPRS



	3/99	6/99	9/99	12/99	3/00	6/00	9/00	12/00	3/01	6/01
Domestic Fixed %	23.0	19.5	20.0	18.6	18.4	18.5	18.4	19.4	21.5	20.9
Cash & Equiv %	3.6	2.8	3.6	4.8	3.2	3.2	3.6	15.1	7.2	3.3
Domestic Equity %	50.9	54.9	52.2	51.2	52.3	51.6	52.3	43.2	48.4	52.0
Intl Equity %	11.7	11.3	12.1	13.7	13.9	13.9	12.7	11.3	10.7	10.4
Real Estate %	10.7	11.4	12.1	11.7	12.1	12.8	13.0	11.1	12.2	13.4
Total Value (\$mil)	571.6	626.2	590.3	622.9	620.7	611.5	627.2	598.3	557.3	578.9

OHIO RETIREMENT STUDY COUNCIL  
 Custom Benchmark Specification  
 HPRS  
 Quarter Ending 6/30/01

Label	Quarter Start	Quarter End	Percent	Description
Policy Index	3/94	12/95	50.00	LB Aggregate
			50.00	Standard & Poors 500
	3/96	12/97	5.00	NCREIF
			5.00	MSCI EAFE (Net)
			40.00	LB Aggregate
			50.00	Standard & Poors 500
	3/98	9/99	15.00	Russell 2000
			40.00	Standard & Poors 500
			25.00	LB Aggregate
			10.00	MSCI EAFE (Net)
			10.00	NCREIF
	12/99	12/00	20.00	Russell 2000
			40.00	Standard & Poors 500
			20.00	LB Aggregate
			10.00	MSCI EAFE (Net)
			10.00	NCREIF
	3/01	6/01	40.00	Standard & Poors 500
			20.00	Russell 2500
			20.00	LB Aggregate
			10.00	MSCI EAFE (Net)
10.00			NCREIF	

OHIO RETIREMENT STUDY COUNCIL  
Performance Overview  
HPRS  
Returns for Periods Ending June 30, 2001

	Last Quarter	Last 2 Quarters	Last 3 Quarters	Last Year	Last 3 Years	Last 5 Years	Since 1st Qtr 94
Total Return	4.59	-2.61	-6.65	-4.59	0.45	5.86	7.49
Policy Index Return	5.31	-2.07	-5.63	-5.70	5.49	11.31	11.57
Domestic Equity Return	8.02	-5.73	-15.97	-12.95	-5.20	3.76	9.51
Equity Segment Median Return	6.89	-4.40	-9.97	-8.69	5.98	14.44	
Wilshire 5000	7.48	-5.78	-15.52	-15.32	3.52	13.07	14.60
Int'l Equity Return	1.19	-10.95	-11.32	-17.07	2.46	5.81	
Int'l Equity Segment Median Return	1.50	-8.00	-14.09	-20.78	2.90	7.82	
MSCI EAFE (Net)	-1.05	-14.61	-16.91	-23.61	-1.25	2.89	5.02
Domestic Fixed Return	0.76	3.66	8.13	11.19	6.35	7.31	6.52
Fixed Income Segment Median Return	0.49	3.57	7.84	10.91	6.21	7.45	
LB Aggregate	0.56	3.60	7.97	11.23	6.25	7.48	6.72
Cash Return	1.50	2.95	4.34	5.97	5.35	5.43	
Real Estate Return	3.33	3.95	9.78	14.51	9.44	9.10	8.03
NCREIF	2.23	4.56	7.78	11.00	11.81	12.71	10.95

OHIO RETIREMENT STUDY COUNCIL  
Performance Overview  
HPRS  
Returns for Periods Ending June 30, 2001

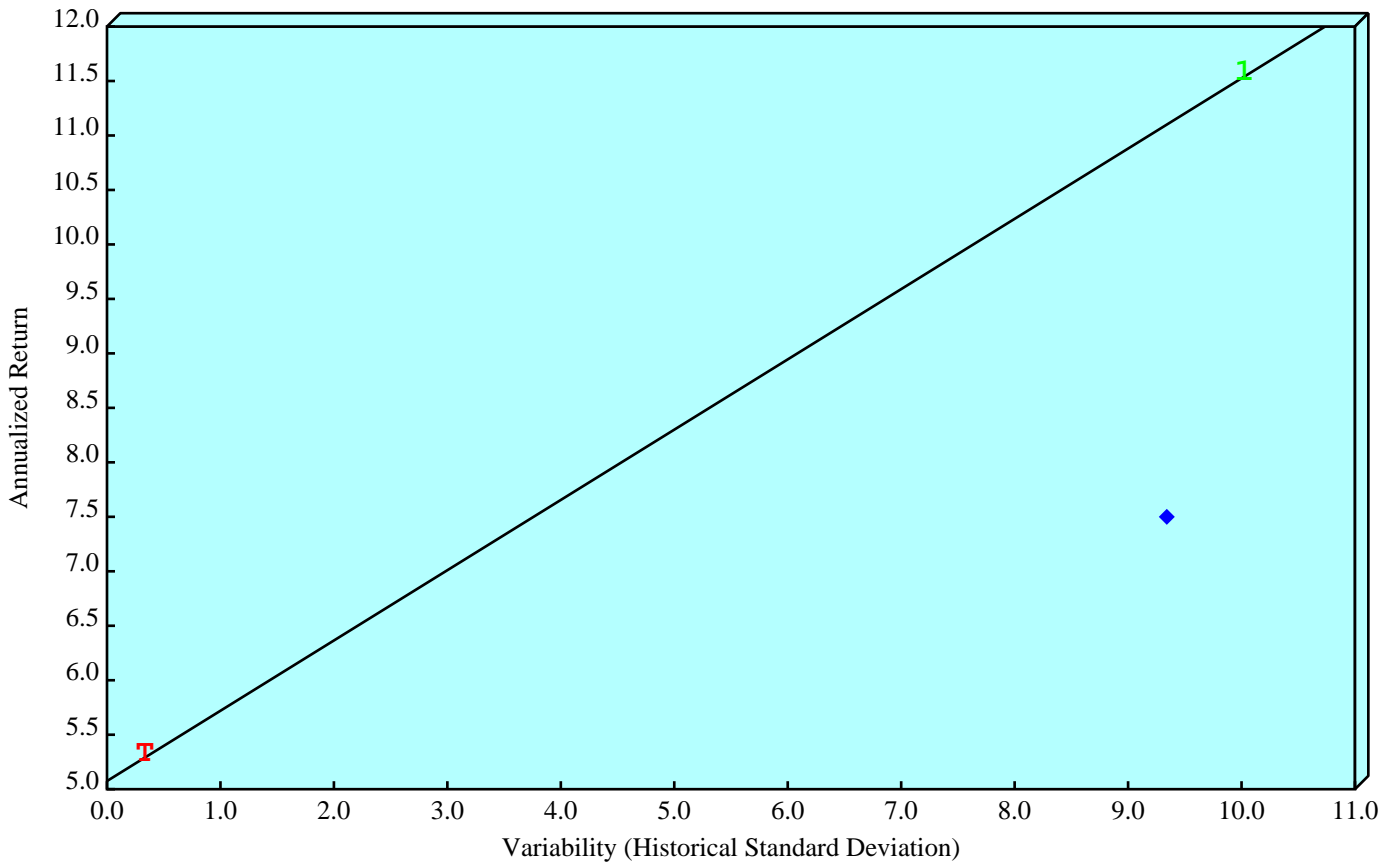
Policy Index

	Segment	Percent
	<hr/>	<hr/>
Standard & Poors 500	Domestic Equity	40.00
Russell 2500	Domestic Equity	20.00
LB Aggregate	Domestic Fixed Income	20.00
MSCI EAFE (Net)	International Equity	10.00
NCREIF	Real Estate	10.00

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly Total Return Market Line Analysis

Periods from 12/93 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
◆ HPRS	7.49	9.40	2.17	0.23
1 Policy Index	11.57	10.07	6.25	0.62
T 91-Day Treasury Bill	5.32	0.38	0.00	0.00

Sharpe Ratio = Reward / Variability

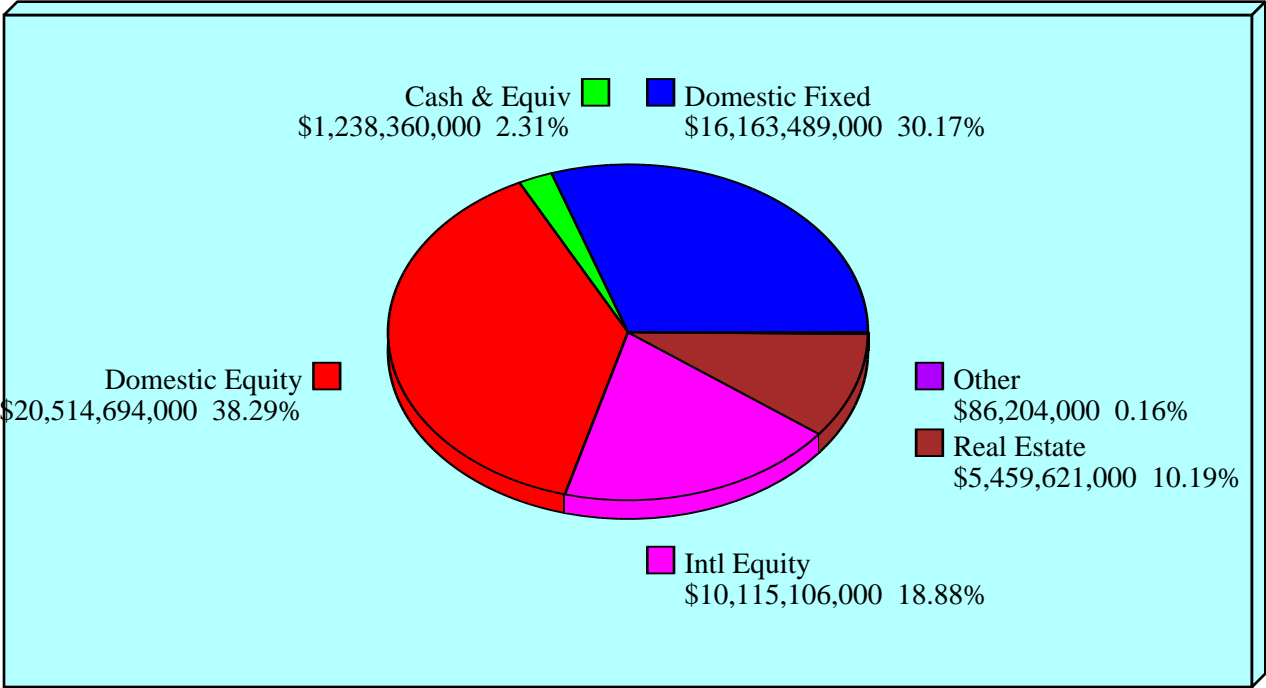


# OHIO RETIREMENT STUDY COUNCIL

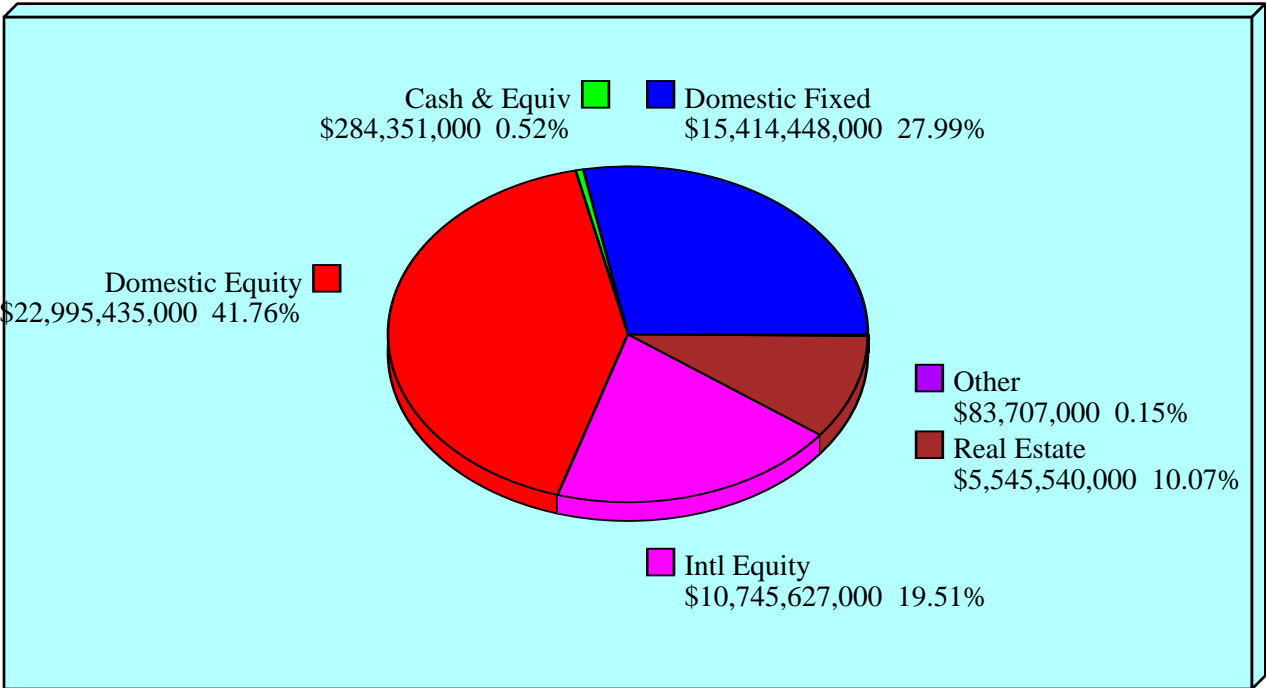
## Asset Allocation

### PERS

March 31, 2001      \$53,577,474,000



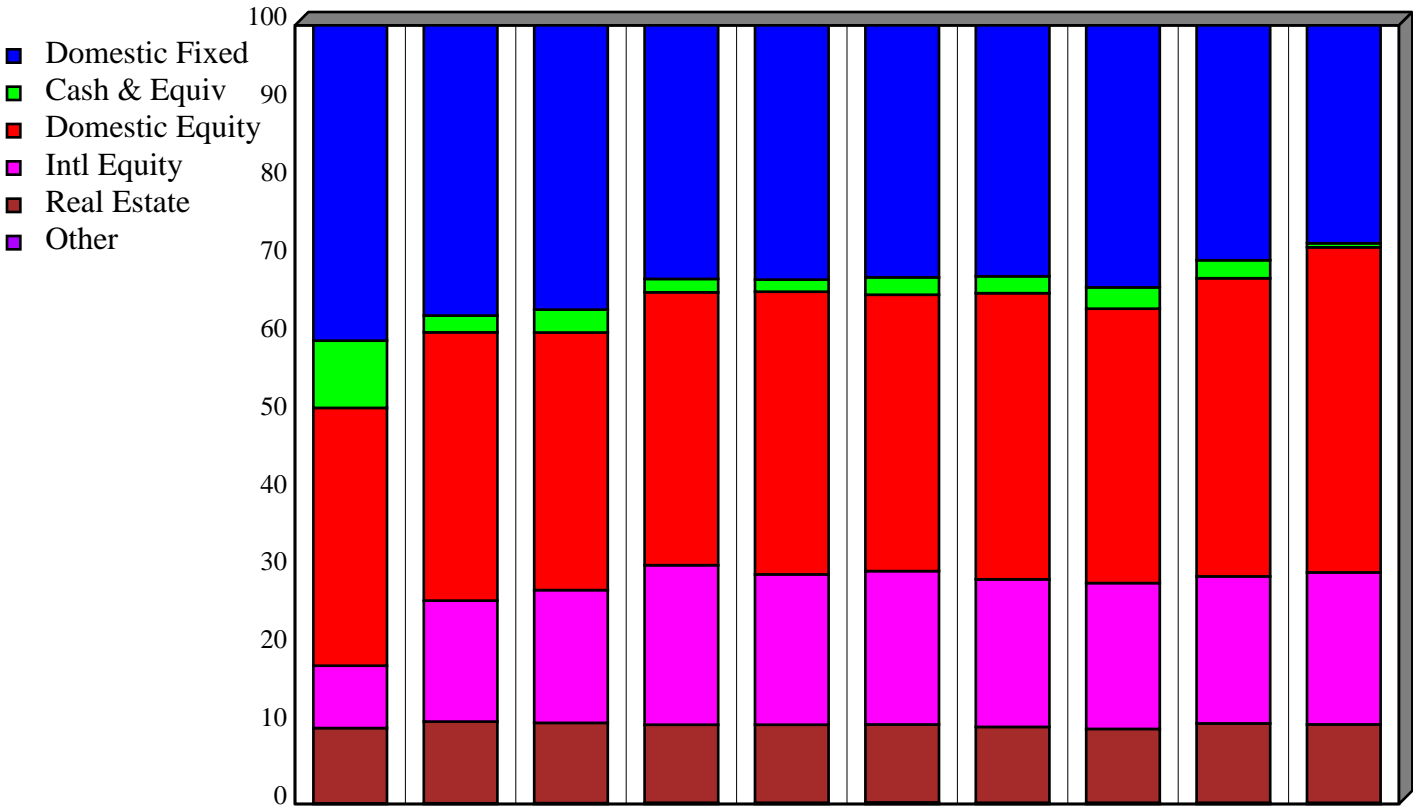
June 30, 2001      \$55,069,108,000



# OHIO RETIREMENT STUDY COUNCIL

## Asset Allocation

### PERS



	3/99	6/99	9/99	12/99	3/00	6/00	9/00	12/00	3/01	6/01
Domestic Fixed %	40.5	37.3	36.5	32.6	32.7	32.4	32.2	33.6	30.2	28.0
Cash & Equiv %	8.6	2.2	2.9	1.7	1.5	2.2	2.2	2.7	2.3	0.5
Domestic Equity %	33.1	34.5	33.1	35.0	36.3	35.5	36.7	35.2	38.3	41.8
Intl Equity %	8.0	15.5	17.0	20.5	19.3	19.7	19.0	18.7	18.9	19.5
Real Estate %	9.7	10.5	10.3	10.0	10.0	10.0	9.7	9.5	10.2	10.1
Other %	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Value (\$mil)	52.2	53.7	52.7	57.7	58.7	58.4	58.8	56.8	53.6	55.1

OHIO RETIREMENT STUDY COUNCIL  
 Custom Benchmark Specification  
 PERS  
 Quarter Ending 6/30/01

Label	Quarter Start	Quarter End	Percent	Description
Policy Index	3/94	6/95	17.00	Standard & Poors 500
			68.00	SB Broad Inv Grade
			7.00	NCREIF
			8.00	91-Day Treasury Bill
	9/95	12/95	26.00	Standard & Poors 500
			59.00	SB Broad Inv Grade
			1.00	MSCI EAFE (Net)
			8.00	NCREIF
	3/96	12/96	6.00	91-Day Treasury Bill
			23.00	Standard & Poors 500
			62.50	SB Broad Inv Grade
			2.00	MSCI EAFE (Net)
3/97	12/97	8.00	NCREIF	
		4.50	91-Day Treasury Bill	
		27.00	Standard & Poors 500	
		56.50	SB Broad Inv Grade	
3/98	9/98	4.00	MSCI EAFE (Net)	
		8.00	NCREIF	
		4.50	91-Day Treasury Bill	
		51.00	SB Broad Inv Grade	
12/98	12/98	30.50	Standard & Poors 500	
		4.50	91-Day Treasury Bill	
		4.80	NCREIF	
		1.60	NAREIT	
3/99	6/99	1.60	Giliberto-Levy Mortgage	
		6.00	MSCI World Ex-US (Net)	
		51.00	SB Broad Inv Grade	
		30.50	Russell 3000	
3/99	6/99	1.00	91-Day Treasury Bill	
		6.60	NCREIF	
		2.20	NAREIT	
		2.20	Giliberto-Levy Mortgage	

OHIO RETIREMENT STUDY COUNCIL  
 Custom Benchmark Specification  
 PERS  
 Quarter Ending 6/30/01

Label	Quarter Start	Quarter End	Percent	Description
Policy Index (cont.)			7.60	MSCI World Ex-US (Net)
			45.40	SB Broad Inv Grade
			35.00	Standard & Poors 500
	6/99	6/99	1.00	91-Day Treasury Bill
			6.60	NCREIF
			2.20	NAREIT
			2.20	Giliberto-Levy Mortgage
			12.90	MSCI World Ex-US (Net)
			40.10	SB Broad Inv Grade
			35.00	Standard & Poors 500
	9/99	12/00	1.00	91-Day Treasury Bill
			6.60	NCREIF
			2.20	NAREIT
			2.20	Giliberto-Levy Mortgage
			35.00	Standard & Poors 500
			36.10	SB Broad Inv Grade
			16.90	MSCI World Ex-US (Net)
	3/01	3/01	34.30	S&P Super 1500 Index
			3.00	Russell 3000
			31.80	LB Aggregate
		5.70	NCREIF	
		1.90	NAREIT	
		1.90	Giliberto-Levy Mortgage	
		18.90	MSCI ACWI Ex US Index	
		2.30	91-Day Treasury Bill	
		0.20	Standard & Poors 500	
6/01		34.70	S&P Super 1500 Index	
		5.80	Russell 3000	
		29.20	LB Aggregate	
		5.58	NCREIF	
		1.86	NAREIT	
		1.86	Giliberto-Levy Mortgage	
		19.30	MSCI ACWI Ex US Index	
		1.50	91-Day Treasury Bill	
		0.20	Standard & Poors 500	

OHIO RETIREMENT STUDY COUNCIL  
Performance Overview  
PERS  
Returns for Periods Ending June 30, 2001

	<u>Last Quarter</u>	<u>Last 2 Quarters</u>	<u>Last 3 Quarters</u>	<u>Last Year</u>	<u>Last 3 Years</u>	<u>Last 5 Years</u>	<u>Since 1st Qtr 94</u>
Total Return	3.08	-2.67	-4.43	-4.59	4.69	8.34	8.36
Policy Index Return	3.14	-2.71	-4.06	-4.14	5.11	9.28	8.95
Domestic Equity Return	6.66	-5.67	-12.50	-12.27	3.03	11.61	11.89
Equity Segment Median Return	6.89	-4.40	-9.97	-8.69	5.98	14.44	
Wilshire 5000	7.48	-5.78	-15.52	-15.32	3.52	13.07	14.60
Int'l Equity Return	-0.61	-13.75	-17.57	-24.25	1.45	4.35	
Int'l Equity Segment Median Return	1.50	-8.00	-14.09	-20.78	2.90	7.82	
MSCI EAFE (Net)	-1.05	-14.61	-16.91	-23.61	-1.25	2.89	5.02
Domestic Fixed Return	0.78	4.45	8.61	11.81	6.40	7.57	7.19
Fixed Income Segment Median Return	0.49	3.57	7.84	10.91	6.21	7.45	
LB Aggregate	0.56	3.60	7.97	11.23	6.25	7.48	6.72
Cash Return	1.12	2.45	4.20	5.94	5.67	5.68	5.52
Real Estate Return	4.72	6.70	11.94	16.46	10.82	11.67	11.17
NCREIF	2.23	4.56	7.78	11.00	11.81	12.71	10.95

OHIO RETIREMENT STUDY COUNCIL  
Performance Overview  
PERS  
Returns for Periods Ending June 30, 2001

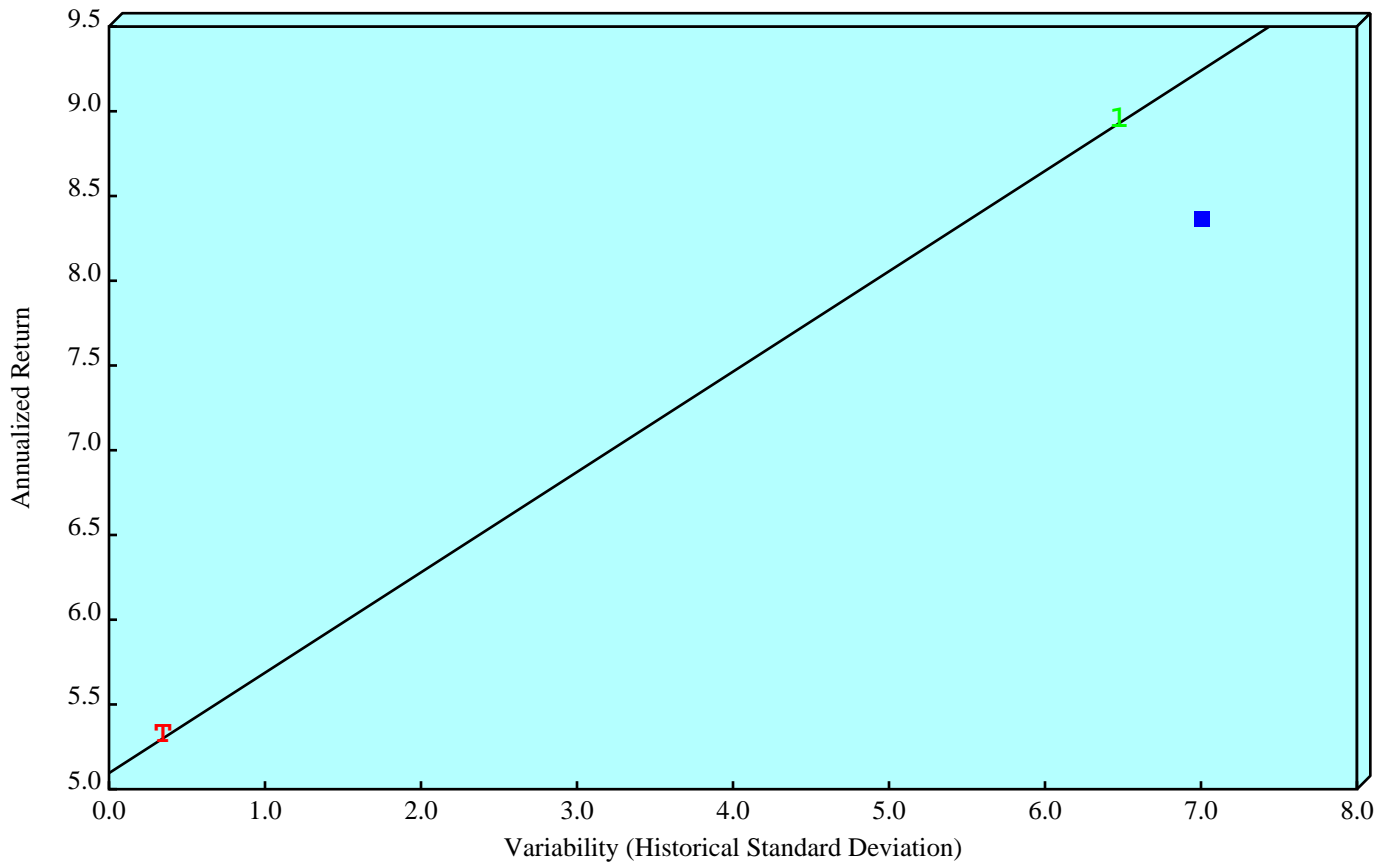
Policy Index

	Segment	Percent
	<hr/>	<hr/>
S&P Super 1500 Index	Domestic Equity	34.70
Russell 3000	Domestic Equity	5.80
LB Aggregate	Domestic Fixed Income	29.20
NCREIF	Real Estate	5.58
NAREIT	Real Estate	1.86
Giliberto-Levy Mortg	Mortgage	1.86
MSCI ACWI Ex US Inde	International Equity	19.30
91-Day Treasury Bill	Cash & Equiv	1.50
Standard & Poors 500	Domestic Equity	0.20

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly Total Return Market Line Analysis

Periods from 12/93 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
■ PERS	8.36	7.05	3.04	0.43
1 Policy Index	8.95	6.51	3.63	0.56
T 91-Day Treasury Bill	5.32	0.38	0.00	0.00

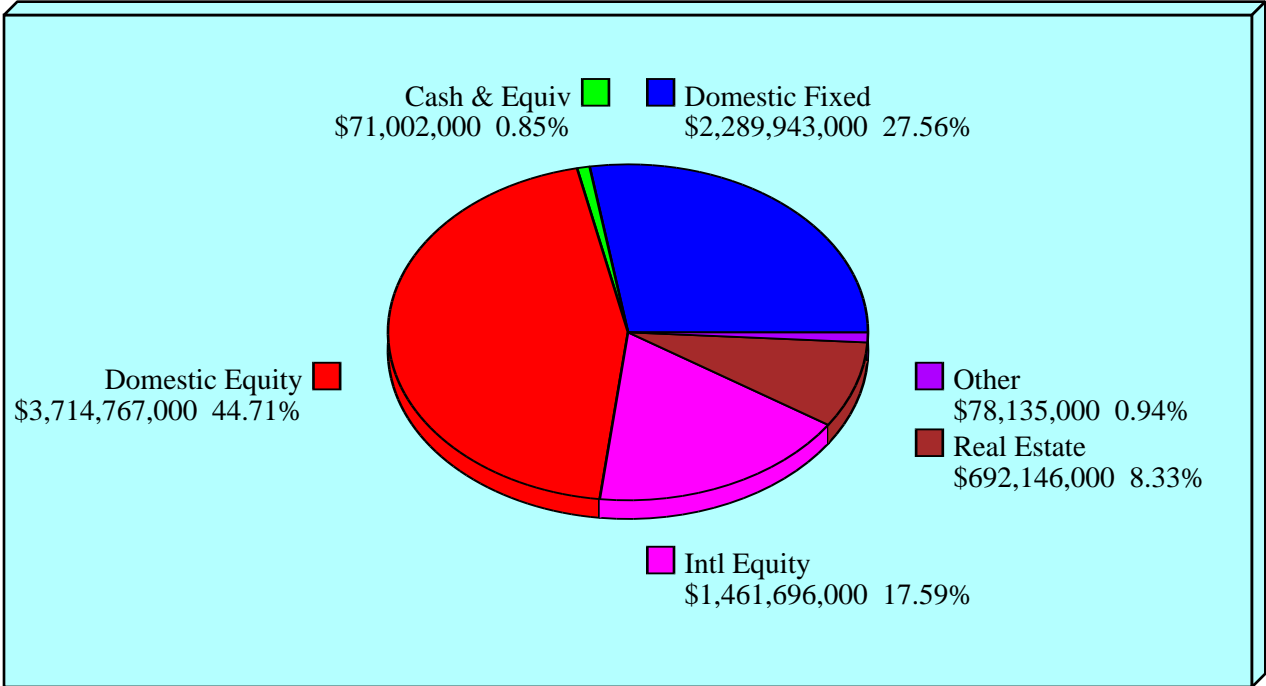
Sharpe Ratio = Reward / Variability

# OHIO RETIREMENT STUDY COUNCIL

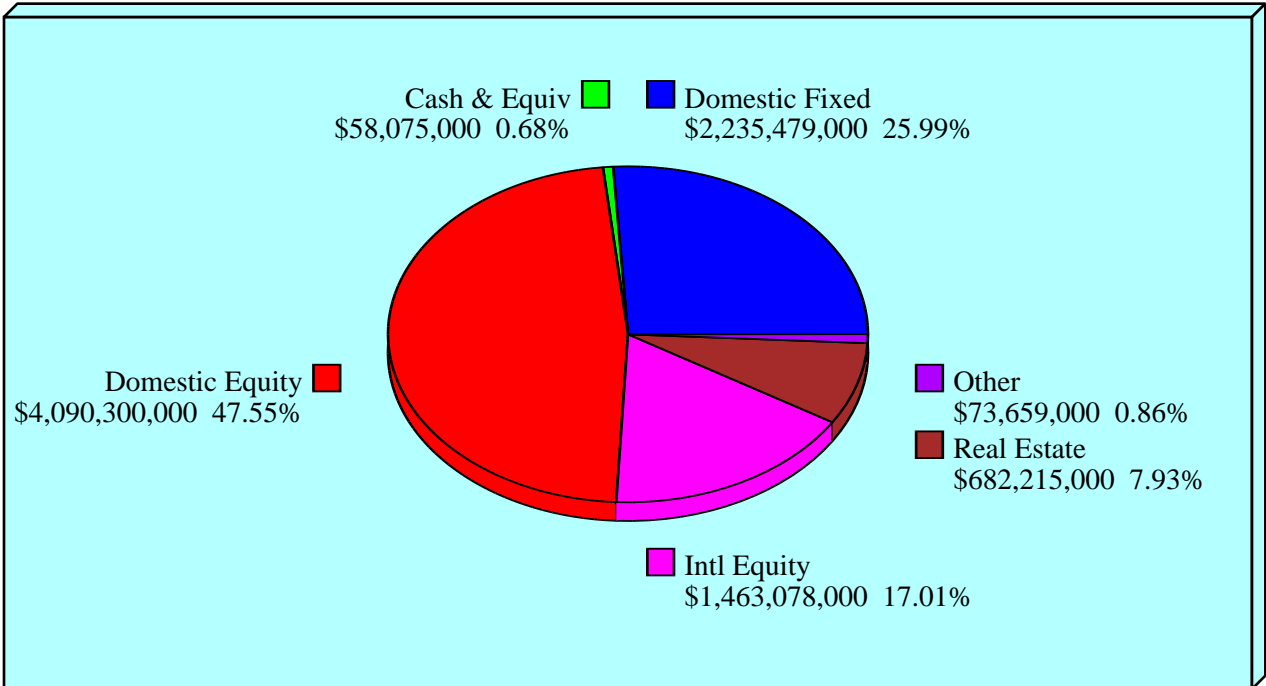
## Asset Allocation

### OP&F

March 31, 2001      \$8,307,689,000



June 30, 2001      \$8,602,806,000

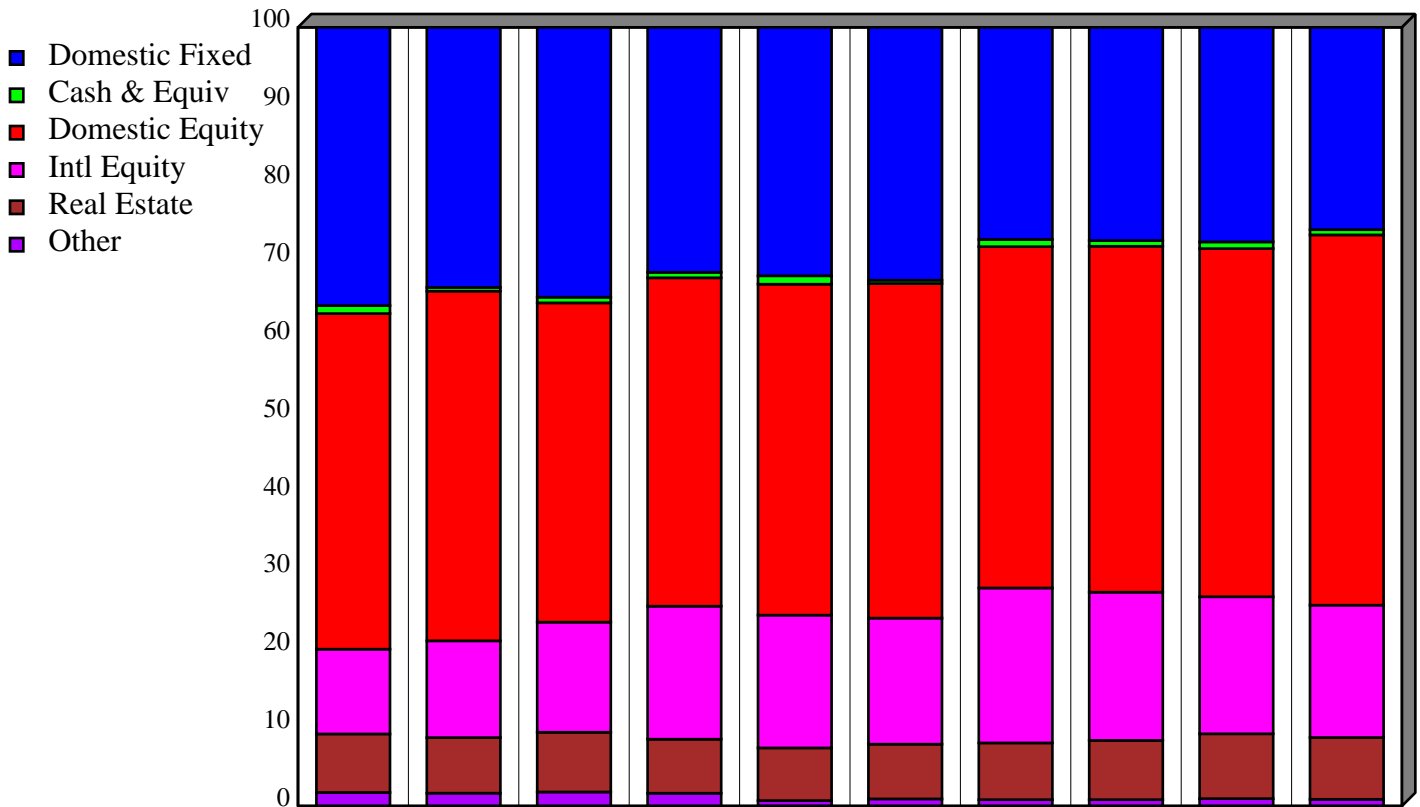




# OHIO RETIREMENT STUDY COUNCIL

## Asset Allocation

### OP&F



	3/99	6/99	9/99	12/99	3/00	6/00	9/00	12/00	3/01	6/01
Domestic Fixed %	35.7	33.4	34.7	31.5	31.9	32.5	27.2	27.4	27.6	26.0
Cash & Equiv %	1.0	0.5	0.7	0.7	1.1	0.4	0.9	0.7	0.9	0.7
Domestic Equity %	43.1	44.9	41.0	42.2	42.5	43.0	43.8	44.4	44.7	47.5
Intl Equity %	10.9	12.4	14.1	17.1	17.1	16.2	19.9	19.0	17.6	17.0
Real Estate %	7.5	7.1	7.7	6.9	6.8	7.0	7.3	7.6	8.3	7.9
Other %	1.7	1.7	1.8	1.6	0.7	0.9	0.8	0.8	0.9	0.9
Total Value (\$mil)	8221.4	8685.1	8429.0	9200.3	9348.2	9089.6	9219.6	8922.8	8307.7	8602.8

OHIO RETIREMENT STUDY COUNCIL  
 Custom Benchmark Specification  
 OP&F  
 Quarter Ending 6/30/01

Label	Quarter Start	Quarter End	Percent	Description
Policy Index	3/94	9/97	9.00	Wilshire RE Funds
			10.00	MSCI EAFE (Net)
			39.50	LB Aggregate
			41.50	Wilshire 5000
	12/97	12/00	35.00	LB Aggregate
			10.00	MSCI EAFE (Net)
			5.00	MSCI Em Mkts Free (Gross)
			8.00	Wilshire RE Funds
			42.00	Wilshire 5000
	3/01	6/01	48.00	Wilshire 5000
			18.00	LB Aggregate
			17.00	MSCI EAFE (Net)
			8.00	Wilshire RE Funds
			5.00	First Boston Hi Yld
			3.00	MSCI Em Mkts Free (Gross)
		1.00	S&P + 5%	

**OHIO RETIREMENT STUDY COUNCIL**  
**Performance Overview**  
**OP&F**  
**Returns for Periods Ending June 30, 2001**

	<u>Last Quarter</u>	<u>Last 2 Quarters</u>	<u>Last 3 Quarters</u>	<u>Last Year</u>	<u>Last 3 Years</u>	<u>Last 5 Years</u>	<u>Since 1st Qtr 94</u>
Total Return	3.82	-2.63	-4.84	-4.88	4.15	9.47	9.95
Policy Index Return	3.67	-4.16	-7.61	-7.81	4.49	9.20	9.68
Domestic Equity Return	7.65	-3.86	-8.84	-6.73	4.28	12.93	13.87
Equity Segment Median Return	6.89	-4.40	-9.97	-8.69	5.98	14.44	
Wilshire 5000	7.48	-5.78	-15.52	-15.32	3.52	13.07	14.60
Int'l Equity Return	0.08	-13.92	-20.26	-27.38	0.01	4.51	
Int'l Equity Segment Median Return	1.50	-8.00	-14.09	-20.78	2.90	7.82	
MSCI EAFE (Net)	-1.05	-14.61	-16.91	-23.61	-1.25	2.89	5.02
Domestic Fixed Return	0.98	4.72	9.70	13.11	6.92	7.96	7.03
Fixed Income Segment Median Return	0.49	3.57	7.84	10.91	6.21	7.45	
LB Aggregate	0.56	3.60	7.97	11.23	6.25	7.48	6.72
Cash Return	1.13	2.66	4.33	5.91	5.58		
Real Estate Return	1.80	7.50	10.20	11.90	11.81	12.03	11.17
NCREIF	2.23	4.56	7.78	11.00	11.81	12.71	10.95

OHIO RETIREMENT STUDY COUNCIL  
Performance Overview  
OP&F  
Returns for Periods Ending June 30, 2001

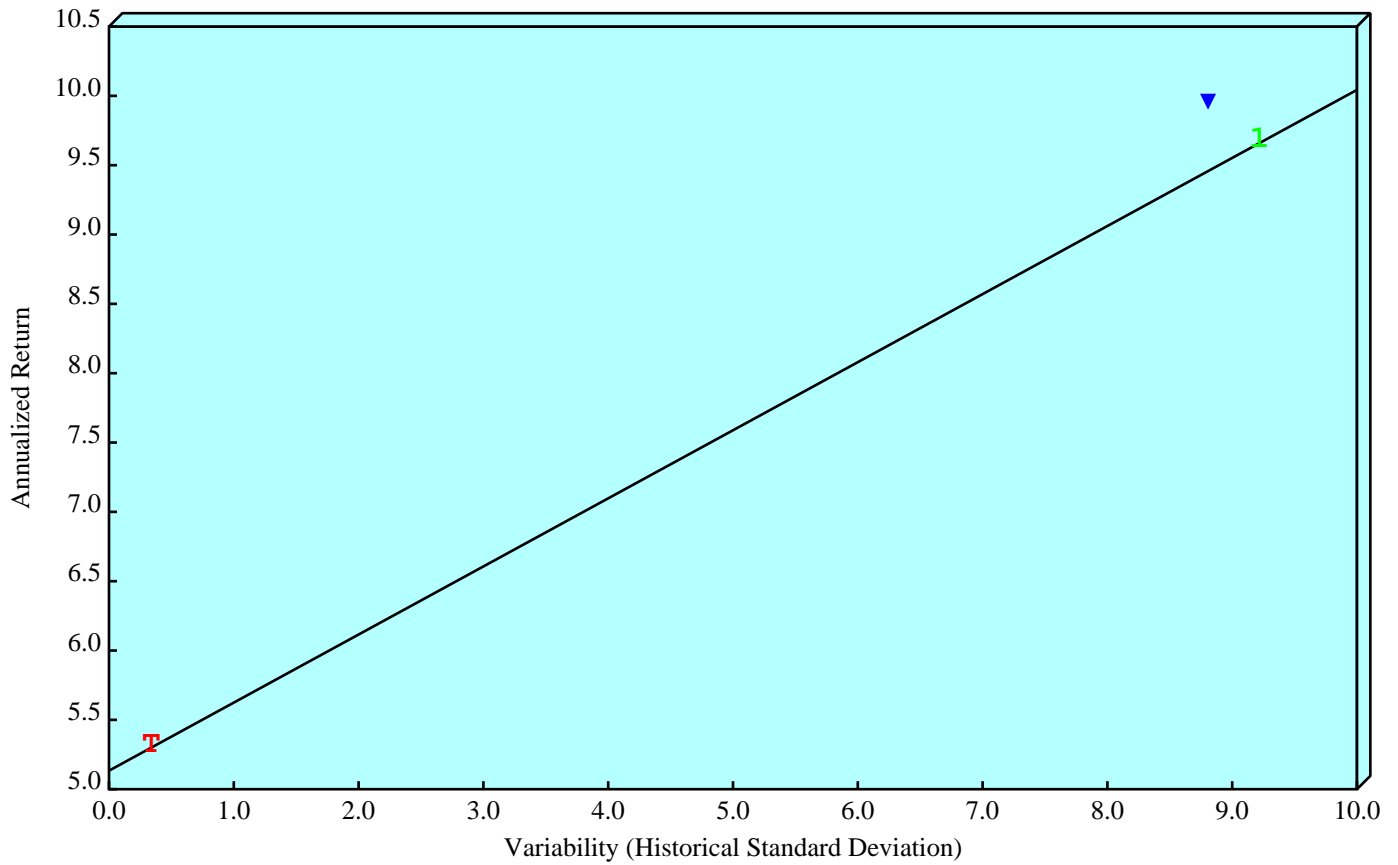
Policy Index

	Segment	Percent
	<hr/>	<hr/>
Wilshire 5000	Domestic Equity	48.00
LB Aggregate	Domestic Fixed Income	18.00
MSCI EAFE (Net)	International Equity	17.00
Wilshire RE Funds	Real Estate	8.00
First Boston Hi Yld	Domestic Fixed Income	5.00
MSCI Em Mkts Free (G	International Equity	3.00
S&P + 5%	Other Assets	1.00

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly Total Return Market Line Analysis

### Periods from 12/93 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
▼ OP&F	9.95	8.86	4.63	0.52
1 Policy Index	9.68	9.26	4.36	0.47
T 91-Day Treasury Bill	5.32	0.38	0.00	0.00

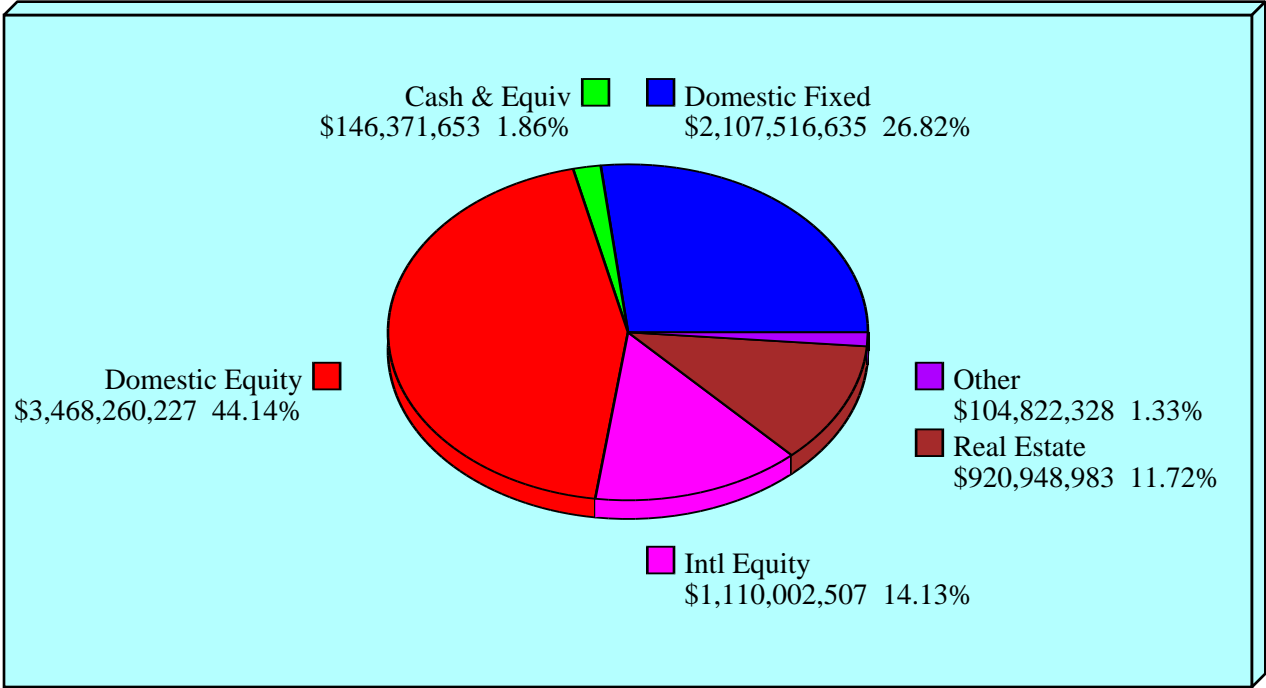
Sharpe Ratio = Reward / Variability

# OHIO RETIREMENT STUDY COUNCIL

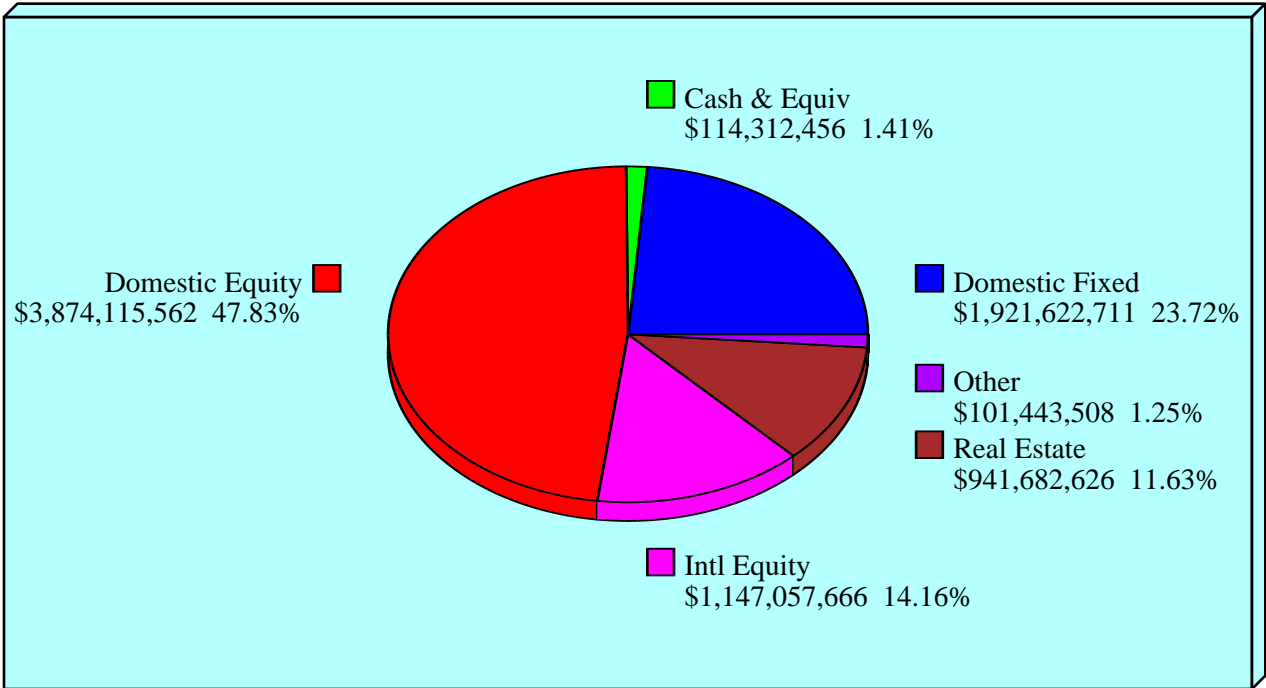
## Asset Allocation

### SERS

March 31, 2001      \$7,857,922,333



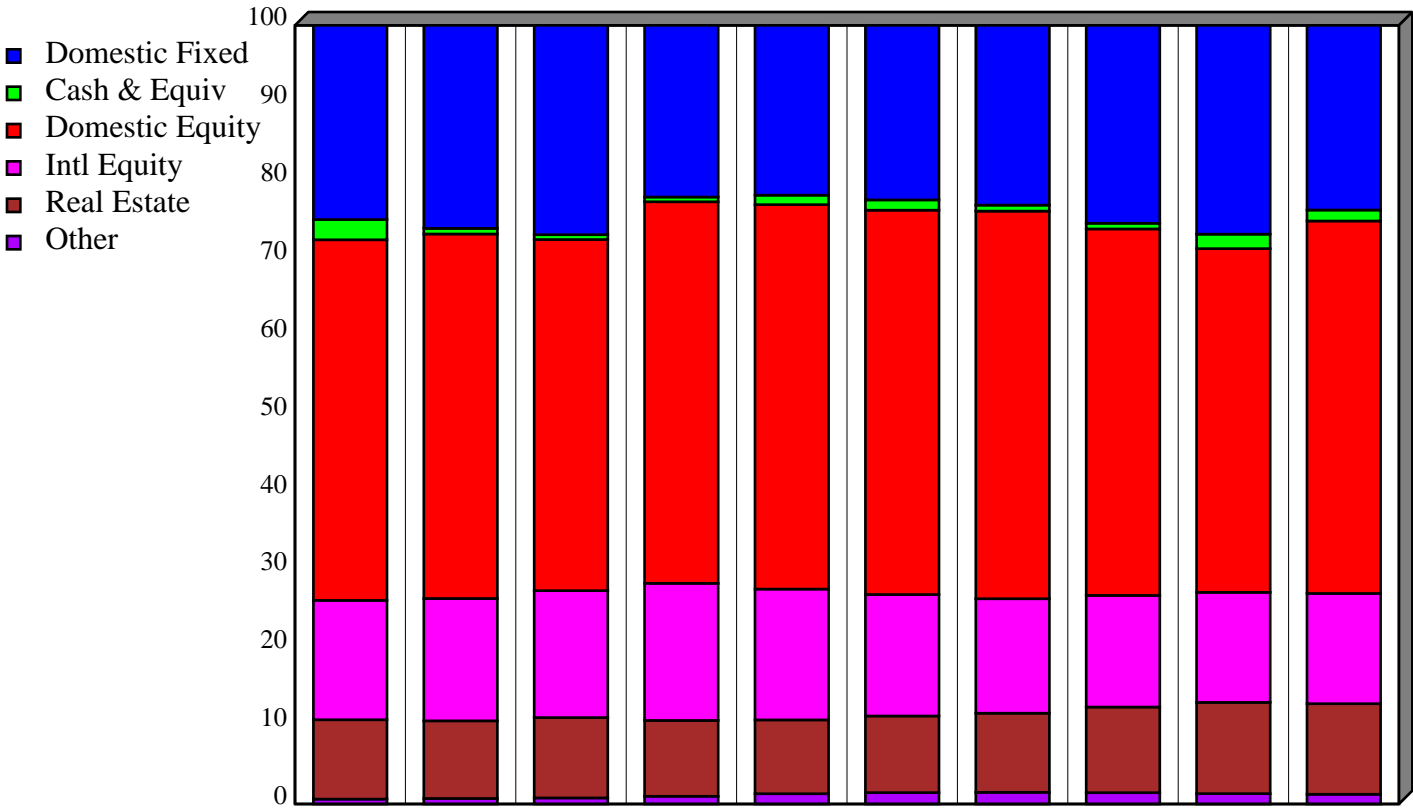
June 30, 2001      \$8,100,234,529



# OHIO RETIREMENT STUDY COUNCIL

## Asset Allocation

### SERS



	3/99	6/99	9/99	12/99	3/00	6/00	9/00	12/00	3/01	6/01
Domestic Fixed %	24.9	26.1	26.9	22.0	21.8	22.4	23.1	25.4	26.8	23.7
Cash & Equiv %	2.6	0.7	0.6	0.6	1.2	1.3	0.8	0.7	1.9	1.4
Domestic Equity %	46.3	46.8	45.1	49.0	49.4	49.4	49.8	47.1	44.1	47.8
Intl Equity %	15.3	15.7	16.3	17.6	16.8	15.6	14.7	14.3	14.1	14.2
Real Estate %	10.2	10.0	10.3	9.7	9.5	9.8	10.2	11.0	11.7	11.6
Other %	0.6	0.7	0.8	1.0	1.3	1.5	1.5	1.4	1.3	1.3
Total Value (\$mil)	7729.5	8076.5	7843.4	8699.1	9024.3	8911.2	8910.5	8473.2	7857.9	8100.2

OHIO RETIREMENT STUDY COUNCIL  
Custom Benchmark Specification  
SERS  
Quarter Ending 6/30/01

Label	Quarter Start	Quarter End	Percent	Description
Policy Index	3/94	9/94	10.00	NCREIF
			10.00	MSCI EAFE (Net)
			28.00	LB Aggregate
			47.00	Standard & Poors 500
			5.00	Salomon 30-day CD
	12/94	12/94	10.00	NCREIF
			5.00	MSCI EAFE Hedged
			5.00	MSCI EAFE (Net)
			28.00	LB Aggregate
			47.00	Standard & Poors 500
	3/95	3/97	10.00	NCREIF
			5.00	MSCI EAFE Hedged
			5.00	MSCI EAFE (Net)
			28.00	LB Aggregate
			47.00	Russell 3000
	6/97	6/97	5.00	Salomon 30-day CD
			46.00	Russell 3000
			28.00	LB Aggregate
			7.50	MSCI EAFE (Net)
			7.50	MSCI EAFE Hedged
	9/97	12/00	10.00	NCREIF
1.00			Salomon 30-day CD	
46.00			Russell 3000	
28.00			LB Aggregate	
7.25			MSCI EAFE (Net)	
3/01		7.25	MSCI EAFE Hedged	
		0.50	MSCI Em Mkts Free (Gross)	
		10.00	NCREIF	
		1.00	Salomon 30-day CD	
		48.00	Russell 3000	
		23.00	LB Aggregate	
		16.00	MSCI ACWI Free ex US	
		10.00	NCREIF	
		2.00	Salomon 30-day CD	



**OHIO RETIREMENT STUDY COUNCIL**  
**Custom Benchmark Specification**  
**SERS**  
**Quarter Ending 6/30/01**

Label	Quarter Start	Quarter End	Percent	Description
Policy Index (cont.)			1.00	S & P 500 + 3%

**OHIO RETIREMENT STUDY COUNCIL**  
**Performance Overview**  
**SERS**  
**Returns for Periods Ending June 30, 2001**

	<u>Last Quarter</u>	<u>Last 2 Quarters</u>	<u>Last 3 Quarters</u>	<u>Last Year</u>	<u>Last 3 Years</u>	<u>Last 5 Years</u>	<u>Since 1st Qtr 94</u>
Total Return	4.00	-3.07	-7.53	-6.98	5.33	10.52	10.90
Policy Index Return	3.88	-3.02	-6.14	-5.52	5.63	10.99	11.37
Domestic Equity Return	7.40	-6.78	-16.38	-15.63	3.80	13.16	14.65
Equity Segment Median Return	6.89	-4.40	-9.97	-8.69	5.98	14.44	
Wilshire 5000	7.48	-5.78	-15.52	-15.32	3.52	13.07	14.60
Int'l Equity Return	0.90	-8.89	-13.17	-17.95	2.02	6.78	
Int'l Equity Segment Median Return	1.50	-8.00	-14.09	-20.78	2.90	7.82	
MSCI EAFE (Net)	-1.05	-14.61	-16.91	-23.61	-1.25	2.89	5.02
Domestic Fixed Return	0.80	4.23	9.02	12.29	6.49	7.74	6.68
Fixed Income Segment Median Return	0.49	3.57	7.84	10.91	6.21	7.45	
LB Aggregate	0.56	3.60	7.97	11.23	6.25	7.48	6.72
Cash Return	1.50	4.14	6.43	9.09	6.55	6.13	5.81
Real Estate Return	3.30	4.33	8.19	11.55	11.23	11.64	11.07
NCREIF	2.23	4.56	7.78	11.00	11.81	12.71	10.95

OHIO RETIREMENT STUDY COUNCIL  
Performance Overview  
SERS  
Returns for Periods Ending June 30, 2001

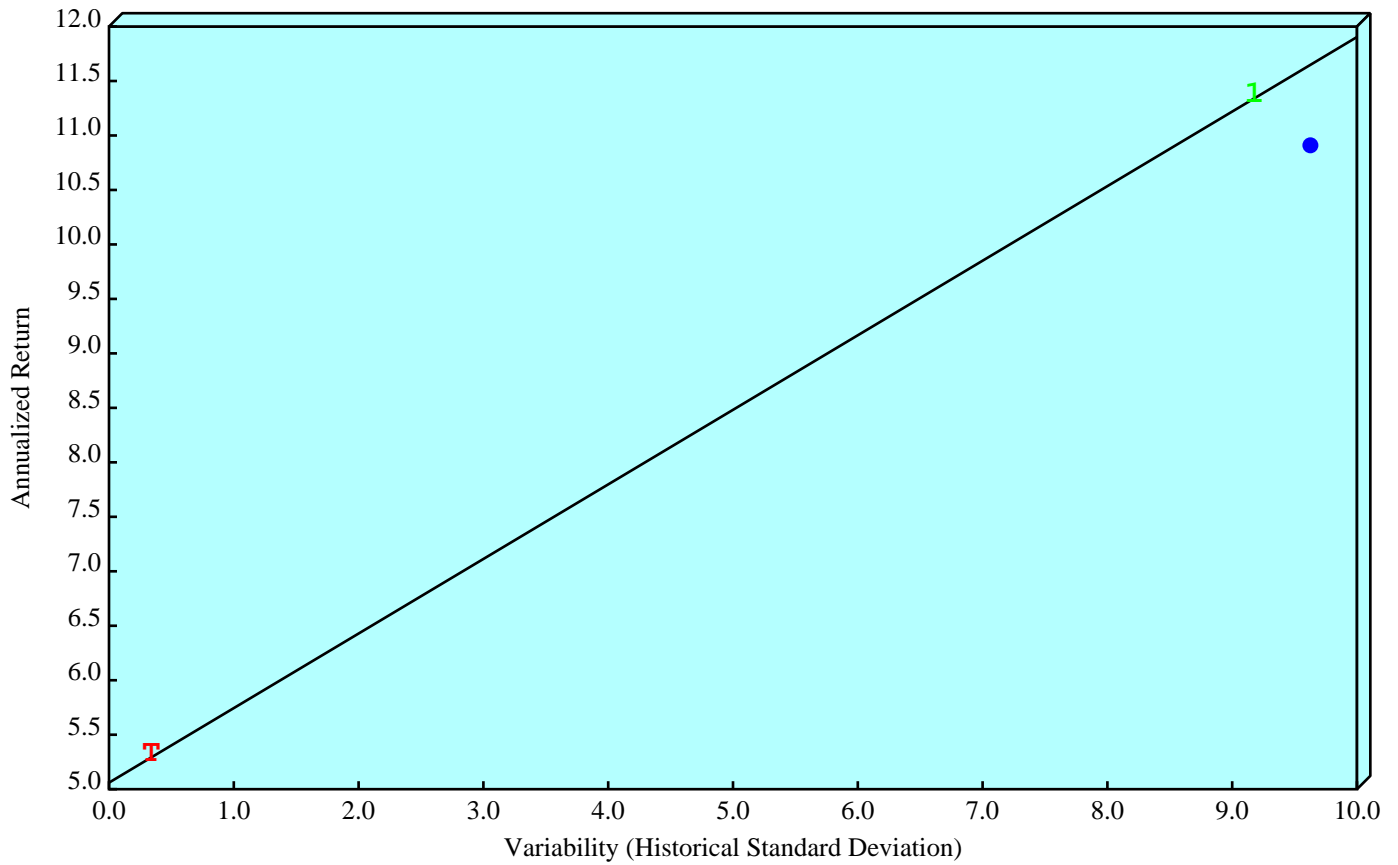
Policy Index

	Segment	Percent
	<hr/>	<hr/>
Russell 3000	Domestic Equity	48.00
LB Aggregate	Domestic Fixed Income	23.00
MSCI ACWI Free ex US	International Equity	16.00
NCREIF	Real Estate	10.00
Salomon 30-day CD	Cash & Equiv	2.00
S & P 500 + 3%	Other Assets	1.00

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly Total Return Market Line Analysis

Periods from 12/93 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
● SERS	10.90	9.68	5.58	0.58
1 Policy Index	11.37	9.22	6.06	0.66
T 91-Day Treasury Bill	5.32	0.38	0.00	0.00

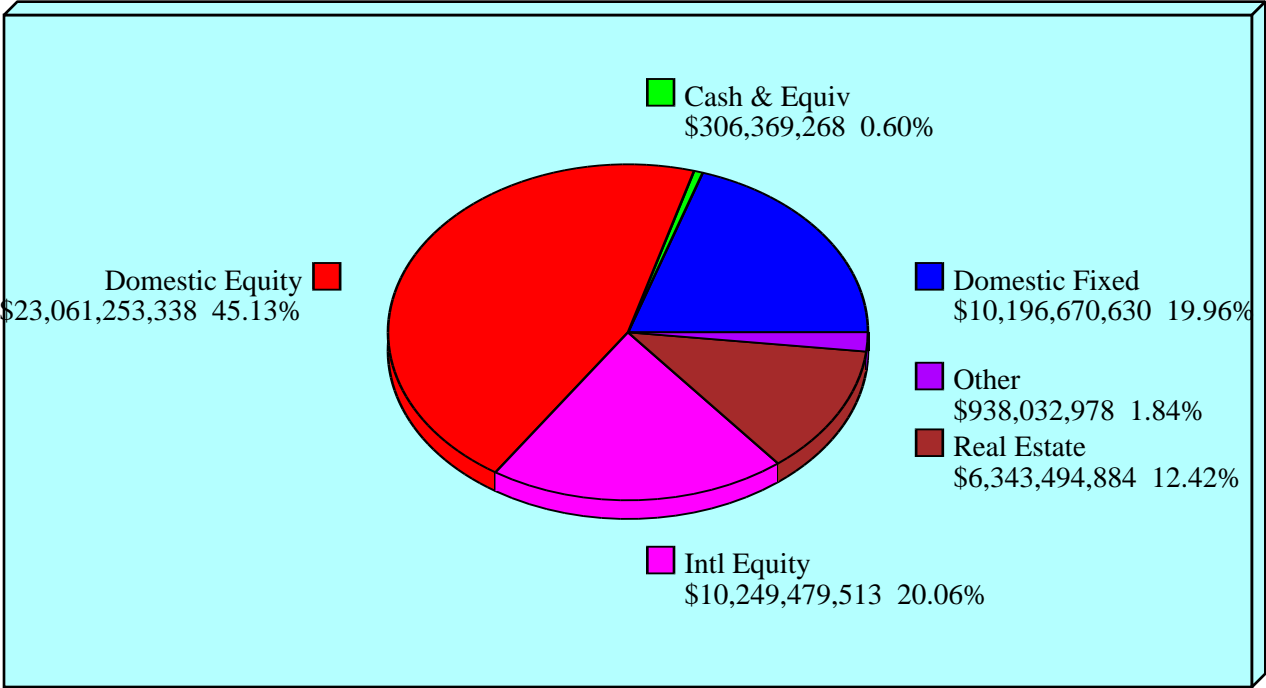
Sharpe Ratio = Reward / Variability

# OHIO RETIREMENT STUDY COUNCIL

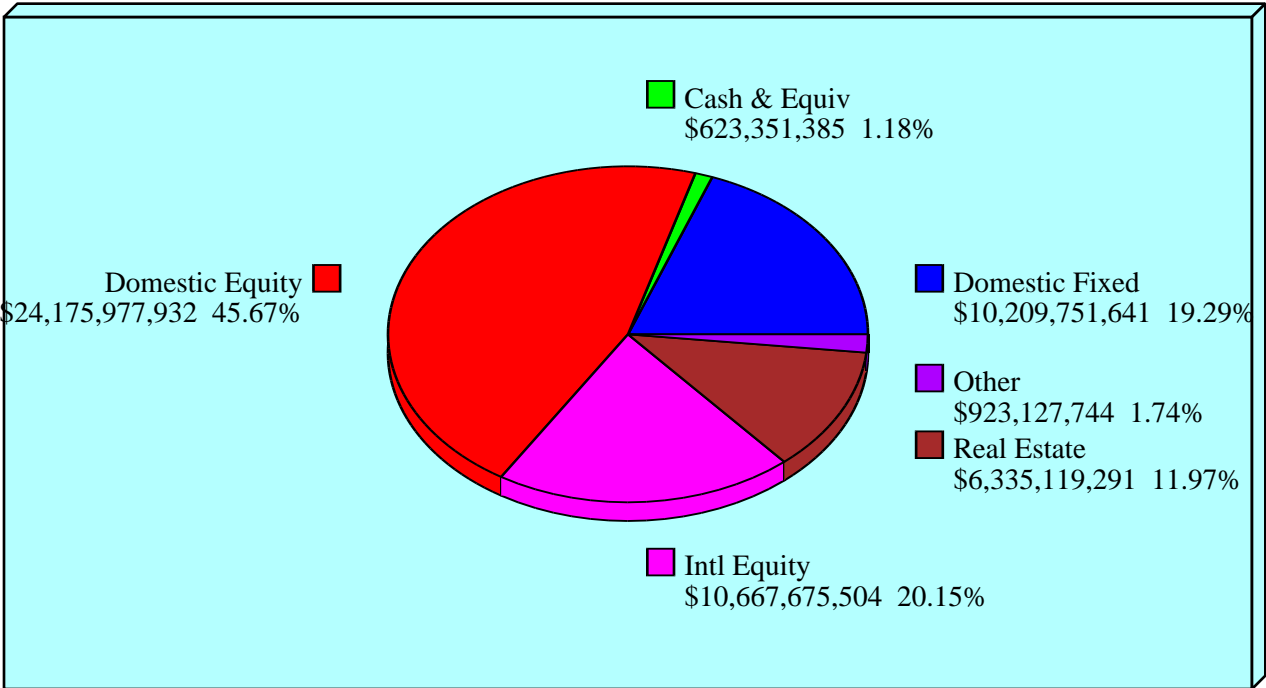
## Asset Allocation

### STRS

March 31, 2001      \$51,095,300,611



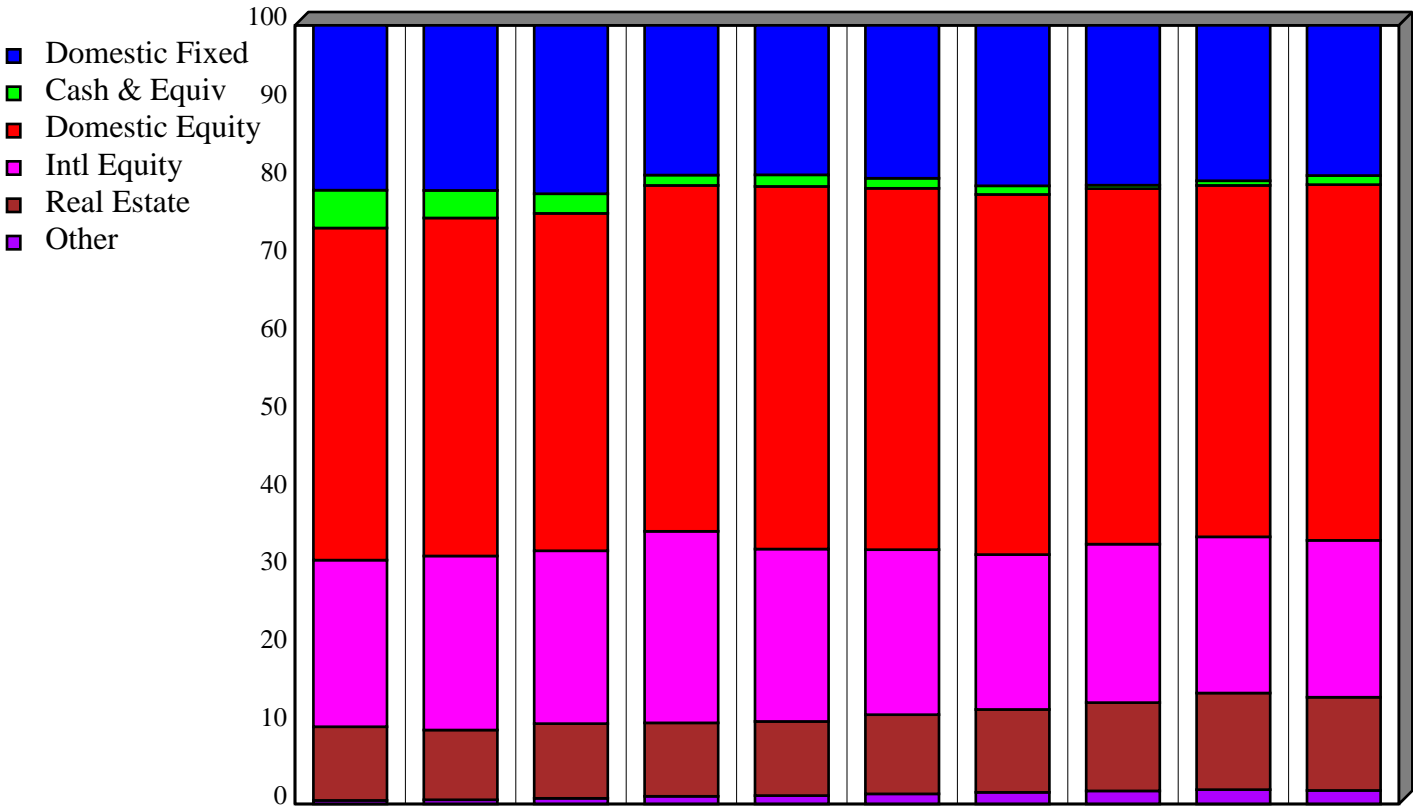
June 30, 2001      \$52,935,003,497



# OHIO RETIREMENT STUDY COUNCIL

## Asset Allocation

### STRS



	3/99	6/99	9/99	12/99	3/00	6/00	9/00	12/00	3/01	6/01
Domestic Fixed %	21.2	21.2	21.6	19.2	19.2	19.6	20.6	20.5	20.0	19.3
Cash & Equiv %	4.9	3.5	2.5	1.3	1.5	1.3	1.1	0.4	0.6	1.2
Domestic Equity %	42.6	43.4	43.3	44.4	46.6	46.4	46.2	45.7	45.1	45.7
Intl Equity %	21.4	22.4	22.2	24.6	22.1	21.2	19.9	20.3	20.1	20.2
Real Estate %	9.5	9.0	9.6	9.4	9.5	10.2	10.6	11.3	12.4	12.0
Other %	0.5	0.5	0.7	1.0	1.1	1.3	1.5	1.7	1.8	1.7
Total Value (\$mil)	49.6	52.8	51.4	57.3	58.6	57.5	56.8	54.8	51.1	52.9

**OHIO RETIREMENT STUDY COUNCIL**  
**Custom Benchmark Specification**  
**STRS**  
**Quarter Ending 6/30/01**

Label	Quarter Start	Quarter End	Percent	Description
Policy Index	3/94	9/94	3.00	91-Day Treasury Bill
			9.00	STRS NCREIF hybrid
			3.00	MSCI EAFE (Net)
			45.00	LB Aggregate
			40.00	Standard & Poors 500
	12/94	12/94	3.00	91-Day Treasury Bill
			9.00	STRS NCREIF hybrid
			0.75	MSCI Em Mkts Free (Gross)
			2.25	MSCI EAFE (Net)
			45.00	LB Aggregate
	3/95	3/96	2.00	91-Day Treasury Bill
			9.00	STRS NCREIF hybrid
			2.00	MSCI Em Mkts Free (Gross)
			6.00	MSCI EAFE (Net)
			35.00	LB Aggregate
	6/96	12/96	2.00	91-Day Treasury Bill
			9.00	STRS NCREIF hybrid
			2.25	MSCI Em Mkts Free (Gross)
			6.75	MSCI EAFE (Net)
			35.00	LB Aggregate
	3/97	6/97	2.00	91-Day Treasury Bill
			9.00	STRS NCREIF hybrid
			4.00	MSCI Em Mkts Free (Gross)
			6.00	MSCI EAFE (Net)
34.00			LB Aggregate	
9/97	3/98	45.00	Standard & Poors 500	
		24.00	LB Aggregate	
		12.00	MSCI EAFE (Net)	
		8.00	MSCI Em Mkts Free (Gross)	
		9.00	STRS NCREIF hybrid	
			2.00	91-Day Treasury Bill

OHIO RETIREMENT STUDY COUNCIL  
 Custom Benchmark Specification  
 STRS  
 Quarter Ending 6/30/01

Label	Quarter Start	Quarter End	Percent	Description
Policy Index (cont.)	3/98	9/98	24.00	LB Aggregate
			8.00	MSCI Em Mkts Free (Gross)
			9.00	STRS NCREIF hybrid
			2.00	91-Day Treasury Bill
			12.00	MSCI EAFE 50% Hedged
			45.00	Standard & Poors 500
	12/98	9/00	24.00	LB Aggregate
			6.00	MSCI Em Mkts Free (Gross)
			9.00	STRS NCREIF hybrid
			2.00	91-Day Treasury Bill
			45.00	S&P Super 1500 Index
			14.00	MSCI EAFE 50% Hedged
	12/00	6/01	1.00	91-Day Treasury Bill
			45.00	S&P Super 1500 Index
			9.00	STRS NCREIF hybrid
25.00			Lehman Universal	
5.00			MSCI Em Mkts Free (Gross)	
15.00			MSCI EAFE 50% Hedged	



OHIO RETIREMENT STUDY COUNCIL  
Performance Overview  
STRS  
Returns for Periods Ending June 30, 2001

	Last Quarter	Last 2 Quarters	Last 3 Quarters	Last Year	Last 3 Years	Last 5 Years	Since 1st Qtr 94
Total Return	3.77	-2.93	-5.86	-6.34	5.26	9.42	9.81
Policy Index Return	3.59	-2.73	-5.90	-6.35	5.74	10.26	10.66
Domestic Equity Return	6.68	-5.76	-12.67	-12.67	3.33	12.10	13.12
Equity Segment Median Return	6.89	-4.40	-9.97	-8.69	5.98	14.44	
Wilshire 5000	7.48	-5.78	-15.52	-15.32	3.52	13.07	14.60
Int'l Equity Return	2.42	-7.48	-11.76	-18.33	3.41	2.78	4.58
Int'l Equity Segment Median Return	1.50	-8.00	-14.09	-20.78	2.90	7.82	
MSCI EAFE (Net)	-1.05	-14.61	-16.91	-23.61	-1.25	2.89	5.02
Domestic Fixed Return	0.67	3.86	8.36	11.82	6.48	8.38	7.56
Fixed Income Segment Median Return	0.49	3.57	7.84	10.91	6.21	7.45	
LB Aggregate	0.56	3.60	7.97	11.23	6.25	7.48	6.72
Cash Return	1.08	2.53	4.26	6.06	5.77	5.72	5.32
Real Estate Return	2.17	3.72	8.31	12.51	12.16	13.02	11.16
NCREIF	2.23	4.56	7.78	11.00	11.81	12.71	10.95

OHIO RETIREMENT STUDY COUNCIL  
Performance Overview  
STRS  
Returns for Periods Ending June 30, 2001

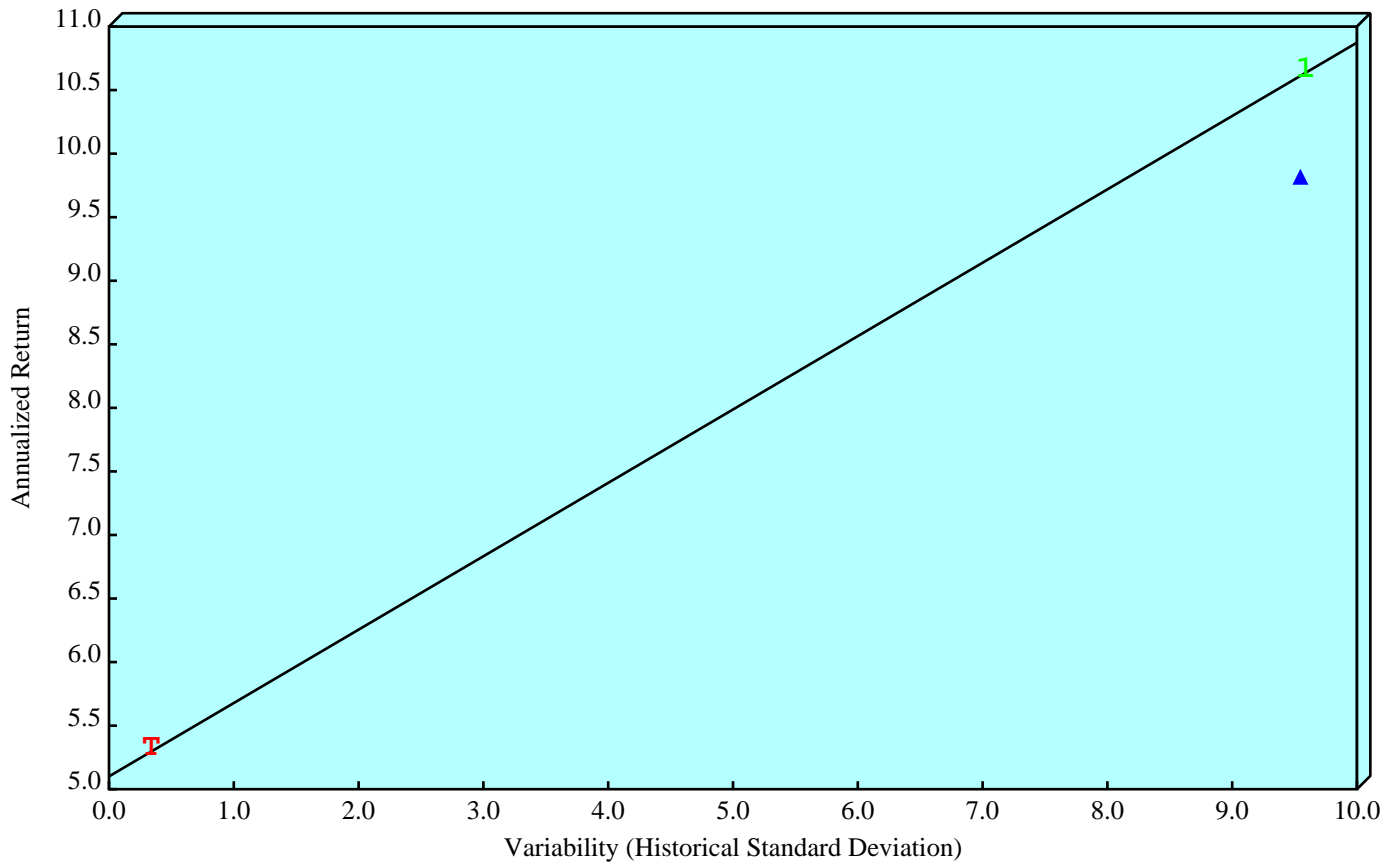
Policy Index

	Segment	Percent
	<hr/>	<hr/>
91-Day Treasury Bill	Cash & Equiv	1.00
S&P Super 1500 Index	Domestic Equity	45.00
STRS NCREIF hybrid	Real Estate	9.00
Lehman Universal	Domestic Fixed Income	25.00
MSCI Em Mkts Free (G	International Equity	5.00
MSCI EAFE 50% Hedged	International Equity	15.00

# OHIO RETIREMENT STUDY COUNCIL

## Quarterly Total Return Market Line Analysis

Periods from 12/93 to 6/01



	Annualized Return	Variability	Reward	Sharpe Ratio
▲ STRS	9.81	9.60	4.49	0.47
1 Policy Index	10.66	9.63	5.34	0.55
T 91-Day Treasury Bill	5.32	0.38	0.00	0.00

Sharpe Ratio = Reward / Variability

# Highway Patrol Pension Plan

## Asset Allocation Actual vs. Benchmark June 30, 2001

---

Asset Class	Asset Allocation	Benchmark	Benchmark Weighting	Difference
Large Cap Equity	35.89%	S & P 500	40%	-4.11%
Small/Mid Cap Equ	16.09%	Russell 2000	20%	-3.91%
Fixed Income	20.86%	LB Aggregate	20%	0.86%
Intl. Equity	10.39%	MSCI EAFE (Net)	10%	0.39%
Real Estate	13.41%	NCREIF	10%	3.41%
Short Term	3.35%		0%	3.35%

# Ohio Police & Fire Pension Plan

## Asset Allocation

### Actual vs. Benchmark

June 30, 2001

---

Asset Class	Asset Allocation	Benchmark	Benchmark Weighting	Difference
Equity	48.01%	Wilshire 5000	48%	0.01%
Fixed Income	20.95%	Lehman Aggregate	18%	2.95%
High Yield Bonds	5.00%	CSFB High Yield	5%	0.00%
Intl. Equity Comp.	13.37%	MSCI EAFE (Net)	17%	-3.63%
Em. Mkts Comp.	3.74%	MSCI Em Mkts Free	3%	0.74%
Real Estate	7.37%	Wilshire RE Fund	8%	-0.63%
Venture Capital	0.89%	S&P 500 + 5%	1%	-0.11%
Short Term	0.68%	3 Month T-Bill	0%	0.68%

# Public Employees Retirement System

## Asset Allocation Actual vs. Benchmark June 30, 2001

---

Asset Class	Asset Allocation	Benchmark	Benchmark Weighting	Difference
Equity	41.75%	S&P 1500	40.5%	1.25%
Fixed Income	28.00%	SB Broad Inv Grade	29.2%	-1.20%
Intl. Equity	19.51%	MSCI ACWI	19.3%	0.21%
Real Estate	10.07%	PERS Custom Index	9.3%	0.77%
Venture Capital	0.15%	S&P 500	0.2%	-0.05%
Short Term	0.52%	3 Month T-Bill	1.5%	-0.98%

# School Employees Retirement System

## Asset Allocation Actual vs. Benchmark June 30, 2001

---

Asset Class	Asset Allocation	Benchmark	Benchmark Weighting	Difference
Domestic Equity	47.83%	Russell 3000	48%	-0.17%
Fixed Income	23.72%	LB Aggregate	23%	0.72%
Intl. Equity	14.16%	MSCI ACWI ex US	16%	-1.84%
Real Estate	11.63%	NCREIF	10%	1.63%
Venture Capital	1.25%	S&P 500 + 3%	1%	0.25%
Short Term	1.41%	Salomon 30 Day CD	2%	-0.59%

# State Teachers Retirement System

## Asset Allocation Actual vs. Benchmark June 30, 2001

---

Asset Class	Asset Allocation	Benchmark	Benchmark Weighting	Difference
Equity	45.67%	S&P 1500	45%	0.67%
Fixed Income	19.29%	Lehman Universal	25%	-5.71%
Intl. Equity	20.15%	Intl. Hybrid Benchmark	20%	0.15%
Real Estate	11.97%	NCREIF Adjusted	9%	2.97%
Venture Capital	1.74%		0%	1.74%
Short Term	1.18%	3 Month T-Bill	1%	0.18%