MEKETA

San Jose Federated City Employees' Retirement System and City of San Jose Police and Fire Department Retirement Plan

2025

Capital Markets Assumptions

Executive Summary

- → We update our capital markets expectations ("CMEs") each year in January.
  - Capital markets are dynamic, and regular updates ensure that assumptions accurately reflect the current market environment.
- → Changes in our CMEs are driven by shifts in the capital markets, including factors such as interest rates, credit spreads, cap rates, and equity prices.
  - Yields increased for much of the investment grade bond market, while credit spreads tightened, especially for lower quality credit such as high yield.
  - Stock market valuations continued to rise, especially in the US, where equity markets rallied at a faster pace than the gain in earnings.
  - Cap rates for real estate moved higher, while the rebound in buyout multiples lagged the valuation gains for public markets.
  - Not only did current Treasury yields increase, but projections for future Treasury yields also increased.
- → Our 10-year CMEs continue to be lower than our 20-year CMEs for every asset class, largely due to a higher assumed "risk-free" rate in the future.
- → The return assumption decreased for two-thirds of the asset classes over the 10-year horizon, while it increased for half the asset classes over the 20-year horizon.
- → Our lower return assumptions over the 10-year horizon implies that investors might be well served by moderating their return expectations for the next ten years.

Expected Return and Changes for Major Asset Classes

Asset Class	10-year Expected Return (%)	Δ From 2024 (%)	20-year Expected Return (%)	Δ From 2024 (%)
Cash Equivalents	2.8	+0.4	3.1	+0.6
Investment Grade Bonds	4.9	+0.3	5.3	+0.5
Long-term Government Bonds	5.0	+0.7	5.7	+0.7
TIPS	4.3	0.0	5.0	+0.3
High Yield Bonds	6.3	-0.2	7.1	+0.3
Bank Loans	6.3	-0.2	6.8	+0.2
Emerging Market Debt	6.3	NA	6.8	NA
Private Debt	8.7	-0.5	9.1	-0.1
US Equity	6.4	-0.5	8.4	-0.1
Developed Non-US Equity	7.2	-0.5	8.7	-0.2
Emerging Non-US Equity	7.1	-0.5	8.7	-0.2
Global Equity	6.7	-0.5	8.5	-0.2
Private Equity	9.8	-0.1	11.2	0.0
Real Estate	6.9	+0.6	8.5	+0.5
Infrastructure	7.2	-0.2	9.2	+0.2
Commodities	5.5	+0.6	5.9	+0.6
Hedge Funds	4.2	-0.3	6.0	+0.2
Inflation	2.3	-0.1	2.7	-0.1

Setting Capital Market Expectations

- → Capital markets expectations ("CMEs") are the inputs needed to determine the long-term risk and returns expectations for a portfolio.
  - They serve as the starting point for determining asset allocation.
- → Consultants (including Meketa) generally set them once a year.
  - Our results are published in January and based on data as of December 31 for public markets and September 30 for private markets.
  - Changes are driven by many factors, including interest rates, credit spreads, cap rates, and equity prices.
- → Setting CMEs involves crafting long-term forecasts for:
  - Returns
  - Standard Deviation
  - Correlations (i.e., covariance)
- → We do not assume any "alpha."
- → For asset classes where there is no passive option (e.g., private markets) we include an assumption for estimated fees.
- → Our process relies on both quantitative and qualitative methodologies.

Building 10-Year Forecasts

→ Our first step is to develop 10-year forecasts based on fundamental models.

- Each model is based on the most important factors that drive returns for that asset class:

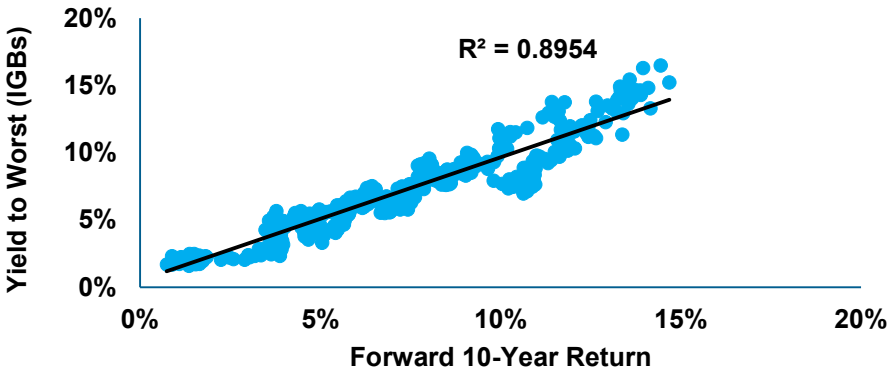
Asset Class Category	Major Factors
Equities	Dividend Yield, GDP Growth, Valuation
Bonds	Yield to Worst, Default Rate, Recovery Rate
Commodities	Collateral Yield, Roll Yield, Inflation
Infrastructure	Public IS Valuation, Income, Growth, Leverage
Natural Resources	Price per Acre, Income, Public Market Valuation
Real Estate	Cap Rate, Yield, Growth, Leverage
Private Equity	EBITDA Multiple, Leverage, Public VC Valuation
Hedge Funds and Other	Leverage, Alternative Betas

→ The common components are income, growth, and valuation.

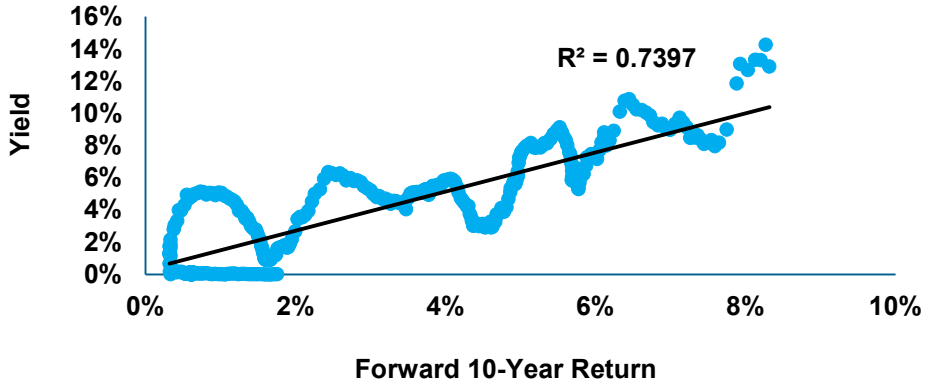
- Leverage and currency impact are also key factors for many strategies.

Some Factors are Naturally More Predictive Than Others

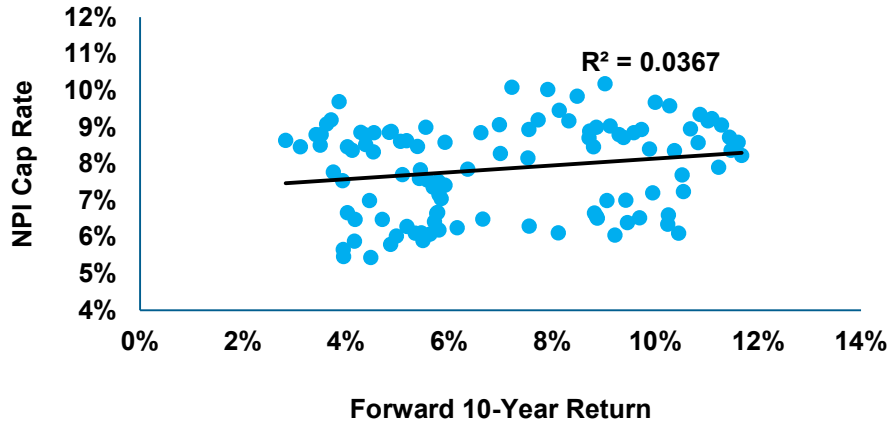
Investment Grade Bonds
Yield to Worst vs. Forward 10-Year Returns



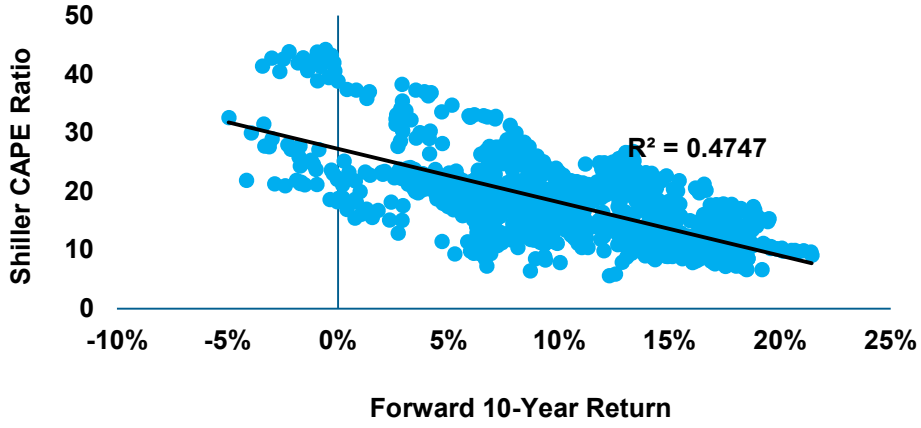
Cash (90-Day T-Bill)
Yield vs. Forward 10-Year Returns



Core Real Estate
Cap Rates vs. Forward 10-Year Returns



US Equities
Shiller CAPE vs. Forward 10-Year Returns



Sources: Bloomberg, FRED, NCREIF, S&P, Robert Shiller (Yale University), and Meketa Investment Group. As of December 31, 2024.

10-Year Model Example: Bonds

- The short version for investment grade bond models is:

$$E(R) = \text{Current YTW (yield to worst)}$$

- Our models assume that there is a reversion to the mean for spreads (though not yields).
- For TIPS, we add the real yield of the TIPS index to the breakeven inflation rate.
- As with equities, we make currency adjustments when necessary for foreign bonds.
- For bonds with credit risk, Meketa Investment Group estimates default rates and loss rates in order to project an expected return:

$$E(R) = YTW - (\text{Annual Default Rate} \times \text{Loss Rate})$$

10-Year Model Example: Equities

→ We use a fundamental model for equities that combines income and capital appreciation.

E(R) = Dividend Yield + Expected Earnings Growth + Multiple Effect + Currency Effect

→ Meketa evaluates historical data to develop expectations for dividend yield, earnings growth, the multiple effect, and currency effect.

- Earnings growth is a function of real GDP growth, inflation, and exposure to foreign revenue sources.
- We assume that long-term earnings growth is linked to economic growth.
- However, many factors can cause differences between economic growth and EPS growth.

→ Our models assume that there is a reversion toward mean pricing over this time frame.

Moving from 10-Year to 20-Year Forecasts

→ Our next step is to combine our 10-year forecasts with projections for years 11-20 for each asset class.

→ We use a risk premium approach to forecast 10-year returns in ten years (i.e., years 11-20).

- We start with an assumption (market informed, such as the 10-year forward rate) for what the risk-free rate will be in ten years.
- We then add a risk premium for each asset class.
- We use historical risk premia as a guide, but many asset classes will differ from this, especially if they have a shorter history.
- We seek consistency with finance theory (i.e., riskier assets will have a higher risk premia assumption).

→ Essentially, we assume mean-reversion over the first ten years (where appropriate), and consistency with CAPM thereafter.

→ The final step is to make any qualitative adjustments.

- The Investment Policy Committee reviews the output and may make adjustments.

The Other Inputs: Standard Deviation and Correlation

→ Standard deviation:

- We review the trailing twenty-year standard deviation, as well as skewness.
- Historical standard deviation serves as the base for our assumptions.
- If there is a negative skew, we increased the volatility assumption based on the size of the historical skewness.

Asset Class	Historical Standard Deviation (%)	Skewness	Assumption[1] (%)
Bank Loans	6.5	-2.9	10.0
FI / L-S Credit	5.8	-2.7	9.0

- We also adjust for private market asset classes with "smoothed" return streams.

→ Correlation:

- We use trailing twenty-year correlations as our guide.
- Again, we make adjustments for "smoothed" return streams.

→ Most of our adjustments are conservative in nature (i.e., they increase the standard deviation and correlation).

[1] Note that we round our standard deviation assumptions to whole numbers.

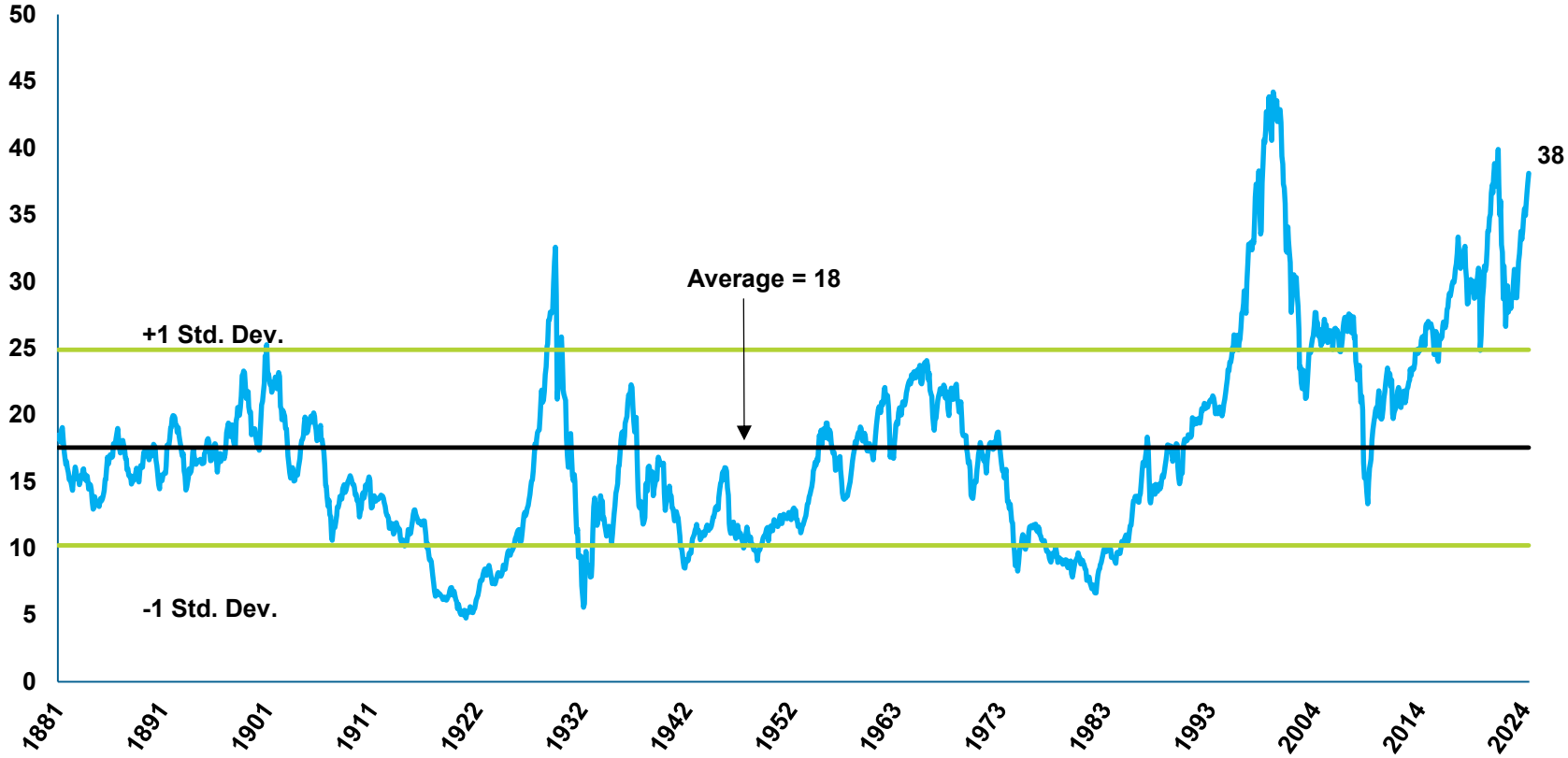
What is Driving the Changes From Last Year?

- US equity markets rallied, pushing them to higher valuations, thus reducing their forward-looking returns.
- Interest rates moved up, increasing yields and hence expected returns for higher quality bonds.
- Credit spreads tightened, leading to lower yields for riskier fixed income assets.
- Higher anticipated cash yields helped expected returns for hedge funds and related asset classes.
- Cap rates for real estate moved up, pushing up the expected returns.
- Higher anticipated long-term interest rates also provide a tailwind in our 20-year projections, as the bridge from 10 to 20 years is made via a risk premium being added to a (higher) future risk-free rate.
  - The market projection for the 10-year risk-free rate jumped from 4.57% to 5.42%.

Higher Prices for US Equities

- → US stocks had another good year, with the S&P 500 index gaining 25%.
- → Valuations increased and remain elevated relative to their long-term history.

US Equity Cyclically Adjusted Price/Earnings



Source: Robert Shiller, Yale University, and Meketa Investment Group. Data is as of December 31, 2024 for the S&P 500 Index.

Similar or Higher Yields

→ Short-term interest rates declined as the Fed cut its target rate, yet the yield on the 10-year Treasury increased.

→ Despite tighter credit spreads, yields increased for all but the lower quality bond markets.

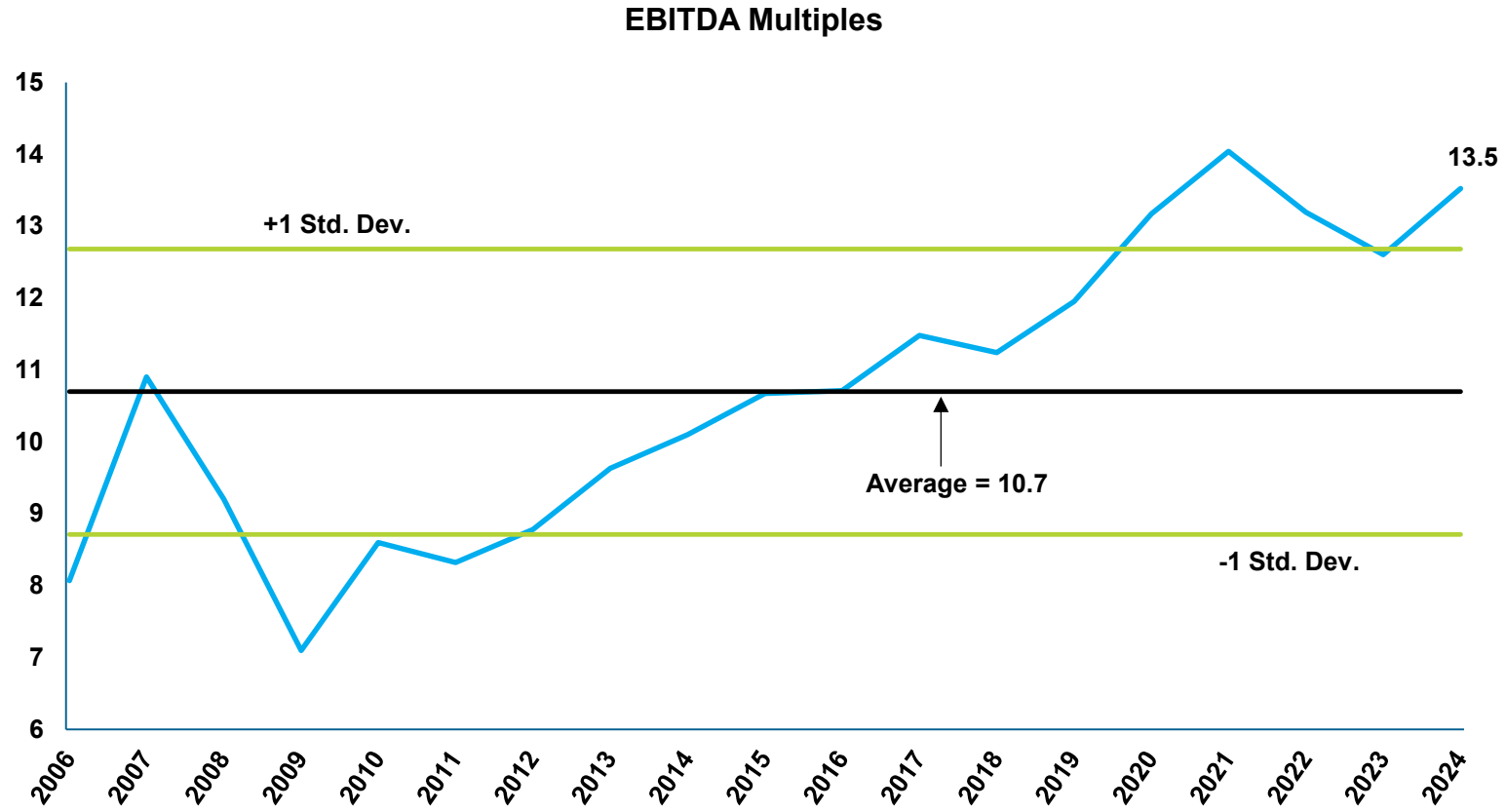
Index	Yield to Worst 12/31/23 (%)	Yield to Worst 12/31/24 (%)
Fed Funds Rate	5.25-5.50	4.25-4.50
10-year Treasury	3.88	4.58
Bloomberg Aggregate	4.53	4.91
Bloomberg Corporate	5.06	5.33
Bloomberg Securitized	4.72	5.25
Bloomberg Global Aggregate	3.51	3.68
Bloomberg US Corporate High Yield	7.59	7.49

Source: Bloomberg. Data is as of December 31, 2023 and December 31, 2024.

Private Equity Prices Rebounding

→ EBITDA multiples rose from year end (note that the endpoint is as of September 30).

- Like public equities, valuations have been trending up since the GFC, though they did not rise as quickly as those for US equities over the past year.



Source: Preqin Median EBITDA Multiples Paid in All LBOs, as of September 30, 2024.

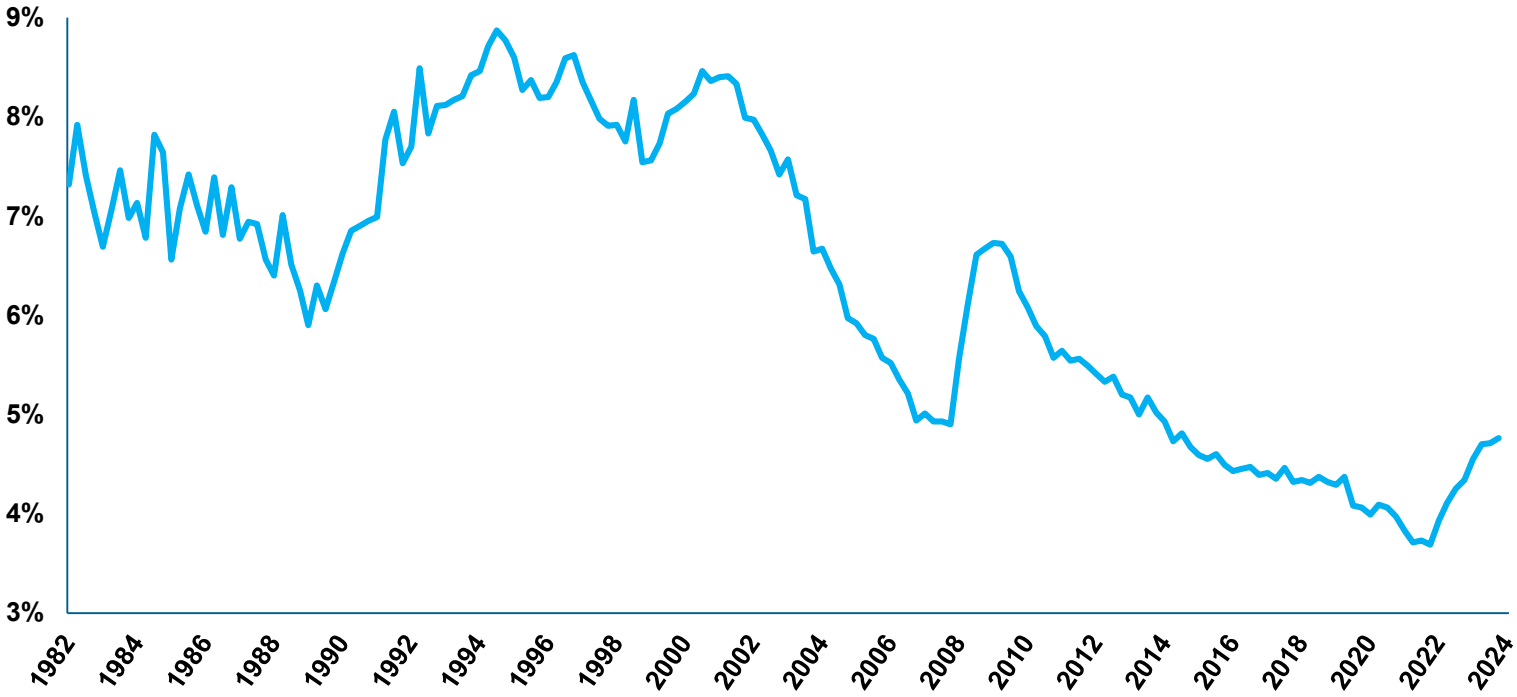
Real Estate Valuations Improving

→ Cap rates for core real estate continued to improve in 2024.

- This is despite a challenging year for many real estate segments.

→ Higher cap rates may be indicative of better returns going forward.

Core Real Estate Cap Rates



Source: NCREIF NPI value-weighted cap rates. As of September 30, 2024.

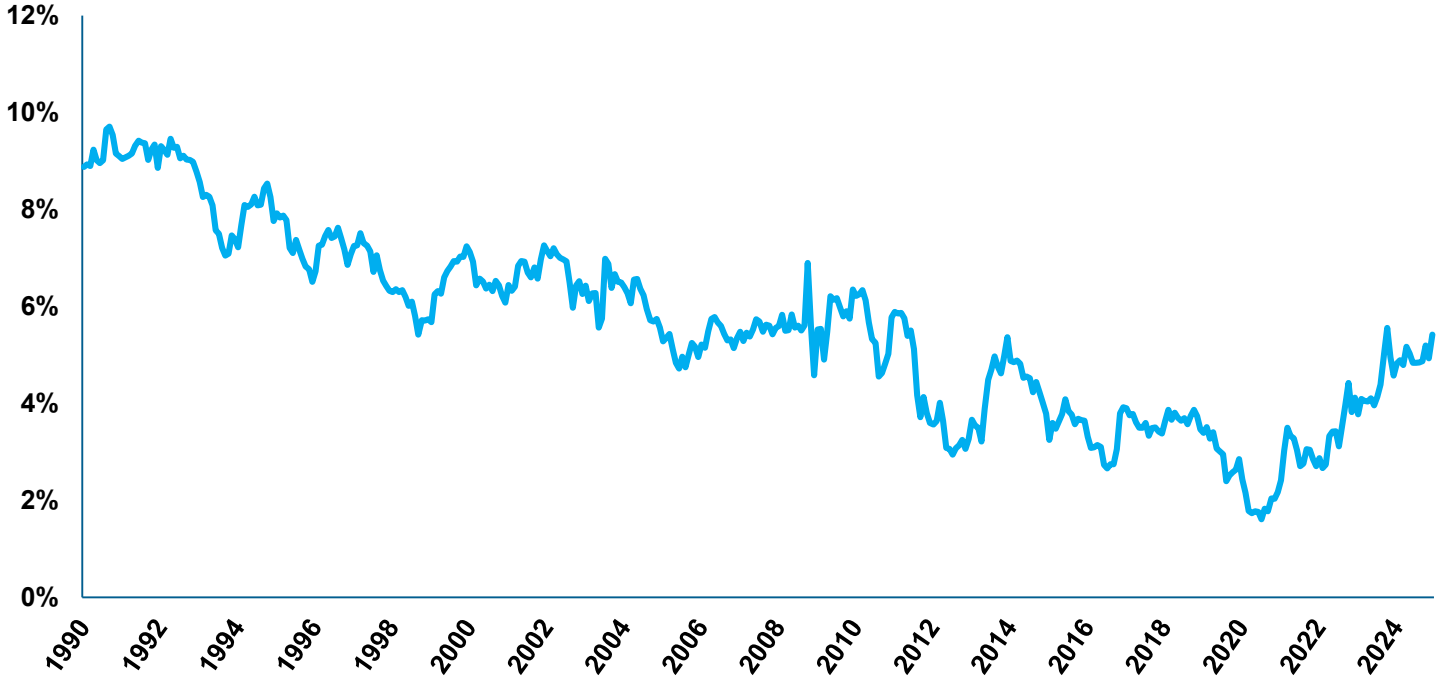
Higher Projected Rates in the Future

→ As interest rates have risen, so have the market's predictions for future interest rates.

- The market is forecasting that the 10-year Treasury yield in ten years will be 5.42%, versus a prediction of 4.57% twelve months ago.

→ Higher future interest rates implies higher expected returns for any forecasting model that includes a risk premium approach.

Market Projection for the 10-Year Treasury Yield in Ten Years



Source: FRED. Represents the Fitted Instantaneous Forward Rate 10 Years Hence, as of December 31, 2024.

FAQs for 2025

How do these CMEs compare to prior years' assumptions?

- → To help evaluate this, we created a weighted average of expected returns for the asset classes that comprise a typical institutional portfolio.[1]
- → The value of the expected return for the portfolio is not a precise expected return (i.e., it has not been run via MPT), but the magnitude of the change is what is relevant.
- → In short, the average of 20-year expected returns is 10 basis points higher than last January.

Year	Weighted Average Expected Return (%)	Change from Prior Year (%)
2025	8.1	+0.1
2024	8.0	-0.2
2023	8.2	+1.7
2022	6.5	+0.4
2021	6.1	-0.7
2020	6.8	-0.6
2019	7.4	+0.7

[1] The weights are as follows: 10% investment grade bonds, 3% LT government bonds, 4% TIPS, 3% high yield, 2% bank loans, 3% EM debt, 3% private debt, 25% US equity, 12% EAFE equity, 8% EM equity, 10% private equity, 10% real estate, 2% natural resources, 3% infrastructure, 2% hedge funds.

FAQs for 2025 (continued)

How do Meketa's CMEs compare to peers?

- → Our CMEs are typically in the same ballpark as our peers.
- → While we expect be above or below the median for various asset classes, we tend not to be systematically above or below for the entire group.
- → We generally cite the survey conducted each year by Horizon Actuarial Services for making peer comparisons, as it is the most comprehensive survey of CMEs of which we are aware.
  - However, this survey is usually not published until July or August.
- → It is important to distinguish between intermediate-term assumptions (e.g., 7-10 years) and long-term assumptions (e.g., 20-30 years) when making these comparisons.
  - The average intermediate-term return assumptions tend to be lower than the long-term assumptions across the peer group, particularly for riskier asset classes.

2024 Peer Survey

- Annually, Horizon Actuarial Services, LLC publishes a survey of capital market assumptions that they collect from various investment advisors.[1]
- The Horizon survey is a useful tool to determine whether a consultant's expectations for returns (and risk) are reasonable.

Asset Class	Horizon 10-Year Average (%)	Meketa 10-Year (%)	Horizon 20-Year Average (%)	Meketa 20-Year (%)
Cash Equivalents	3.7	2.4	3.4	2.5
TIPS	4.4	4.3	4.3	4.7
US Core Bonds	4.9	4.6	4.9	4.8
US High Yield Bonds	6.1	6.5	6.4	6.8
Emerging Market Debt	6.2	6.3	6.3	6.2
Private Debt	8.3	9.2	8.4	9.2
US Equity (large cap)	6.5	6.9	7.0	8.5
Developed Non-US Equity	7.1	7.7	7.5	8.9
Emerging Non-US Equity	7.7	7.6	8.2	8.9
Private Equity	9.1	9.9	9.7	11.2
Real Estate	6.1	6.3	6.2	8.0
Infrastructure	7.3	7.4	7.4	9.0
Commodities	4.9	4.9	5.0	5.3
Hedge Funds	5.9	4.5	6.2	5.8
Inflation	2.4	2.4	2.4	2.8

[1] The 10-year horizon included all 41 respondents to the survey, and the 20-year horizon included 26 respondents. Figures are based on Meketa's 2024 CMEs. The survey is typically published in August.

FAQs for 2025

What model changes were made?

→ We reduced the equity risk premium we assume for years 11-20 by 50 basis points.

- The 5.5% historical average risk premium for US equities is based on a history that includes significant multiple expansion (e.g., increase in P-E ratio).
  - Using this same level of risk premium implies that we would assume multiple expansion in the future.
  - Therefore, we decided to use a lower risk premium.
- We are making this change not just for US equities, but for every equity/growth-oriented asset class.
  - We have observed valuation multiples expand over time for most of these asset classes where we have available metrics (e.g., EBITDA multiples, cap rates).

→ We changed to using two distinct currency models, one for developing markets that emphasizes interest rate parity and one for emerging markets that emphasizes purchasing power parity.

- This was partly driven by the observation that central banks have intervened in their foreign exchange markets.
- Currency movements are the portion of our CMEs that we probably have the least confidence in (hence why we have capped them historically).
- For 2025, developed markets switches from a 50 basis point tailwind to a 20 basis point headwind, while there is no impact on emerging markets.
  - There are a few asset classes (e.g., foreign bonds, foreign equities) that feel the full impact and others (e.g., global equities, buyouts, natural resources) that will experience a more modest impact.

FAQs for 2025

What model changes were made?

→ We switched from using historical *real* income to nominal income to predict near-term income for timberland and farmland.

- The inflation of recent years dispelled the notion of a direct link between income and inflation in the short term for these asset classes.

→ We started incorporating data from third parties for two private market asset classes where such data has traditionally been hard to come by:

- In private credit, we are including yield and spread data from Lincoln Senior Debt Index.
- In private infrastructure, we are including valuation metrics from Macquarie.

→ For various private markets where we use a public market proxy to estimate valuations, we modified the composites to reflect the changing natures of those industries:

- We added an AI index to our VC model.
- We added an Energy Efficiency index to our Energy model.
- We added a Clean Energy index to our Sustainability model.

→ We assume lower leverage for buyouts (range dropped from 1.4x – 1.6x to 1.3x - 1.5x) as leverage has declined over the past 5-10 years.

FAQs for 2025

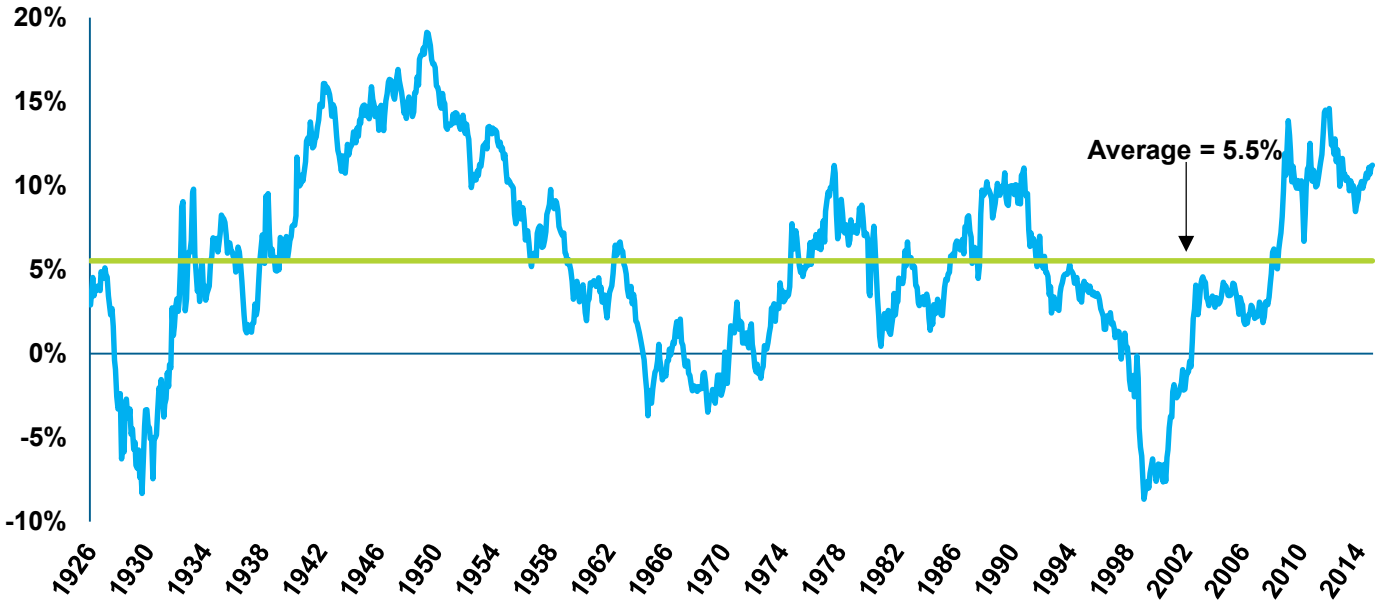
What is the equity risk premium implied by the CMEs?

→ We assume a long-term risk premium of 5.0% for US equities over 10-year Treasuries in our model.

- However, our 10-year assumptions imply an equity risk premium of ~1.5%.
- This averages out to a 20-year implied equity risk premium of ~3.0%.

→ Historically, the risk premium for the S&P 500 over the yield for the 10-year Treasury has averaged 5.5%, though the range has varied considerably.

US Equity Risk Premium over 10-year Treasury[1]



[1] Represents the ten-year risk premium for the S&P 500 index over the 10-year Treasury yield at the start of the period. Data is through December 31, 2024.

20-Year Geometric Expected Returns
Rate Sensitive

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
Cash Equivalents	2.5	3.1	0.6	Higher yields
Short-term Investment Grade Bonds	3.7	4.3	0.6	Higher yields
Investment Grade (Core) Bonds	4.8	5.3	0.5	Higher yields
Intermediate Government Bonds	4.1	4.6	0.5	Higher yields
Long-term Government Bonds	5.0	5.7	0.7	Higher yields
Mortgage-Backed Securities	4.9	5.5	0.6	Higher yields
Investment Grade Corporate Bonds	5.4	5.9	0.5	Higher yields
Long-term Corporate Bonds	6.0	6.7	0.7	Higher yields
Short-term TIPS	3.7	4.1	0.4	Higher real yields
TIPS	4.7	5.0	0.3	Higher real yields
Long-term TIPS	5.2	5.7	0.5	Higher real yields
Global ILBs	4.7	5.0	0.3	Higher yields
Foreign Bonds	3.9	3.9	0.0	Higher yields offset by currency headwind
US Inflation	*2.8*	*2.7*	*-0.1*	*Slightly lower near-term economist and market projections*

20-Year Geometric Expected Returns
Credit

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
High Yield Bonds	6.8	7.1	0.3	Higher yields offset by tighter spreads
Bank Loans	6.6	6.8	0.2	Higher yields offset by tighter spreads
Multi-Sector Credit	NA	7.0	NA	
Collateralized Loan Obligations (CLOs)	7.2	7.0	-0.2	Higher yields offset by tighter spreads
Emerging Market Bonds (major)	6.8	7.1	0.3	Higher yields
Emerging Market Bonds (local)	6.2	6.7	0.5	Higher yields with addition of India
Emerging Market Corporate Bonds	NA	6.5	NA	
Private Debt	9.2	9.1	-0.1	Higher yields offset by tighter spreads
Direct Lending	8.4	8.2	-0.2	Higher yields offset by tighter spreads
Asset Based Lending	9.4	9.3	-0.1	Higher yields offset by tighter spreads
Special Situations Lending	9.9	9.9	0.0	Higher yields offset by tighter spreads

20-Year Geometric Expected Returns
Equities

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
US Equity	8.5	8.4	-0.1	Higher valuations, partly offset by higher projected earnings growth
Developed Non-US (EAFE) Equity	8.9	8.7	-0.2	Switched to currency headwind
Emerging Market Equity	8.9	8.7	-0.2	Higher valuations and lower projected earnings growth
Emerging Market ex-China	9.0	9.0	0.0	
China Equity	8.6	8.1	-0.5	Higher valuations and lower projected earnings growth
Frontier Market Equity	10.0	9.8	-0.2	Lower projected earnings growth
Global Equity	8.7	8.5	-0.2	Higher valuations and some currency headwind
Low Volatility Equity	7.8	7.7	-0.1	Higher valuations
Private Equity	11.2	11.2	0.0	
Buyouts	10.8	10.9	0.1	Lower valuations relative to public markets offset by lower amount of leverage
Growth Equity	11.5	11.4	-0.1	Higher valuations
Venture Capital	12.0	11.9	-0.1	Higher valuations

20-Year Geometric Expected Returns
Real Estate and Infrastructure

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
Real Estate	8.0	8.5	0.5	Higher cap rates
US REITs	7.8	7.8	0.0	
Core Private Real Estate	6.9	7.4	0.5	Higher cap rates
Value-Added Real Estate	9.0	9.6	0.6	Higher cap rates
Opportunistic Real Estate	10.3	10.9	0.6	Higher cap rates
Infrastructure	9.0	9.2	0.2	Higher income growth
Infrastructure (Public)	9.1	9.0	-0.1	Higher valuations
Infrastructure (Core Private)	8.0	8.0	0.0	
Infrastructure (Non-Core Private)	10.0	10.3	0.3	Higher income growth partly offset by higher borrowing costs

20-Year Geometric Expected Returns
Natural Resources and Commodities

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
Natural Resources	9.3	9.2	-0.1	Higher valuations
Natural Resources (Public)	9.2	9.1	-0.1	Slightly higher valuations
Natural Resources (Private)	9.3	9.2	-0.1	Slightly higher valuations
Energy	10.4	10.3	-0.1	Slightly higher valuations
Mining	9.9	9.8	-0.1	Slightly higher valuations
Timberland	7.3	7.3	0.0	
Farmland	7.0	6.5	-0.5	Higher valuations
Sustainability	10.0	10.2	0.2	Lower relative valuations
MLPs	8.4	8.0	-0.4	Higher valuations
Gold Mining	9.5	9.5	0.0	
Gold (Metal)	3.5	3.6	0.1	
Commodities	5.3	5.9	0.6	Higher cash yield

20-Year Geometric Expected Returns
Hedge Funds and Miscellaneous

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
Hedge Funds	5.8	6.0	0.2	Higher valuations offset by higher cash yields
Long-Short	5.3	5.5	0.2	Higher valuations offset by higher cash yields
Event Driven	7.6	6.7	-0.9	Higher equity valuations, tighter spreads
Global Macro	5.4	5.9	0.5	Higher yields
CTA – Trend Following	4.7	4.9	0.2	
Fixed Income/L-S Credit	6.1	6.4	0.3	Higher yields
Relative Value/Arbitrage	6.5	6.5	0.0	
RMS Aggregate	4.4	4.8	0.4	Higher cash yields
Long Vol	1.2	1.5	0.3	
Insurance Linked Strategies	6.2	6.3	0.1	
Alternative Risk Premia	5.2	5.8	0.6	Higher cash yields
Risk Parity (10% vol)	7.2	7.4	0.2	
Digital Currencies	3.5	4.1	0.6	Growing institutionalization

Return and Risk Data

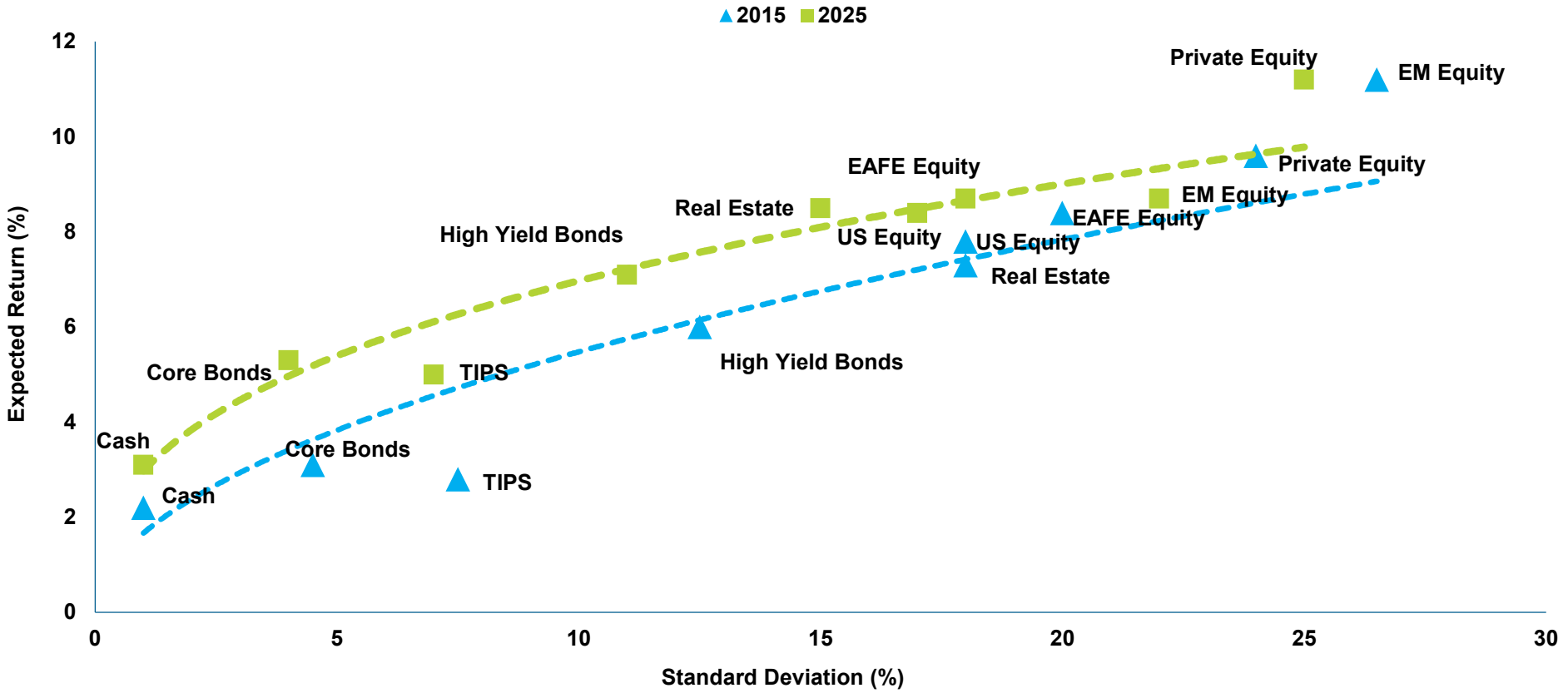
Asset Class	10-year Expected Return (%)	20-year Expected Return (%)	Standard Deviation (%)
Cash Equivalents	2.8	3.1	1.0
Investment Grade Bonds	4.9	5.3	4.0
Long-term Government Bonds	5.0	5.7	12.0
TIPS	4.3	5.0	7.0
High Yield Bonds	6.3	7.1	11.0
Bank Loans	6.3	6.8	10.0
Emerging Market Debt	6.3	6.8	11.0
Private Debt	8.7	9.1	15.0
US Equity	6.4	8.4	17.0
Developed Non-US Equity	7.2	8.7	18.0
Emerging Non-US Equity	7.1	8.7	22.0
Global Equity	6.7	8.5	17.0
Private Equity	9.8	11.2	25.0
Real Estate	6.9	8.5	15.0
Infrastructure	7.2	9.2	18.0
Commodities	5.5	5.9	17.0
Hedge Funds	4.2	6.0	7.0
Inflation	2.3	2.7	NA

Correlation Data

	Inv. Grade Bonds	Long-term Gov't Bonds	TIPS	High Yield Bonds	US Equity	Dev. Non-US Equity	Em. Market Equity	Private Equity	Real Estate	Commod.	Infra.	Hedge Funds
Investment Grade Bonds	1.00											
Long-term Government Bonds	0.86	1.00										
TIPS	0.77	0.61	1.00									
High Yield Bonds	0.35	-0.03	0.47	1.00								
US Equity	0.18	-0.13	0.25	0.74	1.00							
Developed Non-US Equity	0.28	-0.07	0.34	0.77	0.87	1.00						
Emerging Market Equity	0.26	-0.06	0.35	0.72	0.71	0.85	1.00					
Private Equity	0.00	-0.10	0.03	0.66	0.90	0.83	0.79	1.00				
Real Estate	0.26	0.07	0.16	0.56	0.53	0.49	0.42	0.48	1.00			
Commodities	-0.01	-0.24	0.27	0.48	0.48	0.55	0.59	0.23	0.15	1.00		
Infrastructure	0.31	0.14	0.32	0.65	0.64	0.68	0.59	0.51	0.61	0.41	1.00	
Hedge Funds	0.15	-0.17	0.30	0.78	0.79	0.83	0.80	0.53	0.47	0.64	0.61	1.00

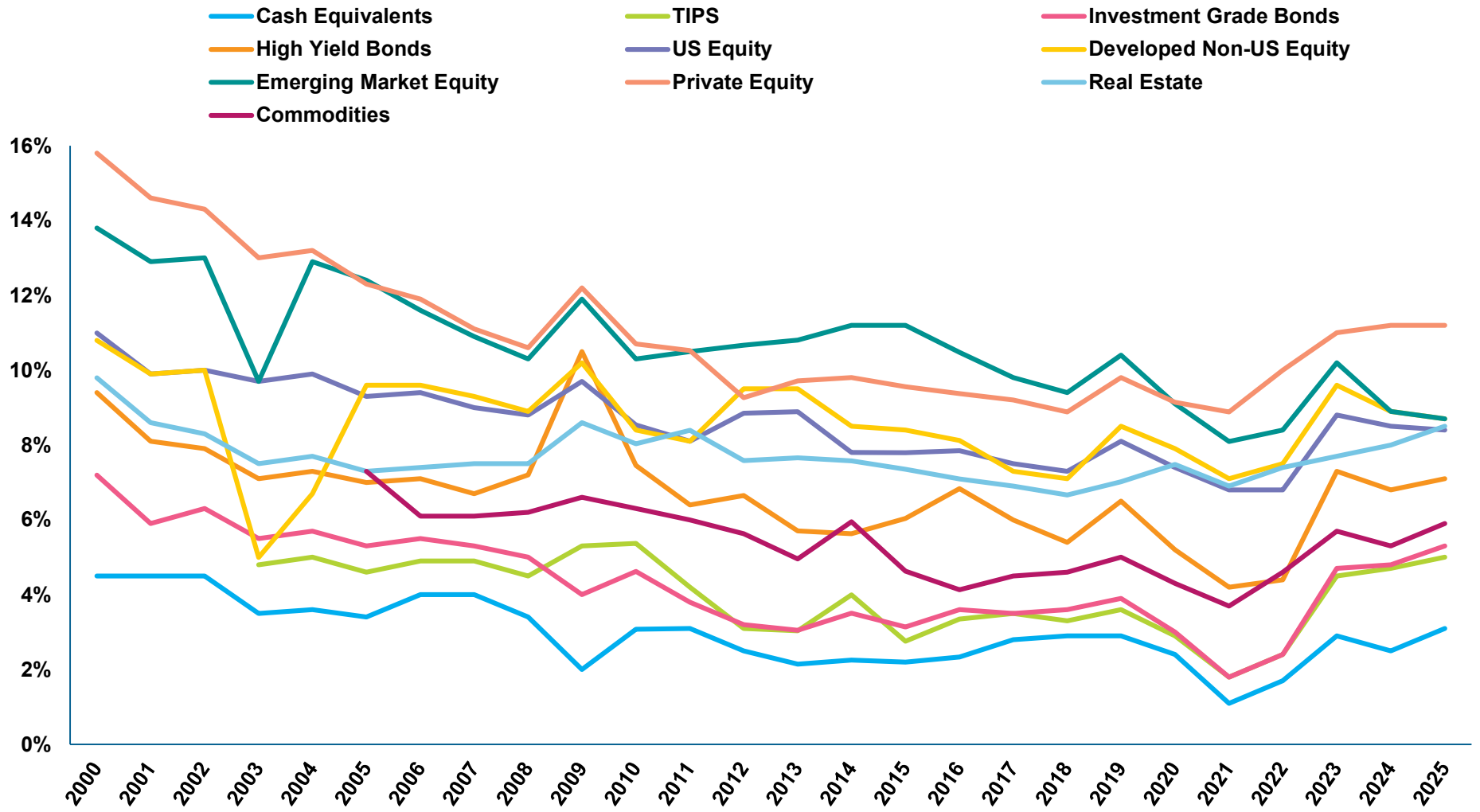
The Big Picture: Higher Return for Similar Risk[1]

- → The relationship between long-term return expectations and the level of risk accepted is not static.
- → The higher interest rates compared to a decade ago mean that many investors have greater flexibility in how they structure a portfolio to achieve their target returns.



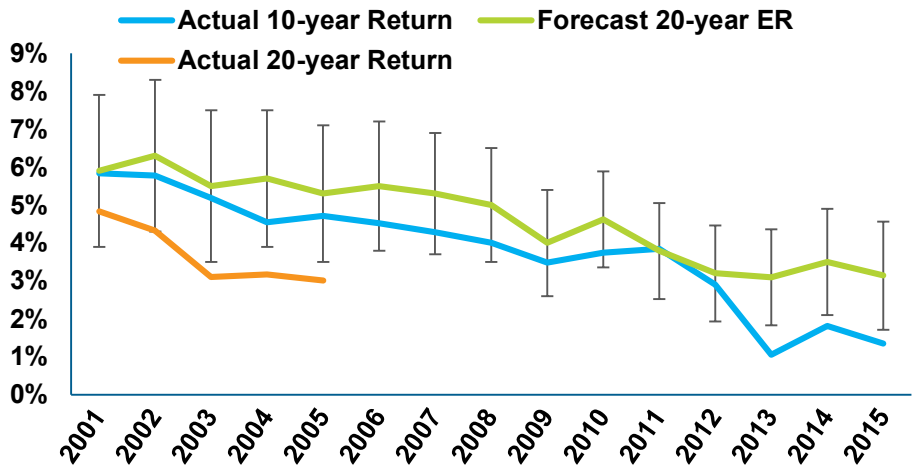
[1] Expected return and standard deviation are based upon Meketa Investment Group's 2015 and 2025 20-year capital market expectations.

Our 20-Year CMEs Since 2000

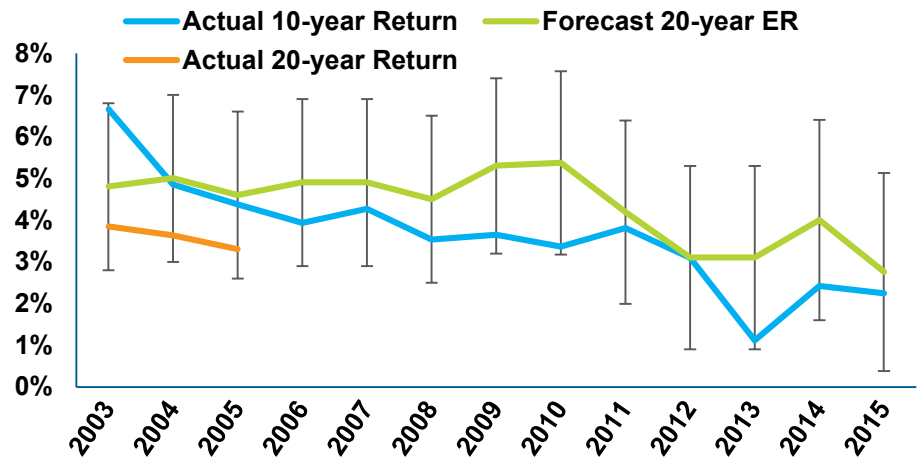


Our Track Record

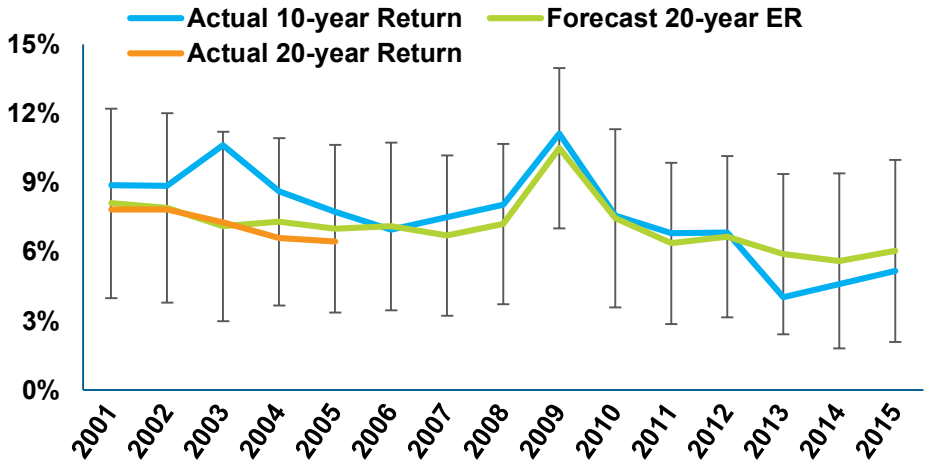
Investment Grade Bonds



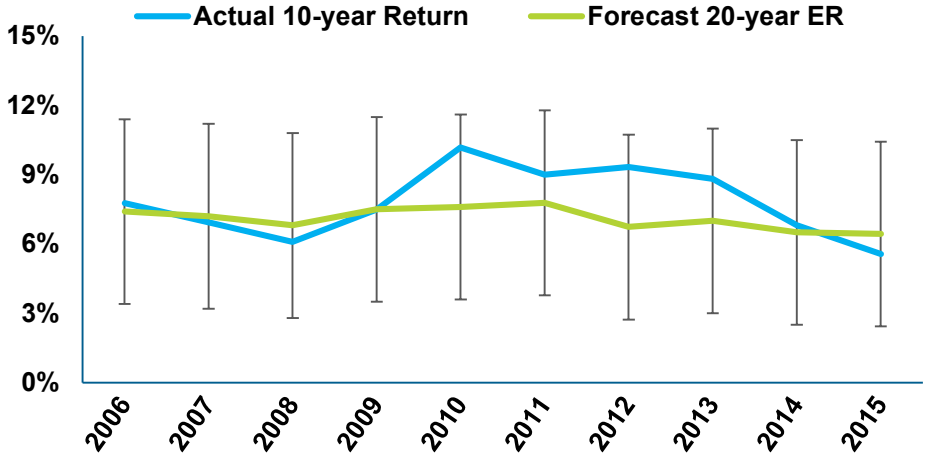
TIPS



High Yield Bonds

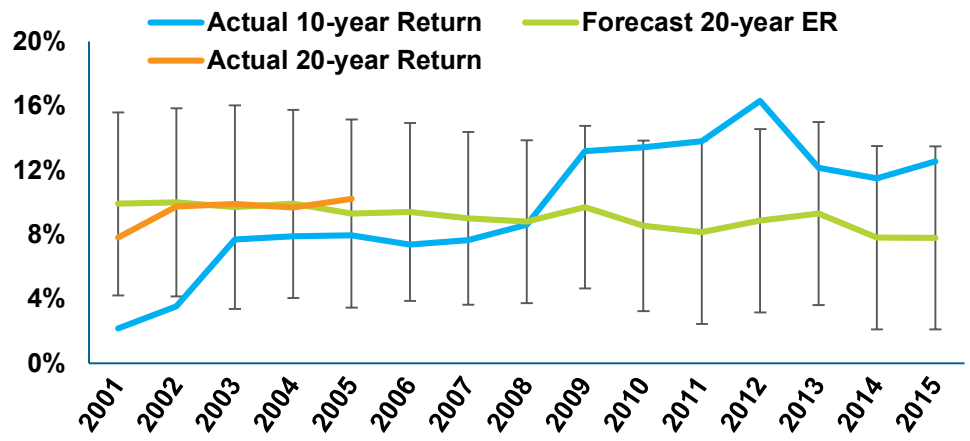


Core Real Estate

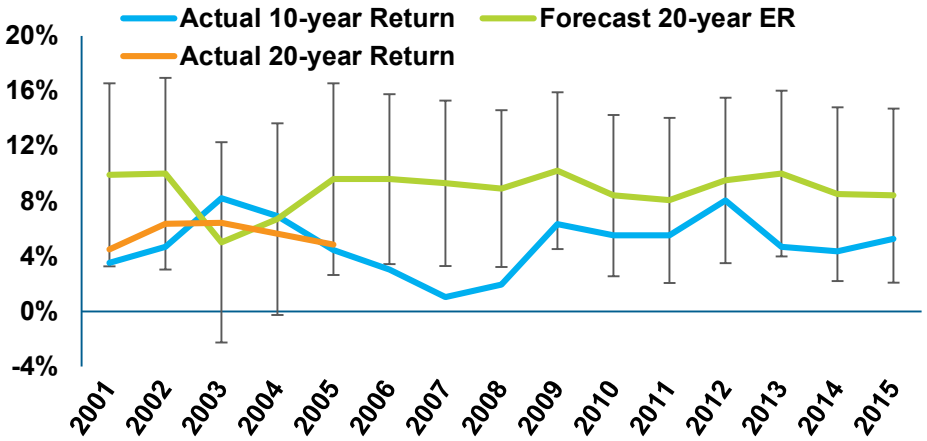


Our Track Record (continued)

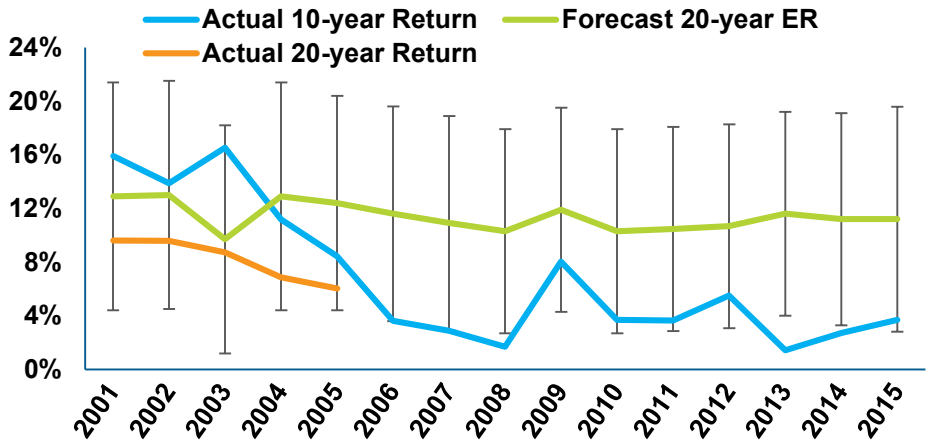
US Equity



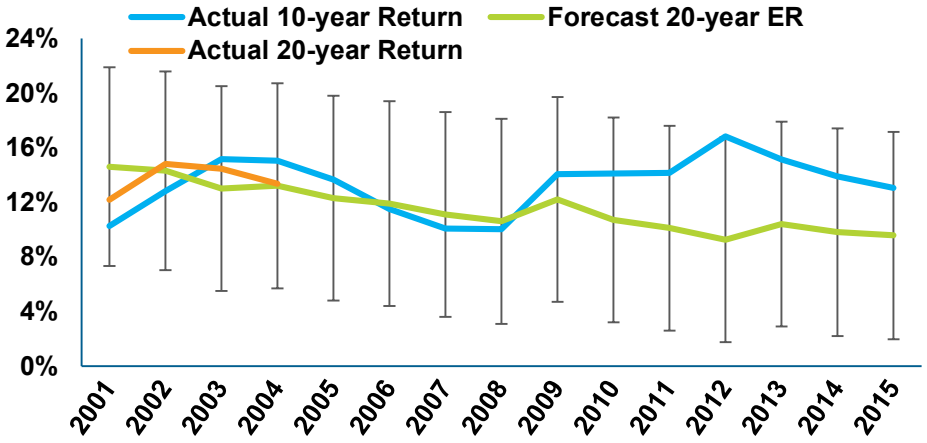
EAFE Equity



Emerging Markets Equity



Private Equity



Current Policy and Higher Fixed Income Alternatives

Asset Allocation Policy Options[1]

	SJ Fed (%)	Fed More FI (%)	SJ P&F (%)	P&F More FI (%)
Growth	**75**	**72.5**	**73.5**	**71**
US Equity	25	23.5	24	22.5
Developed Market Equity (non-US)	12	11	11	10
Emerging Market Equity	12	11	7	6
Buyouts	8	8	10	10
Venture Capital	4	4	4.5	4.5
High Yield Bonds	2	3	2	3
Private Debt	3	3	5	5
Emerging Market Bonds	3	3	2	2
VA/Opp Real Estate	3	3	4	4
Natural Resources (Private)	2	2	3	3
Infrastructure (Core Private)	1	1	1	1
Low Beta	**8**	**8**	**13.5**	**13.5**
Cash Equivalents	5	5	10.5	10.5
Hedge Funds	3	3	3	3
Other	**17**	**19.5**	**13**	**15.5**
Investment Grade Bonds	6	8.5	4.5	7
Long-term Government Bonds	4	4	1.5	1.5
TIPS	2	2	2	2
Core Private Real Estate	5	5	5	5
Expected Return (10/20 years)	**7.2/8.6**	**7.2/8.5**	**7.2/8.6**	**7.2/8.5**
Verus Standard Deviation	**11.5**	**11.0**	**11.0**	**10.6**
Probability of Achieving 6.62% over 10/20 Years	**54.8/74.9**	**54.6/74.7**	**54.8/74.6**	**54.6/74.4**

[1] Expected return is based upon Meketa Investment Group's Annual Capital Markets Expectations, while standard deviation is provided by Verus. Throughout this document, returns for periods longer than one year are annualized. Totals may not sum exactly due to rounding.

Risk Analysis

Scenario	SJ Fed (%)	Fed More FI (%)	SJ P&F (%)	P&F More FI (%)
Worst Case Returns (1)				
One-Year (annualized)	-18.2	-17.4	-17.8	-17.1
Three-Years (annualized)	-7.8	-7.3	-7.6	-7.1
Five-Years (annualized)	-4.3	-4.0	-4.2	-3.8
Ten-Years (annualized)	-0.7	-0.5	-0.6	-0.4
Twenty-Years (annualized)	1.9	2.1	2.0	2.1
Probability of Experiencing Negative Returns				
One-Year	24.9	24.3	24.7	24.1
Three-Years	12.0	11.4	11.8	11.2
Five-Years	6.5	6.0	6.3	5.8
Ten-Years	1.6	1.4	1.5	1.3
Twenty-Years	0.1	0.1	0.1	0.1
Probability of Achieving at least a 6.62% Return				
One-Year	56.0	55.9	55.9	55.8
Three-Years	60.3	60.2	60.1	60.0
Five-Years	63.1	63.0	63.0	62.9
Ten-Years	68.2	68.1	68.0	67.9
Twenty-Years	74.9	74.7	74.6	74.4

Value at Risk[1]

Scenario	SJ Fed	Fed More FI	SJ P&F	P&F More FI
VaR (%):				
1 month	-8.2	-7.9	-8.1	-7.8
3 months	-13.3	-12.7	-13.0	-12.5
6 months	-17.4	-16.7	-17.1	-16.3
VaR ($ M):				
1 month	-8	-8	-8	-8
3 months	-13	-13	-13	-13
6 months	-17	-17	-17	-16

Conditional Value at Risk[1]

Scenario	SJ Fed	Fed More FI	SJ P&F	P&F More FI
CVaR (%):				
1 month	-9.5	-9.1	-9.3	-9.0
3 months	-15.4	-14.8	-15.2	-14.6
6 months	-20.5	-19.6	-20.1	-19.2
CVaR ($ M):				
1 month	-9	-9	-9	-9
3 months	-15	-15	-15	-15
6 months	-20	-20	-20	-19

[1] Calculated with a 99% confidence level and based upon Meketa Investment Group's Annual Capital Markets Expectations. cVaR represents the average loss past the 99th percentile.

Historical Negative Scenario Analysis[1] (Cumulative Return)

Scenario	SJ Fed (%)	Fed More FI (%)	SJ P&F (%)	P&F More FI (%)
Post-COVID Rate Hikes(Jan 2022-Oct 2023)	-10.0	-9.9	-6.5	-6.5
COVID-19 Market Shock (Feb 2020-Mar 2020)	-18.7	-17.8	-17.3	-16.4
Taper Tantrum (May - Aug 2013)	-0.6	-0.7	0.6	0.6
Global Financial Crisis (Oct 2007 - Mar 2009)	-28.6	-26.9	-27.0	-25.3
Popping of the TMT Bubble (Apr 2000 - Sep 2002)	-19.4	-17.2	-17.7	-15.4
LTCM (Jul - Aug 1998)	-9.8	-9.2	-8.2	-7.6
Asian Financial Crisis (Aug 97 - Jan 98)	0.4	0.9	2.7	3.2
Rate spike (1994 Calendar Year)	2.1	2.0	3.8	3.7
Early 1990's Recession (Jun - Oct 1990)	-6.6	-6.2	-5.4	-4.9
Crash of 1987 (Sep - Nov 1987)	-12.4	-11.5	-10.6	-9.8
Strong dollar (Jan 1981 - Sep 1982)	2.6	3.7	3.9	5.0
Volcker Recession (Jan - Mar 1980)	-3.8	-3.9	-2.8	-2.9
Stagflation (Jan 1973 - Sep 1974)	-23.5	-22.0	-20.2	-18.7

[1] See the Appendix for our scenario inputs. In periods where the ideal benchmark was not yet available we used the next closest benchmark(s) as a proxy.

Historical Positive Scenario Analysis[1] (*Cumulative* Return)

Scenario	SJ Fed (%)	Fed More FI (%)	SJ P&F (%)	P&F More FI (%)
Covid Recovery (Apr 2020-Dec 2021)	54.8	52.7	54.9	52.8
Global Financial Crisis Recovery (Mar 2009 - Nov 2009)	37.0	35.4	31.7	30.1
Real Estate and Buyout Boom (Oct 2004-Sept 2007)	72.6	69.8	68.8	66.0
Best of Great Moderation (Apr 2003 - Feb 2004)	32.1	30.6	28.1	26.5
Peak of the TMT Bubble (Oct 1998 - Mar 2000)	61.4	59.1	59.6	57.4
Short Rate Decrease Cycle (Jan 1995-Dec 1995)	20.1	20.1	20.1	20.2
Recession Recovery (Nov 1990-March 1992)	28.4	28.1	23.3	22.9
Plummeting Dollar (Jan 1986 - Aug 1987)	57.8	54.8	50.2	47.2
Long Rate Decrease Cycle (June 1984-August 1986)	83.1	80.7	71.7	69.4
Volcker Recovery (Aug 1982 - Apr 1983)	32.6	31.7	28.7	27.9
Bretton Wood Recovery (Oct 1974 - Jun 1975)	30.5	29.2	27.3	26.0

[1] See the Appendix for our scenario inputs. In periods where the ideal benchmark was not yet available we used the next closest benchmark(s) as a proxy.

Stress Testing: Impact of Market Movements (Expected Return under Stressed Conditions)[1]

Scenario	SJ Fed (%)	Fed More FI (%)	SJ P&F (%)	P&F More FI (%)
10-year Treasury Bond rates rise 100 bps	4.5	4.1	4.5	4.1
10-year Treasury Bond rates rise 200 bps	-1.5	-1.7	-0.9	-1.1
10-year Treasury Bond rates rise 300 bps	-2.4	-2.7	-1.9	-2.2
Baa Spreads widen by 50 bps, High Yield by 200 bps	0.5	0.6	0.4	0.5
Baa Spreads widen by 300 bps, High Yield by 1000 bps	-22.7	-21.7	-21.2	-20.2
Trade Weighted Dollar gains 10%	-4.2	-3.9	-3.2	-2.9
Trade Weighted Dollar gains 20%	-1.7	-1.4	-1.4	-1.1
U.S. Equities decline 10%	-6.2	-5.9	-5.7	-5.4
U.S. Equities decline 25%	-17.5	-16.8	-16.6	-15.9
U.S. Equities decline 40%	-26.8	-25.6	-25.2	-24.0
Bull Steepener	1.9	2.0	1.6	1.7

→ Each policy portfolio has a different sensitivity to four major risk factors: interest rates, credit spreads, currency fluctuations, and equity values.

→ The Funds' primary risk factors would continue to be an equity market decline and a widening of credit spreads, no matter the policy.

[1] Assumes that assets not directly exposed to the factor are affected nonetheless. See the Appendix for further details.

Stress Testing: Impact of Positive Market Movements (Expected Return under Positive Conditions)[1]

Scenario	SJ Fed (%)	Fed More FI (%)	SJ P&F (%)	P&F More FI (%)
10-year Treasury Bond rates drop 100 bps	2.2	2.3	1.9	2.0
10-year Treasury Bond rates drop 200 bps	11.0	10.8	9.3	9.1
10-year Treasury Bond rates drop 300 bps	13.9	13.7	11.5	11.3
Baa Spreads narrow by 30bps, High Yield by 100 bps	7.3	7.1	7.2	6.9
Baa Spreads narrow by 100bps, High Yield by 300 bps	14.0	13.5	12.3	11.9
Trade Weighted Dollar drops 10%	8.2	7.9	7.4	7.1
Trade Weighted Dollar drops 20%	23.3	22.3	20.5	19.5
U.S. Equities rise 10%	7.0	6.8	6.9	6.7
U.S. Equities rise 30%	16.9	16.2	15.5	14.8
Bear Steepener	5.6	5.2	5.4	5.1

[1] Assumes that assets not directly exposed to the factor are affected nonetheless. See the Appendix for further details.

Economic Regime Management®

Economic Regime Management

→ The Economic Regime Management ("ERM") approach focuses on understanding the dynamics of the most important macro level forces that drive returns across asset classes.

→ We find the most important factors to be:

- Interest Rate Surprise – Unexpected changes in the 10 year interest rate (related to Duration).
- Inflation Surprise – Unexpected changes in the CPI growth rate.
- Growth Surprise – Unexpected changes in the Real GDP growth rate.
- Systemic Risk – "System-wide" risk that propagates through all asset classes (e.g., 2008).

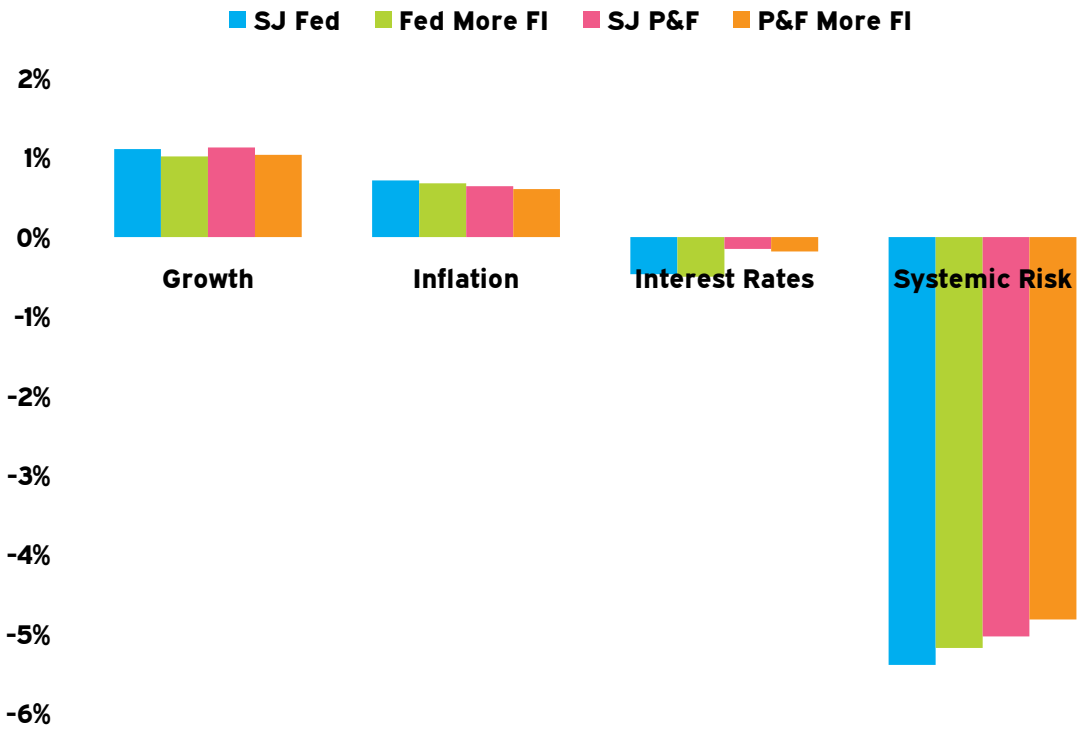
→ We focus on surprises because expectations matter.

- What was considered "low" inflation in the 1970s would be considered "high" today.

→ These factors explain the majority of volatility across asset classes.

- Understanding these dynamics explain the "why" not just the "what."

Portfolio Sensitivity Comparison



- → The chart above shows the resulting change in portfolio return given a one standard deviation event in the respective risk factor.
- → There is more concentration in Growth and Systematic Risk because these sources of risk tend to pay better (have higher expected returns) than the other risk factors.

Summary

→ Based on our analysis, shifting a small allocation from public equites into investment grade and high yield bonds marginally decreases expected returns for both the Federated and Police & Fire portfolios. The projections indicate that the move would likely protect each portfolio better in most stressed scenarios.

Appendices

Scenario Return Inputs

Asset Class	Benchmark Used
Investment Grade Bonds	Bloomberg US Aggregate
TIPS	Bloomberg Global Inflation Linked: US TIPS
Intermediate-term Government Bonds	Bloomberg US Treasury: Intermediate
Long-term Government Bonds	Bloomberg US Treasury: Long
EM Bonds (Local)	Bloomberg Emerging Markets Hard Currency Aggregate
Bank Loans	Credit Suisse Leveraged Loan
High Yield Bonds	Bloomberg US Corporate High Yield
Direct Lending	Cliffwater Direct Lending Index
Special Situations	Cambridge Associates Proxy IRR Returns
Real Estate	NCREIF Property Index
Core Private Real Estate	Cambridge Associates Proxy IRR Returns
Value-Added Real Estate	Cambridge Associates Proxy IRR Returns
Opportunistic Real Estate	Cambridge Associates Proxy IRR Returns
REITs	FTSE NAREIT All Equity REITS
Infrastructure (Private)	Cambridge Associates Proxy IRR Returns
Natural Resources (Private)	Cambridge Associates Proxy IRR Returns
Timber	NCREIF Timberland
Commodities	Bloomberg Commodity Index
US Equity	Russell 3000
Public Foreign Equity (Developed)	MSCI EAFE
Public Foreign Equity (Emerging)	MSCI Emerging Markets
Private Equity	Cambridge Associates Proxy IRR Returns
Long-short Equity	HFRI Equity Hedge
Global Macro	HFRI Macro
Hedge Funds	HFRI Fund Weighted Composite
Private Debt	Cambridge Associates Proxy IRR Returns

Negative Historical Scenario Returns - Sample Inputs

	Covid-19 Market Shock (Feb 2020-Mar 2020)	Taper Tantrum (May - Aug 2013)	Global Financial Crisis (Oct 2007 - Mar 2009)	Popping of the TMT Bubble (Apr 2000 - Sep 2002)	LTCM (Jul - Aug 1998)
Cash Equivalents	0.4	0.0	2.6	9.9	0.8
Short-term Investment Grade Bonds	0.4	-0.1	7.9	21.9	1.6
Investment Grade Bonds	-0.9	-3.7	8.5	28.6	1.8
Long-term Corporate Bonds	-18.4	-9.3	-10.3	26.9	-0.6
Long-term Government Bonds	12.7	-11.6	24.2	35.5	4.1
TIPS	-0.4	-8.5	8.2	37.4	0.7
Global ILBs	-6.5	-7.4	-3.9	39.7	0.7
High Yield Bonds	-20.8	-2.0	-22.8	-6.3	-5.0
Bank Loans	-20.3	0.8	-23.7	6.3	0.7
Direct Lending	-4.8	2.6	-3.3	-2.0	-2.6
Foreign Bonds	-4.5	-3.2	2.1	8.5	3.5
Asset Based Lending	-4.8	2.6	-3.3	-2.0	-2.6
Special Situations	-12.2	4.6	-26.4	-2.0	-2.6
Emerging Market Bonds (major)	-15.3	-11.5	-5.0	6.3	-28.2
Emerging Market Bonds (local)	-13.9	-14.3	-7.9	7.2	-34.1
US Equity	-35.0	3.0	-45.8	-43.8	-15.4
Developed Market Equity (non-US)	-32.7	-2.2	-52.1	-46.7	-11.5
Emerging Market Equity	-31.2	-9.4	-51.2	-43.9	-26.7
Global Equity	-33.6	-0.7	-49.3	-46.7	-14.0
Private Equity/Debt	-7.8	5.7	-27.7	-23.6	-3.2
Private Equity	-7.4	5.8	-28.2	-26.2	-3.3
Private Debt Composite	-10.1	4.6	-22.3	-1.8	-2.3
REITs	-41.0	-13.3	-63.0	45.4	-15.3
Core Private Real Estate	0.7	3.6	-10.6	23.6	2.3
Value-Added Real Estate	-3.5	3.0	-32.2	25.4	0.0
Opportunistic Real Estate	-8.6	4.0	-25.7	21.4	1.5
Natural Resources (Private)	-22.1	2.5	-31.2	-3.9	-16.9
Timberland	0.1	1.3	20.7	-1.5	0.5
Farmland	-0.1	3.3	26.7	11.4	0.8
Commodities (naïve)	-18.9	-2.4	-36.9	18.5	-12.0
Core Private Infrastructure	-1.3	3.7	-0.8	24.8	-0.3
Hedge Funds	-9.1	-0.4	-17.8	-2.1	-9.4
Long-Short	-10.9	-1.0	-26.4	-8.8	-8.3
Hedge Fund of Funds	-7.6	-0.5	-19.5	-0.4	-7.7

Negative Historical Scenario Returns - Sample Inputs (continued)

	Rate spike (1994 Calendar Year)	Crash of 1987 (Sep - Nov 1987)	Strong dollar (Jan 1981 - Sep 1982)	Volcker Recession (Jan - Mar 1980)	Stagflation (Jan 1973 - Sep 1974)
Cash Equivalents	3.9	1.4	24.4	2.9	13.5
Short-term Investment Grade Bonds	0.5	2.3	29.9	-2.6	4.3
Investment Grade Bonds	-2.9	2.2	29.9	-8.7	7.9
Long-term Corporate Bonds	-5.8	1.5	29.6	-14.1	-12.0
Long-term Government Bonds	-7.6	2.6	28.4	-13.6	-1.8
TIPS	-7.5	2.8	15.6	-7.8	4.3
Global ILBs	-7.9	2.9	16.5	-8.3	4.5
High Yield Bonds	-1.0	-3.6	6.9	-2.3	-15.5
Bank Loans	10.3	-1.7	3.3	-1.1	-7.5
Direct Lending	7.6	-2.3	3.2	-1.0	-7.2
Foreign Bonds	5.3	-0.3	34.8	-6.5	-1.4
Asset Based Lending	7.6	-2.3	3.2	-1.0	-7.2
Special Situations	7.6	-2.3	3.2	-1.0	-7.2
Emerging Market Bonds (major)	-18.9	-9.2	-1.6	-2.6	-20.2
Emerging Market Bonds (local)	-22.8	-11.0	-2.0	-3.2	-23.9
US Equity	1.3	-29.5	-2.3	-4.1	-42.6
Developed Market Equity (non-US)	7.8	-14.5	-18.0	-7.0	-36.3
Emerging Market Equity	-7.3	-25.3	-12.1	-6.6	-44.2
Global Equity	5.0	-20.5	-11.1	-5.4	-40.4
Private Equity/Debt	13.2	-0.7	-2.7	-2.5	-18.2
Private Equity	14.2	-0.5	-3.9	-2.7	-20.1
Private Debt Composite	6.2	-1.8	3.0	-1.0	-6.9
REITs	-3.5	-19.5	2.5	-3.6	-33.9
Core Private Real Estate	6.4	2.5	23.9	5.5	-4.4
Value-Added Real Estate	6.5	4.3	44.2	9.6	-7.6
Opportunistic Real Estate	18.8	3.1	30.7	7.0	-5.6
Natural Resources (Private)	12.6	-9.9	-9.5	-9.1	19.3
Timberland	15.4	9.2	23.6	-7.4	5.5
Farmland	9.4	5.3	13.3	-4.2	3.1
Commodities (naïve)	16.6	1.8	-16.0	-9.6	139.5
Core Private Infrastructure	-11.5	-0.1	-0.2	-0.1	-0.5
Hedge Funds	4.1	-7.8	-3.8	-1.9	-15.7
Long-Short	2.6	-10.0	-4.9	-2.5	-19.8
Hedge Fund of Funds	-3.5	-5.7	-2.7	-1.4	-11.5

Positive Historical Scenario Returns - Sample Inputs

	Covid-19 Recovery (Apr 2020 – Dec 2021)	Global Financial Crisis Recover (Mar 2009 - Nov 2009)	Best of Great Moderation (Apr 2003 - Feb 2004)	Peak of the TMT Bubble (Oct 1998 - Mar 2000)	Plummeting Dollar (Jan 1986 - Aug 1987)	Volcker Recovery (Aug 1982 - Apr 1983)	Bretton Wood Recovery (Oct 1974 - Jun 1975)
Cash Equivalents	0.1	0.1	0.9	6.7	10.0	6.0	4.5
Short-term Investment Grade Bonds	1.1	4.3	2.8	5.3	13.2	15.4	5.0
Investment Grade Bonds	2.6	9.0	4.6	1.7	14.4	26.4	9.2
Long-term Corporate Bonds	18.0	28.8	11.3	-3.1	15.9	42.1	17.5
Long-term Government Bonds	-7.2	2.0	4.9	-2.3	15.4	33.6	11.8
TIPS	15.6	14.3	9.1	6.3	10.2	11.5	4.1
Global ILBs	18.9	24.7	9.6	6.6	10.8	12.1	4.3
High Yield Bonds	29.1	49.1	21.8	2.1	24.9	23.3	19.3
Bank Loans	24.8	32.9	10.1	6.1	11.1	10.4	8.7
Direct Lending	25.0	9.4	23.7	26.8	5.4	8.2	8.3
Foreign Bonds	5.2	23.4	15.2	-7.0	44.5	32.3	17.9
Asset Based Lending	25.0	9.4	23.7	26.8	5.4	8.2	8.3
Special Situations	85.8	33.2	23.7	26.8	5.4	8.2	8.3
Emerging Market Bonds (major)	15.7	27.0	20.6	49.0	38.9	21.6	21.0
Emerging Market Bonds (local)	7.0	37.5	25.2	61.0	48.4	26.5	25.7
US Equity	92.0	51.6	37.2	50.2	64.8	59.3	55.1
Developed Market Equity (non-US)	55.4	60.5	56.7	53.0	140.0	29.6	34.6
Emerging Market Equity	50.9	94.6	79.4	101.3	126.5	52.1	53.4
Global Equity	75.2	59.9	46.2	54.8	98.7	46.3	43.8
Private Equity/Debt	97.8	18.8	23.3	82.4	19.0	13.7	18.4
Private Equity	101.5	16.7	23.7	90.0	21.6	14.8	20.2
Private Debt Composite	41.2	28.7	20.4	21.3	5.9	7.9	8.0
REITs	75.1	82.5	44.6	-5.2	51.8	47.4	42.5
Core Private Real Estate	21.4	-12.1	9.0	18.1	13.1	6.8	4.5
Value-Added Real Estate	36.6	-22.4	10.9	22.0	23.6	11.9	7.8
Opportunistic Real Estate	41.1	-14.8	13.6	27.9	16.7	8.6	5.7
Natural Resources (Private)	45.4	57.6	36.1	22.2	78.3	30.2	14.8
Timberland	9.9	-3.7	8.5	20.5	28.6	20.0	8.7
Farmland	11.3	4.5	9.6	10.4	15.9	11.3	5.0
Commodities (naïve)	60.5	28.9	30.6	17.1	27.6	6.2	-20.2
Core Private Infrastructure	32.7	6.9	8.5	33.0	1.4	0.6	0.6
Hedge Funds	39.3	20.1	22.4	52.8	30.6	13.8	14.5
Long-Short	54.1	25.9	25.3	81.4	40.8	18.0	18.9
Hedge Fund of Funds	29.1	10.3	13.3	36.8	21.3	9.7	10.3

Stress Test Return Assumptions - Sample Inputs[1]

	10-year Treasury Bond rates rise 100 bps	10-year Treasury Bond rates rise 200 bps	10-year Treasury Bond rates rise 300 bps	Baa Spreads widen by 50 bps, High Yield by 200 bps	Baa Spreads widen by 300 bps, High Yield by 1000 bps	Trade Weighted Dollar gains 10%	Trade Weighted Dollar gains 20%	US Equities decline 10%	US Equities decline 25%	US Equities decline 40%
Cash Equivalents	-0.2	-0.4	-0.5	2.8	1.1	3.6	1.3	2.9	2.3	0.4
Short-term Investment Grade Bonds	-1.2	-2.5	-3.7	2.2	1.5	0.8	1.4	0.9	0.7	0.8
Investment Grade Bonds	-4.3	-8.4	-11.9	3.9	-0.4	0.8	4.2	1.5	0.7	-1.0
Long-term Corporate Bonds	-8.9	-16.3	-20.9	2.6	-13.4	-1.0	8.1	-1.0	-8.3	-12.3
Long-term Government Bonds	-10.6	-18.9	-23.6	7.8	7.3	1.8	12.8	1.4	2.6	2.4
TIPS	-4.9	-9.8	-13.7	2.8	-6.1	-2.4	-0.2	1.8	-2.3	-8.7
Global ILBs	-1.6	-8.6	-11.9	2.4	-11.1	-4.0	-4.8	1.4	-5.4	-16.3
High Yield Bonds	2.6	-4.3	-3.6	-1.8	-23.0	-4.1	-0.6	-5.3	-15.5	-21.2
Bank Loans	1.4	-1.0	-5.1	-2.8	-20.8	-2.9	-0.6	-3.6	-13.2	-17.4
Direct Lending	0.1	-2.7	-6.3	-1.8	-9.1	-3.2	-0.6	-3.4	-7.6	-5.7
Foreign Bonds	-4.6	-9.9	-15.7	6.6	-2.9	-4.5	-8.8	0.4	-4.6	-9.2
Asset-Based Lending	-0.2	-2.5	-4.5	-1.4	-11.5	-3.4	-3.1	-3.3	-8.2	-6.0
Special Situations	4.6	0.0	-6.4	-2.2	-21.4	-1.6	-9.0	-4.3	-17.3	-21.8
Emerging Market Bonds (major)	0.8	-6.1	-3.6	-0.1	-14.7	-2.6	-4.2	-4.2	-12.5	-15.4
Emerging Market Bonds (local)	1.6	-6.4	-3.0	0.1	-12.8	-3.0	-12.2	-3.8	-13.3	-20.5
US Equity	7.1	-1.0	2.8	-1.2	-32.0	-3.5	1.6	-10.6	-26.5	-42.4
Developed Market Equity (non-US)	8.9	0.7	-5.6	0.3	-35.1	-13.2	-9.0	-8.8	-23.4	-41.4
Emerging Market Equity	10.0	2.3	0.1	-1.1	-42.8	-15.7	-15.7	-11.7	-30.8	-46.9
Global Equity	7.6	-0.1	-0.5	-0.7	-33.6	-9.1	-5.9	-9.8	-25.3	-41.5
Private Equity/Debt	6.5	0.9	-5.5	-0.2	-22.5	-2.9	-7.2	-9.2	-22.5	-25.3
Private Equity	6.8	0.9	-5.3	0.0	-22.8	-2.8	-6.4	-10.0	-23.3	-25.7
Private Debt Composite	2.6	-1.3	-6.2	-1.8	-15.8	-2.4	-4.3	-4.0	-12.8	-15.0
REITs	4.1	-4.4	1.2	-3.8	-37.3	-1.6	12.4	-7.1	-32.8	-55.7
Core Private Real Estate	2.6	4.2	5.0	2.0	-7.1	2.7	9.7	1.0	-8.5	-14.0
Value-Added Real Estate	4.9	7.5	14.1	7.2	-13.5	13.7	6.4	1.9	-13.6	-23.1
Opportunistic Real Estate	4.2	6.9	9.9	1.1	-20.6	2.3	15.6	-0.6	-17.1	-26.3
Natural Resources (Private)	13.3	6.9	-3.5	-0.9	-27.5	-4.3	-21.5	-2.1	-17.0	-29.1
Timberland	1.5	2.3	-9.9	5.0	6.9	2.9	8.6	0.6	2.7	3.9
Farmland	2.5	0.7	-9.2	3.9	10.1	1.3	8.0	1.0	4.9	10.3
Commodities (naïve)	9.9	6.0	-6.6	-4.3	-25.0	-3.4	-24.0	5.1	-11.1	-37.8
Core Private Infrastructure	0.5	-4.6	-6.1	1.2	0.1	-0.7	3.6	-0.4	-5.0	-7.8
Hedge Funds	2.9	-1.8	-5.1	-0.6	-14.5	-2.2	-1.7	-4.3	-12.2	-15.7
Long-Short	5.2	-1.8	-4.2	-0.1	-21.0	-3.7	-4.3	-7.5	-17.7	-23.5
Hedge Fund of Funds	2.1	-2.4	-5.7	-1.3	-14.8	-2.9	-2.4	-4.9	-12.5	-16.0

[1] Assumptions are based on performance for each asset class during historical periods that resembled these situations.

'Anti' Stress Test Return Assumptions - Sample Inputs[1]

	10-year Treasury Bond rates drop 100 bps	10-year Treasury Bond rates drop 200 bps	Baa Spreads narrow by 30bps, High Yield by 100 bps	Baa Spreads narrow by 100bps, High Yield by 300 bps	Trade Weighted Dollar drops 10%	Trade Weighted Dollar drops 20%	US Equities rise 10%	US Equities rise 30%
Cash Equivalents	0.2	0.4	0.6	0.2	2.0	4.5	2.3	3.1
Short-term Investment Grade Bonds	1.3	2.6	0.5	2.0	1.5	3.3	0.8	1.6
Investment Grade Bonds	4.5	9.3	1.3	3.9	2.5	9.4	1.8	3.8
Long-term Corporate Bonds	10.5	23.4	3.9	14.5	5.6	15.8	3.6	7.7
Long-term Government Bonds	13.3	28.8	0.6	-0.6	1.8	22.2	3.6	5.7
TIPS	5.2	10.9	1.2	5.9	3.8	7.8	1.5	2.2
Global ILBs	3.0	6.4	2.1	7.4	5.9	8.4	1.7	3.2
High Yield Bonds	2.8	8.9	7.0	25.7	7.7	8.6	4.8	10.6
Bank Loans	-0.2	2.2	4.0	16.4	4.3	0.6	2.2	4.5
Direct Lending	-0.5	0.2	4.9	5.6	1.5	3.8	1.8	3.5
Foreign Bonds	5.7	11.3	1.6	7.4	9.9	21.3	2.3	6.8
Asset Based Lending	-0.6	1.5	3.4	4.8	1.0	5.9	1.8	5.0
Special Situations	1.2	2.9	9.5	17.1	6.8	7.8	6.2	10.0
Emerging Market Bonds (major)	3.1	7.4	5.5	15.5	7.4	15.4	5.5	11.1
Emerging Market Bonds (local)	3.7	9.9	5.5	17.6	10.5	19.4	6.1	13.2
US Equity	3.4	15.3	11.4	18.8	8.0	24.9	10.6	31.7
Developed Market Equity (non-US)	-2.4	16.4	9.4	18.3	13.4	47.6	6.4	18.8
Emerging Market Equity	0.5	17.8	9.5	34.3	20.1	47.9	9.3	28.9
Global Equity	0.7	15.2	9.6	19.6	11.3	35.9	8.6	25.7
Private Equity/Debt	2.4	4.4	10.5	9.5	7.4	16.7	10.5	13.6
Private Equity	2.5	4.3	10.6	8.3	7.3	17.3	11.1	14.3
Private Debt Composite	0.8	1.8	7.7	12.8	4.8	5.9	4.6	6.5
REITs	2.6	14.5	9.7	27.1	6.5	25.5	10.0	24.1
Core Private Real Estate	1.0	1.6	4.6	-3.5	1.2	5.5	3.0	3.6
Value-Added Real Estate	2.7	6.4	5.6	-9.4	0.9	12.6	6.0	7.4
Opportunistic Real Estate	0.1	3.9	5.9	-5.5	-0.4	11.4	4.7	6.2
Natural Resources (Private)	-1.1	11.3	10.2	31.0	16.9	27.2	7.6	15.0
Timberland	6.4	9.2	4.9	-0.6	3.8	12.9	6.4	5.5
Farmland	3.2	4.2	6.6	3.8	3.4	7.8	5.3	4.1
Commodities (naïve)	-2.6	-3.2	3.1	9.8	13.6	-2.5	3.1	4.0
Core Private Infrastructure	0.8	-4.3	7.0	4.8	3.5	-2.3	2.0	2.9
Hedge Funds	3.3	4.8	5.8	11.3	6.0	9.3	5.6	9.8
Long-Short	3.3	5.8	6.9	12.3	7.8	15.2	7.0	13.3
Hedge Fund of Funds	2.5	3.9	4.9	10.2	5.1	8.3	4.7	8.8

[1] Assumptions are based on performance for each asset class during historical periods that resembled these situations.

Disclosure

You understand and agree that this document is partly based on analysis conducted using Meketa's the Asset Allocation Tool ("AAT"), an interactive tool created by Meketa Investment Group, Inc. ("Meketa") for informational purposes only and is not intended to provide, and should not be relied on for, accounting, legal, tax, or investment advice. The tool generates outcomes that are hypothetical in nature and should not be considered as providing advice on which investments to buy or sell. Results may vary with each use and over time. Specifically, the results may vary if the user modifies the inputs or there are changes to the capital markets assumptions. Information contained herein is subject to change at any time without notice.

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The return characteristics and behavior of asset classes are represented by broad-based indices that have been selected because they are well known and are easily recognizable by investors. The AAT does not favor certain asset classes. The AAT is intended to illustrate the possible trade-offs between portfolios composed of various assets. The behavior modeled for an asset class may differ from an actual portfolio. For example, investments made for a portfolio may differ significantly in terms of security holdings, industry weightings, and asset allocation, from those of the asset class. Further, other asset classes not considered may have characteristics similar or superior to those being analyzed by the AAT.

No investment process is risk free and there is no guarantee of profitability; investors may lose some or all of their investments. No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment. Diversification does not guarantee a profit or protect against loss. Asset classes vary significantly in projected returns and volatility.

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Notes and Disclaimers

[1] The returns shown in the Policy Options and Risk Analysis sections rely on estimates of expected return, standard deviation, and correlation developed by Meketa Investment Group. To the extent that actual return patterns to the asset classes differ from our expectations, the results in the table will be incorrect. However, our inputs represent our best unbiased estimates of these simple parameters.

[2] The returns shown in the Policy Options and Risk Analysis sections use a lognormal distribution, which may or may not be an accurate representation of each asset classes' future return distribution. To the extent that it is not accurate in whole or in part, the probabilities listed in the table will be incorrect. As an example, if some asset classes' actual distributions are even more right-skewed than the lognormal distribution (i.e., more frequent low returns and less frequent high returns), then the probability of the portfolio hitting a given annual return will be lower than that stated in the table.

[3] The standard deviation bars in the chart in the Risk Analysis section do not indicate the likelihood of a 1, 2, or 3 standard deviation event—they simply indicate the return we expect if such an event occurs. Since the likelihood of such an event is the same across allocations regardless of the underlying distribution, a relative comparison across policy choices remains valid.