



**Washington State
Investment Board**

Presentation to the LEOFF Plan 2 Retirement Board



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Senior Investment Officer
Risk Management and Asset Allocation
November 2013**



Overview



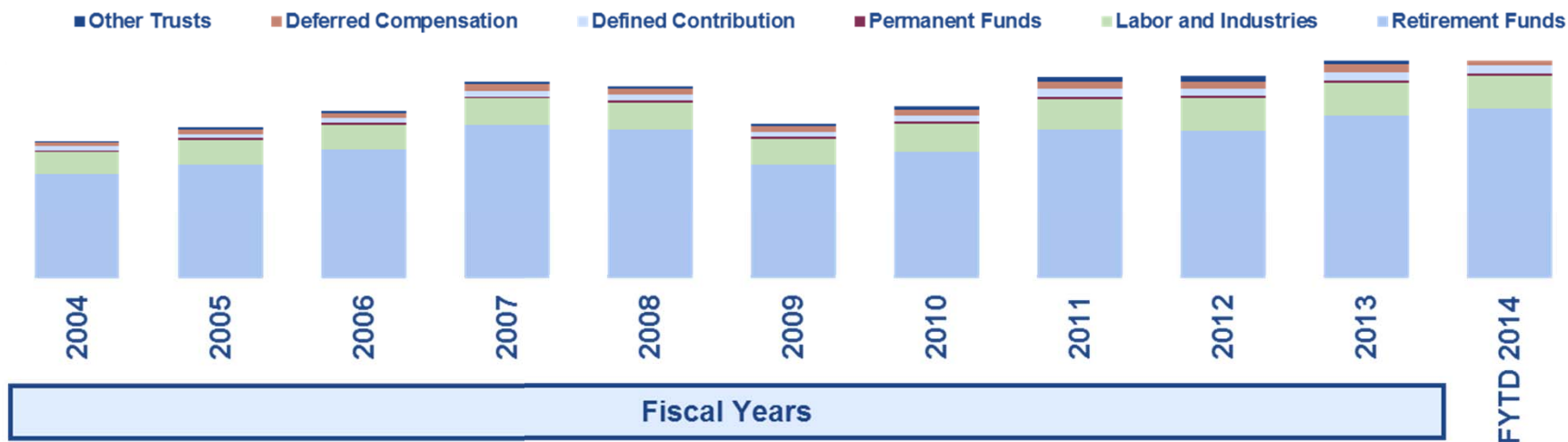
- ▣ **WSIB Stakeholder Assets Overview**
- ▣ **Commingled Trust Fund (CTF) Market Values, Allocation, and Returns**
- ▣ **Asset Allocation Overview**
 - ▣ **Why It's Important**
 - ▣ **Definition and Process**
 - ▣ **Key Considerations**
 - ▣ **Strategic versus Tactical Asset Allocation**
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- ▣ **CTF Return and Risk in Comparison to Major Pension Funds**
- ▣ **Relevant Risks Outside CMA Framework**



Manage Key State Assets

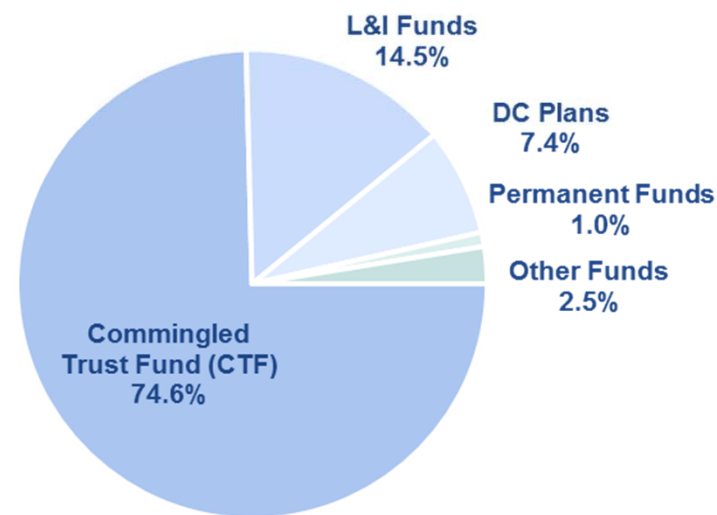
September 30, 2013

Past 10 Fiscal Years



Market Values and Allocation (in billions)

Commingled Trust Fund (CTF)	\$70.6	74.6%
L&I Funds	\$13.7	14.5%
DC Plans	\$7.0	7.4%
Permanent Funds	\$0.9	1.0%
Other Funds	\$2.4	2.5%
Total Assets Under Management	\$94.6	





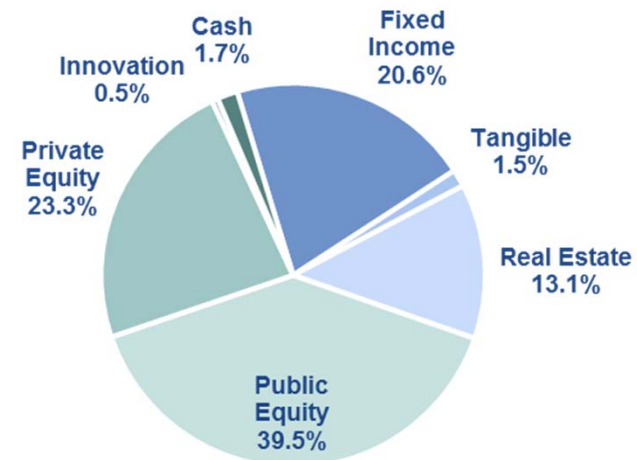
Commingled Trust Fund Market Values, Allocation and Returns

September 30, 2013

Historical Market Value (billions)



Actual Allocation



Historical Fund Returns



Market Values and Returns

Commingled Trust Fund (CTF) Market Values and Returns

	Market Value (000s)	1 Year	3 Year	5 Year	10 Year
Total CTF	\$70,553,386,422	12.57%	10.20%	6.49%	8.41%
Fixed Income	\$14,499,964,971	-1.71%	3.24%	7.07%	5.58%
Tangibles	\$1,025,442,613	0.32%	3.05%	1.37%	N/A
Real Estate	\$9,209,226,634	13.03%	13.45%	0.81%	9.35%
Public Equity	\$27,840,025,921	19.39%	11.19%	8.44%	8.05%
Private Equity	\$16,410,498,256	16.54%	13.79%	6.81%	13.79%
Innovation	\$369,037,043	50.03%	6.21%	N/A	N/A
Cash	\$1,199,190,983	0.14%	0.15%	0.28%	1.77%

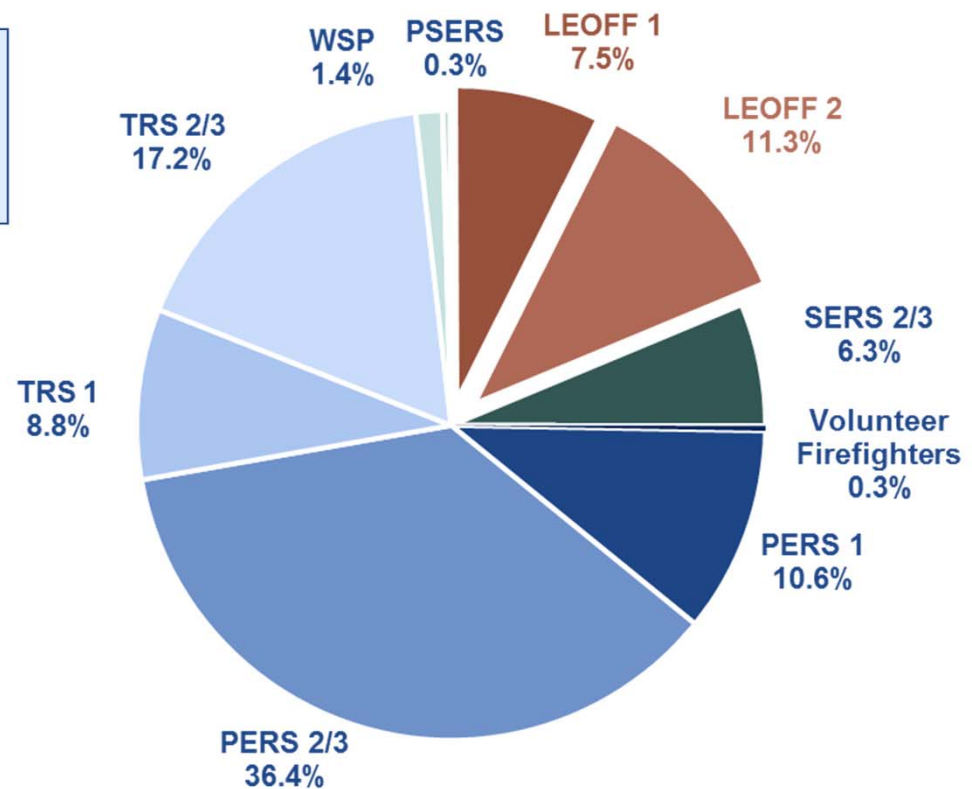


CTF Stakeholders and Asset Mix

The CTF has 17 stakeholder funds

- ▣ 14 Defined Benefit
- ▣ 3 Defined Contribution

CTF Assets
as of September 30, 2013
\$ 70.6 Billion





Why Is Asset Allocation Important?

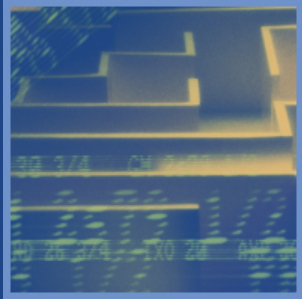


“Data from 91 large U.S. pension plans indicate that investment policy dominates investment strategy (market timing and security selection), explaining on average 93.6% of the variation in total plan return.”

Brinson et al. 1986



CTF Asset Allocation Definition and Process



Asset allocation is a term used to describe the process of dividing a portfolio among major asset categories such as bonds, stocks, or cash

The purpose of asset allocation is to construct a portfolio that has the highest level of return at a set level of risk through diversification – the concept of diversification is the foundation of a strategic asset allocation process

It is important to understand that asset allocation is a combination of art and science. There is no one right answer

The CTF Asset Allocation policy calls for a formal review at least every four years



Asset Allocation Key Considerations



Return Objectives

- ▣ Understanding of Program Goals

Risk Tolerance

- ▣ Volatility of Return
- ▣ Investment Risk

Other Considerations

- ▣ Time Horizon
- ▣ Liquidity Constraints
- ▣ Other Circumstances or Preferences



Strategic versus Tactical Asset Allocation



Strategic Asset Allocation

- ▣ A way to meet the goals of the fund under normal market conditions and over a full market cycle
- ▣ The predominant contribution to the variation in a fund's return comes from strategic asset allocation
- ▣ A longer term approach

Tactical Asset Allocation

- ▣ An attempt to take advantage of opportunities on a large scale when they appear
- ▣ Tactical asset allocation is an effort to beat the market over shorter time frames
- ▣ A more active approach



Retirement Commingled Trust Fund (CTF) Asset Classes



The CTF is currently invested in 7 asset classes

■ Fixed Income

- Invests in interest-producing debt securities with varying maturity, structure, and credit ratings
- Provides liquidity and diversification, in combination with other CTF assets, and strives to meet or exceed the performance of the Barclays Capital Universal Index

■ Tangible Assets

- Investments in four primary sectors: minerals and mining; energy; agriculture; and society essentials
- Focuses primarily on creating high-quality, long-term, stable income streams and on meeting or exceeding the return of CPI (inflation) + 4%

■ Real Estate

- Invests in commercial real estate properties (i.e., office, residential, retail, and industrial) primarily using a real estate operating company structure
- Focuses primarily on creating high-quality, long-term, stable income streams with a secondary goal of capital appreciation, and on meeting or exceeding the return of 8% over 10 years



Retirement CTF Asset Classes



- **Public Equity**
 - Invests in both publicly traded U.S. and non-U.S. equity passively and actively
 - Investment goal is to exceed the performance of the MSCI All Country World Investable Market Index
- **Private Equity**
 - Invests in equity investments that are not listed on a public exchange, ranging from capital in start-up enterprises to leveraged buyouts of mature corporations. The investments are typically long-term commitments
 - Investment goal is to exceed the performance of the Russell 3000 + 3%
- **Innovation**
 - Invests in investment ideas that fall outside the current asset class programs or priorities
 - Investment goals customized for each investment idea
- **Cash**
 - Used to manage cash flows



Building Capital Market Assumptions (CMAs)



Role of CMAs

Definitions of CMAs Terms

- ▣ Return
- ▣ Risk
- ▣ Correlation

Developing a CMAs Recommendation

- ▣ Gather and examine consultant data
- ▣ Discuss and customize data to WSIB classes
- ▣ Perform scenario analysis

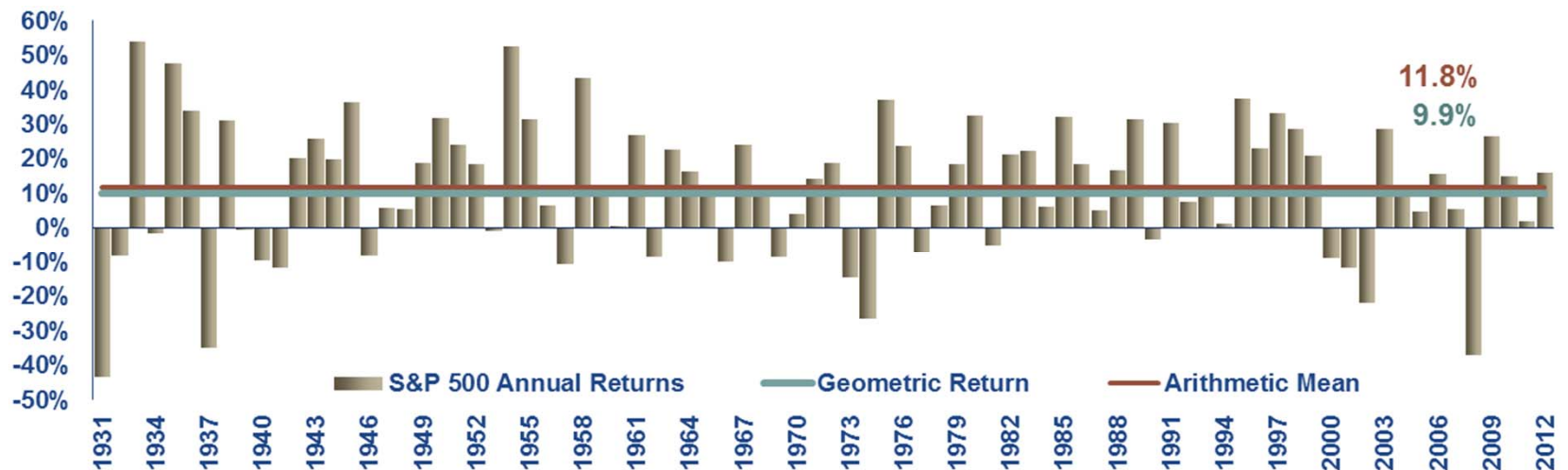


CMAAs – Return Defined

Return is an arithmetic mean, a simple average of the returns.
It is not the same as a geometric return shown on performance reports

It is usually derived from a combination of:

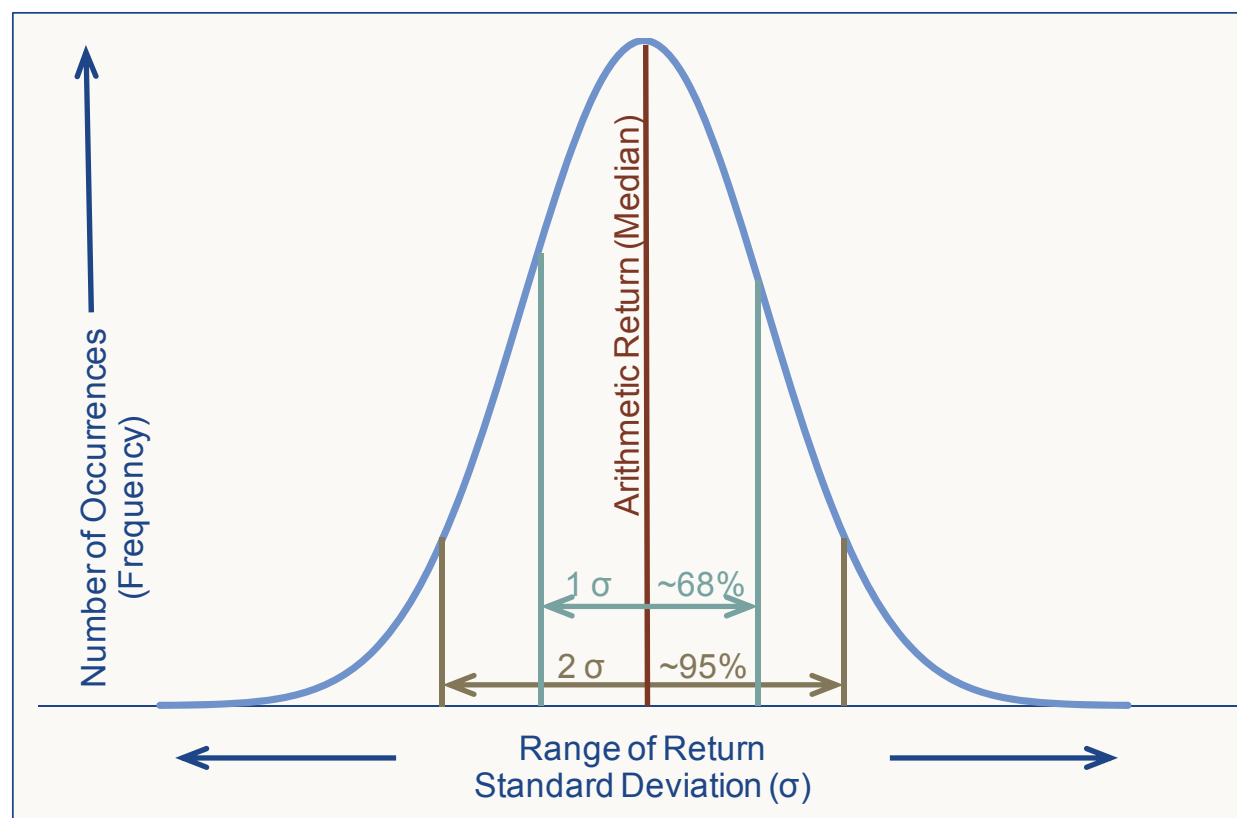
- ▣ Historical capital market data
- ▣ Current interest rates
- ▣ Market expectations for future inflation
- ▣ Other economic variables
- ▣ Traditional financial theory





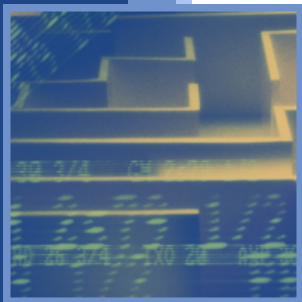
CMAs – Risk Defined

The risk number in CMAs only focuses on one type of risk—volatility (also called standard deviation), which measures how much the return moves, both upward and downward





Capital Market Assumption – Correlation Defined



Correlation is how the asset classes move in relationship to each other over a given time period. The correlation relationship is quantified into a number between one and negative one

- ▣ +1.0 means they have always moved in the same direction
- ▣ -1.0 means they have always moved in opposite directions

Assets that turn out to have a low correlation to each other create the most diversified portfolios

Correlation assumptions are usually derived by using historical data



Asset B has a positive correlation with Asset A as they are both moving in the same direction at the same time.



Asset C has a zero or low correlation with Asset A it is moving independently, sometimes with sometimes opposite Asset A.

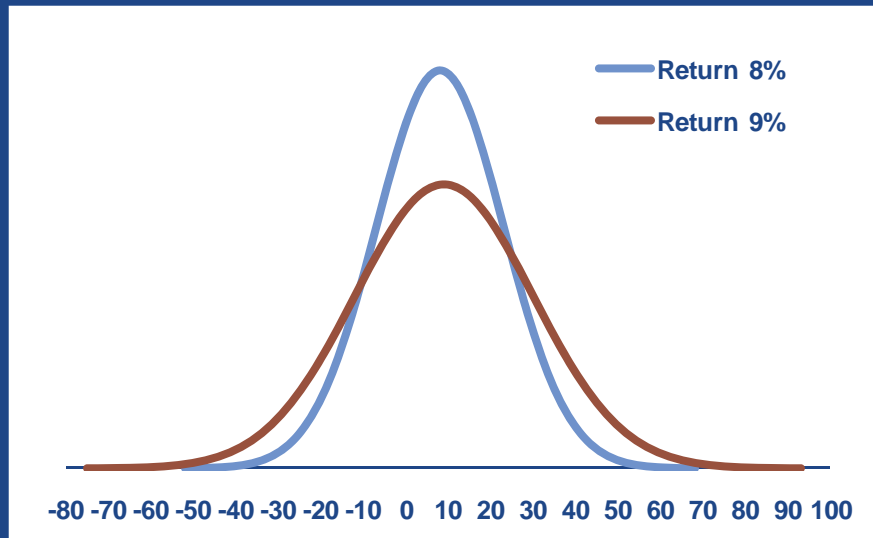


Asset D has a negative correlation with Asset A as it is moving in the opposite direction.



Return and Standard Deviation Together

Different Assumptions Same Geometric Return



Arithmetic return and standard deviation must be looked at together

An 8% arithmetic return with a standard deviation of 15% has the same geometric return as a 9% arithmetic return with a standard deviation of 21%

The arithmetic return is always equal to or higher than the geometric return



Developing CMAs



Process

- ❑ Gather a broad array of consultant expectations for asset class returns, risk, and correlations
- ❑ Compare to one another, compare to history
- ❑ Overlay staff views on the average generic asset class expectations
- ❑ Model and customize expectations for WSIB's specific asset class structure and views

Considerations

- ❑ Looking for reasonable expectations, not a perfect number
- ❑ Estimates contain subjectivity
- ❑ These are model inputs
- ❑ Models attempt to provide understanding of a complex system
- ❑ Models are always a simplification of reality

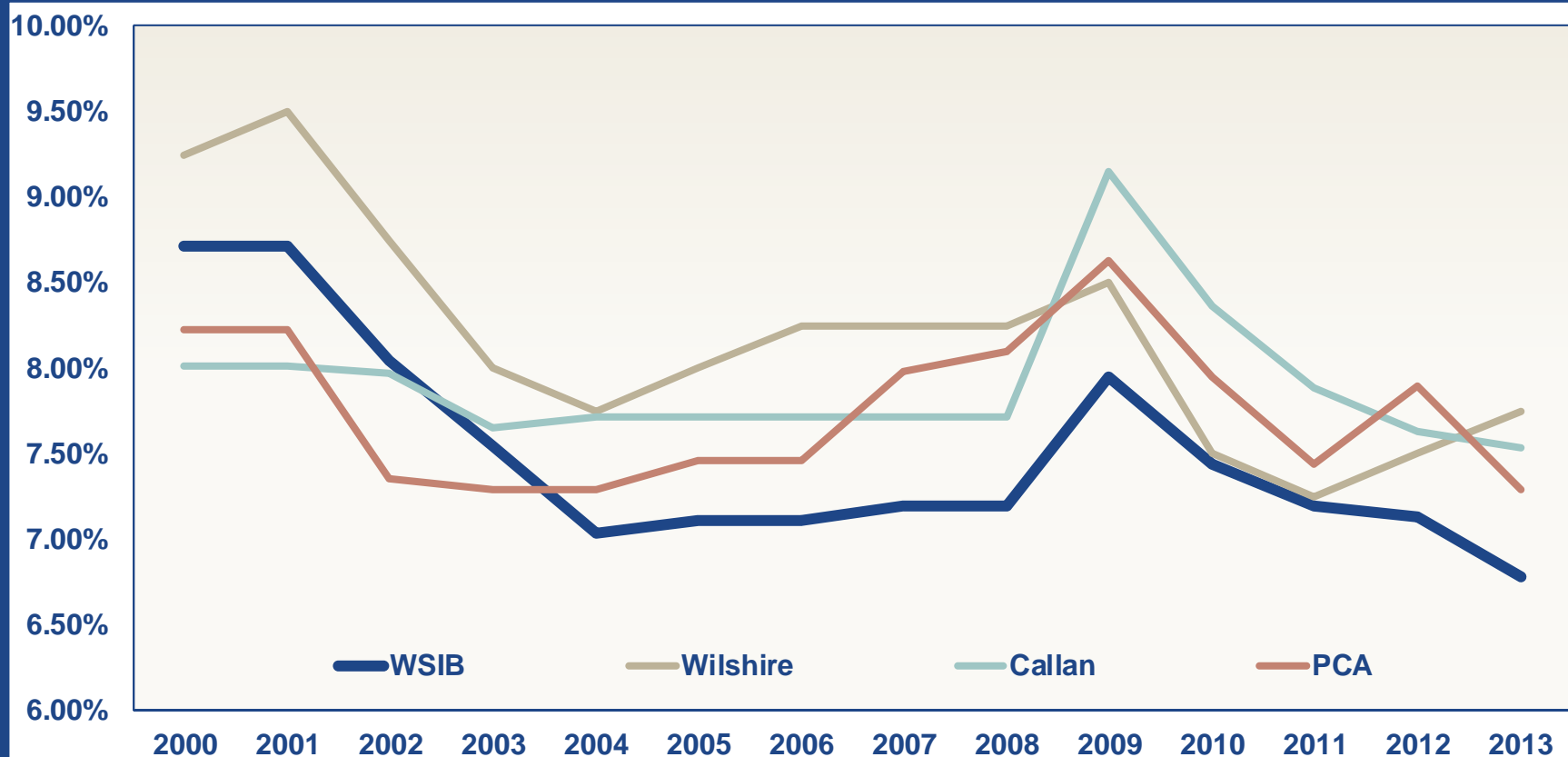


History and Comparison of the WSIB U.S. Equity Assumptions

WSIB U.S. Equity Capital Market Assumptions

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Return	10.00%	10.00%	9.50%	9.00%	8.50%	8.50%	8.50%	8.50%	8.50%	9.25%	8.75%	8.50%	8.60%	8.25%
Risk	17.00%	17.00%	18.00%	18.00%	18.00%	17.50%	17.50%	17.00%	17.00%	17.00%	17.00%	17.00%	18.00%	18.75%

Comparison of the Geometric Return Assumptions



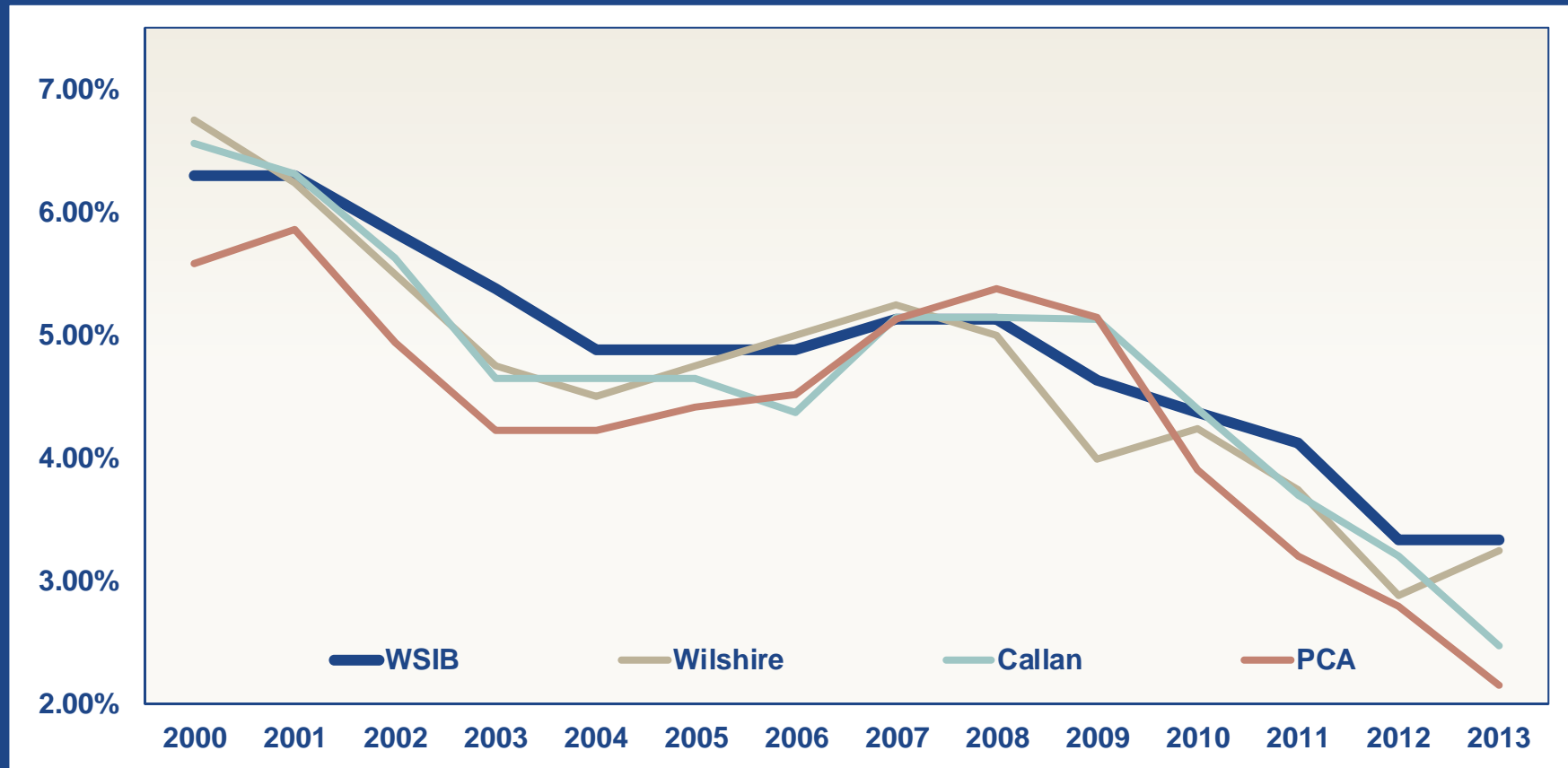


History and Comparison of the WSIB Fixed Income Assumptions

WSIB Fixed Income Capital Market Assumptions

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Return	6.50%	6.50%	6.00%	5.50%	5.00%	5.00%	5.00%	5.25%	5.25%	4.75%	4.50%	4.25%	3.50%	3.50%
Risk	6.50%	6.50%	6.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	4.75%	5.00%	5.00%	5.75%	5.75%

Comparison of the Geometric Return Assumptions





WSIB 2013 Capital Market Assumptions

	Arithmetic Return	Standard Deviation	Geometric Return
TIPS	2.70	5.50	2.55
Fixed Income	3.50	5.75	3.34
Tangible Assets	6.80	7.30	6.55
Real Estate	8.00	15.50	6.90
Global Equity	8.75	18.50	7.21
U.S. Equity	8.25	18.75	6.67
Non-U.S. Equity	9.00	21.00	7.03
Private Equity	11.75	28.00	8.40
Cash	2.50	2.00	2.48
Inflation	2.70	1.75	2.70

Correlation	TIPS	Fixed Income	Tangible Assets	Real Estate	Global Equity	U.S. Equity	Non-U.S. Equity	Private Equity	Cash
TIPS	1.00								
Fixed Income	0.40	1.00							
Tangible Assets	0.35	0.25	1.00						
Real Estate	0.10	0.10	0.20	1.00					
Global Equity	0.00	0.15	0.15	0.47	1.00				
U.S. Equity	0.00	0.30	0.25	0.48	0.85	1.00			
Non-U.S. Equity	0.00	0.15	0.25	0.45	0.90	0.70	1.00		
Private Equity	0.00	0.20	0.25	0.40	0.70	0.75	0.70	1.00	
Cash	0.25	0.20	0.10	0.15	0.00	0.05	0.00	0.00	1.00



2013 CTF Strategic Asset Allocation Review



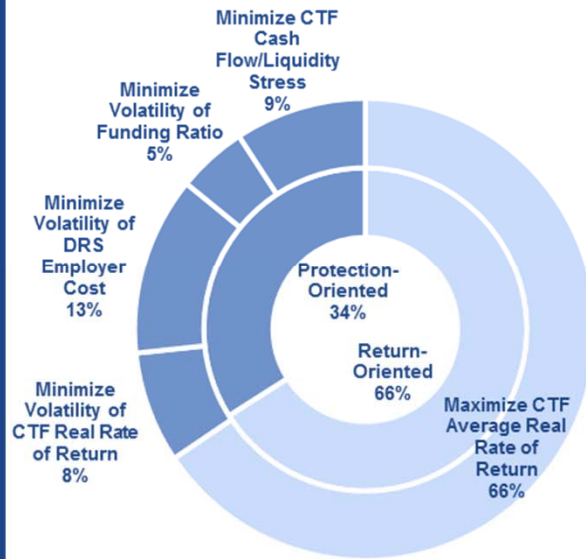
- Prior to the Board's adoption of the 2013 CTF Strategic Asset Allocation, the CTF asset allocation was last reviewed in 2009
- The Board spent considerable time over 14 months engaged in discussions about many aspects of the strategic asset allocation decision
- An asset allocation policy review encompasses both quantitative and qualitative aspects

Board Meeting	Topic	Asset Allocation Concept Addressed
July 2012	Discussion of Plans 1	Liabilities
	Discussion of DC Trends and Potential Impact to the CTF	Liabilities and liquidity
	CTF Scenario Analysis	Liabilities and liquidity
February 2013	Plan Risk Scenario Analysis	Liabilities and liquidity
April 2013	Capital Market Assumptions	Expected return, risk and correlations
May 2013	Portfolio Allocation Approaches - WSIB, Peers, and Others	Asset allocation strategy
July 2013	Expanded Capital Market Assumptions - Private Equity	Expected risk and return
	Fixed Income Market Outlook	Expected risk and return
	Expanded Capital Market Assumptions - Scenario Analysis	Expected risk and return
	CTF Asset Allocation Review, Modeling and Discussions	Comprehensive view of all concepts
	CTF Liquidity Discussion	Liabilities and liquidity
September 2013	Total Allocation Portfolio Discussion	Liabilities and liquidity
	Asset Allocation and Economic Scenarios	Expected risk and return by time horizon
	CTF Asset Allocation Recommendation	Comprehensive view of all concepts

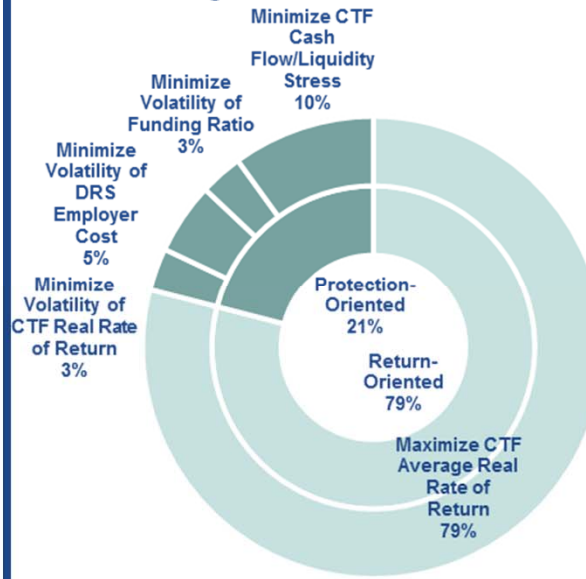


Determining the WSIB's Risk Tolerance – Quantitative Perspective

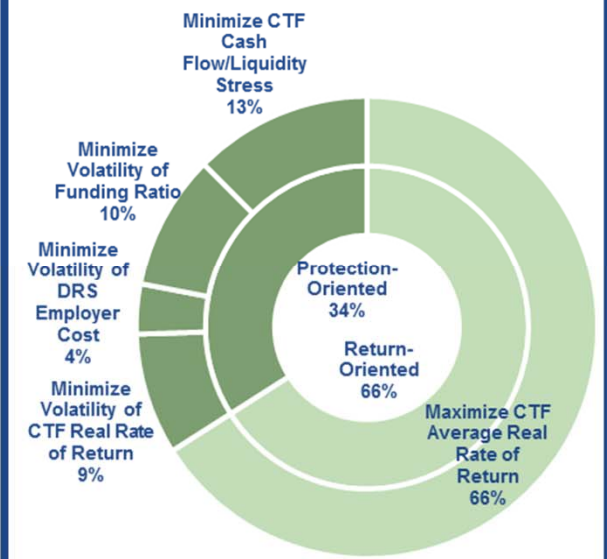
Voting Board Members



Non-Voting Board Members



Staff



	Fixed Income	Tangible Assets	Real Estate	Public Equity	Private Equity	Total
Optimal Portfolio	18.0%	5.0%	16.0%	36.0%	25.0%	100.0%



Determining the WSIB's Risk Tolerance – Qualitative Perspective



Two qualitative adjustments were made to the modeled result

Liquidity

- ▣ Given the Board's significant commitment to private market investments, maintain the target private-to-public market ratio of the CTF

Implementation

- ▣ Increase focus on innovative and proven real estate strategy
- ▣ Maintain the quality of the private equity program as the CTF continues to grow



2013 CTF Strategic Asset Allocation Recommendation



- ▣ Modest change to long-term targets from existing policy
- ▣ Policy range recommendation was unchanged
- ▣ In line with risk preferences expressed by the Board
- ▣ Approved by the Board in September, subject to policy and implementation schedule approval in November 2013

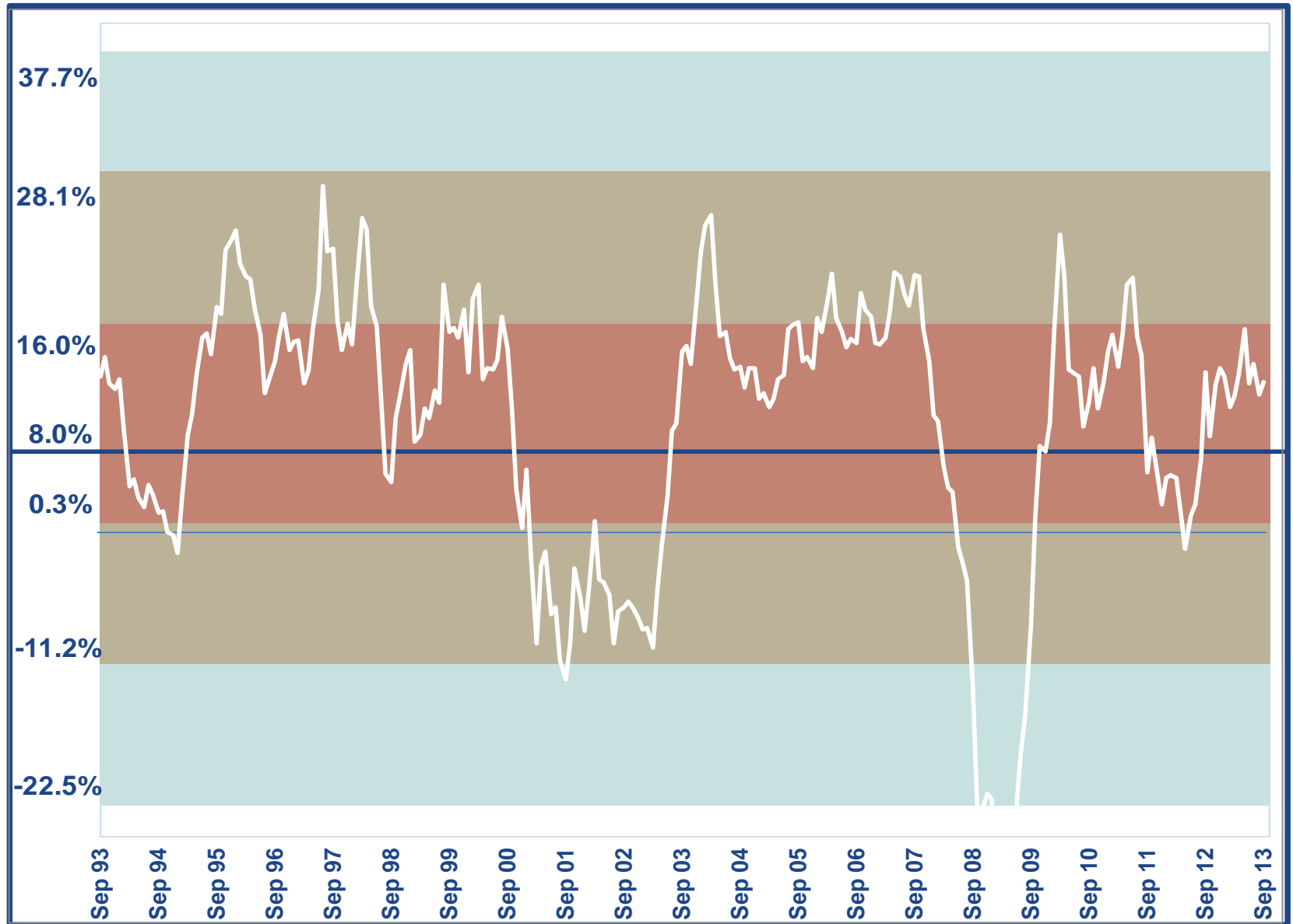
Asset Class	Actual Allocation*	Current Policy	Proposed Policy	Policy Range
Fixed Income	22.6%	20.0%	20.0%	+/- 4%
Tangible Assets	1.5%	5.0%	5.0%	+/-2%
Real Estate	13.6%	13.0%	15.0%	+/-3%
Public Equity	37.7%	37.0%	37.0%	+/- 5%
Private Equity	23.8%	25.0%	23.0%	+/- 4%
Innovation Portfolio	0.5%	0.0%	0.0%	+ 5%
Cash	0.2%	0.0%	0.0%	+ 3%

*As of June 30, 2013



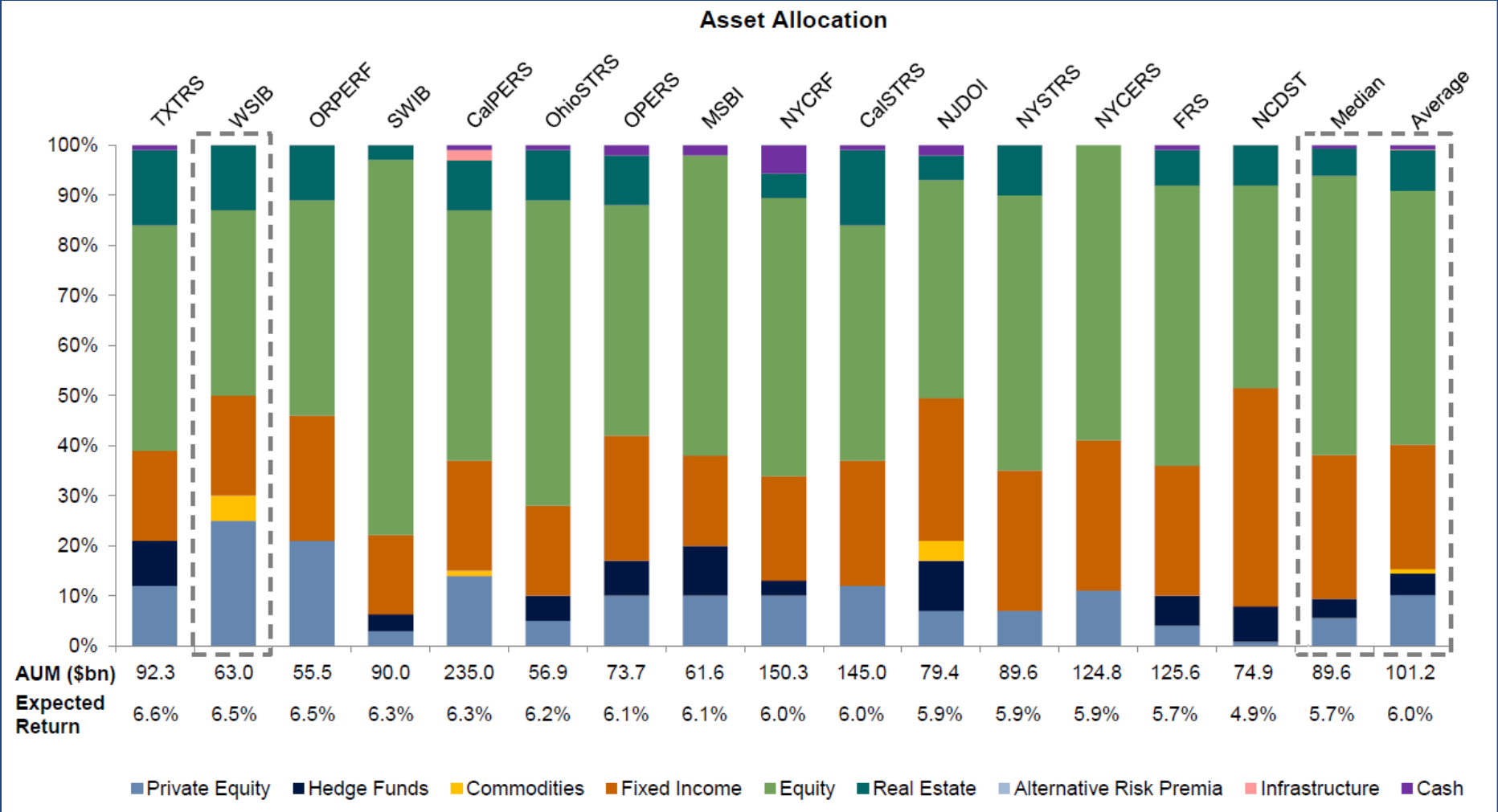
CTF Volatility Over Time

Rolling 1-Year Return



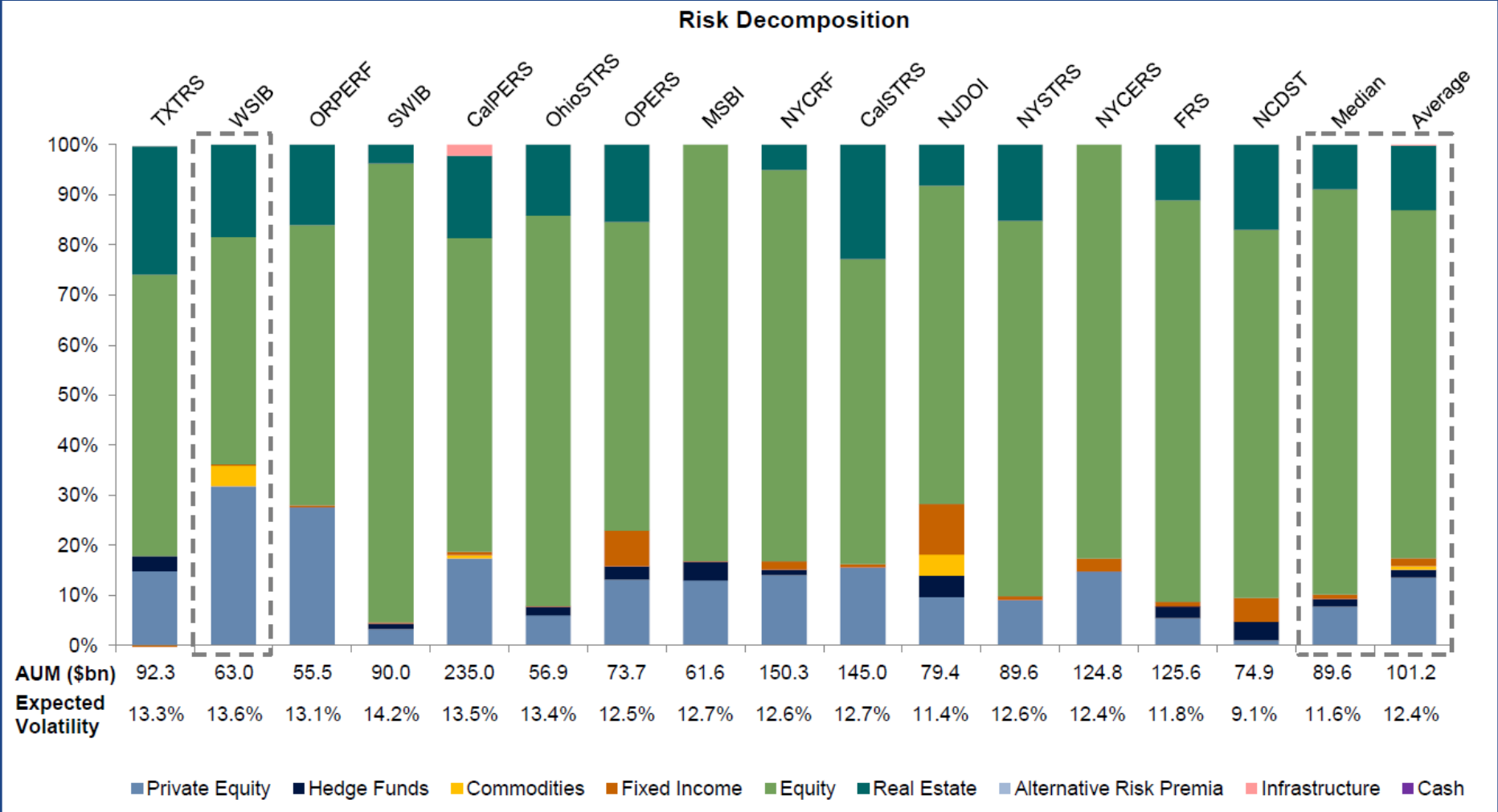


Expected Return Comparison Among Major Pension Plans





Expected Risk Comparison Among Major Pension Funds





Investment Risks Outside of CMA Framework



Risk must be acknowledged from multiple viewpoints, including both quantitative and qualitative views, and using multiple tools to improve relevance

Only some investment risks can be clearly defined and measured at the present time (or ever in some cases)



Primary Risk Types



Investment Risk

- ▣ Market Risk
- ▣ Leverage
- ▣ Liquidity
- ▣ Concentration Risk
- ▣ Credit Risk
- ▣ Interest Rate Risk
- ▣ Counterparty Risk

Assumption Risk

- ▣ CMAs
- ▣ Inflation
- ▣ Liability Assumptions
- ▣ Contribution Assumptions
- ▣ Benefit Assumptions

Plan Risk (the risk of having insufficient assets to pay benefits when required)

- ▣ Funded Ratio
- ▣ Contribution Stability
- ▣ Contribution Level



Contact Information



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