

A Report Comparing

# Texas's Five Largest Long-Term Investment Funds

February 2003

Report No. 03-019



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# Texas's Five Largest Long-Term Investment Funds

## Overall Summary

This report is a comparison of the State of Texas's five largest long-term investment funds (Texas funds). Its objective is to help decision makers obtain a high-level understanding of the similarities and differences in how each fund chose to invest its assets and the performance results of those investment choices. It does not attempt to explain why each fund's governing board chose a particular asset allocation, assess whether each board adopted an optimal allocation, or define and identify the "best performing" fund. For some time periods, the report includes asset allocation and/or performance information for several peer groups (composed of non-state funds that were reasonably similar in size and/or fund type). The Texas funds' information in the report was provided by the funds and was not audited by the State Auditor's Office (SAO).

Variations in the Texas funds' asset allocation strategies likely contributed to differences in the funds' rates of return during time periods ending June 30, 2001, and June 30, 2002. For the five-year period ending June 30, 2001, the latest period for which the SAO collected risk-related data, the Texas funds that took more investment risk earned higher returns. This outcome is consistent with the principle that investors expect to earn higher returns in exchange for accepting more risk. (When speaking of investments, "risk" measures the degree to which returns vary over time. See glossary.)

Table 1

Texas's Five Largest Long-Term Investment Funds and Their Values as of June 30			
	2001	2002	Change % <sup>a</sup>
(in Billions)			
<b>Pension Funds</b>			
Teacher Retirement System (TRS)	\$81.68	\$75.27	-7.8%
Employee Retirement System (ERS)	\$19.21	\$17.75	-7.6%
<b>Endowment Funds</b>			
Permanent School Fund (PSF)	\$19.80	\$17.90	-9.6%
Permanent University Fund (PUF)	\$7.71	\$7.08	-8.2%
UT System Long Term Fund (LTF) <sup>b</sup>	\$2.95	\$2.77	-6.1%
<b>Totals for All Five Funds</b>	<b>\$131.35</b>	<b>\$120.78</b>	<b>-8.0%</b>

<sup>a</sup> The percent change is the result of a combination of investment return, contributions, and distributions.

<sup>b</sup> LTF consists of private endowments and other long-term funds. The assets of LTF and the Permanent Health Fund were merged on March 1, 2001, to create the General Endowment Fund. This report presents information related only to LTF.

Source: Unaudited information provided by each fund (amounts have been rounded)

## Key Points

### Significant Differences Existed Between the Texas Funds' Asset Allocations

The Texas funds' asset allocations—how they divided their total fund assets among categories of investments such as stocks and bonds—generally differed from one another

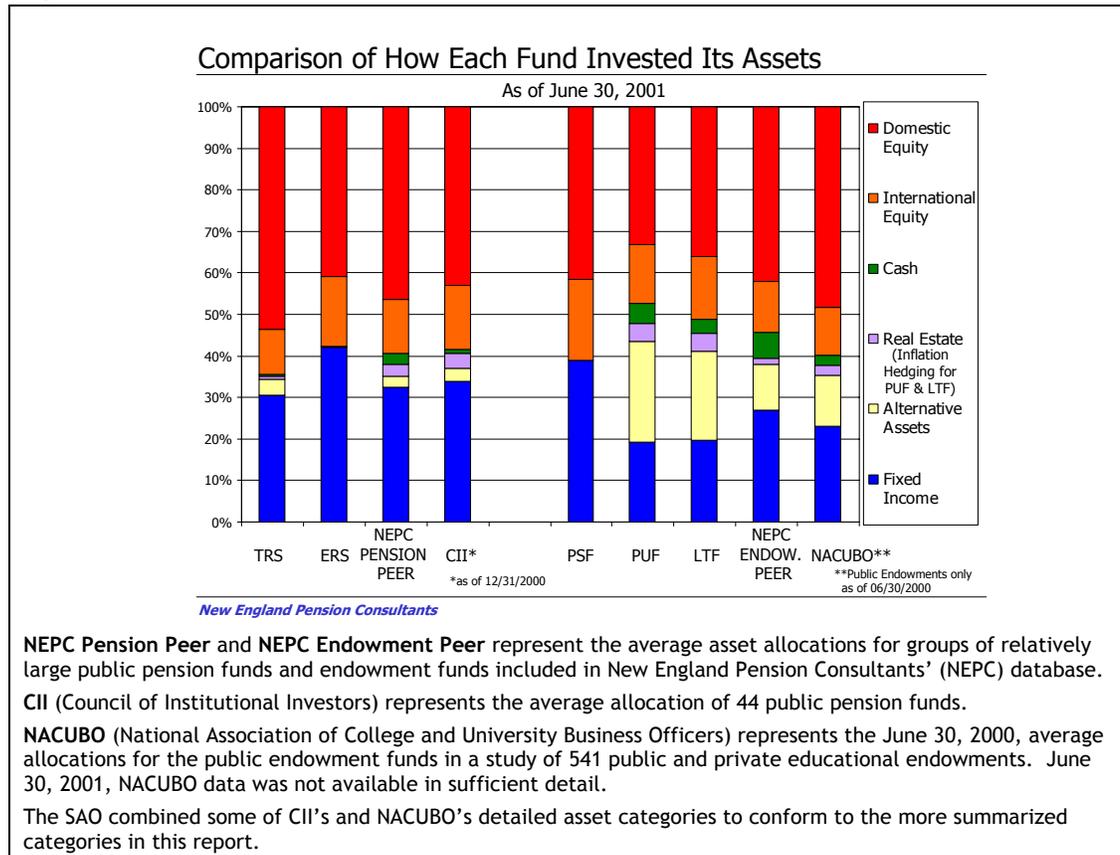


and from the peer groups' allocations. Asset allocation decisions contribute significantly to a fund's total investment return, the variability of a fund's returns over time (a measure of investment risk), and the variation in investment returns across funds. These asset allocation differences arise from a combination of characteristics unique to each fund and the way a fund's governing board addresses those characteristics. Given the same set of fund characteristics, the asset allocation choices might vary from board to board because of differences in each board's collective level of investment expertise and risk tolerance.

A fund's unique characteristics include the fund's purpose, beneficiaries, and any statutory restrictions. For example, the Teacher Retirement System (TRS) and the Employees Retirement System (ERS) cannot directly invest in real estate and generally cannot delegate decision making to outside money managers. The Permanent School Fund (PSF) must annually distribute all interest and dividend income but cannot distribute capital gains from market value increases, while the Permanent University Fund (PUF) and The University of Texas System Long Term Fund (LTF) have fewer legal restrictions on determining the dollar amounts of their annual distributions.

Figure 1 compares TRS's and ERS's June 30, 2001, asset allocations with averages for two public pension fund peer groups, and it compares PSF's, PUF's, and LTF's allocations with averages for two endowment fund peer groups.

Figure 1



Source: Presentation prepared for the SAO by NEPC

This comparison and data for other periods show the following:

- PUF and LTF invested a larger percentage in “nontraditional” assets (alternative assets, real estate, and other inflation hedging assets) than PSF and the endowment peer groups in this comparison. However, other studies show that PUF’s and LTF’s allocations to such nontraditional assets were in line with the allocations of higher education endowment funds larger than \$1 billion. TRS’s allocation to alternative assets is in line with the pension peer groups’, but its strategy of eliminating its real estate investments differentiated it from the average public pension fund. Unlike their respective peer groups, ERS and PSF avoid alternative assets and real estate.
- ERS and PSF invested a significantly higher percentage of assets in bonds (fixed income) than their respective peer groups.

As of June 30, 2002, the Texas funds’ allocations were largely unchanged except that:

- PSF’s bond allocation increased from 39 percent to about 47 percent, while its stock allocation declined.
- PUF and LTF approximately doubled their inflation hedging assets to about 9 percent.

### **Significant Differences Existed Between the Texas Funds’ Rates of Return**

At highly summarized levels, differences existed in the funds’ investment returns and in how closely those returns matched the funds’ policy index returns. (A fund’s unique policy index is calculated with the assumptions that the fund consistently adhered to its asset allocation policy target and that each type of investment in the target portfolio earned a return equal to its benchmark return.) Because of the factors that affect the funds’ asset allocations, comparing a fund’s return to its policy index return may be more meaningful than comparing the returns of different funds.

Table 2 compares each fund’s five- and ten-year returns against its policy index returns; it also presents the median return for the NEPC peer groups and returns for a hypothetical diversified pension fund (CII index). Although the report presents returns for one-, three-, five-, and ten-year periods, assessing performance for pension and endowment funds might be more meaningful over the longer periods because of these funds’ long-term time horizons. Table 2 and data for other measurement periods show that:

- TRS’s and ERS’s returns were typically close to the returns of their policy indexes. (Over the ten-year time periods, TRS slightly exceeded and ERS slightly lagged their policy indexes.)
- PSF’s returns were not generally as close to its policy index returns as TRS’s and ERS’s were to theirs. (PSF did not have an asset allocation policy prior to 1995, so a ten-year policy index return does not exist. Over the five-year time periods, PSF outperformed its policy index.)
- PUF and LTF usually underperformed when compared with the returns of their policy index. The performance shortfall may have been due, at least in part, to factors discussed in the text accompanying Slides 4.15. and 5.4. in the report’s Detailed Results section. PUF’s and LTF’s policy index returns significantly exceeded the other funds’ policy index returns. Their higher policy index returns suggest that PUF and LTF may

have adopted a more aggressive investment strategy than the other three Texas funds, in which PUF and LTF anticipated higher returns in exchange for a higher level of expected risk. The risk/return relationship for each of the funds is summarized in the next section. (The University of Texas Investment Management Company [UTIMCO] manages PUF and LTF and uses the same asset allocation policy for both funds.)

Differences between a fund's actual and policy index returns would be the result of asset allocations departing from policy targets and/or actual returns for individual investment types differing from the returns of each type's assigned benchmark.

Table 2

Comparative Annualized Returns for Periods Ending June 30, 2001, and June 30, 2002								
	Ending June 30, 2001				Ending June 30, 2002			
	5 Years		10 Years		5 Years		10 Years	
	Actual Return	Policy Index	Actual Return	Policy Index	Actual Return	Policy Index	Actual Return	Policy Index
<b>Pension Funds</b>								
TRS	11.04%	11.02%	11.75%	11.40%	5.45%	5.27%	9.56%	9.16%
ERS	9.43%	9.12%	10.06%	10.17%	4.56%	4.41%	7.91%	8.26%
NEPC Pension Median	10.62%	-- <sup>a</sup>	11.32%	-- <sup>a</sup>	-- <sup>a</sup>	-- <sup>a</sup>	-- <sup>a</sup>	-- <sup>a</sup>
CII Index <sup>b</sup>	10.50%	N/A	11.31%	N/A	-- <sup>a</sup>	-- <sup>a</sup>	-- <sup>a</sup>	-- <sup>a</sup>
<b>Endowment Funds</b>								
PSF	11.18%	9.62%	11.75%	N/A <sup>c</sup>	5.82%	4.46%	9.48%	N/A <sup>c</sup>
PUF	10.72%	11.40%	11.20%	12.80%	5.73%	7.33%	9.26%	11.20%
LTF	11.69%	11.40%	11.85%	12.80%	6.63%	7.33%	9.95%	11.20%
NEPC Endowment Median	11.20%	-- <sup>a</sup>	11.75%	-- <sup>a</sup>	-- <sup>a</sup>	-- <sup>a</sup>	-- <sup>a</sup>	-- <sup>a</sup>
N/A - Not Applicable								
<sup>a</sup> NEPC was not requested to provide this data.								
<sup>b</sup> The CII Index is a blended market index developed to represent the potential investment performance of a "typical" diversified pension fund. Its performance is calculated from the performance of the following published indexes that cover large portions of the U.S. stock, U.S. investment grade bond, international stock, and real estate markets: 50% Wilshire 5000; 35% Lehman Aggregate; 10% EAFE; and 5% NCREIF.								
<sup>c</sup> Ten-year policy index return could not be computed because PSF had no official asset allocation policy prior to 1995.								

Source: Actual and policy index return data provided by each State fund; other data calculated by NEPC for the SAO

### The Texas Funds' Rates of Return Generally Corresponded to Their Levels of Risk

For the five-year period ending June 30, 2001, the Texas funds tended to earn rates of return that generally corresponded to the levels of risk they took. The relative risk/return relationships were consistent with the principle that investors expect to earn higher levels of return in exchange for accepting higher levels of risk.

Figure 2 plots the return earned versus the risk taken for each Texas fund, the median for each NEPC peer group (pension and endowment funds), the CII Index, and selected stock (S&P 500) and bond (Lehman Brothers Aggregate) indexes. It also lists the Sharpe Ratio

calculation for each, which is a measurement of risk-adjusted return. Figure 2 facilitates an assessment of how efficient each fund was in generating additional return by assuming more risk.

Figure 2

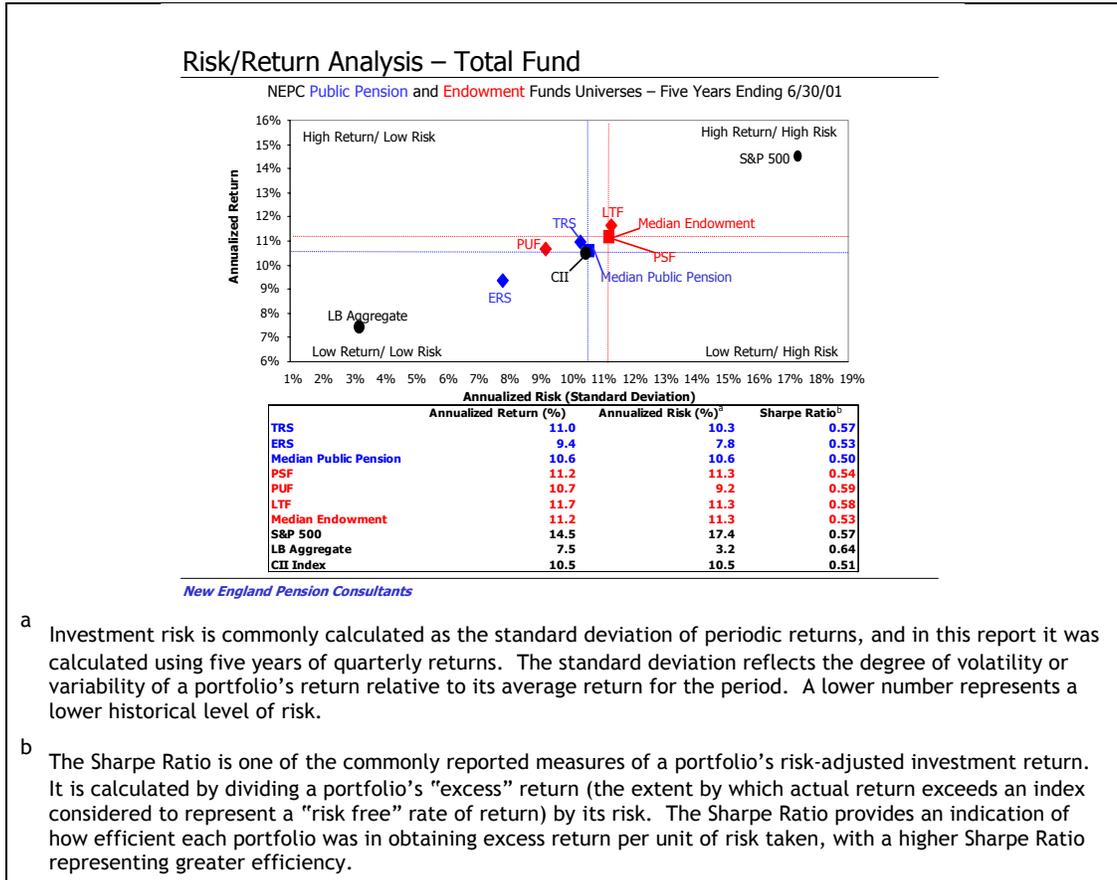


Figure 2 shows the following:

- As represented by NEPC's peer group medians, endowment funds invested less conservatively than public pension funds.
- ERS's lower level of return and risk relative to TRS or to the median results for NEPC's public pension peer group suggests that ERS has adopted a comparatively conservative investment strategy. This conclusion is consistent with ERS's relatively higher allocation to bonds over time. TRS took slightly less risk and earned a slightly higher return than the median NEPC pension fund.
- PSF's levels of return and risk matched the NEPC median for endowment funds. PUF took less risk and earned slightly less return than the median NEPC endowment. LTF took the same level of risk and earned a slightly higher return than the median NEPC endowment fund.

- Based on their calculated Sharpe Ratios, all five Texas funds were somewhat more efficient in generating excess return per unit of risk taken than were the median funds in their respective NEPC peer groups. A higher Sharpe Ratio represents greater efficiency. Differences in the funds' Sharpe Ratios are small; if the Sharpe Ratios were calculated differently (for example, if monthly, rather than quarterly, returns had been used to measure risk), then the funds' comparative rankings could change.

## ***Summary of Comments from the Funds' Management***

Comments from management of the Texas funds follow the Detailed Results section. The comments from TRS, ERS, the Texas Education Agency (for PSF) and UTIMCO (for PUF and LTF) include additional information relevant to each fund, but none of the comments indicate any disagreement with the information in the report.

## ***Objective, Scope, and Methodology***

The objective of this report was to compile comparable historical information about the State of Texas's five largest long-term investment funds and about peer groups of other relatively large public pension funds and endowment funds. The comparative information should help decision makers obtain a high-level understanding of the (1) similarities and differences in how each fund chose to invest its assets and (2) performance results of those investment choices. The information in this report has not been audited. This report was not intended to rate the performance of each fund, and it does not include findings or recommendations.

The scope of this project includes asset allocation and investment performance information for various time periods ending June 30, 2001, or June 30, 2002. The report covers the Teacher Retirement System of Texas; the Employees Retirement System of Texas; the Texas Permanent School Fund; the Permanent University Fund; and The University of Texas System Long Term Fund. In addition, the report presents similar information for several comparison groups of public pension funds and endowment funds.

The State Auditor's Office (SAO) hired New England Pension Consultants (NEPC) to compile or calculate the information presented in most of the slides. The SAO wrote the report's narrative comments. The SAO and/or NEPC obtained the information from each investment fund or its custodian bank, NEPC's proprietary database of other pension and endowment funds, and published surveys of similar investment funds. NEPC calculated investment risk and risk-adjusted return information using each fund's returns. The SAO provided each fund's management the opportunity to verify that the report presented what each fund considered the correct asset allocation and investment return information.

# Contents

## ***Detailed Results***

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Introduction .....	1
Chapter 1	
Comparative Asset Allocations (Five Texas Funds) as of June 30, 2002 .....	4
How Did the Texas Funds' Actual Asset Allocations Compare with Their Targets and One Another as of June 30, 2002? .....	4
Chapter 2	
Comparative Historical Investment Performance (Five Texas Funds) for Periods Ending June 30, 2002 .....	6
What Rates of Return Did the Texas Funds Earn on Their Total Portfolios During the One-, Three-, Five-, and Ten-Year Periods Ending June 30, 2002 (Compared with Each Fund's Policy Index Returns)? .....	6
What Rates of Return Did the Texas Funds Earn on Each Long-Term Asset Class During the One-, Three-, Five-, and Ten-Year Periods Ending June 30, 2002? .....	9
Chapter 3	
Composition of Investment Consultant's Peer Universes for Comparisons Through June 30, 2001 .....	12
How Did the Texas Funds Compare in Size with the Funds in the NEPC Public Pension Fund or Endowment Fund Universes? .....	12
Chapter 4	
Comparative Asset Allocations (Texas and Other Peer Universe Funds) for Periods Through June 30, 2001 .....	13
How Did the Texas Funds' Asset Allocations Compare with One Another and Certain Peer Groups and Change Over Time? .....	13
How Did the Texas Pension Funds' Asset Allocations Compare with Those of the NEPC Public Pension Fund Universe? .....	15
How Did the Texas Endowment Funds' Asset Allocations Compare with Those of the NEPC Endowment Fund Universe? .....	18
What Percentages of the Two UT System Funds (PUF and LTF) Were Allocated to Investments in "Nontraditional" Asset Classes (Alternative Assets and Inflation Hedging Assets) as of June 30, 2001? .....	21
How Did the Texas Funds' Actual Asset Allocations Compare with Their Target Allocations and Change Over Time? .....	23
How Did the Texas Funds' Asset Allocations Change Between 1995 and 2001? .....	25

Chapter 5	
Comparative Historical Investment Performance (Texas and Other Peer Universe Funds) for Periods Ending June 30, 2001 .....	28
What Rates of Return Did the Texas Funds' Investments Earn During the One-, Three-, Five-, and Ten-Year Periods Ending June 30, 2001 (Compared with Each Fund's Policy Index Returns and the Median Returns of the Funds in the Relevant NEPC Universe)? .....	28
What Were the Texas Funds' Annual Rates of Return from June 30, 1992, Through June 30, 2001 (Compared with Each Fund's Policy Index Returns)? .....	32
How Much Did \$100 Invested in Each Texas Fund Grow Between June 30, 1991, and June 30, 2001 (Compared with Each Fund's Policy Index Returns and Returns for Certain Indexes)? .....	35
What Rates of Return Did the Texas Funds Earn Over Time Compared with Funds in the NEPC Universe (Total Fund and Selected Asset Class Returns)? .....	38
Chapter 6	
Returns Versus Risk and Risk-Adjusted Historical Investment Performance (Texas and Median Peer Universe Funds) for the Five-Year Period Ending June 30, 2001 .....	48
How Did the Return Versus Risk and the Sharpe Ratio Compare Among the Texas Funds, the NEPC Universe Medians, and Other Indexes for the Five-Year Period Ending June 30, 2001 (by Total Fund and Select Asset Classes)?.....	49
<b><i>Comments from the Funds' Management</i></b> .....	<b>53</b>
<hr/>	
<b><i>Appendices</i></b>	
<hr/>	
Appendix 1	
Investment Objectives Excerpted from Each Texas Fund's Investment Policy .....	56
Appendix 2	
Other Comparative Information.....	63
Have Texas's Endowment Funds' Asset Values and Annual Distributions Kept Pace with Inflation During the Ten-Year Period Ending August 31, 2001? .....	63
How Did Certain Characteristics of Four Texas Funds' U.S. Stock Portfolios Compare as of June 30, 2001? .....	66
<b><i>Glossary</i></b> .....	<b>67</b>
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# Detailed Results

## Introduction

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### Organization of the Report

The Detailed Results are organized into six chapters. Chapters 1 and 2 contain slides prepared by the State Auditor's Office (SAO) and present information as of or for periods ending June 30, 2002. These two chapters present information for the Texas funds only (see text box). Chapters 3 through 6 contain slides prepared for the SAO by New England Pension Consultants, Inc. (NEPC), and present information as of or for periods ending June 30, 2001, or earlier. These chapters include information about the Texas funds and certain peer groups. The SAO wrote all narrative comments.

Appendices 1 and 2 also contain information relevant to the Texas funds:

- Appendix 1 – Selected Provisions from the Five Texas Funds' Investment Policies
- Appendix 2 – Other Comparative Information, which includes information prepared by NEPC about the three Texas endowment funds in relation to inflation and about certain characteristics of the U.S. stock portfolios of four of the Texas funds as of June 30, 2001

A glossary of relevant investment terms follows the appendices.

### Peer Groups

This report presents high-level comparisons of the results of the five Texas funds' investment strategies against their own targets. These comparisons might be the most meaningful way to assess the performance of each fund. However, this report also presents asset allocation and investment performance information for peer groups of funds that are reasonably similar to the Texas funds.

To obtain information about other funds, the SAO contracted with NEPC, a U.S. investment consulting firm with clients whose investment assets exceed \$270 billion. NEPC pooled its client data with similar client data from several other consulting firms to create the broad database of investment information it used for this report.

From this pooled information, NEPC created two "universes" or "peer groups" of pension and endowment funds (including the Texas funds) with roughly similar fund type and size characteristics. Chapter 3 provides more information about the composition of the NEPC peer groups.

Although the other funds in the peer groups might not be completely comparable with the Texas funds in some important respects, it is common for funds to examine their investment strategies and performance in relation to those of a peer group. (The investment policies of some of the Texas funds require such comparisons.)

<b>"Texas Funds"</b>
<b>Pension Funds</b>
▪ Teacher Retirement System (TRS)
▪ Employee Retirement System (ERS)
<b>Endowment Funds</b>
▪ Permanent School Fund (PSF)
▪ Permanent University Fund (PUF)
▪ UT System Long Term Fund (LTF)

In addition to the two NEPC peer groups, several slides present asset allocation information for the following other peer groups based on published surveys (SAO slightly revised the surveys' information to conform to the asset class categories used in this report):

- CII, from a 2001 survey published by the Council of Institutional Investors (CII). This public pension fund peer group consists of the December 31, 2000, average asset allocations of the 44 participating public pension funds, which at that time had total assets of \$1.2 trillion (an average of \$27 billion per fund).
- NACUBO, from a 2001 survey published by the National Association of College and University Business Officers (NACUBO). This public endowment fund peer group consists of the June 30, 2000, average allocations for the public endowment funds in a study of 541 public and private educational endowments. (June 30, 2001, NACUBO data was not available in sufficient detail to compare it with the asset class categories used in this report.)

Some slides also present investment performance information for the CII Index, a benchmark created by CII. The CII Index reflects the performance that would have resulted from the asset allocation of a reasonably "typical" pension fund. That asset allocation consists of 50 percent to a broad universe of U.S. stocks, 35 percent to a broad universe of U.S. bonds, 10 percent to a broad universe of international stocks in more developed countries, and 5 percent to a universe of real estate investments.

## Asset Allocation

Chapters 1 and 4 provide detail about the Texas funds' and the peer groups' asset allocations. Asset allocation is the way an investment fund divides its assets among investment categories such as stocks and bonds. Understanding how funds' asset allocations differ from one another can help explain why the funds' investment returns and risks also differ. Asset classes used in this report include the following:

- Cash (and equivalent short-term investments)
- Bonds (fixed income)
- U.S. stock (domestic equity)
- International stock (international equity)
- Real estate, which might include direct ownership of investment properties, indirect ownership in non-publicly traded mortgages, and pooled investment vehicles such as real estate investment trusts (REITs). Instead of a real estate category, PUF and LTF have an "inflation hedging asset" category, which might include investments other than real estate, such as commodities.
- Alternative assets, which can include a variety of what might be called "nontraditional" investments, although there is no standard definition. Some reports include real estate as alternative assets; however, this report presents real estate separately. As used in this report, alternative assets can include investments that are somewhat liquid, such as hedge funds and market neutral strategies, and those that are illiquid and nonmarketable, such as privately held investments that are not registered for sale on public exchanges. Further discussion of these categories can be found with Slide 4.13.

Asset allocation and investment performance information is presented only at the asset class level of detail. A fund usually establishes target allocations at the asset class and the more detailed "segment" (or sub-asset class) level. Segments are distinguishable investment types within the same asset class—for example, investment grade and high-yield bonds or large-, mid-, and small-capitalization U.S. stocks. In

addition, some funds might allocate percentages to different investment “styles” such as active versus passive (or index fund) or, for stocks, growth versus value.

Although this report might show that two funds invested the same percentage of their entire funds in U.S. stocks, it will not show whether the allocations consisted of different segments or styles. Differences in segment and/or style allocations can greatly affect investment performance.

## **Performance Comparisons**

Chapters 2 and 5 provide details about the Texas funds’ and the peer groups’ investment returns. So that funds can compare investment returns against expectations at the total fund level, they create a policy index. The policy index measures the return a fund would earn if it consistently allocated its assets in accordance with its target and if each investment type earned exactly the return for that investment type’s performance benchmark.

The report compares each Texas fund’s return at the total fund level with its own policy index over one-, three-, five-, and ten-year periods ending June 30, 2001, and June 30, 2002. Because pension and endowment funds have long-term time horizons, the comparisons for the longer periods might provide the most important information. In addition, the report compares the actual and policy index performance of the five Texas funds with the returns of the median fund in the respective NEPC peer group for the June 30, 2001, periods.

At the asset class level, the report compares the returns for the asset classes that most of the Texas funds have invested in for reasonably long time periods (U.S. stock, international stock, and bonds). Performance for these asset classes is sometimes compared with the performance of certain common indexes (such as the S&P 500 Index, MSCI EAFE, and Lehman Brothers Aggregate Bond Index); however, funds also often develop custom benchmarks. The report includes such comparisons for the Texas funds that provided the SAO with custom benchmarks. Custom benchmarks reflect the blended performance of indexes that represent the different investment segments within an asset class (e.g., a proportional blend of indexes representing what investors categorize as large-, mid-, and small-capitalization U.S. stocks).

Chapter 6 presents, for the five-year period ending June 30, 2001, comparisons of the returns each Texas fund earned in relation to the risk each took and comparisons of each fund’s Sharpe Ratio, a measure of risk-adjusted return. Risk was calculated based on the variability of each fund’s quarterly returns for the five-year period. For informational purposes, the report presents similar return and risk information for the median points in each fund’s peer group and for other selected benchmarks.

## Comparative Asset Allocations (Five Texas Funds) as of June 30, 2002

### How to Read Chapter 1

*Asset allocation* refers to how a fund diversifies its total investments by dividing them among various categories of investment types, or asset classes, such as U.S. stocks, international stocks, and bonds. Each Texas fund adopts, and might periodically revise, an asset allocation policy that establishes target allocation percentages (as well as acceptable ranges above and below each target) for each asset class in which its governing board chooses to invest. Slide 1.1 shows how each fund’s actual asset allocation compared with its target allocation as of June 30, 2002. Differences between actual and target allocations are one reason a fund’s actual investment returns might differ from its policy expectations.

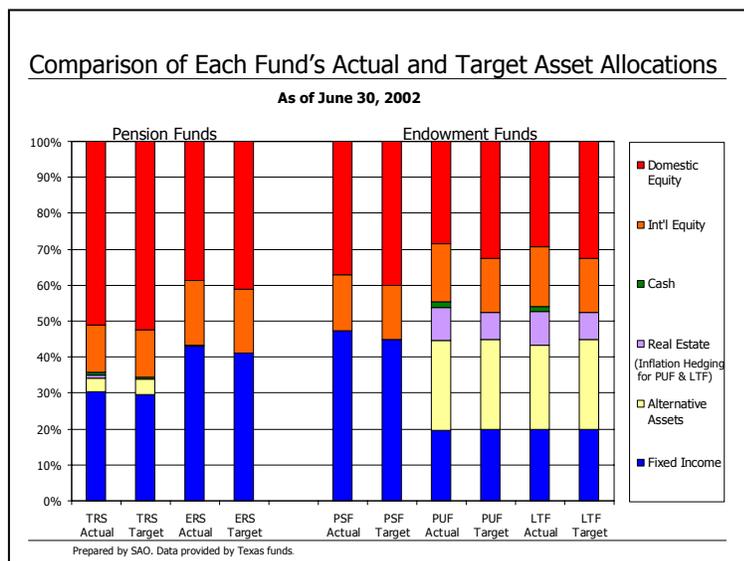
Other chapters of this report present differences between the Texas funds’ investment returns at the asset class level. Variations in the funds’ allocations to specific segments within each asset class probably account for at least some of these differences (e.g., segments of the bond asset class might include U.S. investment grade bonds, high-yield bonds, and international bonds).

This report does not present each fund’s asset allocations or the resulting investment performance at a level of detail below the major asset class level. However, each fund’s allocation policy typically provides additional detail about targets and ranges for individual segments within an asset class.

Chapter 1-A

### How Did the Texas Funds’ Actual Asset Allocations Compare with Their Targets and One Another as of June 30, 2002?

Slide 1.1.



Overall, each fund’s actual allocation to individual asset classes was reasonably similar to its target allocation as of June 30, 2002. However, major differences can be seen in the allocation targets used by each fund, especially in the allocations to U.S. stock (domestic equity), bonds (fixed income), and alternative assets.

Compared with TRS, ERS had a substantially higher allocation to bonds and substantially lower allocations to U.S. stock (and to total stock) and alternative assets. ERS’s alternative assets consisted of its 0.3 percent allocation to the Texas Growth Fund, while TRS reported that 4.5 percent of

its fund was invested in this asset class. (Although TRS now reports its real estate investments in alternative assets, we report TRS’s 0.6 percent real estate investments in the real estate asset class and the remaining 3.9 percent in alternative assets for comparability with other funds’ asset allocations in Chapter 4. In Chapter 2, TRS’s real estate performance is included with its alternative assets performance.)

In addition, TRS's investment in actual alternative assets as of June 30, 2002, was significantly less than the 3.9 percent presented. TRS reports its investment in alternative assets based on its target allocation rather than its actual allocation. Due to the long time frames required to invest in some types of alternative assets, TRS maintains temporary "transition portfolios" that account for the difference between the actual and target allocations. The transition portfolios consist of conventional stock and bond investments. As of June 30, 2002, the 3.9 percent alternative asset investments that TRS reported (after we removed its real estate investments from this asset class) consisted of 1.6 percent in actual alternative assets, 1.5 percent in stock, and 0.8 percent in bonds. (See similar discussion at Slide 4.1.)

Of the three endowment funds, PSF had a significantly higher allocation to bonds and U.S. stock compared with PUF and LTF, but it had no allocations to the alternative asset and inflation hedging (including real estate) asset classes. The latter two asset classes made up about one-third of PUF's and LTF's total investments. (See Slide 4.13. for descriptions of these two asset classes.)

PUF and LTF, both managed by The University of Texas Investment Management Company (UTIMCO), have adopted identical target allocations and currently have reasonably similar actual allocations. In addition, their asset allocations are similar to those reported as of June 30, 2001, by higher education endowments that were larger than \$1 billion in a survey of 617 higher education endowment funds.

## Comparative Historical Investment Performance (Five Texas Funds) for Periods Ending June 30, 2002

### Chapter 2-A

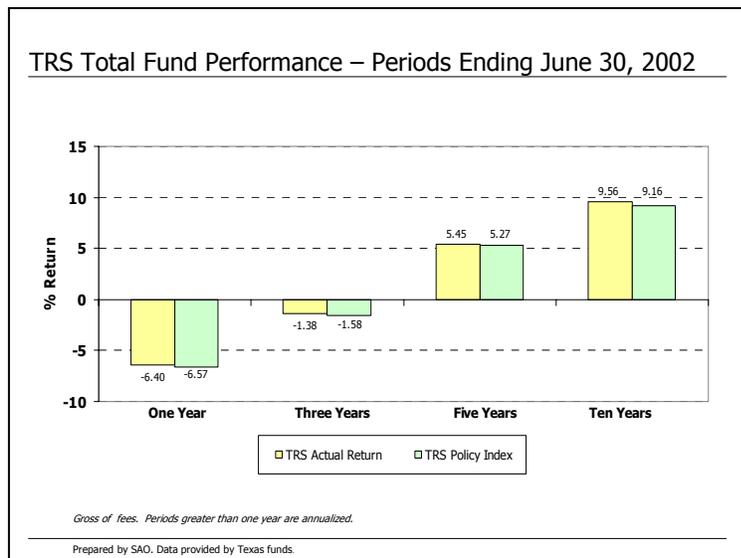
#### What Rates of Return Did the Texas Funds Earn on Their Total Portfolios During the One-, Three-, Five-, and Ten-Year Periods Ending June 30, 2002 (Compared with Each Fund's Policy Index Returns)?

##### How to Read Chapter 2-A

The “policy index” performance for each time period presented on the next five slides represents the return that a fund would have earned if, throughout the period, its asset allocation exactly equaled its target allocation and each investment type earned its assigned benchmark's return.

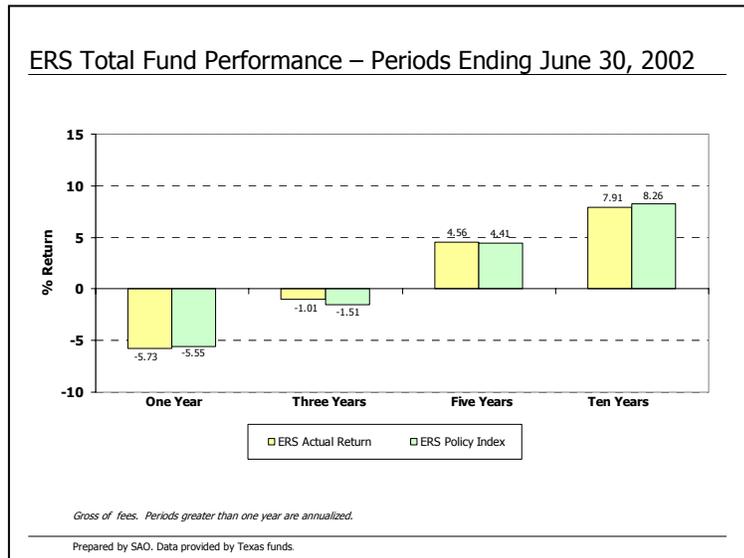
For pension and endowment funds, performance assessments—such as comparisons of actual and policy index returns—might often be more meaningful over the longer time periods presented because of these funds' long-term nature.

Slide 2.1.



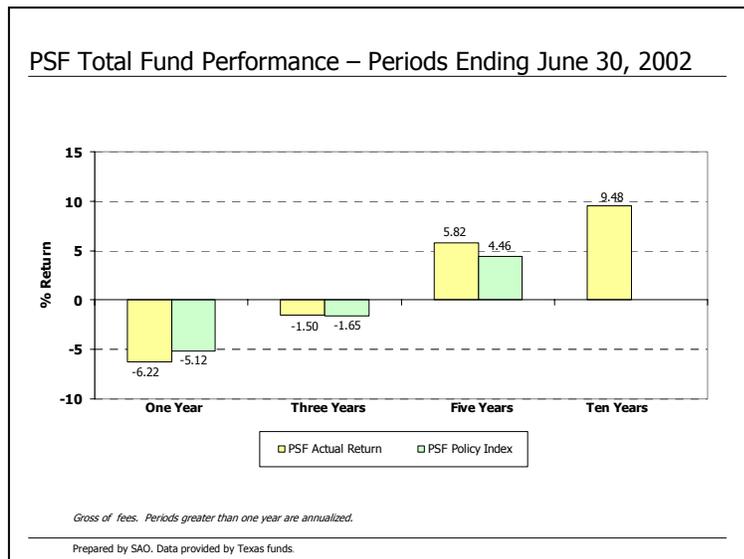
For all four periods ending June 30, 2002, TRS's actual investment return for the total fund was slightly higher than its policy index return.

Slide 2.2.



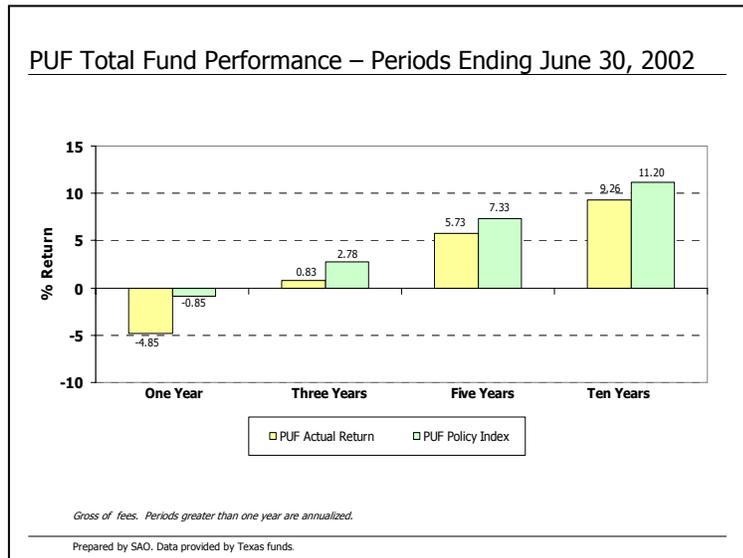
ERS's total fund slightly underperformed its policy index in the one- and ten-year periods ending June 30, 2002, but slightly outperformed its policy index in the three- and five-year periods.

Slide 2.3.



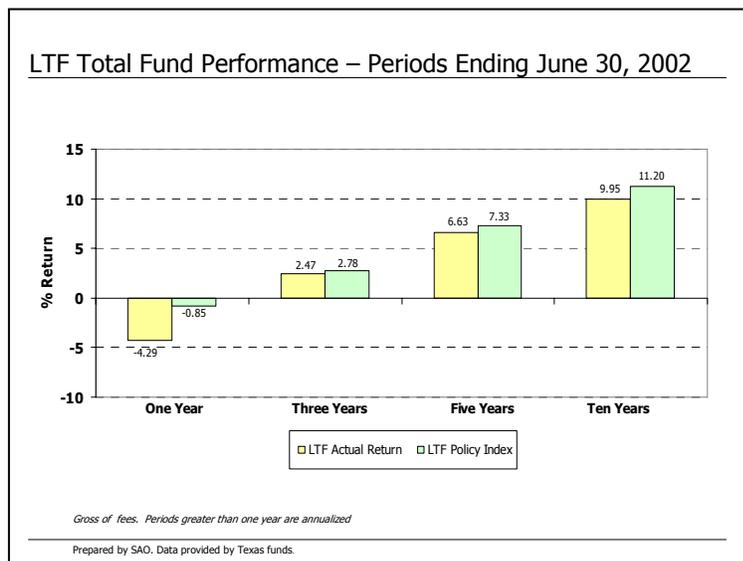
PSF's total fund underperformed its policy index in the one-year period ending June 30, 2002, but outperformed its policy index in the three- and five-year periods. The differences between PSF's actual and policy index returns for the one- and five-year periods were significantly higher than TRS's or ERS's for any of the four periods. (PSF did not have a policy index for the ten-year period because the State Board of Education (SBOE) did not adopt formal target asset allocations until 1995.)

Slide 2.4.



PUF's total fund underperformed its policy index in all four periods ending June 30, 2002. Differences between PUF's actual and policy returns were higher than those observed for TRS, ERS, and PSF. PUF's policy index returns were substantially higher than those of the other three funds, reflecting what appears to be a more aggressive investment strategy depicted by its significantly different asset allocation (see Chapter 1). Slide 5.4. provides a more extensive discussion of why PUF's actual returns might have differed so much from its policy index returns. That discussion applies equally to periods ending June 30, 2002, and June 30, 2001.

Slide 2.5.



LTF's total fund, like PUF's, underperformed its policy index in all four periods ending June 30, 2002, although by slightly smaller margins than PUF's underperformance. PUF and LTF report identical policy index returns based on their identical reported historical target allocations. LTF's underperformance relative to its policy index likely was caused by factors similar to those affecting PUF's performance, discussed on Slide 5.4.

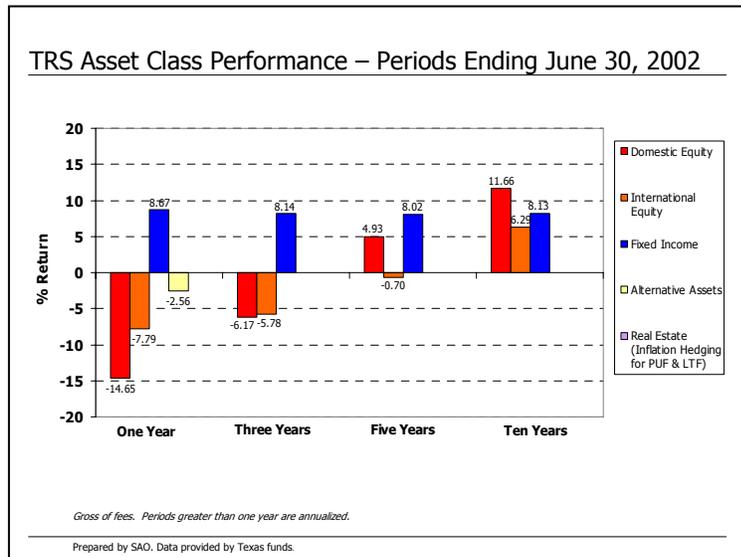
## What Rates of Return Did the Texas Funds Earn on Each Long-Term Asset Class During the One-, Three-, Five-, and Ten-Year Periods Ending June 30, 2002?

### How to Read Chapter 2-B

The following five slides present each Texas fund's returns for its long-term asset classes (performance of the "cash and cash equivalents" asset class was omitted) for various periods ending June 30, 2002. Some of the funds have more recently made allocations to certain asset classes and therefore do not have long-term performance results for these asset classes.

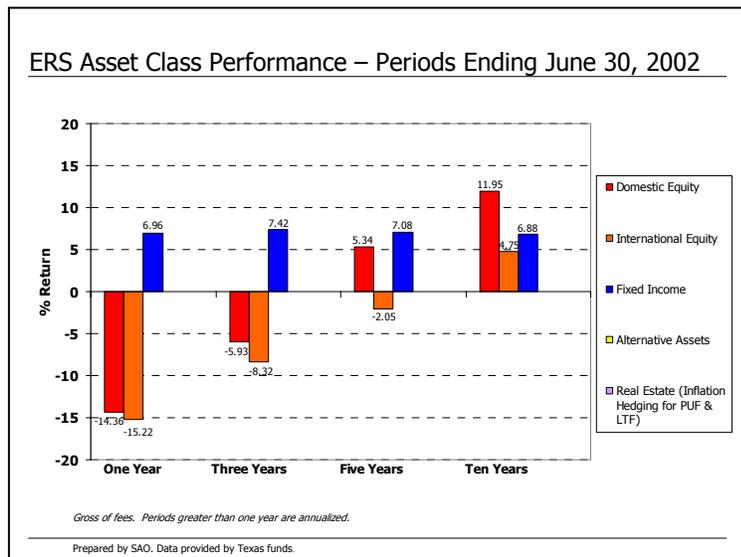
As discussed in the introduction to Chapter 1, this report does not present performance at a level of detail below the major asset class level. Differences in the composition of some of the funds' asset classes (individual asset class segments used and their relative percentages) could account for much of the differences in returns observed across the five funds at the asset class level.

Slide 2.6.



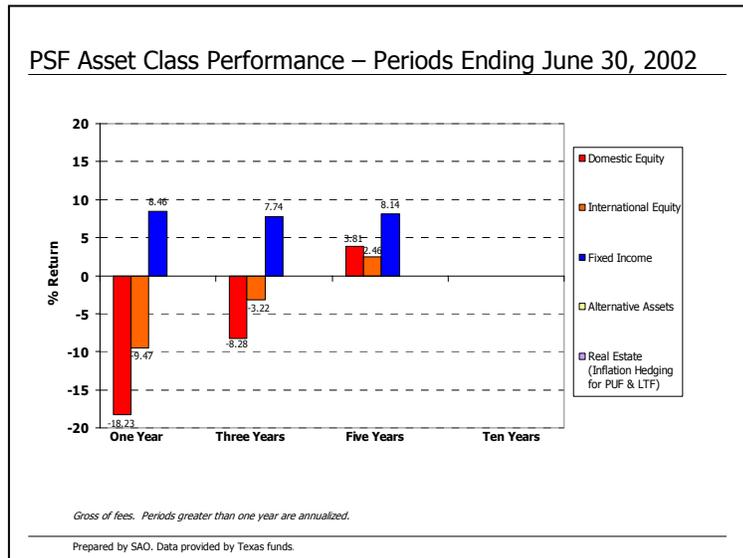
TRS had not invested in its alternative asset class for periods longer than the one-year period ending June 30, 2002. As discussed at Slide 1.1., this asset class includes substantial amounts of conventional investments in stock and bonds, and these investments' returns are included in the performance TRS reported for its alternative assets. (TRS also reports its real estate investments' returns as part of its alternative assets' performance.)

Slide 2.7.



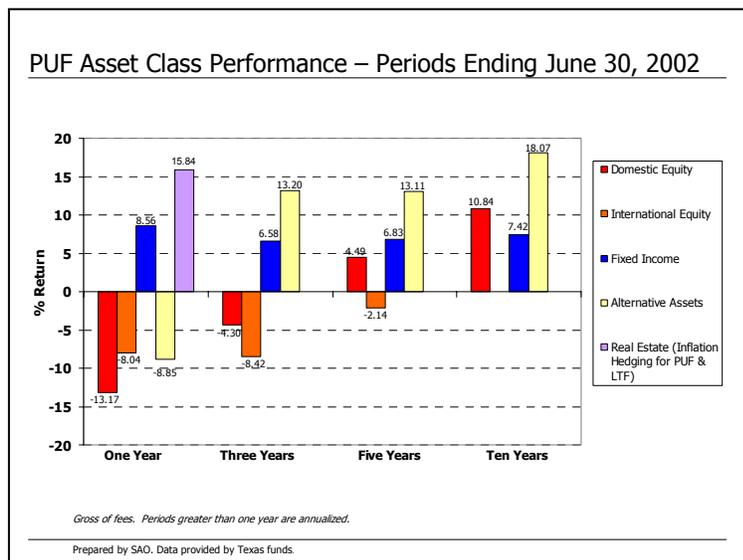
ERS does not invest in real estate and does not separately report performance for its investment in the Texas Growth Fund, an alternative asset investment. That investment represented about 0.3 percent of the fund's assets as of June 30, 2002.

Slide 2.8.



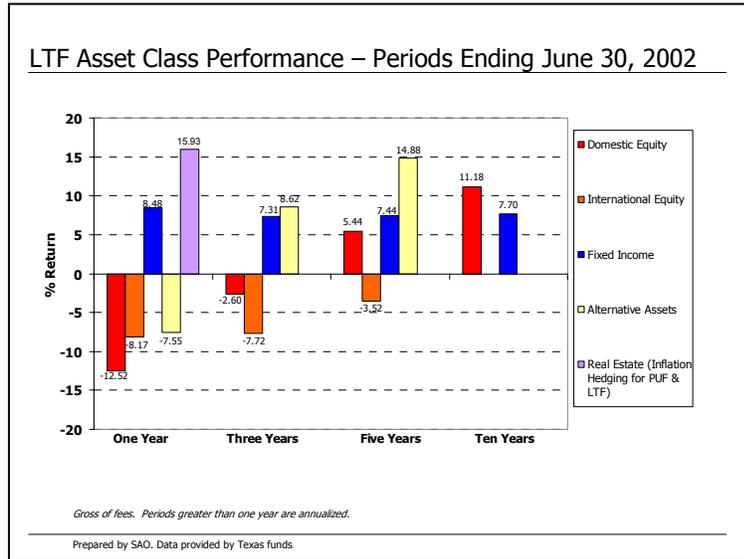
PSF did not provide returns at the asset class level for the ten-year period ending June 30, 2002. It does not invest in real estate or alternative assets.

Slide 2.9.



PUF had not invested in its inflation hedging asset class (which includes real estate investments) for the entire three-year period ending June 30, 2002 (see also Slide 4.19.). In addition, PUF had not invested in international stocks for the full ten-year period.

Slide 2.10.



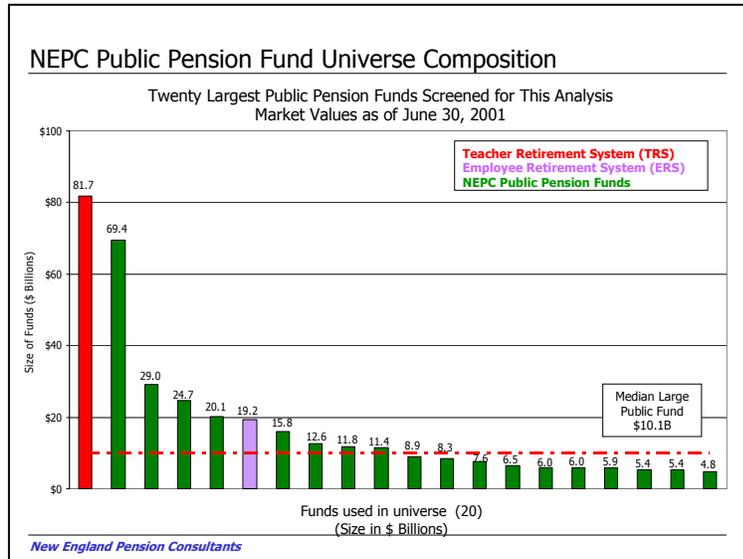
LTF, like PUF, had not invested in inflation hedging assets for the entire three-year period ending June 30, 2002 (see also Slide 4.20.). In addition, LTF had not invested in international stocks or alternative assets for the full ten-year period.

## Composition of Investment Consultant's Peer Universes for Comparisons Through June 30, 2001

Chapter 3-A

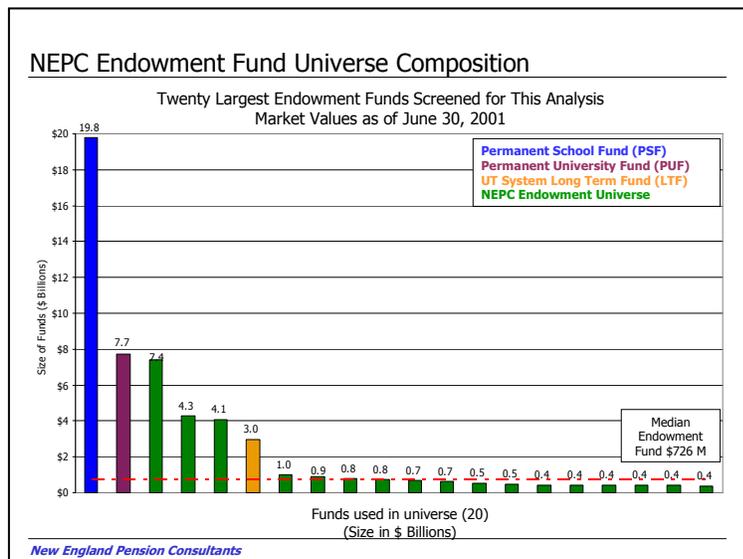
### How Did the Texas Funds Compare in Size with the Funds in the NEPC Public Pension Fund or Endowment Fund Universes?

Slide 3.1.



NEPC's comparative universe of 20 public pension funds as of June 30, 2001, included TRS as the largest fund and ERS as the sixth-largest fund. The median fund in the comparative universe was \$10.1 billion.

Slide 3.2.



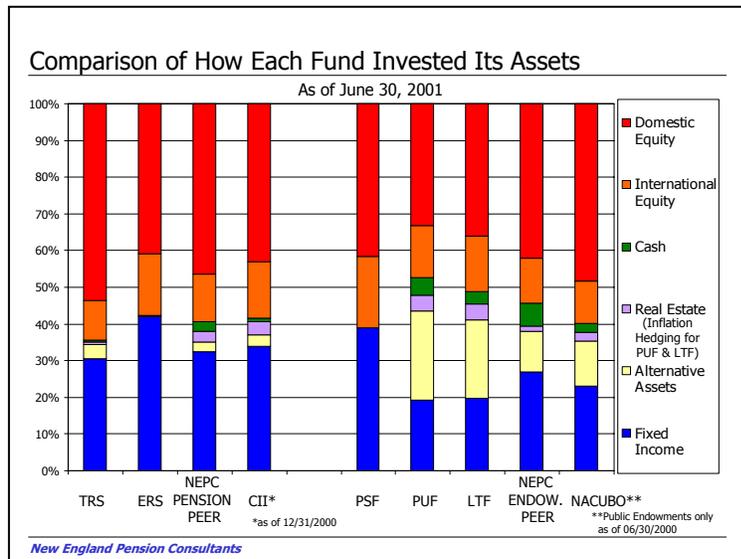
As of June 30, 2001, the largest fund in the NEPC comparative universe of 20 public and private endowment funds was PSF. PUF was the second-largest fund, and LTF was the sixth-largest fund. The median fund size was \$726 million.

## Comparative Asset Allocations (Texas and Other Peer Universe Funds) for Periods Through June 30, 2001

Chapter 4-A

### How Did the Texas Funds' Asset Allocations Compare with One Another and Certain Peer Groups and Change Over Time?

Slide 4.1.



Compared with endowment funds, TRS, ERS, and pension funds in general (as represented by the two public pension comparative universes) typically invested a higher percentage of their assets in bonds and a lower percentage in alternative assets.

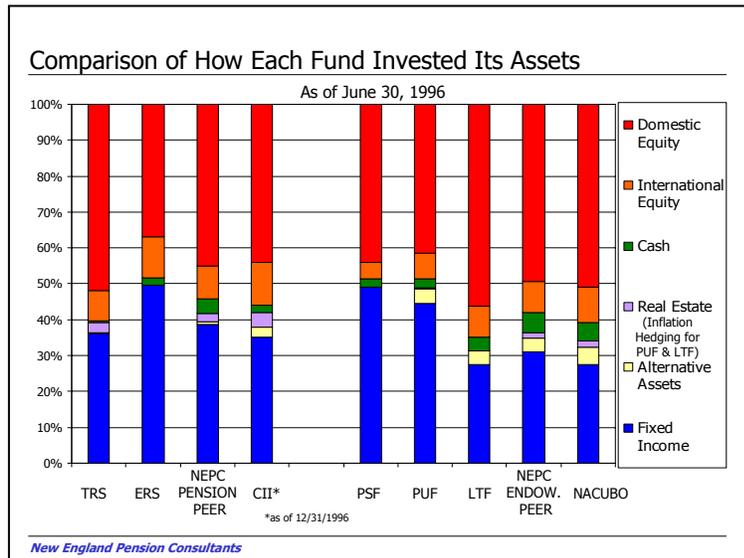
PSF was an exception. Constitutional provisions prohibit annual distributions from PSF based on its total return (interest, dividends, and capital gains). Instead, the Constitution mandates a spending policy under which PSF must distribute all interest and dividends and must retain all capital gains. This restriction no longer applies to PUF, LTF, the NEPC comparison funds, or

the majority of the NACUBO universe funds. It could contribute to the differences between PSF's asset allocation and the allocations of the other endowment funds presented. (Due to the income distribution restriction and the SBOE's agreement to increase distributions, by June 30, 2002, PSF's investments in bonds had increased to 47.2 percent from the 39.0 percent allocation at June 30, 2001.)

TRS's actual investment in alternative assets was significantly less than the 3.9 percent presented (see similar discussion on Slide 1.1.). Due to the long time frames required to invest in some types of alternative assets, TRS maintains temporary "transition portfolios" that account for the difference between the actual and target allocations. The transition portfolios consist of conventional stock and bond investments. As of June 30, 2001, the 3.9 percent alternative asset investments that TRS reported consisted of 1.1 percent in actual alternative assets, 0.6 percent in stock, and 2.2 percent in bonds. (For comparability with other funds in this report, we present TRS's real estate investments, representing 0.6 percent of the fund, as a separate asset class. TRS actually reports a 4.5 percent allocation to alternative assets including real estate.)

PUF's and LTF's allocations to alternative assets and inflation hedging assets (including real estate investments) were much higher than either comparison endowment group's combined allocation to alternative assets and real estate. However, a survey of 617 higher education endowment funds reported average alternative asset allocations (including real estate) that were comparable to PUF's and LTF's 2001 percentages.

Slide 4.2.



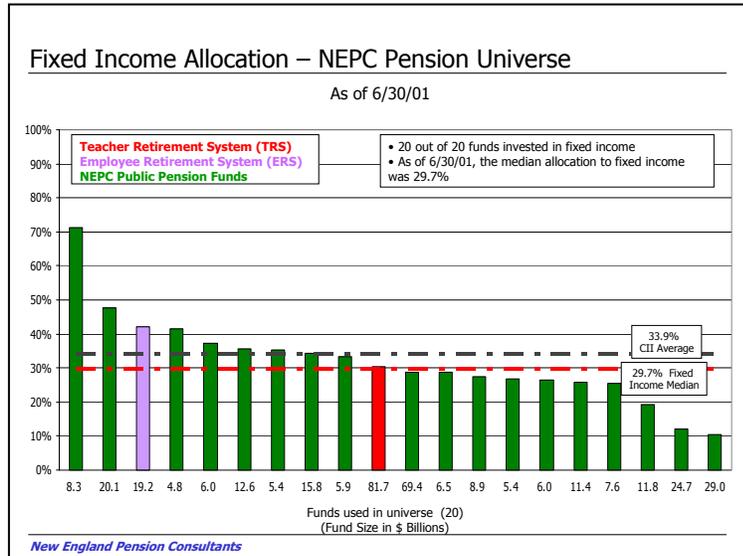
As of June 30, 1996, all funds and comparative universes had higher allocations to bonds and lower commitments to alternative assets than they did at June 30, 2001.

PUF's relatively high allocation to bonds was due to a spending policy limit similar to PSF's. PUF, like PSF, was constitutionally restricted to distributing all dividend and interest income and retaining all capital gain income. Since a November 1999 constitutional amendment permitted PUF to distribute from its cumulative total return, PUF has significantly reduced its allocation to bonds in order to focus on investments with greater long-term investment potential.

LTF's allocation resembled that of the comparative endowment universes. Like most endowment funds at that time, LTF was no longer statutorily restricted to distributing only interest and dividend income.

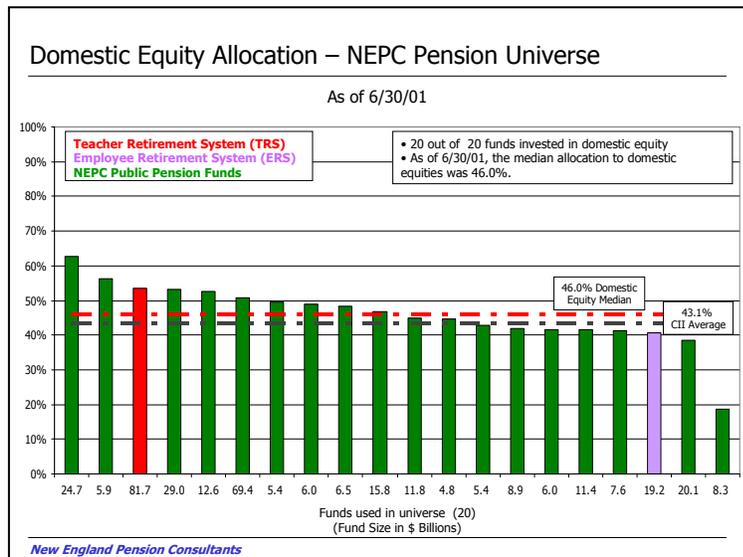
## How Did the Texas Pension Funds' Asset Allocations Compare with Those of the NEPC Public Pension Fund Universe?

Slide 4.3.



Although the fixed income (bond) allocations within the NEPC pension comparative universe ranged from about 10 percent to about 70 percent, the allocations for the majority of funds were more tightly distributed around the median. TRS approximated the median allocation, while ERS had the third-highest commitment to bonds. Bond investments are typically expected to generate lower long-term return with lower risk than most other long-term investments.

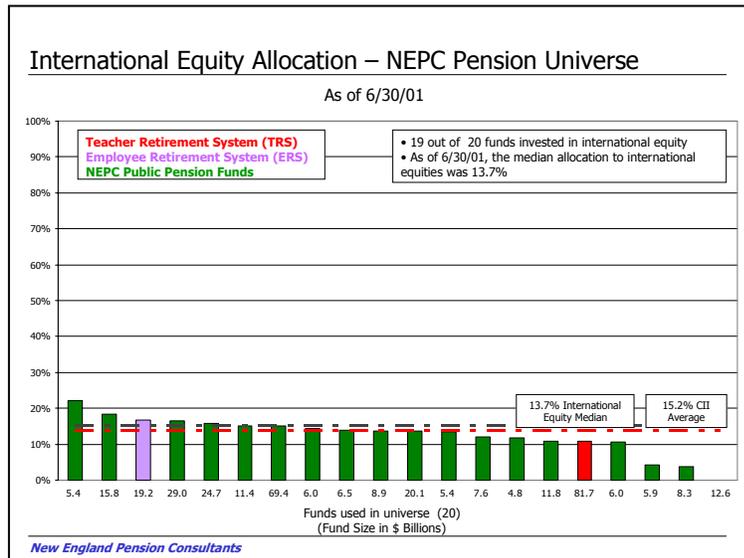
Slide 4.4.



The domestic equity (U.S. stock) allocations are mostly clustered around the comparative universe's median. While TRS had the third-highest allocation to U.S. stock, it had the fifth-lowest international stock allocation (see Slide 4.5). On a combined basis for all types of stock, TRS was only modestly above the combined median level.

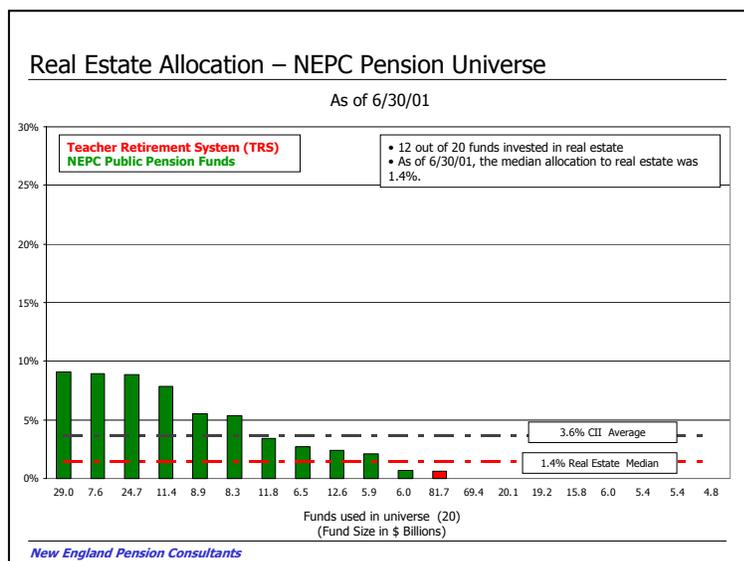
Alternatively, ERS had the third-lowest allocation to U.S. stock and the third-highest allocation to international stock. On a combined basis for all types of stock, ERS was only slightly below the combined median level.

Slide 4.5.



ERS was more heavily committed to international stock when compared with TRS and most peer group funds, although TRS's total commitment to all types of stock was higher than ERS's (see comments on Slide 4.4.). One peer fund did not invest in international stock.

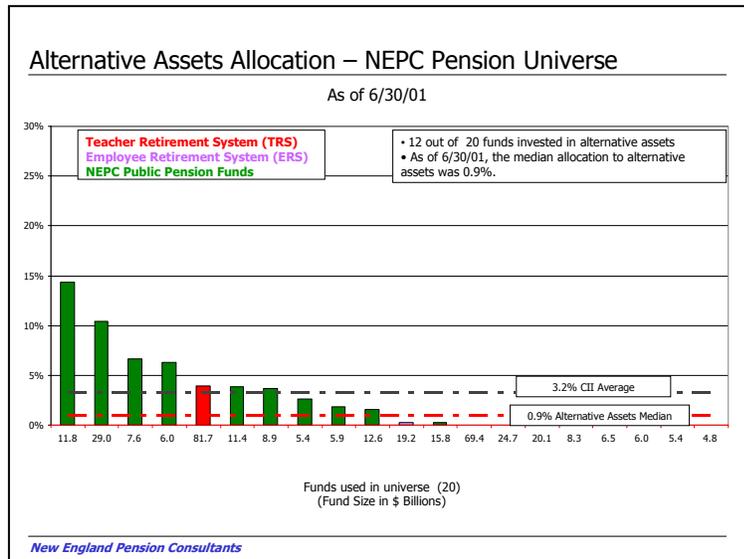
Slide 4.6.



The NEPC comparative universe's median real estate allocation was only 1.4 percent because 8 of the 20 funds had no real estate investments. The comparative universe's average allocation of 2.9 percent was closer to the 3.6 percent average for the 44 public pension funds in the CII universe. TRS is in the process of phasing out its real estate investments. Its 0.6 percent real estate allocation as of June 30, 2001, the lowest among NEPC peer funds with real estate investments, was down significantly from its 3.5 percent allocation as of June 30, 1995 (see Slide 4.16.).

ERS does not invest in real estate.

Slide 4.7.



Allocations to alternative assets varied widely among the public pension funds in the NEPC comparative universe. Because many funds had no allocation and a few had a much higher allocation, the NEPC median allocation of 0.9 percent was considerably lower than the 2.8 percent average allocation. The NEPC average was similar to the 3.2 percent average allocation reported by CII.

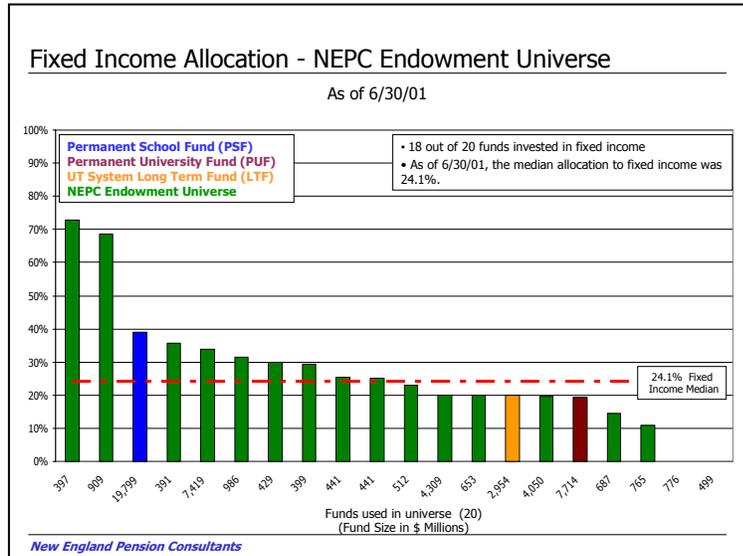
TRS recently increased its target and actual allocations to this asset class. As noted on Slide 4.1., TRS's reported 3.9 percent allocation to alternative assets (excluding real estate) consisted of 2.8 percent in a "transition portfolio" of

stocks and bonds and 1.1 percent of actual alternative asset investments. At the reported 3.9 percent allocation, TRS ranked fifth among the 12 NEPC pension funds that invested in alternative assets. (When compared with the other NEPC funds, the 1.1 percent TRS actually invested in alternative assets ranked tenth of 12.)

ERS does not have an active alternative assets strategy, with the exception of its 0.3 percent investment in the state-sponsored Texas Growth Fund. At this level, ERS was tied with another fund for the lowest allocation to alternative assets of the 12 funds holding alternative asset investments.

## How Did the Texas Endowment Funds' Asset Allocations Compare with Those of the NEPC Endowment Fund Universe?

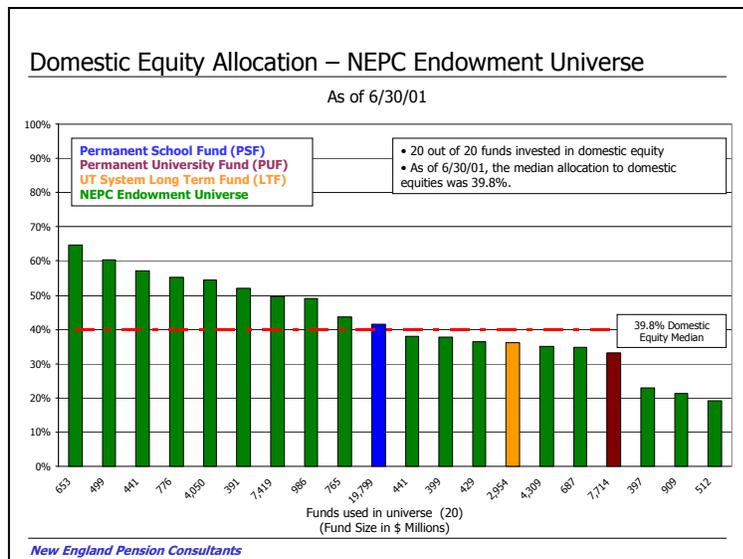
Slide 4.8.



Although the fixed income (bond) allocation range within the NEPC endowment comparative universe was very large, many of the funds' allocations were distributed tightly around the median. The median and average bond allocations for the endowment universe were considerably lower than those for the NEPC pension universe.

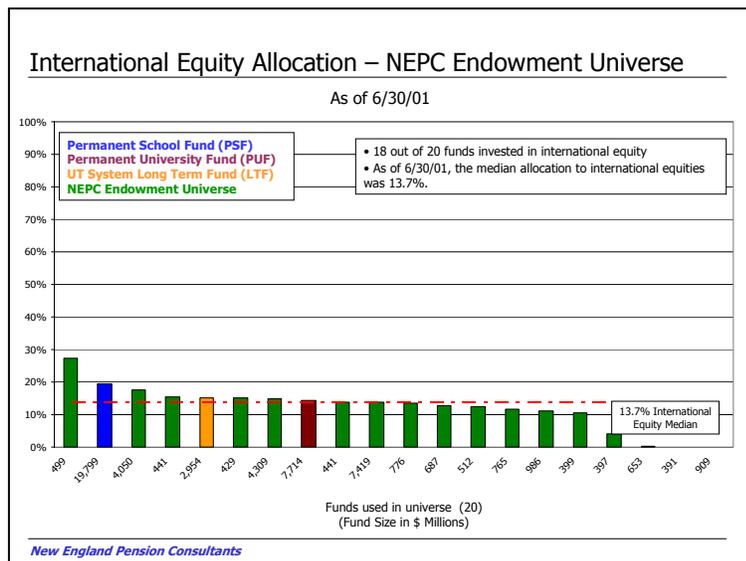
As discussed in Slide 4.1., spending policy constraints might have led to PSF maintaining a comparatively high allocation to bonds.

Slide 4.9.



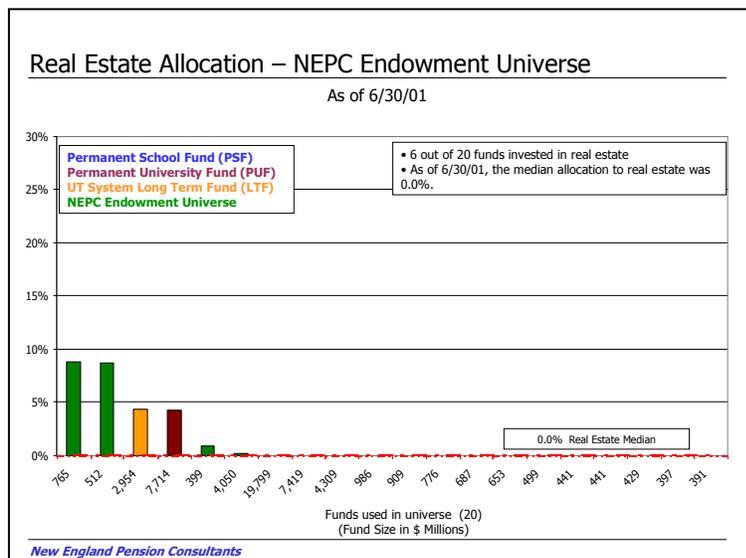
The U.S. stock allocations were broadly distributed over a 40-plus percentage point range. PSF and the NEPC comparative universe had higher U.S. stock allocations than PUF and LTF. This difference is not unexpected given PUF's and LTF's significant allocations to alternative and inflation hedging assets (see Slides 4.11. through 4.13.) and PSF's avoidance of them.

Slide 4.10.



Most of the NEPC comparative universe funds, including PUF and LTF, were tightly grouped around the median. PSF had the second-highest international stock allocation, which could have resulted from its avoidance of alternative asset investments, unlike PUF, LTF, and many of the NEPC funds. (PSF's allocations to bonds, U.S. stock, and international stock were all higher than the peer group's median level.)

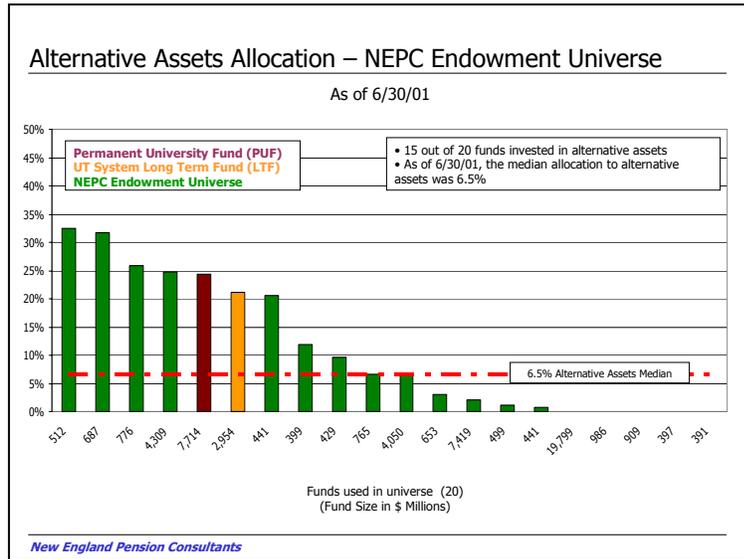
Slide 4.11.



Most of the NEPC comparative endowment universe funds, including PSF, had no investments in real estate. PUF's and LTF's relatively recent investments in the inflation hedging asset class, which includes real estate investments, consisted entirely of investments in REITs (real estate investment trusts) as of June 30, 2001. At times, PUF and LTF have held other investment types, such as commodities, in this asset class, rendering it somewhat incomparable with the real estate asset class reported for the comparison fund groups.

The average real estate allocation for NEPC endowment funds was about half that of the NEPC pension funds.

Slide 4.12.



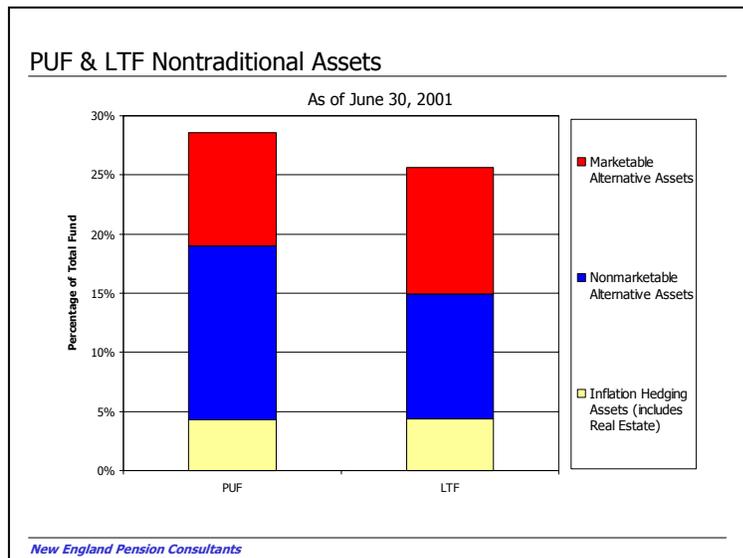
Endowment fund allocations to alternative assets varied widely, as they did for public pension funds. Because 9 of the 20 NEPC comparative universe funds had little or no allocation to alternative assets, the 6.5 percent median was considerably lower than the 11.1 percent average allocation. This average was significantly higher than the 2.8 percent average allocation for the 20 NEPC public pension funds, which is consistent with other surveys that conclude that endowments tend to invest more heavily in alternative assets than do public pension funds.

PSF does not invest in alternative assets, while PUF's and LTF's allocations were

approximately twice as large as the endowment peer group's average.

## What Percentages of the Two UT System Funds (PUF and LTF) Were Allocated to Investments in “Nontraditional” Asset Classes (Alternative Assets and Inflation Hedging Assets) as of June 30, 2001?

Slide 4.13.



PUF and LTF invested more than one quarter of their assets in what might be categorized as “nontraditional” assets (that is, not the more common categories of domestic and international stock, bonds, and cash and short-term investments). The slide presents the percentages PUF and LTF held in alternative assets (segregated into two subcategories PUF and LTF refer to as “Marketable” and “Nonmarketable”) and inflation hedging assets as of June 30, 2001. These combined percentages far exceeded the allocations for TRS, the only one of the three other Texas funds with an allocation to similar investments, but are in line with average percentages reported by recent studies

of higher education endowment funds larger than \$1 billion.

As of June 30, 2001, PUF’s and LTF’s inflation hedging assets consisted only of investments in REITs; however, at times before and after that date, the funds included commodities investments in their inflation hedging portfolios. As stated elsewhere, although not a precise comparison, this report equates PUF’s and LTF’s inflation hedging assets with other funds’ real estate assets.

PUF’s investment policy includes the following definitions:

- Marketable Alternative Assets – are broadly defined to include hedge funds, arbitrage and special situation funds, distressed debt, market neutral, and other nontraditional investment strategies whose underlying securities are traded on public exchanges or are otherwise readily marketable. Alternative marketable investments may be made directly by UTIMCO or through partnerships. If these investments are made through partnerships, they offer faster drawdown of committed capital and earlier realization potential than alternative nonmarketable investments. Alternative marketable investments made through partnerships will generally provide investors with liquidity at least annually.
- Nonmarketable Alternative Assets – shall be expected to earn superior equity type returns over extended periods. The advantages of alternative nonmarketable investments are that they enhance long-term returns through investment in inefficient, complex markets. They offer reduced volatility of Fund asset values through their characteristics of low correlation with listed equities and fixed income instruments. The disadvantages of this asset class are that they may be illiquid, require higher and more complex fees, and are frequently dependent on the quality of external managers. In addition, they possess a limited return history versus traditional stocks and bonds. The risk of alternative nonmarketable investments shall be controlled with extensive due diligence and diversification. These investments are held either through limited partnership or as direct ownership

interests. They include special equity, mezzanine venture capital, and other investments that are privately held and which are not registered for sale on public exchanges. In partnership form, these investments require a commitment of capital for extended periods of time with no liquidity.

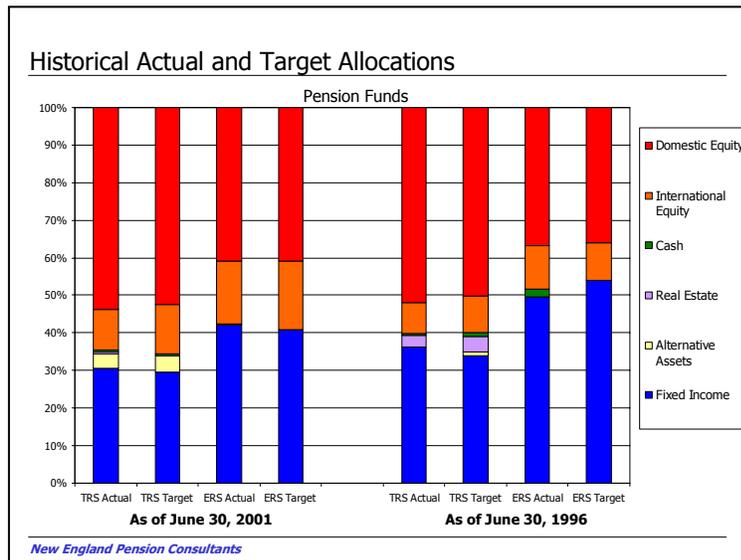
- Inflation Hedging Assets – generally consist of assets with a higher correlation of returns with inflation than other eligible asset classes. They include direct real estate, REITs, oil and gas interests, commodities, inflation-linked bonds, timberland and other hard assets. These investments may be held through limited partnership, other commingled funds, or as direct ownership interests.

## How Did the Texas Funds' Actual Asset Allocations Compare with Their Target Allocations and Change Over Time?

### How to Read Chapter 4-E

Each Texas fund adopts, and might periodically revise, an asset allocation policy that establishes target allocation percentages for each major asset class. These two slides permit an assessment of how closely each fund's actual asset allocation matched its target allocation in effect as of June 30, 2001, and June 30, 1996, and of how those targets changed between those two dates. Differences between actual and target allocations are one reason a fund's actual investment returns might differ from its policy expectations.

Slide 4.14.

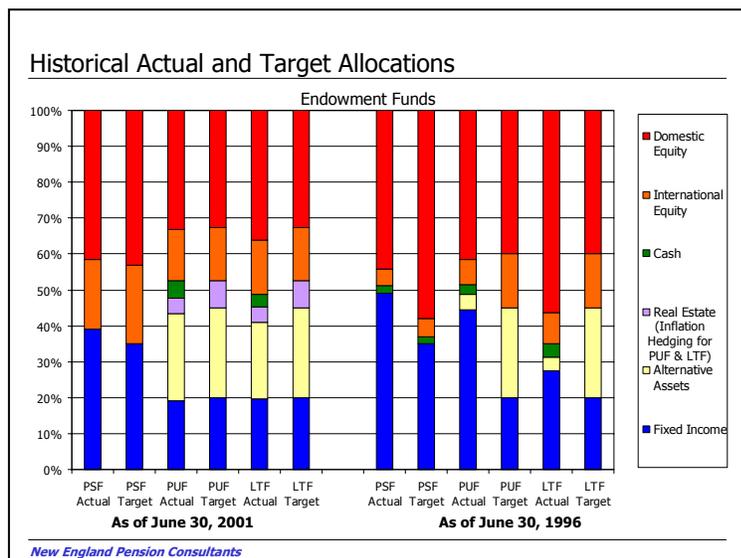


TRS's actual investments reasonably approximated its allocation targets as of June 30, 2001, and June 30, 1996 (subject to the explanatory comments for Slides 4.1. and 4.7. about how TRS reports the stocks and bonds in its alternative assets "transition" portfolios). When compared with those of June 30, 1996, TRS's actual and target allocations as of June 30, 2001, showed increases in domestic and international stock and alternative assets and decreases in bonds, real estate, and cash.

ERS's actual investments also reasonably approximated its allocation targets as of June 30, 2001, and June 30,

1996. When compared with those of June 30, 1996, ERS's actual and target allocations as of June 30, 2001, showed increases in domestic and international stock and decreases in bonds.

Slide 4.15.



PSF's June 30, 2001, asset allocation was closer to its target than was its actual allocation as of June 30, 1996. The divergence in 1996 resulted from the SBOE's decision to avoid an abrupt decline in interest income by phasing in the implementation of its 1995 asset allocation plan, designed to increase PSF's allocation to stock and reduce its allocation to bonds. (The need for gradual changes is a consequence of PSF's constrained spending policy discussed in Slide 4.1. Slide 4.18. shows PSF's annual asset allocation changes; Slide 7.2. shows how annual distributions declined in the four years after 1995 as the new policy was

implemented, except for a one-time increase in 1996 due to a statutory change in the calculation of bond interest.)

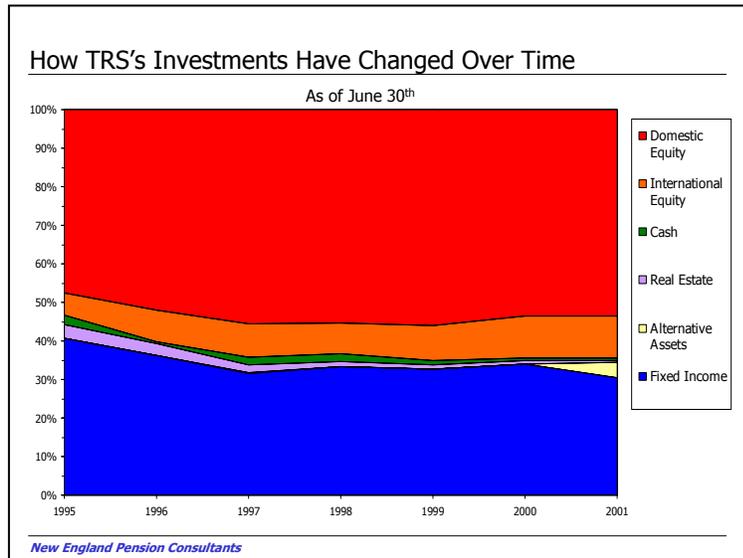
PUF's June 30, 2001, asset allocation was also closer to its target than was its actual allocation as of June 30, 1996. The divergence in 1996 resulted from The University of Texas System Board of Regents' (Regents) desire to avoid reducing annual distribution levels that would have occurred if the Regents had immediately implemented PUF allocation targets. (Like PSF, PUF had a spending policy in 1996 that set distributions equal to dividend and interest income. A November 1999 constitutional amendment eliminated this constraint.) Additionally, PUF's high alternative asset target was relatively new, and greatly increasing investments in alternative assets often requires more time than would be required to increase investments in stocks or bonds.

LTF's actual allocation as of June 30, 1996, was much closer to its target bond allocation than PUF's was to its target, but LTF also had significant differences between target and actual amounts. LTF had a greater ability to meet its target in 1996 than PUF did because, after 1993, LTF was no longer restricted to making distributions only from dividends and interest. However, in 1995 the Regents adopted a new allocation plan with a five-year phase-in period, so by 1996 the plan's targets had not yet been met. The new allocation targets reduced LTF's emphasis on bonds and increased its emphasis on alternative assets. As noted for PUF, alternative assets were significantly lower than the new target because of the difficulty of making a large amount of new alternative investments quickly.

## How Did the Texas Funds' Asset Allocations Change Between 1995 and 2001?

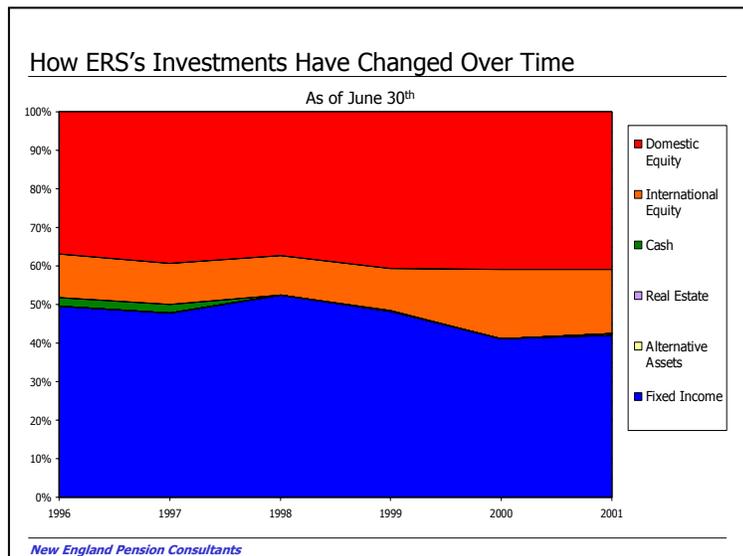
The following five graphs represent asset allocations that existed between 1995 and 2001 at June 30. (By joining these annual points, the graph suggests that the year-to-year changes occurred gradually between June 30 points. However, had we obtained data for additional intervals, the changes between points might have looked different.)

Slide 4.16.



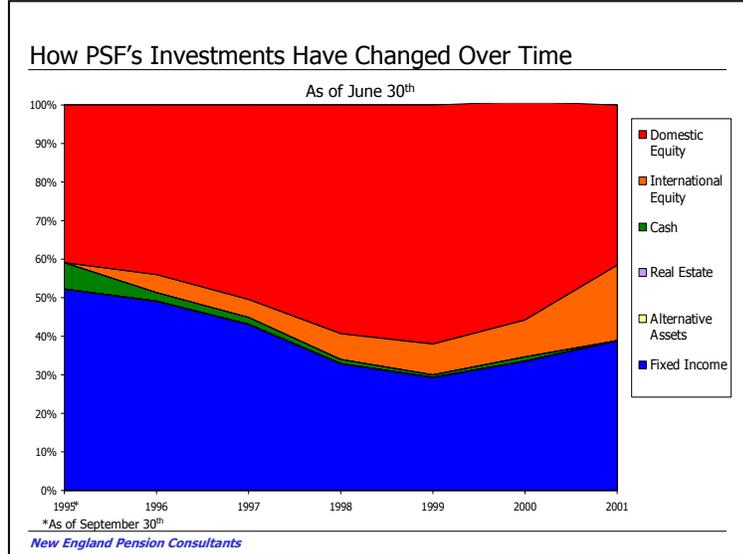
In addition to showing a trend of increasing total domestic and international stock investments and reducing bond investments, the graph shows that TRS has gradually replaced its allocation to real estate with an approximately equal allocation to alternative assets. (See Slides 4.1. and 4.7. for a discussion of the composition of the alternative asset class that TRS reports as of June 30, 2001.)

Slide 4.17.



The six June 30 measurement points (1995 allocation data was unavailable) demonstrate ERS's relatively consistent trend of decreasing bond allocations and increasing allocations to domestic and international stock.

Slide 4.18.



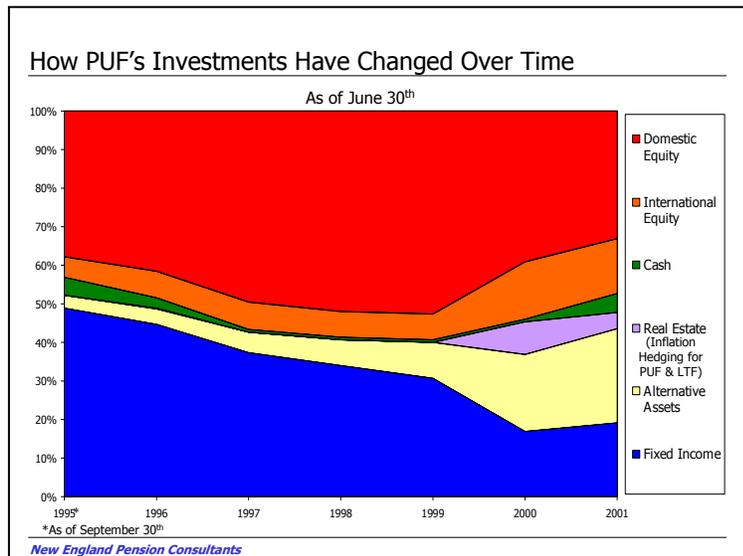
The seven measurement points demonstrate two trends (September 30 data for 1995 is presented because June 30 allocation data was unavailable):

- Until June 30, 1999, the total allocation to domestic and international stock consistently increased, from approximately 41 percent to about 70 percent. (June 30, 1996, represents the first measurement point at which PSF had international stock.) Cash and bond allocations similarly declined consistently, from about 59 percent to about 30 percent.

Beginning with the June 30, 2000, measurement point, the bond allocation began to increase and reached 39 percent as of June 30, 2001. (Not depicted is the subsequent increase to approximately 47 percent as of June 30, 2002.) Simultaneously, PSF's combined allocation to domestic and international stock decreased to 61 percent as of June 30, 2001 (and to approximately 53 percent as of June 30, 2002). The allocation shift away from stock might have been initially due to the effects of negative stock market returns over the last three years. More significantly, however, the June 30, 2002, allocation levels resulted from SBOE's increased bond allocation target in an effort to meet higher annual PSF distribution targets requested by the 77th Legislature.

- Beginning with the June 30, 2000,

Slide 4.19.



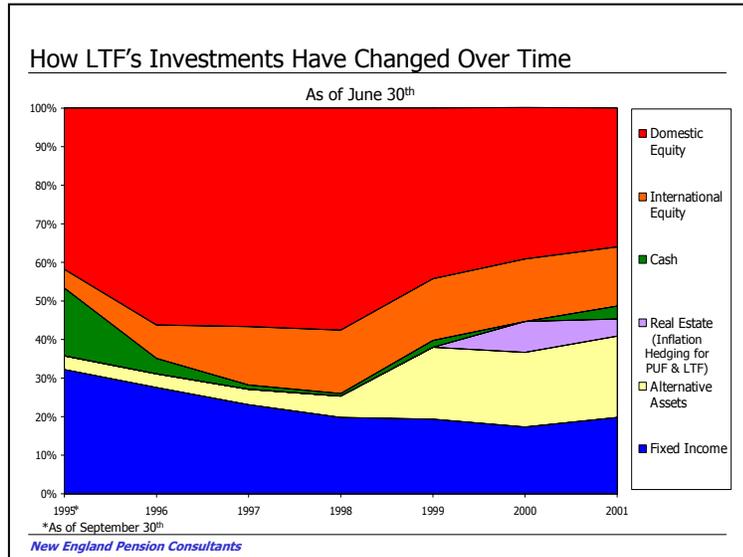
PUF's bond allocation consistently decreased at each measurement point except for a slight increase as of June 30, 2001. The pronounced change between 1999 and 2000 likely resulted from a constitutional amendment approved in November 1999. The increase as of June 30, 2001, likely resulted from the effects of declining stock market values relative to bond market values.

The constitutional amendment permitted the Regents to set annual PUF distributions from the fund's total investment return. This change reduced the need for PUF to maintain its higher-than-desired allocation to bonds (see

Slide 4.15.) and allowed PUF to more quickly shift its actual allocations to better match its targets.

The first June 30 measurement point at which PUF had any allocation to inflation hedging assets (including real estate, or REITs, as described on Slide 4.13.) occurred after the adoption of the constitutional amendment.

Slide 4.20.



LTF's bond allocation decreased more steadily during the period than did PUF's (with a similar slight increase between 2000 and 2001). Since 1993, Regents have been able to base LTF's distributions on its total return rather than on only interest and dividends. In 1995, Regents adopted a five-year plan to shift assets away from bonds and into stock and alternative assets. According to UTIMCO, the high cash balance at September 30, 1995, most likely resulted from accumulating cash to reallocate investments among asset classes and/or hire new external portfolio managers. An LTF annual report disclosed that the fund made significant investments in "marketable"

alternative assets in August 1998. The relative ease of quickly funding these types of investments compared with "nonmarketable" alternative assets helps explain the dramatic increase in LTF's alternative assets between June 30, 1998, and June 30, 1999. LTF, like PUF, first began reporting investments in its inflation hedging asset class after June 30, 1999.

## Comparative Historical Investment Performance (Texas and Other Peer Universe Funds) for Periods Ending June 30, 2001

### How to Read Chapter 5

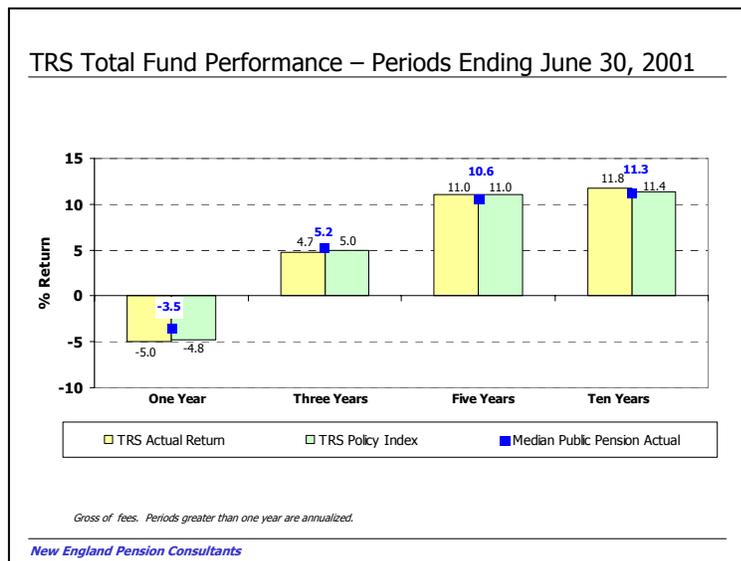
The “policy index” performance for each time period presented on the next 15 slides represents the return that a fund would have earned if, throughout the period, its asset allocation exactly equaled its target allocation and each investment type earned its assigned benchmark.

Assessing performance for pension and endowment funds, such as by comparing actual and policy index returns, might often be more meaningful over the longer time periods presented because of these funds’ long-term time horizons.

Chapter 5-A

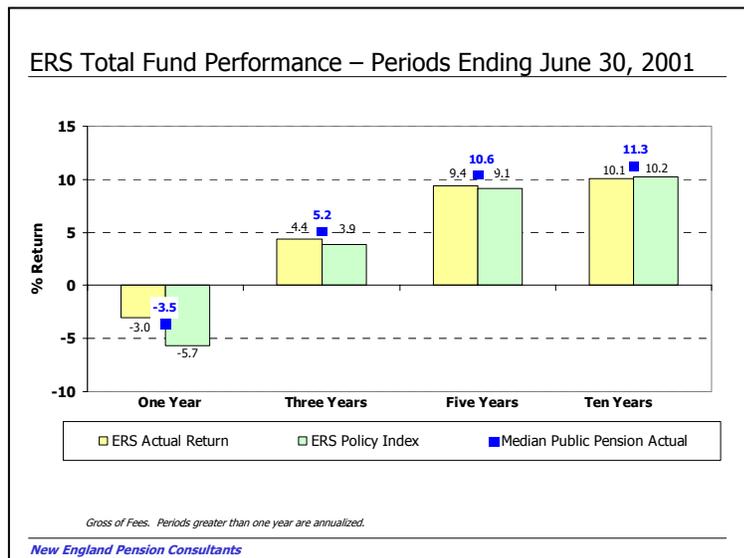
### What Rates of Return Did the Texas Funds’ Investments Earn During the One-, Three-, Five-, and Ten-Year Periods Ending June 30, 2001 (Compared with Each Fund’s Policy Index Returns and the Median Returns of the Funds in the Relevant NEPC Universe)?

Slide 5.1.



For the one- and three-year periods ending June 30, 2001, TRS’s investment return was slightly less than that of its policy index and the NEPC public pension fund median. For the two longer periods presented, TRS outperformed both its policy index and the median peer group fund. (Prior to rounding, TRS’s five-year return slightly exceeded its policy index return.)

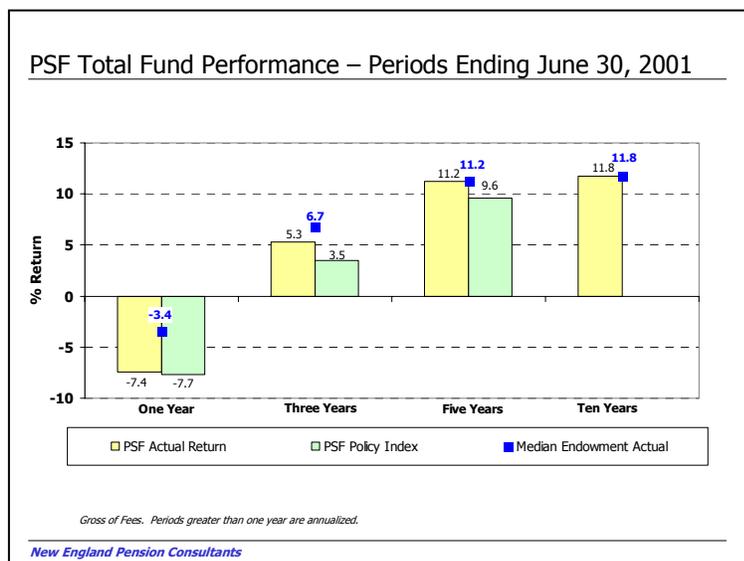
Slide 5.2.



For the one-, three-, and five-year periods ending June 30, 2001, ERS's investment return exceeded its policy index. ERS slightly underperformed its policy index for the ten-year period. ERS outperformed the NEPC public pension fund median during the one-year period and underperformed it during the three-, five-, and ten-year periods. These results are generally consistent with ERS's more conservative investment approach of investing more in bonds and less in stock than the pension peer groups (see Slides 4.1. and 4.2.). For the one-year period ending June 30, 2001, bonds substantially outperformed U.S. stock as measured by commonly cited indexes.

Over the five- and ten-year periods ending June 30, 2001, however, U.S. stock significantly outperformed bonds. (See also Slide 6.1., which presents a five-year risk/return analysis for the five Texas funds, peer groups, and those commonly cited stock and bond indexes.)

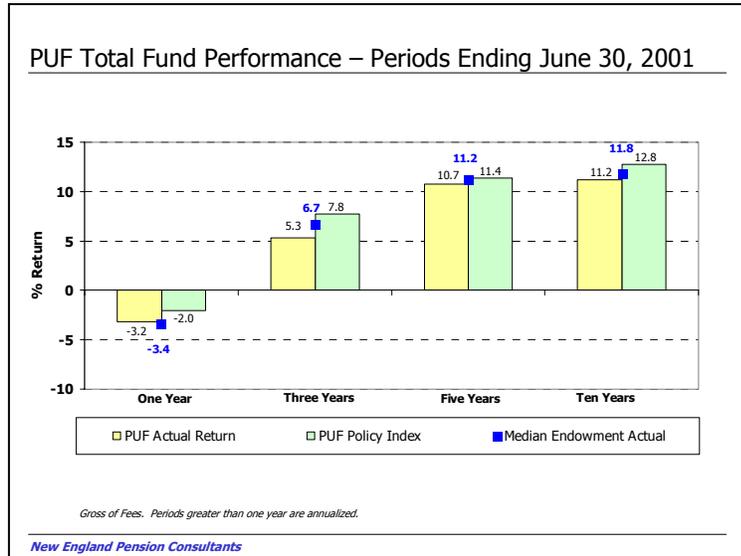
Slide 5.3.



For the one-, three-, and five-year periods ending June 30, 2001, PSF outperformed its policy index. (PSF did not have a policy index for the ten-year period because SBOE did not adopt formal target asset allocations until 1995.) Differences between actual and policy index performance might be expected because PSF's actual allocation, both at the asset class and the segment levels (segments, such as investment grade bonds and high-yield bonds, represent subcategories of an asset class), differed significantly from its targets during portions of the five-year period (Slide 4.15. shows asset class differences that existed at June 30, 1996). PSF underperformed the NEPC

endowment fund peer group median during the one-, three-, and five-year periods (the effect of rounding conceals the five-year underperformance on the slide) and matched the median for the ten-year period.

Slide 5.4.



PUF underperformed its policy index in all four time periods. PUF outperformed the NEPC endowment fund peer group median during the one-year period ending June 30, 2001, and underperformed it during the three-, five-, and ten-year periods.

Although a detailed analysis is beyond the scope of this report, several factors may have contributed to PUF's actual performance consistently, and sometimes substantially, lagging its policy index. In general, actual and policy index returns might differ if the fund's actual allocation was not consistently identical to its target (see Slide 4.15.) and/or if the returns of the

actual investments did not consistently equal the benchmark returns for the investment type.

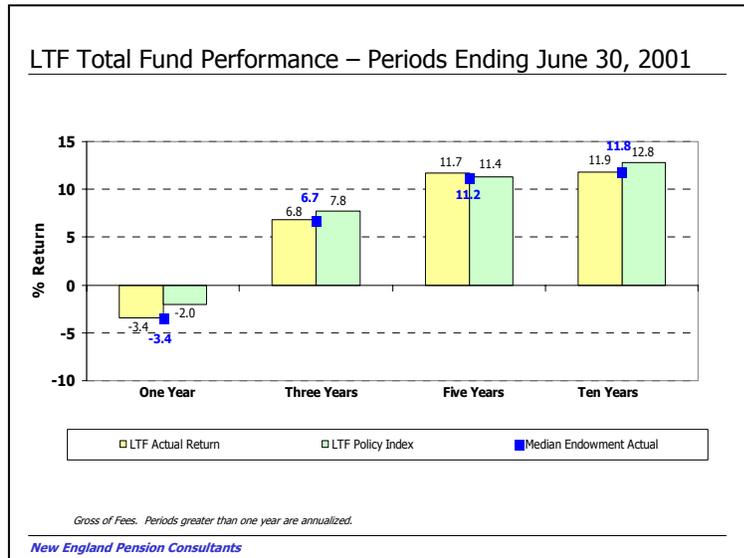
Large differences between PUF's (and LTF's) actual and benchmark returns might sometimes occur because of the specific benchmarks PUF (like LTF) has adopted for its alternative assets. These investments represented about 25 percent of the fund, so large differences between actual and benchmark returns for this asset class could have a substantial impact on the difference between actual and policy index returns at the total fund level.

There are many categories and subcategories of alternative assets in which a fund might choose to invest, and there might not be any published indexes that would consistently and accurately match the collective composition and resulting performance of the investment types each fund owns. In the absence of a reliable market-based benchmark, PUF has chosen to use a fixed benchmark of 17 percent for its nonmarketable alternative assets and a benchmark equal to the return of U.S. Treasury Bills plus 7 percent for its marketable alternative assets. Both benchmarks are intended to reflect the expected return of these assets over the long-term. However, perhaps neither benchmark is a good predictor of the approximate performance of its applicable investment type in a given year, nor might either provide a useful way to compare PUF's alternative assets' performance against that of other funds.

For example, PUF reported a loss of about 5 percent on its nonmarketable alternative assets for the year ending June 30, 2001, meaning that this investment type underperformed its fixed benchmark by about 22 percent for the year. However, other funds that invested in nonmarketable alternative asset investments might have experienced losses greater than 5 percent, meaning that PUF's nonmarketable alternative assets might actually have performed well compared with the entire population of such investments.

In contrast, TRS, ERS, and PSF invest all or most of their assets in investment types for which published indexes are readily available. Each such index is based on a "market basket" or universe of investments that is expected to be reasonably similar, in total, to the applicable portfolio of TRS, ERS, or PSF. In a year when such an index loses money, the three funds' portfolios that are measured against that index could also lose money but still perform well compared with their benchmarks, which is not the case for PUF's alternative asset class and its benchmarks.

Slide 5.5.

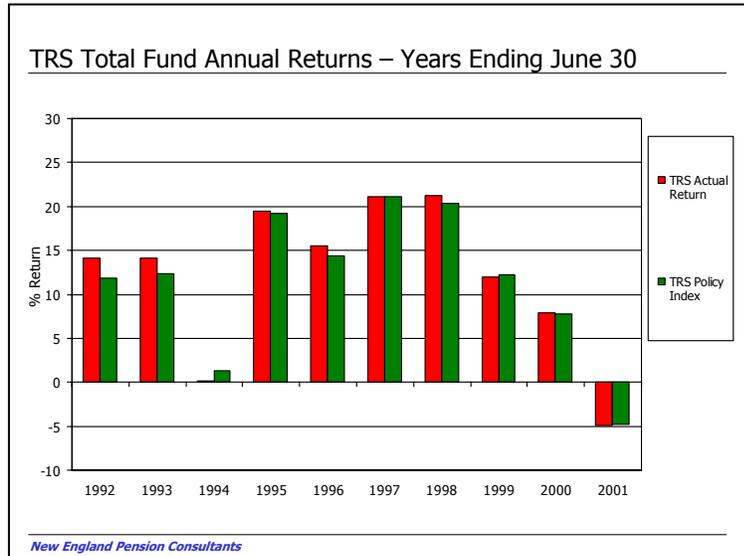


LTF underperformed its policy index for the one-, three-, and ten-year time periods ending June 30, 2001, and outperformed it for the five-year period. LTF outperformed the NEPC endowment fund peer group median for all four periods (the effect of rounding to the nearest tenth of a percent masks LTF's slight outperformance in the one-year period).

LTF's underperformance relative to its policy index was likely caused by factors similar to those affecting PUF's performance, as discussed in Slide 5.4.

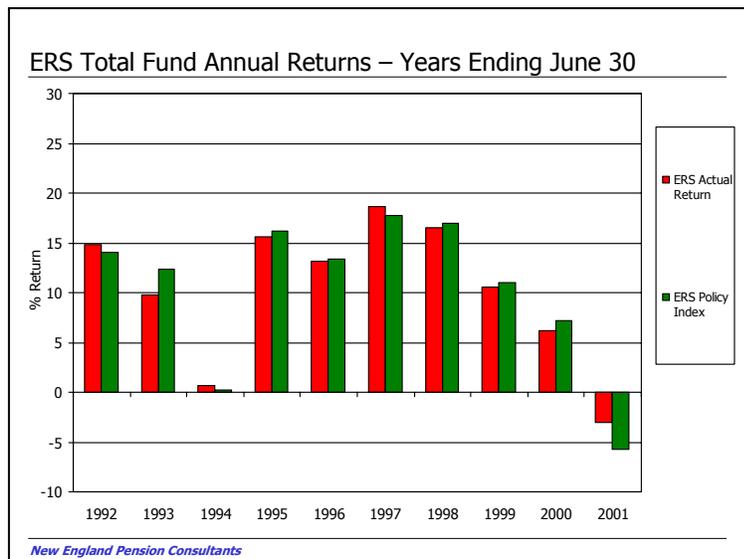
## What Were the Texas Funds' Annual Rates of Return from June 30, 1992, Through June 30, 2001 (Compared with Each Fund's Policy Index Returns)?

Slide 5.6.



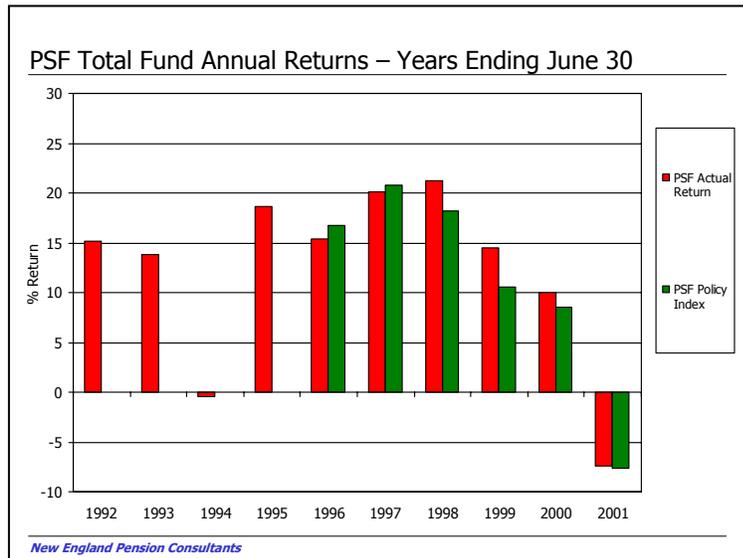
TRS's actual returns exceeded its policy index returns in seven of the ten years presented.

Slide 5.7.



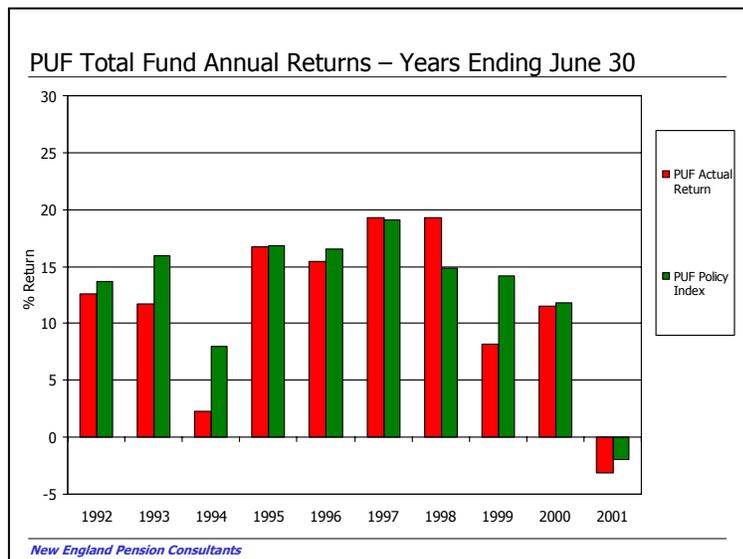
ERS's actual returns exceeded its policy index returns in four of the ten years presented.

Slide 5.8.



PSF's actual returns exceeded its policy index returns in four of the six full years for which a policy index existed.

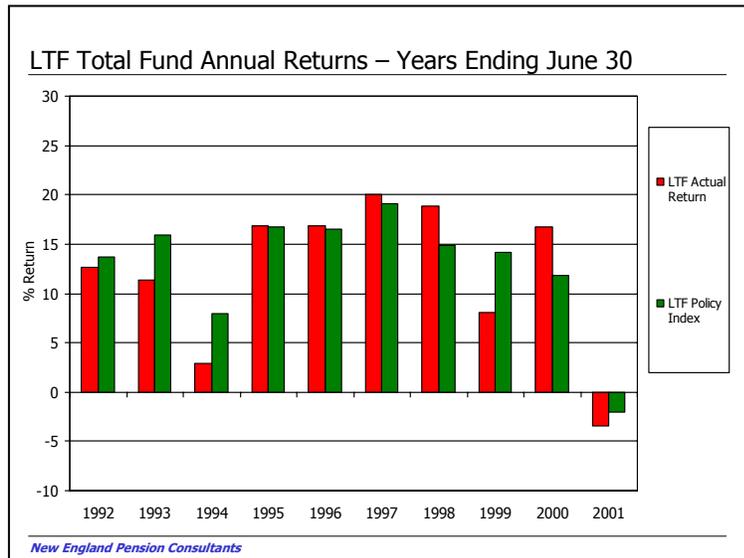
Slide 5.9.



PUF's actual returns equaled or exceeded its policy index in three of the ten years presented.

In several years, the difference between PUF's actual and policy index returns was at least 4 percent. Except for LTF, none of the other Texas funds had such large disparities in any year. See the discussion at Slides 5.4. and 5.5. for possible explanations.

Slide 5.10.



LTF's actual returns exceeded policy index returns in five of the ten years presented.

In several years, the difference between LTF's actual and policy index returns was at least 4 percent. Except for PUF, none of the other Texas funds had such large disparities in any year. See the discussion at Slides 5.4. and 5.5. for possible explanations.

## How Much Did \$100 Invested in Each Texas Fund Grow Between June 30, 1991, and June 30, 2001 (Compared with Each Fund’s Policy Index Returns and Returns for Certain Indexes)?

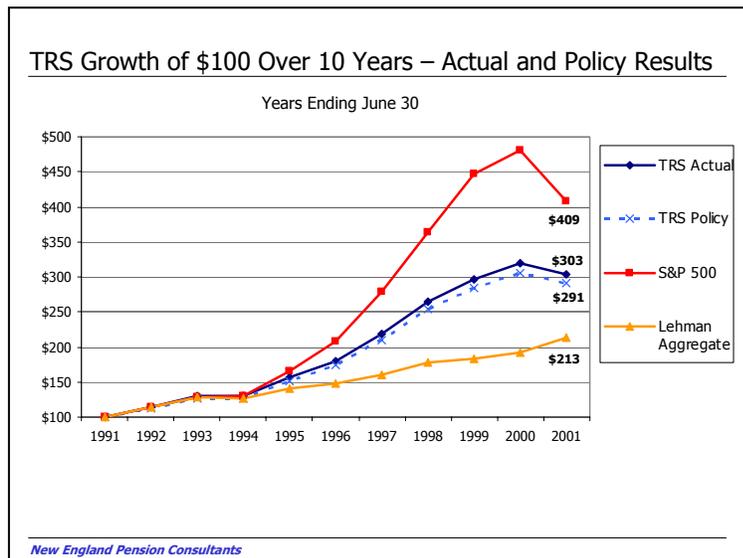
### How to Read Chapter 5-C

These slides show how \$100 invested by each fund grew during the ten-year period ending June 30, 2001. Each slide compares this actual growth with how \$100 would have grown if the fund had earned the same returns as the following:

- The fund’s policy index
- The S&P 500 Index (as if the fund had invested all of its assets in certain U.S. stocks)
- The Lehman Brothers Aggregate Bond Index (Lehman Index) (as if the fund had invested all of its assets in certain U.S. government, corporate, and mortgage-backed bonds)

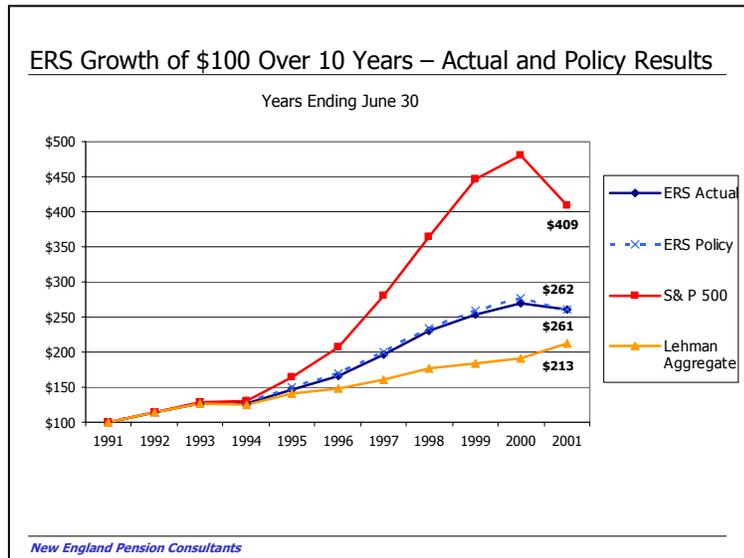
The points representing the performance of the stock and bond indexes demonstrate that the stock index consistently and often significantly outperformed the bond index (except for the stock index’s significant underperformance relative to the bond index in the 2001 period and its barely visible underperformance in the 1992 period).

Slide 5.11.



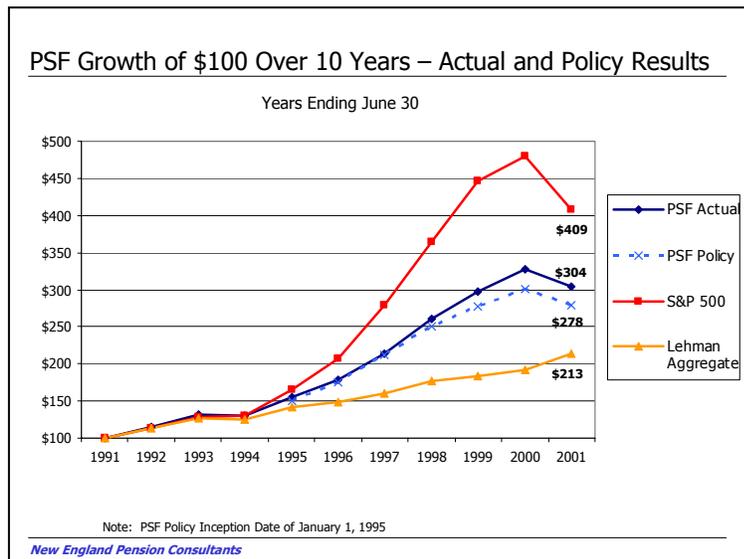
TRS generated \$12 (\$303 less \$291) more per \$100 invested than its policy index would have over the ten-year period (see Slide 5.1.).

Slide 5.12.



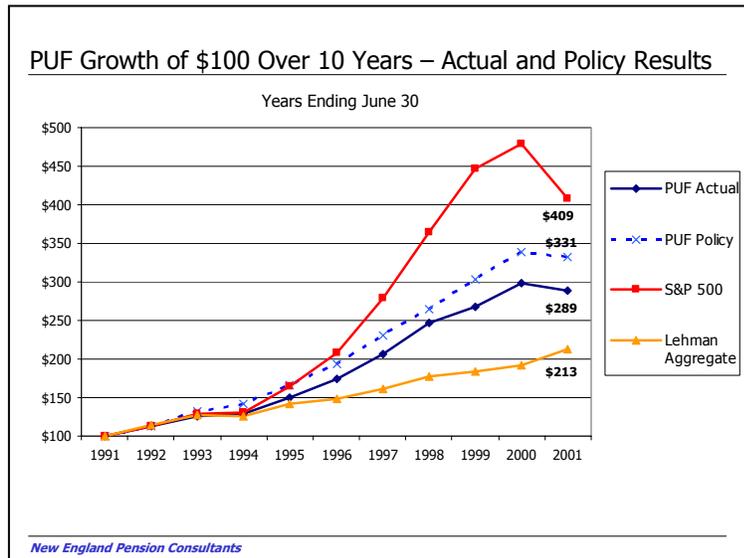
ERS generated \$1 (\$261 versus \$262) less per \$100 invested than its policy index would have over the ten-year period (see Slide 5.2.).

Slide 5.13.



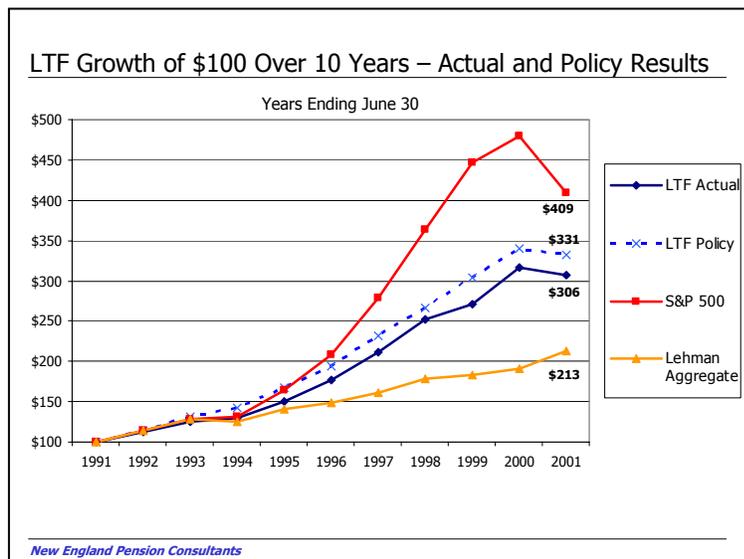
PSF generated \$26 (\$304 less \$278) more per \$100 invested than its policy index would have over the period ending June 30, 2001. (PSF's policy index calculation begins in 1995, the year SBOE first adopted an asset allocation policy. NEPC set the policy index's beginning value as the approximate actual value of the initial \$100 at the time the policy index was adopted. See Slide 5.3.)

Slide 5.14.



PUF generated \$42 less (\$289 versus \$331) per \$100 invested than its policy index would have in the ten-year period (see Slide 5.4.). With identical targets, PUF's and LTF's target asset allocations and benchmarks produced, by far, the highest policy index returns among the Texas funds and were the only policy indexes that would have resulted in the initial \$100 investment growing to \$300 or more. Their higher policy returns over the period suggest that PUF and LTF had adopted a more aggressive investment strategy than the three other Texas funds adopted.

Slide 5.15.



LTF generated \$25 less (\$306 versus \$331) per \$100 invested than its policy index would have over the ten-year period (see Slide 5.5.). However, despite significantly underperforming its policy index (probably due to factors discussed on Slide 5.4.), LTF's investment strategy produced the most actual growth of an initial investment among the five Texas funds for the ten-year period. (Based on each fund's reported return for the subsequent year, in which all five Texas funds lost money, this relationship persisted for the eleven-year period ending June 30, 2002. LTF, despite significantly underperforming its policy index for the additional year, lost less in the year

ending June 30, 2002, than the other four funds lost.)

## What Rates of Return Did the Texas Funds Earn Over Time Compared with Funds in the NEPC Universe (Total Fund and Selected Asset Class Returns)?

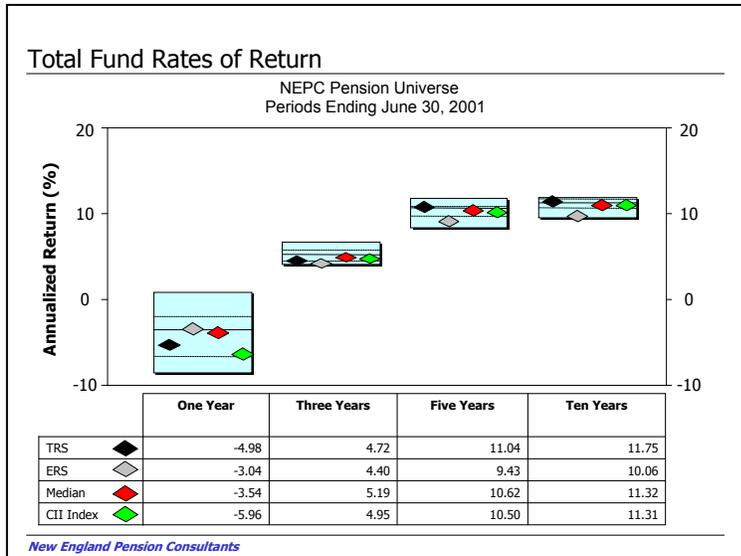
### *How to Read Chapter 5-D*

- The “floating bar” charts provide information about the range of returns for the funds in the NEPC peer group, specific returns for each of the Texas funds, and specific returns for any relevant custom benchmarks or index. The higher a fund’s symbol appears in a box, the better its relative investment performance for that period.
- Custom benchmarks provided by the Texas funds represent the combined performance of the different indexes each fund uses to assess the performance of each separate segment of a particular asset class. In contrast to using a single index to assess asset class performance, these custom benchmarks provide a more precise assessment of how each fund’s asset class, as a whole, performed against that fund’s investment strategy. (For example, a fund’s U.S. stock portfolio might include target allocations to three segments, each managed against a different U.S. stock index, such as the S&P 500, S&P MidCap 400, and S&P SmallCap 600. Although total U.S. stock portfolios are sometimes compared against only the S&P 500 Index, that index represents the performance of a narrower universe of possible U.S. stocks than the fund actually invests in.)
- The horizontal lines in each box represent the following rankings for the NEPC peer group funds’ returns:
  - ♦ The top line of the box marks the top fifth percentile (for these types of investment rankings, the lower the percentile number, the better the comparative performance). Five percent of the funds had annualized returns that equaled or exceeded the return rate that corresponds to this line.
  - ♦ The next lower line (dotted) marks the top twenty-fifth percentile. Twenty-five percent (the first quartile) of the funds had annualized returns that equaled or exceeded the return rate that corresponds to this line.
  - ♦ The middle line (solid) represents the fiftieth percentile, or median, return level. The funds with annualized returns that fall between this solid line and the dotted line above it are in the second quartile.
  - ♦ The next lower line (dotted) represents the seventy-fifth percentile.
    - The funds with annualized returns that fall between this dotted line and the solid line above it (the median) are in the next-to-lowest, or third, quartile.
    - The funds with annualized returns that fall below this dotted line are in the bottom, or fourth, quartile.
  - ♦ The bottom line of the box represents the ninety-fifth percentile. Ninety-five percent of the funds had annualized returns that equaled or exceeded the return level that corresponds to this line.

The symbols represent actual performance of the Texas funds, the median fund in the appropriate NEPC peer group, and applicable indexes and Texas fund custom benchmarks.

## Total Fund Rates of Return

Slide 5.16.

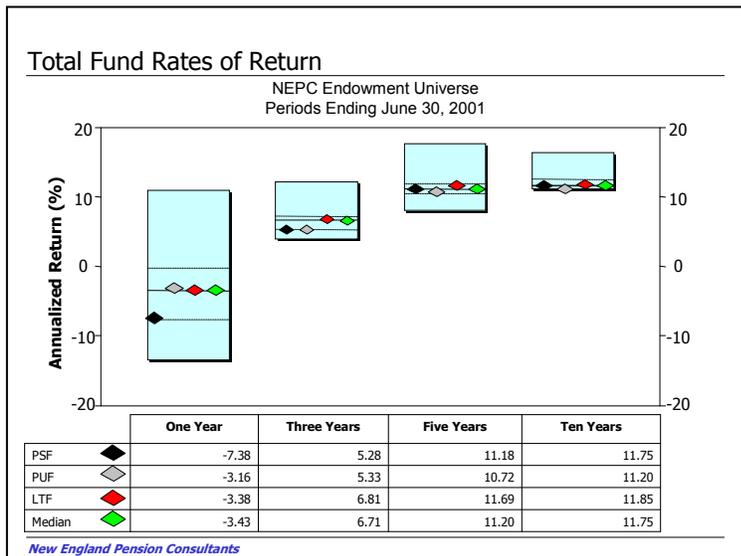


For the one- and three-year periods ending June 30, 2001, TRS’s total fund returns underperformed the NEPC median fund, ranking in the third quartile of the peer group. For the two longer periods, TRS outperformed the NEPC median and was in the top quartile. With the exception of the three-year period, TRS outperformed the returns of the CII Index, which is a market index developed to represent the potential investment performance of a “typical” diversified pension fund. (See Slide 5.1. for a comparison of TRS’s actual and policy index returns.)

ERS’s total fund returns outperformed the NEPC median fund’s return for the one-year period ending June 30, 2001; was in the peer group’s second quartile; and outperformed the CII Index. For the other three periods, ERS underperformed the median and the CII Index and ranked in the fourth quartile. (See Slide 5.2. for a comparison of ERS’s actual and policy index returns.)

ERS’s total fund returns outperformed the NEPC median fund’s return for the

Slide 5.17.



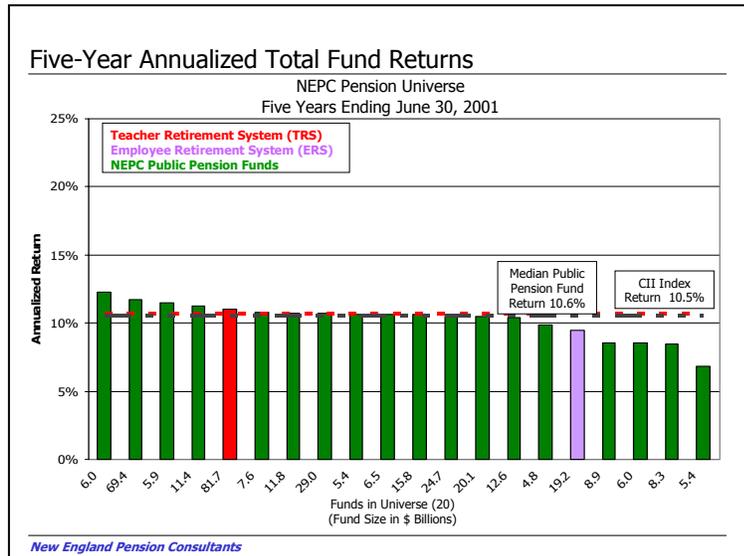
PSF’s total fund underperformed the NEPC median endowment fund for the one- and three-year periods ending June 30, 2001, and was in the third and fourth quartiles, respectively. PSF’s performance was essentially the same as the NEPC median fund for the five- and ten-year periods. (See Slide 5.3. for a comparison of PSF’s actual and policy index returns.)

PUF’s total fund outperformed the NEPC median for the one-year period, ranking in the second quartile. PUF underperformed the median for the three-, five-, and ten-year periods, ranking in the third and fourth quartiles. (See Slide 5.4. for a comparison of

PUF’s actual and policy index returns.)

LTF’s total fund outperformed the NEPC median and was in the second quartile for each period. (See Slide 5.5. for a comparison of LTF’s actual and policy index returns.)

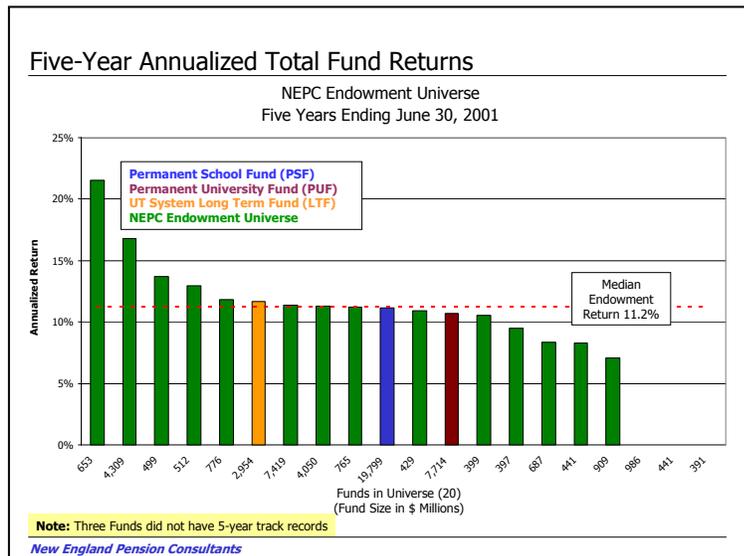
Slide 5.18.



TRS's 11.04 percent annualized return for the five-year period ending June 30, 2001, ranked fifth among the 20 funds in the NEPC public pension peer group.

ERS's 9.43 percent annualized return for the same five-year period ranked sixteenth in the peer group.

Slide 5.19.



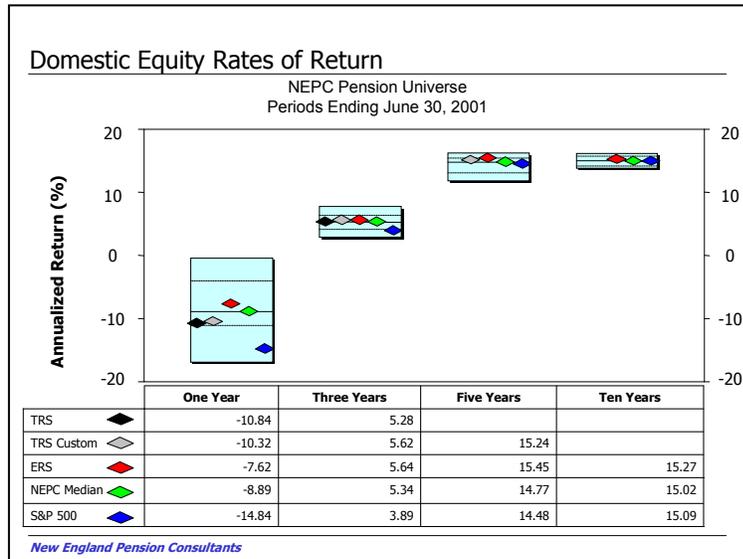
PSF's 11.18 percent annualized return for the five-year period ending June 30, 2001, ranked tenth, just below the 11.20 percent of the median fund in the NEPC endowment fund peer group. The peer group for this analysis consisted of the 17 endowment funds that provided five-year performance data.

PUF's 10.72 percent five-year annualized return ranked twelfth in the NEPC peer group.

LTF's 11.69 percent five-year annualized return ranked sixth in the NEPC peer group.

## U.S. Stock Rates of Return

Slide 5.20.

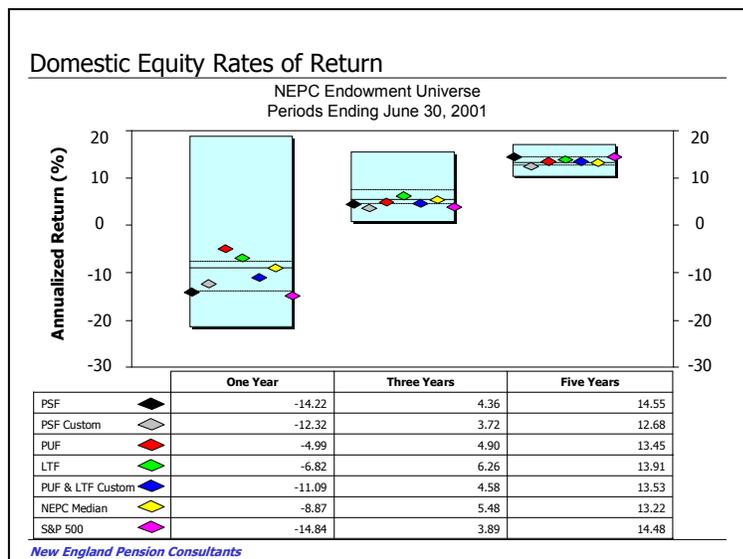


TRS uses a custom benchmark to evaluate the performance of its U.S. stock portfolio. The benchmark is a blend, based on target allocations, of the different indexes TRS uses for each of its separate categories (or asset class “segments”) of U.S. stock. This custom benchmark provides an assessment of how TRS’s total U.S. stock portfolio performed that is more precise than a comparison of TRS’s U.S. stock portfolio with the S&P 500 Index (which represents a narrower universe of possible U.S. stock investments). Although ERS also divides its U.S. stock (and bonds) asset class into more than one segment, ERS did not provide information indicating that it uses any custom benchmarks.

For the one- and three-year periods ending June 30, 2001, TRS’s U.S. stock underperformed the NEPC median, ranking in the third quartile. These returns also slightly underperformed TRS’s U.S. stock custom benchmark but outperformed the S&P 500 Index. (TRS’s U.S. stock returns of 14.16 percent and 14.87 percent for the five- and ten-year periods ending June 30, 2001, respectively, also ranked in the third quartile. TRS’s returns for these two periods are not presented on this slide because TRS calculated and submitted these amounts after NEPC had finalized its slides. See also Slides 5.22. and 6.2.)

ERS’s U.S. stock outperformed the NEPC median return for all periods presented. ERS’s returns were in the peer group’s first quartile for the five-year period and the second quartile for all other periods.

Slide 5.21.



PSF, PUF, and LTF provided custom benchmarks for total U.S. stock investments. These custom benchmarks were calculated to reflect a blended market index based on each fund’s target allocations to different types (or “segments”) of the U.S. stock asset class (e.g., large-, mid-, and small-cap stocks). PUF and LTF report identical target allocations for each asset class and therefore report identical custom benchmark returns. None of the Texas endowment funds provided ten-year returns.

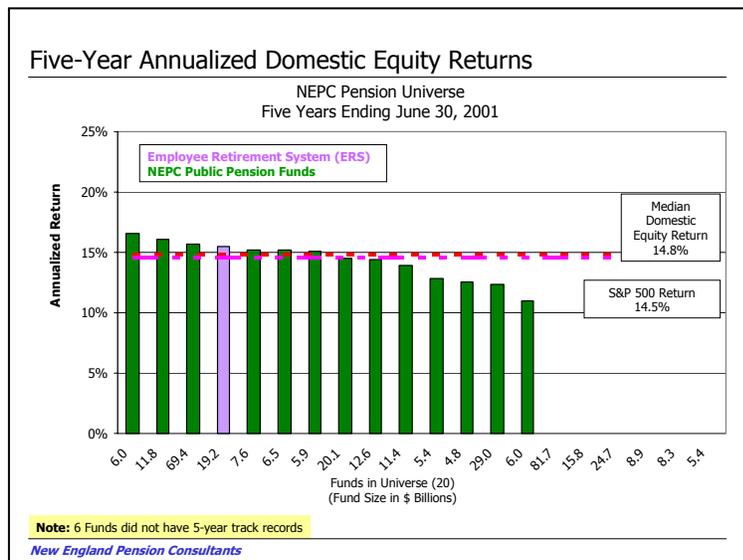
PSF's U.S. stock underperformed NEPC's median for the one- and three-year periods ending June 30, 2001, ranking in the bottom quartile in both periods. For the five-year period, PSF ranked in the first quartile, significantly outperforming its custom benchmark, which ranked in the fourth quartile.

PUF's U.S. stock ranked in the first, third, and second quartiles in the one-, three-, and five-year periods, respectively.

LTF's U.S. stock ranked in the first quartile for the one-year period and the second quartile for both the three- and five-year periods.

PUF's and LTF's U.S. stock investments outperformed their custom benchmark with the exception of PUF's underperformance for the five-year period.

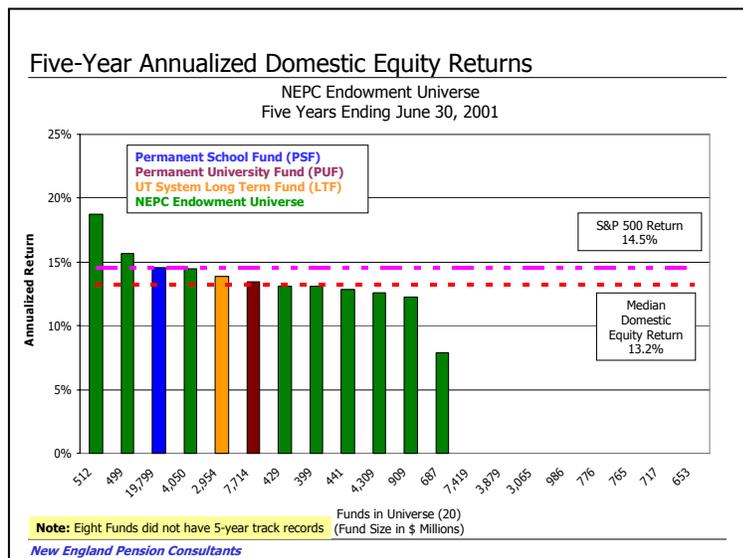
Slide 5.22.



When compared with the performance of the funds in the NEPC public pension peer group for the five-year period ending June 30, 2001 (only 14 funds provided five-year U.S. stock performance data for inclusion on the slide), ERS's 15.45 percent annualized U.S. stock return ranked fourth.

As discussed on Slide 5.20., TRS provided its U.S. stock returns for this period after NEPC finalized its slides. TRS's 14.16 percent annualized U.S. stock return would have ranked tenth out of 15 funds had TRS's return been included on Slide 5.22.

Slide 5.23.

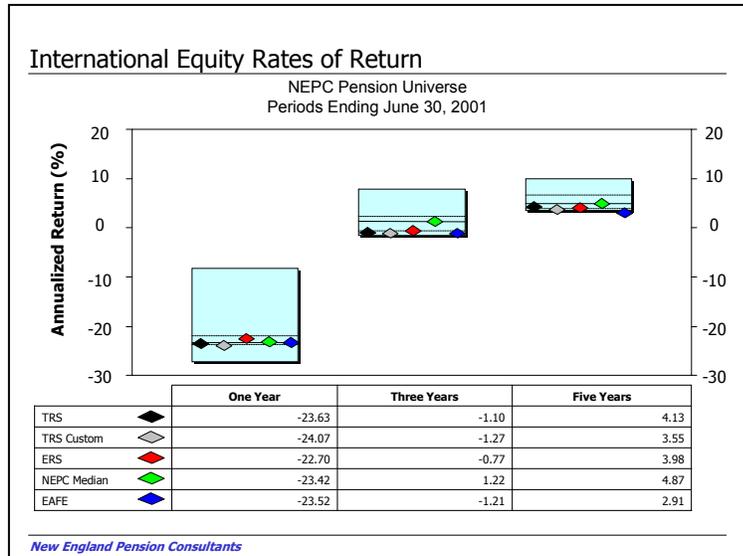


When compared with the performance of the funds in the NEPC endowment fund peer group for the five-year period ending June 30, 2001 (only 12 funds provided five-year U.S. stock performance data):

- PSF's 14.55 percent annualized U.S. stock return ranked third.
- PUF's 13.45 percent annualized U.S. stock return ranked sixth.
- LTF's 13.91 percent annualized U.S. stock return ranked fifth.

## International Stock Rates of Return

Slide 5.24.

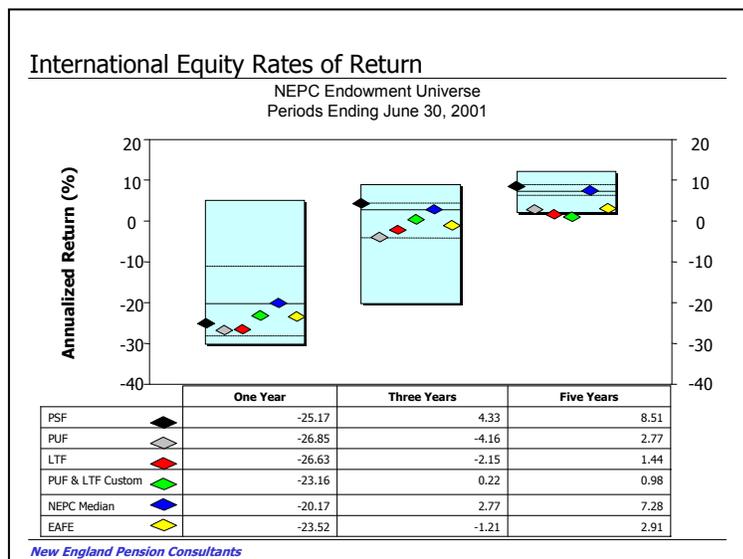


TRS's international stock outperformed its custom benchmark for the one-, three-, and five-year periods ending June 30, 2001. However, TRS's actual investments and its custom benchmark for this asset class underperformed the NEPC median for all three periods. TRS's international stock performance ranked in the third quartile for the one- and five-year periods and in the fourth quartile for the three-year period.

(Note: Subsequent to verifying the data NEPC used to create its slides, TRS calculated its five-year international stock return as 4.68 percent, which also ranks in the third quartile. See discussion for Slides 5.26. and 6.3.)

ERS's international stock investments outperformed the NEPC median fund for the one-year period, ranking in the second quartile. They underperformed the median in the three- and five-year periods, ranking in the fourth quartile and third quartile, respectively. (ERS did not indicate that it uses a custom benchmark; ERS's performance reports compared its international stock to an index that reasonably approximates the performance of the MSCI EAFE Index shown.)

Slide 5.25.



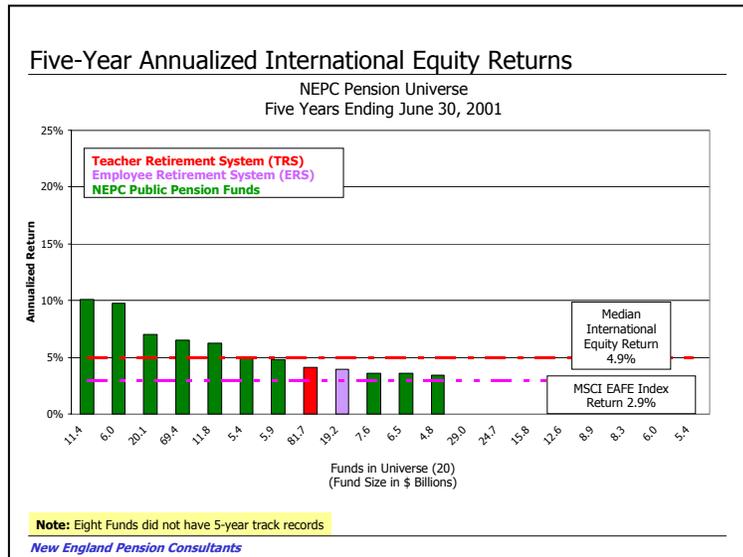
PSF's international stock underperformed the NEPC median for the one-year period ending June 30, 2001, ranking in the third quartile. For the three- and five-year periods, PSF outperformed the median, ranking in the second quartile for both periods. (PSF does not report a custom benchmark for international stock. Instead, it evaluates the performance of this asset class against a published index that is different from, but that reasonably approximates the performance of, the MSCI EAFE Index shown.)

PUF's and LTF's international stock underperformed the median for the

one-, three-, and five-year periods, ranking in the third quartile for the one-year period. PUF ranked in the fourth quartile, while LTF ranked in the third quartile for the three-year period. Both ranked in the fourth quartile for the five-year period. Both funds' international stock underperformed their identical custom benchmark for the one- and three-year periods but outperformed it for the five-year period.

PUF and LTF were the only Texas funds to formally allocate investments to nations that are commonly called Emerging Markets (which are less economically developed nations than the “Established Markets” countries, whose stocks comprise the MSCI EAFE Index). To the extent that Established and Emerging Markets returns differ significantly from each other, PUF’s and LTF’s total international stock returns are also likely to differ from those of the other Texas funds.

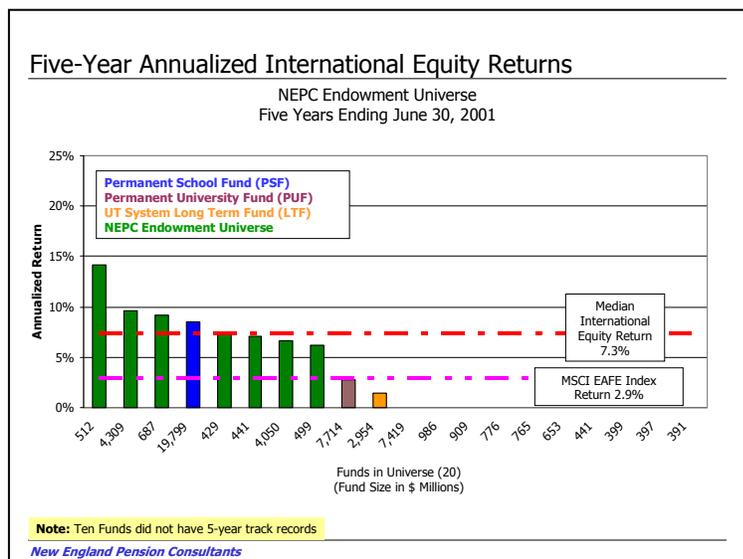
Slide 5.26.



When compared with the performance of the funds in the NEPC public pension peer group for the five-year period ending June 30, 2001 (only 12 funds provided five-year international stock performance data):

- TR’s 4.13 percent annualized international stock return, used for this slide by NEPC, ranked eighth. As discussed on Slide 5.24., TRS later calculated this return as 4.68 percent. The revised return does not change TR’s ranking.
- ER’s 3.98 percent annualized international stock return ranked ninth.

Slide 5.27.

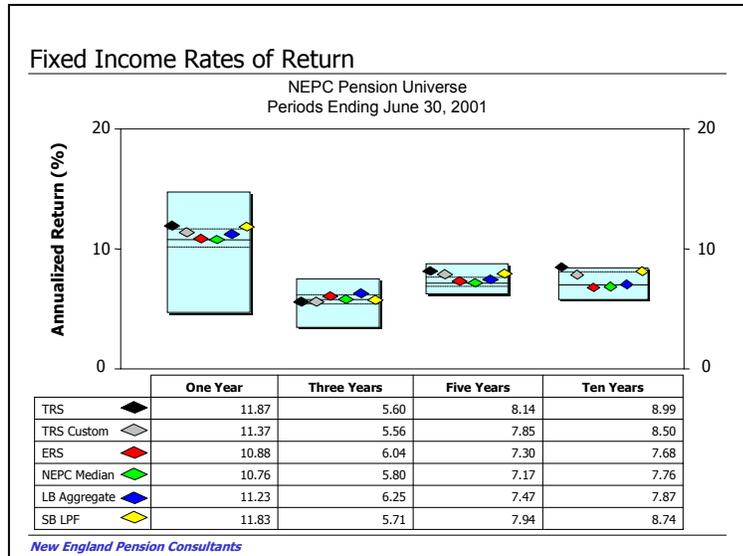


When compared with the performance of the funds in the NEPC endowment fund peer group for the five-year period ending June 30, 2001 (only ten funds provided five-year international stock performance data):

- PSF’s 8.51 percent annualized international stock return ranked fourth.
- PUF’s 2.77 percent annualized international stock return ranked ninth.
- LTF’s 1.44 percent international stock return ranked tenth, or lowest.

## Bond Rates of Return

Slide 5.28.



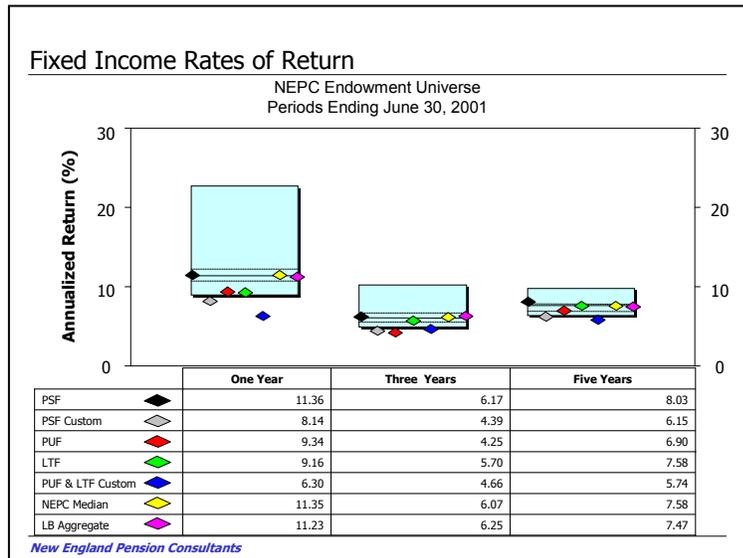
TRS benchmarks most of its bond portfolio to the Salomon Brothers Large Pension Funds Index (Salomon Index). ERS benchmarks most of its bond investments to the Lehman Index (as does PSF and, for their domestic bonds, PUF and LTF). The Salomon Index has a longer average maturity than the Lehman Index, so its long-term return and risk should generally exceed the Lehman Index's return and risk. As a result, a comparison between TRS's and ERS's (or between TRS's and the three endowment funds') bond performance may not be meaningful. (Other differences, such as allocations to "high-yield" bonds, which perform unlike either the Salomon or Lehman

Indexes, could account for additional differences between TRS's and ERS's bond returns and risk. An analysis of these differences is beyond the scope of this report.)

TRS's bond investments outperformed TRS's bond custom benchmark for the one-, three-, five-, and ten-year periods ending June 30, 2001. In addition, TRS's bond investments and its custom benchmark both outperformed the NEPC median pension fund for all periods except the three-year period. TRS's bond performance ranked in the first quartile for the one-, five-, and ten-year periods and in the third quartile for the three-year period. (TRS's use of the Salomon Index might distinguish its strategy from that of the other funds in the NEPC peer group.)

ERS's bond investments outperformed the NEPC median for the one-, three-, and five-year periods, ranking in the second quartile in each period. For the ten-year period, ERS's bond portfolio ranked in the third quartile. (ERS's performance reports did not compare bond performance to a custom benchmark.)

Slide 5.29.



PSF's bond investments outperformed its custom benchmark and the NEPC median for each of the three periods ending June 30, 2001. For the one- and three-year periods, PSF's bond portfolio was in the second quartile; it was in the first quartile for the five-year period.

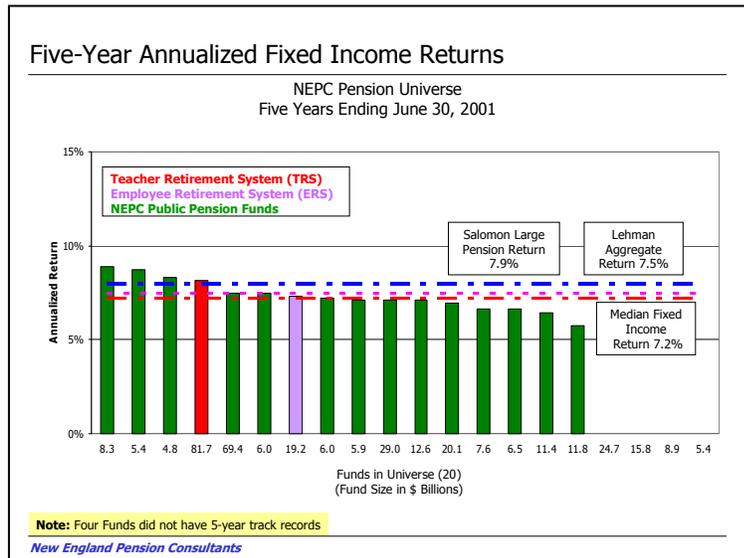
PSF's custom benchmark ranked in the bottom fifth percentile of the peer group for all three periods. This low ranking, as well as some of the difference between PSF's actual bond returns and the returns of this custom benchmark, might be explained by PSF's comparatively high target allocation to high-yield bonds, which performed comparatively poorly, during much of

the period presented. High-yield bonds generally performed poorly compared with investment-grade bonds, so a high allocation to high-yield bonds would negatively affect the custom benchmark's return. However, PSF's actual allocation to this bond segment was typically well below its target allocation during the period. By investing less of its bond portfolio than targeted in the poorer performing segment and more bonds than targeted in the higher performing segment, actual performance would be more likely to exceed the custom benchmark. (For the one-year period ending June 30, 2001, the Lehman Index returned 11.23 percent, while the high-yield bond index PSF includes in its custom benchmark returned 1.57 percent. The performance differences between these two bond indexes were smaller, but still substantial, over the three- and five-year periods.)

PUF's bond investments underperformed the NEPC median for the one-, three-, and five-year periods, ranking in the fourth quartile for each. PUF's custom benchmark consistently ranked in the bottom fifth percentile. The benchmark's large target allocation to international bonds possibly differentiated PUF's and LTF's bond portfolio from that of many NEPC peer funds.

LTF's bond investments outperformed its custom benchmark (PUF and LTF use the same custom benchmark) for all three periods but underperformed the NEPC median in the one- and three-year periods ending June 30, 2001. For the five-year period, LTF's bond investments equaled the median. LTF's bond performance ranked in the fourth quartile for the one-year period and the third quartile for the three-year period.

Slide 5.30.



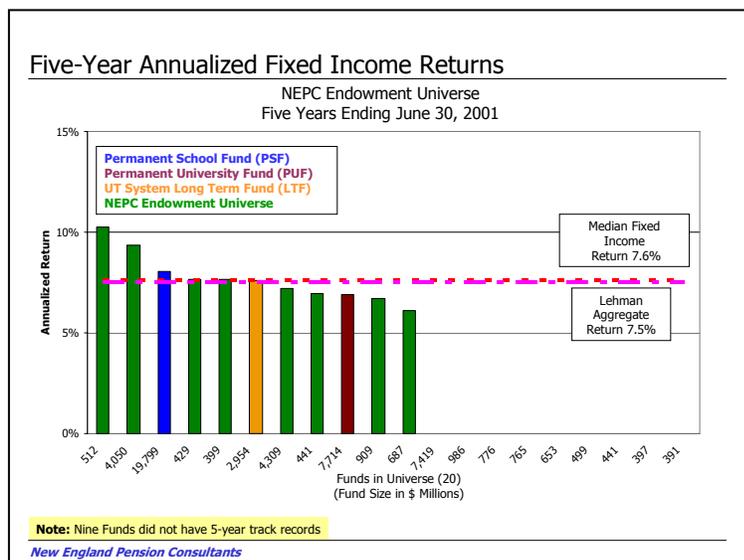
When compared with the performance of the funds in the NEPC public pension peer group for the five-year period ending June 30, 2001 (only 16 funds provided five-year bond performance data):

- TR’s 8.14 percent annualized bond return ranked fourth and also exceeded the 7.94 percent return of the Salomon Index. (As noted on Slide 5.28., because TRS benchmarks most of its bond investments against this index, comparisons of TR’s bond performance to that of other funds may not be meaningful. For instance, differences in strategies

that result from selecting different benchmarks, and not differences in the levels of success in implementing those strategies, could be entirely responsible for TR’s higher bond performance.)

- ERS’s 7.30 percent annualized bond return ranked seventh and was slightly lower than the 7.47 percent return of its targeted Lehman Index.

Slide 5.31.



When compared with the performance of the funds in the NEPC endowment fund peer group for the five-year period ending June 30, 2001 (only 11 funds provided five-year bond performance data):

- PSF’s 8.03 percent annualized bond return ranked third.
- PUF’s 6.90 percent annualized return ranked ninth.
- LTF’s 7.58 percent annualized return ranked sixth and was therefore the median performer.

## **Returns Versus Risk and Risk-Adjusted Historical Investment Performance (Texas and Median Peer Universe Funds) for the Five-Year Period Ending June 30, 2001**

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### **How to Read Chapter 6**

A fundamental investment principle holds that investors expect higher-risk investments to produce higher returns.

The next four graphs plot the investment return versus risk for each Texas fund (for the total fund on the first graph and for selected asset classes on the next three), each peer group's median point, and selected indexes for the five-year period ending June 30, 2001. Pension fund measurement points are presented in blue and endowment funds are presented in red to highlight any relative differences between the two fund types.

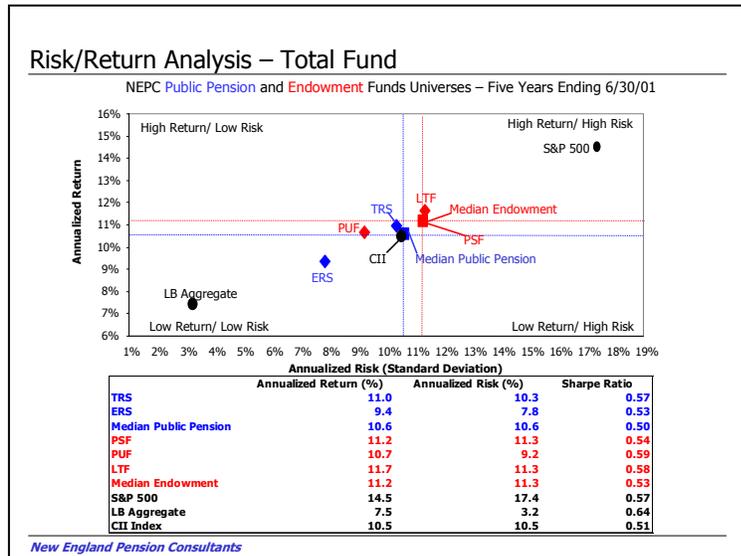
The median points for each fund type implicitly identify four quadrants differentiated by their combined levels of return (high or low) and risk (high or low). Ideally, an investor prefers investment strategies that produce high return with low risk (measurement points in the upper left quadrant) and wants to avoid strategies that result in low return but that are high risk (the lower right quadrant). Realistically, however, the principle that taking more risk should produce higher returns suggests that rational investors expect their long-term investment results to roughly follow a hypothetical line that moves from the lower left to the upper right quadrant. (In practice, the risk/return relationship might be nonlinear so that, hypothetically, increasing return by one quarter, for example, might require increasing risk by one half.)

The table accompanying each graph presents return and risk data (risk, typically quantified in terms of the volatility or variability of returns, was calculated as the standard deviation of quarterly returns). The table also presents the Sharpe Ratio, one of several common measures of risk-adjusted return, computed from quarterly return data.

The Sharpe Ratio is computed by dividing "excess return" (the amount that actual return exceeds the "risk free" rate, typically the U.S. Treasury Bill rate) by the risk (represented by the standard deviation of returns). The Sharpe Ratio provides an indication of how efficient each fund (or index) was in obtaining return in relation to the level of risk taken (i.e., how much excess return is produced per unit of risk taken). Higher Sharpe Ratio numbers tend to represent greater efficiency.

## How Did the Return Versus Risk and the Sharpe Ratio Compare Among the Texas Funds, the NEPC Universe Medians, and Other Indexes for the Five-Year Period Ending June 30, 2001 (by Total Fund and Select Asset Classes)?

Slide 6.1.



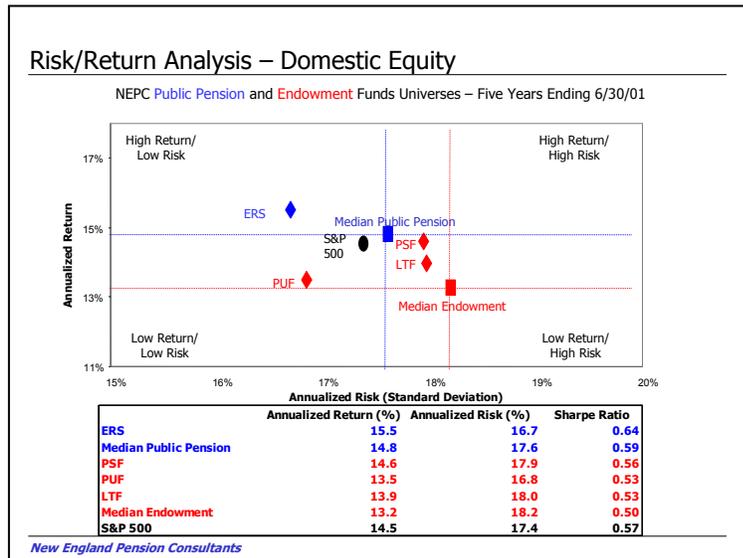
The total fund risk-return graph for the five-year period ending June 30, 2001, suggests the following:

- The returns of the five Texas funds appear to follow the principle that investors expect higher-risk investment strategies to produce higher returns. ERS had the lowest return but took the lowest risk, while the other Texas funds generated incrementally higher returns as they assumed incrementally higher risk. LTF had the highest risk and return (the same risk as PSF, although PSF’s return was slightly below LTF’s).

- As represented by the median points in NEPC’s two peer groups, endowment funds took more risk than did public pension funds and earned higher returns. This outcome is consistent with the observation that endowment funds typically adopt more aggressive investment strategies than do pension funds.
- Compared with the NEPC pension peer group median, ERS earned a lower return but took substantially less risk, while TRS earned a slightly higher return while also taking slightly less risk. (TRS was therefore in the most desirable quadrant relative to the median.)
- Compared with the NEPC endowment peer group median, PUF earned a slightly lower return but took substantially less risk, PSF replicated the median return and risk, and LTF earned higher return while taking the median level of risk.
- The CII Index’s performance, based on the hypothetical asset allocation of a “typical” pension fund, was nearly identical to the return and risk of the NEPC median point for public pension funds.
- An all-bond portfolio (represented by the Lehman Index) produced relatively low risk and return compared with an all-stock portfolio (represented by the S&P 500 Index), which produced much higher risk and return.

The table shows that each Texas fund’s risk-adjusted return, based on the Sharpe Ratio, exceeded the median risk-adjusted return for its respective peer group. This result suggests that the Texas funds were somewhat more efficient in generating excess return per unit of risk taken than their respective median funds were.

Slide 6.2.



The U.S. stock risk-return graph for the five-year period ending June 30, 2001, demonstrates the following:

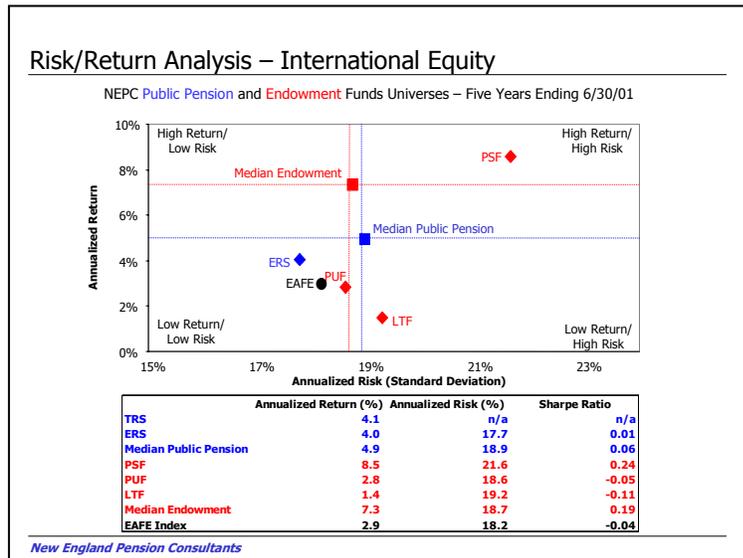
- The U.S. stock return of the median endowment fund was lower than that of the median pension fund, but the median risk taken by endowment funds exceeded the median risk taken by pension funds.
- The U.S. stock investments of the four Texas funds presented on the graph produced above-median return with below-median risk compared with their respective peer groups. Therefore, all four funds were in the most desirable quadrant

relative to their respective peer group medians. (As discussed on Slide 5.20., TRS did not provide five-year U.S. stock return data in time for NEPC to include its return and risk on the graph. TRS’s 14.2 percent five-year annualized return that it subsequently reported and its 17.0 percent annualized risk that the SAO calculated from TRS’s quarterly returns were both below median for its peer group.)

- The median risk and return for the NEPC public pension peer group closely matched the S&P 500 Index. However, the S&P 500 Index represents only one segment of U.S. stock (large-cap). The entire universe of U.S. stocks also includes mid- and small-cap stocks whose performance is usually benchmarked against more relevant indexes. All of the Texas funds (and probably many of the other peer group members) had allocations to mid- and/or small-cap portfolios, so it would be unlikely that each fund’s overall U.S. stock performance would consistently match that of the S&P 500 Index. (Slides 5.20. and 5.21. present custom benchmark returns for TRS, PSF, PUF, and LTF. These custom benchmarks better reflect the target composition of each fund’s overall U.S. stock investments.)

Based on the Sharpe Ratios for the four Texas funds with five-year U.S. stock data (TRS submitted its quarterly returns too late for NEPC to calculate its U.S. stock Sharpe Ratio), the risk-adjusted return for each exceeded the median risk-adjusted return for its respective peer group.

Slide 6.3.

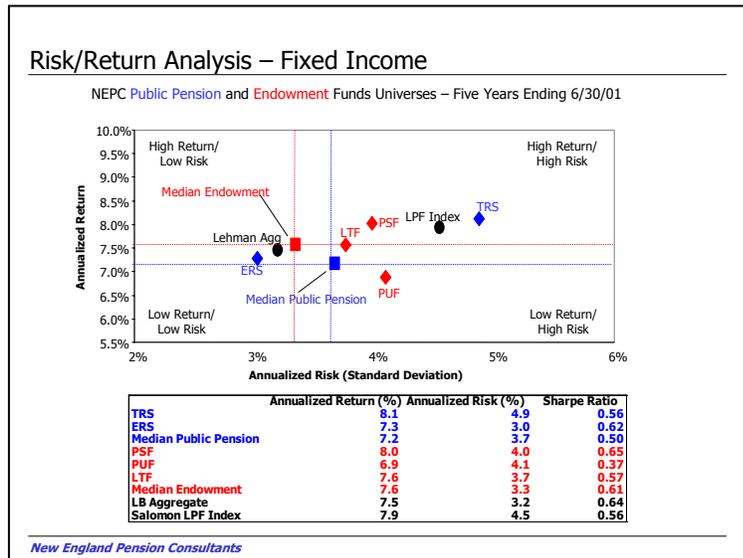


The international stock risk-return graph for the five-year period ending June 30, 2001, demonstrates the following:

- When compared with U.S. stock results (see Slide 6.2.), international stock had significantly lower return and somewhat higher risk. This relationship was consistent for all comparable points (peer group medians, commonly used market indexes, and each Texas fund that reported results for both asset classes, including information not on the graph because TRS submitted it after NEPC had finalized its slides).
- In contrast to the relative relationship for U.S. stock, the endowment peer group’s median international stock return exceeded the pension peer group’s median return. However, the endowment peer group’s median risk was slightly less than the pension peer group’s.
- Also in contrast to the relative relationships for U.S. stock, none of the Texas funds’ international stock investments produced above-median return with below-median risk compared with their respective peer groups. PSF was the only Texas fund that had above-median return, but it also had above-median risk. ERS had below-median return and risk, while PUF and LTF each had below-median return, with PUF’s risk slightly below and LTF’s risk slightly above that of the median endowment. (As also discussed on Slide 5.24., TRS did not provide five-year international stock return data in time for NEPC to plot its return and risk on the graph. However, TRS’s recent calculations indicate that its five-year international stock return was actually 4.7 percent, below the pension peer median return but higher than the 4.1 percent return that TRS previously verified in the data NEPC used to create this slide. From TRS’s quarterly returns, the SAO calculated a 19.0 percent five-year annualized risk, slightly above the median risk.)
- TRS’s risk and its Sharpe Ratio are not presented on the slide because NEPC could not obtain TRS’s quarterly international stock performance data in time to calculate these amounts.

Based on the Sharpe Ratios for the four Texas funds that reported five-year international stock data to NEPC, only PSF had a risk-adjusted return that exceeded the median risk-adjusted return for its peer group.

Slide 6.4.



The bond investments risk-return graph for the five-year period ending June 30, 2001, demonstrates the following:

- The median bond return for the endowment peer group exceeded the pension median return, while the median endowment took slightly less risk.
- TRS’s bond investments’ risk and return exceeded the median for the pension peer group. TRS’s results more closely resembled the risk and return of the benchmark it uses, the Salomon Index, for the majority of its bond investments. As expected, based on the discussion at Slide

5.28. of the difference between this index and the Lehman Index used by the other Texas funds, the Salomon Index produced higher return with higher risk than the Lehman Index.

- ERS’s bond investments earned a slightly higher return than the median while taking less risk. ERS’s results more closely resembled the risk and return of its primary bond benchmark, the Lehman Index.
- PSF’s bond investments’ risk and return exceeded the median.
- PUF’s bond investments returned less than the median, while LTF’s bonds returned the same as the median. Both funds’ bond investments had higher-than-median risk. (Unlike the other Texas funds, PUF and LTF invest a substantial portion of their bond portfolios in international bonds. International bond indexes underperformed U.S. bond indexes during this period, so PUF’s and LTF’s international bond investments likely contributed to lower total performance for this asset class than would have resulted if each fund had invested only in U.S. bonds.)

The Sharpe Ratios for bonds for the five-year period ending June 30, 2001, demonstrate the following:

- TRS and ERS had risk-adjusted returns that exceeded their peer group median. Both funds’ Sharpe Ratios approximated those of the indexes against which they benchmark most of their bonds (Salomon Index or Lehman Index). Although the Salomon Index had higher returns than the Lehman Index, it also had higher risk and its Sharpe Ratio was lower than that of the Lehman Index.
- For the Texas endowment funds, only PSF had risk-adjusted returns that exceeded the median.

# Comments from the Funds' Management

## Teacher Retirement System

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*This is to comment on A Report Comparing Texas's Five Largest Long-Term Investment Funds prepared by the State Auditor's Office (SAO) and New England Pension Consultants (NEPC). We appreciate the professional manner in which the study was conducted and the coordination efforts of SAO staff during the course of the project. The involvement of a firm like NEPC, who regularly works with performance measurement and evaluation for institutional entities, adds significantly to the report.*

*The TRS pension trust fund is quite large, serving over one million members and annuitants. Trustees and management strive to maintain a clear and continuous focus on matters that drive investment results — effective oversight and policies; sound methodology in establishing asset allocation; effective execution; cost efficiency; and performance measurement against well-defined standards.*

*The report is a useful compilation of information that provides decision makers with cross-fund perspective. Investment goals for each fund are driven by the purposes for which they are established. At TRS, trustees employ rigorous process to develop asset allocation and then incorporate their decisions into unambiguous investment policy for specific guidance to TRS investment staff who are responsible to implement the policy. Ultimately, the board's decisions with respect to portfolio structure are influenced by their view of the asset allocation that offers the best long run opportunity to fund current and future member benefits at an acceptable level of risk. Internal management offers substantial value by keeping costs to the pension trust fund low.*

*TRS trustees and staff understand their role in managing the pension trust fund, who it is intended to serve, and believe that it is worthwhile for the legislature to periodically receive independent analysis such as this.*

*We appreciate the opportunity to comment on the final report.*

## Employees Retirement System

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*Thank you for the draft copies of A Report Comparing Texas's Five Largest Long-Term Investment Funds and the opportunity to comment on your analysis.*

*The objective of the ERS investment program is to support this retirement system by prudently maximizing its assets for our stakeholders by pairing a long-range perspective with a commitment to expertise in the capital markets and high ethical standards.*

*The philosophy guiding the investment decisions of ERS adheres to the whole portfolio approach as provided in the Texas Trust Code and the exclusive benefit requirements of the Texas Constitution. Consistent with those requirements, the Board of Trustees has established investment policies, objectives and strategies to obtain the optimum return on the fund's portfolios along with the assumption of prudent risk.*

*The goal of the ERS investment program is to earn a return that will ensure that payments due to members of the retirement plans and their beneficiaries can be provided at a reasonable cost to the*

*members and the taxpayers of our state. We seek to achieve that goal through a disciplined long-term investment strategy that has benefited the state and members of our system.*

*Since 1996, when the state contribution was lowered to 6% and the normal cost was not funded, Texas has saved \$185 million. In addition, the state has never made a contribution to the Law Enforcement and Custodial Officers Supplemental Fund saving \$206 million. At the same time, ERS has been able to enhance benefits for both active members and retirees. Improvements include allowing employees to retire under the rule of 80 and steadily increasing the retirement multiplier from 2.0% to 2.25% then to 2.3%. Members also may apply their unused annual and sick leave credits to increase their retirement benefit. Every ERS annuity has been recalculated for cost-of-living adjustments to bring annuitants up to 100% purchasing power and multiplier increases. Retirees have also received 13th checks on five separate occasions between 1995 and 2001.*

*The mission of ERS is to enhance the lives of our customers by delivering high quality benefits efficiently at the lowest practical cost. Our long-term investment strategy has proven successful in fulfilling our objective by providing our retirees with sound, secure benefits, and saving money for the state at the same time.*

## **Texas Education Agency**

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*We have received your draft report entitled A Report Comparing Texas's Five Largest Long-Term Investment Funds.*

*The Permanent School Fund (PSF) investment staff reviewed the report and found no inaccuracies in the PSF's investment data.*

*We applaud your efforts to produce a meaningful comparative report of the State's five largest funds. We understand the difficulty of comparing funds that have unique operating characteristics to peer groups that "might not be completely comparable." Certainly the constitutional provisions that mandate the PSF's spending policy make the PSF unique to its peer group and should be considered when making comparisons based upon your report.*

## **The University of Texas Investment Management Company**

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*We commend the State Auditor's Office for the scope and quality of this analysis of the five largest long term investment funds in Texas. The Report clearly and correctly highlights the differences in approach and subsequent results for the five funds in a manner that should prove illuminating and useful to citizens as well as Texas policymakers. The Report successfully deals with several highly technical issues through careful analyses and explanations by both the consultant and the Auditor's staff, and sets a very high standard for future analyses of these important pools of capital.*

*The Report presents information for both the Permanent University Fund (PUF) and the Long Term Fund (LTF) managed by the University of Texas Investment Management Company (UTIMCO). It is important to note that because of the investment limitations on the PUF which existed prior to 1999, the LTF asset allocation and investment results are more indicative of the investment approach pursued by UTIMCO in managing the endowment funds of the University of Texas System. With the restrictions now removed from the PUF, future reports should indicate nearly identical asset allocation and investment returns for the PUF and LTF.*

*We are pleased that the LTF outperformed all the other funds and their benchmarks over all time periods of the study. The Report highlights that both the PUF and the LTF have a far more diverse asset mix than the other funds and that the broader asset mix was effective in controlling investment risk. As a result, both the LTF and the PUF produced higher risk adjusted returns, higher returns per unit of risk assumed, than all other funds in the Report.*

*Although the report indicates very favorable absolute and risk adjusted returns for the LTF and PUF, the one area that deserves clarification is that actual returns for the LTF and PUF appeared to lag the policy index returns for those funds. However, this conclusion could be taken out of context due to two important factors.*

*First as noted in the report, the benchmark index utilized for the alternative asset category, a constant 17% per year, while appropriate for very long term comparisons can prove to be quite misleading over shorter time periods. In recognition of this problem, the UTIMCO Board has, upon the recommendation of our consultant Cambridge Associates, approved the use of a new benchmark. Pending approval by the Board of Regents, we plan to use the Wilshire 5000 Index plus 4% as the benchmark for the alternative asset category. Had we used the more appropriate benchmark for the period of study in the Report, the 5 year (ending June 30, 2002) comparison of the LTF to the policy index would have shown a favorable return spread, 6.63% for the LTF versus 5.82% for the policy index, rather than 7.33% for the policy index as shown in the Report. Relative performance comparisons for other time periods for both the LTF and the PUF would have been similarly improved as compared to the results shown in the Report.*

*Second, because benchmark changes are reflected immediately in policy portfolio indices but actual portfolios change more gradually as investments are made at a measured pace, particularly in the relatively illiquid alternative asset category, there is often a mismatch between the composition of the benchmark portfolio and actual portfolios, and hence differences in actual versus policy index returns. In periods where the benchmark returns of the illiquid asset category are increasing rapidly relative to other categories in the policy portfolio, as was the case for most of the period covered in this analysis, the comparison between actual returns and policy portfolio returns will be unrealistically biased in favor of the policy benchmark portfolio return. The combination of these two factors negatively biased return comparisons for both the LTF and the PUF relative to the policy index.*

*It is important to note that any fault for biased relative performance comparisons lies completely with UTIMCO for the decision to use the 17% benchmark for alternative assets and with the technical benchmark issues outlined above, and not with the analysis presented by the State Auditor's Office. Our decision to use a more appropriate alternative asset category benchmark and ongoing attempts to deal with the technical benchmark issue outlined above should result in more accurate performance comparisons in future reports.*

*We thank you for a well-researched and informative report and for the opportunity to offer comments.*

# Appendices

## Appendix 1

### **Investment Objectives Excerpted from Each Texas Fund's Investment Policy**

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The following are excerpts of selected provisions in the investment policy of each of Texas's five largest long-term investment funds, based on the policy in effect as of June 30, 2002. Also included are excerpts of the State Board of Education's *Statement of Investment Objectives, Policies, and Guidelines of the Texas Permanent School Fund*, in the Texas Administrative Code (TAC), Title 19, Part II, Chapter 33:

#### **Teacher Retirement System**

<b>Purpose (excerpt)</b>	The primary purpose of the Investment Policy Statement ("the Investment Policy") is to provide a formal plan for investing assets to achieve defined investment objectives consistent with the mission of the TRS - delivering retirement and related benefits authorized by law for members and their beneficiaries through prudent investment and management of assets held in trust for them in an actuarially sound system administered in accordance with applicable fiduciary principles.
<b>Objectives</b>	<p>A long-term investment horizon will be maintained that allows for investments in assets with a cyclical economic nature such as bonds, equities, and alternative assets as approved by the Board. The total investment portfolio will be structured to achieve a long-term rate of return that:</p> <ol style="list-style-type: none"><li>1. Exceeds the assumed actuarial rate of return adopted by the Board.<sup>1</sup></li><li>2. Exceeds the long-term rate of inflation by an annualized 4%.</li><li>3. Exceeds a composite index composed of the respective long-term normal asset mix weighting of the major asset classes, operating within the defined risk parameters for the various asset classes.</li></ol> <p>Separate performance standards will be approved by the Board.</p>
<b>Investment Standard (excerpt)</b>	Article 16, §67(a)(3) of the Texas Constitution and Tex. Gov't Code §825.301(a) states that the standard of prudence for TRS investments is a "prudent person" standard. Texas Gov't Code §825.301(a) provides that Tex. Prop. Code §113.056(a) applies to TRS investment decisions. Texas Prop. Code §113.056(a) generally states that the determination of the prudence of a single investment decision will be made taking into consideration the investment of all of the assets of the trust, or the assets of the collective investment vehicle, as the case may be, rather than a consideration as to the prudence of the single investment of the trust, or the single investment of the collective investment vehicle, as the case may be.
<b>Asset Mix (excerpt)</b>	An asset/liability study will be conducted at least every five years to review asset classes, return/risk assumptions and correlation of returns with applicable benchmarks and across asset classes. As a result of the study, a diversified portfolio will be developed which specifies a range of exposure and a "long-term normal" position for each asset class. The normal portfolio mix will represent the portfolio that is expected to meet the risk tolerances set by the Board and the actuarial return objectives. A review of the market assumptions and the actuarial soundness of the fund will be conducted annually.
<b>Measurement and Review Criteria</b>	<p>The following comparisons and reviews will be performed quarterly and presented to investment counsel and the Board:</p> <ol style="list-style-type: none"><li>1. The investment returns for each asset class and for the total fund will be compared with their respective benchmarks.</li><li>2. The asset weightings will be reviewed and compared with their respective long-term normal positions and with the ranges around those positions.</li><li>3. The portfolio will be reviewed for compliance with the requirements set forth in the Investment Policy.</li></ol>

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<sup>1</sup> The Board's assumed actuarial rate of return was 8.0 percent as of June 30, 2002.

## Employees Retirement System

<b>Investment Philosophy</b>	Investment decisions shall adhere to the whole portfolio approach as provided in the Texas Trust Code and the exclusive benefit requirements of the Texas Constitution. Consistent with those requirements, the Board of Trustees shall establish investment policies, objectives, and strategies for the purpose of obtaining the optimum return on the Fund's portfolios in keeping with the assumption of prudent risk.
<b>Investment Strategy (excerpt)</b>	<p><b>Primary Investment Goal.</b> The goal of the investment program is to earn a return that will insure the payments due to members of the retirement plans and their beneficiaries at a reasonable cost to the members and the taxpayers of the State.</p> <p><b>Asset Allocation.</b> The most important component of an investment strategy is the asset mix, or the resource allocation among the various classes of securities available to the ERS for investment purposes. The Board of Trustees shall set long-term asset allocation targets or ranges that will best meet the needs of the plans and their beneficiaries.</p> <p>Formal asset allocation studies will be conducted at least every 5 years, with annual evaluations of the validity of the adopted asset allocation based on updated return projections. Any lack or weakness of validity will require consideration of revision to the asset allocation policy.</p>
<b>Performance (excerpt)</b>	<p><b>Performance Evaluation (excerpt).</b> Performance evaluation of the Fund is designed to monitor the asset allocation implementation plan and advisory manager selection decisions. Its purpose is to test the continued validity of these decisions and to trigger an analysis of underperformance or undue volatility.</p> <p>The Executive Director shall provide to the Trustees in writing, on a quarterly basis, a summary of the Fund's performance as calculated by an outside performance measurement service. This report shall include a comparison to performance benchmark objectives as well as to the investment performance of other public funds.</p> <p><b>Performance Benchmark Objectives. Total Fund.</b> The performance objective is to obtain overall investment returns over rolling five-year periods equal to the weighted average of the passive benchmark returns, plus active returns over the benchmark returns proportionate to the amount of active risk (tracking error) assumed in each asset class. At a minimum, active returns are expected to exceed the cost of management. Returns are weighted according to the adopted asset allocation. The expected excess returns are a function of the active return expected per unit of active risk established in the Fund's active risk budget.</p>
<b>Implementation (excerpt)</b>	<p><b>Duty of Care.</b> The Board of Trustees, as fiduciaries of the Employees Retirement System of Texas funds, will:</p> <ol style="list-style-type: none"><li>Manage the assets for the exclusive benefit of the members of the retirement plans;</li><li>Establish prudent investment policies defining investment objectives and strategies;</li><li>Seek to maximize investment return while maintaining the safety of principal;</li><li>Diversify the assets to reduce risk of loss;</li><li>Monitor and document investment performance; and</li><li>Efficiently manage the costs associated with implementation of its investment program.</li></ol> <p>Investments shall be made exercising the judgment and care, under the circumstances prevailing at the time of the investment, that persons of ordinary prudence, discretion, and intelligence exercise in the management of their own affairs, not in speculation, but when making a permanent disposition of their funds, considering the probable income from the disposition and the probable safety of their capital. In determining whether a trustee has exercised prudence with respect to an investment decision, such determination shall be made taking into consideration the investment of all the assets of the trust, or the assets of the collective investment vehicle, as the case may be, over which the trustee had management and control, rather than a consideration as to the prudence of the single investment of the trust, or the single investment of the collective investment vehicle, as the case may be.</p>

## Permanent School Fund

### Statement of Investment Objectives, Policies, and Guidelines of the Texas Permanent School Fund (Excerpts)

<b>§33.1. Constitutional Authority and Constitutional Restrictions.</b>	<p>(a) The Texas Permanent School Fund (PSF) is comprised of the principal of all bonds and other funds, and the principal arising from the sale of the lands set apart for the PSF. The interest and dividends derived from the PSF and any taxes authorized and levied shall be the Available School Fund, which shall be applied annually to the support of the public free schools.</p> <p>(b) In managing the assets of the PSF, the State Board of Education (SBOE) may acquire, exchange, sell, supervise, manage, or retain, through procedures and subject to restrictions it establishes and in amounts it considers appropriate, any kind of investment, including investments in the Texas Growth Fund created by the Texas Constitution, Article XVI, §70, that persons of ordinary prudence, discretion, and intelligence, exercising the judgment and care under the circumstances then prevailing, acquire or retain for their own account in the management of their affairs, not in regard to speculation but in regard to the permanent disposition of their funds, considering the probable income as well as the probable safety of their capital.</p>
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**§33.10. Purposes of Texas Permanent School Fund Assets and the Statement of Investment Policy. (excerpt)**

(a) The purpose of the Texas Permanent School Fund (PSF), as defined by the Texas Constitution, shall be to support and maintain an efficient system of public free schools. The State Board of Education (SBOE) views the PSF as a perpetual institution. Consistent with its perpetual nature, the PSF shall be an endowment fund with a long-term investment horizon. The SBOE shall strive to manage the PSF consistently with respect to the following: generating income for the benefit of the public free schools of Texas, the growth of the corpus of the PSF, protecting capital, and balancing the needs of present and future generations of Texas school children.

**§33.15. Objectives. (excerpt)**

(a) Investment objectives.

(1) Investment objectives have been formulated based on the following considerations (excerpt):

- (A) the anticipated financial needs of the Texas public free school system in light of expected future contributions to the Texas Permanent School Fund (PSF);
- (B) the need to preserve capital;
- (C) the risk tolerance set by the State Board of Education (SBOE) and the need for diversity;
- (D) observations about historical rates of return on various asset classes;
- (E) assumptions about current and projected capital market and general economic conditions and expected levels of inflation;
- (F) the need to invest according to the prudent person rule; and

(2) Investment objectives represent desired results and are long-term in nature, covering typical market cycles of three to five years. Any shortfall in meeting the objectives should be explainable in terms of general economic and capital market conditions and asset allocation.

(b) Goal and objectives for the PSF.

(1) Goal. The goal of the SBOE for the PSF shall be to obtain the greatest amount of income and capital appreciation consistent with the safety of principal, in light of the strategic asset allocation plan adopted. To achieve this goal, PSF investment shall be carefully administered at all times.

(2) Objectives. (excerpt)

(A) The preservation and safety of principal shall be a primary consideration in PSF investment.

(c) Investment rate of return and risk objectives. (excerpt)

(1) Because the education needs of the future generations of Texas school children are long-term in nature and directly related to income growth and income potential, the return objective of the PSF shall also be long-term and focused on maintaining asset growth while preserving real capital value. Maintaining value under an income and capital appreciation concept encompasses a policy that over the long term will provide the PSF a positive return when adjusted for inflation and spending.

(2) Investment rates of return shall be based on a time-weighted calculation, compounded and annualized over a rolling period of three to five years, and shall take into account all cash income plus realized and unrealized capital gains and losses, and calculated gross and net of fees and expenses.

(3) The overall risk level of PSF assets in terms of potential for price fluctuation shall not be extreme and risk variances shall be minimal. The primary means of achieving such a risk profile are:

- (A) a broad diversification among asset classes that, as nearly as possible, react independently through varying economic and market circumstances;
- (B) careful control of risk level within each asset class by avoiding over-concentration and not taking extreme positions against the market averages; and
- (C) a degree of emphasis on stable growth.

(4) Over time, the volatility of returns (or risk) for the total fund, as measured by standard deviation of investment returns, should be comparable to investments in market indices in the proportion in which the PSF invests.

(10) (excerpt) Additional consideration shall be given to meeting the projected income expectations of the PSF in each respective biennium as a guideline in allocating assets to the respective PSF investment managers, if this guideline is consistent with the prudent person mandate of the Texas Constitution, Article VII, §5(d), and the SBOE asset allocation strategy.

(d) Asset allocation policy. (excerpt)

(1) The SBOE shall adopt and implement a strategic asset allocation plan based on a well diversified, balanced investment approach that uses a broad range of asset classes indicated by the following characteristics of the PSF:

- (A) the long-term nature of the PSF;
- (B) the spending policy of the PSF;
- (C) the relatively low liquidity requirements of the PSF;

- (D) the investment preferences and risk tolerance of the SBOE;
- (E) the rate of return objectives; and
- (F) the diversification objectives of the PSF, specified in the Texas Constitution, Article VII, §5(d), the Texas Education Code, Chapter 43, and the provisions of this chapter.

(2) The strategic asset allocation plan shall contain guideline percentages, at market value of the total fund's assets, to be invested in various asset classes. The target mix may not be attainable at a specific point in time since actual asset allocation will be dictated by current and anticipated market conditions, as well as the overall directions of the SBOE.

(3) The SBOE Committee on School Finance/Permanent School Fund, with the advice of the PSF investment staff, shall review the provisions of this section at least annually and, as needed, rebalance the assets of the portfolio according to the asset allocation rebalancing procedure specified in the PSF Investment Procedures Manual. The SBOE Committee on School Finance/Permanent School Fund shall consider the industry diversification and the percentage allocation between fixed income and equity securities within the following asset classes:

- (A) domestic equities;
- (B) international equities;
- (C) domestic fixed income;
- (D) international fixed income; and
- (E) cash.

**§33.20.  
Responsible  
Parties and  
Their Duties.  
(excerpt)**

- (e) The SBOE shall have the following exclusive duties:
  - (1) determining the strategic asset allocation mix between asset classes based on the attending economic conditions and the PSF goals and objectives;
  - (5) approving the selection of, and the performance measurement contract with, a well-recognized and reputable firm employed to evaluate and analyze PSF investment results. The service shall compare investment results to the written investment objectives of the SBOE and also compare the investment of the PSF with the investment of other public and private funds against market indices and by managerial style;
  - (6) setting policies, objectives, and guidelines for investing PSF assets; and
  - (7) representing the PSF to the state.

**§33.30.  
Standards of  
Performance.  
(excerpt)**

- (a) The State Board of Education (SBOE) Committee on School Finance/Permanent School Fund shall set and maintain performance standards for the total fund, the equity fund, the fixed income fund, and the cash fund of the Texas Permanent School Fund (PSF), and all investment managers based on criteria that include the following:
  - (1) time horizon;
  - (2) real rate of return;
  - (3) representative benchmark index;
  - (4) volatility of returns (or risk), as measured by standard deviation; and
  - (5) universe comparison.

**Investment Procedures Manual (excerpt)**

**Standards of  
Performance.  
Total Funds.  
(excerpt)**

The Total Fund shall consist of a diversified portfolio of domestic and international stocks and bonds, diversified by manager style/strategy, capitalization ranges, maturity, coupon, duration and quality criteria.

The State Board of Education expects active managers to collectively out-perform their respective (and agreed upon) individual unmanaged benchmarks net of fees. Therefore, total performance of the Texas Permanent School Fund will be measured against a composite benchmark reflective of the Fund's allocation between equities and fixed income assets and reflective of the Fund's capitalization, maturity/quality and style orientation.

In order to meet the investment objectives as specified in the State Board of Education's Statement of Investment Objectives, Policies and Guidelines, the Total Fund is to earn over a market cycle of three to five years, a positive real return after adjusting for spending and inflation. The benchmark to meet this objective is a weighted average annual total investment rate of return in excess of the rate of return of an investment in representative indices in the quarter ending allocations of the Fund, excluding fees and other expenses.

The Fund should rank in the top half of a universe of other actively managed Funds with similar objectives and risk profiles.

The volatility of three-year annualized returns, or risk, for the Total Fund, as measured by standard deviation of investment returns, should be, over time, less than the risk for comparable investments in the market indices in the proportion in which the Fund invests.

Year-over-year performance shall be measured in terms of total return whose components - principal and income- shall have varying degrees of importance.

## Permanent University Fund

<b>Fund Management (excerpt)</b>	<p>Article VII of the Texas Constitution assigns fiduciary responsibility for managing and investing the Fund to the U. T. Board. Article VII authorizes the U. T. Board, subject to procedures and restrictions it establishes, to invest the Fund in any kind of investments and in amounts it considers appropriate, provided that it adheres to the prudent person investment standard. This standard provides that the U. T. Board, in making investments, may acquire, exchange sell, supervise, manage, or retain, through procedures and subject to restrictions it establishes and in amounts it considers appropriate, any kind of investment that prudent investors, exercising reasonable care, skill, and caution, would acquire or retain in light of the purposes, terms, distribution requirements, and other circumstances of the fund then prevailing, taking into consideration the investment of all the assets of the fund rather than a single investment.</p> <p>Ultimate fiduciary responsibility for the Fund rests with the Board. Section 66.08 of the Texas Education Code authorizes the U. T. Board to delegate to its committees, officers or employees of the U. T. System and other agents the authority to act for the U. T. Board in investment of the PUF. The Fund shall be managed through The University of Texas Investment Management Company ("UTIMCO") which shall a) recommend investment policy for the Fund, b) determine specific asset allocation targets, ranges and performance benchmarks consistent with Fund objectives, and c) monitor Fund performance against Fund objectives. UTIMCO shall invest the Fund's assets in conformity with investment policy.</p>
<b>Fund Investment Objectives</b>	<p>The primary investment objective shall be to preserve the purchasing power of Fund assets and annual distributions by earning an average annual total return after inflation of 5.5% over rolling ten-year periods or longer. The Fund's success in meeting its objectives depends upon its ability to generate high returns in periods of low inflation that will offset lower returns generated in years when the capital markets underperform the rate of inflation.</p> <p>The secondary fund objective is to generate a fund return in excess of the Policy Portfolio benchmark over rolling five-year periods or longer. The Policy Portfolio benchmark will be established by UTIMCO and will be comprised of a blend of asset class indices weighted to reflect Fund asset allocation policy targets.</p>
<b>Asset Allocation (excerpt)</b>	<p>Asset allocation is the primary determinant of the volatility of investment return and, subject to the asset allocation ranges specified herein is the responsibility of UTIMCO. Specific asset allocation targets may be changed from time to time based on the economic and investment outlook.</p>
<b>Asset Allocation Policy</b>	<p>The asset allocation policy and ranges herein recognize that the Fund's return/risk profile can be enhanced by diversifying the Fund's investments across different types of assets whose returns are not closely correlated. The targets and ranges seek to protect the Fund against both routine illiquidity in normal markets and extraordinary illiquidity during a period of extended deflation.</p> <p>The long-term asset allocation policy for the Fund must recognize that the 5.5% real return objective requires a high allocation to broadly defined equities, including domestic and international stocks, alternative equity investments, and inflation hedging assets of 68% to 90%. The allocation to deflation hedging Fixed Income should therefore not exceed 32% of the Fund.</p> <p>The Board delegates authority to UTIMCO to establish specific neutral asset allocations and ranges within the broad policy guidelines described above. UTIMCO may establish specific asset allocation targets and ranges for large and small capitalization U. S. stocks, established and emerging market international stocks, marketable and non-marketable alternative equity investments, and other asset classes as well as the specific performance objectives for each asset class. Specific asset allocation policies shall be decided by UTIMCO and reported to the U. T. Board.</p>
<b>Performance Measurement</b>	<p>The investment performance of the Fund will be measured by an unaffiliated organization, with recognized expertise in this field and reporting responsibility to the UTIMCO Board, and compared against the stated investment benchmarks of the Fund. Such measurement will occur at least annually, and evaluate the results of the total Fund, major classes of investment assets, and individual portfolios.</p>
<b>Fund Distributions (excerpt)</b>	<p>The Fund shall balance the needs and interests of present beneficiaries with those of the future. Fund spending policy objectives shall be to:</p> <ol style="list-style-type: none"><li>provide a predictable, stable stream of distributions over time</li><li>ensure that the inflation adjusted value of distributions is maintained over the long-term</li><li>ensure that the inflation adjusted value of Fund assets after distributions is maintained over the long-term.</li></ol> <p>The goal is for the Fund's average spending rate over time not to exceed the Fund's average annual investment return after inflation and expenses in order to preserve the purchasing power of Fund distributions and underlying assets.</p> <p>The Texas Constitution states that "The amount of any distributions to the available university fund shall be determined by the board of regents of The University of Texas System in a manner intended to provide the available university fund with a stable and predictable stream of annual distributions and to maintain over time the purchasing power of permanent university fund investments and annual distributions to the available university fund. The amount distributed to the available university fund in a fiscal year must be not less than the amount needed to pay the principal and interest due and owing in that fiscal year on bonds and notes</p>

issued under this section. If the purchasing power of permanent university fund investments for any rolling 10-year period is not preserved, the board may not increase annual distributions to the available university fund until the purchasing power of the permanent university fund investments is restored, except as necessary to pay the principal and interest due and owing on bonds and notes issued under this section. An annual distribution made by the board to the available university fund during any fiscal year may not exceed an amount equal to seven percent of the average net fair market value of permanent university fund investment assets as determined by the board, except as necessary to pay any principal and interest due and owing on bonds issued under this section. The expenses of managing permanent university fund land and investments shall be paid by the permanent university fund.”

Annually, the U. T. Board of Regents will approve a distribution amount to the AUF.

### ***The University of Texas System Long Term Fund***

<b>LTF Organization (excerpt)</b>	The Fund is organized as a mutual fund in which each eligible account purchases and redeems Fund units.
<b>LTF Management</b>	Ultimate fiduciary responsibility for the LTF rests with the Board. Section 163 of the Property Code authorizes the U. T. Board to delegate to its committees, officers or employees of the U. T. System and other agents the authority to act for the U. T. Board in the investment of the LTF. The LTF shall be governed through The University of Texas Investment Management Company ("UTIMCO") which shall a) recommend investment policy for the LTF, b) determine specific asset allocation targets, ranges, and performance benchmarks consistent with LTF objectives, and c) monitor LTF performance against LTF objectives. UTIMCO shall invest the LTF assets in conformity with investment policy.
<b>LTF Investment Objectives</b>	<p>The primary investment objective shall be to preserve the purchasing power of LTF assets by earning an average annual total return after inflation of 5.5% over rolling ten year periods or longer. The LTF's success in meeting its objectives depends upon its ability to generate high returns in periods of low inflation that will offset lower returns generated in years when the capital markets underperform the rate of inflation.</p> <p>The secondary fund objectives are to generate a fund return in excess of the Policy Portfolio benchmark and the average median return of the universe of the college and university endowments as reported annually by Cambridge Associates and NACUBO over rolling five-year periods or longer. The Policy Portfolio benchmark will be established by UTIMCO and will be comprised of a blend of asset class indices weighted to reflect LTF's asset allocation policy targets.</p>
<b>Asset Allocation</b>	Asset allocation is the primary determinant of the volatility of investment return and, subject to the asset allocation ranges specified herein, is the responsibility of UTIMCO.
<b>Asset Allocation Policy (excerpt)</b>	<p>The asset allocation policy and ranges herein recognize that the LTF's return/risk profile can be enhanced by diversifying the LTF's investments across different types of assets whose returns are not closely correlated. The targets and ranges seek to protect the LTF against both routine illiquidity in normal markets and extraordinary illiquidity during a period of extended deflation.</p> <p>The long-term asset allocation policy for the LTF recognizes that the 5.5% real return objective requires a high allocation to the broadly defined conventional equity and alternative equity investments and inflation hedging assets comprising the GEF.<sup>2</sup></p> <p>The Board delegates authority to UTIMCO to establish specific neutral asset allocations and ranges within the broad policy guidelines described above. Specific asset allocation policies shall be decided by UTIMCO and reported to the U. T. Board.</p> <p>The asset allocation policy and ranges herein recognize that the Fund's return/risk profile can be enhanced by diversifying the Fund's investments across different types of assets whose returns are not closely correlated. The targets and ranges seek to protect the Fund against both routine illiquidity in normal markets and extraordinary illiquidity during a period of extended deflation.</p>
<b>Performance Measurement</b>	The investment performance of the LTF will be measured by an unaffiliated organization, with recognized expertise in this field and reporting responsibility to the UTIMCO Board. Such measurement will occur at least annually.
<b>LTF Distributions (excerpt)</b>	<p>The LTF shall balance the needs and interests of present beneficiaries with those of the future. LTF spending policy objectives shall be to:</p> <ul style="list-style-type: none"> <li>A. provide a predictable, stable stream of distributions over time</li> <li>B. ensure that the inflation adjusted value of distributions is maintained over the long-term</li> </ul>

<sup>2</sup> The GEF refers to the General Endowment Fund, a pooled fund created on March 1, 2001, by combining the investment assets of LTF and the Permanent Health Fund, another endowment fund under the control of The UT System Board of Regents.

C. ensure that the inflation adjusted value of LTF assets after distributions is maintained over the long-term. The goal is for the LTF's average spending rate over time not to exceed the LTF's average annual investment return after inflation in order to preserve the purchasing power of LTF distributions and underlying assets.

Pursuant to the Uniform Management of Institutional Funds Act, a governing board may distribute, for the uses and purposes for which the fund is established, the net realized appreciation in the fair market value of the assets of an endowment fund over the historic dollar value of the fund to the extent prudent under the standard provided by the Act. In addition, income may be distributed for the purposes associated with the endowments/foundations.

UTIMCO shall be responsible for establishing the LTF's distribution percentage and determining the equivalent per unit rate for any given year. Unless otherwise established by UTIMCO and approved by the Board or prohibited by the Act, fund distributions shall be based on the following criteria:

The annual unit distribution amount shall be adjusted annually based on the following formula:

A. Increase the prior year's per unit distribution amount (cents per unit) by the average inflation rate (C.P.I.) for the previous twelve quarters. This will be the per unit distribution amount for the next fiscal year. This amount may be rounded to the nearest \$.0005 per unit.

B. If the inflationary increase in Step A. results in a distribution rate below 3.5%, (computed by taking the proposed distribution amount per unit divided by the previous twelve quarter average market value price per unit) the UTIMCO Board, at its sole discretion, may grant an increase in the distribution amount as long as such increase does not result in a distribution rate of more than 5.5%.

C. If the distribution rate exceeds 5.5%, (computed by taking the proposed distribution amount per unit divided by the previous twelve quarter average market value per unit) the UTIMCO Board at its sole discretion, may reduce the per unit distribution amount.

Notwithstanding any of the foregoing provisions, the Board of Regents may approve a per unit distribution amount that, in their judgment, would be more appropriate than the rate calculated by the policy provisions.

## ***Other Comparative Information***

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Appendix 2-A

### **Have Texas's Endowment Funds' Asset Values and Annual Distributions Kept Pace with Inflation During the Ten-Year Period Ending August 31, 2001?**

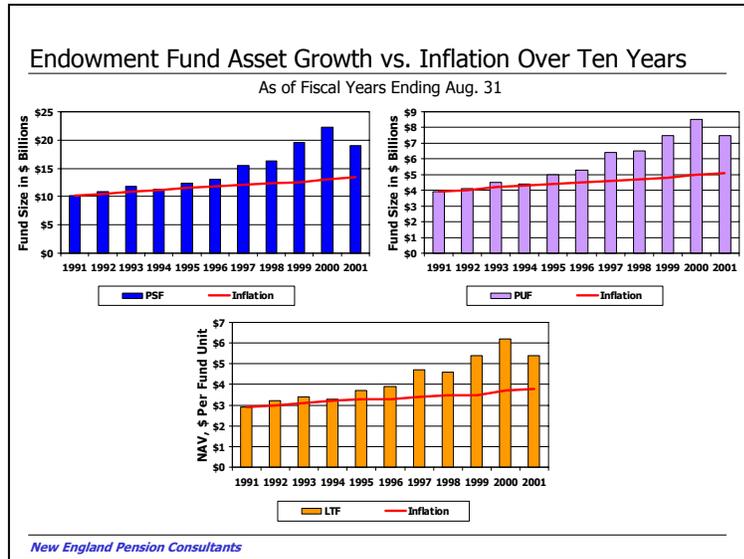
A basic endowment fund objective is the ability, net of distributions, to grow the fund's asset value as fast as long-term inflation. Using the fiscal year ending August 31, 1991, as the base year, the red line on each graph in Slide 7.1. depicts the subsequent August 31 year-end market value of each Texas endowment fund if each grew as fast as inflation in every subsequent year. Inflation was assumed to be the growth in the Consumer Price Index.

Another basic endowment fund objective is the ability to maintain the inflation-adjusted purchasing power of distributions. Using the fiscal year ending August 31, 1991, as the base year, the red line on each graph in Slide 7.2. depicts the level of annual distributions from each Texas endowment fund necessary to keep pace with inflation in every subsequent year. Inflation was assumed to be the growth in the Consumer Price Index.

The graphs on Slides 7.1. and 7.2. on the next page demonstrate the extent to which each fund's market value or annual distributions kept pace with inflation. Any years in which the top of the vertical bar was below the red line are years during which the fund's market value or annual distributions did not keep pace with cumulative inflation.

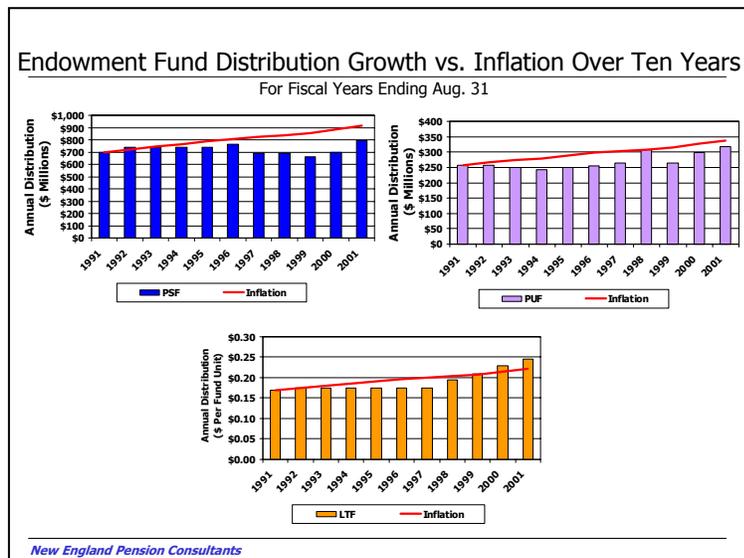
Some of the annual growth of PSF and PUF came from the mineral income contributions each received from state land or mineral rights dedicated to each fund. This analysis did not attempt to factor out the effect of those annual contributions on ending asset values to determine whether investment income alone, net of distributions, was sufficient to grow each fund's asset value as fast as inflation.

Slide 7.1.



For the ten-year period ending August 31, 2001, each Texas endowment fund grew substantially faster than inflation. The period of greatest excess growth began in fiscal year 1995 and coincides with the bull market for stock during the later 1990s.

Slide 7.2.



This slide demonstrates the following:

- For the ten-year period ending August 31, 2001, PSF’s distributions did not keep pace with inflation, although asset growth (per Slide 7.1.) consistently outpaced cumulative inflation. Because the Constitution requires that PSF only distribute interest and dividends, none of PSF’s market value growth was available to permit distributions to grow as fast as inflation.

PSF’s increased distribution in 1996 was due to a one-time statutory accounting change, while the \$794 million payout in 2001, sharply

higher than the \$698 million payout in 2000, erased some of the deficit compared with the inflation-adjusted level. The 2001 increase was primarily caused by reallocations from stock to bonds during fiscal year 2000 to reduce actual stock holdings and bring their levels back in line with PSF’s target allocation. Stock allocations had exceeded their target due to the bull market that has since ended.

- PUF’s distributions also lagged inflation for the ten-fiscal year period, although the 1998 distribution almost caught up with inflation when a statutory change (different from the 1996 change for PSF) permitted a one-time increase. However, a November 1999 constitutional amendment eliminated the requirement that PUF distribute only interest and dividend income. The amendment allowed distributions, within certain limits, based on PUF’s cumulative undistributed total return. As a result, the Regents established a payout rate that resulted in significant distribution increases in fiscal years 2000 and 2001. By 2001, distributions had almost caught up with the inflation-adjusted trend line.

- LTF received the authority to make distributions from the fund's total return in 1993. However, the Regents, as the fund's fiduciaries, believed the payout rate was unsustainably high compared with other university endowment funds. Consequently, the Regents held the payout rate constant for the six years ending August 31, 1997. During this six-year period, payout lagged cumulative inflation. However, LTF's investment value grew significantly. Therefore, in fiscal year 1998 the Regents began consistently increasing LTF's payout rate. Since fiscal year 1999, distributions have consistently exceeded the inflation trend line.

Between fiscal years 1992 and 2001, the three Texas funds' payout rates (when measured as a percentage of the funds' prior year ending market value for PSF and PUF or unit value for LTF) declined substantially. Annual studies of a large number of higher education endowment funds showed those funds distributed approximately 5.4 percent of their market value in 1992, while the public funds distributed slightly more. But endowments larger than \$1 billion distributed only about 5.1 percent (larger endowments in the studies consistently distributed at a lower rate than the public fund or total fund averages). In comparison, the three Texas funds' 1992 distribution rates were relatively high. However, by 2001, the three funds' distribution rates had fallen below the rates reported in the 2001 study but were only slightly below the average rate for the largest endowment funds.

The following table shows the fiscal year 1992 and 2001 distribution rates calculated as a percentage of the three funds' prior year ending market value (unit value for LTF). It also shows the average distribution rates for higher education endowments as reported in the 2001 endowment study.

Table 3

Fund	Fiscal Year 1992 Payout Rate	Fiscal Year 2001 Payout Rate
PSF	7.23%	3.56%
PUF	6.54%	3.75%
LTF	6.03%	3.95%
Average University Endowment	5.42%	5.00%
Average Public University Endowment	5.61%	5.03%
Average University Endowment > \$1 billion	5.05%	4.05%

Source: PSF, PUF, and LTF annual reports and 2001 NACUBO Endowment Study

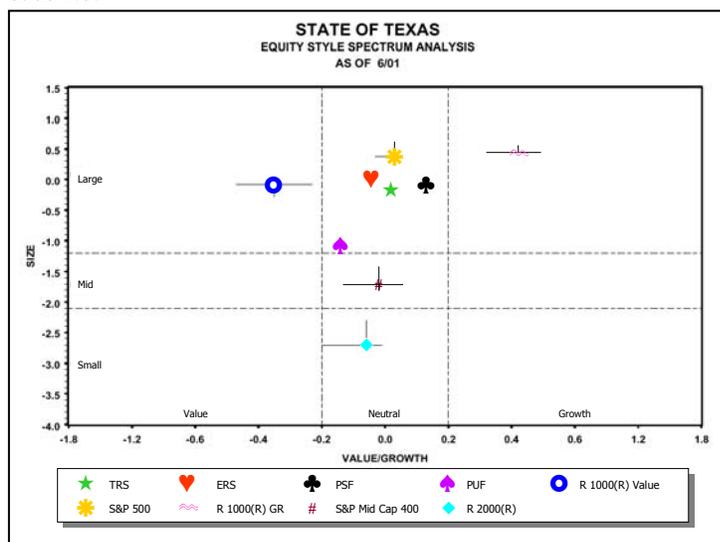
Many endowment funds' investment policies establish an annual payout rate that is based on a percentage of the fund's average market value for several prior years. This method is used to smooth the effect on annual distributions of large year-to-year changes in fund market value. Because the table above presents payout rates as a percentage of only the prior year's market value, the percentage rates shown in the table might not agree with the percentage rates stated in those funds' investment policies. For example, each of the Texas funds' 2001 payout rates would have exceeded 4 percent if their rates had been calculated as a percentage of the funds' average market value for the prior three years.

## How Did Certain Characteristics of Four Texas Funds' U.S. Stock Portfolios Compare as of June 30, 2001?

The Equity Style Spectrum Analysis prepared by NEPC categorized U.S. stock investments as of June 30, 2001, for four of the five Texas funds (LTF investments were not included in this assessment) according to market capitalization segments and commonly cited investment styles (value versus growth style). The analysis also presents an assessment of these two characteristics for five stock indexes, as well as the range of movement for each index during a prior time period (the range is represented by the length of the horizontal and vertical lines associated with each index's symbol). No range of movement is provided for the Texas funds.

The analysis defines nine different categories, whose boundaries are created by the horizontal and vertical dotted lines, based on the nine possible segment and style combinations (small-, mid-, and large-capitalization segments; value, neutral, and growth styles). The five indexes presented are associated with large-cap value, neutral, and growth, as well as mid- and small-cap neutral categories.

Slide 7.3.



The analysis of the four Texas funds at June 30, 2001, shows the following:

- Although all four Texas funds were grouped in the “Large-cap Neutral” category, PUF’s stock investments seemed somewhat unique. PUF’s investments were the closest of the four funds to the mid-cap segment and the value style. The other three funds’ stock investments more clearly resembled large-cap portfolios with styles approximating neutral. ERS’s holdings demonstrated a slight tendency toward a “value” style, PSF’s holdings demonstrated more of a growth tendency, and TRS’s holdings demonstrated a neutral style.
- Because returns can differ dramatically across segments and styles, the extent to which the characteristics differ across each Texas fund’s U.S. stock investments could explain some of the observed performance differences across these funds.

For example, for the one-year period ending June 30, 2001, the S&P 500 (large-cap) Index had a negative return of approximately 15 percent while the S&P 400 (mid-cap) and S&P 600 (small-cap) Indexes had positive returns of approximately 9 percent and 11 percent, respectively. A combined U.S. stock portfolio weighted more toward the mid- and small-cap segments during the year would be more likely to have earned higher returns than a U.S. stock portfolio weighted toward large-cap would have earned during the same period.

# Glossary

<b>Active Portfolio Strategy</b>	A money-management approach based on informed, independent investment judgment as opposed to passive management (indexing). It attempts to outperform a benchmark index. See also Passive Portfolio Strategy.
<b>Alternative Assets (Alternative Investments; Alternatives)</b>	Investment opportunities other than traditional publicly traded equity, fixed income, or cash equivalent securities. Alternative investments are usually structured as private offerings of debt or equity interests, are often made through entities organized as limited partnerships, and tend to be less liquid than traditional investments. Examples of alternative investments include hedge funds, event driven strategies, venture capital, mezzanine financing, private equity and buy-out investing, real estate, oil and gas, and other commodities.
<b>Annualized Return (Geometric Average Return)</b>	The annualized return (sometimes referred to as the geometric average returns) is the customary way to present multi-year investment returns because it considers the effect of compounding. It represents the equivalent single annual rate of return that, if compounded each year, would match a particular level of growth achieved over a longer period. For example, if an investment grows from \$100 to \$150 in two years, the annualized return for the two years would be 22.5 percent. The annualized return calculation normally results in a lower return figure than does a calculation of the simple mathematical average of the same series of returns. The difference between the annualized return and the mathematical average annual return increases as the variability of a series of returns increases. To illustrate the difference between the two calculation methods, assume that an initial investment of \$100 earned 100 percent in the first year and lost 50 percent in the second year. The two-year annualized return would be zero (the investment doubled to \$200 in the first year but lost half its value in the second year to return to its initial \$100 value). The mathematical average annual return would be 25 percent per year (the sum of a positive 100 and a negative 50 divided by 2) despite the fact that the investment had not grown in value over the two-year period.
<b>Annual Return (Total Return)</b>	The annual return on an investment is the combined profit (or loss) it produces in a year from interest, dividends, and price increases or decreases (capital gains or losses). It is usually expressed as a percentage rate. An investment's annual return would be negative if its decline in price (capital loss) for the year exceeded the interest or dividends it produced for the year. The annual return of an investment that paid no interest or dividends would be equal to the percentage change in its price for the year.
<b>Asset Allocation (Asset Mix)</b>	The distribution of investments among different types of assets, such as stocks, bonds, and real estate, or among subcategories of assets, such as different types of stocks or bonds, in order to achieve a particular investment objective. Asset allocation affects both the risk and return of an investment portfolio or fund. Studies have shown that asset allocation has a greater effect on investment performance than does the selection of investment managers or the selection of individual securities.
<b>Asset Class</b>	A grouping or type of individual investments, such as bonds, stocks, or real estate, having reasonably similar characteristics.

<b>Basis Point (bp)</b>	The smallest measure used in quoting investment performance or fees. One basis point is 1/100th of 1 percent. Thus, 100 basis points equals 1 percent. A bond's yield that increased from 8.00 percent to 8.50 percent would be said to have risen by 50 basis points. A management fee of 25 basis points represents 0.25 percent of the value of the assets managed per year. A portfolio whose annualized return over a five-year period was 11.75 percent would be said to have outperformed another portfolio with a 10.50 percent return by 125 basis points on an annualized basis.
<b>Benchmark</b>	Something that serves as a standard by which others may be measured. In the investment environment, the benchmark may be a common economic or financial index, such as the Consumer Price Index or the S&P 500 Index. See also Index and S&P 500.
<b>Bonds</b>	Contract to pay specified sum of money (the principal or face value) at a specified future date (maturity) plus interest paid at an agreed percentage of the principal. Maturity is usually longer than one year. The relationship between the bondholder and issuer of the bonds is that of creditor and debtor. Thus, unlike shareholders, the bondholder has no corporate ownership privileges. See also Fixed Income.
<b>Broker</b>	A person who acts as an intermediary between a buyer and seller, usually charging a commission.
<b>Capital Gain (Loss)</b>	The difference between an investment's purchase price and its selling or market price. Capital gains result from increases in the market price above the purchase price; capital losses result from market price declines below the purchase price. If an investment is sold for a gain or loss, the capital gain or capital loss is said to have been "realized"; if the investment is still owned, the capital gain or loss resulting from the market price changes is said to be "unrealized." For individuals or entities subject to U.S. income taxes, earning capital gains rather than ordinary interest or dividend income on investments can result in certain favorable tax consequences. However, because government investors, such as government pension or endowment funds, are generally exempt from income taxes, whether investment income results from capital gains or other sources has no tax impact. See also Total Return.
<b>Cash Equivalents</b>	Investments having such high liquidity and safety that they are virtually as good as cash. They typically have a short maturity. Examples include a money market fund, Treasury Bills, commercial paper, repurchase agreements (repos), and investments in a custodian bank's STIF (short-term investment fund) or similar fund. These types of investments help to minimize risk during volatile market periods and they provide current income in the form of interest and dividends.
<b>Common Stock</b>	Another name for equities. Represents a share of ownership in a public or privately held corporation. Common stockholders typically have voting and dividend rights. In the event of corporate bankruptcy or other liquidation of assets, common stockholders are paid after creditors, bondholders, and preferred stockholders.

<b>Corpus</b>	The principal of a fund as distinct from income or interest. For an endowment fund categorized as a “total return fund,” the corpus would be equivalent to the amount of the donor’s initial (and any subsequent) contribution that the donor specified should be maintained in perpetuity. If the donor’s instructions specify that some portion of the annual return should be added to the fund—for example, an amount equal to inflation—the fund’s corpus (also known as the “historic dollar value” under the law governing most Texas endowment funds) would increase over time.
<b>Correlation</b>	The degree to which the behavior of one variable (e.g., returns on U.S. stocks) is related to the behavior of another variable (e.g., returns on U.S. bonds or international stocks). Correlation is typically measured on a scale of –1.0 (perfect negative correlation, when one variable consistently moves inversely to the other variable) to +1.0 (perfect positive correlation, when one variable consistently moves in the same direction as the other variable). Very low or negative correlation among a portfolio’s investments results in greater diversification and stabilization of investment returns (reduction in risk) compared with a portfolio of investments that are highly positively correlated with one another.
<b>Credit Risk</b>	The likelihood that a party involved in an investment transaction will not fulfill its obligations.
<b>Custodian Bank</b>	A bank employed to hold securities, record transactions, and collect interest or dividends from investments. The custodian bank (or trust company) is sometimes referred to as the primary or master custodian because it obtains the services of subcontractors and agents to actually hold and trade the securities.
<b>Derivatives</b>	A contract or financial arrangement whose value is based on the performance of an underlying financial asset, index, or other investment. Derivatives are available based on the performance of assets, interest rates, currency exchange rates, and various domestic and foreign indexes.
<b>Diversification</b>	The spreading of risk by investing in multiple investments of a single type, such as numerous stocks in a portfolio of stocks, or investing in several different categories of investments, such as stocks, bonds, cash equivalents, real estate, and alternative assets. Commonly referred to as not “putting all your eggs in one basket.” See also Correlation.
<b>Dividends</b>	Distributions of earnings to shareholders; may be paid in the form of cash, stock, or other items of value.
<b>Duration</b>	A concept that measures bond price volatility by measuring the “length” of a bond. It is a weighted average length of time to maturity of the bond’s cash flows, the weights being the present value of each cash flow as a percentage of the bond’s full price. The greater the duration of a bond is, the greater its percentage price volatility. In general, duration rises with maturity, falls with the frequency of coupon payments, and falls as the yield rises.
<b>Efficient Frontier</b>	A portfolio that provides the greatest expected return for a given level of risk or the lowest risk for a given expected return.

<b>Endowment (Endowment Fund)</b>	Funds given to an entity, such as a college or university, with donor-imposed restrictions that the funds are not to be expended but are to be invested for the purpose of producing income to be used to serve the specific purpose for which the gift was intended. See also Spending Policy (Spending Rule, Spending Rate).
<b>Equity Investments</b>	Ownership interest possessed by shareholders in a corporation—stocks as opposed to bonds.
<b>External Manager</b>	A person or firm that makes investment portfolio decisions and executes transactions independently, subject to the overall restrictions agreed upon by contract between the fiduciary for the fund and the external manager.
<b>Fixed Income Investments</b>	A security that pays a specified return, in the form of interest or dividends, over a specified period of time, including government, corporate, and municipal bonds, preferred stocks, and certain mortgage investments. As a general rule, this asset class provides regular income and greater stability of market value than are available from equity investments. The term <i>fixed income</i> customarily excludes cash equivalent investments but may include securities with either a fixed or a variable rate of dividends or interest. See also Bonds.
<b>General Partner</b>	Member of a partnership who is jointly and severally liable for all debts incurred by the partnership; or a managing partner of a limited partnership who is in charge of its operations. A general partner has unlimited liability.
<b>Hedge/Hedging</b>	A strategy used to offset investment risk. A perfect hedge is one that eliminates the possibility of future gain or loss.
<b>Hedge Fund</b>	Any of a broad variety of private funds that are often structured as limited partnerships and are typically available only to wealthy or institutional investors. The partnerships are managed by the fund's general partners, who typically invest their own capital in the fund and who use specialized strategies not used in traditional investment portfolios. Examples of strategies associated with hedge funds include "distressed securities," "market neutral arbitrage," "market neutral securities hedging (or long-short)," and "special situations." The limited partners often pay incentive-based compensation to the general partners, including a portion of the profits in addition to a management fee.
<b>Index</b>	A statistical composite that measures changes in the economy or in financial markets, often expressed in percentage changes from a base period. For example, the Consumer Price Index (CPI), which is composed of the prices of key goods and services, moves up or down as the rate of inflation changes. Other indexes measure the ups and downs of the stock, bond, and other markets. Common indexes include the New York Stock Exchange Index, Standard & Poor's 500 Index (S&P 500), and the Lehman Brothers Aggregate Bond Index. See also Benchmark.
<b>Inflation Hedge (Inflation Hedging Investments)</b>	An investment that is designed to protect against the loss of purchasing power due to the effects of inflation. Precious metals, such as gold, and real estate are often considered inflation hedging investments.
<b>Institutional Investor</b>	An organization, such as a bank, insurance company, mutual fund, pension or endowment fund, that trades large volumes of securities.

<b>Investment Advisor</b>	A person or service retained by the investing entity to provide investment advice for a fee. The advisors may present economic information such as expected changes in interest rates, current and future national or global economic growth, and other factors that may affect the economy. Investment advisors also present industry information that may affect future decisions in selecting specific securities. The advisor may specialize in a particular kind of investment, such as emerging growth stocks or international stocks. An investment advisor can provide advice only or manage actual investment portfolios on a client's behalf.
<b>Large Capitalization Stocks (Large-Cap)</b>	Stock of companies with market capitalization of approximately \$5 billion or greater, although this range might change over time or vary according to the particular index used to represent the universe of mid-cap stocks (for example, the S&P 500 or Russell 1000 indexes). See also Market Capitalization.
<b>Leveraged Buyout Fund</b>	Equity investments in public or private companies that result in the purchase of a significant portion or majority control of the company.
<b>Liquidity</b>	The ease with which an asset can be converted to money. Also, the ability to buy or sell an asset quickly and in large volume without substantially affecting the price.
<b>Marketable Investment</b>	Investments that can be easily sold, if desired. An investment's marketability refers to the speed and ease with which it may be bought or sold. Investors might be contractually prohibited from selling some investments, for example, limited partnership interests in non-publicly traded partnerships, in which case those investments would be considered nonmarketable.
<b>Market Capitalization (Market Cap)</b>	The value of a corporation based on the market price of its outstanding common stock, calculated by multiplying the number of outstanding shares by the market price per share. Asset class segments, or sub-asset classes, of the stock market (e.g., large-, mid-, small-, and micro-cap U.S. stocks) are generally distinguished based on the range of market capitalizations of the stocks within each segment. The precise ranges depend on the particular index used (for example, the S&P 500 and the Russell 1000 large-cap indexes might establish somewhat different ranges); change somewhat over time as overall stock prices rise or fall; and contain some overlap so that a stock's market cap might simultaneously fall within the high end of the mid-cap and the low end of the large-cap segments.
<b>Market Risk</b>	The risk that the price of a security will rise or fall because of changes in market conditions.
<b>Maturity</b>	The date on which a debt's principal is to be repaid.
<b>Mezzanine Financing</b>	Investment in the subordinated debt of privately owned companies. The debt holder participates in equity appreciation through conversion features such as rights, warrants, or options.
<b>Mezzanine Level</b>	Stage of a company's development just prior to its going public, in venture capital language. Venture capitalists entering at that point have a lower risk of loss than at previous stages and can look forward to early capital appreciation because of the market value gained by an initial public offering.

<b>Mid Capitalization Stocks (MidCap)</b>	Stock of companies with market capitalization of approximately \$500 million to \$3–\$5 billion, although this range might change over time or vary according to the particular index used to represent the universe of mid-cap stocks (for example, the S&P MidCap 400 or Russell MidCap indexes). See also Market Capitalization.
<b>Modern Portfolio Theory (or Portfolio Theory)</b>	An investment-decision approach that permits an investor to classify, estimate, and control both the kind and the amount of expected risk and return. Portfolio theory quantifies the relationship between risk and return and assumes that investors must be compensated for assuming risk. It departs from traditional security analysis by determining the statistical relationships among securities comprising the overall portfolio rather than analyzing the characteristics of individual investments.
<b>Money Market Fund</b>	A mutual fund that invests in short-term cash equivalent securities such as Treasury bills, commercial paper, or repurchase agreements. Primary emphasis is placed on maintaining a constant market value (typically \$1.00 per share), safety of principal, and liquidity. The weighted average maturity of a money market fund’s investments typically cannot exceed 90 days.
<b>MSCI EAFE Index</b>	An index representative of the securities markets of developed market countries (as opposed to “emerging market” countries) in Europe, Australasia, and the Far East. Morgan Stanley Capital International (MSCI) calculates and publishes the performance of the index.
<b>Mutual Fund</b>	Portfolio of securities professionally managed by the sponsoring management company or investment company that issues shares to investors. The major advantages of mutual funds are diversification, professional management, and ownership of a variety of securities with a minimal capital investment. The fund’s manager might employ either an active or a passive (index fund) investment strategy.
<b>NCREIF Property Index</b>	An index representative of the performance of investment-grade, non-agricultural, income-producing real estate properties in the United States. It is published by the National Council of Real Estate Investment Fiduciaries.
<b>Passive Portfolio Strategy</b>	A money management strategy that seeks to match, rather than outperform, return and risk characteristics of a market segment or index by mirroring the market segment’s or index’s composition. The strategy would therefore result in investment performance no better or worse than the market’s performance. A fund using this strategy may also be called an “index fund.” See also Active Portfolio Strategy.
<b>Peer Group</b>	A group whose members have equal standing with one another. In comparing an investment fund’s performance with its peers, the peer group should include other funds with similar characteristics, such as fund size, purpose, and investment restrictions.
<b>Policy Index</b>	As used in this report, a fund’s policy index (individual funds might use different terms such as <i>total fund composite</i> or <i>total fund policy benchmark</i> , <i>policy portfolio</i> , etc.) represents the return that would be earned in any period if the fund had consistently adhered to its asset allocation target percentages for each investment type and if each investment type had consistently earned exactly the return of the benchmark used for that investment type in the construction of the policy index.

<b>Portfolio</b>	A combined holding of more than one stock, bond, real estate investment, etc. The purpose of a portfolio is to reduce risk by diversification. See Diversification.
<b>Private Placement</b>	A securities issuance that is exempt from the registration requirements of the Securities Act of 1933. It generally involves the sale of stocks, bonds, or other investments, including private limited partnerships, directly to an institutional investor. See also Institutional Investor.
<b>Publicly Traded</b>	Investments that are traded on the open market such as a nationally recognized stock exchange (e.g., New York Stock Exchange) or the over-the-counter market (e.g., NASDAQ).
<b>Public Pension Fund</b>	A retirement plan funded by a government agency, such as a state, county, or municipality (the plan sponsor), for the purpose of giving its workers income after retirement. The plan may receive contributions from the government agency as well as from the government employees covered by the plan. Private pension funds are sponsored by a non-government agency such as a corporation.
<b>Real Estate Investment Trust (REIT)</b>	A company, which might be publicly traded, that manages a portfolio of real estate to earn profits for investors. REITs can invest in a wide range of property types, such as shopping centers, office buildings, warehouses, and hotels. “Equity” – REITs own equity interests in real estate, and investors receive a share of rental income as well as any capital gains from property sales; “mortgage” – REITs lend money to real estate developers, and investors receive a share of the mortgage interest income; “hybrid” – REITs include a mix of equity and debt, or mortgage, investments.
<b>Return</b>	A profit on an investment, usually expressed as an annual percentage rate. See Annual Return, Total Return.
<b>Risk</b>	In exchange for a return on investment, the investor may expose assets to possible losses. Risk is the probability or possibility of such losses. Risk is also often defined in terms of market volatility, variability, or standard deviation of returns. See also Standard Deviation.
<b>Risk-Adjusted Return</b>	A measure of an investment’s (or fund’s) return in relation to the amount of risk incurred by that investment (or fund). The Sharpe Ratio is one measure of risk-adjusted return. The Information Ratio and Treynor Ratio are other such measures.
<b>S&amp;P 500 Index (Standard &amp; Poor’s 500 Index)</b>	An index that measures the performance of the common stock of 500 of the largest U. S. corporations. The S&P 500 represents the aggregate market value changes relative to a base period of 500 stocks primarily traded on the New York Stock Exchange. Although sometimes used to represent the performance of the U.S. stock market as a whole, the S&P 500 more precisely mirrors the performance of U.S. stocks with the largest market capitalizations (large-cap segment). See also Market Capitalization.

<b>Segment (or Sub-asset Class)</b>	As used in this report, asset class segments are distinguishable investment types within the same asset class. For example, segments of the bond asset class might include investment grade and high-yield bonds; the investment- grade bond segment might be subdivided further into corporate, government, and mortgage-backed bonds. Segments of the U.S. stock asset class might include large-, mid-, and small-capitalization stocks. Segments of an asset class might produce different return and risk from one another; for example, small-capitalization U.S. stocks might outperform large-capitalization U.S. stocks over time but exhibit greater volatility of returns over time (higher risk).
<b>Small Capitalization Stocks (SmallCap)</b>	Stock of companies with market capitalization of \$500 million or less, although this range might change over time or vary according to the particular index used to represent the universe of small-cap stocks (for example the S&P SmallCap 600 or Russell 2000 Indexes). Such stocks generally represent companies that are less well established, but that might be faster growing, than mid-caps (market capitalization of approximately \$500 million to \$3–\$5 billion) or large-caps (approximately \$1 billion or more). They are often more volatile than stocks of more well-established companies. See also Market Capitalization.
<b>Spending Policy (Spending Rule, Spending Rate)</b>	As used in this report, for an endowment fund, a spending policy or spending rule is the formalized method by which the fund’s governing board (or governing statutes) specifies how the amount of annual distributions from the fund (spending) will be calculated. The spending policy or rule might state that the fund will distribute a specified percentage of the fund’s moving average market value for the past three years or 60 calendar quarters. A different spending policy might specify that each successive year’s spending will exceed the prior year’s amount by the rate of inflation or some other growth factor. For the Texas Permanent School Fund, the Texas Constitution establishes the spending policy, under which all interest and dividends must be distributed each year and all capital gains must be retained in the fund (also referred to as a “spend all income” policy). The spending rate, unless otherwise defined, is the dollar amount of an endowment fund distributed in a year, expressed as a percentage of the fund’s market value at the beginning of the year. See also Total Return.
<b>Standard Deviation (Risk)</b>	A statistical measure of the degree to which individual values in a probability distribution tend to vary from the mean, or average, of the values in the distribution. The greater the variability of the values is, the greater the standard deviation. In the investment environment, the standard deviation of a series of investment returns (for an individual investment, a particular portfolio of similar investments, or an entire fund) is commonly used as one way to measure investment risk. It is used as an estimate of risk because it measures how wide the range of returns typically is. The wider the range of returns is, the higher the investment’s risk. The standard deviation calculation for a particular period might differ somewhat for the same investment or fund depending on the intervals, or individual time periods, of returns (e.g., daily, monthly, or quarterly) used in the calculation.

**Total Return (Annual Return)**

The annual return on an investment including interest or dividends plus realized and unrealized capital gains or losses (from periodic price changes). An endowment fund might be referred to as a “total return fund” if it can make distributions from a prudent portion of its cumulative undistributed total return, regardless of whether the return is generated by interest and dividend income or capital gains, and regardless of whether the capital gains were “realized” (because the investment was sold) or “unrealized” (because the investment was still held at the end of the period. In 1989, the Texas Legislature passed a law permitting most endowment funds to make distributions from their cumulative total return. A 1999 amendment to the Texas Constitution permitted the Permanent University Fund to operate on a total return basis. The Permanent School Fund is not considered a total return fund because the Constitution requires different treatment of capital gains and dividend and interest income. All capital gains must remain in the fund while all dividend and interest income must be distributed. See also Spending Policy.

**Venture Capital**

Venture capital is an important source of financing for start-up companies or others embarking on new or turnaround ventures that entail some investment risk but offer the potential for above-average future profits. Sources of venture capital include wealthy individual investors; subsidiaries of banks and other corporations organized as small business investment companies; and groups of investment banks and other financing sources that pool investments in venture capital funds or venture capital limited partnerships. Some venture capital sources invest only at a certain stage of entrepreneurship, such as the start-up or seed money stage, the first- or second-round phases that follow, or at the mezzanine level immediately preceding an initial public offering. In return for taking an investment risk, venture capitalists are usually rewarded with some combination of profits, preferred stock, royalties on sales, and capital appreciation of common shares.

**Volatility**

The extent to which a security or market tends to rise or fall sharply in price within a short-term period.

**Yield**

The annual return on an investment (from dividends or interest) expressed as a percentage of either cost or current price. Yield is one component of return.

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