KEY MARKET THEMES AND ASSUMPTIONS

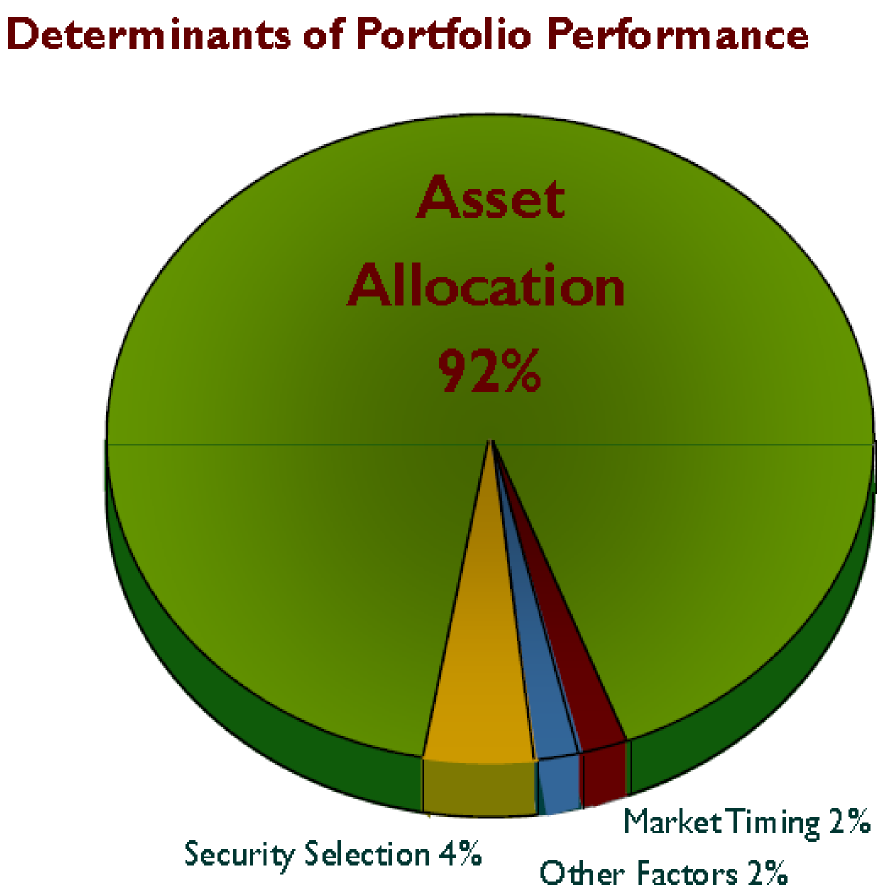
SAN BERNARDINO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

Sam Austin, Partner

TODAY'S AGENDA

- Review of NEPC's asset class forecasting process
- Discussion of implications for SBCERA potential returns
- Benchmarking analysis and discussion
- Discussion of the Key Investment Themes that NEPC expects to impact capital markets

ASSET ALLOCATION: THE KEY INVESTMENT DECISION



Source: Determinants of Portfolio Performance II: An Update, Brinson, et al, Financial Analysts Journal, May/June 1991, pp 40-48.

ASSET CLASS ASSUMPTIONS

OVERVIEW

- **NEPC's capital market assumptions are available each quarter and reflect December 31, 2022 market data**
- **A tighter policy backdrop weighed on broad market performance, but higher interest rates have lifted forward-looking return expectations**
- **The interest rate reset has increased yields in public fixed income and lowered valuations in public equities, both of which are positive contributors to forward returns in each asset class**
- **We encourage investors to hold a dedicated safe-haven fixed income allocation to be a source of portfolio liquidity and downside protection**
- **NEPC's expectation for inflation is elevated over the near-term, but the long-term outlook reflects a more subdued inflation environment**

ASSET CLASS ASSUMPTIONS

DEVELOPMENT

- **Assumptions are published for over 70 asset classes**
  - NEPC publishes return forecasts for 10-year and 30-year periods
- **Market data as of 12/31/2022**
  - Assumptions are developed with NEPC valuations models and rely on a building block approach
- **The 10-year return outlook is intended to support strategic asset allocation analysis**
- **30-year return assumptions are used for actuarial inputs and long-term planning**

Asset Allocation Process

1. Finalize list of new asset classes
2. Calculate asset class volatility and correlation assumptions
3. Set model terminal values, growth, and inflation inputs
4. Model data updated at quarter-end
5. Review model outputs and produce asset class return assumptions
6. Assumptions released on the 15th calendar day after quarter-end

ASSET CLASS BUILDING BLOCKS

METHODOLOGY

- Asset models reflect current and forecasted market data to inform expected returns
- Systematic inputs are paired with a long-term trend to terminal values
- Model inputs are aggregated to capture key return drivers for each asset class
- Building block inputs will differ across asset class categories

Exhibit A: Page 7

CORE ASSET CLASS RETURN ASSUMPTIONS

	Asset Class	12/31/22 10-Year Return	12/31/21 10-Year Return	Delta
	Cash	4.0%	1.5%	+2.5%
	U.S. Inflation	2.5%	2.4%	+0.1%
Equity	U.S. Large-Cap Equity	5.4%	4.3%	+1.1%
	Non-U.S. Developed Equity	5.6%	5.2%	+0.4%
	Emerging Market Equity	9.6%	8.3%	+1.3%
	Global Equity*	6.3%	5.4%	+0.9%
	Private Equity*	9.2%	9.0%	+0.2%
Fixed Income	US Treasury Bond	4.2%	1.5%	+2.7%
	US Municipal Bond	4.4%	1.6%	+2.8%
	US Aggregate Bond*	4.8%	2.0%	+2.8%
	US TIPS	4.4%	1.4%	+3.0%
	US High Yield Corporate Bond	7.1%	3.2%	+3.9%
	Private Debt*	8.8%	6.6%	+2.2%
Real Assets	Commodity Futures	4.2%	0.4%	+3.8%
	REIT	6.2%	4.5%	+1.7%
	Gold	5.1%	3.3%	+1.8%
	Real Estate - Core	4.0%	4.7%	-0.7%
	Private Real Assets - Infrastructure	6.6%	5.3%	+1.3%
Multi-Asset	60% S&P 500 & 40% U.S. Aggregate	5.4%	3.7%	+1.7%
	60% MSCI ACWI & 40% U.S. Agg.	6.0%	4.4%	+1.6%
	Hedge Fund*	6.5%	4.2%	+2.3%

*Calculated as a blend of other asset classes

INFLATION ASSUMPTIONS

OVERVIEW

- **Inflation is a key building block to develop asset class assumptions**
- **Inflation assumptions are model-driven and informed by multiple inputs for both the U.S. and global assets**
  - Includes forecasts from international organizations (e.g. IMF), local consumer and producer price indices, global interest rate curves, and break-even inflation expectations
- **NEPC's U.S. inflation expectations reflect stickier inflation over the near-term, but a stable inflation outlook over the long-term**
  - We anticipate continued volatility among inflation measures as market-based inflation expectations diverge from current consumer inflation metrics

Region	10-Year Inflation Assumption	30-Year Inflation Assumption
United States	2.5%	2.6%

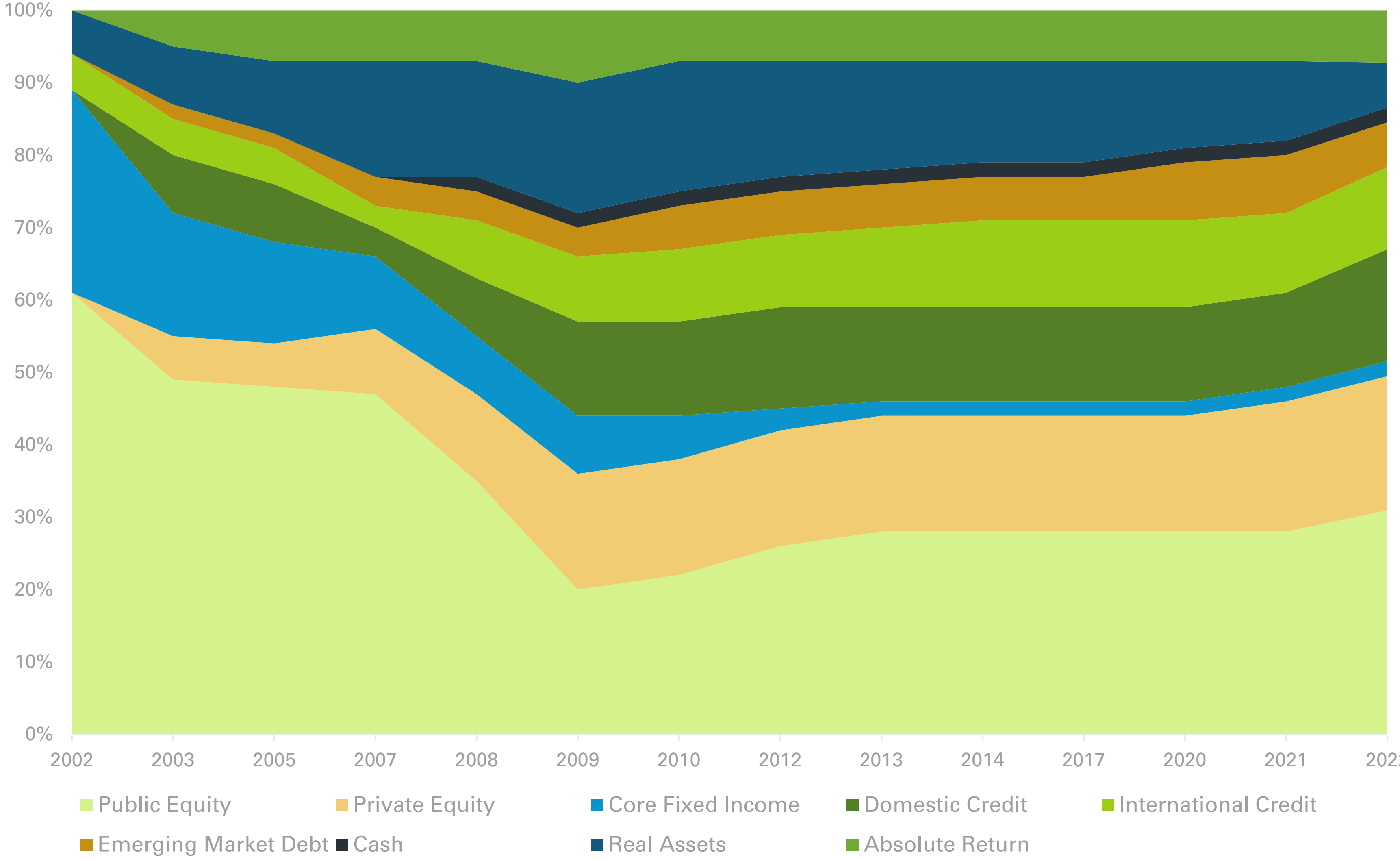
CHANGES TO SBCERA ASSUMPTIONS

ASSET ALLOCATION

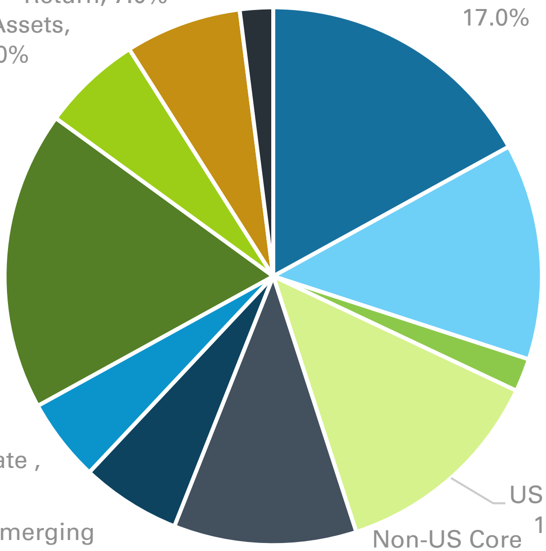
POLICY TARGETS, RANGES AND INDEXES

Asset Class	Policy Target	Range	Benchmark
Domestic Equities	**17.00%**	**10% – 27%**	**Russell 3000 Index**
Passive Large Cap	14.50%	0% – 20%	
Passive Small Cap	2.50%	-3% – 7%	
International Equities	**13.00%**	**8% – 18%**	**MSCI ACWI ex USA Index**
Developed Market	7.00%	1% – 12%	
Emerging Market Equity	6.00%	1% – 11%	
US Fixed Income	**15.00%**	**10% – 20%**	**Bloomberg Barclays US Aggregate Bond Index**
US Core Fixed Income	2.00%	-3% – 7%	
High Yield/Credit Strategies	13.00%	8% – 18%	
Global Fixed Income	**17.00%**	**11% – 21%**	**Bloomberg Barclays Global Aggregate Bond ex US Index**
International Core Fixed Income	0.00%	-5% – 5%	
International Credit	11.00%	6% – 16%	
Emerging Market Debt	6.00%	1% – 10%	
Real Estate	**5.00%**	**0% – 10%**	**NCREIF Property Index**
Core	2.50%	0% – 5%	
Non-Core	2.50%	0% – 5%	
Real Assets	**6.00%**	**0% – 10%**	**67% S&P GSCI + 33% BBG US TIPS Index**
Commodities	4.00%	-1% – 7%	
Infrastructure	2.00%	0% – 6%	
Private Equity	**18.00%**	**6% – 23%**	**Russell 3000 Index**
Absolute Return	**7.00%**	**0% – 12%**	**Bloomberg Barclays US Aggregate Bond Index**
Cash	**2.00%**	**0% – 10%**	**91 Day T-Bill Index**

HISTORICAL POLICY ALLOCATION



SBCERA RETURN AND RISK EXPECTATIONS
USING DEC. 31, 2022 CAPITAL MARKET ASSUMPTIONS



	10 Year		*30 Year*	
	2023	*2022*	*2023*	*2022*
Expected Return	8.2%	6.9%	8.9%	8.0%
Expected Volatility	11.4%	11.3%	11.4%	11.3%
Sharpe Ratio	0.37	0.48	0.48	0.51

Probabilities using 2023 Assumptions	
Probability of 1-Year Return Under 0.00%	**23.5%**
Probability of 10 Year Return Under 0.00%	**1.1%**
Probability of 10 Year Return Under 7.25%	**39.2%**
Probability of 30-Year Return Under 7.25%	**21.6%**

Note: 2023 Expected Volatility assumption is based on smoothed volatilities in private markets asset classes

BENCHMARKING OVERVIEW & ANALYSIS

WHAT IS A BENCHMARK?

A benchmark may have many definitions:

"A collection of unmanaged assets used to assess the quality of an investor's choices."

"An articulation of the mix of assets chosen by our Board to reflect our risk tolerance in achieving our goals."

- **How are individual benchmarks constructed?**
  - Assets are grouped using certain criteria to construct a reference point for an investor within a same-or-like asset type
  - Market cap weighted (Russell 3000, MSCI ACWI IMI)
  - Equal weighted; all assets within a group are tracked in equal proportions
  - Style tilted; over-allocate to certain metrics, for example, price-to-book, last 3 months of price movements
  - Universe-based; Private Equity (Cambridge, Burgiss, Preqin; Real Estate (NCREIF ODCE)
- **Not all benchmarks are constructed equally; Investor beliefs play a role in choosing a benchmark**
  - Benchmark providers use definitions and calculations that are differ and result in different outcomes
    - Rebalancing frequency, earnings screens, security inclusion rules
- **Staff and NEPC are tasked with assessing the relevance of the current benchmarking regime to ensure best practices and more importantly the Strategic Asset Allocation Policy is properly interpreted and investment program implementation is measured prudently**

THE ROLE OF BENCHMARKS

- **Benchmarks are used to measure the performance and risk characteristics from the top down (Total Plan) and bottom-up (Portfolios and Asset Classes) within the investment program**
  - Provides the ability to measure the quality of active or passive decisions within the Plan (e.g. asset allocation, manager selection and manager skill)

- **Investment strategies typically fall into one of three categories:**
  1. **Benchmark Relative**: In this category, investment decisions are made relative to benchmark weights, exposures, and risks. The portfolio may be very similar to the benchmark in this instance (e.g. passive and active index strategies).

  2. **Benchmark Aware**: In this category, benchmark relativity is observed or the benchmark serves as an investable universe. Generally, there will be distinct differences between the portfolio and the benchmark (e.g. concentrated strategies).

  3. **Benchmark Neutral**: In this category, benchmarks are treated more as target returns or hurdles to beat or there is no appropriate benchmark. This is common with absolute return and alternative strategies and for strategies not covered by index providers. In these instances, a predefined target return that is not based on a market index may be used.
     - Measuring risk on a relative basis becomes impeded.

Source: CFA Institute

CONSTRUCTING A TOTAL FUND BENCHMARK

- **Total Fund benchmarking is an outcome of the Board setting a Strategic Asset Allocation; choosing a mix of assets that produces a rate of return at a certain level of risk**
  - Asset Liability Modeling, Actuarial Studies, Investment Policies and Beliefs, Risk Budgeting all play a role in defining the categories of assets invested in
- **The optimal mix of asset weights as identified by investment policy determines the asset mix in a benchmark**
- **Asset allocation models use broad indexes and their characteristics as an input to model expected returns and risk**
  - Consider and assess asset allocation inputs as a means to assess objectives and appropriateness of benchmark selection
- **Public markets or "traditional" investments have largely well-defined and ubiquitously understood benchmarks**
- **Private markets or "alternatives" may create some challenges**
  - Opportunity cost, strategy, objective and risk profile may play a role

TYPES OF BENCHMARKS

- **Absolute return target**
  - A static goal to beat, for example, 7.25% actuarial rate of return
  - Typically involves very in-depth work behind the scenes
- **Real return target**
  - A target that is defined by a market index for inflation plus a risk premium to account for the risk of assets invested in
- **Investable market index**
  - Typically an aggregation of public markets equity or fixed income representing a ubiquitously known segment of the market
  - Liquidity is key
  - Have many flavors of index construction based on, for example, cap weight, style (growth, value), cap size (large, small), "factors" (momentum, low volatility, carry, size)
- **Opportunity cost benchmark**
  - An aggregation of assets that represents an investment that was forgone, for example, public equity indexes may be used to benchmark private equities
- **Universe-based or peer benchmark**
  - An aggregation of investments tracking particular implemented strategies, for example, Hedge Funds (HFRI), Private Equity (Preqin, Cambridge)

STANDARDS IN BENCHMARKING - GIPS

- **There are standards; governed by CFA Institute's Global Investment Performance Standards (GIPS)**
  - Ethical standards for the calculation and presentation of investment performance to ensure fair representation and full disclosure of investment performance.
  - Investment managers in public markets are typically GIPS compliant
    - Private market investment managers may be GIPS compliant or produce performance in substitutable best practice methodology
- **Asset owners are voluntarily taking on GIPS compliance**
  - Sets best practices across performance measurement including benchmarking
- **Compliant firms are required to select a benchmark if one is appropriate and present benchmark performance in compliant presentations**
  - The GIPS standards define a benchmark as a point of reference against which the composite's or portfolio's performance and/or risk is compared
  - The benchmarks used by each asset class must be disclosed, along with their weights as of the most recent annual period end as well as general information regarding the investments, structure, and/or characteristics of the benchmarks.
- **Properly used, a benchmark should be a focal point in the relationship between the firm and the fiduciary body overseeing the prudent management of the assets**

Source: CFA Institute

BEST PRACTICES IN BENCHMARKING

- **Benchmarks are not model portfolios**
  - but may be in certain efficient asset sectors based on investment beliefs and risk budget
- **Benchmarks should allow for ease of implementation and may facilitate tactical asset allocation**
- **Benchmark returns and characteristics serve as a baseline for risk assessment in the portfolio**
  - Active risk budget, portfolio structure, active implementation and investment manager skill are informed by benchmarks
  - Ex-poste risk adjusted returns use benchmarks as inputs and are key to evaluating implementation quality
  - Ex-ante risk analysis is keyed off of benchmarks
- **Benchmarks may serve as a base-line for compliance monitoring**
- **Benchmarks that are absolute return based pose issues when assessing volatility and or risk, both ex-ante and ex-poste**
- **Evaluate validity using CFA Institute's SAMURAI framework**

FRAMEWORK FOR EVALUATING APPROPRIATE BENCHMARKS

Valid benchmarks (per the CFA Institute) must meet certain criteria.

The CFA Institute outlines these requirements as SAMURAI.

Is the benchmark:

Specified in advance: Benchmark is known to all at start of evaluation period

Appropriate: The benchmark should accurately reflect the manager's performance style

Measurable: You must be able to measure the results

Unambiguous: A good benchmark's components should be known

Reflective: Of manager's current investment expertise

Accountable: Manager should agree that the benchmark is an appropriate measure

Investable: You should be able to replicate and invest in a benchmark

SBCERA POLICY BENCHMARK

INDEX DEFINITIONS AND CONSIDERATIONS

Asset Class	Policy Target	Benchmark	Index Definition	Benchmark Type	Preferred Market Index	Aligned With Asset Allocation Policy	Considerations
Domestic Equities	**17.00%**	**Russell 3000 Index**	Market-cap-weighted index measuring the entire U.S. stock market. The index tracks the performance of the 3,000 largest U.S.-traded stocks, which represent about 97% of all U.S.-incorporated equity securities	Investable Index	Yes	Yes	None
International Equities	**13.00%**	**MSCI ACWI ex USA Index**	Market-cap-weighted index of Large and mid cap representation across 22 of 23 Developed Markets (DM) countries (excluding the US) and 24 Emerging Markets (EM) countries*. With 2,257 constituents, the index covers approximately 85% of the global equity opportunity set outside the US	Investable Index	Yes	Yes	None
US Fixed Income	**15.00%**	**BBG US Aggregate Bond Index**	Market-cap-weighted bond market index representing intermediate term investment grade bonds traded in the United States. Index tracks investment-grade corporate debt, government debt, mortgage-backed securities (MBS) and asset-backed securities (ABS).	Opportunity Cost	Yes*	Yes	Credit risk is investment-grade
Global Fixed Income	**17.00%**	**BBG Global Aggregate Bond ex US Index**	Measures the performance of global investment grade fixed-rate debt markets that excludes USD-dominated securities.	Opportunity Cost	Yes*	Yes	Credit risk is investment-grade
Real Estate	**5.00%**	**NCREIF Property Index**	Market-value weighted, includes Apartment, Hotel, Industrial, Office and Retail properties, and sub-types within each type. Includes properties with leverage, but all returns are reported on an unleveraged basis.	Universe	Yes*	Yes	NCREIF ODCE Index has gained traction among clients.
Real Assets	**6.00%**	**67% S&P GSCI + 33% BBG US TIPS Index**	S&P GSCI tracked investments in the commodity markets. It is a tradable index that is readily available to market participants of the Chicago Mercantile Exchange. BBG US TIPS Index measures the performance of the US Treasury Inflation Protected Securities market. Federal Reserve holdings of US TIPS are not index eligible and are excluded from the face amount outstanding of each bond in the index.	Opportunity Cost	Yes*	Yes	Private markets implementation
Private Equity	**18.00%**	**Russell 3000 Index**	See above.	Opportunity Cost	Yes/No*	Yes	Measures Board's decision to invest in private markets. Universe indexes used by others.
Absolute Return	**7.00%**	**BBG US Aggregate Bond Index**	See above.	Opportunity Cost	Yes*	Yes	Credit risk is investment-grade
Cash	**2.00%**	**91 Day T-Bill Index**	Measures the performance of the U.S. short-term Treasury Bill market.	Investable Index	Yes	Yes	None

* Denotes considerations may be need to be taken into account.

Exhibit A: Page 22

SBCERA BENCHMARKING EVALUATION

Asset Class	Domestic Equities	International Equities	US Fixed Income	Global Fixed Income	Real Estate	Real Assets	Private Equity	Absolute Return	Cash
Policy Target	17%	13%	15%	17%	5%	6%	18%	7%	2%
Benchmark	Russell 3000 Index	MSCI ACWI ex USA Index	BBG US Aggregate Bond Index	BBG Global Aggregate Bond ex US Index	NCREIF Property Index	67% S&P GSCI + 33% BBG US TIPS Index	Russell 3000 Index	BBG US Aggregate Bond Index	91 Day T-Bill Index
Specified in Advance	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Appropriate	Yes	Yes	Yes*	Yes*	Yes	Yes	Yes*	Yes	Yes
Measurable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unambiguous	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Reflective	Yes	Yes	Yes*	Yes*	Yes	Yes*	Yes*	Yes*	Yes
Accountable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Investable	Yes	Yes	Yes	Yes	No*	Yes	Yes	Yes	Yes
Considerations			SBCERA portfolio is credit risk focused	SBCERA portfolio is credit risk focused	Many clients use ODCE	SBCERA implementation is in private assets	Index measures the Board's decision to invest in private markets	SBCERA portfolio is credit risk focused	

- **Asset classes effectively capture the characteristics of asset classes set by board approved Investment Policy and Investment Beliefs**
- **Investment-grade credit related benchmarks measure the risk and return differential associated with the decision to investment in private markets, an opportunity cost approach, rather than an investable market approach. Portfolio characteristics differ from benchmark by design.**

RECOMMENDATIONS AND CONCLUSION

- **SAMURAI analysis has not uncovered any significant issues with benchmarks used when evaluated in context of Investment Policy and Beliefs.**

  Considerations:

  - **Credit implementation and characteristics is different than the benchmark.**
    - **Reference indexes used in reporting evaluate manager skill.**
  - **In Private Equity, many clients use a universe-based benchmark.**
    - **Universe-based benchmark measures manager skill.**
  - **In Real Estate many clients use the NCREIF ODCE Index, an index of Open-ended Core Funds.**

- **Benchmarks used are broadly in line with industry best practices.**
- **NEPC is not recommending any changes unless there is a change in investment belief.**
- **Benchmarks are aligned well with Investment Policy objectives.**

KEY INVESTMENT THEMES

NEPC KEY INVESTMENT THEMES

PURPOSE AND GOAL

- **Key Investment Themes are important macro-economic forces that we believe will impact the investment landscape over the next 12 months**
  - Themes are a catalyst to reveal investment opportunities with significant influence on market pricing and investor sentiment
- **We believe themes carry implications for asset allocation, dynamic portfolio tilts, opportunistic investments, and portfolio implementation**
  - The introduction and conclusion of a theme is likely to alter NEPC's investment outlook and understanding of market dynamics

NEPC Key Investment Themes

1. Stagflation Trends
2. Recession Outlook
3. European Energy Transition
4. China Reopening
5. U.S. Dollar Trajectory

A REGIME SHIFT FOR INVESTORS

NEPC MARKET OUTLOOK

- **Investors experienced a paradigm shift in 2022 as central banks transitioned from supporting market sentiment to combating inflation**
  - This paradigm shift reset the expectations for investors, capital markets, economies, consumers, and corporations across the globe
- **This transition is forcing a broad re-pricing across all financial assets and higher discount rates are challenging the capital market structures that thrived over the last decade**
  - The transition to a new investment regime reflects major trends across monetary policy, interest rates, portfolio construction and geopolitics
- **The composition of these trends reflect certain stagflation dynamics and foreshadow a challenging economic environment**
  - The full impact has yet to be seen as each of these trends have a prolonged lag effect that flows through the global economy and capital markets
  - The result is a market environment exposed to external shocks and tightening liquidity that leaves all asset class more at risk to downside events

REGIME SHIFTS CHALLENGE INVESTOR BIASES

NEPC MARKET OUTLOOK

Elevated Inflation and Monetary Policy	Central banks have transitioned from supporting investor sentiment and market liquidity to suppressing inflation as their primary policy objective
Interest Rate Super Cycle	The forty-year interest rate super cycle has ended, and capital markets are only beginning to reflect an environment of higher discount rates and an increased cost of capital
Portfolio Construction	Higher volatility in inflation and economic factors have increased stock-bond correlations and diversifying assets offer greater value to a portfolio relative to the last decade
Geopolitical Trends	New geopolitical trends in Europe and the Middle East are straining commodity markets and supply chains while inciting macro-economic stagflation trends

THE END OF THE INTEREST RATE SUPER CYCLE

HIGHER DISCOUNT RATES HAVE A PROLONGED LAG EFFECT

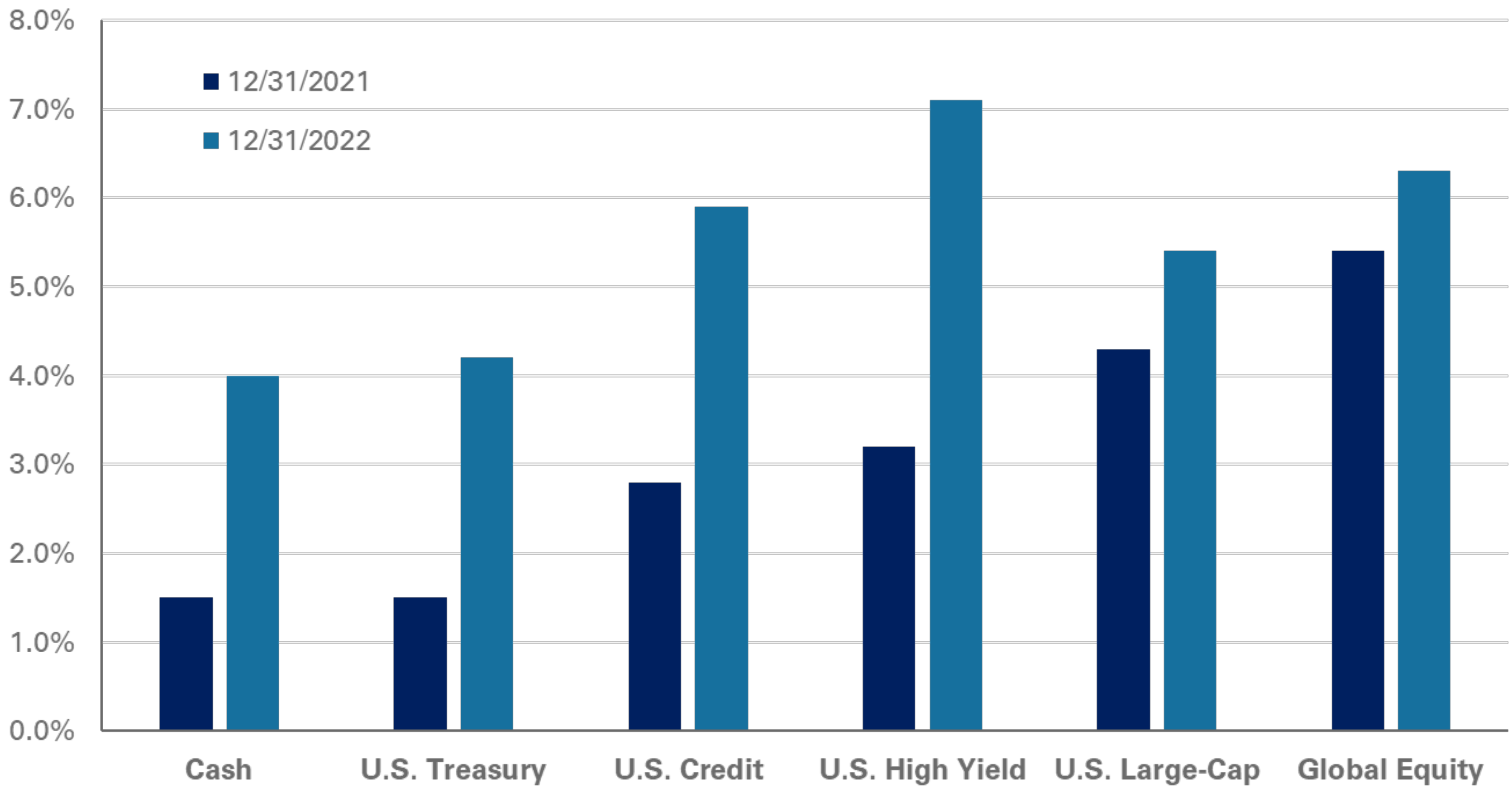
Source: FactSet

- **The transition to higher levels of interest rates continues to progress with the effects rippling from the public markets to consumer finance, real estate, private markets, and the overall cost of capital**
  - The economic effect has yet to be felt as debt issuance and refinancings slow and weak balance sheets buckle from the pressure of higher interest rates

Exhibit A: Page 29

2023 CAPITAL MARKET EXPECTATIONS RESET

NEPC 10-YEAR EXPECTED RETURN



Source: NEPC Capital Market Assumptions as of 12/31/2021 and 12/31/2022

2023 KEY INVESTMENT THEMES

NEPC MARKET OUTLOOK

Stagflation Trends	Stagflation trends challenge the investment landscape and are the driving force for market dynamics
Recession Outlook	Changes in unemployment, wages, and service sector inflation will inform the likelihood and potential severity of a U.S. recession
European Energy Transition	Europe is on the clock to secure new sources of natural gas supply or face severe energy shortages
China Reopening	China's reopening will have global implications for growth, trade, and inflation and may drive a consumer resurgence in China
U.S. Dollar Trajectory	U.S. Dollar strength reveals risks in the global financial system and is a tightening of financial conditions

MACROECONOMIC

INFLATION ASSUMPTIONS

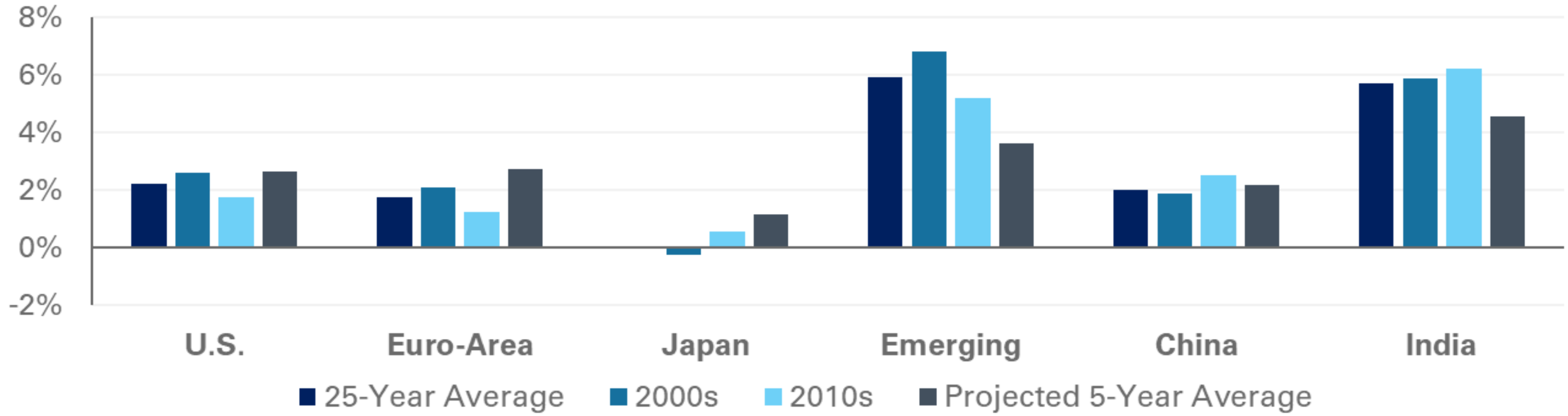
OVERVIEW

- **Inflation is a key building block to develop asset class assumptions**
- **Inflation assumptions are model-driven and informed by multiple inputs for both the U.S. and global assets**
  - Includes forecasts from international organizations (e.g. IMF), local consumer and producer price indices, global interest rate curves, and break-even inflation expectations
- **NEPC's U.S. inflation expectations reflect stickier inflation over the near-term, but a stable inflation outlook over the long-term**
  - We anticipate continued volatility among inflation measures as market-based inflation expectations diverge from current consumer inflation metrics

Region	10-Year Inflation Assumption	30-Year Inflation Assumption
United States	2.5%	2.6%

GLOBAL INFLATION

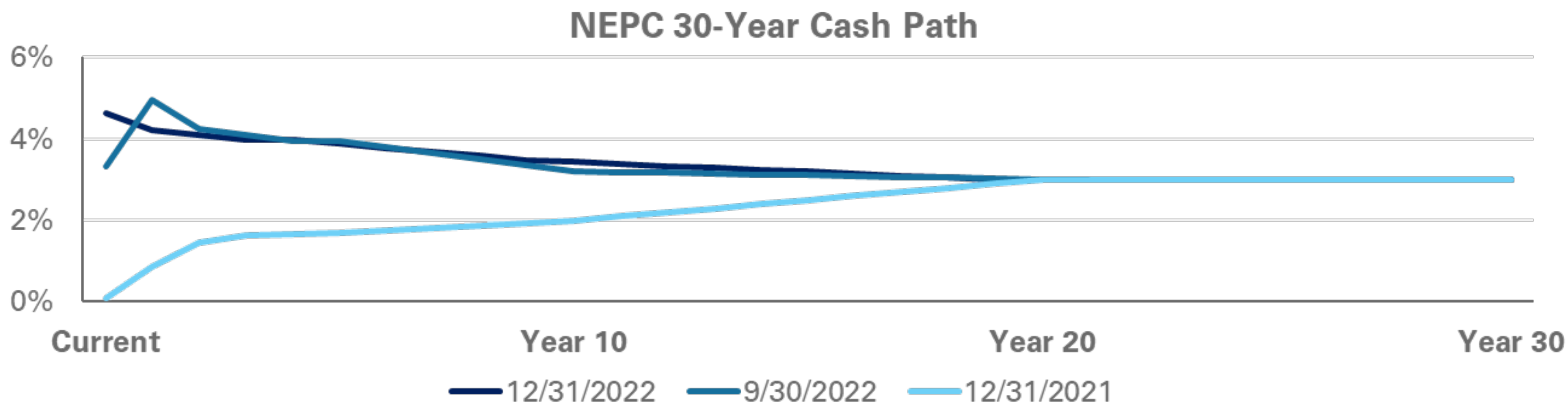
HISTORICAL INFLATION



- **Near-term inflation levels are elevated relative to stated central bank inflation targets**
  - Long-term inflation assumptions are subdued and reflect market-based break-even inflation expectations
- **Emerging market inflation levels are projected to decline, but generally remain above the developed world**

Sources: IMF, FactSet, NEPC

U.S. CASH
EXPECTATIONS



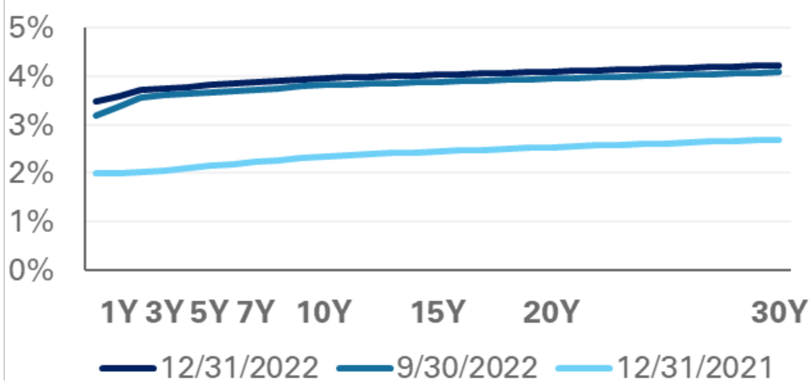
- **Cash is a foundational input for all asset class return expectations**
  - Cash + risk premia is an input for long-term asset class return projections
- **Cash assumptions reflect inflation and real interest rates**
- **U.S. nominal rate forecasts reflect continued tighter policy in the near-term, but long-term expectations remain subdued relative to history**

Sources: Bloomberg, FactSet, NEPC

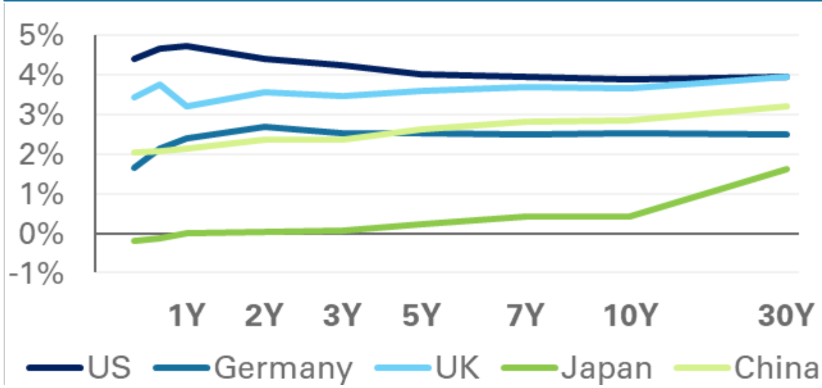
GLOBAL INTEREST RATE
EXPECTATIONS

- **Real yields have normalized, reflecting the transition to a tighter policy environment**
  - Higher real rates support returns in the long-term, but also signal a shift in risk posture for markets
- **The transition to tighter Fed policy has lifted bond yield forecasts**
- **The outlook is relatively poor for Non-U.S. developed markets due to the nominal yield differential**
- **Emerging market real rates and nominal interest rates are higher relative to the developed world**

NEPC 10-Year Forward Curve



Global Yield Curves



Sources: FactSet, NEPC

PUBLIC EQUITY

PUBLIC EQUITY ASSUMPTIONS

OVERVIEW

- **Current valuation multiples across public equities have moved lower, reflecting a tighter monetary policy and elevated inflation environment**
  - Equity valuation multiples are sensitive to higher interest rates, though inflation can positively impact nominal revenue growth
- **Long-term valuation multiples underlying equity return assumptions have lowered as well, reflecting the impact of higher interest rates**
- **NEPC's strategic equity targets reflect a bias to the U.S. and Emerging Markets over Non-U.S. Developed relative to the MSCI ACWI IMI**
  - The return assumption for emerging markets is highest among public equities, driven by the long-term opportunities in Asia
- **NEPC encourages a strategic bias to small-cap with the use of active management relative to small-cap exposure in the MSCI ACWI IMI**

PUBLIC EQUITY ASSUMPTIONS

BUILDING BLOCKS

Illiquidity Premium	The return expected for assets with illiquidity risk
Valuation	Represents P/E multiple contraction or expansion relative to long-term trend
Inflation	Market-specific inflation based on country-level revenue exposure
Real Earnings Growth	Market-specific real growth based on a weighted-average of country revenue exposure and GDP growth
Dividend Yield	Income distributed to shareholders adjusted to reflect market trends

Asset Class	12/31/22 10-Yr Return	12-Month Change
U.S. Large-Cap Equity	5.4%	+1.1%
U.S. Small/Mid-Cap Equity	6.5%	+0.9%
Non-U.S. Developed Equity	5.6%	+0.4%
Non-U.S. Developed Small-Cap Equity	6.7%	+0.8%
Emerging Market Equity	9.6%	+1.3%
Emerging Market Small-Cap Equity	9.3%	+1.7%
China Equity	8.7%	-0.1%
Hedge Fund - Equity	6.0%	+1.9%
Global Equity*	6.3%	+0.9%
Private Equity*	9.2%	+0.2%

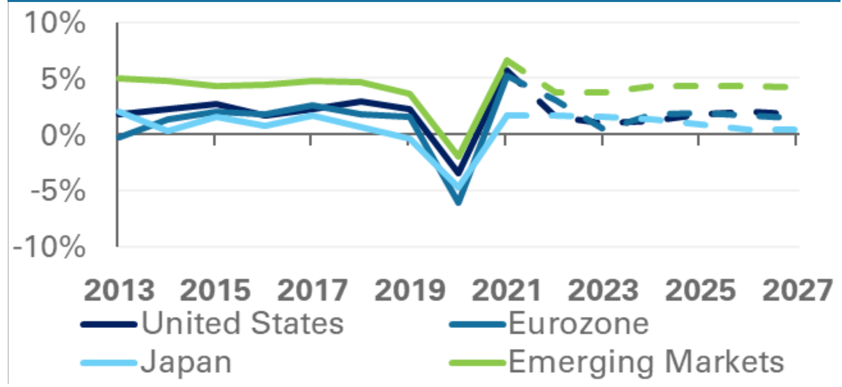
Source: NEPC

*Calculated as a blend of other asset classes

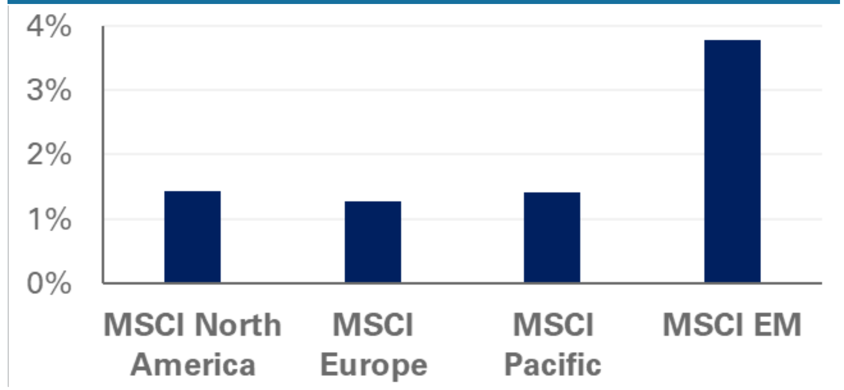
PUBLIC EQUITY
REAL EARNINGS GROWTH

- **Global growth rates have slowed from recent highs**
- **Regions reliant on revenue from emerging markets are forecasted to benefit from higher earnings growth**
  - Non-U.S. stocks benefit from a greater portion of revenue from EM than U.S. stocks
- **We expect elevated real earnings growth for small-caps over the long-term relative to large-cap**
  - Over the long-term we expect a forward-looking risk premium for small-cap and mid-cap equities relative to large-cap stocks

Real GDP Growth Projections



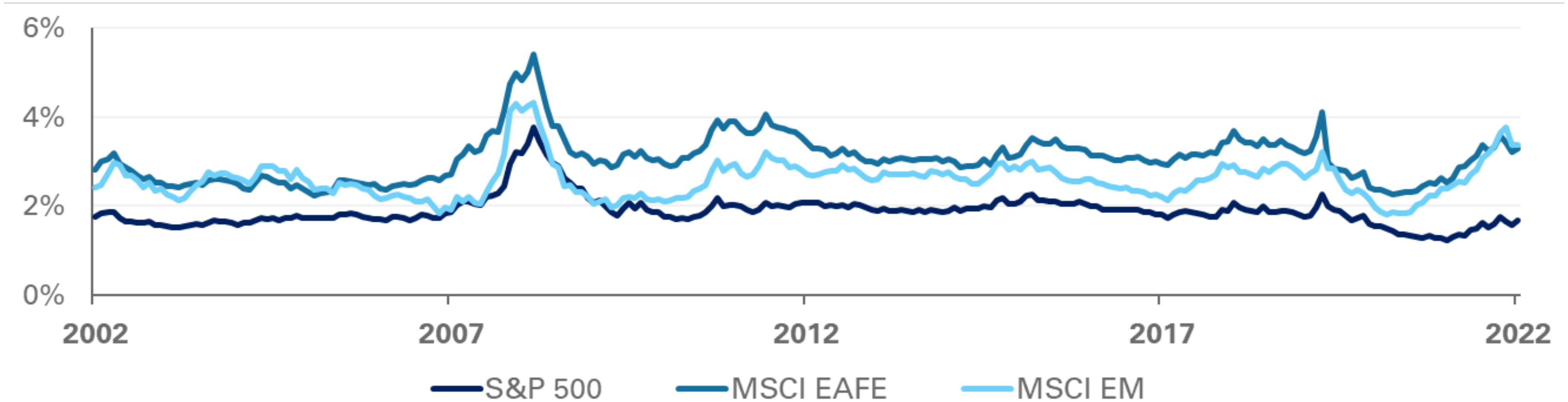
Expected 5-Year Real Growth



Sources: IMF, MSCI, FactSet, NEPC

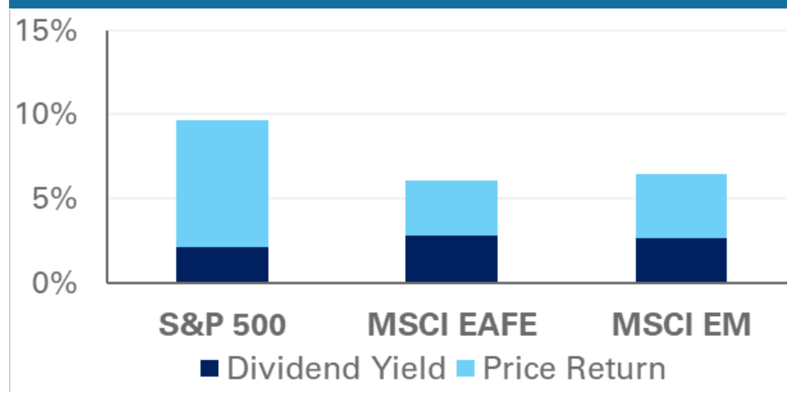
PUBLIC EQUITY

DIVIDEND YIELD



- **Non-U.S. equities provide higher dividend yields relative to the U.S. over the long-term**
  - Terminal value dividend yield inputs for MSCI EM and EAFE are 2.5% and 3.0%
  - Terminal value dividend yield input for S&P 500 is 2.50%

30-Year Annualized Return

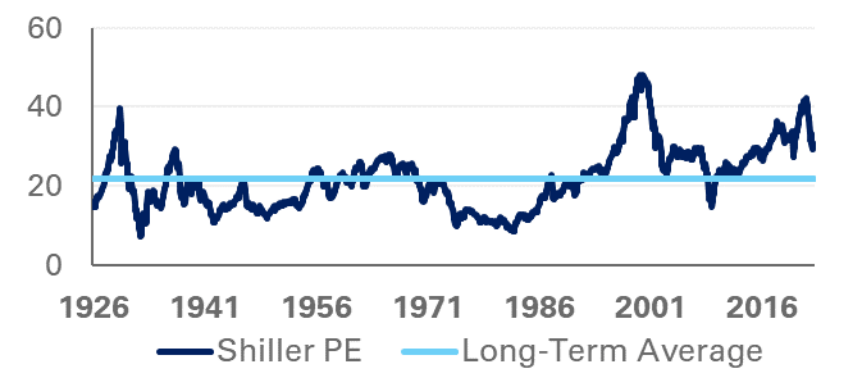


Sources: S&P, MSCI, FactSet

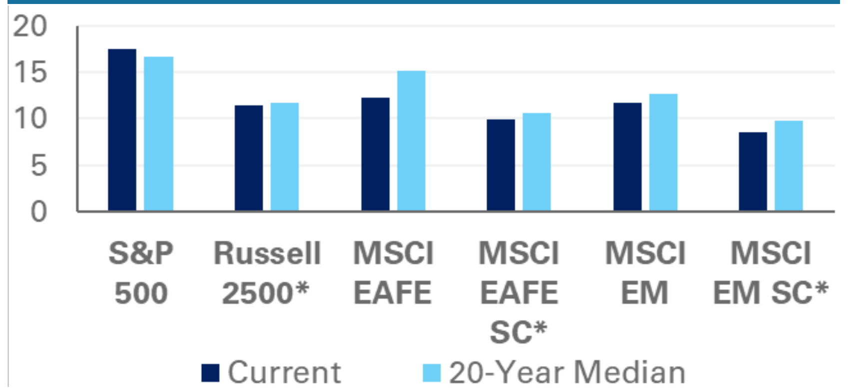
PUBLIC EQUITY
VALUATION

- **U.S. stock valuations have declined and are now trading closer to long-term averages**
- **P/E terminal value inputs are lower, reflecting the impact of higher nominal interest rates**
- **EAFE P/E inputs reflect more subdued market sentiment levels**
- **Emerging market stocks offer an elevated total return opportunity relative to developed markets**

S&P 500 Shiller PE Ratio



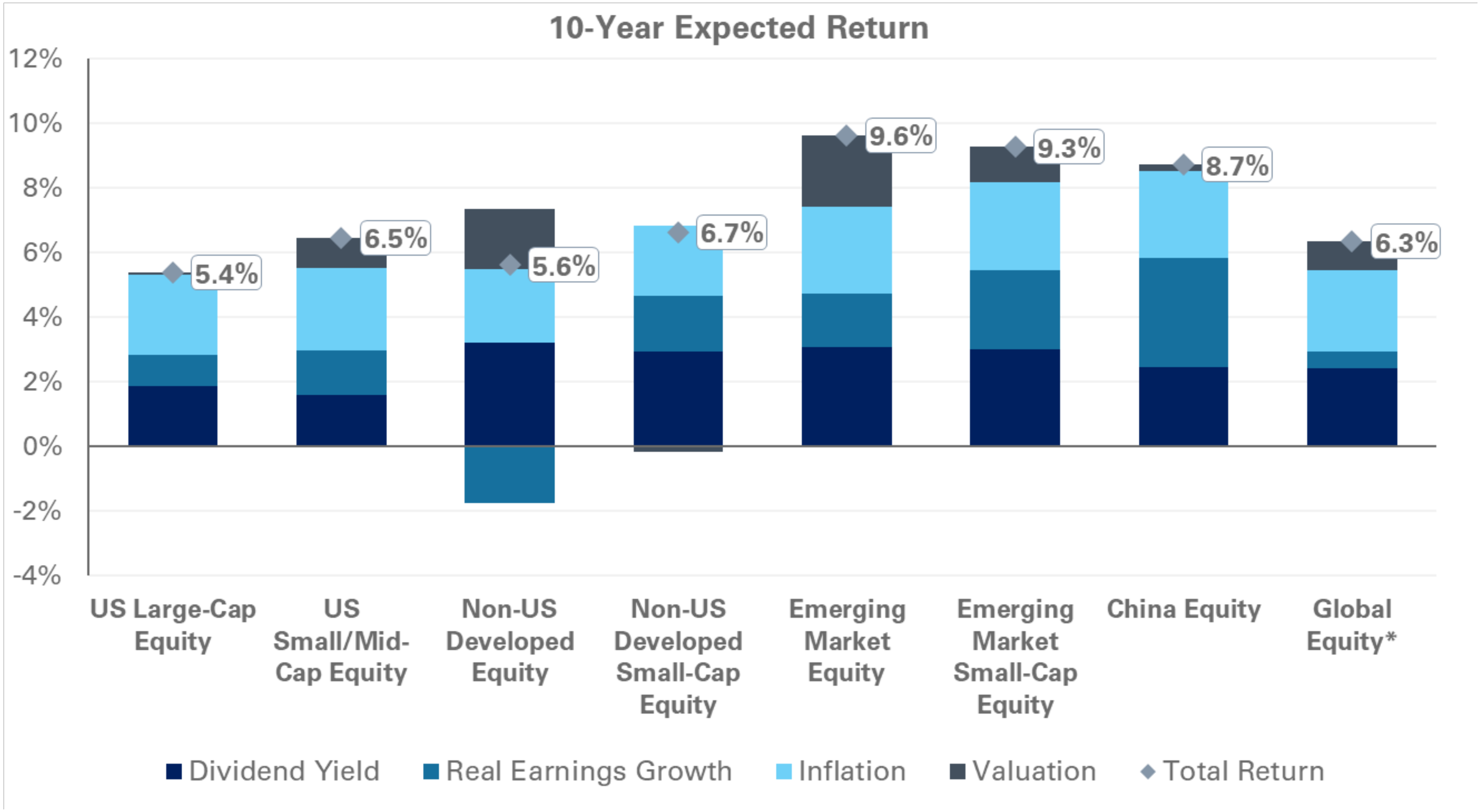
Trailing PE Relative Median



Sources: S&P, Shiller, Russell, MSCI, FactSet, NEPC; Shiller PE long-term average beginning in 1926
Note: *Small cap indices valuations based on EV/EBITDA multiples; MSCI EM Small Cap median calculated since 3/31/2003

Exhibit A: Page 42

PUBLIC EQUITY
BUILDING BLOCKS



Source: NEPC
*Calculated as a blend of other classes

FIXED INCOME

FIXED INCOME ASSUMPTIONS

OVERVIEW

- **Fixed income return assumptions are higher, reflecting the transition to tighter monetary policy to offset ongoing inflationary pressures**
- **NEPC remains committed to a dedicated Treasury allocation given the upward movement in interest rates and return expectations**
- **Safe-haven fixed income exposure is a critical liquidity source for the portfolio and offers downside protection in periods of market stress**
  - Sizing of the safe-haven exposure is a strategic exercise and reflects investor return objectives, risk-tolerance, and private market pacing plan needs
- **High-quality fixed income is an asset class designed to support lower volatility portfolios and larger strategic targets to fixed income**
  - Investment grade credit and TIPS offer exposure to nominal and real interest rates plus cyclical diversification benefits to the overall fixed income portfolio
- **The use of return-seeking credit investments requires a more dynamic posture to manage shifts in credit spreads and market cycles**

FIXED INCOME ASSUMPTIONS

BUILDING BLOCKS

Illiquidity Premium	The return expected for assets with illiquidity risk
Government Rates Price Change	Change due to shifts in current yields relative to forecasted rates
Credit Deterioration	The average loss for credit assets due to defaults and recovery rates
Spread Price Change	Valuation change due to changes in credit spreads relative to long-term targets
Credit Spread	Yield premium provided by securities with credit risk
Government Rates	The yield attributed to sovereign bonds that do not have credit risk

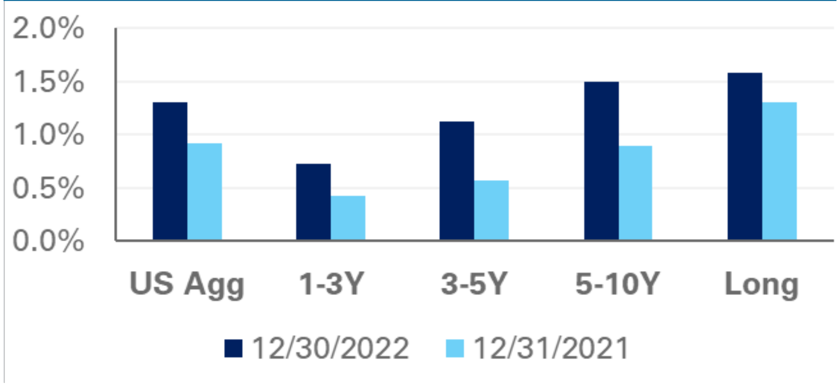
Asset Class	12/31/22 10-Yr Return	12-Month Change
U.S. TIPS	4.4%	+3.0%
U.S. Treasury Bond	4.2%	+2.7%
U.S. Corporate Bond	5.9%	+3.1%
U.S. MBS	4.5%	+2.7%
U.S. High Yield Corporate	7.1%	+3.9%
U.S. Leveraged Loan	7.8%	+3.1%
EMD External Debt	7.1%	+3.0%
EMD Local Currency Debt	7.2%	+1.5%
Non-U.S. Govt. Bond	2.6%	+1.5%
U.S. Muni Bond (1-10 Year)	3.2%	+2.0%
U.S. High Yield Muni Bond	5.7%	+3.6%
Hedge Fund – Credit	7.1%	+2.9%
U.S. Aggregate Bond*	4.8%	+2.8%
Private Debt*	8.8%	+2.2%

Source: NEPC
*Calculated as a blend of other asset classes

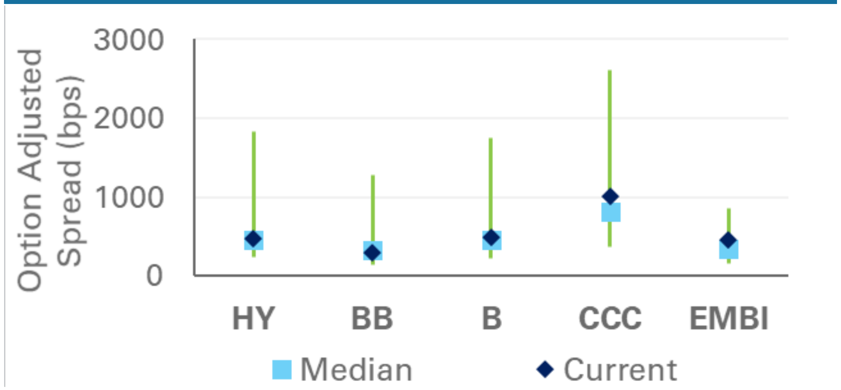
FIXED INCOME
CREDIT SPREADS

- **Credit spreads have increased and are above median levels**
- **Higher credit spread levels raise future return expectations**
- **Credit spread assumptions reflect potential disruption**
  - With a record number of BBB rated corporates, fallen angel downgrades are a greater risk
  - CCC spreads reflect broad economic concerns and have diverged from the rest of high yield
- **Default and recovery rates are informed by long-term history**

U.S. Corporate OAS by Maturity



Return-Seeking Credit Spreads



Sources: Barclays, JPM, FactSet, NEPC; Spread medians as of 12/31/2000

FIXED INCOME
GOVERNMENT RATES

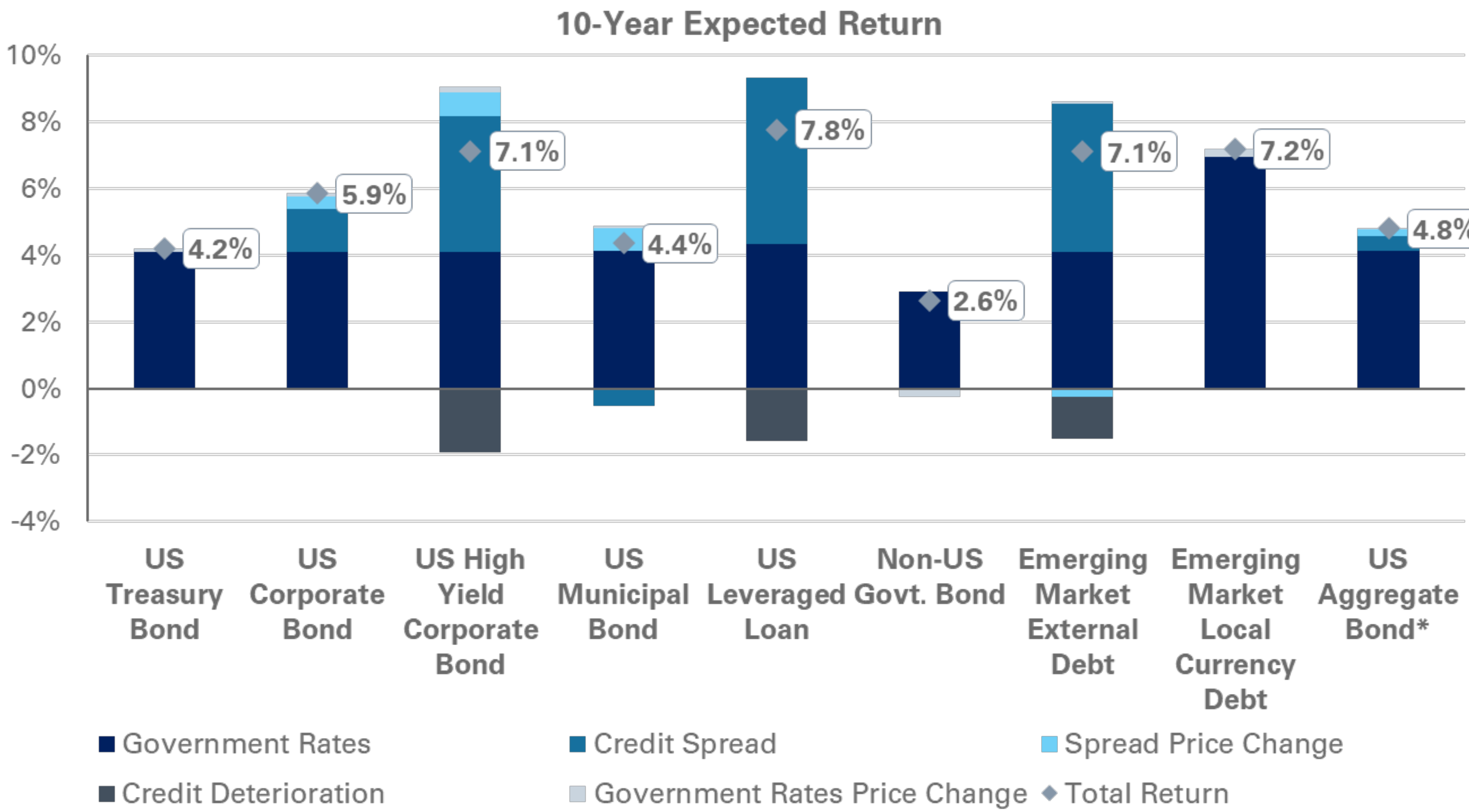
- **Government rates price change reflects shifts in interest rates, the yield curve, and roll down**
  - Roll down refers to the price change due to the aging of a bond along the yield curve
- **Expectations for rising rates are a headwind for return expectations**
  - However, higher interest rates boost the long-term return due to the increased yield benefit
- **A steeper yield curve relative to forward interest rates can offer relief from rising rates**

Barclays U.S. Aggregate Bond

Annual Change in Treasury Yields

Sources: Barclays, FactSet, NEPC

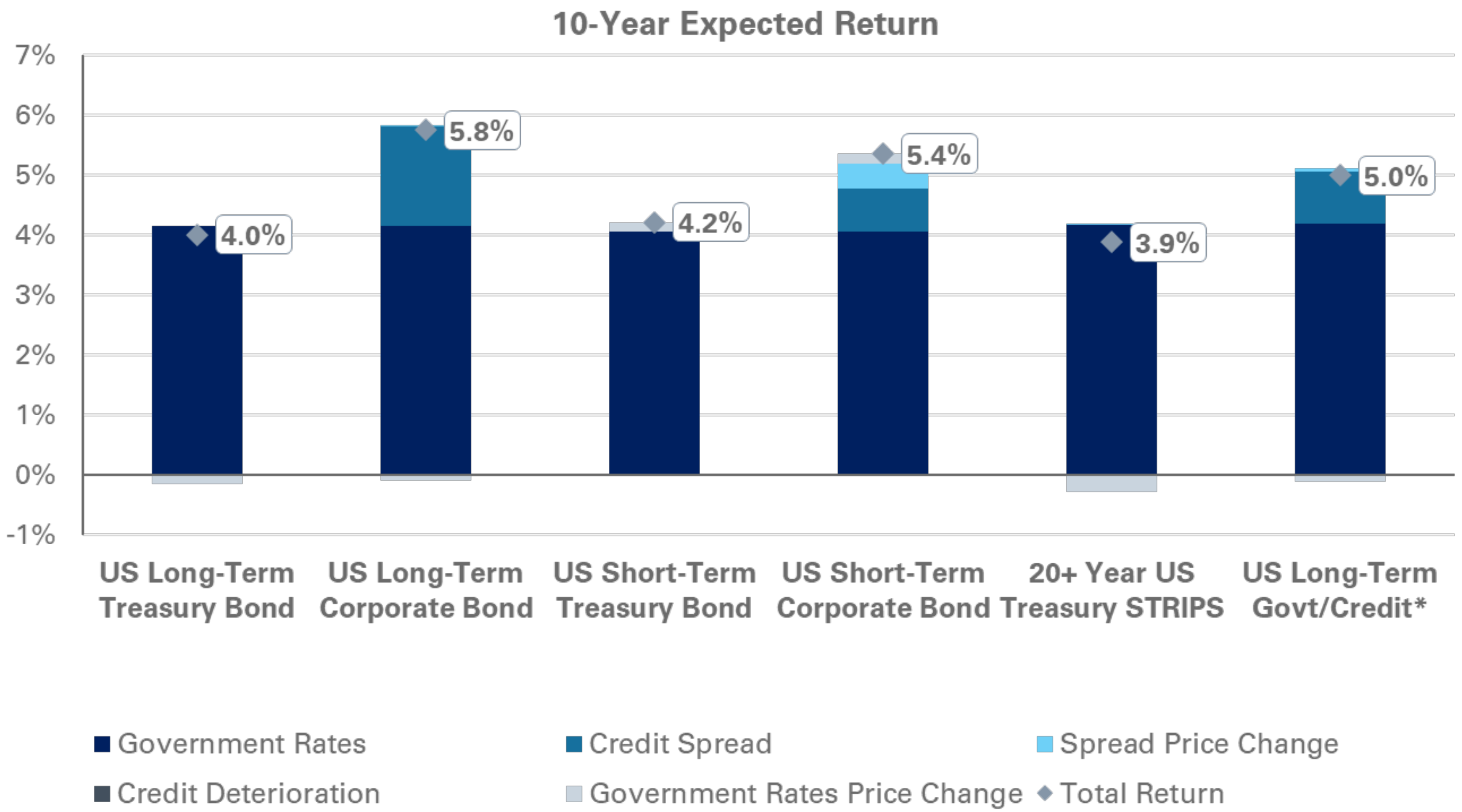
FIXED INCOME
BUILDING BLOCKS



Source: NEPC
*Calculated as a blend of other classes

Exhibit A: Page 49

FIXED INCOME
BUILDING BLOCKS



Source: NEPC
*Calculated as a blend of other classes

REAL ASSET

REAL ASSET ASSUMPTIONS

OVERVIEW

- **The strategic outlook for real assets reflects a high level of uncertainty due to the elevated near-term inflation environment**
  - Real assets offer a meaningful portfolio diversification benefit, but are sensitive to a wide range of potential inflation scenarios
- **Real assets exhibit different betas to inflation and each asset class is exposed to various economic factors**
  - Diversification and correlation benefits are helpful to a portfolio but must be carefully considered relative to the expected risk premium
- **Strategic asset allocation targets for real assets are determined by investor objectives, including the need for portfolio inflation sensitivity**
  - Short-term changes in market inflation dynamics should not dictate a portfolio's strategic need for real asset exposure
- **Building portfolio inflation sensitivity is a strategic exercise and is well-aligned with an appropriately sized private real assets pacing program**
  - The strategic outlook for real assets is volatile as market expectations conflict with the near-term inflation path and longer-term deflationary forces

REAL ASSET ASSUMPTIONS

BUILDING BLOCKS

Illiquidity Premium	The return expected for assets with illiquidity risk
Valuation	The change in price of the asset moving to a terminal value or real average level
Inflation	Based on the inflation path as defined by breakeven-inflation rates and NEPC assumptions
Growth	Market-specific real growth based on a weighted-average of country-level revenue exposure and GDP growth
Real Income	The inflation-adjusted income produced by the asset

Asset Class	12/31/22 10-Yr Return	12-Month Change
Commodity Futures	4.2%	+3.8%
Midstream Energy	6.0%	-0.7%
REIT	6.2%	+1.7%
Global Infrastructure Equity	5.6%	-
Global Natural Resources Equity	5.5%	-
Gold	5.1%	+1.8%
Real Estate - Core	4.0%	-0.7%
Real Estate – Non-Core	5.3%	-0.6%
Private Debt - Real Estate	5.8%	+1.2%
Private Real Assets - Natural Resources	8.1%	+1.0%
Private Real Assets - Infrastructure	6.6%	+1.3%

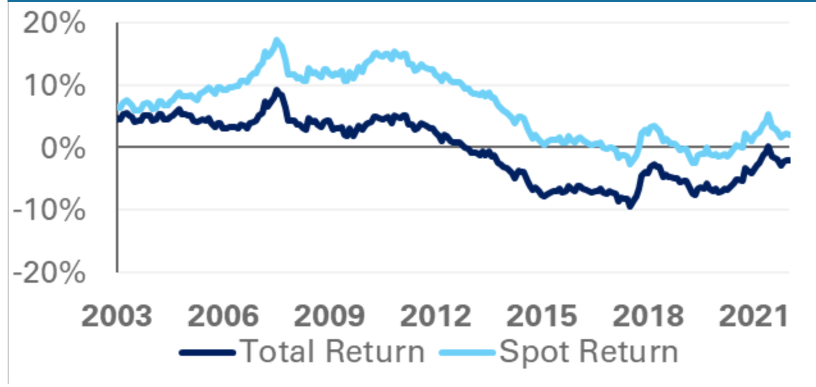
Source: NEPC
*Calculated as a blend of other asset classes

REAL ASSET

REAL INCOME

- **Equity: Real income is inflation-adjusted dividend yield**
  - Includes public infrastructure, REITS, midstream energy, and natural resource equity
- **Real Estate: Real income is net operating income (NOI)**
  - NOI growth tracks the business cycle and economic regimes
- **Commodity Futures: Real income reflects collateral return and the futures roll yield**
  - Collateral is based on a cash proxy over the time horizon

Commodities Rolling 10-Year Returns



Real Assets Yields

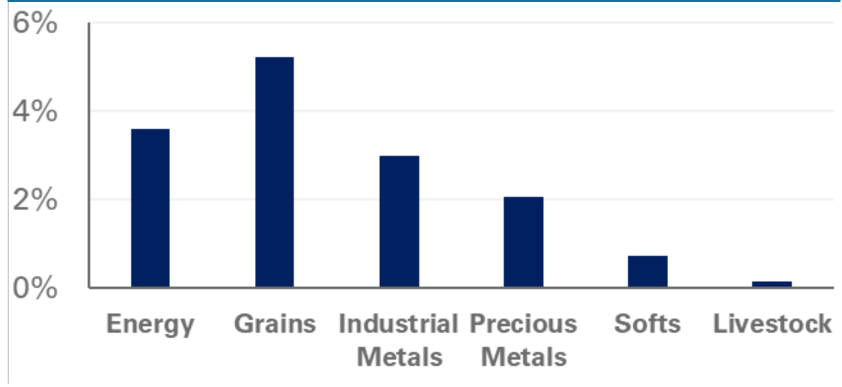
	12/31/22	12/31/21
Midstream Energy	5.6%	5.9%
Real Estate - Core	2.7%	3.1%
US REITs	4.4%	2.9%
Global Infrastructure Equities	3.2%	2.8%
Natural Resource Equities	3.8%	3.8%
US 10-Year Breakeven Inflation	2.3%	2.6%
Commodity Index Roll Yield	5.7%	2.4%

Sources: Bloomberg, NCREIF, Alerian, NAREIT, S&P, FactSet, NEPC
*Commodity Index Roll Yield represents a proprietary calculation methodology

REAL ASSET
VALUATION

- **Commodity valuation inputs reflect the long-term average of spot prices**
  - Many areas of the commodity index are trading at a premium to long-term real averages
- **Valuation assumptions for other real assets are based on asset-specific valuation inputs**
  - Capitalization rates are used for core real estate, price-to-earnings for global infrastructure and global natural resources equity
  - Gold's valuation incorporates the asset's historical risk premia and the impact of the macroeconomic market regime

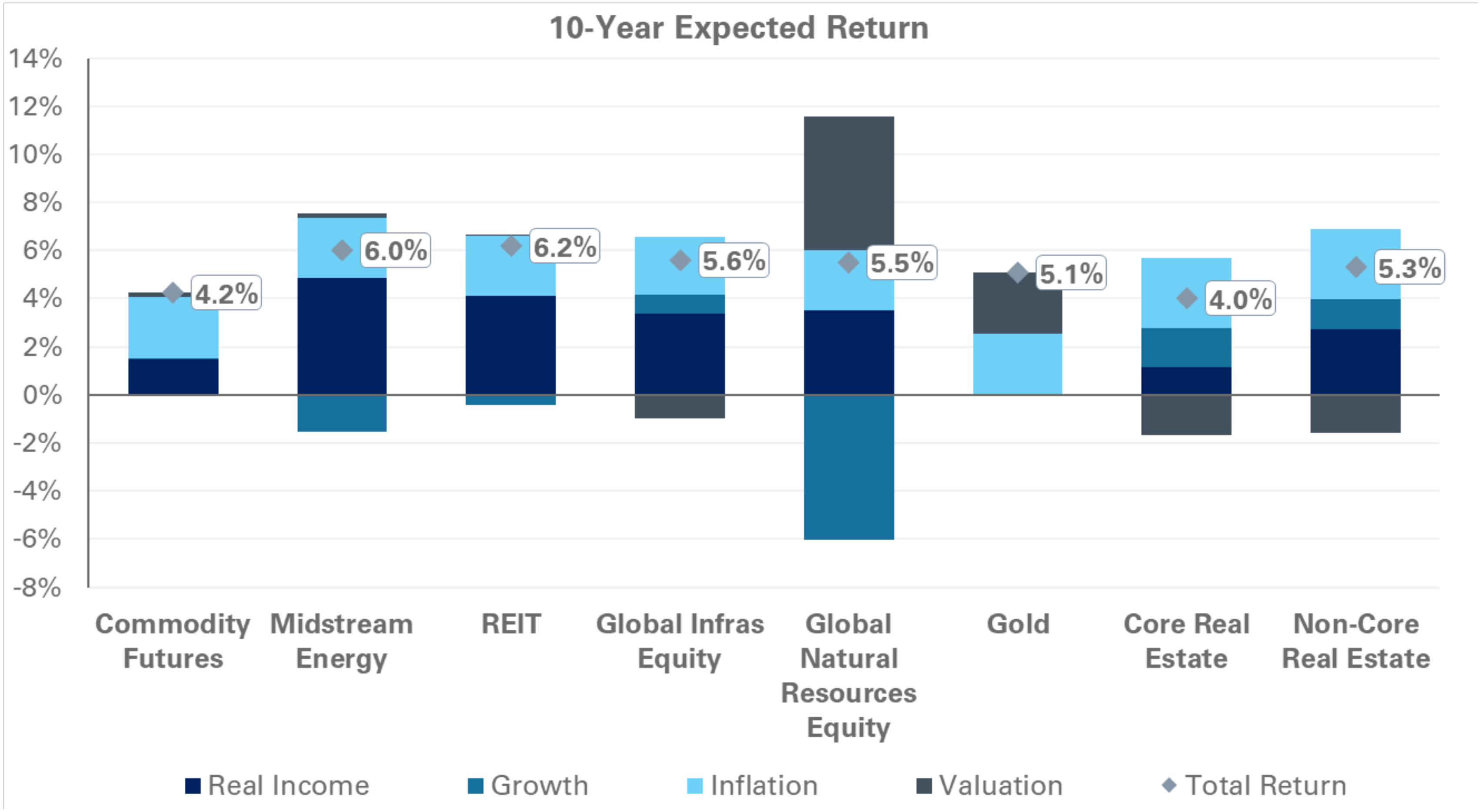
Discount/Premium to 10-Year Real Average



Real Price of Gold

Sources: FactSet, NEPC

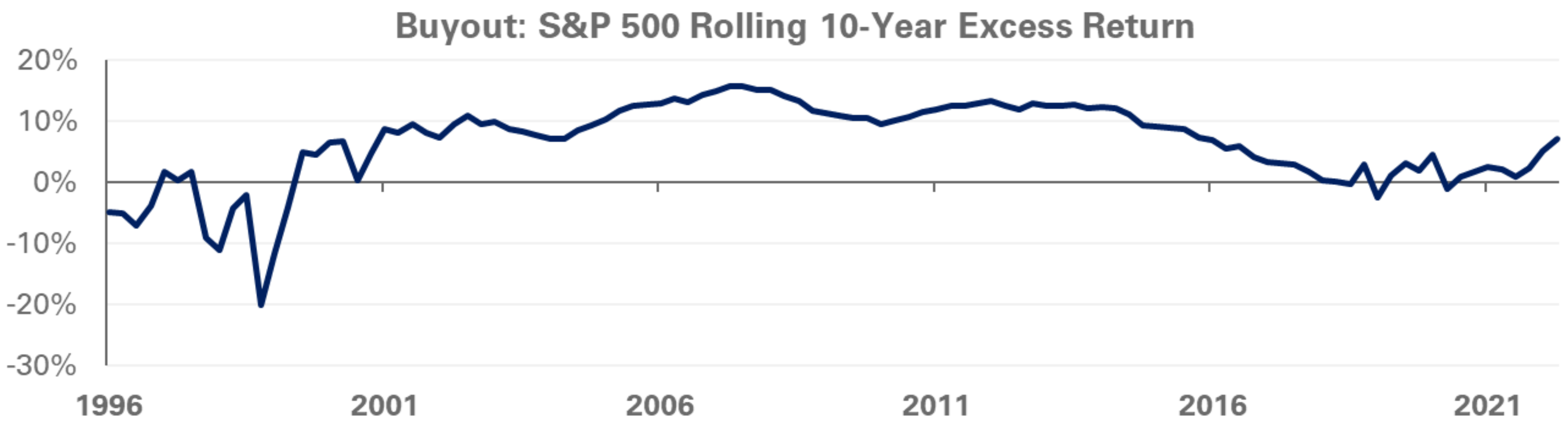
REAL ASSET
BUILDING BLOCKS



Source: NEPC

ALTERNATIVE ASSETS

ALTERNATIVE ASSETS
METHODOLOGY



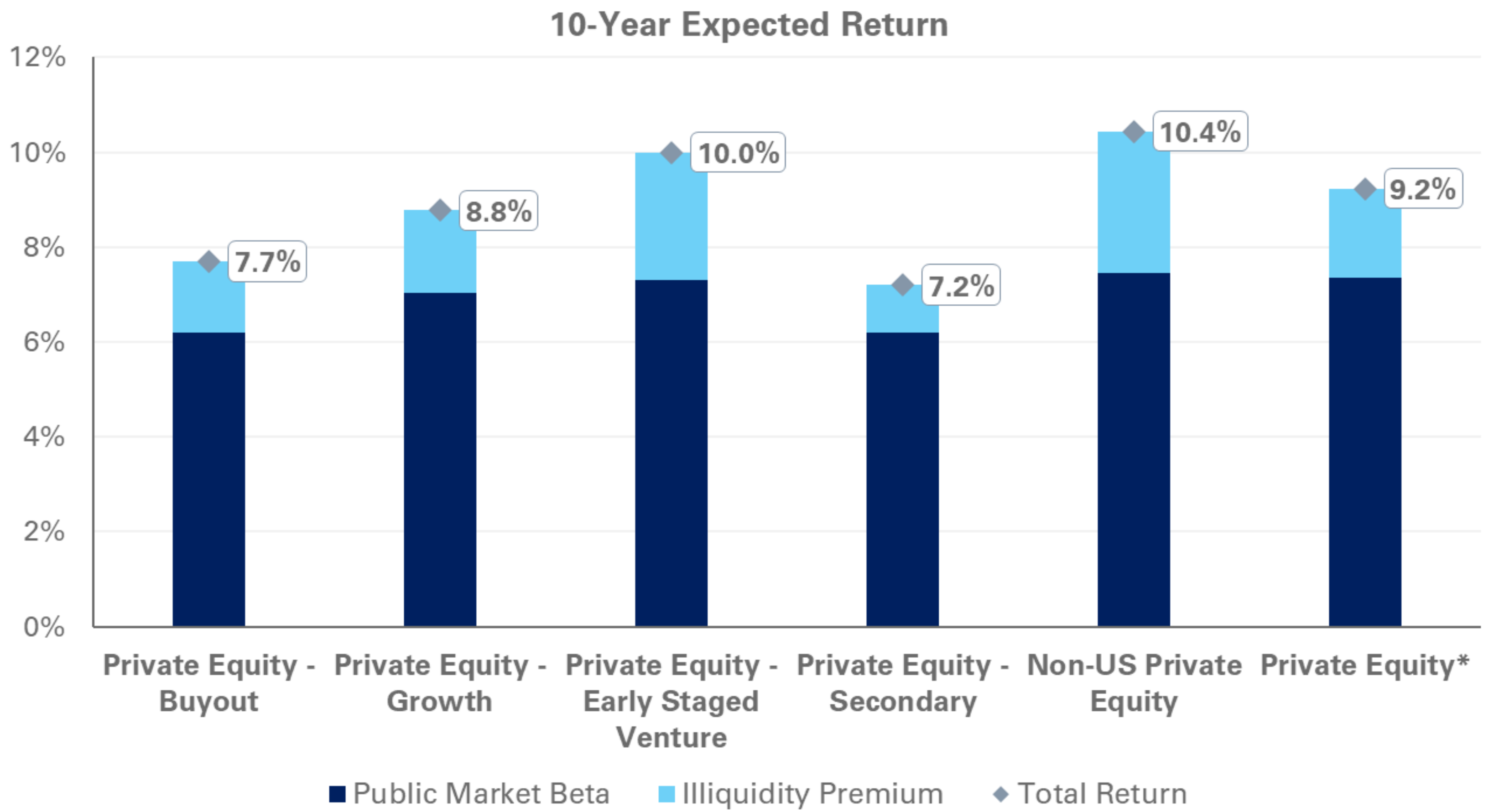
- **Private market assumptions are constructed from betas to public markets with an added illiquidity premia**
  - Historically, the observed illiquidity premium has been a significant component driving private market returns

- **Hedge fund assumptions are constructed from betas to public markets with an added alpha assumption**

Sources: Thomson One, S&P, FactSet

PRIVATE EQUITY

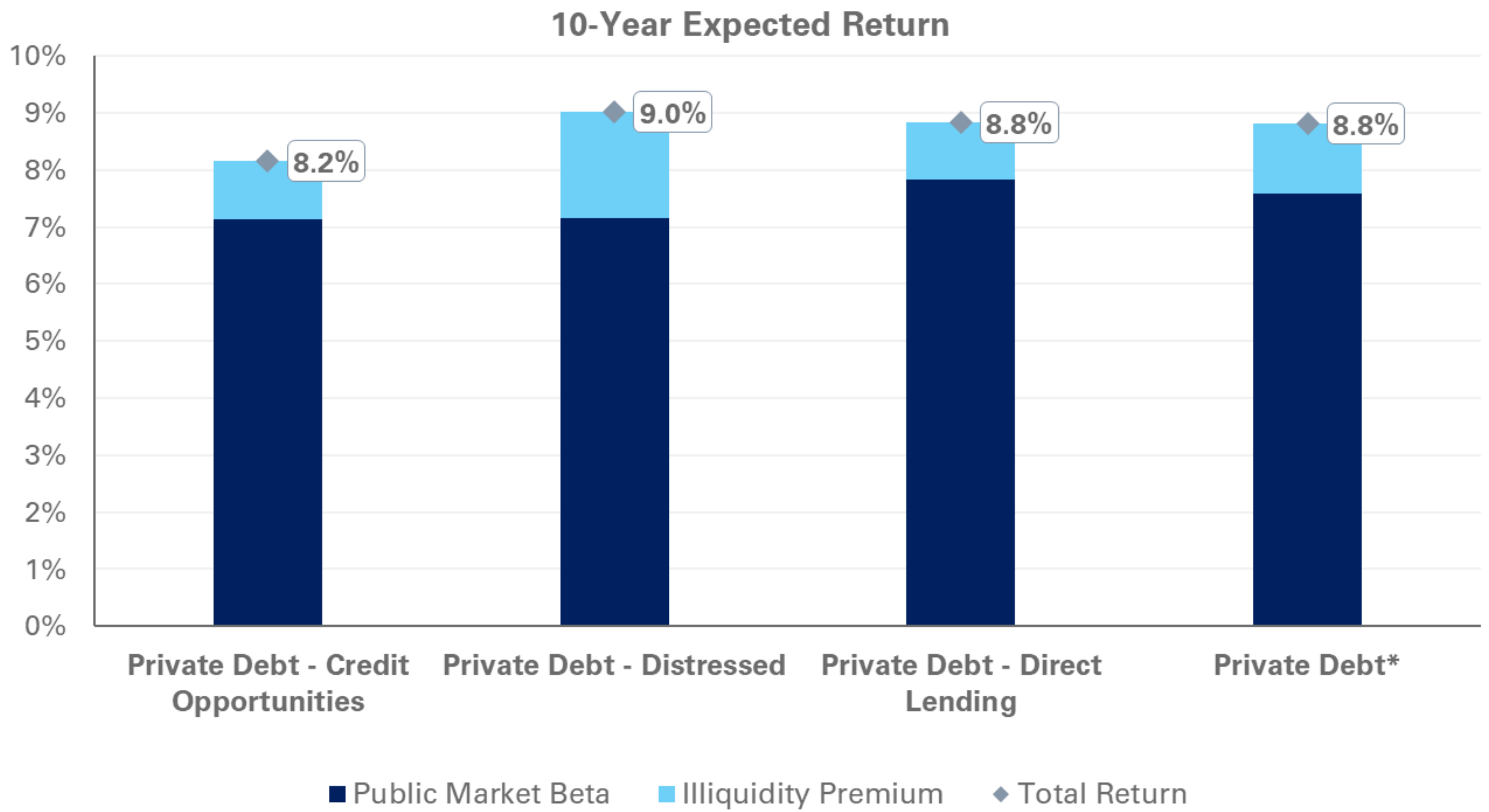
BUILDING BLOCKS



Source: NEPC

*Private Equity is a derived composite of 34% U.S. Buyout, 34% U.S. Growth, 8.5% U.S. Secondary, 8.5% U.S. Venture, 15% Non-U.S. PE

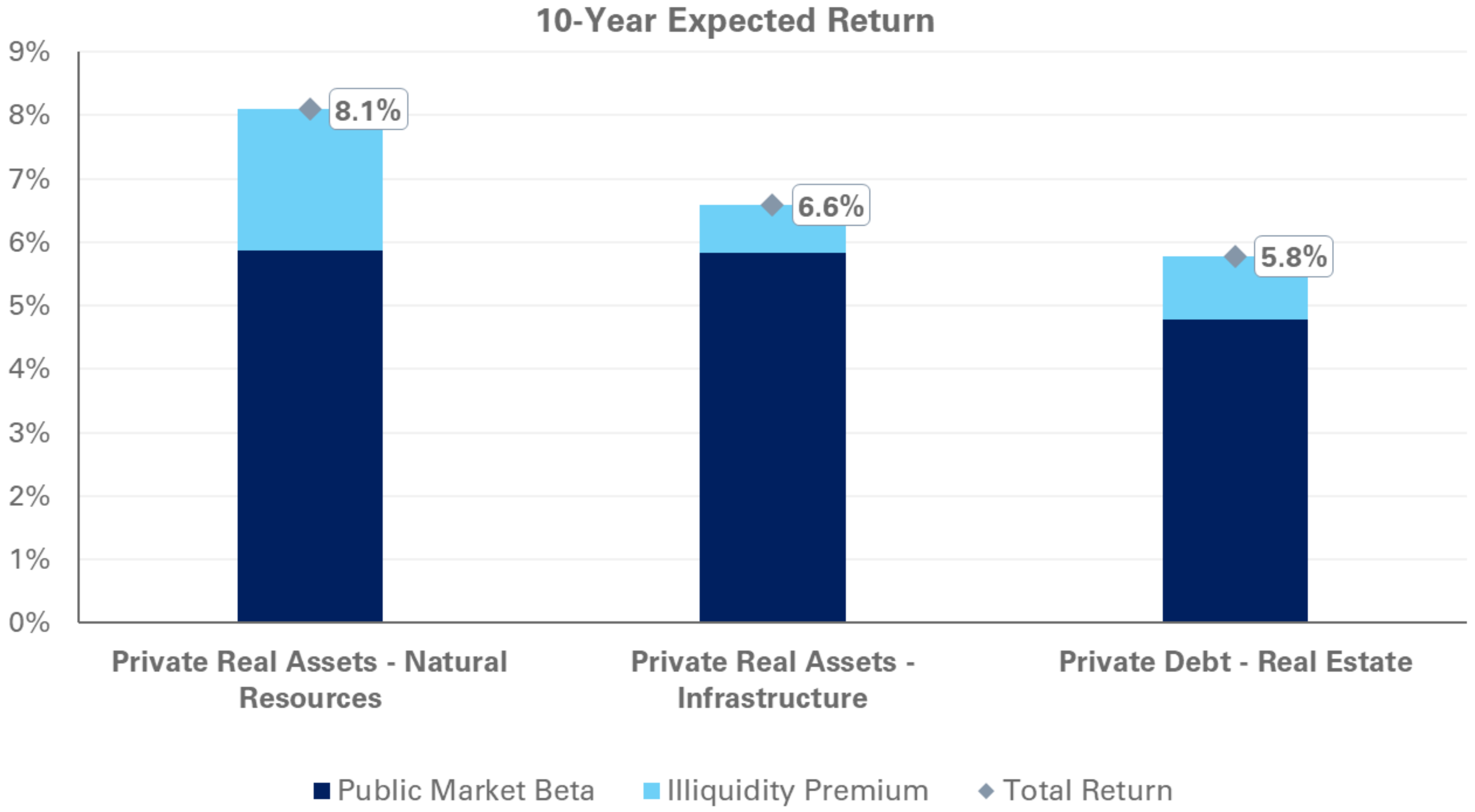
PRIVATE DEBT
BUILDING BLOCKS



Source: NEPC

*Private Debt is a derived composite of 25% Mezzanine, 25% Distressed, 50% Direct Lending

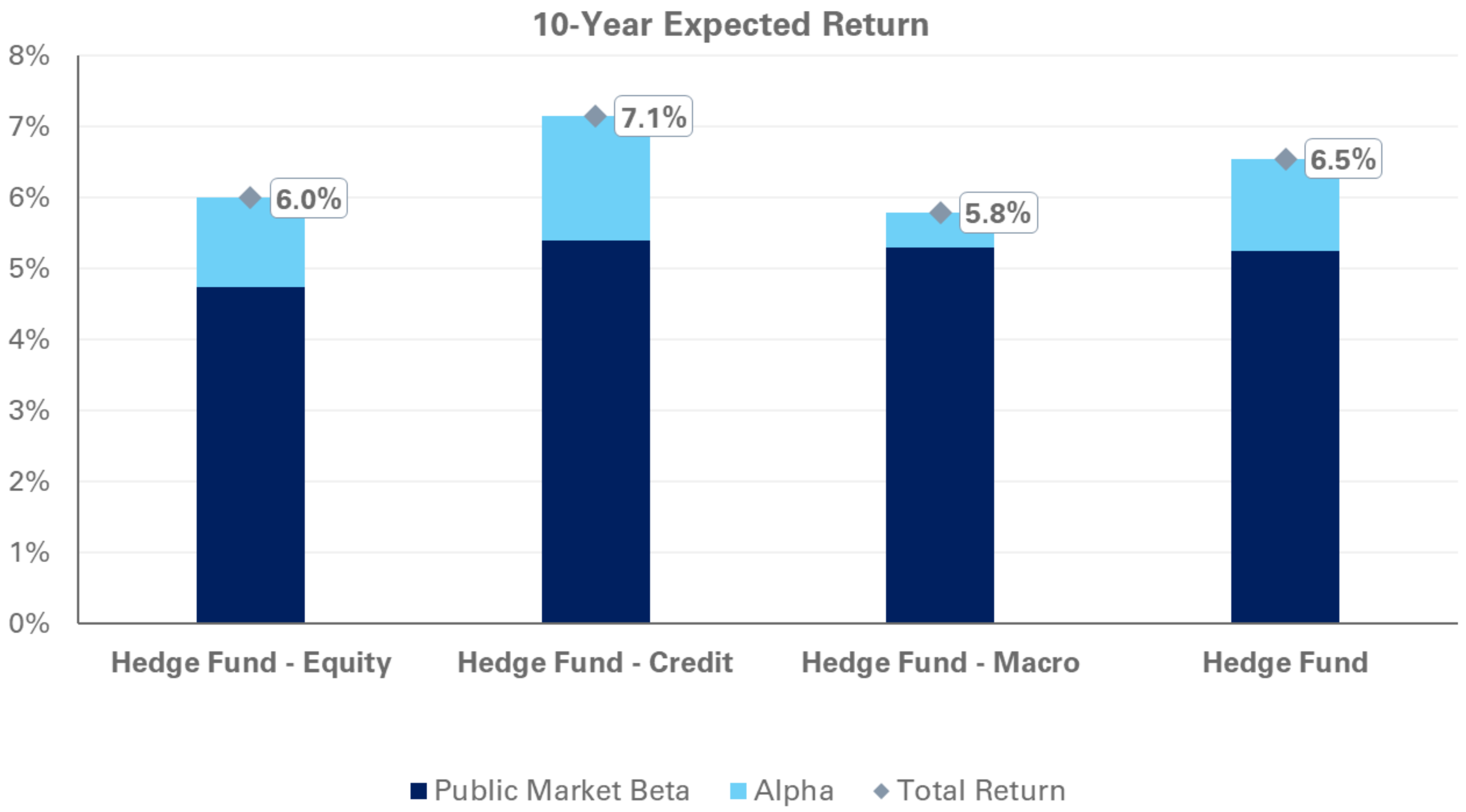
PRIVATE REAL ASSET
BUILDING BLOCKS



Source: NEPC

HEDGE FUND

BUILDING BLOCKS



Source: NEPC
*Hedge Funds is a derived composite of 40% Long/Short, 40% Credit, 20% Macro

APPENDIX

10-YEAR RETURN FORECASTS

EQUITY

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
U.S. Large-Cap Equity	5.4%	4.3%	+1.1%
U.S. Small/Mid-Cap Equity	6.5%	5.6%	+0.9%
Non-U.S. Developed Equity	5.6%	5.2%	+0.4%
Non-U.S. Developed Equity (USD Hedge)	5.8%	5.4%	+0.4%
Non-U.S. Developed Small-Cap Equity	6.7%	5.9%	+0.8%
Emerging Market Equity	9.6%	8.3%	+1.3%
Emerging Market Small-Cap Equity	9.3%	7.6%	+1.7%
Hedge Fund - Equity	6.0%	4.1%	+1.9%
Private Equity - Buyout	7.7%	7.3%	+0.4%
Private Equity - Growth	8.8%	8.6%	+0.2%
Private Equity - Early Stage Venture	10.0%	10.0%	-
Private Equity - Secondary	7.2%	6.8%	+0.4%
Non-U.S. Private Equity	10.4%	10.3%	+0.1%
China Equity	8.7%	8.8%	-0.1%
U.S. Microcap Equity	7.6%	6.5%	+1.1%
Global Equity*	6.3%	5.4%	+0.9%
Private Equity*	9.2%	9.0%	+0.2%

*Calculated as a blend of other asset classes

10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
Cash	4.0%	1.5%	+2.5%
US TIPS	4.4%	1.4%	+3.0%
US Treasury Bond	4.2%	1.5%	+2.7%
US Corporate Bond	5.9%	2.8%	+3.1%
US Corporate Bond - AAA	4.9%	2.2%	+2.7%
US Corporate Bond - AA	5.0%	2.2%	+2.8%
US Corporate Bond - A	5.6%	2.6%	+3.0%
US Corporate Bond - BBB	6.2%	3.1%	+3.1%
US Mortgage-Backed Securities	4.5%	1.8%	+2.7%
US Securitized Bond	5.2%	2.3%	+2.9%
US Collateralized Loan Obligation	5.8%	3.1%	+2.7%
US Municipal Bond	4.4%	1.6%	+2.8%
US Municipal Bond (1-10 Year)	3.2%	1.2%	+2.0%
US Taxable Municipal Bond	5.5%	2.7%	+2.8%

10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
Non-US Government Bond	2.6%	1.1%	+1.5%
Non-US Government Bond (USD Hedge)	2.9%	1.3%	+1.6%
Non-US Inflation-Linked Bond (USD Hedge)	3.4%	0.7%	+2.7%
US Short-Term TIPS (1-3 Year)	4.3%	1.2%	+3.1%
US Short-Term Treasury Bond (1-3 Year)	4.2%	1.4%	+2.8%
US Short-Term Corporate Bond (1-3 Year)	5.4%	2.3%	+3.1%
US Intermediate-Term TIPS (3-10 Year)	4.4%	1.5%	+2.9%
US Intermediate-Term Treasury Bond (3-10 Year)	4.2%	1.6%	+2.6%
US Intermediate-Term Corporate Bond (3-10 Year)	6.1%	3.0%	+3.1%
US Long-Term TIPS (10-30 Year)	4.5%	1.3%	+3.2%
US Long-Term Treasury Bond (10-30 Year)	4.0%	1.4%	+2.6%
US Long-Term Corporate Bond (10-30 Year)	5.8%	2.8%	+3.0%
20+ Year US Treasury STRIPS	3.9%	1.0%	+2.9%
10 Year US Treasury Bond	4.3%	1.8%	+2.5%
10 Year Non-US Government Bond (USD Hedge)	2.2%	0.3%	+1.9%
US Aggregate Bond*	4.8%	2.0%	+2.8%

*Calculated as a blend of other asset classes

10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
US High Yield Corporate Bond	7.1%	3.2%	+3.9%
US Corporate Bond - BB	7.5%	4.0%	+3.5%
US Corporate Bond - B	7.5%	3.6%	+3.9%
US Corporate Bond - CCC/Below	2.9%	-3.8%	+6.7%
US Short-Term High Yield Corporate Bond (1-3 Year)	6.2%	2.3%	+3.9%
US Leveraged Loan	7.8%	4.7%	+3.1%
Emerging Market External Debt	7.1%	4.1%	+3.0%
Emerging Market Local Currency Debt	7.2%	5.7%	+1.5%
US High Yield Securitized Bond	8.9%	3.4%	+5.5%
US High Yield Collateralized Loan Obligation	8.5%	5.5%	+3.0%
US High Yield Municipal Bond	5.7%	2.1%	+3.6%
Hedge Fund - Credit	7.1%	4.2%	+2.9%
Private Debt - Credit Opportunities	8.2%	6.5%	+1.7%
Private Debt - Distressed	9.0%	7.2%	+1.8%
Private Debt - Direct Lending	8.8%	6.2%	+2.6%
Private Debt*	8.8%	6.6%	+2.2%

*Calculated as a blend of other asset classes

10-YEAR RETURN FORECASTS

REAL ASSETS

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
Commodity Futures	4.2%	0.4%	+3.8%
Midstream Energy	6.0%	6.7%	-0.7%
REIT	6.2%	4.5%	+1.7%
Global Infrastructure Equity	5.6%	5.6%	-
Global Natural Resources Equity	5.5%	5.5%	-
Gold	5.1%	3.3%	+1.8%
Real Estate - Core	4.0%	4.7%	-0.7%
Real Estate - Non-Core	5.3%	5.9%	-0.6%
Private Debt - Real Estate	5.8%	4.6%	+1.2%
Private Real Assets - Natural Resources	8.1%	7.1%	+1.0%
Private Real Assets - Infrastructure	6.6%	5.3%	+1.3%

30-YEAR RETURN FORECASTS

EQUITY

Geometric Expected Return			
Asset Class	12/31/2022	12/31/2021	Delta
U.S. Large-Cap Equity	6.9%	6.1%	+0.8%
U.S. Small/Mid-Cap Equity	7.4%	6.6%	+0.8%
Non-U.S. Developed Equity	6.7%	6.2%	+0.5%
Non-U.S. Developed Equity (USD Hedge)	6.9%	6.4%	+0.5%
Non-U.S. Developed Small-Cap Equity	7.5%	6.8%	+0.7%
Emerging Market Equity	9.6%	8.7%	+0.9%
Emerging Market Small-Cap Equity	9.6%	8.7%	+0.9%
Hedge Fund - Equity	6.2%	5.2%	+1.0%
Private Equity - Buyout	8.8%	8.5%	+0.3%
Private Equity - Growth	9.8%	9.7%	+0.1%
Private Equity - Early Stage Venture	10.6%	10.7%	-0.1%
Private Equity - Secondary	8.2%	7.9%	+0.3%
Non-U.S. Private Equity	10.8%	10.7%	+0.1%
China Equity	9.1%	8.8%	+0.3%
U.S. Microcap Equity	8.2%	7.5%	+0.7%
Global Equity*	7.5%	6.8%	+0.7%
Private Equity*	10.1%	10.0%	+0.1%

*Calculated as a blend of other asset classes

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
Cash	3.4%	2.3%	+1.1%
US TIPS	4.3%	2.6%	+1.7%
US Treasury Bond	4.1%	2.5%	+1.6%
US Corporate Bond	5.9%	4.2%	+1.7%
US Corporate Bond - AAA	5.1%	3.3%	+1.8%
US Corporate Bond - AA	5.0%	3.4%	+1.6%
US Corporate Bond - A	5.5%	3.8%	+1.7%
US Corporate Bond - BBB	6.1%	4.4%	+1.7%
US Mortgage-Backed Securities	4.4%	2.8%	+1.6%
US Securitized Bond	5.1%	3.6%	+1.5%
US Collateralized Loan Obligation	5.2%	4.0%	+1.2%
US Municipal Bond	3.9%	2.5%	+1.4%
US Municipal Bond (1-10 Year)	3.4%	2.3%	+1.1%
US Taxable Municipal Bond	5.8%	4.3%	+1.5%

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
Non-US Government Bond	3.2%	1.9%	+1.3%
Non-US Government Bond (USD Hedge)	3.4%	2.2%	+1.2%
Non-US Inflation-Linked Bond (USD Hedge)	3.6%	1.4%	+2.2%
US Short-Term TIPS (1-3 Year)	3.9%	2.4%	+1.5%
US Short-Term Treasury Bond (1-3 Year)	3.8%	2.4%	+1.4%
US Short-Term Corporate Bond (1-3 Year)	4.9%	3.4%	+1.5%
US Intermediate-Term TIPS (3-10 Year)	4.4%	2.8%	+1.6%
US Intermediate-Term Treasury Bond (3-10 Year)	4.2%	2.7%	+1.5%
US Intermediate-Term Corporate Bond (3-10 Year)	6.0%	4.4%	+1.6%
US Long-Term TIPS (10-30 Year)	4.6%	2.3%	+2.3%
US Long-Term Treasury Bond (10-30 Year)	4.3%	2.4%	+1.9%
US Long-Term Corporate Bond (10-30 Year)	6.2%	4.2%	+2.0%
20+ Year US Treasury STRIPS	4.3%	2.1%	+2.2%
10 Year US Treasury Bond	4.7%	3.0%	+1.7%
10 Year Non-US Government Bond (USD Hedge)	3.1%	1.4%	+1.7%
US Aggregate Bond*	4.7%	3.1%	+1.6%

*Calculated as a blend of other asset classes

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
US High Yield Corporate Bond	7.3%	5.4%	+1.9%
US Corporate Bond - BB	7.7%	6.0%	+1.7%
US Corporate Bond - B	7.2%	5.4%	+1.8%
US Corporate Bond - CCC/Below	2.1%	-0.6%	+2.7%
US Short-Term High Yield Corporate Bond (1-3 Year)	5.5%	3.7%	+1.8%
US Leveraged Loan	6.9%	5.6%	+1.3%
Emerging Market External Debt	6.8%	5.1%	+1.7%
Emerging Market Local Currency Debt	6.1%	5.3%	+0.8%
US High Yield Securitized Bond	8.1%	5.4%	+2.7%
US High Yield Collateralized Loan Obligation	7.7%	6.4%	+1.3%
US High Yield Municipal Bond	5.7%	3.9%	+1.8%
Hedge Fund - Credit	7.1%	5.7%	+1.4%
Private Debt - Credit Opportunities	8.4%	7.4%	+1.0%
Private Debt - Distressed	9.4%	8.2%	+1.2%
Private Debt - Direct Lending	9.1%	7.8%	+1.3%
Private Debt*	9.1%	7.9%	+1.2%

*Calculated as a blend of other asset classes

30-YEAR RETURN FORECASTS

REAL ASSETS

Geometric Expected Return			
Asset Class	**12/31/2022**	**12/31/2021**	**Delta**
Commodity Futures	3.2%	3.3%	-0.1%
Midstream Energy	6.7%	6.7%	-
REIT	7.3%	6.3%	+1.0%
Global Infrastructure Equity	6.7%	6.3%	+0.4%
Global Natural Resources Equity	6.6%	6.7%	-0.1%
Gold	4.8%	4.0%	+0.8%
Real Estate - Core	5.1%	5.6%	-0.5%
Real Estate - Non-Core	6.5%	6.9%	-0.4%
Private Debt - Real Estate	6.0%	5.4%	+0.6%
Private Real Assets - Natural Resources	8.4%	8.2%	+0.2%
Private Real Assets - Infrastructure	7.0%	6.6%	+0.4%

PRIVATE MARKETS COMPOSITES

PUBLIC MARKET BETA INPUTS FOR PRIVATE MARKETS

PRIVATE EQUITY

Buyout: 25% U.S. Large Cap, 75% U.S. Small/Mid Cap

Secondary: 25% U.S. Large Cap, 75% U.S. Small/Mid Cap

Growth: 50% U.S. Small/Mid Cap, 50% U.S. Microcap

Early-Stage Venture: 25% U.S. Small/Mid Cap, 75% U.S. Microcap

Non-U.S.: 70% International Small Cap, 30% Emerging Small Cap

Composite: 34% Buyout, 34% Growth, 15 % Non-U.S., 8.5% Secondary, 8.5% Early Venture

PRIVATE DEBT

Direct Lending: 100% Bank Loans

Distressed: 20% U.S. Small/Mid Cap, 60% U.S. High Yield, 20% Bank Loans

Credit Opportunities: 34% U.S. SMID Cap, 33% U.S. High Yield, 33% Bank Loans

Composite: 50% Direct Lending, 25% Credit Opportunities, 25% Distressed

PRIVATE REAL ASSETS

Energy: 30% Comm., 35% Midstream, 35% Public Resource Equity

Infra/Land: 30% Commodities, 70% Public Infrastructure

Private Real Estate Debt: 50% CMBS, 50% Real Estate - Core

INFORMATION DISCLAIMER

Past performance is no guarantee of future results.

The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.

Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.

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