CalSTRS 2023 Asset-Liability Management Study – Recommended Capital Markets Assumptions

Expected Returns

Expected geometric returns represent the expected compound annual growth rate of each asset class. For example, $100 million invested in RMS at a 5% expected return is expected to grow to $105 million in one year.

Table 1 reflects our expectations for future returns. Assumptions from a survey of asset managers and the 2019 ALM Study are provided for comparison.

Table 1. Expected Returns (Geometric)

Asset Classes	Expected Return (Geometric)	Survey Avg.*	2019 ALM Assumption
Global Equity	8.0%	8.1%	7.5%
Private Equity	9.5%	11.4%	9.0%
Real Estate	6.8%	6.8%	6.3%
Inflation Sensitive	6.4%	6.6%	6.0%
Fixed Income[1]	5.2%	4.0%	4.0%
RMS	5.0%	6.6%	4.5%
Cash	2.8%	2.6%	2.4%
Inflation	2.75%	2.75%	2.75%

Expected Volatility

Expected volatility represents the expected annual dispersion of returns for each asset class. Dispersion reflects how much an asset class's returns vary around the average return.

For example, if expected volatility is 15% and assuming a normal distribution of returns, then 68% of future annual returns are expected to fall within plus or minus 15 percentage points of the average return (or within 1 standard deviation). 95% are expected to fall within plus or minus 30 percentage points of the average return (or within 2 standard deviations). If expected volatility is 0%, then it is expected that the asset will return the average expected return every year with no variation.

Table 2 reflects our expectations for future volatility. Assumptions from a survey of asset managers and the 2019 ALM Study are provided for comparison.

Table 2. Expected Volatility

Asset Classes	Expected Volatility (Risk)	Survey Avg.*	2019 ALM Assumption
Global Equity	16.2%	16.9%	17.6%
Private Equity	21.1%	25.8%	24.0%
Real Estate	11.6%	11.4%	14.9%
Inflation Sensitive	10.5%	11.0%	12.3%
Fixed Income[1]	6.2%	5.3%	6.2%
RMS	7.4%	9.0%	10.0%
Cash	0.5%	0.3%	1.0%

Expected Correlations

Expected correlations represent the degree to which the returns of two asset classes move linearly in relation to each other. Correlations help determine whether certain asset classes help diversify the portfolio. Diversification of returns is an important aspect of risk management.

Correlation is represented as a number between 1 and -1. A correlation of 1 indicates that the returns of each asset class move perfectly in tandem with each other. A correlation of -1 indicates that the returns of each asset move perfectly in opposite directions. A correlation of 0 indicates that the returns of each asset class have no relationship with each other.

In general, a portfolio of assets with returns that are uncorrelated or negatively correlated with each other can significantly improve portfolio returns relative to volatility.

Table 3 reflects our expectations for future correlations. A correlation of an asset class to itself will always be 1 as the returns will be perfectly correlated.

Table 3. Expected Correlations

	Global Equity	Private Equity	Real Estate	Inflation Sensitive	Fixed Income	RMS	Cash
Global Equity	1	0.77	0.40	0.42	0.16	0.08	-0.03
Private Equity	0.77	1	0.42	0.39	0.16	0.15	0.07
Real Estate	0.40	0.42	1	0.36	-0.06	0.18	-0.03
Inflation Sensitive	0.42	0.39	0.36	1	0.20	0.18	0.02
Fixed Income	0.16	0.16	-0.06	0.20	1	0.44	0.09
RMS	0.08	0.15	0.18	0.18	0.44	1	0.12
Cash	-0.03	0.07	-0.03	0.02	0.09	0.12	1

*Survey Avg. is a compilation of assumptions from multiple asset managers

[1] Includes allocation to Private Direct Lending