

# 2024 Capital Market Assumptions and Asset Allocation Review

Santa Barbara County Employees' Retirement System



April 2024



# 2024 Capital Market Assumptions



# Capital Market Assumptions

## Philosophy

- Each year, RVK's general consulting and research teams collaborate to review the capital market environment and update long-term, forward-looking capital market (CM) expectations for each asset class utilized by our clients.
- The forecast horizon is for long-term periods, typically 10 years or more.
- The three (3) components we estimate include:
  - Return
  - Risk (volatility of returns)
  - Correlation (relationship of asset class returns with all other asset classes)
- Return assumptions are generally index-based, net of fees, and assume no investment manager alpha.
- Annual updates are typically gradual and incorporate historical performance, current valuations, as well as the overall economic environment.

# What does it mean to get CM Assumptions “right”?

## Relative accuracy is most important...

- **Relative Accuracy:** Assumptions capture the relative relationships between asset classes, which are vitally important to trade-off decisions when modeling.
  - Having some assumptions that are spot on, and others that are far off, will produce unbalanced and poorly diversified portfolios.

## ...but “absolute” accuracy matters too – just not as much.

- **Absolute Accuracy:** Assumptions reflect the absolute values actually experienced in future long-term market environments.
  - Assumptions that are too high or too low across the board can cause a Plan to either spend more than it can afford or restrict spending more than necessary.

# Themes for 2024 Capital Markets Assumptions

- Past and future inflation levels are studied and considered given market conditions, break-even indications, sovereign intervention, and inflation component pricing behavior.
  - *The 2024 inflation assumption remained unchanged at 2.5% to reflect the continued near-term uncertainty of inflation trajectory, while also accounting for longer-term deflationary factors such as deficits, debt, demographics, automation and globalization.*
- Return decomposition models are run and examined in light of current and possible future market conditions.
  - *Domestic equity return assumptions were decreased, given increased valuation levels and lower dividend yields following the significant market recovery experienced during 2023.*
- Yield history, current environment, and prospective environments are considered.
  - *Most fixed income return assumptions remain unchanged, reflecting modest year-over-year differences in current yields.*

Asset Class	Return Expectation	Rationale
US Equity	↓	Yields & Valuations Worsened
Non-US Equity	↓	Yields & Valuations Worsened
Fixed Income	—	Yields Unchanged

# Building Block Methodology

**Approach:** The sum of the building blocks equals expected return

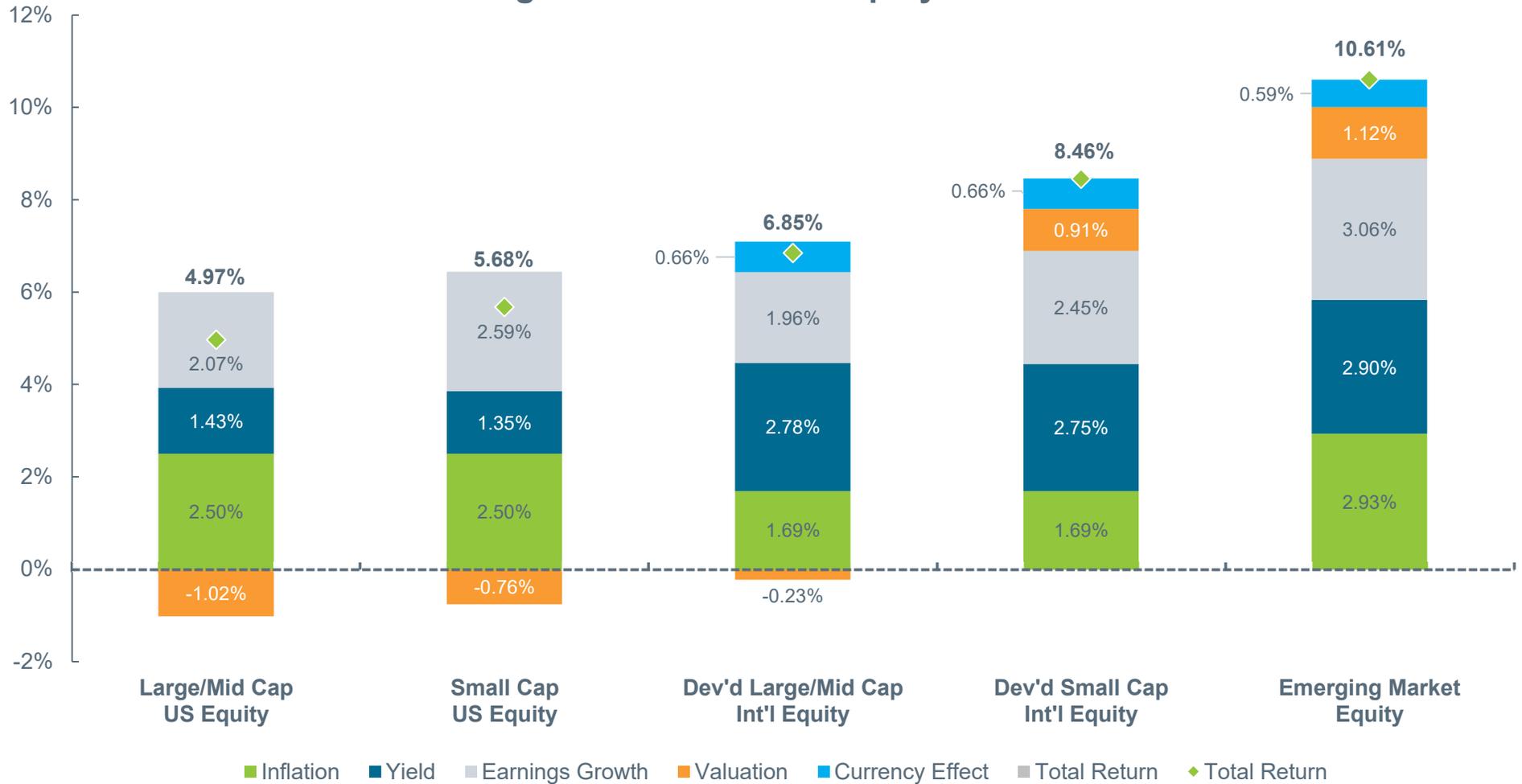


**Expected Return Building Blocks**

For illustrative purposes only. While the above factors generally inform the direction and magnitude of the capital market assumptions, RVK also considers qualitative, triangulation, and other factors as needed, when arriving at final assumption values. Real Growth includes GDP and profit margin growth.

# RVK Return Methodology for Equities

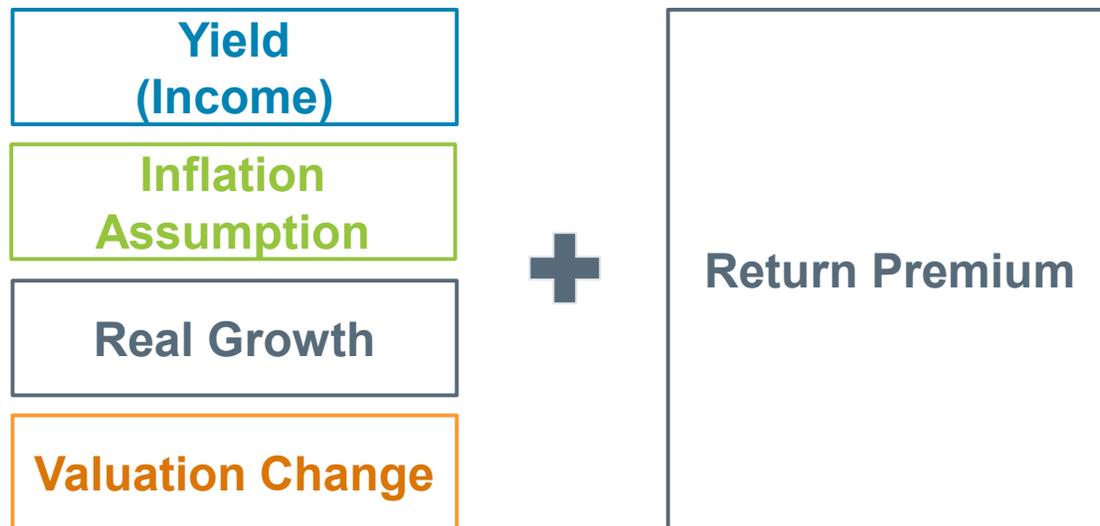
## 2024 Decomposition of the Building Blocks for Public Equity Asset Classes



Source: FactSet (2024). Data as of December 31, 2023.

# Build-Up/Spread Methodology

**Output:** The sum of the building blocks equals expected return

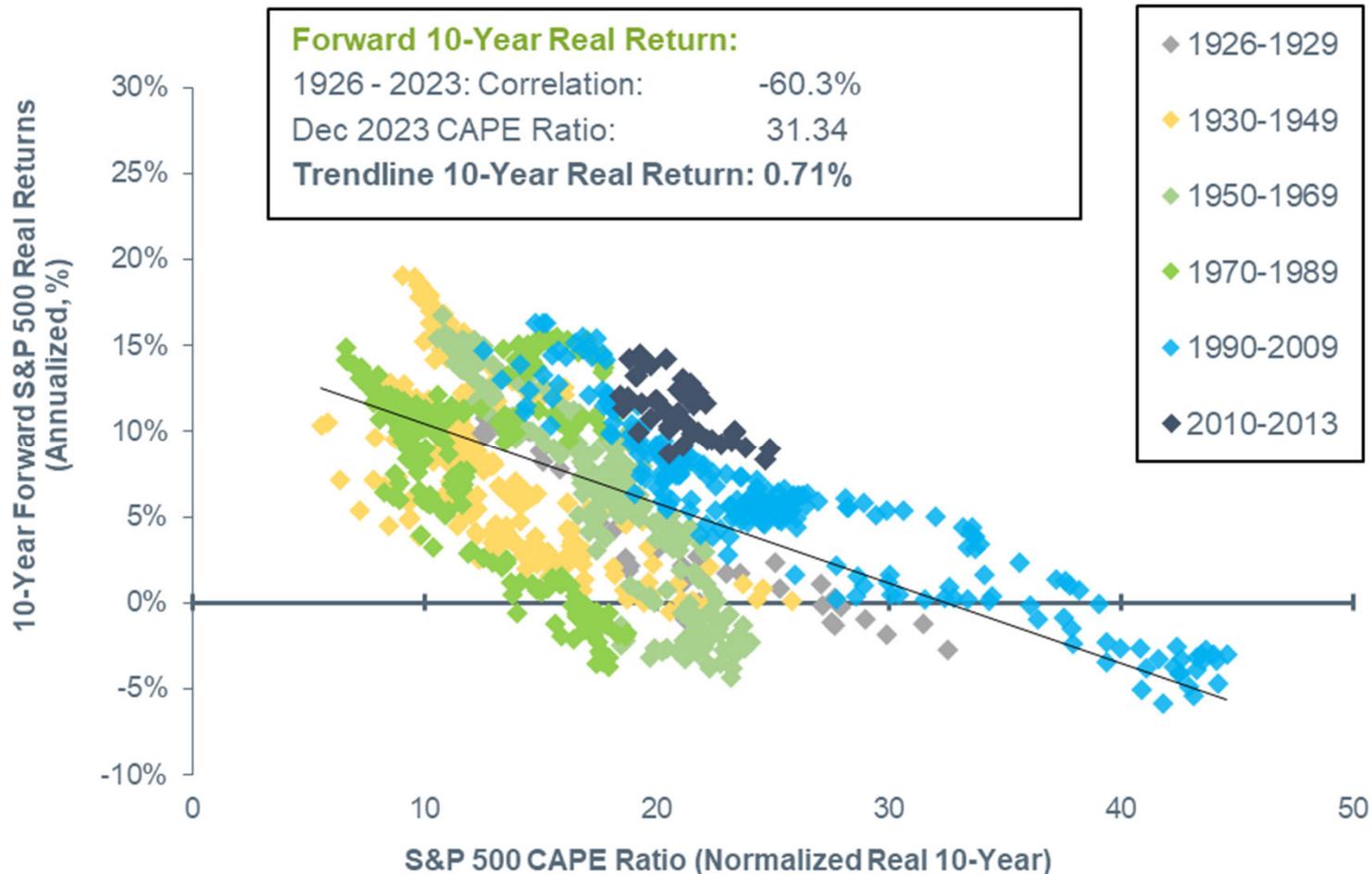


**Expected Return Inputs**

For illustrative purposes only. While the above factors generally inform the direction and magnitude of the capital market assumptions, RVK also considers qualitative, triangulation, and other factors as needed, when arriving at final assumption values. Real Growth includes GDP and profit margin growth.

# US Equity Valuations

## Relationship between Shiller P/E and Forward 10-Year Returns



**Shiller P/E (S&P 500 CAPE Ratio)** – The cyclically adjusted price-to-earnings ratio is a valuation measure applied to the S&P 500 Index, which represents U.S. Large Cap Equities. It is defined as price divided by the average of ten years of earnings, adjusted for inflation. The ratio was invented by American economist Robert J. Shiller and is used to gauge whether the index is undervalued or overvalued by comparing the current market price to its inflation-adjusted historical earnings record.

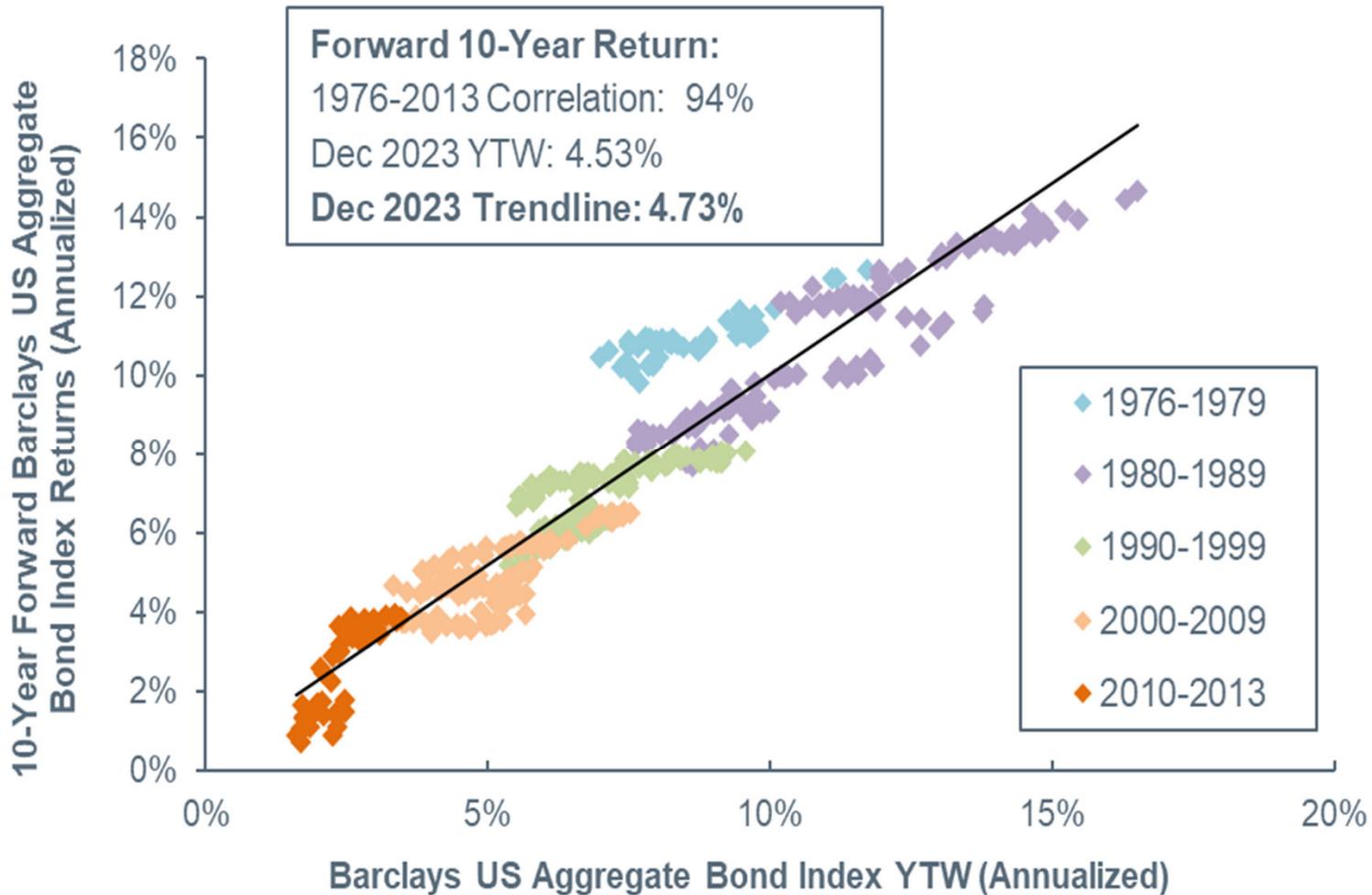
RVK Broad US Equity assumption is a combination of 94.6% Large/Mid Cap US Equity and 5.4% Small Cap US Equity.

Source: RVK, based on data from FactSet (2024). December 2023 CAPE ratio uses the S&P 500 earnings estimate for the Q4 2023.



# US Fixed Income Valuations

## Relationship between YTW and Forward 10-Year Returns

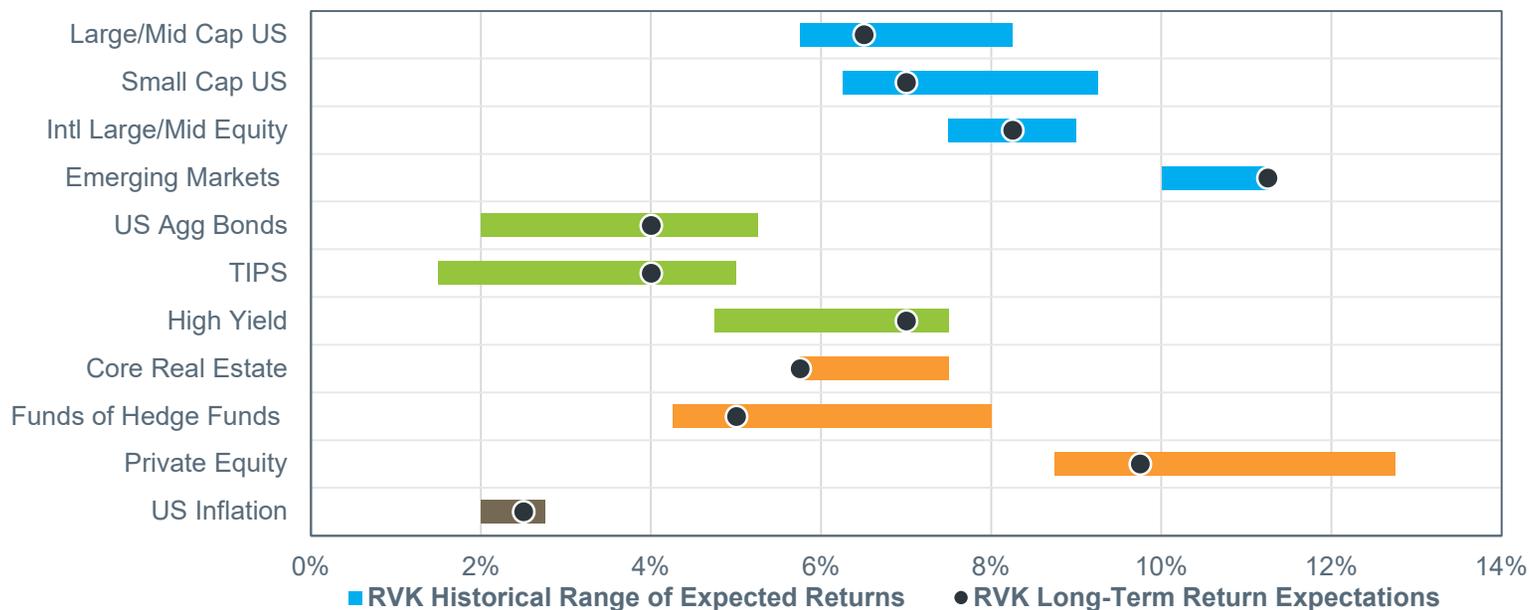


# Historical Perspective of Expected Returns

## RVK Long-Term Expected Returns vs. Historical Range of Returns<sup>1</sup>



## 2024 Expected Returns vs. RVK Historical Range of Expected Returns<sup>2</sup>



<sup>1</sup> Historical range shows the minimum and maximum 20-year annualized return for a given asset class based on monthly rolling 20-year annualized return series starting from Jan 1926. Large/Mid Cap US is represented by SBBI US Large Stock; Small Cap US by SBBI US Small Stock; US Int./Agg Bonds by SBBI US Intermediate Government Jan 1926 – December 1999 and Barclays US Aggregate Bond Index thereafter; US Inflation by SBBI US Inflation.

<sup>2</sup> Data shown includes 2006 through 2024 Capital Market Assumptions for selected asset classes.

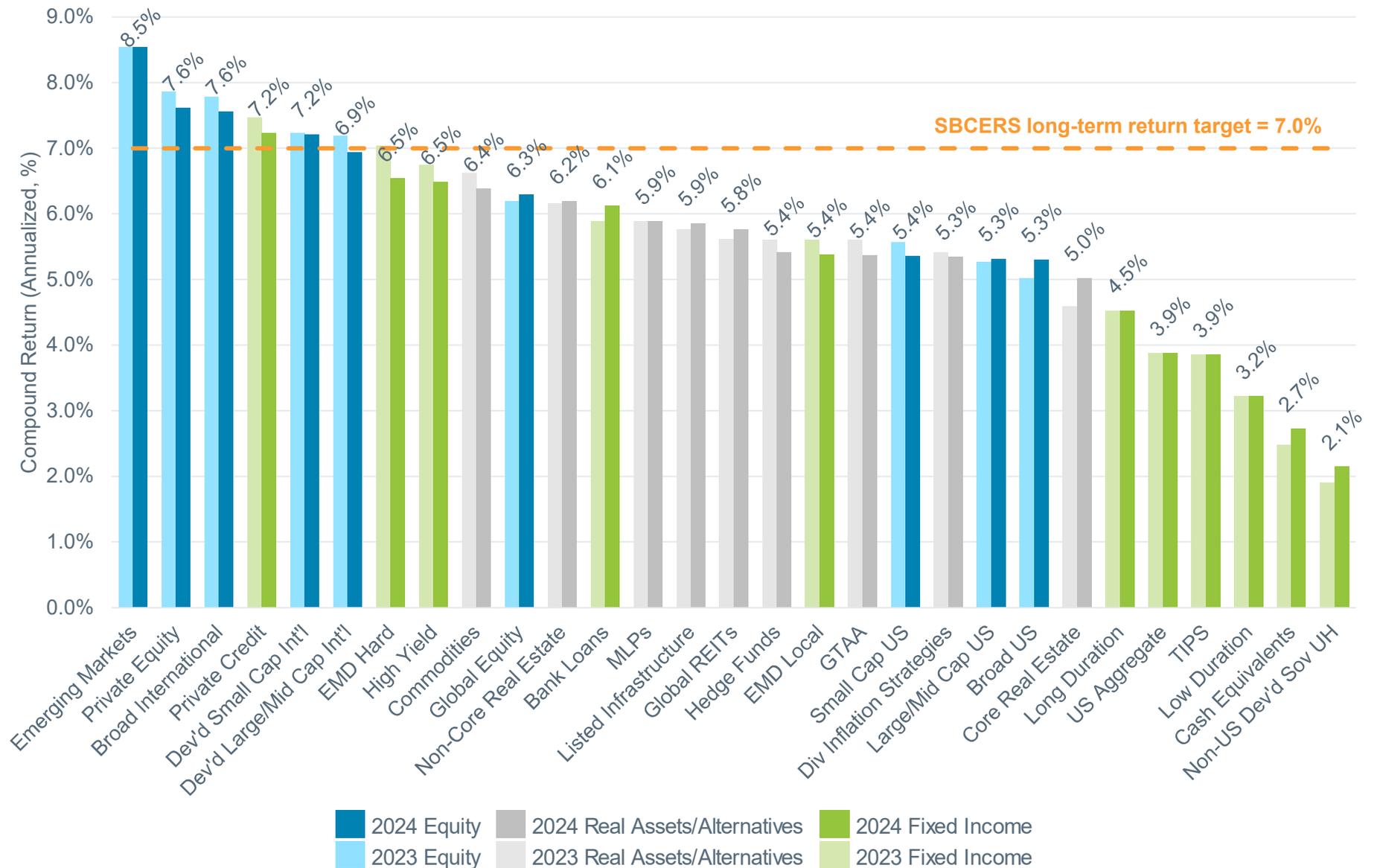
# Range of Potential Outcomes for Expected Returns

**RVK 2024 Long-Term Return Expectations and Uncertainty of Returns Distribution**

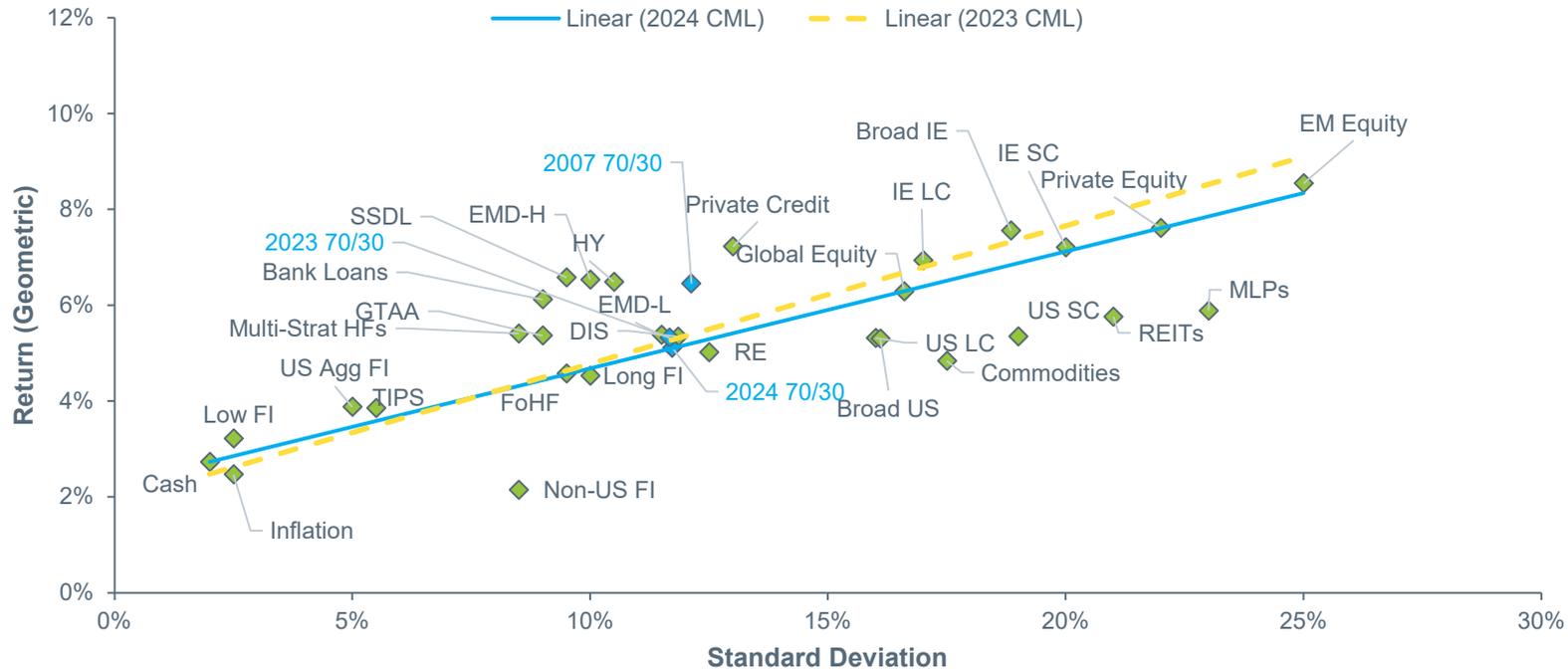


\* StDev return uncertainty is based on RVK 2024 CMA risk assumption for each asset class.

# Expected Compound Returns



# Capital Markets Line – 2024 vs. 2023



Data Labels	Asset Class
US LC	Large/Mid Cap US Equity
US SC	Small Cap US Equity
Broad US	Broad US Equity
IE LC	Dev'd Large/Mid Cap Int'l Equity
IE SC	Dev'd Small Cap Int'l Equity
EM Equity	Emerging Markets Equity
Broad IE	Broad International Equity
Global Equity	Global Equity
2024 70/30	2024 Assumption 70/30 US Equity/FI
2023 70/30	2023 Assumption 70/30 US Equity/FI
2007 70/30	2007 Assumption 70/30 US Equity/FI
US Agg FI	US Aggregate Fixed Income
Non-US FI	Non-US Dev'd Sovereign Fixed Income UH
EMD-H	Emerging Markets Debt Hard Currency
EMD-L	Emerging Markets Debt Local Currency
TIPS	TIPS

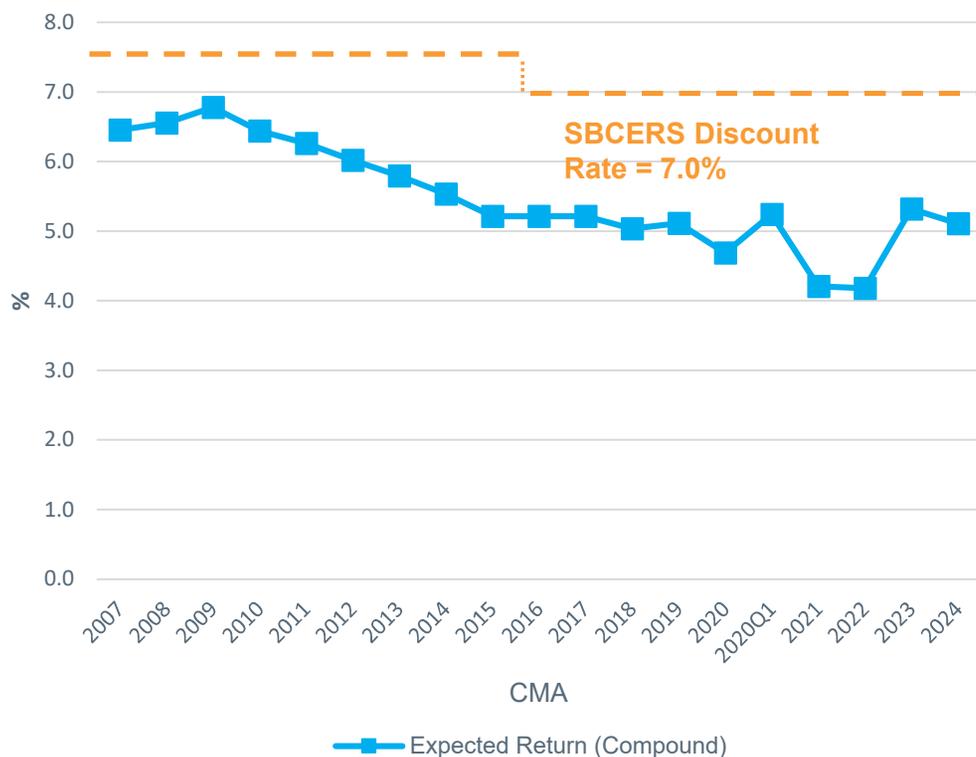
Data Labels	Asset Class
Low FI	Low Duration Fixed Income
Long FI	Long Duration Fixed Income
HY	High Yield
Private Credit	Private Credit
SSDDL	Senior Secured Direct Lending
Bank Loans	Bank Loans
RE	Core Real Estate
REITs	Global REITs
MLPs	MLPs
FoHF	Funds of Hedge Funds
Multi-Strat HFs	Multi-Strategy Hedge Funds
GTAA	GTAA
Private Equity	Private Equity
Commodities	Commodities
DIS	Diversified Inflation Strategies
Inflation	US Inflation
Cash	Cash Equivalents

Capital Markets Line is based on risk and return assumptions for Cash and Global Equity.

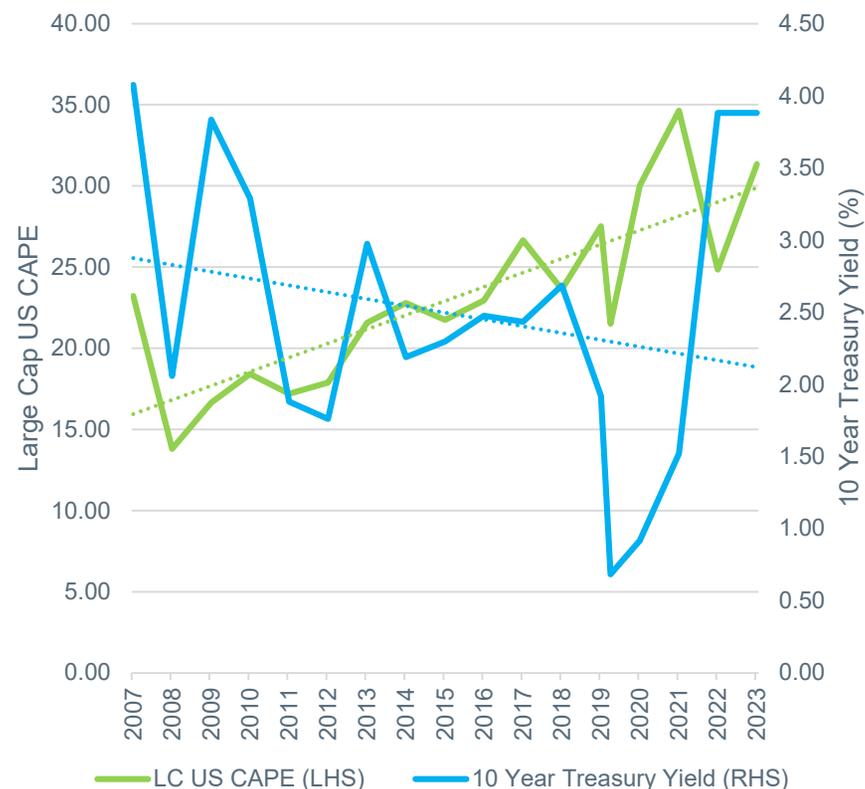


# Traditional 70/30 Return Expectations over Time

## Historical US 70/30 Expected Risk-Adjusted Return Assumption



## US Equity Valuations and 10 Year Treasury Yields



	2013	2023	10 Year Difference
10 Year Treasury Yield (%)	3.04	3.88	+0.84
Large/Mid Cap US Equity Valuations (CAPE Ratio)	24.87	31.34	+6.47

Historical US 70/30 assumptions consist of 70% Broad US Equity and 30% US Aggregate Fixed Income. SBCERS reduced its Discount Rate from 7.5% to 7.0% in 2016. The CAPE (Cyclically Adjusted Price-to-Earnings) Ratio is a valuation measure defined as :  
**CAPE Ratio = (Share Price) / (10 Year Average, Inflation-Adjusted Earnings)**



# Factors to keep in mind when evaluating assumptions

- While excessively high capital market assumptions provide the hope of higher rates of expected return, this prospect may not actually materialize if the market environment does not support them and can often lead to suboptimal portfolio structures.
- A well-structured and executed investment program will be best positioned to benefit from the available market returns ***regardless of the forecasts for total return.***
- Well-structured asset allocations (and the resulting outcomes) are largely produced by the relative accuracy of assumptions, not simply by forecasting higher absolute returns.

# SBCERS 2024 Capital Market Assumptions

Asset Class	2023				2024				Change (2024 – 2023)			
	Nominal Return (Geo.)	Risk (St. Dev)	Nominal Return (Arith.)	Return/Risk Ratio (Geo.)	Nominal Return (Geo.)	Risk (St. Dev)	Nominal Return (Arith.)	Return/Risk Ratio (Geo.)	Nominal Return (Geo.)	Risk (St. Dev)	Nominal Return (Arith.)	Return/Risk Ratio (Geo.)
Broad US Equity	5.61	16.10	6.80	0.35	5.30	16.10	6.50	0.33	-0.31	-	-0.30	-0.02
Developed Int'l Equity	7.19	17.00	8.50	0.42	6.94	17.00	8.25	0.41	-0.25	-	-0.25	-0.01
EM Equity	8.54	25.00	11.25	0.34	8.54	25.00	11.25	0.34	-	-	-	-
Core FI	3.88	5.00	4.00	0.78	3.88	5.00	4.00	0.78	-	-	-	-
Non-Core FI	6.61	7.24	6.85	0.91	6.46	7.56	6.73	0.85	-0.15	0.32	-0.12	-0.06
Real Return	6.33	8.70	6.68	0.73	6.30	8.63	6.65	0.73	-0.03	-0.07	-0.03	-
Real Estate	5.58	14.39	6.54	0.39	5.73	15.09	6.79	0.38	0.15	0.70	0.25	-0.01
Private Equity	7.86	22.00	10.00	0.36	7.61	22.00	9.75	0.35	-0.25	-	-0.25	-0.01
<b>Total Fund</b>	<b>6.59</b>	<b>10.52</b>	<b>7.10</b>	<b>0.63</b>	<b>6.47</b>	<b>10.69</b>	<b>7.00</b>	<b>0.61</b>	<b>-0.12</b>	<b>0.17</b>	<b>-0.10</b>	<b>-0.02</b>

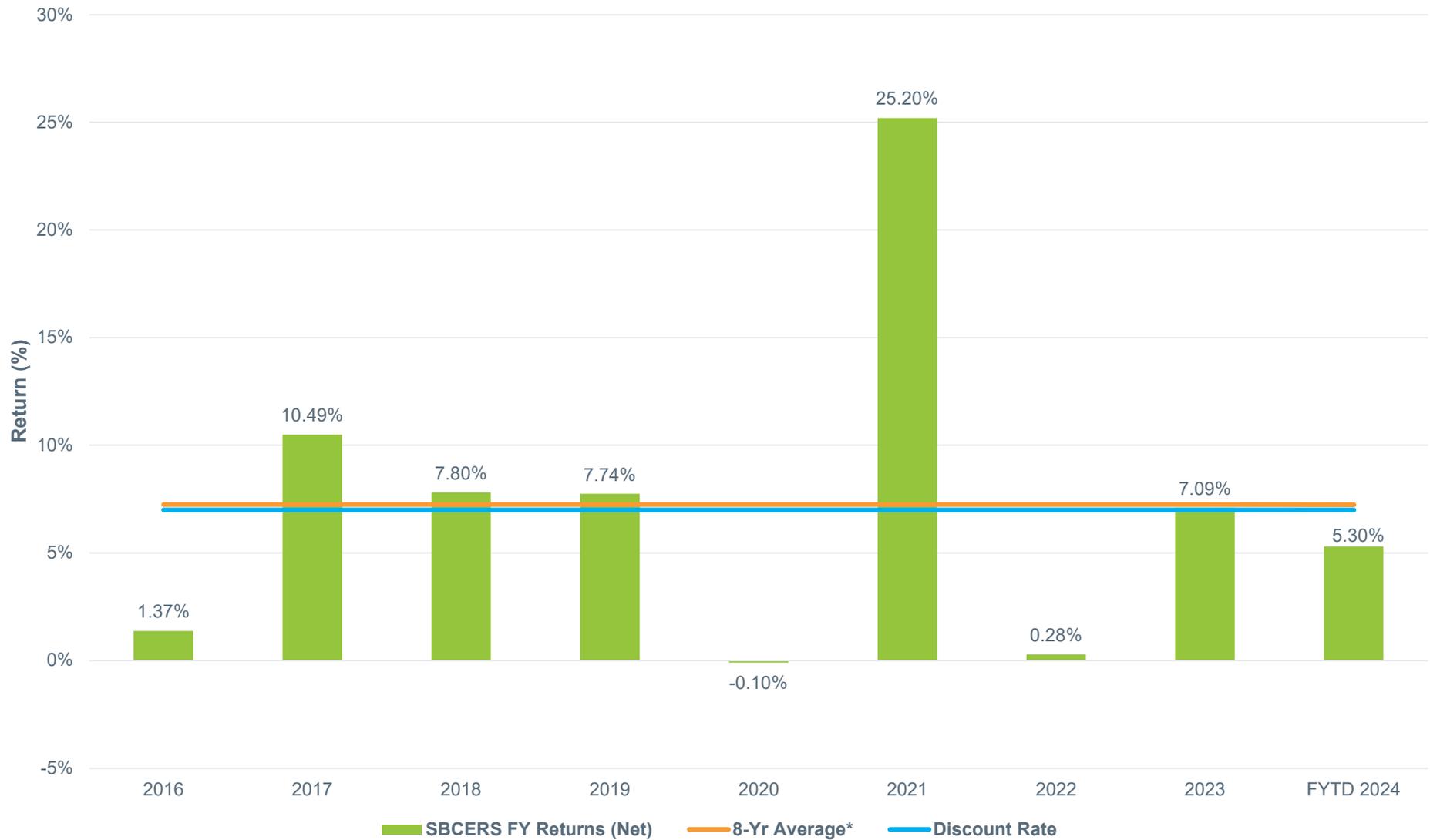
## Drivers of Custom Assumption Year-over-Year Changes

- **Non-Core Fixed Income:** Return assumption decreased due to decreased return assumption for Bank Loans. Risk assumption increased due to increased risk assumption for Bank Loans and Private Credit (Senior Secured Direct Lending).
- **Real Return:** Changes to expected risk and return were minimal.
- **Real Estate:** Return assumption increased and risk assumption increased due to an increased allocation to non-core real estate compared to last year (35% to 46%).

Favorable change relative to 2023  
 Unfavorable change relative to 2023

# SBCERS' FY Returns Since Discount Rate Revision

SBCERS Fiscal Year Returns Relative to RVK Assumptions and Assumed Actuarial Rate

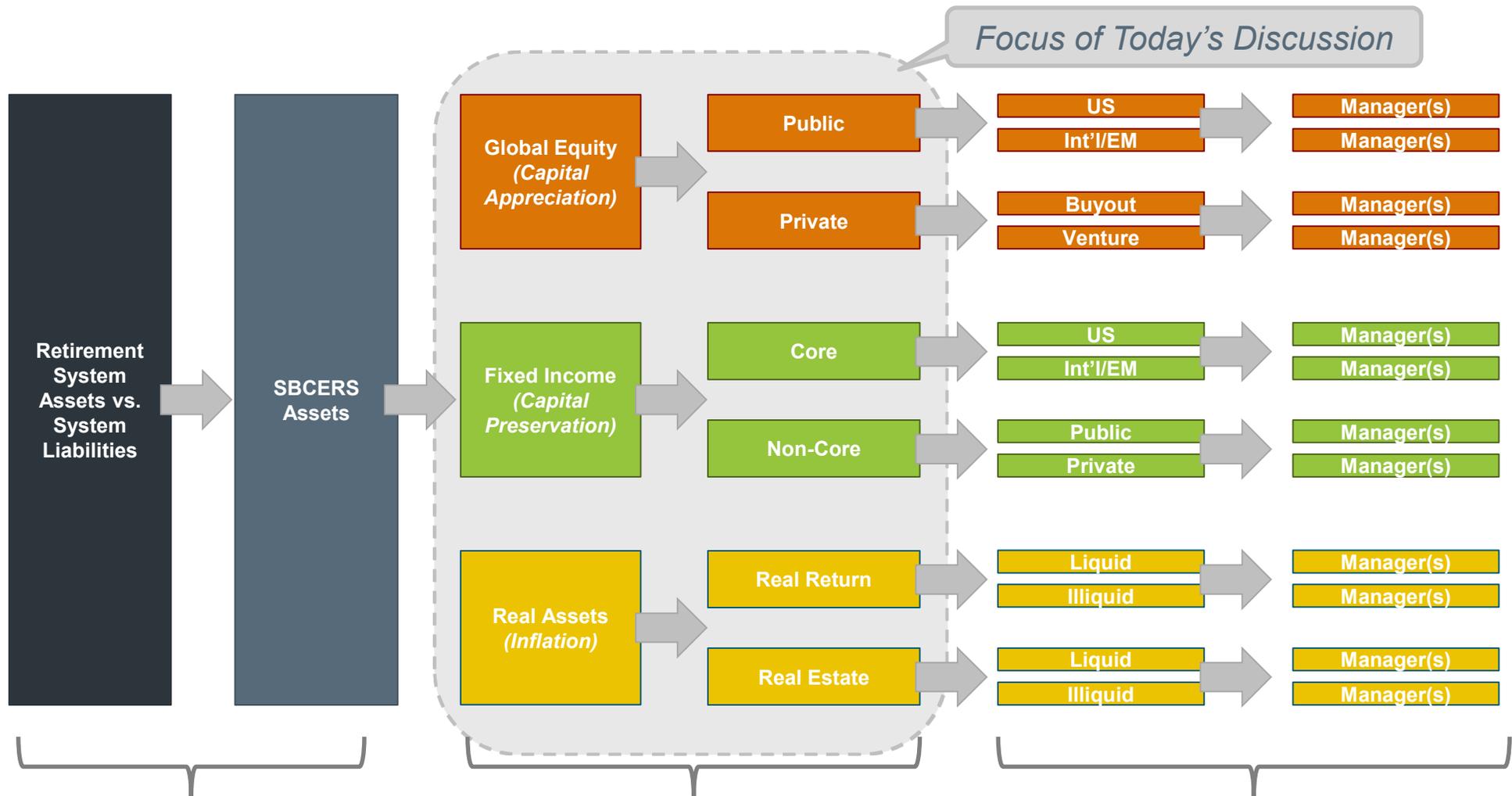


\*8-Yr Average of 7.24% represents the annualized return for FY2016-FY2024.  
 FYTD 2024 return is as of 2/29/2024.

# Introduction



# Investment Decision-Making Hierarchy



## Asset/Liability Study

- Assesses health of the Plan
- Models risk and return parameters including prevailing and expected cash flows
- Links Investment Policy, Contribution Policy and Benefit Policy

## Asset Allocation Study

- Models specific targets to asset classes
- Used to select overall target/policy allocation
- Generally uses passive capital market assumptions

## Asset Class Structure Studies

- Implementation guide with targets to sub-asset classes
- Mix of active and passive investments determined
- Optimal mix of managers

# Introduction

## Asset/Liability Summary

- “The System can best meet its objectives through the continued use of a well-diversified investment portfolio. However, positive outcomes are extremely dependent on the contribution policy.
- This study does not suggest changes to the long-term strategic target allocation. The incremental cost of additional volatility does not justify the potential increase in median outcomes. Additionally, reducing volatility increases contributions and does not improve the expected median outcome.”

20 Years	Probability of Full Funding in 2042	Probability of < 83% (Current) Funding in 2042	Probability of < 50% Funding in 2042	Maximum 1 Year Investment Loss
100% Fixed Income	0%	98%	2%	-18%
Lower Risk	18%	56%	2%	-26%
Target Allocation	30%	45%	3%	-30%
Higher Risk	39%	41%	5%	-36%
100% Equity	50%	36%	8%	-47%

20 Years	Market Funded Ratio in Year 20			Cumulative Employer Contributions in Year 20 (Billions)			Payout Ratios		
	50th	5th	95th	Year 20			Years 1 to 20		
				50th	5th	95th	Median	Peak	Trough
100% Fixed Income	65%	53%	79%	\$6.1	\$7.5	\$4.7	9%	12%	6%
Lower Risk	80%	55%	124%	\$4.4	\$6.9	\$2.2	8%	11%	5%
Target Allocation	86%	53%	158%	\$3.9	\$7.0	\$2.0	7%	12%	4%
Higher Risk	90%	50%	199%	\$3.7	\$7.3	\$1.9	7%	12%	3%
100% Equity	100%	46%	303%	\$3.4	\$7.9	\$1.7	6%	14%	2%

# Introduction

## Asset Allocation Overview

- **Selecting an asset allocation is one of the most important investment decisions a fiduciary will make.**
- **There are two steps to the asset allocation decision:**
  1. Identification of the asset classes to be considered
  2. Selection of the portfolio mix that best meets plan objectives
- **Strategic asset allocation is the most powerful determinant of total fund performance in the long run:**
  - While good manager evaluation decisions will unquestionably add to performance over a full market cycle, they cannot make up for a poorly diversified, inefficient allocation
- **Multiple studies have shown asset allocation's effect on portfolio returns can be a significant driver of performance over a full market cycle.**

# Introduction

## Current Target Allocation

### The current Target Allocation was adopted in late-2016

- The A/L study indicated through low payout ratios that liquidity is not a concern. This suggested that additional illiquidity could be assumed with private assets to achieve a better return/risk ratio.
- The following asset class targets were decreased: US Equity (23% → 19%), Emerging Markets Equity (11% → 7%) and Core Fixed Income (21% → 17%).
- The following asset class targets were increased: Developed Non-US Equity (9% → 11%), Non-Core Fixed Income (9% → 11%), Real Return (12% → 15%), Real Estate (8% → 10%) and Private Equity (7% → 10%).

	SBCERS Target
Broad US Equity	19
Dev'd Market Non-US Equity	11
Emerging Markets Equity	7
Core Fixed Income	17
Custom Non-Core Fixed Income	11
Custom Real Return	15
Custom Real Estate	10
Private Equity	10
<b>Summary</b>	
Capital Appreciation	58
Capital Preservation	17
Alpha	0
Inflation	25
<b>Performance Metrics</b>	
Expected Arithmetic Return	7.0
Expected Compound Return	6.5
Expected Risk (Std. Dev.)	10.7
<b>Risk Ratios</b>	
Expected Return (Arithmetic)/Risk Ratio	0.65
Expected Equity Beta (S&P 500)	0.61
1-Year Max Drawdown	-27.7
RVK Liquidity Metric (T-Bills = 100)	63

# Asset Allocation Study



# Asset Allocation Study

## Key Inputs

### Return/Risk Assumptions

	Nominal Return (Geo.)	Standard Deviation Assumption	Nominal Return (Arith.)	Return/Risk Ratio (Geo.)	RVK Liquidity Metric	Thematic Bucket
Broad US Equity	5.30	16.10	6.50	0.33	95	Capital Appreciation
Dev'd Market Non-US Equity	6.94	17.00	8.25	0.41	90	Capital Appreciation
Emerging Markets Equity	8.54	25.00	11.25	0.34	85	Capital Appreciation
Core Fixed Income	3.88	5.00	4.00	0.78	85	Capital Preservation
Custom Non-Core Fixed Income	6.46	7.56	6.73	0.85	30	Capital Appreciation
Custom Real Return	6.30	8.63	6.65	0.73	59	Inflation
Custom Real Estate	5.73	15.09	6.79	0.38	16	Inflation
Private Equity	7.61	22.00	9.75	0.35	5	Capital Appreciation

### Correlations

	Broad US Equity	Dev'd Market Non-US Equity	Emerging Market Equity	Core Fixed Income	Custom Non-Core Fixed Income	Custom Real Return	Custom Real Estate	Private Equity
Broad US Equity	1.00	0.85	0.74	0.24	0.61	0.83	0.31	0.76
Dev'd Market Non-US Equity	0.85	1.00	0.81	0.18	0.65	0.81	0.29	0.72
Emerging Market Equity	0.74	0.81	1.00	0.15	0.65	0.81	0.24	0.65
Core Fixed Income	0.24	0.18	0.15	1.00	0.13	0.04	0.04	-0.05
Custom Non-Core Fixed Income	0.61	0.65	0.65	0.13	1.00	0.78	0.15	0.61
Custom Real Return	0.83	0.81	0.81	0.04	0.78	1.00	0.48	0.82
Custom Real Estate	0.31	0.29	0.24	0.04	0.15	0.48	1.00	0.57
Private Equity	0.76	0.72	0.65	-0.05	0.61	0.82	0.57	1.00

# Asset Allocation Study

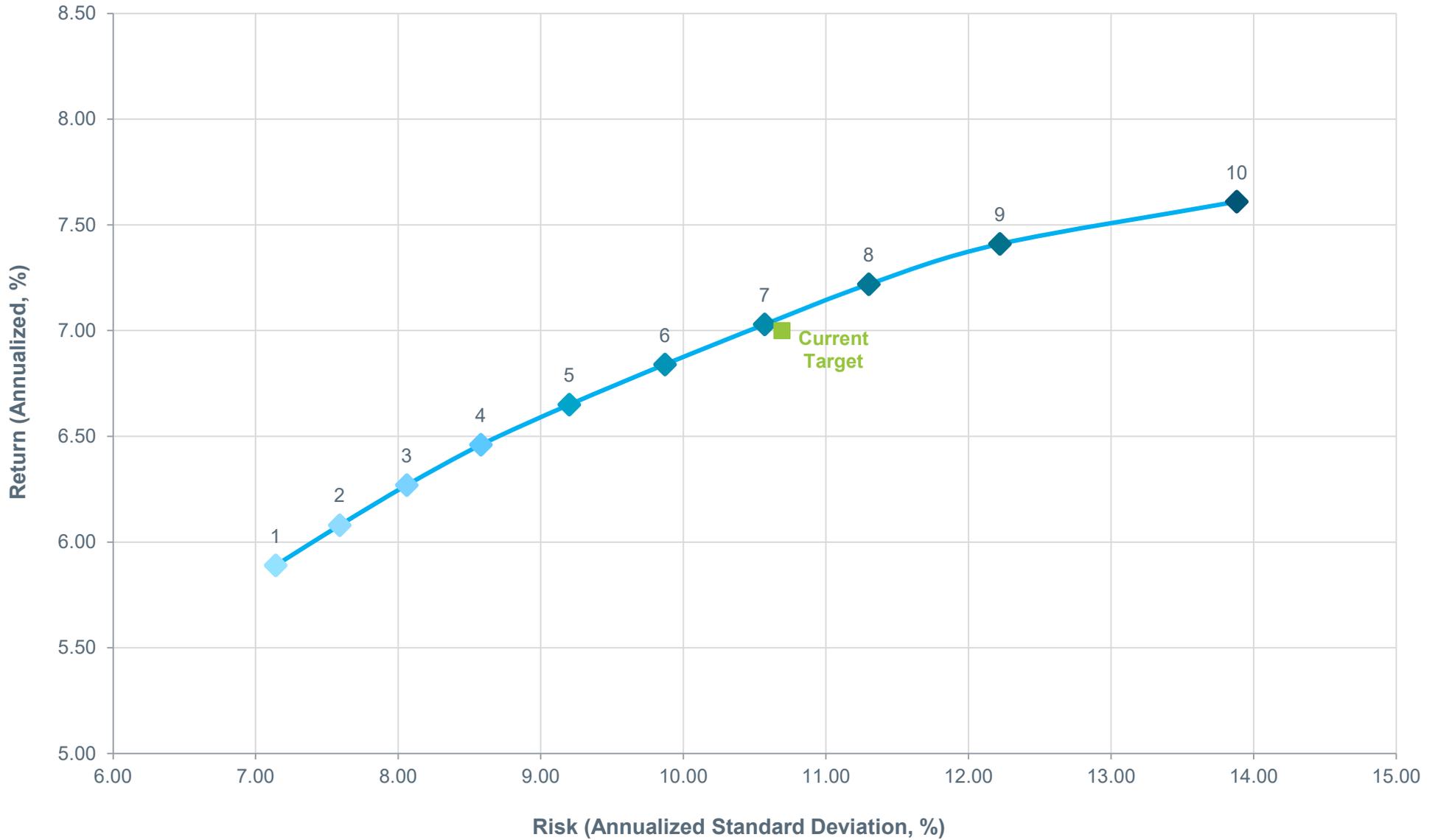
## Efficient Portfolios

	Min	Max	1	2	3	4	5	6	7	8	9	10	Current Target
Broad US Equity	15	30	15	15	15	15	15	15	15	16	20	30	19
Dev'd Market Non-US Equity	10	30	10	10	10	10	10	10	10	10	12	20	11
Emerging Markets Equity	0	10	0	1	3	5	5	5	5	6	8	10	7
Core Fixed Income	10	35	35	30	27	24	21	19	16	13	10	10	17
Custom Non-Core Fixed Income	0	15	15	15	15	15	14	12	11	9	7	0	11
Custom Real Return	0	15	15	15	15	15	15	15	15	15	13	0	15
Custom Real Estate	0	15	10	14	15	15	15	15	15	15	15	15	10
Private Equity	0	15	0	0	0	1	5	9	13	15	15	15	10
<b>Total</b>			100	100	100	100	100	100	100	100	100	100	<b>100</b>
Capital Appreciation			40	41	43	46	49	51	54	57	62	75	58
Capital Preservation			35	30	27	24	21	19	16	13	10	10	17
Alpha			0	0	0	0	0	0	0	0	0	0	0
Inflation			25	29	30	30	30	30	30	30	28	15	25
<b>Expected Return</b>			5.89	6.08	6.27	6.46	6.65	6.84	7.03	7.22	7.41	7.61	<b>7.00</b>
<b>Risk (Standard Deviation)</b>			7.14	7.59	8.06	8.58	9.20	9.87	10.57	11.30	12.22	13.88	<b>10.69</b>
<b>Return (Compound)</b>			5.65	5.81	5.97	6.12	6.26	6.39	6.51	6.63	6.72	6.73	<b>6.47</b>
Return/Risk Ratio			0.82	0.80	0.78	0.75	0.72	0.69	0.67	0.64	0.61	0.55	<b>0.65</b>
RVK Expected Eq Beta			0.41	0.43	0.45	0.48	0.52	0.55	0.59	0.63	0.69	0.80	<b>0.61</b>
RVK Liquidity Metric			68	65	65	64	61	59	56	56	58	67	<b>63</b>

Allocations shown may not sum up to 100% exactly due to rounding.  
 Total International Equity cannot exceed Broad US Equity allocation.  
 Custom Non-Core Fixed Income cannot exceed 2/3 Core Fixed Income allocation.  
 Emerging Markets Equity cannot exceed 2/3 Developed International Equity allocation.

# Asset Allocation Study

## Efficient Frontier



# Monte Carlo Analysis

## What is it and why is it important?

Monte Carlo simulation uses a random sampling of asset class returns, based on the probability distribution implied by the empirical returns, to create several thousand estimates of portfolio performance. Undergoing a Monte Carlo simulation provides insight into the performance of the asset allocation by examining many randomly sampled return outcomes.

**In the simplest terms, Monte Carlo analysis introduces uncertainty into the modeling framework.**

An asset allocation study allows for the construction of an "efficient," or return-maximizing, portfolio of asset class investments at each given level of portfolio volatility. These calculations are based on expected return, risk, and correlations for each asset class. The asset allocation process provides a snapshot of portfolio performance that is highly dependent on the mean return expectations. A Monte Carlo simulation process "stress tests" these assumptions and asset allocation recommendations that stem from them through thousands of independent samplings of portfolio returns, based on the assumptions and indicated asset allocations. Through the Monte Carlo simulation process, we are better able to ascertain the real-world probability of achieving various return targets over time.

Our Monte Carlo simulation model assumes a non-normal distribution of returns for equity asset classes (as other high-risk asset classes), which we believe provides a more realistic representation of historical market experience than the typically used normal distribution. Given this non-normal distribution of random returns derived from our assumption inputs and empirical return dispersion, we can estimate the potential return for a given portfolio over the indicated time period.

It is important to note that the output that follows refers to geometric (compound) return, rather than the arithmetic return assumptions used in the asset allocation analysis. The geometric return of a portfolio will be less than (or equal to) its arithmetic return over time, because geometric return accounts for the dampening effect of volatility on the portfolio's compound returns.

# Asset Allocation Study

## Monte Carlo Analysis: Expected Compound Return by Percentile

Time Period	Percentile	1	2	3	4	5	6	7	8	9	10	Current Target
1 Year	1st Percentile	-18.98	-21.25	-22.17	-23.38	-24.90	-26.13	-27.77	-29.09	-31.45	-34.60	-27.74
	5th Percentile	-6.57	-7.01	-7.59	-8.28	-8.92	-9.48	-10.10	-11.14	-12.81	-16.39	-11.05
	25th Percentile	1.75	1.87	1.72	1.56	1.46	1.27	1.13	0.74	-0.04	-1.79	0.43
	<b>50th Percentile</b>	6.14	6.44	6.61	6.79	7.00	7.15	7.31	7.48	7.53	7.40	<b>7.10</b>
	75th Percentile	10.63	11.03	11.55	12.12	12.69	13.27	13.78	14.45	15.40	17.05	<b>14.16</b>
	95th Percentile	17.69	18.27	19.53	20.70	21.71	22.79	24.01	25.70	28.09	33.16	<b>25.30</b>
	99th Percentile	22.88	23.67	25.52	27.46	29.08	30.50	32.07	34.47	38.11	45.53	<b>34.42</b>
3 Years	1st Percentile	-9.25	-10.40	-11.19	-11.87	-12.67	-13.35	-14.40	-15.67	-17.27	-18.69	-14.79
	5th Percentile	-2.22	-2.50	-2.92	-3.23	-3.51	-3.93	-4.35	-4.88	-5.90	-8.05	-4.82
	25th Percentile	3.16	3.25	3.19	3.12	3.10	3.00	2.93	2.73	2.28	1.22	2.54
	<b>50th Percentile</b>	6.04	6.29	6.44	6.59	6.77	6.93	7.07	7.19	7.28	7.09	<b>6.93</b>
	75th Percentile	8.74	9.08	9.46	9.85	10.21	10.57	10.96	11.41	11.98	12.85	<b>11.11</b>
	95th Percentile	12.65	13.14	13.86	14.59	15.31	16.02	16.75	17.67	19.03	21.65	<b>17.41</b>
	99th Percentile	15.54	16.16	17.19	18.10	19.02	19.99	20.98	22.28	24.28	28.41	<b>22.00</b>
5 Years	1st Percentile	-6.71	-7.52	-8.32	-8.97	-9.44	-10.14	-11.11	-11.90	-13.38	-14.97	-11.17
	5th Percentile	-0.68	-0.90	-1.18	-1.46	-1.79	-2.19	-2.47	-2.91	-3.72	-5.32	-2.81
	25th Percentile	3.56	3.67	3.64	3.62	3.62	3.64	3.60	3.48	3.16	2.22	3.25
	<b>50th Percentile</b>	5.91	6.13	6.29	6.42	6.56	6.70	6.86	6.97	7.00	6.82	<b>6.71</b>
	75th Percentile	8.03	8.33	8.67	8.98	9.30	9.63	9.94	10.31	10.72	11.34	<b>10.00</b>
	95th Percentile	11.00	11.45	12.07	12.66	13.19	13.76	14.40	15.16	16.22	18.17	<b>14.83</b>
	99th Percentile	13.16	13.66	14.47	15.21	15.86	16.65	17.42	18.43	19.86	22.68	<b>18.18</b>
10 Years	1st Percentile	-2.68	-3.27	-3.80	-4.38	-4.80	-5.16	-5.66	-6.59	-7.67	-8.82	-5.91
	5th Percentile	0.95	0.82	0.63	0.41	0.22	0.03	-0.20	-0.53	-1.14	-2.32	-0.40
	25th Percentile	4.08	4.16	4.17	4.19	4.23	4.24	4.28	4.23	4.00	3.32	4.04
	<b>50th Percentile</b>	5.81	6.01	6.15	6.29	6.45	6.59	6.73	6.84	6.87	6.70	<b>6.60</b>
	75th Percentile	7.40	7.65	7.95	8.21	8.48	8.74	9.00	9.29	9.62	9.98	<b>9.01</b>
	95th Percentile	9.59	9.93	10.39	10.87	11.31	11.79	12.27	12.80	13.57	14.84	<b>12.50</b>
	99th Percentile	11.11	11.46	12.06	12.65	13.17	13.71	14.34	15.10	16.08	18.01	<b>14.77</b>

Monte Carlo simulation results shown for the Current Target and efficient portfolios as detailed on page 26.

# Asset Allocation Study

## Monte Carlo Analysis: Expected Gain/Loss by Percentile

Time Period	Percentile	1	2	3	4	5	6	7	8	9	10	Current Target
1 Year	1st Percentile	-793.0	-891.4	-931.2	-983.4	-1,049.0	-1,102.3	-1,173.3	-1,230.3	-1,332.4	-1,468.8	-1,172.2
	5th Percentile	-256.1	-275.1	-300.3	-330.3	-357.8	-382.1	-409.1	-453.8	-526.0	-681.1	-450.0
	25th Percentile	103.6	109.0	102.4	95.6	91.2	82.9	76.9	60.1	26.5	-49.5	46.5
	<b>50th Percentile</b>	293.7	306.7	313.9	321.7	330.7	337.3	344.4	351.7	353.6	348.2	<b>335.2</b>
	75th Percentile	488.0	505.0	527.5	552.2	576.9	601.9	624.1	653.1	694.1	765.7	<b>640.6</b>
	95th Percentile	793.1	818.4	872.7	923.4	967.3	1,013.9	1,066.6	1,139.7	1,243.4	1,462.4	<b>1,122.3</b>
	99th Percentile	1,017.8	1,052.0	1,131.9	1,215.8	1,285.8	1,347.3	1,415.4	1,519.4	1,676.5	1,997.5	<b>1,517.1</b>
3 Years	1st Percentile	-1,064.6	-1,185.7	-1,267.5	-1,337.1	-1,416.9	-1,483.4	-1,585.0	-1,703.8	-1,848.8	-1,972.8	-1,621.8
	5th Percentile	-253.6	-288.6	-339.5	-377.4	-412.2	-462.6	-512.6	-574.4	-694.0	-934.5	-568.3
	25th Percentile	451.1	463.4	455.5	445.6	442.3	429.2	418.9	392.3	330.8	188.8	366.4
	<b>50th Percentile</b>	860.7	897.1	919.0	941.0	967.6	991.4	1,011.7	1,029.9	1,043.5	1,014.9	<b>991.6</b>
	75th Percentile	1,264.3	1,316.1	1,375.1	1,436.6	1,493.6	1,549.4	1,612.0	1,683.8	1,776.0	1,918.8	<b>1,636.3</b>
	95th Percentile	1,885.4	1,967.0	2,088.0	2,211.1	2,335.1	2,457.3	2,585.8	2,750.5	2,998.1	3,489.9	<b>2,704.5</b>
	99th Percentile	2,374.7	2,482.3	2,664.7	2,827.4	2,995.7	3,175.6	3,362.4	3,612.1	4,005.2	4,860.9	<b>3,556.8</b>
5 Years	1st Percentile	-1,241.1	-1,371.0	-1,496.1	-1,593.8	-1,663.4	-1,763.2	-1,897.2	-2,002.5	-2,188.2	-2,374.9	-1,905.5
	5th Percentile	-116.5	-162.4	-221.0	-278.3	-346.6	-425.7	-480.3	-565.1	-718.4	-1,006.0	-547.3
	25th Percentile	854.5	881.0	876.0	870.4	870.2	874.9	865.8	833.9	756.7	529.6	778.1
	<b>50th Percentile</b>	1,466.7	1,526.3	1,570.0	1,608.0	1,645.2	1,685.7	1,730.7	1,761.1	1,770.0	1,719.5	<b>1,687.9</b>
	75th Percentile	2,066.9	2,157.1	2,256.5	2,353.1	2,450.9	2,551.7	2,651.3	2,769.3	2,899.8	3,104.3	<b>2,669.0</b>
	95th Percentile	2,991.5	3,140.3	3,350.4	3,554.6	3,740.8	3,945.1	4,177.7	4,463.7	4,875.0	5,669.2	<b>4,339.9</b>
	99th Percentile	3,730.2	3,906.6	4,205.1	4,481.4	4,734.8	5,045.5	5,356.6	5,778.6	6,402.2	7,723.6	<b>5,673.9</b>
10 Years	1st Percentile	-1,002.1	-1,195.8	-1,361.9	-1,534.6	-1,653.9	-1,750.2	-1,882.6	-2,110.6	-2,350.9	-2,578.9	-1,945.0
	5th Percentile	455.5	396.6	310.6	210.2	124.2	41.8	-59.5	-197.8	-439.2	-875.4	-143.8
	25th Percentile	2,152.7	2,206.5	2,212.7	2,224.3	2,250.7	2,256.6	2,279.9	2,249.7	2,104.2	1,698.3	2,130.7
	<b>50th Percentile</b>	3,309.9	3,454.2	3,557.3	3,660.5	3,785.5	3,890.4	3,999.7	4,083.3	4,108.7	3,979.8	<b>3,900.1</b>
	75th Percentile	4,531.6	4,744.5	4,997.4	5,224.2	5,467.5	5,698.0	5,946.8	6,217.8	6,538.7	6,900.9	<b>5,951.3</b>
	95th Percentile	6,515.3	6,847.0	7,331.1	7,845.1	8,328.8	8,886.6	9,463.3	10,128.7	11,146.0	12,968.2	<b>9,744.0</b>
	99th Percentile	8,104.8	8,507.4	9,204.5	9,941.8	10,607.5	11,333.1	12,222.4	13,353.6	14,916.5	18,358.2	<b>12,859.8</b>

Monte Carlo simulation results shown for the Current Target and efficient portfolios as detailed on page 26.

Gain/Loss projections assume no cash flows and a starting market value of \$4.3B. Gain/Loss projections shown in millions and are in nominal terms.

# Asset Allocation Study

## Monte Carlo Analysis: Percentage Chance of Achieving Target Return

Time Period	Target Return	1	2	3	4	5	6	7	8	9	10	Current Target
1 Year	Target 0%	82	82	81	80	80	79	78	77	75	70	76
	Target 6.25%	49	51	52	53	53	54	54	54	54	53	53
	Target 6.5%	48	50	51	51	52	53	53	54	53	52	52
	Target 6.75%	46	48	49	50	51	52	52	53	53	52	51
	<b>Target 7%</b>	45	47	48	49	50	51	51	52	52	51	50
	Target 7.25%	44	45	47	48	49	49	50	51	51	50	49
3 Years	Target 0%	90	90	90	89	88	88	87	86	84	79	85
	Target 6.25%	48	50	52	53	54	55	55	56	56	54	54
	Target 6.5%	45	48	50	51	52	53	54	54	54	53	53
	Target 6.75%	43	45	47	49	50	51	52	53	53	51	51
	<b>Target 7%</b>	41	43	45	47	48	50	50	51	51	50	50
	Target 7.25%	38	41	43	45	46	48	49	50	50	49	48
5 Years	Target 0%	94	93	93	92	92	91	91	90	88	84	90
	Target 6.25%	46	48	50	52	53	54	55	56	56	54	54
	Target 6.5%	43	45	47	49	51	52	53	54	54	52	52
	Target 6.75%	39	43	45	46	48	50	51	52	52	50	50
	<b>Target 7%</b>	37	40	42	44	46	47	49	50	50	49	48
	Target 7.25%	34	37	39	42	43	45	47	48	48	47	45
10 Years	Target 0%	97	96	96	96	95	95	95	94	93	90	94
	Target 6.25%	43	46	49	51	52	54	55	56	56	54	54
	Target 6.5%	39	42	45	47	49	51	53	53	54	52	51
	Target 6.75%	35	38	41	44	46	48	50	51	51	50	48
	<b>Target 7%</b>	31	35	38	40	43	45	47	48	49	48	46
	Target 7.25%	27	31	34	37	40	42	44	46	46	45	43

\*SBCERS current actuarial assumed rate of return is 7.0%

Monte Carlo simulation results shown for the Current Target and efficient portfolios as detailed on prior slide.

# Appendix



# Custom Assumption Definitions

Custom Non-Core Fixed Income		
SBCERS Target Structure		RVK Assumption Index
45.0%	Private Credit (Senior Secured Direct Lending)	Cambridge Private Credit Index
25.0%	EMD Blend	50% JPM GBI EM Global Div./50% JPM EMBI Global Div.
30.0%	Bank Loans	CS Leveraged Loan
<b>100.0%</b>		

Custom Real Return		
SBCERS Target Structure		RVK Assumption Index
32.0%	Diversified Inflation Strategies	33.3% Bloomberg US TIPS/33.3% Bloomberg Comdty/33.3% MSCI Gbl Real Estate (Gross)
8.0%	TIPS	Bloomberg US Treasury: US TIPS
36.6%	Private Infrastructure	S&P Global Infrastructure
23.4%	Private Natural Resources	45% Alerian MLP/39% NCREIF Farmland/16% S&P Global NR
<b>100.0%</b>		

Custom Real Estate		
SBCERS Target Structure		RVK Assumption Index
54.0%	Core Real Estate	NCREIF ODCE (Gross) (AWA)
46.0%	Non-Core Real Estate	Preqin Non-Core Real Estate
<b>100.0%</b>		

- **Custom Non-Core Fixed Income:** Targets are based on the current approved structure for Non-Core Fixed Income.
- **Custom Real Return:** Targets to public assets (40%) and private assets (60%) are based on the current approved structure for Real Return. The targets to Private Infrastructure and Private Natural Resources are based on the current Hamilton Lane allocation to these respective asset classes.
- **Custom Real Estate:** Targets are based on the current Hamilton Lane allocations to these respective asset classes.

# Current Policy Target and Ranges

<b>Asset Class</b>	<b>Target Allocation (%)</b>	<b>Target Range (%)</b>
US Equity	19	15 - 23
Developed Market non-U.S. Equity	11	8 - 14
Emerging Markets Equity	7	4 - 10
Core Fixed Income	17	14 - 20
Non-Core Fixed Income	11	8 - 14
Real Return	15	8 - 22
Real Estate	10	5 - 15
Private Equity	10	5 - 15
Cash	0	0 - 2

# Active/Passive and Liquidity Profile

Composite	Target	Active/Passive	Liquidity
<b>Total Fund</b>	<b>100%</b>	<b>82% Active/18% Passive</b>	<b>66% Liquid</b>
U.S. Equity	19%	10% Active/90% Passive	100% Liquid
Dev'd Mkt. Non-U.S. Equity	11%	100% Active	100% Liquid
Emerging Mkt. Equity	7%	100% Active	100% Liquid
Core Fixed Income	17%	100% Active	100% Liquid
Non-Core Fixed Income	11%	100% Active	55% Liquid
Real Return	15%	98% Active/2% Passive	40% Liquid
Real Estate	10%	100% Active	0% Liquid
Private Equity	10%	100% Active	0% Liquid

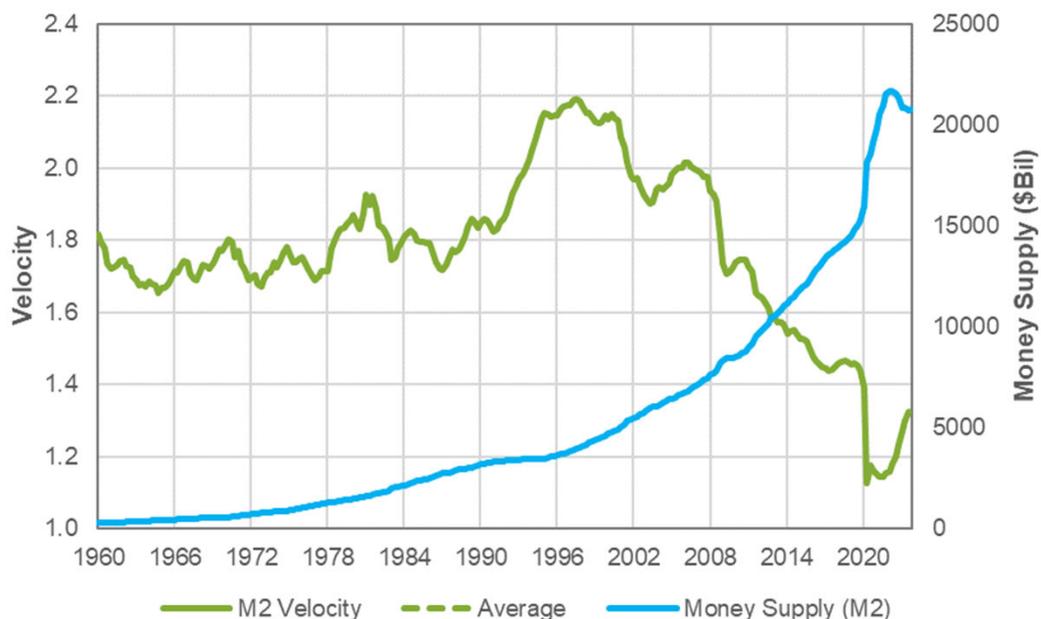
All figures shown represent target allocations not actual allocations. Liquidity figures are illustrative of expected liquidity but do not represent a quantitative measure. The characteristics considered when determining relative liquidity include trading volume, gates for redemption, leverage, nature of transactions, and pricing mechanisms. The RVK liquidity metric is calculated using target investment weights applied to each corresponding asset class liquidity rating.



# US Inflation & Cash Equivalents

US Inflation & Cash Equivalents									
Asset Class	2023			2024			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
US Inflation	2.50%	2.50%	2.47%	2.50%	2.50%	2.47%	--	--	--
Cash Equivalents	2.50%	2.00%	2.48%	2.75%	2.00%	2.73%	+0.25%	--	+0.25%

Supply and Velocity of Money



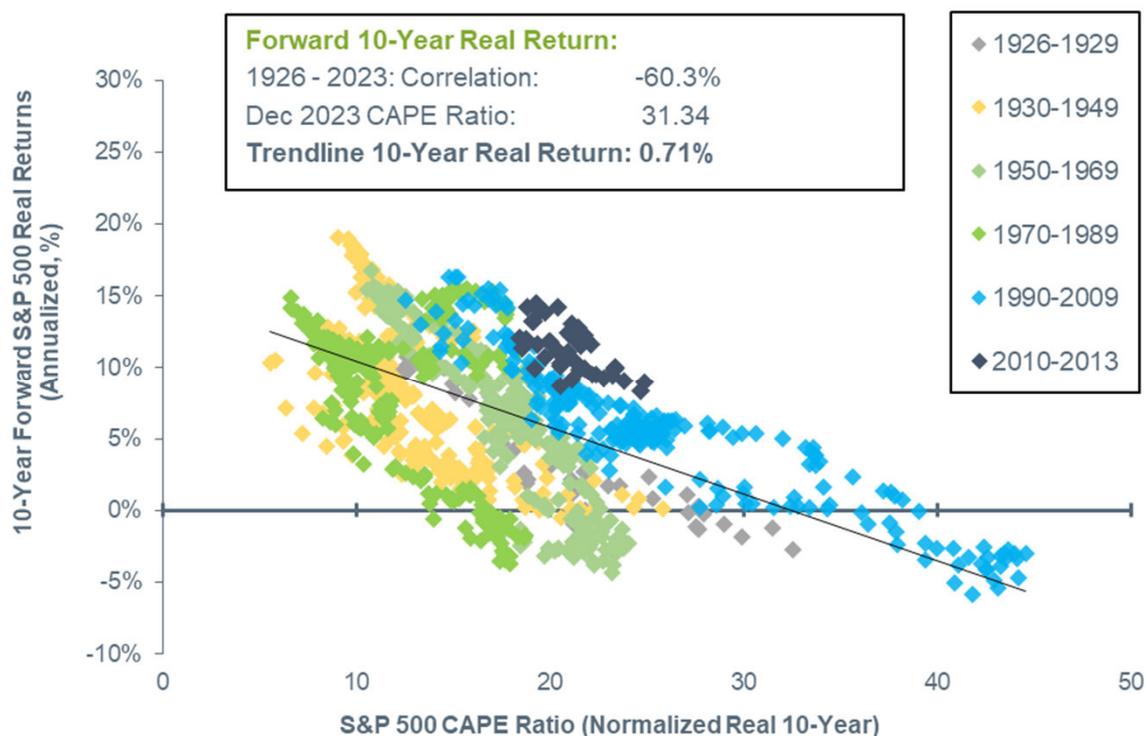
- The inflation assumption remained constant, balancing between the uncertainty of near-term inflationary pressures and long-term deflationary factors.
- The cash assumption was increased to reflect increased yields.

As of December 29, 2023	5-Year	7-Year	10-Year	20-Year	30-Year
<b>Treasury Yield</b>	3.84%	3.88%	3.88%	4.20%	4.03%
<b>TIPS Yield</b>	1.72%	1.72%	1.72%	1.82%	1.90%
<b>Implied Expected Inflation</b>	2.12%	2.16%	2.16%	2.38%	2.13%

# Public Equity – United States

Public Equity: US									
Asset Class	2023			2024			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Large/Mid Cap US	6.75%	16.00%	5.57%	6.50%	16.00%	5.32%	-0.25%	--	-0.25%
Small Cap US	7.25%	19.00%	5.61%	7.00%	19.00%	5.35%	-0.25%	--	-0.25%
Broad US Equity	6.80%	16.10%	5.61%	6.50%	16.10%	5.30%	-0.30%	--	-0.30%

## Relationship between Valuations and Forward 10 Year Returns



- US equity return forecasts all decreased relative to 2023.
- The decrease was driven by elevated valuations as domestic equities rallied in 2023, supported by strong consumer spending, AI developments and prospects of near-term monetary easing.
- Large Cap US valuation at year-end, as represented by the Shiller CAPE, ranked in the 93<sup>rd</sup> percentile of historical values going back to 1926.
- Therefore, return assumptions remain lower than historical averages.

RVK Broad US Equity assumption is a combination of 94.6% Large/Mid Cap US Equity and 5.4% Small Cap US Equity.  
 Source: RVK, based on data from FactSet (2024). December 2023 CAPE ratio uses the S&P 500 earnings estimate for the Q4 2023.

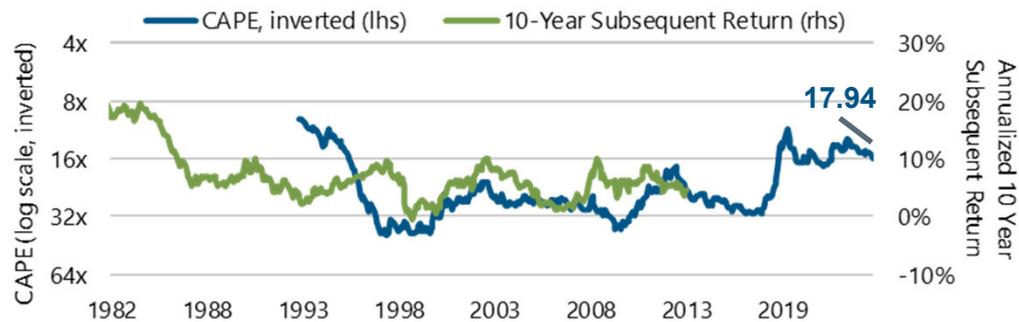
# Public Equity – International

## Public Equity: International

Asset Class	2023			2024			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Intl Large/Mid Equity	8.50%	17.00%	7.19%	8.25%	17.00%	6.94%	-0.25%	--	-0.25%
Intl Dev'd Small Cap	9.25%	20.00%	7.46%	9.00%	20.00%	7.21%	-0.25%	--	-0.25%
Emerging Markets	11.25%	25.00%	8.54%	11.25%	25.00%	8.54%	--	--	--
Broad International	9.35%	18.70%	7.79%	9.15%	18.85%	7.56%	-0.20%	+0.15%	-0.23%

### Valuations: Cyclically-adjusted P/E

#### EAFE valuations



#### Emerging markets valuations



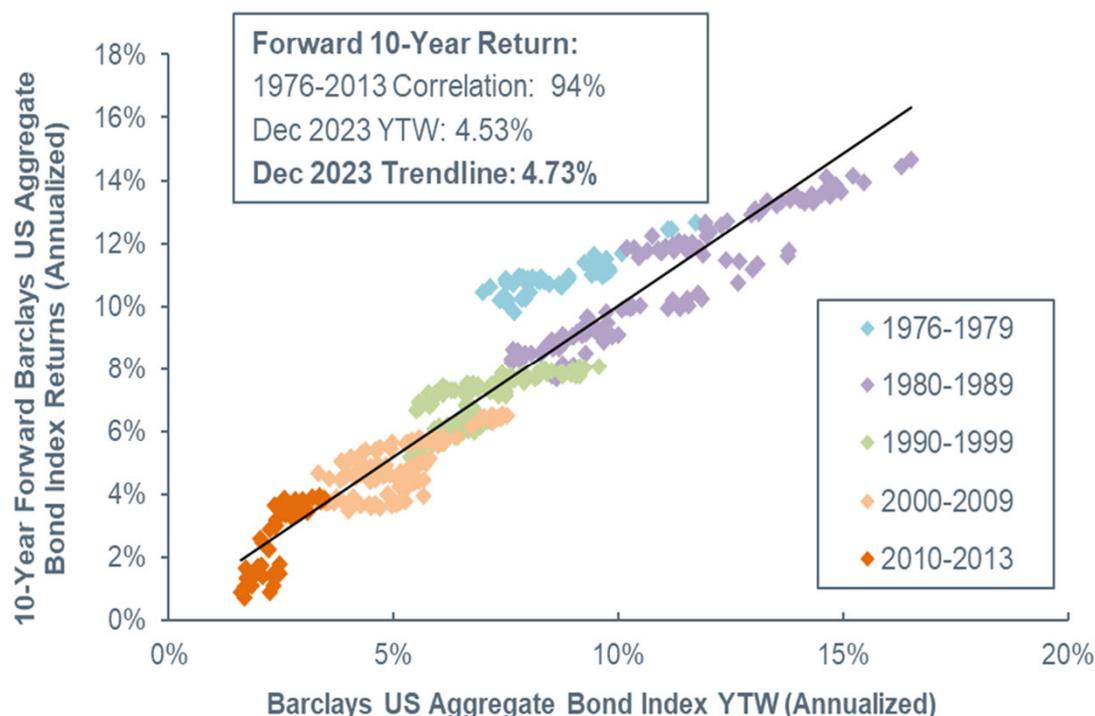
- Developed international equity assumptions decreased primarily due to lower real growth/earnings expectations and increased valuations in 2023, just like with domestic equities.
- International developed inflation expectations remain below US expectations. However, all non-US valuations remain better than their US counterparts.
- No change to the emerging markets equity assumptions.

RVK Broad International Equity is a mix of 62.0% Dev'd Large/Mid Cap Int'l Equity, 9.9% Dev'd Small Cap Int'l Equity, and 28.1% Emerging Markets Equity. Source: Research Affiliates (RA); EAFE valuations represented by MSCI EAFE CAPE calculations by RA since December 1982; EM represented by MSCI EM CAPE calculations by RA since Jan 1990. Data as of December 31, 2023.

# Fixed Income

Fixed Income									
Asset Class	2023			2024			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
US Aggregate	4.00%	5.00%	3.88%	4.00%	5.00%	3.88%	--	--	--
Non-US Dev. Sovereign	2.25%	8.50%	1.90%	2.50%	8.50%	2.15%	+0.25%	--	+0.25%
Low Duration	3.25%	2.50%	3.22%	3.25%	2.50%	3.22%	--	--	--
Long Duration	5.00%	10.00%	4.53%	5.00%	10.00%	4.53%	--	--	--
TIPS	4.00%	5.50%	3.85%	4.00%	5.50%	3.85%	--	--	--

Relationship between YTW and Forward 10 Year Returns



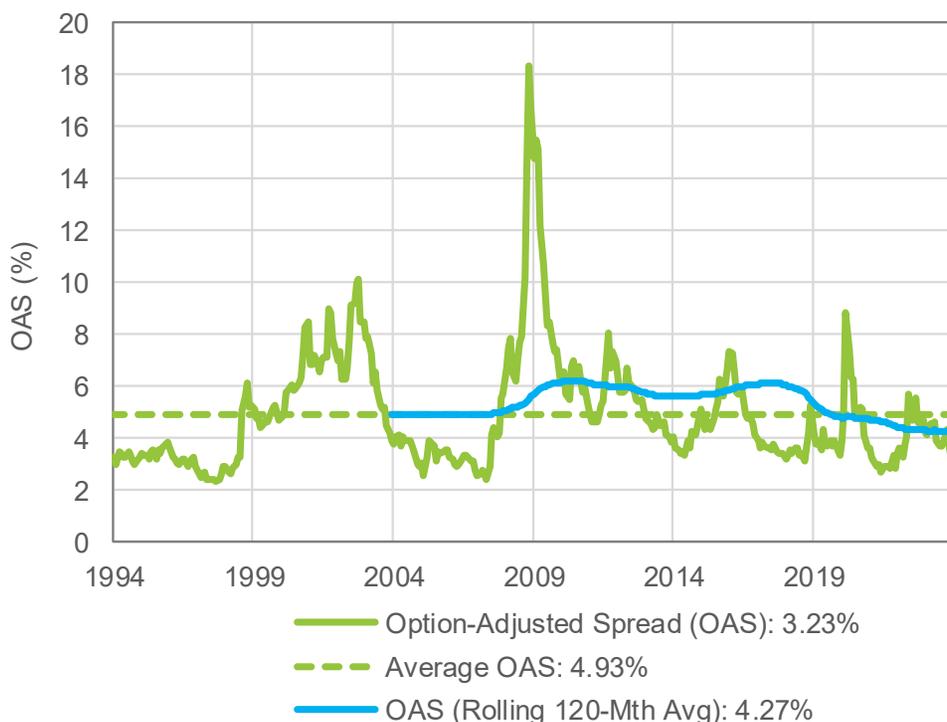
- Starting yields have historically been a reasonable starting point when forecasting future bond returns.
- Domestic bond return assumptions remained stable as our 2023 assumptions already reflected higher starting yields, and an expectation that the yield curve inversion corrects over time.
- Changes in spreads and durations were mostly nominal and thus did not generally have material impacts on the return forecasts.

Source: FactSet (2024).

# Fixed Income – Spread Assets

Fixed Income: Spread Sectors									
Asset Class	2023			2024			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
High Yield	7.25%	10.50%	6.74%	7.00%	10.50%	6.49%	-0.25%	--	-0.25%
Emerging Markets Debt (HC)	7.50%	10.00%	7.04%	7.00%	10.00%	6.54%	-0.50%	--	-0.50%
Emerging Markets Debt (LC)	6.50%	11.50%	5.88%	6.00%	11.50%	5.38%	-0.50%	--	-0.50%
Bank Loans	6.50%	8.50%	6.16%	6.50%	9.00%	6.12%	--	+0.50%	-0.04%

## BB US Corporate High Yield Index Option-Adjusted Spread (OAS)



- Bank loans return assumption was kept constant as tightening spreads were offset by higher starting yields.
- Bank loans risk assumption increased reflecting a decline in quality over time.
- Decrease in starting yields as well as tightening spreads led to lower expected long-term returns for emerging market debt (both HC and LC) and high yield.

# SBCERS Custom Real Return Structure

	Weighting	Asset Class	Index	Expected Arithmetic Return	Expected Risk	Expected Geometric Return
Private Assets (60%)	37%	Private Core Infrastructure	S&P Global Infrastructure	7.25%	15.00%	6.22%
	23%	Private Natural Resources	45% Alerian MLP/ 39% NCREIF Farmland/ 16% S&P Global NR	7.51%	13.68%	6.65%
Public Assets (40%)	32%	Diversified Inflation Strategies	33.3% Bloomberg US TIPS/33.3% Bloomberg Commodity/33% MSCI Global Real Estate (Gross)	6.00%	11.85%	5.34%
	8%	TIPS	Bloomberg US Treasury: US TIPS	4.00%	5.50%	7.82%
<b>Total</b>				<b>6.65%</b>	<b>8.63%</b>	<b>6.30%</b>

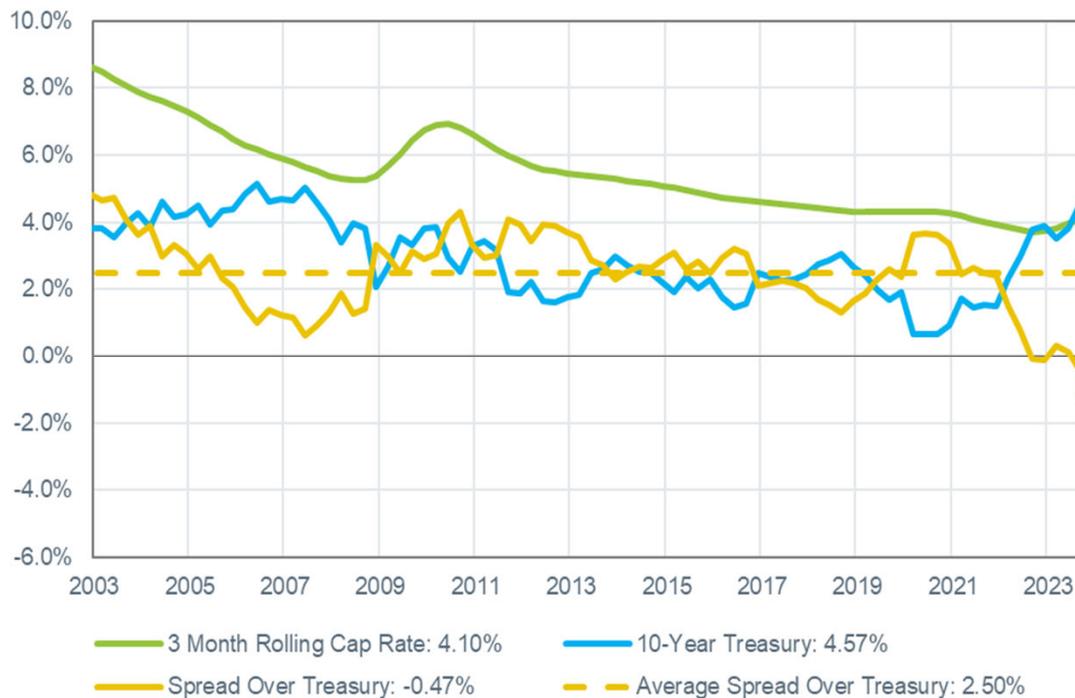
- From 2023 to 2024, the only structural change to the Real Return assumption was to adjust the weighting to Private Infrastructure and Private Natural Resources to be based off of current weightings.
- A Real Return structure study will be conducted later this year, at which point assumption changes may be considered.

Arithmetic Return Assumption: **6.30%**  
 Geometric Return Assumption: **8.63%**  
 Standard Deviation Assumption: **6.65%**

# Real Estate

Real Estate									
Asset Class	2023			2024			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Core Real Estate	5.75%	12.50%	5.02%	5.75%	12.50%	5.02%	--	--	--
Non-Core Real Estate	8.00%	20.00%	6.19%	8.00%	20.00%	6.19%	--	--	--
Global REITs	7.75%	21.00%	5.76%	7.75%	21.00%	5.76%	--	--	--

Cap Rates and Spread to Treasuries



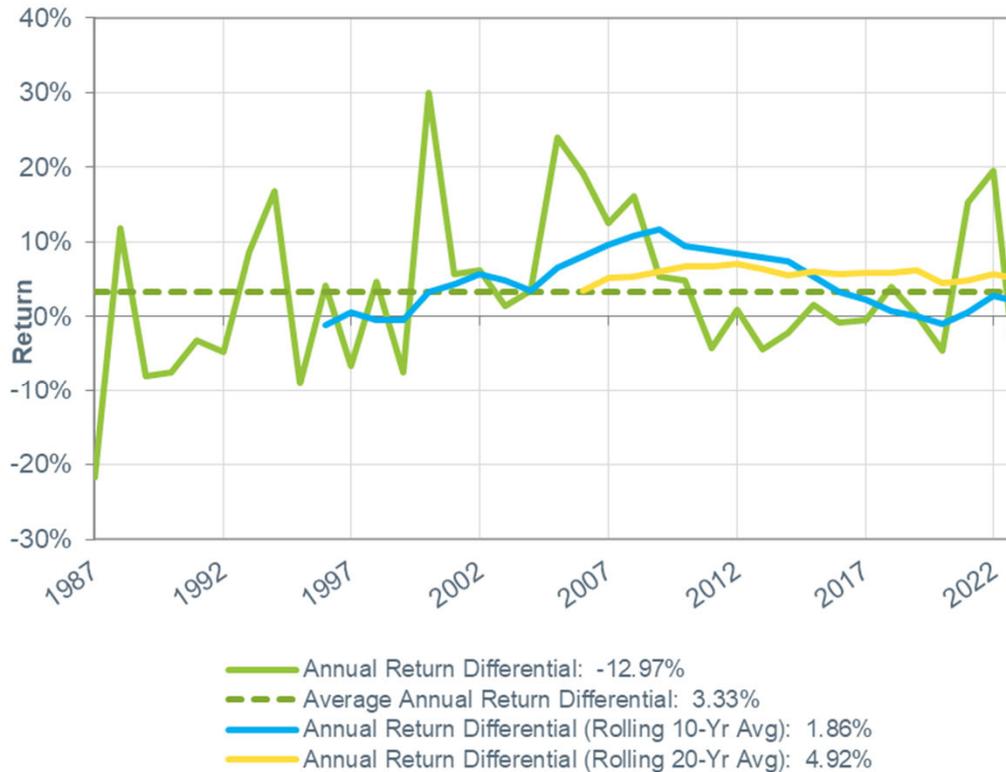
- Cap rates increased slightly during 2023.
- However, on a relative basis – with Treasury rates materially increased – income yields for core real estate assets are relatively less attractive.
- Core real estate’s return assumption remains unchanged.
- Global REITs assumption remains unchanged as valuations and yields did not significantly change.

Source: NCREIF and FactSet (2024). Data as of September 30, 2023.

# Private Equity

Private Equity									
Asset Class	2023			2024			One Year Adjustment		
	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)	Nominal Return	Risk (StDev)	Nominal Return (Geo.)
Private Equity	10.00%	22.00%	7.86%	9.75%	22.00%	7.61%	-0.25%	--	-0.25%

**Annual Return Differential:  
Cambridge US Private Equity Index vs. S&P 500 Index**



- Our spread assumption remained constant at 225 basis points (geometric) above Large/Mid Cap US Equities.
- This spread differential is similar to the historical spread differential.
- The decrease in Private Equity return expectation was influenced by the reduction in the underlying public market return forecast. The Large/Mid Cap US Equity assumption was decreased by 0.25% given diminishing yield and growth expectations as well as elevated valuations.

Source: Cambridge Associates LLC and FactSet (2024). Data as of June 30, 2023. Cambridge index is pooled horizon internal rates of return, net of fees, expenses, and carried interest.

# RVK 2024 Assumptions vs 2023

Asset Class	Benchmark	2023			2024			Change		
		Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)	Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)	Nominal Return (Arith.)	Risk (St. Dev.)	Nominal Return (Geo.)
Large/Mid Cap US Equity	S&P 500 (Cap Weighted)	6.75%	16.00%	5.57%	6.50%	16.00%	5.32%	-0.25%	0.00%	-0.25%
Small Cap US Equity	Russell 2000	7.25%	19.00%	5.61%	7.00%	19.00%	5.35%	-0.25%	0.00%	-0.25%
Broad US Equity	Russell 3000	6.80%	16.10%	5.61%	6.50%	16.10%	5.30%	-0.30%	0.00%	-0.30%
Devd Large/Mid Cap Int'l Equity	MSCI EAFE (Gross)	8.50%	17.00%	7.19%	8.25%	17.00%	6.94%	-0.25%	0.00%	-0.25%
Devd Small Cap Int'l Equity	MSCI EAFE Small Cap (Gross)	9.25%	20.00%	7.46%	9.00%	20.00%	7.21%	-0.25%	0.00%	-0.25%
Emerging Markets Equity	MSCI Emerging Markets (Gross)	11.25%	25.00%	8.54%	11.25%	25.00%	8.54%	0.00%	0.00%	0.00%
Broad International Equity	MSCI ACW Ex US IMI (Gross)	9.35%	18.70%	7.79%	9.15%	18.85%	7.56%	-0.20%	0.15%	-0.23%
Global Equity	MSCI ACW IMI (Gross)	7.85%	16.40%	6.62%	7.55%	16.60%	6.29%	-0.30%	0.20%	-0.33%
US Aggregate Fixed Income	Bloomberg US Aggregate Bond	4.00%	5.00%	3.88%	4.00%	5.00%	3.88%	0.00%	0.00%	0.00%
Non-US Devd Sov'n Fixed Income UH	Citi Non-US World Gov't Bond	2.25%	8.50%	1.90%	2.50%	8.50%	2.15%	0.25%	0.00%	0.25%
Emerging Markets Debt Hard Currency	JPM EMBI Global Diversified	7.50%	10.00%	7.04%	7.00%	10.00%	6.54%	-0.50%	0.00%	-0.50%
Emerging Markets Debt Local Currency	JPM GBI EM Global Diversified	6.50%	11.50%	5.88%	6.00%	11.50%	5.38%	-0.50%	0.00%	-0.50%
TIPS	Bloomberg US Treasury: US TIPS	4.00%	5.50%	3.85%	4.00%	5.50%	3.85%	0.00%	0.00%	0.00%
Low Duration Fixed Income	Bloomberg US Gov't/Cred: 1-3 Year	3.25%	2.50%	3.22%	3.25%	2.50%	3.22%	0.00%	0.00%	0.00%
Long Duration Fixed Income	Bloomberg US Gov't/Cred: LT Bond	5.00%	10.00%	4.53%	5.00%	10.00%	4.53%	0.00%	0.00%	0.00%
High Yield	Bloomberg US Corp: High Yield	7.25%	10.50%	6.74%	7.00%	10.50%	6.49%	-0.25%	0.00%	-0.25%
Bank Loans	CS Leveraged Loan	6.50%	8.50%	6.16%	6.50%	9.00%	6.12%	0.00%	0.50%	-0.04%
Core Real Estate	NCREIF ODCE (Gross) (AWA)	5.75%	12.50%	5.02%	5.75%	12.50%	5.02%	0.00%	0.00%	0.00%
Global REITs	MSCI World Real Estate (Gross)	7.75%	21.00%	5.76%	7.75%	21.00%	5.76%	0.00%	0.00%	0.00%
MLPs	Alerian MLP	8.25%	23.00%	5.89%	8.25%	23.00%	5.89%	0.00%	0.00%	0.00%
Funds of Hedge Funds	HFRI Fund of Funds Composite	5.00%	9.50%	4.57%	5.00%	9.50%	4.57%	0.00%	0.00%	0.00%
Multi-Strategy Hedge Funds	HFRI RV Multi-Strat	5.75%	8.50%	5.41%	5.75%	8.50%	5.41%	0.00%	0.00%	0.00%
GTAA	Custom GTAA Index	6.00%	9.00%	5.62%	5.75%	9.00%	5.37%	-0.25%	0.00%	-0.25%
Private Credit	Cambridge Private Credit Index	8.00%	13.00%	7.23%	8.00%	13.00%	7.23%	0.00%	0.00%	0.00%
Senior Secured Direct Lending	--	7.00%	9.00%	6.62%	7.00%	9.50%	6.58%	0.00%	0.50%	-0.04%
Private Equity	Cambridge US Private Equity	10.00%	22.00%	7.86%	9.75%	22.00%	7.61%	-0.25%	0.00%	-0.25%
Commodities	Bloomberg Commodity	6.00%	17.50%	4.58%	6.25%	17.50%	4.84%	0.25%	0.00%	0.25%
Diversified Inflation Strategies	Custom DIS Index	5.90%	11.60%	5.27%	6.00%	11.85%	5.34%	0.10%	0.25%	0.07%
US Inflation	Consumer Price Index	2.50%	2.50%	2.47%	2.50%	2.50%	2.47%	0.00%	0.00%	0.00%
Cash Equivalents	BofA ML 3 Mo US T-Bill	2.50%	2.00%	2.48%	2.75%	2.00%	2.73%	0.25%	0.00%	0.25%

PORTLAND

BOISE

CHICAGO

NEW YORK

