Investment Consultant and Pension Actuary Conversation

Mandy Notaristefano, EA, FCA, FSA, MAAA
President
The McKeogh Company
West Conshohocken, Pennsylvania

Julian M. Regan
Public Sector Market Leader/
Senior Vice President
Segal Marco Advisors
Braintree, Massachusetts

International Foundation OF EMPLOYEE BENEFIT PLANS

Agenda

- Which comes first: The actuarial assumption or investment allocation?
- Implications for actuarial assumptions and investment allocation
- Approaching the issue differently; managing risk

Actuarial Assumptions

Interest Rate Assumption

- Pension plan assets
  - Generally equal to expected return on assets
  - Modeled in projections to show asset growth over time
- Pension plan liabilities
  - Discount rate used to convert future expected pension payments into present values
  - Lower discount rate = higher liabilities

    (And vice versa)

Interest Rate Assumption

- Let's assume I was granted a wish that someone else will pay my daughter's college tuition (approx. $50,000/year at ages 18, 19, 20, 21).
- What is the "liability" of this gift today?
  - Answer depends on the discount rate

Rate:	0%	5%	7%	9%
Liability*:	$200,000	$77,000	$54,000	$37,000

- The "promise" of future payments is similar to a pension plan.
- Lower discount rates correspond to higher liability measurements.

* Liabilities are rounded.

Actuarial Assumptions

- ERISA—431(c)(3)
  - For purposes of this section, all costs, liabilities, rates of interest and other factors under the plan shall be determined on the basis of actuarial assumptions and method:
    A. Each of which is **reasonable** (taking into account the experience of the plan and reasonable expectations), and
    B. Which, in combination, offer the **actuary's best estimate** of anticipated experience under the plan.

[Emphasis added]

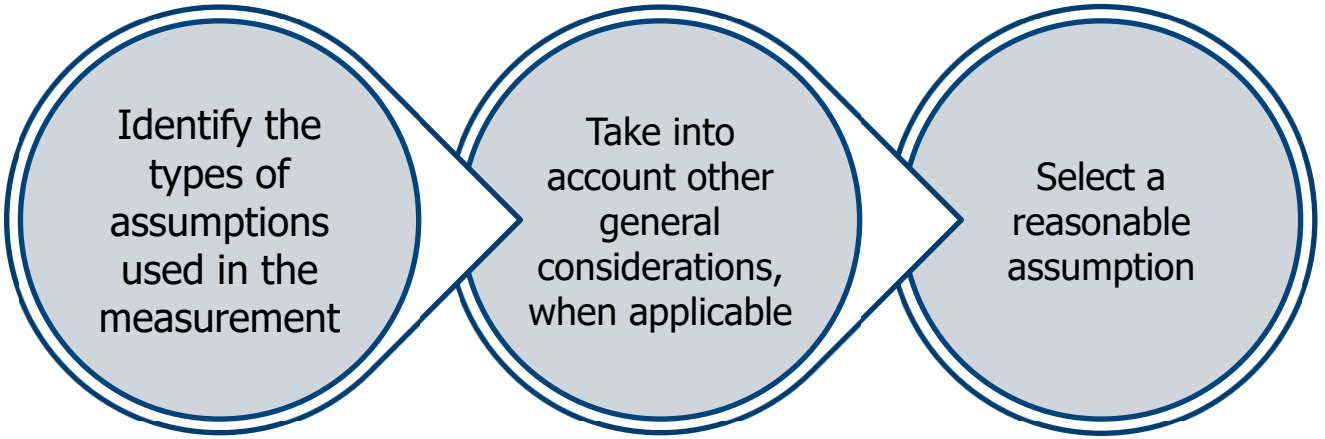
Actuarial Assumptions

- Actuarial Standards Board
  - ASB sets standards for appropriate actuarial practice in the US through the development and promulgation of Actuarial Standards of Practice (ASOPs).
  - These ASOPs describe the procedures an actuary should follow when performing actuarial services and identify what the actuary should disclose when communicating the results of those services.
  - ASOP No. 27 = Selection of Assumptions for Measuring Pension Obligations *

* Revised effective 1/1/2025

Actuarial Assumptions

- ASOP 27—General Selection Process



** Complete steps for each assumption, then review the set of assumptions for consistency and make adjustments as necessary*

Actuarial Assumptions

- ASOP 27—Selecting a reasonable assumption
  - Actuary should use professional judgement to select reasonable assumptions
  - Reasonable if:
    - Appropriate for the purpose of the measurement
    - Reflects current and historical data (that is relevant and available)
    - Reflects actuary's estimate of future experience and/or actuary's observations of estimates inherent in market data
    - Expected to have no significant bias

Actuarial Assumptions

- ASOP 27—Selecting a reasonable assumption
  - May adjust for adverse deviation
  - Range of reasonable assumptions
    - Actuary may consider several different assumptions reasonable for a given measurement
    - Different actuaries will apply different professional judgment and may choose different reasonable assumptions
    - As a result, a range of reasonable assumptions may develop, both for an individual actuary and across actuarial practice
  - Should consider combined effect of assumptions so that not significantly biased (i.e., not overly pessimistic or optimistic)

Actuarial Assumptions

- ASOP 27—Investment Return Assumption
  - Should reflect anticipated returns on the plan's current assets and, if appropriate, anticipated returns on the plan's future assets
  - Factors to consider
    - Time value of money; inflation and inflation risk; illiquidity; credit risk; macroeconomic conditions; growth in earnings, dividends and rents
  - Actuary may take into account a broad range of data and other inputs, including the judgement of investment professionals
  - Measurement-specific considerations
    - Plan's investment policy; effect of reinvestment; investment volatility; investment manager performance; investment and administrative expenses; cash flow timing; benefit volatility; expected plan termination; tax status of funding vehicle; forward-looking expected investment returns

Investment Consultant Asset Allocation

Note: The terms "Asset Allocation" and "Investment Allocation" are sometimes used interchangeably.

Asset Allocation

Asset allocation is the process of allocating dollars across various asset classes. The goal is to **maximize risk-adjusted returns** to either:

1. Get the highest return for a given level of risk, or
2. Take the least risk for a given level of return

Benefit Plan Objective: To pay promised benefits to plan participants as they come due.

Asset Allocation Considerations

Investment portfolios should be designed to meet current and future liabilities.

- Some are more predictable than others—Think monthly pension benefit payments vs. monthly health claims.

Funded Percentage | **Earnings Assumptions** | **Plan Demographics**

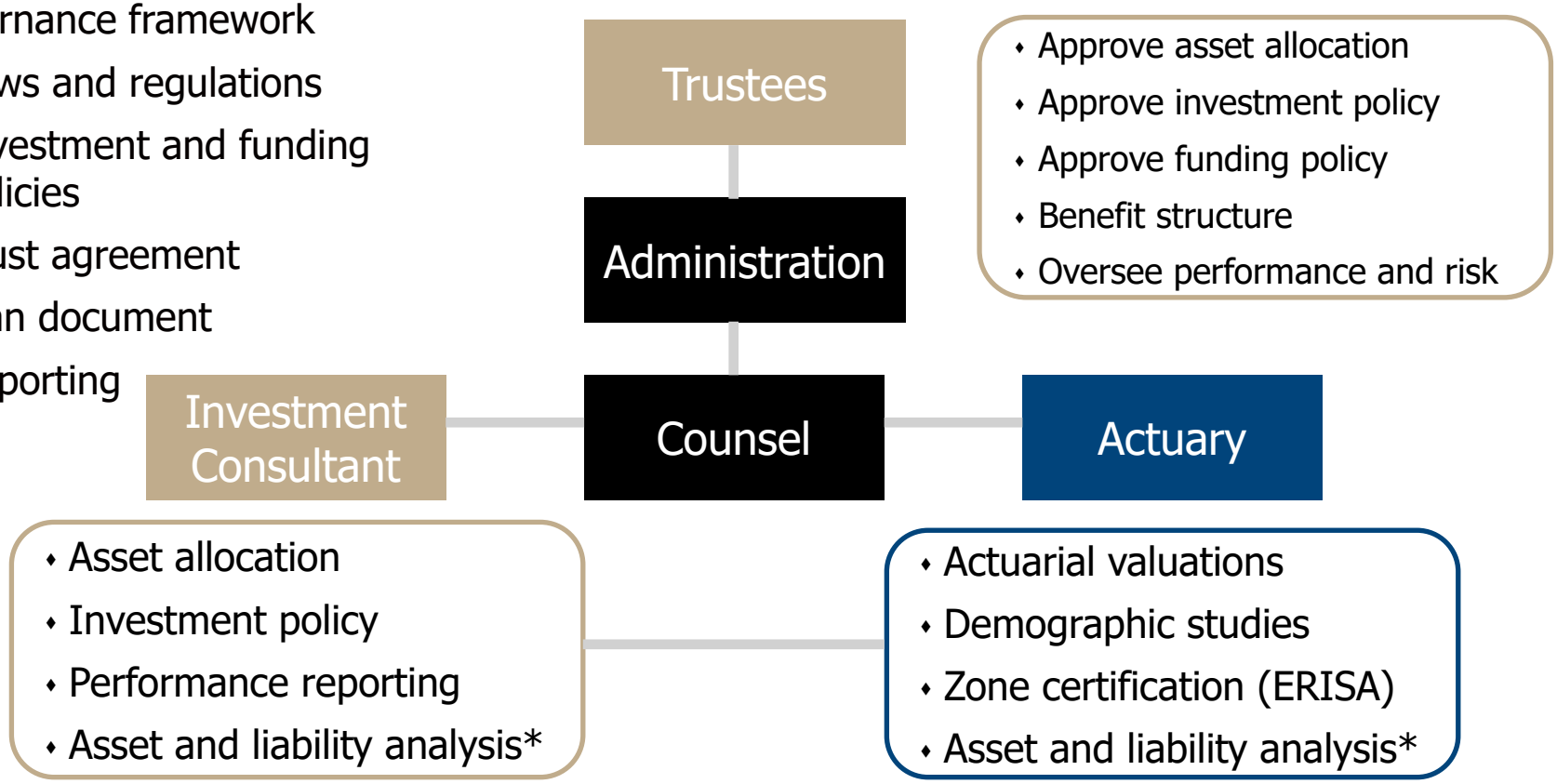
Plan Characteristics

Projected Cash Flow | **Liquidity Needs** | **Risk Tolerances**

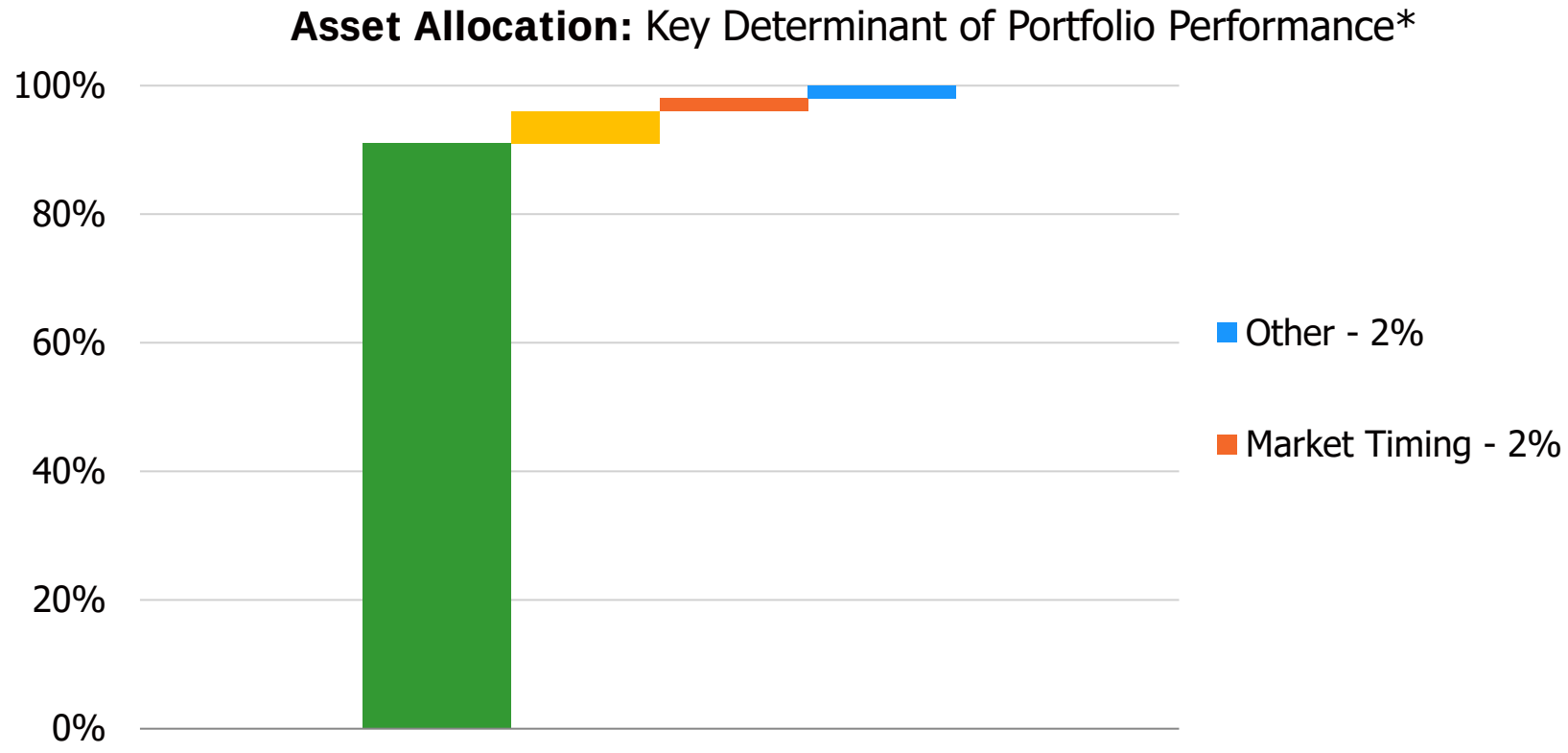
Asset Allocation: Coordination Between the Investment Consultant and Actuary…

Governance framework

- Laws and regulations
- Investment and funding policies
- Trust agreement
- Plan document
- Reporting



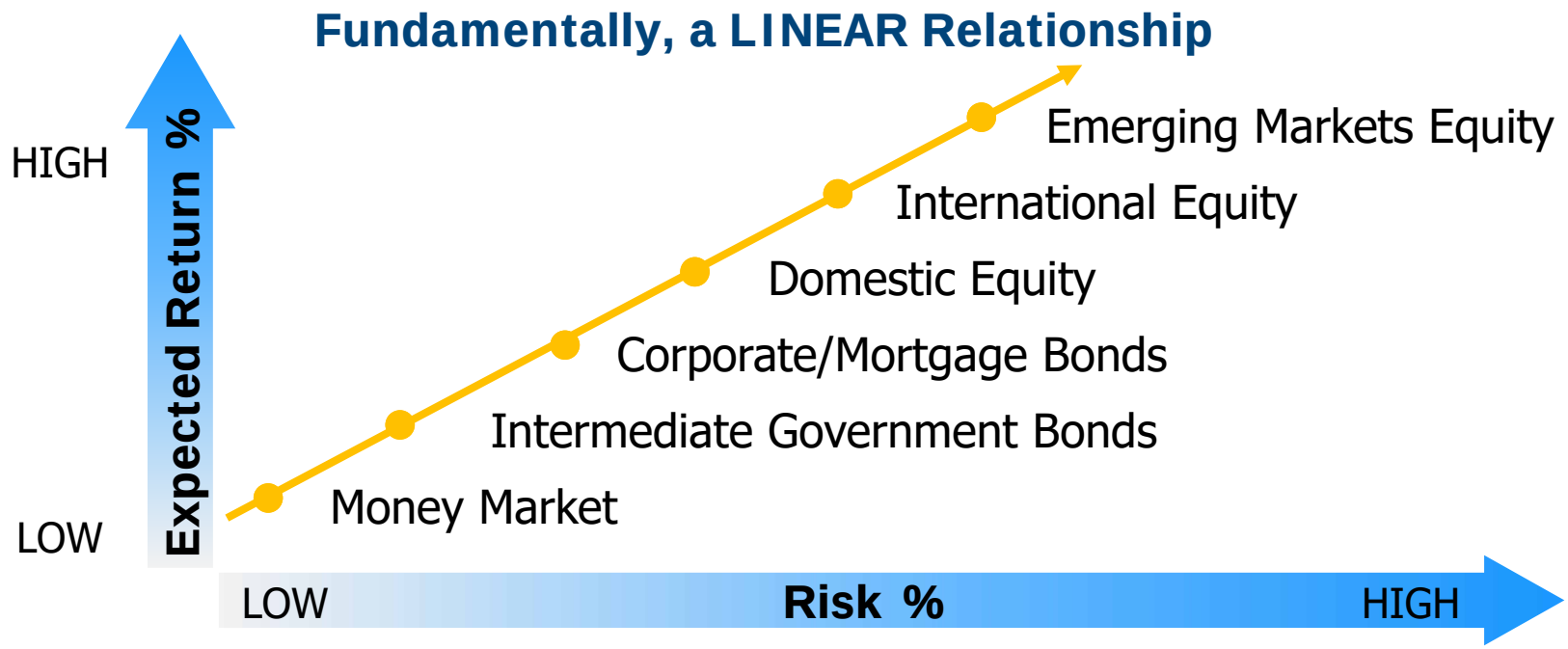
Importance of Asset Allocation



* Source of "determinants": Brinson, Hood and Beebower, "Determinants of Portfolio Performance," Financial Analyst Journal, May-June 1991.

Risk/Return Tradeoff

The **risk/return tradeoff** is the basic investment principle and the framework within which all investment decisions should be made



Average Asset Class Return Assumptions

Average Expected Returns (20-Year Horizon)

Asset Class	2020	2021	2022	2023	2024
Private Equity	9.9%	9.7%	10.1%	10.1%	9.7%
Non-U.S. Eq. (Dev)	7.5%	7.0%	7.2%	7.8%	7.5%
US Eq. (Large Cap)	7.1%	6.7%	6.8%	7.4%	7.1%
Real Estate	6.6%	6.1%	6.0%	6.1%	6.2%
US Bonds (HY)	5.6%	4.9%	5.2%	6.4%	6.3%
Hedge Funds	5.7%	5.4%	5.6%	6.4%	6.3%
US Bonds (Core)	3.6%	3.4%	3.7%	4.8%	4.8%
US Treasuries	2.2%	2.0%	2.2%	3.2%	3.4%

"Overall, expectations for fixed income investments remain elevated when compared to their 2020 levels…"
— Survey of Capital Market Assumptions. Horizon Actuarial. August 2024.

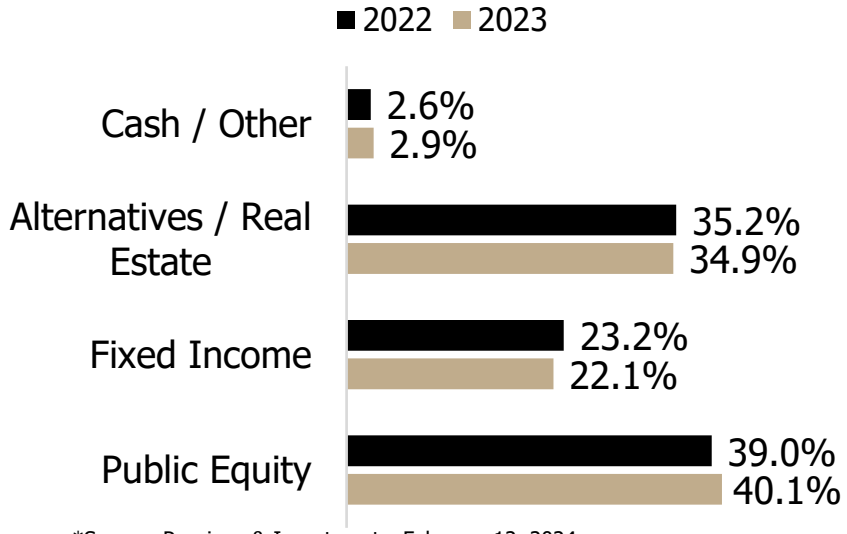
Source: Survey of Capital Market Assumptions. 2024. Horizon Actuarial

Asset Allocation: Correlations

Correlations	US Equity	Core Fixed Income	High Yield	Emerging Market Debt	Global Fixed Income	Private Equity	Private Credit	Hedge Fund of Funds	Real Estate - Core	Infrastructure
US Equity	1									
Core Fixed Income	0.31	1								
High Yield	0.81	0.42	1							
Emerging Market Debt	0.58	0.53	0.73	1						
Global Fixed Income	0.43	0.86	0.55	0.72	1					
Private Equity	0.77	0.19	0.69	0.45	0.30	1				
Private Credit	0.63	0.15	0.81	0.55	0.26	0.65	1			
Hedge Fund of Funds	0.80	0.20	0.75	0.54	0.31	0.84	0.76	1		
Real Estate - Core	-0.10	-0.05	-0.16	-0.20	-0.15	0.21	-0.15	-0.04	1	
Infrastructure	0.75	0.44	0.73	0.72	0.56	0.59	0.59	0.61	0.11	1

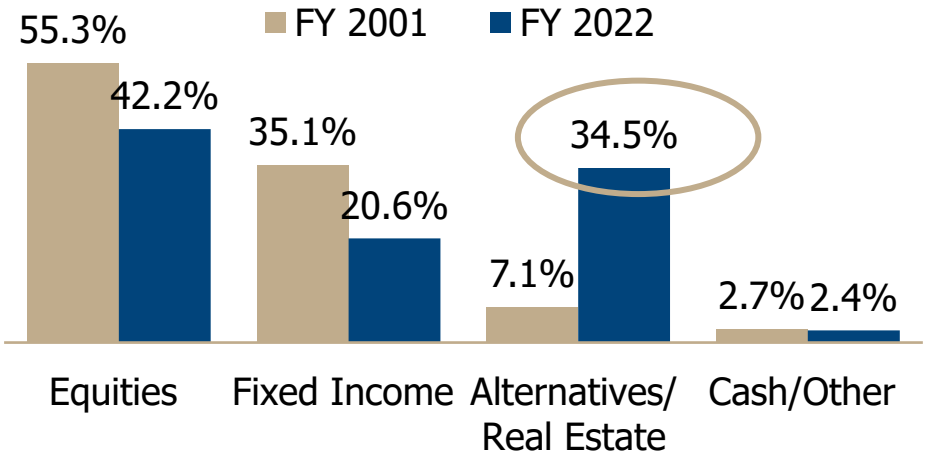
Asset Allocation Trends

Top 1000 DB Funds: Aggregate Asset Mix
(Change Over One Year)



*Source: Pensions & Investments. February 12, 2024.

Public Pension Asset Allocation
(Change Over 21 Years)

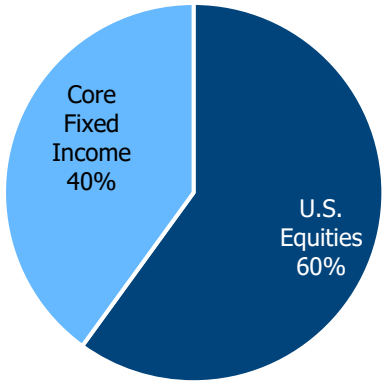


*Source: NASRA. November 2023.

- Average pension fund allocations to alternative investments have increased materially in the past two decades due in part to more modest return expectations for stocks and bonds.
- Alternative investments may increase risk-adjusted return but also introduce new risks.

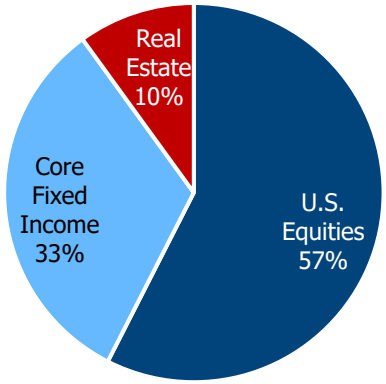
Asset Allocation: Why Add Alternatives?

60/40 Portfolio



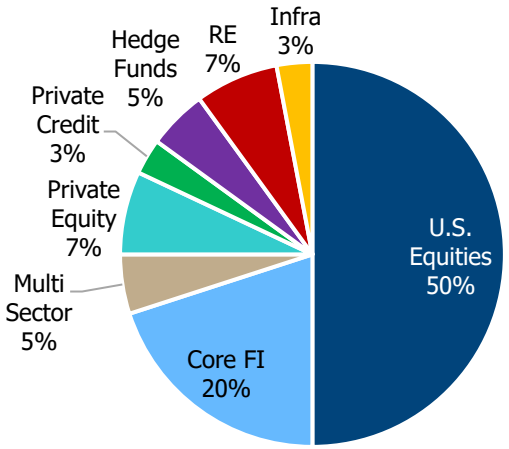
Annualized Return	**6.7 %**
Annualized Risk	**11.8%**
Sharpe Ratio	**0.31**

Add Real Estate



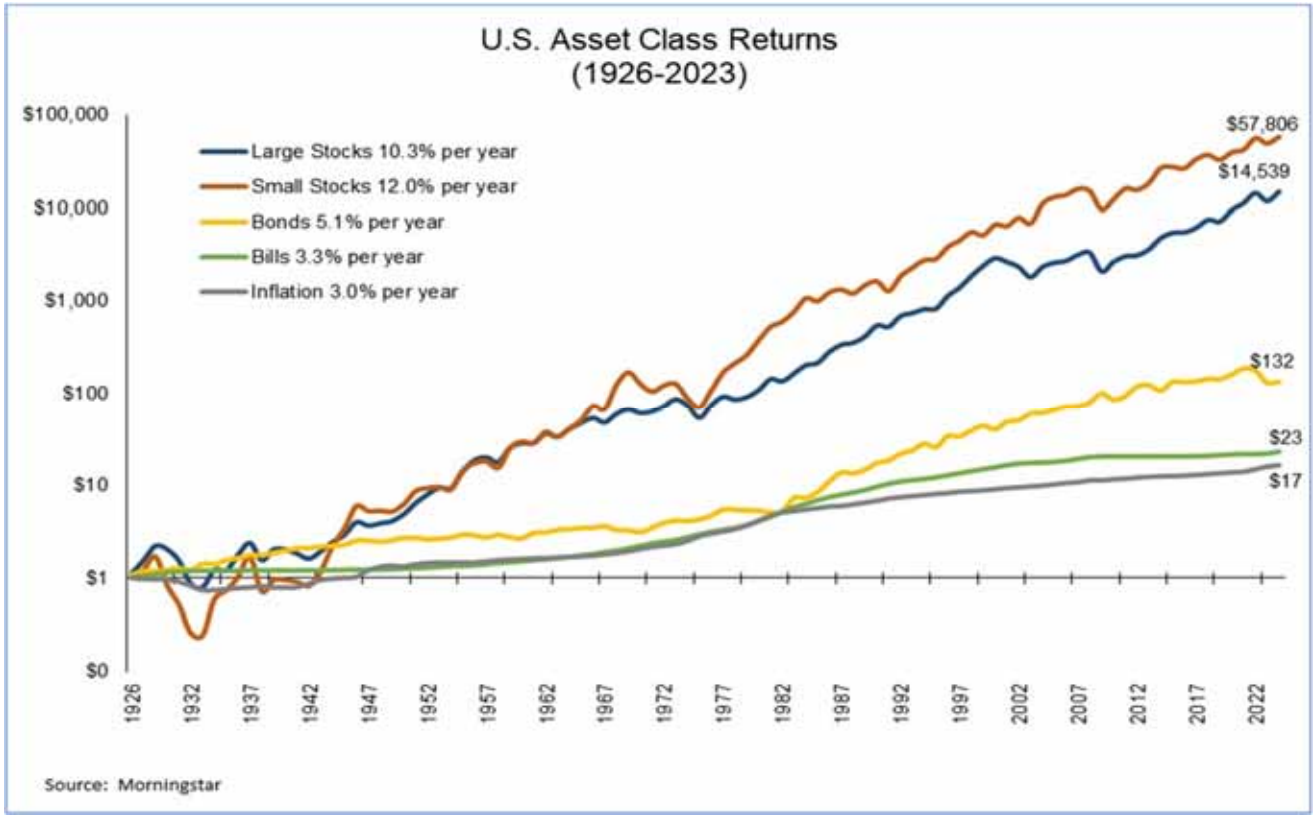
Annualized Return	**6.8 %**
Annualized Risk	**11.1%**
Sharpe Ratio	**0.33**

Add Other Alternatives



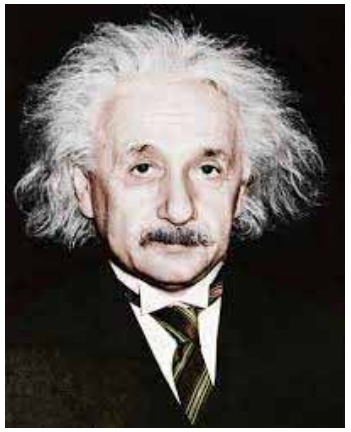
Annualized Return	**7.2 %**
Annualized Risk	**11.9%**
Sharpe Ratio	**0.35**

Asset Allocation:
Historical Asset Class Returns

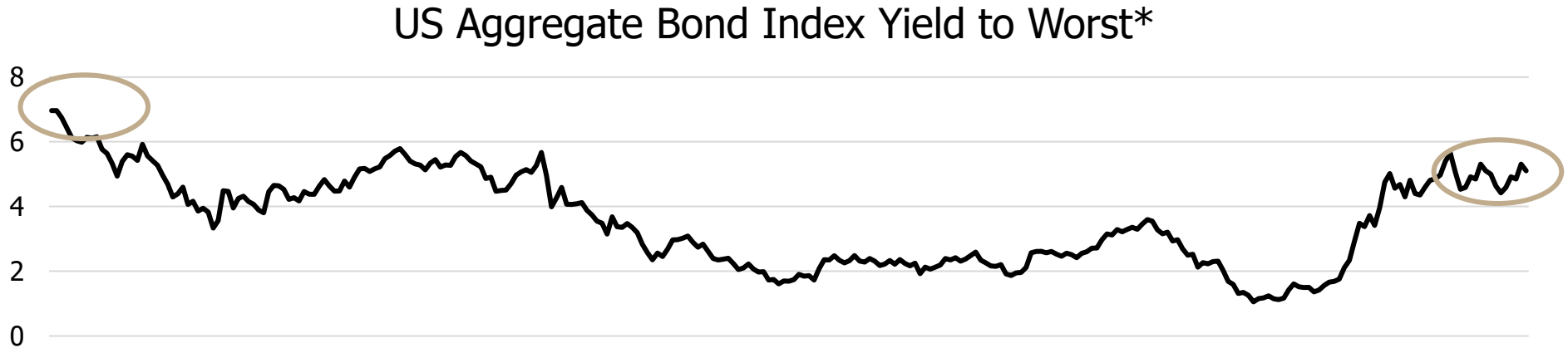


"The most powerful force in the universe is compound interest."

—Albert Einstein



Asset Allocation:
U.S. Bond Yields and Returns



	Starting Yield	Index Return
1992-2002	6.76%	7.45%
2002-2012	4.38%	5.29%
2012-2022	1.75%	1.27%
2022-?	4.68%	?**

*Source: BarclaysLive (from 1/1/2000-8/31/2024)
** As of 9/23/2024, the trailing 1-Year is 10.7% and the tailing 2-Year is 5.5%

- As of August 2024, bond yields were back to 2002 levels.
- This has implications for asset allocation and index returns.

Polling Question

Has your pension changed its asset allocation targets in the past two years?

A. Yes—Increased allocation to alternative investments
B. Yes—Increased allocation to fixed income
C. Yes—Increased allocation to public equities
D. No
E. Not Sure

Implications

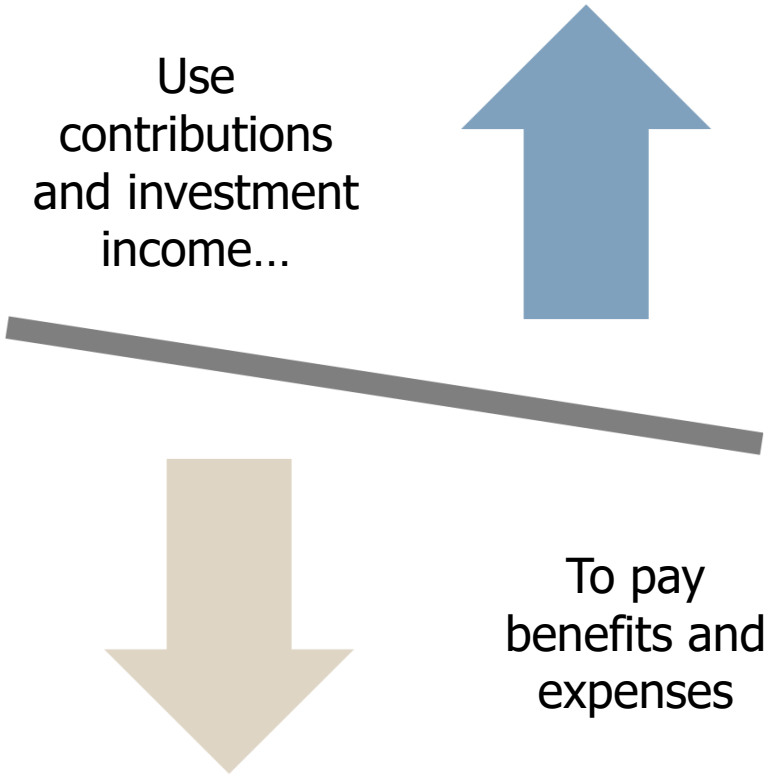
Pension Funds

Set goals

Manage Risk

Pension Funds

Use contributions and investment income…



To pay benefits and expenses

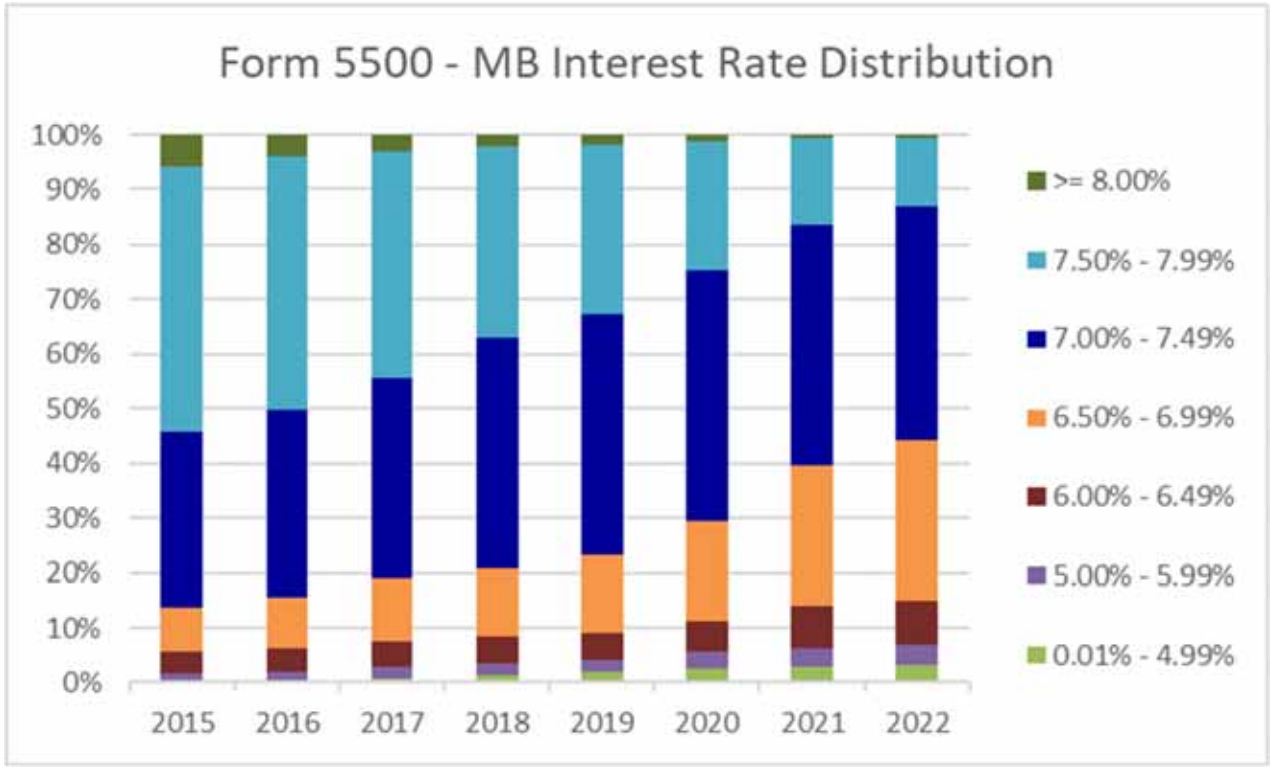
What happens if the discount rate changes?

Polling Question

Has your pension plan changed its interest rate assumption in the past five years?

A. Yes—Lowered
B. Yes—Increased
C. No
D. Not Sure

Actuarial Assumptions



The percentage of plans with discount rates less than 7.99% and greater than 7.00% dropped from **81% in 2015**, to **55% in 2022**.

Based on information from The McKeogh Company analysis of Form 5500 databases as of 9/4/2024

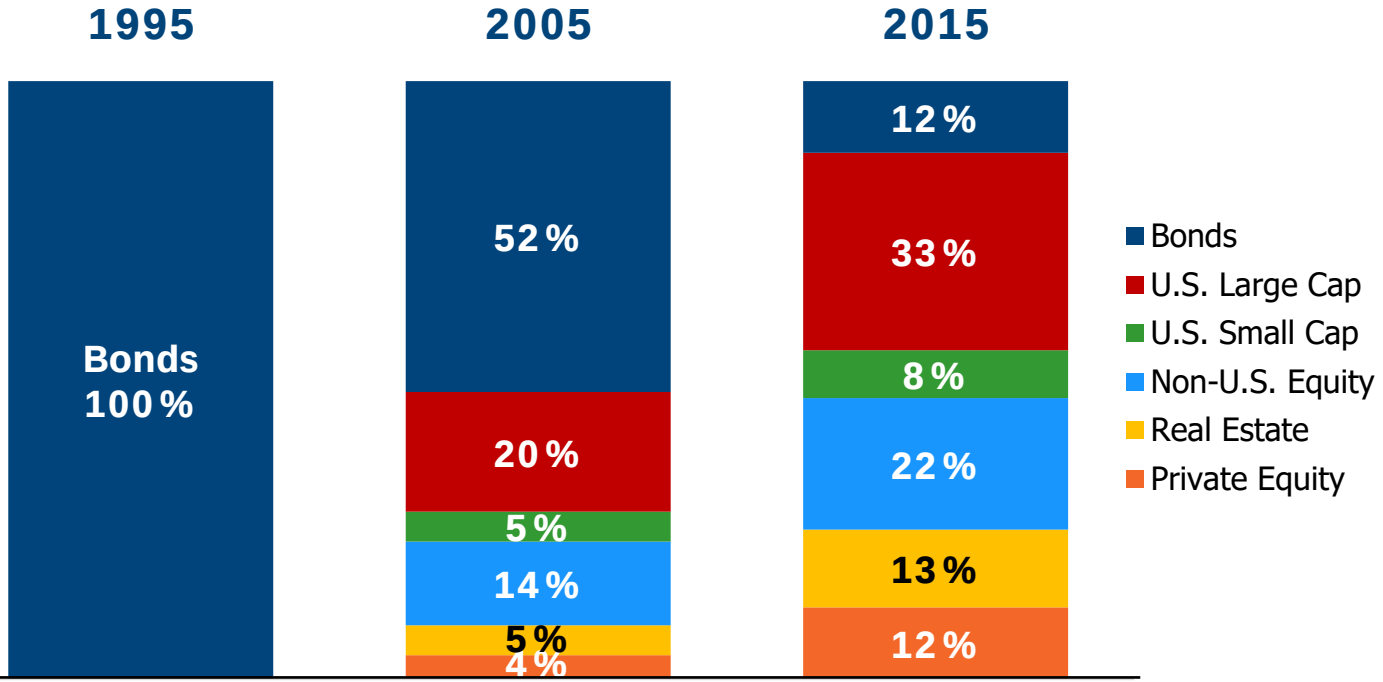
Investment Risk

Sample Case—Assume 7% is current assumption

	Alternate #1	Current	Alternate #2
Interest Rate:	8.0%	7.0%	6.0%
Liability:	$170M	$190M	$210M
Funded Pct:	105%	96%	88%
Future investment income:	Lower than expected	As expected	Higher than expected
Future Benefit costs:	Higher than expected	As expected	Lower than expected
Pressure:	Contribution increases and/or benefit reductions		Contribution decreases and/or benefit improvements

Achieving a 7.5% Return Over Time

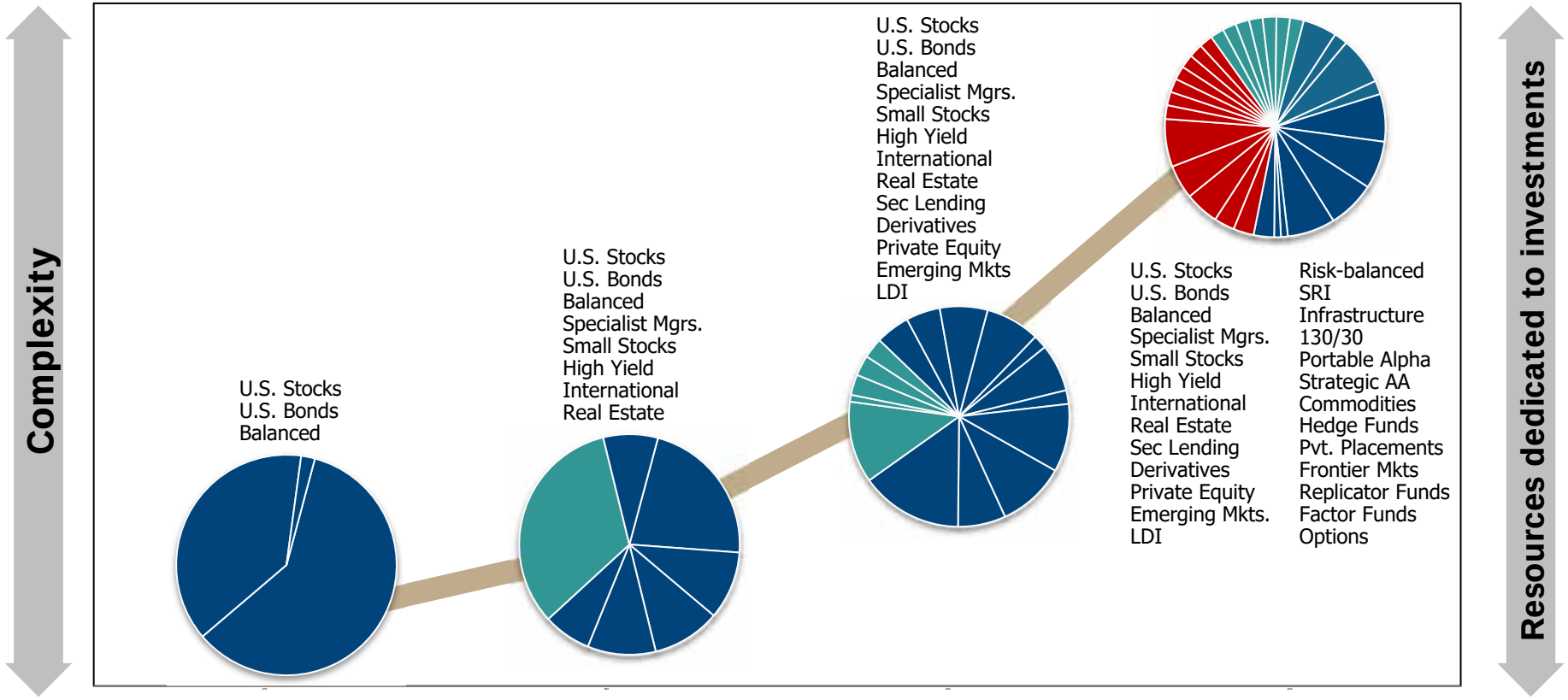
Estimates of the Asset Allocation Needed to Earn 7.5%



	1995	2005	2015
Expected Return	**7.5%**	**7.5%**	**7.5%**
Standard Deviation	**6.0%**	**8.9%**	**17.2%**

Note: Sample portfolios and data provided by Wall Street Journal; Callan Associates

Increased Investment Complexity



Evolution of Asset Allocation

Classic

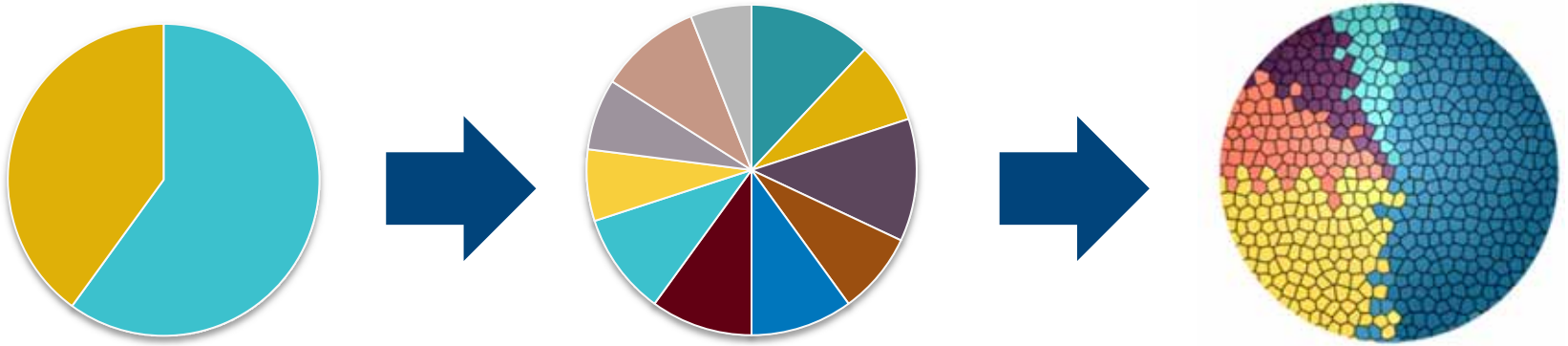
- Select policy based on **return** expectations
- Characteristics:
  - U.S. vs. International
  - Large, Mid and Small Cap
  - Value vs. Growth
  - Active vs. Passive

Contemporary

- Select policy based on **risk** expectations
- Characteristics:
  - Public vs. Private Equity
  - Inflation Hedging
  - Capital vs. Risk Allocation
  - Alpha vs. Beta

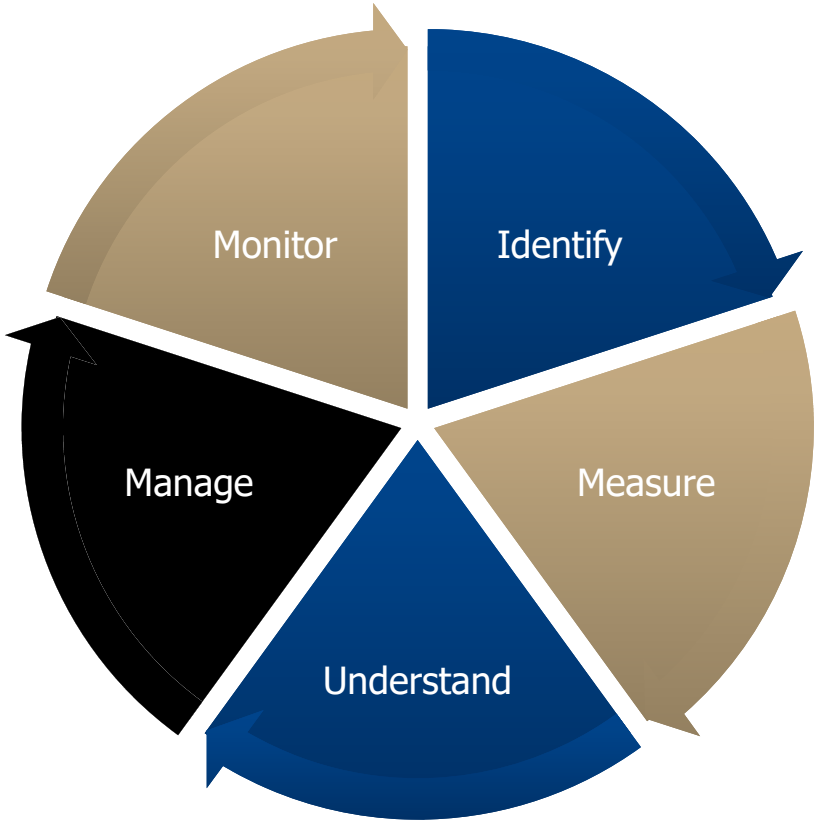
Advanced

- Select policy based on **integrated asset-liability analysis**
- Characteristics:
  - PPA/Funding Status
  - Evolving Assumptions
  - Risk-on vs. Risk-off



Managing Risk

Risk Management Process



Pension Goal:

Paying promised benefits.

Types of Pension Plan Risks

- **Investment risk**
- Contribution risk
- Decrease in # actives/ available hours
- Active PTP engagement
- Loss of major employer
- Negative cash flow
- **Asset and liability mismatch**
- Interest rate risk
- Participants living longer
- Legal/regulatory risk
- Inflation
- Adverse selection risk
- Lump sum payment risk

Pension Plans: Asset/Liability Risk

Investment (market)

- Assets earn less than expected

Asset and Liability Mismatch

- Changes in asset values (as a result of interest rates changes) will not match changes in the value of liabilities or other movements between assets and liabilities.

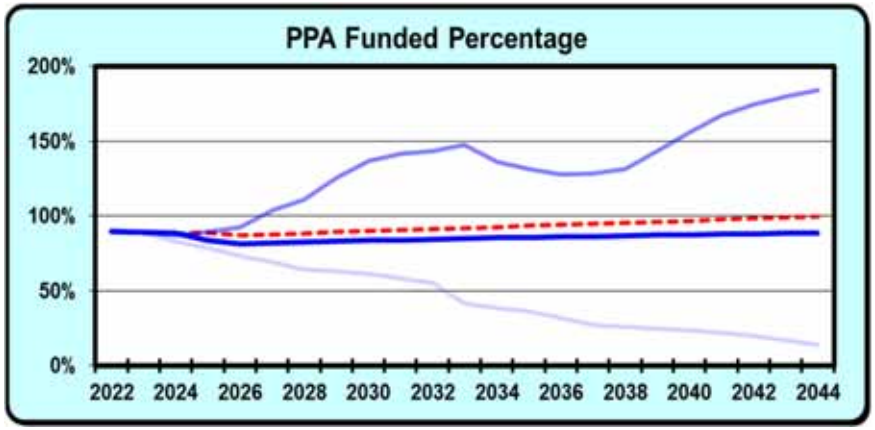
Any shortfall must come from contribution increases or benefit reductions

Projections

Deterministic

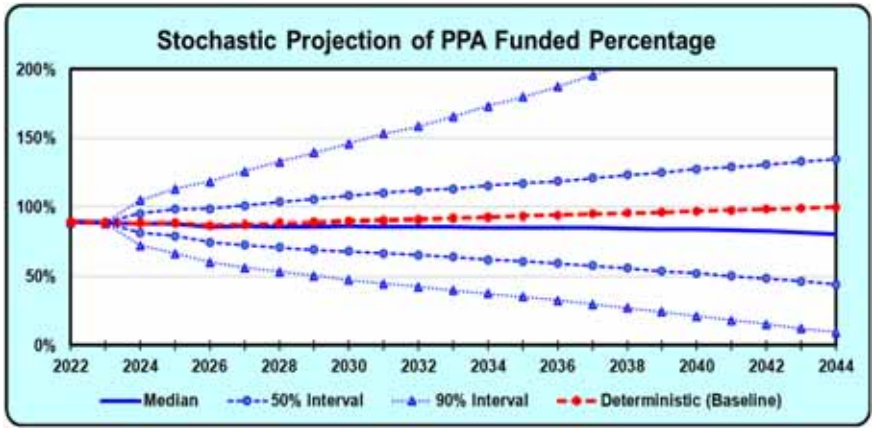
One scenario at a time

Interactive



Stochastic

Multiple scenarios run simultaneously



Both provide BOT with insights into "what if" for pension plan assets (and related funded percentages) based on changes in future investment returns

Defining and Categorizing Risk

By breaking risk into distinct categories an investor can more effectively measure and manage risk toward the end of reducing the probability and severity of losses.

Broad Risk Categories

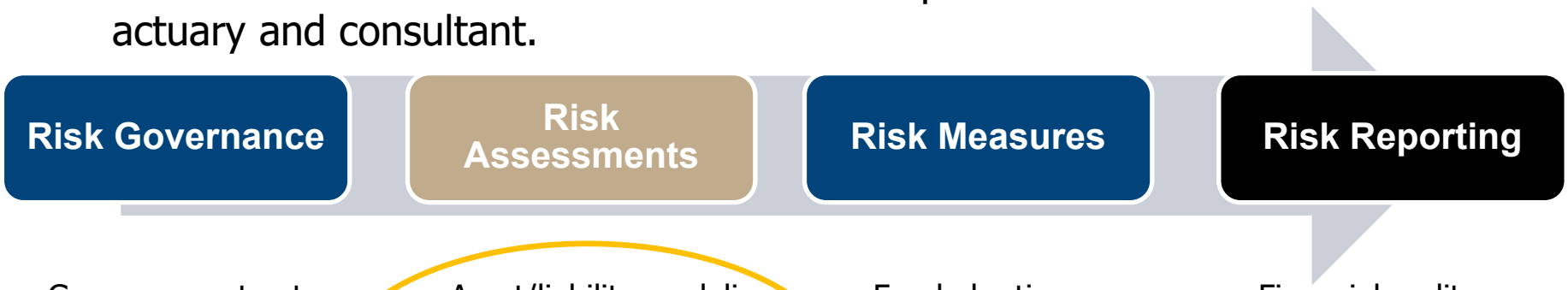
Broad Risk Definitions

Category	Definition
Operational	Risk of loss resulting from inadequate or failed internal processes, people and systems of from external events.
Market	Risk related to adverse movement in market factors such as asset prices, currency exchange rates of interest rates.
Asset/Liability	Risk that liquidity will not be adequate to meet operational requirements or financial obligations.
Credit	Risk of loss due to failure of obligors to honor their payments.

- Note: Risk categories are not all inclusive.

Risk Management Framework

- A plan may effectively manage risk through implementation of an integrated framework.
- Asset/Liability Modeling, Stochastic Modeling and Deterministic Modeling are assessments under a risk framework that require coordination between the actuary and consultant.



- Governance structure
- Investment policy
- Committee charters
- Contracts

- Asset/liability modeling
- Stochastic modeling
- Deterministic modeling
- Liquidity tier analysis

- Funded ratio
- Asset class exposures
- Standard deviation
- Credit rating

- Financial audit
- Actuarial valuation
- Consultant reports
- Manager reports

Risk Management: Liability Driven Investing

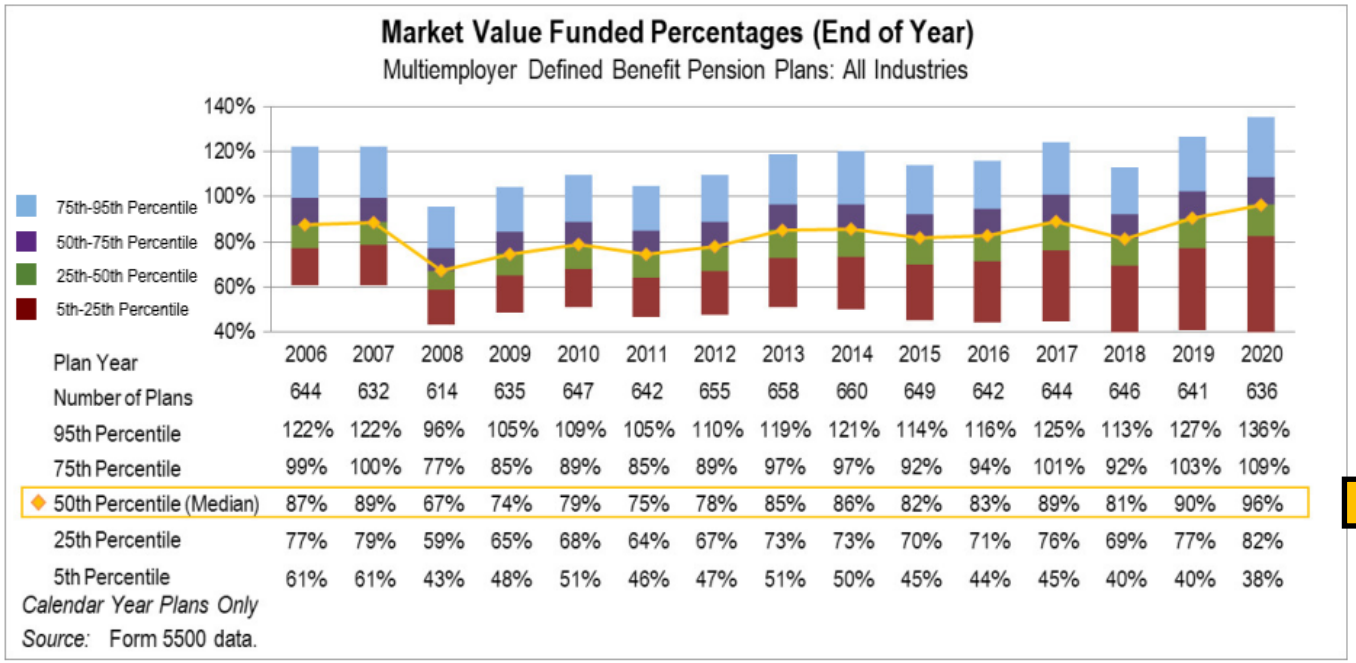
- Liability Driven Investing (LDI) is a holistic framework for a strategic asset allocation that focuses on long-term pension plan solvency.
- LDI strategy may be considered by Plans that are fully funded, overfunded or are projected to be fully funded.
- Each Fund is unique to the **magnitude, maturity, currency, real/nominal, etc.** of these benefit payments.
- The approach recognizes that custom credit portfolios built with the participants' unique benefits structure in mind may maximize long-term solvency.
- LDI focus is downside protection.

Risk Management Strategies

Absorb Risk	Transfer Risk	Reduce Risk
Contribution increases	Annuity purchases	Investment Policy Statement (Highest return for a given level of risk or least risk for a given level of return)
Benefit reductions	Lump sum payouts	Asset class exposures
	Variable annuity design	LDI strategy

Multiemployer Plan Funding

Exhibit DB 6.01



Plan Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of Plans	644	632	614	635	647	642	655	658	660	649	642	644	646	641	636
95th Percentile	122%	122%	96%	105%	109%	105%	110%	119%	121%	114%	116%	125%	113%	127%	136%
75th Percentile	99%	100%	77%	85%	89%	85%	89%	97%	97%	92%	94%	101%	92%	103%	109%
50th Percentile (Median)	87%	89%	67%	74%	79%	75%	78%	85%	86%	82%	83%	89%	81%	90%	96%
25th Percentile	77%	79%	59%	65%	68%	64%	67%	73%	73%	70%	71%	76%	69%	77%	82%
5th Percentile	61%	61%	43%	48%	51%	46%	47%	51%	50%	45%	44%	45%	40%	40%	38%

Calendar Year Plans Only

Source: Form 5500 data.

The **highest median** market value funded percentage from 2006-2020 occurred in 2020 (96%) for calendar year multiemployer plans.

IFEBP's "The Multiemployer Retirement Plan Landscape: A 15-Year Look (2006-2015)
https://www.ifebp.org/resources---news/survey-reports/multiemployer-retirement-plan-landscape-survey

Key Takeaways

- For multiemployer plans, the Plan actuary determines the discount rate, a key driver to measuring plan liabilities.
- Investment consultants use the actuarial assumption and specific plan characteristics including funded ratio, liquidity needs, and demographics to set a plan's asset allocation.
- A Plan's asset allocation may change over time as Plan risk tolerances, capital market assumptions and available asset classes change.
- Pension plan risk discussions must integrate both assets and liabilities.
- Effective coordination between the actuary and investment consultant under the Trustees' oversight enables effective plan governance and risk management for the benefit of participants and beneficiaries.
- Plan risk tolerances and asset allocation policy may change as funding levels change.

Your Feedback Is Important. Please Scan This QR Code.

Session Evaluation

Appendix: Terms

Note: Partial summary of terms. Terms are not all-inclusive.

Terms

Asset Allocation	Asset allocation is the process of allocating dollars across various asset classes. The goal is to maximize risk-adjusted investment returns.
Arithmetic Return	A simple average of a sample of historical returns (e.g., an average of all calendar-year returns) and assumes no volatility.
Correlation	A measure of how two securities or asset classes move in relation to one another.
Geometric Return	The compounded rate of return over multiple periods. The compounding effect incorporates the volatility of returns.
Standard Deviation	A measure of risk that is used to measure variability of returns over time around an average.
Sharpe Ratio	A measure of return generated per unit of risk. A higher Sharpe ratio implies better risk-adjusted performance.

Note: Partial summary of terms. Terms are not all-inclusive.