

Meketa Investment Group

2021 Capital Markets Expectations

Background

- In the following slides, we provide a review of Meketa Investment Group's process for setting capital markets expectations, and show the changes from last year for individual asset classes and the San Jose Police & Fire Department Retirement Plan as a whole.
- At the request of the San Jose Investment Committee, Meketa's research team also developed custom expectations for growth and value styles within major equity asset classes.
- Based on our updated expectations, the long-term (20-year) annualized expected return for the Retirement Plan portfolio has decreased from 7.5% to 6.8%. Fortunately, this return expectation remains above the Plan's actuarial assumed rate of return, which is 6.625%.

Executive Summary

- We update our capital markets expectations each year in January.
 - Changes are driven by many factors, including interest rates, credit spreads, and equity prices.
- The good news is that most investors achieved returns in 2020 that were above their target return.
 - The bad news is the impact this has on our expectations for future returns.
- In 2020, yields went down, credit spreads tightened, and prices for most risk assets went up.
 - Hence our expected returns have declined for almost every asset class.

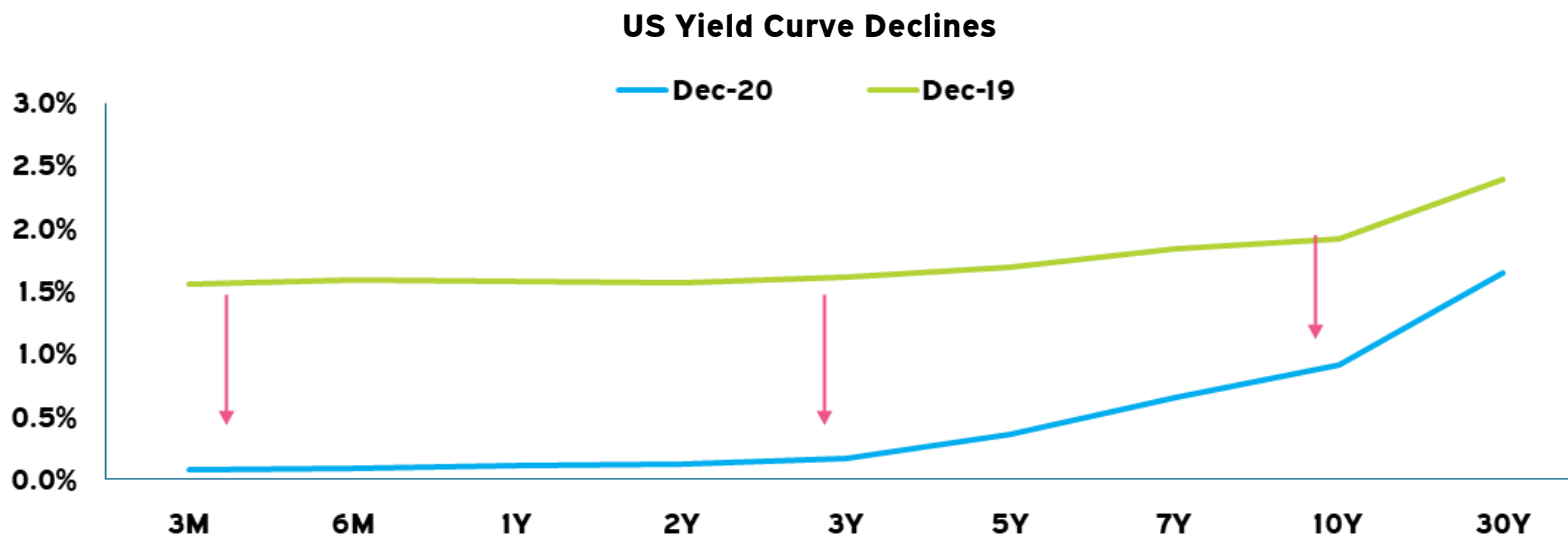
Year-over-Year Comparison

Asset Allocation	2020 Policy (%)	2021 Policy (%)	Change
Expected Return	7.5	6.8	-0.68
Meketa Standard Deviation	12.7	13.1	+0.54
Sharpe Ratio	0.40	0.43	+0.03

- Meketa Investment Group's long-term (20-year) annualized expected return for the San Jose Police & Fire Department Retirement Plan portfolio has decreased from 7.5% using our 2020 assumptions to 6.8% using our 2021 assumptions.
- The portfolio's expected standard deviation using Meketa expectations has increased from 12.7% to 13.1%. Plan adherence to the Investment Policy Statement guidelines for risk are determined by Verus standard deviations, which are lower and will be discussed shortly in the Asset Allocation Analysis item.

Declining Interest Rates

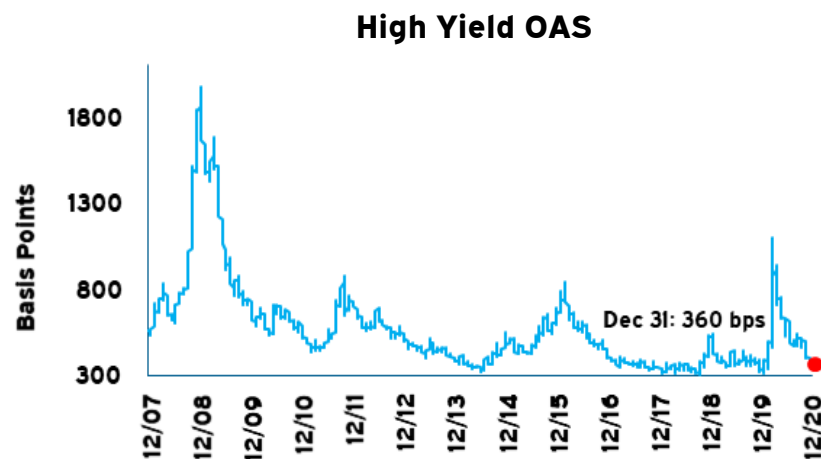
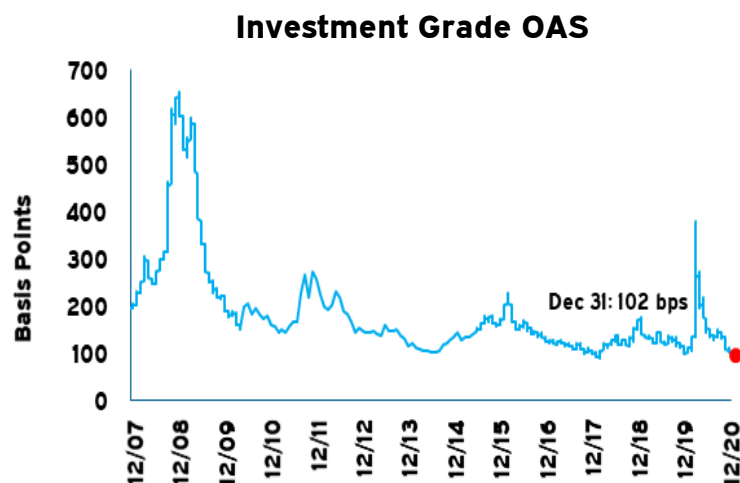
- The US Treasury yield curve declined materially during 2020, driven by demand for safe-haven assets (e.g., Treasuries), Federal Reserve policies (e.g., policy rate cuts and the quantitative easing program), and weak US economic fundamentals.
- The change was most dramatic at the shorter end of the curve, but even longer-dated maturities saw significant declines.



Source: Bloomberg. Data is as of December 31, 2020.

Tighter Credit Spreads

- Credit spreads (the spread above a comparable Treasury) for investment grade and high yield corporate debt tightened in 2020.
- Despite a widening of spreads at the outset of the pandemic, a combination of policy support (by the Fed) and the search for yield led to a decline in spreads to below long-term averages.
- A tighter spread on top of an already low yield for Treasuries equals lower yields for corporate bonds and other riskier bonds.



Source: Bloomberg. Data is as of December 31, 2020.

Declining Rates + Tighter Spreads = Lower Yields

- The combination of declining rates and tight spreads resulted in lower yields across every major sector of the global bond market.

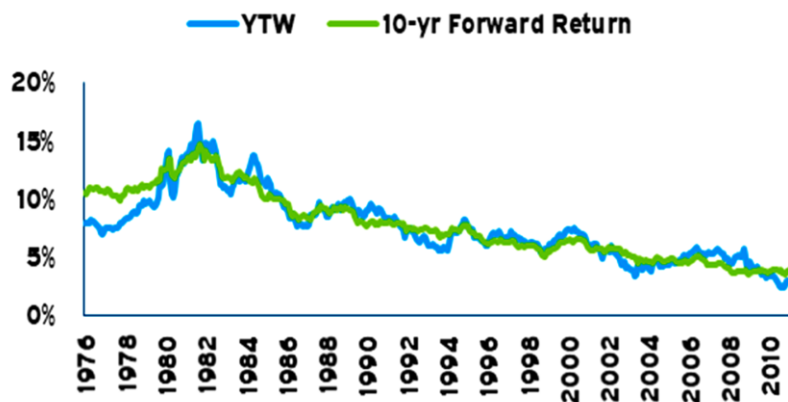
Index	Yield to Worst 12/31/20 (%)	Yield to Worst 12/31/19 (%)
Fed Funds Rate	0.1	1.6
10-year Treasury	0.93	1.92
Barclays Aggregate	1.12	2.31
Barclays Corporate	1.74	2.84
Barclays Securitized	1.24	2.53
Barclays Global Aggregate	0.83	1.45
Barclays EM Local Currency Government	3.20	3.72
Barclays EM Hard Currency Aggregate	3.20	4.45
Barclays US Corporate High Yield	4.18	5.19

Source: Bloomberg. Data is as of December 31, 2020 and 2019.

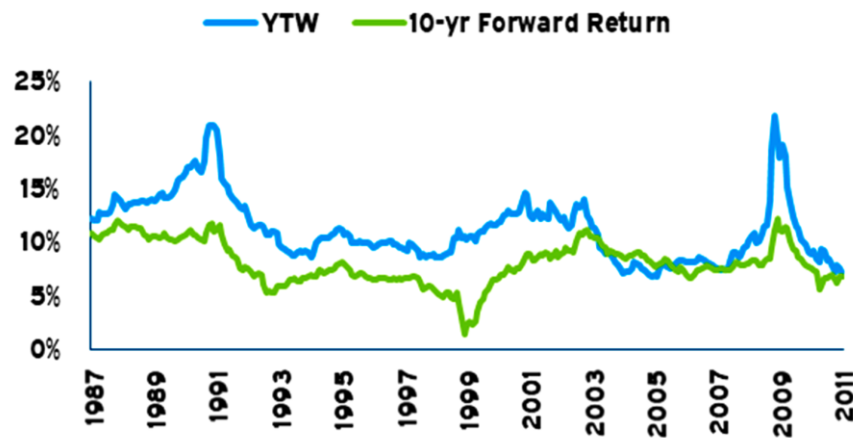
Lower Yields Means Lower Future Returns

- This decline in interest rates matters because yields are a very good predictor of future returns for bonds¹, at least over a 10-year horizon.

YTW and Returns for Investment Grade Bonds



YTW and Returns for High Yield Bonds



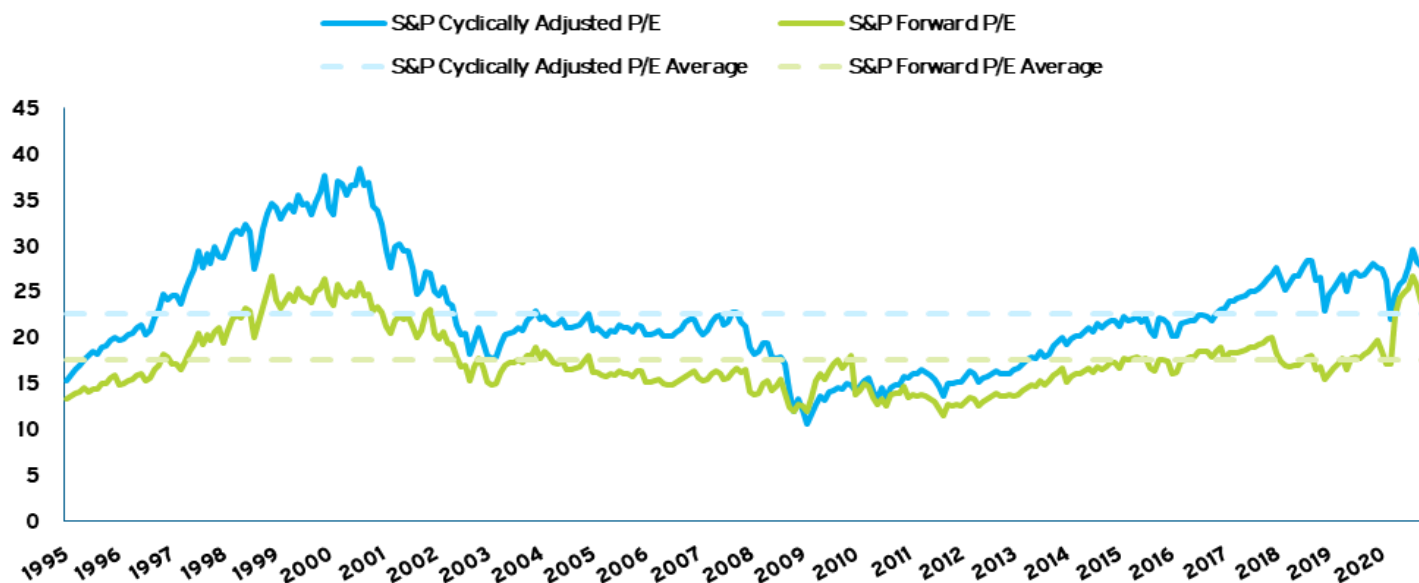
¹ When predicting returns for bonds, default risk should also be taken into account. For example, defaults are why the return for high yield bonds have generally been below the starting yield.

Source: Bloomberg. Data is as of December 31, 2020.

Higher Prices for Equities

- After the initial downturn during the outset of the pandemic, stocks rebounded strongly and finished the year well above where they started.
- Valuations based on both forward- and backward-looking earnings rose to levels not seen since 2001.

S&P 500 Valuations¹

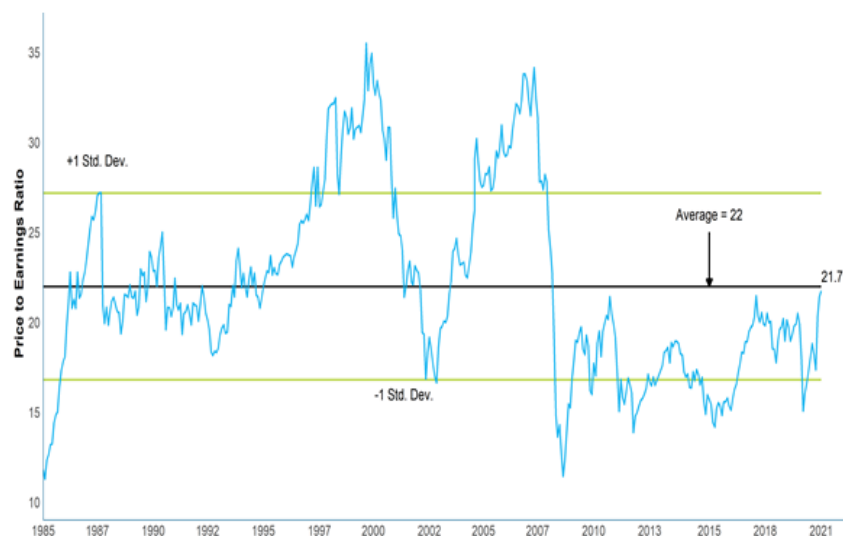


¹ Source: Bloomberg. Data is as of December 31, 2020.

Higher Prices in Non-US Equities, too

- It is not just US equities that saw a jump in PE ratios.
- EM equities had a strong 2020, led by Chinese stocks.
- EAFE equities lagged behind, but because they experienced a much larger hit to earnings¹, their PE ratios likewise moved up.

Developed International Equity Cyclically Adjusted P/E¹



Emerging Market Equity Cyclically Adjusted P/E²

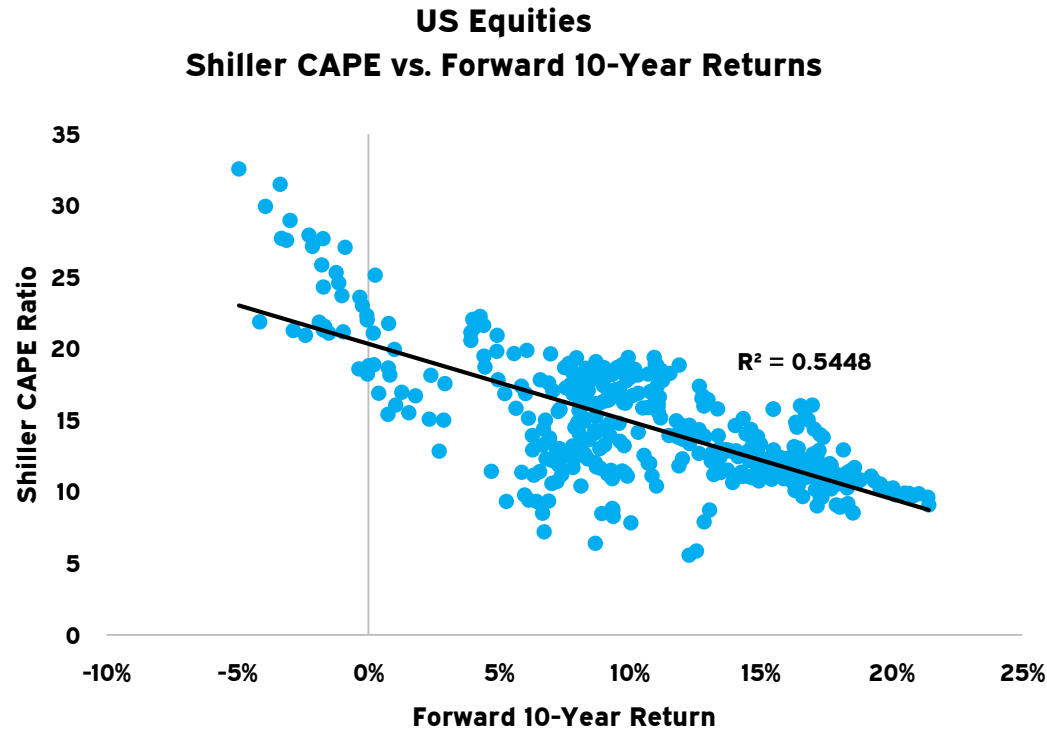


¹ Trailing 12-month EPS for MSCI EAFE dropped from 115.4 to 49.1 from December 2019 to December 2020.

² Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data as of December 31, 2020.

Higher Prices Imply Lower Returns for Equities

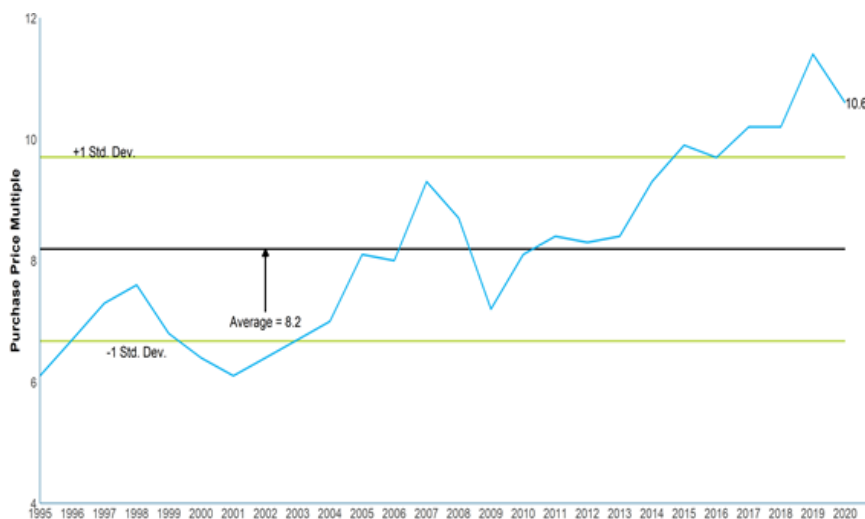
- Relative prices have been indicative of future equity returns.
- Higher prices have led to lower future returns, and vice versa.



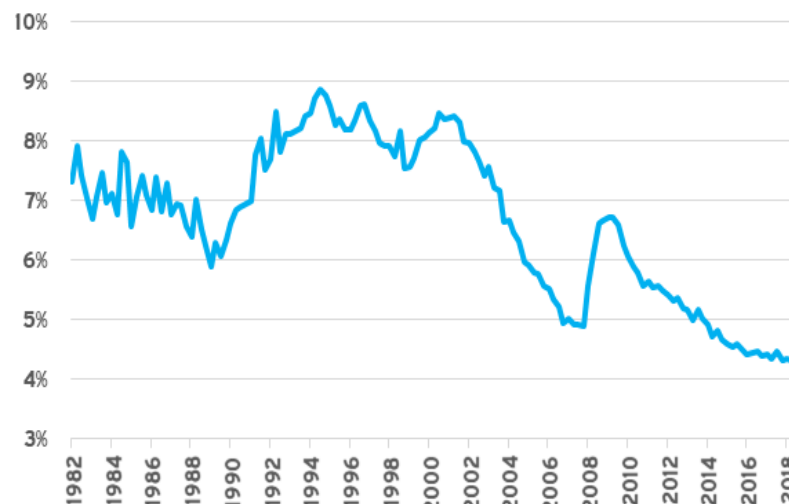
Higher Prices in Private Markets, too

- EBITDA multiples are the closest proxy to a PE ratio for private equity.
 - Like public markets, private markets have seen prices climb gradually higher.
- Real estate cap rates are similar to an earnings yield (the inverse of the PE ratio) for equities.
 - Cap rates are indicative of future returns and have been gradually moving down.

Private Equity Multiples¹



Core Real Estate Cap Rates²

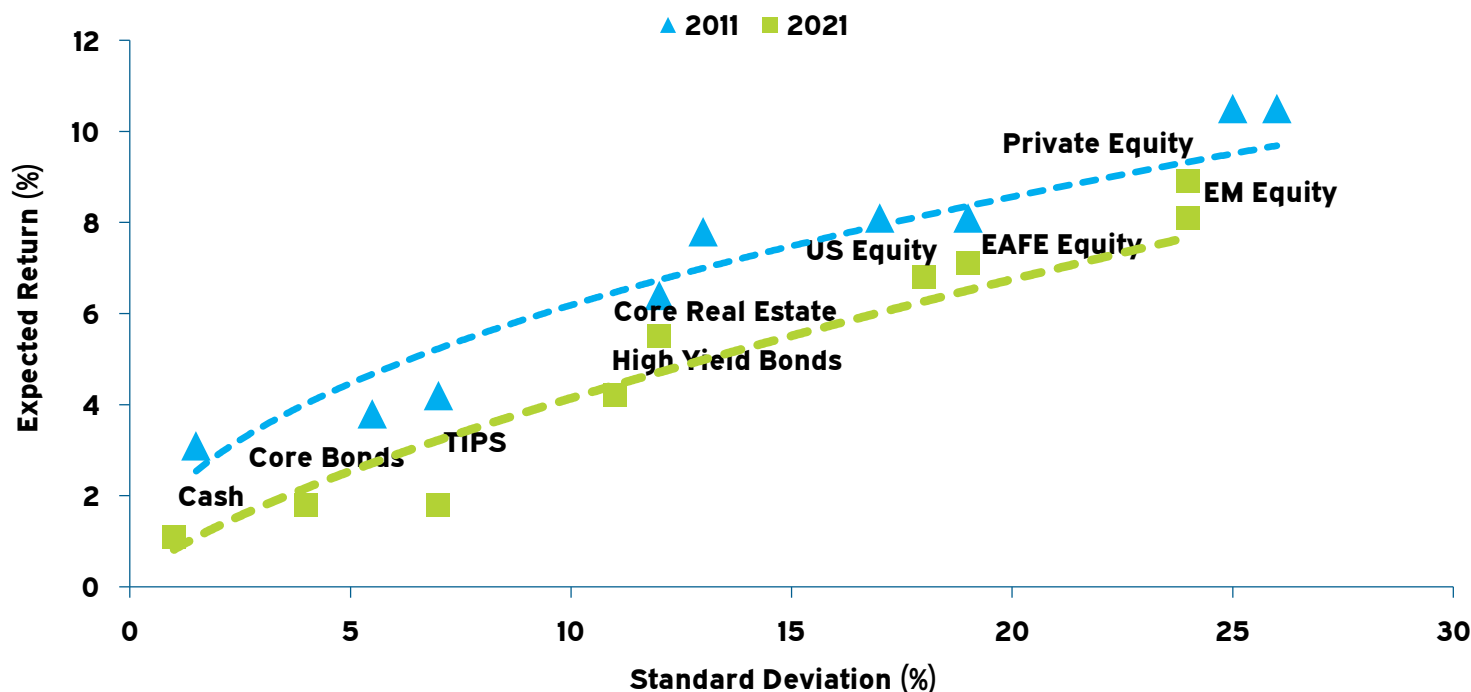


¹ Source: S&P LCD Average EBITDA Multiples Paid in All LBOs. Annual figures, except for 2020 (YTD), as of September 30, 2020.

² Source: NCREIF NPI value-weighted cap rates. As of September 30, 2020.

The Big Picture: Less Return for the Same Risk¹

- The relationship between long-term return expectations and the level of risk accepted is not static.
- We anticipate investors will have to take on greater levels of risk than they have historically if they want to achieve the returns they have in the past.



¹ Expected return and standard deviation are based upon Meketa Investment Group's 2011 and 2021 Capital Markets Expectations.

Our Process

Setting Capital Market Expectations

- Capital Markets Expectations are the inputs needed to conduct Mean Variance Optimization (“MVO”).
 - MVO is the traditional starting point for determining asset allocation.
- Consultants (including Meketa) generally set expectations once a year.
 - Our results are published in January, based on December 31 data.
- This process involves setting long-term expectations for a variety of asset classes for:
 - Returns
 - Standard Deviations
 - Correlations (i.e., covariance)
- Our process relies on both quantitative and qualitative methodologies.

Asset Class Definitions

- We identify asset classes and strategies that are appropriate for long-term allocation of funds, and that also are investable.
- Several considerations influence this process:
 - Unique return behavior,
 - Observable historical track record,
 - A robust market,
 - And client requests.
- We then make forecasts for each asset class.
 - We created inputs for 86 “asset classes” in 2021.

Building 10-year forecasts

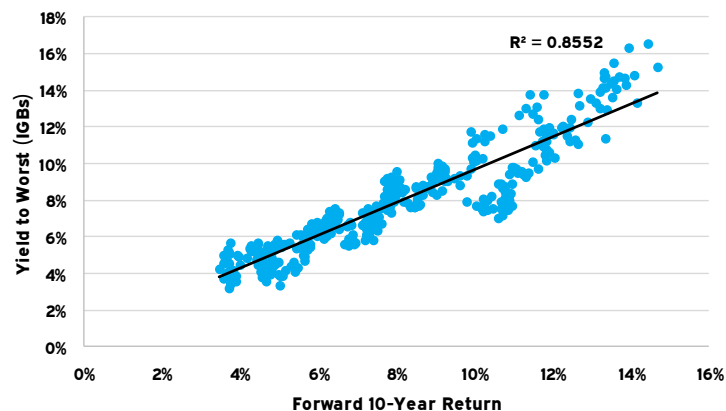
- Our first step is to develop 10-year forecasts based on fundamental models.
 - Each model is based on the most important factors that drive returns for that asset class:

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
Natural Resources	Price per Acre, Income, Public Market Valuation
Real Estate	Cap Rate, Yield, Growth
Private Equity	EBITDA Multiple, Debt Multiple, Public VC Valuation
Hedge Funds and Other	Leverage, Alternative Betas

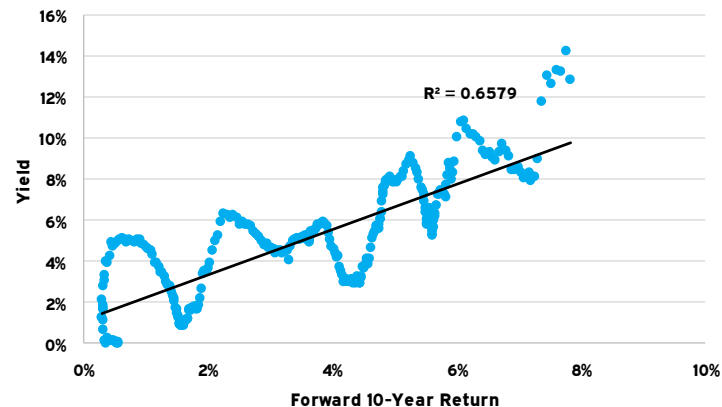
- The common components are income, growth, and valuation.

Some factors are naturally more predictive than others

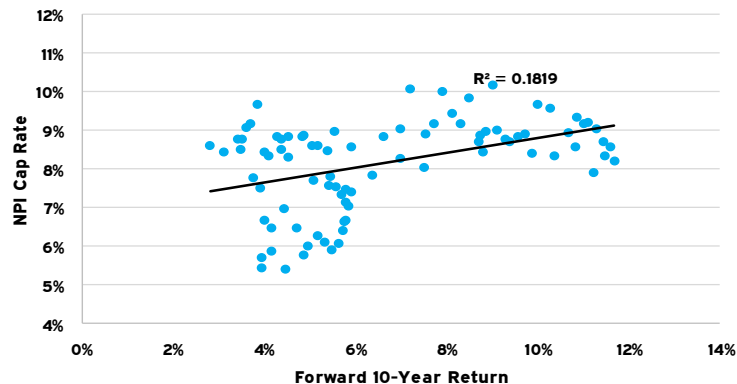
Investment Grade Bonds
Yield to Worst vs. Forward 10-Year Returns



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



10-year Model Example: Equities

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

$$E(R) = \text{Dividend Yield} + \text{Expected Earnings Growth} + \text{Multiple Effect} + \text{Currency Effect}$$

- Meketa Investment Group evaluates historical data statistically to develop expectations for dividend yield, earnings growth, the multiple effect and currency effect.
- Our models assume that there is a reversion toward mean pricing over this timeframe.

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 Treasury Inflation-Protected Securities ("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:

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

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 premia 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 premia 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 Capital Asset Pricing Model ("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 fifteen-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	Standard Deviation	Skewness	Assumption
Bank Loans	6.6%	-2.3	9.0%

- We also adjust for private market asset classes with “smoothed” return streams.
- Correlation:
 - We use trailing fifteen-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).

Rate Sensitive

	2021 E(R) (%)	2020 E(R) (%)	Δ from 2020 (%)	Notes
Cash Equivalents	1.1	2.4	-1.3	Lower rates
Investment Grade Bonds	1.8	3.0	-1.2	Lower yields
Long-term Government Bonds	2.5	3.2	-0.7	Lower yields
TIPS	1.8	2.9	-1.1	Lower yields

Credit

	2021 E(R) (%)	2020 E(R) (%)	Δ from 2020 (%)	Notes
High Yield Bonds	4.2	5.2	-1.0	Lower yields and tighter spreads
Emerging Market Bonds (USD)	3.7	4.5	-0.8	Lower yields
Emerging Market Bonds (local currency)	3.9	4.8	-0.9	Lower yields
Private Debt	6.8	6.9	-0.1	Lower yields

Equities

	2021 E(R) (%)	2020 E(R) (%)	Δ from 2020 (%)	Notes
US Equity	6.8	7.4	-0.6	Higher price-to-earnings, lower dividend
<i>US Equity Growth</i>	6.3	NA	NA	<i>Custom new asset class</i>
<i>US Equity Value</i>	7.3	NA	NA	<i>Custom new asset class</i>
Developed Non-US Equity	7.1	7.9	-0.8	Higher price-to-earnings, lower dividend
<i>Dev. Non-US Growth</i>	6.8	NA	NA	<i>Custom new asset class</i>
<i>Dev. Non-US Value</i>	7.4	NA	NA	<i>Custom new asset class</i>
Emerging Market Equity	8.1	9.1	-1.0	Higher price-to-earnings, lower dividend
<i>Emerging Market Growth</i>	7.5	NA	NA	<i>Custom new asset class</i>
<i>Emerging Market Value</i>	8.8	NA	NA	<i>Custom new asset class</i>
Global Equity	7.1	7.8	-0.7	Higher price-to-earnings, lower dividend
Private Equity	9.1	9.4	-0.3	Higher prices, offset by lower borrowing costs
Buyouts	9.0	9.4	-0.4	Higher prices, offset by lower borrowing costs
Venture Capital	9.6	9.3	0.3	Higher earnings

Real Assets

	2021 E(R) (%)	2020 E(R) (%)	Δ from 2020 (%)	Notes
Real Estate	6.9	7.5	-0.6	Lower cap rates
REITs	7.2	7.0	0.2	Higher yields
Core Private Real Estate	5.5	6.3	-0.8	Lower cap rate, partially offset by lower cost of borrowing
Value-Added Real Estate	7.7	8.4	-0.7	Lower cap rate, partially offset by lower cost of borrowing
Opportunistic Real Estate	9.2	9.9	-0.7	Lower cap rate, partially offset by lower cost of borrowing
Natural Resources (Private)	8.3	8.8	-0.5	Higher Prices
Energy	9.0	9.4	-0.4	Lower prices offset by lower earnings expectations
Infrastructure (Core Private)	7.0	6.7	0.3	Lower prices and lower cost of borrowing
Infrastructure (Non-Core Private)	9.0	9.1	-0.1	Higher prices offset by lower cost of borrowing

Alternative Strategies (Other)

	2021 E(R) (%)	2020 E(R) (%)	Δ from 2020 (%)	Notes
Hedge Funds	4.3	4.9	-0.6	Higher prices, lower yields
Commodities	3.7	4.3	-0.6	Lower collateral returns
US Inflation	2.1	2.6	-0.5	

2020 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	10-Year Average (%)	Meketa 10-Year (%)	20-Year Average (%)	Meketa 20-Year (%)
Cash Equivalents	1.6	0.5	2.3	1.3
TIPS	2.0	1.3	2.7	2.1
US Core Bonds	2.6	1.2	3.6	2.1
US High Yield Bonds	4.9	4.0	5.6	4.9
Emerging Market Debt	5.2	4.0	5.9	4.3
Private Debt	7.8	6.5	7.9	6.7
US Equity (large cap)	6.2	5.2	7.1	7.2
Developed Non-US Equity	6.8	7.4	7.5	7.8
Emerging Non-US Equity	7.9	8.4	8.4	8.8
Private Equity	9.1	8.1	9.9	9.1
Real Estate	5.8	6.4	6.6	7.0
Infrastructure	6.9	6.4	7.3	6.4
Commodities	3.2	4.3	4.0	3.9
Hedge Funds	4.7	3.1	5.7	4.3
Inflation	2.0	1.8	2.2	2.2

¹ The 2020 survey included 39 respondents. The 10-year horizon included all 39 respondents, and the 20-year horizon included 18 respondents. Figures based on Meketa's 2020 interim CMEs.

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