PERA
Public Employees Retirement Association of New Mexico

INVESTED IN TOMORROW.

Board of Trustees 2023 Retreat

Ruidoso Convention Center • Ruidoso, NM 88345

Tuesday, July 11, 2023 • 9:00am – 4:00pm
Wednesday, July 12, 2022 • 9:30am – 4:00pm

Tuesday, July 11, 2023

9:00am	Capital Market Assumptions		Michael Shackelford, CIO LeAnne Larrañaga-Ruffy, DCIO Steve DiGirolamo Joanna Bewick Wilshire
10:00am	Asset Allocation Education & Future Recommendations		Michael Shackelford, CIO LeAnne Larrañaga-Ruffy, DCIO Steve DiGirolamo Joanna Bewick Wilshire
11:00am	Private Equity Education		Michael Brandmeyer, Co-CIO of AIMS Bill Braxton Goldman Sachs Asset Management
1:30pm	Private Equity Q&A		Mike Krems, Aksia Kate Brassington, Senior Portfolio Manager – Global Equity
2:00pm	Legislative Landscape		Greg Trujillo, Executive Director; Roberto Ramirez, Legislative Committee Chair; Charlie Marquez, Broad Spectrum Consulting

Wednesday, July 12, 2023

9:30am	Fiduciary Session		Bob Perez, Foster Garvey
10:30am	Actuarial Session		Paul T. Wood, ASA, FCA, MAAA Actuary, Senior Consultant, and Team Leader Janie Shaw, ASA, EA, MAAA, Actuary Consultant; Gabriel, Roeder, Smith & Company
1:00pm	Risk Budgeting Primer		Michael Shackelford, CIO LeAnne Larrañaga-Ruffy, DCIO Steve DiGirolamo Joanna Bewick Wilshire
2:00pm	Benchmarking Education		Michael Shackelford, CIO LeAnne Larrañaga-Ruffy, DCIO Steve DiGirolamo Joanna Bewick Wilshire
3:00pm	SmartSave 457b Plan Education		Karyn Lujan, Deferred Compensation Manager
4:00pm	PERA Outreach Presentation		Christina Perea, Outreach Bureau Chief

PERA Board Meeting • Thursday, July 13, 2023 • 9:00am

Public Employees Retirement Association of New Mexico 2023 Retreat

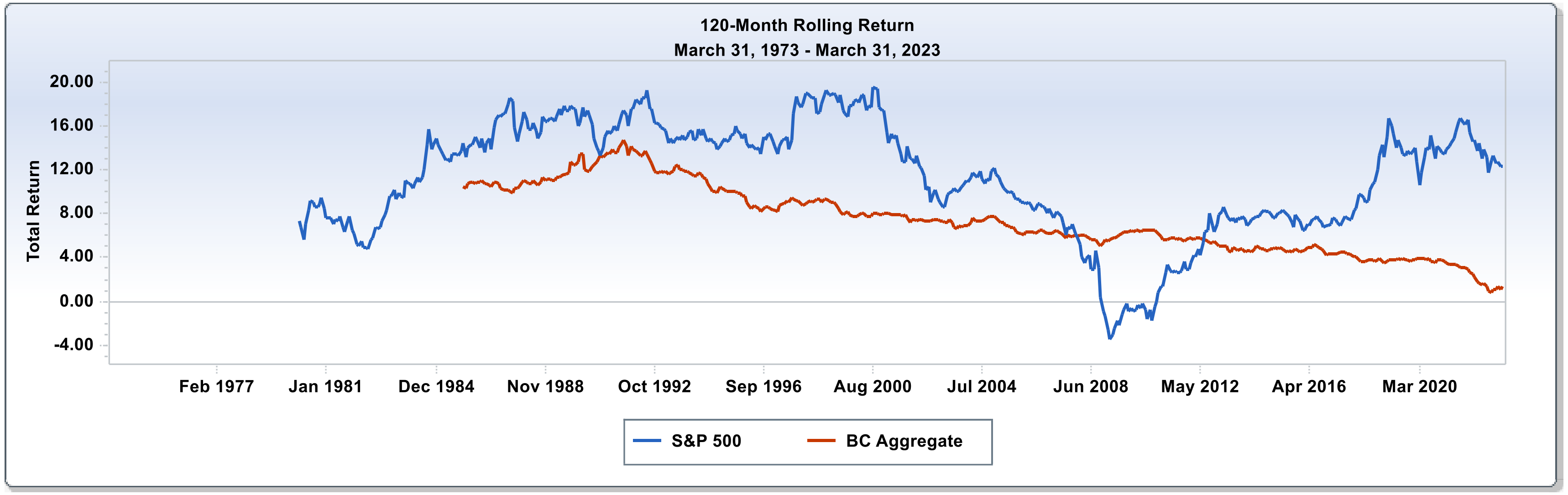
Forecasting Capital Market Assumptions

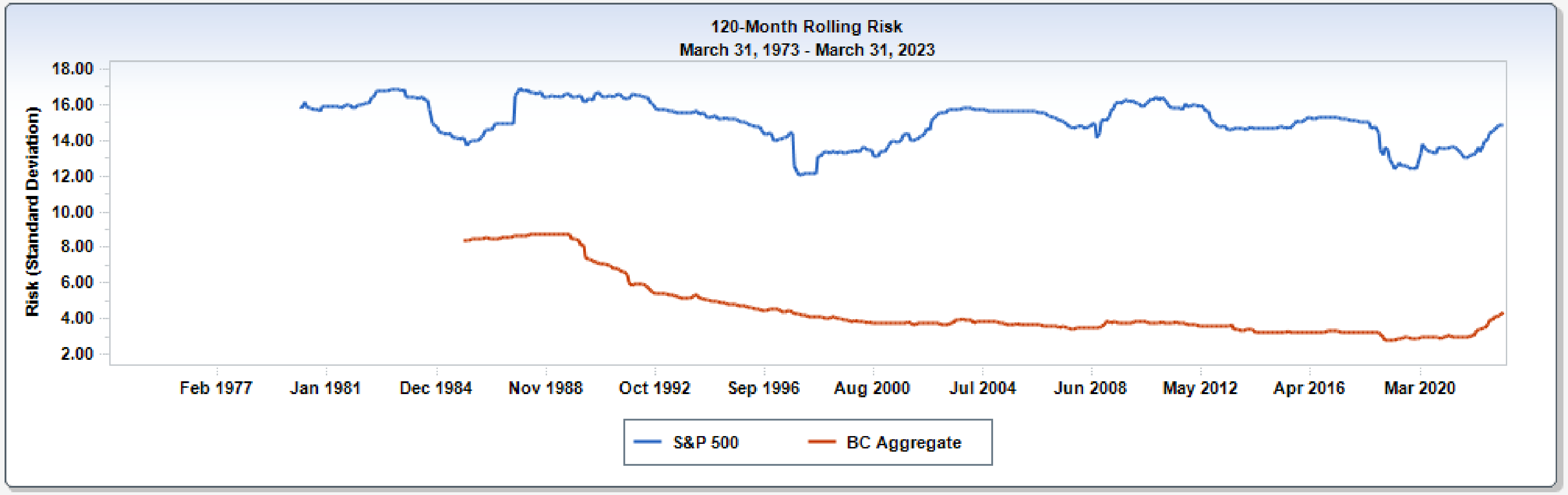
July 2023

Introduction

- Wilshire Consulting has been formulating long-term asset class return, risk and correlation assumptions since the early 1980s
- Standard approach to forecasting returns
  - Forecasting asset class return, risk and correlation assumptions is the first step in the asset allocation process
  - Estimates are long-term; 10-year return assumption
  - Combines historical data with forward-looking analysis
  - Assumptions are updated quarterly
- Risk & Correlation
  - Relies heavily (but not exclusively) on historical return data
  - Analyze various rolling standard deviations; 5-year risk, 10-year risk, etc.
  - For some asset classes, particularly private equity, need to rely on proxies and other cross-correlation assumptions

Historical Context

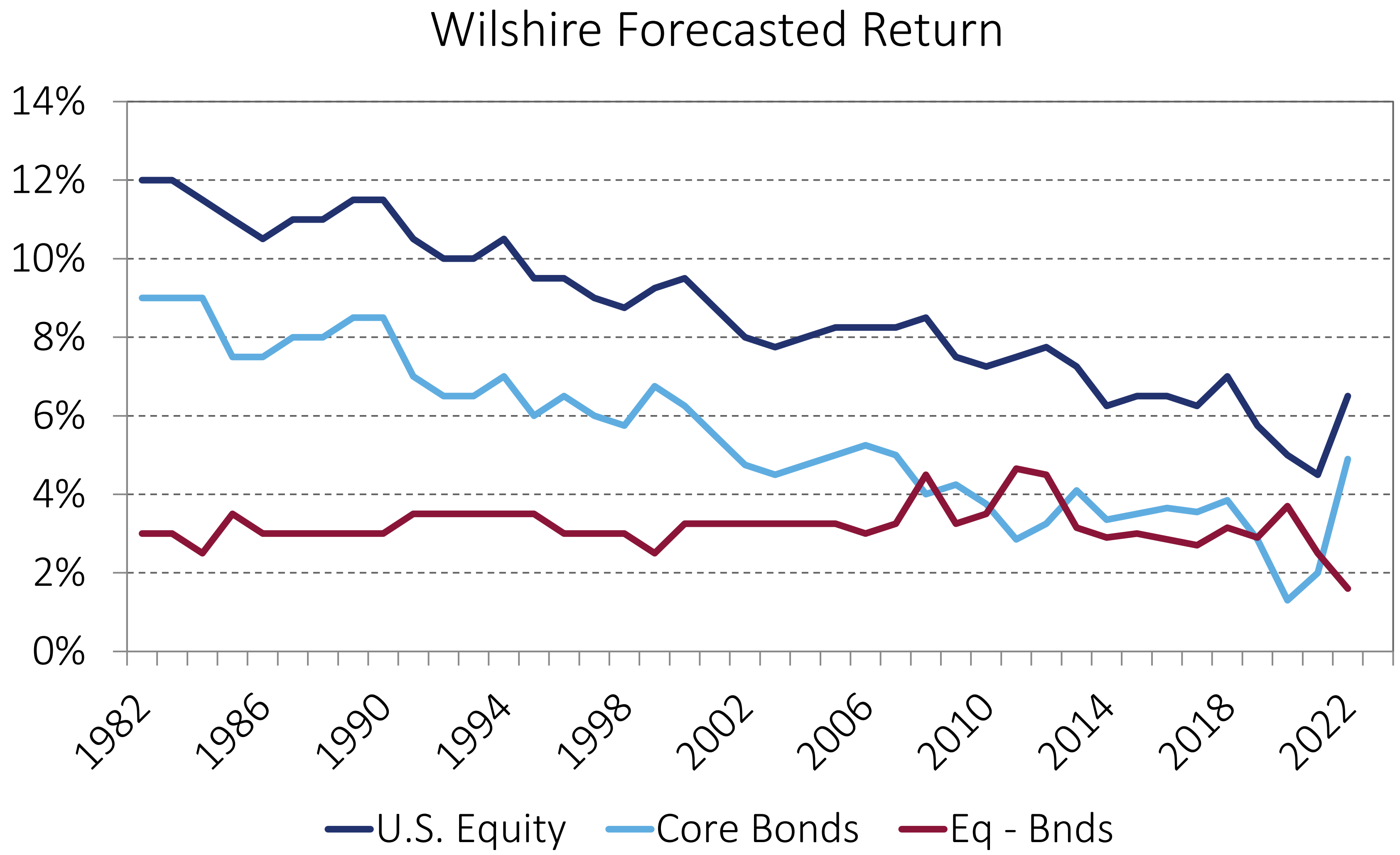




- While equity returns are volatile, even on a rolling 10-years basis, fixed income returns vary with interest rates.

- Historical risk level are more stable when compared to historical returns.

Equity Risk Premium



Capital Market Assumptions 1Q 2023

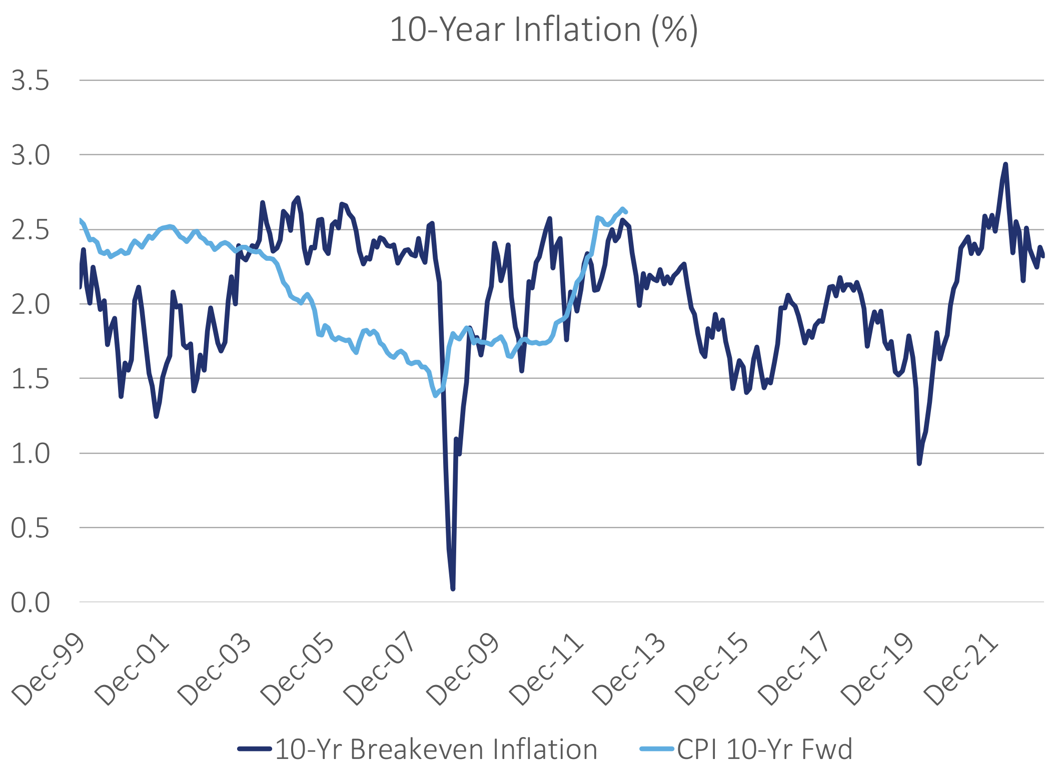
	Equity						Fixed Income							Real Assets					
														Real Estate					
	US Stock	Dev ex-US Stock	Emg Stock	Global ex-US Stock	Global Stock	Private Equity	Cash	Core Bond	LT Core Bond	TIPS	High Yield	Private Credit	Dev ex-US Bond (Hdg)	US RES	Global RES	Private RE	Cmdty	Real Assets	US CPI
Compound Return (%)	6.15	6.90	7.15	7.25	6.70	9.60	3.65	4.60	4.60	3.65	6.25	8.55	2.85	5.75	5.90	6.25	5.90	6.65	2.25
Expected Risk (%)	17.00	18.00	26.00	19.10	17.10	29.65	0.75	4.70	9.85	6.00	10.00	12.75	4.00	17.50	16.45	13.90	16.00	12.35	1.75
Cash Yield (%)	1.65	3.15	2.75	3.05	2.20	0.00	3.65	4.90	4.95	4.25	9.35	4.90	3.45	4.05	4.05	2.25	3.65	3.15	0.00
Growth Exposure	8.00	8.00	8.00	8.00	8.00	14.00	0.00	-0.95	-2.40	-3.00	4.00	5.10	-1.00	6.00	6.00	3.50	0.00	2.70	0.00
Inflation Exposure	-3.00	0.00	5.00	1.45	-1.30	-3.75	0.00	-2.50	-6.80	2.50	-1.00	-1.50	-3.00	1.00	1.80	1.00	12.00	5.25	1.00
Correlations																			
US Stock	1.00																		
Dev ex-US Stock (USD)	0.81	1.00																	
Emerging Mkt Stock	0.74	0.74	1.00																
Global ex-US Stock	0.84	0.95	0.89	1.00															
Global Stock	0.95	0.91	0.84	0.94	1.00														
Private Equity	0.72	0.63	0.61	0.67	0.73	1.00													
Cash Equivalents	-0.05	-0.09	-0.05	-0.08	-0.06	0.00	1.00												
Core Bond	0.28	0.13	0.00	0.08	0.20	0.30	0.18	1.00											
LT Core Bond	0.31	0.15	0.01	0.11	0.24	0.31	0.11	0.94	1.00										
TIPS	-0.05	0.00	0.15	0.06	-0.01	-0.03	0.20	0.60	0.48	1.00									
High Yield Bond	0.54	0.39	0.49	0.46	0.53	0.31	-0.10	0.24	0.32	0.05	1.00								
Private Credit	0.68	0.55	0.58	0.60	0.68	0.44	0.00	0.24	0.30	0.00	0.76	1.00							
Dev ex-US Bond (Hdg)	0.16	0.25	-0.01	0.16	0.17	0.26	0.10	0.68	0.66	0.39	0.26	0.22	1.00						
US RE Securities	0.58	0.47	0.44	0.49	0.57	0.49	-0.05	0.17	0.22	0.10	0.56	0.62	0.05	1.00					
Global RE Securities	0.64	0.57	0.54	0.60	0.65	0.55	-0.05	0.17	0.21	0.11	0.61	0.68	0.04	0.96	1.00				
Private Real Estate	0.55	0.45	0.45	0.49	0.54	0.50	-0.05	0.19	0.25	0.09	0.58	0.63	0.05	0.79	0.78	1.00			
Commodities	0.25	0.34	0.39	0.38	0.32	0.28	0.00	-0.03	-0.03	0.25	0.29	0.29	-0.10	0.25	0.28	0.25	1.00		
Real Assets	0.62	0.63	0.65	0.69	0.67	0.57	-0.03	0.22	0.24	0.30	0.64	0.69	0.04	0.78	0.84	0.76	0.64	1.00	
Inflation (CPI)	-0.10	-0.15	-0.13	-0.15	-0.13	-0.10	0.10	-0.12	-0.12	0.15	-0.08	0.00	-0.08	0.05	0.04	0.05	0.44	0.22	1.00

Inflation Assumption

- Market-based inflation forecast
  - TIPS are the starting point in forecasting inflation
  - Subtract TIPS yield from nominal Treasury yield with same maturity
  - Difference is “breakeven inflation rate”

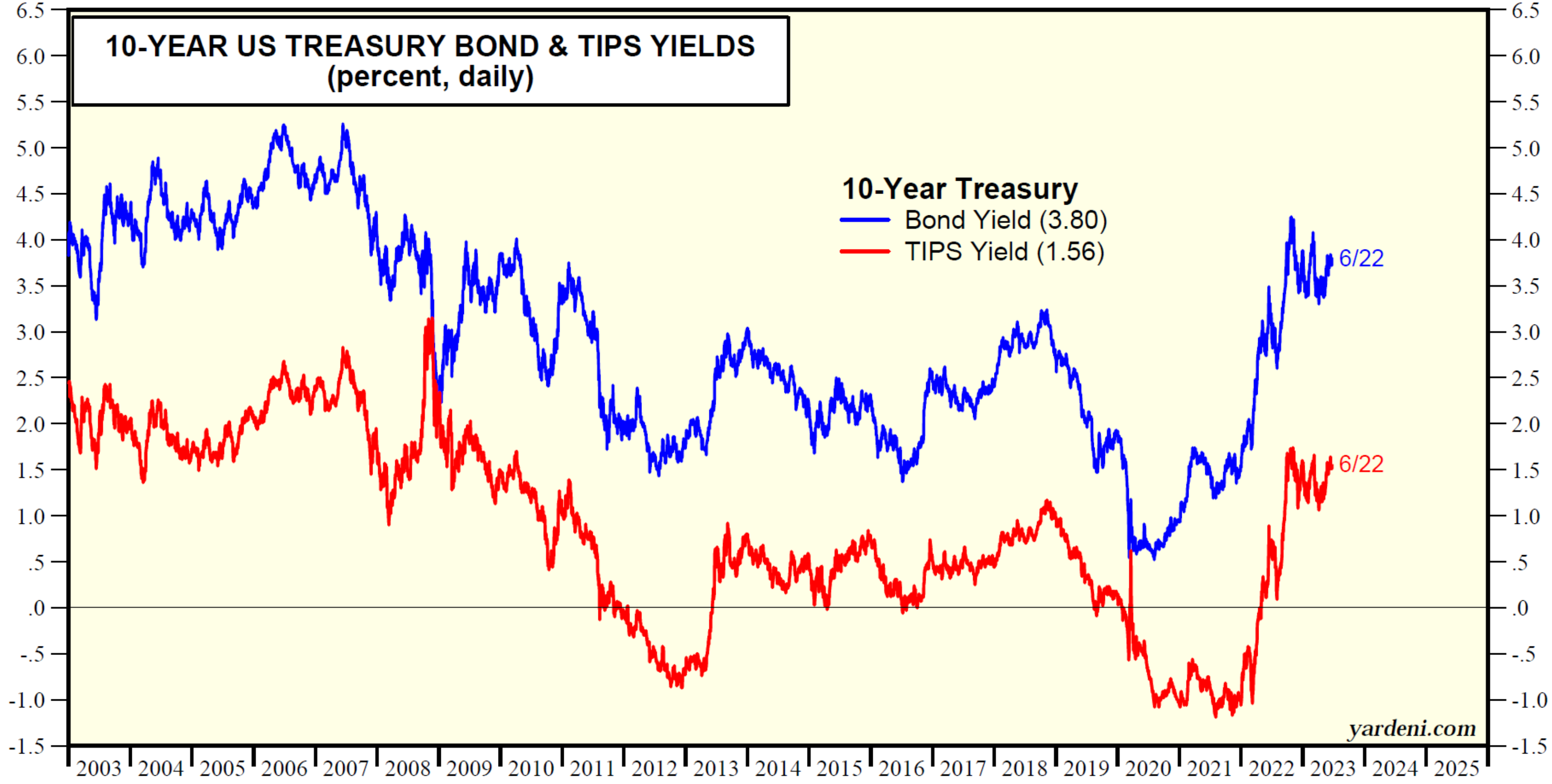
- Increased volatility in breakeven will sometimes cause Wilshire to temporarily move away from accepting a single point-in-time inflation forecast
  - December 2008 – breakeven inflation went to zero during the depths of the global financial crisis
  - March 2020 – breakeven inflation fell below 1% while the coronavirus pandemic caused global shutdowns

- Current assumption of 2.25% is 7 basis points below breakeven



Data Source: Bloomberg

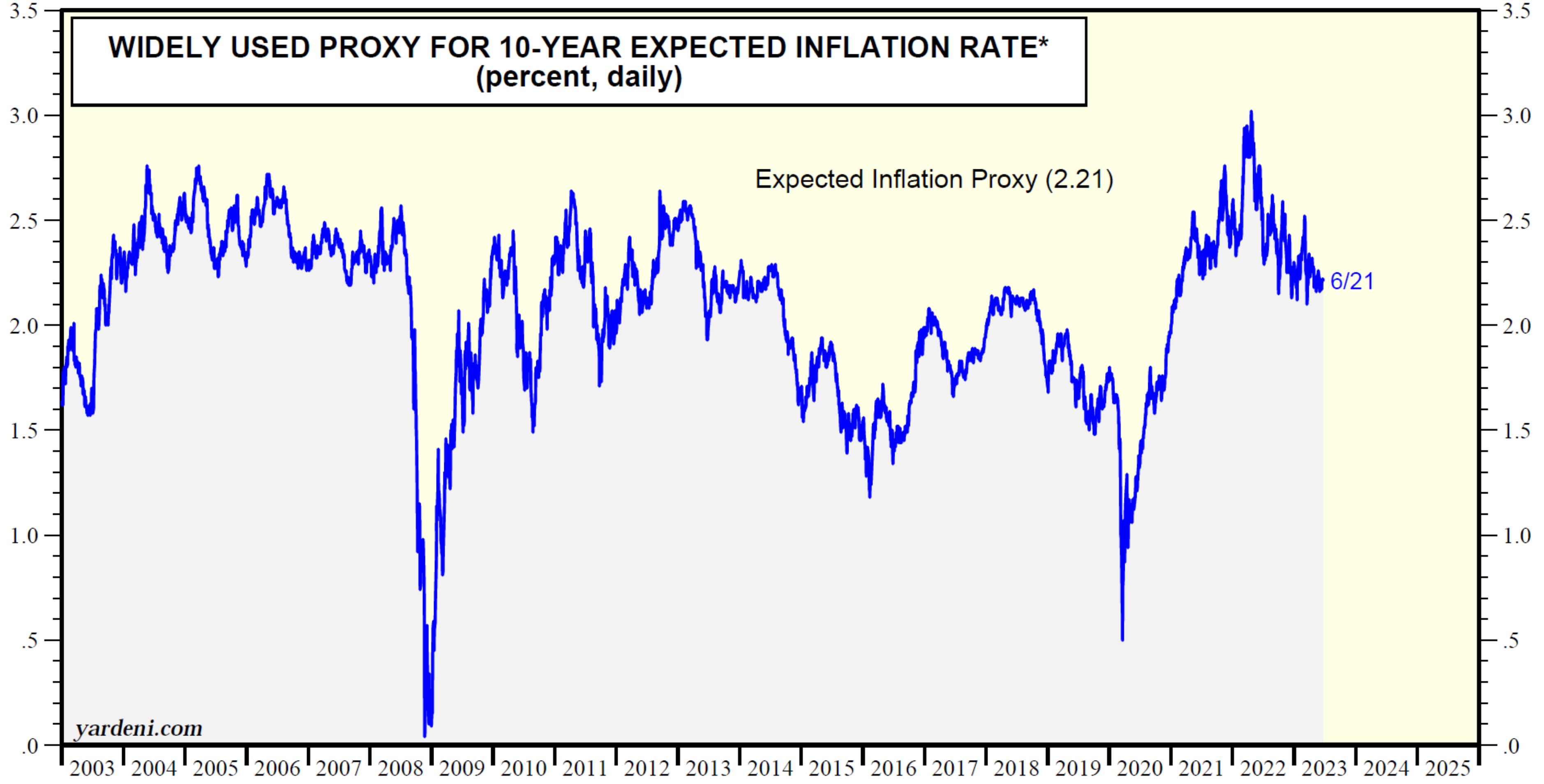
Inflation Assumption: Nominal Treasury and TIPS Yields



Data Source: Yardeni Research

Source: Federal Reserve Board.

Inflation Assumption: Breakeven Inflation Rate



Data Source: Yardeni Research

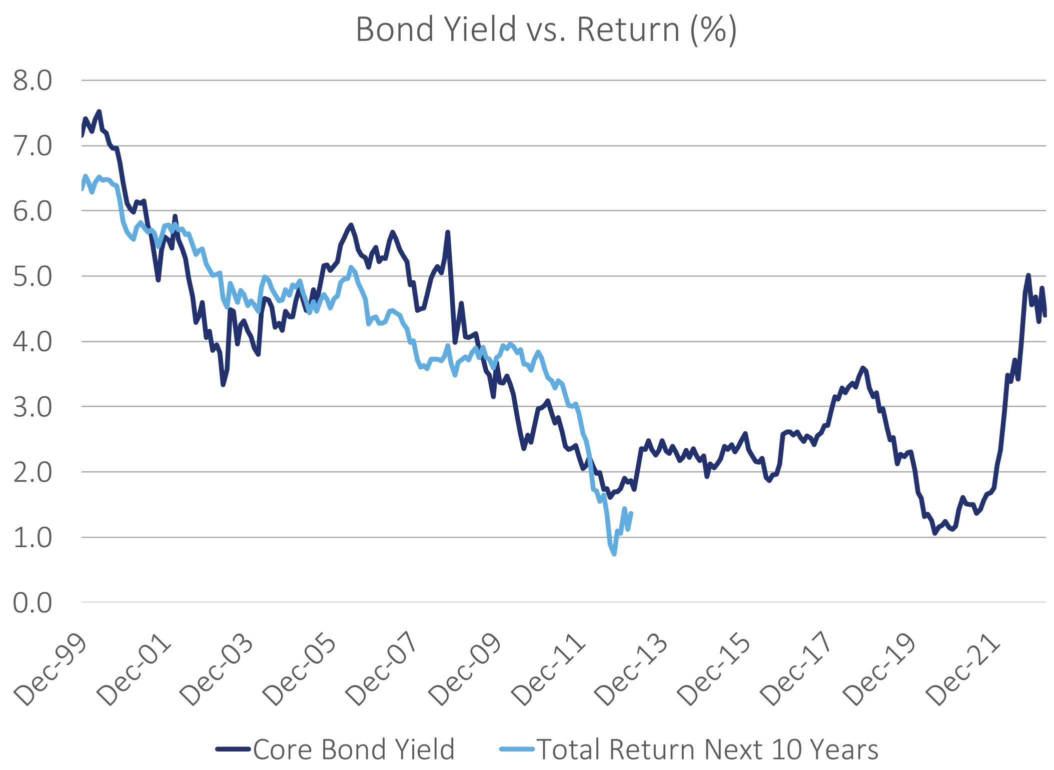
* Nominal 10-year US Treasury bond yield minus 10-year TIPS yield.
Source: Federal Reserve Board.

Fixed Income Model Framework

- Forecasting fixed income involves two major components
  - Current Treasury yields and current credit spread levels
  - Expectations for changes in both of those inputs during the next 10 years

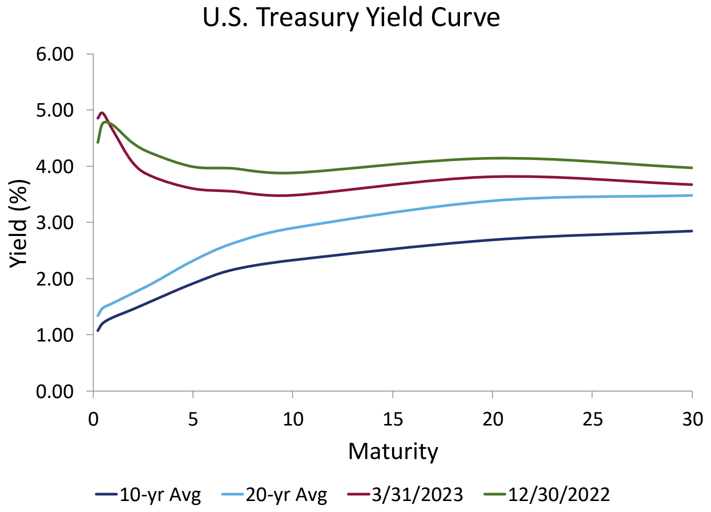
- Wilshire's fixed income return assumptions build off key inputs
  - Inflation assumption
  - Current observed yields/spreads, historical relevant relationships and forward yield curve
  - Forecasts for the pace and timing of yield and spread changes

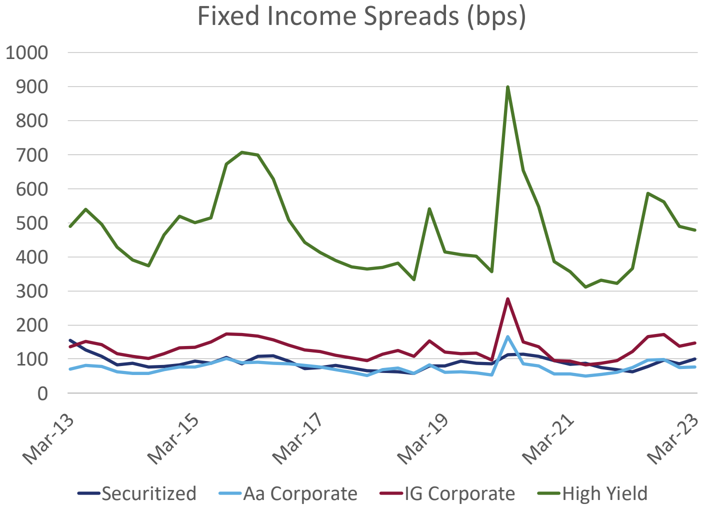
- Current observed maturity and credit risk premiums are normalized to forecasted levels during our forecast period to calculate fixed income return assumptions



Data Source: Bloomberg

Fixed Income Update





Data Source: Bloomberg

Inflation & Fixed Income		Dec 2022	Change	Mar 2023
Inflation	10-Year Treasury Yield	3.88	(0.41)	3.47
	10-Year Real Yield	1.58	(0.43)	1.15
	Breakeven Inflation	2.30	0.02	2.32
	Inflation Forecast	**2.25**	**0.00**	**2.25**
Cash	91-Day T-Bill Yield	4.42	0.43	4.85
	T-Bill Yield in 10 Yrs	3.85	(0.45)	3.40
	Cash Forecast	**4.00**	**(0.35)**	**3.65**
Treasury	U.S. Treasury Idx Yield	4.18	(0.35)	3.83
	Treasury Idx Yield in 10 Yrs	4.45	(0.15)	4.30
	Treasury Idx Forecast	**4.30**	**(0.30)**	**4.00**
	U.S. LT Treasury Idx Yield	4.08	(0.31)	3.77
	LT Treasury Idx Yield in 10 Yrs	4.15	(0.29)	3.86
	LT Treasury Idx Forecast	**4.05**	**(0.30)**	**3.75**
Spread	U.S. Corporate Idx OAS	1.38	0.09	1.46
	Corporate Idx OAS in 10 Yrs	1.54	(0.01)	1.53
	Corporate Idx Forecast	**5.45**	**(0.30)**	**5.15**
	U.S. Core Bond Forecast	**4.90**	**(0.30)**	**4.60**
	U.S. LT Core Bond Forecast	**4.90**	**(0.30)**	**4.60**
	U.S. High Yield Idx OAS	4.89	(0.11)	4.78
	High Yield Idx OAS in 10 Yrs	5.40	(0.05)	5.36
	High Yield Bond Forecast	**6.55**	**(0.30)**	**6.25**

High Yield Bonds & Emerging Market Debt

- Wilshire utilizes a high yield bond model to forecast returns, which accounts for credit yield spreads, defaults, recoveries & appreciation/depreciation of principal

- High Yield inputs/assumptions
  - Initial yield spread of 4.78%, widening to historical average of 5.36%
  - Initial default rate of 4.75% for each of the next two years; equal to 4.25% during the remaining forecast period
  - A 45% recovery rate

- Emerging Market Debt inputs/assumptions
  - Current yield spread of 3.58%, tightening to historical average of 3.36%
  - Spreads are measured versus a U.S. Treasury curve
  - Historical default rates are typically lower than High Yield bonds but with a similar recovery rate; current default rate assumption is 2.00% per year

U.S. Stocks

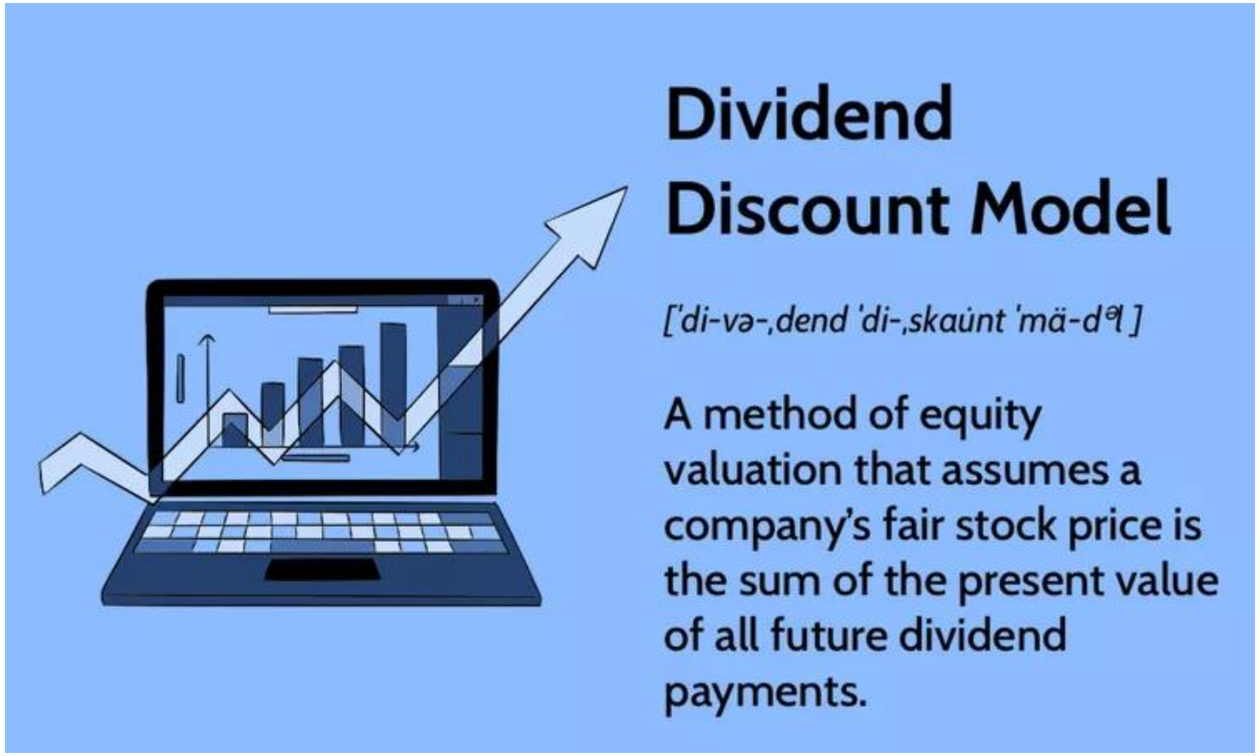
Utilize 3 return forecasting models that we evaluate and blend on a qualitative basis

- DDM: Dividend Discount Model
  - Legacy/Single model used until 2009
  - Less sensitivity to market moves/valuations
  - Elegant and well-understood framework, but highly dependent on key inputs

- IGV: Income, Growth, Valuation component model
  - Formally introduced during the global financial crisis (2009)
  - Stands as an important signal that does not rely on sometimes volatile earnings estimates

- CAPE: Cyclically-Adjusted Price/Earnings (a.k.a. Shiller P/E)
  - Introduced more recently (2019); uses approach formulated by Professor Robert Shiller
  - Can serve as a “tie-breaker” for USE forecast and premium/discount signal for Non-USE forecasts

Dividend Discount Model



Stock Price =

$$\frac{\text{Dividends Per Share}}{(\text{Cost of Capital Equity} - \text{Dividend Growth Rate})}$$

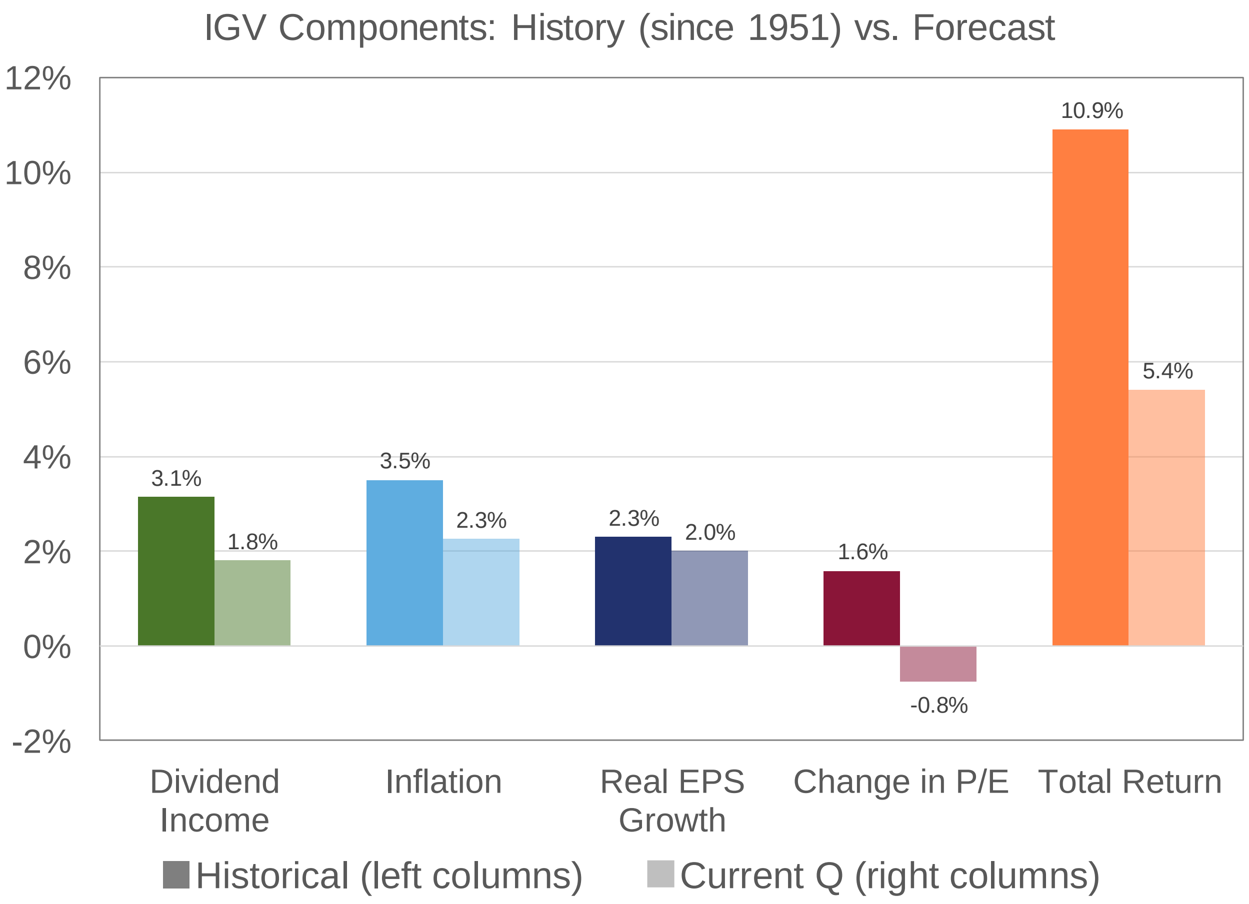
Cost of Capital Equity AKA Required Rate of Return =

$$\left[\frac{\text{Dividends Per Share}}{\text{Stock Price}}\right] + \text{Dividend Growth Rate}$$

- Critical Assumptions: Stock Price, Earnings, Dividend Payout Ratio, Dividend Growth Rate

IGV Model

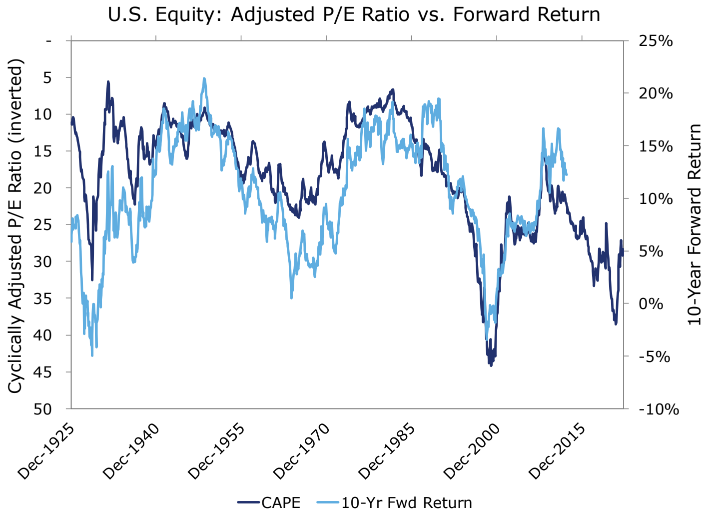
- Simple (few heroic assumptions) and intuitive
- Clearly separates the drivers of return, focusing questions on return levels
  - If the assumption is "wrong," where is it off, which return driver
  - And then by how much is it off

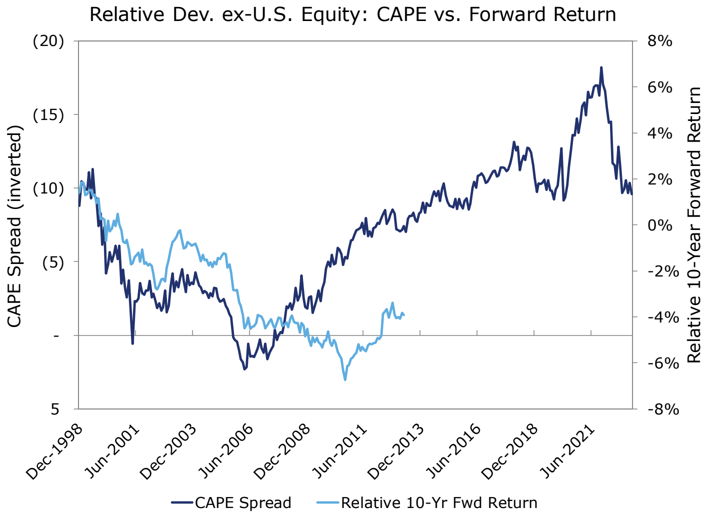


Data Source: Bloomberg

Equity Markets Update

Equity: Public & Private		Dec 2022	Change	Mar 2023
Equity	DDM	6.85	(0.10)	6.75
	IGV	5.95	(0.60)	5.35
	CAPE	6.95	0.05	7.00
	U.S. Equity Forecast	**6.50**	**(0.35)**	**6.15**
	Dev-ex-US Equity Forecast	**7.25**	**(0.35)**	**6.90**
	EM Equity Forecast	**7.50**	**(0.35)**	**7.15**
Private	Cost of Debt (Public)	5.65	(0.25)	5.40
	Cost of Debt (Private)	7.95	(0.35)	7.60
	Private Market Basket Forecast	**9.90**	**(0.30)**	**9.60**





Data Source: Bloomberg

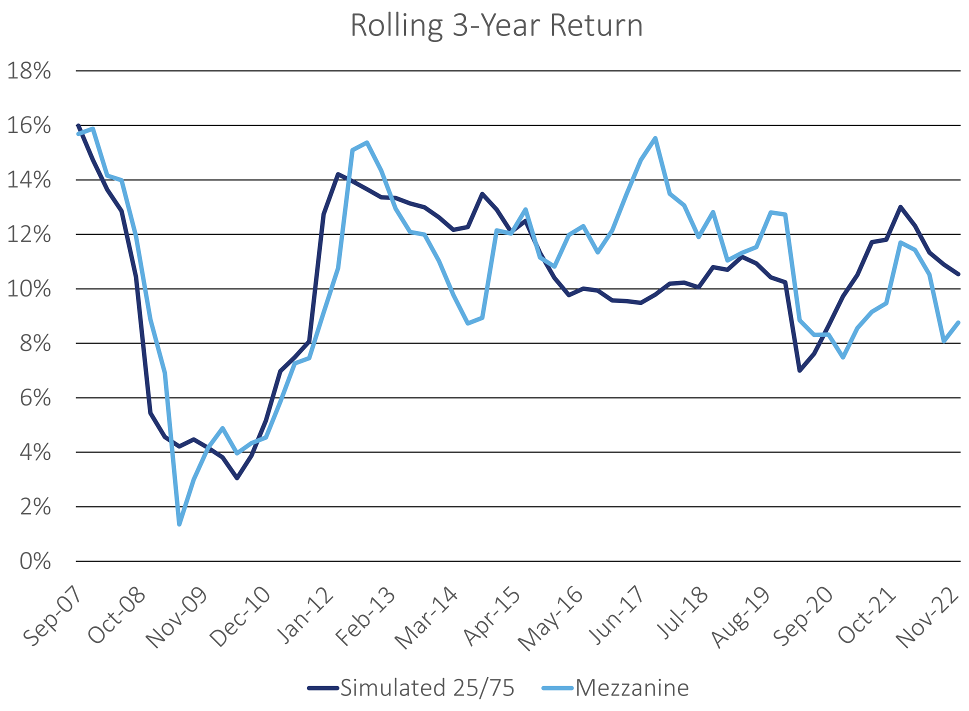
Private Equity

- Employ more than one forecasting approach to buyouts given the difficulty in accurately observing performance within private equity
  - Complex signal that identifies all the components driving private equity, such as beta and financial leverage
  - Direct signal that builds off the public market assumption, while adjusting for any relative pricing differences between public and private markets
- Final assumption is compared to a public markets-plus corridor as a reasonableness check – currently equal to the U.S. equity assumption + 2% (low end) and then + 6%
- Forecast both buyouts (U.S. & Non-U.S.) and venture capital and then combine them to arrive at a "typical," diversified private equity portfolio assumption

Market Segment	Assumption
U.S. Equity	6.15%
USE + 2%	8.15%
U.S. Buyouts	8.25%
USE + 6%	12.15%
Non-U.S. Buyouts	8.90%
Global Venture Capital	9.40%
Private Equity	**9.60%**

Private Credit

- Direct Lending is a similar asset class to Bank Loans, model accordingly starting with the public security
  - Apply leverage of 50% to Bank Loans assumption
  - Include return premium of 1%, as these borrowers have fewer options and so lenders can demand higher coupon rates
- Mezzanine (or Opportunistic) Debt is like a convertible bond sensitive to equity and fixed income betas; proxy assumption based on 25%/75% weighting of U.S. buyouts and direct lending
- Distressed Debt represents issues that are in default; proxy assumption based on 50%/50% weighting of U.S. buyouts and high yield bonds

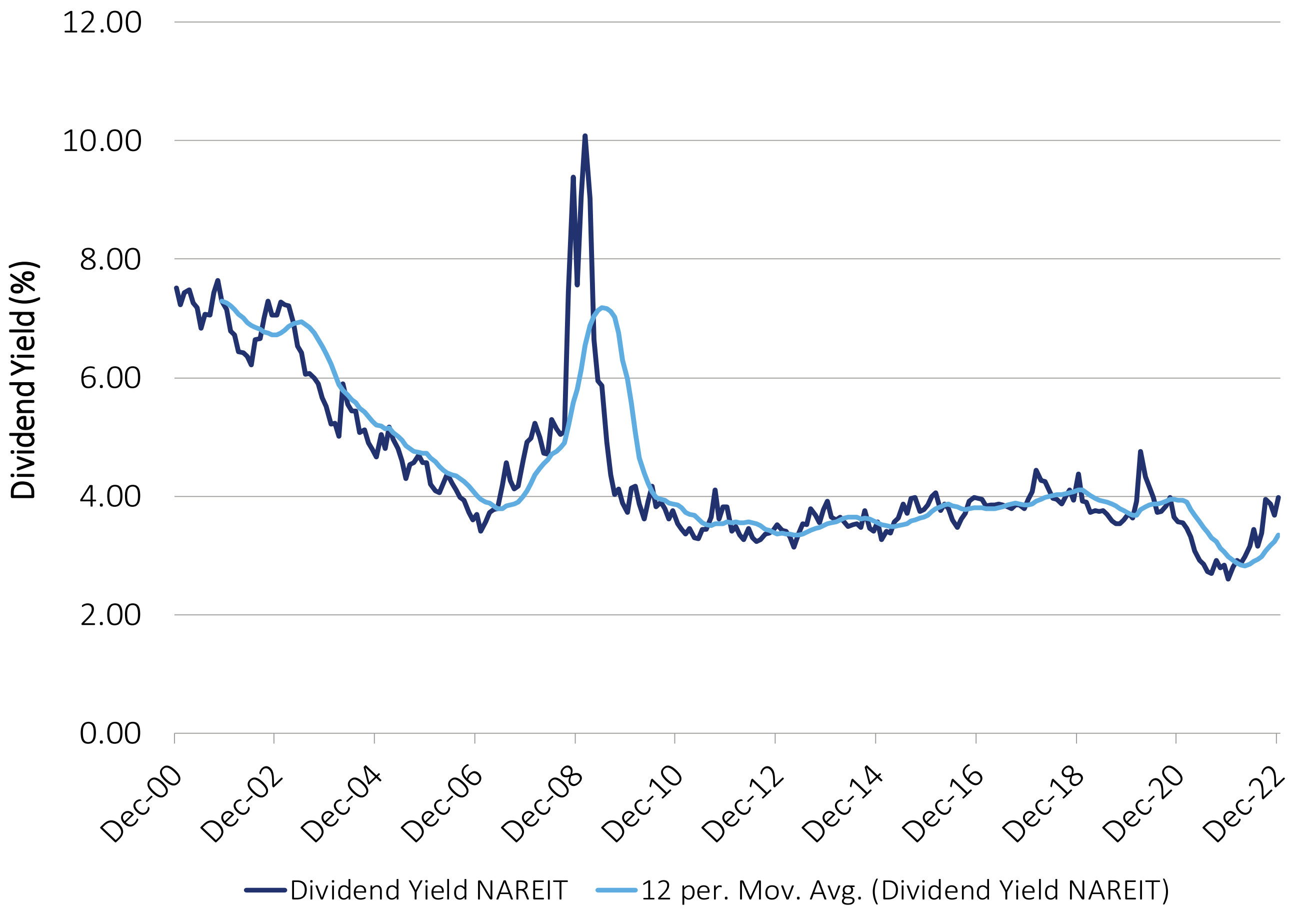


Market Segment	Basket Weight	Assumption
Direct Lending	50%	8.20%
Mezz./Opportunistic	30%	8.20%
Distressed Debt	20%	7.95%
Private Credit		**8.55%**

Real Estate

- REIT assumption based on dividend yield + dividend growth
  - Yields have recently recovered from a substantial drop, equaling 4.07% in March
  - Expected growth equals 75% of Wilshire's 2.25% inflation forecast (1.70%)

- Private real estate takes a similar approach except to include the private market capitalization rate, rather than a market yield



Data Source: Bloomberg

Additional Real Assets

- Infrastructure – public and private
  - Forecast for Global Listed Infrastructure begins with the current yield on the market and assumes an expected dividend growth rate equal to 75% of long-run inflation
  - Private Infrastructure mirrors our private real estate model with two modifications
    - Yields reflective of the infrastructure market
    - Leverage typical of private infrastructure funds

- Forecasting a return for a basket of commodity futures focuses on three components of total return
  - Changes in spot prices – represented by our inflation assumption
  - Collateral yield – equal to our forecast on cash
  - Contract roll yield – Currently zero as its history contains mixed results, both positive and negative

Data Source: Bloomberg

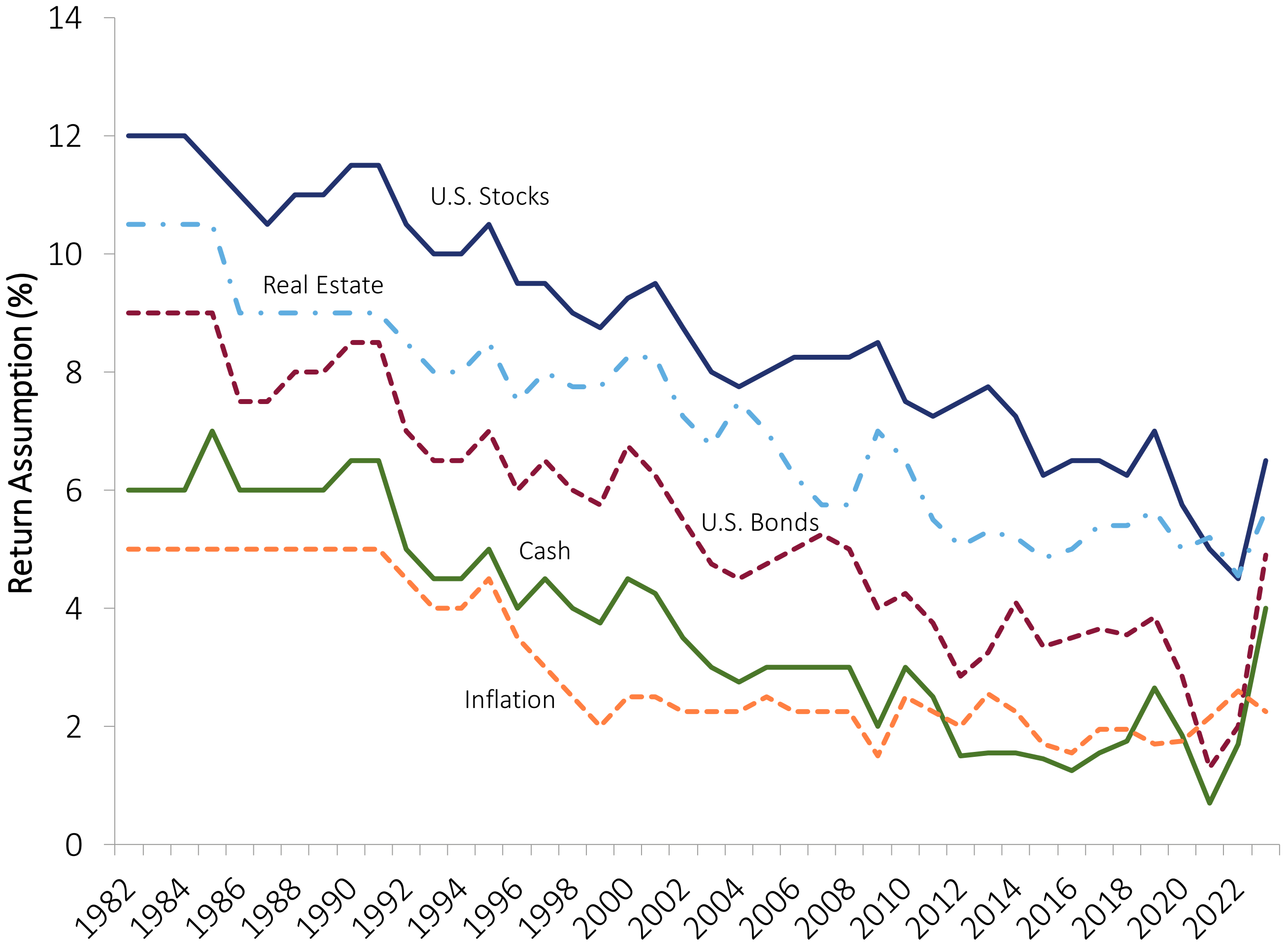
Hedge Funds

- Wilshire primarily views hedge funds as implementation vehicles, rather than as a separate asset class
- However, we do maintain return, risk and correlation assumptions to support their use within asset allocation studies
- Use a building block approach with the following three components
  - Risk-free rate (i.e., a cash equivalent return)
  - Systematic market component (i.e., beta) *(see table)*
  - Active component (i.e., alpha)
- Use regression analysis to identify beta factors to different asset classes

Strategy	Equity	Fixed Income	High Yield	Commodities
Long/Short Equity	0.50	0.00	0.00	0.10
Equity Market Neutral	0.10	0.00	0.00	0.00
Event Driven	0.20	0.00	0.30	0.05
Global Macro	0.25	0.20	0.10	0.05
Relative Value	0.10	0.00	0.25	0.05

Data Source: Bloomberg

Wilshire Forecasts through Time



Q1 2023 Correlation Matrix

	Equity						Fixed Income							Real Assets					
														Real Estate					
	US Stock	Dev ex-US Stock	Emg Stock	Global ex-US Stock	Global Stock	Private Equity	Cash	Core Bond	LT Core Bond	TIPS	High Yield	Private Credit	Dev ex-US Bond (Hdg)	US RES	Global RES	Private RE	Cmdty	Real Assets	US CPI
Compound Return (%)	6.15	6.90	7.15	7.25	6.70	9.60	3.65	4.60	4.60	3.65	6.25	8.55	2.85	5.75	5.90	6.25	5.90	6.65	2.25
Expected Risk (%)	17.00	18.00	26.00	19.10	17.10	29.65	0.75	4.70	9.85	6.00	10.00	12.75	4.00	17.50	16.45	13.90	16.00	12.35	1.75
Cash Yield (%)	1.65	3.15	2.75	3.05	2.20	0.00	3.65	4.90	4.95	4.25	9.35	4.90	3.45	4.05	4.05	2.25	3.65	3.15	0.00
Growth Exposure	8.00	8.00	8.00	8.00	8.00	14.00	0.00	-0.95	-2.40	-3.00	4.00	5.10	-1.00	6.00	6.00	3.50	0.00	2.70	0.00
Inflation Exposure	-3.00	0.00	5.00	1.45	-1.30	-3.75	0.00	-2.50	-6.80	2.50	-1.00	-1.50	-3.00	1.00	1.80	1.00	12.00	5.25	1.00
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Dev ex-US Bond (Hdg)	0.16	0.25	-0.01	0.16	0.17	0.26	0.10	0.68	0.66	0.39	0.26	0.22	1.00						
US RE Securities	0.58	0.47	0.44	0.49	0.57	0.49	-0.05	0.17	0.22	0.10	0.56	0.62	0.05	1.00					
Global RE Securities	0.64	0.57	0.54	0.60	0.65	0.55	-0.05	0.17	0.21	0.11	0.61	0.68	0.04	0.96	1.00				
Private Real Estate	0.55	0.45	0.45	0.49	0.54	0.50	-0.05	0.19	0.25	0.09	0.58	0.63	0.05	0.79	0.78	1.00			
Commodities	0.25	0.34	0.39	0.38	0.32	0.28	0.00	-0.03	-0.03	0.25	0.29	0.29	-0.10	0.25	0.28	0.25	1.00		
Real Assets	0.62	0.63	0.65	0.69	0.67	0.57	-0.03	0.22	0.24	0.30	0.64	0.69	0.04	0.78	0.84	0.76	0.64	1.00	
Inflation (CPI)	-0.10	-0.15	-0.13	-0.15	-0.13	-0.10	0.10	-0.12	-0.12	0.15	-0.08	0.00	-0.08	0.05	0.04	0.05	0.44	0.22	1.00

Capital Market Assumptions: NM PERA Custom Buckets, Q1 2023

	Public Equity - Global	Public Equity - Global Low Volatility	Private Equity	Core US Bond	Global High Yield (Hedged)	Alternative Credit	Private Credit (Blend)	Liquid Real Assets	Private Real Estate (Blend)	Private Real Assets (Blend)	Risk Parity (15% Volatility)
Return - 10-Year (%)	6.70	6.73	9.92	4.60	6.51	7.51	8.09	5.60	6.01	6.53	7.94
Return - 30-Year (%)	7.40	7.42	10.47	4.68	6.85	7.34	8.03	6.88	6.83	8.13	9.30
Risk (%)	17.10	13.54	30.43	4.70	9.75	7.05	8.88	17.00	13.75	21.20	15.42
Correlations											
Public Equity - Global	1.00										
Public Equity - Global Low Volatility	0.97	1.00									
Private Equity	0.73	0.75	1.00								
Core US Bond	0.20	0.20	0.30	1.00							
Global High Yield (Hedged)	0.53	0.51	0.31	0.24	1.00						
Alternative Credit	0.56	0.51	0.28	0.27	0.69	1.00					
Private Credit (Blend)	0.57	0.54	0.26	0.13	0.80	0.96	1.00				
Liquid Real Assets	0.73	0.73	0.58	0.12	0.58	0.56	0.63	1.00			
Private Real Estate (Blend)	0.54	0.65	0.49	0.19	0.58	0.59	0.63	0.49	1.00		
Private Real Assets (Blend)	0.73	0.72	0.60	0.13	0.62	0.59	0.66	0.86	0.55	1.00	
Risk Parity (15% Volatility)	0.71	0.69	0.60	0.63	0.54	0.54	0.50	0.62	0.50	0.63	1.00

Current Portfolio – Based on Q1 2023 Assumptions

Asset Class	Current Portfolio
Public Equity - Global	16.0%
Public Equity - Global Low Volatility	5.0%
Private Equity	17.0%
Global Equity	**38.0%**
Core US Bond	17.0%
Risk Reduction & Mitigation	**17.0%**
Global High Yield (Hedged)	4.0%
Alternative Credit	7.0%
Private Credit (Blend)	8.0%
Credit Oriented Fixed Income	**19.0%**
Liquid Real Assets	3.0%
Private Real Estate (Blend)	7.0%
Private Real Assets (Blend)	8.0%
Real Assets	**18.0%**
Risk Parity (15% Volatility)	8.0%
Multi-Risk	**8.0%**
Total Assets	**100.0%**

Assumptions - As of 3/31/2023	%
Expected Beta Return - 10 Years	**7.70**
Expected Beta Return - 30 Years	**8.28**
Standard Deviation of Return	**12.35**

New Mexico PERA Customized Capital Market Assumptions

- Private Equity: 45% US Buyout, 25% Non-US buyout, 30% Venture
- Alt Credit: 60% Large Cap Direct Lending, 25% Securitized Lending, 5% Credit Oriented Hedge Funds, 10% Bank Loans
- Private Credit: 10% Distressed, 20% Asset Based Lending, 20% Commercial Real Estate Lending, 50% Direct Lending
- Private Real Estate: 80% Core Real Estate, 20% Opportunistic Real Estate
- Private Real Assets: 70% Infrastructure, 10% Agriculture, 20% Energy

Concluding Observations

- Wilshire employs a robust methodology that incorporates multiple models for forecasting returns, risk and correlations
  - Wilshire's forecasts have generally shown accuracy over the "long-term" – defined as a span of the next ten years
  - However, the models are adaptable: volatile or transformative market environments can result in forecasting adjustments over shorter time horizons
- Notable Developments for 2023
  - A higher inflation regime and more restrictive monetary policy has lifted return expectations for most fixed income-oriented assets as the expected real return (return in excess of inflation) on cash is now positive
  - Wilshire's implied return forecast for stocks relative to bonds results in a multi-decade low for the equity risk premium. The implication is that investors may not be earning sufficient incremental return to compensate for the risk of equities.
- Wilshire believes that the Q1 2023 estimates are well-reasoned, serve as a prudent foundation for our clients' asset allocation studies and provide context for NM PERA's actuarial return target of 7.25%.

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Wilshire

Public Employees Retirement Association of New Mexico 2023 Retreat

Asset Allocation Education

July 2023

Contents & Agenda

Role of Asset Allocation

Role of Asset Allocation

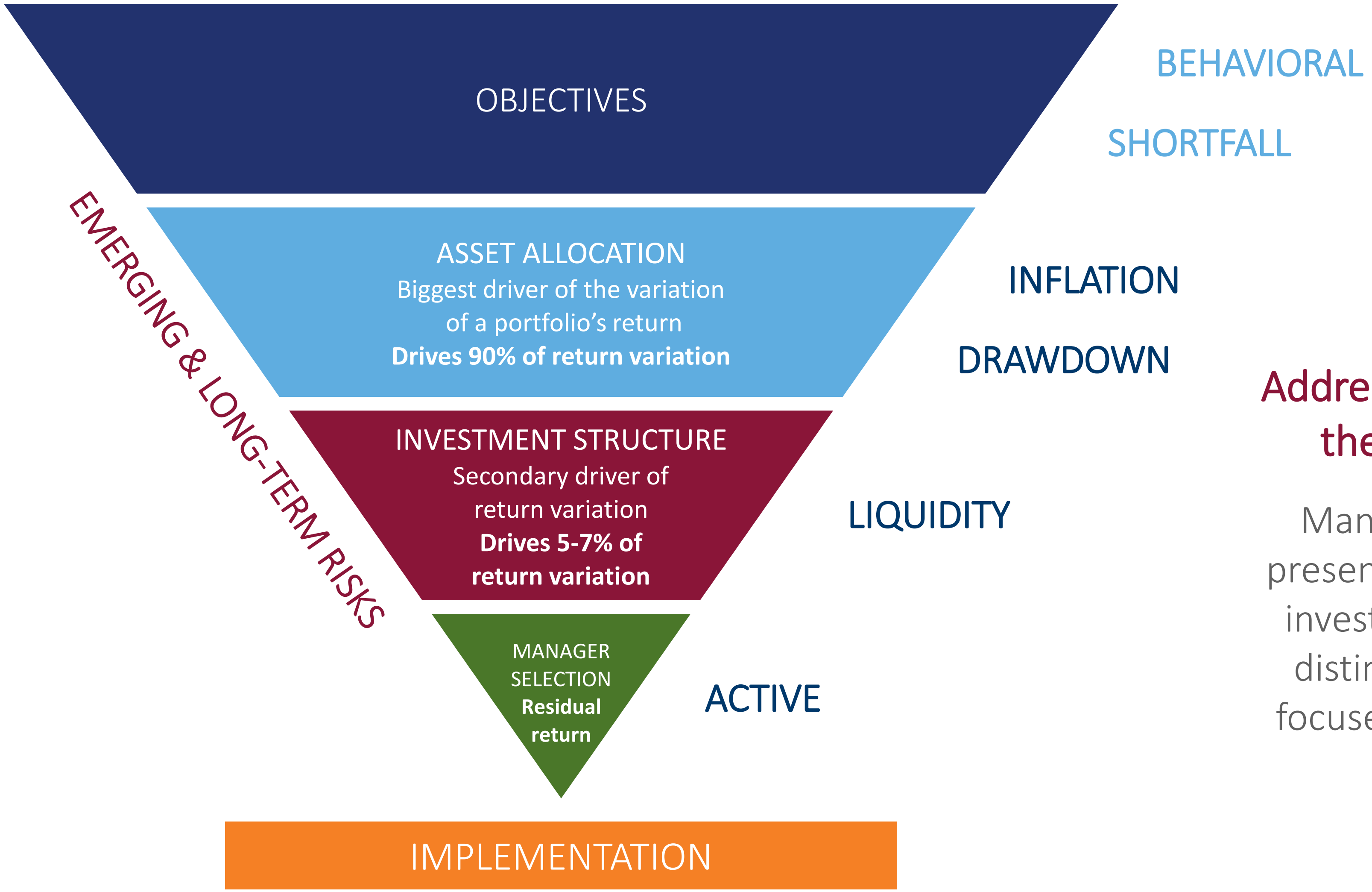
The asset allocation decision is the most important decision an investor can make

- Studies have proven that 90% of return variation across plans is driven by differences in asset allocation

The asset allocation process determines which mix of assets (stocks, bonds, real assets, cash, etc.) to hold in the portfolio

- Considerations during the asset allocation process
  - Expected return on asset classes
  - Risk tolerance
  - Risk balance vs. risk concentration
  - Time horizon
  - Liquidity to pay benefits and rebalance
- Diversification among asset classes
  - Understand how assets move in relation to one another

Focus on Decisions That Matter



Address Key Risks Throughout the Investment Process

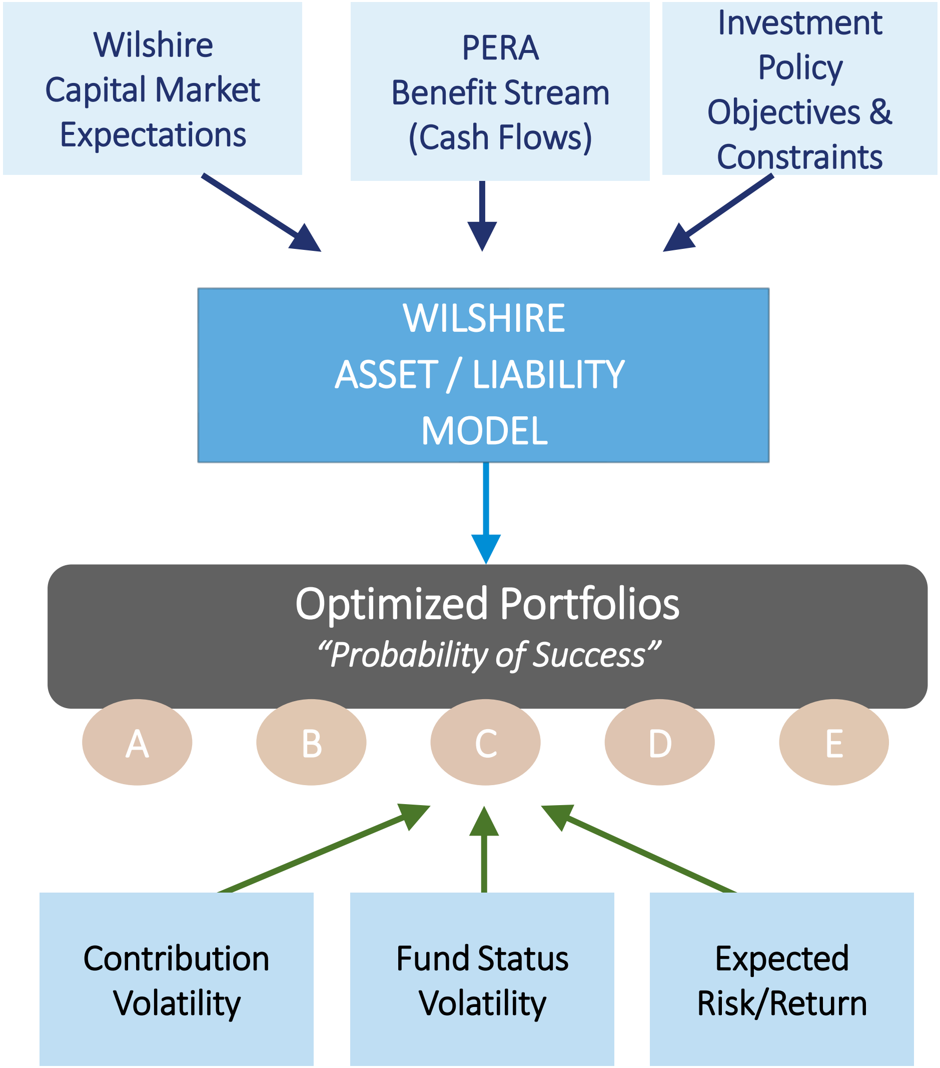
Many of the six key risks are present at multiple points in the investment process, but each distinct step in the process is focused on one or two primary risks.

Asset Allocation Process

Capital Market Assumptions

- Standard approach to forecasting returns
  - Forecasting asset class return, risk and correlation assumptions is the first step in the asset allocation process
  - Estimates are long-term; 10-year return assumption
  - Combines historical data with forward-looking analysis
  - Assumptions are updated quarterly
- Risk & Correlation
  - Relies heavily (but not exclusively) on historical return data
  - Analyze various rolling standard deviations; 5-year risk, 10-year risk, etc.
  - For some asset classes, particularly private equity, need to rely on proxies and other cross-correlation assumptions

Asset Liability Analysis Model



- Wilshire believes the mission of a defined benefit plan is to fund benefits promised to participants
- The role of asset allocation is to manage risk in order to fulfill that core mission
  - Maximize safety of promised benefits
  - Minimize cost of funding these benefits
- Wilshire's Asset Liability Model provides methodology for selecting a target portfolio that considers both goals
- Rigorously developed capital market assumptions for risk and return (see appendix)
- Given that short-term volatility is also important, we identify the impact of the asset allocation decision on funded ratios, annual contribution requirements, and other metrics
- Strategic asset allocation is not a guide to outperforming in every market … but it should provide a roadmap for success over a market cycle

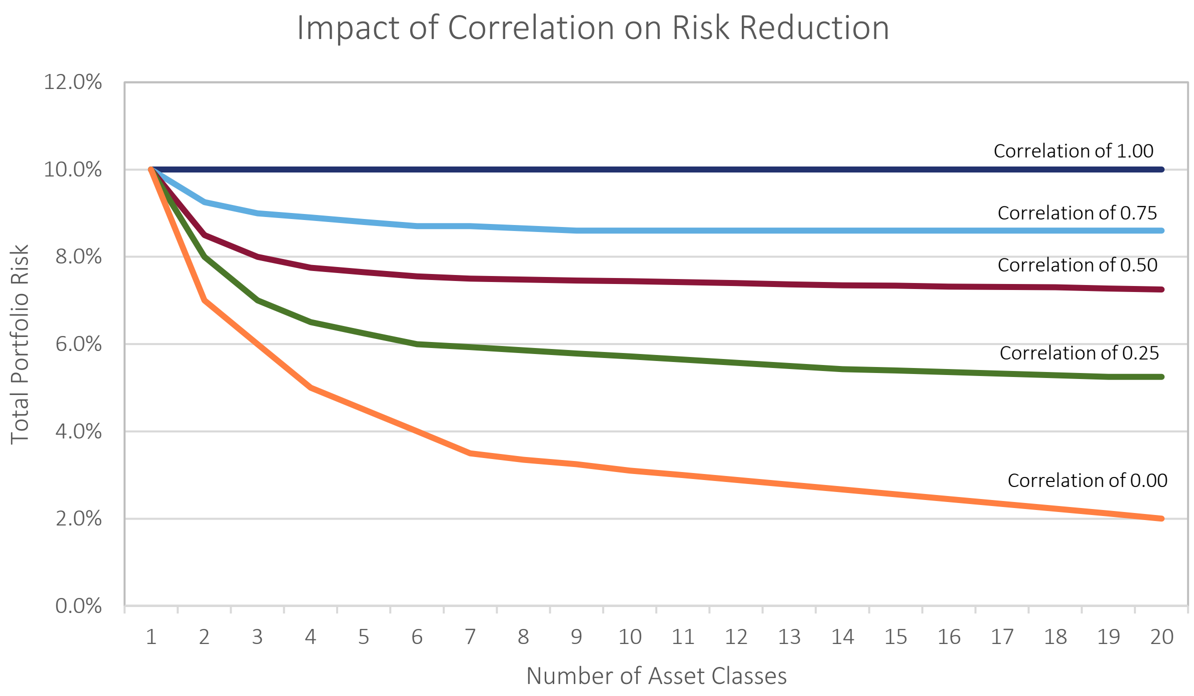
Benefits & Challenges of Diversification

Investors must take a thoughtful approach to diversification

- DINO (Diversification in name only)
- Diminishing marginal benefit by simply adding asset classes, even with uncorrelated assets

Utilize a factor-based and bucketing approach to asset allocation decisions

- Concept of grouping asset classes together that perform similarly in various market environments
- Emphasize asset class economic factors



Asset-Only Mean Variance Optimization

Role of asset allocation:

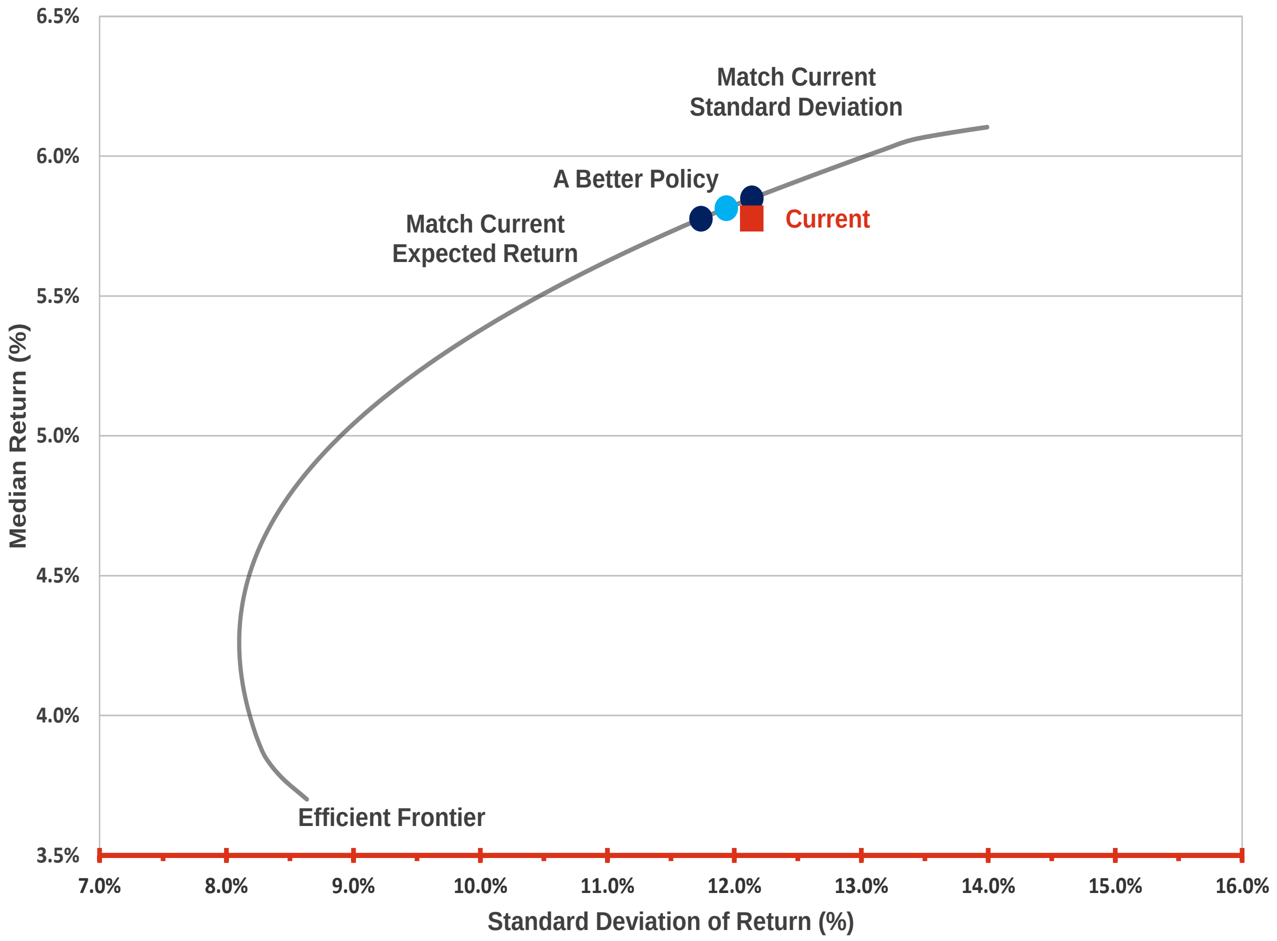
- To maximize return
- To minimize risk

Traditional mean-variance optimization considers the relationship of assets to each other when analyzing portfolios.

- Consider the relationship of asset classes and the role each asset class plays in a portfolio
  - Return, risk and correlation assumptions

Optimal portfolio is a balance of trade-offs.

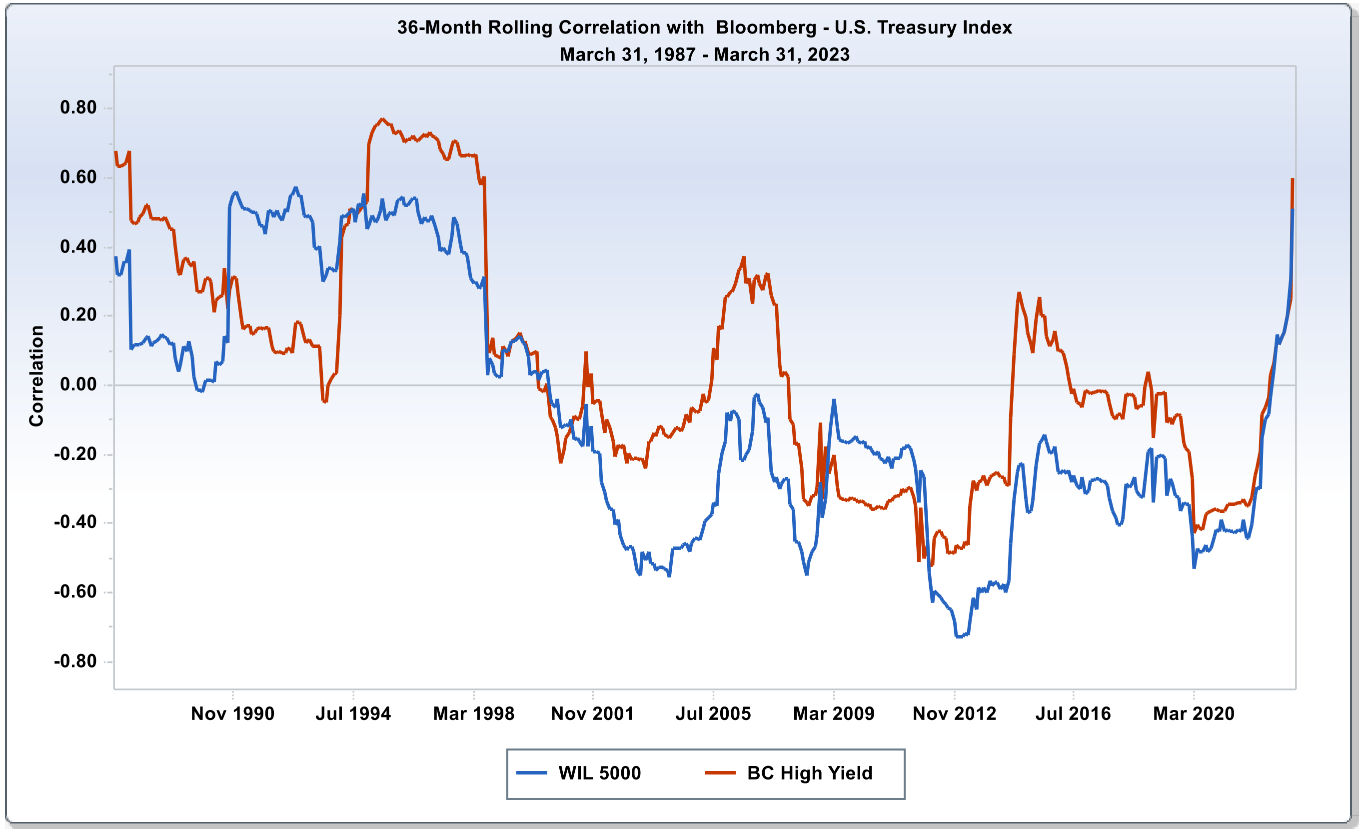
- Return vs. risk
- Liquidity
- Diversification



Correlation Instability / Economic Factor Consideration

Correlations can be unstable especially in times of market stress

Supplement with considerations such as economic factor exposure, liquidity and qualitative constraints



Need for Constraints

Practical diversification

- Optimizer will not differentiate between public and private markets / factor exposure / role in portfolio
- Asset class roles (growth, defensive, inflation mitigation) are examples of practical portfolio considerations

Liquidity

- Private markets tend to have higher return expectations partially due to illiquidity premium
- In an optimization framework, private asset classes are very attractive based on risk/return inputs
- However, mean-variance optimization ignores the need for liquidity

Investability

- Investments in private market strategies take time to fully implement
- Implementation challenges in some sectors to deploy significant portion of the portfolio

Current Plan Assumptions

Wilshire

Capital Market Assumptions: NM PERA Custom Buckets, Q1 2023

	Public Equity - Global	Public Equity - Global Low Volatility	Private Equity	Core US Bond	Global High Yield (Hedged)	Alternative Credit	Private Credit (Blend)	Liquid Real Assets	Private Real Estate (Blend)	Private Real Assets (Blend)	Risk Parity (15% Volatility)
Return - 10-Year (%)	6.70	6.73	9.92	4.60	6.51	7.51	8.09	5.60	6.01	6.53	7.94
Return - 30-Year (%)	7.40	7.42	10.47	4.68	6.85	7.34	8.03	6.88	6.83	8.13	9.30
Risk (%)	17.10	13.54	30.43	4.70	9.75	7.05	8.88	17.00	13.75	21.20	15.42
Correlations											
Public Equity - Global	1.00										
Public Equity - Global Low Volatility	0.97	1.00									
Private Equity	0.73	0.75	1.00								
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Global High Yield (Hedged)	0.53	0.51	0.31	0.24	1.00						
Alternative Credit	0.56	0.51	0.28	0.27	0.69	1.00					
Private Credit (Blend)	0.57	0.54	0.26	0.13	0.80	0.96	1.00				
Liquid Real Assets	0.73	0.73	0.58	0.12	0.58	0.56	0.63	1.00			
Private Real Estate (Blend)	0.54	0.65	0.49	0.19	0.58	0.59	0.63	0.49	1.00		
Private Real Assets (Blend)	0.73	0.72	0.60	0.13	0.62	0.59	0.66	0.86	0.55	1.00	
Risk Parity (15% Volatility)	0.71	0.69	0.60	0.63	0.54	0.54	0.50	0.62	0.50	0.63	1.00

Current Portfolio – Based on Q1 2023 Assumptions

Asset Class	Current Portfolio
Public Equity - Global	16.0%
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Global Equity	**38.0%**
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Alternative Credit	7.0%
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Liquid Real Assets	3.0%
Private Real Estate (Blend)	7.0%
Private Real Assets (Blend)	8.0%
Real Assets	**18.0%**
Risk Parity (15% Volatility)	8.0%
Multi-Risk	**8.0%**
Total Assets	**100.0%**

Assumptions - As of 3/31/2023	%
Expected Beta Return - 10 Years	**7.70**
Expected Beta Return - 30 Years	**8.28**
Standard Deviation of Return	**12.35**

New Mexico PERA Customized Capital Market Assumptions

- Private Equity: 45% US Buyout, 25% Non-US buyout, 30% Venture
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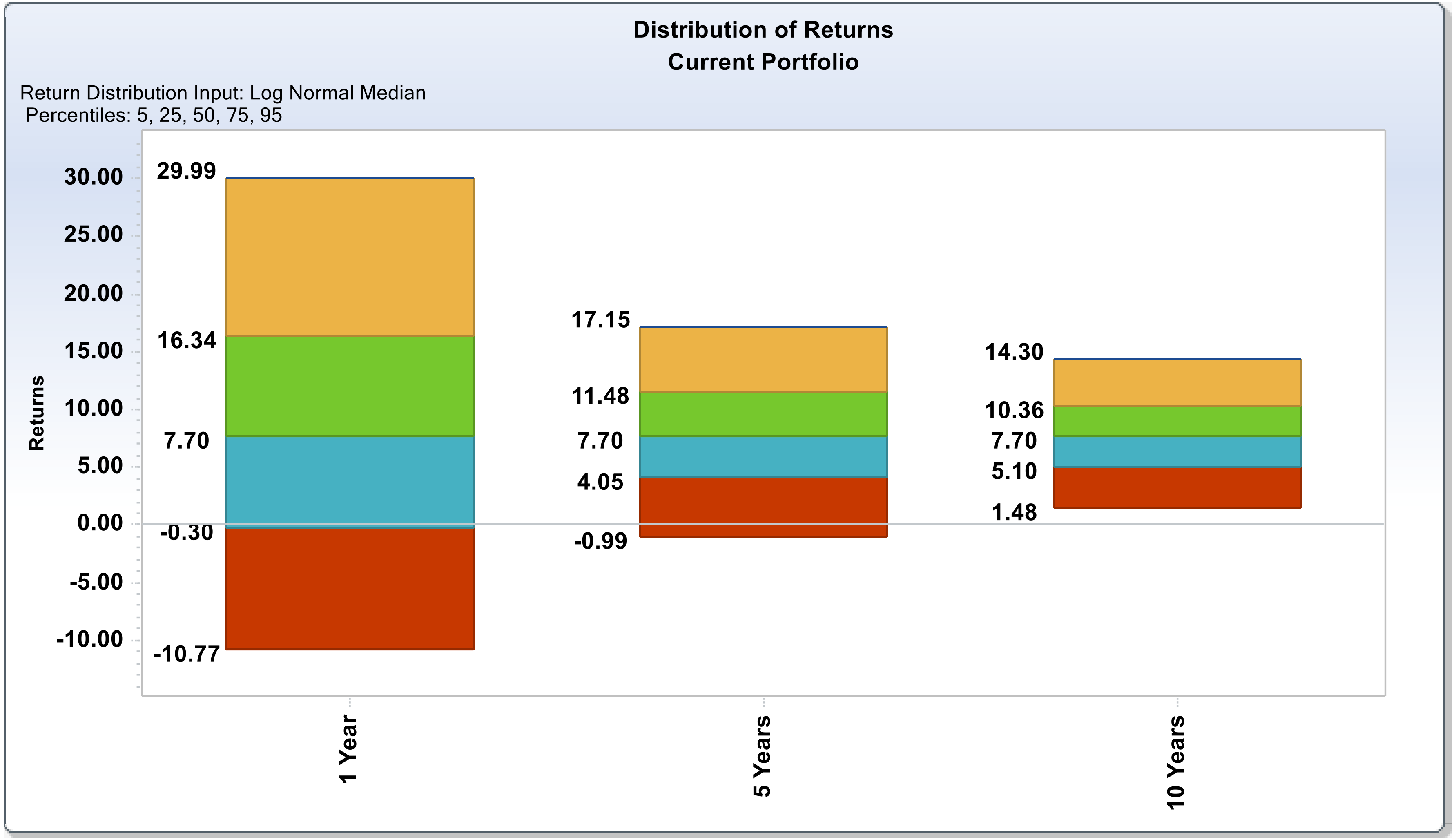
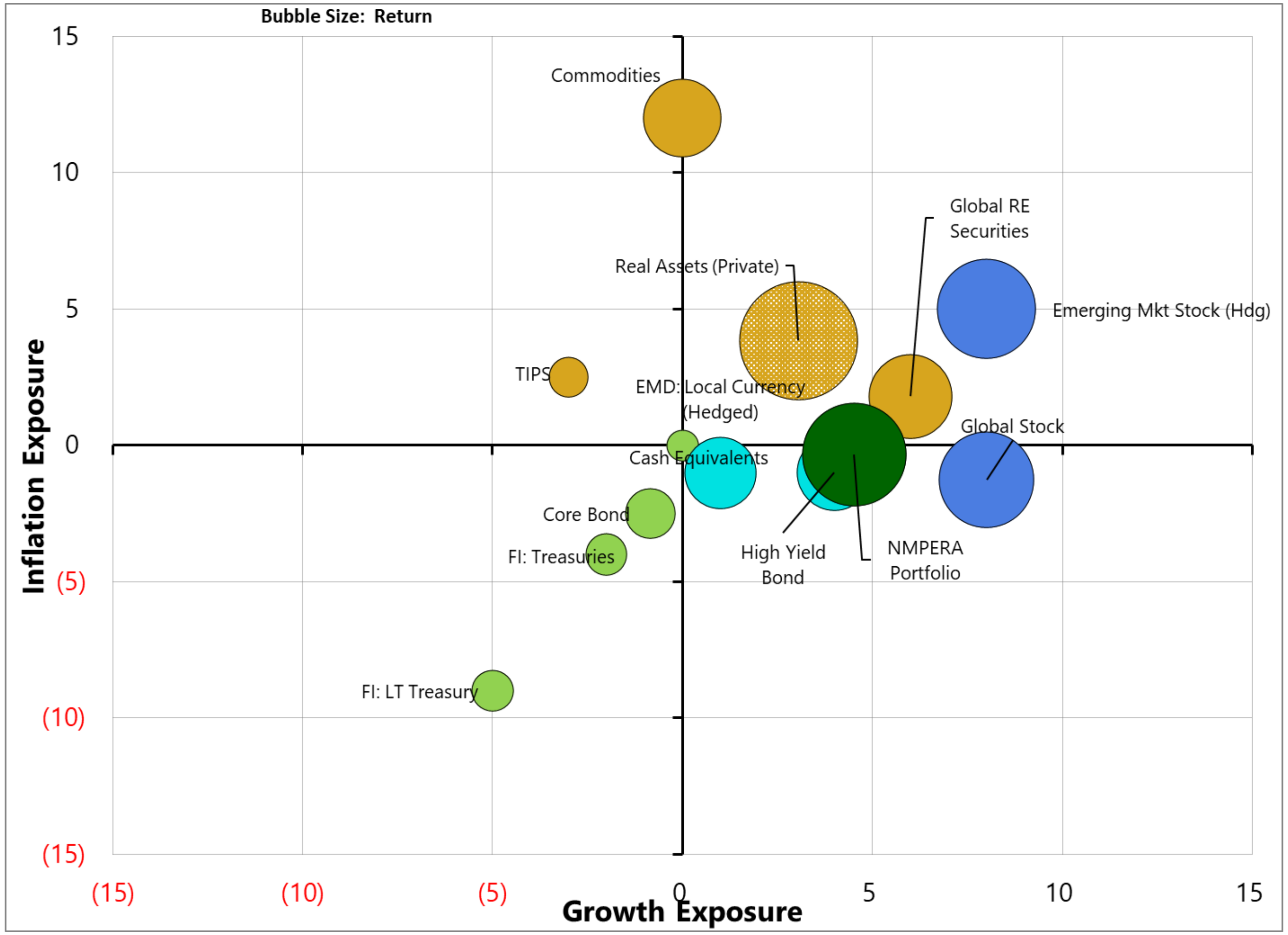
- Private Real Assets: 70% Infrastructure, 10% Agriculture, 20% Energy

Distribution of Returns – 10-year Assumptions



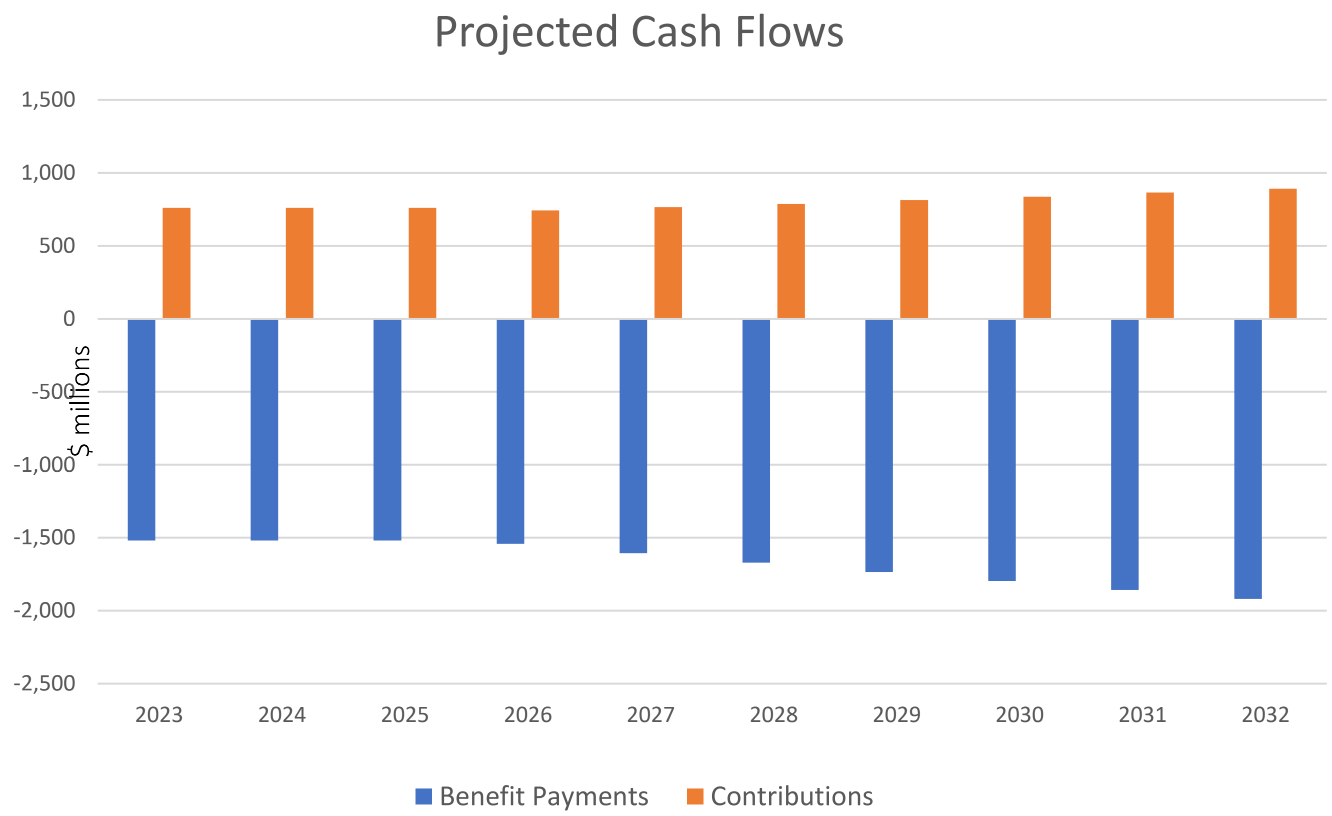
Economic Factor Exposure



- Concentrated factor tilts can represent portfolio vulnerability
- To the extent possible, portfolios with factor neutrality are desirable

Illiquidity Analysis

Cash Flow Projection



- Annual benefit payments are projected to increase faster than annual contributions
- The plan will remain cash flow negative over the foreseeable future
- The extent of illiquidity exposure for PERA must consider the extent of liquid assets to cover cash flow shortfall

Liquid Portfolio Value Simulation

Assumptions

- Simulation was run for 10 years using PERA projected benefit payments and contributions
- One time 20% / 30% / 40% drawdown in liquid assets assumed for one year starting year 2
- Liquid asset return assumption based on Wilshire CMA = 6.5%
- Then calculated the maximum allocation to private assets before depleting liquid assets

Caveats

- Simulation assumes you can get these exposure to private markets instantaneously – this is not realistic
- The plan has more than 10 years of benefits to payout
- Host of actuarial assumptions go into the cash flow projections. If any of these assumptions change, the results will change
- It would be prudent to apply qualitative adjustments to factor in these uncertainties

Max Private Assets Allocation – 20% Drawdown Scenario

	Market Value of PERA Liquid Assets (Simulation)									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Simulation 1	7,636	7,349	7,042	6,715	6,326	5,868	5,337	4,733	4,052	3,291
Simulation 2	7,636	5,429	4,998	4,539	4,008	3,399	2,708	1,933	1,070	115
Simulation 3	7,636	7,349	5,199	4,753	4,236	3,642	2,967	2,208	1,363	427
Simulation 4	7,636	7,349	7,042	4,954	4,450	3,870	3,210	2,467	1,639	720
Simulation 5	7,636	7,349	7,042	6,715	4,657	4,090	3,444	2,716	1,904	1,003
Simulation 6	7,636	7,349	7,042	6,715	6,326	4,308	3,675	2,963	2,167	1,283
Simulation 7	7,636	7,349	7,042	6,715	6,326	5,868	3,904	3,206	2,426	1,559
Simulation 8	7,636	7,349	7,042	6,715	6,326	5,868	5,337	3,445	2,681	1,830
Simulation 9	7,636	7,349	7,042	6,715	6,326	5,868	5,337	4,733	2,930	2,095
Simulation 10	7,636	7,349	7,042	6,715	6,326	5,868	5,337	4,733	4,052	2,354

- **Max allocation to private assets is 54% before depleting liquid assets in year 10**

Max Private Assets Allocation – 30% Drawdown Scenario

	Market Value of PERA Liquid Assets (Simulation)									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Simulation 1	8,633	8,409	8,172	7,918	7,608	7,233	6,791	6,281	5,700	5,046
Simulation 2	8,633	5,407	4,974	4,513	3,981	3,371	2,677	1,900	1,035	77
Simulation 3	8,633	8,409	5,251	4,808	4,295	3,705	3,033	2,279	1,438	507
Simulation 4	8,633	8,409	8,172	5,084	4,589	4,018	3,367	2,635	1,817	911
Simulation 5	8,633	8,409	8,172	7,918	4,874	4,321	3,690	2,978	2,183	1,301
Simulation 6	8,633	8,409	8,172	7,918	7,608	4,621	4,009	3,318	2,545	1,686
Simulation 7	8,633	8,409	8,172	7,918	7,608	7,233	4,323	3,653	2,902	2,066
Simulation 8	8,633	8,409	8,172	7,918	7,608	7,233	6,791	3,982	3,252	2,439
Simulation 9	8,633	8,409	8,172	7,918	7,608	7,233	6,791	6,281	3,595	2,804
Simulation 10	8,633	8,409	8,172	7,918	7,608	7,233	6,791	6,281	5,700	3,160

- **Max allocation to private assets is 48% before depleting liquid assets in year 10**

Max Private Assets Allocation – 40% Drawdown Scenario

	Market Value of PERA Liquid Assets (Simulation)									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Simulation 1	9,961	9,824	9,678	9,523	9,316	9,053	8,729	8,345	7,898	7,387
Simulation 2	9,961	5,388	4,954	4,491	3,958	3,346	2,651	1,872	1,005	46
Simulation 3	9,961	9,824	5,306	4,866	4,357	3,771	3,104	2,354	1,518	593
Simulation 4	9,961	9,824	9,678	5,218	4,732	4,170	3,529	2,807	2,001	1,106
Simulation 5	9,961	9,824	9,678	9,523	5,094	4,556	3,940	3,245	2,467	1,603
Simulation 6	9,961	9,824	9,678	9,523	9,316	4,937	4,346	3,677	2,927	2,093
Simulation 7	9,961	9,824	9,678	9,523	9,316	9,053	4,747	4,104	3,382	2,577
Simulation 8	9,961	9,824	9,678	9,523	9,316	9,053	8,729	4,523	3,828	3,053
Simulation 9	9,961	9,824	9,678	9,523	9,316	9,053	8,729	8,345	4,265	3,517
Simulation 10	9,961	9,824	9,678	9,523	9,316	9,053	8,729	8,345	7,898	3,970

- **Max allocation to private assets is 40% before depleting liquid assets in year 10**

Important Information

Goldman Sachs | Asset Management

Public Employees Retirement Association of New Mexico (PERA)

EXTERNAL INVESTING GROUP (XIG)

June 2023

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1

Private Equity Overview

Overview

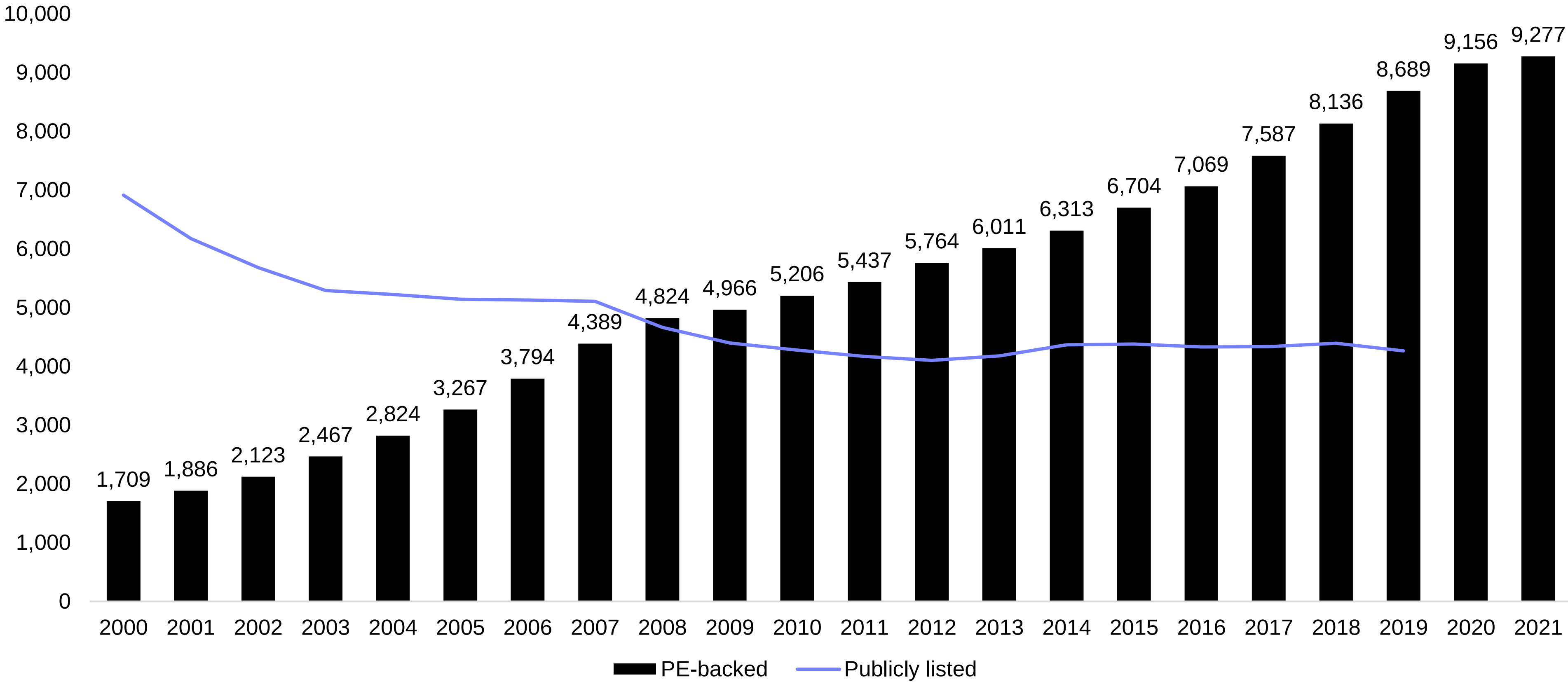
Performance

Strategies

Implementation

The private markets have grown significantly in the last two decades

As the universe of publicly-listed equities shrinks and the number of PE-backed companies increases, we believe private equity investors are capturing meaningful value creation



47%
decline in the number of US public companies since 1996

~5x
increase in the number of US PE-backed companies since 2000

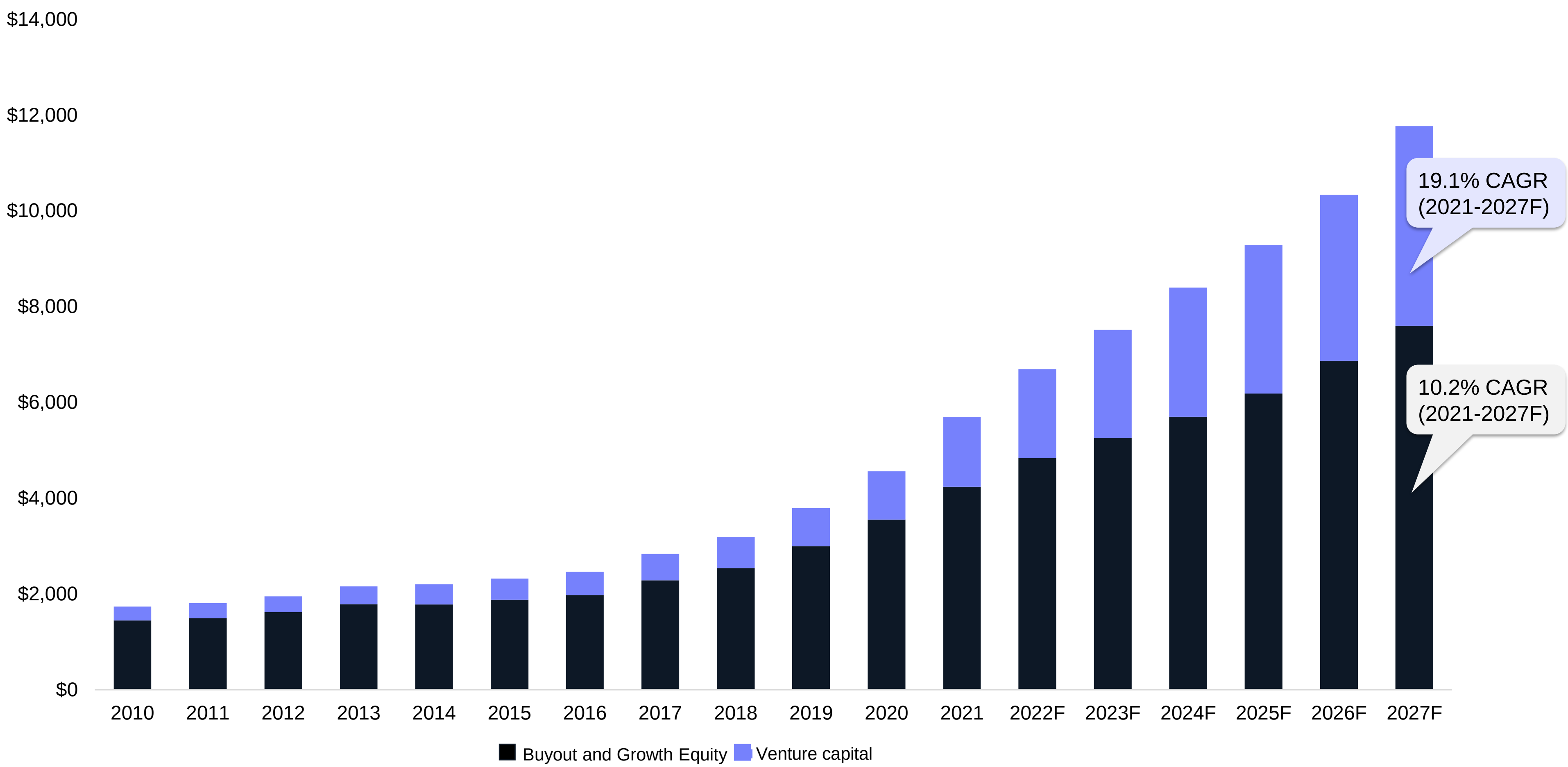
45%
of US corporate earnings are produced by private companies

Source: Pitchbook, World Bank, Credit Suisse. Data as of December 2021.

Private equity assets are expected to grow meaningfully

Venture AUM expected to grow at almost double the pace of buyouts and growth as venture becomes a core allocation for many investors

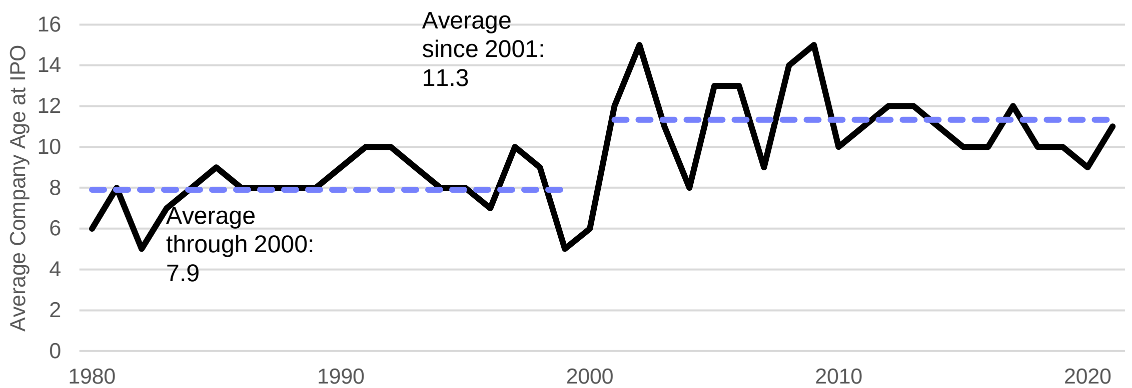
PRIVATE EQUITY ASSETS UNDER MANAGEMENT ($ IN BILLIONS)



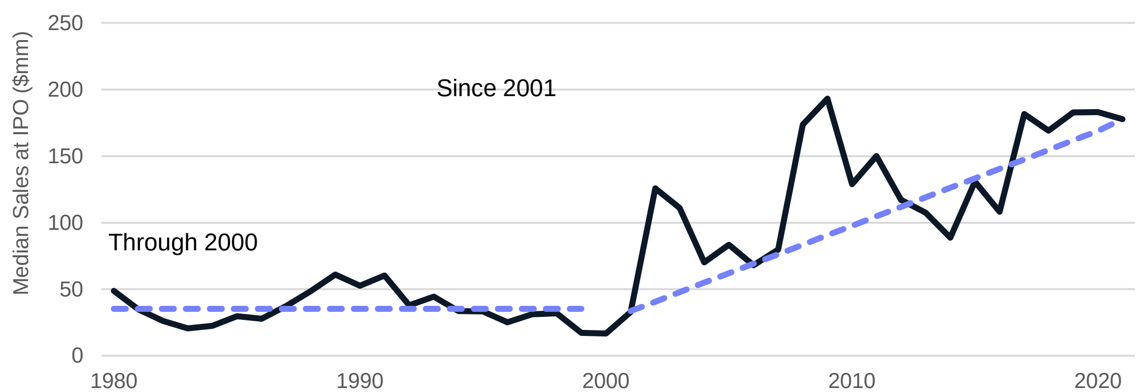
Source: Preqin, as of September 2022. "The Future of Alternatives in 2027" Special Report.

Private equity provides bespoke capital solutions to companies that have potential to align with the long-term growth and success of the underlying business

AVERAGE AGE OF COMPANY AT IPO HAS INCREASED SINCE 2000



MEDIAN SALES AT IPO OF TECH COMPANIES HAS BEEN INCREASING

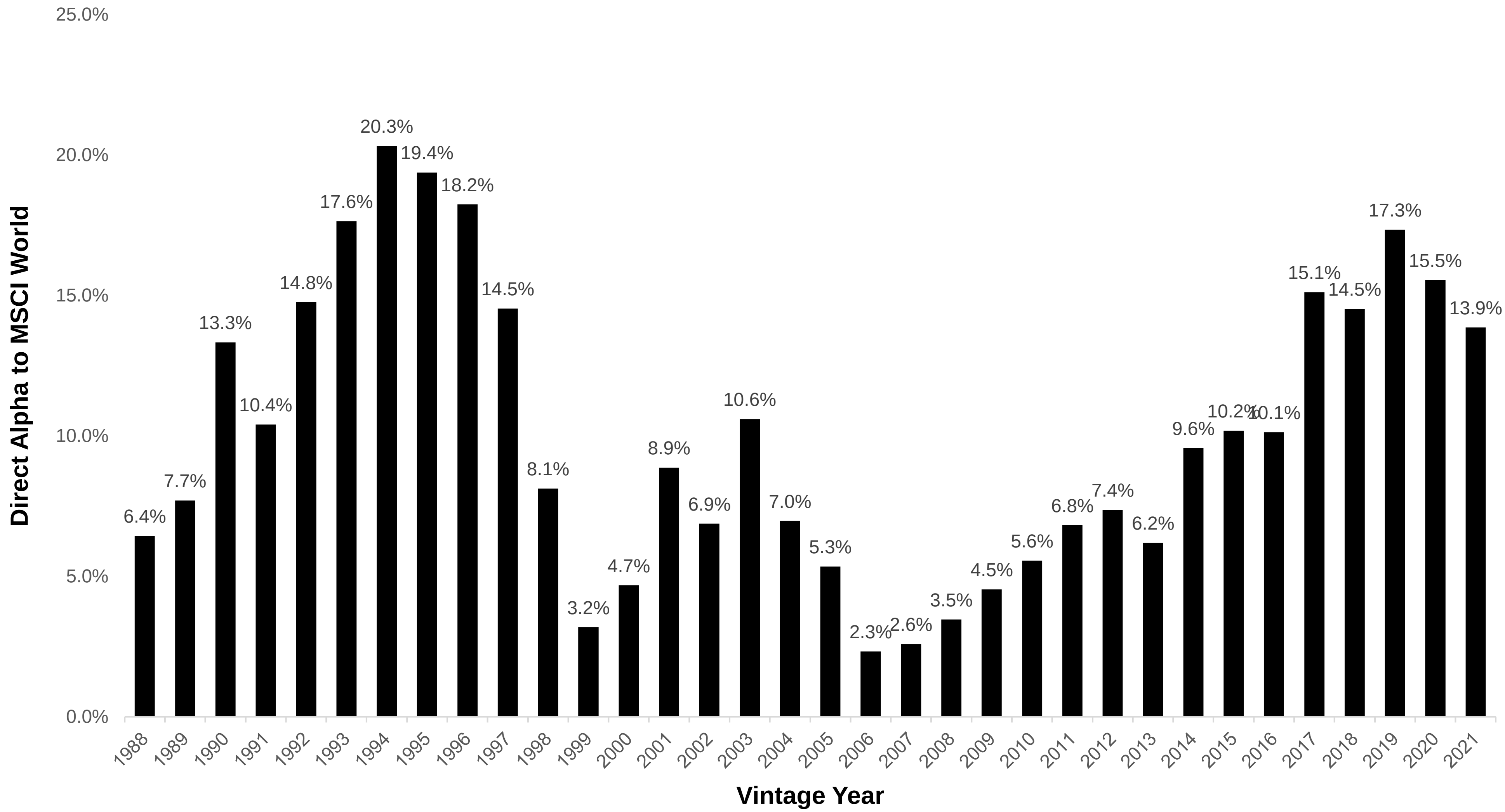


OBSERVATIONS

- Over the last two decades, the number of private equity-backed companies has grown significantly, while the number of publicly listed firms in the US has contracted
- New companies are choosing to stay private for longer, often leveraging growth equity capital to expand their businesses before becoming publicly listed
- Much of the growth and value that was previously generated post-IPO is now being built under private market ownership
- Value creation is accelerated by structural advantages in sourcing and executing transactions, and by exerting operational control

Past performance does not predict future returns and does not guarantee future results, which may vary. Sources: Private equity companies over time: PitchBook, as of 12/31/2022. Public companies over time: World Bank, McKinsey. Average age of company at IPO: Jay Ritter, as of 12/2021. Median Sales at IPO for Technology companies: Jay Ritter, in real terms, indexed to 2014 dollars; as of 12/2021. For educational purposes only and should not be construed as investment advice or an offer or solicitation to buy or sell securities. Past performance is not indicative of future results.

Private equity has consistently outperformed global public markets



Source: MSCI and Cambridge Associates, as of Q4 2022. Includes data from Buyout, Venture, and Growth Equity strategies. Views and opinions expressed are for informational purposes only and do not constitute a recommendation by Goldman Sachs Asset Management to buy, sell, or hold any security. Views and opinions are current as of the date of this presentation and may be subject to change, they should not be construed as investment advice. Direct Alpha measures the relative outperformance or underperformance of a private equity fund over a benchmark index as an annualized rate of return. Positive direct alpha indicates outperformance compared to the index return, and negative direct alpha indicates underperformance. The MSCI World Index is a broad global equity index that represents large and mid-cap equity performance across all 23 developed markets countries. **Past performance does not guarantee future results, which may vary.** Please see additional end disclosures.

Private equity managers benefit from several structural advantages compared to investors in the public markets

ASSET CONTROL AND INFLUENCE

Managers may work with a company to improve strategy, re-engineer capital structure or enhance management

ALIGNED INCENTIVES

Managers can create incentives for top corporate executives to deliver strong operating performance. Through incentive compensation, managers themselves are also incentivized to generate strong returns for investors

DEPLOYMENT OF CAPITAL

Managers can deploy capital in relation to the current market environment

ACCESS TO TALENT

Managers may leverage robust networks to attract and retain high quality executives, advisors and director

LONG-TERM INVESTMENT HORIZON

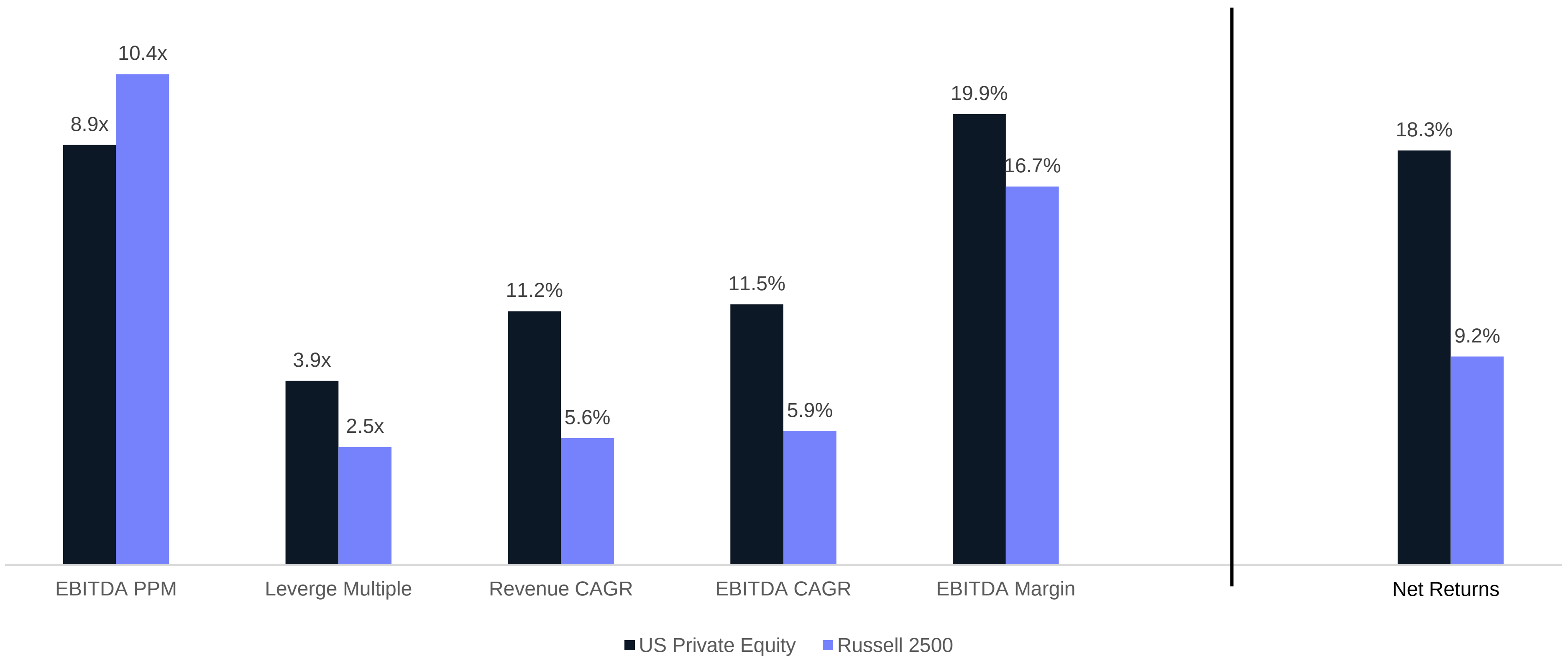
Managers and management teams are incentivized to focus on long-term growth rather than quarterly performance metrics due to the long-term nature of private equity

There is no guarantee that objectives will be met.

Private equity has a track record of outperformance

Private equity-backed companies have exhibited superior operating performance to public companies over the last two decades

MEDIAN OPERATING METRICS (2000-2020) AND RETURNS (2000-Q1 2022)

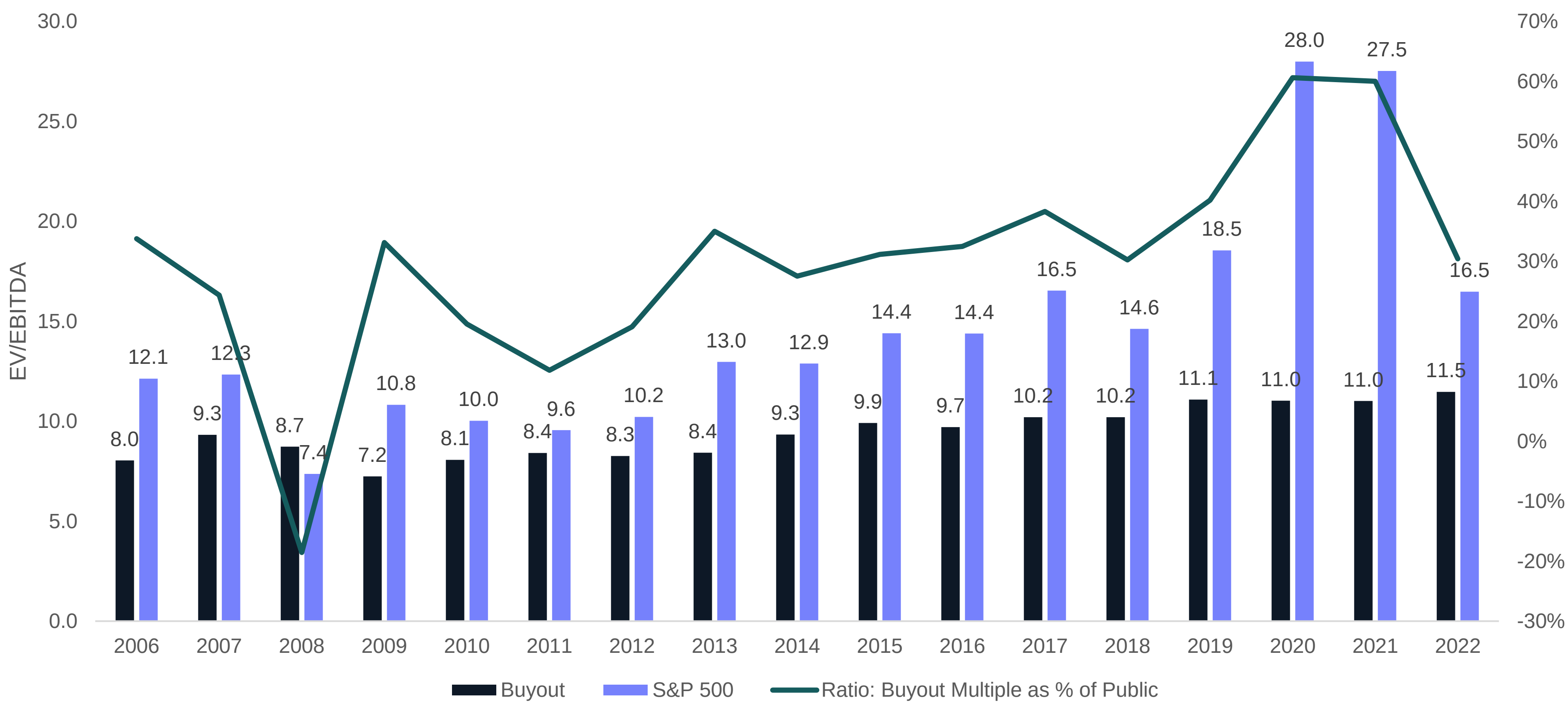


Source: Cambridge Associates LLC Private Investments Database, FactSet Research Systems, and Frank Russell Company, as of May 2023. Data from January 1, 2000 – March 31, 2022. **Past performance does not predict future returns and does not guarantee future results, which may vary.**

Historical private markets multiples fluctuate less than public markets

Public markets saw significant multiple expansion in 2020-2021, which reversed in 2022, while valuations for buyout deals have been more stable

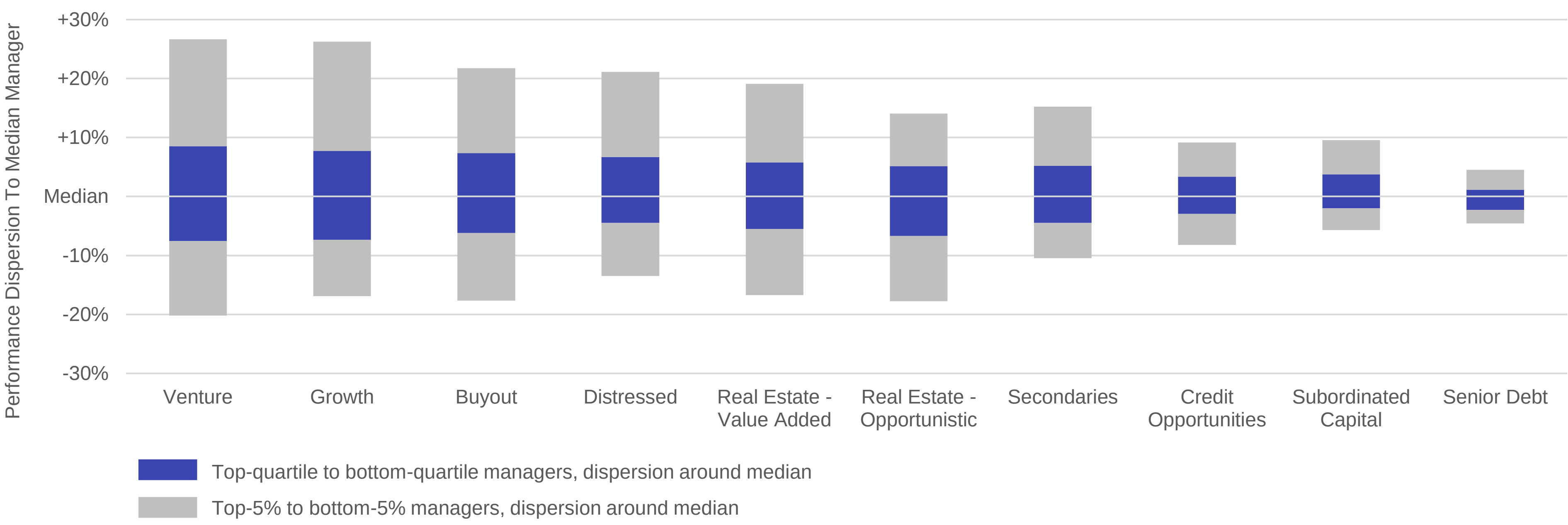
S&P 500 VS. BUYOUTS: MULTIPLES EVOLUTION



Source: Refinitiv. As of May 2023.

High performance dispersion across strategies and funds means manager selection is critical in private markets

DISPERSION IN PRIVATE MARKETS HAS BEEN SUBSTANTIAL OVER TIME

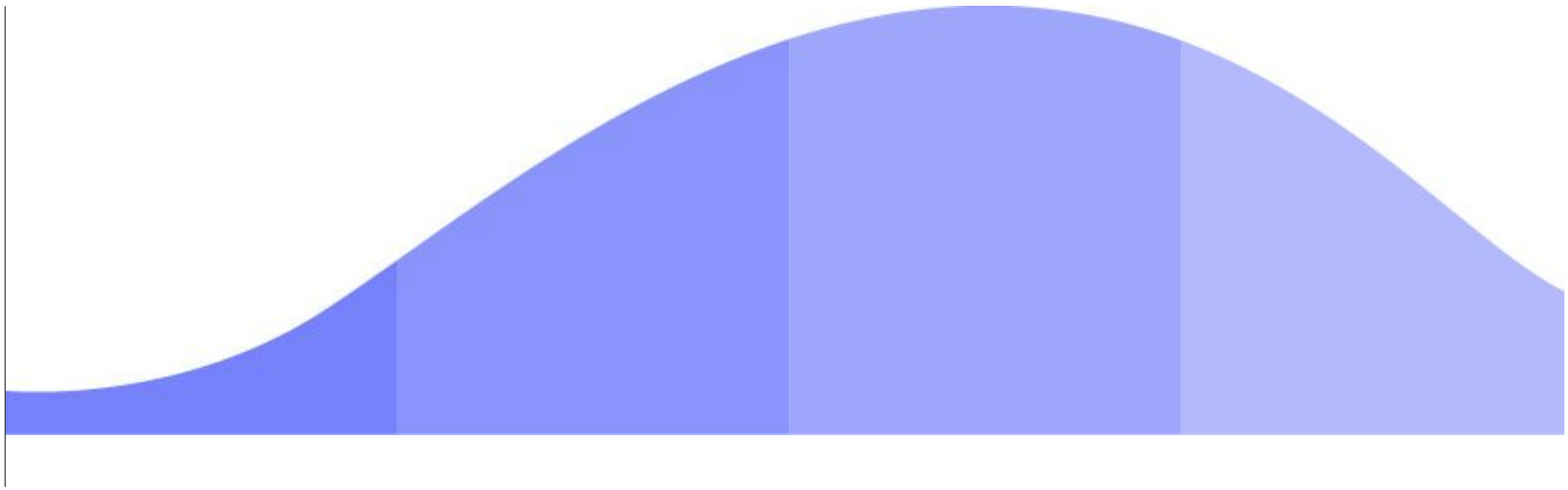


OBSERVATIONS

- Manager skill is not evenly distributed, magnifying the consequences for selecting well or poorly
- Given the long-term, illiquid nature of private equity investments, managers must be evaluated not only for their ability to create value in the current environment, but sustainably over time through a variety of market conditions

Source: Cambridge Associates, as of Q2 2022. Represents the average dispersion to the median manager across vintages 2000-2018 within each strategy. **Past performance is not indicative of future results.** For educational purposes only and should not be construed as investment advice or an offer or solicitation to buy or sell securities.

Private equity opportunities can be accessed across the company lifecycle



	Venture Capital	Growth	Buyouts	Distressed
Definition	• Equity investments in new companies • Focuses on business plan development	• Equity investments in expanding companies • Typically no change in control of the business	• Stakes in listed or non-listed companies • Intent to influence company strategy and operations	• Debt or equity investments in firms needing drastic change • Generally invests for control to guide firms through process
Features	• Unproven products / concepts • Often exhibits binary performance • Longer holding periods	• Often financing a transforming event • Stable revenue, but insufficient funds for expansion	• Broad category; spans all industries and most geographies • Deals typically incorporate leverage to enhance returns	• Controlling equity stake, often through debt conversion • Positions sometimes taken in advance of restructuring
Value Creation	• Provide capital for expansion or R&D • Build out management team • Identify potential acquirers or complementary businesses	• Assist team in transition • Identify avenues for growth • Drive development of scalable business model	• Enhance profitability through operational improvements • Influence and possibly change management and board positions	• Guide company through restructuring process • Advise on acquisitions or divestments • Potentially replace management

Source: XIG, as of June 2023. For illustrative purposes only. XIG is not providing a recommendation or advice on a private equity asset allocation. The information above does not purport to represent a complete list of characteristics or considerations.

Private markets strategies hold key portfolio roles

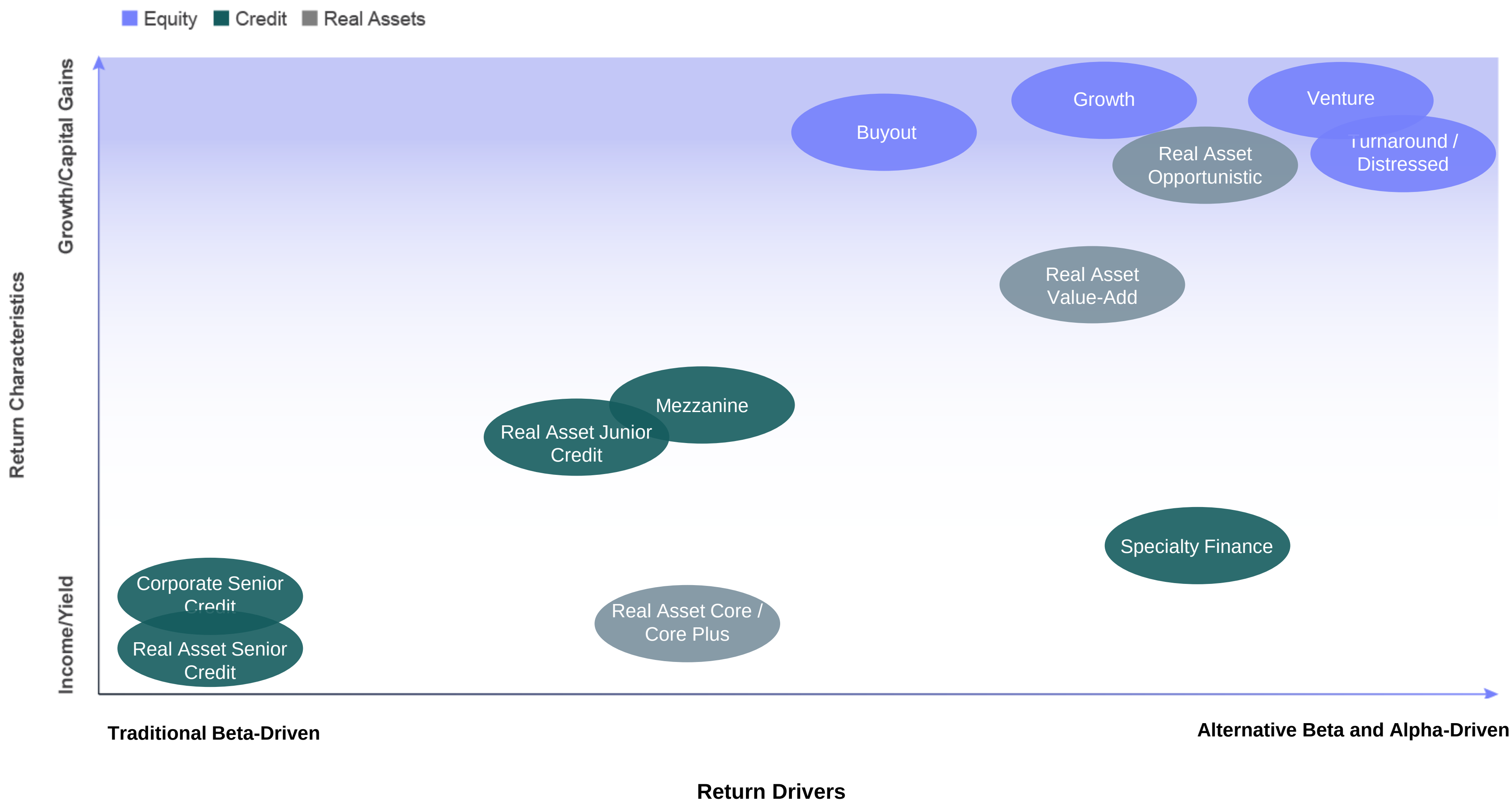
A private markets portfolio can be constructed to target a variety of characteristics and asset class exposures

		Long-Term Growth	Income / Yield	Inflation Mitigation	Diversification to Traditional Asset Class Return Drivers[1]
Private Equity	Buyout	✓		✓	✓
	Growth	✓		✓	✓
	Venture Capital	✓			✓
	Distressed / Turnaround	✓			✓
Private Credit	Senior Corporate Credit		✓		✓
	Mezzanine		✓		✓
	Specialty Finance & Loan Portfolios		✓		✓
	Real Asset Senior Credit		✓		✓
	Real Asset Junior Credit		✓		✓
Real Assets	Real Asset Core / Core Plus		✓	✓	✓
	Real Asset Value-Add	✓		✓	✓
	Real Asset Opportunistic	✓			✓

Source: Goldman Sachs Asset Management as of June 2022. For illustrative purposes only. 1. Diversification does not protect an investor from market risk and does not ensure a profit.

Strategies are diversified by return characteristics and drivers

A private markets portfolio can be diversified across strategies offering a variety of return characteristics and drivers



Source: Goldman Sachs Asset Management, as of June 2022. For illustrative purposes only and should not be construed as investment advice or an offer or solicitation to buy or sell securities. Diversification does not protect an investor from market risk and does not ensure a profit.

A variety of factors need to be considered when constructing a private markets portfolio

Asset Allocation	Commitment Pacing	Implementation / Manager Selection	Evolution Across Time
• Program objectives • Characteristics and roles of private markets strategies • Sources of return of private markets strategies • Return and risk targets[1] • Asset allocation frameworks	• Strategy and vintage year diversification[2] • J-curve considerations[3] • Cash flow management, NAV evolution • Commitment pacing to reach ultimate target • Accelerated commitments for faster ramp-up	• Outsourcing vs. insourcing • Manager and investment selection • Manager diversification within strategies • Vehicle mix • Strategic partnerships	• Performance measurement and benchmarking • Organizational resources and portfolio strategy • Evolution of program over time • Scenario and risk analysis • Evolving GP relationships

Source: Goldman Sachs Asset Management, as of June 2022. For illustrative purposes only. The information above does not purport to represent complete list of characteristics or considerations. 1. The portfolio risk management process includes an effort to monitor and manage risk, but does not imply low risk. 2. Diversification does not protect an investor from market risk and does not ensure a profit. 3. The J-curve refers to the cumulative net cash flow seen by an investor, which for private equity investments is typically negative in the first several years after the initial commitment due to capital being drawn down for investments and generally becomes positive after capital is returned and the fund becomes net cash flow positive.

We believe three core principles lead to the creation of a successful private markets program

CORE PRINCIPLES TO INVESTING IN PRIVATE MARKETS

Broad Manager Reach

A wide dispersion of returns, from the first to fourth quartile performers, in private equity necessitates a focus on manager selection to identify top managers

Consistent Allocations

Private equity is a long term asset class and it is difficult to predict market cycles, making it important to be in the market on a consistent, annual basis to mitigate the risk of market timing

Portfolio Diversification

Private equity spans all phases of the business lifecycle, and opportunities can be found in different sectors, industries, and geographies; a well-balanced private equity program can diversify return drivers across these metrics

We believe that these three core principles, when taken with a cycle-aware approach, pivoting to what we believe are the most attractive opportunities at a given time, can lead to a well-constructed private equity portfolio that can potentially achieve enhanced returns.

Source: XIG, as of June 2023. For discussion purposes only. Diversification does not protect an investor from market risk and does not ensure a profit. The portfolio risk management process includes an effort to monitor and manage risk but does not imply low risk. **There is no guarantee that objectives will be met.**

2

Current Private Equity Environment

Macro Environment

PE Valuations & Exits

Recent Performance

Current Themes

As the world has emerged from the depths of the pandemic, a rise in geopolitical tensions, supply and labor constraints and an increase in inflation have led to increased market volatility

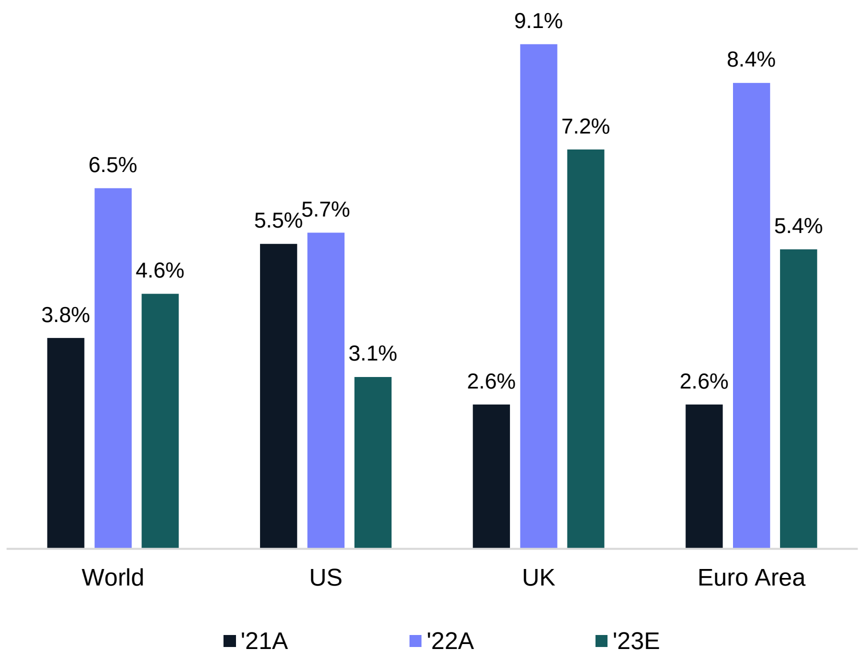
1. **Rising inflation**
2. **Tightening monetary policy**
3. **Higher interest rates and strong USD**
4. **Increased risk of recession**
5. **Impact on Valuations**

Source: XIG and Goldman Sachs Investment Strategy Group, as of October 2022.

The macroeconomic environment experienced a large shift in 2022

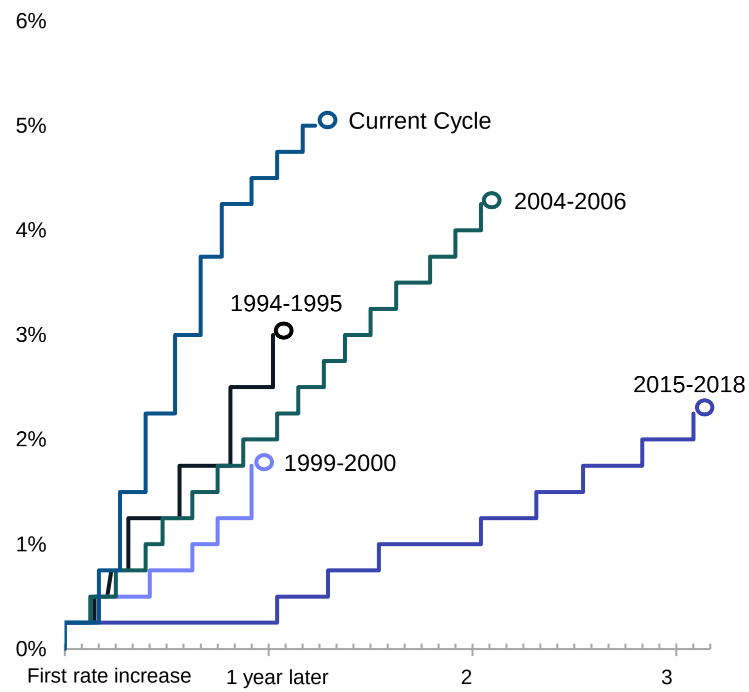
INFLATION IS FORECAST TO DECLINE BUT REMAINS HIGH IN MOST GLOBAL ECONOMIES

Inflation Estimate for 2023[2]



THE FED AND OTHER CENTRAL BANKS HAVE TIGHTENED MONETARY POLICY AT AN UNPRECEDENTED RATE

Cumulative Increases to the Federal Funds Rate Target During Recent Tightening Cycles[1]



Source: [1] Wall Street Journal, Federal Reserve, as of March 2023 [2] Goldman Sachs Global Investment Research ("GIR"), as of May 1st, 2023. For discussion purposes only. The economic and market forecasts presented herein are for informational purposes as of the date of this presentation. There can be no assurance that the forecasts will be achieved. Please see additional disclosures at the end of this presentation.

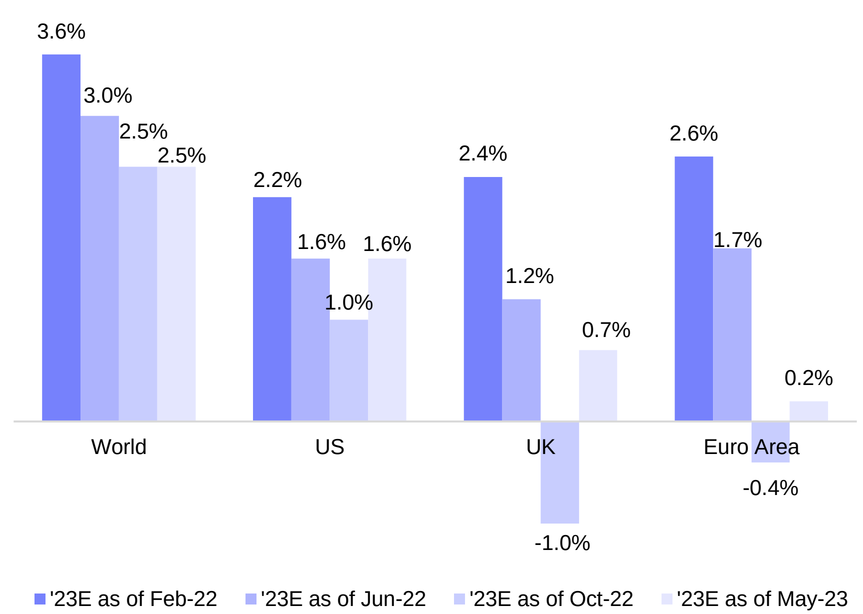
Loan volumes have experienced a decrease and 2023 GDP growth expectations have declined

THE RISING COST OF DEBT AND ECONOMIC UNCERTAINTY HAD LED TO A SLOWDOWN IN PE TRANSACTIONS AND INSTITUTIONAL LOAN VOLUMES

Institutional Loan Volume (in $bn)[1] relative to PE deal volume [3]

RISING INTEREST RATES AND INPUT COSTS, BANKING TURMOIL AND GEO-POLITICAL EVENTS HAVE CAUSED A DECLINE IN GDP GROWTH FORECASTS

Revision of 2023E GDP Growth Expectations[2]

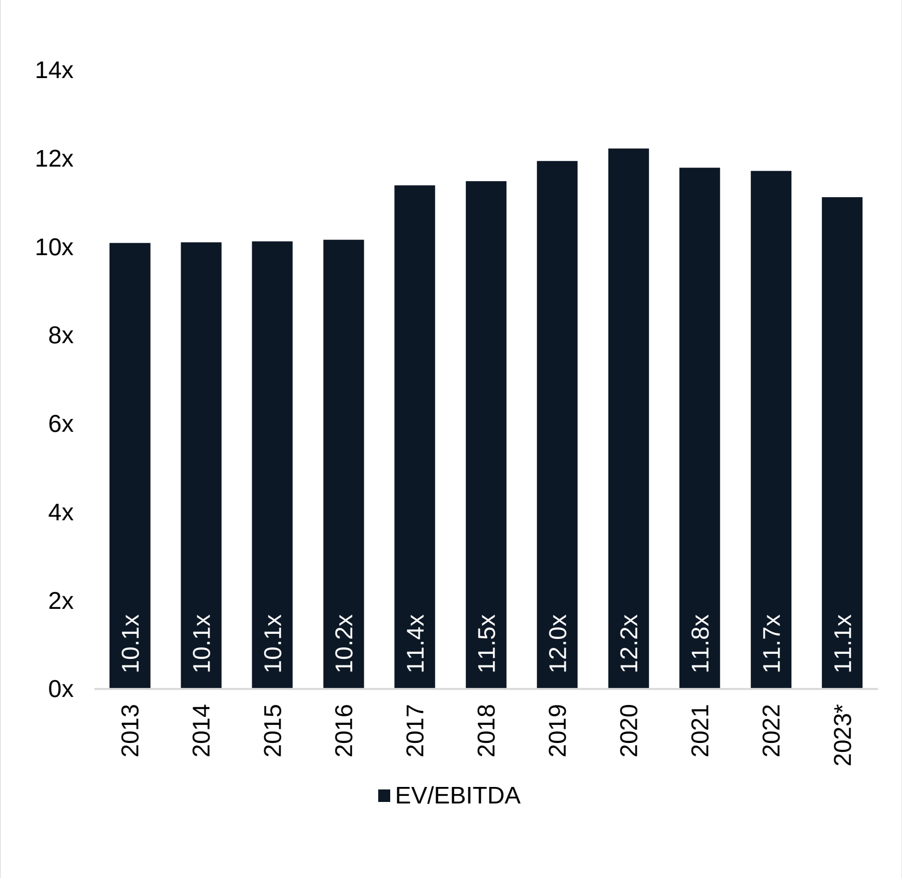


Source: [1] LCD LBO Q1 2023 Report. [2] Goldman Sachs Global Investment Research ("GIR"), as of February, June, October and May 2023. For discussion purposes only. The economic and market forecasts presented herein are for informational purposes as of the date of this presentation. There can be no assurance that the forecasts will be achieved. Please see additional disclosures at the end of this presentation. [3] Pitchbook, as of March 31, 2023 'US PE deal activity.'

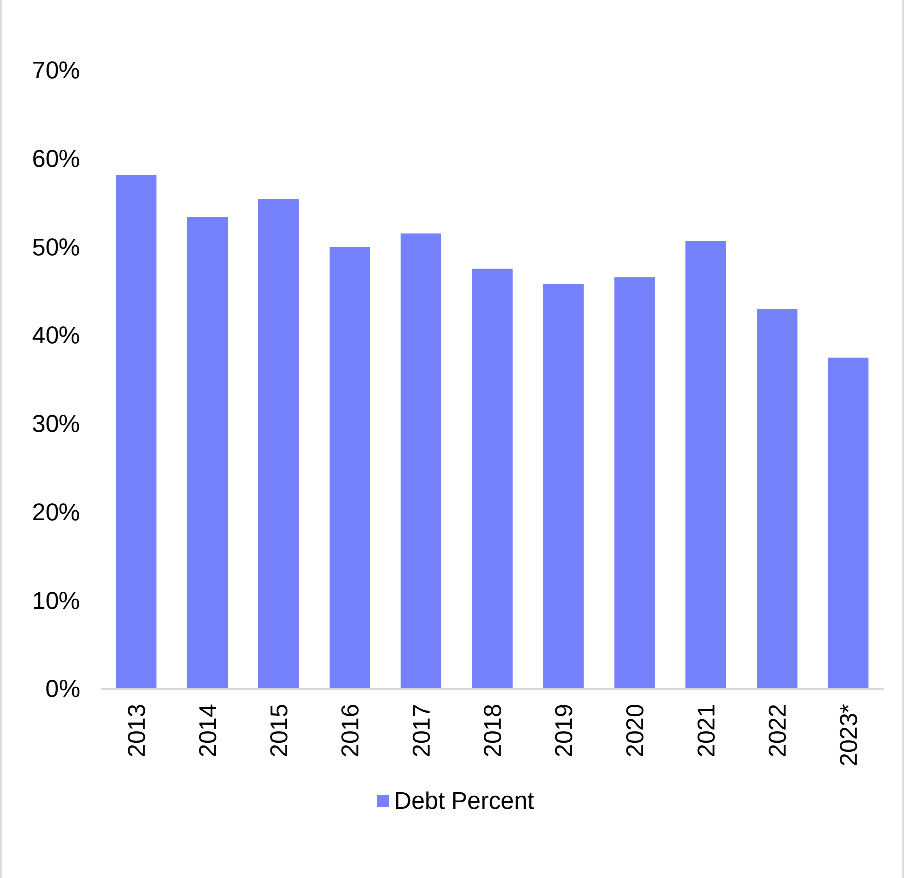
Buyout valuations remain elevated

Leverage levels show signs of moderating

EV/EBITDA MULTIPLES HAVE DECLINED MODESTLY SINCE 2020



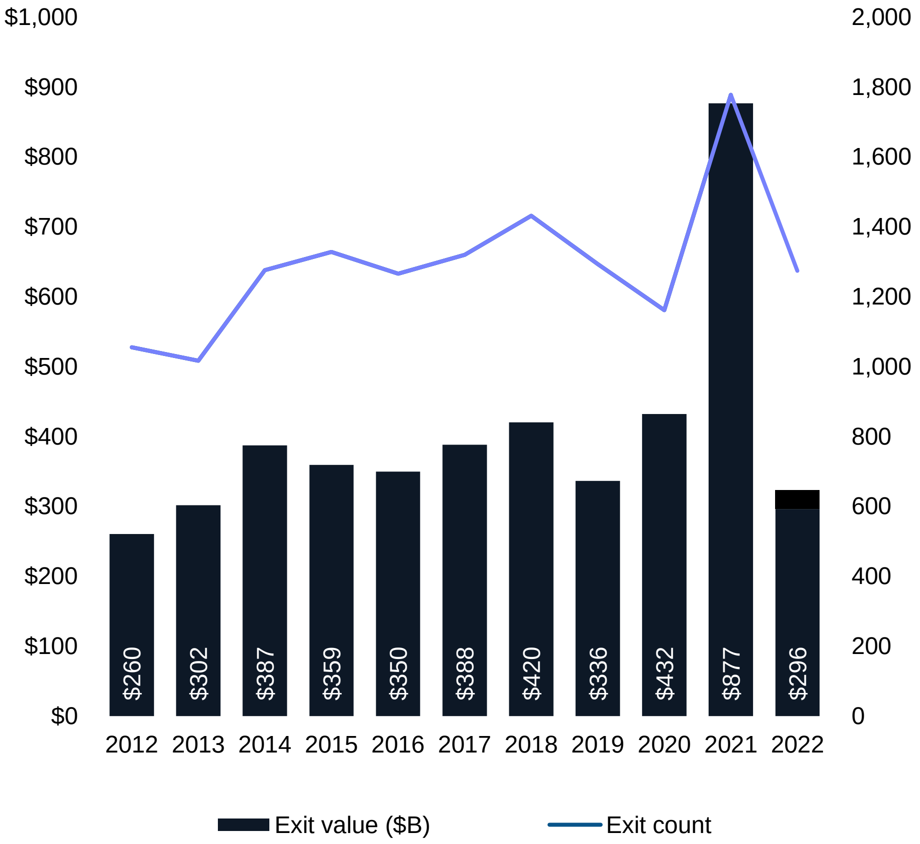
WHILE LEVERAGE LEVELS HAVE ALSO MODERATED



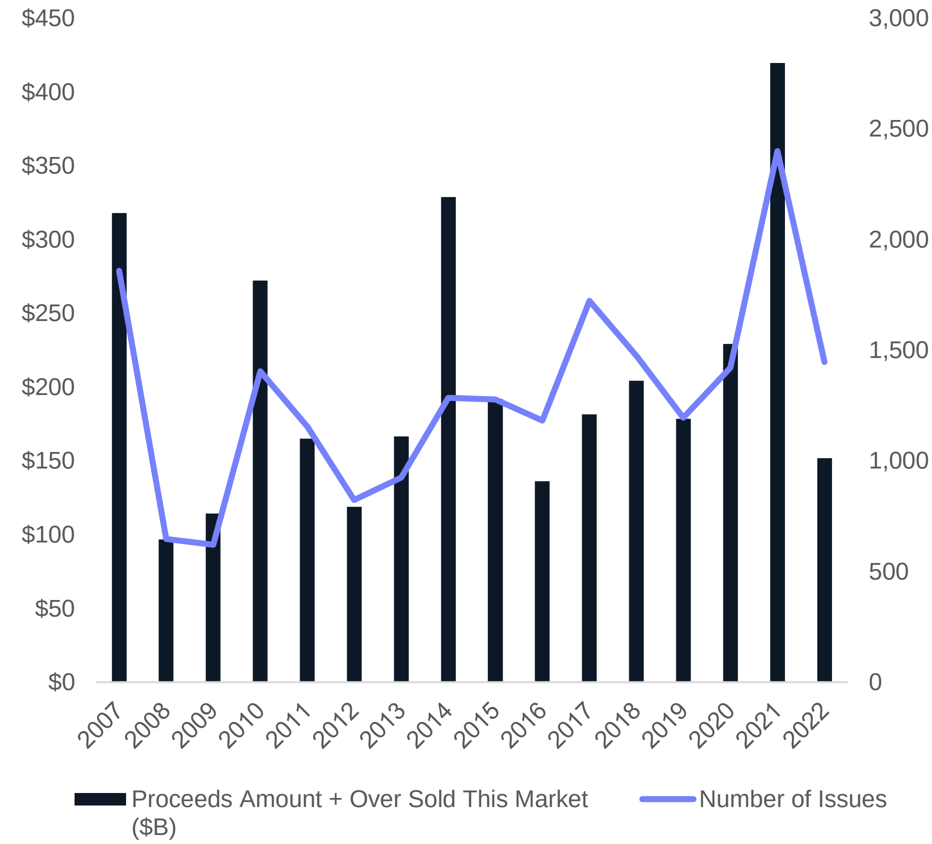
Source: Pitchbook, as of March 31, 2023, Median North America and Europe PE buyout EV/EBITDA Multiples.

Coming off a record year, exit activity in 2022 fell sharply with a significant drop in IPOs hindering larger exits

US PRIVATE EQUITY EXIT ACTIVITY



US PRIVATE EQUITY EXIT ACTIVITY



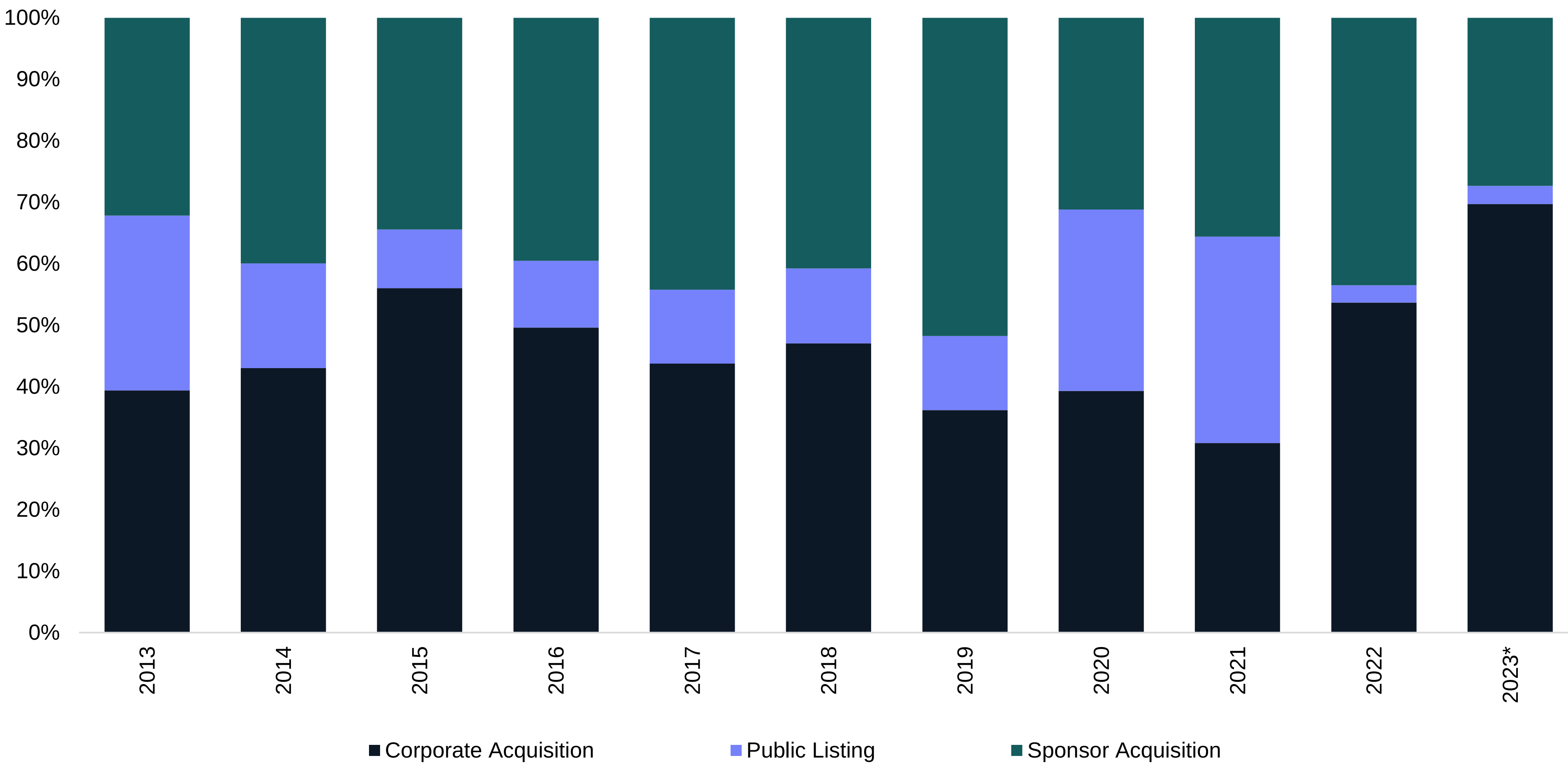
Source: PitchBook, as of April 2023. Data shows both confirmed and anticipated deal closes.

Public market exit activity remains muted

Exits to strategic acquirors represented two-thirds of PE exits in Q1 2023[1], a 10-year high

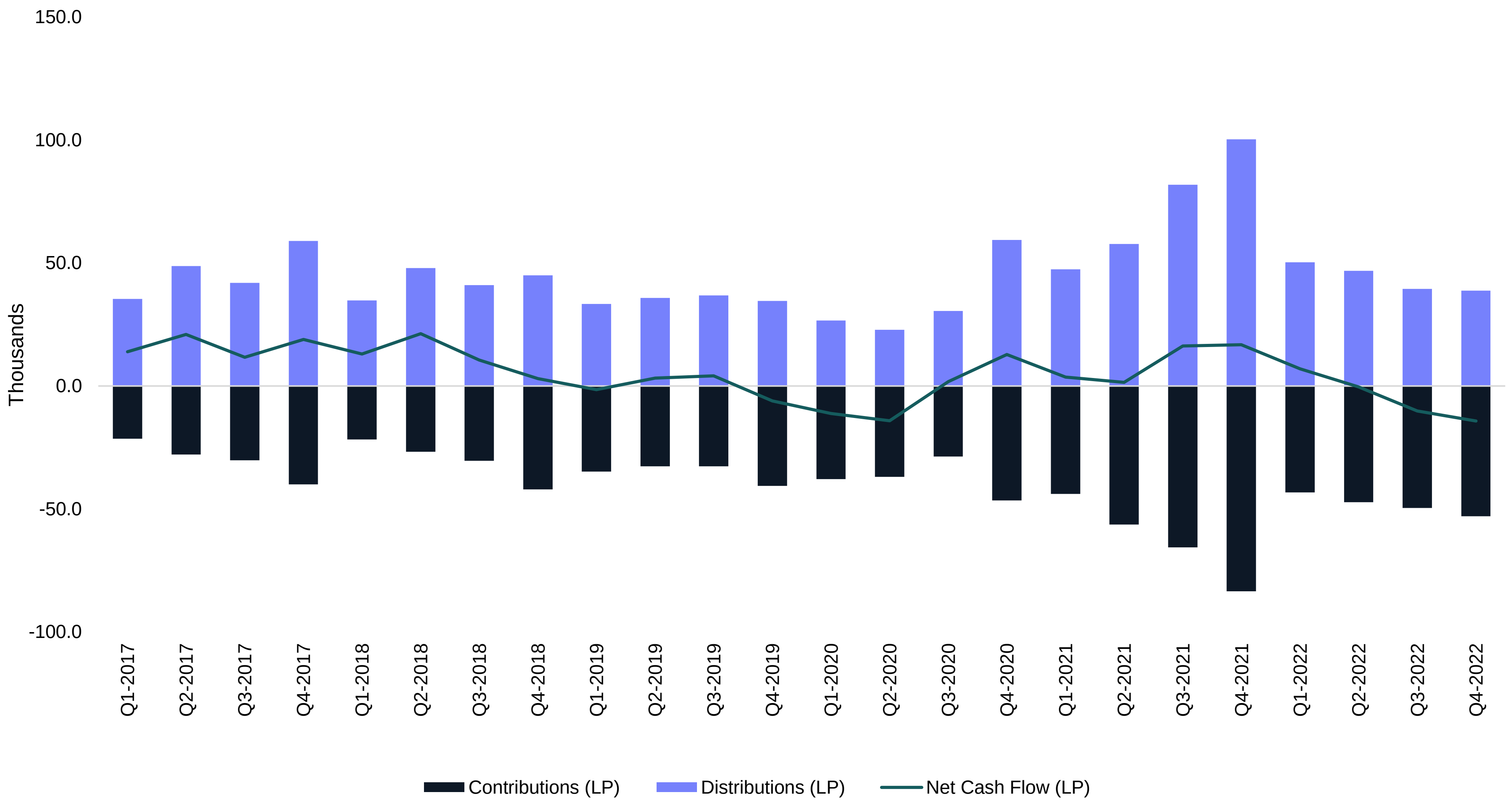
91%

Decrease in quarterly value of IPO Activity[2]



Source: Pitchbook, as of March 31, 2023, 'Q1 2023 US PE Breakdown.' [1] EY PE Report. [2] Pitchbook data, 2013-2021 quarterly exit values compared with 2022-1Q 2023.

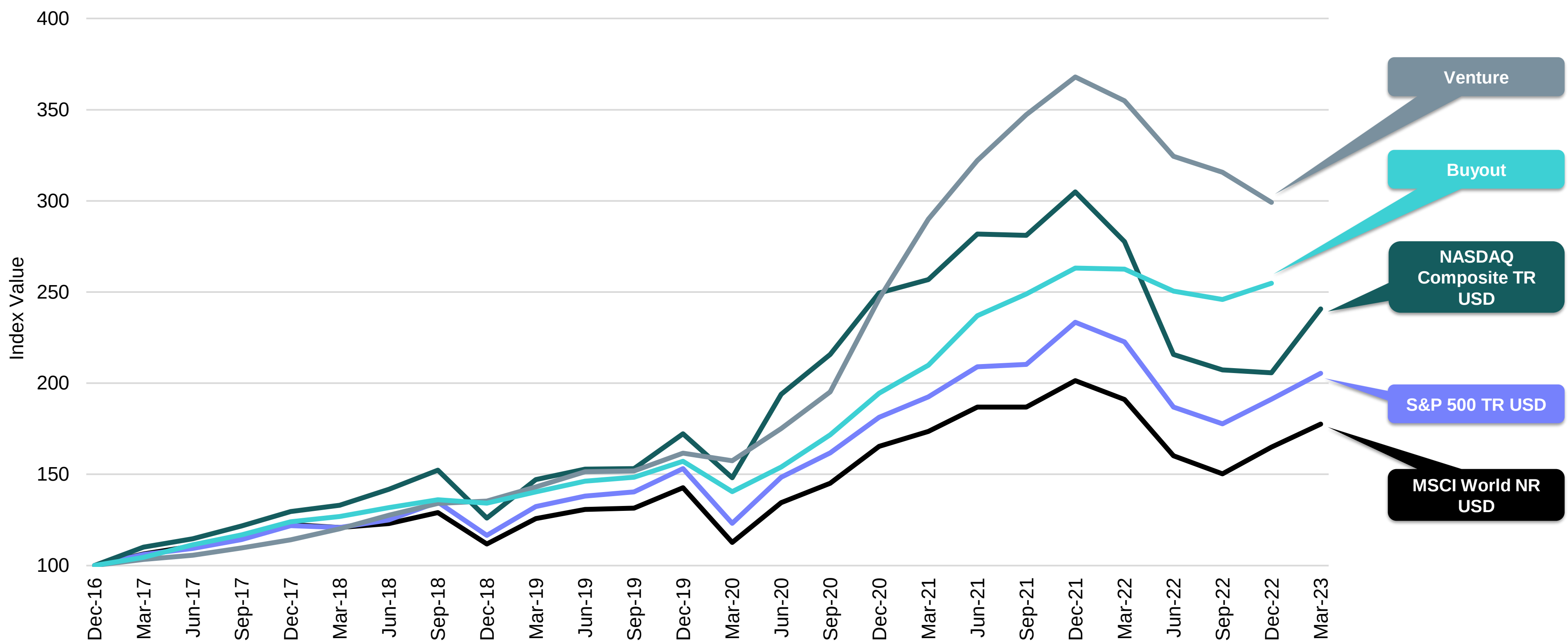
Distributions and contributions declined in 2022 as exit activity slowed



Source: Cambridge Associates, as at December 31, 2022. Cash Flow/NAV History report showing the Buyout universe.

Private equity performance has generally outpaced the public markets with more limited drawdowns

Buyout performance has been resilient relative to the public markets in 2022



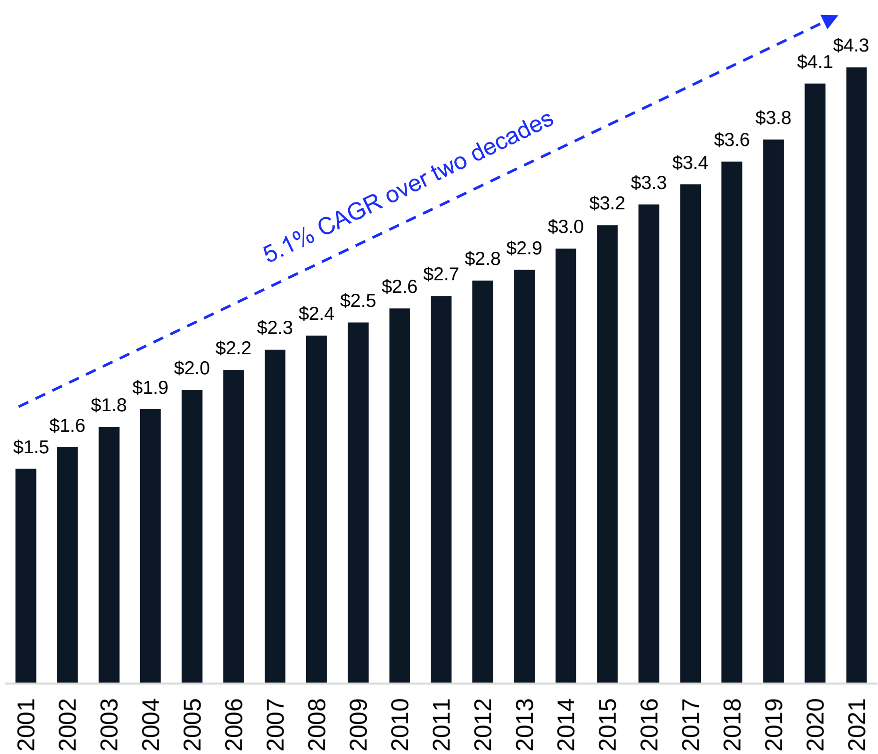
Index	Drawdown – Peak to Trough (%)[1]
Buyout	-7%
Venture	-19%
NASDAQ Composite TR USD	-33%
S&P 500 TR USD	-24%
MSCI World NR USD	-25%

Source: Morningstar public market data, MSCI, as of March 31, 2023. Please note: Venture and Buyout represent quarterly NAV growth based on Cambridge data as of December 31, 2022. The Venture universe includes 1,954 funds as of December 31, 2022. The Buyout universe includes 1,172 funds as of December 31, 2022. 1 Through December 31, 2022. MSCI World Index represents a broad global equity index representing large and mid-cap equity performance across all 23 developed markets countries. NASDAQ Composite includes all stocks listed on the NASDAQ. S&P 500 Total Return index features the 500 leading US publicly traded companies.

We believe the healthcare and technology sectors are benefiting from strong secular tailwinds

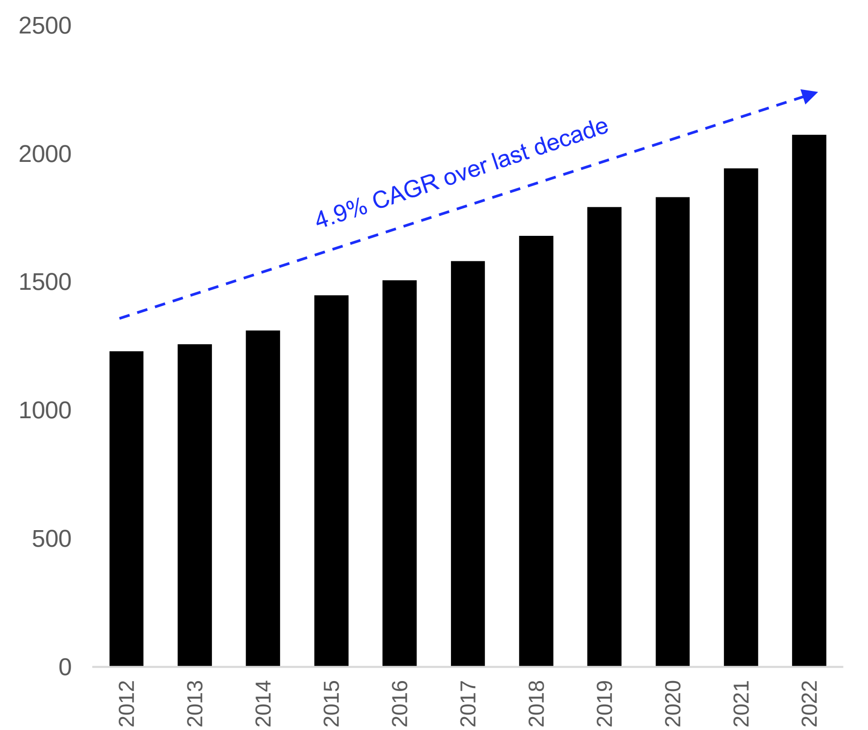
Healthcare and Technology expenditures continue to grow

US NATIONAL HEALTH EXPENDITURES[1] ($ TRILLION)



US healthcare expenditures are expected to grow at a 5.1% CAGR through 2030[1]

US TECHNOLOGY SPENDING[2] ($BILLIONS)



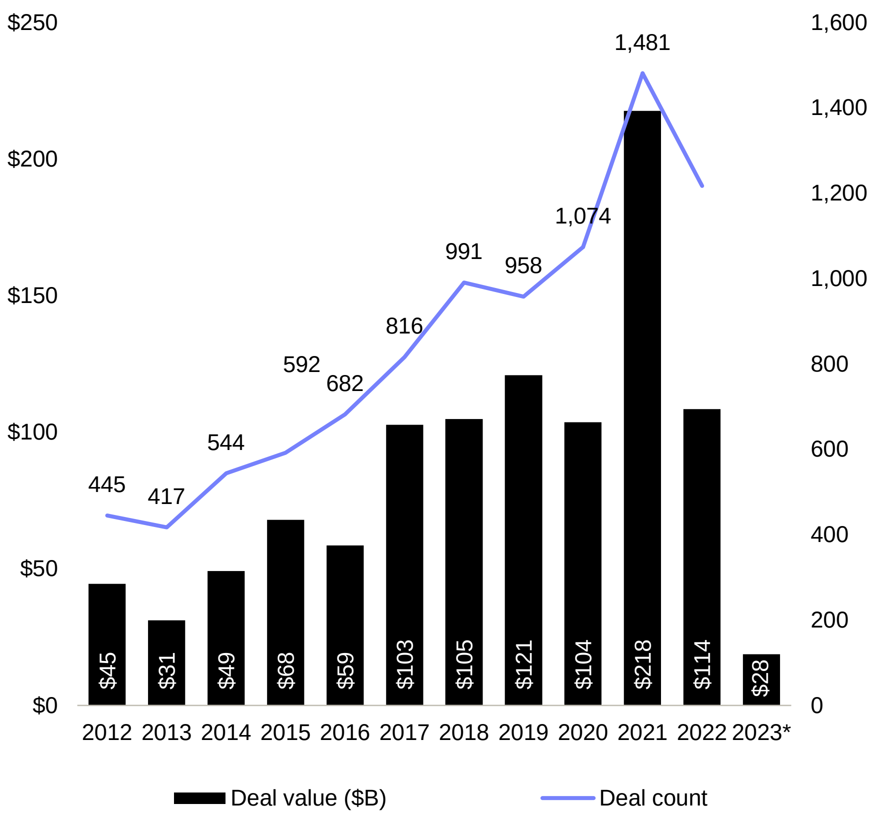
US operational technology expenditures is expected to grow at a 6.4% CAGR through 20303

Source: [1] Center for Medicare and Medicaid Services. National Health Expenditure Data, as of December 2022. [2] Statista, 'Business and government spending on information and business technology in the United States from 2012 to 2022' as of March 3, 2023. [3] Global Operational Technology Industry, April 2023.

Healthcare and technology remain a focus for the private equity industry

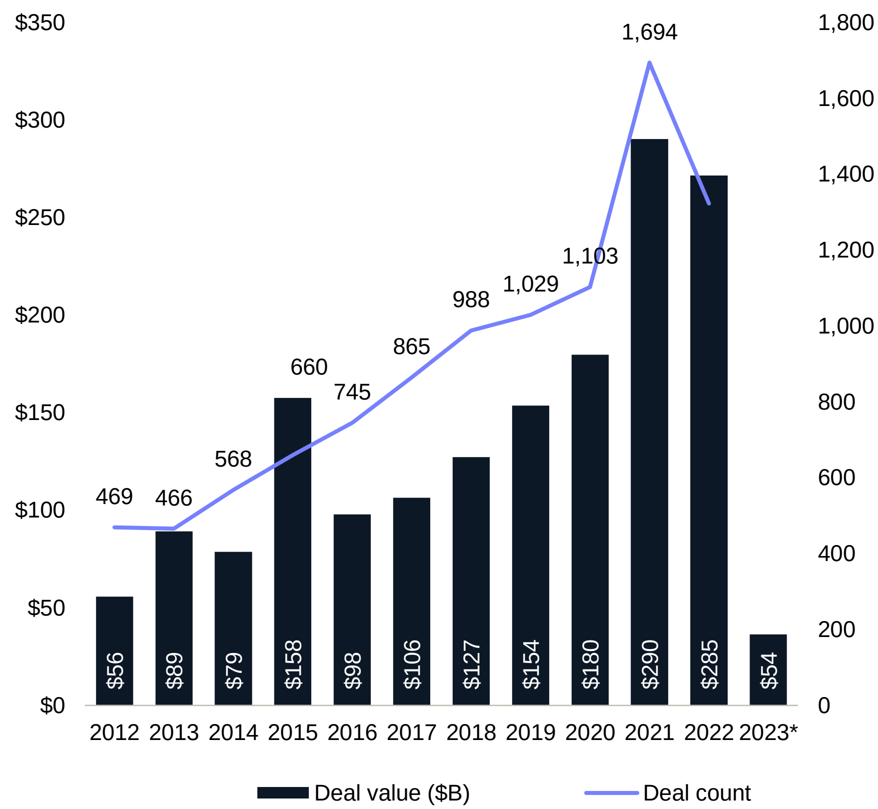
HEALTHCARE

11% of 2022 deals were healthcare



TECHNOLOGY

28% of 2022 deals were tech



Source: Pitchbook, as of March 31, 2023, 'Q1 2023 US PE Breakdown.'

XIG key themes for 2023

Private Credit	Secondaries	Co-Investments	Seeding
Direct lending market has become more lender friendly as pricing on underlying loans is increasingly more attractive – base rates are higher, spreads are wider, and upfront fees on new loans are greater	Traditional secondaries pricing widened out from 8% in 2021 to 19% in 2022, which shows the willingness of sellers to transact at attractive pricing or structures.	Ongoing macro uncertainty has led to an attractive market backdrop for co-investing	We have seen a significant increase in the number of seasoned investment professionals spinning out of established firms
180+ private credit funds were raised in 2022, which represents more than double the amount raised in 2011[1]	Global secondary volume in 2022 was $108 billion, which makes it the second biggest year on record. We expect that this year is also on track to break $100 billion[3]	GPs are looking to extend their current capital and are offering more co-investment opportunities	The number of PE fund launches has increased 1.6x between 2009-2012 and 2018-2021[4]
With public markets essentially shut through 2022, broadly syndicated loans (leveraged loans) volume and high yield issuance was down significantly in 2022 while private credit has filled the void	GP-led volume was $52 billion, as transactions involving high-quality, recession-resilient buyout assets continued to be in demand[3]	A tougher private equity fundraising environment is likely to lead to more LP co-investments	First-time funds face fundraising headwinds, resulting in many launching below scale
Aggregate AUM has increased six-fold since 2007 to $1.3 trillion in 2022 as private debt has rapidly matured into an established asset class[2]	GPs may need to extend duration and buy time to maximize value and we believe continuation vehicles will be a core solution for this challenge	Challenging credit markets and lower availability of debt are likely to create more equity need	Cornerstone commitments from seed investors can reduce launch risk for new managers

Source: XIG, as of June 2023. 1. Preqin, as of November 2022. 2. Preqin, as of December 31, 2022. 3. Jefferies, 2023 Global Secondary Market Report. 4. Source: Preqin as of December 31, 2021. 5. Source: Preqin and Petershill as of December 2022. First-time fund category includes buyout, growth and venture first-time funds closed between 2000-2021 in North America and Europe. Such results do not represent the complete universe of first-time funds, nor does the data provided guarantee future results. Although the data provided is believed to be reliable, we do not guarantee its accuracy, completeness or fairness.

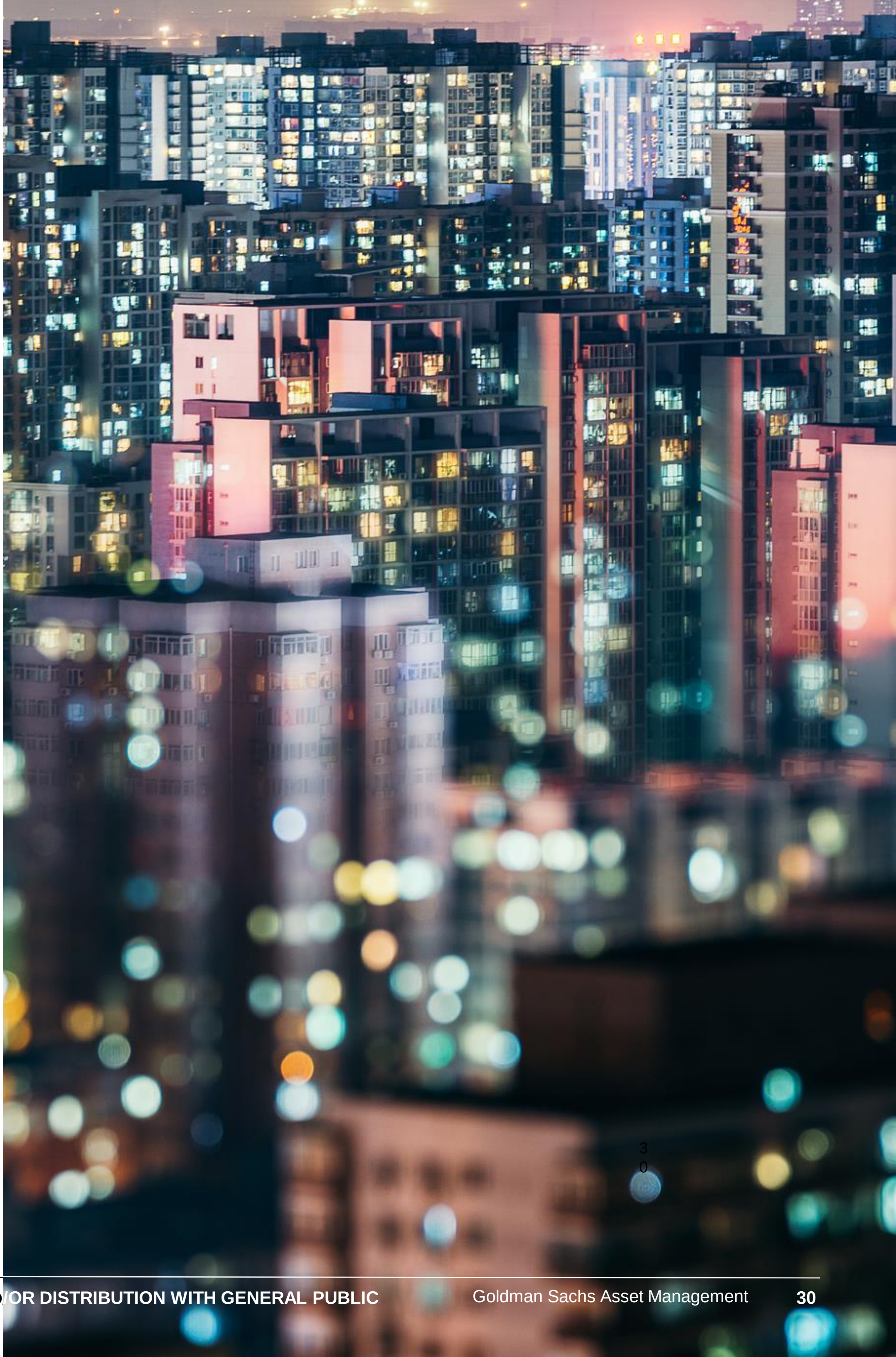
3

The Opportunity in GP Stakes

Introduction to the Petershill Platform

The Petershill platform launched in 2007 to partner with leading alternative asset managers and help accelerate their strategic goals.

In 2018, Petershill expanded its investment program through the launch of a dedicated strategy focused on partnering with early-stage managers that we believe have the potential to become the leading investment firms of tomorrow.



Petershill

Executive Summary

Goldman Sachs is recognized as a leader in GP stakes investing given our long history, broad network, and leading alternatives franchise

~$12bn+	48
Capital Raised[1]	Partner-Firms[2]

Partner with leading alternatives firms across their lifecycle, through GP stakes in established platforms or cornerstone investments in early-stage managers

Established managers

Minority equity and structured equity investments in established fund managers

Early-stage partners

Cornerstone investments in early-stage fund managers

Source: Petershill, as of April 2023. [1] This includes total capital raised across Petershill I ($589mm), Petershill II ($1.4bn), Petershill III ($2.5bn), Petershill IV ($5.0bn), Petershill PES I ($843mm) and Petershill Partners ($1.5bn). [2] Represents investments in Petershill I – IV and Petershill PES, which are closed to new investors. This does not include follow-on investments. The Petershill team leverages the resources of Goldman Sachs & Co. LLC subject to legal, internal and regulatory restrictions.

Petershill Platform

Established Partners					Early-Stage Partners	
2007	2014	2017	2020	2021	2019	2023
PETERSHILL I	PETERSHILL II	PETERSHILL III	PETERSHILL IV	PETERSHILL PARTNERS PLC	PETERSHILL PES I	PETERSHILL PES II
$589m	$1,434m	$2,500m[1]	$5,000m	$1,500m IPO RAISE	$843m	In Market

Current Private Markets Partner-Firms

AKKR, Arclight, Arctos, ACP, Arsenal Capital Partners, Atwater Capital, Clearlake, Francisco Partners, General Catalyst, Harvest Partners, Haveli, Incline Equity Partners, Industry Ventures, Kayne Anderson Real Estate, Littlejohn & Co., LLR, Montagu private equity, NCP Northlane Capital Partners, Oceansound Partners, Parthenon Capital, Permira, Piney Lake Capital, River Stone, Slate, SLR Capital Partners, STG, TrueLink, Varagon, Westbrook Partners, Wind Point Partners, Willow Tree Credit Partners

Source: Petershill, as of April 2023. 1. Inclusive of Petershill III and affiliated vehicles. Represents all current private markets firms across the Petershill Platform. The Petershill team leverages the resources of Goldman Sachs & Co. LLC subject to legal, internal and regulatory restrictions. Any mention of an investment decision is intended only to illustrate our investment approach and/or strategy and is not indicative of the performance of our strategy as a whole. It should not be assumed that any investment decisions shown will prove to be profitable, or that any investment decisions made in the future will be profitable or will equal the performance of the investments discussed herein. A complete list of past investments is available upon request. Please see additional disclosures. Your capital is at risk, and you may lose some or all of the capital you invest.

What is GP stakes investing?

GP stakes investing represents a portfolio of minority interests in alternatives firms, offering the opportunity to participate in fund economics enjoyed by private capital funds

GP Stakes Fund

Management Fee Income

Potentially consistent cash yield uncorrelated to overall markets

Carried Interest Income

Direct participation in fund performance upside

Balance Sheet Income

Potentially enhanced return gross-of-fees as a result of GPs investing into their own funds

Monetization

Acceleration of cash flows to underlying investors through portfolio exit or other liquidity event

GP Stake 1	**GP Stake 2**	**GP Stake 3**
GP Stake 4	**GP Stake 5**	**GP Stake 6**

Source: XIG Petershill, as of June 2023. For illustrative purposes only. Your capital is at risk and you may lose some or all of the capital you invest.

GP stakes investors benefit from an uncommon opportunity to back leading managers as they institutionalize their firms

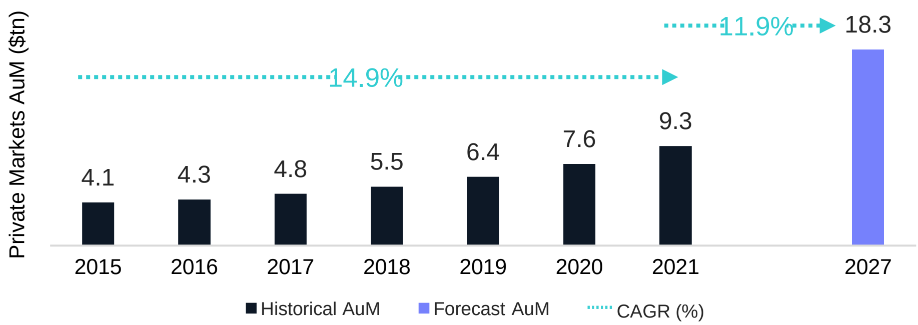
Manager Needs	LP Benefits
Increase GP Commitment Alongside LPs	PE firms are generally high growth, high margin businesses supported by strong secular tailwinds
Develop New Products, Expand Platform and Grow Capital Base	PE managers tend to be highly cash generative with average EBIT margins of over 50% among listed alternatives firms
Firm Institutionalization, Infrastructure & Operational Support	GP stakes investors benefit from the contractually locked up nature of cash flows generated from management fee streams with potential upside from performance-based carried interest fee streams
Employee Retention & Generational Transition	A portfolio of GP stakes attenuates risk by providing diversified exposure to fees generated on durable capital from multiple growth engines, providing a consistent cash yield over time
Cornerstone Investor for First-Time Managers	

Source: XIG Petershill, as of June 2023. For illustrative purposes only. Your capital is at risk and you may lose some or all of the capital you invest.

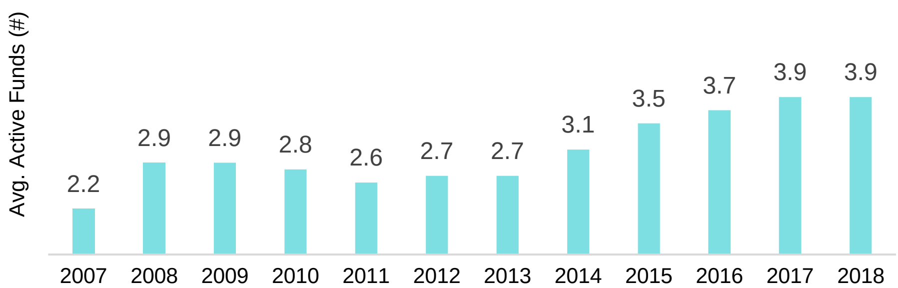
Industry growth and diversification serve as secular tailwinds for our long-term opportunity set and launch activity

Established Manager Trends

Private Markets AUM to Reach $18.3tn by 2027[1]



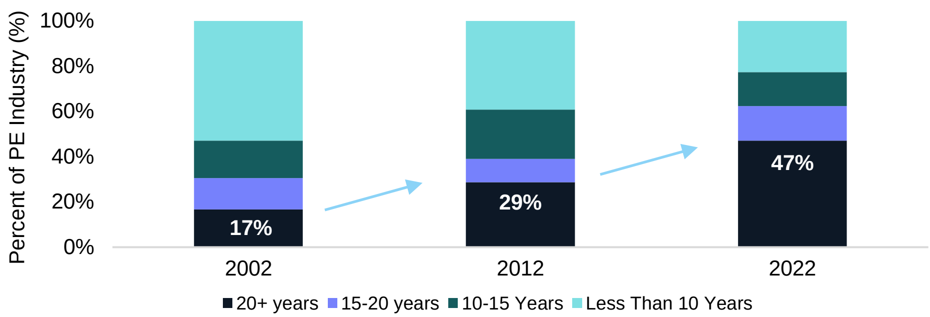
Buyout Firms Continue to Scale Their Platforms[2]



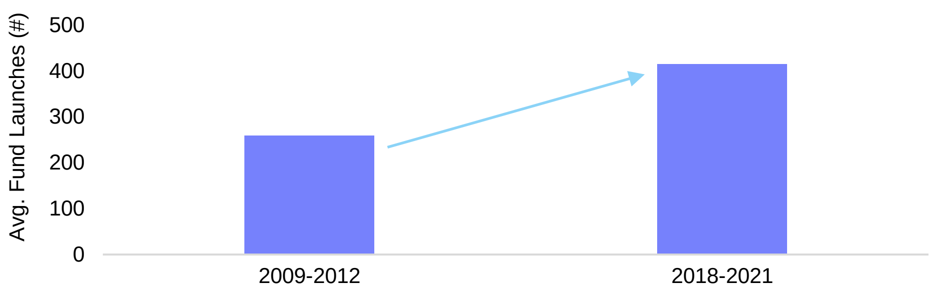
- The longer-term outlook for private capital remains positive, with private capital AUM projected at an annualized growth of 11.9%
- Firms have continued to broaden their product offerings in response to LP demand for multi-asset class capabilities

Early-Stage Manager Trends

Increasing Age of PE Firms[3]



Number of PE Fund Launches[4]



- We have seen a significant increase in the number of seasoned investment professionals spinning out of established firms
- We believe our cornerstone commitment for first-time funds substantially reduces launch risk

Source: XIG Petershill, as of June 2023. 1. Preqin 'Future of Alternatives 2027', as of October 2022. AuM figure for 2021 based on data to December 2021. 2022-2027 are Preqin's forecasted figures. 2. Source: Bain Private Equity Report 2019. Includes 88 buyout firms that have closed >$2bn in buyout capital funds in the last five years; active funds include funds that held a final close in the five years preceding each year. 3. Source: Preqin as of December 2022. Includes all private equity buyout firms with AUM greater than $1 billion. 4. Source: Preqin as of December 31, 2021.

Goldman Sachs seeks to be a partner of choice

A partnership with Goldman Sachs can help position GP firms for longevity given our network, historical track record and partnership approach

Access to a Top-Tier Investment Bank

Longstanding network of deep relationships with:

Companies	***Investors***
Entrepreneurs	***Institutions***

- #1 global investment banking franchise[1] with >3,000 investment bankers in 43 offices providing access to deal flow
- Extensive proprietary sourcing opportunities

Historical Track Record

Pioneered Strategy in 2007

Strong Performance History

- Established in 2007, Petershill is Goldman Sachs' flagship GP Stakes platform
- Consistent cash yield over time, with a five-year average annual yield (levered) of 18.6% across the platform[2]

Strategic Partnership and Alignment Between GS & GP

Petershill GP Services | ***GP Advisory Council***

Drives Development and Unlocks Value

- Petershill GP Services enhance value creation through long-term strategic partnerships with our GPs
- Led by a team of industry specialists and supported by a network of Goldman Sachs specialist advisors

Source: XIG Petershill, as of June 2023. 1. As of December 31, 2019 based on cumulative publicly-disclosed Investment Banking revenues since 2015, per competitor public filings. Peers include Bank of America, Barclays, Citi, Credit Suisse, Deutsche Bank, JPMorgan, Morgan Stanley and UBS. GS excludes Corporate Lending for comparability. GSAM leverages the resources of Goldman Sachs & Co. LLC subject to legal, internal and regulatory restrictions. 2. Source: Petershill, as of December 2022. Platform yield includes Petershill II-IV and is weighted by fund size. Represents total portfolio income from investments (received and accrued) since inception, divided by time weighted investor contributions paid to the Fund, and is levered. Past performance does not guarantee future results, which may vary.

4

Disclosures

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Alternative Investments

Alternative Investments may be subject to less regulation than other types of pooled investment vehicles such as mutual funds. Alternative Investments may impose significant fees, including incentive fees that are based upon a percentage of the realized and unrealized gains, and such fees may offset all or a significant portion of such Alternative Investment's trading profits. An individual's net returns may differ significantly from actual returns. Alternative Investments are not required to provide periodic pricing or valuation information. Investors may have limited rights with respect to their investments, including limited voting rights and participation in the management of the Alternative Investment.

Alternative Investments often engage in leverage and other investment practices that are extremely speculative and involve a high degree of risk. Such practices may increase the volatility of performance and the risk of investment loss, **including the loss of the entire amount that is invested.**

Alternative Investments may purchase instruments that are traded on exchanges located outside the United States that are "principal markets" and are subject to the risk that the counterparty will not perform with respect to contracts.

Alternative Investments are offered in reliance upon an exemption from registration under the Securities Act of 1933, as amended, for offers and sales of securities that do not involve a public offering. No public or other market is available or will develop. Similarly, interests in an Alternative Investment are highly illiquid and generally are not transferable without the consent of the sponsor, and applicable securities and tax laws will limit transfers.

Alternative Investments may themselves invest in instruments that may be highly illiquid and extremely difficult to value. This also may limit your ability to redeem or transfer your investment or delay receipt of redemption or transfer proceeds.

Alternative Investments are not required to provide their investors with periodic pricing or valuation information. Alternative Investments may involve complex tax and legal structures and accordingly are only suitable for sophisticated investors. You are urged to consult with your own tax, accounting and legal advisers regarding any investment in any Alternative Investment.

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Although certain information has been obtained from sources believed to be reliable, we do not guarantee its accuracy, completeness or fairness. We have relied upon and assumed without independent verification, the accuracy and completeness of all information available from public sources.

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An investment product may make a limited number of investments. A consequence of a limited number of investments is that the aggregate returns realized by the investors of such product may be substantially adversely affected by the unfavorable performance of a small number of these investments. Furthermore, an investment product may not have fixed guidelines for industry diversification and investments may be concentrated in only a few industries.

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Direct Alpha

Direct alpha measures the marginal performance that would need to be added to or subtracted from the performance of a selected index in order for that index to generate the same level of returns as a given private equity fund, while accounting for the size and timing of that private equity fund's cash flows. It is calculated by determining the future value of each private equity cash flow, compounded at an index's rate of return between the date of the cash flow and the as-of date of the calculation (effectively adjusting the value of that cash flow for market performance), then determining the internal rate of return of those adjusted cash flows plus any (unadjusted) net asset value. This generates the residual performance of the private equity investment after controlling for the performance of the index. Direct alpha does not represent the actual performance of the index, and does not adjust for leverage, hedging, or other risk factors that may be present in the private equity investment. Unlike public equity investments, private equity is illiquid and may not be readily sold for its stated value. Positive direct alpha indicates outperformance compared to the index return, and negative direct alpha indicates underperformance.

Benchmarks

References to indices, benchmarks or other measures of relative market performance over a specified period of time are provided for your information only and do not imply that the portfolio will achieve similar results. The index composition may not reflect the manner in which a portfolio is constructed. While an adviser seeks to design a portfolio which reflects appropriate risk and return features, portfolio characteristics may deviate from those of the benchmark.

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Index Benchmarks

Indices are unmanaged. The figures for the index reflect the reinvestment of all income or dividends, as applicable, but do not reflect the deduction of any fees or expenses which would reduce returns. Investors cannot invest directly in indices.

The indices referenced herein have been selected because they are well known, easily recognized by investors, and reflect those indices that the Investment Manager believes, in part based on industry practice, provide a suitable benchmark against which to evaluate the investment or broader market described herein. Emerging markets securities may be less liquid and more volatile and are subject to a number of additional risks, including but not limited to currency fluctuations and political instability.

Economic and market forecasts presented herein reflect a series of assumptions and judgments as of the date of this presentation and are subject to change without notice. These forecasts do not take into account the specific investment objectives, restrictions, tax and financial situation or other needs of any specific client. Actual data will vary and may not be reflected here. These forecasts are subject to high levels of uncertainty that may affect actual performance. Accordingly, these forecasts should be viewed as merely representative of a broad range of possible outcomes. These forecasts are estimated, based on assumptions, and are subject to significant revision and may change materially as economic and market conditions change. Goldman Sachs has no obligation to provide updates or changes to these forecasts. Case studies and examples are for illustrative purposes only. These forecasts are not a reliable indicator of future performance.

MSCI World Index

The MSCI World Index captures large and mid-cap representation across 23 Developed Markets (DM) countries including: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the UK and the US. With 1,643 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

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An investor should only invest if he/she has the necessary financial resources to bear a complete loss of this investment.

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Performance, Credit Facility Usage & Recycling of Proceeds

Performance figures reflect the impact of XIG fund-level and underlying manager-level credit facilities, the reinvestment of proceeds from the sale of underlying funds and/or portfolio companies, cash management, and hedging, which may enhance investor returns. The underlying funds and/or portfolio companies held by PEM Funds may employ additional leverage. Investor returns may be lower without these activities, but leverage will magnify the loss of capital to investors if investments experience negative performance. Please refer to fund offering documents and the latest annual audited financial statement for additional details.

XIG private equity funds have generally incurred leverage for a variety of purposes including to meet capital calls of underlying investments, to acquire new investments, to facilitate hedging activities, and to leverage existing investments to permit distributions or additional investments. Of these, PEM Funds typically use leverage to meet capital calls of underlying investments (see Scenario B, below).

The following table provides a simplified example of the effect of leverage on portfolio returns if an investment experiences either positive or negative returns. For example, assume a portfolio has a steady investment return, net of fees, of 12% per annum in the positive performance example or -12% per annum in the negative performance example. Assume also that the portfolio has a credit facility that charges an interest rate of 3% per annum on drawn capital. $1mm is called by the portfolio on day one, compounds in value for three years, and then is distributed at the end of the three year period. In Scenario A no leverage is used, and the capital is called directly from investors. In Scenario B, 100% of the value of the capital call is met using the credit facility, which is paid off after the first month. The table shows that leverage can impact returns by delaying the payment of capital (Scenario B).The magnitude of the difference between gross-of-leverage and net-of-leverage returns will depend on a variety of factors, and the example has been intentionally simplified.

Scenario	A	B
IRR to Investor – Positive Performance	12.0%	12.3%
IRR to Investor – Negative Performance	-12.0%	-12.4%

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The risks of an investment in a product comprising leveraged acquisitions, reorganizations, and real estate and/or private equity situations arise both from the risks associated with investments in leveraged acquisitions, reorganizations, real estate and private equity situations, as well as from the risks attendant to such product's ability to achieve its investment objectives. These risks will be described more fully in such product's Private Placement Memorandum. Investors should be aware that the business of investing in leveraged acquisitions, reorganizations, and private equity situations is highly competitive. The results of the earlier investment partnerships organized by Goldman Sachs & Co. LLC are not indicative of the results that any current or future investment product may achieve.

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Public Employees Retirement Association of New Mexico

Board of Trustees 2023 Retreat

Fiduciary Session

Foster Garvey

Bob Perez
Executive Committee | Investment Management Co-Chair
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Board Governance Roadmap

1. N.M. Statutes: Fiduciary Responsibility (Board, Executives and Staff)

- **1.1** Basics of Fiduciary Responsibilities
  - **1.1.1** Uniform Prudent Investor Act
  - **1.1.2** Board Obligations
  - **1.1.3** Service Provider Obligations
  - **1.1.4** Responsibility and Liability

2. N.M. PERA – Board Investment Policies

- **2.1** Board Policy
  - **2.1.1** Review of Standards of Conduct
  - **2.1.2** Roles and Duties
- **2.2** Investment Policy
  - **2.2.1** Board /Investment Committee
  - **2.2.2** Staff
  - **2.2.3** External Service Providers

1. N.M. Statutes: Fiduciary Responsibility (Board, Executives and Staff)

1.1 Basics of Fiduciary Responsibilities

- **Duty of Loyalty**
- **Duty to Deal Impartially**
- **Duty to Preserve the Trust**
- **Duty to Be Educated**
- **Duty as Co-Trustee**

1.1.1 Uniform Prudent Investor Act

Uniform Prudent Investor Act

- Exercise the prevailing care, skill, prudence and diligence
- Contemporary best practices
- Not 20/20 hindsight
- Good record keeping

"While even the most aggressive and unconventional investment can meet the standard if arrived at through a sound process, the most conservative and traditional product may be inappropriate if a sound process was not implemented."

– Greenwich Roundtable,
Best Governance Practices for Investment Committees

1.1.2 Board Obligations

Board of Trustees

- Prudent investment and expenditure of the Fund's assets

No statutory expertise requirement

- Experience with large institutional portfolios
- Justified reliance
- Overreliance
- Expected to operate

Board Education

- Education and training

1.1.3 Service Provider Obligations

Investment Consultants

- Operate under a formal contract

External Investment Managers

- Investment Advisers Act of 1940
- Operate under a formal contract

1.1.4 Responsibility and Liability

Preparation

- Understand the materials
- Asking staff questions

Collegiality

- Speak freely
- Explore ideas
- Seek information

Attendance

- Expected attendance at all Board and applicable committee meetings
- Absences
- Medical or other substantial reasons

Inquisitiveness

- Understanding and Questions
- Governance vs. Management

"Governance is governance, management is management, and every Organization must clearly distinguish between them."

– Kenneth Dayton, Greenwich Roundtable

1.1.4 Responsibility and Liability

Monitoring Delegations

- Unambiguous
- Ongoing monitoring
- Prudence
- Co-fiduciary liability

Board Member and Staff Conflicts of Interest

- Fiduciaries are to avoid conflicts of interest
- Disclose promptly
- Refrain from discussing, and recuse from conflicted matters

1.1.4 Responsibility and Liability

Relevant Authority and Liability

- Uniform Prudent Investor Act
- New Mexico statute 10-11-132
- Governmental Conduct Act
- Board policy

2. N.M. PERA – Board Investment Policies

2.1 Board Policy

2.1.1 Review of Standards of Conduct

Board Members, the Executive Director, and PERA Staff:

Expected Conduct

- Conflict
- Financial conflicts
- Record-keeping

Conflicts of Interest

- Impartiality/Nepotism
- Illegal Gifts
- Disclosure and Recusal

Prohibited Transactions and Acts

- Influence for Private Gain
- Use of PERA Property
- Self-Dealing

"Competent boards have a preponderance of people of character who are comfortable doing their organizational thinking in multi-year time frames. These people understand ambiguity and uncertainty and are still prepared to go ahead and make the required judgments and decisions. They know what they don't know. They are prepared to hire a competent Chief Investment Officer and delegate management and operational authority."

– Keith Ambachtsheer
Pension Fund Excellence

2.1.1 Review of Standards of Conduct

Gifts, Contributions, Disclosure and Solicitations

- Current contract
- Potential bidder, offeror or contractor
- Authorized to invest

Confidential Information

- Shall not disclose
- New Mexico Public Records Act

Outside Employment and Other Outside Activity

- Incompatible with the full discharge of their duties and responsibilities

Procurement Oversight

- Proposals and Bids: Quiet Period

2.1.2 Roles and Duties

Board's Adoption and Monitoring of Policies

- Select, supervise the Executive Director
- Delegate

Board's Review and Evaluation of Agency Performance

- Monitor performance and review results
- Ensure the integrity of the financial control and reporting system
- RFPs

Individual Board Member Responsibilities

- Implement and monitor the Board's policies
- Delegated functions
- Operational management

"A good Committee member begins with a flexible mind, willing and able to consider, weigh, and apply new concepts and ideas, to challenge previously held concepts, including one's own, and to ask hard questions."

– Greenwich Roundtable

2.1.2 Roles and Duties

Board Chair and Vice Chair - The Board Chair manages the affairs of the Board and ensures the Board's integrity by:

- **Setting** the Board agenda
- **Making** decisions
- **Ensuring** comprehensive information
- **Conducting** Board meetings / rules of order
- **Acting** as the Board's representative and formal spokesperson
- **Providing** leadership

Committees, Committee Chairs and Vice-Chairs - Committee Chairs organize Committee work and ensure assistance to the Board by:

- **Limiting meeting discussion**
- **Ensuring fair and efficient deliberations**
- **Working directly with the staff**
- **Acting as a liaison**

"Keep a thorough history of decisions. Memories are (annoyingly) selective."

*– Arnold Wood,
Greenwich Roundtable*

2.2 Investment Policy

2.2.1 Board / Investment Committee

Board of Trustees

- Prudent investment and expenditure of the Fund's assets
- Oversee the management of the Fund
- Determine the strategic direction of investment of the Fund

Investment Committee is established to assist the Board by:

- Making recommendations to the Board on investment actions
- Establishing benchmarks to evaluate investment portfolio performance
- Adopting an annual work plan

"Periodically, an Investment Committee should ask itself: 'Are we the right people tackling the right issues?' If so, the Committee is more likely to make the right decisions."

– Myra Drucker,
Greenwich Roundtable

2.2.2 Staff

Executive Director, with assistance from Staff and Consultants, shall:

- Plan, organize, and administer the operations of PERA
- Follow the policy guidance and direction from the Board
- Retain and rely on Staff and Investment Consultants

Chief Investment Officer, has the primary responsibility to:

- Implement and direct all decisions necessary and appropriate to carry out the Board's investment policies, including the strategic asset allocation target, risk budget, and active management strategic target approved by the Board
- Report on all decisions and the progress of implementation of those decisions to PERA's Investment Committee

2.2.2 Staff

Investment Staff, working with the CIO, and exercising the same fiduciary responsibility as the Board, is responsible for:

- Assisting in establishing investment and administrative policies
- Implementing Board established policies and programs
- Managing investments and informing the Board thereof
- Assisting with development and review of investment policies and procedures
- Reporting on the progress of the Fund
- Evaluating, selecting, monitoring and terminating investments and managers

General Counsel / Legal, exercising the same fiduciary responsibility as the Board, is responsible for:

- Legal compliance of the investment program
- Advising the Board, Executive Director, CIO and Staff on Investment-related legal matters

2.2.3 External Service Providers

Investment Consultants, shall:

- Report to the Board or the Investment Committee as directed
- Work with the Board and Staff in the oversight and implementation of the investment objectives
- Make recommendations to the Board regarding strategic objectives and risk budget
- Advise regarding selection of investment managers and portfolio monitoring

Investment Managers, shall:

- Be selected by the CIO to serve PERA through various contracts
- Exercise proxy voting in accordance with the PERA Proxy Voting Policy
- Report to Staff on the performance of the Fund

Questions and Firm Information

Foster Garvey PC

Foster Garvey PC: Fast Facts

- Headquartered in Seattle with offices in Portland, Washington DC, New York, Spokane and Beijing
- Full service corporate law firm and investment management practice
- Deep commitment to diversity initiatives, pro bono, and community service

Investment Management Practice at Foster Garvey

- Provide alternative investment legal counsel across all areas of public pension fund investing since 1999
- Represent more than 30+ U.S. public pension funds (ranging in AUM ~$3B to ~$495B)
- Also represent other institutional investors (corporate retirement funds, universities, endowments, foundations, insurance companies, private non-profits, family offices, etc.)

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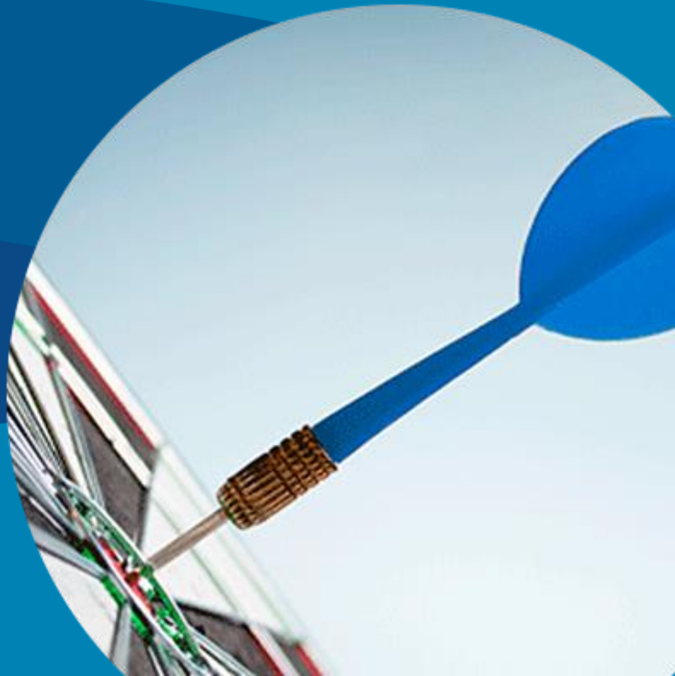
SEATTLE PORTLAND WASHINGTON, D.C. NEW YORK SPOKANE BEIJING

New Mexico Public Employees Retirement Association
2023 Experience Study Primer

July 12, 2023

Janie Shaw, ASA, EA, MAAA
Paul Wood, ASA, FCA, MAAA



Agenda

- Review of Current Situation
- Experience Study Process
- Trends in the “Headline” Assumptions
  - Discount Rate
  - Mortality
- Impact on Service Purchase
- Timeline

Review of Current Situation
Managing Uncertainty

- Circumstance:
  - There is a future reality that we will have to live with…
  - But there are limitations in our ability to predict it
- Strategy:
  - Narrow the range of possible outcomes
    - Getting right what we can get right
    - Developing defensible, unbiased starting points
  - And then implementing strategic policies that will provide an appropriate and sustainable path to those eventual outcome(s)

GRS

Review of Current Situation

Funding Policy

- The “Funding Policy” of a Pension Plan is a systematic set of procedures used to determine the contributions which must be made in a specific year to meet a pre-specified goal
- NMPERA is funded on a fixed rate basis
  - Contribution does not automatically adjust to changes in experience

Basic Retirement Funding Equation

C + I = B + E

Contributions	Investment Income	Benefits	Expenses
• Funding Policy	• Investment Strategy	• Plan Design	• Administrative Policy

"Net Money In = Money Out"

Review of Current Situation

Funding Policy – Contribution Rates for FY2024

- Public Employees Retirement Association of New Mexico

Division	Employer Contribution Rate	Member Contribution Rate
State General	19.24%	10.92%
State Police	25.69%	9.05%
Municipal General*	10.97%	14.47%
Municipal Police*	19.97%	18.33%
Municipal Fire*	22.76%	20.03%
All PERA Divisions	**16.66%**	**13.46%**

** For Municipal plans, employee and employer rates will increase by 0.5% of payroll effective July 1, 2024, and July 1, 2025.*

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Review of Current Situation

Funding Policy – Contribution Rates

- Legislative Division of the Public Employees Retirement Association of New Mexico
  - Annual appropriations to finance portions of benefits not financed by members' contributions
  - Members contribute $1,000 for each year of service
- New Mexico Judicial Retirement Fund
  - The State contributes 15.0% of pay, a portion of docket fees, and $100,000 every month until the Judicial Fund is 100% funded
  - Members contribute 10.5% of salary
- New Mexico Magistrate Retirement Fund
  - The State contributes 15.0% of pay, a portion of docket fees, and $100,000 every month until the Magistrate Fund is 100% funded Members contribute 10.5% of salary
- Volunteer Firefighters Retirement Fund of New Mexico
  - State contributes $750,000 annually to the Volunteer Firefighters Fund from the State's fire protection fund

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Experience Study Process

Purpose of the Valuation

- The *primary* purpose of the annual actuarial valuation is to:
  - Determine the adequacy of the current State and employer contributions
  - Describe the current financial condition of PERA
  - Analyze the changes in condition of PERA
  - Provide various summaries of the data

Experience Study Process

Actuarial Valuation: Projecting the Liability

What is the probability the member reaches retirement? (Termination assumption)

When will the member retire? (Retirement assumption)

How much will the benefit be? (Benefit Provisions, Salary increase assumption)

How long will the benefit be paid? (Mortality assumption)

Hired at age 30

Retire with annual benefit

Receive benefit for remaining lifetime

What level of COLA will be paid?

What investment earnings will be available to help pay the benefits?

What overall payroll will be available to provide contributions?

Experience Study Process

How assumptions factor in…

- Over time, the true cost of benefits will be borne out in actual experience
  - Ultimate benefits paid are NOT affected by actuarial assumptions or methods
  - Determined by actual participant behavior (termination, retirement), plan provisions, and actual investment returns
- Assumptions help us develop a reasonable starting point for decision making and budgeting today

"Projections are difficult, especially ones about the future"

Experience Study Process

Purpose of Experience Study

- Assumptions should occasionally change to reflect
  - Emerging industry best practices
  - New information and changing knowledge
  - Changing patterns of retirements, terminations, mortality, etc.
- Experience study is a regularly scheduled review of the assumptions and methods
- General process for setting assumptions and methods
  - Actuary makes recommendations
  - Board considers actuary's recommendation and makes the final decision for the system
- Any changes would be reflected in the 2024 valuation

Experience Study Process

General Procedure

- Compare actual experience to current actuarial assumptions and recommend changes to assumptions if necessary to better align with future expectations
- Reviewed past experience over a given timeframe
  - Identified how many members retired, terminated, became disabled, or died, including their age/service
  - Identified salary increases received by active members
- Greater emphasis on forward-looking expectations for economic assumptions

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Experience Study Process

Actuarial Standards of Practice

- Guidelines for the assumption setting process are set by the Actuarial Standards of Practice
  - ASOP #4 Measuring Pension Obligations
  - ASOP #25 Credibility
  - ASOP #27 Selection of Economic Assumptions
  - ASOP #35 Selection of Demographic and Other Noneconomic Assumptions
  - ASOP #44 Selection and Use of Asset Valuation Methods

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Experience Study Process

Reasonable Assumptions, per ASOP 27

- An assumption is reasonable if
  - It is appropriate for the purpose of the measurement
  - It reflects the actuary's professional judgement
  - It takes into account historical and current economic data that is relevant as of the measurement date
  - It reflects the actuary's estimate of future experience
  - It has no significant bias (i.e., it is not significantly optimistic or pessimistic)
    - Although some allowance for adverse experience may be appropriate

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Experience Study Process

Reasonable Assumptions, per ASOP 27 (cont.)

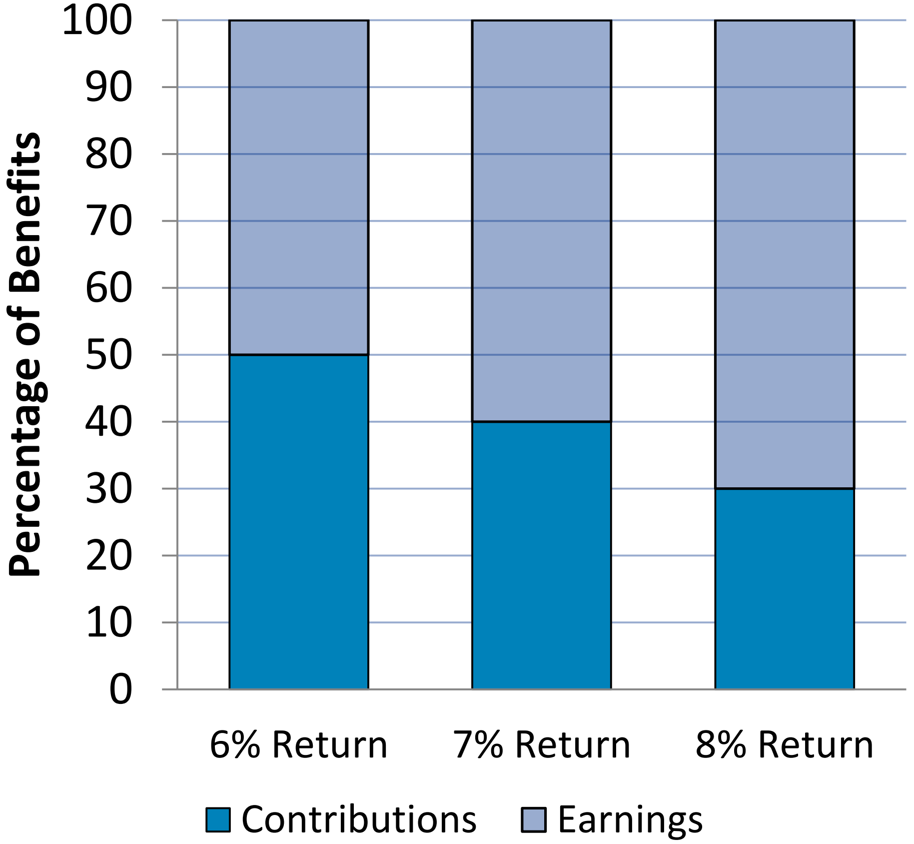
- Each individual assumption must satisfy the standards
- From ASOP 4: Actuary should select assumptions such that the <u>combined effect</u> of the assumptions selected by the actuary has no significant bias (i.e., it is not significantly optimistic or pessimistic) except when provisions for adverse deviation are included

Trends in the "Headline" Assumptions

Discount Rate

- Discount Rate assumption is used to predict what percentage of a future benefit payments will be covered by investment return and what percentage by contributions

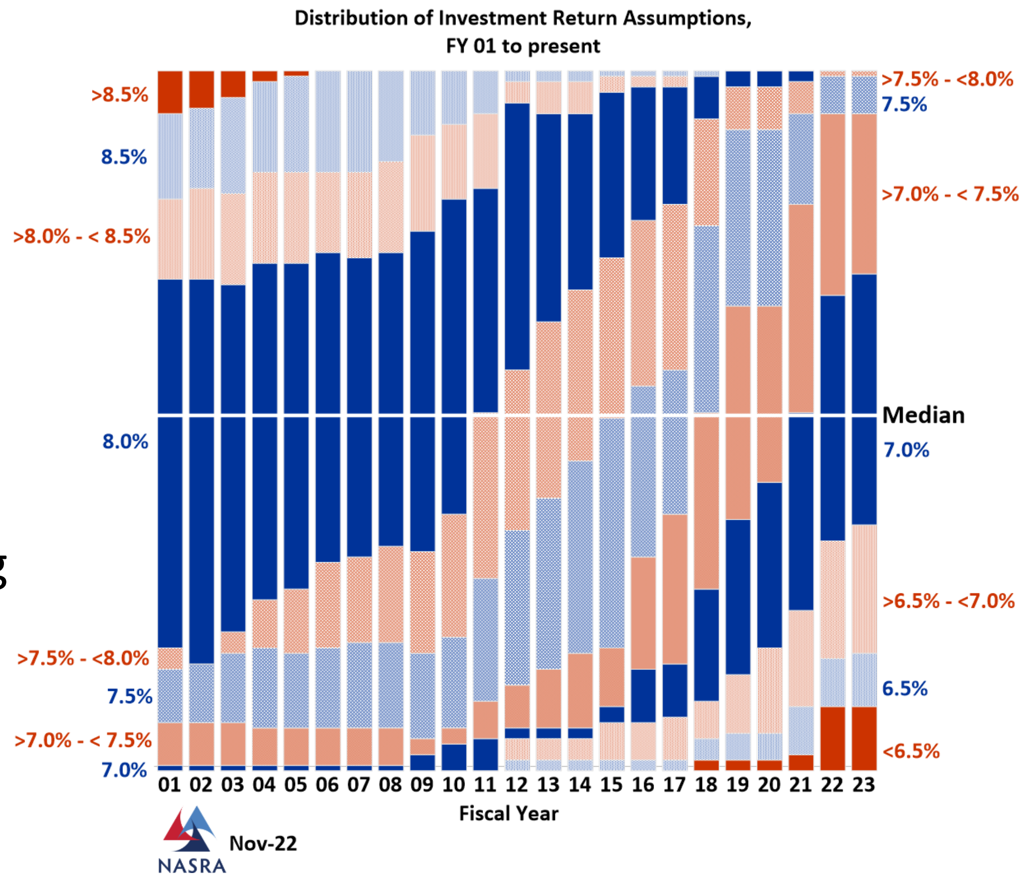
- Lower Returns/Higher Contributions



Trends in the "Headline" Assumptions

Discount Rate

- Tremendous amount of pressure on the discount rate assumption in recent years
- Recent volatility in the capital markets is again shining the spotlight in the process of setting this assumption



Source: 2023 Public Plans Database

Trends in the "Headline" Assumptions

Discount Rate

- The assumption selected should be reasonable
  - Not necessarily a single "correct" answer
- Assumption is selected using a process that considers:
  - The Plan's target asset allocation
  - Capital market expectations
    - Utilize a building block approach that reflects expected inflation, real rates of return, and plan related expenses
    - Take into account the volatility of the expected returns produced by the investment portfolio
- Other factors to potentially consider
  - Historical investment performance
  - Comparison with peers

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Trends in the "Headline" Assumptions

Discount Rate

- Current assumption is 7.25%
  - 2.50% inflation rate
  - 4.75% real rate of return
- Based on a September 2022 analysis by Wilshire:
  - Expected Beta Return - 10 Years: 7.49%
  - Expected Beta Return - 20 Years: 7.80%
  - Expected Beta Return - 30 Years: 8.11%

Trends in the "Headline" Assumptions

Mortality

- Current Mortality Assumptions
  - Based on the RPH-2014 Blue Collar mortality tables with female ages set forward one year
  - Future improvement in mortality rates is assumed using 60% of the MP-2017 projection scale generationally
  - Non-public safety groups
    - 25% of in-service deaths are assumed to be duty related
  - Public safety groups
    - 35% of in-service deaths are assumed to be duty related

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Trends in the "Headline" Assumptions

Mortality

- Public sector specific tables released in 2019
  - Pub-2010 Public Retirement Plans Mortality Tables
- No longer blue collar/white collar adjustments
  - Now it is above or below a median income level
- We will compare actual mortality experience to the what would have been predicted
- These tables (or a variation of) may be more appropriate to value the liabilities
- We will also review the appropriateness of the mortality projection scale

Impact on Service Purchases

- Assumptions used to determine the cost of service purchase are based on very old assumptions
- We are currently working on an update to the Service Purchase calculator that incorporates not only Tier 2 but also an updated set of assumptions
- The cost under the new assumption set will likely result in a slight reduction in the cost of service purchase

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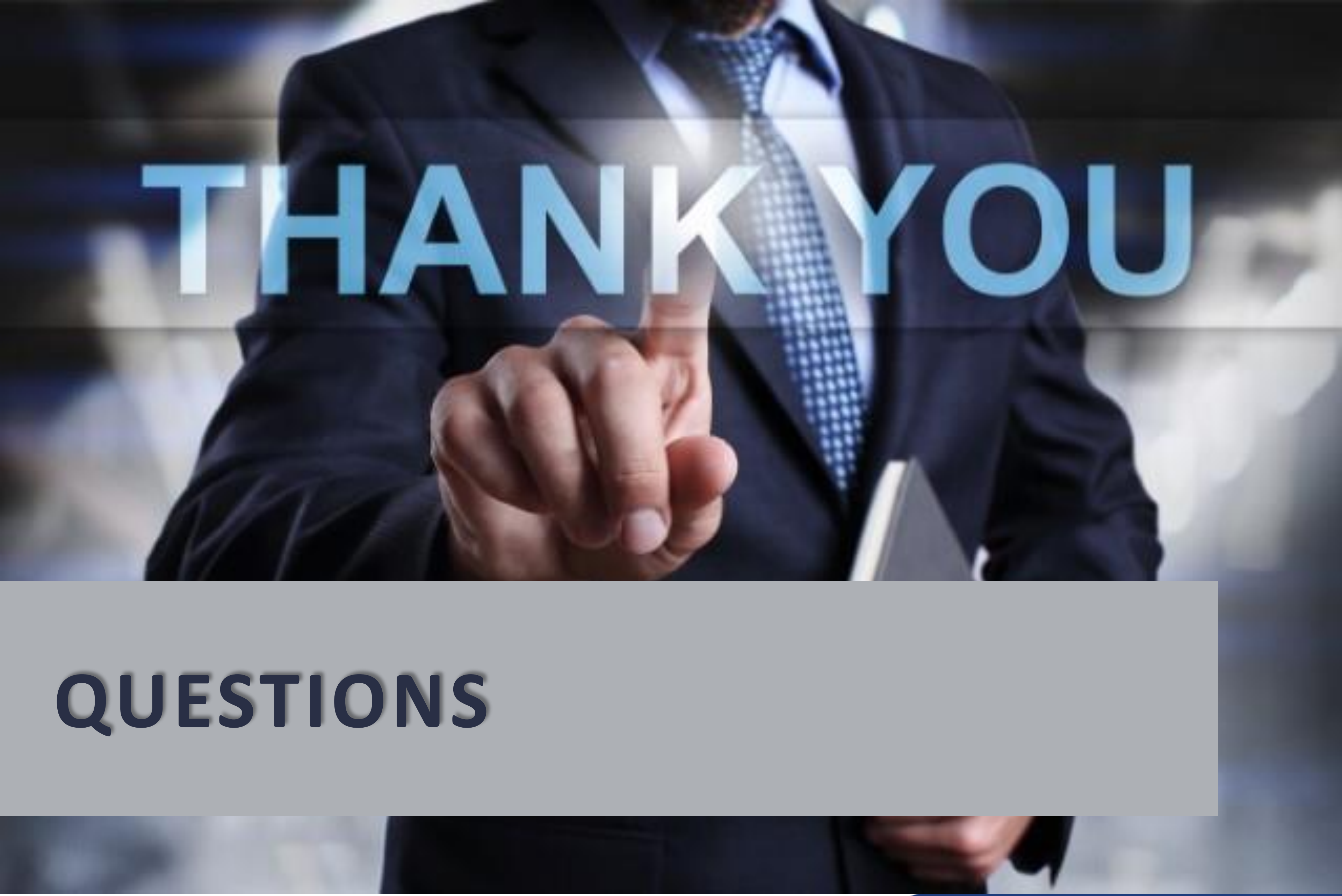
Timeline

- Today: Cover the basics of an experience study
- July 1, 2023 valuation will be based on the current assumption set
- After the valuation, we will begin the study
- Present results and recommendations in 2024
- Board approval prior to the commencement of the July 1, 2024 valuation
- July 1, 2024 valuation will be based on the new assumption set

Timeline

Other Items to Consider

- There are implementation and effective date items to consider
- Among these are the effective date of changes for benefit administration items such as service purchase and optional form factors



QUESTIONS

Wilshire

Public Employees Retirement Association of New Mexico 2023 Retreat

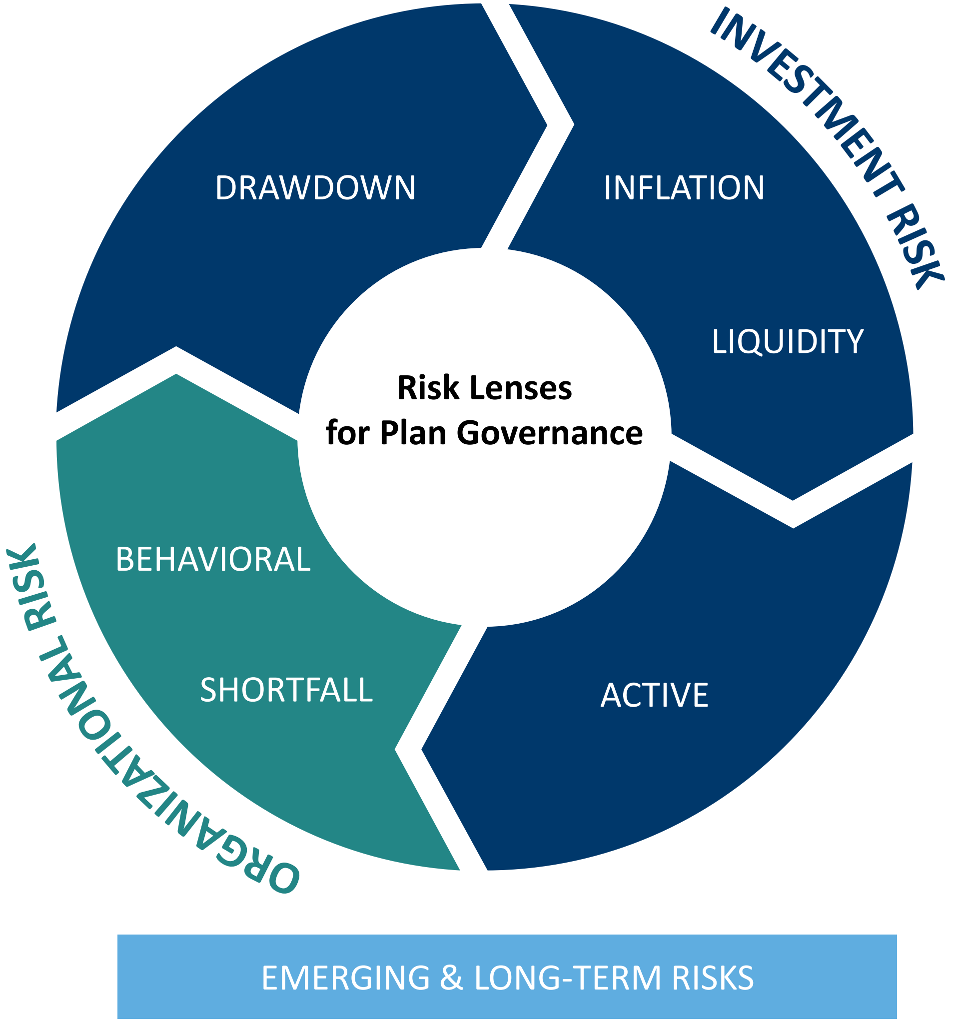
Investment Risk Education

July 2023

Risk Assessment Framework

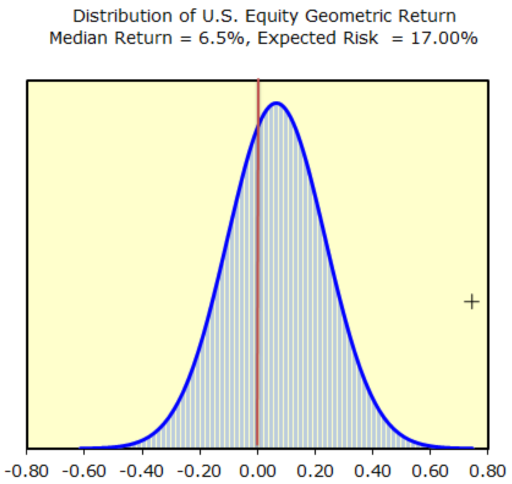
Wilshire's multi-dimensional view of risk integrates organizational and investment considerations into a comprehensive framework for evaluating strategic decisions.

- Shortfall: Support distributions and long-term growth
- Behavioral: Instill strong governance
- Drawdown: Limit portfolio losses
- Inflation: Preserve long-term purchasing power
- Liquidity: Balance near-term needs, long-term opportunities
- Active: Ensure unique exposures
- Emerging & Long-Term: Environmental, Social & Governance risks, such as externalities, intangibles and reputation may be linked to various risk lenses



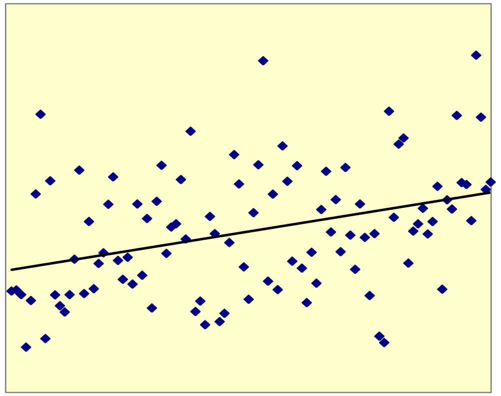
Asset Class Expectations

- Median Return
- 50% probability that the return will be greater than the expected return.
- 50% probability that it will be less than the expected return.



- Measures the dispersion of asset class returns around the expected return.

Correlation = .35

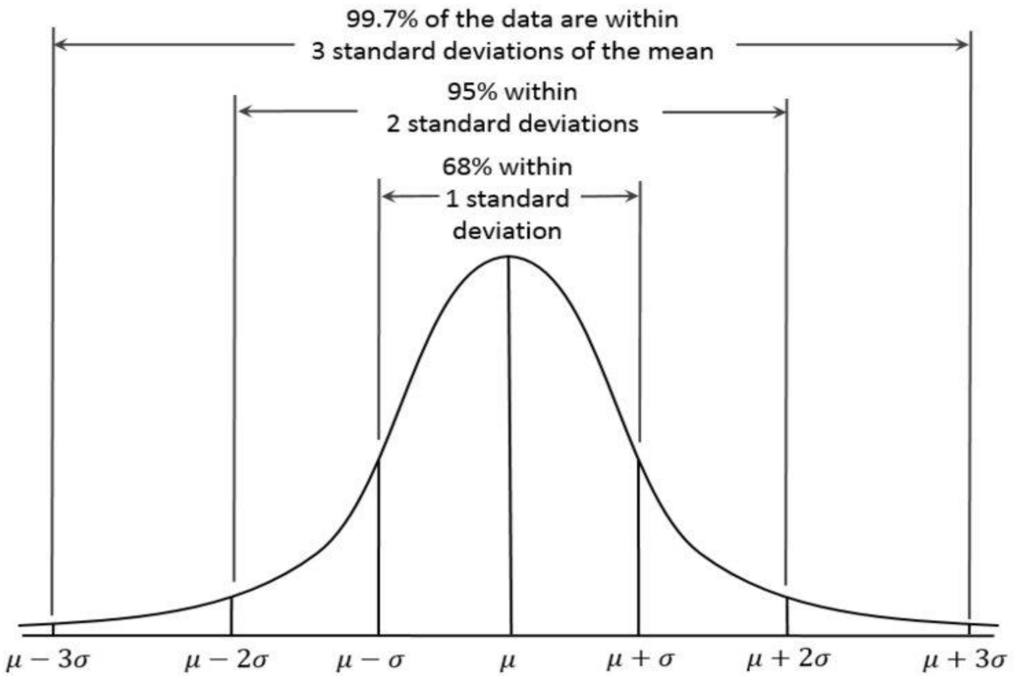


- Measures the movement of asset class returns in relation to one another.

Standard Deviation – Absolute Risk

- The forward looking expected standard deviation (variation) of the PERA asset allocation policy is 12.35% as of March 31, 2023

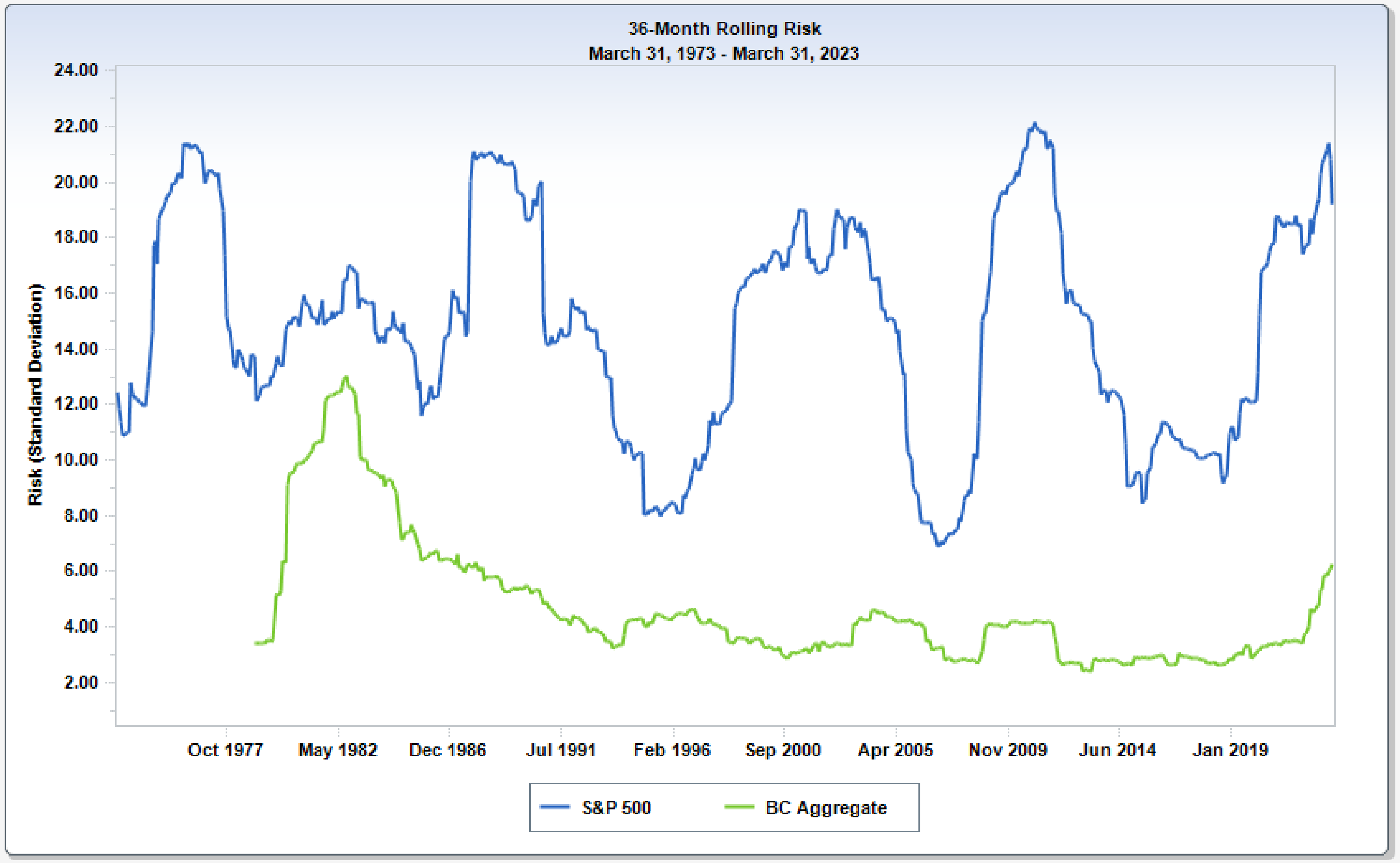
What Does This Mean?



-29.4% -17.0% -4.7% 7.70% 20.1% 32.4% 44.8%

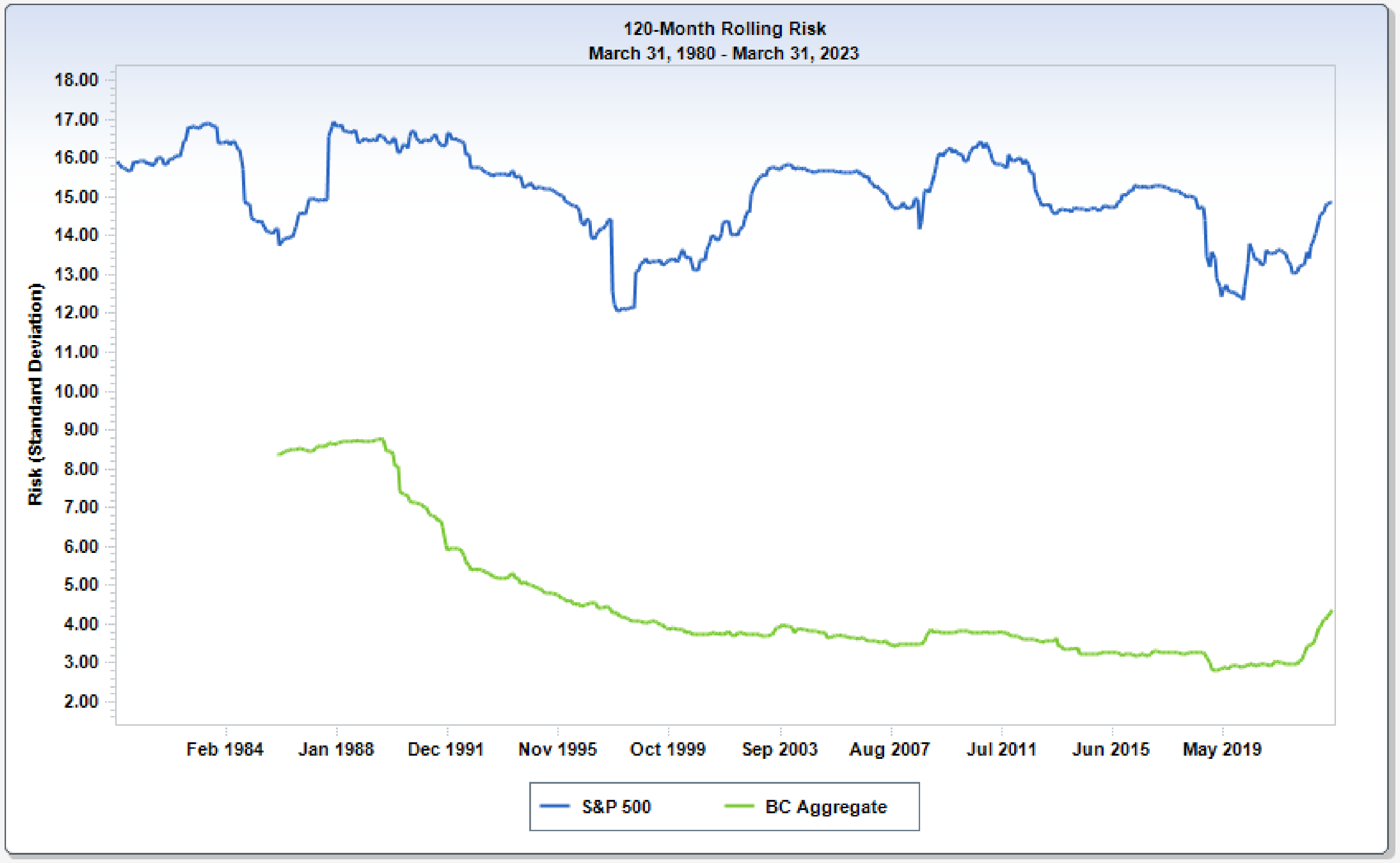
- Standard deviation is used to quantify risk, as it measures variation or dispersion around a central point (In this case, the central point is the expected return)
- Recall the ten-year expected return figure of 7.70% with standard deviation of 12.35%
- Statistically, 68% of the time the return is expected to be within +/- 1 standard deviation of 7.70% or between -4.65% and 20.05%
- 95% of the time the return should be within +/- 2 standard deviations of 7.70%, or between -17.00% and 32.40%

Standard Deviation – Is 12.35% good? Bad?



	S&P 500	Bloomberg Agg Bond
Max	22.16%	13.04%
Min	6.90%	2.42%
Average	14.74%	4.68%
Median	14.92%	4.06%

Standard Deviation – Is 12.35% good? Bad?



	S&P 500	Bloomberg Agg Bond
Max	16.93%	8.77%
Min	12.04%	2.82%
Average	15.06%	4.53%
Median	15.21%	3.79%

Different Ways to View Standard Deviation

There are many (and no single perfect) ways to measure standard deviation

Ex-Post = Measuring risk using historical realized returns “after the fact”

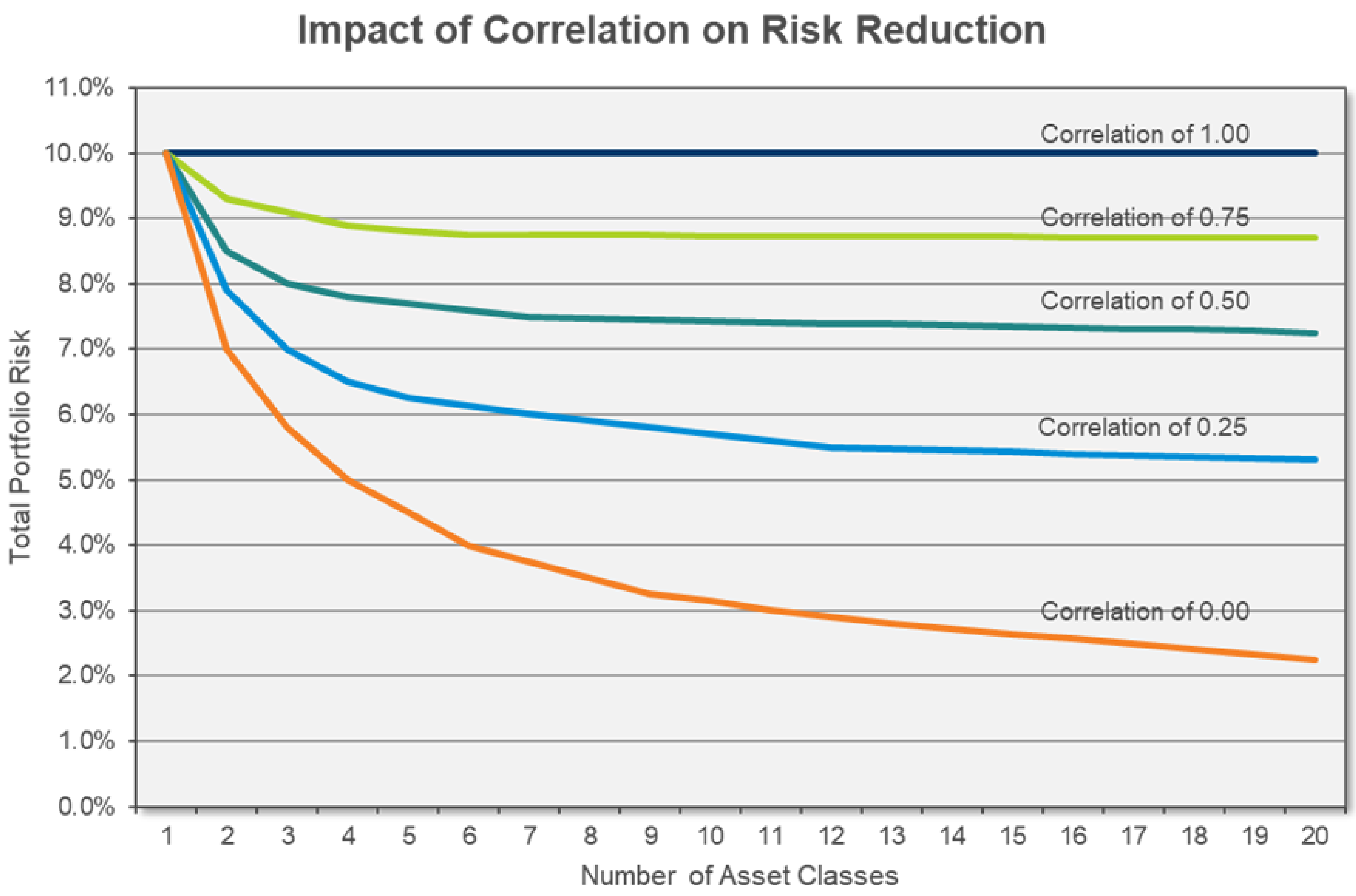
- The look back period is very impactful in terms of the results
- Not very informative about the underlying drivers of risk going forward

Ex-Ante = Forecasting future risk using holdings and risk models “before the fact”

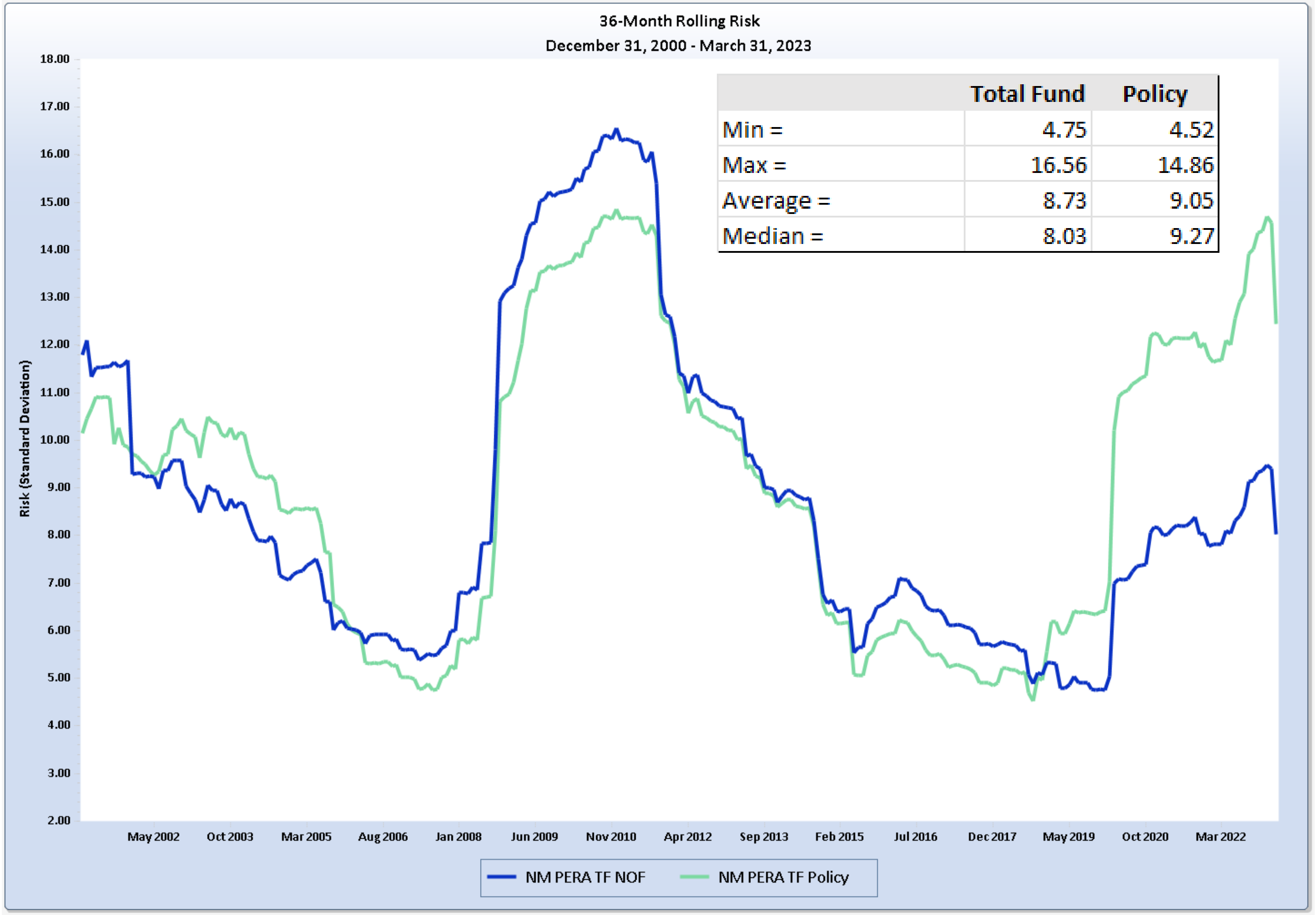
- Many different risk models available
- Allows the investor to decompose the underlying drivers of risk in the portfolio using factors that can be managed

Diversification of Asset Classes

- "Diversification is the only free lunch in finance" – Harry Markowitz, Noble Prize Recipient
- However, investors must take a thoughtful approach to diversification
- DINO (Diversification in name only)
- Diminishing marginal benefit by simply adding asset classes, even with uncorrelated assets
- Address using a 'bucketing approach' to asset allocation

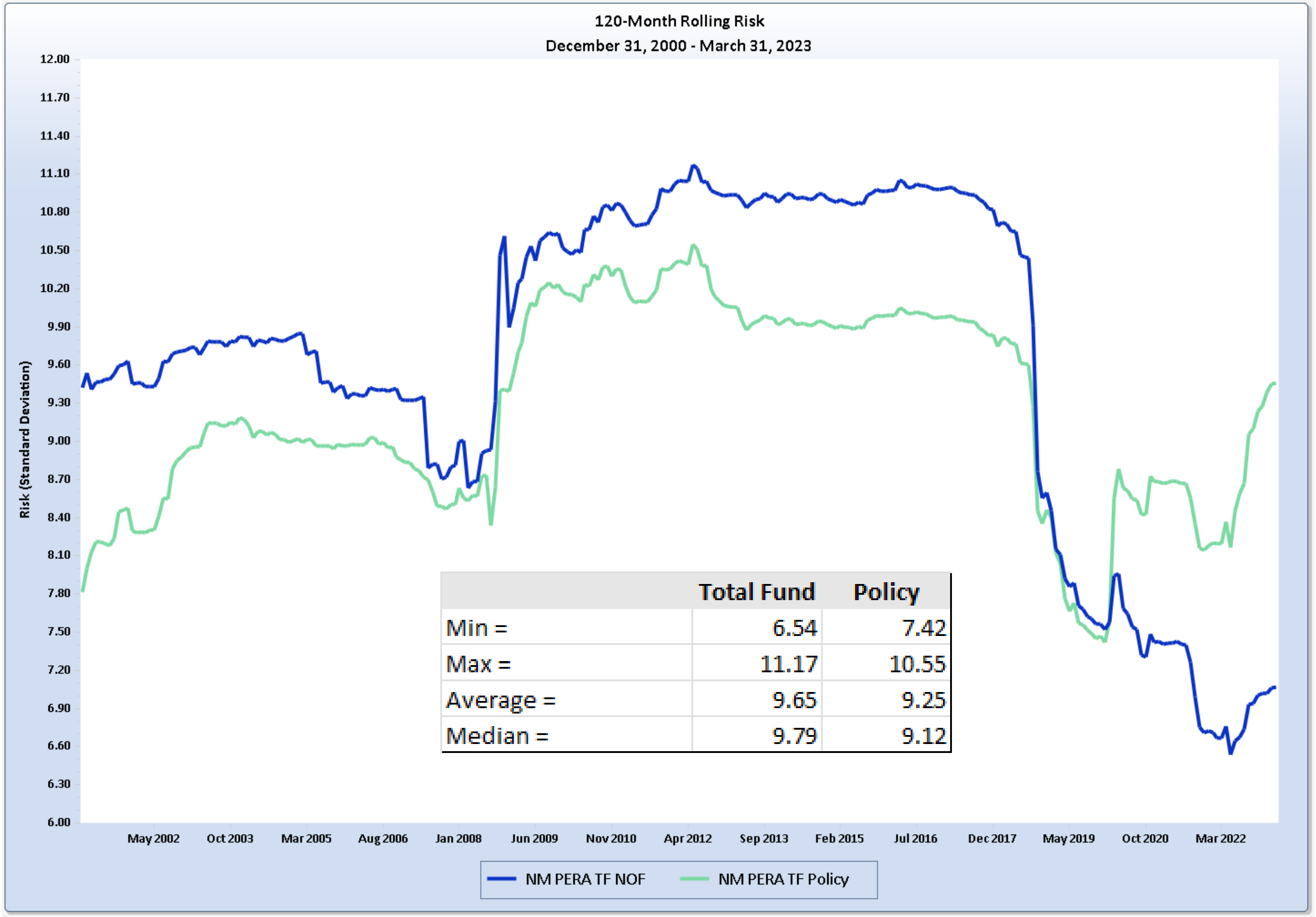


Ex-Post Realized Risk (Rolling 36 Months)

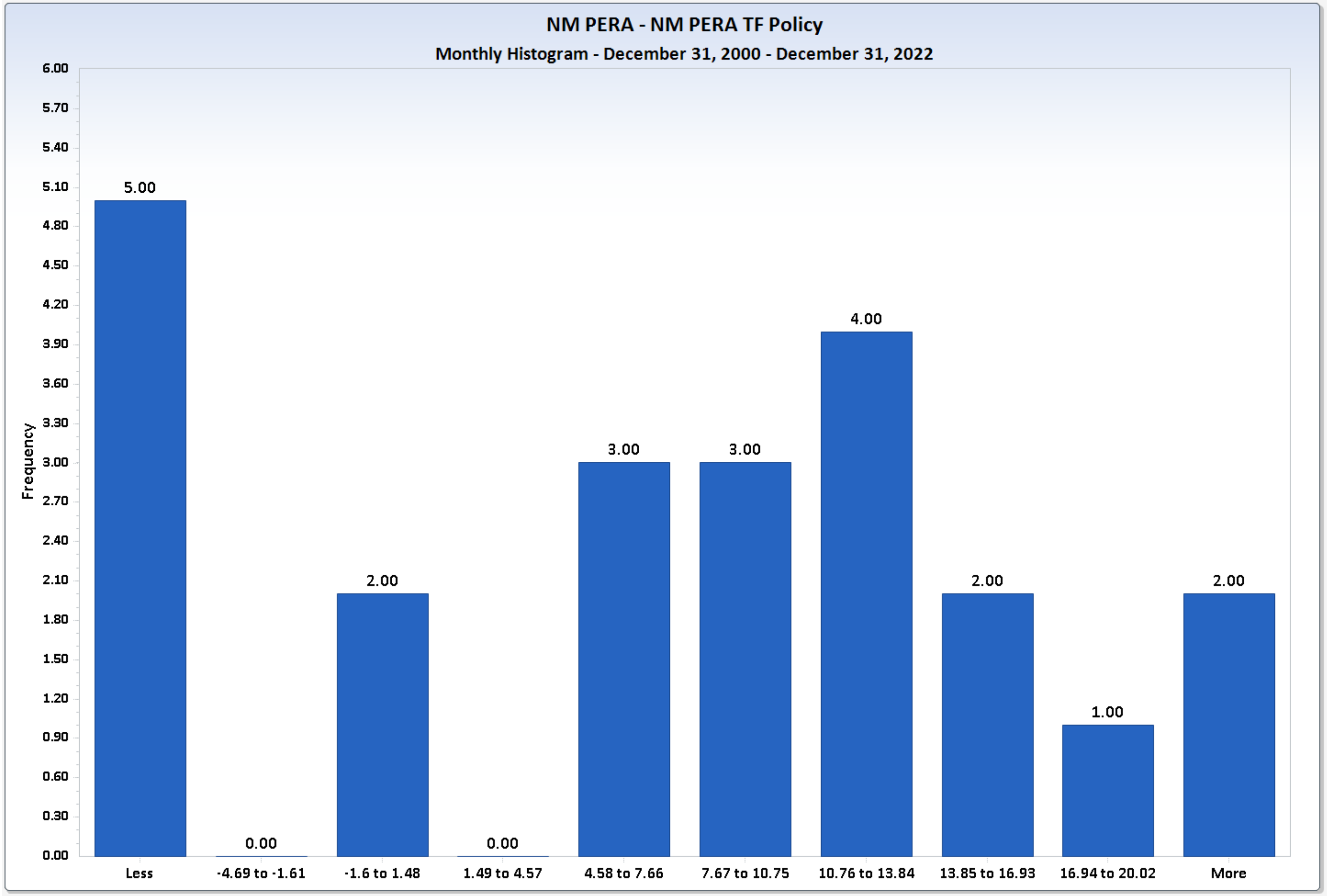


	Total Fund	Policy
Min =	4.75	4.52
Max =	16.56	14.86
Average =	8.73	9.05
Median =	8.03	9.27

Ex-Post Realized Risk (Rolling 120 Months)



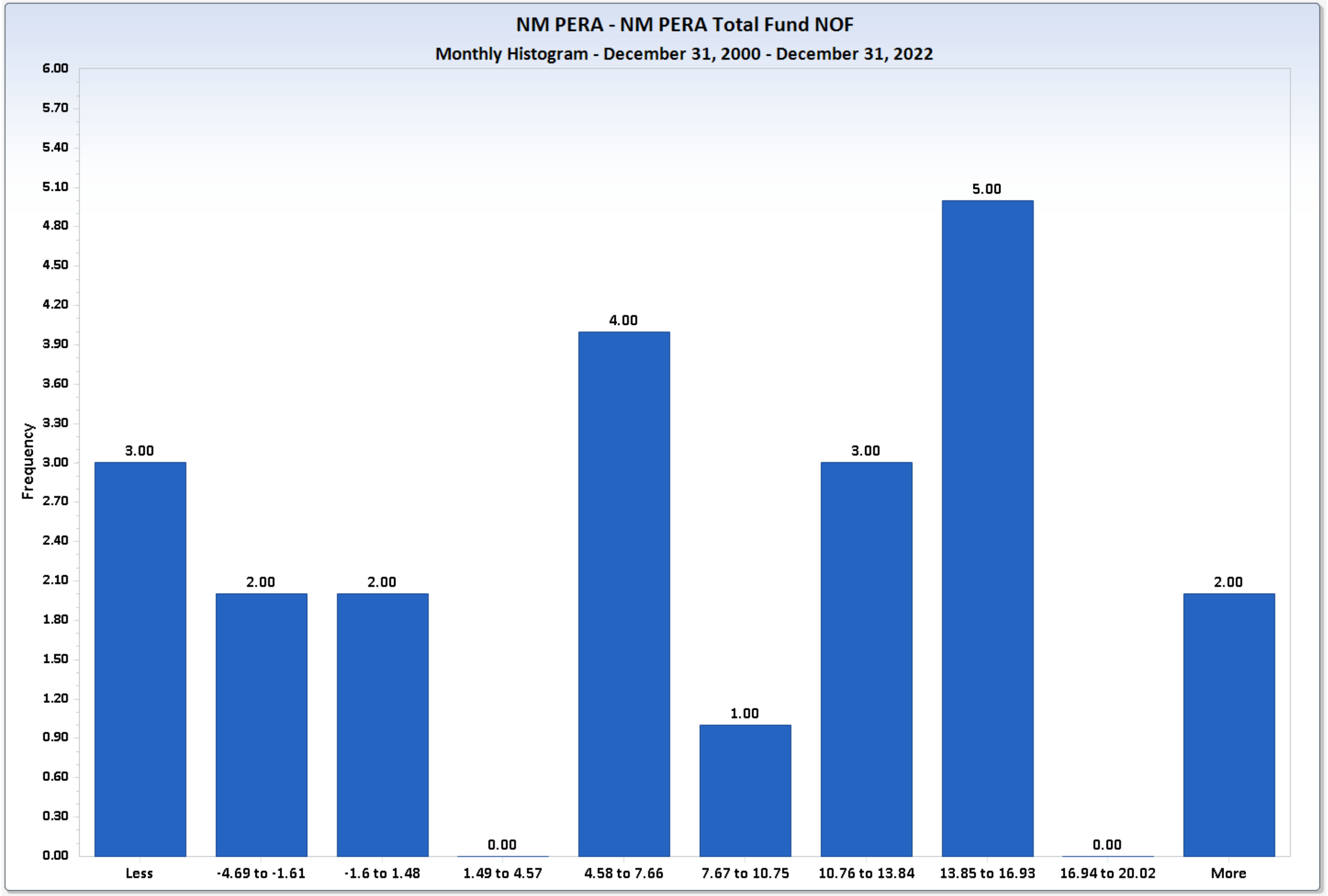
Histogram of Realized Returns – SAA



Realized Results: Past 22 Years

- Using the most recent portfolio assumptions we assume a 1 standard deviation return would fall between -4.7% and 20.0% almost 68% of the time.
- Per the histogram of PERA results (at left), given 22 years of returns, 7 of those years fall outside a range of 1 standard deviation.
- 68% of the observations (15 of 22 years) are within 1 standard deviation.

Histogram of Realized Returns – Portfolio



Realized Results: Past 22 Years

- Using same analysis but with actual portfolio returns
- 5 observations fall outside 1 standard deviation range
- 77% of the observations (17 of 22 years) are within 1 standard deviation
- This is due to tracking error

What is Tracking Error?

- Strategic policy portfolios cannot be implemented passively for a combination of reasons
  - Rebalancing is costly and transaction costs should always be considered
  - Private markets are not directly investable in a passive vehicle and benchmarking remains a challenge
- The result of this implementation hurdle is that portfolio returns can deviate from policy returns – these are excess returns

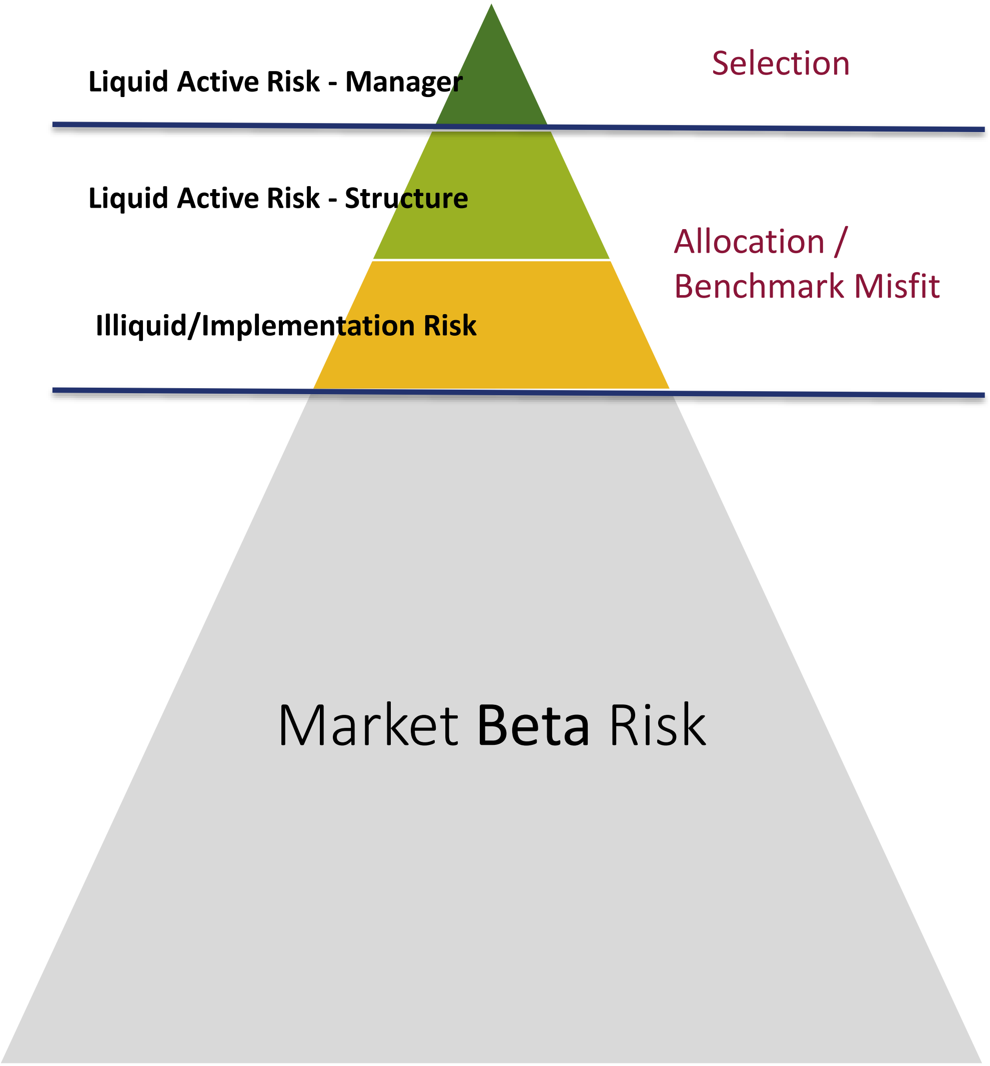
Tracking error is equal to either the realized or expected volatility of the excess returns

- A plan should only accept tracking error if they:
  - Expect to get compensated for that risk by generating additional return
  - If that risk is unavoidable in order to access the underlying beta (private markets)

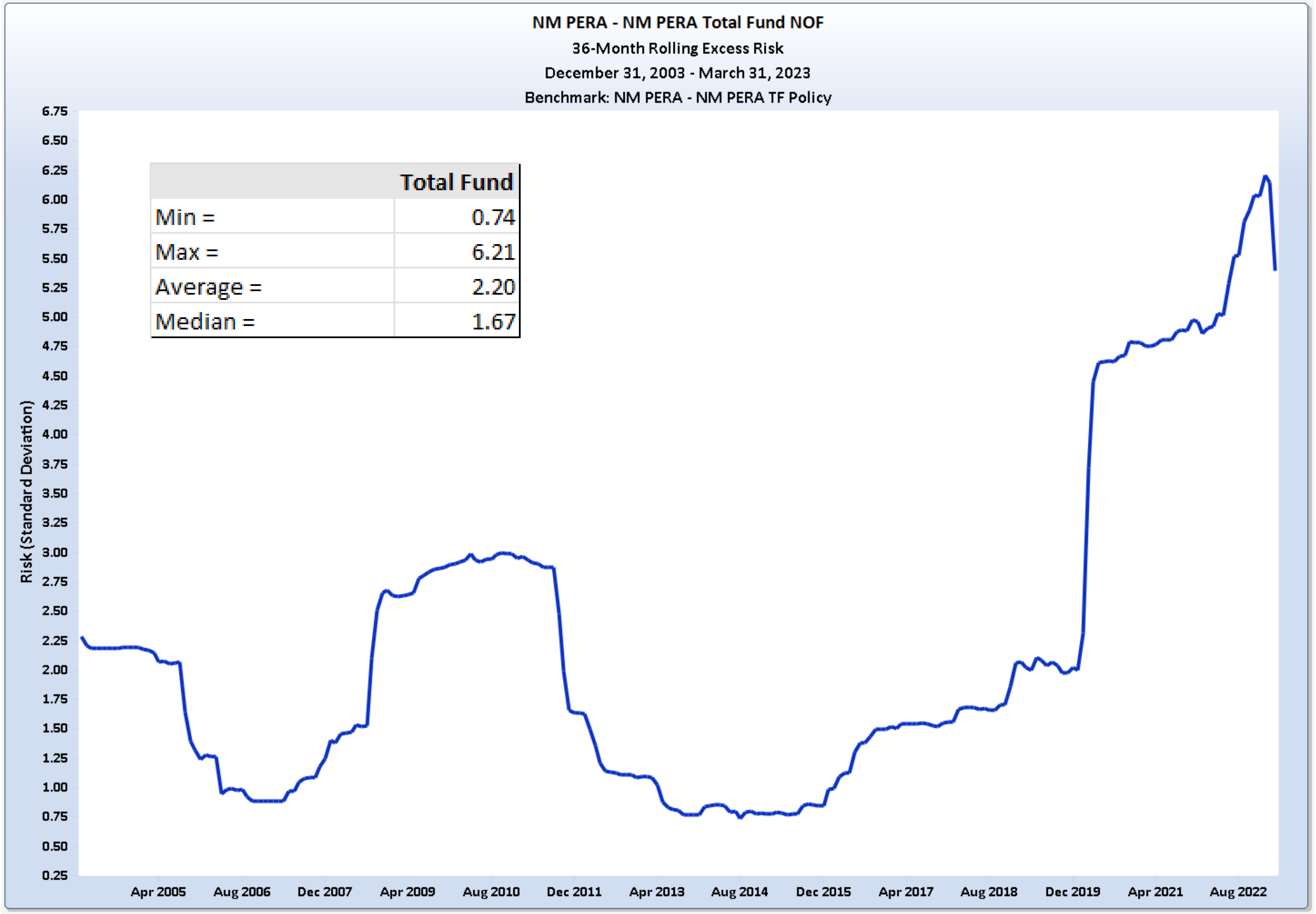
Interpreting Active Risk: Sources of Tracking Error

Active manager risk is not the only source of tracking error for asset owners.

- **Total Fund TE** – aggregate active risk of all investments versus the strategic policy but can and should be split up amongst the various stakeholders
- **Allocation Deviation** – active risk from differences in actual weights vs policy weights.
- **Benchmark Mismatch** – active risk from differences in style in the individual composites versus composite benchmarks (by staff).
- **Manager Risk**– active risk from asset managers (irrespective of style biases versus their benchmark or truly idiosyncratic risk).

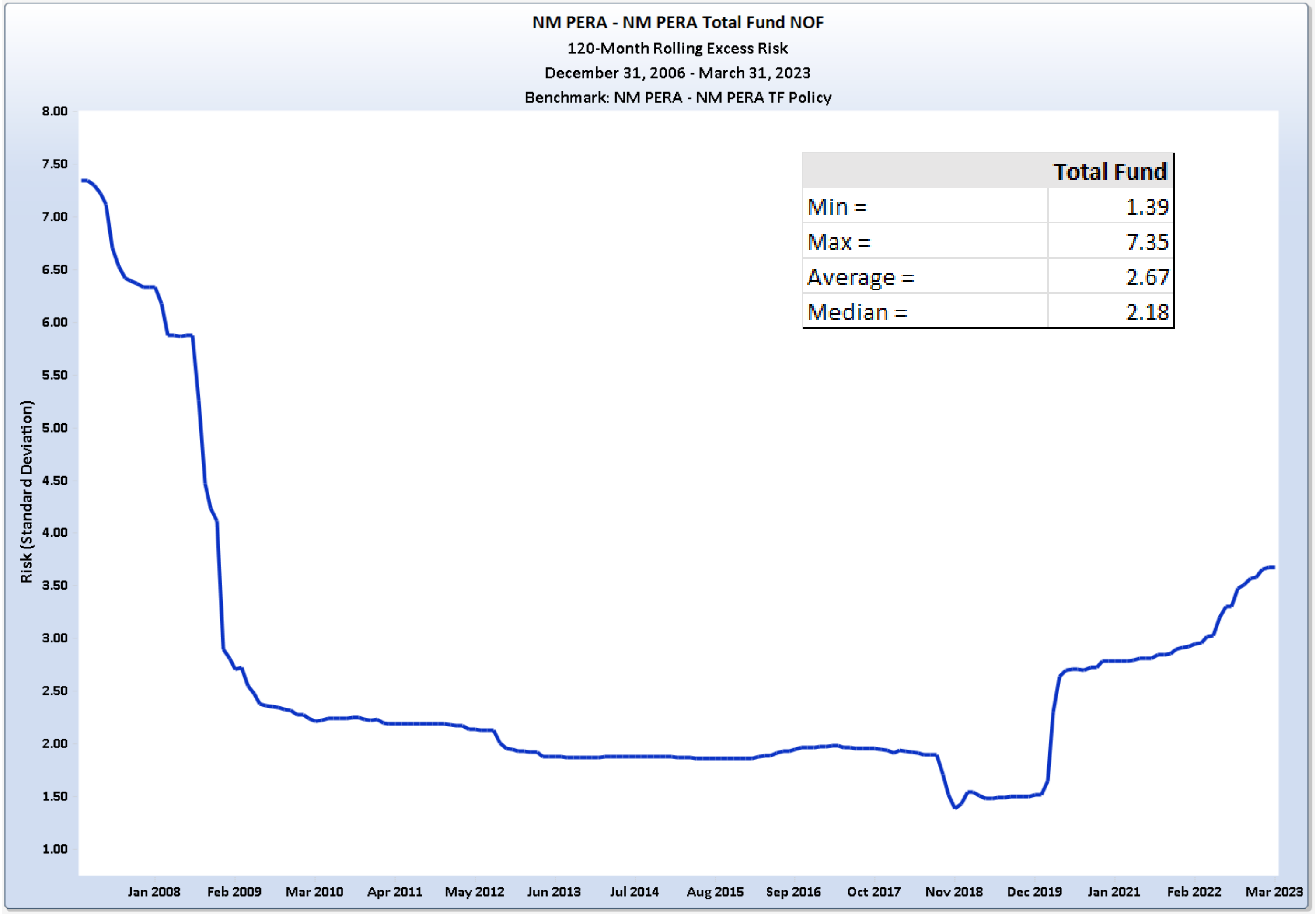


Ex-Post Realized Tracking Error (Rolling 36 Months)



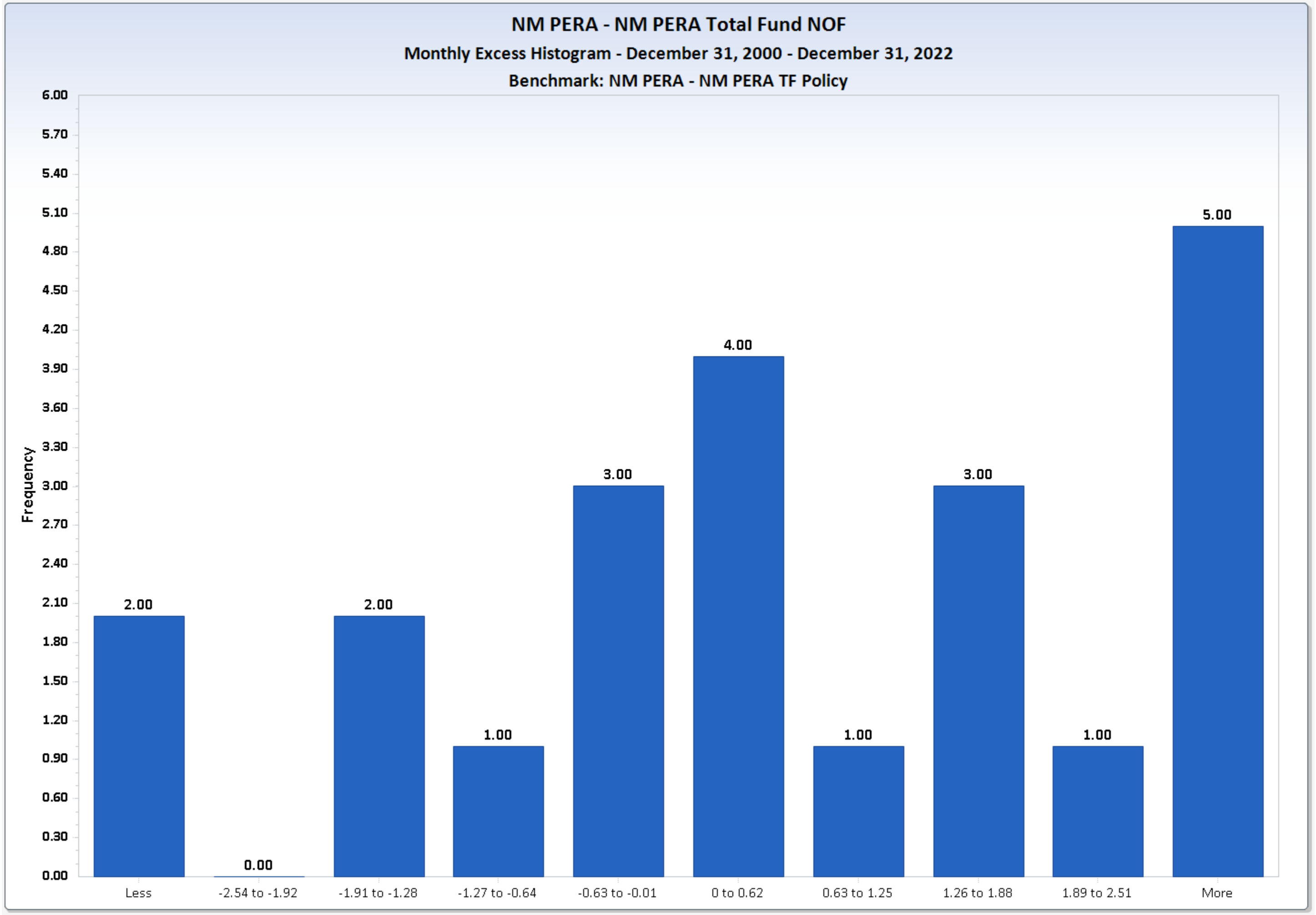
	Total Fund
Min =	0.74
Max =	6.21
Average =	2.20
Median =	1.67

Ex-Post Realized Tracking Error (Rolling 120 Months)



	Total Fund
Min =	1.39
Max =	7.35
Average =	2.67
Median =	2.18

Histogram of Realized Excess Returns



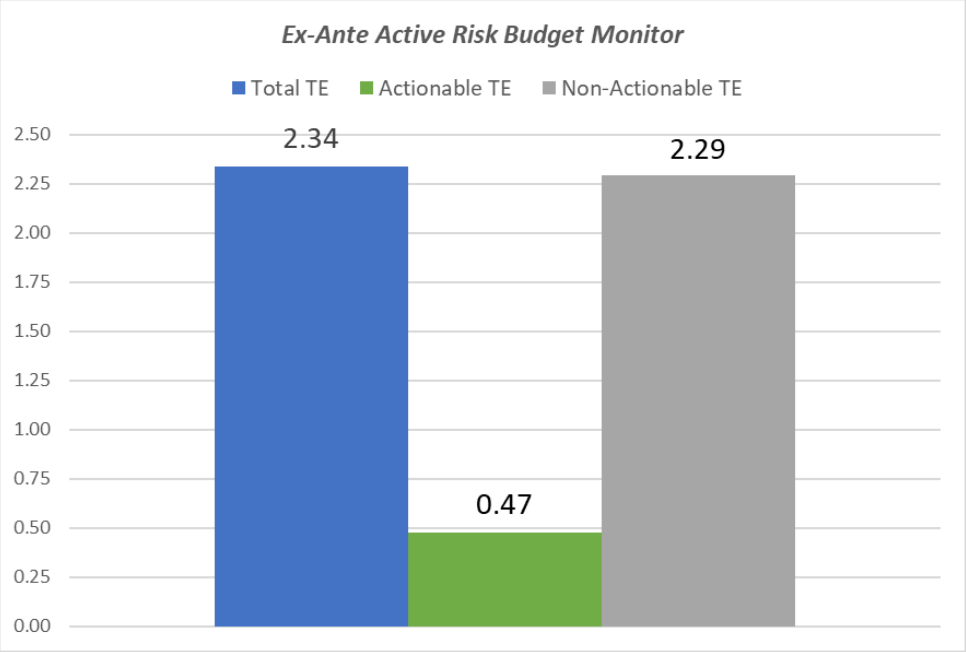
Realized Results:

Past 22 Calendar Years

- Using a tracking error of 2.5% we would expect 68% of the observations of excess returns to fall between -2.5% and 2.5%
- 7 observations fall outside expected range (most to the upside)
- 68% of all observations (15 of 22 years) are within 1 standard deviation

PERA Ex-Ante Risk Dashboard Snapshot (as of March 31, 2023)

Composite	Benchmark	Weight	Tracking Error vs Composite Benchmark	Total Plan Tracking Error Contribution	Total Plan Tracking Error Contribution(%)	Total Portfolio Absolute Risk Contribution(%)
Credit Oriented FI	TOT CREDIT POLICY	18.98%	3.11	0.92	39.35%	2.32%
Global Equity	TOT GLB EQ POLICY	37.76%	4.88	0.32	13.79%	64.05%
Multi Risk	Risk Parity	8.34%	0.00	-0.33	-13.95%	17.64%
Real Assets	TOT REAL ASTS POLICY	17.75%	11.52	0.71	30.13%	13.21%
Risk Reduction	TOT RISKMIT POLICY	17.17%	0.59	0.72	30.68%	2.76%
Total		**100.00%**	**2.34**	**2.34**	**100.00%**	**100.00%**



- ***Ex-Ante Tracking Error (TE) Target is 2.5% (Range 2-3%)***
- ***Actionable Ex-Ante TE Target is 1.25%***
- *Actionable Tracking Error is defined as the portion of tracking error in the plan/composite attributable to the public market segments of the plan*
  - *Combination of factor exposure differences, actual vs. target allocation differences, and security specific contributions*
- *Non-Actionable Tracking Error is defined as the remaining portion of overall tracking error in the plan/composite*
  - *This is the inherent tracking error risk in the plan vs. the policy. Largely, this portion comes from the overall nature of private markets, the difficulty in rebalancing these assets, and their benchmarking to public market assets*
- ***Current Ex-Post Actionable TE is 0.97%***

What is Risk Budgeting?

- Risk is the currency we use to pay for return at any level of investing
- In order to meet return targets investors must take a certain amount of excess risk in order to generate sufficient excess return
- Just like anything in life there is a limit on what we can afford to spend and how we can best deploy that capital

Total Fund Tracking Error Pie

Risk Budgeting is the most efficient deployment of active risk across the entire plan at all the important levels

Concluding Observations

- Risk is Multi-Dimensional
  - Investment Risk vs Organizational Risk vs Emerging & Long-Term Risks
  - Ex-Post vs Ex-Ante
  - Absolute Risk vs Tracking Error
- Risk is Variable
  - May be reduced through diversification
  - Diminishing marginal benefit of adding new asset classes
- Understanding your Organization’s Risk Tolerance
  - What is our overall level of risk tolerance?
  - What are our sources of risk?
  - Where should we take risk within the portfolio?
  - Can we “stomach” the potential variability in returns implied by realized and expected risk?

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Wilshire

Public Employees Retirement Association of New Mexico 2023 Retreat

Benchmarking Education

July 2023

Purpose of Benchmarking

Serves as a ***clear*** and ***objective*** means of evaluating performance

Benchmarks provide investors a realistic and achievable starting point

The purpose of benchmarking can be summarized as follows:

Performance Attribution	Decomposition of sources of return, such as asset allocation, active vs. passive management, manager skill, etc.
Insight on Risk/Returns	Insight into level of risk being taken to generate return and the volatility of return over time
Manager Evaluation	Measure against which manager performance can be evaluated to assist in retention / termination decisions

Benchmark Selection Considerations

Total Fund Benchmark	Does it appropriately match the plan sponsor's investment philosophy and objectives and reflect the overall structure of the fund?
Asset Class Benchmark	Does it reflect a broad universe of investment opportunities in an asset class and offer a "target" for combining multiple managers within the asset class?
Manager Benchmark	Does it appropriately reflect the objective of the strategy and is it consistent with the asset class objective?

Ideal Benchmark Characteristics

Unambiguous	Benchmark components and construction methodology are clearly identifiable.
Investable	It is possible to replicate and simply hold the benchmark.
Measurable	The benchmark's return is readily calculable on an on-going basis.
Appropriate	The benchmark is consistent with the composite's objective or manager's investment style.
Reflective of current investment options	The manager is knowledgeable of the securities or factor exposures within the benchmark.
Pre-specified	The benchmark is agreed upon prior to the start of the monitoring period.

 Source : CFA Institute

Appropriate Benchmarks

- The appropriate benchmark is a function of the return and risk characteristics of the asset class or portfolio being measured
- Benchmarks may be published market benchmarks or custom benchmarks
  - Generally, asset class benchmarks are published market indices which represent a broad investment opportunity set
    - EXAMPLE: Wilshire 5000 Index; Bloomberg U.S. Aggregate Index
  - Published benchmarks are preferable; however, custom benchmarks may be optimal for some portfolio strategies such as Multi-Asset Risk Allocation
- Objective of benchmark selection process is to minimize benchmark "misfit" risk, which is uncompensated risk
  - "Misfit" risk is the return difference attributable to the benchmark characteristics that are not reflected in the portfolio and vice versa
    - EXAMPLES:
      - All cap equity portfolio benchmarked to the S&P 500 Index
      - Core Plus bond portfolio benchmarked to the Bloomberg U.S. Aggregate Index

Benchmarking Private Assets

Benchmarking Private Assets is ***not*** as straightforward as Public Assets

- Available private asset “benchmarks” from multiple providers are actually universe comparisons, either of private market funds or other plan sponsor private programs
  - *Not Investable in the same manner as public indexes*
  - *Underlying constituents can shift depending on data availability*
  - *Data availability is limited to quarterly periodicity*
- PERA currently utilizes public market benchmarks to most appropriately define investable market beta
- Benchmarking challenges include:
  - *Valuation and pricing of private assets occurs quarterly vs. daily for public assets*
    - Timing mismatch leads to higher levels of measured active risk (tracking error) on a short-term basis; will normalize over longer-term periods
  - *Valuation availability lags that of public assets, typically by three months, due to the time it takes to compile and translate financial statement information into an estimate of fair market value*
    - Public market appraisals adjust much more quickly (both up and down) than private market appraisals
  - *Potential future enhancement could include adjustment to index timing to align with the valuation of less liquid assets (i.e., quarterly lagged)*

Benchmarking Hedge Funds

Benchmarking Hedge Funds is also ***not*** as straightforward as Public Assets

- Historically, investors typically established hedge fund benchmarks based on the concept of an "Absolute Return"
  - *Stated trailing-year rate of return theoretically achievable in any market environment*
  - *Example: 10.0%*
- As markets have become increasingly volatile, benchmarking to an absolute return has become challenging
- Hedge Fund peer group universes are another method of benchmarking, but have drawbacks
  - *Peer group universes are not investible*
  - *Voluntary performance reporting can leave to survivorship bias*
- The most commonly used methodology is to reposition absolute returns in terms of an interest rate plus risk premium
  - *Example: LIBOR + 30 basis points*
- Hedge Fund Investors should take care to define in advance expectations over both the short and long term

Total Fund Benchmarking

- Policy Portfolio Benchmark
  - Weighted blend of diversified asset class portfolios
  - Used as a benchmark to measure effective implementation, across a diversified portfolio of defined systematic exposures Policy portfolio concept meets the objectives of a good benchmark
    - Does present mismatch for illiquid/alternative investments
  - Targets the same diversified beta exposures as adopted in SAA
  - Serves as a clear and objective means of evaluating total fund performance over a long-term time horizon

- Current Weightings

PERA - Total Fund Benchmark					
		38.00%			**18.00%**
Global Equity	MSCI ACWI IMI ($N)	33.00%	**Real Assets**	Wilshire Global REIT	7.00%
	MSCI ACWI Minimum Volatility ($N)	5.00%		DJB Global Infrastructure	9.00%
		17.00%		Bloomberg Commodity (Total Return)	2.00%
Risk Reduction & Mitigation	Bloomberg U.S. Aggregate	17.00%			
		19.00%			**8.00%**
Credit Oriented Fixed Income	Bloomberg Global High Yield (Hedged)	19.00%	**Multi Risk**	Wilshire Risk Parity - 15%	8.00%

Total Fund Benchmarking – Changes Implemented 12/31/2022

Policy Portfolio Benchmark Changes:

- Global Equity composite increased from 35.5% to 38.0%
  - *MSCI ACWI IMI Index increased from 28.5% to 33.0%*
  - *MSCI ACWI Minimum Volatility Index decreased from 7.0% to 5.0%*
- Risk Reduction & Mitigation composite decreased from 19.5% to 17.0%
  - *Bloomberg Global Aggregate Hedged Index decreased from 2.5% to 0.0%*
- Credit Oriented Fixed Income composite increased from 15.0% to 19.0%
  - *Bloomberg Global High Yield Index increased from 12.0% to 19.0%*
  - *Custom EM Debt Blended Index decreased from 3.0% to 0.0%*
- Real Assets composite decreased from 20.0% to 18.0%
  - *DJ Brookfield Global Infrastructure Index increased from 4.0% to 9.0%*
  - *Bloomberg Commodity Index decreased from 4.0% to 2.0%*
  - *Alerian MLP Index decreased from 2.0% to 0.0%*
  - *Bloomberg U.S. TIPS Index decreased from 3.0% to 0.0%*
- Multi Risk composite decreased from 10.0% to 8.0%
  - *Wilshire Risk Parity (15%) Index decreased from 10.0% to 8.0%*

Policy Portfolio Benchmark	Previous Target	Target as of 12/31/22
Global Equity	**35.50%**	**38.00%**
MSCI ACWI IMI ($N)	28.50%	33.00%
MSCI ACWI Minimum Volatility ($N)	7.00%	5.00%
Risk Reduction & Mitigation	**19.50%**	**17.00%**
Bloomberg U.S. Aggregate	17.00%	17.00%
Bloomberg Global Aggregate (Hedged)	2.50%	0.00%
Credit Oriented Fixed Income	**15.00%**	**19.00%**
Bloomberg Global High Yield (Hedged)	12.00%	19.00%
50% JPM EMBI ($) / 50% JPM GBI ($)	3.00%	0.00%
Real Assets	**20.00%**	**18.00%**
Wilshire Global REITs	7.00%	7.00%
Dow Jones - Brookfield Global Infrastructure Index	4.00%	9.00%
Bloomberg Commodity Index (TR)	4.00%	2.00%
Alerian MLP Index	2.00%	0.00%
Bloomberg - U.S. TIPS	3.00%	0.00%
Multi-Risk Allocation	**10.00%**	**8.00%**
Wilshire Risk Parity - 15%	10.00%	8.00%

Appendix

Benchmarking Portable Alpha

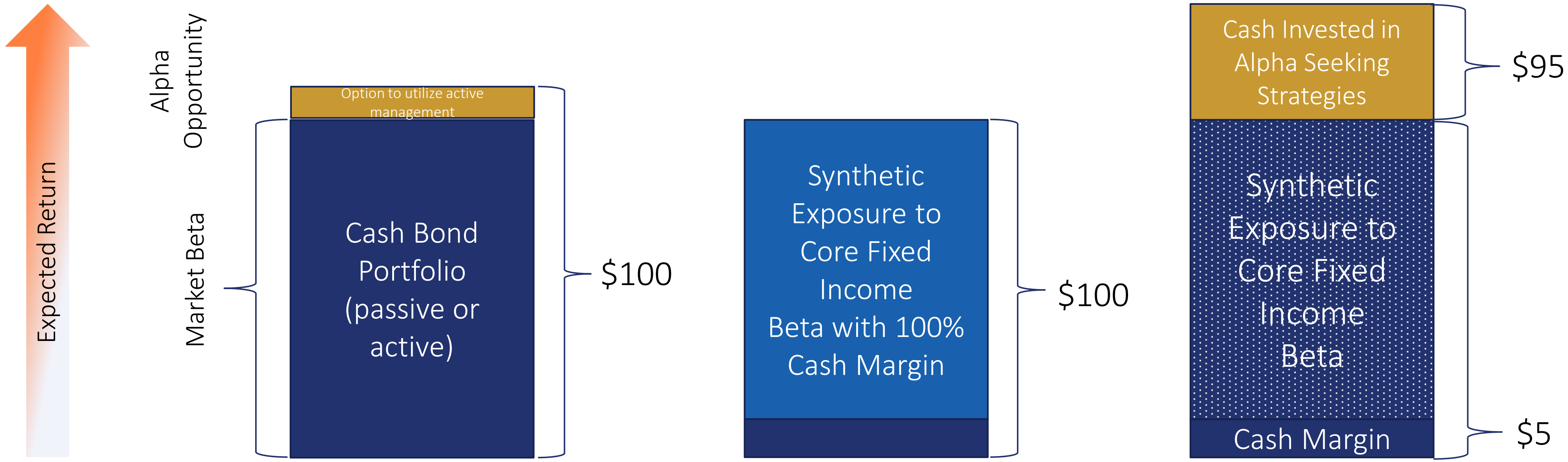
Portable Alpha benchmark is based on the market beta over which the alpha portfolio is ported

- PERA Bonds Plus portfolio asset class benchmark is the Bloomberg U.S. Aggregate Index, which is the most widely used U.S. investment grade bond index

Differentiate between the strategy's benchmark index and the active return target over and above that benchmark

- PERA risk budget sets active risk budgets for Actionable (Public Markets) and Non-Actionable (Private Markets) assets
- Actionable (Public Markets) Active Risk: 1.25%
- Non-Actionable (Private Markets) Active Risk: 2.25%

Portable Alpha Program Components of Return



Considerations

- Straightforward investment structure
- Reasonably liquid
- Low to moderate management fees
- Market exposure
- Passive or active implementation

- More complex structuring with derivative counterparties
- Cash margin enhances liquidity of Total Fund
- Lower management fees
- Market only exposure

- Most complex with derivative counterparties and hedge fund structures
- Least liquid
- Higher management fees
- Market exposure
- Potential alpha generation

Important Information

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PERA SmartSave
Deferred Compensation Plan

Past, present and future.

Karyn Lujan, Deferred Compensation Plan Manager
July 12, 2023

Overview

- The PERA *SmartSave* Deferred Compensation Plan is a supplemental, voluntary 457b retirement plan (no employer match).
- 457b plans are designated for state, city and county government employers as well as other public sector employers such as, public schools.
- The Plan is completely separate from the employee's mandatory PERA/ERB retirement or social security and participating has no impact on either one.
- It is a *defined contribution plan* – benefits are based on total contributions plus investment earnings.

Overview

- The Plan is intended to span over one’s career for optimal investment results and to complement the default PERA defined benefit plan.

- Participants choose their own contribution amount – the minimum contribution amount is $10 per pay period; as of 2023, the maximum is $22,500 per calendar year. *(those age 50 or older may contribute up to $30,000)*

- Participants build their own investment portfolio from the list funds offered by the Plan.

- Participants have access to these funds when they terminate employment*. Taxes are withheld from these distributions.

**Active participants can access funds through the loan and/or unforeseen emergency options, see FAQs.*

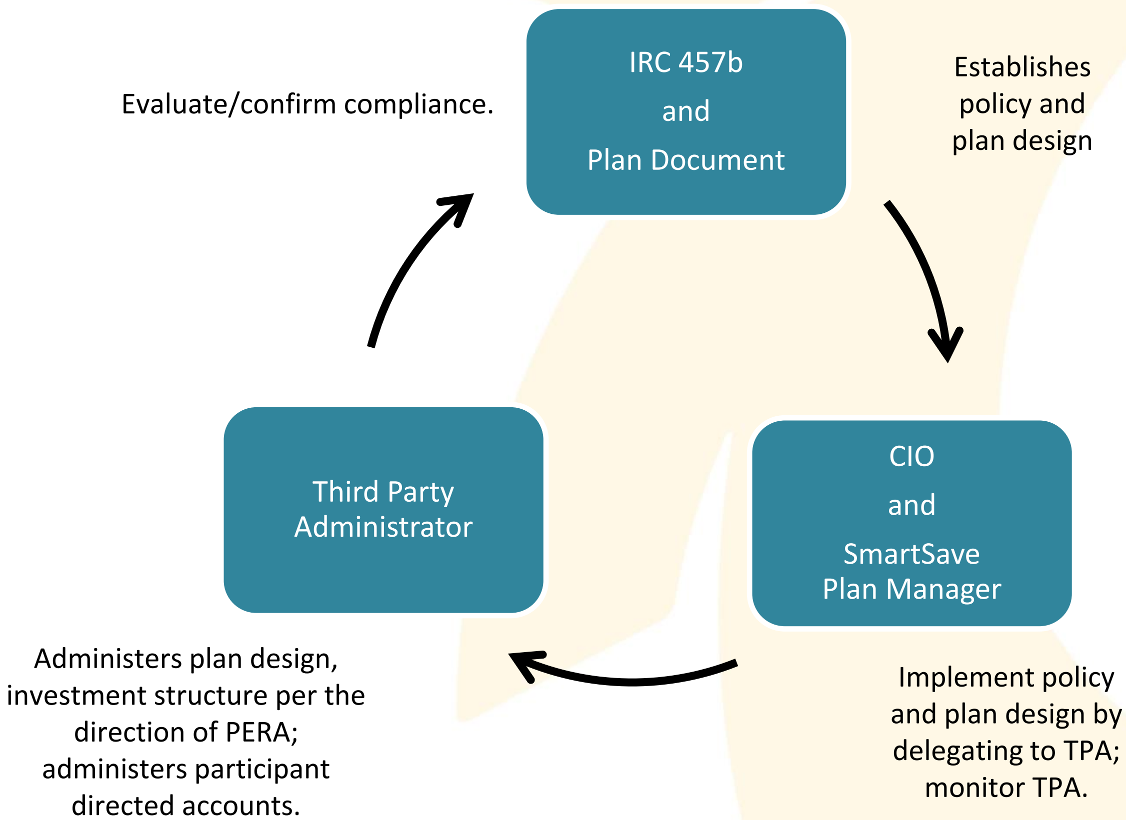
As of June 30, 2023

Total Net Asset Value: $779,495,355		
$62,933,600 gain since FY22		
	As of June 30, 2023	FY 23 Additions
Participants	23,348	350
Participating Employers	258 Employers – includes local public bodies, schools, and all state agencies.	2
New Enrollments	2,933 1,858 online enrollment 1,075 paper enrollment	1053

PERA SmartSave
Deferred Compensation Plan

Policy and Plan Design

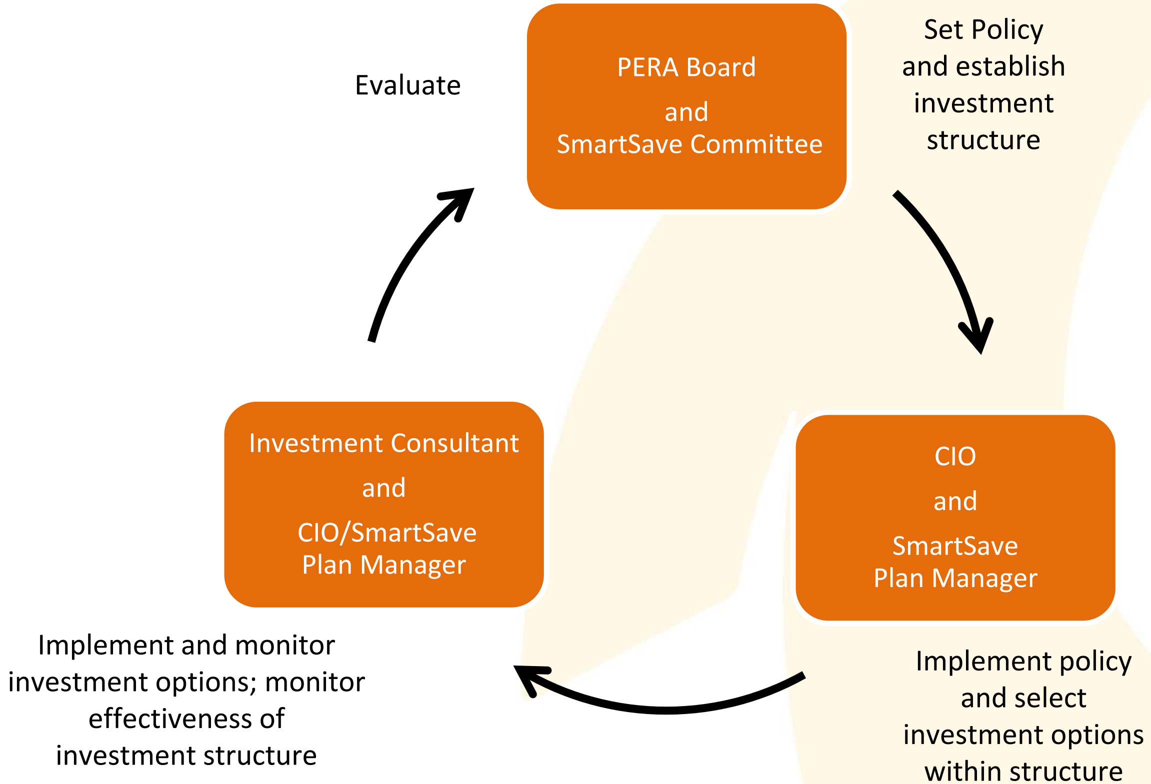
The SmartSave Plan is governed by IRC 457b and the Plan Document. PERA Board contracts with a third-party administrator to provide custody bank, administrative and record keeping services – all in accordance with the governing documents.



PERA SmartSave
Deferred Compensation Plan

Investment Policy and Implementation

The PERA Board acts as fiduciary to the Plan; this includes monitoring of the investment structure, investment performance and plan design. PERA Board contracts with an investment consultant to assist in investment recommendations.



Current Investment Structure – Four Tiered

Conservative

Tier One
Target Date Funds*

- **New Mexico** Conservative Portfolio
- **New Mexico LifeCycle** 2025 Portfolio
- **New Mexico LifeCycle** 2030 Portfolio
- **New Mexico LifeCycle** 2035Portfolio
- **New Mexico LifeCycle** 2040 Portfolio
- **New Mexico LifeCycle** 2045 Portfolio
- **New Mexico LifeCycle** 2050 Portfolio
- **New Mexico LifeCycle** 2055 Portfolio
- **New Mexico LifeCycle** 2060 Portfolio

Tier Two
Passive Core Options

- **US Core Fixed Income** Vanguard Total Bond Market
- **TIPS** Vanguard Inflation Protection Securities Fund
- **US Large Cap Core Equity** Vanguard Institutional Index
- **Non-US Equity** Vanguard Total Intl. Stock Index
- **Domestic Real Estate** Vanguard RE Index Admiral Shares
- **US Small Cap Equity** Fidelity Small Cap Index
- **Emerging Markets Equity** Fidelity EM Index Fund

Tier Three
Active Core Options

- **Capital Preservation** NM Stable Value Fund
- **US Large Cap Equity** Dodge & Cox Stock Fund
- **Non-US Equity** Fidelity Diversified Intl. Fund, American Funds EuroPacific Growth
- **US Mid Cap Equity** Principal Mid Cap, T. Rowe Price Mid Cap Growth
- **US Small Cap Equity** Fidelity Low-Priced Stock

Tier Four
Additional Diversification

- **Diversified Inflation Hedge** Principal Diversified Real Asset
- **Global Fixed Income** Wellington CIF
- **Self-Directed Brokerage Acct.** Brokerage Link

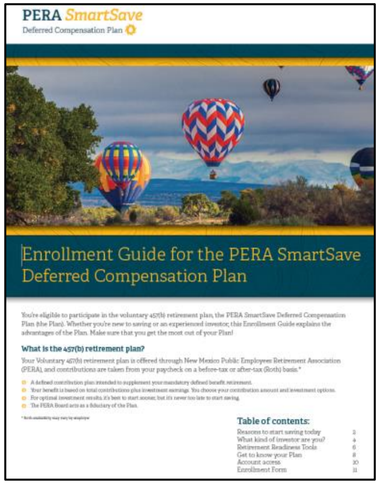
Aggressive

**Target Date Funds are built with most of the funds in Tiers 2-4.*

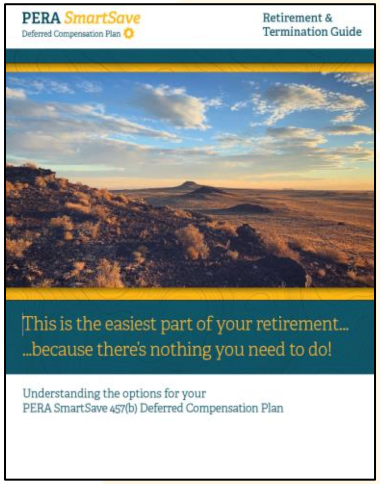
Third-Party Administrator

- The third-party administrator is responsible for:
  - Custody bank
  - Customer service
  - Marketing and outreach
  - Processing accounts
    - benefit payments
    - unforeseen emergencies/loans
    - investment transactions
    - quarterly statements

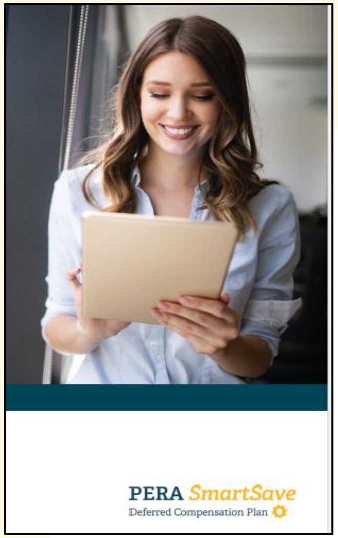
Marketing Material Samples



Enrollment Guide



Retirement & Termination Guide

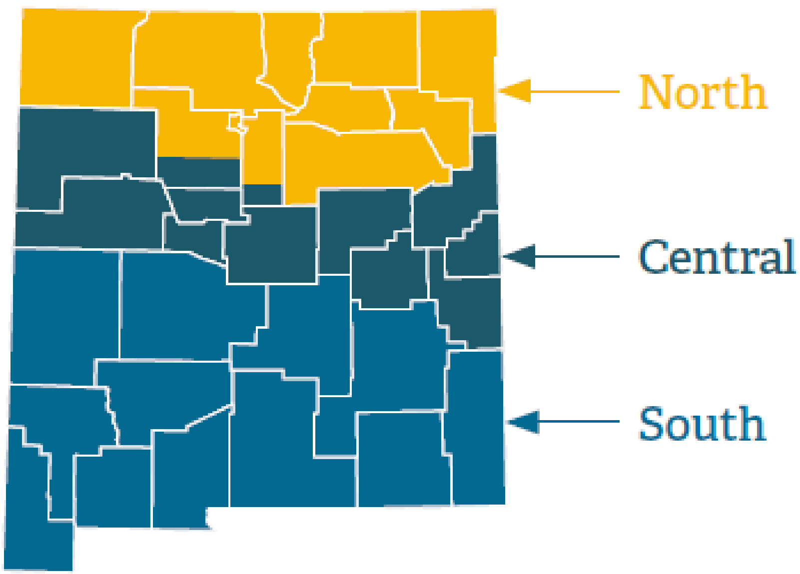


Mini Enrollment Guide

- PERA works closely with Voya on all new marketing publications and approves all content, design, messaging.

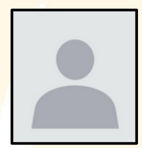
Regional Outreach Reps

- There are three regional Plan representatives
- One administrative support position located in Santa Fe
- Outreach covers all state agencies, cities, counties, other local governments and some schools



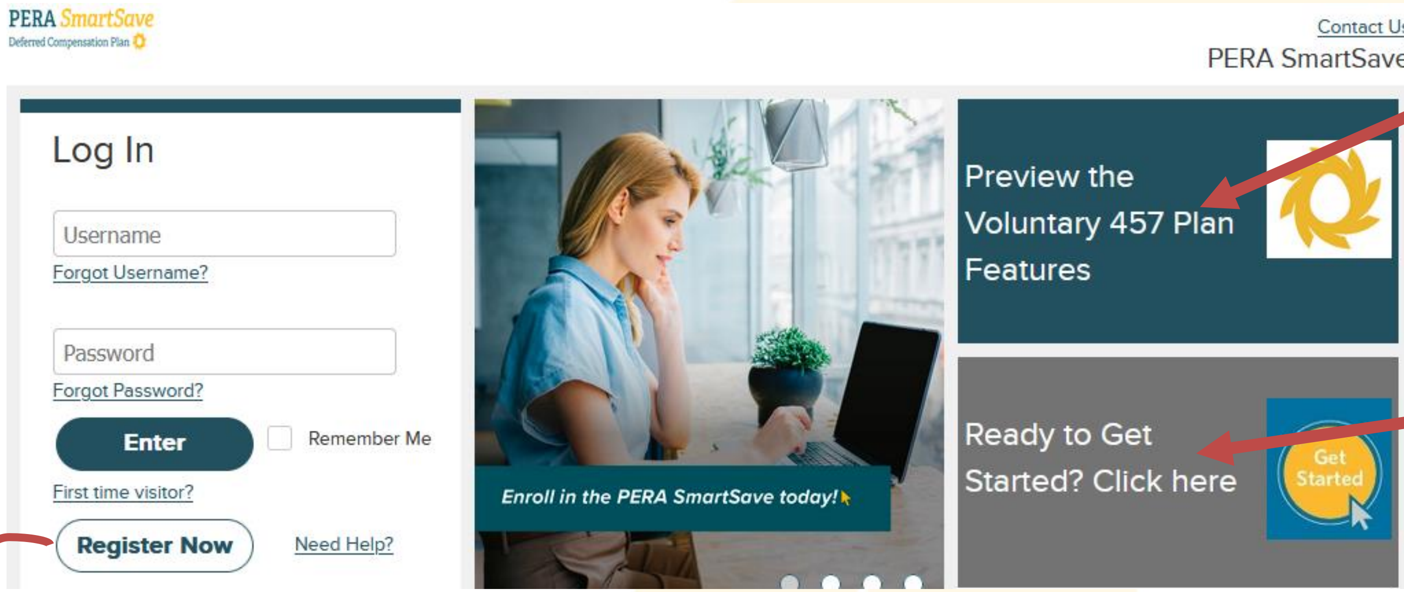
- **Peter Rappmund, Northern NM Territory**
- FINRA Licenses Series 6, 63 and 65
- With PERA SmartSave over one year

- **Paul Lium, Central NM Territory**
- FINRA Licenses Series 6, 63 and 65
- With PERA SmartSave for 23 years



- **Ron Uribe, Southern NM Territory**
- FINRA Licenses Series 63; pending 6 and 65
- With PERA SmartSave since June 26, 2023

Website: *PERASmartSave.voya.com*



Click this box for Plan Details

Click this box to Enroll

Already contributing? Click here to set up your online Voya account.

- Participant Call Center: 1-833-424-SAVE (7283)
- Plan's email address: PERA-SmartSave@state.nm.us

PERA *SmartSave*
Deferred Compensation Plan

Plan Evolution

- Plan started in approximately 1981
- Copeland was the Plan's administrator
- Nationwide started in 2003, Mercer was the Plan's investment consultant
- Meketa Investment Group became Plan's new investment consultant in 2015
- *PERA SmartSave* was established in 2015
- Hybrid fee structure established in 2017 – lowered the fee for 2/3 of participants
- Senate Bill 75 established online enrollments, DC Act updated
- Voya became Plan's new administrator in October 2019
- Fee policy was adopted in 2022
- RFP for Plan's investment consultant currently in progress

Fund Evolution

2016 – 2017

- Replaced BlackRock active TIPS with a passive Vanguard TIPS option.
- Moved Principal Diversified Real Asset fund from a Tier III (active core) to Tier IV (extended choice).
- Enhanced the LifeCycle Portfolios' manager roster and asset allocation.
  - Added 5-year increments.
  - Added high yield fixed income (Columbia).
  - Replaced REIT allocation (Invesco) with private core real estate (PRREF II).
  - Replaced redundant active international equity manager exposure (Fidelity Diversified International) with passive exposure (Vanguard Total Int'l Stock Index) to reduce cost.

2018 – 2019

- Conducted recordkeeper RFP and interviews, ultimately replacing Nationwide with Voya.
- Revamped IPS and governance structure (CIO given authority to make underlying investment option changes).

PERA SmartSave
Deferred Compensation Plan

Fund Evolution

2020 – present

- Replaced Templeton Global Bond Fund with Wellington Emerging Markets Debt. Applied to core lineup and LifeCycle portfolios.
- Replaced DFA US Small Cap Fund with Fidelity Small Cap Index Fund. Applied to core lineup and LifeCycle portfolios.
- Replaced Invesco Global REIT with Vanguard REIT Index.
- Replaced Aberdeen Emerging Markets Equity with Fidelity Emerging Markets Equity Index. Applied to core lineup and LifeCycle portfolios.
- Removed Fidelity Contrafund and mapped assets to existing Vanguard S&P 500 Index.
- Removed Oakmark Equity and Income Fund and mapped assets to age-appropriate LifeCycle portfolio.

Investment Structure Evolution (2015)

Conservative

Tier One
Target Date Funds*

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- **New Mexico LifeCycle** 2030 Portfolio
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- **New Mexico LifeCycle** 2060 Portfolio

Tier Two
Passive Core Options

- **US Core Fixed Income** Vanguard Total Bond Market
- **US Large Cap Core Equity** Vanguard Institutional Index
- **Non-US Equity** Vanguard Total Intl. Stock Index

Tier Three
Active Core Options

- **Capital Preservation** NM Stable Value Fund
- **Diversified Inflation Hedge**
- **Balanced**
- **US Large Cap Equity** Dodge & Cox Stock Fund, Fidelity Contrafund
- **Non-US Equity** Fidelity Diversified Intl. Fund, American Funds EuroPacific Growth
- **US Mid Cap Equity** Principal Mid Cap, T. Rowe Price Mid Cap Growth
- **US Small Cap Equity** Fidelity Low-Priced Stock, DFA US Small Cap

Tier Four
Additional Diversification

- **TIPS** Blackrock
- **Global Fixed Income** Franklin Templeton
- **Diversified Inflation Hedge** Principal Diversified Real Asset
- **Global Fixed Income** Wellington CIF
- **Global Real Estate** Invesco Global REIT
- **Emerging Markets Equity** Aberdeen EME
- **Self-Directed Brokerage Acct.** Brokerage Link

Aggressive

Target Date Funds are built with most of the funds in Tiers 2-4.

PERA SmartSave
Deferred Compensation Plan

Upcoming Goals

- Complete RFP for IC and award contract
- Initiate improvements to fund lineup

  Implementation of SECURE and SECURE 2.0 Act provisions
    - Age 50 Roth Catch Up
- Continue to improve/enhance administration, marketing and outreach efforts
- Explore other opportunities for enrollment, ie: PERA member application

PERA SmartSave
Deferred Compensation Plan