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Part 6:
Risk Management

Learning Objectives

Managing General Risk

- Demonstrate understanding of fiduciary responsibility
- Know several strategies for protecting against fiduciary liability
- Be familiar with risk assessment
- Understand internal control concepts, such as preventative and detective controls
- Distinguish the roles of the trustees, system administrator and staff, related to risk control
- Read and understand a Comprehensive Annual Financial Report
- Comprehend the role of auditors, including internal and external
- Be aware of state requirements related to contracting
- Be familiar with their system's measures for ensuring security of confidential information
- Understand the importance of recordkeeping requirements
- Know the ways in which management of the system is delegated to the executive director

Managing Investment Risk

- Explain the importance of diversification
- Be familiar with types of investment risk including systematic and specific risk, and how to manage total risk
- Understand the basic elements of an investment policy statement and be familiar with their system's investment policy
- Demonstrate understanding of due diligence

Risk Management

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"For every complex problem there is an answer that is clear, simple, and wrong."
– H.L. Mencken

This session will cover:

- Risk Assessment
- Adoption of a Governance-Risk-Compliance Framework
- Internal Controls

Risk Management

- Internal Controls
- Risk Assessment
- Investment Risks and Financial controls
- The Keeping or Records (security of Confidential Information)
- Comprehensive Annual Financial Report
- Internal and External Auditors

Risk Is Defined Within A Context, For Example:

- **Asset allocation** risk;
- **Asset liability mismatch** risk;
- Board and Actuary **miscommunication** risk;
- Board Committee structure and **personnel** risk;
- **Cybersecurity** risk;
- **Delegations of authority** risk;
- **Ethics** risk;
- **Fiduciary responsibilities** risk;
- **Financial controls** risk;
- **Legal risk**;
- **Operations** risk; and
- **Reputational** risk.

Internal Control

Internal control is a process, effected by an entity's board of directors, management, and other personnel, **designed to provide reasonable assurance regarding the achievement of objectives** in the following categories:

- Effectiveness and efficiency of operations
- Safeguarding of assets, preventing fraud
- Reliability of financial reporting
- Compliance with applicable laws and regulations

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Why Is An Internal Controls Framework Important?

L – LEARN — Examine and analyze the context and culture of the pension plan to learn what the plan needs to know to establish investment return objectives within a principled asset allocation decision-making process.

A – ALIGN — Align investment performance, governance risk management and compliance objectives, strategies, decision-making criteria, actions and controls with the requirements established by the Texas statutes, rules and regulations.

P – PERFORM — Address threats, opportunities, and requirements by encouraging desired conduct and events, and prevent what is undesired, through the application of proactive, detective, and responsive actions and controls.

R – REVIEW — Conduct activities to monitor and improve design and operating effectiveness of all actions and controls, including their continued alignment to investment risk-return objectives, funded status objectives, and all relevant legal requirements.

Benefits of Internal Controls

- Reducing and preventing errors
- Ensuring priority issues are identified and addressed
- Protecting employees & resources
- Providing appropriate checks and balances
- Having more efficient audits, resulting in shorter timelines, less testing, and fewer demands on staff

Whose Job Is It? Everyone Plays a Role!

Good Governance and **Risk Management** considers the structure, manner and processes through which a defined benefit pension Board exercises authority, and the various other plan professionals with whom trustees will interact:

- Board Actuary;
- Plan Accountants;
- Auditors – both internal and external;
- Custodians;
- Investment Advisers;
- Investment Consultants;
- Investment Managers;
- Legal Counsel; and
- Other Service Providers.

Weak Internal Controls Increase Risk

- Business Interruption
- Erroneous Management Decisions
- Fraud, Embezzlement and Theft
- Statutory Sanctions
- Excessive Costs
- Loss, Misuse or Destruction of Assets
- Inappropriate Financial Reporting

Internal Control Starts At The Top

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The Board is responsible for the following:

- Creating the Tone-at-the-Top
- Procedures Are In Place To Objectively Assess Management's Practices
- Management Develops And Adheres To Sound System Of Internal Controls
- Independent Auditors Assess System's Financial Reporting Practices.

The Executive Director is responsible for the following:

- Properly develops internal controls
- Adheres To Sound System Of Internal Controls
- Continuous oversight to assure adherence to sound system of internal controls
- Annual Independent Auditors Assessment of the System's Financial Reporting Practices
- Presents Positive Tone-at-the-Top Regarding Importance of System of Internal Controls.

Risk Assessment

- Risks are internal & external events that threaten the accomplishment of objectives (economic conditions, staffing changes, new systems, regulatory changes, natural disasters, etc.).
- Risk assessment is the process of identifying, evaluating, and deciding how to manage these events.
  1. What is the likelihood of the event occurring?
  2. What would be the impact if it were to occur?
  3. What can we do to prevent or reduce the risk?

Risk Assessment Concepts & Tools

- Policies and Procedures
- Separation of Duties
- Reconciliation and Review
- Security of Assets

Risk Assessment using Policies And Procedures

- Well designed system enhances both accountability and consistency. Procedures should:
  - Include an appropriate level of approval
  - Delineate the authority and responsibility
  - Explain the design and purpose of control-related procedures.
  - Promptly updated
- Management is responsible for ensuring that this duty is performed consistently.

Control for Risk: Separation of Duties

- Probably the most important control activity.
- Divide responsibilities between different employees so one individual doesn't control all aspects of a transaction.
- Reduce the opportunity for an employee to commit and conceal errors (intentional or unintentional) or perpetrate fraud.
- Separate ability to authorize and execute transactions.

Control for Risk: Reconciliation and Review

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- Examine transactions, information, and events to verify accuracy, completeness, appropriateness, and compliance.
- A basic level of review is on materiality, risk, and overall importance to organization's objectives.
- Ensure frequency is adequate enough to detect and act upon questionable activities or simple mistakes in a timely manner.

Control for Risk: Security of Assets

- Secure and restrict access to equipment, cash, inventory, confidential information, etc. to reduce the risk of loss or unauthorized use.
- Perform periodic physical inventories to verify existence, quantities, location, condition, and utilization.
- Base the level of security on the vulnerability of items being secured, the likelihood of loss, and the potential impact should a loss occur.

Control for Risk: Contracting

- Evaluate scope of services
- Mandate review and performance schedule
- Review remuneration terms
- Assess risks stemming from services
- Review mandatory provisions – State specific

  scope, standard of care, limitation of liability, waiver of consequential damages, indemnification
- “Nice to have” provisions
- Heightened risk provisions

Risk Assessment: Document Communication

- Pertinent information must be captured, identified and communicated on a timely basis.
- Effective information and communication systems enable the organization's people to exchange the information needed to conduct, manage, and control its operations.
- Effective information needs to be timely.

Control for Risk: Monitoring

- Internal control systems must be monitored to assess their effectiveness… Are they operating as intended?
- Ongoing monitoring is necessary to react dynamically to changing conditions…Have controls become outdated, redundant, or obsolete?
- Monitoring occurs in the course of everyday operations, it includes regular management & supervisory activities and other actions personnel take in performing their duties.

Level of Investment Risk

- "Necessary" risk:
  - Enables the fiduciary to cover short- and long-term liabilities and/or objectives
  - Is associated with a point on the efficient frontier
- "Tolerable" risk:
  - The amount of risk beneficiaries and fiduciaries will tolerate without deviating from the proposed portfolio design

Systematic & Non-Systematic Risk

- Systematic risk – the risk that is tied to overall economic conditions and cannot be avoided. Investors are compensated for assuming more systematic risk via higher return expectations over longer-term time horizons.
- Non-systematic risk – the risk that is specific to each asset held and generally can be lessened by increasing the number of diverse assets whose returns would not be expected to closely correlate to each other or to the assets already held in the portfolio. Generally speaking, fiduciaries are obligated to diversify to reduce non-systematic risk.

Managing Investment Risk as measured by Standard Deviation

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- A manager's alpha risk or active risk is measured by standard deviation
- The standard deviation is often used by investors to measure the risk of a stock. The basic idea is that the standard deviation is a measure of volatility i.e. the more a stock's returns vary from the stock's average return, the more volatile the stock. Consider the following two stock portfolios and their respective returns over the last six months:

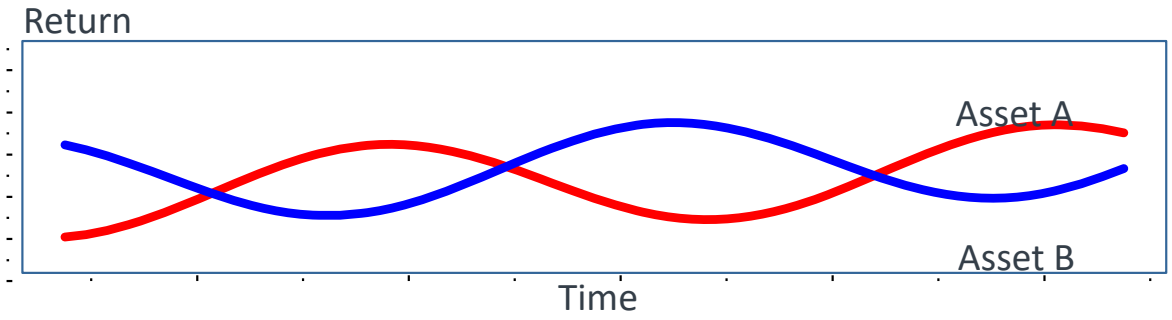
	Stock A			Stock B		
Month	Value	Return	Final Value	Value	Return	Final Value
1	1000	0.75%	1008	1000	1.50%	1015
2	1008	1%	1018	1015	5%	1066
3	1018	3%	1048	1066	12%	1194
4	1048	-1.5%	1032	1194	-9%	1086
5	1032	0.50%	1038	1086	-4%	1043
6	1038	2%	1058	1043	1.5%	1058

- Both stocks end up increasing in value from $1,000 to $1,058. However, both stocks differ in volatility. Stock A's monthly returns range from -1.5% to 3% whereas Stock B's range from -9% to 12%.
- The standard deviation of the returns is a better measure of volatility than the range of returns because it takes all the values into account. The standard deviation of the six returns for Stock A is 1.52; for Stock B it is 7.24

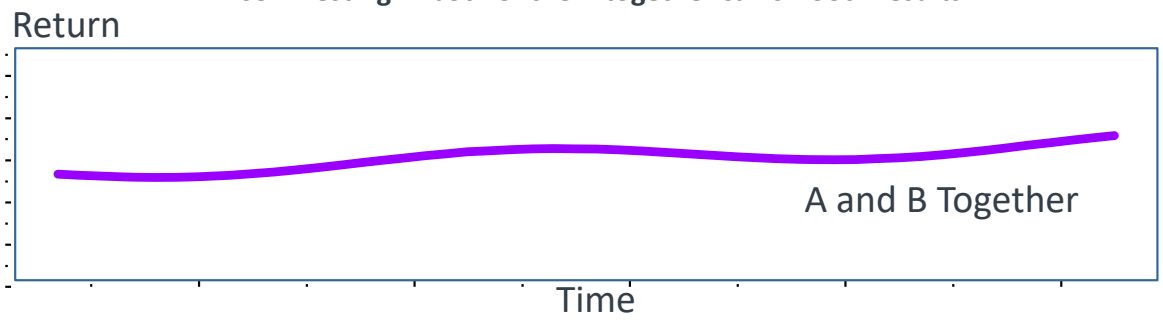
Managing Investment Risk through Diversification

Diversification is the practice of holding a large number of assets or asset classes in a portfolio so as to reduce the portfolio's sensitivity to the return of an individual asset (or class of assets). Diversification can produce a more optimal risk/return relationship.

Assets A and B have low correlations



... so investing in both of them together can smooth results



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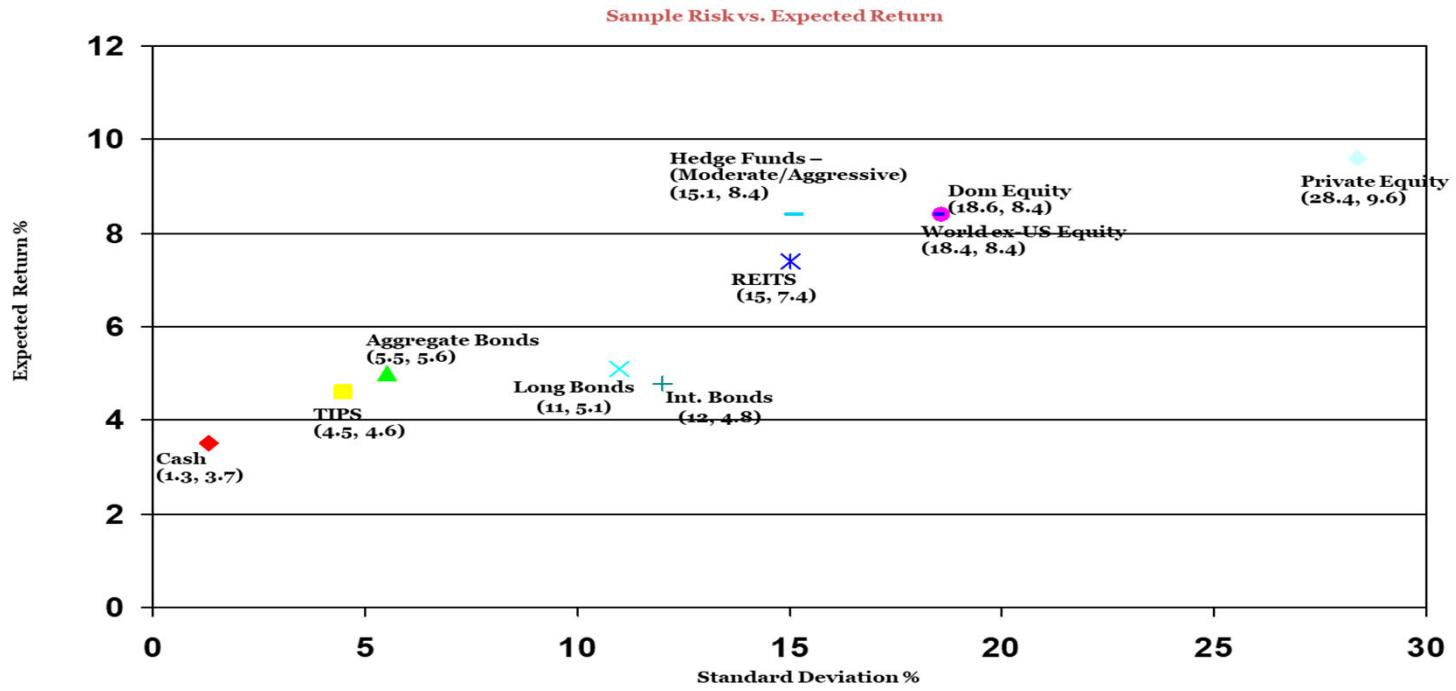
Managing Risk through Allocation of Diverse Assets



Methods of Investing

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Passively Managed Portfolio

- A strategy of holding a well diversified portfolio of securities without attempting to outperform other investors (defined as the broad market index, hence the benchmark)
- The Portfolio Manager will create a portfolio of securities that holds close to the same weightings of sectors (financials, technology, healthcare, etc.) as their specific benchmark

Actively Managed Portfolio

- A strategy of creating a portfolio of securities selected by the “skill” of the portfolio manager with the goal of outperforming the broad market
- The term Alpha is typically used when discussing active management – Alpha is the excess returns generated by a portfolio due to the “skill” of the portfolio manager

Developed versus Emerging

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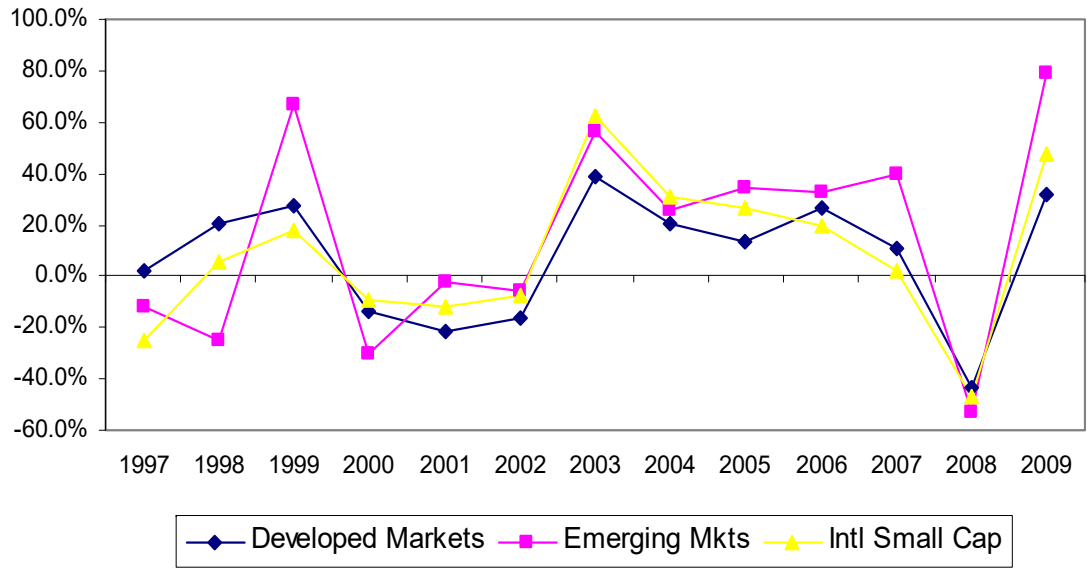
Rolling One Year Returns for Annual Periods Ending December 31



Annual Financial Report Requirement

«802.103. Annual Financial Report.

The governing body of a public retirement system shall publish an annual financial report showing the financial condition of the system as of the last day of the fiscal year covered in the report. The report must include:

1. the financial statements and schedules examined in the most recent audit performed
2. a statement of opinion by the certified public accountant as to whether or not the financial statements and schedules are presented fairly and in accordance with generally accepted accounting principles
3. a listing, by asset class, of all direct and indirect commissions and fees paid by the retirement system during the system's previous fiscal year for the sale, purchase or management of system assets; and
4. the names of investment managers engaged by the retirement system.

The governing body of a public retirement system shall, before the 211th day after the last day of the fiscal year under which the system operates, file with the State Pension Review Board a copy of each annual financial report it makes as required by law.

Comprehensive Annual Financial Reporting

- Annual Comprehensive Financial Report (CAFR)
- Periodic Financials and Budget Reports
- Open/Formal communication with Executive Level

Auditors – Internal and External – Perform A Critical Function:

- Internal auditors are employees examining issues related to business practices and risks of the plan.
- External auditors are independent persons or firms examining the books and financial records, and issuing an opinion.

Annual Audit Requirement

«802.102. Audit.

The governing body of a public retirement system shall have the accounts of the system audited at least annually by a certified public accountant in accordance with generally accepted auditing standards. A general audit of a governmental entity does not satisfy the requirement of this section.

Correction of Errors

«802.1024. Correction of Errors.

…if an error in the records of a public retirement system results in a person receiving more or less money than the person is entitled to receive under this subtitle, the retirement system shall correct the error and so far as practicable adjust any future payments so that the actuarial equivalent of the benefit to which the person is entitled is paid. If no future payments are due, the retirement system may recover the overpayment in any manner that would be permitted for the collection of any other debt.

Report of Members and Retirees

«802.104. Report of Members and Retirees.

Each public retirement system annually shall, before the 211th day after the last day of the fiscal year under which the system operates, submit to the board a report containing the number of members and number of retirees of the system as of the last day of the immediately preceding fiscal year.

Registration Requirements

«802.105. Registration.

Each public retirement system shall, before the 91st day after the date of its creation, register with the State Pension Review Board.

A registration form submitted to the board must include:

1. the name, mailing address, and telephone number of the public retirement system
2. the names and occupations of the chairman and other members of its governing body
3. a citation of the law under which the system was created
4. the beginning and ending dates of its fiscal year; and
5. the name of the administrator of the system and the person's business mailing address and telephone number if different from those of the retirement system.

A public retirement system shall notify the board of changes in information before the 31st day after the day the change occurs.

Reports and Contact Information Requirements

«802.107. General Provisions Relating to Reports and Contact Information.

A public retirement system shall maintain for public review copies of the most recent edition of each type of report or other information required to be submitted to the State Pension Review Board.

A public retirement system shall post on a publicly available Internet website:

1. the name, business address, and business telephone number of a system administrator of the public retirement system
2. a copy of the most recent edition of each report and other written information that is required…to be submitted to the [Pension Review Board].

Theft and Embezzlement Safeguards

- Safeguards include:
  - Insurance protection through a fidelity bond
  - Internal controls to reduce, if not eliminate, opportunities for bad behavior
  - Physical security measures to minimize external threats

Sufficient Insurance is Required

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- Bank deposits insured through FDIC (Federal Deposit Insurance Corporation)
- Broker-Dealer customer accounts normally insured through SIPC (Securities Investor Protection Corporation)

Client and Plan Data Must Be Secured

- Client and data protection is consistent with duty of care
- An assessment of data security should include the following areas:
  - Personally Identifiable Information (PII)
  - Storage, transmission, and disposal of beneficiary or plan data
  - Data encryption
  - Background checks
  - Document retention policies
  - Data back-ups
  - Physical security controls
  - Terminated employees
  - Procedures for handling security breaches

Managing Cybersecurity Risk

National Institute of Standards and Technology's (NIST) five-part framework:

1. Identify the assets at risk
2. Protect assets from compromise
3. Detect possible breaches through ongoing monitoring
4. Respond to breaches by taking action and containing the impact
5. Recover from a breach by understanding what happened, restoring capabilities, and making improvements

Theft and Embezzlement Safeguards

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  - Physical security measures to minimize external threats

Disaster Recovery Plan

- The DRP is meant to ensure continuity of operations when extraordinary events occur; extraordinary events include:
  - natural disasters
  - major accidents
  - severe weather
  - extended power outages
- An annual test is best practice