

SOCIAL PROTECTION AND JOBS

2019 CORE COURSES

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Framework for Pension Investment Management

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[Pensions Core Course](#)

Road Map

- Quick Overview of the World Bank Pension Fund
- Pension Fund Investment Framework
 - Governance Structure
 - Investment Policy
 - Investment Management
 - Risk Management
 - Performance Measurement
 - Accounting & Reporting
 - Information Technology

World Bank Post-Retirement Benefit Plans

- The World Bank's post-retirement benefit plans are comprised of 3 plans: 1) Staff Retirement Plan (the pension plan); 2) Retired Staff Benefit Plan (the medical plan); and 3) an other Post-Retirement Benefit Plan.
- The Pension Plan is a funded contributory **defined benefit pension plan** established to provide retirement benefits to eligible employees of the World Bank Group.
- Currently, there are more than **26,500 plan participants** (16,552 active and 9,880 retirees) covered by the Plans.
- Assets under management total approximately **USD 28 billion**.
- The Pension and Medical Plan are formalized as explicit trusts, where contributions are irrevocable with IBRD acting as a trustee.

Pension – Definition/Classifications

- System that would **provide an individual with income** when they are no longer earning a regular income from employment;
- **Pension schemes** may be set up by an **employer** for the benefit of employees (occupational or employer pension) or by the **state** in the form of social security;
- These schemes typically require participants and employers to **make payments during their working life** in order to qualify for benefits later on.
- Based on how the benefits are determined, pension plans can be classified as **defined benefit or defined contribution plans**;
- **Defined benefit plans**:
 - **Guarantees** a certain benefit stream at retirement;
 - The benefit stream is usually determined based on some formula related to the member's salary and length of membership in the plan.
- **Defined contribution plans**:
 - The benefit stream at retirement is **dependent** exclusively upon the **amount of money contributed and the investment returns** realized from investing the contributions through capital markets.

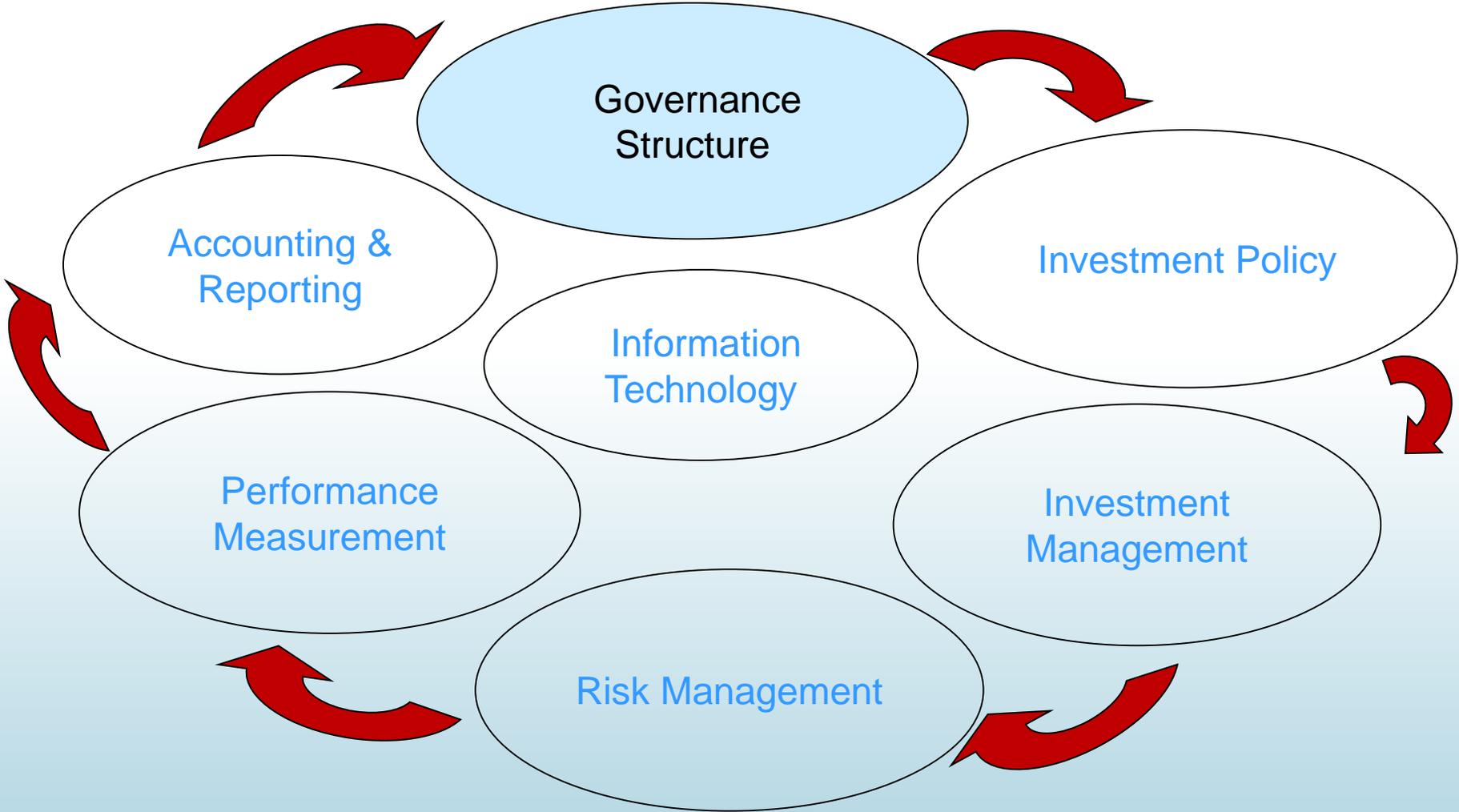
From a Pension Scheme to a Pension Fund

- **Defined benefit plans** may be either **funded or unfunded**;
- **Unfunded** defined benefit plan:
 - No assets are set aside to service future benefit payments;
 - The benefits are paid by the pension sponsor (the state) directly from current active participants contributions and taxes (if the state is the sponsor);
 - This is commonly known as a Pay-as-you-go system.
- **Funded** defined benefit plan:
 - Contributions from the plan sponsor and the plan participants are invested in a fund towards meeting the benefits;
 - In this case the plan sponsor is the “beneficiary” of both investment risk/rewards.
- **Defined contribution plans are funded**

Pension Fund Management Decisions

- Overall **goal** is to build up and sustain a **well-funded pension plan** that can meet the contractual pension benefits in a timely fashion as they come due, not only in the short-term but well into the future as well
- Ultimately, the **pension benefits** have to be met through some combination of **contributions from sponsor and participants and investment returns** on plan assets (**Funding Policy and Investment Policy**).
- Critical decision involves making the appropriate trade-off between **return and risk**.
- A very **conservative investment policy** could result in **meager but certain investment returns** and require 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.

Investment Framework



Elements of Governance Structure



When integrated appropriately, these elements facilitate the conversion of retirement savings into pension payments in an efficient, cost-effective manner*

Other key drivers of investment outcomes:

- governance quality
- investment beliefs
- operational and strategic risk management
- implementation capability

Governance – Coherence, People, Processes

Coherence

- Legal foundation
- Ownership of investment decisions
- Clarity of **investment objectives**
- **Delegation of authority** and clear accountability
- Transparency of decisions and result
- Clear standards of care for **fiduciaries and managers**: *prudent person rule*

People

- Leadership
- Qualified, well trained and empowered staff
- Demonstrable quantitative skills
- Capacity for logical thinking, ability to think about risk in the probability domain
- **Culture of risk-awareness**

Responsibility as a Fiduciary

- Pension Trustees perform a **fiduciary role** and have **specific responsibilities**. In the US, ERISA (Employee Retirement Income Security Act) sets fiduciary responsibilities with respect to qualified retirement plans. **These include:**
 - **Acting solely in the interest of the plans' participants** and their beneficiaries and with exclusive purpose of providing benefits and avoiding conflicts of interest;
 - Ensuring that the plans offers a **diversified investment approach** that minimizes risk of long-term losses;
 - Following the **plan documents**;
 - Paying only **reasonable plan expenses** (not necessarily the lowest costs);
 - **Monitoring investments**;
 - Avoiding **prohibited transactions**;

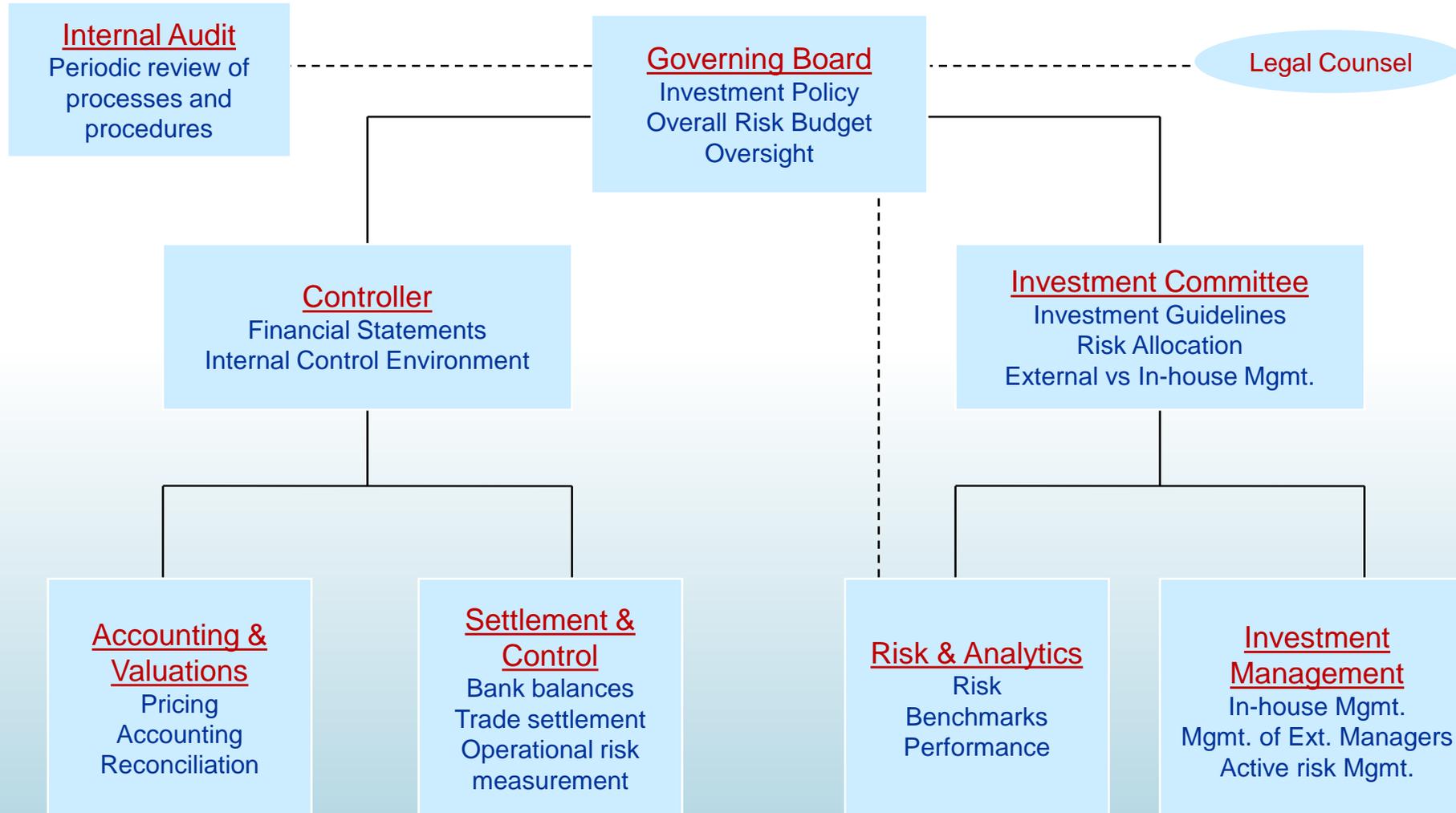
Processes

- **Oversight** based on quantitative and qualitative performance indicators
- **Internal controls** and external validation of processes and reporting, including independent audit function
- Reliable **information and reporting system**
- Well resourced
- **Code of conduct**

Guiding Principles

- **Good governance** = Clear separation of roles and accountabilities;
- Every pool of funds (the 'Fund') has a unique risk profile based on:
 - the objectives for which those funds exist;
 - the liability characteristics of the Fund (where there are explicit liabilities); 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, changes in market conditions and/or structures, 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

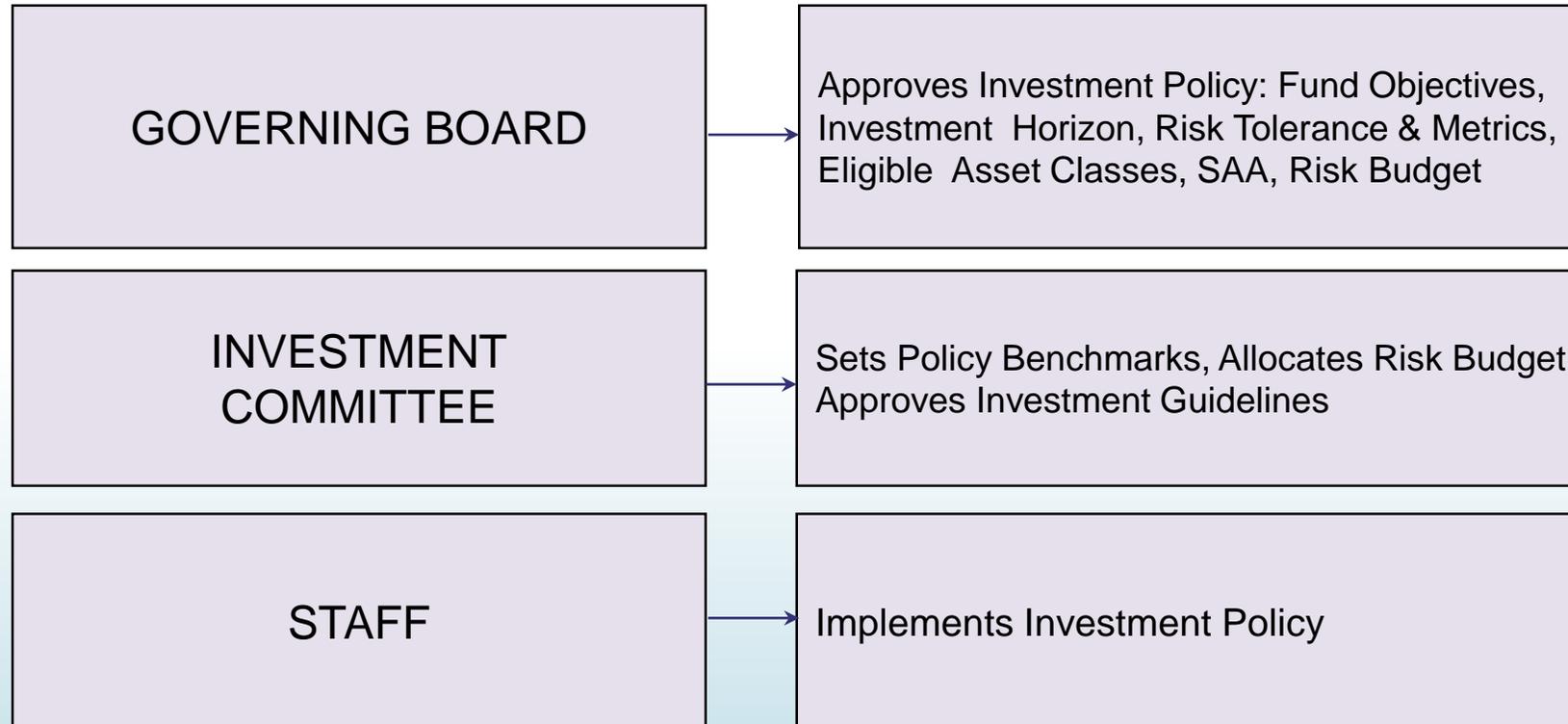


What decisions need to be made?

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 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



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 presented by staff.
- Ultimate objective is to **facilitate the Board's ability to make necessary decisions**, and 'own' these decisions.

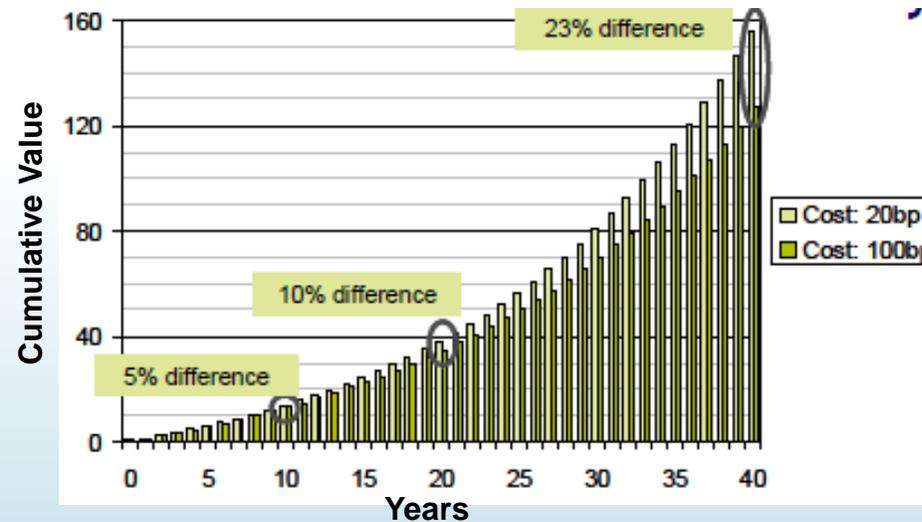
Importance of Strategic Public Communication



Focus on Investment Management Costs

Impact on Value of Pensions

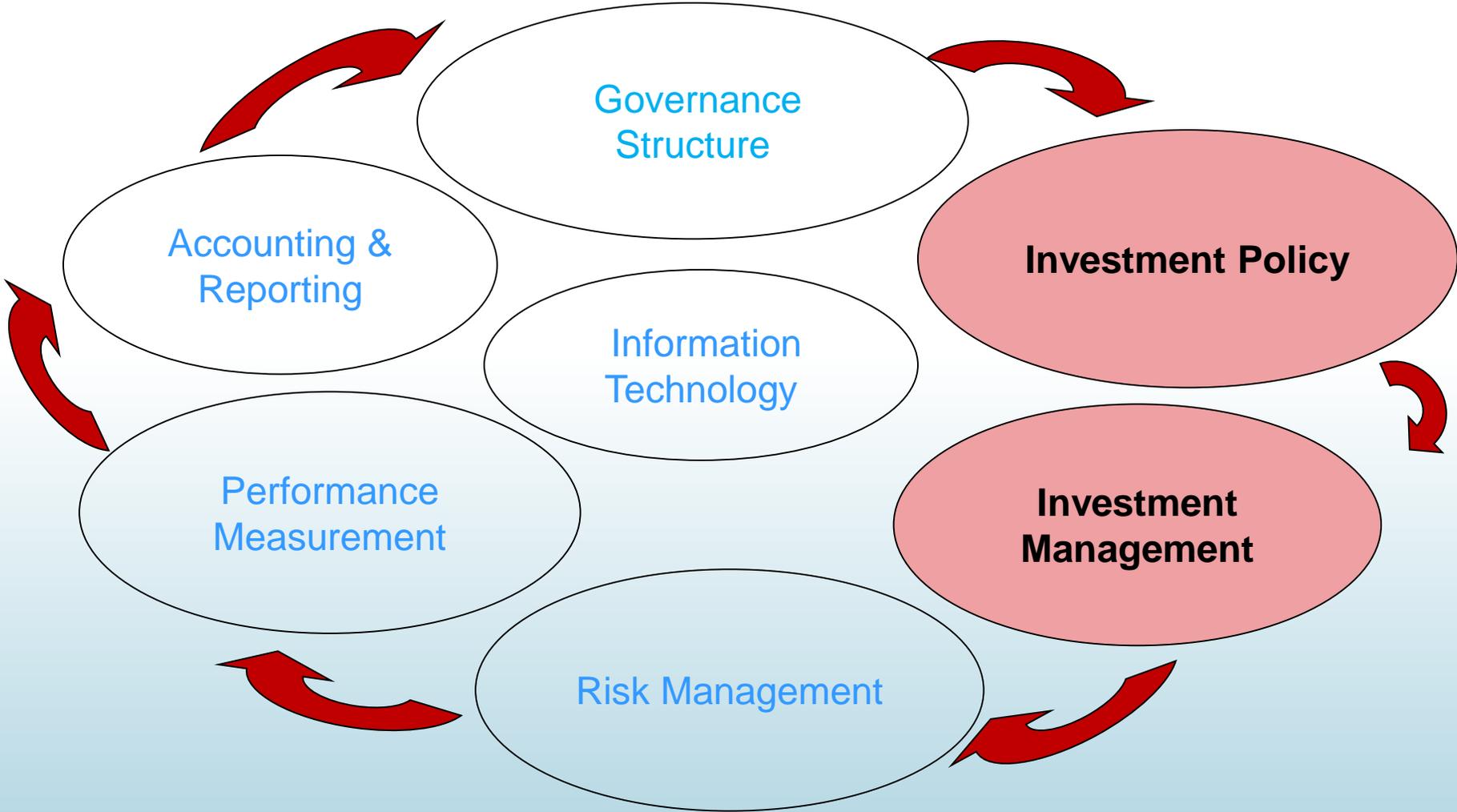
- **Singapore's Central Provident Fund** – a 1% administrative charge on assets over a 40-year period could erode returns at a member's retirement by 25%.
- **Denmark's ATP** – 0.8% higher annual asset management costs over a 40-year period may reduce benefits available to members by about 23%



“Funds with **low cost structures generally outperform funds with higher cost structures** (adjusted for difference in investment policies)” and

“Higher-than-necessary costs are a primary indicator of a shortfall in fund management excellence”

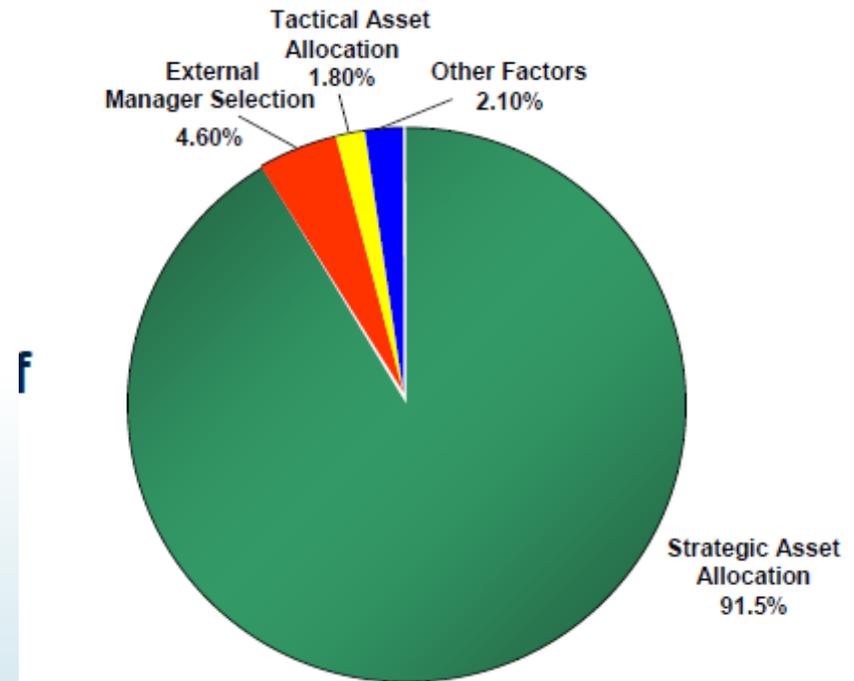
Investment Framework



Importance of Long-term Investment Policy

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

- Defines the **overall risk-return profile of the portfolio**
- **Ranks high** in the hierarchy of investment decisions
- Needs to be **owned at the highest governance level**



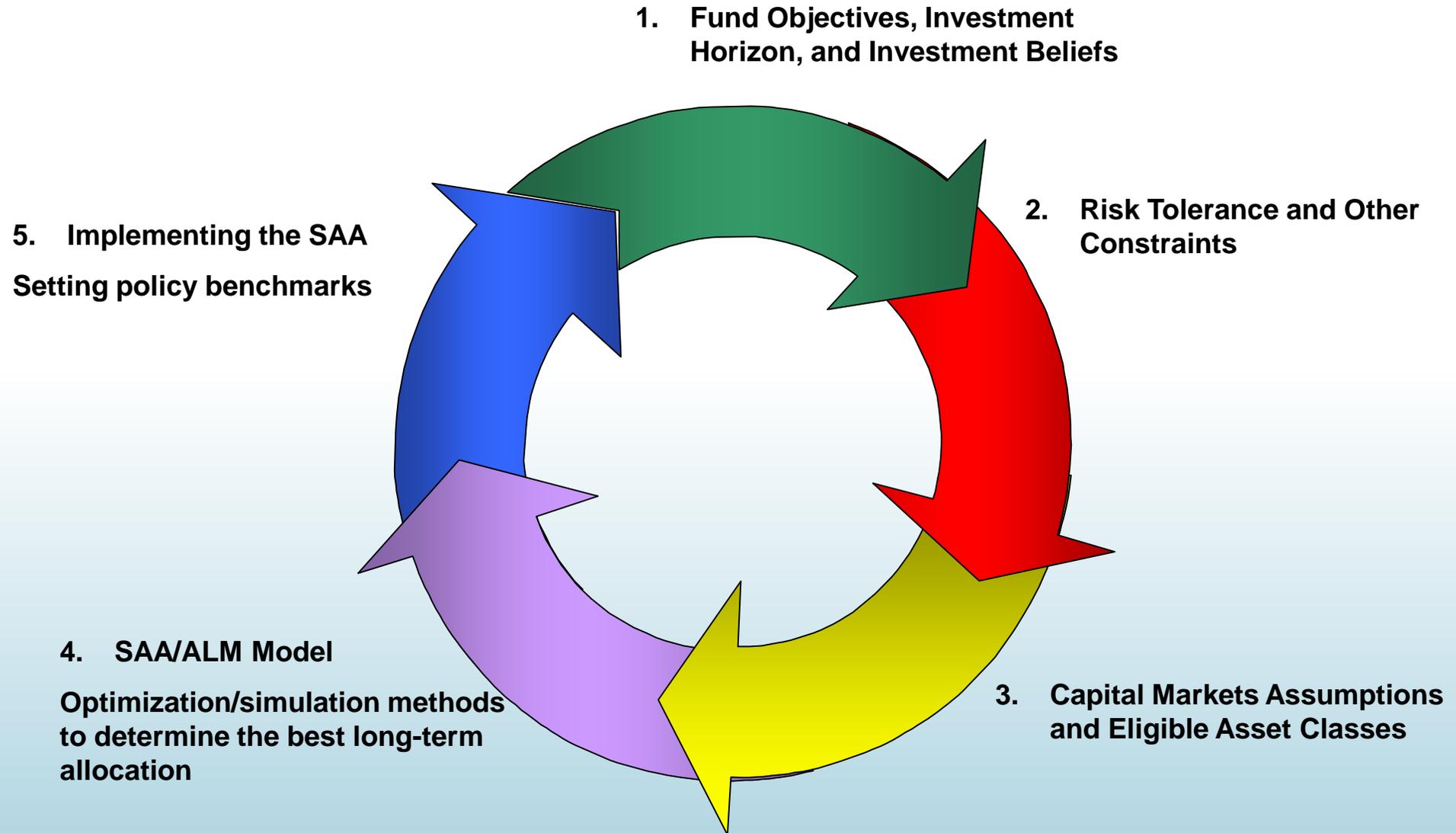
Source: Brinson, Hood & Beebower. "Determinants of Portfolio Performance" Financial Analysts Journal. May/June 1991.

What is Strategic Asset Allocation?

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

- SAA is **neutral** in the sense that it 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)
- SAA involves **primarily a trade-off between risk and return**
- Typically SAA seeks to **maximize return** subject to a set of risk constraints
- For a pension fund, ideally the SAA should be **liability informed**

Investment Policy Process



Investment Policy Issues

Defined Benefit Pension Fund

- **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) are somewhat 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, financial strength of the sponsor, and demographic profile of beneficiaries

Typical Investment Objective

- A typical **investment objective** for a defined benefit pension plan is to maintain and grow the **plan surplus**, which is the difference between the value of assets and liabilities.
- Another way to express this is through the **funded ratio**, which is the ratio of assets to liabilities. On that basis the investment objective would be to **maximize the funded ratio** over time.
- **Liabilities** are the key to definition of pension plan investment objectives
- It follows that it is critical to understand the nature of liabilities (e.g. are the benefit payments indexed with 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 Service | Salary Increase | New Entrants |
|--------------|--------------|----------------|-----------------|--------------|
| ABO | ✓ | | | |
| PBO | ✓ | | ✓ | |
| Closed Group | ✓ | ✓ | ✓ | |
| Open Group | ✓ | ✓ | ✓ | ✓ |

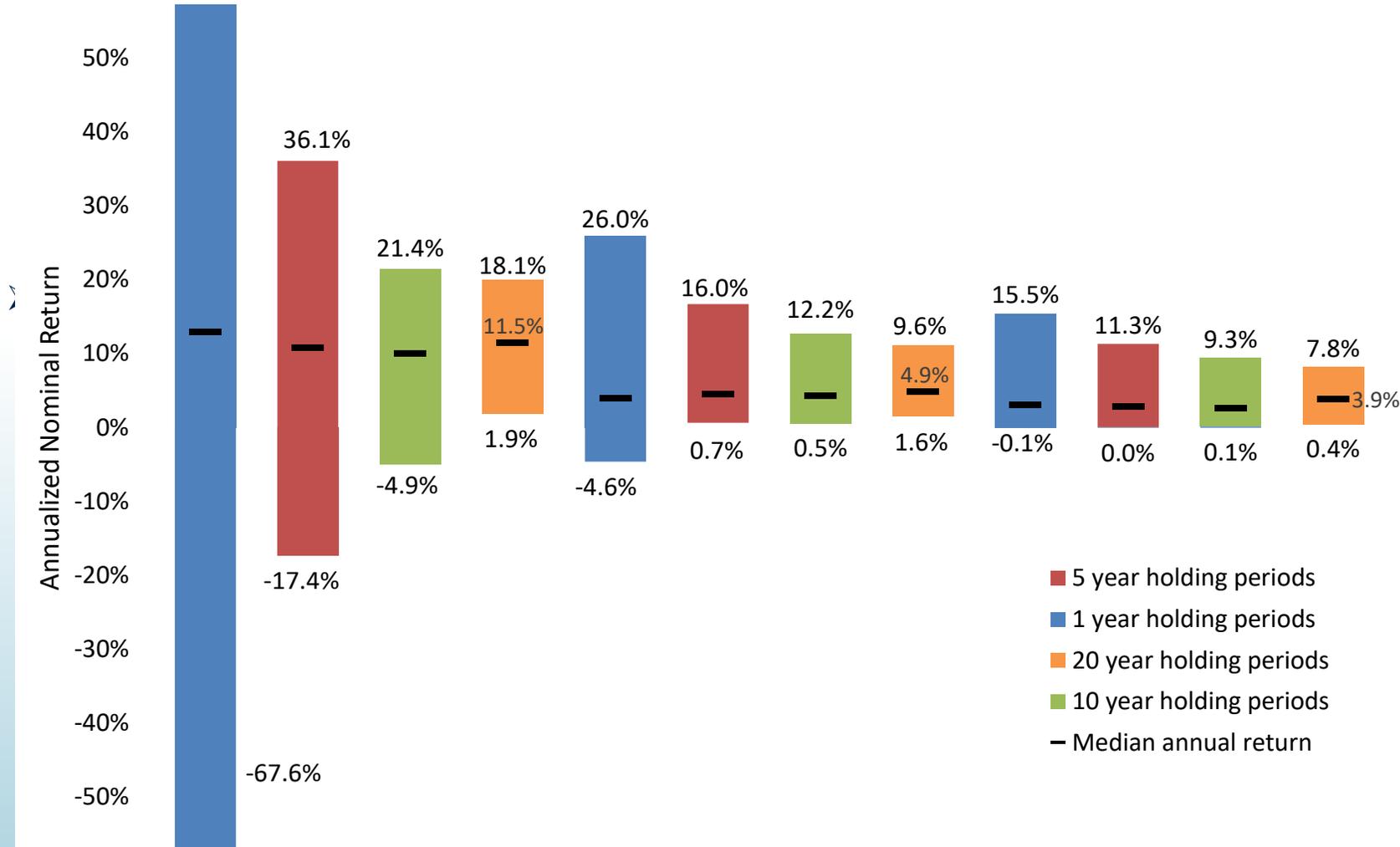
Define key actuarial assumptions such as mortality, termination rates, cost-of-living increases in pensions, investment return, inflation

Investment Horizon

- The investment horizon is the time period over which the **fund is expected to be held and used**, and over which **returns and risks should be managed and measured**
- **Critical factor** in determining the SAA; generally, higher risk tolerance is appropriate for investors with long investment horizon
- **It is not the accounting or reporting cycle**
- Sub-portfolios with different investment objectives can have different investment horizons

Investment Horizon

➤ Stocks, bonds and bills (1926 – 2016)



Source: Ibbotson Associates and World Bank Treasury calculations

Investment Beliefs – What are they?

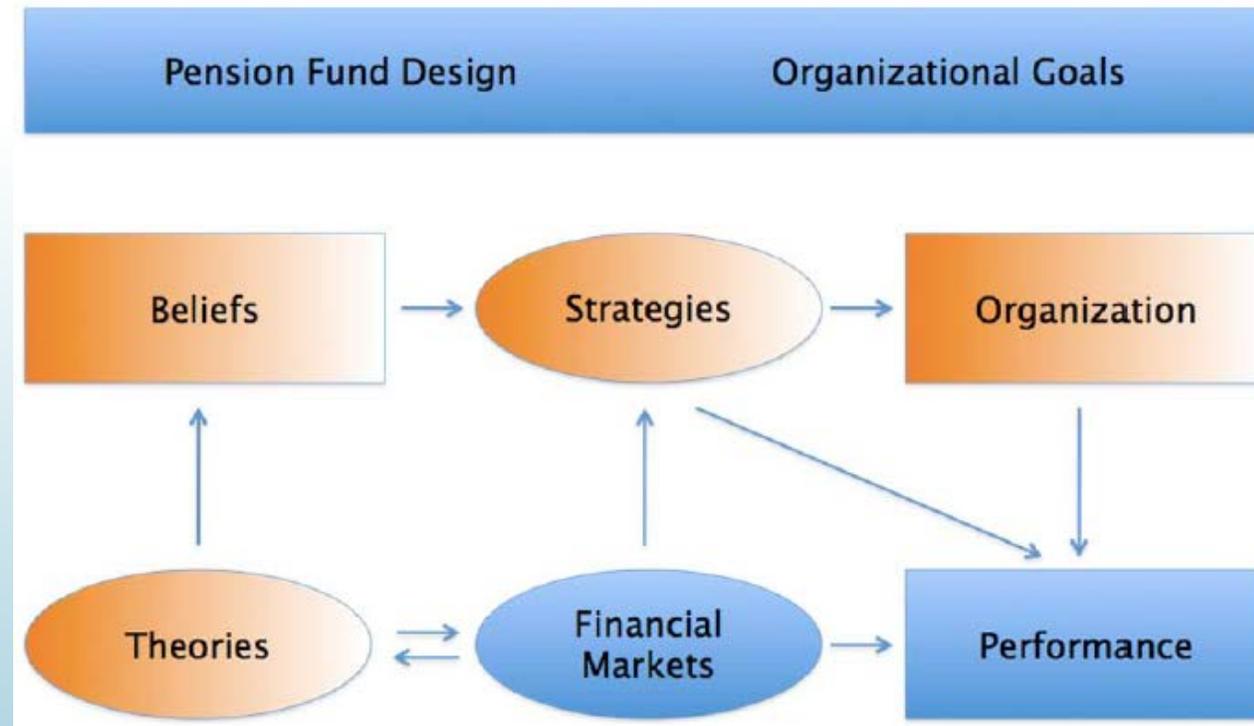
- There are no universally-agreed or universally-appropriate methods on many questions concerning the financial markets
- **Investment beliefs can be thought of as a clear view of how each organization perceives that capital markets work and how the organization can add value and strive for excellence.**
- **Most beliefs cannot be definitely proven** and are instead **collectively agreed** judgements based on research and experience.
- As such, beliefs:
 - Provide clarity of thought
 - Combine individual perspectives into a disciplined institutional whole
 - Allow for consistency of decision making over time
 - Provide support for staying the course when most needed
 - Represent the foundation of the institutional identity and culture

Why is important to formulate beliefs

- Trustees need a **clear governance framework** to make choices for a constructive dialogue with stakeholders. They are an important governance instrument.
- Even more relevant in financial markets where **different visions and/or investment models co-exist** (e.g. internal management vs. outsourcing, passive vs. active management, asset classes vs. risk factors, traditional portfolio allocation vs. the endowment model, etc).
 - Asset managers have to articulate their **unique proposition for client(s)**
- Investment beliefs offer also a **framework for evaluating new developments** and decide whether to include them in the strategy (reduces the tendency to ‘join the herd’)
- From a governance perspective investment beliefs should be made **explicit, documented, shared and understood** by both fiduciaries and investment professionals

Elements of an investment belief system

- An investment belief system has four main elements:
 - Basic beliefs (e.g. markets are mean-reverting, active management adds value, etc.)
 - Investment theory or arguments supporting the beliefs
 - Their translation into a workable investment strategy
 - Requirement for the organization to implement beliefs successfully



Investment Beliefs – Stylized Categories seen in practice

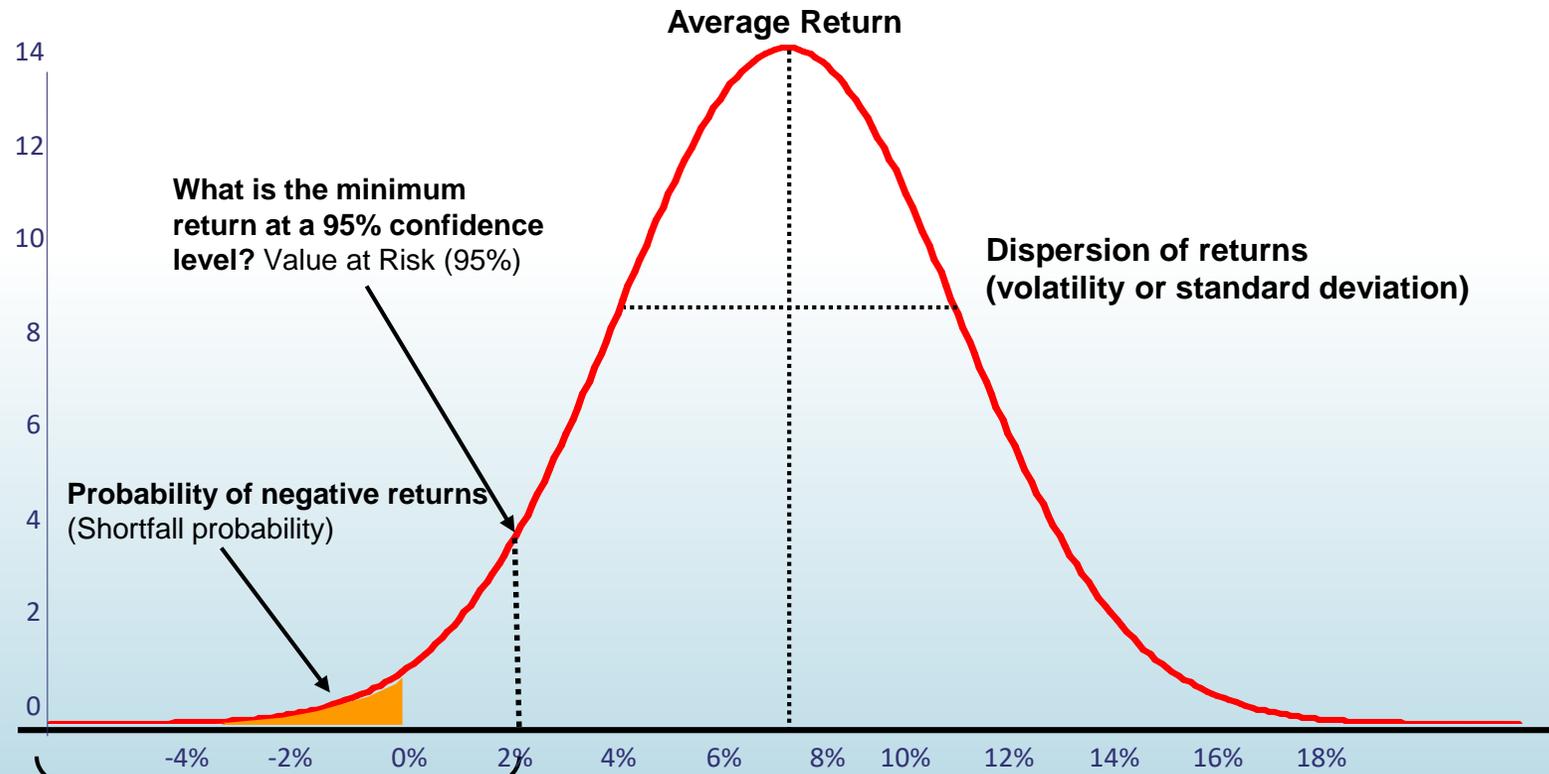
| Broad Category | Pension Funds' Stylized Investment Belief |
|---|--|
| Long-term investing | Long holding periods allow investment in assets with higher risk premiums, notably illiquidity and equity risk, earning additional returns. Implies also greater ability to tolerate short-term volatility |
| Diversification | Diversification is the only 'free lunch' in investment management. Larger funds can realize additional diversification advantages by adding niche, complex strategies |
| Active management | With the right skills, resources and process, an investor should be able to create excess returns with active strategies. Passive management should be the norm in markets with high costs, limited inefficiencies and difficulties in separating skill from noise |
| Costs | Costs are certain and a drag on net returns. Future returns are uncertain. So costs need to be properly considered, managed and accounted for |
| Organization/ Governance | Pension funds can access the right skills by combining internal and external management lowering principal-agent costs and enhancing returns |
| Responsible investing | As long-term investors Pension funds must have concern for environmental, social and governance (ESG) factors because they are material to long-term returns. |
| Asset allocation and Investment Strategy | Strategic asset allocation is a key determinant of long-term performance. Pension fund liabilities should be considered in determining the appropriate asset allocation and investment strategy |

Risk Tolerance

- Risk tolerance is about knowing where the line is drawn between **acceptable and unacceptable outcomes**
- Risk tolerance depends on expected **funding and withdrawal pattern**
- Need to translate concerns of decision makers into **quantifiable statistics** (risk measures)
- Risk tolerance should ideally reflect an institution's **ability** to take risk, and not the Board's or decision maker's **willingness** to tolerate risk
- **How to assess risk tolerance?**

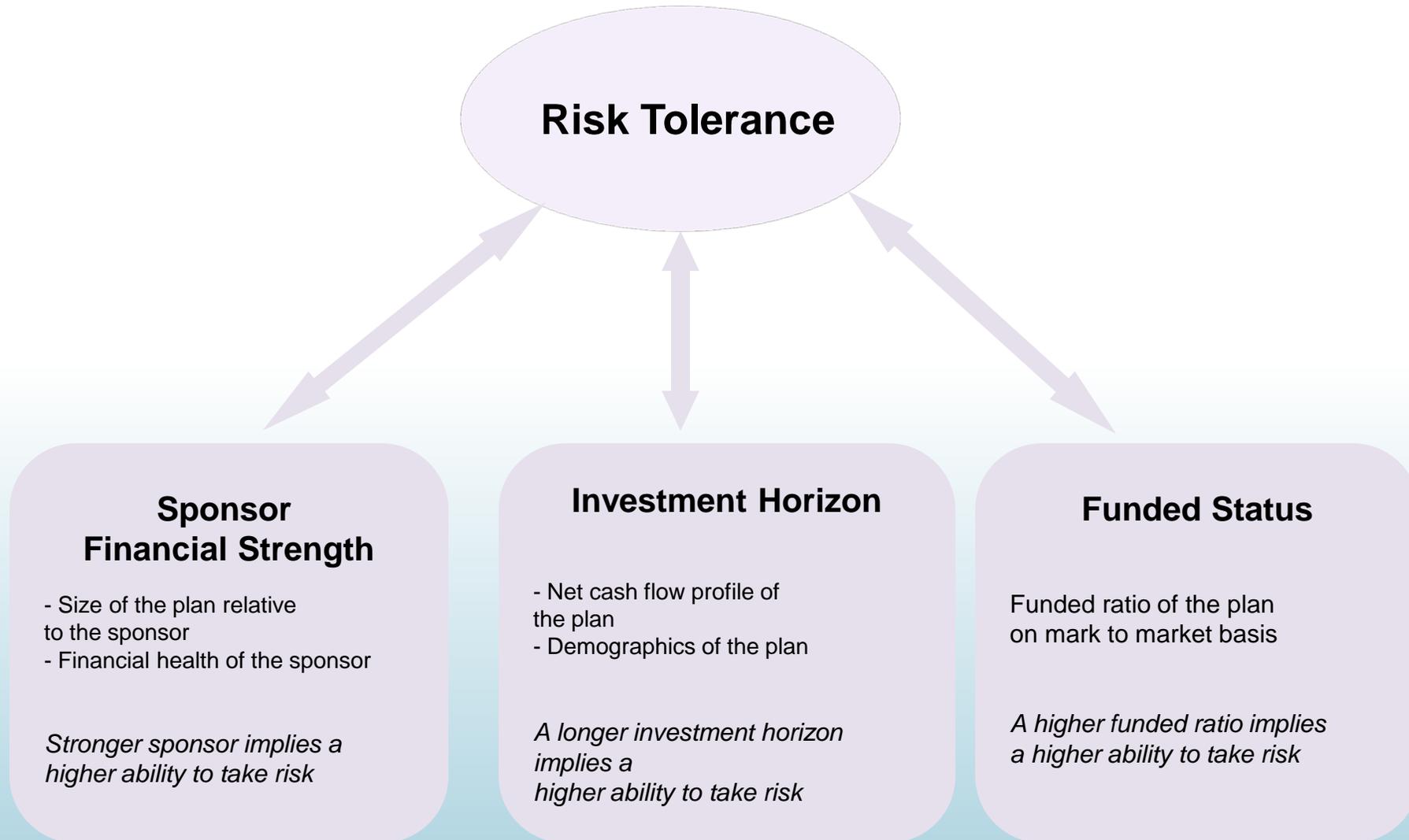
Risk Tolerance in Finance Terms

Distribution of portfolio returns



What is the average worst case outcome (95% confidence level)?
(Average loss or Conditional VaR)

Determinants of Risk Tolerance



Willingness vs. Ability to Take Risk

Distinguish between the institution's ability to take risk and individual's or committee's willingness to take risk!

Ability to Take Risk

Ability to take risk refers to the appropriate amount of risk to achieve long-term objectives and is driven by:

- Rationale for holding funds, investment horizon and investment objectives
- Asset liability considerations
- Institutional constraints and human resources (capacity and skills of staff members)

Willingness to Take Risk

Can be driven by:

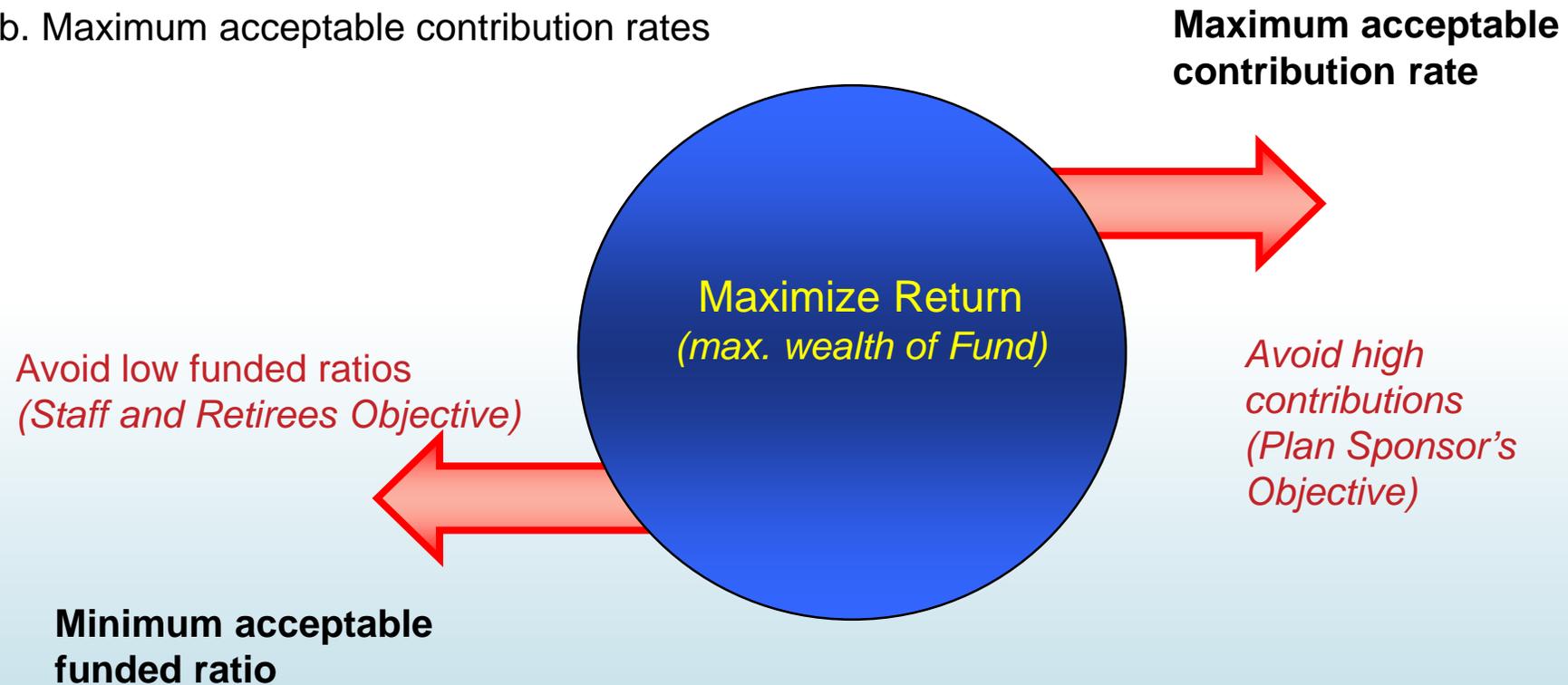
- Emotions and noise
- Peer pressure & herd behavior
- Misunderstanding of objectives and financial illiteracy of public or parliament
- Undue focus on accounting value instead of economic values

If willingness is lower than ability, huge opportunity costs may be incurred

Typical Risk Trade-offs

Two measures of risk:

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

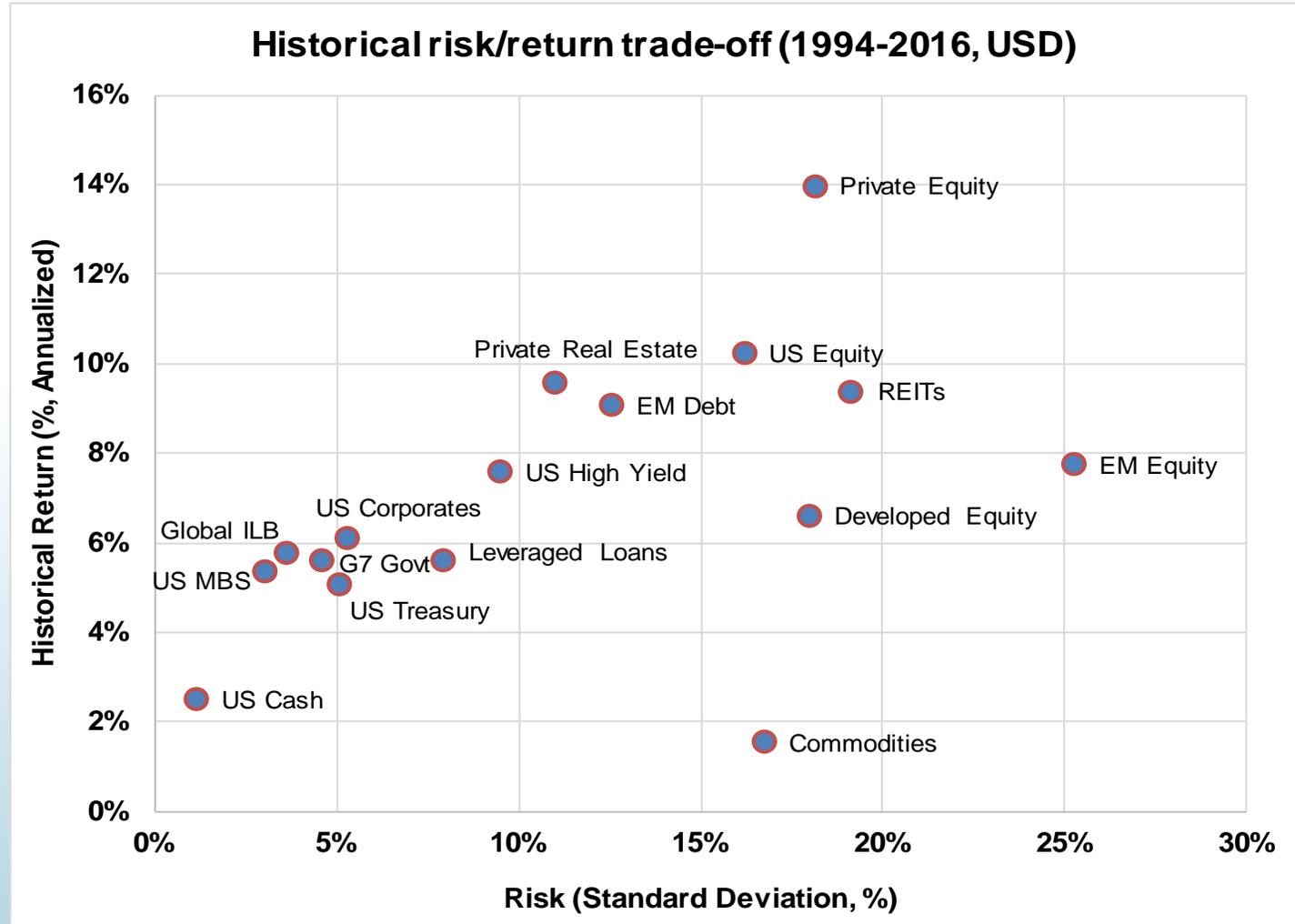


Eligible Asset Classes

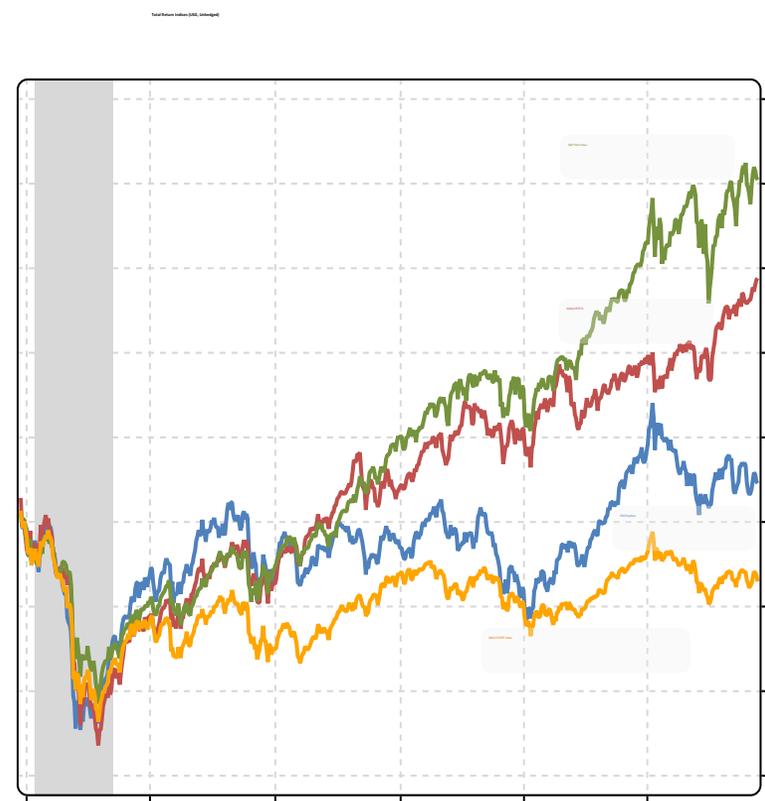
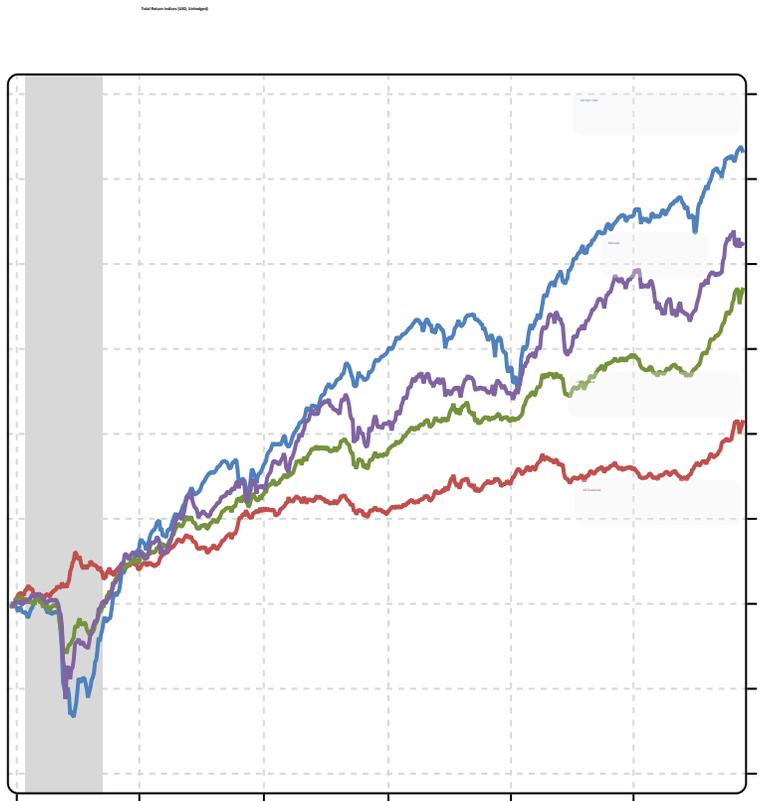
- Selection of eligible asset classes is an important part of the asset allocation process
- Considerations influencing choice of eligible asset classes:
 - *Investment objectives and **risk-return considerations***
 - ***Risk factor exposure and diversification potential***
 - ***Headline/Reputational risk** issues*
 - ***Staff capabilities and skill mix***
 - *Sophistication of portfolio and risk management infrastructure*
- Focus should be on **total portfolio risk and return** – not on the riskiness of individual assets in isolation

Risk-return Profile of Asset Classes

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



Diversification Matters

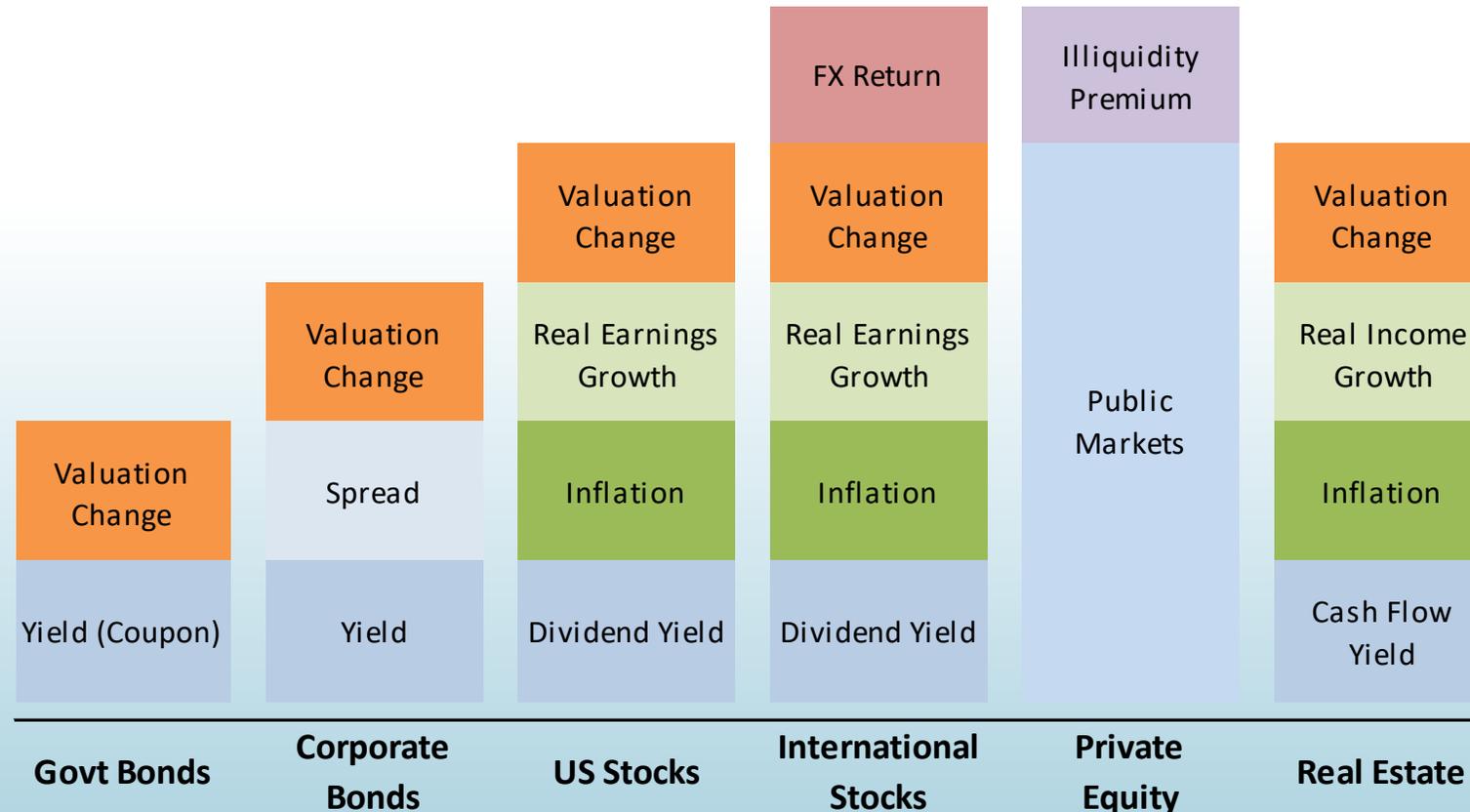


Capital Market Assumptions

- One of the key assumptions in the SAA process is related to the expected properties of assets over the investment horizon in particular the **expected returns**. Optimization results (hence ALM results) are disproportionately sensitive to these expectations.
- There is scope for **building internal capabilities** to derive **forward-looking return expectations** as institutional ownership of these assumptions is critical.
- Elements of potential process for setting return expectations:
 - Research various methodologies for setting return expectations and build capabilities to implement such methodologies internally;
 - Link the underlying assumptions to the external economic and financial environment and the consensus expectations going forward (perhaps through the use of a macroeconomic model or by surveying market expectations for such variables)
 - Periodically compare the expected returns derived internally versus the expectations of other market participants (e.g. consultants, institutional investors, investment banks) and seek to understand the main methodological differences
- **Role of the Board: approve the methodology for deriving expectations and oversee the consistent implementation of this methodology over time.**

Example - Building Blocks for Asset Return Assumptions

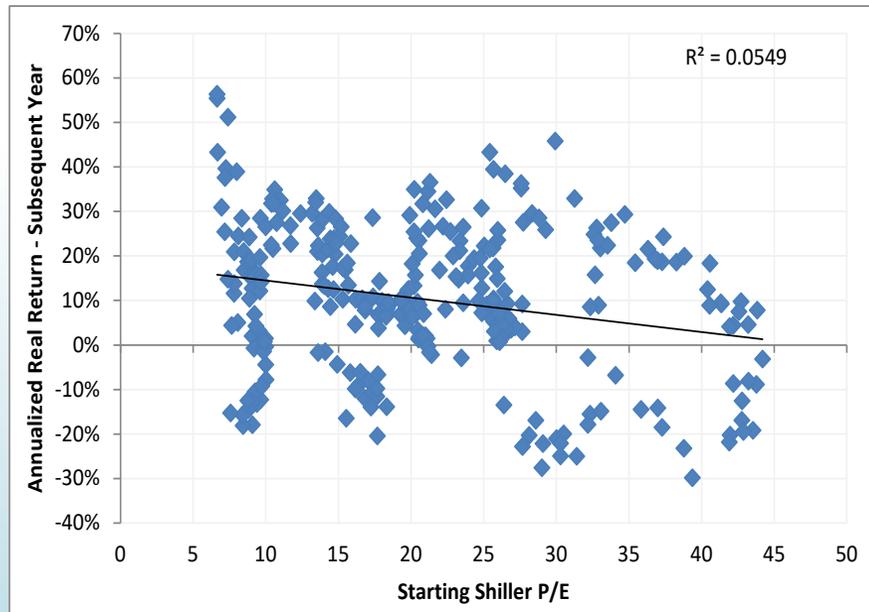
- In general, expected returns for various assets can be decomposed into a yield or cash flow component and a change valuation (e.g. change in yield, P/E ratio or cap rate).
- The **valuation change** is much more **volatile** in the short term but tends to mean-revert over the long-term.



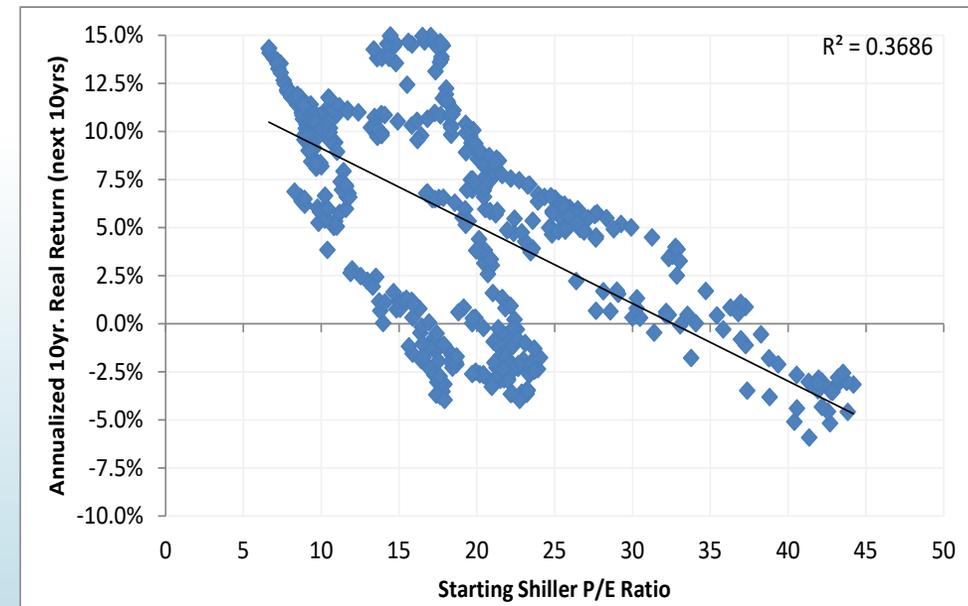
Equity expected return - No predictability in the short-term

- It is important to stress that there is a much lower predictability in the short-run when it comes to linking observable variable with future realized returns. The predictability power increases significantly with the investment horizon.

Starting CAPE and Subsequent 1yr Real return – Since 1980



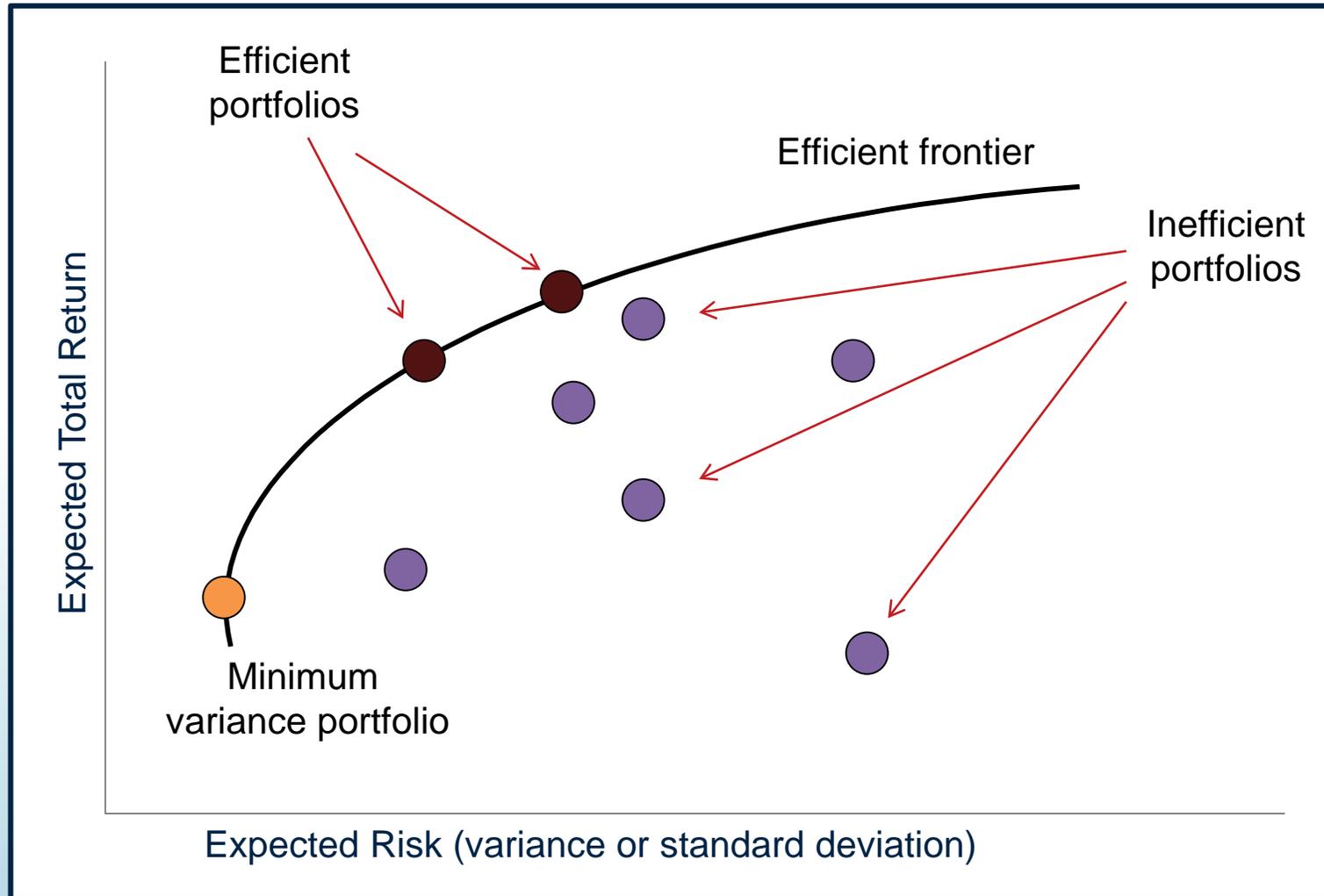
Starting CAPE and Subsequent 10yr Real return – Since 1960



Portfolio Construction

- Most common approach employed by institutional investors and asset managers to determine optimal portfolios is **mean variance optimization**.
- Mean variance optimization is a procedure that helps an investor find the portfolio that maximizes expected return for a given level of risk (as measured by variance or standard deviation of returns)
- In the case of pension fund where liabilities have to be taken into account, the measure of risk changes to what is called '**surplus risk**' (standard deviation of the difference between asset returns and liability returns). Similarly the measure of expected return changes to '**expected surplus excess return**' (expected asset return over the expected liability return)
- **Inputs:**
 - Expected return of each asset class (or expected excess returns vs. liabilities)
 - Standard deviation of each asset class (or surplus risk when optimization includes liabilities)
 - Correlation of returns between asset classes (or correlation of excess returns over the liabilities)
- **Output:**
 - The efficient frontier, i.e. the set of portfolios with the highest expected return for a given level of risk

Efficient Frontier - Example



What should come out of the Investment Policy process?

- The key elements coming out of the process should be reflected in the **Investment Policy Statement** and include:
 - Investment objective
 - Investment horizon
 - Risk tolerance measure and specific metrics
 - Asset allocation: asset class weights, benchmarks, bands around the target weights (if any), expected risk/return profile over the investment horizon
 - Rebalancing policy
 - Overall active risk budget and limits

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 driven by short-term market conditions (**'enhanced indexing'**).

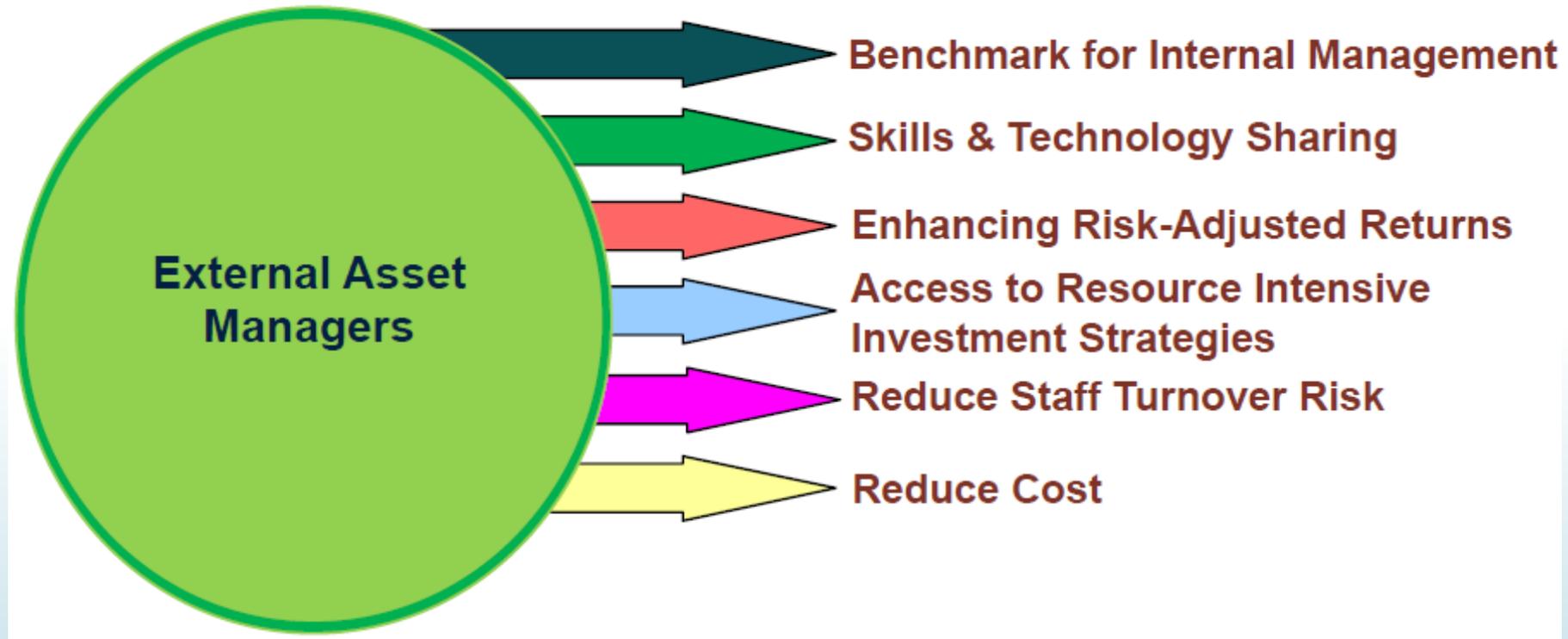
Investment Management Styles

| | 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 |

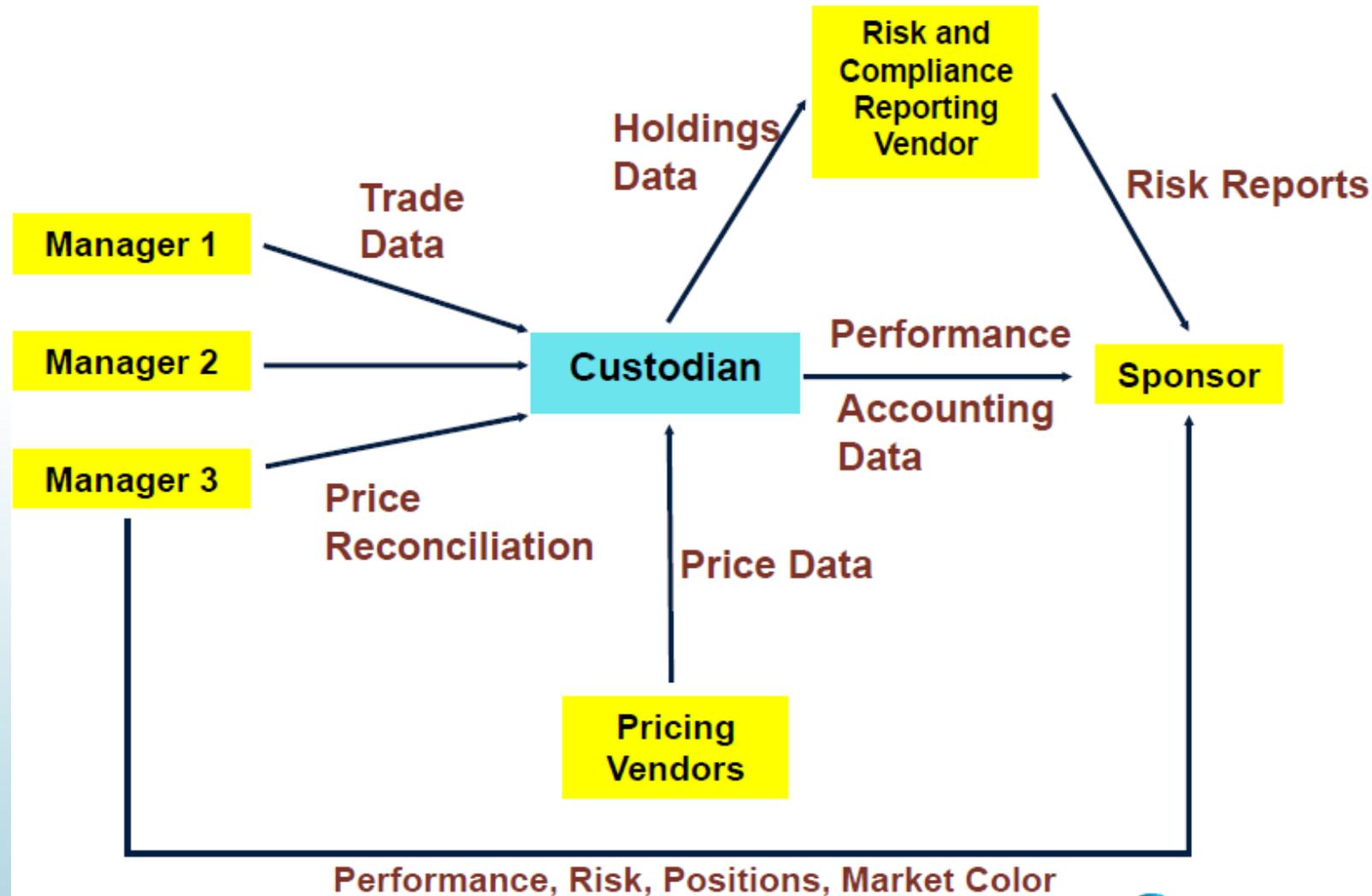
Strategic vs. Active Investment Decisions

| | Strategic Decisions (beta) | Active Decisions (active) |
|----------------|--|--|
| Main decision | Passive management of market exposures; source of expected long term risk premium | Active management through security selection, tactical deviations , market timing (zero sum game) |
| Implementation | Investing in the benchmark portfolio | Outperform the benchmark portfolio |
| Costs | Cheap (low fees) and does not require much skill | Expensive (fees and cost of infrastructure) and skill is critical |
| Importance | Dominant source of risk in most institutional portfolios | Small part in most institutional portfolios |
| Measurement | Measurement: total return of the benchmark | Measurement: excess return over benchmark |

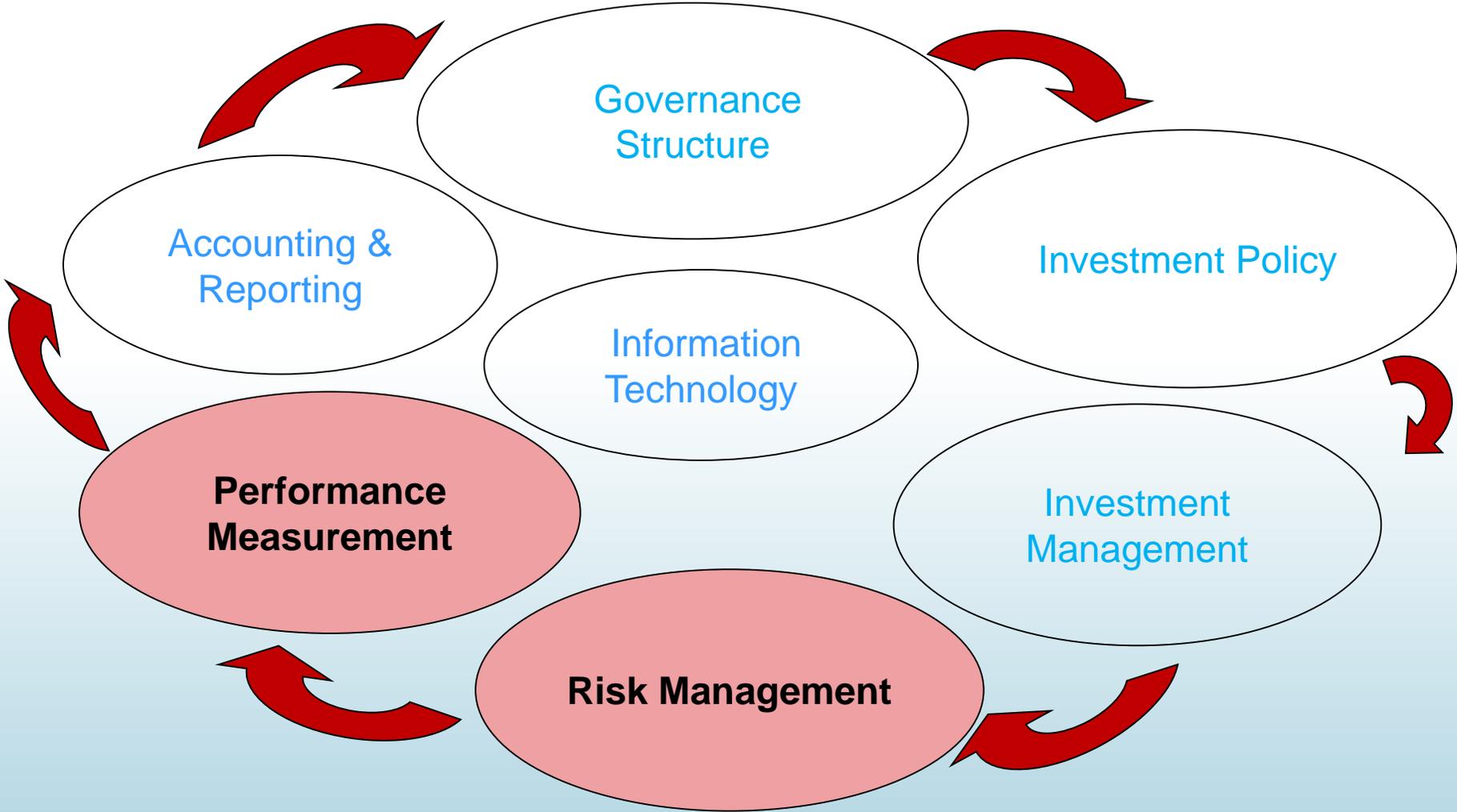
Role of External Asset Managers



Ongoing Monitoring



Investment Framework



Stages of Risk Management



Typical Risks in Pension Fund

- Primarily the types of risks encountered in the management of a pension fund include market, credit and liquidity risk. There are also other types of risks that need to be considered in the risk management process, such as: operational risk, regulatory and legal risk, reputation risk, etc. Some of these risks will be more difficult to capture through a risk measure though.

I. 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)
- change in FX rates (currency risk)

II. Credit Risk

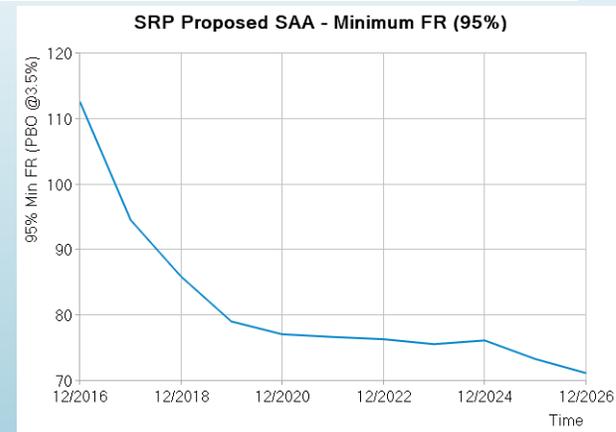
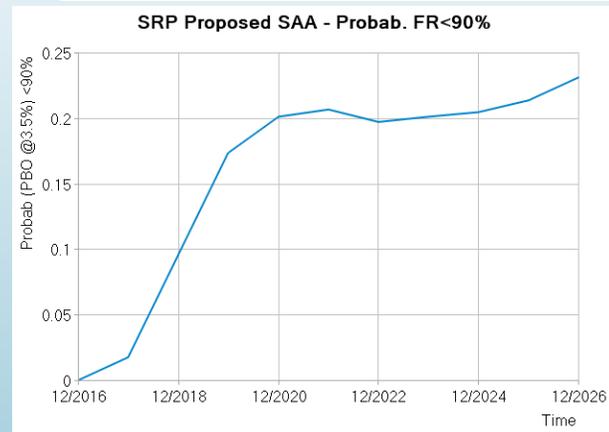
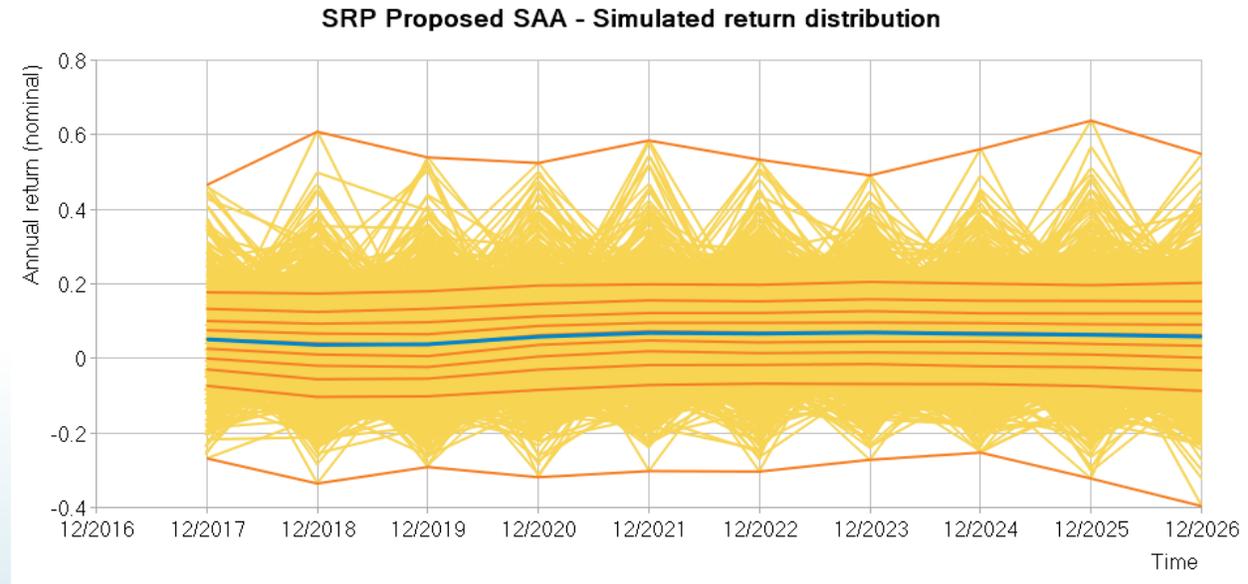
The risk of default on an obligation by the counter-party or the issuer

III. 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

What do you need for Risk Management?

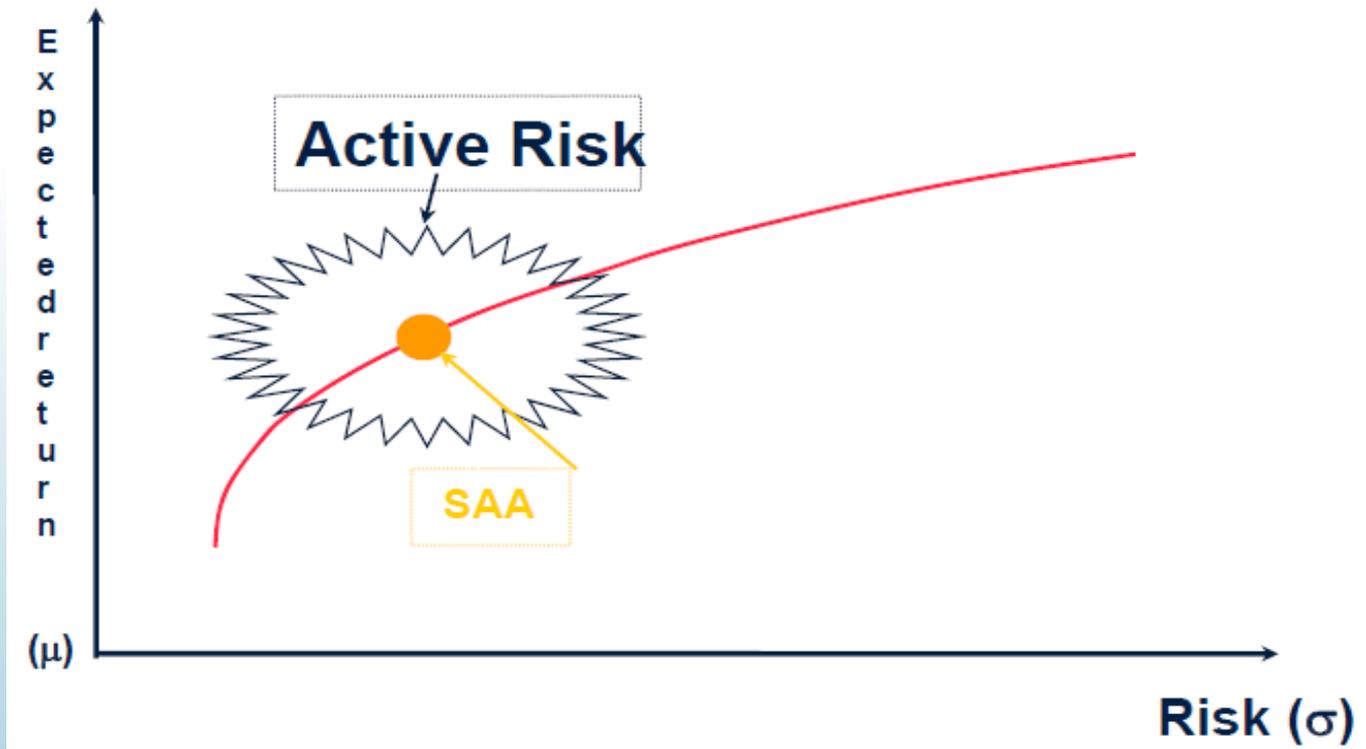
- Professional systems that allow to accurately measure risks across the asset portfolio on a forward-looking basis, but also from an ALM perspective



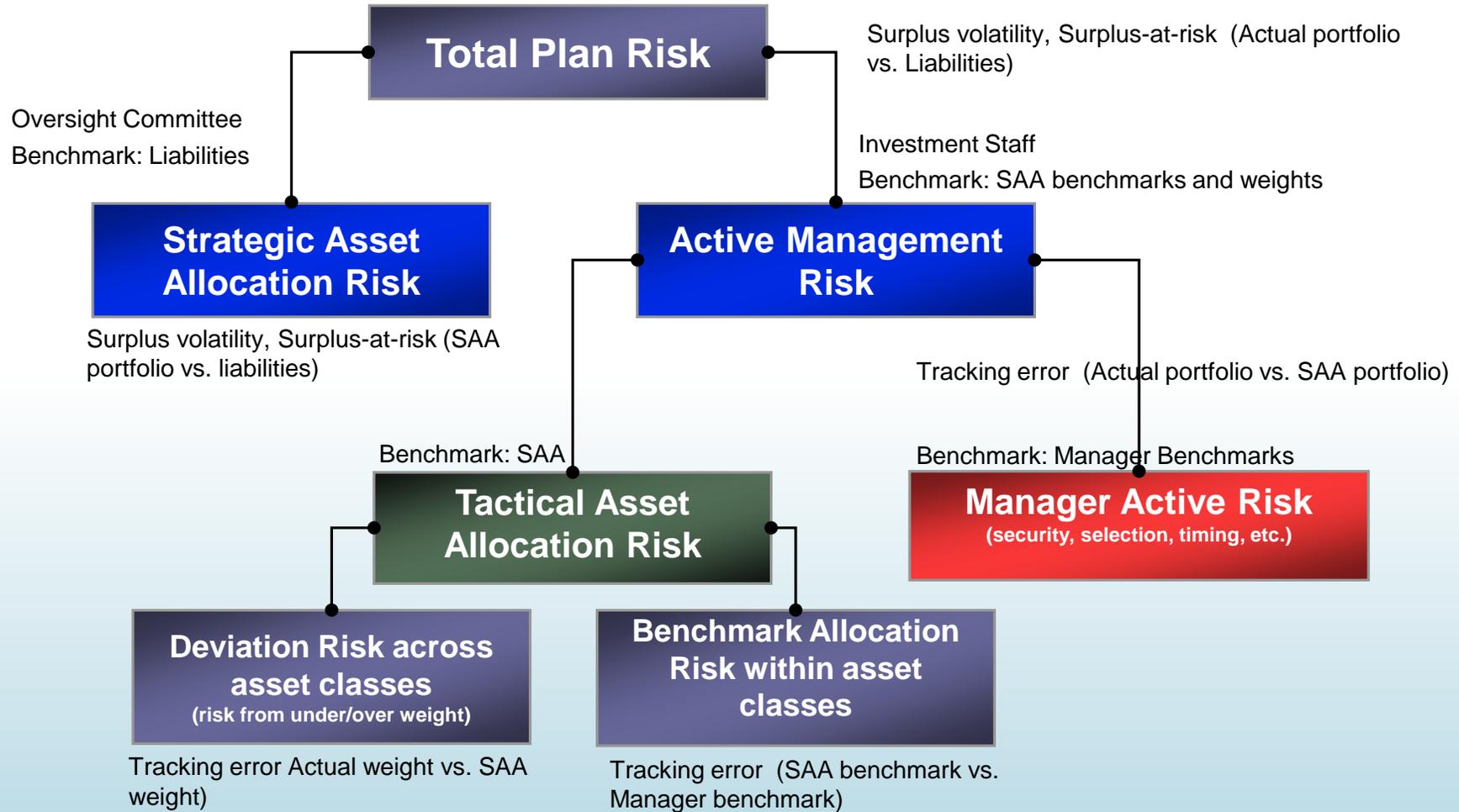
Types of Risk-taking Activities

Risk can be deployed in one of two ways:

- Strategic Asset Allocation
- Active Risk Taking



Risk Structure should reflect Governance Structure

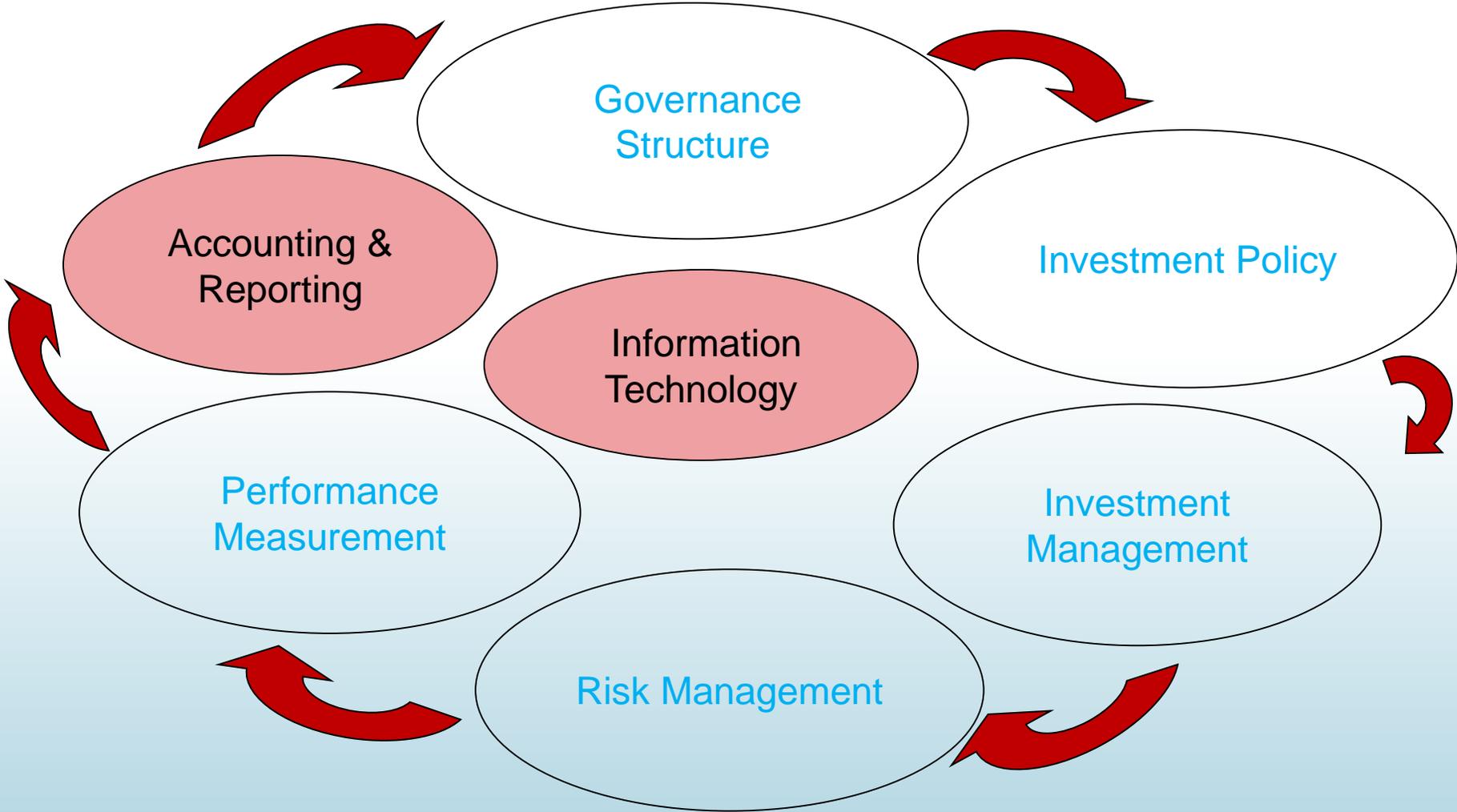


Performance Measurement

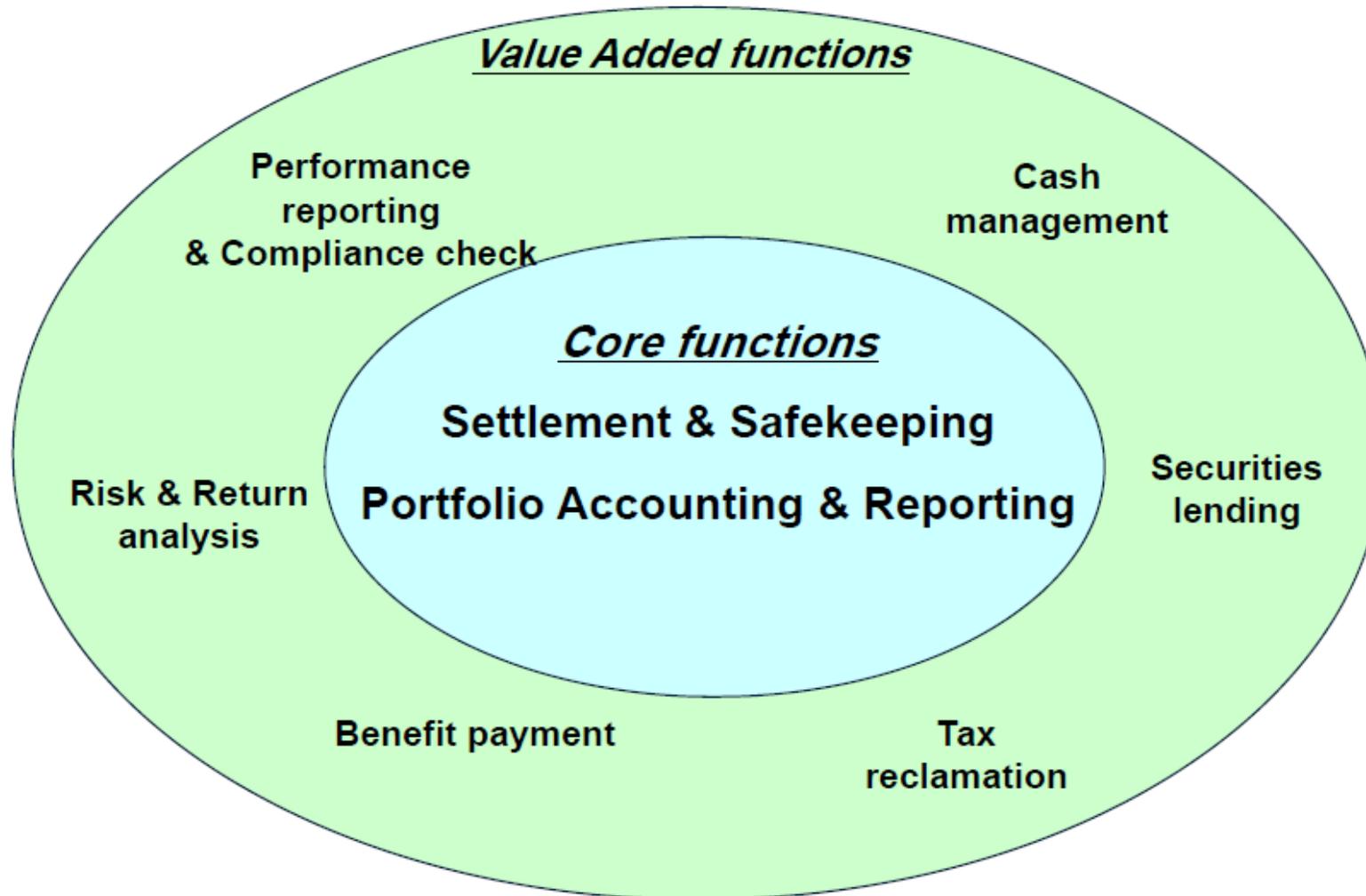
It is important to measure accurately performance and to understand the attribution of it to the various investment decisions made (either internally or be the external managers)

| MTD as of March 31, 2018 | | | | | |
|--|-----------------|--------|------------------------------|------------------|--------------------|
| | Net Return* (%) | | Unsmoothed Attribution (bps) | | |
| | Actual | Excess | BR ² | MVA ³ | Total Attributions |
| SRP Portfolio (Nominal) | -0.4 | 0.0 | -2.2 | 1.5 | -4.4 |
| Fixed Income Strategies | 0.8 | -0.1 | -1.0 | -1.1 | -2.1 |
| Equity Strategies | -1.4 | 0.1 | -1.1 | 3.0 | 1.8 |
| Global Equities | -1.7 | 0.1 | -1.8 | 3.3 | 1.5 |
| EM Equities | -1.8 | 0.0 | 0.6 | -0.3 | 0.3 |
| Private Equity | -0.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| Real Assets Strategies | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Absolute Return Strategies | 0.3 | 0.0 | 0.0 | -0.3 | -0.3 |
| Opportunistic ¹ | -0.4 | -0.3 | | | -0.1 |
| Opport-Asset Allocation | -1.6 | -1.7 | | | -1.0 |
| LT Private Credit | -0.1 | 0.0 | | | 1.0 |
| Others ¹ | -3.1 | -3.7 | | | -0.4 |
| Other TAA Decisions¹ | | | | | -3.2 |

Investment Framework



Role of a custodian



Periodic, Relevant and Reliable Reporting are Key to our Governance



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.
- Translate that into a sound **strategic asset allocation** that is owned at the Board level and implemented consistently over time
- 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 in-house staff and infrastructure.

Disclaimers

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