

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

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

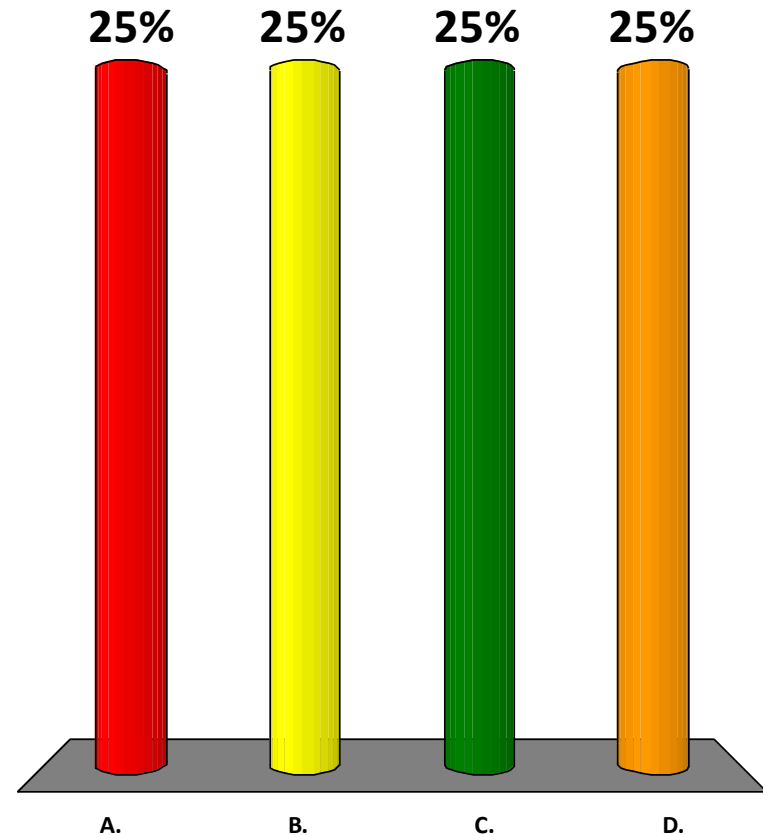
Clicker Question

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

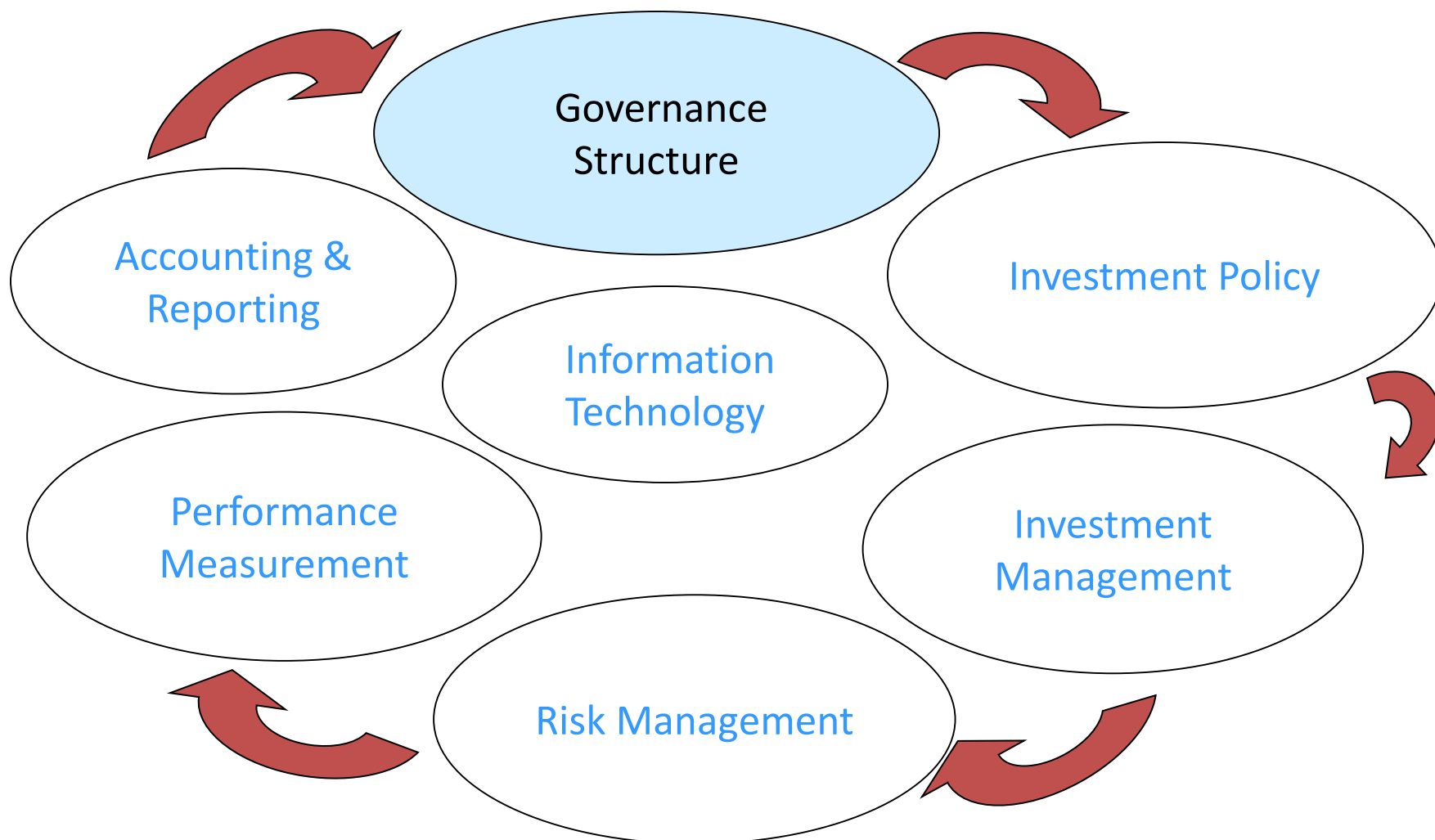
- A. Pension Scheme Design
- B. Funding Policy
- C. Investment Policy
- D. All of the above

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



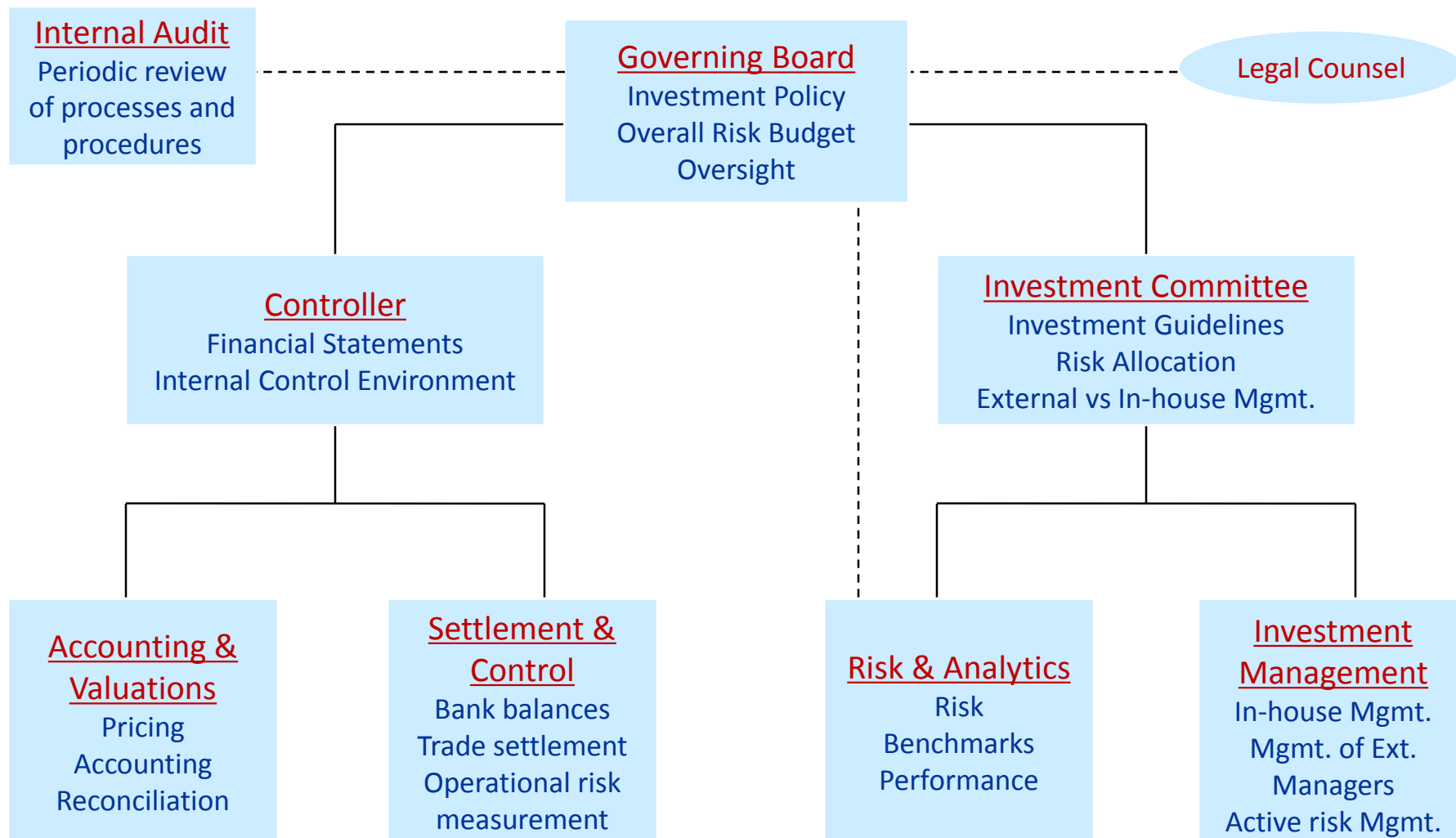
Investment Framework



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

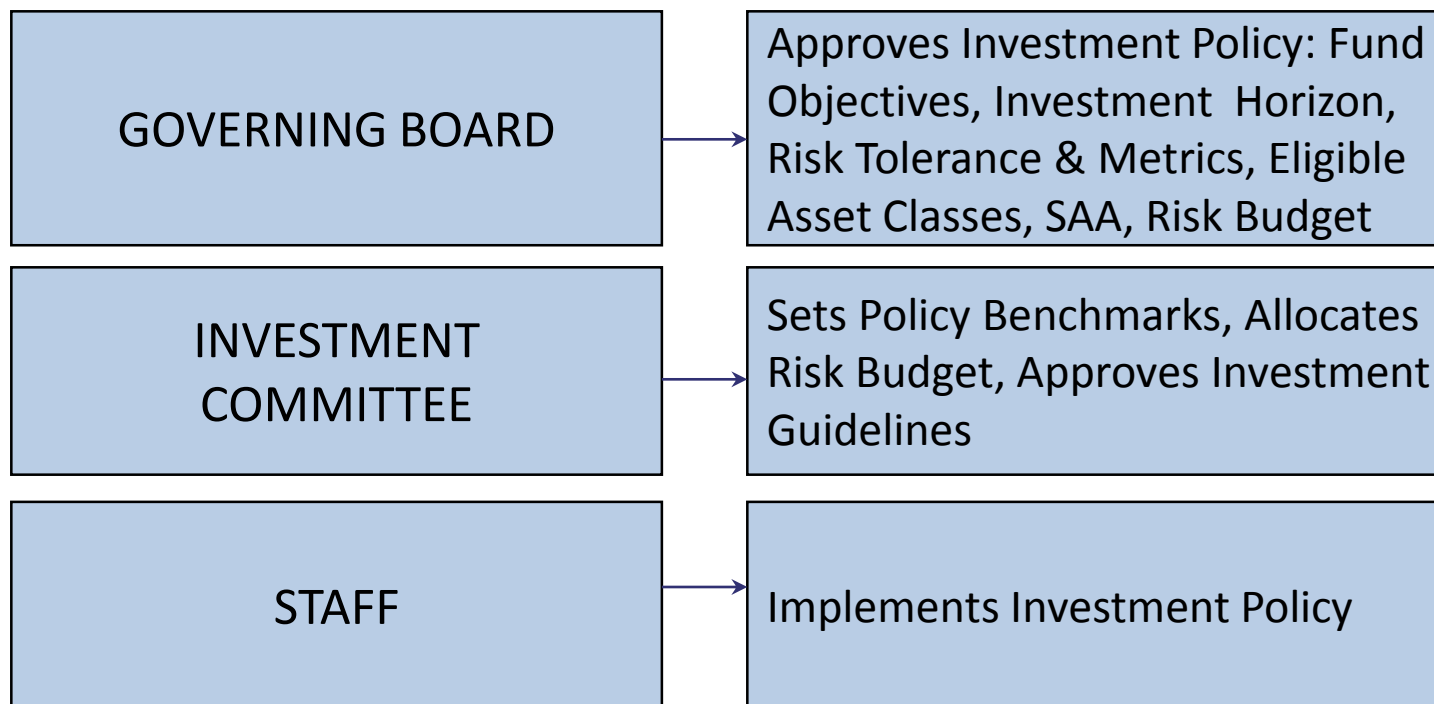


What decisions do we need to make?

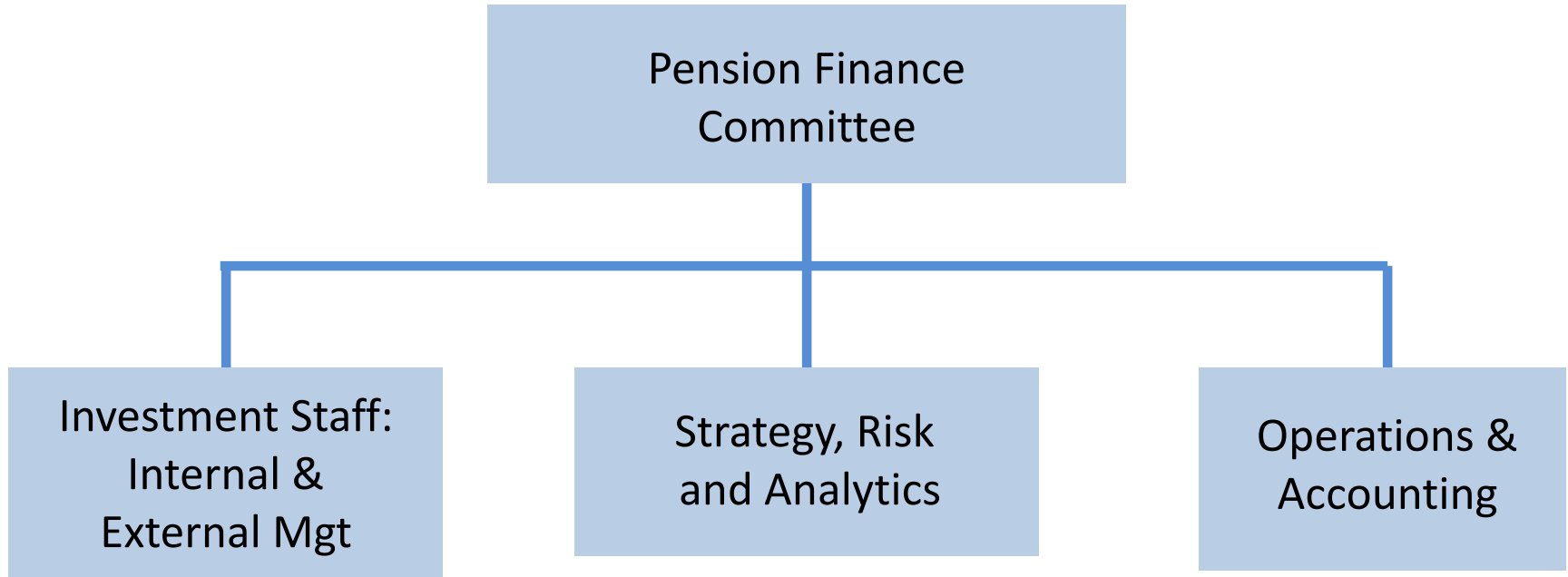
Range of required investment-related decisions

- 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



Governance: World Bank Pension Plan Staff Delegation



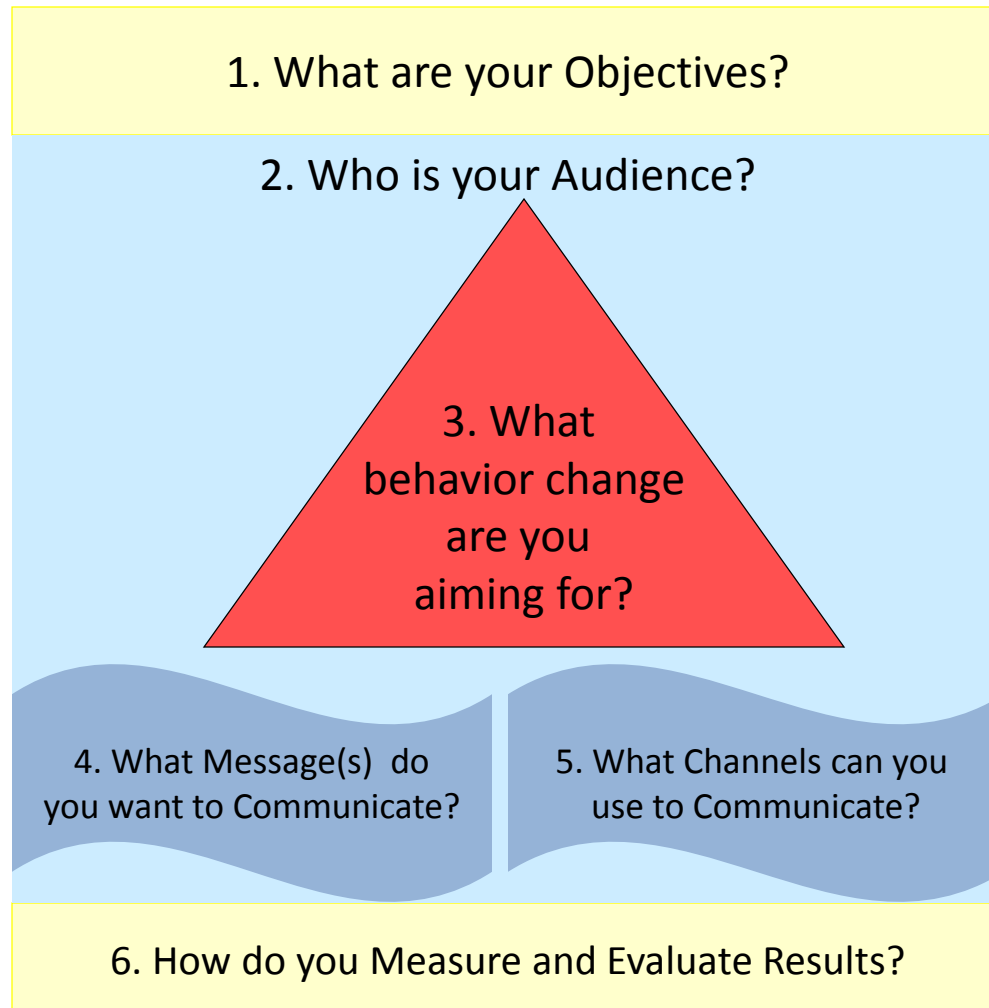
Staff develop, recommend and implement asset allocation, investment management and other policies in a well segregated and specialized institutional environment

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

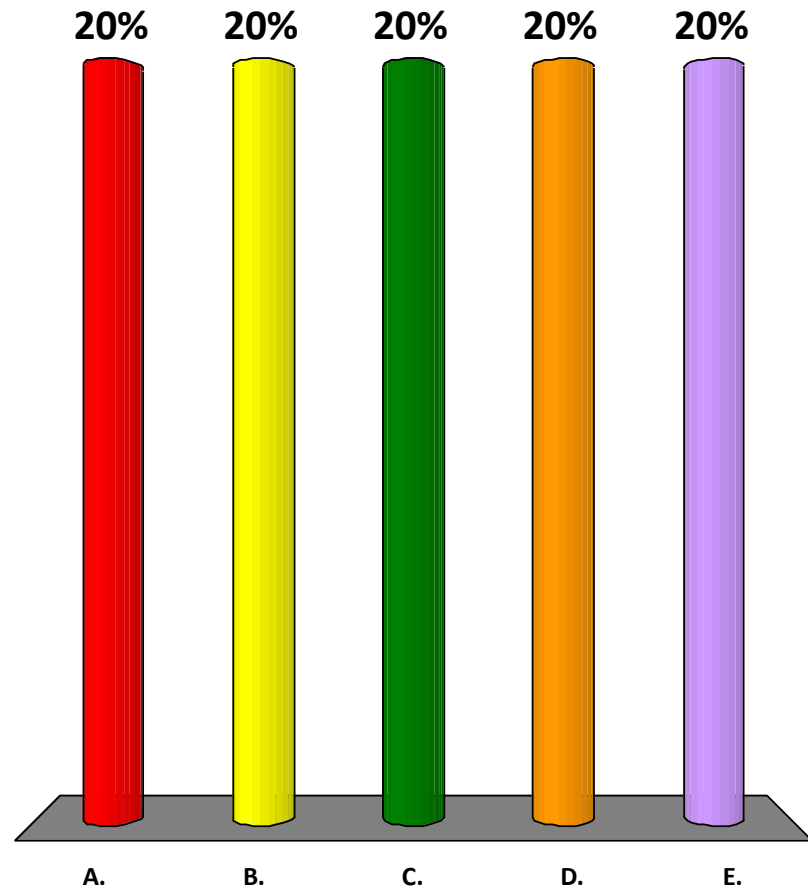


What activities should a pension fund's Governing Board focus on?

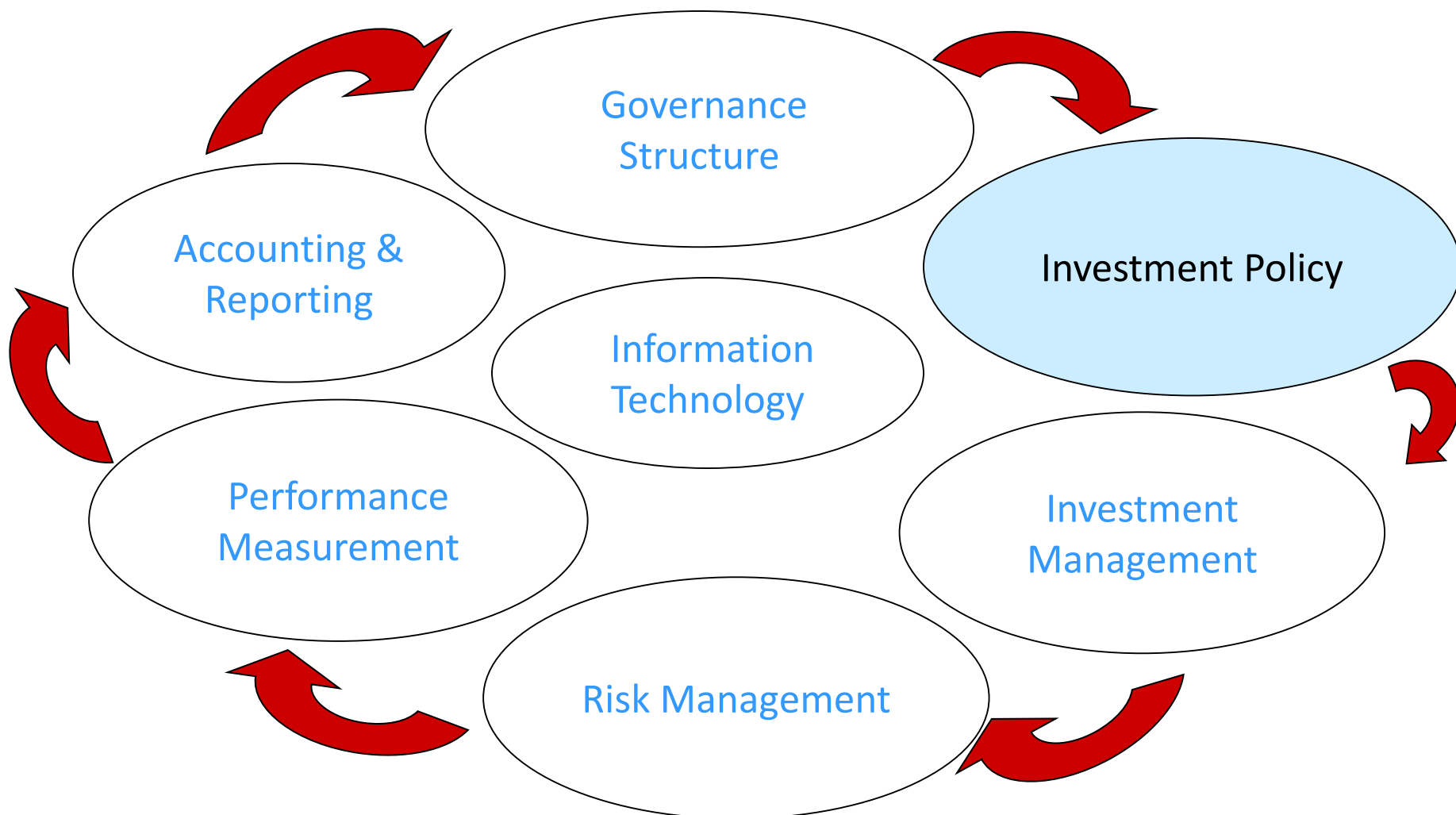
- A. Articulating and documenting key Policy decisions
- B. Getting involved in Operational decision-making
- C. Educating Board members to help with item A
- D. Communicating pro-actively with key stakeholders
- E. A, C, and D

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

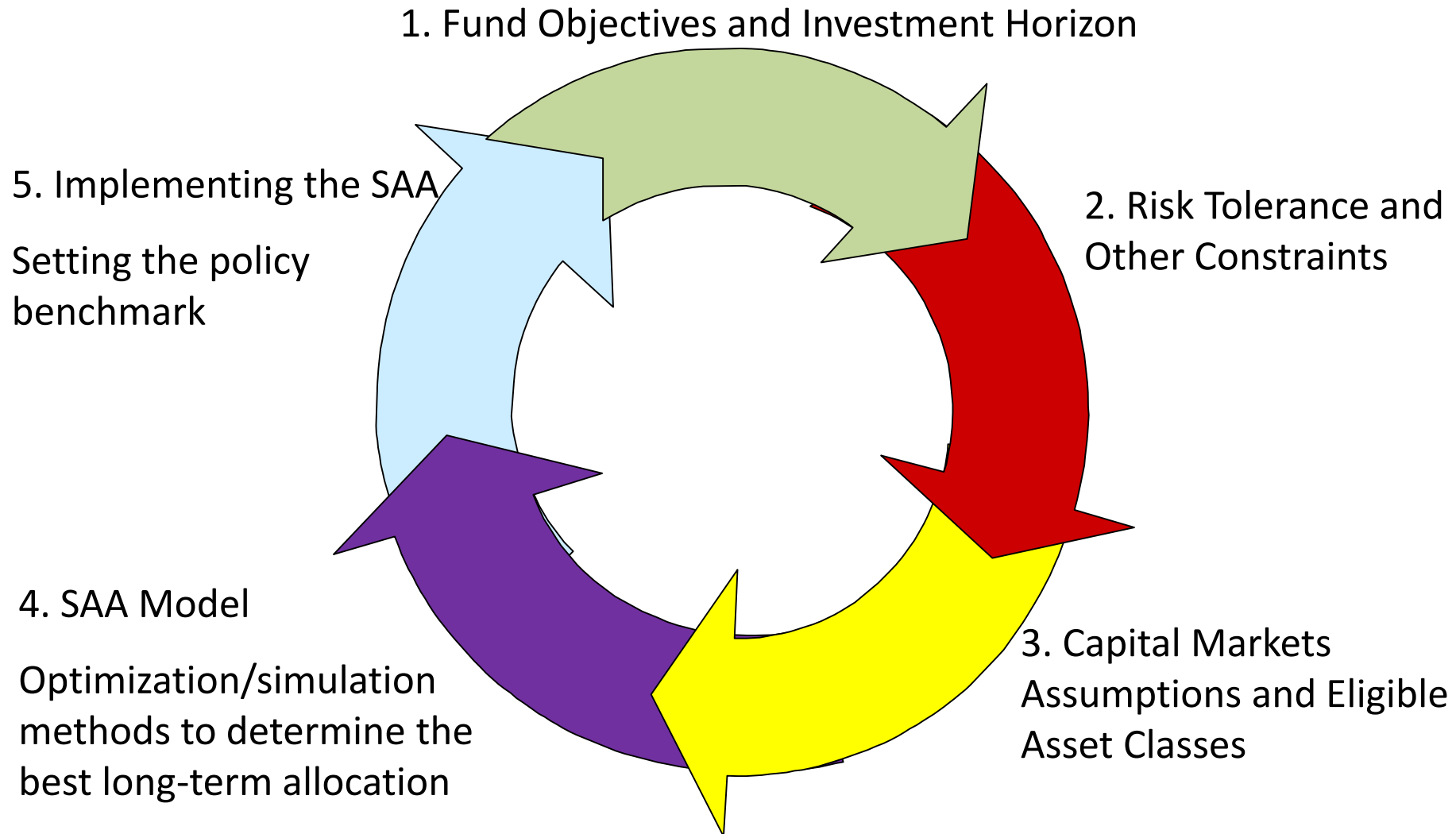
- A. Articulating and documenting key Policy decisions
- B. Getting involved in Operational decision-making
- C. Educating Board members to help with item A
- D. Communicating pro-actively with key stakeholders
- E. A, C, and D



Investment Framework



Investment Policy Process



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

Investment Policy Issues

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?

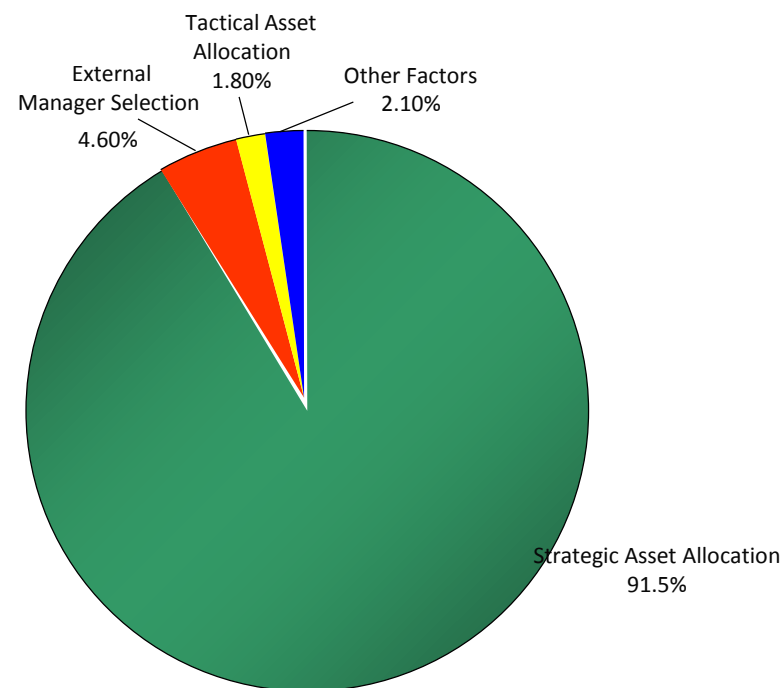
“The process by which an institution determines the appropriate *neutral* asset allocation to achieve its *long-term* investment objectives”

- 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



Source: Brinson, Hood & Beebower. "Determinants of Portfolio Performance" Financial Analysts Journal. May/June 1991.

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

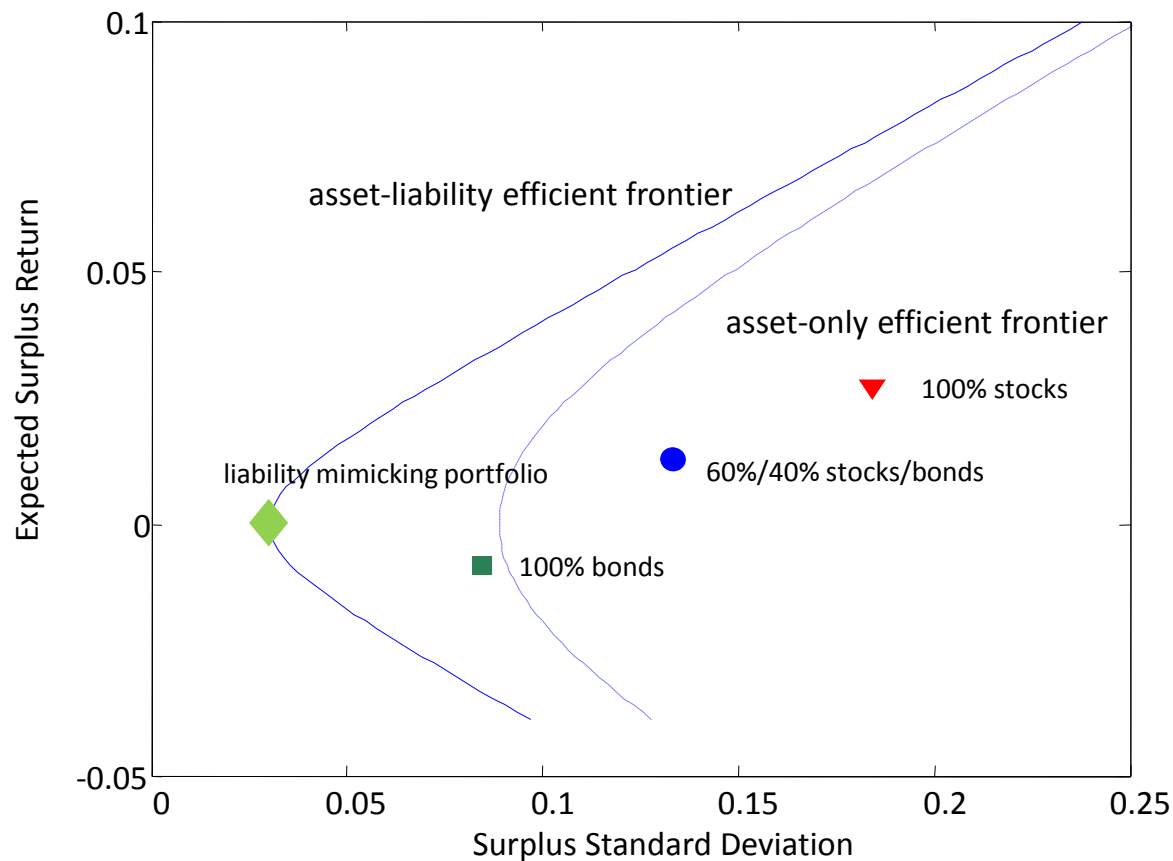
Liabilities are the present value of benefit payments and can be valued using different assumptions and measures

	Past Service	Future Increase	Salary Entrants	New
ABO	✓			
PBO	✓		✓	
Closed Group	✓	✓	✓	
Open Group	✓	✓	✓	✓

Define key actuarial assumptions such as mortality, termination rates, cost-of-living increases in pensions, investment return, inflation

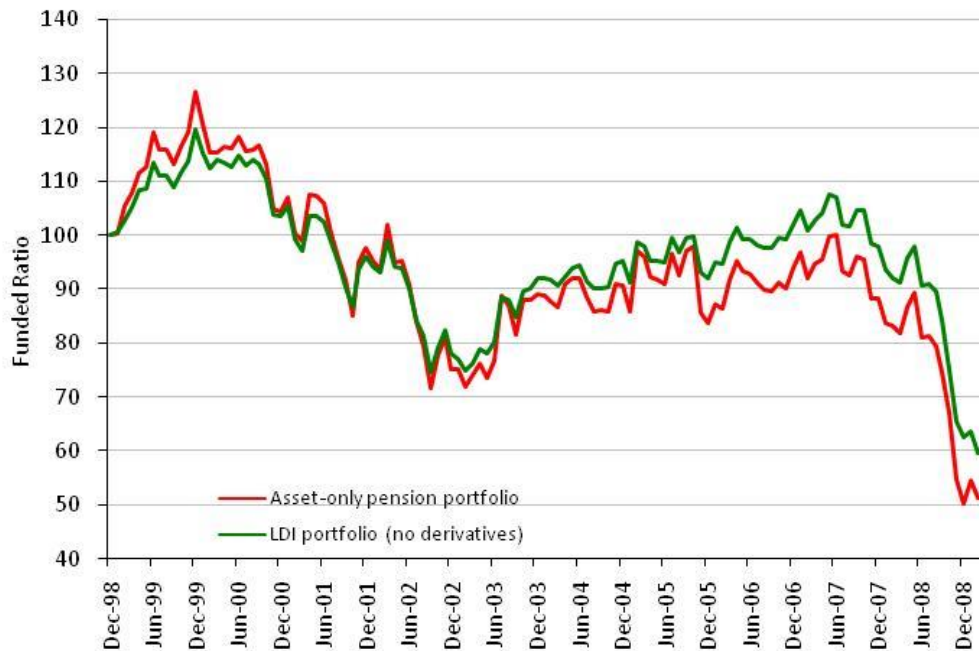
Asset-only versus Asset-liability approach

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



Illustrative back-test - liabilities matter

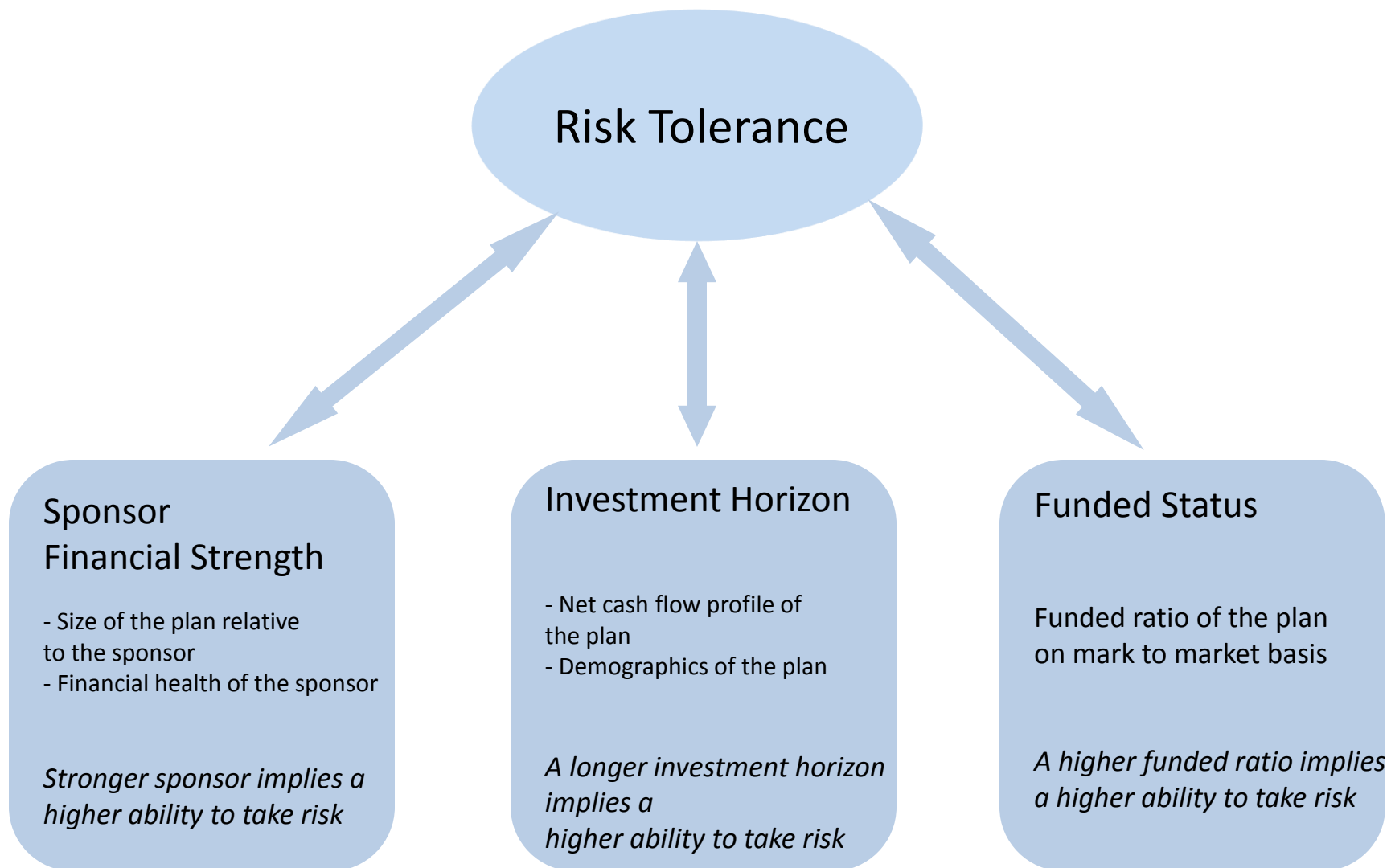
Impact of Fixed Income duration on the Funded Ratio



Asset-only Pension Portfolio		LDI Portfolio	
Allocation		Allocation	
US Equity	35%	US Equity	35%
International Equity	15%	International Equity	15%
Lehman Global Agg. (Hedged)	40%	Long maturity Treasury Bonds	40%
Real Estate	10%	Real Estate	10%
Surplus return	-7.1%	Surplus return	-5.3%
Surplus volatility	17.8%	Surplus volatility	13.1%
Asset-only volatility	9.5%	Asset-only volatility	10.6%

Source: Ryan Labs Liabilities Index, Bloomberg and World Bank Treasury calculations.

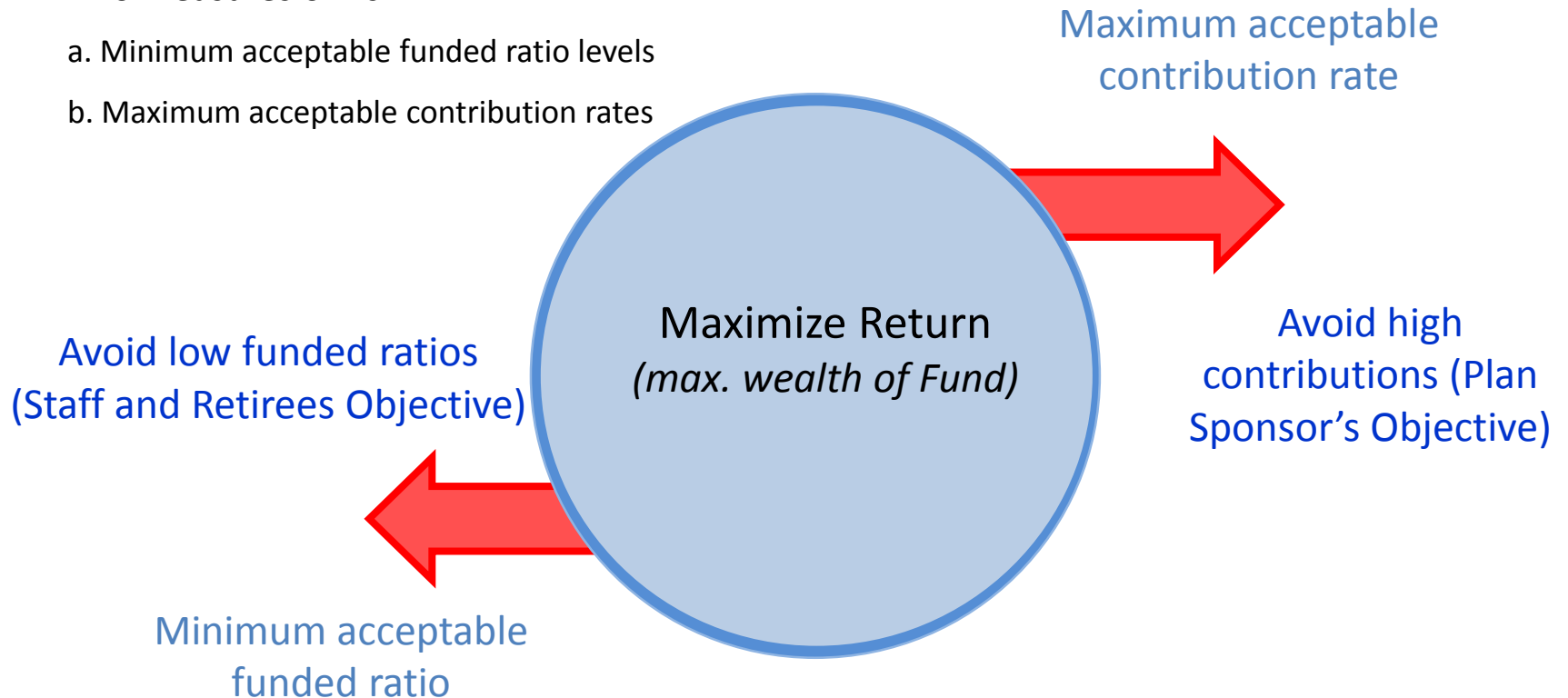
Determinants of Institutional Risk Tolerance



Typical Risk Constraints

Two measures of risk :

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



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

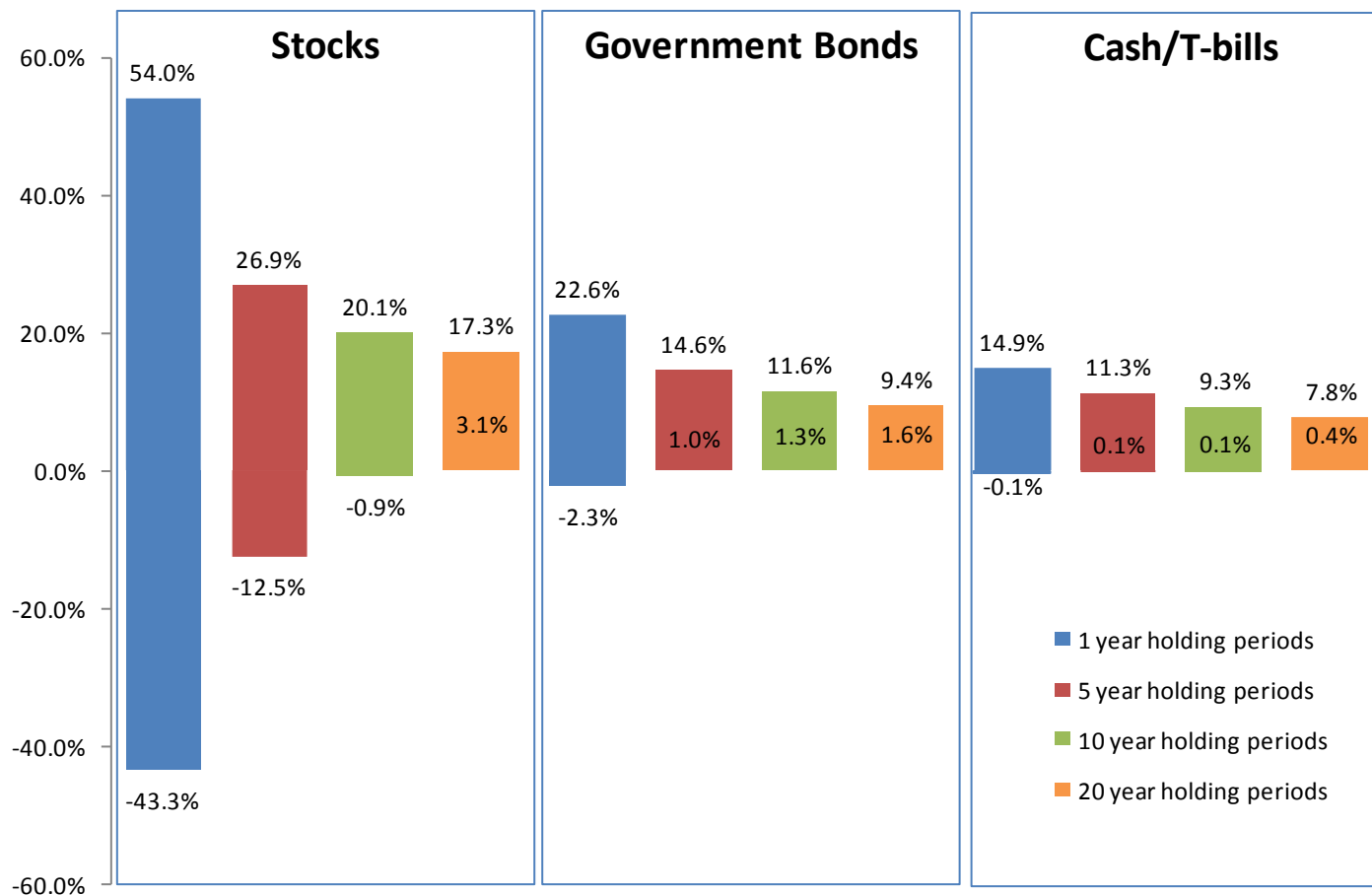
Evaluating eligible Asset Classes

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

*L = Low, M = Moderate, H = High

Risk-Return Profile of Different Asset Classes

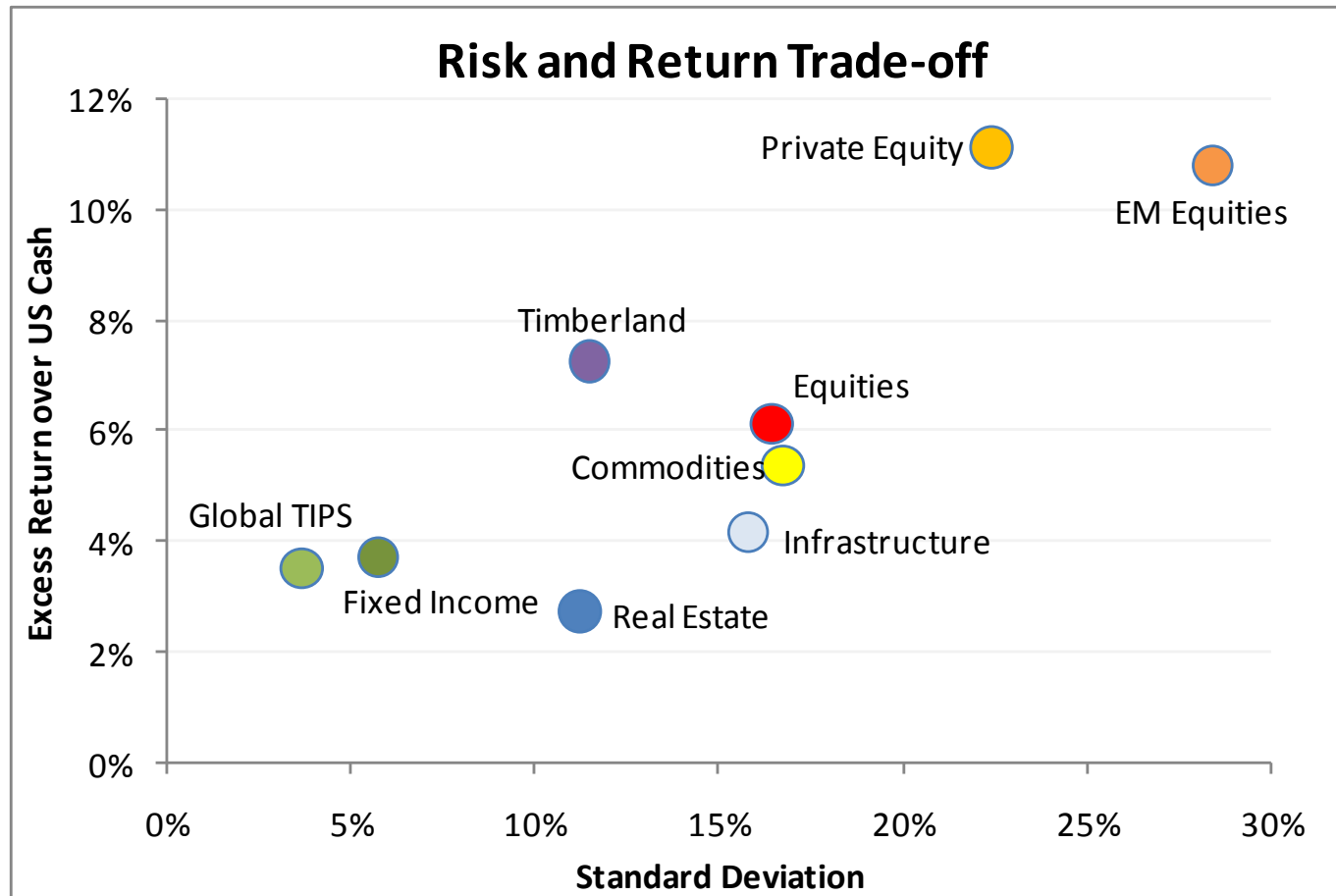
Historical performance of US asset classes (1926-2010):
Maximum and Minimum Returns



- 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

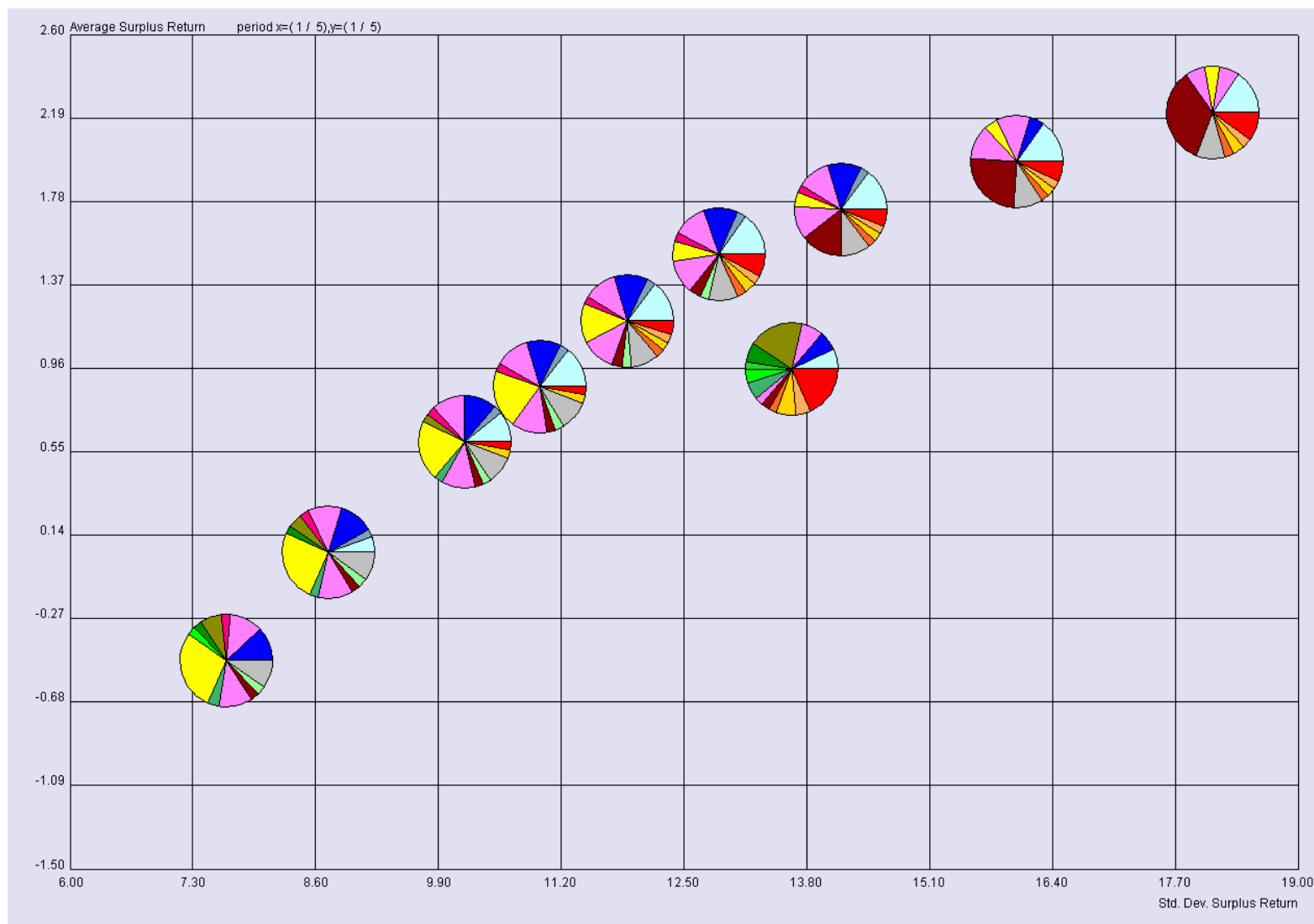
Asset classes are typically evaluated in terms of risk (measured by volatility) and expected return



Historical returns based on quarterly data from 1990 to 2010

Risk and Return: Efficient Frontier

Expected return versus volatility over next 5 years



The World Bank SAA Model

Strategic Asset Allocation (SAA) is set by the Pension Finance Committee (PFC) every three years

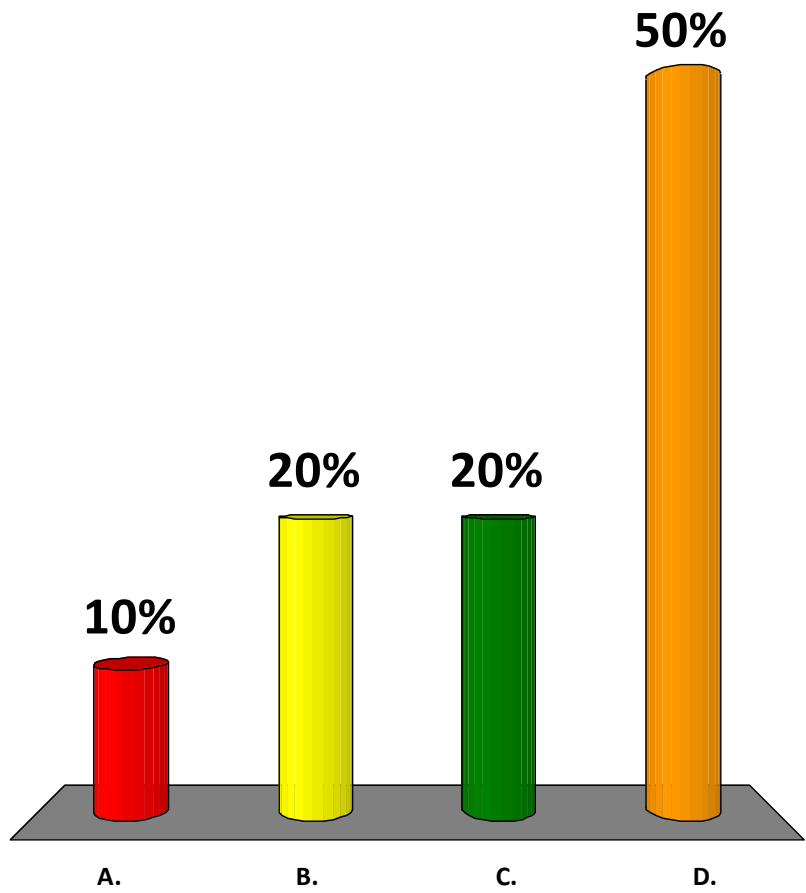
- We use an *Asset Liability model* to generate multiple future economic scenarios based on asset class risk/return assumptions
- We evaluate different SAA allocations over these scenarios and determine funded ratios and contribution rates under each scenario
- We identify the SAA that meets the PFC's 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

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

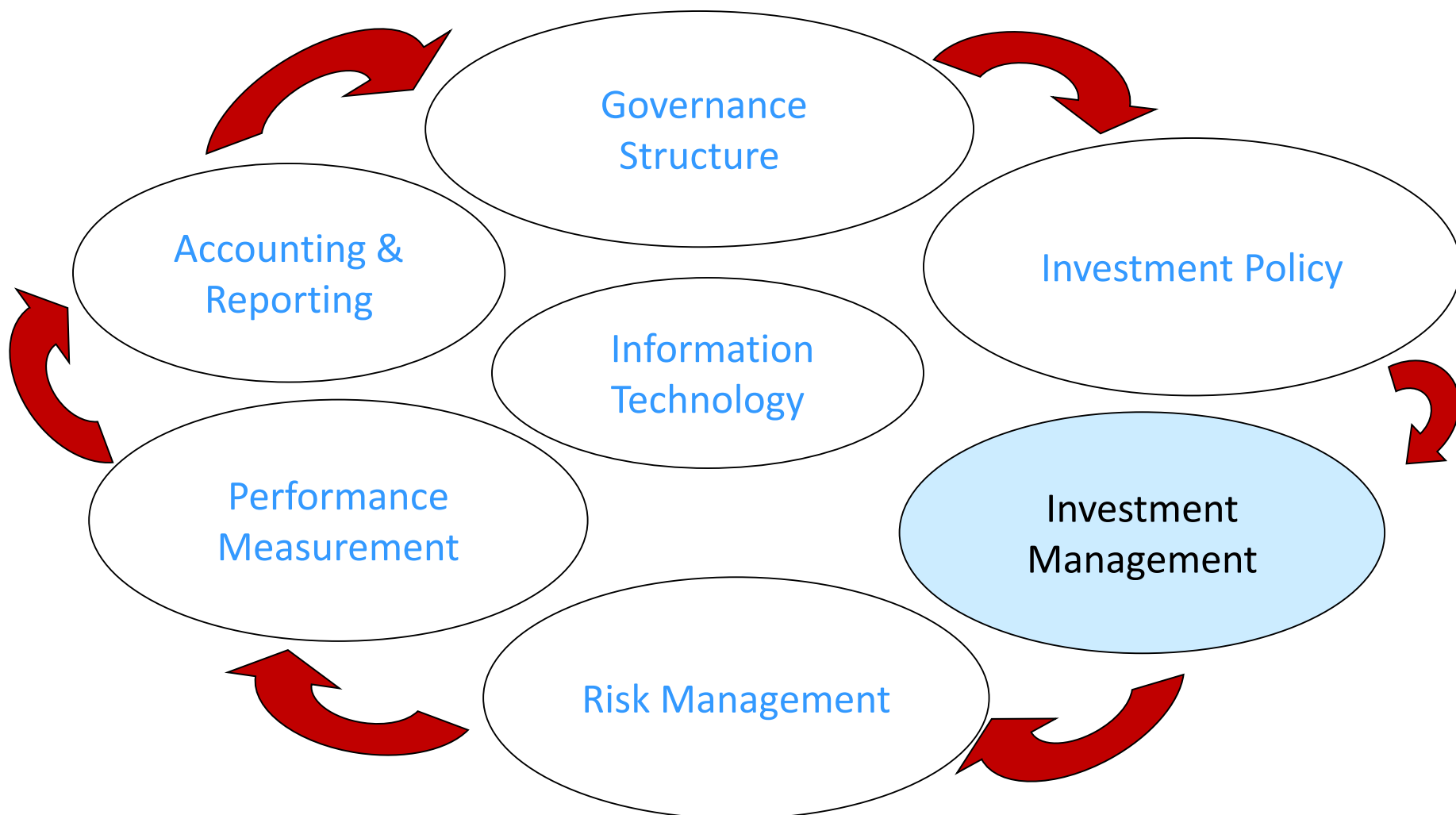
- A. 25%
- B. 50%
- C. 75%
- D. Greater than 90%

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



Investment Management

- **Benchmark portfolio represents:**

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

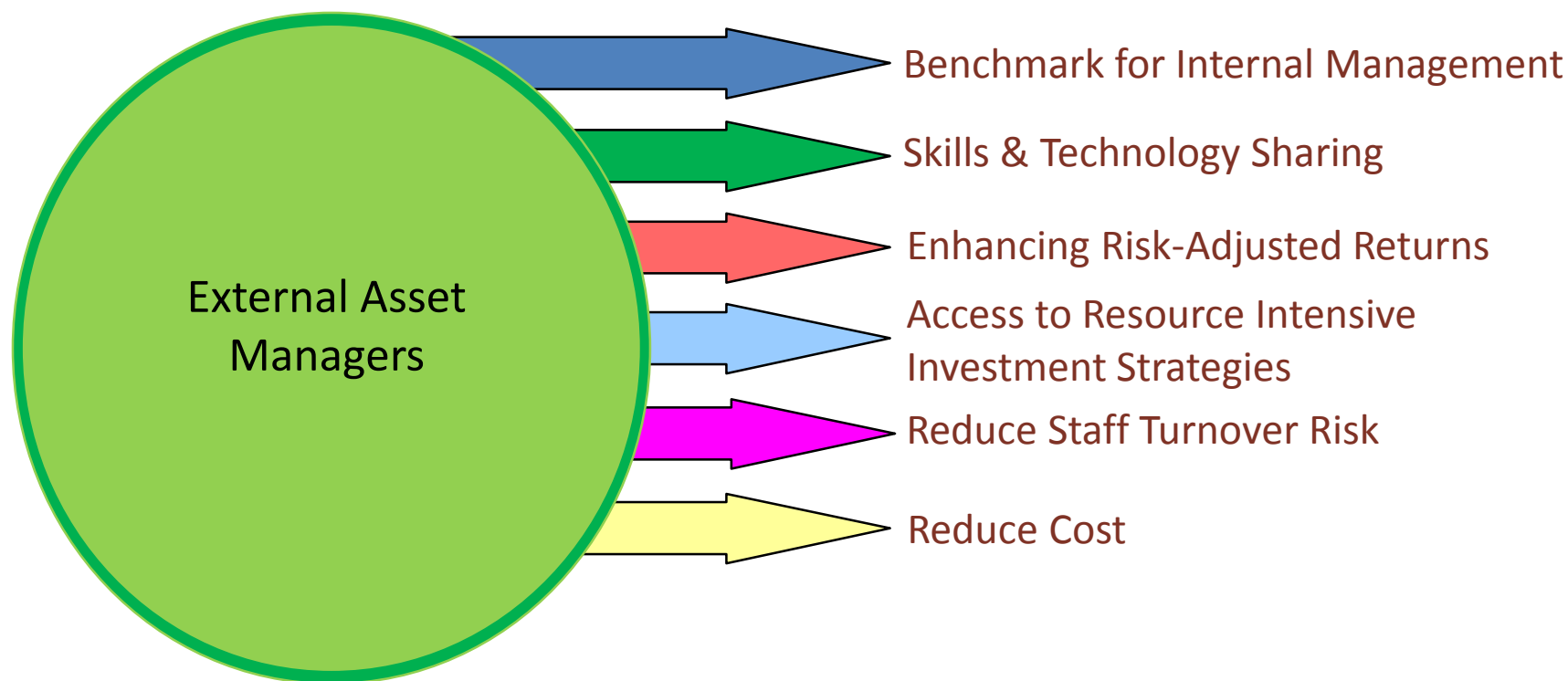
- **Investment Management may involve:**

- 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’**)

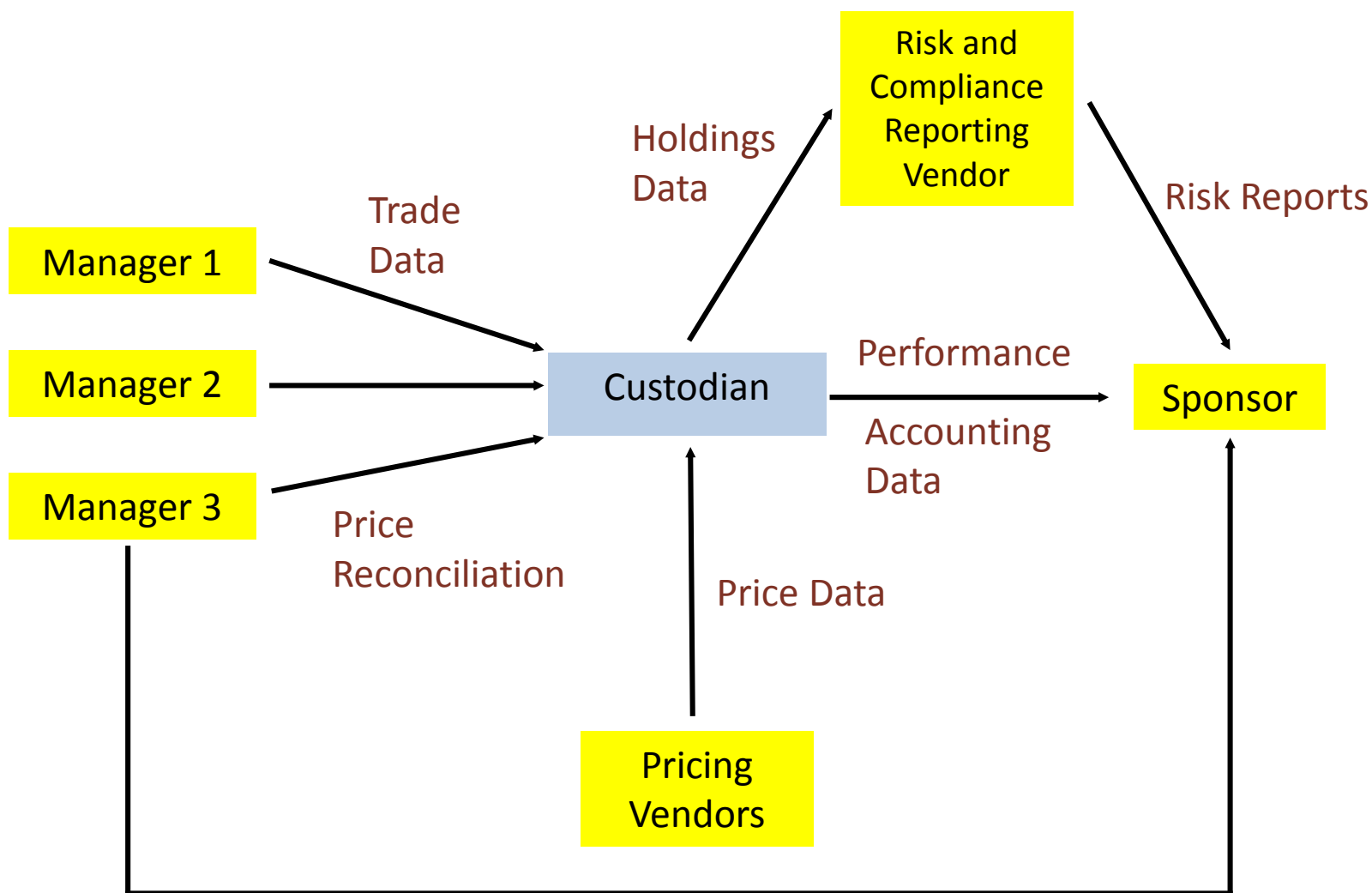
Investment Management Styles: Key Elements

	Passive Management	Enhanced Indexing	Active Management
Investment Style	Benchmark Replication	Arbitrage based	Taking Market Views
Excess Returns	Low	Moderate	Volatile
Risks	Low	Moderate	High
Risk Management	Compliance	Basic	Complex
Staffing Implications	No Investment Manager Discretion	Investment Managers engaged in market	Investment Managers 100% market focused

Role of External Asset Managers



Ongoing Monitoring of Monthly Data Flows



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?

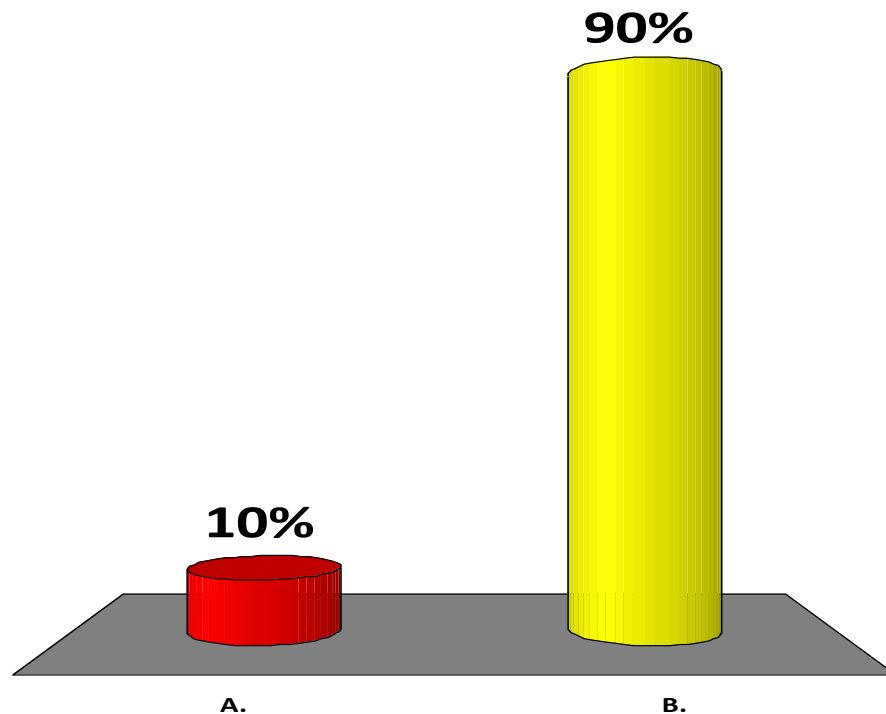
- A. Yes
- B. No

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.

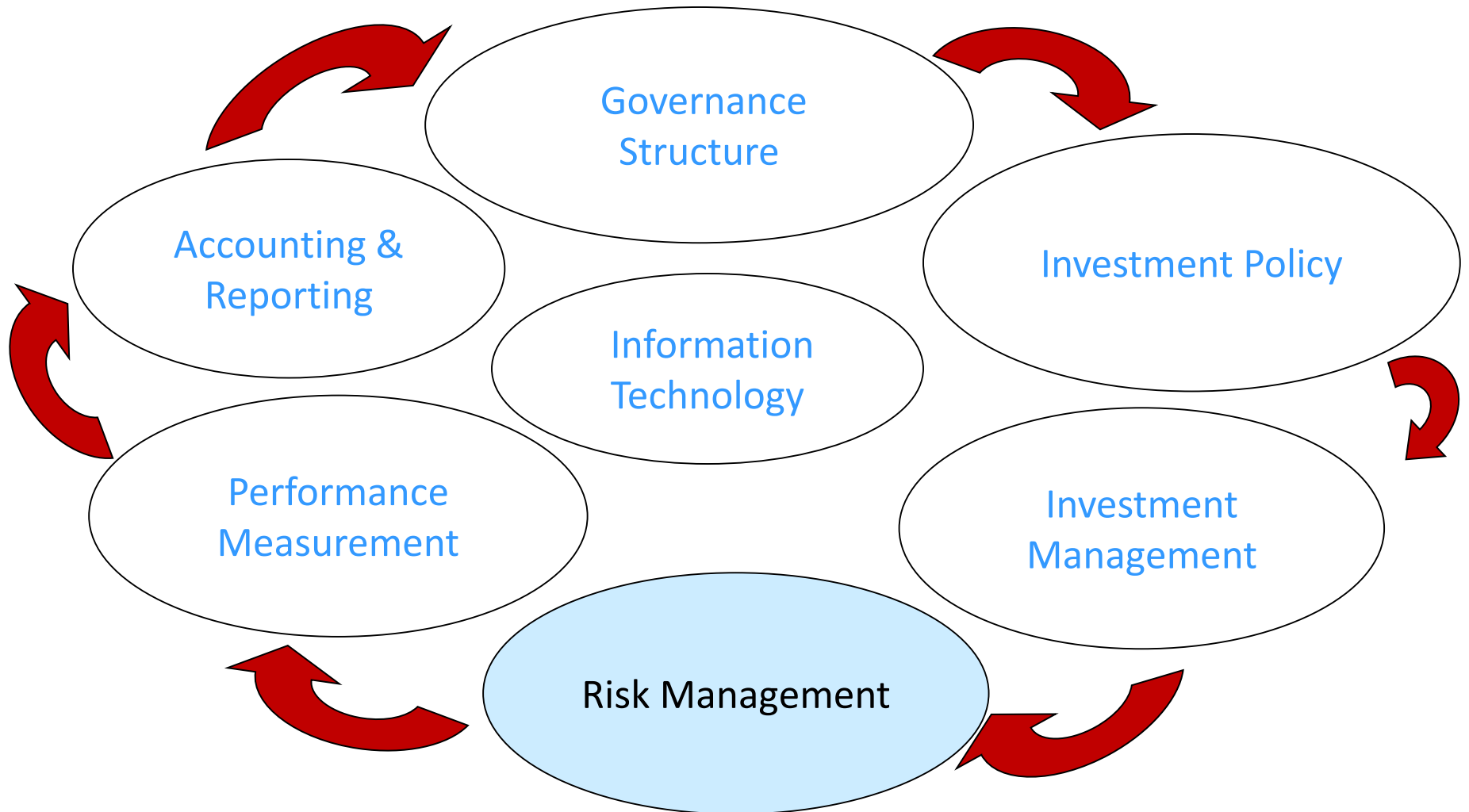
Are they correct?

A. Yes

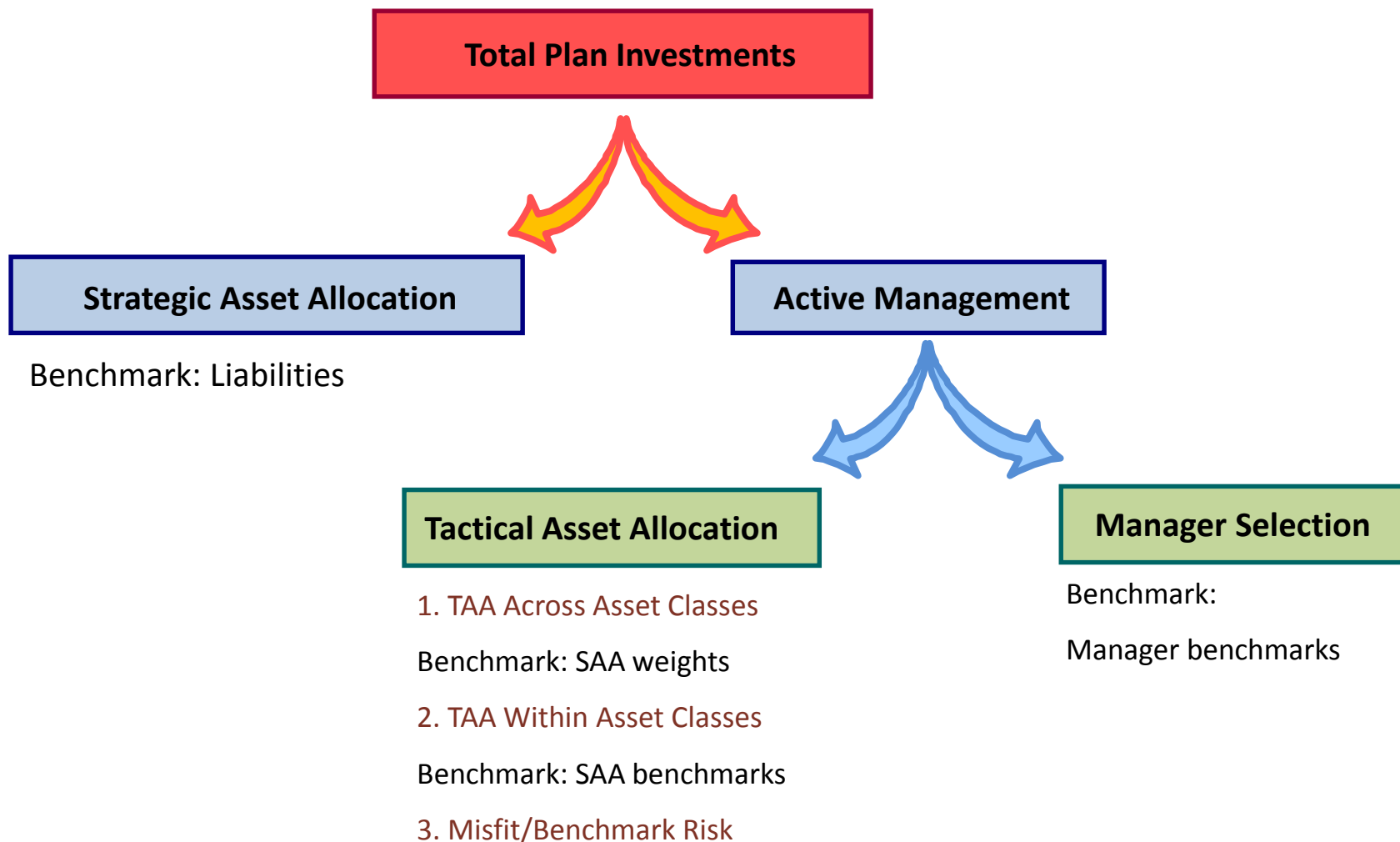
B. No



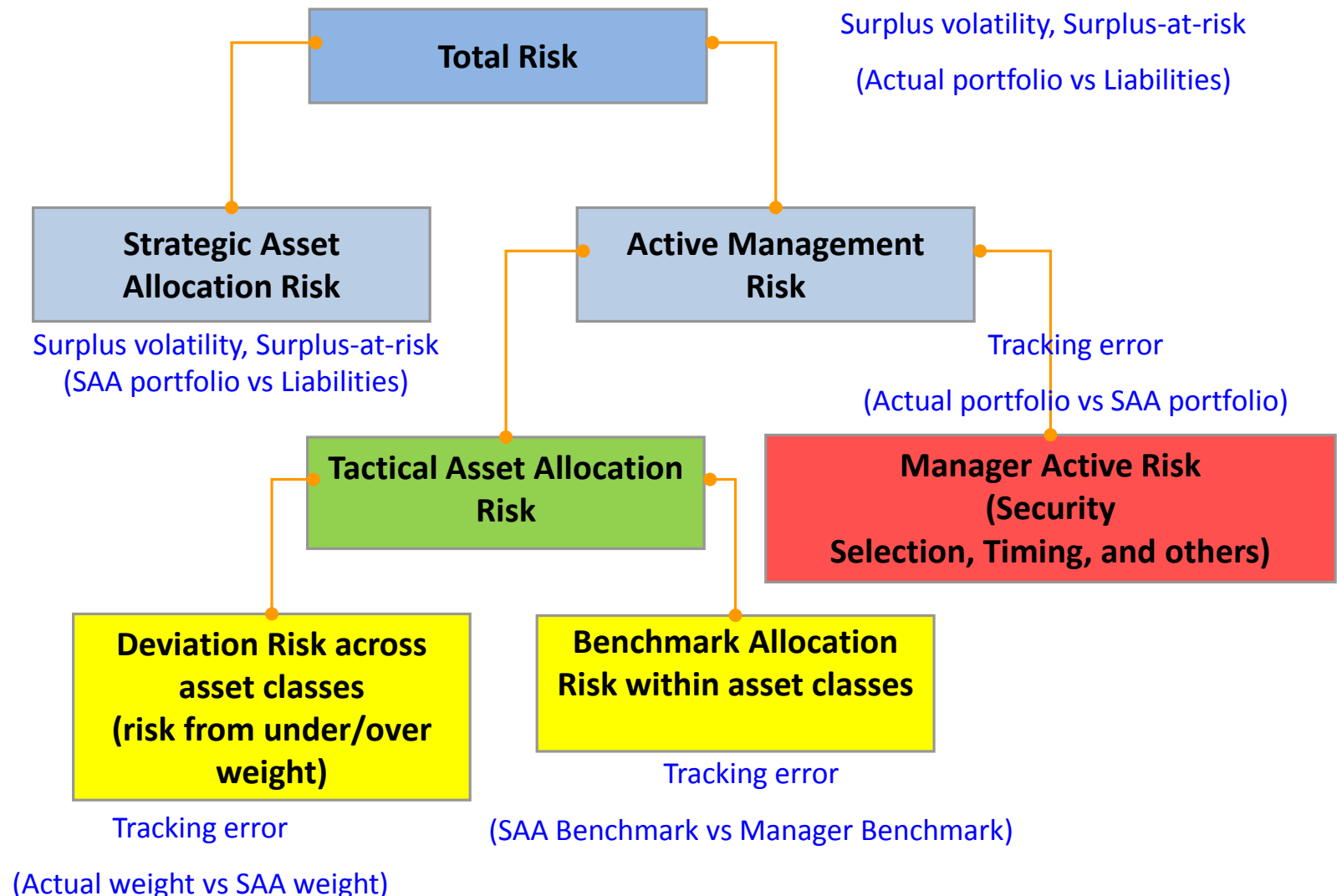
Investment Framework



Key Roles



Risk Structure should reflect Governance Structure



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

Three Stages of Risk Management

II. Risk Attribution

Where does our risk
come from?

Which decisions
contributed to risk?



I. Risk Measurement

What is our risk?

How do we measure our
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

Asset Classes	EMV Million USD	Policy %	Actual %	TAA Bet	Annualized (in bps)			Annualized (in bps)				
					Total Absolute Risk (Std. Dev.)	Policy Absolute Risk (Std. Dev.)	Total TE	Total Alpha	IR	TAA TE	Misfit TE	Manager TE
US Equities	2164.46	23.0%	23.0%	0.0%	434	439	10	25	2.4	0	6	12
NUS Equities	1586.63	16.7%	16.9%	0.1%	285	287	25	68	2.8	2	2	25
EM Equities	196.12	2.1%	2.1%	0.0%	55	50	9	5	-0.6	0	0	9
Hedge Funds	527.43	5.6%	5.6%	0.0%	16	3	15	-1	-0.1	0	0	15
HY	0.90	0.0%	0.0%	0.0%	0	0	0	0	0.6	0	0	0
EMFI	68.53	0.0%	0.7%	0.7%	10	0	10	13	1.3	9	0	4
USFI	1176.51	13.5%	12.5%	-1.0%	39	45	9	-4	-0.5	3	0	7
Global FI	1143.49	12.8%	12.2%	-0.7%	37	34	10	4	0.4	2	0	11
Currency	1004.75	11.0%	11.0%	0.0%	36	39	7	4	0.6	0	0	7
TOTAL PORTFOLIO	9,408.25	100%	100%	0%	750	742	79	191	2.4	11	6	78
Risk under No Correlation					535	544	73			10	6	73

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.

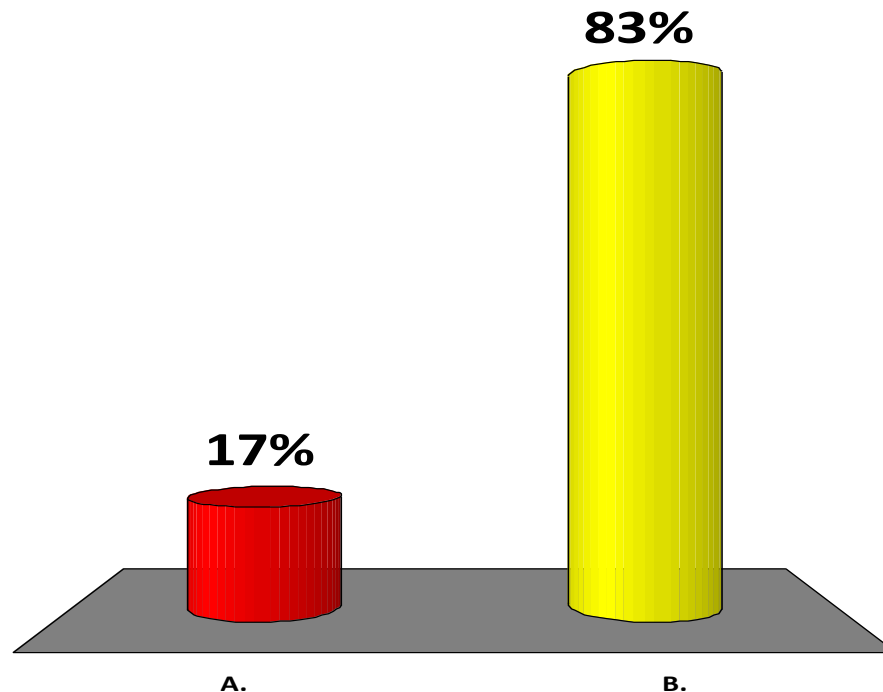
Is s/he correct?

- A. Yes
- B. No

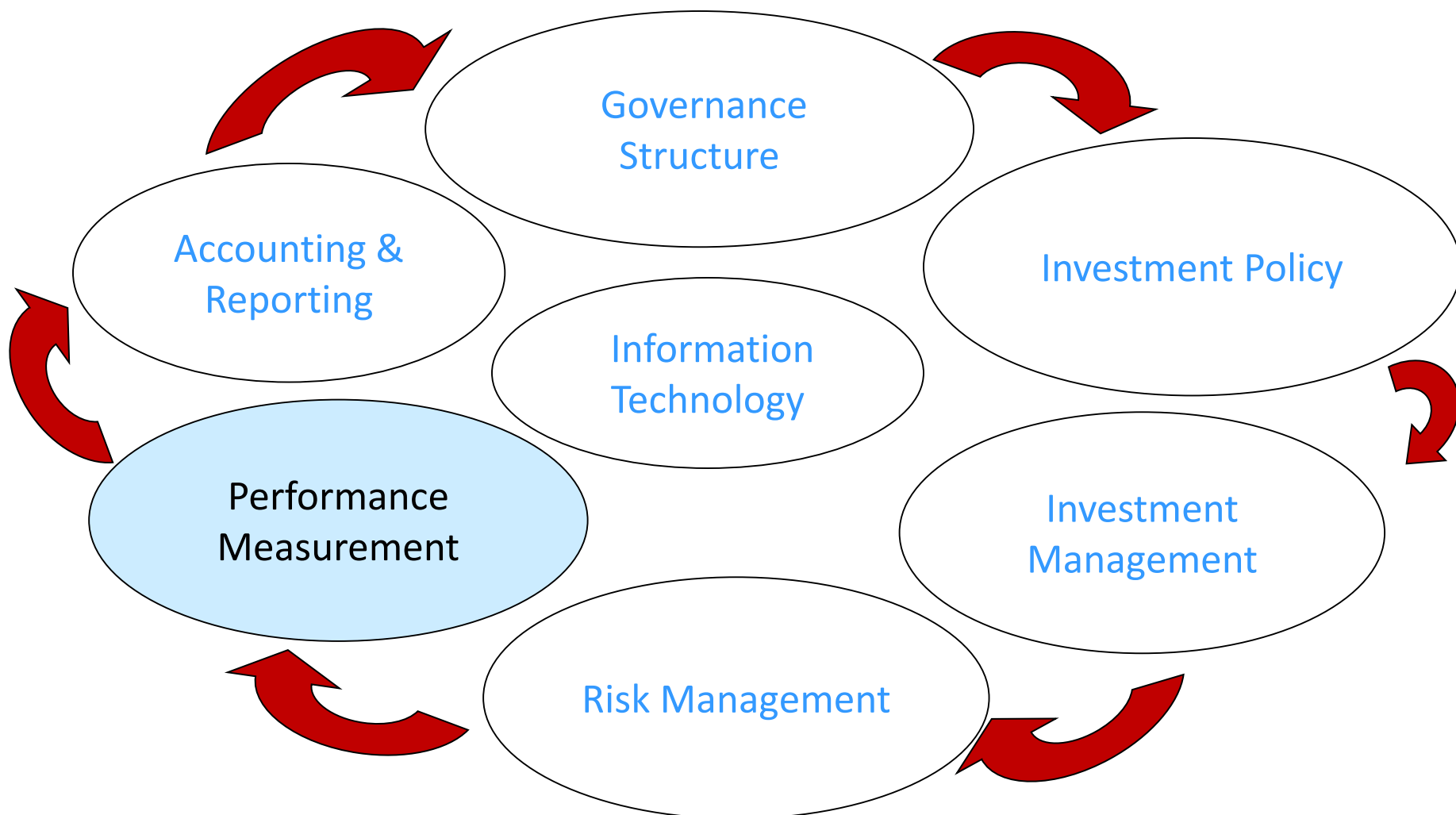
**Your pension fund's CEO says s/he has installed a state of the art risk measurement system, so the fund's risk management is now as good as anywhere else in the world.
Is s/he correct?**

A. Yes

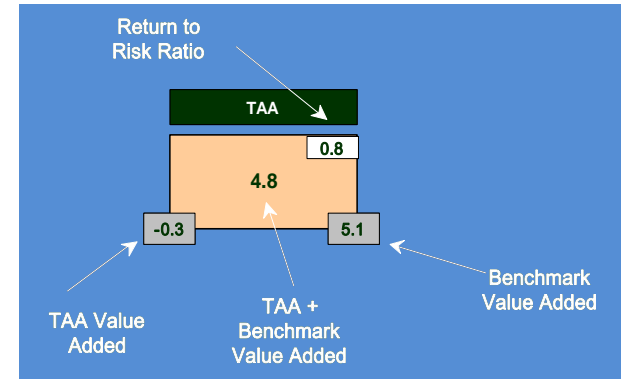
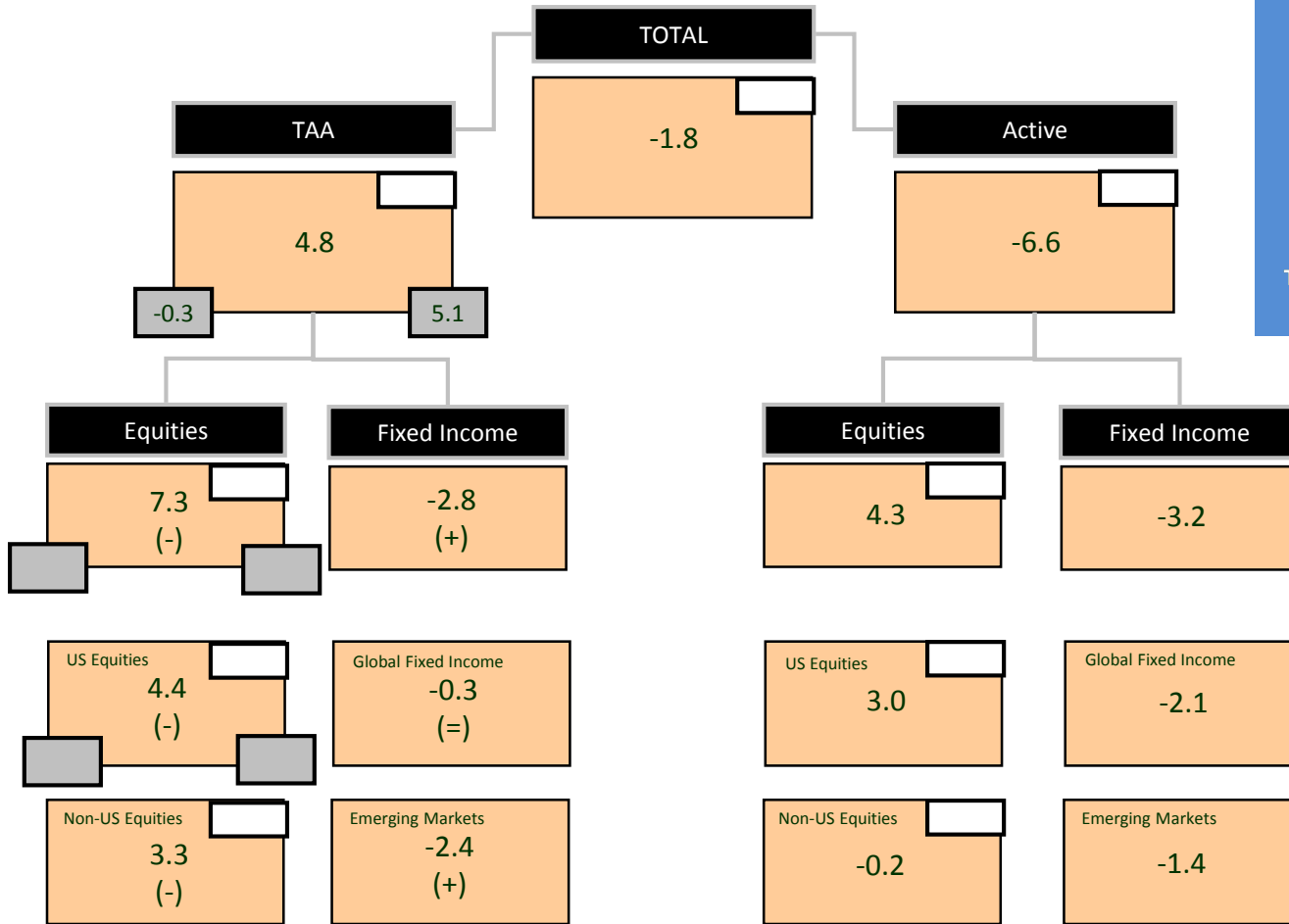
B. No



Investment Framework

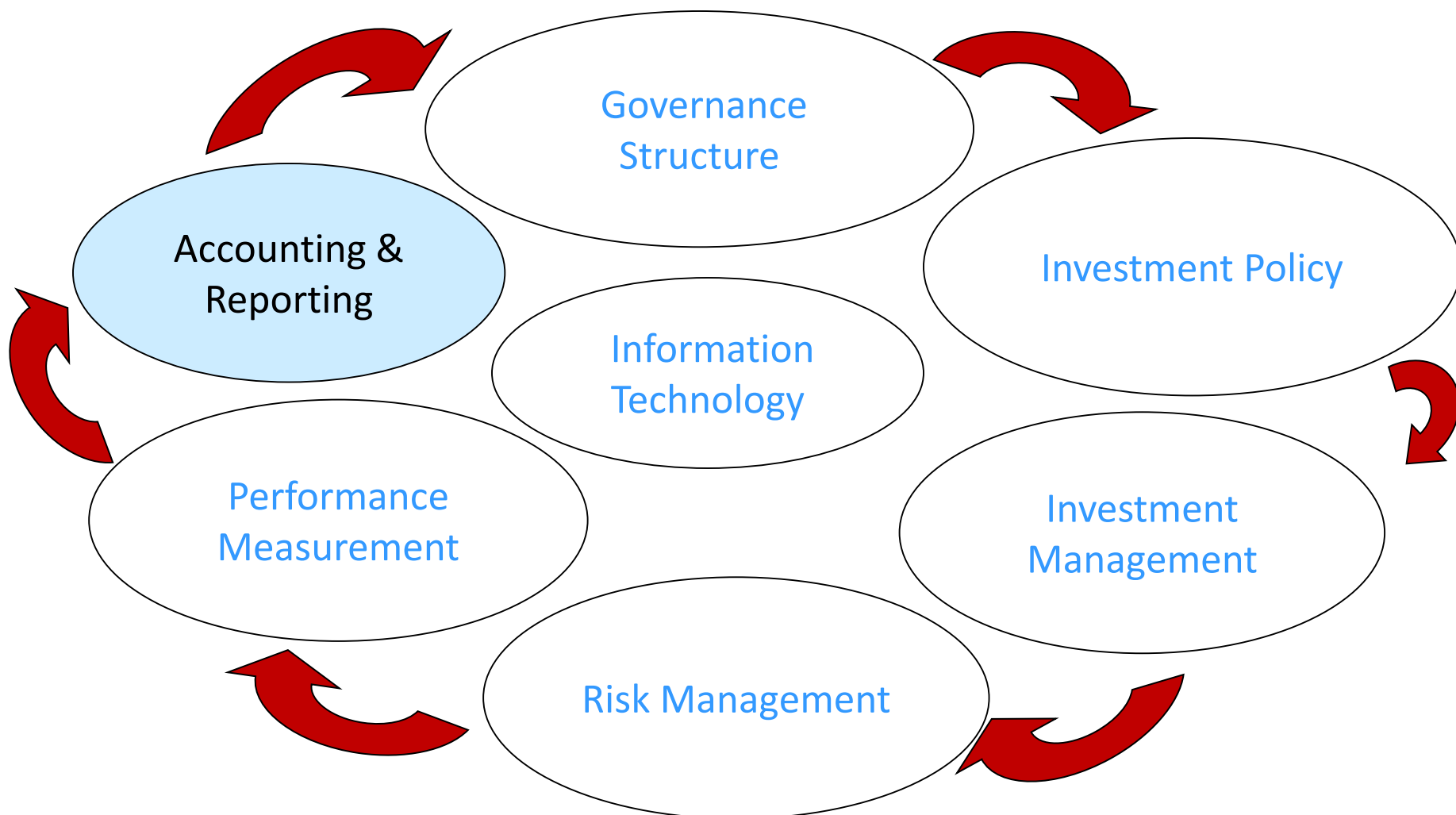


Sample Performance Attribution Report

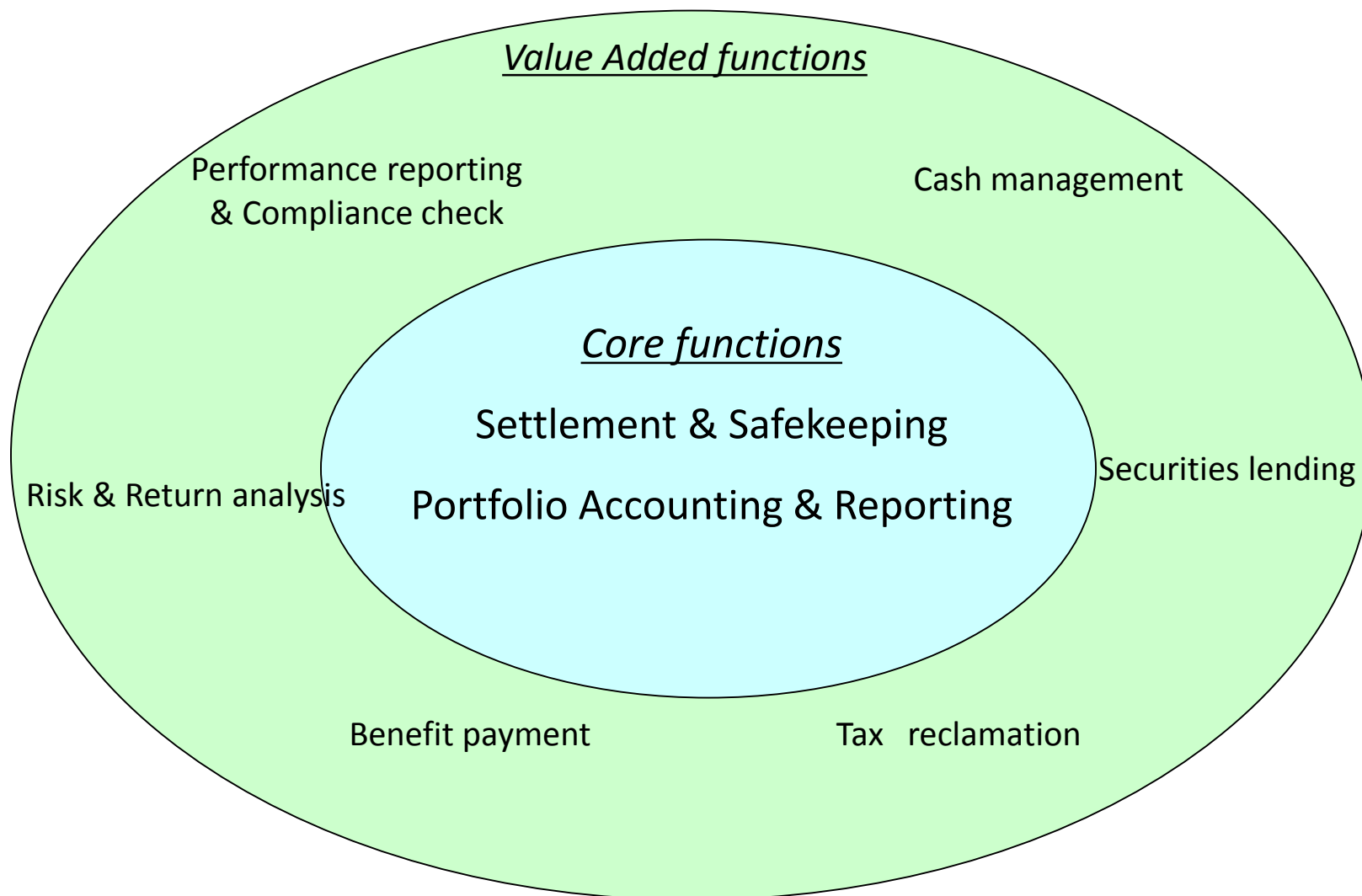


Source RAM2002: excess return

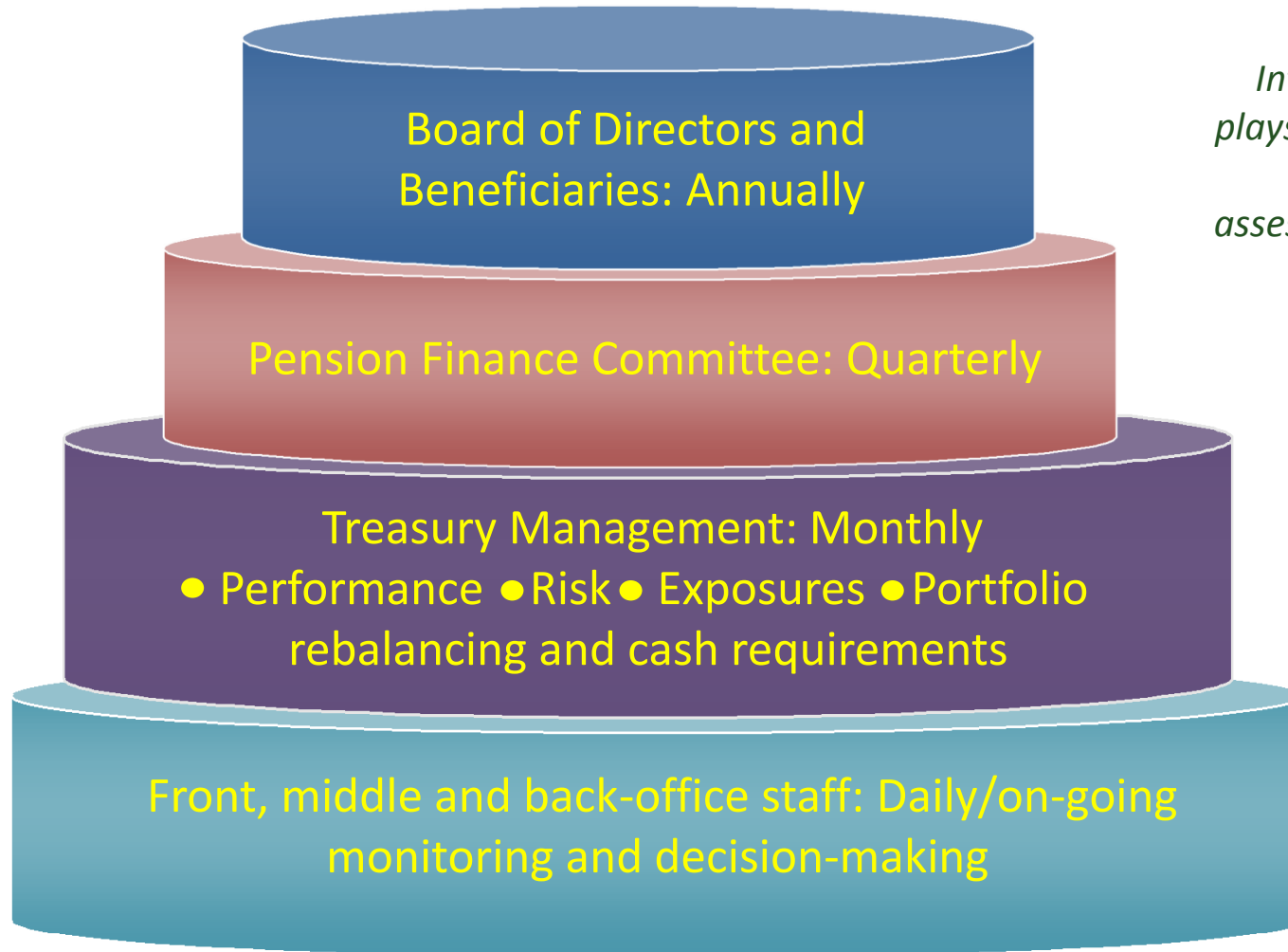
Investment Framework



Role of a Custodian



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

Clicker Question

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?

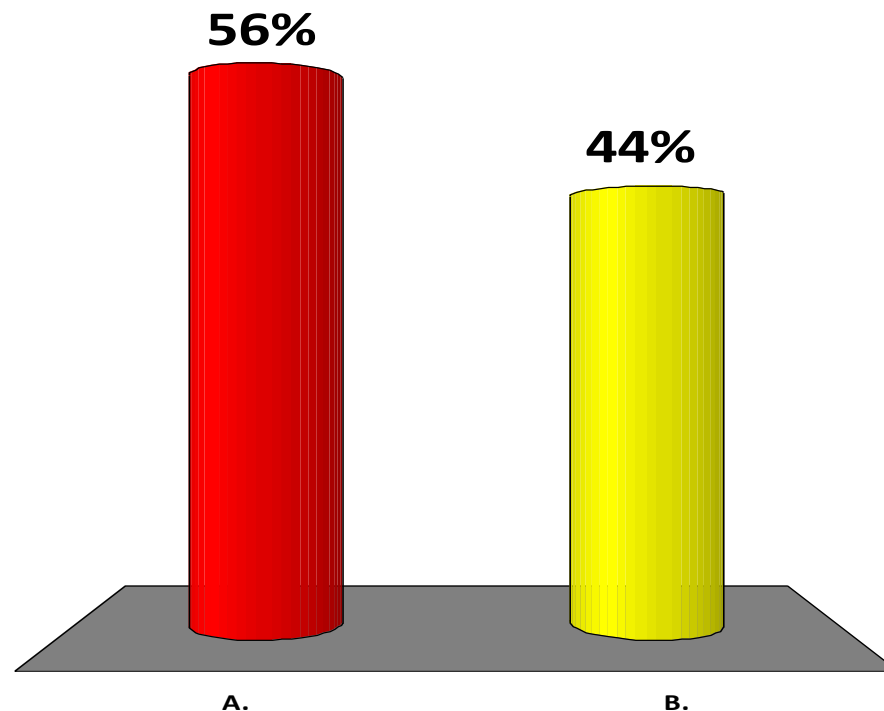
- A. Yes
- B. No

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.

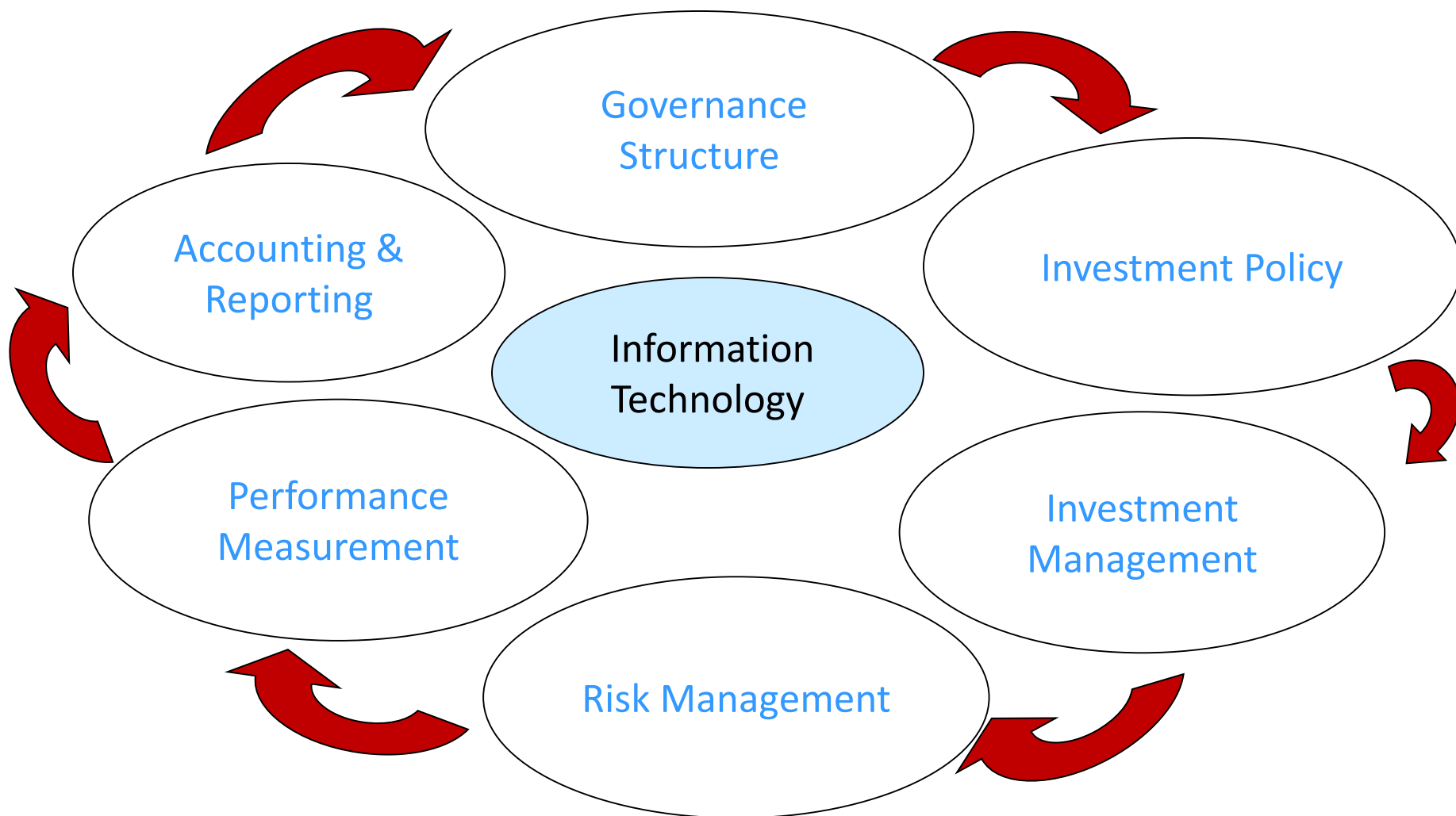
Is that a good use of the Governing Board's time?

A. Yes

B. No

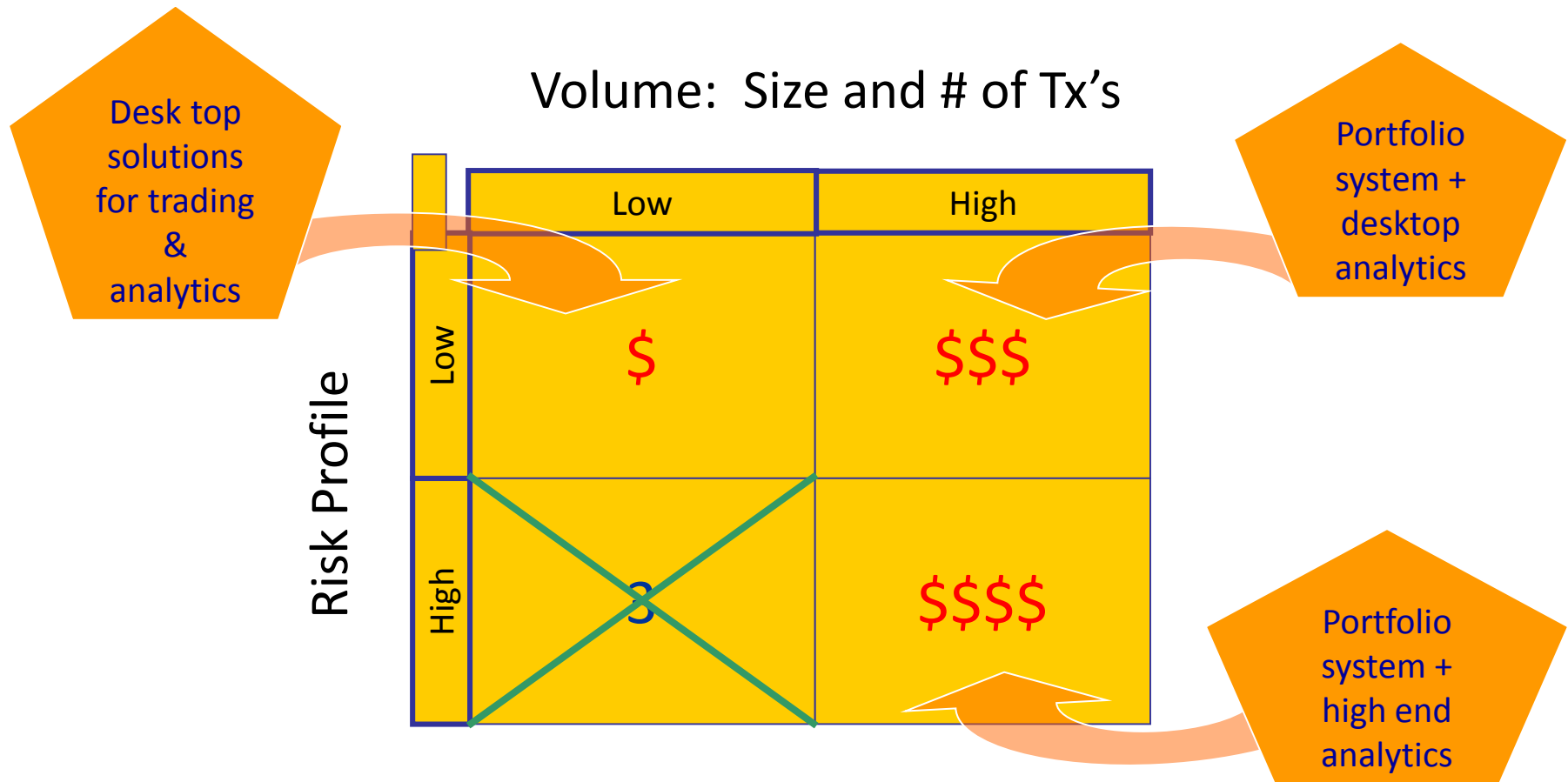


Investment Framework



The risk/volume profile defines IT solutions

→ which drive costs!



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

©2012 The International Bank for Reconstruction and Development / The World Bank 1818 H Street NW Washington DC 20433/ Telephone: 202-473-1000/ Internet: www.worldbank.org

E-mail: feedback@worldbank.org

All rights reserved.

This work is a product of the staff of the International Bank for Reconstruction and Development/The World Bank. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of the Executive Directors of the World Bank or the governments they represent.

The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of the World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this publication is copyrighted. Copying and/or transmitting portions or all of this work without permission may be a violation of applicable law. The International Bank for Reconstruction and Development / The World Bank encourages dissemination of its work and will normally grant permission to reproduce portions of the work promptly.

For permission to photocopy or reprint any part of this work, please contact the World Bank Treasury.