Pension Fund Management
At the World Bank

Sudhir Rajkumar
Head of Pension Advisory
Financial Advisory and Banking

World Bank Treasury
Washington, DC
Road Map

- Background on World Bank Treasury
- Overview of World Bank Pension Fund
- Pension Fund Investment Framework
  - Governance Structure
  - Investment Policy
  - Investment Management
  - Risk Management
  - Performance Measurement
  - Accounting & Reporting
  - Information Technology
World Bank Treasury Activities

- **US$120-140 billion of investment management**
  - 85% managed internally
  - 15% managed externally
  - Full spectrum of assets, from fixed income (bonds) to private equity
  - Includes US$20 billion of Pension Plan Assets

- **US$20-40 billion borrowings per year**
  - Frequent international issuer with hundreds of transactions per year
  - Wide variety of products with different maturities, currencies, and structures

- **US$25-50 billion derivative operations per year**
  - Variety of derivative products for risk management
Overview of WB Pension Fund

- Established in 1948
- Current fund size: USD 20 billion
- Membership: 15000 active staff, 9000 retirees
- Well-funded plan, with assets close to liabilities
- Investments in a wide range of asset classes including equities, bonds, real estate, hedge funds and private equity
- Investment activities overseen by Pension Finance Committee, and managed by qualified professional staff
Pension Fund Management Decisions

Policy

- **HR Policy**
  - Pension plan design resulting in creation of contractual obligations or liabilities

- **Overall Policy**
  - Funded scheme ensures security of entitlement and sustainability

- **Funding Policy**
  - Contributions to a funded scheme have to be determined

- **Investment Policy**
  - Investment Policy devised for maximizing Plan wealth subject to risk constraints

Diagram:
- **Employer Pension Scheme**
  - **Funded or Pay as You Go (PAYG) Scheme**
    - **Contributions Participants & Employer**
      - **Investment Process**
Pension Fund Management Decisions

- Overall goal is to build up and sustain a well-funded pension plan that can meet the contractual pension liabilities over time.

- Ultimately, the pension benefit payments have to be met through some combination of contributions from the sponsor and investment returns on plan assets (*Funding Policy and Investment Policy*).

- Critical decision involves making the appropriate tradeoff between return and risk.

- A very conservative investment policy could result in meager investment returns, and force the sponsor to make large contributions.

- A very aggressive investment policy could make the fund vulnerable to adverse investment outcomes, and jeopardize the financial health and security of the plan.
Clicker Question

Which factor is most important to ensure long-term financial sustainability of a pension scheme?

A. Pension Scheme Design
B. Funding Policy
C. Investment Policy
D. All of the above
Which factor is most important to ensure long-term financial sustainability of a pension scheme?

A. Pension Scheme Design
B. Funding Policy
C. Investment Policy
D. All of the above
Investment Framework

Governance Structure

- Accounting & Reporting
- Information Technology
- Risk Management
- Performance Measurement
- Investment Policy
- Investment Management
Guiding Principles

- Good governance = Clear separation of roles and accountabilities;
- Every pension fund has a unique risk profile based on:
  - the liability characteristics of the Fund; and
  - the size of the Fund relative to its liabilities;
- Board should “own” the Fund’s risk profile (both SAA & Risk Budget), and should review it at regular intervals, as well as in response to structural changes (e.g. availability of new asset classes, demographic profile of beneficiaries, cash-flow needs, capacity of domestic markets, ability to hedge currency risk);
- Policy decisions need to be clearly articulated and documented;
- All other decisions should be delegated to levels where they can be made most effectively, together with enhanced controls which create accountability; and
- Risk usage, total return, and performance versus benchmarks, should be monitored and reported regularly with a focus on the Fund’s investment horizon;
Organizational Structure

**Internal Audit**
- Periodic review of processes and procedures

**Controller**
- Financial Statements
- Internal Control Environment

**Settlement & Control**
- Bank balances
- Trade settlement
- Operational risk measurement

**Accounting & Valuations**
- Pricing
- Accounting
- Reconciliation

**Risk & Analytics**
- Risk
- Benchmarks
- Performance

**Investment Committee**
- Investment Guidelines
- Risk Allocation
- External vs In-house Mgmt.

**Investment Management**
- In-house Mgmt.
- Mgmt. of Ext. Managers
- Active risk Mgmt.

**Governing Board**
- Investment Policy
- Overall Risk Budget
- Oversight

**Legal Counsel**
What decisions do we need to make?

Range of required investment-related decisions

- Roles and responsibilities of oversight committee and staff
- Investment philosophy, objectives, investment horizon, and risk tolerance
- Investment policy
  - role of liabilities
  - asset class strategies
  - performance benchmarks
  - risk budget for active management
- Internal versus external management of the pension assets
- Portfolio construction and manager selection
- Engagement of auditors and custodian
- Frequency and content of reporting to – staff, management, investment committee, board, stakeholders
- Budget for investment management
Key Roles

GOVERNING BOARD
- Approves Investment Policy: Fund Objectives, Investment Horizon, Risk Tolerance & Metrics, Eligible Asset Classes, SAA, Risk Budget

INVESTMENT COMMITTEE
- Sets Policy Benchmarks, Allocates Risk Budget, Approves Investment Guidelines

STAFF
- Implements Investment Policy
Governance: World Bank Pension Plan Staff Delegation

Pension Finance Committee

- Investment Staff: Internal & External Mgt
- Strategy, Risk and Analytics
- Operations & Accounting

Staff develop, recommend and implement asset allocation, investment management and other policies in a well segregated and specialized institutional environment

Significant delegation of decision-making to staff
Importance of On-going Board Education

- Continuing orientation and education of Board members, both individually and as a group

- Education ensures understanding of fiduciary responsibilities and scope of authority

- Participation by external “experts” in Board meetings as necessary, particularly when specialized topics are being presented by staff

- Ultimate objective is to facilitate the Board’s ability to make necessary decisions, and “own” these decisions
Importance of Strategic Public Communication

1. What are your Objectives?
2. Who is your Audience?
3. What behavior change are you aiming for?
4. What Message(s) do you want to Communicate?
5. What Channels can you use to Communicate?
6. How do you Measure and Evaluate Results?
Clicker Question

What activities should a pension fund’s Governing Board focus on?

A. Articulating and documenting key Policy decisions
B. Getting involved in Operational decision-making
C. Educating Board members to help with item A
D. Communicating pro-actively with key stakeholders
E. A, C, and D
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D. Communicating proactively with key stakeholders

E. A, C, and D
Investment Framework

- Governance Structure
- Investment Policy
- Information Technology
- Investment Management
- Risk Management
- Performance Measurement
- Accounting & Reporting
Investment Policy Process

1. Fund Objectives and Investment Horizon

2. Risk Tolerance and Other Constraints

3. Capital Markets Assumptions and Eligible Asset Classes

4. SAA Model Optimization/simulation methods to determine the best long-term allocation

5. Implementing the SAA Setting the policy benchmark
Investment Policy Issues

Defined Benefit Pension Funds

- **Fund Objectives:**
  - Fund stream of cash outflows in cheapest possible way, given that:
    - cash inflows (e.g. contributions) can be controlled
    - cash outflows (e.g. benefit payments) uncertain and cannot easily be controlled or influenced

- **Investment Horizon:**
  - Typically fairly long, but may be affected by regulatory and accounting factors

- **Risk Tolerance:**
  - Moderate to High, but can vary depending on funded status and demographic profile of beneficiaries
Defined Contribution Pension Funds

- Fund Objectives:
  - Create stable and sufficient retirement income, given that:
    - cash inflows (e.g. contributions) are known
    - cash outflows (e.g. required income in retirement) relatively more uncertain

- Investment Horizon:
  - Typically fairly long, but depends on age of individual

- Risk Tolerance:
  - Low, Moderate, or High, depending on age and retirement goals of individual
What is Strategic Asset Allocation?

“The process by which an institution determines the appropriate neutral asset allocation to achieve its long-term investment objectives”

- SAA is neutral (should not be driven by short-term market views)
- Objectives are long-term and can be varied (help meet certain future payment obligations or liabilities, preserve and grow capital etc.)
- SAA should be reviewed periodically (conditions can change, both internal and external)
- Essentially involves trade-off between return and risk
- Typically SAA seeks to maximize return subject to a set of risk constraints
- Pension SAA should be liability driven
Importance of long-term investment policy

Strategic asset allocation is the key driver of long-term investment success:

- defines the overall return-risk profile of the portfolio
- ranks high in the hierarchy of investment decisions
- needs to be owned at the highest level

Typical Investment Objectives

- Maintain and grow the plan surplus, which is the difference between the value of assets and liabilities
- Maintain and grow the funded ratio, which is the ratio of assets to liabilities
- Liabilities are the key to definition of pension plan investment objectives
- Critical to understand the nature of liabilities (e.g., are they indexed to inflation, etc.) and how they are valued
Measuring Liabilities

Liabilities are the present value of benefit payments and can be valued using different assumptions and measures.

<table>
<thead>
<tr>
<th>Group</th>
<th>Past Service</th>
<th>Future Service</th>
<th>Salary Increase</th>
<th>New Entrants</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABO</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBO</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Closed Group</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Open Group</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Define key actuarial assumptions such as mortality, termination rates, cost-of-living increases in pensions, investment return, inflation.
Asset-only versus Asset-liability approach

- Portfolios should be constructed on an asset-liability basis
  - Correlations between assets and liabilities matter
Illustrative back-test
- liabilities matter

Impact of Fixed Income duration on the Funded Ratio

<table>
<thead>
<tr>
<th>Asset-only Pension Portfolio</th>
<th>LDI Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocation</td>
<td>Allocation</td>
</tr>
<tr>
<td>US Equity</td>
<td>US Equity</td>
</tr>
<tr>
<td>International Equity</td>
<td>International Equity</td>
</tr>
<tr>
<td>Lehman Global Agg. (Hedged)</td>
<td>Long maturity Treasury Bonds</td>
</tr>
<tr>
<td>Real Estate</td>
<td>Real Estate</td>
</tr>
<tr>
<td>Surplus return</td>
<td>Surplus return</td>
</tr>
<tr>
<td>Surplus volatility</td>
<td>Surplus volatility</td>
</tr>
<tr>
<td>Asset-only volatility</td>
<td>Asset-only volatility</td>
</tr>
</tbody>
</table>

-7.1%  17.8%  9.5%  
-5.3%  13.1%  10.6%

Source: Ryan Labs Liabilities Index, Bloomberg and World Bank Treasury calculations.
Determinants of Institutional Risk Tolerance

- **Sponsor**
  - Financial Strength
    - Size of the plan relative to the sponsor
    - Financial health of the sponsor
  
  *Stronger sponsor implies a higher ability to take risk*

- **Investment Horizon**
  - Net cash flow profile of the plan
  - Demographics of the plan

  *A longer investment horizon implies a higher ability to take risk*

- **Funded Status**
  - Funded ratio of the plan on mark to market basis

  *A higher funded ratio implies a higher ability to take risk*
Typical Risk Constraints

Two measures of risk:

a. Minimum acceptable funded ratio levels
b. Maximum acceptable contribution rates

Avoid low funded ratios
(Staff and Retirees Objective)

Maximum acceptable
contribution rate

Minimum acceptable
funded ratio

Maximize Return
(max. wealth of Fund)

Avoid high contributions
(Plan Sponsor’s Objective)
Portfolio Risks

I. Liquidity Risk
The risk that assets cannot be converted into cash in a timely manner or incurring reasonable transaction costs in order to meet any and all forecasted and unpredicted cash flows.

II. Market Risk
Potential change in market value of assets due to:
- interest rate changes (interest rate risk)
- change in spread to an underlying security (spread risk)
- change in expectations of future earning potential (equity risk)

III. Credit Risk
The risk of default on an obligation by the counter-party.
# Evaluating eligible Asset Classes

<table>
<thead>
<tr>
<th>Category</th>
<th>Liquidity Risk*</th>
<th>Market Risk*</th>
<th>Credit Risk*</th>
<th>Total Risk Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Bonds (Dev. Mkt.)</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>Agency Bonds/MBS</td>
<td>L/M</td>
<td>L/M</td>
<td>L</td>
<td>L/M</td>
</tr>
<tr>
<td>ABS/CMBS</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Corporate Inv. Grade</td>
<td>M/H</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Equities (Dev. Mkt.)</td>
<td>L</td>
<td>H</td>
<td>M/H</td>
<td>M/H</td>
</tr>
<tr>
<td>Emerging Market Debt</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Corporate High Yield (junk bonds)</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Emerging Market Equity</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Private Equity</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Real Estate</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>Hedge Funds</td>
<td>H</td>
<td>H</td>
<td>H</td>
<td>H</td>
</tr>
</tbody>
</table>

*L = Low, M = Moderate, H = High
Stocks are much more volatile than bonds or cash investments, especially over short horizons, but can produce higher returns over the long run.
Risk-Return Profile of Different Asset Classes

Asset classes are typically evaluated in terms of risk (measured by volatility) and expected return.

Historical returns based on quarterly data from 1990 to 2010.
Risk and Return: Efficient Frontier

Expected return versus volatility over next 5 years
Strategic Asset Allocation (SAA) is set by the Pension Finance Committee (PFC) every three years

- We use an Asset Liability model to generate multiple future economic scenarios based on asset class risk/return assumptions
- We evaluate different SAA allocations over these scenarios and determine funded ratios and contribution rates under each scenario
- We identify the SAA that meets the PFC’s risk criteria and maximizes the Plan’s wealth
- We then establish an appropriate benchmark for each of the asset classes in the SAA, which results in a “benchmark” portfolio
Clicker Question

What percentage of the risk and return of a pension fund’s investments are dependent on its long-term Investment Policy (or SAA)?

A. 25%
B. 50%
C. 75%
D. Greater than 90%
What percentage of the risk and return of a pension fund’s investments are dependent on its long-term Investment Policy (or SAA)?

A. 25%
B. 50%
C. 75%
D. Greater than 90%
Investment Framework

Governance Structure

Investment Policy

Information Technology

Investment Management

Performance Measurement

Risk Management

Accounting & Reporting
Investment Management

- Benchmark portfolio represents:
  - the “practical” strategic asset allocation
  - optimal and feasible portfolio
  - reference portfolio to assess added value from active investment management

- Investment Management may involve:
  - just a replication of the benchmark (passive management or ‘indexing’), or
  - tactical deviations from benchmark to implement market views with the objective of outperforming the benchmark (active management), or
  - an intermediate strategy focusing mostly on profiting, within defined risk limits, from arbitrage opportunities thrown up by short-term market conditions (‘enhanced indexing’).
# Investment Management Styles: Key Elements

<table>
<thead>
<tr>
<th></th>
<th>Passive Management</th>
<th>Enhanced Indexing</th>
<th>Active Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investment Style</strong></td>
<td>Benchmark Replication</td>
<td>Arbitrage based</td>
<td>Taking Market Views</td>
</tr>
<tr>
<td><strong>Excess Returns</strong></td>
<td>Low</td>
<td>Moderate</td>
<td>Volatile</td>
</tr>
<tr>
<td><strong>Risks</strong></td>
<td>Low</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td><strong>Risk Management</strong></td>
<td>Compliance</td>
<td>Basic</td>
<td>Complex</td>
</tr>
<tr>
<td><strong>Staffing Implications</strong></td>
<td>No Investment Manager Discretion</td>
<td>Investment Managers engaged in market</td>
<td>Investment Managers 100% market focused</td>
</tr>
</tbody>
</table>
Role of External Asset Managers

- Benchmark for Internal Management
- Skills & Technology Sharing
- Enhancing Risk-Adjusted Returns
- Access to Resource Intensive Investment Strategies
- Reduce Staff Turnover Risk
- Reduce Cost
Ongoing Monitoring of Monthly Data Flows

Manager 1
Manager 2
Manager 3

Custodian

Risk and Compliance Reporting Vendor
Holdings Data

Risk Reports
Performance Accounting Data

Sponsor

Pricing Vendors

Trade Data
Price Reconciliation

Price Data

Performance, Risk, Positions, Market Color
Clicker Question

Your pension fund’s Governing Board says there is no need to hire any investment professionals for the fund since they have decided to outsource 100% of the investments to external managers.

Are they correct?

A. Yes
B. No
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A. Yes
B. No
Investment Framework

- Governance Structure
- Investment Policy
- Information Technology
- Investment Management
- Performance Measurement
- Accounting & Reporting
- Risk Management
Key Roles

Total Plan Investments

Strategic Asset Allocation
Benchmark: Liabilities

Active Management

Tactical Asset Allocation
1. TAA Across Asset Classes
   Benchmark: SAA weights
2. TAA Within Asset Classes
   Benchmark: SAA benchmarks
3. Misfit/Benchmark Risk

Manager Selection
Benchmark:
Manager benchmarks
Risk Structure should reflect Governance Structure

- Total Risk
  - Strategic Asset Allocation Risk
    - Surplus volatility, Surplus-at-risk (SAA portfolio vs Liabilities)
  - Active Management Risk
    - Tracking error (Actual portfolio vs SAA portfolio)
  - Tactical Asset Allocation Risk
    - Deviation Risk across asset classes (risk from under/over weight)
    - Tracking error (Actual portfolio vs SAA portfolio)
  - Manager Active Risk
    - Benchmark Allocation Risk within asset classes
    - Tracking error (SAA Benchmark vs Manager Benchmark)

Risk structure should reflect governance and responsibility structure of organization (which decision incurs what risk)
Three Stages of Risk Management

I. Risk Measurement
What is our risk?
How do we measure our risk?

II. Risk Attribution
Where does our risk come from?
Which decisions contributed to risk?

III. Risk Allocation
How do we utilize and manage risk going forward?
How do we want to allocate risk?
## Sample Risk Measurement Report

### Risk at Asset Class Level

<table>
<thead>
<tr>
<th>Asset Classes</th>
<th>EMV Million USD</th>
<th>Policy %</th>
<th>Actual %</th>
<th>TAA Bet</th>
<th>Annualized (in bps) Total Absolute Risk (Std. Dev.)</th>
<th>Annualized (in bps) Policy Absolute Risk (Std. Dev.)</th>
<th>Annualized (in bps) Total TE Alpha IR</th>
<th>TAA TE TE TE</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Equities</td>
<td>2164.46</td>
<td>23.0%</td>
<td>23.0%</td>
<td>0.0%</td>
<td>434</td>
<td>439</td>
<td>10 25 2.4</td>
<td>0 6 12</td>
</tr>
<tr>
<td>NUS Equities</td>
<td>1566.63</td>
<td>16.7%</td>
<td>15.0%</td>
<td>0.1%</td>
<td>285</td>
<td>287</td>
<td>25 68 2.8</td>
<td>2 2 28</td>
</tr>
<tr>
<td>EM Equities</td>
<td>196.12</td>
<td>2.1%</td>
<td>2.1%</td>
<td>0.0%</td>
<td>55</td>
<td>50</td>
<td>9 -5 -0.6</td>
<td>0 0 19</td>
</tr>
<tr>
<td>Hedge Funds</td>
<td>527.43</td>
<td>5.6%</td>
<td>5.6%</td>
<td>0.0%</td>
<td>16</td>
<td>3</td>
<td>15 1 -0.1</td>
<td>0 0 15</td>
</tr>
<tr>
<td>HY</td>
<td>0.90</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0</td>
<td>0</td>
<td>0 0 0.6</td>
<td>0 0 0</td>
</tr>
<tr>
<td>EMFI</td>
<td>68.53</td>
<td>0.0%</td>
<td>0.7%</td>
<td>0.7%</td>
<td>10</td>
<td>0</td>
<td>10 13 1.3</td>
<td>9 0 4</td>
</tr>
<tr>
<td>USFI</td>
<td>1176.51</td>
<td>13.5%</td>
<td>12.5%</td>
<td>-1.0%</td>
<td>39</td>
<td>45</td>
<td>9 4 0.5</td>
<td>3 0 7</td>
</tr>
<tr>
<td>Global FI</td>
<td>1143.49</td>
<td>12.0%</td>
<td>12.2%</td>
<td>-0.7%</td>
<td>37</td>
<td>34</td>
<td>10 4 0.4</td>
<td>2 0 11</td>
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<tr>
<td>Currency</td>
<td>1004.75</td>
<td>11.0%</td>
<td>11.0%</td>
<td>0.0%</td>
<td>36</td>
<td>39</td>
<td>7 -1 0.5</td>
<td>0 0 7</td>
</tr>
<tr>
<td><strong>TOTAL PORTFOLIO</strong></td>
<td><strong>9,408.25</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td><strong>0%</strong></td>
<td><strong>750</strong></td>
<td><strong>742</strong></td>
<td><strong>79 191 2.4</strong></td>
<td><strong>11 6 78</strong></td>
</tr>
</tbody>
</table>

Risk under No Correlation

Calculations Based on Historical Data from ... to ...
Clicker Question

Your pension fund’s CEO says s/he has installed a state of the art risk measurement system, so the fund’s risk management is now as good as anywhere else in the world.

Is s/he correct?

A. Yes
B. No
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A. Yes
B. No
Investment Framework

- Governance Structure
- Investment Policy
- Information Technology
- Investment Management
- Risk Management
- Accounting & Reporting
- Performance Measurement
Sample Performance Attribution Report

TAA
-0.3  5.1

Equities
7.3  (-)

US Equities
4.4  (-)

Non-US Equities
3.3  (-)

Fixed Income
-2.8  (+)

Global Fixed Income
-0.3  (=)

Emerging Markets
-2.4  (+)

Total
-1.8

Active
-6.6

Equities
5.1

US Equities
3.0

Non-US Equities
-0.2

Fixed Income
-3.2

Global Fixed Income
-2.1

Emerging Markets
-1.4

Source: RAM2002: excess return
Investment Framework

- Governance Structure
- Investment Policy
- Information Technology
- Investment Management
- Risk Management
- Performance Measurement
- Accounting & Reporting
Role of a Custodian

Core functions
- Settlement & Safekeeping
- Portfolio Accounting & Reporting

Value Added functions
- Performance reporting & Compliance check
- Risk & Return analysis
- Benefit payment
- Tax reclamation
- Cash management
- Securities lending
Periodic, relevant and reliable reporting are key to our governance.

Internal Audit also plays an important role in the periodic assessment of risks and controls.

- **Board of Directors and Beneficiaries:** Annually
- **Pension Finance Committee:** Quarterly
- **Treasury Management:** Monthly • Performance • Risk • Exposures • Portfolio rebalancing and cash requirements
- **Front, middle and back-office staff:** Daily/on-going monitoring and decision-making
A member of your pension fund’s Governing Board suggests that the Board set aside time to focus on the content and frequency of the reports it receives from management.

Is that a good use of the Governing Board’s time?

A. Yes
B. No
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Is that a good use of the Governing Board’s time?

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- Governance Structure
- Accounting & Reporting
- Performance Measurement
- Risk Management
- Investment Policy
- Investment Management
- Information Technology
The risk/volume profile defines IT solutions which drive costs!

Volume: Size and # of Tx’s

<table>
<thead>
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Desk top solutions for trading & analytics

Portfolio system + high end analytics

Portfolio system + desktop analytics
Summary

- Create a governance structure which aligns incentives of fiduciaries with those of stakeholders in the assets and ensures accountability for results.

- Focus on continuing Board education as well as an explicit strategic communication strategy with all stakeholders.

- Define investment objectives and risk tolerance in the context of liability characteristics when setting investment policy.

- Evaluate passive versus active management decisions in the context of your risk tolerance and organizational capabilities; recognize that managing external managers requires significant investment in infrastructure.
Summary

- Understand the linkages between measurement, attribution, and allocation of risk and its impact on effective investment management.

- Measure performance regularly as it provides an important check on the quality of investment decisions and serves as an ex-post risk control mechanism.

- Select the right custodian as this will determine the quality and timeliness of reporting to the governing board, which in turn will impact the quality of decisions made by the governing board.

- Recognize the importance of hiring and retaining qualified professional staff with the right skills mix.
Contact Details

Sudhir Rajkumar
Head of Pension Advisory
Financial Advisory and banking
World Bank Treasury
+1 (202)-473-0799
srajkumar@worldbank.org

treasury.worldbank.org
Disclaimers


E-mail: feedback@worldbank.org

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