SB|cera

NEPC 2024 INVESTMENT OUTLOOK

ASSET CLASS ASSUMPTIONS AND RETURN EXPECTATIONS

MAY 16, 2024

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ASSET CLASS ASSUMPTIONS

INTRODUCTION

ASSET CLASS ASSUMPTIONS

OVERVIEW

- **NEPC's capital market assumptions are available each quarter and reflect March 31, 2024 market data**
- **Risk-on sentiment fueled equity valuation expansion and tighter credit spreads, weighing on forward-looking returns**
- **The multi-year path for cash levels and interest rates reflect a bias to higher interest rates and a stickier inflation environment**
- **We encourage a dedicated safe-haven fixed income allocation to serve as a critical liquidity source for the portfolio**
- **We recommend adding strategic policy targets for U.S. TIPS given elevated long-term forecasts for real yields and breakeven inflation**
- **Real asset exposure can enhance risk-adjusted returns as markets undergo a secular shift toward higher interest rates and inflation levels**

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 03/31/2024**
  - 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

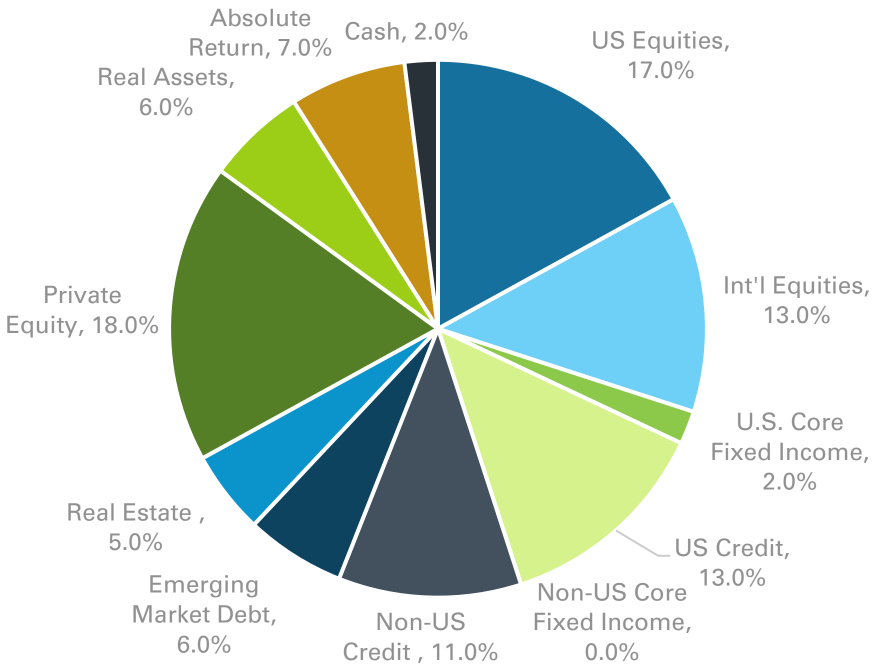
- **Asset models reflect current and forecasted market data to inform expected returns**
- **Systematic inputs are paired with a long-term trend to terminal values**
- **Model inputs are aggregated to capture key return drivers for each asset class**
- **Building block inputs will differ across asset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

CORE ASSET CLASS RETURN ASSUMPTIONS

	Asset Class	03/31/24 10-Year Return	03/31/23 10-Year Return	Delta
	Cash	4.1%	3.8%	+0.3%
	U.S. Inflation	2.6%	2.5%	+0.1%
Equity	U.S. Large-Cap Equity	4.1%	4.9%	-0.8%
	Non-U.S. Developed Equity	4.3%	5.0%	-0.7%
	Emerging Market Equity	8.3%	9.3%	-1.0%
	Global Equity*	5.1%	5.9%	-0.8%
	Private Equity*	8.8%	9.2%	-0.4%
Fixed Income	U.S. Treasury Bond	4.4%	3.9%	+0.5%
	U.S. Municipal Bond	3.7%	4.1%	-0.4%
	U.S. Aggregate Bond*	4.8%	4.5%	+0.3%
	U.S. TIPS	4.7%	4.1%	+0.6%
	U.S. High Yield Corporate Bond	6.1%	6.9%	-0.8%
	Private Debt*	8.3%	8.6%	-0.3%
Real Assets	Commodity Futures	4.3%	3.9%	+0.4%
	REIT	6.1%	6.3%	-0.2%
	Gold	4.8%	4.8%	-
	Real Estate - Core	5.8%	4.5%	+1.3%
	Private Real Assets - Infrastructure	6.7%	6.6%	+0.1%
Multi-Asset	60% S&P 500 & 40% U.S. Aggregate	4.7%	4.8%	-0.1%
	60% MSCI ACWI & 40% U.S. Agg.	5.3%	5.4%	-0.1%
	Hedge Fund*	6.1%	6.3%	-0.2%

*Calculated as a blend of other asset classes

SBCERA RETURN AND RISK EXPECTATIONS
USING MARCH 31, 2024 CAPITAL MARKET ASSUMPTIONS



	10 Year		30 Year	
	2024	*2023*	*2024*	*2023*
Expected Return	7.7%	8.1%	8.8%	8.8%
Expected Volatility	10.8%	10.8%	10.8%	10.8%
Sharpe Ratio	0.34	0.40	0.49	0.51

Probabilities using 2024 Assumptions	
Probability of 1-Year Return Under 0.00%	23.8%
Probability of 10 Year Return Under 0.00%	1.2%
Probability of 10 Year Return Under 7.25%	44.6%
Probability of 30-Year Return Under 7.25%	21.5%

Note:
Return and risk expectations are based on NEPC capital market assumptions as of 3/31/24 and 3/31/23.
Expected volatility assumptions are based on smoothed volatilities in private markets asset classes.

MACROECONOMIC

U.S. INFLATION ASSUMPTIONS

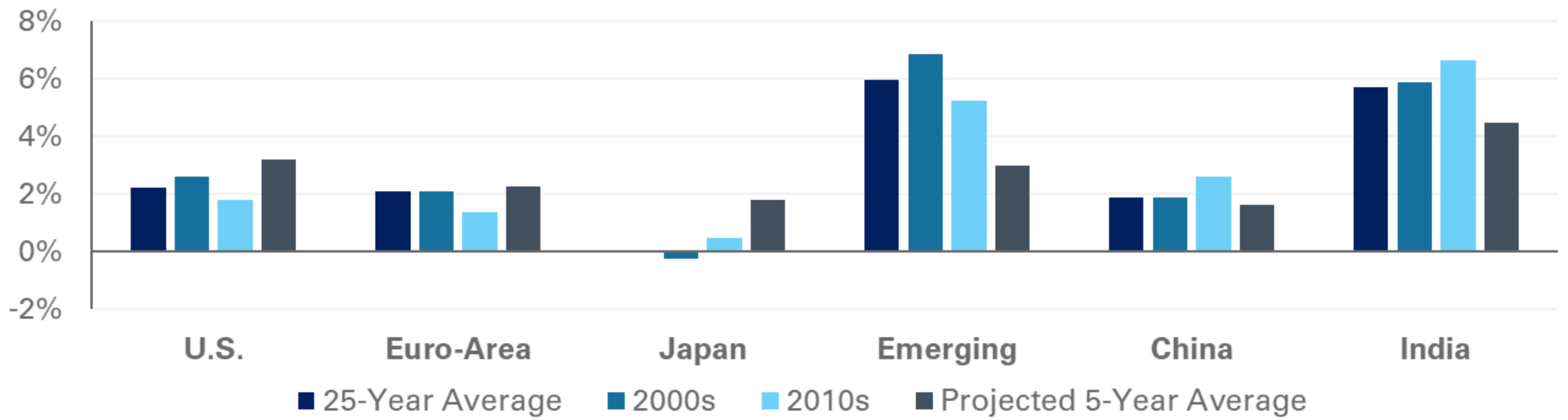
OVERVIEW

- **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**
- **NEPC's inflation assumption forecasts near-term paths for major Consumer Price Index (CPI) components including food, energy, core services, and shelter costs**
  - CPI is expected to converge with breakeven inflation rates over the long-term
- **A composite inflation assumption reflects a blend of NEPC's inflation forecast and market-implied breakeven inflation rates**

United States Inflation Assumption		
Time Horizon	Current	12-Month Change
10-Year	2.6%	+0.1%
30-Year	2.6%	-

GLOBAL INFLATION

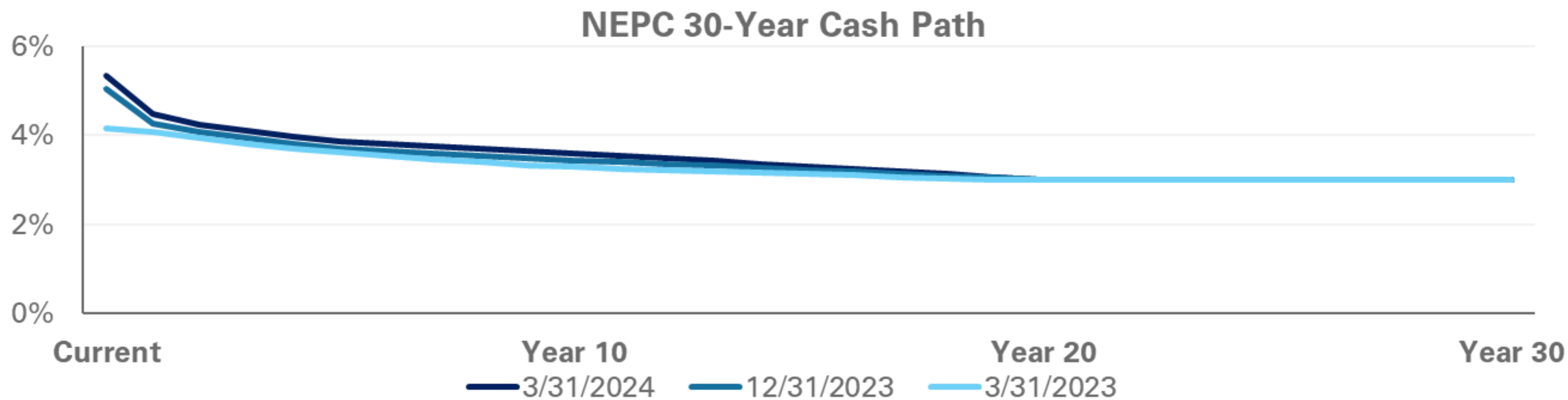
HISTORICAL INFLATION



- **Non-U.S. forecasts are guided by IMF forecasts, local consumer and producer price indices, and global interest rate curves**
- **Near-term inflation levels for developed markets are projected to be higher relative to history**
  - Long-term inflation assumptions reflect NEPC's path and central bank targets
  - The expected inflation differential between emerging and developed markets has narrowed significantly

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**
- **A composite cash assumption is built from a blend of NEPC's cash forecast and market forward pricing of short-term interest rates**

10-Year Cash Assumption	30-Year Cash Assumption
4.1%	3.5%

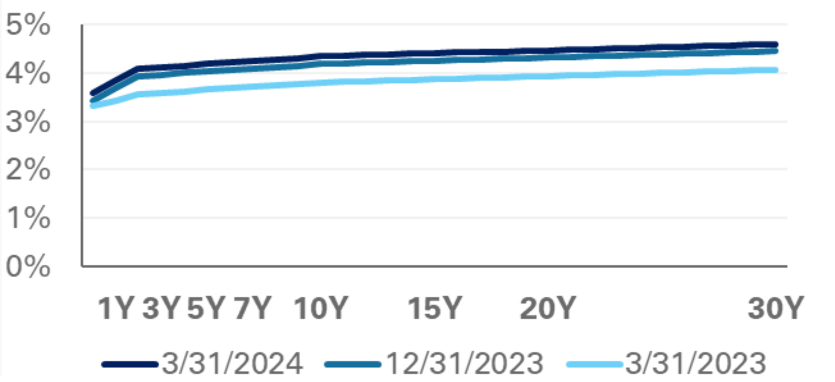
Sources: Bloomberg, FactSet, NEPC

GLOBAL INTEREST RATES

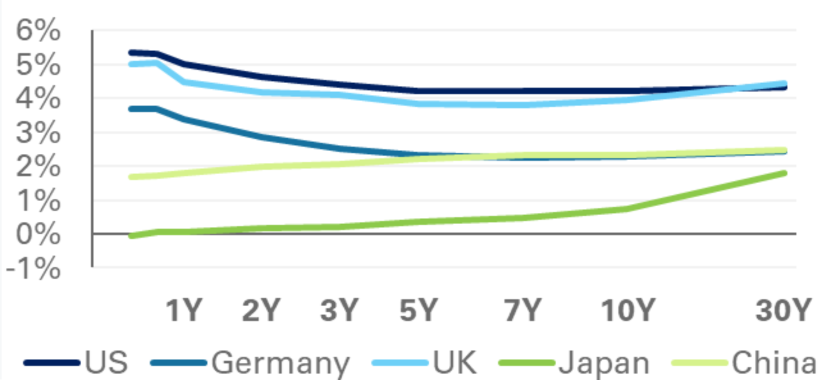
EXPECTATIONS

- **Real yields have normalized, reflecting the tighter monetary policy environment**
  - Attractive real yields should signal a shift in risk posture for investors
- **Higher nominal rates are additive to forward-looking returns for fixed income assets broadly**
- **The outlook is less attractive for non-U.S. developed markets due to the nominal yield differential relative to the U.S.**
  - Differing regional growth and inflation conditions have led to diverging central bank actions

NEPC 10-Year Forward Curve



Global Yield Curves



Sources: FactSet, NEPC

PUBLIC EQUITY

PUBLIC EQUITY ASSUMPTIONS

OVERVIEW

- **Expanded valuations have driven performance so far this year across the equity complex, weighing on the future return outlook**
  - U.S. equity valuations pushed further above long-term averages as positive sentiment and capital flows to A.I.-related businesses persisted
- **Forecasted earnings growth rates are muted across developed market equity assumptions as profit margins are expected to decline**
- **Market expectations for nominal earnings growth remains robust in emerging markets, supporting return expectations**
- **NEPC's long-term valuation inputs are tied to our path for interest rates and inflation, reflecting valuation sensitivity to the macro environment**
- **NEPC recommends a strategic bias to non-U.S. small-cap relative to the MSCI ACWI IMI and highly encourages the use of active management**

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	03/31/24 10-Yr Return	12-Month Change
U.S. Large-Cap Equity	4.1%	-0.8%
U.S. Small/Mid-Cap Equity	5.6%	-0.8%
Non-U.S. Developed Equity	4.3%	-0.7%
Non-U.S. Developed Small-Cap Equity	6.5%	-0.6%
Emerging Market Equity	8.3%	-1.0%
Emerging Market Small-Cap Equity	7.8%	-1.3%
China Equity	10.3%	+1.9%
Hedge Fund - Equity	5.5%	-0.2%
Global Equity*	5.1%	-0.8%
Private Equity*	8.8%	-0.4%

Source: NEPC

*Calculated as a blend of other asset classes

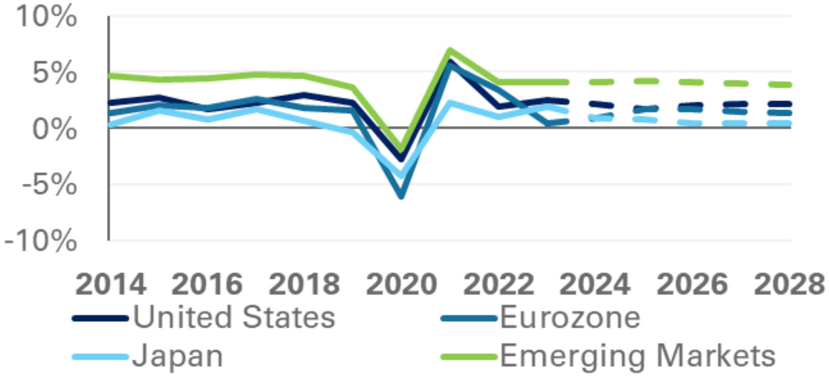
PUBLIC EQUITY

REAL EARNINGS GROWTH

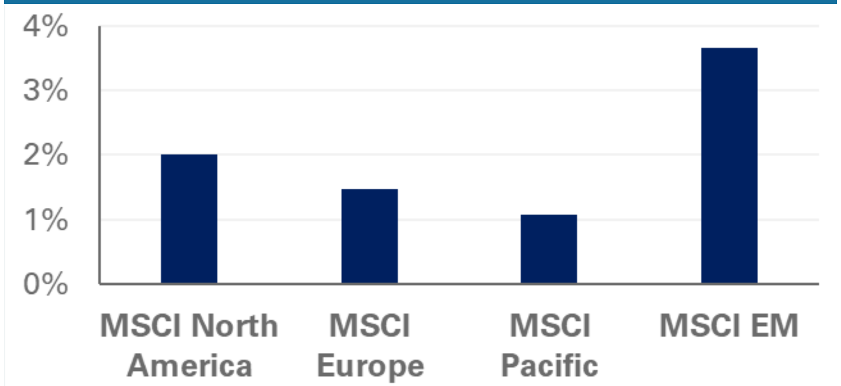
- **Equities with a greater share of revenue from emerging markets are forecasted to benefit from higher sales growth**
  - Non-U.S. stocks benefit from a greater portion of revenue from EM than U.S. stocks

- **Normalizing profit margins across developed markets dampen real earnings forecasts**
  - Profit margin assumptions reflect a path towards long-term median levels

Real GDP Growth Projections



Expected 5-Year Real Growth

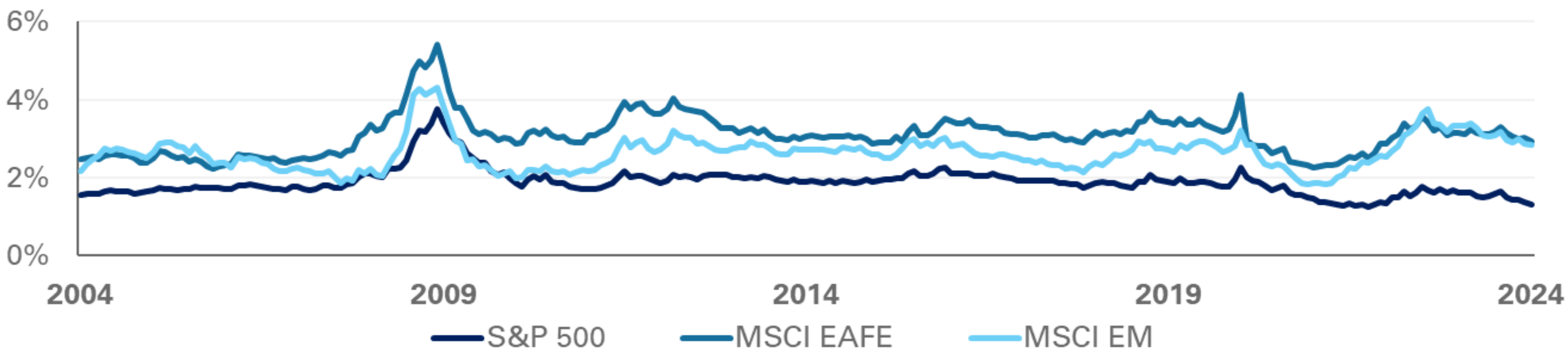


Sources: IMF, MSCI, FactSet, NEPC

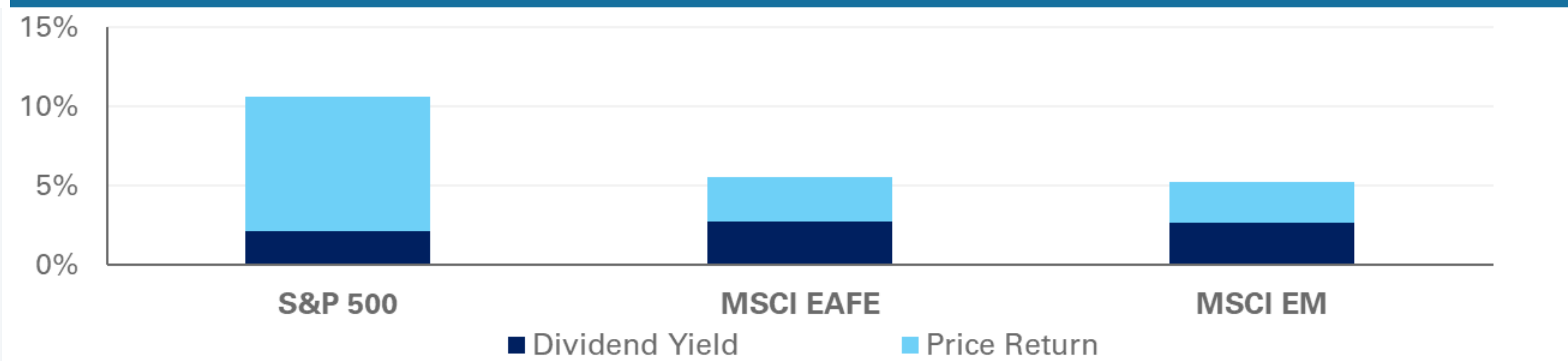
PUBLIC EQUITY DIVIDEND YIELD

NON-U.S. EQUITY OFFERS STRUCTURALLY HIGHER DIVIDENDS

Dividend Yield



30-Year Annualized Return



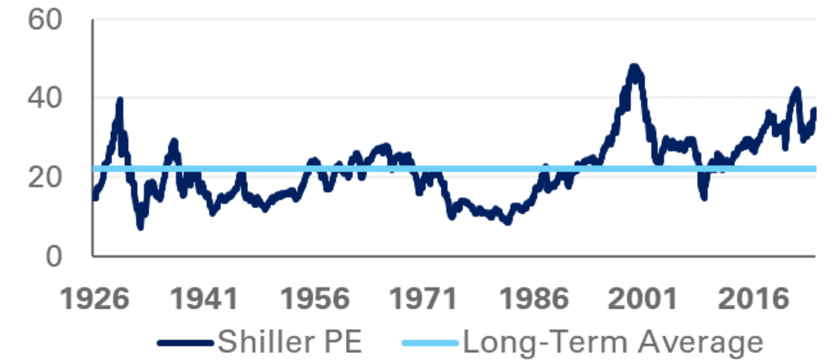
Sources: S&P, MSCI, FactSet

Exhibit A: Page 19

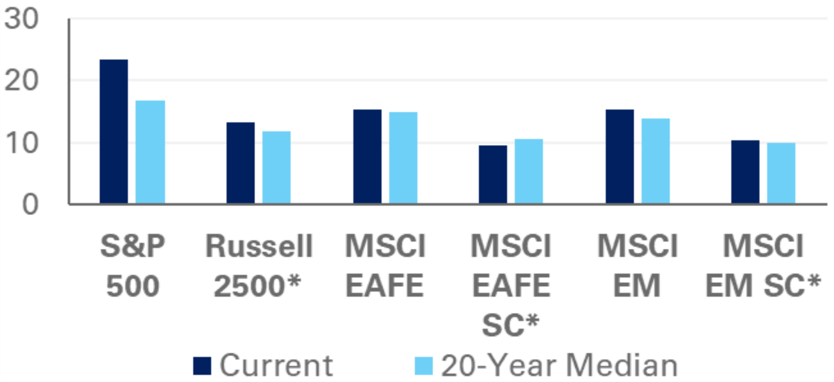
PUBLIC EQUITY
VALUATION

- **Valuations remain elevated relative to long-term averages**
  - U.S. large-cap valuations represent the largest drag on returns across the equity complex
- **EAFE valuation inputs are lower relative to the U.S. and reflect the economic growth profile**
- **Emerging markets offer an elevated total return opportunity relative to developed markets**

S&P 500 Shiller PE Ratio



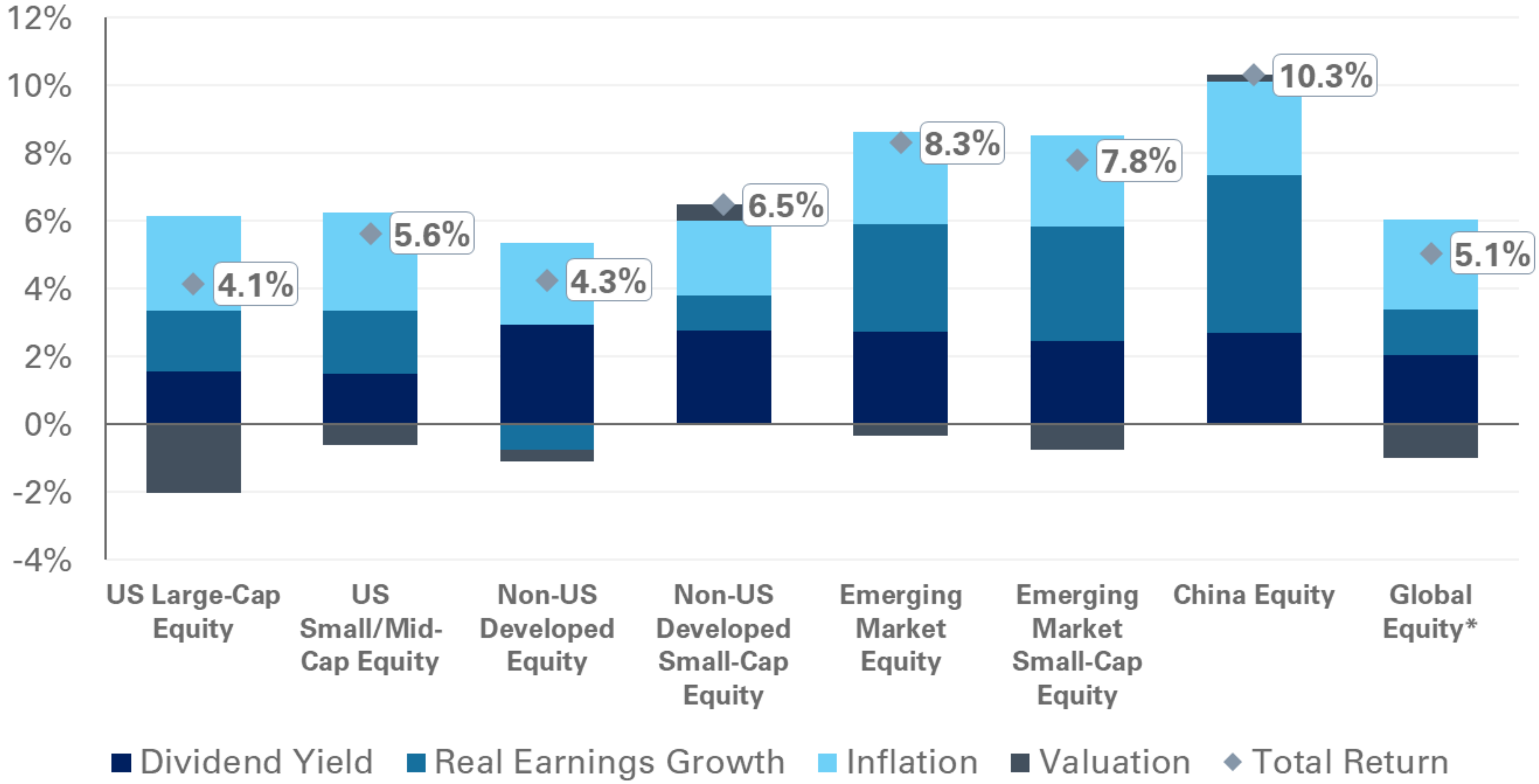
Trailing PE Relative Median



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

PUBLIC EQUITY

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



Source: NEPC
*Calculated as a blend of other classes

FIXED INCOME

FIXED INCOME ASSUMPTIONS

OVERVIEW

- **Safe-haven fixed income return assumptions rose as a resilient economic backdrop drove current and expected interest rates higher**
- **Credit spreads tightened to below median levels across the credit complex amid resilient growth, leading to lower return expectations**
- **We encourage a dedicated safe-haven fixed income allocation to serve as a critical liquidity source for the portfolio**
  - 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 group designed to support lower volatility portfolios and larger strategic targets to fixed income**
- **We recommend utilizing U.S. TIPS within high-quality fixed income policy targets given forecasts for real yields and breakeven inflation**

FIXED INCOME ASSUMPTIONS

BUILDING BLOCKS

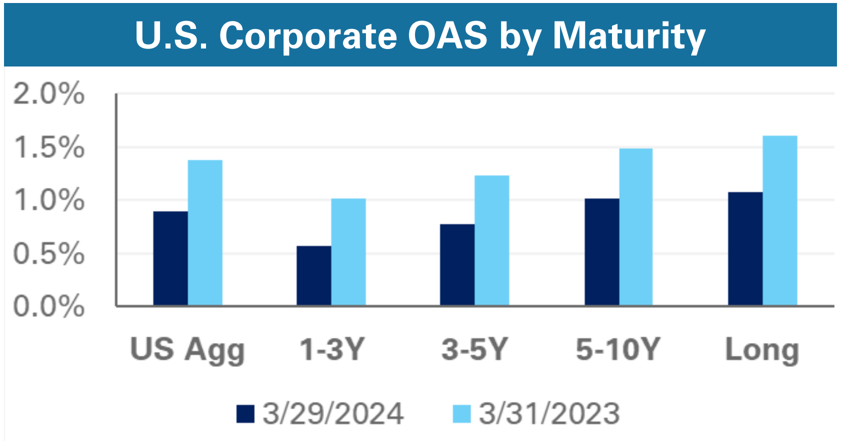
Illiquidity Premium	The return expected for assets with illiquidity risk
Government Rates Price Change	Change due to shifts in current yields relative to forecasted rates
Credit Deterioration	The average loss for credit assets due to defaults and recovery rates
Spread Price Change	Valuation change due 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

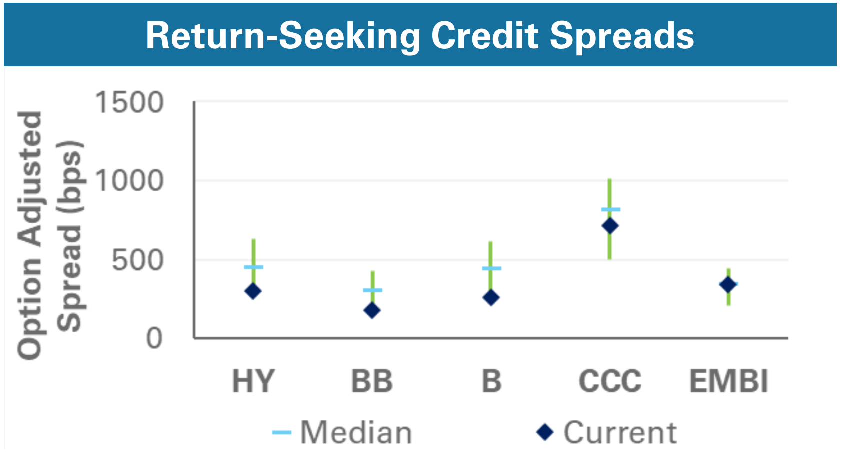
Asset Class	03/31/24 10-Yr Return	12-Month Change
U.S. TIPS	4.7%	+0.6%
U.S. Treasury Bond	4.4%	+0.5%
U.S. Corporate Bond	5.5%	-0.1%
U.S. MBS	4.7%	+0.5%
U.S. High Yield Corporate	6.1%	-0.8%
U.S. Leveraged Loan	7.3%	-0.2%
EMD External Debt*	6.9%	-1.1%
EMD Local Currency Debt	6.7%	-0.3%
Non-U.S. Govt. Bond	2.5%	-
U.S. Muni Bond (1-10 Year)	3.1%	+0.2%
U.S. High Yield Muni Bond	4.5%	-1.1%
Hedge Fund – Credit	6.6%	-0.3%
U.S. Aggregate Bond*	4.8%	+0.3%
Private Debt*	8.3%	-0.3%

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

FIXED INCOME
CREDIT SPREADS

- **Credit spreads have tightened and are broadly below median levels**
  - BB and B spreads have fallen below the 5th percentile
- **Lower spread levels weigh on future return expectations given less overall carry return**
- **Credit spread assumptions reflect a path towards long term median levels**
- **Default and recovery rate assumptions are informed by long-term history**





Sources: Bloomberg, JPM, FactSet, NEPC; Spread medians as of 12/31/2000 and range represents 5th to 75th percentile

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

- **A normalization of yield curve steepness is a headwind to long duration fixed income**

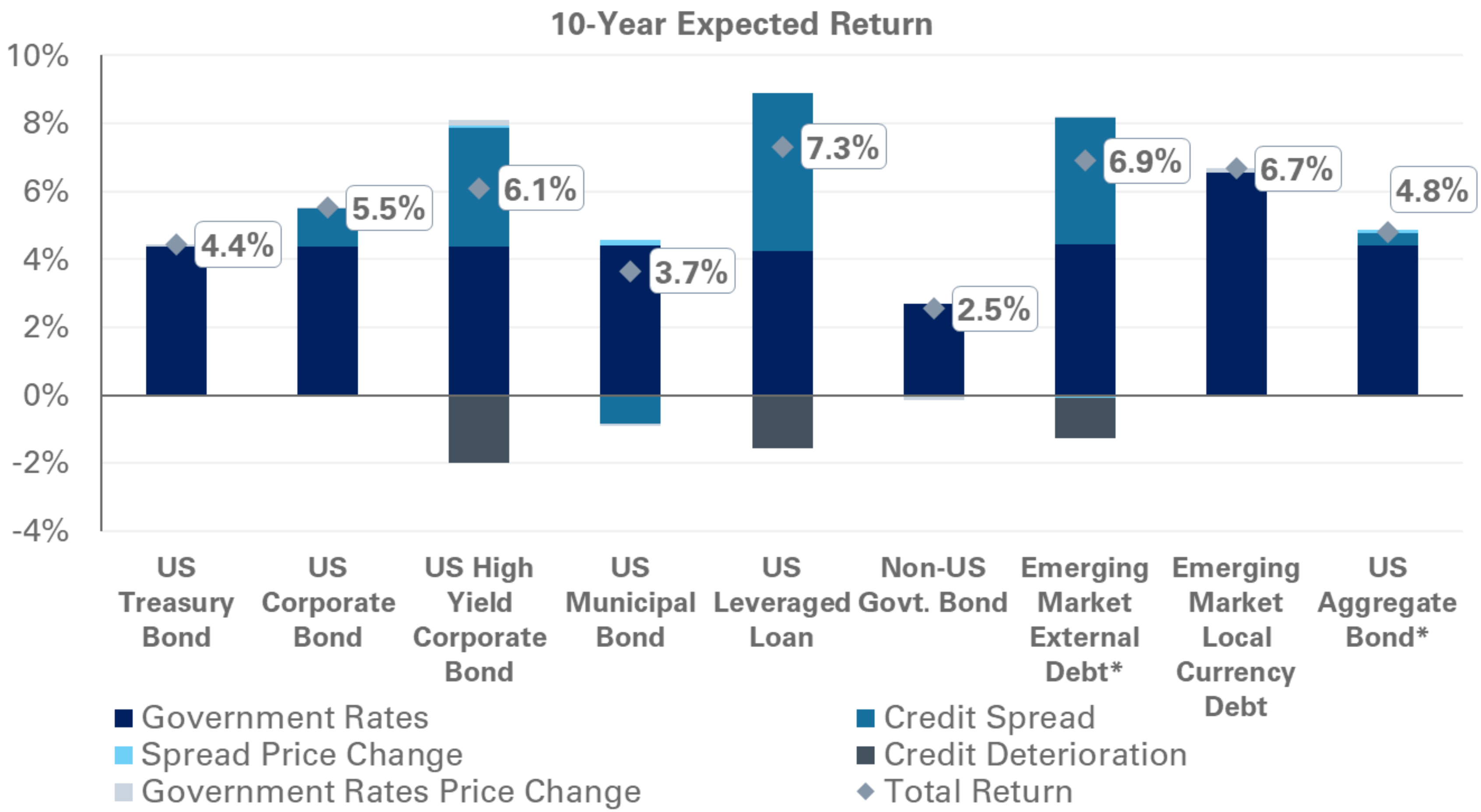
Barclays U.S. Aggregate Bond

Annual Change in Treasury Yields

Sources: Bloomberg, FactSet, NEPC

FIXED INCOME

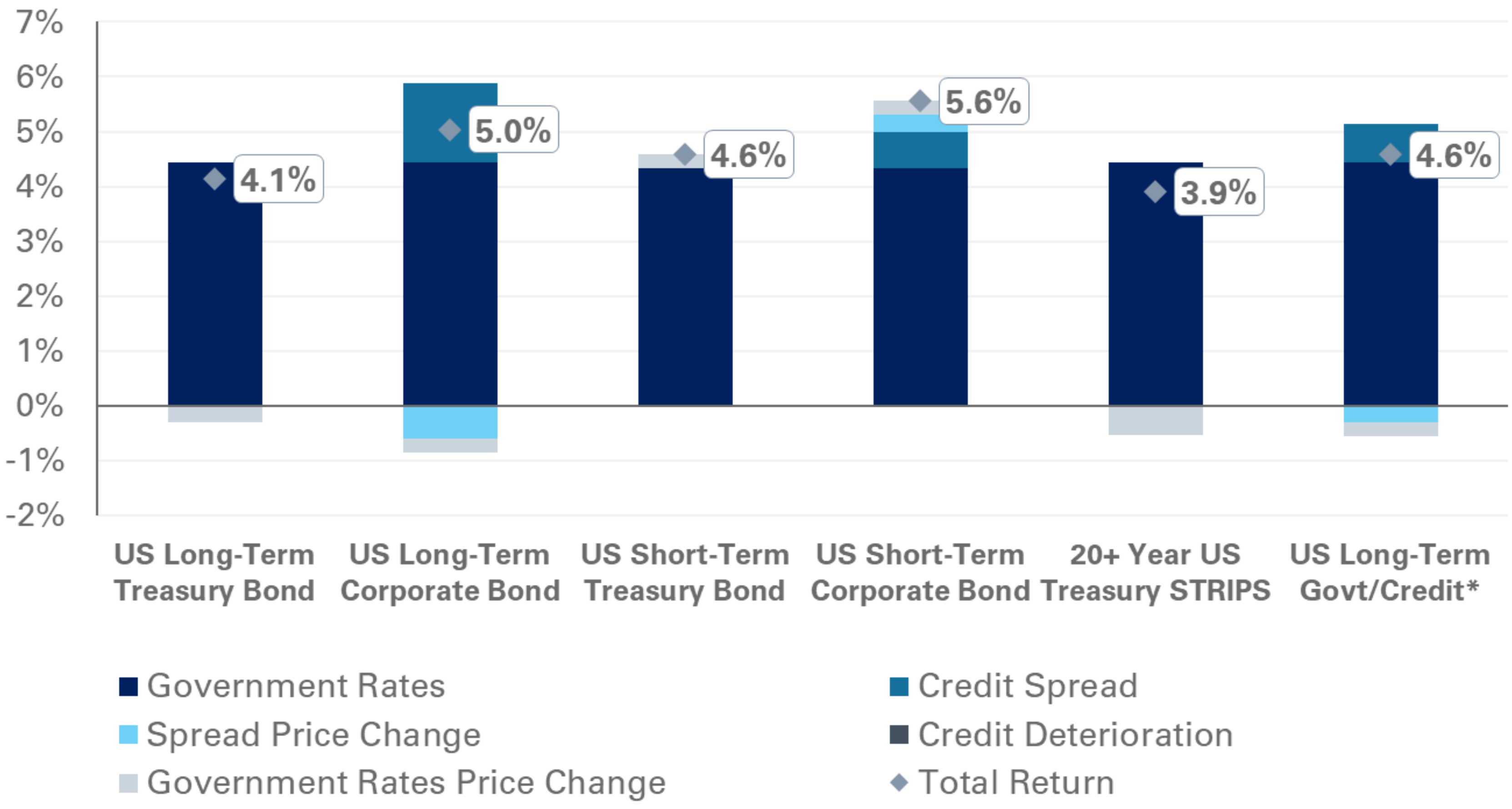
BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



Source: NEPC
*Calculated as a blend of other classes

FIXED INCOME

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



Source: NEPC
*Calculated as a blend of other classes

REAL ASSET

REAL ASSET ASSUMPTIONS

OVERVIEW

- **Real asset exposure can enhance risk-adjusted returns as markets undergo a secular shift toward higher interest rates and inflation levels**
  - A diversifying blend of real assets provides an elevated beta to inflation relative to public equity and nominal bond exposure
- **Real estate valuations have declined, but higher cap rates offset the valuation impact and are beneficial to forward-looking returns**
- **We encourage investors to evaluate strategic real asset exposure relative to their long-term investment objectives and spending needs**
  - We believe building portfolio inflation sensitivity is a strategic exercise and public real assets serve as a complement to private market investments
- **NEPC recommends a strategic real assets target comprising an equal-weight blend to commodity futures, natural resource equity, public infrastructure equity, REITs, and gold**

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	03/31/24 10-Yr Return	12-Month Change
Commodity Futures	4.3%	+0.4%
Midstream Energy	5.2%	-0.9%
REIT	6.1%	-0.2%
Global Infrastructure Equity	6.5%	+0.7%
Global Natural Resources Equity	6.2%	-
Gold	4.8%	-
Real Estate - Core	5.8%	+1.3%
Real Estate – Non-Core	7.6%	+1.9%
Private Debt - Real Estate	6.5%	+0.7%
Private Real Assets - Natural Resources	8.1%	-0.2%
Private Real Assets - Infrastructure	6.7%	+0.1%

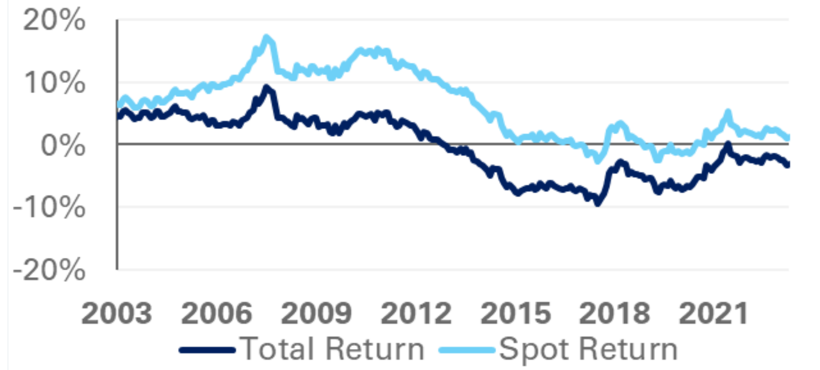
Source: NEPC
*Calculated as a blend of other asset classes

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 and has increased in-line with cash rates

Commodities Rolling 10-Year Returns



Real Assets Yields

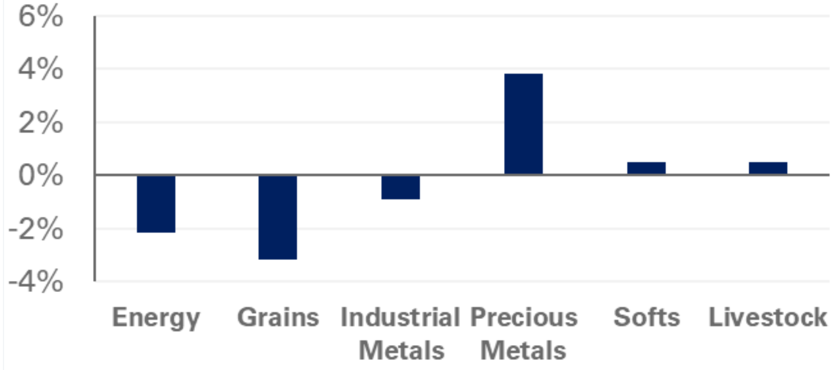
	03/31/24	03/31/23
Midstream Energy	4.0%	5.9%
Real Estate - Core	2.8%	2.5%
U.S. REITs	4.4%	4.4%
Global Infrastructure Equities	3.7%	3.3%
Natural Resource Equities	3.8%	4.1%
U.S. 10-Year Breakeven Inflation	2.3%	2.3%
Commodity Index Roll Yield	-3.1%	3.0%

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**
  - Energy and grains prices are trading at a large discount 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

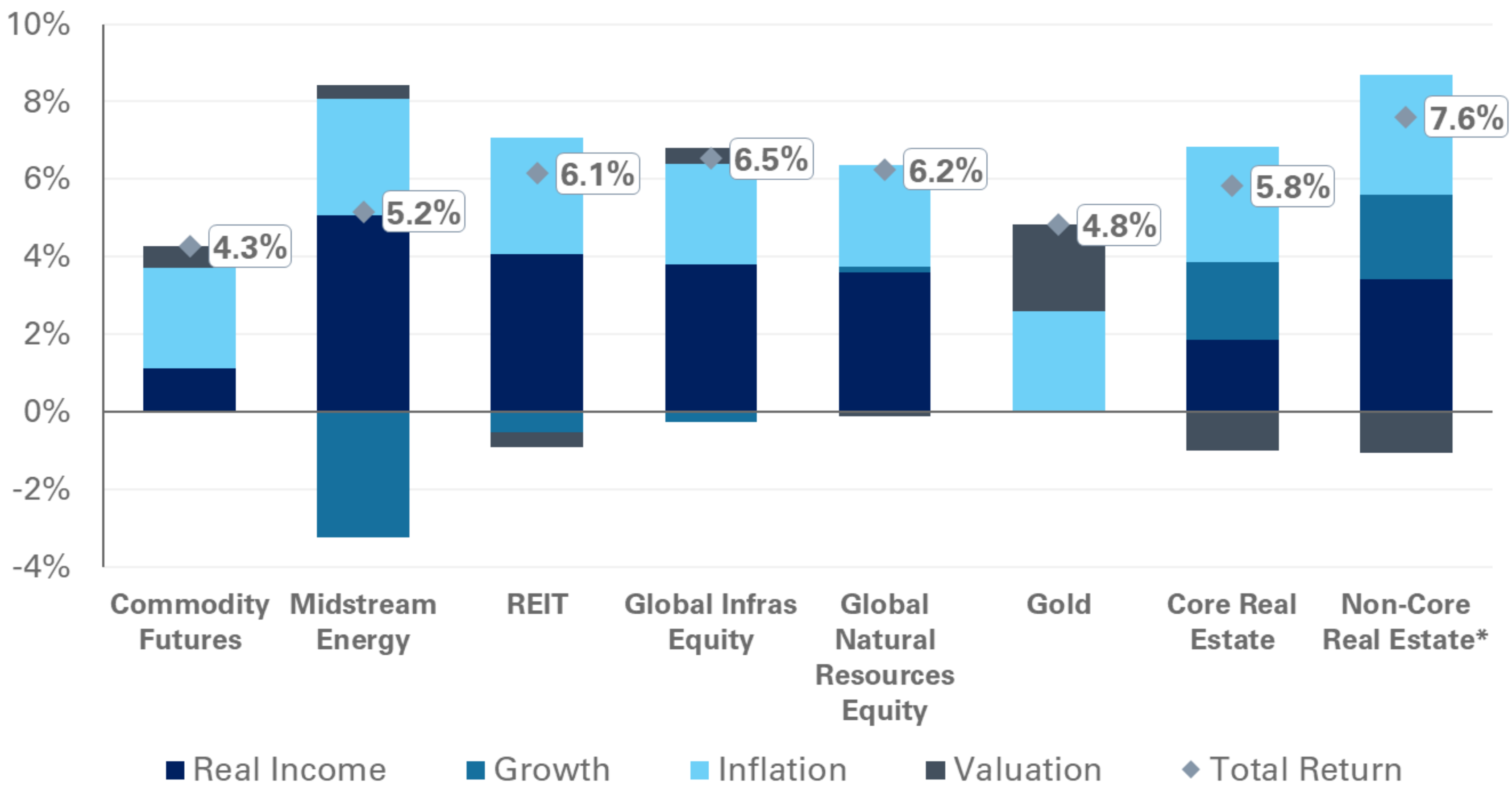


Real Price of Gold

Sources: FactSet, NEPC

REAL ASSET

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN

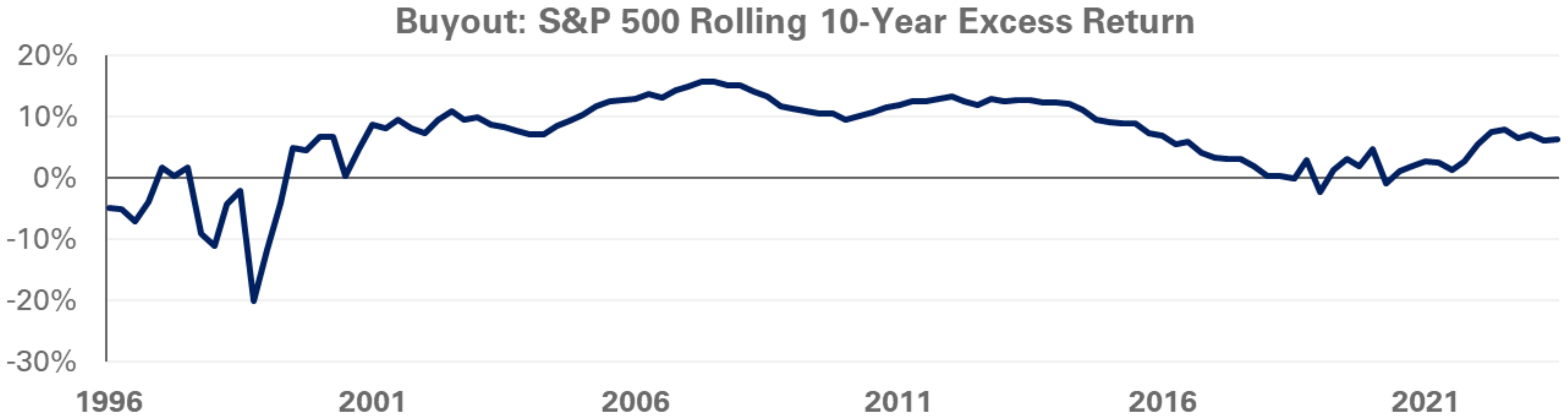


Source: NEPC

ALTERNATIVE ASSETS

ALTERNATIVE ASSETS

METHODOLOGY

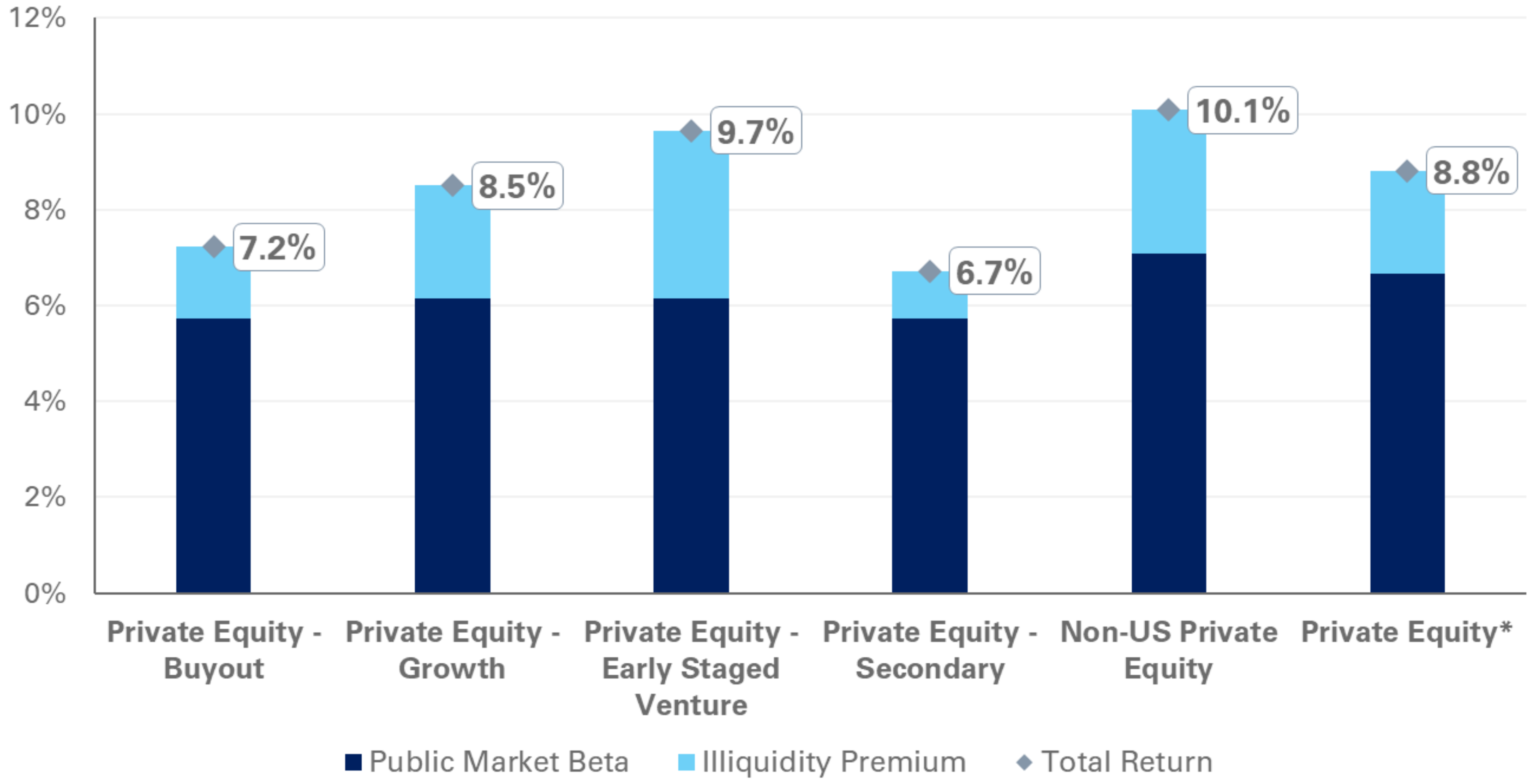


- **Private market assumptions are constructed from public market betas with an added illiquidity premia**
  - Historically, the observed illiquidity premium has been a significant component driving private market returns
- **Hedge fund assumptions are constructed from betas to public markets with an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

Sources: Thomson One, S&P, FactSet

PRIVATE EQUITY

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN

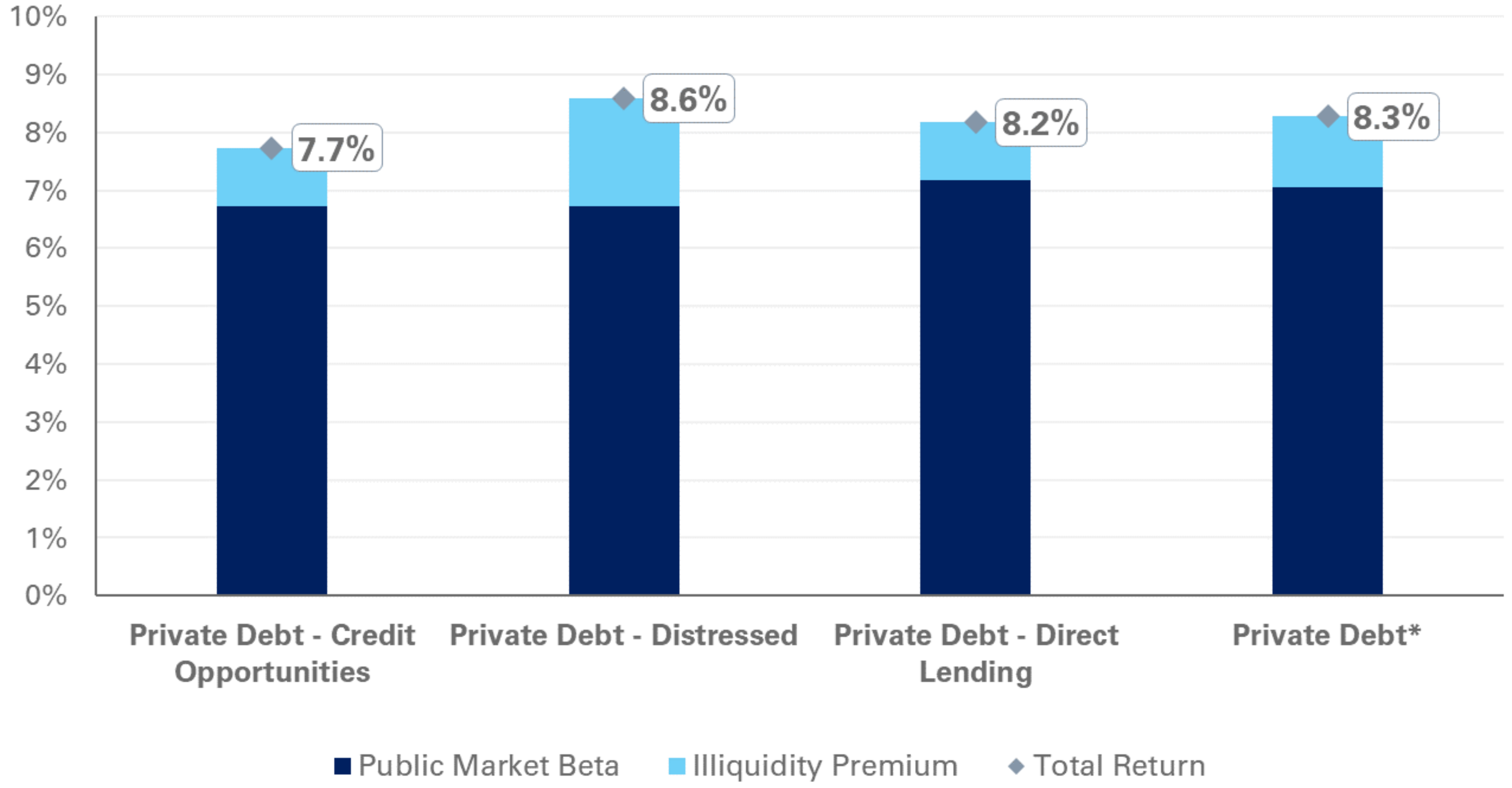


Source: NEPC

*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

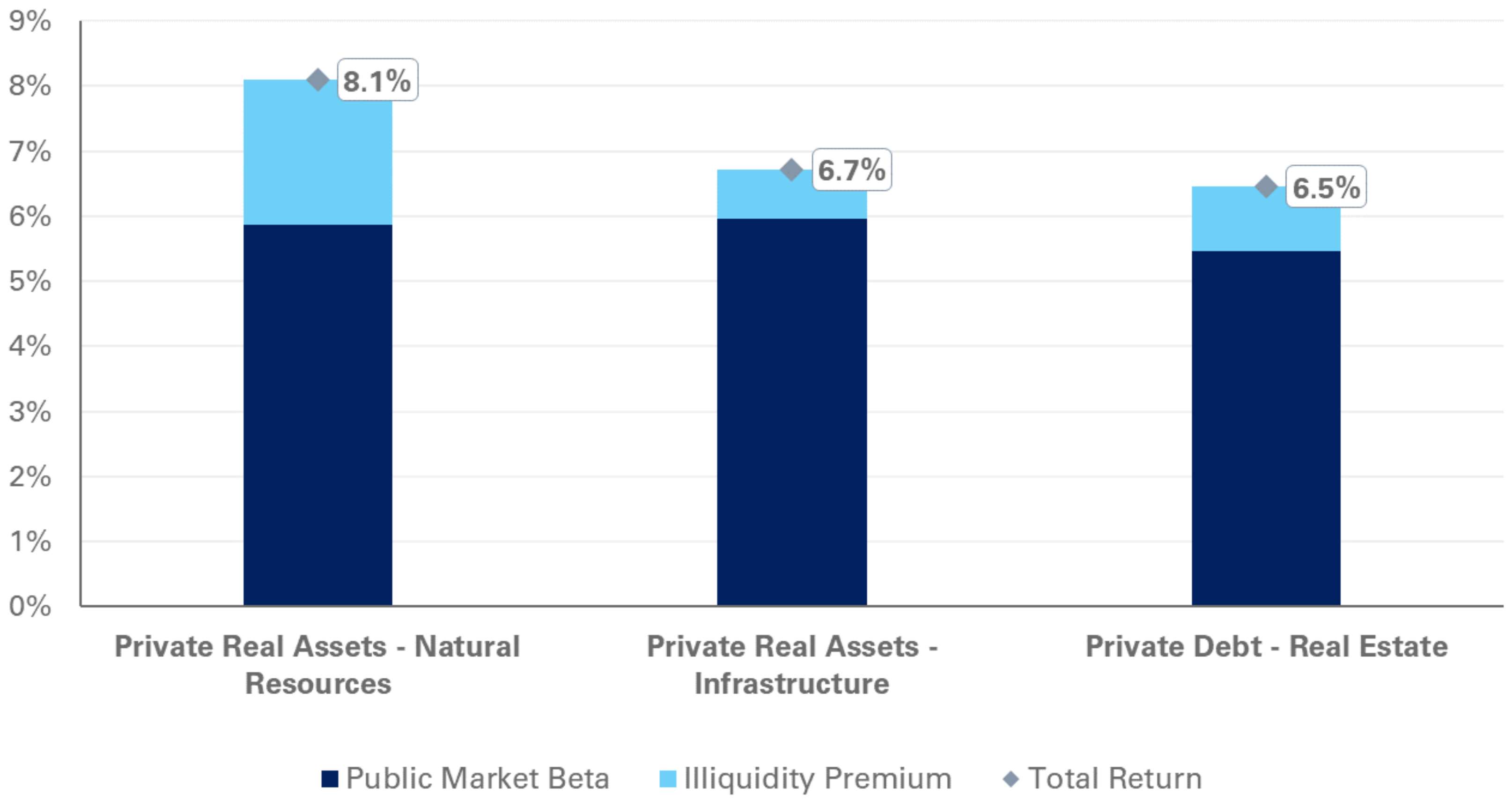
BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



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

PRIVATE REAL ASSET

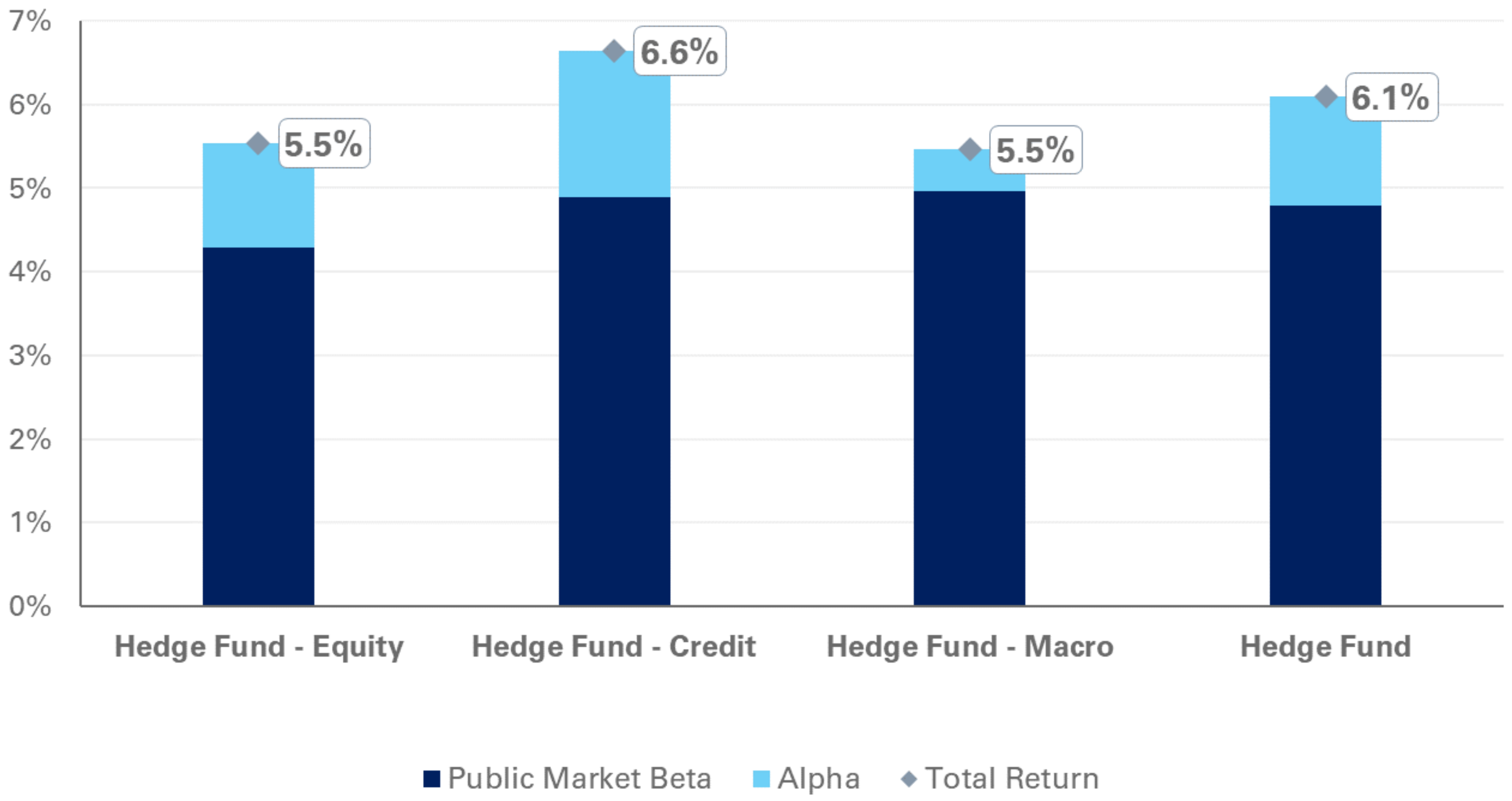
BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



Source: NEPC

HEDGE FUND

BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



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

APPENDIX

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: 100% U.S. Small/Mid Cap

Early-Stage Venture: 100% U.S. Small/Mid Cap

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

10-YEAR RETURN FORECASTS

EQUITY

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
U.S. Large-Cap Equity	4.1%	4.9%	-0.8%
U.S. Small/Mid-Cap Equity	5.6%	6.4%	-0.8%
Non-U.S. Developed Equity	4.3%	5.0%	-0.7%
Non-U.S. Developed Equity (USD Hedge)	4.5%	5.2%	-0.7%
Non-U.S. Developed Small-Cap Equity	6.5%	7.1%	-0.6%
Emerging Market Equity	8.3%	9.3%	-1.0%
Emerging Market Small-Cap Equity	7.8%	9.1%	-1.3%
Hedge Fund - Equity	5.5%	5.7%	-0.2%
Private Equity - Buyout	7.2%	7.5%	-0.3%
Private Equity - Growth	8.5%	8.8%	-0.3%
Private Equity - Early Stage Venture	9.7%	10.0%	-0.3%
Private Equity - Secondary	6.7%	7.0%	-0.3%
Non-U.S. Private Equity	10.1%	10.7%	-0.6%
China Equity	10.3%	8.4%	+1.9%
Global Equity*	5.1%	5.9%	-0.8%
Private Equity*	8.8%	9.2%	-0.4%

*Calculated as a blend of other asset classes

10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
Cash	4.1%	3.8%	+0.3%
US TIPS	4.7%	4.1%	+0.6%
US Treasury Bond	4.4%	3.9%	+0.5%
US Corporate Bond	5.5%	5.6%	-0.1%
US Corporate Bond - AAA	4.7%	4.5%	+0.2%
US Corporate Bond - AA	4.9%	4.7%	+0.2%
US Corporate Bond - A	5.4%	5.3%	+0.1%
US Corporate Bond - BBB	5.7%	5.9%	-0.2%
US Mortgage-Backed Securities	4.7%	4.2%	+0.5%
US Securitized Bond	5.4%	5.1%	+0.3%
US Collateralized Loan Obligation	5.6%	5.6%	-
US Municipal Bond	3.7%	4.1%	-0.4%
US Municipal Bond (1-10 Year)	3.1%	2.9%	+0.2%
US Taxable Municipal Bond	5.4%	5.1%	+0.3%

10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
Non-US Government Bond	2.5%	2.5%	-
Non-US Government Bond (USD Hedge)	2.8%	2.7%	+0.1%
Non-US Inflation-Linked Bond (USD Hedge)	3.4%	3.1%	+0.3%
US Short-Term TIPS (1-3 Year)	4.7%	4.0%	+0.7%
US Short-Term Treasury Bond (1-3 Year)	4.6%	4.0%	+0.6%
US Short-Term Corporate Bond (1-3 Year)	5.6%	5.2%	+0.4%
US Intermediate-Term TIPS (3-10 Year)	4.7%	4.1%	+0.6%
US Intermediate-Term Treasury Bond (3-10 Year)	4.5%	4.0%	+0.5%
US Intermediate-Term Corporate Bond (3-10 Year)	5.8%	5.8%	-
US Long-Term TIPS (10-30 Year)	4.7%	4.0%	+0.7%
US Long-Term Treasury Bond (10-30 Year)	4.1%	3.6%	+0.5%
US Long-Term Corporate Bond (10-30 Year)	5.0%	5.4%	-0.4%
20+ Year US Treasury STRIPS	3.9%	3.3%	+0.6%
10 Year US Treasury Bond	4.5%	3.9%	+0.6%
10 Year Non-US Government Bond (USD Hedge)	2.2%	2.0%	+0.2%
US Aggregate Bond*	4.8%	4.5%	+0.3%

*Calculated as a blend of other asset classes

10-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
US High Yield Corporate Bond	6.1%	6.9%	-0.8%
US Corporate Bond - BB	6.9%	7.3%	-0.4%
US Corporate Bond - B	6.3%	7.1%	-0.8%
US Corporate Bond - CCC/Below	0.5%	2.7%	-2.2%
US Short-Term High Yield Corporate Bond (1-3 Year)	5.5%	5.9%	-0.4%
US Leveraged Loan	7.3%	7.5%	-0.2%
Emerging Market Investment Grade External Debt	5.3%	-	-
Emerging Market High Yield External Debt	8.1%	-	-
Emerging Market Local Currency Debt	6.7%	7.0%	-0.3%
US High Yield Securitized Bond	9.1%	8.4%	+0.7%
US High Yield Collateralized Loan Obligation	7.9%	8.3%	-0.4%
US High Yield Municipal Bond	4.5%	5.6%	-1.1%
Hedge Fund - Credit	6.6%	6.9%	-0.3%
Private Debt - Credit Opportunities	7.7%	7.9%	-0.2%
Private Debt - Distressed	8.6%	8.8%	-0.2%
Private Debt - Direct Lending	8.2%	8.5%	-0.3%
Private Debt*	8.3%	8.6%	-0.3%

*Calculated as a blend of other asset classes

10-YEAR RETURN FORECASTS

REAL ASSETS

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
Commodity Futures	4.3%	3.9%	+0.4%
Midstream Energy	5.2%	6.1%	-0.9%
REIT	6.1%	6.3%	-0.2%
Global Infrastructure Equity	6.5%	5.8%	+0.7%
Global Natural Resources Equity	6.2%	6.2%	-
Gold	4.8%	4.8%	-
Real Estate - Core	5.8%	4.5%	+1.3%
Real Estate – Value-Add	7.0%	6.0%	+1.0%
Real Estate - Opportunistic	8.1%	7.7%	+0.4%
Private Debt - Real Estate	6.5%	5.8%	+0.7%
Private Real Assets - Natural Resources	8.1%	8.3%	-0.2%
Private Real Assets - Infrastructure	6.7%	6.6%	+0.1%

30-YEAR RETURN FORECASTS

EQUITY

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
U.S. Large-Cap Equity	6.5%	6.7%	-0.2%
U.S. Small/Mid-Cap Equity	7.3%	7.3%	-
Non-U.S. Developed Equity	6.1%	6.5%	-0.4%
Non-U.S. Developed Equity (USD Hedge)	6.3%	6.7%	-0.4%
Non-U.S. Developed Small-Cap Equity	7.7%	7.7%	-
Emerging Market Equity	9.2%	9.5%	-0.3%
Emerging Market Small-Cap Equity	8.8%	9.5%	-0.7%
Hedge Fund - Equity	6.0%	6.0%	-
Private Equity - Buyout	8.7%	8.7%	-
Private Equity - Growth	9.7%	9.8%	-0.1%
Private Equity - Early Stage Venture	10.5%	10.6%	-0.1%
Private Equity - Secondary	8.2%	8.1%	+0.1%
Non-U.S. Private Equity	10.8%	10.9%	-0.1%
China Equity	9.7%	9.0%	+0.7%
Global Equity*	7.0%	7.4%	-0.4%
Private Equity*	10.1%	10.1%	-

*Calculated as a blend of other asset classes

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	03/31/2024	03/31/2023	Delta
Cash	3.5%	3.3%	+0.2%
US TIPS	4.7%	4.2%	+0.5%
US Treasury Bond	4.5%	3.9%	+0.6%
US Corporate Bond	6.0%	5.7%	+0.3%
US Corporate Bond - AAA	5.3%	4.9%	+0.4%
US Corporate Bond - AA	5.3%	4.8%	+0.5%
US Corporate Bond - A	5.7%	5.3%	+0.4%
US Corporate Bond - BBB	6.3%	6.0%	+0.3%
US Mortgage-Backed Securities	4.8%	4.2%	+0.6%
US Securitized Bond	5.5%	5.0%	+0.5%
US Collateralized Loan Obligation	5.0%	5.1%	-0.1%
US Municipal Bond	3.9%	3.7%	+0.2%
US Municipal Bond (1-10 Year)	3.6%	3.3%	+0.3%
US Taxable Municipal Bond	6.1%	5.7%	+0.4%

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
Non-US Government Bond	3.0%	3.1%	-0.1%
Non-US Government Bond (USD Hedge)	3.2%	3.3%	-0.1%
Non-US Inflation-Linked Bond (USD Hedge)	3.5%	3.5%	-
US Short-Term TIPS (1-3 Year)	4.4%	3.7%	+0.7%
US Short-Term Treasury Bond (1-3 Year)	4.3%	3.7%	+0.6%
US Short-Term Corporate Bond (1-3 Year)	5.3%	4.8%	+0.5%
US Intermediate-Term TIPS (3-10 Year)	4.8%	4.2%	+0.6%
US Intermediate-Term Treasury Bond (3-10 Year)	4.6%	4.1%	+0.5%
US Intermediate-Term Corporate Bond (3-10 Year)	6.2%	5.8%	+0.4%
US Long-Term TIPS (10-30 Year)	4.9%	4.3%	+0.6%
US Long-Term Treasury Bond (10-30 Year)	4.6%	4.0%	+0.6%
US Long-Term Corporate Bond (10-30 Year)	6.2%	5.9%	+0.3%
20+ Year US Treasury STRIPS	4.5%	4.0%	+0.5%
10 Year US Treasury Bond	5.0%	3.9%	+1.1%
10 Year Non-US Government Bond (USD Hedge)	3.0%	2.9%	+0.1%
US Aggregate Bond*	5.0%	4.5%	+0.5%

*Calculated as a blend of other asset classes

30-YEAR RETURN FORECASTS

FIXED INCOME

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
US High Yield Corporate Bond	7.2%	7.1%	+0.1%
US Corporate Bond - BB	7.8%	7.6%	+0.2%
US Corporate Bond - B	7.1%	7.1%	-
US Corporate Bond - CCC/Below	1.6%	2.0%	-0.4%
US Short-Term High Yield Corporate Bond (1-3 Year)	5.6%	5.3%	+0.3%
US Leveraged Loan	6.6%	6.7%	-0.1%
Emerging Market Investment Grade External Debt	6.1%	-	-
Emerging Market High Yield External Debt	8.2%	-	-
Emerging Market Local Currency Debt	5.8%	6.0%	-0.2%
US High Yield Securitized Bond	8.5%	7.9%	+0.6%
US High Yield Collateralized Loan Obligation	7.4%	7.6%	-0.2%
US High Yield Municipal Bond	5.0%	5.7%	-0.7%
Hedge Fund - Credit	7.0%	6.9%	+0.1%
Private Debt - Credit Opportunities	8.3%	8.3%	-
Private Debt - Distressed	9.3%	9.2%	+0.1%
Private Debt - Direct Lending	8.9%	9.0%	-0.1%
Private Debt*	8.9%	9.0%	-0.1%

*Calculated as a blend of other asset classes

30-YEAR RETURN FORECASTS

REAL ASSETS

Geometric Expected Return			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
Commodity Futures	3.8%	3.2%	+0.6%
Midstream Energy	6.5%	6.7%	-0.2%
REIT	7.4%	7.4%	-
Global Infrastructure Equity	6.9%	6.8%	+0.1%
Global Natural Resources Equity	7.2%	6.9%	+0.3%
Gold	4.7%	4.6%	+0.1%
Real Estate - Core	6.4%	5.4%	+1.0%
Real Estate – Value-Add	7.7%	7.1%	+0.6%
Real Estate - Opportunistic	8.6%	8.7%	-0.1%
Private Debt - Real Estate	6.7%	6.0%	+0.7%
Private Real Assets - Natural Resources	8.8%	8.5%	+0.3%
Private Real Assets - Infrastructure	7.1%	7.0%	+0.1%

VOLATILITY FORECASTS

EQUITY

Volatility			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
U.S. Large-Cap Equity	17.2%	16.9%	+0.3%
U.S. Small/Mid-Cap Equity	21.0%	20.8%	+0.2%
Non-U.S. Developed Equity	19.7%	19.6%	+0.1%
Non-U.S. Developed Equity (USD Hedge)	17.7%	17.6%	+0.1%
Non-U.S. Developed Small-Cap Equity	24.2%	24.2%	-
Emerging Market Equity	28.1%	28.6%	-0.5%
Emerging Market Small-Cap Equity	31.4%	31.9%	-0.5%
Hedge Fund - Equity	11.0%	11.1%	-0.1%
Private Equity - Buyout	20.0%	20.0%	-
Private Equity - Growth	31.5%	31.4%	+0.1%
Private Equity - Early Stage Venture	46.5%	45.0%	+1.5%
Private Equity - Secondary	20.4%	21.0%	-0.6%
Non-U.S. Private Equity	32.0%	32.0%	-
China Equity	30.6%	30.7%	-0.1%
Global Equity*	18.2%	18.1%	+0.1%
Private Equity*	25.9%	25.7%	+0.2%

*Calculated as a blend of other asset classes

VOLATILITY FORECASTS

FIXED INCOME

Volatility			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
Cash	0.6%	0.6%	-
US TIPS	6.0%	6.1%	-0.1%
US Treasury Bond	5.4%	5.4%	-
US Corporate Bond	7.7%	7.6%	+0.1%
US Corporate Bond - AAA	6.8%	6.5%	+0.3%
US Corporate Bond - AA	6.6%	6.4%	+0.2%
US Corporate Bond - A	7.6%	7.5%	+0.1%
US Corporate Bond - BBB	8.4%	8.4%	-
US Mortgage-Backed Securities	6.5%	6.5%	-
US Securitized Bond	8.0%	8.2%	-0.2%
US Collateralized Loan Obligation	7.7%	7.6%	+0.1%
US Municipal Bond	6.0%	6.0%	-
US Municipal Bond (1-10 Year)	4.5%	4.5%	-
US Taxable Municipal Bond	7.5%	7.5%	-

VOLATILITY FORECASTS

FIXED INCOME

Volatility			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
Non-US Government Bond	9.5%	9.5%	-
Non-US Government Bond (USD Hedge)	4.1%	4.1%	-
Non-US Inflation-Linked Bond (USD Hedge)	6.7%	6.6%	+0.1%
US Short-Term TIPS (1-3 Year)	3.3%	3.4%	-0.1%
US Short-Term Treasury Bond (1-3 Year)	2.3%	2.3%	-
US Short-Term Corporate Bond (1-3 Year)	2.8%	2.8%	-
US Intermediate-Term TIPS (3-10 Year)	6.0%	6.0%	-
US Intermediate-Term Treasury Bond (3-10 Year)	5.9%	5.9%	-
US Intermediate-Term Corporate Bond (3-10 Year)	7.1%	7.1%	-
US Long-Term TIPS (10-30 Year)	12.4%	12.4%	-
US Long-Term Treasury Bond (10-30 Year)	11.8%	11.8%	-
US Long-Term Corporate Bond (10-30 Year)	11.9%	12.1%	-0.2%
20+ Year US Treasury STRIPS	20.7%	20.7%	-
10 Year US Treasury Bond	7.5%	7.5%	-
10 Year Non-US Government Bond (USD Hedge)	5.0%	5.1%	-0.1%
US Aggregate Bond*	5.8%	5.8%	-

*Calculated as a blend of other asset classes

VOLATILITY FORECASTS

FIXED INCOME

Volatility			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
US High Yield Corporate Bond	11.2%	11.1%	+0.1%
US Corporate Bond - BB	9.7%	9.7%	-
US Corporate Bond - B	11.6%	11.7%	-0.1%
US Corporate Bond - CCC/Below	20.3%	20.3%	-
US Short-Term High Yield Corporate Bond (1-3 Year)	8.2%	8.5%	-0.3%
US Leveraged Loan	9.1%	9.1%	-
Emerging Market Investment Grade External Debt	8.7%	-	-
Emerging Market High Yield External Debt	17.5%	-	-
Emerging Market Local Currency Debt	12.7%	13.0%	-0.3%
US High Yield Securitized Bond	11.2%	11.1%	+0.1%
US High Yield Collateralized Loan Obligation	10.4%	10.4%	-
US High Yield Municipal Bond	12.0%	12.0%	-
Hedge Fund - Credit	9.9%	10.0%	-0.1%
Private Debt - Credit Opportunities	14.5%	14.8%	-0.3%
Private Debt - Distressed	14.4%	14.6%	-0.2%
Private Debt - Direct Lending	11.0%	11.0%	-
Private Debt*	11.8%	11.8%	-

*Calculated as a blend of other asset classes

VOLATILITY FORECASTS

REAL ASSETS

Volatility			
Asset Class	**03/31/2024**	**03/31/2023**	**Delta**
Commodity Futures	18.5%	18.5%	-
Midstream Energy	28.2%	28.8%	-0.6%
REIT	21.8%	21.7%	+0.1%
Global Infrastructure Equity	19.4%	20.6%	-1.2%
Global Natural Resources Equity	23.3%	23.5%	-0.2%
Gold	16.4%	16.3%	+0.1%
Real Estate - Core	15.0%	15.0%	-
Real Estate – Value-Add	23.4%	20.4%	+3.0%
Real Estate - Opportunistic	25.8%	23.3%	+2.5%
Private Debt - Real Estate	11.9%	11.9%	-
Private Real Assets - Natural Resources	32.3%	32.5%	-0.2%
Private Real Assets - Infrastructure	12.4%	12.4%	-

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