Pension Investing: Fundamentals and Best Practices

Nicholas Greifer
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Foreword

Since the publication of GFOA’s Pension Fund Investing in 1987, the world of public pensions has seen a sea change in how pension systems invest their funds. Pension system trustees, administrators, and outside advisors have continued to grow in sophistication about how to invest retirement assets and what kind of investments to analyze and select. This has been manifested in the move toward more asset classes than ever before, and a heavier emphasis on international equities and asset classes that may have been considered exotic among earlier generations of pension administrators.

At the same time, the tools for measuring, comprehending, and managing the risks of these investments in “real time” has improved, as investment consultants, custodians, and money managers have put technology to work to better monitor investment risk. Moreover, risk management tools such as investment policies have become commonplace. Many small and large pension systems now have some formal statement of policy that spells out investment goals, duties, and internal controls.

Given the changes in the state of the art, the goal of this book is to capture the lessons learned in recent years, and provide a straightforward summary of what the next generation of pension leaders should know about pension portfolio management. In addition, the publication provides trustees and administrators a conceptual framework for understanding the analytical tools and organizational processes for managing an effective pension investment program.

I would like to thank several individuals who made this work possible, including author Nicholas Greifer, GFOA Manager, and Girard Miller, ICMA Retirement Corporation CEO and President. Mr. Miller edited this publication and wrote Pension Fund Investing, which provided many of the concepts, recommendations, and illustrations for the new publication. Other reviewers were: Gary Bruebaker, GFOA Past President and Chief Investment Officer of the Washington State Investment Board; Linda Herman, Senior Investment Officer, Montgomery County, Maryland, and member of GFOA’s Committee on Retirement and Benefits Administration (CORBA); and Irwin Bornstein, GFOA Executive Board Member and Director of Administrative Services and Treasurer, Mission Viejo, California. In addition, three members of CORBA helped select examples of best practices cited in this publication: Art Hewig, Finance Officer, New York State Teachers’ Retirement System; Bonita Brown, Assistant Director, Teachers’ Retirement System of Louisiana; and Keith Overly, Deputy City Manager, City of
Kalamazoo, Michigan. GFOA staff Rowan Miranda, Stephen Gauthier, and Greg Condell provided valuable comments on the manuscript as well. Lastly, we received literally dozens of internal investment documents from GFOA members, and for that we are grateful.

Jeffrey L. Esser, Executive Director
Government Finance Officers Association
Preface

The simple act of picking up a book: this is the first challenge that a writer faces when trying to communicate a message—the challenge of capturing a person’s interest so that he or she actually selects that particular book for reading. But when the publication in question is about investing, it can be difficult to differentiate one title from another; so much has been written on the same topic. *Pension Investing: Fundamentals and Best Practices* offers a unique perspective, however, and one that provides readers with something that they are unlikely to find elsewhere:

- A focus solely on the public-sector pension community;
- The collective wisdom of Government Finance Officers Association (GFOA) members who have decades of investment experience and who have evolved rigorous norms for competent, ethical conduct;
- An absence of industry or vendor bias (which too often manifests itself in investment publications); and
- It targets a readership that has some familiarity with pension investing, but does not have the time, inclination, or need for an extensive discourse on the subject.

*Pension Investing: Fundamentals and Best Practices* builds upon the work of individuals with many years of experience in the field. Above all, the book benefits from the work of the 1987 GFOA publication by Girard Miller, *Pension Fund Investing*. Readers of that publication will find useful material in this updated book as well. In particular, the discussion of fiduciary constraints in Chapter 1, the arguments for why asset allocation matters in Chapter 2, the identification of pension professionals needed to manage a pension system in Chapter 3, and money manager communication and oversight in Chapter 4 owe their place to the fine work in Miller’s 1987 publication. Also, the appendices of the current publication use the same material that appeared in the 1987 publication, including a Pension System Self-Examination, a Glossary of Investment Terms, and an Eight-Step Process for Money Manager Selection. These materials have all stood the test of time and will be of great value to the next generation of readers.

In addition, this book builds upon the vital work of the GFOA Committee on Retirement and Benefits Administration, whose past and current members have literally created a body of knowledge that did not exist before—the GFOA Recommended Practices (RPs) in the pension area. These RPs spell out how public-sector pension systems should structure and carry out their responsibilities, and many of
these responsibilities directly tie into this publication. Indeed, one of the aims of this book is to ensure that pension professionals and government finance officers are made aware of these important recommendations. Entities that are putting these ideals into practice, thereby raising the state of the art, are to be commended and GFOA is pleased to showcase a few such examples within these pages.

Nicholas Greifer
Government Finance Officers Association
Introduction: Mapping How Public Pension Systems Invest

After strong growth in pension investments during the 1980s and 1990s, the state of the public-sector pension community is perhaps at an apogee. However, achieving the ultimate investment goal of a pension system—delivering benefits to retirees and other beneficiaries—may be severely tested in the years ahead. Clearly, there is no guarantee that the general investment climate of the next twenty years will be as placid as the last twenty years, which were marked by low inflation, rapid productivity growth, the end of the Cold War, and of course the unprecedented performance of U.S. equity markets. Any change in the heretofore-sunny investment climate could test the ability of pension systems to adhere to their long-term investment strategy. In addition, the maturation of pension systems—defined by fewer inflows of employee and employer contributions, and greater outflows of payments to beneficiaries—will add new complexity to portfolio management. What’s more, many pension systems are overseeing changes in pension design (e.g., a shift to defined contribution arrangements) that could impact the size and flow of investment dollars.

Given the challenges that lie ahead, pension fiduciaries—trustees, in-house staff, and external advisors—must re-examine their investment practices and assumptions, learn about and implement best practices, and extract every percentage point of investment return from the market. This book is dedicated to assisting fiduciaries in gaining knowledge about state-of-the-art practices, based on:

- The best practices of public pension systems;
- The Government Finance Officers Association (GFOA) Recommended Practices; and
- The implementation of the widely accepted concepts of modern portfolio theory.

Fundamental Steps of an Investment Program

The subject of investments can be daunting to many pension plan trustees and administrators. As the world of investment opportunities—and pitfalls—becomes more complex, it is easy to suffer from information overload. In addition to the complexities, trustees and administrators serve as fiduciaries and therefore face an imposing legal obligation to invest on behalf of existing and future retirees.

This book follows a simple but effective four-part paradigm for pension investing...
that can be used to categorize—and make sense of—the overwhelming volume of data flowing into a pension system. Fundamentally, trustees and administrators carry out four functions in the investment process, as shown in Exhibit 1. While this publication presents these four functions in a neat, sequential order, in the real world each of these activities impacts the other. For example, after implementation (step four), the pension system may realize that alterations may be needed to the investment policy (step one) or asset allocation plan (step two). Nonetheless, this simple paradigm can be used to help understand the investment process and to structure a coherent investment program.

Because trustees are typically given key decision-making authority, this publication emphasizes their role in tasks such as the formulation of an investment policy and asset allocation. Most public-sector pensions assign to boards of trustees the fundamental duty of asset allocation, as Exhibit 2 demonstrates.

### Investment Responsibilities of Fiduciaries

Unlike other financial professionals who typically work in the interests of their employer, pension fiduciaries have a unique obligation to act on behalf of others—namely, the beneficiaries of the pension plan. Under the federal Employee Retirement Income Security Act (ERISA) of 1974, fiduciaries must act in the “exclusive interest” of these beneficiaries, with the interests of the pension plan sponsor (the governments that fund the plan) and the fiduciaries themselves being secondary.

The duty to act on behalf of others colors how fiduciaries carry out four fundamental activities in managing investments. The following steps summarize these four tasks and subsidiary tasks, which are examined in the rest of this book.
Step 1. Trustees adopt an investment policy. A typical investment policy states the:

- Investment program mission or objectives;
- General roles and responsibilities of individuals involved in managing investments;
- Measures to control risk at the portfolio level (e.g., asset allocation);
- Measures to control risk of individual investments (e.g., diversification requirements);
- Investment constraints (e.g., limits on tobacco investments);
- Performance measurement criteria (including performance expectations); and
- Criteria for selection of money managers and other professionals.

Step 2. Trustees and administrators formulate an asset allocation plan. An asset allocation plan often involves:

- Determining the financial profile of the pension system;
- Reviewing available asset classes;
- Developing capital market assumptions (e.g., estimates of investment return); and
- Selecting an “optimal” portfolio.

Step 3. Trustees and administrators assemble an investment team. The team can include:

- Administrative staff;
- Money managers;
- Investment consultants;
- Attorneys;
- Actuaries;
- Accountants/auditors; and
- Custodians.

Step 4. Trustees and administrators monitor the investment program’s implementation and performance. The tasks involved include:

- Monitoring actual versus target asset allocation (rebalancing);
- Portfolio management strategies;
- Monitoring, evaluation, and control; and
- Reporting.

This book provides hands-on, practical applications of these investment concepts. Examples and best practices from the public-sector pension community are used to bring alive these concepts, and the GFOA Recommended Practices relevant to each of the four steps are discussed throughout.

Endnote
1. Although state and local governments are largely exempt from ERISA, its provisions have influenced state legislation that governs state and local pension plans.
Investment Policies: The Bedrock of Prudent Investing

The development of an investment policy is crucial to maintaining the long-term focus needed to overcome the daily “noise” of the marketplace. Government pension systems are long-term investors who operate in the public spotlight where they can expect their actions to be carefully scrutinized. Short-term market fluctuations can generate frequent and anxious calls from stakeholders to “do something” when the wisest course of action may be no action at all.

Investment policies represent a crucial building block for governing not only the actions of trustees, staff, and third parties, but in explaining the investment rationale to the outside world. These policies serve a number of important functions and provide:

- A concrete statement of investment goal(s) (e.g., to exceed a long-term target rate of return);
- A method for determining and expressing the pension board’s investment philosophy and risk tolerance to both staff and third parties;
- A clear demonstration of “due diligence” (i.e., that the pension system follows a prudent set of procedures);
- A foundation for internal controls; and
- Guidance to staff and third parties, to ensure both proper execution of the investment strategy as well as compliance with the law.

In addition, many pension systems include an asset allocation statement within the investment policy (discussed in the following chapter). As a result, this kind of allocation is often referred to as a policy asset allocation to distinguish it from the actual asset allocation, which fluctuates according to the market.

The following section outlines fiduciary considerations that affect how an investment policy is developed, followed by a review of the elements that are commonly included in an investment policy. Lastly, the Government Finance Officers Association’s (GFOA) Recommended Practices and best practice examples are reviewed.
Fiduciary Constraints

Since trustees, staff, and third parties act as fiduciaries, they face a number of legal requirements. These influence how investment policies are drafted; indeed, many pension plans refer to or insert relevant sections of state law directly into the investment policy. Moreover, because these legal constraints translate into constraints on what kinds of investments can be made, they influence the critical decision of asset allocation (discussed in Chapter 2).

The primary source of legal and fiduciary obligations emanates from state law. Thus, pension systems in each state will have somewhat different fiduciary requirements. Even so, the following standards contained in the federal ERISA law provide a useful first step in investment policy formulation:

- Prudence—Fiduciaries are obligated to carry out duties “with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an [similar] enterprise.”
- Exclusive benefit—Fiduciaries must advance the interests of the participants and the beneficiaries only. (Note: Some public trustees also may be obligated to act in the interests of taxpayers.)
- Purpose—The primary purpose of the plan is to provide benefits to participants and defray reasonable administrative expenses.
- Diversification—Investments shall be diversified to preclude large losses from a single position.
- Due diligence—Trustees shall exercise due diligence and shall govern the fund through written and documented actions, policies, and instruments.

Pensions derive their investment authority from two types of state law. In some states, pensions invest according to a legal list, which outlines permissible investments such as government bonds, corporate bonds, equities, or mutual funds composed of such investments. In contrast, a prudent investment approach delegates the selection of specific investments to the individual pension system, subject to the legal standards of prudence as noted above. The prudent person rule and its variants—the prudent expert and prudent investor standards—have gained prominence in recent years.

Elements of an Investment Policy

What provisions do pension systems typically include in an investment policy? GFOA analyzed approximately forty investment policies obtained from public pension systems to determine the state of the art in formulating such policies. The analysis determined that most policies are comprehensive, addressing ten categories:

1. Statement of goal, purpose, or mission
2. Identification of decision maker(s)
3. Statement on performance measurement (benchmarking)
4. Statement on managing risks of individual investments
5. Statement on managing risk of overall portfolio
6. Money manager guidelines
7. Guidelines for other investment professionals
8. Legal standards
9. Cost management
10. Transacting or brokering trades

Pension systems developing or updating their policies can use the ten categories as a kind of checklist. As expected, the GFOA analysis found that every single pension policy identified some type of goal, mission statement, or purpose, although not necessarily an explicit investment goal (e.g., the goal of earning income to provide retirement benefits is not a measurable investment goal, whereas a goal of earning the actuarial rate of return is). Every policy also identified at least one decision maker, such as the pension board. Large majorities of the policies addressed the remaining eight categories as well, as indicated in Exhibit 3.

Within the broad categories, the policies analyzed contained specific elements, as shown in Exhibit 4. In general, multi-employer pension systems had more detailed policies than smaller, single-employer systems, and they contained more of these specific elements.

**Elements of an investment policy that affect asset allocation.** At the core of an investment policy are three elements that help shape the asset allocation decision (discussed in the next chapter). First, the board sets forth a target rate of return for the portfolio. The target could be an absolute target; for instance, a pension board might determine that its actuarial requirements necessitate a minimum long-term rate of return of 3 percent above inflation. Alternatively, the board could stipulate a relative return goal, e.g., one which measures the return of the portfolio against a customized index that mirrors the plan’s asset allocation strategy. Exhibit 4 indicates that a greater percentage of pension investment policies use index benchmarks than benchmarks based on actuarial targets.

The Houston Firefighters’ Relief and Retirement Fund, for example, uses both an absolute target of the actuarial return plus expenses (currently 8.75 percent plus 75 basis points) for assessing long-term performance over a ten-year planning period, and simultaneously employs a relative return benchmark, which synthesizes the performance of five asset classes. This customized index mimics the target asset allocation of the Houston fund, using such indexes as the Russell 3000. Relative returns may be particularly useful over shorter time periods, when the portfolio may
be providing meager returns in an absolute sense yet doing well relative to the benchmark. This could indicate that the plan is managing its portfolio competently in an unfavorable investment climate, and it may provide the pension fiduciaries the courage to adhere to its long-term strategy.

Some pension systems compare their relative performance against their peers. For example, a pension system may track the performance of its portfolio against other pension portfolios, perhaps using a database operated by an investment consultant with many pension clients. Although any pension official wants to know how well his or her plan performs against its peers, how useful is it to know that a pension system with a strategic asset allocation of 80 percent equities ranked highest in 1996 (a good year for domestic and international equities) or lowest in 2000 (a harsh year) among a universe of pension systems that on average invests only 60 percent in equities? As the former pension administrator of Eastman Kodak stated, “Framing our objectives as a function of what our peers are doing makes us a prisoner of their investment objectives and constraints, whether or not their objectives and constraints are appropriate for us... Moreover, they are often influenced by herd mentality.”

A second feature needed in the investment policy is the risk constraint statement. Trustees should seek to identify their system’s tolerance for risk. Again, this can be expressed in relative terms to the overall market, or it could be expressed in absolute terms if a finite limit to financial losses is necessary. Often times, risk tolerance is determined in the process of developing an asset allocation strategy (see page 20 for a discussion of risk), which many pension sys-

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**Exhibit 4**

**Investment Policy Elements**

<table>
<thead>
<tr>
<th>Category</th>
<th>Element</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Statement of goal, purpose, or mission</td>
<td>A1. Statement of investment philosophy</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>A2. Prioritization of investment goals (e.g., safety, principal, then yield)</td>
<td>44%</td>
</tr>
<tr>
<td>B. Identification of decision maker(s)</td>
<td>B1. Board duties</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>B2. Staff duties</td>
<td>66%</td>
</tr>
<tr>
<td></td>
<td>B3. Third-party duties</td>
<td>98%</td>
</tr>
<tr>
<td>C. Statement on managing risk of overall portfolio</td>
<td>C1. Asset allocation target (adds to 100%)</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>C2. Guidelines on alternative assets</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>C3. Asset allocation range</td>
<td>76%</td>
</tr>
<tr>
<td></td>
<td>C4. Rebalancing guidelines</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>C5. Limitation on market timing</td>
<td>7%</td>
</tr>
<tr>
<td>D. Statement on managing risks of individual investments</td>
<td>D1. Allowable investment vehicles_STRATEGIES listed</td>
<td>76%</td>
</tr>
<tr>
<td></td>
<td>D2. Prohibited investment vehicles_STRATEGIES listed</td>
<td>66%</td>
</tr>
<tr>
<td></td>
<td>D3. Limit on some or all derivatives stated</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>D4. Diversification within an asset class</td>
<td>88%</td>
</tr>
<tr>
<td>E. Statement of performance measurement (PM)</td>
<td>E1. Performance measures for overall portfolio</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>E2. ...Relative to inflation</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>E3. ...Relative to actuarial assumption</td>
<td>51%</td>
</tr>
<tr>
<td></td>
<td>E4. ...Relative to index</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>E5. ...Relative to pension universe</td>
<td>32%</td>
</tr>
<tr>
<td></td>
<td>E6. PM for each asset class</td>
<td>66%</td>
</tr>
<tr>
<td></td>
<td>E7. PM for each manager</td>
<td>85%</td>
</tr>
<tr>
<td></td>
<td>E8. ...in relation to a group of managers</td>
<td>59%</td>
</tr>
<tr>
<td></td>
<td>E9. ...in relation to index</td>
<td>78%</td>
</tr>
<tr>
<td></td>
<td>E10. Any PMs expressed as net of fees?</td>
<td>37%</td>
</tr>
<tr>
<td>F. Money manager guidelines</td>
<td>F1. Selection criteria</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>F2. Manager watchlist_termination guidelines</td>
<td>59%</td>
</tr>
<tr>
<td>G. Guidelines for other professionals</td>
<td>G1. Custodian</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>G2. Investment consultant</td>
<td>71%</td>
</tr>
<tr>
<td>H. Legal standards</td>
<td>H1. Exclusive benefit principle</td>
<td>56%</td>
</tr>
<tr>
<td></td>
<td>H2. “Collateral benefits”_Economically targeted investment</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>H3. Prudent person</td>
<td>63%</td>
</tr>
<tr>
<td></td>
<td>H4. Prudent expert</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>H5. Prudent investor</td>
<td>10%</td>
</tr>
<tr>
<td>I. Cost management</td>
<td>I1. Limits on transaction costs</td>
<td>56%</td>
</tr>
<tr>
<td></td>
<td>I2. Index funds statement</td>
<td>41%</td>
</tr>
<tr>
<td>J. Transacting or brokering trades</td>
<td>J1. Securities lending guidelines</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>J2. Directed brokerage guidelines</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>J3. Best execution standard</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>J4. Soft dollars guidelines</td>
<td>24%</td>
</tr>
</tbody>
</table>

tems then incorporate into the investment policy.

Finally, some investment policies include a **diversification statement** as a way to ensure that losses related to individual securities do not undermine the entire portfolio. This should also note the benefit of constructing a portfolio consisting of multiple asset classes that do not have a high correlation to each other.

**Best Practices in Investment Policies**

Based on the analysis in the preceding section, an outstanding pension investment policy should have three broad characteristics to be considered a best practice:

- **Breadth**—It should be comprehensive (e.g., covering all ten categories presented in Exhibit 3);
- **Depth**—It should have adequate detail, including many of the elements identified in Exhibit 3; and
- **Clarity**—It should communicate clearly the pension system's investment program so that staff or third parties could read the policy as a stand-alone document, understand it, and implement the investment directives contained in the policy.

Regarding the latter point, one investment consultant recommends a test for an investment policy: is it written clearly and explicitly so that a “competent stranger” could manage the portfolio and conform to the investor’s intentions? Investment policies must provide clarity, but at the same time offer sufficient detail or depth to give meaningful guidance to staff and third parties. This dual goal is often met by developing separate procedures to supplement the policy, particularly with regard to implementation issues. In addition, investment policies should implement GFOA Recommended Practices on the subject. Please refer to Exhibit 5 for specific elements that GFOA recommends be included in an investment policy.

GFOA identified investment policies that exemplified many of the features of a strong investment policy (e.g., breadth, depth, and clarity). Members of the GFOA Committee on Retirement and Benefits Administration subsequently identified specific elements of two investment policies as best practices.

The first example is from the Kansas Public Employees Retirement System (KPERS), and illustrates a clear statement of investment objectives addressing both risk and return (see Exhibit 6). KPERS presents general goals that describe the functional objectives of the investment program (e.g., achieve real return of assets that provides for the payment of benefits) and specific, quantifiable goals for both the total portfolio and for each money manager. The portfolio goals are outlined below, and they present both an absolute return target (beating the actuarially assumed rate of return) and a relative return target (beating a passive portfolio that mirrors the actual asset allocation of KPERS).

The second best practice is from the Missouri State Employees’ Retirement System (MO SERS), and it illustrates how an asset allocation is articulated in an investment policy (see Exhibit 7). It shows a broad policy mix and a strategy mix that reveals its methods for implementing the asset allocation.
<table>
<thead>
<tr>
<th>GFOA Recommended Practice</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public Employee Retirement System Investments</strong></td>
<td>• Plan assets should be invested for the “exclusive benefit” of plan participants</td>
</tr>
<tr>
<td></td>
<td>• Investments with “collateral benefits” (e.g., economically targeted investing) should meet certain standards of prudence</td>
</tr>
<tr>
<td></td>
<td>• Policies should govern the objectives of the investment program</td>
</tr>
<tr>
<td></td>
<td>• Policies should specify acceptable risks</td>
</tr>
<tr>
<td></td>
<td>• Policies should indicate diversification requirements</td>
</tr>
<tr>
<td></td>
<td>• An asset allocation strategy should be developed and regularly reviewed</td>
</tr>
<tr>
<td></td>
<td>• Passive or indexed investments should be formally and regularly evaluated</td>
</tr>
<tr>
<td></td>
<td>• Formal benchmarks specific to the assigned role of the portfolio or portfolio manager should be established</td>
</tr>
<tr>
<td><strong>Asset Allocation: Guidance for Defined Benefit Plans</strong></td>
<td>• Long-term strategic asset allocation plans should be developed</td>
</tr>
<tr>
<td></td>
<td>• Rebalancing should be performed at least annually</td>
</tr>
<tr>
<td></td>
<td>• Investment policies should preclude market timing</td>
</tr>
<tr>
<td><strong>Alternative Investment Policy for Public Employee Retirement Systems</strong></td>
<td>• Policies should address alternative investments</td>
</tr>
<tr>
<td><strong>Selection of Investment Advisers for Pension Fund Assets</strong></td>
<td>• Policies should be developed to guide the procurement of investment services</td>
</tr>
</tbody>
</table>
Exhibit 6
Best Practice: Pension Investment Policy — Statement of Investment Goals
(Kansas Public Employees Retirement System)

Investment Rate of Return and Risk Objectives

Through a detailed study of the liabilities and assets of the Kansas Public Employees Retirement System (KPERS), which reflects both the statutory requirements and the investment experience in the capital markets, the Board has developed and established these objectives:

1. Rates of return will be based on a time-weighted total return calculation; they will be based on compounded and annualized returns over rolling three- to five-year periods (five to ten or more years for non-publicly traded assets) and will recognize all cash income plus realized and unrealized capital gains and losses, and will be calculated both gross and net of fees and expenses.

2. The objective of the Total Fund is to earn the greater of the actuarial discount rate (which is currently 8.0 percent per annum) or an average annual total investment rate of return in excess of the rate of return of an investment in representative indices in the target allocation of the Fund as shown below, adjusted for risk and including fees and other expenses.

<table>
<thead>
<tr>
<th>Percent of Portfolio</th>
<th>Russell 1000 Index</th>
<th>Russell 2000 Index</th>
<th>MSCI EAFE Index</th>
<th>KPERS Fixed Income Benchmark</th>
<th>KPERS Real Estate Benchmark*</th>
<th>KPERS Alternative Investments Benchmark*</th>
<th>Merrill Lynch 0 to one-year Treasury Index</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Portfolio</td>
<td>25.0</td>
<td>15.0</td>
<td>15.0</td>
<td>32.0</td>
<td>7.0</td>
<td>5.0</td>
<td>1.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*As adjusted for composition or tenure of underlying portfolio

3. The volatility of returns, or risk, for the Total Fund, as measured by standard deviation of investment returns, should be, over time, commensurate with the level of returns achieved.
Asset Allocation—Policy and Strategy Objectives

Missouri State Employees’ Retirement System (MOSERS) investments are divided into the following general asset classifications: Domestic Equities, International Equities, and Diversification Pool. The latter consists of nominal bonds, real bonds, commodities and cash. It is common practice to construct portfolios using combinations of asset classifications in order to improve the risk/return profile of the fund. This concept is called diversification, and was discussed briefly in Section III. The asset allocation decision is generally regarded as the most important decision to be made in the investment management process. Studies have indicated that as much as 90 percent of an investment portfolio’s performance can be attributed to the asset allocation decision.

In order to determine the optimum mix of asset classes in a portfolio, four factors must be considered:

1. The expected rate of return for each asset classification;
2. The estimated risk of each asset classification (expressed as the standard deviation of the rate of return);
3. The correlation between the rates of return of the asset classifications; and
4. The investment objectives and risk constraints of the fund.

Once this analysis is completed, the asset mix that produces an optimal risk/return tradeoff can be determined. Based on its determination of the appropriate risk tolerance for the System, and its long-term return expectations, the Board has chosen the following Asset Allocation Policy Mix:

<table>
<thead>
<tr>
<th>Policy Mix</th>
<th>Percent of Total Fund</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Equity Investments</td>
<td>50%</td>
</tr>
<tr>
<td>International Equity Investments</td>
<td>25%</td>
</tr>
<tr>
<td>Diversification Pool Investments</td>
<td>25%</td>
</tr>
</tbody>
</table>

Unless the decision has been made to implement the Policy Mix in a completely passive fashion with the intent of replicating the returns of the policy benchmarks, it becomes important for the Board to make certain strategic decisions regarding the portfolio structure. The major types of strategic decisions typically include:

- The passive vs. active management mix
- The internal vs. external management mix
- Any strategic overweights/underweights based on size, style, or sector

(Continues on next page)
Exhibit 7 (Continued)
Best Practice: Pension Investment Policy — Statement of Asset Allocation
(Missouri State Employees' Retirement System)

Based on a variety of considerations, the Board has chosen the following Strategy Mix:

<table>
<thead>
<tr>
<th>Strategy Mix</th>
<th>Percent of Total Fund</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 percent of the Domestic Equity Portfolio managed passively/semi-passively in an S&amp;P 500 index-like portfolio.</td>
<td>25%</td>
</tr>
<tr>
<td>20 percent of the Domestic Equity Portfolio managed passively/semi-passively by a manager(s) with expertise in non-large-cap stock investing and value stock investing.</td>
<td>10%</td>
</tr>
<tr>
<td>30 percent of the Domestic Equity Portfolio managed actively by one or more managers holding a relatively small (in most cases, twenty to forty) number of stocks.</td>
<td>15%</td>
</tr>
<tr>
<td>60 percent of the International Equity Portfolio managed actively in developed countries by one or more managers.</td>
<td>15%</td>
</tr>
<tr>
<td>40 percent of the International Equity Portfolio managed passively/semi-passively in developed and emerging countries by one or more managers with tight risk control relative to a composite benchmark comprised of the MSCI EAFE and EMF benchmark.</td>
<td>10%</td>
</tr>
<tr>
<td>40 percent of the Diversification Pool managed passively by MOSERS’ internal staff in a portfolio consisting of long duration real bonds.</td>
<td>10%</td>
</tr>
<tr>
<td>24 percent of the Diversification Pool managed passively/semi-passively by one or more managers in a portfolio consisting of mortgage and asset-backed securities with tight risk controls relative to the Lehman Mortgage (67 percent) and the Lehman Asset Backed Indices (33 percent).</td>
<td>6%</td>
</tr>
<tr>
<td>16 percent of the Diversification Pool managed by MOSERS’ internal staff in a portfolio consisting of high quality, intermediate-duration corporate bonds.</td>
<td>4%</td>
</tr>
<tr>
<td>10 percent of the Diversification Pool managed actively by a Treasury-only manager given discretion along the yield curve and a maximum portfolio duration of 7.0.</td>
<td>2.5%</td>
</tr>
<tr>
<td>10 percent of the Diversification Pool managed passively/semi-passively by one or more managers investing in a commodity overlay program with the intent of providing a return comparable to the Goldman Sachs Commodity Index.</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

Endnotes
1. As noted on page 6, some pension systems set a prudent expert or prudent investor standard, which represents recent variations of the older prudent person standard.
2. A less common form of legal authority is an insurance company clause, which restricts the pension system’s investments to those used by state-regulated insurance companies.
2 Asset Allocation: The Driver of Portfolio Performance

"Numerous studies have concluded that the single most important component determining overall performance of an investment portfolio is how that portfolio is allocated among different types of investments."


The single most important investment decision that pension trustees1 can make is the asset allocation determination. This chapter demonstrates why asset allocation matters, relying on published studies. Secondly, it reviews the building blocks of any asset allocation: the individual asset classes and how they behave. The third section of this chapter compares the basic risk management tools of diversification versus asset allocation. Lastly, Chapter 2 discusses steps to construct an asset allocation strategy.

For this publication, asset allocation is defined as strategic asset allocation. This refers to a particular asset allocation that (a) is the product of in-depth quantitative and qualitative analysis (e.g., an asset allocation study); (b) focuses on asset classes and not subcategories (e.g., stocks versus bonds, not growth stocks versus value stocks); and (c) is long-term in nature, usually varying little from year to year.2

Why Asset Allocation Matters

A wealth of empirical research suggests that the biggest single portion of the variation in investment returns over time is explained by the portfolio's basic asset allocation. Ironically, some pension officials may devote less time and attention to this area; consequently, this chapter is intended to focus their attention to the critical subject of asset allocation.

The graph shown in Exhibit 8 summarizes the empirical research reported by Gary Brinson, et al. After studying the returns of investment portfolios over ten years, the Brinson study demonstrates that the allocation of assets in a portfolio consisting of the traditional asset classes (stocks, bonds, and cash) accounted for 94 percent of the total variation in returns. Market timing explained only 2 percent, and the remaining 4 percent was attributable to securities selection.

Numerous other studies have validated the overwhelming importance of asset allocation. In particular, the research shows, over time, both the variability of re-
returns and the return amount are largely explained by asset allocation policy. Because most public-sector pensions own hundreds of securities, the importance of asset allocation should not be surprising—inasmuch as one security contributes relatively little to overall investment performance. On the other hand, if a pension held a portfolio consisting of one stock, one bond, and one real estate investment, security selection would necessarily become a much more important determinant of investment performance, with asset allocation being a correspondingly smaller factor.

As mentioned, market timing explains only 2 percent of performance. The investment research casts doubt on the ability of portfolio managers to correctly select the period in which specific asset classes will outperform others. Market timers incur the risk of being out of the market on days when the market increases in value (or increasing investment positions when the market subsequently declines). Historically, even missing a few days of powerful market rallies has depressed long-term returns.

Savvy portfolio managers might be capable of producing incremental returns by separating the winners from the losers in the market. Three caveats should be noted: first, active managers impose substantially higher costs on the pension system; second, the aforementioned research indicates that the active manager impact in terms of security selection would be small; third, to realize benefits from a stand-out active manager requires that a pension system establish an effective screening mechanism that results in outstanding hires. The process of money manager selection is discussed in detail on page 38.

Understanding How Asset Classes Behave

This section identifies asset classes commonly used by public pensions, and it reviews how asset classes “behave” or perform in terms of return and risk. Investment professionals frequently measure risk using the standard deviation statistic.

Asset classes defined. Today’s investors have a nearly infinite number of investment vehicles from which to choose. However, the basic building blocks of a pension portfolio—asset classes—remain publicly traded stocks and bonds. These and other asset classes are discussed below.

Two criteria are important in distinguishing asset classes: function and performance.
Functionally, equities are distinct from bonds in that the legal claim of the holder of an equity security is different from the claim that a holder of a fixed-income security has. This would come into play, for example, during a bankruptcy proceeding in which a bondholder would have priority claim to the assets of a defunct corporation in comparison to the stockholder. The stockholder would be a “residual” claimant.

The interests of a stockholder tend to align more closely with the managers of a corporation. Increases in the value of a corporation’s stock would benefit both the investor and the corporate owners, all things being equal. In recent years, this alignment has, if anything, grown stronger, as private-sector managers derive more income from their employer’s stock options, which rise in value as the stock price increases. In contrast, bondholders’ interest may collide with the interests of the corporation or government that issues the bonds. For example, when prevailing interest rates fall, the bond issuer may be tempted to call the bonds, which is detrimental to the bondholder. (After the bonds have been called, the bondholder would have to reinvest the bond proceeds in a lower-yielding security.)

Secondly, the historical performance of an asset class like stocks should be distinctly different from another asset class. That is, long-run return and risk (e.g., measured by standard deviation of returns) should differ. Exhibit 9 illustrates the tradeoff between risk and return. In addition, the correlation of each asset class may differ. Correlation is a statistic that measures how closely linked the investment return of two asset classes or two securities are (discussed on page 25).

Exhibit 10 illustrates the long-term, historical record of various asset classes. As one might expect, stocks have outperformed bonds and cash equivalents and have outpaced inflation. Notwithstanding the market crash of 1929-32 and the 1973-74 downturn, stocks have significantly outperformed all other asset classes. The exhibit also confirms the notion that higher returns can only be obtained by incurring greater risk, evidenced by the general upward trajectory of stocks being interrupted by sharp downward movements. That is, stocks have shown greater volatility—a more jagged line—than other asset classes, which have smoother, upward movements.

Inventory of asset classes. Pension systems commonly invest in the following asset classes. They are presented in approximate order of risk, beginning with relatively low-risk cash-equivalent securities.

Cash equivalents. Cash equivalents include vehicles such as Treasury bills, re-

Exhibit 9
Long-Term Risk-Return Tradeoff

<table>
<thead>
<tr>
<th>Risk</th>
<th>Cash Equivalents</th>
<th>Bonds</th>
<th>Real Estate</th>
<th>Domestic Stocks</th>
<th>International Stocks</th>
<th>Alternative Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>#</td>
<td>#</td>
</tr>
</tbody>
</table>
purchase agreements, certificates of deposit, commercial paper, as well as commingled funds comprised of the former (e.g., local government investment pools and money market mutual funds). Portfolio managers use cash-equivalent securities as a low-risk investment to balance other, riskier asset classes. (This can also be accomplished by using short-duration bonds such as Treasury notes.) In addition, cash-equivalent investments provide an incremental return on cash flows into and out of the plan. Because cash-equivalent securities are almost by definition highly liquid (easily converted into dollars), they may be used as a temporary investment prior to purchasing long-term securities. In addition, they can serve as a short-term investment before making anticipated payments to beneficiaries.

Many pension systems seek to limit the excess cash on hand since in the long term, cash equivalents do not return as much as other asset classes, and pension plans can often rely on regular cash inflows from employee and employer contributions for liquidity needs. This situation may change as pension systems mature. For example, prior to 1997 the Washington State Investment Board generally had greater cash inflows from contributions than outflows for benefit payments, but beginning that year the outflows to beneficiaries for the first time began to exceed inflows from contributions.

**Domestic bonds and other fixed-income securities.** Bonds provide pension plans a number of advantages: a fixed rate of return, a nearly certain return of principal (if
the highest quality securities are selected), and a hedge against the long-term liabilities of the plan. Moreover, they act as portfolio diversifier, since they generally have a low correlation with the return of stocks (see correlation matrix, Exhibit 19).

Treasury notes and bonds and other U.S. Government bonds enjoying the backing of the U.S. Government have little risk to principal (credit risk). However, the credit risk of corporate bonds can vary tremendously at any point in time depending on the strength of the issuer, and generally can worsen in a weak economy. Rating agencies evaluate the credit risk of bond issuers, assigning a grade to indicate the quality or safety of the bonds. Those in the highest tiers are considered investment grade, and many pension systems as a matter of policy limit themselves to this category. In addition, all bonds incur market or interest rate risk, because the market value of an existing bond declines if interest rates rise. Arguably the biggest risk to bonds is the loss of purchasing power if inflation were to return to the double-digit levels of the 1970s.

**Inflation-indexed bonds.** Inflation-linked bonds, such as Treasury inflation protection securities (TIPS), move in concert with inflation. Whereas an ordinary bond is vulnerable to any unanticipated inflation destroying its economic value, TIPS would keep pace by linking to the Consumer Price Index. Because of this distinct difference, and because they have low correlations with other stock and bond benchmarks, some pension systems treat them as a separate asset class. Aside from the portfolio diversification benefit, inflation-indexed assets act as a hedge against the pension systems' liabilities, since many pension systems give cost-of-living adjustments to beneficiaries. Because they are low-risk, they necessarily offer low returns.

**International bonds.** International bonds and stocks were once thought of as alternative investments, but are now generally considered to be a separate investment category. According to the 2000 Public Pension Coordinating Council survey, only about 2 percent of public pension assets are invested in international fixed-income investments. Although they present similar risks as domestic bonds, international bond investors incur exchange rate risks as well (e.g., the risk that a British bond would fall in value due to a decline in the English pound relative to the U.S. dollar).

**Real estate.** Many governments classify real estate as a distinct asset class (although sometimes it is categorized as either a kind of alternative asset or as a sector of the stock market). For example, many governments report real estate investments separately from other investments in their comprehensive annual financial reports. Functionally, real estate can be viewed as a hybrid of stocks and bonds: like stocks, real estate represents an ownership position; like bonds, the economic value can be predominantly in the form of a stream of payments (e.g., obtaining lease payments from owning a shopping mall). Consequently, many pension systems project that the long-term risk and return of this asset class lies between stocks and bonds, although estimates may rely on limited historical data.

**Domestic stocks.** Nearly all states now permit public pension systems to purchase common stocks and other business equity instruments. Because many pension systems explicitly seek real returns in excess of inflation, stocks serve an important role in portfolios as an inflation-beating generator of returns. With the increase in returns is a corresponding increase in volatility, however. Both the historical record and the assumptions embedded in pension systems' asset allocation strategies indicate that international and domestic stocks are more volatile than their
fixed-income counterparts.

**International stocks.** For the purposes of asset allocation modeling and financial reporting, most pension systems categorize international stocks as a separate asset class. Although functionally similar to domestic stocks, they differ in terms of historical performance. Moreover, they may act as an important diversifier to the overall portfolio, since the returns of international markets do not move in tandem with U.S. markets.7

**Alternative assets.** In addition to the foregoing asset classes, many pension systems allocate a small portion of their investments to alternative investments. As a category, alternative investments encompass a variety of instruments that are characterized as being either non-traditional assets (e.g., emerging markets, oil and gas, timber) or non-traditional methods (e.g., derivatives and privately placed debt or equity, such as venture capital). While they may play a role in a pension portfolio (even a risk reduction role if they offset the volatility of traditional asset classes), they present unique risks and oversight challenges and thus the Government Finance Officers Association (GFOA) recommends “extreme prudence and care” in their use. (See www.gfoa.org for GFOA Recommended Practice, “Alternative Investments Policy for Public Employee Retirement Systems (PERS)” (2000).)

**Risk of various asset classes.** Intuitively, many investors view risk as the chance of loss. Thus, as long as an investment produces a positive return and principal is not lost, it might be considered a low-risk option. Investment professionals, however, measure risk in a different way—through the measurement of volatility. Volatility is simply the fluctuation of the investment return—either for an individual security, an asset class, or the pension system’s entire portfolio. That is, it calculates the fluctuation above and below a given investment’s long-term average. It takes into account the size and frequency of the fluctuations, so that an investment with modest returns but one outstanding year would be volatile in comparison to another investment with the same yearly returns except for the stand-out year. Exhibit 11 illustrates how two investments with the same long-term returns can have different degrees of volatility.

As Exhibit 12 shows, the annual returns on bonds have been much less volatile than the returns on stocks, although the average returns on stocks have been higher. For example, during the twenty-six years ending on December 31, 2001, bond returns were negative in only two
years whereas stocks lost money in six years. However, stocks produced returns exceeding 20 percent far more often than did bonds.

Investment professionals capture volatility using a statistic called standard deviation. (Other measures of portfolio risk are presented in Exhibit 13.) A standard deviation defines a probable range within which investment returns fluctuate. About two-thirds of the time, a random number will fluctuate from its average by no more than one standard deviation. If the range is doubled to two standard deviations, the odds improve to 95 percent.

Exhibit 14 illustrates a hypothetical asset class with an average return of +5 percent and a standard deviation of ±10 percent. Approximately two-thirds of the time, the annual returns would fall in the range between −5 percent and +15 percent. With two standard deviations equaling ±20 percent (2 × 10) for the same asset class, there would be a 95 percent chance that its returns would exceed −15 percent but be less than +25 percent.
Exhibit 12 illustrates that common stock returns fluctuate more than bonds, and that the chances for dollars being lost are greater for common stocks than for bonds. This is reflected in the differing standard deviations: 7.8 percent for bonds and 14.9 percent for stocks during the 1976-2001 period.

Risk diminishes with time. Time is the ally of any investor. As Exhibit 15 indicates, the volatility of investments declines as the time horizon extends. Although it may be difficult to tolerate short-term fluctuations, if pension trustees understand before the fact that short-term volatility is normal, they will be better equipped to endure the “noise” of the market and focus on long-term results.

Exhibit 15 illustrates the historical record of investment risk (as measured by volatility or standard deviation of returns). Average returns are widely scattered over the short run, but as the time frame extends, the average returns become tightly clustered around a long-term average. Whereas one-year losses were frequent (occurring twenty-one times), ten-year losses were rare occurrences. Only in two years (the ten-year periods ending in 1938 and 1939) were negative returns posted over a ten-year window.

All the same, it should be noted that time diminishes but does not eliminate risk of an asset class. While the average annualized return of stocks was 13.1 percent from 1971 to 2000, it is impossible to know with precision what the long-term average will be going forward. This points to the unavoidable risk of markets falling to achieve long-term expected re-

Exhibit 13
Alternative Measures of Portfolio Risk

Standard deviation of returns (volatility)—Gives equal weight to returns above or below the average, long-term return.

Semi-variance—Similar to standard deviation, but measures the downside risk of an investment falling below the long-term average return. This is a more intuitive measure of risk, since most people are concerned about declines in value whereas standard deviation treats oscillations above and below a long-term average the same. Nonetheless, standard deviation and semi-variance are similar in practice.*

Beta—Return statistic in relation to a benchmark. For example, the investment returns of a manager of domestic equities might be compared against the Wilshire 5000 index of domestic equities. Positive returns that are greater than the positive returns of the benchmark (or negative returns greater than the negative returns of the benchmark) are considered riskier, reflected by a higher beta.

Sharpe ratio—Return in relation to a risk-free investment such as Treasury bills. This is a measure of “risk-adjusted” return that rewards money managers who achieve high returns with less volatility. Specifically, it shows a money manager’s investment return per unit of risk taken.


Exhibit 14
The Concept of Standard Deviation
Exhibit 15
Comparison of Historical Stock Index Returns

One-year returns ending 12/31/00

<table>
<thead>
<tr>
<th>Source: Stratford Investment Advisory Group, Inc.</th>
</tr>
</thead>
</table>

Five-year returns ending 12/31/00

Ten-year returns ending 12/31/00

Source: Stratford Investment Advisory Group, Inc.
turns, attributable to unanticipated political, economic, or market surprises. (See Appendix A, which categorizes the various types of risk facing pension investors. The appendix identifies various external risks not subject to the direct control of the pension system, such as markets failing to match long-term expectations for returns.)

Basic Techniques for Managing the Risk of Portfolios

Under modern portfolio theory, two important concepts provide the conceptual underpinnings for managing the risk of pension portfolios:

- Systematic risk is the variation in the return of a portfolio of a particular asset class (e.g., a portfolio of stocks) that is attributable to the overall market (also called market risk); and
- Unsystematic risk is the variation in the return of a portfolio of a particular asset class that is attributable to an individual company or security’s successes or failures (also called unique risk).

According to modern portfolio theory, the unique risk of holding an individual security—unsystematic risk—can be eliminated by purchasing a diversified basket of securities within a given asset class. This type of risk can be “diversified away.” Diversification within an asset class, however, cannot eliminate systematic risk. In Exhibit 16, systematic risk is the remaining volatility of returns that cannot be eliminated after increasing the number of securities beyond a certain level (fifteen securities in the exhibit).

Possible sources of systematic risk that affect an entire asset class might include factors such as:

- An increase in capital gains taxes, which could depress all stock share prices;
- Growing public interest in equity investing fueled by media coverage, which could boost stock prices;
- Changes in macroeconomic conditions; or
- Public sentiments that risk has increased in the financial system.

These kinds of systematic risks
affect all investors, regardless of the particular stock that has been purchased; they cannot be “diversified away.” If the stock market crashes, the pension plan cannot be better protected by owning, say, two hundred stocks in the portfolio instead of twenty stocks.

To reduce the systematic risk associated with a particular asset class, a pension system uses asset allocation (see Exhibit 17). Although asset allocation cannot eliminate the systematic risk of an asset class, it can help manage this kind of risk by selecting asset classes that alternately perform better than other asset classes during certain periods of time (e.g., real estate or stocks might perform better at different stages in the business cycle than bonds, or in different economic environments marked by high or low inflation).

Ideally, a pension system would select an asset allocation that produces positive long-term returns. At the same time, this ideal asset allocation strategy would contain two or more asset classes that move in opposite directions over time, thereby canceling each other’s volatility. Exhibit 18 depicts a simplified representation of this investment strategy using a portfolio containing only two asset classes. (In reality, most public pension systems invest in three or more asset classes.) It demonstrates, first, that the two investment classes, considered in isolation, are volatile. Second, it shows that while each investment class would be volatile, one investment increases by the same amount as the other investment decreases. As a result, the two asset classes offset each other, so that taken together, the overall portfolio would increase in value at a steady rate.

Correlation is the statistic that measures the extent to which the returns of two asset classes move together. Perfectly correlated asset classes change in value by identical proportions and would have correlation coefficients of +1.0. Two asset classes moving perfectly in tandem would not provide any benefit in terms of reducing overall portfolio volatility.

On the other hand, if an asset class goes up in value and another

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**Exhibit 18**
Portfolio of Two Assets Classes That Are Negatively Correlated

**Exhibit 19**
Correlation Matrix for Four Asset Classes

<table>
<thead>
<tr>
<th></th>
<th>Domestic Stocks</th>
<th>Foreign Stocks</th>
<th>Domestic Bonds</th>
<th>Cash Equivalents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Stocks</td>
<td>1.00</td>
<td>.70</td>
<td>.30</td>
<td>−.10</td>
</tr>
<tr>
<td>Foreign Stocks</td>
<td>.70</td>
<td>1.00</td>
<td>.15</td>
<td>−.15</td>
</tr>
<tr>
<td>Domestic Bonds</td>
<td>.30</td>
<td>.15</td>
<td>1.00</td>
<td>.20</td>
</tr>
<tr>
<td>Cash Equivalents</td>
<td>−.10</td>
<td>−.15</td>
<td>.20</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Source: Washington State Investment Board
declines in value by the same percentage, as in Exhibit 18, they would be inversely correlated and have a correlation coefficient of -1.0. Exhibit 18 illustrates that a hypothetical two-asset class portfolio that is negatively correlated has the virtue of eliminating volatility; unfortunately, this negative correlation is practically impossible to obtain. Exhibit 19 illustrates that the correlations between different categories of assets are considered to be positive, in most instances. (The table reflects projected correlations between four different asset classes. Only cash-equivalent investments have a negative correlation with other asset classes.)

Even though two asset classes rarely have negative correlations over time, pension plans gain an important risk-reduction benefit by combining two or more asset classes together. For example, Exhibit 20 shows the diversification benefit of domestic stocks and international stocks. Considered in isolation, each is a high-risk, high-return investment. However, by combining the two risky asset classes, the “magic” of modern portfolio theory is achieved: overall portfolio risk is reduced and return is increased. Specifically, by committing a small percentage of the portfolio to a second asset class of international equities—i.e., by going from point A to point B in Exhibit 20—risk is projected to go down and return to increase. (Some commentators have referred to this phenomenon as the only “free lunch” available to investors.)

Exhibit 20 illustrates the “efficient frontier,” the Holy Grail of institutional investors. The efficient frontier represents a pension system’s best asset allocation alternatives. Efficient portfolios would lie between points B, C, and D whereas inefficient portfolios would lie between points A and B. For example, portfolio B is superior to A because it offers both lower risk and higher returns than portfolio A. The following section discusses how pension systems go about selecting efficient portfolios.

Construction of an Asset Allocation

This section demonstrates methods used by public pensions to construct a strategic, long-term asset allocation. Regardless of what techniques are used, the end result is an explicit statement contained in either an investment policy or other official document. The statement will identify a target level for each asset class that should add to 100 percent of the portfolio, with a minimum and maximum range identified as well. One such example is the Tacoma Employees’ Retirement System asset mix, illustrated in Exhibit 21.

Preliminary step: Develop the pension plan’s financial profile. Before agreeing upon an asset allocation plan, trustees and administrators must first under-
stand the financial structure of their retirement system. Developing a financial profile—or revising an outdated one—might be triggered by any number of external events, such as a new plan for a class of employees, conversion to a defined contribution plan, or major state legislation.

In order to develop a financial profile, administrative staff (with trustee oversight) would develop a document that describes the pension plan’s funding structure. These include the following elements:

- Obligations for retirees and beneficiaries on the pension rolls;
- Obligations for employees who will retire in the future; and
- Expected future contributions (employer and employee).

Pension trustees may find it worthwhile to meet with administrators, actuaries, and investment consultants to fashion a financial profile. The goal would be to answer the following questions:

- What stage of growth best describes the system: start-up, early growth, sustained growth, maturity, decline?
- What are estimates of growth in the workforce, benefit increases, inflation, and other economic factors?
- What is the projected level of cash payments to beneficiaries for the next twenty years? This information will help trustees better understand the “liabilities stream.”
- What assumption regarding “real investment return” is used by the actuary to make funding estimates? (Real return equals total return rate minus wage inflation rate.)
- Is the plan under-funded? (Are assets less than accrued liabilities?)
- What has been the history of employer and employee payments into the fund? Is there any reason to expect that these will change?
- What is the long-term demographic forecast for your jurisdiction? Population and business growth, stagnation, out-migration, and aging housing stock or industrial facilities can affect your tax base and the employer’s ability to keep pace with future inflation. Likewise, high growth areas are likely to see an expanding workforce and future pressures for more employee benefits.

By answering these questions first, the pension fiduciaries will be equipped to better understand investment return requirements and constraints.

**How to select a strategic asset allocation.** Assuming that 94 percent of the variation in portfolio returns is attributable to the strategic asset allocation, it follows
that the development of such a strategy should be the most important order of business for pension trustees as they oversee the investment program.

There are at least three fundamental approaches to designing a strategic asset allocation plan. First, a naïve approach might attempt to replicate either the (a) entire universe of asset classes available to investors worldwide or (b) public pension universe. In the latter method, a given pension system simply attempts to duplicate the asset allocation generally used by other public pensions. As shown in Exhibits 22 and 23, most public pensions have shifted asset allocations from cash equivalents and domestic bonds to equities during the 1990s. However, these methods fail to take into account the unique circumstances of individual pension systems—in particular, the “liability stream” of a particular pension.

Second, some pension systems rely on asset-liability studies to struc-

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**Exhibit 22**
**Average Asset Allocation for Public Pension Systems—Overview**

![Chart of asset allocation percentages]

Source: Government Finance Officers Association Research Center, PENDAT Database (Chicago: Public Pension Coordinating Council, 2000).

**Exhibit 23**
**Average Asset Allocation for Public Pension Systems—Detailed View**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Asset Allocation by Fiscal Year</th>
<th>Eight-year change</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. equities</td>
<td>37.8</td>
<td>39.3</td>
</tr>
<tr>
<td>International equities</td>
<td>2.0</td>
<td>3.7</td>
</tr>
<tr>
<td>International bonds</td>
<td>0.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Real estate equities</td>
<td>2.9</td>
<td>3.3</td>
</tr>
<tr>
<td>Other</td>
<td>3.6</td>
<td>3.0</td>
</tr>
<tr>
<td>Real estate mortgages</td>
<td>2.7</td>
<td>3.0</td>
</tr>
<tr>
<td>Cash</td>
<td>5.8</td>
<td>4.6</td>
</tr>
<tr>
<td>U.S. bonds</td>
<td>44.4</td>
<td>41.4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note: Asset allocation percentages are weighted averages, comparing the value of assets in a given asset class to the total pension system assets. Statistics are based on all survey respondents in each survey year.

Source: Government Finance Officers Association Research Center, PENDAT Database (Chicago: Public Pension Coordinating Council, 2000).

“The term structure of assets and liabilities should be carefully reviewed and matched to the extent possible.”

This method has gained favor in recent years. Because of the complexities involved with this approach, asset-liability modeling is presented in Appendix B.

Third, many public pensions use the “classic” method of portfolio optimization (specifically, mean-variance optimization). In interviewing public pension plan administrators for this publication, the author attempted to determine the methodology public pensions use to select an asset allocation; their responses can be summarized in the five-step process shown in Exhibit 24.9

Several caveats should be made about portfolio optimization. Even before conducting the optimization, most pension systems impose a priori constraints on the percentages of certain asset classes that they will contemplate using, so in fact the plans are performing constrained optimizations. For example, many pensions constrain private equity and real estate investments to avoid exceeding a predetermined comfort level; otherwise, an unconstrained optimization could produce a portfolio dominated by these illiquid investments.

As with many financial decisions, the key decision rests with the underlying assumptions to be used (step 2 in Exhibit 24). Any unreasonable assumptions (e.g., that the recent past will continue unchanged or that the U.S. stock market will achieve consistent, double-digit returns) will distort the results and produce unusual portfolio recommendations. Moreover, the results of the optimization calculation (step 3 in Exhibit 24) can be very sensitive to small changes in inputs. Thus, it is important to test the asset allocation by performing the calculations several times, until fiduciaries are assured that the results are reliable or robust. (The process of running several iterations of the calculations is termed sensitivity analysis.)

Based on the GFOA staff’s interviews with pension officials, selection of an efficient portfolio (step 5 in Exhibit 24) requires as much subjective judgment as objective analysis. At one pension system, the staff narrows the number of portfolios for consideration by the board of trustees so that the board can consider a reasonable number. During one or more board meetings, the board of trustees will examine where it wants to be on “the efficient frontier.” This collective judgment is decided upon using several factors:

- Staff and investment consultant input
Identification of “maverick risk” or political risk
Change relative to current asset allocation
Ability to execute.

For example, it is possible that a portfolio software program could produce a portfolio with a 10 percent assignment to private equity (a type of alternative investment). Even if such a portfolio could dampen down the risk of the overall portfolio, the board could very well reject the software program’s recommendation. This is likely to occur if the current allocation toward private equities is negligible, if the organization’s ability to execute and monitor investments in this category is unproven, or if its peer pension systems do not invest in this asset class. (The latter point refers to maverick risk, or the risk of being the only pension system to use a particular strategy.12)

In states that restrict the portfolio allocation by statutory formula, trustees have only a limited ability to establish an optimal asset allocation plan. Under such circumstances, consideration should be given to the investment options that are available as a way to produce a suboptimal, but reasonably efficient portfolio. In some cases, however, remedial legislative action might be the only way to solve the problem.

Adjustments to the asset allocation. After the long-term asset allocation strategy has been set, the board of trustees should periodically review, and if necessary, adjust the portfolio mix. The board may deem it necessary to adjust the long-term allocation strategy if (a) the plan is re-designed, (b) plan sponsor circumstances (e.g., investment authority under state law) change, or (c) its fundamental assumptions about the long-term capital markets change.13

One straightforward way to carry out a high-level portfolio analysis is to use pie charts as illustrated in Exhibit 25. This would reveal any intended or unintended changes in the portfolio over time—for example, if a favorable market for a certain class of securities (e.g., growth stocks) significantly expands the value of the portfolio’s holdings in that category. On the other hand, a market segment that is out of favor (e.g., value stocks) might cause a contraction in
the value of these assets, in spite of incoming contributions.

In addition, pension fiduciaries may also perform an internal review of the plan’s objectives, investments, and liabilities to understand how they have held up over time, in relation to expectations. The following checklist can identify important issues:

☑ What has happened to the employee and retiree population over the past five years, and what is expected to occur over the next 10 or 20 years?
☑ Is the plan growing? Has the work force stabilized or is the sponsoring jurisdiction experiencing contraction of its labor force? (Local demographic and economic forces such as immigration or outmigration may be important.)
☑ What are the projections for the plan’s net cash flow? Are contributions (inflows) greater than benefit payments (outflows)?
☑ Have actuarial assumptions been updated to recognize current expectations regarding inflation and interest rates? What are the actuary’s projections for future employee salary growth and cash pension payments?
☑ Are pension benefits likely to be expanded at any time in the future? Are costs under control?
☑ Has the employer consistently made timely contributions?
☑ Is a systematic program in place for dealing with unfunded liabilities? If not, why?

Pension trustees can direct the foregoing questions to staff or third parties, such as the pension system’s actuaries. Indeed, every three to five years many pension systems routinely schedule an actuarial experience study to obtain answers to many of these questions.

Endnotes
1. According to a 2000 Public Pension Coordinating Council survey, 84 percent of the pension systems assign the asset allocation decision to the board of trustees. Investment staff, third-party advisors, and other officials are infrequently given this authority, although they often play an advisory role.
2. This publication does not address either style asset allocation or tactical asset allocation. Style or dynamic asset allocation involves choices within subcategories of an asset class, such as small company stocks versus large company stocks. Strategic asset allocation, on the other hand, focuses on the broadest categories—stocks versus bonds, for example. Unlike strategic asset allocation, tactical asset allocation is short term in scope; some observers view it as a form of market timing.
4. Roger G. Ibbotson argues that for a long-term investor, the asset allocation decision is by far the most important decision. For a short-term investor that practices market timing, trades more frequently, and invests directly in individual securities, asset allocation is less important. See “The True Impact of Asset Allocation on Returns,” by Roger G. Ibbotson.
5. There are many types of investment risk. Appendix A contains a framework for categorizing risks that is based on a report prepared by the Association of Public Pension Fund Auditors and investment officers of public pension systems. Entitled “Public Pension Systems—Statements of Key Investment Risks and Common Practices to Address those Risks,” the report divides investment risk into external risks related to the nature of the capital markets, and internal risks related to an organization’s execution of a given investment strategy. GFOA has endorsed this report.
7. The Economist magazine notes, however, that the diversifying power of international stocks declined somewhat in the 1990s. See “Dancing in Step,” The Economist (March 24, 2001).
8. This data was based on the Wilshire 5000 Index from 1971 to 2000.
9. The five-step process used by public pensions is similar to that described by Dennis E. Logue and Jack S. Rader in Managing Pension Plans: A Comprehensive Guide to Improving Plan Performance (Oxford University Press, 1998), 115.
10. For examples of how portfolio optimization can be misused, see David F. Swensen, Pioneering Portfolio Management: An Unconventional Approach to Institutional Investment (Free Press, 2000), 105, 119.
12. Keith P. Ambachtsheer and D. Don Ezra, Pension Fund Excellence: Creating Value for Stakeholders (New York: John Wiley & Sons, 1998), 115. In selecting a particular asset allocation, the authors note that the desire to avoid maverick risk—the regret if your strategy performs worse than the traditional strategy adopted by the pension system’s peers—is an important consideration. On the other hand, pension systems may have perfectly good reasons for investing differently, such as a different risk tolerance, a younger/older workforce, or different expectations about the capital markets.
13. Logue and Rader, Managing Pension Plans, 156.
Passive Management and the Selection of an Investment Team

"Like the residents of Lake Wobegon who all believe their children to be above average, all investors believe their active strategies will produce superior results."

David F. Swensen, Pioneering Portfolio Management

The successful selection of active money managers is a hazardous proposition, because in essence it is a zero-sum game: half of the managers will exceed the average performance of the market they operate in, while the other half will trail the market. Most institutional investors nonetheless retain at least one money manager to implement an active investment strategy in the quest for above-average performance. This chapter describes the role of and selection criteria for active money managers, the role of the passive management alternative, as well as the duties of other investment professionals that serve the defined benefit pension community.

The preceding chapter reviewed the strategic decision of asset allocation. Once that decision has been reached, a pension system needs to arrive at decisions on three tactical matters before actually selecting the investment team:

- **Scope of services**— How many kinds of investment services must be obtained?
- **Passive versus active management**— Will investments be passively managed, using index funds, or actively managed (see page 34)?
- **Outsourcing**— Will the pension system perform a particular investment service internally or externally (see page 36)?

After the three issues have been resolved, a pension system is in an effective position to initiate the process of money manager selection.

**Scope of Investment Services Used by Pension Systems**

Because of the complexities in managing investments and the myriad risks, even the smallest pension systems assemble a number of specialists to protect and grow the investments. At minimum, all pension systems use money managers, but additional services are commonly used by pension systems to augment the investment program.¹ The following section describes eight kinds of investment professionals frequently retained by public pension systems.
Investment consultants. Investment consultants have become a common specialist among institutional investors. They provide one or more of the following functions:

- Money manager selection (gate keeping),
- Establishment of investment policies,
- Asset allocation guidance,
- Asset/liability analyses, and
- Performance evaluation.

Many consulting firms seek to provide all these services, whereas others operate as specialists. Their role in money manager selection is discussed below.

Money managers. Money managers execute the pension systems' strategy by buying and selling appropriate securities through a broker. In addition, they provide interim and yearly reports on their performance and transaction details. Money managers work for a variety of financial institutions, as shown on page 38.

Administrative services. Most retirement systems hire a staff or rely on the finance department of the plan sponsor (i.e., the government supporting the retirement plan). Administrative services entail, at a minimum, managing relationships between the board, staff, and external parties, as well as providing certain services to beneficiaries.

Legal counsel. Legal counsel is required to help trustees determine their fiduciary responsibilities. Many state statutes contain specific language regarding investment decision making and authorized investment vehicles. To protect themselves as well as their pension systems, trustees should always verify that their actions are in accordance with the law.

Actuaries. Actuaries ascertain the current and projected financial liabilities of the pension system, in part so that employee and employer contributions can be determined. They provide trustees useful information on the relationship between present assets and liabilities, future contributions and employee benefits, and investment return requirements. They could also assist the pension system in determining the current or future impact on the financial condition of the fund of either new benefits, changes in employee compensation, or workforce demographics.

Accountants/auditors. Pension systems hire certified public accountants to develop external financial reports. (Sometimes, the audit is conducted by a state audit organization.) Participants and contributors value an independently audited financial statement. Accounting firms also provide ancillary services, such as software consulting and financial analyses.

Custodians. Banks and other financial institutions carry out custodial functions: safekeeping, transaction processing, reporting, and short-term investment (e.g., through securities lending). Custodial functions such as reporting/performance
measurement may overlap with investment consultant functions.

**Broker-dealers.** Broker-dealers execute the buy/sell orders of the money managers. Unless specified by the pension system, money managers select their own brokers. Consequently, many pension systems are often not involved in this particular hiring decision.³

### Passive versus Active Management

The choice of active versus passive management is an important tactical decision that affects both investment performance and the choice of what kinds of money managers are selected. For example, firms that dominate the market for U.S. equity index funds are not likely to be the same firms that are market leaders in actively managed U.S. equities.

Passive managers invest in a portfolio that tracks an index such as the S&P 500.

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**Exhibit 26**

**Considering Passive Management as a Best Practice**

**Is Passive Management a Best Practice?**

In certain situations, passive management should be considered a best practice. In particular, smaller pension systems investing in highly competitive, efficient, and liquid markets such as U.S. large cap equities should consider it a best practice. According to pension consultants Keith P. Ambachtsheer and D. Don Ezra, “A fundamental principle of game theory is that the only way not to lose in games you can’t win is not to play. The small pension system application of this principle is to implement the chosen asset allocation policy passively...”*

The Government Finance Officers Association (GFOA) argues in a Recommended Practice, “Public Employee Retirement System Investments,” that at minimum plan sponsors should “evaluate formally and regularly the role or potential role of passive or indexed investment strategies applicable to the portfolio, and appropriate strategies to minimize the costs of transactions, portfolio management and consultants.” The advantages for passive management rest on five pillars, according to the investment policy of the Maine State Retirement System:

1. Cost
2. Market returns (no risk of underperforming relative to market)
3. Efficient rebalancing
4. Broadest diversification and
5. Minimal review.

For smaller pension systems, cost and minimal review are particularly salient. Simply put, the cost advantages of indexing for a smaller pension system are greater than they are for a larger system. Larger pension systems are able to obtain better pricing from active managers due to economies of scale. Even for a larger system such as the Maine State Retirement System (which manages $6.5 billion in assets as of January 2002), the cost difference is substantial: 1 to 3 basis points for passive management versus 20 to 50 basis points for active management (U.S. fixed-income sector). (Maine reports a greater cost differential for U.S. and international equities.)

Minimal review is important to smaller pensions that may not have the staff to oversee external investment professionals. The Maine policy notes that “index funds require less exhaustive review, providing the Board more time to spend on other issues relating to the investment program.”

Usually, such managers attempt to replicate the performance of the given index by buying every stock, in the same proportion, as in the underlying index, although some money managers use a sampling approach for indexes that are very large. For example, to replicate a bond index that consists of thousands of securities, a manager would purchase only a representative sample of securities in order to reduce transaction costs. Index funds are also called passively managed funds, to distinguish them from funds where active managers construct a portfolio using different methods and who typically engage in more buying and selling of securities. Passively managed funds generally are low in cost, since less investment research is required and less buying and selling (turnover) occurs within a given time period.

Exhibit 26 details some of the factors that a pension system should consider before deciding upon an active or passive strategy.

Outsourcing Services

Discretion in outsourcing. Because of the lack of economies of scale, many small pension systems rely exclusively on external investment professionals and have essentially no staff. On the other hand, some of the largest pension systems have the luxury of choosing between hiring in-house investment professionals or retaining external professionals. Indeed, certain large public-sector pensions employ internal investment consultants, money managers, as well as brokers as full-time staff. The State of Wisconsin Investment Board, for example, has an authorized staff of over 100 positions. These include not only fixed income and equity money managers, but also portfolio managers for alternative asset classes, such as private equity and real estate. Nonetheless, even the largest public pension systems may face a challenge in either adding authorized positions (i.e., obtaining budget authority for hiring investment professionals) or retaining staff via a compensation package that is competitive with the private sector.

Is outsourcing to an investment consultant warranted? One common issue facing pension officials is whether to employ an investment consultant to assist either in (a) money manager selection, (b) asset allocation modeling, (c) performance measurement, or (d) investment policy review. Smaller pension systems may find the services cost-prohibitive; even though they may need help, they find it difficult to justify the expense. Conversely, large pension systems with full-time staff may be able to perform these services internally.

Even these larger systems, however, may find it advantageous to retain an investment consultant for, say, money manager selection if the consultant has greater expertise or access to better data. Since there are thousands of money management firms in operation, investment consultants can assist with the selection process by tracking the firms along several dimensions, such as investment style, process, or cost, for example. Moreover, investment consultants can perform quantitative screens for “short-listing” potential candidates for a pension system, and can also gather intelligence on how investments were or might be obtained. For example, they can determine if past investment results were created by the team currently in place, if the firm has internal management issues that might hinder the ability to
achieve superior investment results in the future, and if their investment style has changed over the years.

Some pension plans have elected to retain consultants in an effort to minimize the potential legal liability of their trustees, despite the availability of professional internal staff. In these cases, the trustees’ rationale is that a paid independent consultant offers special expertise that could be cited in subsequent court proceedings if a money manager’s performance proves unsatisfactory and decisions affecting portfolio returns were challenged by beneficiaries.

Because they influence so many key decisions of a pension system, an important criterion for outsourcing to an investment consultant is independence, as indicated by the standards of the Association for Investment Management and Research (AIMR) and the Public Pension Coordinating Council (PPCC). Please refer to Exhibit 27.

Money Manager Selection

This section first discusses how a pension system should articulate its need for a money manager, based on its asset allocation strategy. This will allow a pension system to choose
among the many specialists in the field of portfolio management. Second, a step-by-step approach for securing the services of an external money manager is presented. Lastly, recommended practices for money manager selection are examined.

Asset Mix Determines Money Manager Selection. The selection of portfolio managers should be driven by the asset allocation process, and not the reverse. This means that the role of a given manager should be pre-determined by the board of trustees or the investment committee, on the basis of an asset allocation “master plan.” Exhibit 28 illustrates one such master plan; it resembles the blueprint for a house.

Money managers work for a variety of financial institutions and develop specialties, as noted below:

- Money management firms—Such firms invest directly on clients' behalf and may include any number of Securities and Exchange Commission-registered advisers. Money management firms offer both “balanced” funds that encompass several asset classes and funds that specialize in a single category (e.g., stocks or bonds) or sub-category (e.g., small versus large capitalization stocks).
- Bank trust departments—In order to optimize their cash management, most pension systems use bank trust departments to invest surplus cash that would otherwise lay idle. In addition, these firms offer longer-term investments (e.g., balanced funds and pooled funds) that seek to achieve broad or comprehensive investment objectives as well as specialized management (e.g., fixed income or stock fund management).
- Specialty managers—Some firms specialize in certain segments of the market, such as international stocks and bonds, emerging markets, or “alternative investments.” (Alternative investments are asset classes such as venture capital that usually play a small role in public pension portfolios.) Conversely, so-called “financial supermarkets” have come into being in recent years in an attempt to sell a wide variety of investment vehicles to institutional and retail investors.
- Commingled funds—Smaller pension systems may participate in commingled funds, such as mutual funds or local government investment pools, if they can be more cost-effective than segregated accounts. Local government investment pools are a particularly popular vehicle for managing cash-equivalent investments, and occasionally they manage longer-duration bond funds as well. Some pension investment policies limit participation to no-load mutual funds that do not assess a fee upon initial investment.

Outsourcing to Money Managers: An Eight-Step Approach. Pension systems should use some type of systematic process to screen and select portfolio managers—a process that (hopefully) yields a cost-effective money manager and that demonstrates due diligence. Despite the well-known admonition that “past performance is no guarantee of future success,” pension officials must gather historical data and make forward-looking judgments about how well the various candidates will perform. Whether done strictly in house or using the services of an investment con-
sultant (e.g., to act as a facilitator and data analyst), the process can be segmented into the following eight tasks, which are examined in detail in Appendix C.6

1. Establish criteria
2. Select potential candidates
3. Gather information
4. Analyze data
5. Choose candidates to interview
6. Interview finalists
7. Negotiate contract
8. Distribute assets.

**Exhibit 29**
GFOA Recommended Practice, “Selection of Investment Advisers for Pension Fund Assets” (excerpt)

**Recommended Criteria for Selection of Money Managers**

Develop policies regarding the procurement of money managers prior to retaining one.

Policies should address:
• The appointment of a party (e.g., investment consultant or review committee) responsible for selection
• Competitive selection, based on merit
• Specific selection criteria (e.g., money manager specialty)
• “Due diligence” through an RFP process

Conclude the process with a formal agreement establishing fees and termination procedures.

Perform compliance reviews and other risk controls.

**Exhibit 30**
Sample Policies for Money Manager Selection

The City of Houston Firefighter’s Relief and Retirement Fund policy and the Kansas Public Employees’ Retirement System (KPERS) have established policies that govern the money manager selection process. In particular, both contain the four elements identified in the related GFOA Recommended Practice:

• The appointment of a responsible party—Houston defines an Investment Committee as the responsible party; KPERS stipulates that the board will authorize staff to initiate a search.
• Competitive, merit-based selection—Both policies describe an open RFP process to be used. KPERS specifically mandates that its staff publish the RFP in popular financial periodicals.
• Selection criteria—Houston enumerates “filters,” such as investment philosophy and expense control, to narrow the number of candidates; KPERS requires minimum screening criteria before the RFPs will considered, and additional criteria for subsequent evaluation.
• Due diligence—By policy, KPERS staff or consultants are to gather comprehensive information on each candidate, such as references, turnover among personnel at the money management firm, experience, and other factors. The Houston policy requires staff to analyze proposals and calls for on-site visits by short-listed candidates.

In addition, both policies clearly state criteria for retaining or dismissing managers, including qualitative and quantitative measures.
Endnotes

1. In the public sector, most defined benefit pension systems—including smaller pension systems—used an unbundled approach to select third-party professionals. In contrast, a government using a bundled approach would obtain actuarial, money management, performance measurement, and/or other services from the same vendor.

2. Sometimes investment consultants are placed in the more general category of investment adviser, a broader term that includes portfolio or money managers. Portfolio or money managers are discussed separately in this publication.

3. Other pension systems, however, use directed brokerage, whereby money managers must use brokers pre-selected by the pension system.

4. This number does not include benefits administration personnel, who work for a separate agency, the Wisconsin Department of Employee Trust Funds.

5. See A Guide for Selecting Pension Investment Consultants: Writing RFPs and Evaluating Proposals, Rick Dahl (Chicago: Government Finance Officers Association, 1999) and the PPCC “Application for the Public Pension Principles Achievement Award and Certificate of Merit.” See also “Pay to Play,” Forbes (September 4, 2000), for a description of possible conflicts of interest in investment consulting.

4 Cost-Efficient Implementation and Transparent Reporting

“[C]ontrolling investment expenses is a key fiduciary duty in addition to being a necessity for maximizing return.”

This chapter reviews the activities trustees and administrators should perform in ensuring that investment policy and asset allocation strategy is implemented efficiently and effectively. To a great extent, this centers on three activities: compliance with the asset allocation strategy (rebalancing), cost management, and oversight and reporting of investment results. The latter involves ensuring regular, forthright communications between money managers and the pension system, carrying out formal performance evaluations, and delivering clear external reports to stakeholders.

Rebalancing: Compliance with Asset Allocation Strategy
Rebalancing is simply the task of ensuring that the pension system’s actual asset allocation complies with the system’s strategic asset allocation. For example, if the strategic asset allocation calls for 60 percent domestic stocks and 40 percent bonds, whereas market values indicate that the actual allocation is at 70 percent and 30 percent respectively, then it must be rebalanced back to the original 60/40 target. The Sacramento Regional Transit District investment policy illustrates three techniques for rebalancing (see Exhibits 31 and 32), using a hierarchical approach.

Rebalancing has two important benefits. First, it controls risk. Selecting a particular asset allocation is the pension board’s explicit statement of how much risk it will accept in relation to expected returns. Thus, if the portfolio is not rebalanced—if the portfolio “drifts”—the pension system by default would be accepting a new risk-return portfolio. If portfolio drift results in a higher commitment to equities, then it is unintentionally following a higher risk strategy. Secondly, some investment research indicates that disciplined rebalancing results in modest increases in investment return.

Cost Management
Trustees and administrators have important roles to play in the management of investment costs. In evaluating public pension practices, the Government Finance
Officers Association (GFOA) identified four techniques that assist in managing costs. First, trustees can influence costs by establishing cost management as a high priority in their investment policy. As noted in Exhibit 4, over half of pension investment policies have some kind of statement on limiting transaction costs (e.g., brokerage costs or formal measures of manager performance net of fees).

Second, passive management provides important cost advantages, particularly for smaller pension systems that cannot obtain economies of scale available to larger pensions. Passive management gains a cost advantage stemming from lower investment research costs and less frequent securities trading, among other factors. However, only about 40 percent of pension investment policies spell out a role for passive management or index funds (see page 8).

Exhibit 31
Process of Rebalancing

- First, direct new cash inflows (e.g., from employer and employee contributions) into the underfunded asset class.
- Then, allocate income obtained from dividends or interest payments into the underfunded asset class.
- If necessary, allocate dollars to underfunded asset class by liquidating securities.

Exhibit 32
Investment Policy on Asset Rebalancing (excerpt)
(Sacramento Regional Transit District)

The Board established the aforementioned Asset Allocation Policy to maintain the long-term strategic asset allocation. The rebalancing process results in the movement of assets from recently strong performing asset classes which may be highly valued into lower valued asset classes. Over the long term, this discipline is expected to enhance portfolio returns while reducing risk (volatility) by realizing gains in one asset class and using those funds to make additional purchases in the undervalued asset class.

It is understood that the funds are periodically required to pay benefits and administrative expenses. Distributions for these capital outlays should comply with the rebalancing policy so that capital is taken from the over-funded managers in such a manner so as to preserve the asset allocation targets.

To minimize Plan’s expense, the transfer of funds will occur in the following order. First, contributions and withdrawals of cash will be used to maintain target allocations. The second priority is to transfer funds among managers. When capital distributions are required, the first priority is to use income from dividends and interest payments. If this does not satisfy the obligation, manager securities will be liquidated from the over-funded managers until the target allocations are met. Thereafter, the obligation will be met on a pro rata basis.

The Board also recognizes that the pension plan rebalancing process requires timely implementation to be effective. Therefore, the Board delegates authority to the Controller/Treasurer to manage pension plan assets in accordance with the approved rebalancing policy. The Controller/Treasurer shall report to the Board on asset rebalancing at the quarterly performance review meetings.
Third, because internal staff usually negotiate contracts with third parties and administer them on a day-to-day basis, the staff play a key oversight role in ensuring costs are held in check. For example, like many pension systems, staff at the State Universities Retirement System of Illinois (SURS) have negotiated contracts with money managers that reduce investment costs (expressed in basis points) along a sliding scale, so that basis points decrease as assets under management increase. In addition, SURS staff has periodically renegotiated the entire scale downward.

Finally, certain pension systems carry out studies to benchmark their costs relative to similar “peer” pension systems. For example, the State Teachers Retirement System of Ohio commissioned a study of asset management costs, including (a) direct investment management, (b) governance, and (c) administration. This was compared two ways: against a peer group of pension systems (public and private sector having assets that approximated the $57 billion that the Ohio system manages) and longitudinally, over a four-year period.

Exhibit 33 identifies GFOA recommended practices that have implications for managing investment costs.

### Communicating with Money Managers

Pension fiduciaries should continually monitor the work of money managers, including the relationship of their respective contributions to the performance of the total fund portfolio. For example, quarterly meetings, supplemented by more frequent written reports, may suffice for monitoring. Obviously, the pension board and/or staff should determine the reporting formats and meeting agendas, not the money managers. In general, pension systems may find it useful to divide interim meetings into four topics, as follows:

**A review of goals and policies.** Pension trustees should assess the entire portfolio’s performance as well as the components—e.g., the asset classes—against the goals and policies of the retirement plan. This goal-and-policy review should be done prior to other presentations, including portfolio manager reviews. Discrepancies, deviations, or unusual developments should be identified for specific review and action.

**Performance measurement.** Ask money managers to compare results against formal benchmarks that are in the investment policy. A small cap value manager,
for instance, should not post comparisons solely against the popular Standard & Poor's 500 stock index or all equity managers in a database; rather, it should also include comparisons to appropriate small cap or small cap value indices identified in the investment policy.

Pension systems often state that they endeavor to evaluate managers over a full market cycle on the grounds that their investment style (say, value stocks in the technology sector) may be out of favor over a shorter period of time. Because of the difficulty of separating a money manager's success from the segment of the market he/she is in, pension officials should be concerned especially about the manager's relative performance—particularly over shorter time periods. The larger question of whether to invest at all in value stocks, for example, should be addressed during discussions of asset allocation policy—not the specific portfolio manager's interim reviews.

**Investment outlook.** After the rear view examination of past performance, fiduciaries should obtain a forward-looking briefing on the money manager's current investment outlook or forecast as well as strategies for the future. Investment decisions will be more effective if pension officials spend less time on economic analysis and more time on what the economic outlook means to portfolio strategies. Under ideal conditions, the pension plan officials will concur with the manager's general approach. However, if a substantive disagreement regarding strategies emerges, these should be discussed explicitly or tabled for prompt follow-up.

**Wrap-up.** Following the presentations of individual portfolio managers, the trustees or investment committee should conduct a wrap-up session in which they identify concerns, problems, and areas for further research before the next meeting. In many cases, no action will be taken as a result of these updates. However, if unanswered questions remain, specific responsibility for follow-up should be assigned to an official.

Many pension systems rely on investment consultants to provide oral and written reports that validate the information that each money manager gives. Moreover, the consultants are able to synthesize the information from myriad money managers to provide a total fund perspective—a perspective that an individual money manager is simply not positioned to provide. For example, in its investment policy the Forth Worth, Texas Employees Retirement Fund requires its consultant to provide the following information on each manager and the total portfolio:

- An overview of the most recent quarter and year-to-date investment performance;
- Comparison of returns relative to portfolio and manager benchmarks (inflation, actuarial rate of return, and other investment objectives);
- Asset allocation of the overall portfolio; and
- Source of return (capital appreciation, income).

In addition to investment consultant reports, Fort Worth requires that money managers provide the pension system detailed information that gives it insight into how investment returns have been achieved. They are to address in writing and orally:
• Performance over multiple time periods (annualized, time-weighted returns);
• Explanation of results tied to the strategy and tactics of the money manager; and
• Discussion of strategy in the next six to twelve months, including assumptions behind the strategy (e.g., capital market expectations).

Evaluating Money Manager Performance

Performance evaluation is similar to the process of money manager selection (discussed in the prior chapter), in that pension systems must make judgments about the future performance of money managers. Selection asks pension officials to determine how well various candidates will perform in the future. Evaluation asks whether the incumbent money manager under contract will continue to perform at desired levels into the future. Pension trustees rely on a combination of qualitative and quantitative information to make these judgments.

Qualitative analysis. Performance evaluation is as much about qualitative judgment as quantitative analysis, even though the ultimate goal of a money manager is to produce impressive numerical returns. In fact, qualitative information may provide a decisive case for action if a clear-cut change occurs, such as a mass exodus of staff from an investment firm. Four qualitative criteria can be used to determine if the money manager retained yesterday has become transformed into a different “creature” today.

Objectives. In general, has the portfolio manager accomplished the assigned objectives? Compare like with like: a manager of a long-duration bond portfolio should be compared with similar managers having the same objective of investing within the market segment of long-duration bonds. Too often, money managers are penalized for producing poor results despite the fact that they have done exactly what their employing organization hired them to do. Unless the pension system has hired a money manager to be a market timer, portfolio managers should not be punished simply because of declining markets. On the other hand, trustees and administrators should not accept results that fail to meet the plan’s objectives just because they “like their relationship.”

Consistent investment approach. Has the money management firm hired to act as large capitalization (“cap”) growth manager transformed itself into a small cap value manager? If so, the firm may no longer be in compliance with the original mandate from the plan sponsor. Moreover, it may skew the overall portfolio so that it deviates from the long-term investment strategy.

An investment consultant or custodian may be able to monitor if a money manager changes its investment stripes, particularly if it would result in non-compliance with its investment policy. For example, some custodians employ investment tracking systems that determine, daily, the individual securities held by the pension system, and whether excessive concentration in a given security results. Similarly, the tracking system should be able to monitor the investment style of each manager, enabling the pension system to learn, for instance, if a large cap growth manager has become a small cap value manager.
Reporting and other services. Reports are a fundamental service of investment managers, and they should be timely, clear, and in the format desired by the pension system. If reports are not in the form desired, pension officials have an obligation to their constituencies to express dissatisfaction with the information, and to demand changes. Retirement officials cannot produce adequate reports for plan sponsors and beneficiaries unless the money managers themselves produce timely, informative performance reports. Reporting deficiencies can hint at problems that should be brought into the open.

In some cases, additional support services are expected of portfolio managers. If additional research in special areas is expected from a manager who is retained as a generalist, this should be clarified both at the time of the original manager selection as well as during the periodic evaluation.

Staff turnover. When a pension system selects a money management firm, a key factor influencing the hiring decision is the perceived quality of the firm's staff. This decision needs to be periodically "ratified" by asking if the investment team at the money management firm is still in place and if the pension system would retain the firm given the current staff of the investment team. Thus, fiduciaries need to track the turnover of both the money manager(s) who make the security selection decisions on behalf of the pension system as well as the money manager(s)' research team that may assist the manager, since any exodus of talent could call into question future performance. Some money management firms use a "star" system in which a single portfolio manager is responsible for the pension system's investment account, whereas other firms use a multi-manager portfolio that is less vulnerable to staff turnover.

Quantitative analysis. Inevitably, any pension system must evaluate a money manager's past returns (and corresponding risk) and make a hard determination: was it satisfactory, and is it indicative of future performance? There are seemingly an infinite number of statistics and methods of presentation for evaluating a portfolio manager's performance. While a review of complex statistical calculations is beyond the scope of this publication, it should be noted that pension systems need to develop specific, agreed-upon procedures for performance analysis and attribution. For example, in their investment policies many pension systems spell out specific benchmarks for money managers to meet or exceed. Based on a GFOA analysis of forty-one investment policies, 71 percent of pension investment policies use a customized index to evaluate managers (e.g., Russell 2000 for small cap equity managers) and 50 percent of the policies measure managers against other active managers.

To evaluate money manager performance, pension systems commonly use a time-weighted rate of return. This simply calculates the total change in value of an investment resulting from both a change in the value of the stock or bond and from income derived either from a dividend payment or coupon payment, e.g., from the beginning of the year to the end of the year. This allows a pension system to make external, "apples-to-apples" comparisons of one money manager against another, or even the entire portfolio of the pension system against another pension system's portfolio.

In contrast, a dollar-weighted rate of return is for internal use primarily, answering
the question: how much did the pension system assets grow during the year (or some other period of time) taking into account cash flows going into or leaving the pension system? For example, if a pension system obtains a 10 percent time-weighted rate of return from its domestic large cap manager—perhaps owing to a market rally at the beginning of the year—yet the pension system transfers new cash flows to the manager at mid-year, the dollar-weighted rate of return would be lower. Thus, the lower, dollar-weighted return would be the actual return experienced by the pension system. Because the timing of each pension system’s cash flow is unique, a dollar-weighted return is not used for money manager comparisons.2
Apart from the measures to be used, additional factors should be considered:

- What time frame(s) should be used?
- What standards should be used for generating return data (e.g., performance presentation standards developed by standard-setting bodies such as the Association for Investment Management and Research)?
- Who will verify the data—in house staff, investment consultants, or custodians?

Exhibit 34
Sample Evaluation of Money Manager Performance

A.B.C. MASTER TRUST
EQUITY FUNDS - TOTAL RATES OF RETURN
PERIODS ENDING 9/01

<table>
<thead>
<tr>
<th>QUARTERS</th>
<th>YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAST OTR</td>
<td>LAST 2 OTR</td>
</tr>
<tr>
<td>MANAGER A</td>
<td>-10.1 14</td>
</tr>
<tr>
<td>MANAGER B</td>
<td>-12.1 30</td>
</tr>
<tr>
<td>MANAGER C</td>
<td>-14.8 48</td>
</tr>
<tr>
<td>MANAGER D</td>
<td>-16.6 60</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>-14.7 47</td>
</tr>
<tr>
<td>R 2000(R)</td>
<td>-20.8 76</td>
</tr>
<tr>
<td>S&amp;P MID CAP 400</td>
<td>-16.6 61</td>
</tr>
<tr>
<td>MEDIAN</td>
<td>-14.9</td>
</tr>
</tbody>
</table>

Source: Becker, Burke Associates
Who will perform in-depth analysis?—would this require the services of investment professionals able to perform complex analyses?

Although quarterly reporting may be adequate for monitoring, pension systems tend to use long-term measures in deciding whether to retain or fire a manager. In practice, many pension systems seek to evaluate a money manager over a full market cycle. A market cycle is a somewhat vague but useful term referring to a period of time in which the market has expanded and contracted, so that the quality of a money manager can be assessed in different investment climates. Some pension systems equate a market cycle with approximately three to five years.

Exhibits 34 and 35 illustrate two kinds of interim measures used by an investment consulting firm to assess equity money managers. Exhibit 34 allows the pension system to focus not only on very short-term, quarterly developments, but progressively longer, more meaningful time periods as well. Moreover, it reveals not only absolute performance (how did my manager do since the beginning of a given time period?), but relative performance of a given money manager set against other active managers as well as the “default” option of passive indexes. In this illustration, the Russell 2000, Standard & Poor’s mid-cap 400, and Standard & Poor’s 500 are the passive benchmarks.

Exhibit 35
Sample Evaluation of Money Manager Performance: Assessment of Investment “Style”

A.B.C. MASTER TRUST
EQUITY MANAGER SPECTRUM STYLE ANALYSIS - TOTAL RETURNS
YEAR ENDING 9/01

<table>
<thead>
<tr>
<th>SMALL VALUE</th>
<th>SMALL CORE</th>
<th>SMALL GROWTH</th>
<th>MEDIUM VALUE</th>
<th>MEDIUM CORE</th>
<th>MEDIUM GROWTH</th>
<th>LARGE VALUE</th>
<th>LARGE CORE</th>
<th>LARGE GROWTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANAGER A</td>
<td>4.0</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANAGER B</td>
<td>-16.9</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANAGER C</td>
<td>-26.8</td>
<td>78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANAGER D</td>
<td>18.5</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIAN</td>
<td>6.0</td>
<td>-9.0</td>
<td>-43.9</td>
<td>2.9</td>
<td>-16.4</td>
<td>-46.3</td>
<td>0.3</td>
<td>22.1</td>
</tr>
</tbody>
</table>

Source: Becker, Burke Associates
Suppose a pension administrator wanted to judge Money Manager A's long-term performance. In Exhibit 34, the administrator would locate that manager's performance—denoted by a black star—in the five-year rectangle. Although the one-year rectangle shows Money Manager A performed in a stellar fashion, the five-year rectangle reveals that the manager was average, no different than the average (median) of all active equity managers.

The range of performance by all equity money managers in the investment consultant's database is captured by the rectangles: the top edge of each rectangle indicates the top fifth percentile (i.e., only 5 percent of money managers did better), the bottom edge, the ninety-fifth percentile. The uppermost dotted line through each rectangle reflects the twenty-fifth percentile, the lowermost dotted line the seventy-fifth, and the solid line in the middle represents the average performer. Over longer periods such as five years, all the money managers cluster around the average—reflecting the tendency for short-term volatility to dampen down over time.

The pension administrator would turn to Exhibit 35 for additional insight, using style analysis, into Money Manager A's performance. First, the graph reveals that Money Manager A invested in the "small core" segment of the U.S. stock market. Second, it shows that he performed significantly better than average over the past twelve months relative to all the small core money managers in the investment consultant's database. Third, over the twelve months analyzed, Exhibit 35 demonstrates that small value managers as a group beat both small core and small growth managers. Any change noted in a money manager's investment style (for example, if a money manager originally hired as a small value specialist has become a small growth investor) should be discussed at the next meeting of the board of trustees.

**Reporting Investment Results to Stakeholders**

External reports are the final element of an investment program. Whether presenting information to policy makers or pension participants, pension officials should consider providing the types of information found in the investment section of a pension system comprehensive annual financial report (CAFR). GFOA reviews pension CAFRs and awards a Certificate of Achievement for Excellence in Financial Reporting to pension systems that meet the reporting standards. Other units of governments that may not submit pension CAFRs may nonetheless consider using the CAFR reporting standards as a template for external reporting as well. The CAFR standards call for the following:

1. A narrative report on investment activity for the reporting period, including investment objective and the basis for presentation of the return data—GFOA strongly encourages conformance with AIMR reporting standards;
2. An outline of investment policies;
3. Time-weighted investment returns, including one-, three-, and five-year returns annually for both the total portfolio and major portfolio categories (e.g., asset classes), compared to relevant benchmarks;
4. Asset allocation data, such as target versus actual asset allocations;
5. A list of large holdings, such as the top ten stocks and bonds held;
6. Schedule of fees and commissions; and
7. An investment summary showing, by asset class and subasset class, a “snapshot” of the portfolio.3

In addition, trustees may consider calling attention to policy issues, if the situation warrants. For example, if state law hampers the pension system’s ability to diversify into multiple asset classes (e.g., due to a restrictive legal list), suggested legislative remedies might be put forward. Likewise, if the plan is significantly underfunded, and investment returns appear incapable of achieving the necessary balancing of assets and liabilities over a reasonable horizon, this should be called to the attention of the plan sponsor.

Exhibit 36
Best Practice: External Reporting of Investment Results—Presentation of Investment Management Fees
(New Hampshire Retirement System)
Exhibits 36, 37, and 38 demonstrate best practices for external reporting. They were obtained from pension CAFRs that earned the Certificate of Achievement for Excellence in Financial Reporting, and were reviewed by selected members of the GFOA Committee on Retirement and Benefits Administration. Exhibits 36 and 37 demonstrate a clear, comprehensive presentation of investment costs, expressed in both dollar terms and basis points.

The investment section of the Missouri State Employees’ Retirement System CAFR presents a narrative overview of the investment year, then a presentation of the total portfolio, followed by a presentation of the three major asset classes. Exhibit 38 demonstrates a comprehensive presentation of investment return for one of the three asset classes (international equities), with graphical data emphasizing key events during the year.

Exhibit 37
Best Practice: External Reporting of Investment Results—Presentation of Brokerage Commissions
(New Hampshire Retirement System)
Exhibit 38
Best Practice: External Reporting of Investment Results—Presentation of Investment Results by Asset Class
(Missouri State Employees’ Retirement System)

International Equity Review

**Market Value**
As of June 30, 2000, the MOSERS’ International Portfolio had a market value of $1.43 billion, representing 25.7 percent of the total fund.

**Summary of International Equity Investments**
Non-U.S. stocks, with a target allocation of 25.0 percent, are employed by the fund primarily because their historical return premium versus inflation, if realized in the future, will help preserve and enhance the fund’s ability to achieve a long-term real rate of return in excess of the 4 percent objective set by the board. Non-U.S. stocks are also attractive for the diversification benefits they provide to the portfolio. By incorporating non-U.S. stocks into the asset mix, MOSERS expects to achieve overall equity returns, which are comparable to that of a U.S. stock portfolio while reducing overall portfolio volatility. The graph to the right depicts the performance of the international equity portfolio since 1994, by showing how a $1.00 investment in the portfolio had grown to $1.83 by June 30, 2000.

**International Equity Portfolio Structure**
As of June 30, 2000, 39.9 percent of the international portfolio was managed in an enhanced index fashion with the balance of 60.1 percent being managed actively. Non-U.S. stock investments consist of a Morgan Stanley Capital International Europe, Australia, and Far East (MSCI EAFE) Enhanced Index Portfolio, a Morgan Stanley Capital International Emerging Markets Free (MSCI EMF) Enhanced Index Portfolio and two active portfolios. In July 1995, the board hired an active, value-tilted, developed markets manager to complement the EAFE Index Portfolio. This past year, an active, growth-tilted, developed markets manager was hired. The MOSERS’ policy allows the active managers to hedge currency up to 25 percent, while the enhanced portfolios are unhedged.

The pie charts to the right show the breakdown of investments in developed markets and emerging markets in the international portfolio compared to the policy benchmark, Morgan Stanley Capital International EAFE + EMF Index.
Exhibit 38 (Continued)
Best Practice: External Reporting of Investment Results—Presentation of Investment Results by Asset Class
(Missouri State Employees’ Retirement System)

International Equity Portfolio Statistics
The following table displays the statistical characteristics of the MOSERS’ International Stock Portfolio as of June 30, 2000, with comparisons shown to the portfolio’s policy benchmark and to the same portfolio as of the end of the prior fiscal year.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of securities</td>
<td>1,483</td>
<td>1,802</td>
<td>1,229</td>
</tr>
<tr>
<td>Avg. market capitalization</td>
<td>$6.3 billion</td>
<td>$9.4 billion</td>
<td>$6.8 billion</td>
</tr>
<tr>
<td>Portfolio yield</td>
<td>2.5%</td>
<td>1.6%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Portfolio P/E</td>
<td>25.1x</td>
<td>29.8x</td>
<td>25.3x</td>
</tr>
<tr>
<td>Price/book ratio</td>
<td>2.7x</td>
<td>3.0x</td>
<td>2.3x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ten Largest Holdings</th>
<th>Market Value</th>
<th>Percentage of International Stocks</th>
<th>Ten Largest Holdings</th>
<th>Market Value</th>
<th>Percentage of International Stocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 30, 2000</td>
<td></td>
<td></td>
<td>June 30, 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pernod-Ricard (France)</td>
<td>$14,718,169</td>
<td>1.0%</td>
<td>Nestle SA (Switzerland)</td>
<td>$11,277,001</td>
<td>1.2%</td>
</tr>
<tr>
<td>Aventis (France)</td>
<td>13,820,062</td>
<td>1.0</td>
<td>Smith Nephew (UK)</td>
<td>9,671,296</td>
<td>1.0</td>
</tr>
<tr>
<td>ING Groep (Netherlands)</td>
<td>13,732,336</td>
<td>1.0</td>
<td>Allied Domecq (UK)</td>
<td>9,497,384</td>
<td>1.0</td>
</tr>
<tr>
<td>Talisman Energy (Canada)</td>
<td>13,731,485</td>
<td>1.0</td>
<td>Den Danske Bank (Denmark)</td>
<td>9,039,629</td>
<td>1.0</td>
</tr>
<tr>
<td>Royal Bank of Scotland (UK)</td>
<td>13,527,824</td>
<td>0.9</td>
<td>Matsushita Elect (Japan)</td>
<td>9,023,138</td>
<td>1.0</td>
</tr>
<tr>
<td>Samsung Electric (Korea)</td>
<td>12,853,800</td>
<td>0.9</td>
<td>BP Amoco (UK)</td>
<td>8,351,700</td>
<td>0.9</td>
</tr>
<tr>
<td>Diageo (UK)</td>
<td>12,350,047</td>
<td>0.9</td>
<td>ING Groep (Netherlands)</td>
<td>7,839,390</td>
<td>0.8</td>
</tr>
<tr>
<td>Parmalat Finanz (Italy)</td>
<td>12,266,848</td>
<td>0.9</td>
<td>Paribas (France)</td>
<td>7,736,566</td>
<td>0.8</td>
</tr>
<tr>
<td>Swiss Reinsurance (Switzerland)</td>
<td>12,064,141</td>
<td>0.8</td>
<td>Tate &amp; Lyle (UK)</td>
<td>7,719,420</td>
<td>0.8</td>
</tr>
<tr>
<td>RAS (Italy)</td>
<td>11,804,555</td>
<td>0.8</td>
<td>Unigate (UK)</td>
<td>7,581,342</td>
<td>0.8</td>
</tr>
</tbody>
</table>

* A complete list of holdings is available upon request.
Exhibit 38 (Continued)
Best Practice: External Reporting of Investment Results—Presentation of Investment Results by Asset Class
(Missouri State Employees' Retirement System)

**International Equity Portfolio Investment Advisors**
As of June 30, 2000, MOSERS had contracts with three external investment advisors for the management of four non-U.S. stock portfolios. Two firms are managing active portfolios in the developed markets which are expected to add incremental return over an established benchmark through stock selection, country selection, and small amounts of currency hedging. The third manager has two enhanced index portfolios which are expected to add a small amount of return while matching country weights with the index. One enhanced portfolio is for the developed markets and the other is for the emerging markets.

The following table displays the external firms that were under contract with MOSERS during FY2000 for management of international stocks. Also displayed are the managers' investment styles, FY2000 ending portfolio market values, and the managerial fees paid for the fiscal year.

During FY2000, MOSERS released one passive investment advisor and one active investment advisor from their contracts. One enhanced manager and one active manager were hired.

<table>
<thead>
<tr>
<th>Investment Advisor</th>
<th>Investment Style</th>
<th>Portfolio Market Value as of June 30, 2000</th>
<th>FY2000 Management Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silchester International Investors</td>
<td>Active value Developed markets</td>
<td>$ 430,491,532</td>
<td>$ 1,641,371</td>
</tr>
<tr>
<td>Merrill Lynch Quantitative Advisors</td>
<td>Enhanced Developed markets</td>
<td>425,676,224</td>
<td>332,195</td>
</tr>
<tr>
<td>Merrill Lynch Quantitative Advisors</td>
<td>Enhanced Emerging markets</td>
<td>142,909,567</td>
<td>30,000</td>
</tr>
<tr>
<td>Maslholm Asset Management</td>
<td>Active growth Developed markets</td>
<td>427,704,333</td>
<td>164,383</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>Passive MSCI EAFE Index</td>
<td>0</td>
<td>99,554</td>
</tr>
<tr>
<td>Morgan Grenfell Investment Services</td>
<td>Active core Emerging markets</td>
<td>0</td>
<td>725,058</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$ 1,426,296,596</strong></td>
<td><strong>$ 2,992,561</strong></td>
</tr>
</tbody>
</table>

*This total includes the impact of the rebalancing account on the total international portfolio and therefore the managers' portfolio market values will not sum.*
Exhibit 38 (Continued)
Best Practice: External Reporting of Investment Results—Presentation of Investment Results by Asset Class
(Missouri State Employees’ Retirement System)

The chart to the left displays the MOSERS’ country exposure relative to the policy benchmark on June 30, 2000.

**International Equity Investment Returns**
The MOSERS’ Policy Benchmark, the MSCI EAFE + EMF Index gained 16.6 percent for the year. During the past year the strategy of over-weighting the emerging markets was eliminated. Going forward, any decision to deviate from the benchmark weight in emerging markets will be made on an opportunistic basis by the active managers. MOSERS’ actual return of 10.5 percent did not add value relative to the strategic benchmark. This shortfall was caused by the failure of the active, developed country value manager to generate returns in excess of the benchmark. The developed markets were dominated by growth companies in the first half of FY2000. With the addition of the growth style manager in May, it is expected that style influences should be dampened in the future.

The lower left graph shows 1- and 3-year results as described above and also includes the actual return compared with the policy benchmark for five years. MOSERS’ first allocation to international stocks did not occur until July 1994; therefore, 10-year returns are not applicable.
Exhibit 38 (Continued)
Best Practice: External Reporting of Investment Results—Presentation of Investment Results by Asset Class
(Missouri State Employees' Retirement System)

Brokerage Commissions

In FY2000, MOSERS generated the following commissions through the purchase and sale of international equity securities.

<table>
<thead>
<tr>
<th>Brokerage Firms</th>
<th>Shares Traded</th>
<th>Dollar Volume of Trades</th>
<th>Dollar Amount</th>
<th>Basis Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Suisse First Boston</td>
<td>6,109,831</td>
<td>$59,472,286</td>
<td>$129,287</td>
<td>21.74</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>20,608,955</td>
<td>45,884,134</td>
<td>121,397</td>
<td>26.46</td>
</tr>
<tr>
<td>Societe Generale</td>
<td>1,549,200</td>
<td>32,814,783</td>
<td>96,187</td>
<td>29.31</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>208,959,600</td>
<td>32,752,709</td>
<td>80,394</td>
<td>24.55</td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td>9,061,300</td>
<td>30,992,088</td>
<td>63,688</td>
<td>20.55</td>
</tr>
<tr>
<td>Paribas Limited</td>
<td>897,500</td>
<td>28,659,887</td>
<td>74,522</td>
<td>26.14</td>
</tr>
<tr>
<td>Kleinwort Benson</td>
<td>3,577,267</td>
<td>25,892,318</td>
<td>51,135</td>
<td>19.75</td>
</tr>
<tr>
<td>ABN AMRO</td>
<td>21,417,245</td>
<td>25,538,238</td>
<td>57,328</td>
<td>22.45</td>
</tr>
<tr>
<td>Robert Fleming</td>
<td>6,628,400</td>
<td>25,526,689</td>
<td>82,831</td>
<td>32.45</td>
</tr>
<tr>
<td>Natwest Securities</td>
<td>168,000</td>
<td>16,384,088</td>
<td>47,110</td>
<td>28.75</td>
</tr>
<tr>
<td>Credit Lyonnais</td>
<td>7,725,100</td>
<td>14,467,290</td>
<td>49,801</td>
<td>34.42</td>
</tr>
<tr>
<td>SBC Warburg</td>
<td>5,157,620</td>
<td>13,959,524</td>
<td>35,270</td>
<td>25.27</td>
</tr>
<tr>
<td>Union Bank of Switzerland</td>
<td>5,423,467</td>
<td>11,809,479</td>
<td>24,388</td>
<td>20.65</td>
</tr>
<tr>
<td>Smith New Court Securities</td>
<td>2,636,000</td>
<td>11,655,539</td>
<td>21,465</td>
<td>18.42</td>
</tr>
<tr>
<td>Nesbit Burns</td>
<td>385,400</td>
<td>10,424,411</td>
<td>15,421</td>
<td>14.79</td>
</tr>
<tr>
<td>Bankgesellschaft A.G.</td>
<td>326,713</td>
<td>9,727,522</td>
<td>29,700</td>
<td>30.53</td>
</tr>
<tr>
<td>Donaldson Lulkin</td>
<td>81,628,200</td>
<td>8,686,456</td>
<td>22,098</td>
<td>25.44</td>
</tr>
<tr>
<td>Daiwa</td>
<td>755,300</td>
<td>8,026,674</td>
<td>16,045</td>
<td>19.99</td>
</tr>
<tr>
<td>Others (including 38 brokerage firms)</td>
<td>144,647,260</td>
<td>81,007,457</td>
<td>259,705</td>
<td>32.06</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>527,662,358</strong></td>
<td><strong>493,681,572</strong></td>
<td><strong>1,278,172</strong></td>
<td><strong>25.89</strong></td>
</tr>
</tbody>
</table>

Zero commission trades excluded above
22,864,128 $11,023,217

Soft Dollar Service Expenditures

For FY 2000, MOSERS’ current international equity managers declared that $24,986 of the commissions generated were utilized to acquire a broad variety of services and research information. Soft dollars represented less than 2 percent of the total agency commissions.

<table>
<thead>
<tr>
<th>Type of Service Acquired</th>
<th>Commissions Used</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trading and analytic systems</td>
<td>$ 8,746</td>
<td>35.0%</td>
</tr>
<tr>
<td>Research services</td>
<td>1,117</td>
<td>4.5</td>
</tr>
<tr>
<td>Market research</td>
<td>15,123</td>
<td>60.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 24,986</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Endnotes
1. Although able to obtain scale economies from a single manager, larger pension systems may instead opt to divide assets among several managers to achieve further diversification. For example, rather than assigning its entire large cap domestic equity portfolio to a single passive manager, the pension trustees may prefer the perceived diversification benefit of three large cap managers: a “core” manager, a value manager, and a growth manager. This would neutralize larger pension systems’ scale economies.
2. The dollar-weighted return of the overall portfolio is useful for a comparison to an investment goal such as the actuarial assumed rate of return, according to Russell L. Olson, The Independent Fiduciary: Investing for Pension Funds and Endowment Funds (New York: John Wiley & Sons, 1999), 25. Dollar-weighted returns are also referred to as cash-flow returns or internal rates of return.
Appendix A
Categories of Investment Risk

The exhibit on the following page is a framework for understanding the vast number of investment risks facing pension systems. It uses a classification scheme developed by the Association of Public Pension Fund Auditors and investment officers of public pension funds, and is adapted from a report entitled, “Public Pension Systems: Statements of Key Investment Risks and Common Practices to Address Those Risks.” The report can be seen in its entirety at www.nctr.org.

The risk framework is hierarchical, with the ultimate investment risk being assets insufficient to support liabilities. This is the fundamental investment risk since the very purpose of a pension system is to pay out retirement and ancillary benefits. The major subcategories are liabilities (not discussed in detail in the report) and the assets or investments. On the asset side, risks are subdivided into:

- External risks not directly controllable by the pension organization, such as external market forces producing lower-than-expected returns; and
- Internal risks, subject to greater control by the pension system, such as portfolio drift/lack of rebalancing to comply with the strategic asset allocation.
Exhibit A
Key Risk Framework

Assets Do Not Support Liabilities

Liabilities Do Not Behave as Expected

Assets Do Not Behave as Expected

External Risks

Internal Risks

Markets Fail to Achieve Expected Returns
- Returns
- Volatility
- Correlation of assets
- Correlation with liabilities

Legislated Actions

Inherent Risk of Investment Vehicles
- Capital risk
- Credit risk
- Inflation risk
- Interest rate risk
- Liquidity risk

Strategic Risks
- Active management
- Style over/under weights
- Sector over/under weights
- Market cap over/under weights
- Additional asset types
- Benchmark maintenance
- Index selection

Poor Governance
- Integrity and ethical values
- Competence
- Board of directors
- Organizational structure
- Assignment of authority and responsibility

Implementation Risks
- Tactical: Portfolio drift and underperformance
- Operational: External managers, custodial banks, internal operations (internal asset management, cash management, operating systems)
Appendix B
Asset-Liability Studies

Asset-liability studies encompass a variety of analytical tools. They share one common feature: they deliberately compare liabilities of a pension system with corresponding assets in order to arrive at or refine an investment strategy. As such, they are different from traditional portfolio optimization (mean-variance optimization; see Exhibit 24 on page 29) which does not consider liabilities in an explicit manner. The Government Finance Officers Association (GFOA) has endorsed asset-liability analysis in a 1999 Recommended Practice, “Asset Allocation—Guidance for Defined Benefit Plans.”

Asset-liability modeling (ALM) appears to have grown more popular in recent years. This may be attributable to the maturation of pension systems in tandem with the aging of the baby boomer generation, and/or to the growing sophistication of investment analytics available from investment professionals. Three examples of asset-liability studies follow.

At one extreme, this could entail simply creating a portfolio that attempts to match liabilities of a certain duration with assets of a similar duration. For example, liabilities in years 0-5, 6-10, 11-15, etc., would be identified, and assets would be matched to these categories or “buckets.” This analysis may reveal an imbalance, in which too few assets are available in, say, the 0-5 year bucket to cover the corresponding liabilities. In creating these asset and liability buckets, the pension system essentially backs into an asset allocation. Exhibit C analyzes an asset stream against a liability stream, revealing that a proportionately large number of assets cover short-term (0-2 year) liabilities, and few assets cover long-term liabilities.

A second example of ALM involves a different kind of optimization. As noted on page 29, traditional portfolio optimization involves maximizing return for a given level of risk (measured by standard deviation of returns). ALM optimization involves:

- minimizing the estimated future cost of the pension plan for a given level of risk (measured by the worst case estimates of future returns).

Exhibit B
Decision Rules for Selecting an Asset Allocation

<table>
<thead>
<tr>
<th>Traditional portfolio optimization</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Maximize investment return for a given amount of risk (volatility of returns)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Asset-liability modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Match assets to liabilities of a similar duration</td>
</tr>
<tr>
<td>• Minimize future contributions to plan (cost) for a given amount of risk (volatility of cost)</td>
</tr>
<tr>
<td>• Minimize fluctuations in funding ratio</td>
</tr>
</tbody>
</table>
Specifically, the average present value of future contributions to the plan is calculated under dozens or hundreds of scenarios. The present value of future contributions represents the cost of the plan, and it takes into account income from both yearly contributions and investments. The emphasis on cost is critical, since this marries assets and liabilities into a single statistic. This measure is compared to the risk as measured by the estimated present value of future contributions under worst-case scenarios.

The combinations of portfolios would be analyzed using a different kind of efficient frontier. A traditional efficient frontier (see Exhibit 20) plots the expected return against risk for any number of portfolios. Under the ALM model, the same portfolios could be analyzed, but they would plot estimated future cost against risk/volatility of future costs.

A third approach focuses on maintaining the funding ratio of a pension plan. For example, if a pension plan were 100 percent funded, the investment objective would be to maintain this funding ratio with only moderate fluctuations over time. Again, this would marry assets to liabilities, because the criterion for decision making—a level funding ratio—is simply calculated as assets minus liabilities (either measured on a market basis or on an actuarial basis). For example, one analyst suggests that a risk-averse pension system would seek no volatility in the funding ratio, which would be accomplished by using cash flow-matched portfolios or immunized, duration-matched portfolios.

### Exhibit C
**Matching Assets with Liabilities**

<table>
<thead>
<tr>
<th>Year/Duration Bucket</th>
<th>Assets ($000)</th>
<th>Liabilities ($000)</th>
<th>Assets - Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Present Value</td>
<td>Liability Bucket</td>
<td>Imbalance</td>
</tr>
<tr>
<td>0-2</td>
<td>$2100</td>
<td>$200 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>0</td>
<td>$200</td>
<td>200 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>1</td>
<td>200</td>
<td>200 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>2</td>
<td>300</td>
<td>200 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>3</td>
<td>400</td>
<td>400 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>4</td>
<td>400</td>
<td>400 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>5</td>
<td>400</td>
<td>400 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>3-5</td>
<td>1700</td>
<td>1200 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>6</td>
<td>400</td>
<td>400 $300</td>
<td>$700 $1400</td>
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<tr>
<td>7</td>
<td>400</td>
<td>400 $300</td>
<td>$700 $1400</td>
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<td>8</td>
<td>400</td>
<td>400 $300</td>
<td>$700 $1400</td>
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<tr>
<td>9</td>
<td>400</td>
<td>400 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>10</td>
<td>400</td>
<td>400 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>6-10</td>
<td>2500</td>
<td>2000 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>11</td>
<td>500</td>
<td>500 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>12</td>
<td>500</td>
<td>500 $300</td>
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<td>600</td>
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<td>$700 $1400</td>
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<tr>
<td>15</td>
<td>600</td>
<td>600 $300</td>
<td>$700 $1400</td>
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<tr>
<td>16</td>
<td>700</td>
<td>700 $300</td>
<td>$700 $1400</td>
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<tr>
<td>17</td>
<td>700</td>
<td>700 $300</td>
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<tr>
<td>18</td>
<td>800</td>
<td>800 $300</td>
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<tr>
<td>19</td>
<td>800</td>
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</tr>
<tr>
<td>11-19</td>
<td>2400</td>
<td>5700 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>20</td>
<td>900</td>
<td>900 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>21</td>
<td>1000</td>
<td>1000 $300</td>
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</tr>
<tr>
<td>22</td>
<td>1100</td>
<td>1100 $300</td>
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<td>23</td>
<td>1100</td>
<td>1100 $300</td>
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<td>24</td>
<td>1100</td>
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<td>$700 $1400</td>
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</tr>
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<td>26</td>
<td>1200</td>
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<td>1200</td>
<td>1200 $300</td>
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<td>28</td>
<td>1200</td>
<td>1200 $300</td>
<td>$700 $1400</td>
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<tr>
<td>29</td>
<td>1100</td>
<td>1100 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>30</td>
<td>1100</td>
<td>1100 $300</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>20+</td>
<td>4000</td>
<td>12200 $800</td>
<td>$700 $1400</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12700</td>
<td>21800 $900</td>
<td></td>
</tr>
</tbody>
</table>

Source: Data from the Village of Carol Stream, Illinois, and Salomon Smith Barney
Endnotes

1. It should be noted that portfolio optimization may consider liabilities in an indirect way. As mentioned in Exhibit 24, portfolio optimization often uses a five-step process to construct a series of efficient portfolios on the “efficient frontier.” The last step involves selection of one portfolio as the pension system’s strategic asset allocation, based on the risk tolerance of the pension trustees. Their risk tolerance will be colored by the liabilities of the pension system. For example, trustees would weigh (a) the downside risk that if the target return is not achieved over the long run, then the pension’s funding ratio would decline against (b) the upside that outstanding returns would increase the funding ratio (allowing for lower employer contributions).


3. For a detailed discussion, see Peskin, Pensions in the Public Sector.

4. For each asset allocation under consideration, a former private-sector pension administrator states that the pension system could run 500 scenarios to estimate the average contribution, in present value terms. See Russell Olson, “The Power of Diversification,” AFP Exchange (March/April 2000): 22.

Appendix C
Eight-Step Process for Money Manager Selection

The following eight steps outline the tasks needed to conduct an effective search for a money manager. The issues and questions that are likely to arise at each step of the process are examined.

1. Establish criteria for the portfolio managers.
   Before recruiting portfolio managers, the trustees should agree to formalize the criteria that will be used in the selection process. Otherwise, the various money managers are likely to become confused about the trustee's objectives, and it is possible that somebody could manipulate the process to their advantage. Some of the factors that might be considered include:
   - The total size of the portfolio to be managed by each respective manager;
   - The number of managers that will be used for the total portfolio;
   - An initial determination as to whether existing managers will be retained automatically or reviewed as part of the overall selection process;
   - The type(s) of manager or firm to be selected (bond, stock, real estate, etc.);
   - The size of the management firm;
   - The style or investment philosophy of the manager;
   - The methodology or investment process that is desired;
   - The range of fees that are considered tolerable, and whether performance-based fees are desired or acceptable; and
   - Whether “soft dollars” or directed brokerage will be permitted.

   Other factors may influence the trustees or plan sponsor. These might include the location of the manager, minority contracting requirements, or policy restrictions (such as investments in tobacco companies).

2. Select potential candidates.
   Although some retirement systems routinely solicit money managers by advertising, generally in newspapers of broad circulation, this approach may not be fruitful. If local procurement requirements necessitate public advertising, this obviously must be undertaken. However, most professionally assisted manager searches begin with a
“focus list” of money managers who are widely known to meet broad management criteria. If an independent consultant is retained to assist in the process, this list is likely to have been generated in prior engagements. On the other hand, if the staff administrator is responsible for developing such a list, a word-of-mouth approach may be sufficient.

The next step of the process, however, becomes more complicated and controversial. At some point, it becomes necessary to select a subset of finalists who will be screened for performance, fees, and other criteria. The trustees or the investment committee cannot interview all potential candidates, so a narrowing process is required. In performing this screening, some firms may complain that they have been unfairly excluded. If an internally administered selection process is used, it therefore may be necessary to gather more information than would be the case if a consultant were retained.

3. Gather information.
Prior to interviewing the portfolio managers, a formalized procedure for information collection is needed. Typically, this is accomplished through a questionnaire or a request for proposal. Information items generally included in the questionnaire are: description of the firm (including resumes of key personnel, the business organization, and size); the firm’s investment philosophy; the process by which investment decisions are made; the fee structure; client references; the firm’s past performance, with particular emphasis on performance in comparable assignments; and samples of reports generated for clients.

4. Analyze data.
Once the questionnaires or proposals have been received, somebody must compile them in a uniform format. Sometimes, supplemental information or an independent verification of a firm’s claims may be needed.

5. Choose candidates to interview.
The consultant, the plan administrator, the investment committee, or a selection committee should pre-screen candidates for interviews. Most professional advisers recommend the use of a committee so that several opinions can be obtained and charges of favoritism cannot be directed toward a single individual. Further, committee members can independently rate the candidates, which minimizes the potential for “groupthink.” After obtaining these independent ratings, the members can discuss their conclusions. A composite score can be generated and used to select finalists for interviews.

6. Interview finalists
Ultimately, the trustees or the investment committee must make the final decision regarding which firm or firms will be retained by the system. Experience has shown that the process works best if interviews are conducted on a single day. Otherwise, memories tend to fade, and the selection committee can be lobbied during interim periods. Each interview should be scheduled for approximately one hour of time, with a suggested minimum of forty-five minutes, and no more than one and one-half hours devoted to the process of individual interviews.
During the interview period, trustees and pension plan officials should seek to control lobbying efforts by marketing representatives. Until a formal, final decision is made, lunch meetings or hallway discussions may be viewed by competitors as improper or unfair.

Time should be provided for committee discussions after each interview and the conclusion of all interviews. Generally, a senior officer of the firm and the portfolio manager who will be responsible for the pension plan’s account should attend this meeting. Before final selections are made, the selection committee should be sure to return to the original objectives and ensure that the formal criteria are considered in the final decision making.

7. Negotiate contract(s).

The manager selection process should have included all of the considerations identified in the original criteria. Before assets are turned over to the money manager, however, a contract should be executed that includes:

- The specific fee schedule;
- The term of the agreement and cancellation provisions;
- The performance objectives for the manager (perhaps as an appendix);
- Insurance coverage if appropriate; and
- Other factors that may be pertinent to the local jurisdiction.

Trustees and administrators should remember that, at this point, they have the upper hand in negotiating fees and conditions of the engagement.

8. Distribute assets.

The conclusion of a money manager selection process is really the beginning of the next phase of portfolio management. Unless the decision has simply reaffirmed the role of an existing manager, it is likely that assets must be redeployed. This can be accomplished by liquidating an existing manager’s portfolio, or by transferring assets from one manager to another. Generally, it is advisable to allow a newly selected manager to review the old portfolio, and to select those assets that would be desired for ownership under the new manager’s control. The balance of the portfolio then can be liquidated without incurring unnecessary transaction costs.

In some cases, the time period needed to accomplish the transition between the managers can become extended. Care must be taken to ensure that responsibility for performance is properly fixed. If the transition is prolonged, the pension plan could suffer from a situation in which “nobody is in charge.” Evaluation of the new manager then becomes more difficult. Accordingly, most consultants recommend establishing a specific time schedule for asset redeployment.

If the manager selection process is based on a major asset allocation change, thought also might be given to the use of futures contracts to serve as substitutes for actual securities transactions until they can be accomplished in the cash marketplace. This is because the new manager may need time to transfer physical securities and other evidence of ownership to new accounts. Also, time may be needed to sell off large holdings and reinvest in new positions without adversely affecting market prices.
Glossary of Investment Terms

**Alternative investment.** Investments characterized by using non-traditional assets (e.g., timberlands, oil, or gas) or non-traditional trading methods (e.g., private equity, which is not publicly traded). Public pension systems typically invest only a small portion of their overall portfolios in alternative investments.

**Alpha.** A statistical measure of investment return above and beyond the benchmark return. A properly constructed measure of alpha would shed light on the unique attributes of a money manager, such as skill in security selection.

**Asset allocation.** Pension systems are invested in different categories of investments (such as stocks, bonds, and real estate). The division of the total portfolio into different percentages for each asset is sometimes called the asset allocation.

**Beta.** A measure of investment risk in relation to a benchmark. For example, the investment returns of a manager of domestic equities might be compared against the Wilshire 5000 index of domestic equities. Positive returns that are greater than the positive returns of the benchmark (or negative returns greater than the negative returns of the benchmark) are considered riskier, reflected by a higher beta.

**Bonds.** Fixed-income securities, usually paying interest on a fixed schedule. Local, state, or national governments, corporations, and financial institutions can issue bonds. Sometimes investors refer to all fixed-income securities (including mortgages and guaranteed investment contracts) as bonds, although this is not completely accurate.

**Capital markets.** The various markets in which bonds, stocks, and other securities are bought and sold. They include regulated exchanges, as well as over-the-counter markets. Usually, capital markets are the appropriate place for long-term investors such as pension systems. They are distinguished from money markets, which consist of short-term investment instruments.

**Cash equivalents.** Short-term, high-quality securities that produce a rate return reflective of money market interest rates. Examples include U.S. Treas-
sury bills, short-term government securities, bank certificates of deposit, commercial paper, repurchase agreements, and similar instruments.

**Certificate of deposit (CD).** An investment instrument issued by a bank or savings association. Usually offered as a short-term investment, CDs offer a fixed rate of return. Under federal deposit insurance regulations, pension systems are ensured on behalf of their employee members, which means that the federal deposit insurance usually exceeds the conventional $100,000.

**Common stocks.** Shares of ownership in private corporations. Stocks are one form of equity, which means that the owner is entitled to an individual share of the ownership of the corporation. Unlike preferred stocks, which usually pay a predetermined dividend and may offer special security in the event of bankruptcy, common stocks offer no such protection. In return, common shareholders receive the benefits whenever profits exceed the claims of lenders and preferred shareholders.

**Correlation.** A statistical relationship between two assets, which measures the degree to which they increase or decrease in value simultaneously. Perfectly correlated assets would increase in identical proportions. Inversely related assets move in opposite directions.

**Current assets.** The current assets of a pension system include cash and investments. These should be measured on a market or market-related basis for purposes of investment decision making and portfolio planning.

**Diversification.** The systematic purchase or holding of multiple securities to preclude large losses arising from adverse developments in any one area.

**Duration.** A measure of interest-rate risk. For example, bonds with a long duration decline in value when interest rates increase compared to short-duration bonds, because long-term bonds are more sensitive to interest rate movements.

**E.A.F.E.** Europe, Australia, and Far East stock index compiled by the investment banking firm Morgan Stanley Capital International. This index is commonly used as a benchmark for international investments.

**ERISA.** Employee Retirement Income Security Act, adopted by Congress in 1974. This federal statute applies to private-sector pension plans. Public pension systems are not governed by the statute, but may attempt to subscribe to the fiduciary standards written into the federal law.

**Fixed-income securities.** Investment instruments that promise to pay the investor a future return that is set in advance. Included are bonds, which usually pay a fixed coupon interest rate every six months; mortgages and mortgage securities, which repay investors as homeowners and borrowers make their payments of interest and principal; guaranteed investment contracts (GICs); and other vehicles that are traded in the credit markets.
Growth stocks. Investment styles are frequently categorized along two dimensions: size of companies the money manager invests in (small, medium, or large corporations, measured by the aggregate value of each corporation’s market capitalization) and stock characteristics (value, growth, or core). Growth money managers specialize in selecting high-growth stocks (often characterized by high price-to-book or price-to-earnings ratios), value managers in stocks with correspondingly low ratios, and core managers operate in both niches.

Guaranteed investment contracts (GICs). An investment instrument issued by a regulated insurance company, and guaranteed from the general assets of the insurance company. GICs usually pay a fixed rate of return, determined in advance, but generally are not marketable. They may be used as “buy-and-hold” investments.

Hedging. The use of specialized instruments, such as financial futures and options, to modify the risk characteristics of a portfolio. For example, a pension money manager could hedge a stock portfolio by purchasing puts (the right to sell stock at a lower price) as a way to protect against catastrophic losses if the market declines abruptly.

Index fund. A mutual fund or trust fund with a portfolio consisting of securities that are held in direct proportion to a given market index. In the stock market, many index funds seek to replicate the performance of the Standard & Poor’s 500 index, for example, by purchasing stocks in the exact ratio used by Standard & Poor’s in its index. In the bond market, various index funds seek to hold different fixed-income securities in proportions that reflect the universe of outstanding securities. Index funds are closely associated with passive investment management.

Insurance company clause. A state law that restricts pension system investments to the same instruments that may be purchased by regulated insurance companies.

Investment return. Portfolio managers, consultants, and trustees measure the return on investments in a specific way. In addition to income generated from dividends and interest, changes in market value are added or subtracted. Thus, a common stock whose price has risen by 10 percent and whose dividends represented 4 percent of the price at the beginning of the year would be credited with an investment return of 14 percent. On the other hand, a bond that paid coupon interest of 8 percent, but whose price declines by 10 percent (because of rising interest rates) would show an investment return of -2 percent. In measuring portfolio performance, dollar-weighted rates of return and time-weighted rates of return should be considered.

Legal list. A state statutory list that identifies investments that can be purchased by pension systems. Usually, these lists include government securities, investment-grade corporate bonds and stocks, as well as other specific investments.

Liability stream. The actual cash payments projected to be made in the future by a pension system on a year-by-year basis.
Money manager. Individual or firm retained to buy and sell securities or other assets for pension systems. A money manager relieves pension systems of the day-to-day activities associated with operating a portfolio. Portfolio management of some pension systems is accomplished through internal staff rather than external consultants.

Multiple managers. Arrangement in which a pension system's portfolio is assigned to several portfolio managers, usually with special responsibilities for each.

Performance-based fee. An arrangement whereby a money manager is compensated in proportion to the degree by which investment results exceed a predetermined benchmark. Frequently, a market index is used as the benchmark, and the manager is paid extra only if the portfolio's returns exceed the index.

Portfolio insurance. A portfolio hedging technique using financial futures or options. Usually, a portfolio management firm seeks to employ sophisticated market strategies that will assure a pension system's minimum returns. This can be accomplished by purchasing put options or by selling stock index futures short in declining markets.

Portfolio manager. See money manager.

Price-earning (P/E) ratios. The relationship between a common stock's price and the corporation's per-share earnings. Typically, P/E ratios are used to measure a stock's relative value. High P/E ratios generally connote riskier investments, although they may also be associated with high-growth companies.

Prudent investment clause. A policy that requires investments to be made with the judgment and care, under circumstances then prevailing, that persons of prudence, discretion, and intelligence would exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived. Such statutory language sometimes replaces legal lists, and provides greater flexibility and responsibility to investment governing bodies.

Real estate. For pension investment purposes, real estate usually refers to land and buildings that can be expected to produce income. Capital appreciation may be a part of the investment strategy, however. Real estate is one form of equity investment (the other being stocks). Usually, diversified portfolios of real estate are required by pension systems, and require the use of professional management firms or advisors.

Return objectives. The investment returns sought by a pension system. Frequently, these are expressed as a long-term rate of return, either before or after inflation.

R-squared. A statistic that measures the strength or closeness of the relationship between two variables. For example, a pension's international portfolio might be
closely linked to the Morgan Stanley Capital International EAFE benchmark of international securities, reflected by a high R-squared statistic. This international portfolio would have a weaker relationship to a U.S. stock market benchmark such as the S&P 500, manifested by a low R-squared statistic (making the S&P 500 a less useful benchmark).

**Soft dollars.** Arrangement with brokers whereby money managers or clients receive special benefits (research, computer facilities, etc.) in exchange for brokerage business with a specific firm.

**Standard deviation.** A measure of volatility or fluctuation. Standard deviation is a way to measure the probable range within which a number would be likely to fluctuate. In the case of investment returns, one standard deviation would measure the range within which returns would be expected to occur about two-thirds of the time. Thus, an investment with an average return of 5 percent and a standard deviation of 10 percent would be likely to fluctuate within the range of -5 to 15 percent at least two-thirds of the time.

**Stocks.** Shares of ownership in a corporation. See common stocks.

**Strategic (normal) asset allocation.** A long-term plan for apportioning a pension system’s investments among various asset classes. Generally, the strategic asset allocation ignores current market values, and focuses instead on long-term investment objectives and risk tolerances.

**Tactical asset allocation.** The deployment of investment assets to take advantage of timely market opportunities or to avoid current investment risks. Unlike strategic allocation, tactical asset allocation decisions involve timing factors.

**Value stocks.** Investment styles are frequently categorized along two dimensions: size of companies the money manager invests in, and stock characteristics (value, growth, or core). Whereas growth money managers specialize in selecting high-growth stocks (often characterized by high price-to-book or price-to-earnings ratios), value managers invest in stocks with correspondingly low ratios.

**Venture capital.** Investments in new, emerging companies that involve greater risk than established companies’ stock ownership. Venture capital sometimes takes the form of debt as well as ownership interest in a new business venture. Historically, the returns on venture capital have been higher than other forms of investment, but so have the risks.

**Volatility.** Fluctuations in the market value or the rate of return of an investment. A highly volatile security is one whose price or yields change dramatically, and therefore fluctuate considerably from the average. Historically, stocks have exhibited greater volatility in their returns than bonds or short-term securities (such as U.S. Treasury bills).
Appendix E
Pension System Self-Examination

To get started in implementing the ideas presented in this guidebook, try to evaluate your retirement system using the criteria and scoring system presented below.

Your score

Administrative/Legal
Do all trustees have copies of appropriate statutes, attorney opinions, and other governing laws?

1 Yes 0 No

How frequently does the board review, with counsel, its legal authority and the fiduciary responsibilities of trustees?

1 Every year or two 0 Never

Does your plan operate under a prudent person investment statute?

2 Yes

1 Modernized legal list or basket clause

0 No, outdated statute

Have investment policies been written and adopted?

2 Yes 0 No

Does the board maintain accurate minutes regarding the rationale for major investment decisions?

2 Yes 0 No

Professional Coordination
Are annual meetings held with each of the major advisers (attorneys, accountants, actuaries, consultants, portfolio managers, etc.) present to discuss the investment program?

2 Yes 0 No
Have actuaries and investment advisers met to analyze the plan's demands for cash in relation to investment planning?

________
1 Yes 0 No

If multiple money managers are used, has the board determined how their responsibilities fit together and how they might duplicate or cancel each other out?

________
1 Yes 0 No

Has the retirement board provided for investment training for an internal staff person (plan administrator, finance director, etc.)?

________
1 Yes 0 No

**Asset Allocation**

Has the board of trustees developed a formal asset allocation plan?

________
2 Yes 0 No

Have pension officials determined the financial impact (on contribution rates) of different long-term rates of return?

________
1 Yes 0 No

**Portfolio Management**

Are portfolio managers assigned specific portfolio responsibilities on the basis of a formal plan?

________
1 Yes 0 No

Have portfolio performance measures (indexes or benchmarks) been established as a basis for evaluating portfolio manager performance?

________
1 Yes 0 No

Has the board formally evaluated the advantages and disadvantages of index funds as an alternative to active portfolio management?

________
1 Yes 0 No

Has the board evaluated the relative net (after fees) investment returns of its portfolio managers over the past two to three years, on a collective as well as individual basis?

________
1 Yes 0 No

Has the board established a procedure for systematically monitoring money manager activities and for controlling their actions?

________
2 Yes 0 No
Reporting
Does the board annually report its investment results to the sponsoring jurisdictions and employees?

2 Yes, comprehensive
0 Incomplete or no reporting

Enter your total score here: _________

<table>
<thead>
<tr>
<th>Score</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-24</td>
<td>A complete investment program.</td>
</tr>
<tr>
<td>16-20</td>
<td>A generally well designed investment program that can be improved.</td>
</tr>
<tr>
<td>12-15</td>
<td>Although basic decision making is sound, several weaknesses should be remedied.</td>
</tr>
<tr>
<td>11 or less</td>
<td>You should act promptly and decisively to improve the investment program. Sponsors or beneficiaries could challenge serious deficiencies.</td>
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