PERA BOARD
EDUCATIONAL SESSION
PERA Seminar Room

June 28, 2018 after Board meeting

AGENDA

ITEM		PRESENTER
A.	PERA Strategic Investment Plan Discussion	Dominic Garcia Chief Investment Officer Tom Toth Wilshire Associates
B.	Risk Balance Panel Discussion	Patrick Dimick Senior Portfolio Strategist Bob Smith Client Advisor Bridgewater Associates Bryan D. Belton, CFA Director, Multi Asset William Bardeen Business Development Associate PanAgora Asset Management Kevin Kneafsey, Ph.D. Senior Investment Strategist Wells Fargo Asset Management

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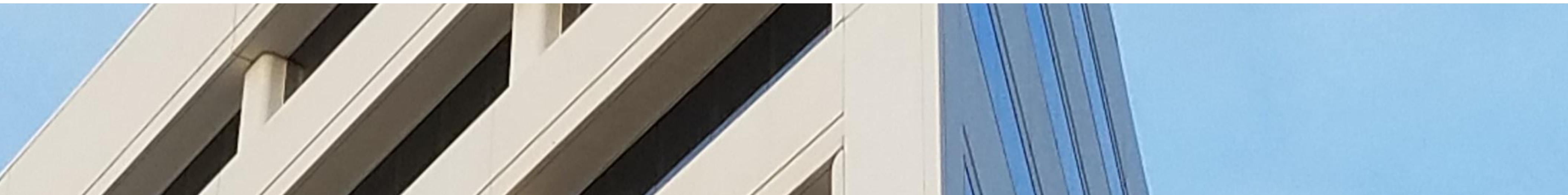

Strategic Investment Plan Discussion

Asset Allocation Incorporating A Risk Balanced Approach

PERA'S OBJECTIVE

- Mission of PERA is to preserve, protect, and administer the trust to meet its current and future obligations
  - Prudently invest the portfolio in order to provide sufficient capital to pay benefits over long term time horizon
  - Ensure appropriate level of liquidity is available at all times
  - Investment strategy must take into account PERA's liability structure

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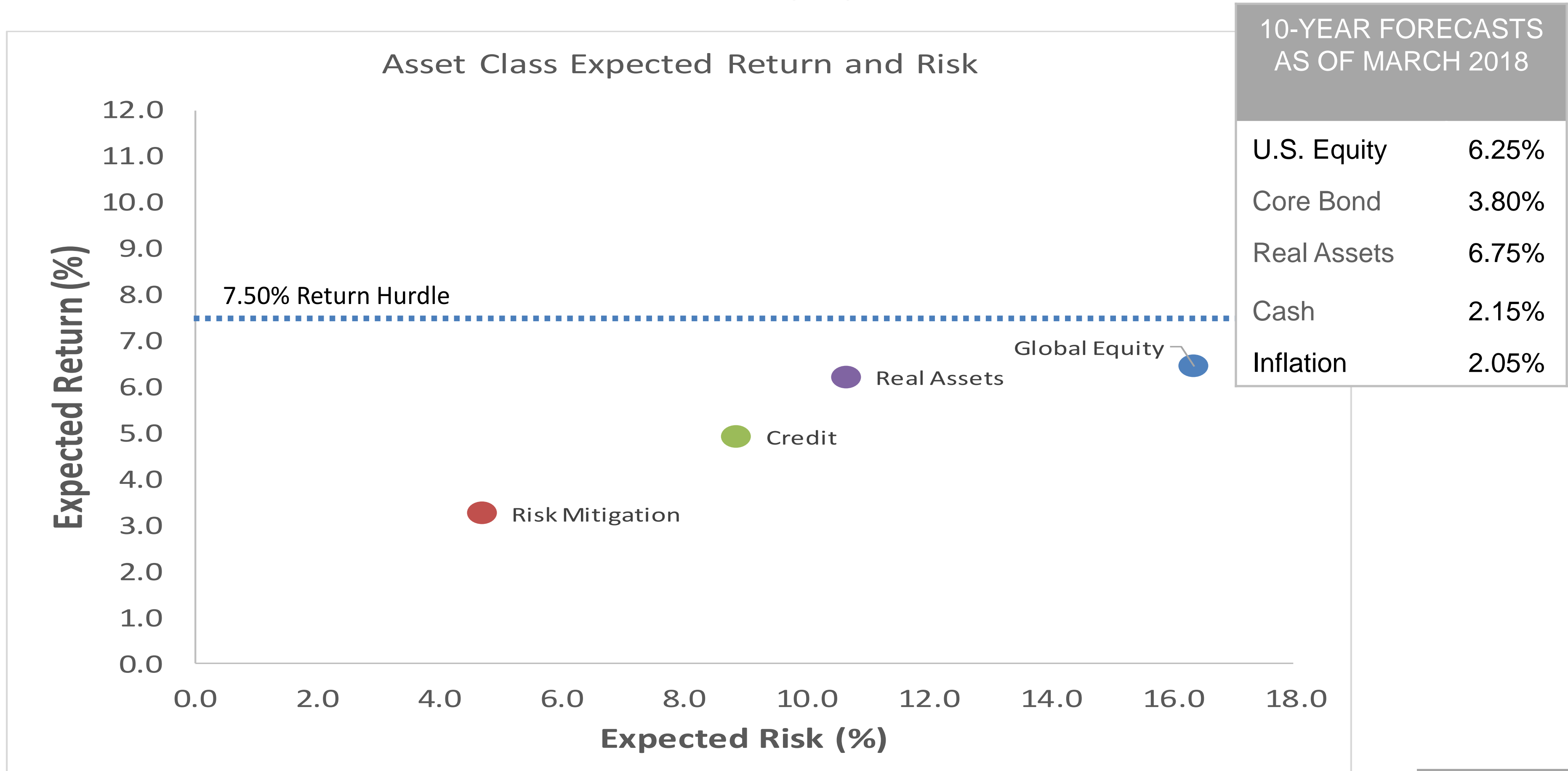
PERA'S CHALLENGE

- Return target for PERA is 7.50% blended rate over long term time horizon
- Late Cycle Economy
- Asset class expectations make that a challenging level of return to achieve



10-YEAR FORECASTS AS OF MARCH 2018	
U.S. Equity	6.25%
Core Bond	3.80%
Real Assets	6.75%
Cash	2.15%
Inflation	2.05%

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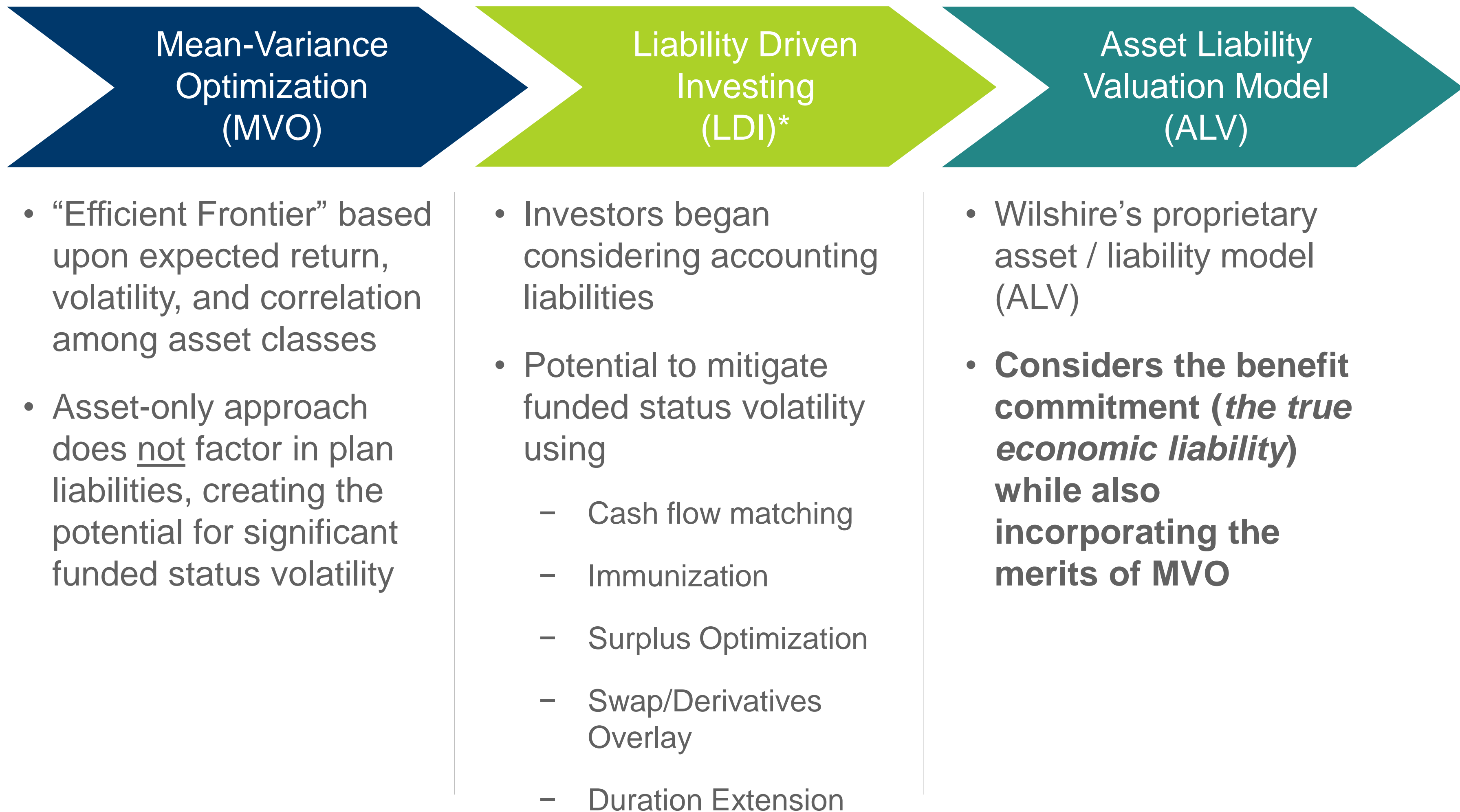
ASSET LIABILITY MANAGEMENT



* There is no standard definition for Liability Driven Investing. Vendors of LDI-based products (insurance companies, investment managers, brokers, etc.) tend to define it in ways that align with their individual product offerings.

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INVESTMENT OPTIONS

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1. PERA Passive Reference Portfolio (58% Equity/ 42% Fixed Income)
2. Increase Passive Equity Investment (85% Equity/ 15% Fixed Income)
3. Current Portfolio inclusive of active selection
4. Increase Private Asset Investment
5. Risk Balance

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OPTIONS 1 & 2: PASSIVE LIQUID PORTFOLIOS

	Pros	Cons
PERA Passive Reference Portfolio (58% Equity/ 42% Fixed Income) Expected Return 5.67% Expected Risk 10.6%	• Simple, easy to implement • Conventional, similar to peers • Fewer resources necessary for implementation • Absolute risk level reflects historical board risk tolerance	• Falls short of return objective • Increases equity risk from policy • Increases drawdown risk • Increases risk to ruin • Decreases alignment with liability • Increases volatility of funding status
Increase Passive Equity Investment (85% Equity/ 15% Fixed Income) Expected Return 6.25% Expected Risk 14.75%	• Simple, easy to implement • Conventional, similar to peers • Fewer resources necessary for implementation • Slightly higher return expectation	• Falls short of return objective • Absolute risk greater than historical board risk tolerance • Wholly driven by equity market returns • Increases drawdown risk • Increases risk to ruin • Decreases alignment with liability • Increases volatility of funding status

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OPTION 3: CURRENT PORTFOLIO

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	Pros	Cons
Current Portfolio Expected Return 6.7% Expected Risk 10.5%	• Improves return profile relative to reference portfolio • Improves diversification for 'smoother ride', lower drawdowns • Absolute risk level reflects historical board risk tolerance	• Falls short of return objective • Equity risk remains predominant driver of total portfolio return • Additional complexity from introduction of illiquid and alternative asset classes

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OPTION 4: INCREASE PRIVATE ASSET INVESTMENT

	Pros	Cons
Increase Private Asset Investment by 25% Expected Return 7.2% Expected Risk 11.2% (Expectations can vary depending on new private commitments)	• Increases expected return over long time horizon	• Increases portfolio complexity and diligence requirements • Increases fees • Reduces portfolio flexibility, particularly in times of stress • Reduces assurance that sufficient cash is on hand to meet financial commitments

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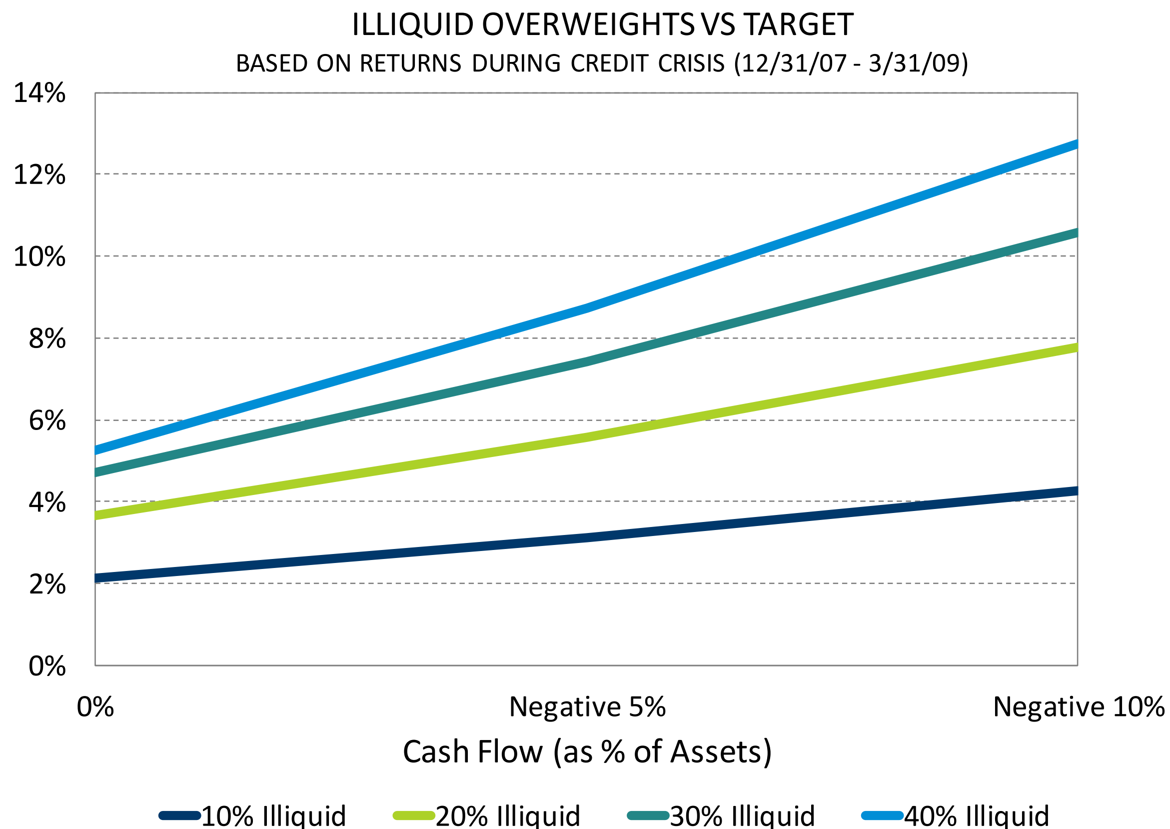
LIQUIDITY RISK: WHAT ARE THE CONSEQUENCES?

Meeting liquidity needs with a "sell as you go" process can tear portfolios away from their asset allocation targets during stressed market environments

Potentially leading to undesirable risk characteristics and/or increased market vulnerability

The threat of being pushed away from allocation targets increases…

1. With larger required cash outflows (i.e., greater liquidity needs)
2. With larger allocations to illiquid assets



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OPTION 5: RISK BALANCE

	Pros	Cons
Risk Balance Expected Return 7.7% Expected Risk 10.9% 30% allocation to Risk Balance through 2020 increases expected returns Expectations include active selection alpha	• Improves risk adjusted returns • Improves total plan return, at similar risk • Reduces reliance on equities • Minimizes drawdowns driven by equity markets, better compounding • Better alignment with liability structure • Decreases volatility of funding status • Decreases risk to ruin	• Increases portfolio complexity • Increases operational risk • Requires more resources for implementation • Maverick risk: Different than peer universe or 60/40 allocation

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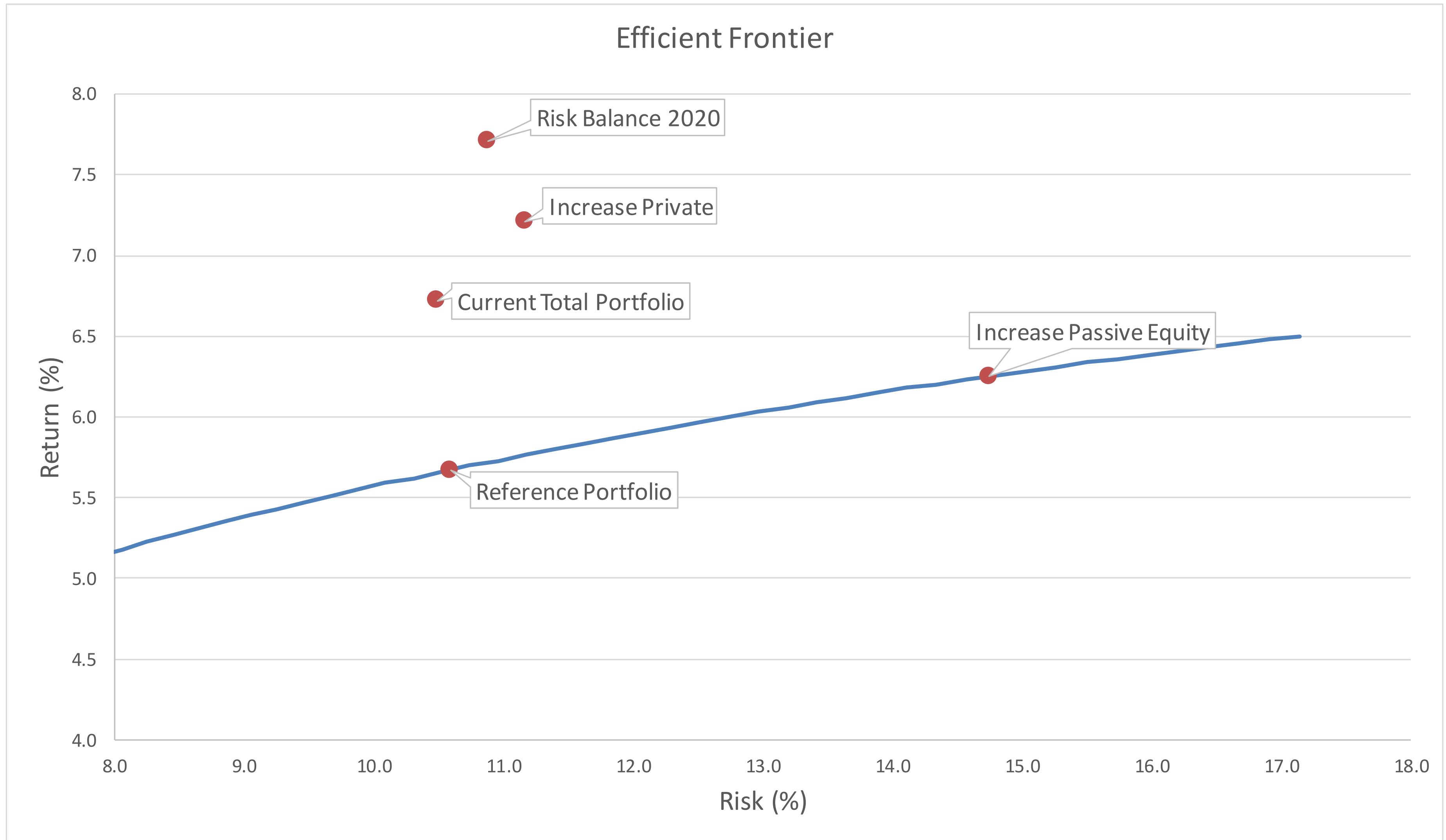
MEETING RETURN TARGET WITH A RISK BALANCED PORTFOLIO



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WHICH INVESTMENT OPTION IS MOST SUITED TO PERA OBJECTIVES?

	Meets Return Objective of 7.5%?	Risk Level Consistent with Board Risk Tolerance*?	Manages Surplus Volatility (ALM approach)?
PERA Passive Reference Portfolio		✓	
Increase Passive Equity Investment			
Current Policy		✓	
Increase Private Asset Investment		✓	
Risk Balance	✓	✓	✓

* Risk tolerance based on standard deviation

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SUMMARY

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- Risk Balance can deliver better returns with similar total risk, but less concentrated in a single risk and less dependent on a single favorable economic environment.
  - Better diversification
  - Better liability hedge
  - Better able to withstand multiple economic scenarios
- Risk Parity will lag a traditional portfolio in certain environments, but over a full market cycle with meaningful inflation and economic recession can perform better.
- Risk Parity requires a long term perspective since investors will deviate from their peers (behavioral risk). A glide path can provide a stepwise path to investment.

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APPENDIX

ASSET ALLOCATION

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	Current Policy	10% Risk Balance Allocation	10% Risk Balance Allocation - Look Through Capital Exposure	Median Plan Asset Allocation Estimate
Global Equity	43.5%	33.5%	37.3%	52.0%
Risk Mitigation	21.5%	21.5%	34.0%	24.0%
Credit	15.0%	15.0%	15.0%	9.9%
Real Assets	20.0%	20.0%	28.2%	14.1%
Risk Balance (14%)	0.0%	10%		0%
Expected Policy Return	5.75	5.87		5.76
Expected Policy Risk	9.79	9.36		10.30
Expected Sharpe Ratio	0.41	0.44		0.39

- Median plan asset allocation based on broad TUCS universe data
  - Assumes that median plan is allocated in similar manner within the four broad asset categories
  - Equally allocate TUCS allocation in "Alternative Investments" to credit and real assets
- Similar return profile but more concentrated in Global Equity

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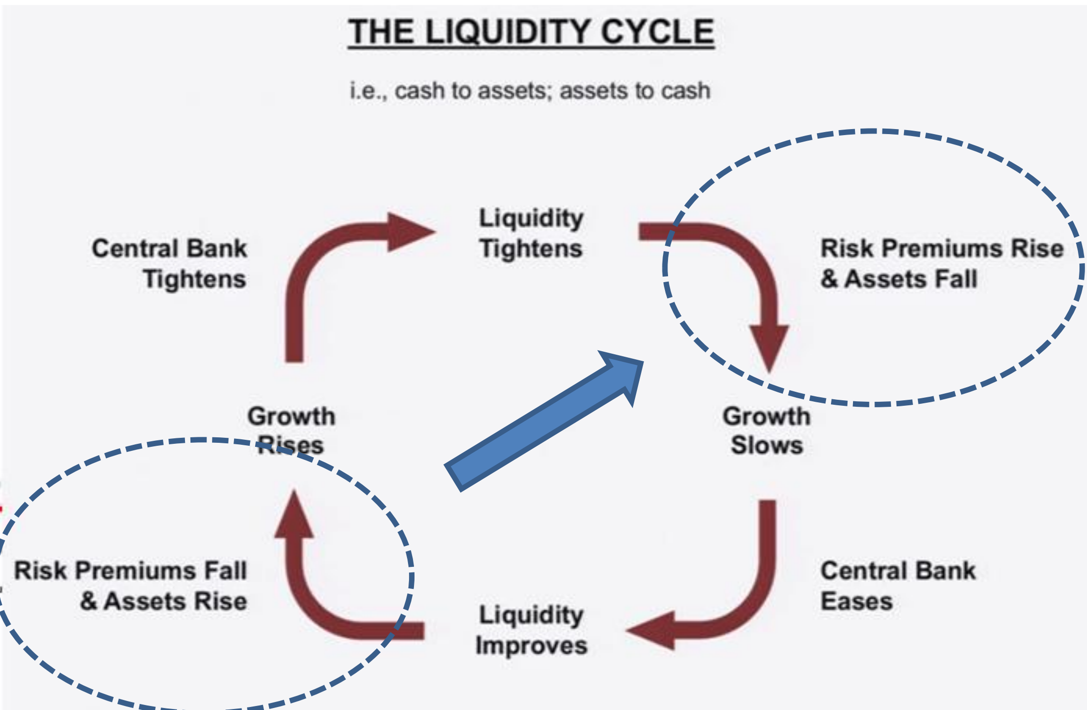
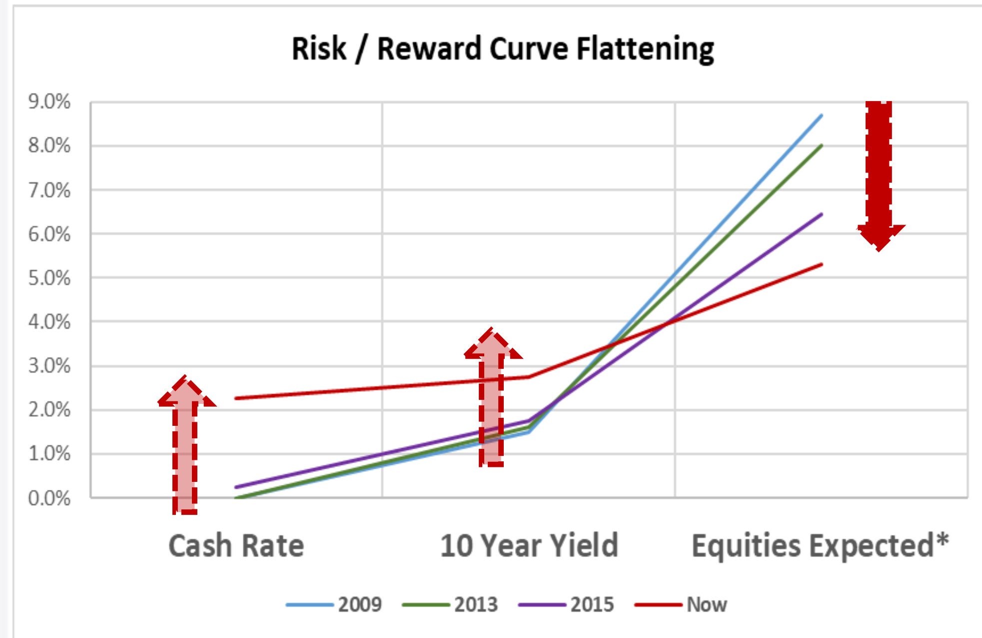
LATE CYCLE CHALLENGES

- Return Opportunities Less Attractive
  - As the cycle matures, the risk/reward curve continues to flatten
- Risk Management Tools Less Reliable
  - The correlations between bonds and equities may turn largely positive





*Yield is the yield to maturity; Equities are expected return based on the IGV model.

Source: Barclays Capital; Wilshire Consulting

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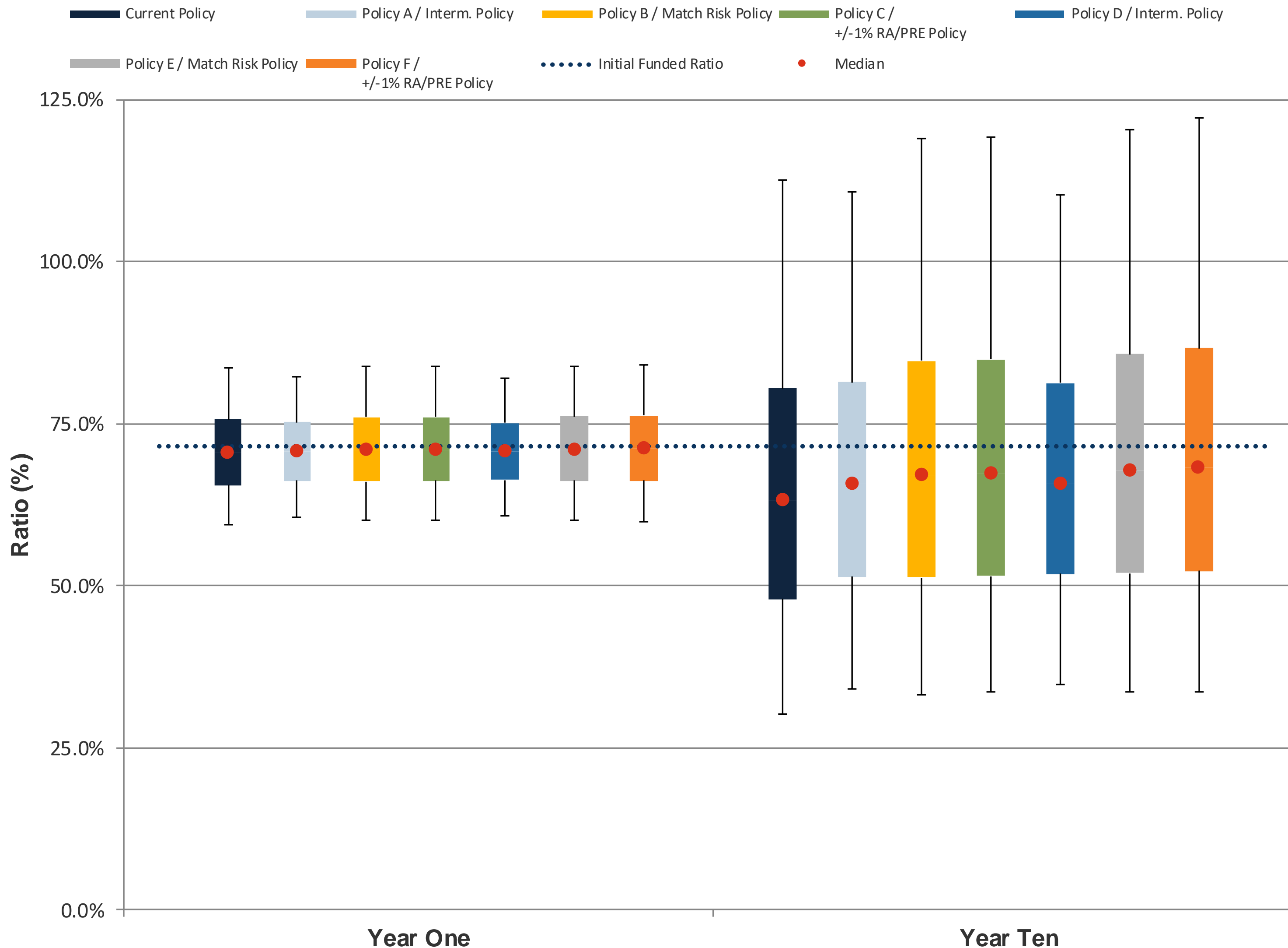
DISTRIBUTION OF FUNDED STATUS - EXAMPLE



Shortfall Risk:

The potential for the alternatives to have a lower median funded status than the current policy.

Drawdown Risk:

The potential for the alternatives to have a lower "very pessimistic" funded ratio than the current policy.

Additional asset-liability metrics such as Economic Cost and Contributions will be examined in July.

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