MEETING MATERIALS

HOWARD COUNTY RETIREMENT PLANS

January 28, 2021

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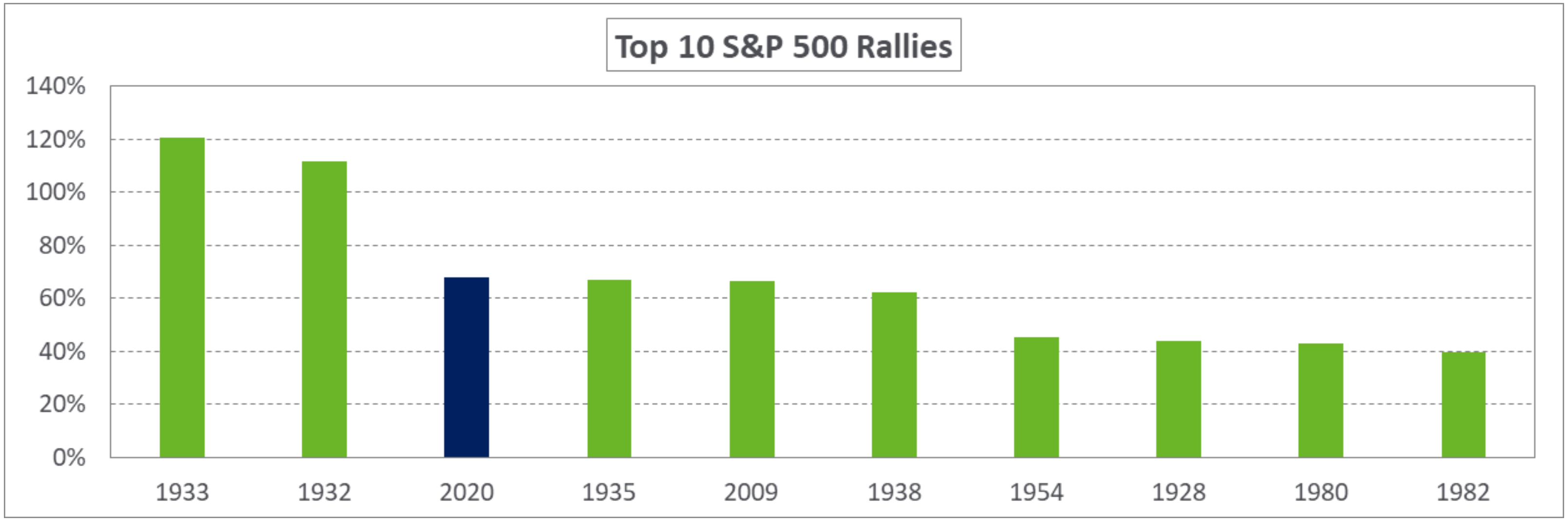
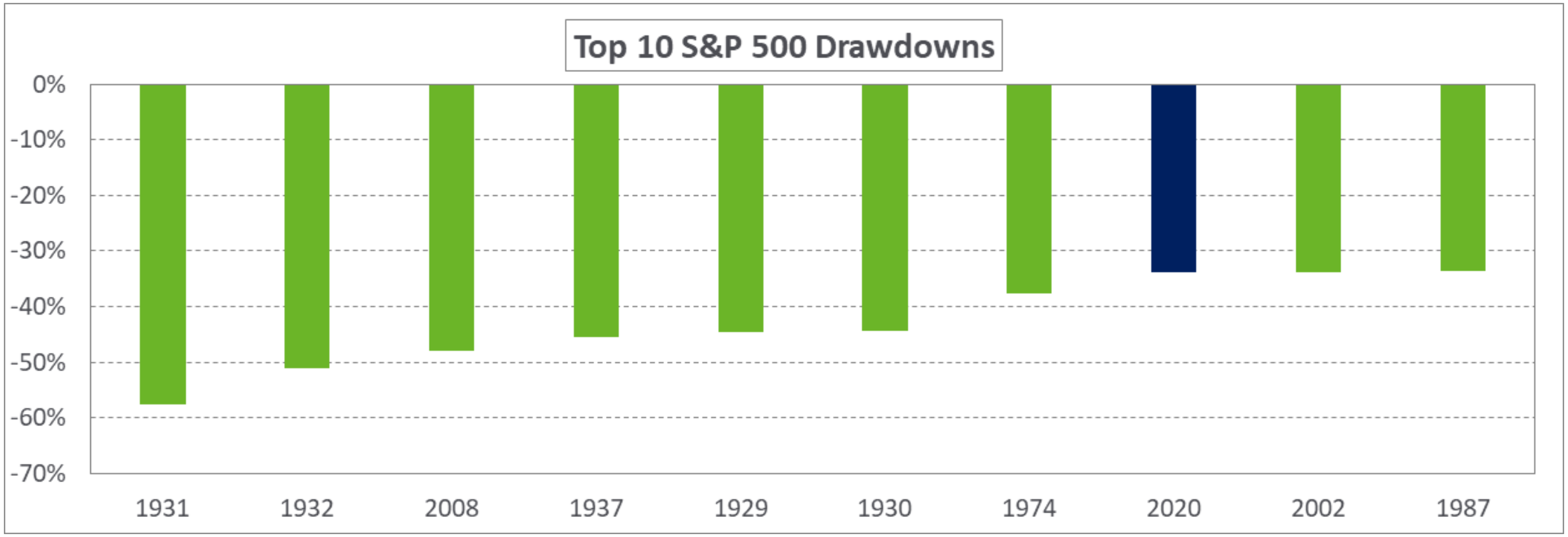
TABLE OF CONTENTS

MARKET OUTLOOK

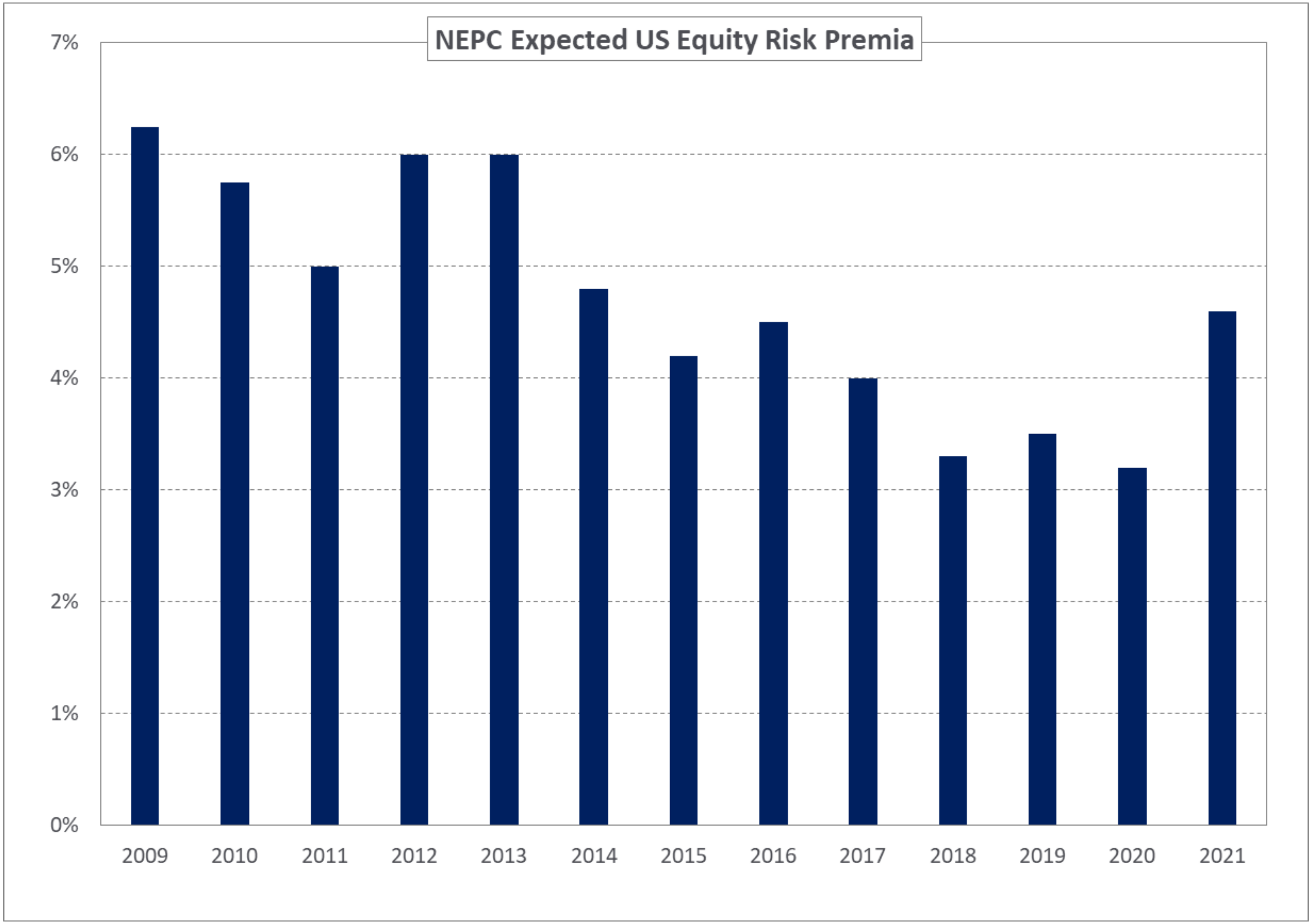
2020 WAS A MOMENTOUS YEAR





Source: S&P, FactSet
Rallies and drawdowns represent the largest trough-to-peak and peak-to-trough, respectively, within a calendar year

CONSIDER HIGHER STRATEGIC EQUITY TARGETS



Source: NEPC
Represents the difference between 10-Year NEPC US Large-Cap and Cash Assumptions
*Prior to 2019, return assumption reflected a 5-7 year time horizon

CORE GEOMETRIC RETURN ASSUMPTIONS

	Asset Class	10-Year Return	30-Year Return	Volatility
	Cash	0.8%	1.9%	0.6%
	US Inflation	2.0%	2.2%	-
Equity	US Large-Cap Equity	5.4%	6.3%	16.6%
Equity	Non-US Developed Equity	5.9%	6.5%	19.7%
Equity	Emerging Market Equity	7.5%	8.4%	28.7%
Equity	*Global Equity**	*6.2%*	*7.0%*	*18.1%*
Equity	*Private Equity**	*9.3%*	*10.1%*	*24.8%*
Fixed Income	US Treasury Bond	0.9%	2.0%	5.3%
Fixed Income	*US Aggregate Bond**	*1.4%*	*2.7%*	*5.7%*
Fixed Income	US TIPS	1.0%	2.1%	5.8%
Fixed Income	US High Yield Corporate Bond	2.9%	5.0%	11.5%
Fixed Income	*Private Debt**	*6.1%*	*7.5%*	*11.9%*
Real Assets	Commodity Futures	0.9%	3.3%	18.5%
Real Assets	US REIT	5.5%	6.7%	21.4%
Real Assets	Gold	2.9%	3.7%	16.4%
Real Assets	Core Real Estate	4.4%	5.6%	15.0%
Real Assets	Private Real Assets - Infrastructure	5.4%	6.6%	12.5%
Multi-Asset	*60% S&P 500 & 40% US Aggregate*	*4.1%*	5.1%	*10.3%*
Multi-Asset	*60% MSCI ACWI & 40% US Aggregate*	*4.3%*	5.3%	*11.8%*
Multi-Asset	*Hedge Fund**	*4.0%*	5.2%	*8.7%*

*Calculated as a blend of other asset classes

REFRESHER ON HOW NEPC BUILDS ASSUMPTIONS

ASSUMPTION DEVELOPMENT

Assumptions are published for over 70 asset classes

NEPC publishes 10- and 30-year return forecasts

Based on data as of 12/31/20

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
Finalize list of new asset classes
Calculate asset class volatility and correlation assumptions
Set model terminal values, growth and inflation inputs
Models updated at quarter-end
Review model outputs and produce return assumptions
Assumptions released on the 15th calendar day after quarter-end

BUILDING BLOCKS METHODOLOGY

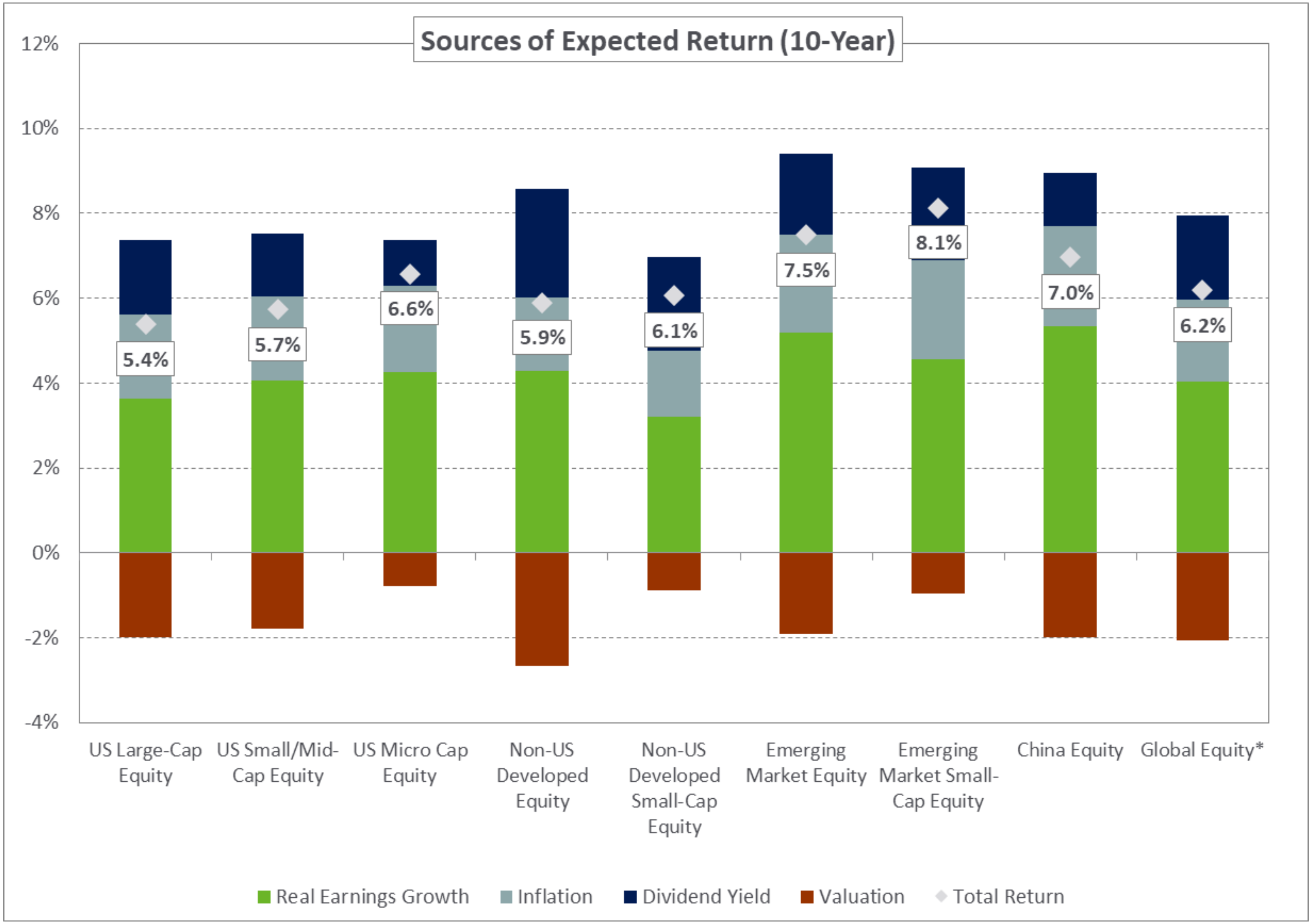
Asset models reflect current and forecasted market data to inform expected returns

Systematic inputs are paired with a long-term trend rate path for terminal values

Model inputs are aggregated to capture key return drivers for each asset class

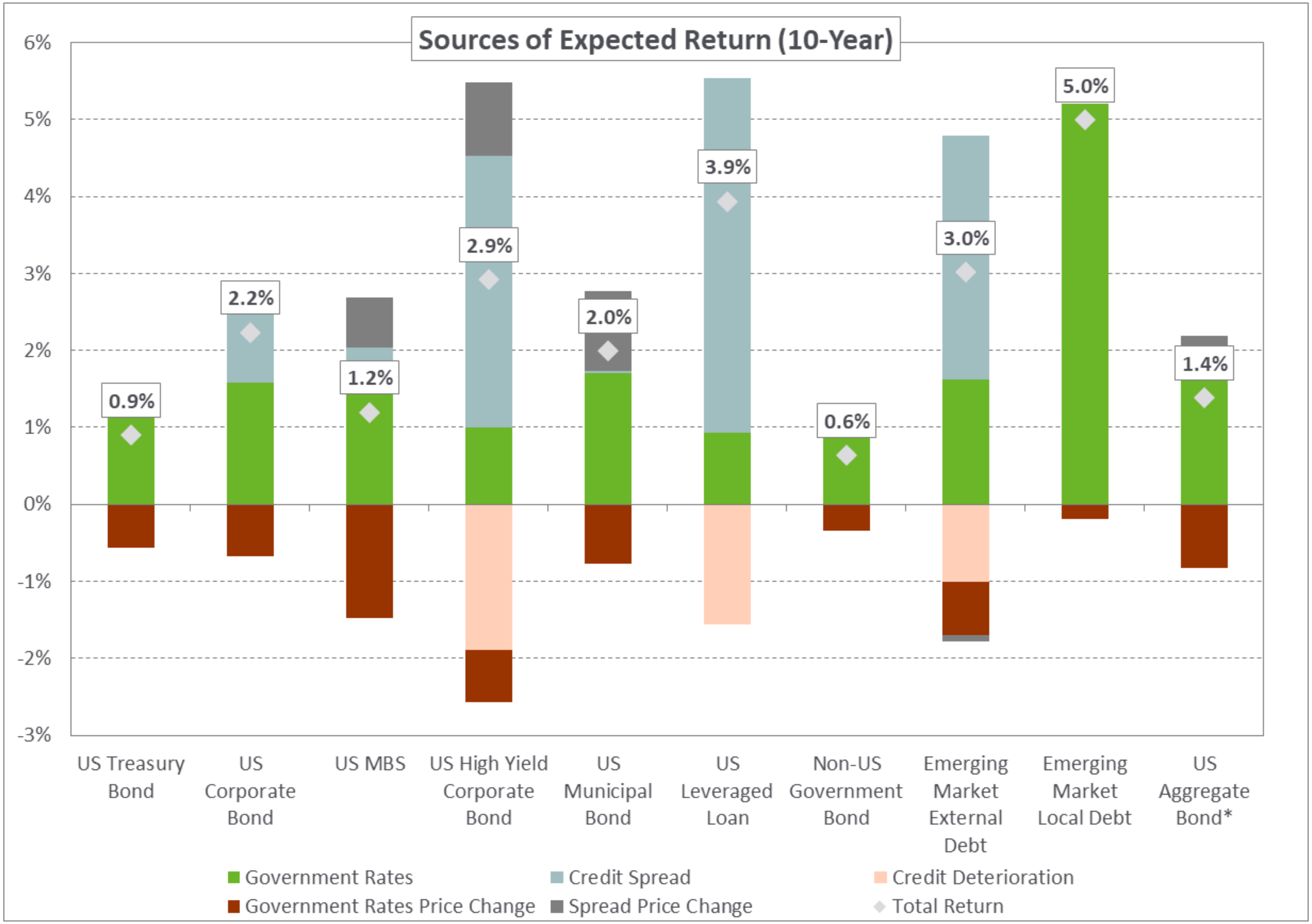
Building block inputs will differ for equity, fixed income, and real assets

EQUITY: BUILDING BLOCKS



Source: NEPC
*Calculated as a blend of other classes

FIXED INCOME: BUILDING BLOCKS



Source: NEPC
*Calculated as a blend of other classes

HOWARD COUNTY 2021 ASSET ALLOCATION REVIEW

NEPC, LLC

HOWARD COUNTY TOTAL PORTFOLIO – CURRENT POLICY

Asset Class	Target Allocation (2019 Assumptions)	Target Allocation (2020 Assumptions)	Target Allocation (2021 Assumptions)	Δ from 2020 (+/-)
Large Cap Equity	19.0%	19.0%	19.0%	--
Small/Mid Cap Equity	4.0%	4.0%	4.0%	--
Int'l Equities	12.0%	12.0%	12.0%	--
Emerging Markets Equity	5.0%	5.0%	5.0%	--
Private Equity	10.0%	10.0%	10.0%	--
Total Equities	**50.0%**	**50.0%**	**50.0%**	--
TIPS	2.0%	2.0%	2.0%	--
Core Bonds	20.0%	20.0%	20.0%	--
Emerging Market Debt (Local)	4.0%	4.0%	4.0%	--
Absolute Return Fixed Income	4.0%	4.0%	4.0%	--
Private Debt	5.0%	5.0%	5.0%	--
Total Fixed Income	**35.0%**	**35.0%**	**35.0%**	--
Core/Non-Core Real Estate[1]	5.0%	5.0%	5.0%	--
Private Real Assets – Energy/Metals	2.0%	2.0%	2.0%	--
Total Real Assets	**7.0%**	**7.0%**	**7.0%**	--
Hedge Funds	8.0%	8.0%	8.0%	--
Total Multi Asset	**8.0%**	**8.0%**	**8.0%**	--
Total Portfolio	**100.0%**	**100.0%**	**100.0%**	--
Expected Return (10 years)	***6.57%***	***5.91%***	***5.39%***	***-0.52%***
Expected Return (30 years)	***7.66%***	***6.98%***	***6.40%***	***-0.58%***
Standard Deviation	***11.51%***	***11.70%***	***11.95%***	***+0.25%***

(1) Real Estate was modeled using a 60/40 split between NEPC's assumptions for Core Real Estate and Non-Core Real Estate.

HOWARD COUNTY TOTAL PORTFOLIO – MIX A

Asset Class	Target Allocation (2021 Assumptions)	MIX A (2021 Assumptions)	Δ from 2020 (+/-)
Large Cap Equity	19%	22%	+3.0%
Small/Mid Cap Equity	4%	5.5%	+1.5%
Int'l Equities	12%	11%	-1.0%
Emerging Markets Equity	5%	6.5%	+1.5%
Private Equity	10%	13%	+3.0%
Total Equities	**50%**	**58%**	**+8.0%**
TIPS	2%	2%	--
Core Bonds (constrained to Treasuries)	20%	9%	-11.0%
Emerging Market Debt (Local)	4%	4%	--
High Yield Bonds	0%	4%	+4.0%
Absolute Return Fixed Income	4%	4%	--
Private Debt	5%	5%	--
Total Fixed Income	**35%**	**28%**	**-7.0%**
Core/Non-Core Real Estate[1]	5%	4%	-1.0%
Private Real Asset	2%	2%	--
Total Real Assets	**7%**	**6%**	**-1.0%**
Hedge Funds	8%	8%	**--**
Total Multi Asset	**8%**	**8%**	**--**
Total Portfolio	**100%**	**100%**	**--**
Expected Return (10 years)	***5.3%***	***5.9%***	***+0.6%***
Expected Return (30 years)	***6.4%***	***6.9%***	***+0.5%***
Standard Deviation	***11.9%***	***13.8%***	***+1.9%***

(1) Real Estate was modeled using a 50/50 split between NEPC's assumptions for Core Real Estate and Non-Core Real Estate.

SCENARIO ANALYSIS: REGIME CHANGES

- **NEPC scenario analysis highlights the impact of shifting economic and market regimes on the portfolio and potential asset allocation mixes**
  - Scenario returns are based on asset class beta exposure informed by historical returns classified across market regimes and NEPC's current capital market assumptions
  - Allows for a better understanding of portfolio risk exposures under non-consensus inflation and economic growth outcomes over a five year time horizon

Expansion

Informed by two years of a rising economic growth and falling inflation regime followed by two years of a rising growth and rising inflation regime and a final year of a balanced economic growth and inflation regime

Overextension

Informed by two years of a rising economic growth and rising inflation regime followed by a year of a rising growth and falling inflation regime, a year of a balanced economic growth and inflation regime, and a final year of a falling growth and inflation regime

Goldilocks

Balanced economic growth, low rates, muted inflation

Recession

Informed by three years of a falling economic growth and falling inflation regime followed by two years of an economic growth recovery and muted changes to inflation

Stagflation

Informed by three years of a falling economic growth and rising inflation regime followed by a year of a rising growth and inflation regime and a final year of a rising growth and falling inflation regime

SCENARIO ANALYSIS: REGIME RETURNS

Expansion Scenario Return*

Cash: 1.75%
Treasuries: -0.8%
Long Treasuries: -3.9%
US TIPS: 1.3%
US IG Credit: 0.7%
High Yield Bonds: 2.3%
US Large-Cap Equity: 6.9%
Emerging Market Equity: 9.9%
Commodities: 1.6%

Depression Scenario Return*

Cash: -0.3%
Treasuries: 1.0%
Long Treasuries: 3.7%
US TIPS: -0.7%
US IG Credit: 2.5%
High Yield Bonds: -6.5%
US Large-Cap Equity: -11.7%
Emerging Market Equity: -29.0%
Commodities: -17.2%

Goldilocks Scenario Return*

Cash: 0.5%
Treasuries: 0.3%
Long Treasuries: 0.0%
US TIPS: 0.6%
US IG Credit: 2.4%
High Yield Bonds: 2.8%
US Large-Cap Equity: 7.6%
Emerging Market Equity: 11.1%
Commodities: -0.6%

Recession Scenario Return*

Cash: 0.0%
Treasuries: 0.1%
Long Treasuries: 0.5%
US TIPS: -0.9%
US IG Credit: 2.0%
High Yield Bonds: -0.2%
US Large-Cap Equity: 0.2%
Emerging Market Equity: -2.4%
Commodities: -7.5%

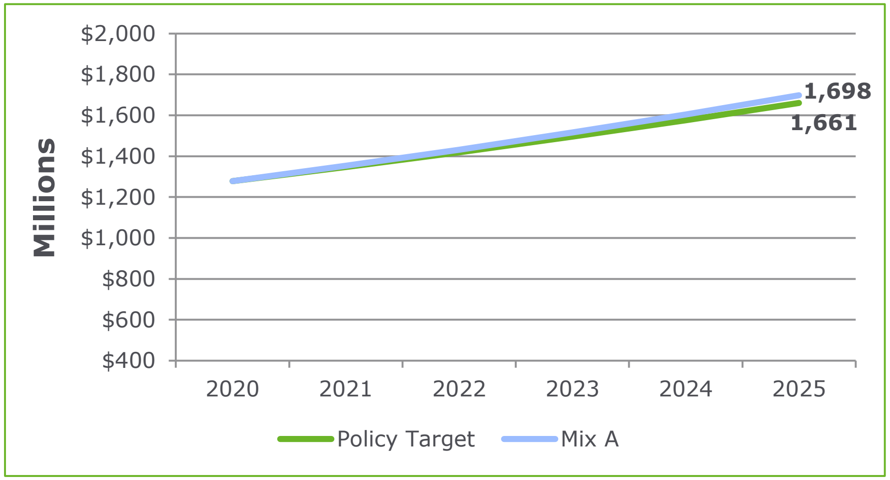
Stagflation Scenario Return*

Cash: 1.4%
Treasuries: -0.6%
Long Treasuries: -4.4%
US TIPS: 2.3%
US IG Credit: -0.4%
High Yield Bonds: 0.7%
US Large-Cap Equity: -3.6%
Emerging Market Equity: -11.3%
Commodities: 4.5%

Scenario returns are a 5 year annualized returns

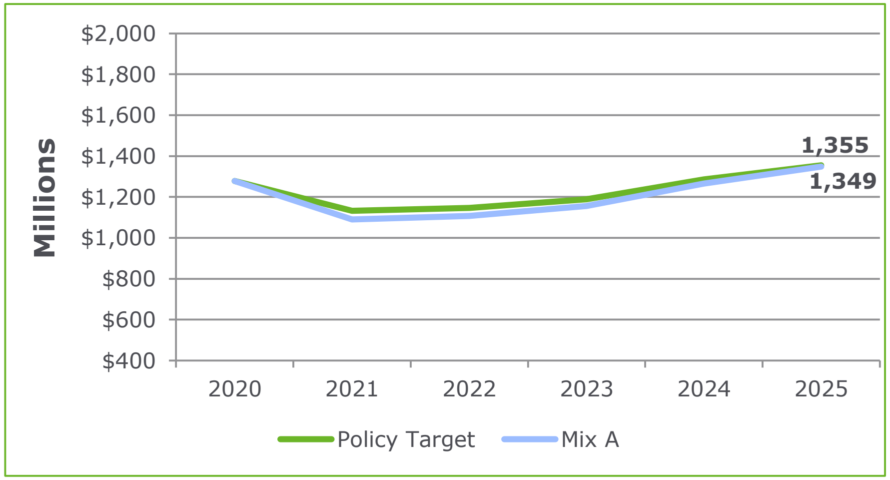
HOWARD COUNTY TOTAL PORTFOLIO – SCENARIOS

Base Case



Stagflation

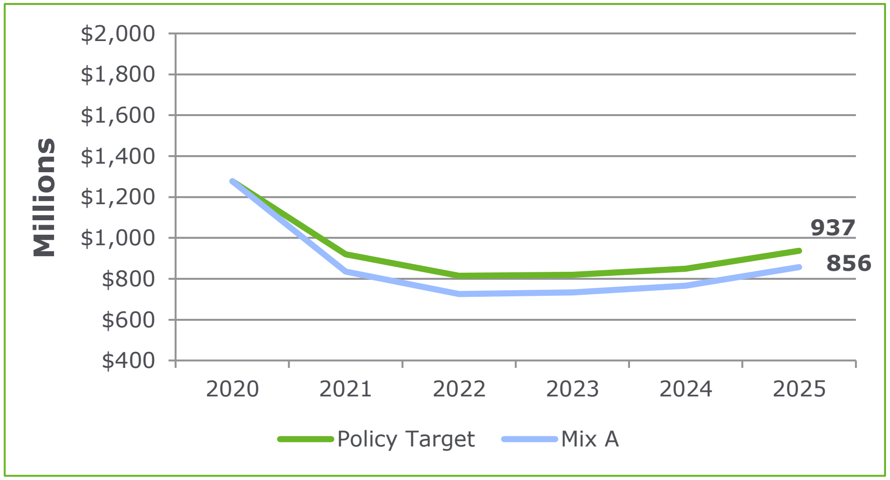
Recession



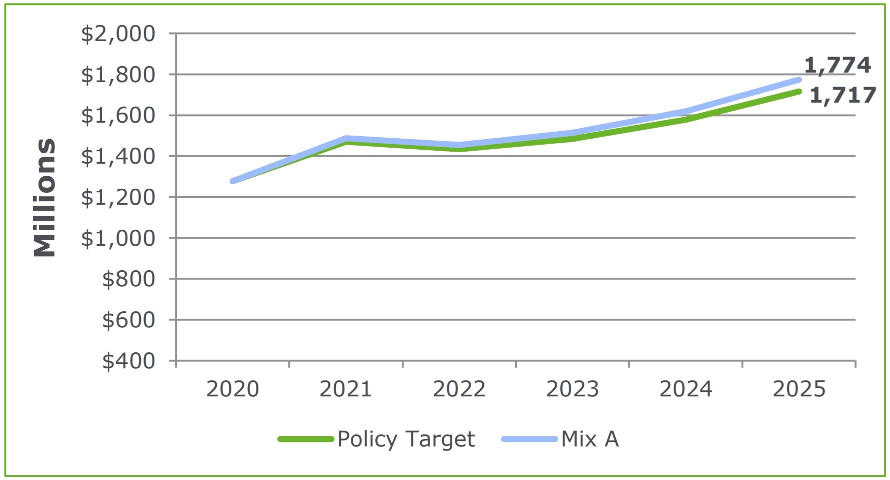
HOWARD COUNTY TOTAL PORTFOLIO – SCENARIOS

Expansion

Depression



Goldilocks



SUMMARY OF ASSET ALLOCATION THOUGHTS AND ACTIONS

Consider higher strategic equity targets as the long-term return differential relative to fixed income is wide

Consider a strategic allocation to safe haven fixed income by adjusting guidelines with PIMCO and Dodge & Cox to hold Treasuries as a way to serve as a source of liquidity and to provide downside protection

Consider a strategic allocation with a blend of high yield, levered loans, and emerging market debt to offer an improved beta profile for return-seeking credit

PUBLIC MARKET EQUITY

PUBLIC MARKET EQUITY
STRATEGIC VIEWS

NEPC recommends US equity exposure be held at a target of 60% relative to overall global equity exposure

Currently represents a modest overweight to US markets as we believe the elevated valuations trends are likely to continue

We encourage a strategic bias to emerging market equities relative to the MSCI ACWI weight

The strategic overweight is designed to capture higher return expectations and growth potential in emerging Asia

EAFE large cap is the recommended funding source for the US and emerging markets overweight

The strategic mix for public market equity is the entry point to align with an equity beta group framework

Investor risk-tolerance, size of the strategic allocation to public market equity, and illiquidity risk guide the decision regarding the use of active equity investment strategies and private equity

PUBLIC MARKET EQUITY
STRATEGIC VIEWS

Public Market Equity Allocation

- **US Equity**
  60.0%
  Index Weight: 56.6%
  - **Large Cap (S&P 500)**
    48.0%
    Index Weight: 47.0%
  - **SMID Cap**
    12.0%
    Index Weight: 9.6%
- **Non-US Developed Equity**
  25.0%
  Index Weight: 30.3%
  - **Large Cap**
    20.0%
    Index Weight: 25.8%
  - **Small Cap**
    5.0%
    Index Weight: 4.5%
- **Emerging Market Equity**
  15.0%
  Index Weight: 13.1%
  - **Large Cap**
    12.0%
    Index Weight: 11.7%
  - **Small Cap**
    3.0%
    Index Weight: 1.4%

Source: S&P, MSCI, FactSet, NEPC; index data as of 12/31/2020
Bolded numbers represent NEPC Strategic Views

SAFE-HAVEN FIXED INCOME

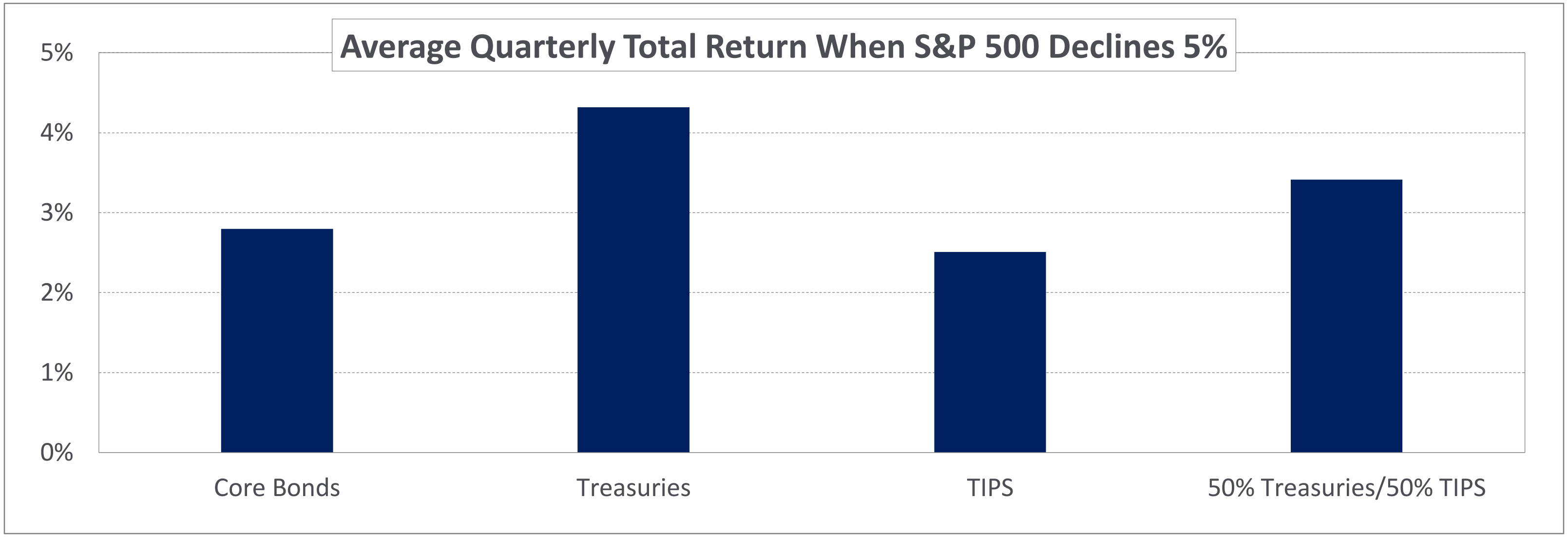
SAFE-HAVEN FIXED INCOME
STRATEGIC VIEWS

Safe-haven fixed income exposure is a liquidity source and offers downside protection for the total portfolio

The safe-haven liquidity profile is vital as market stress can impair the portfolio's ability to meet cash flow needs

The inability to service capital calls, support spending needs, or rebalance in times of market stress limit the portfolio's future return

Sizing of the safe-haven exposure to support downside protection needs should reflect return objectives and investor risk tolerance



Source: Barclays, FactSet, NEPC

SAFE-HAVEN FIXED INCOME

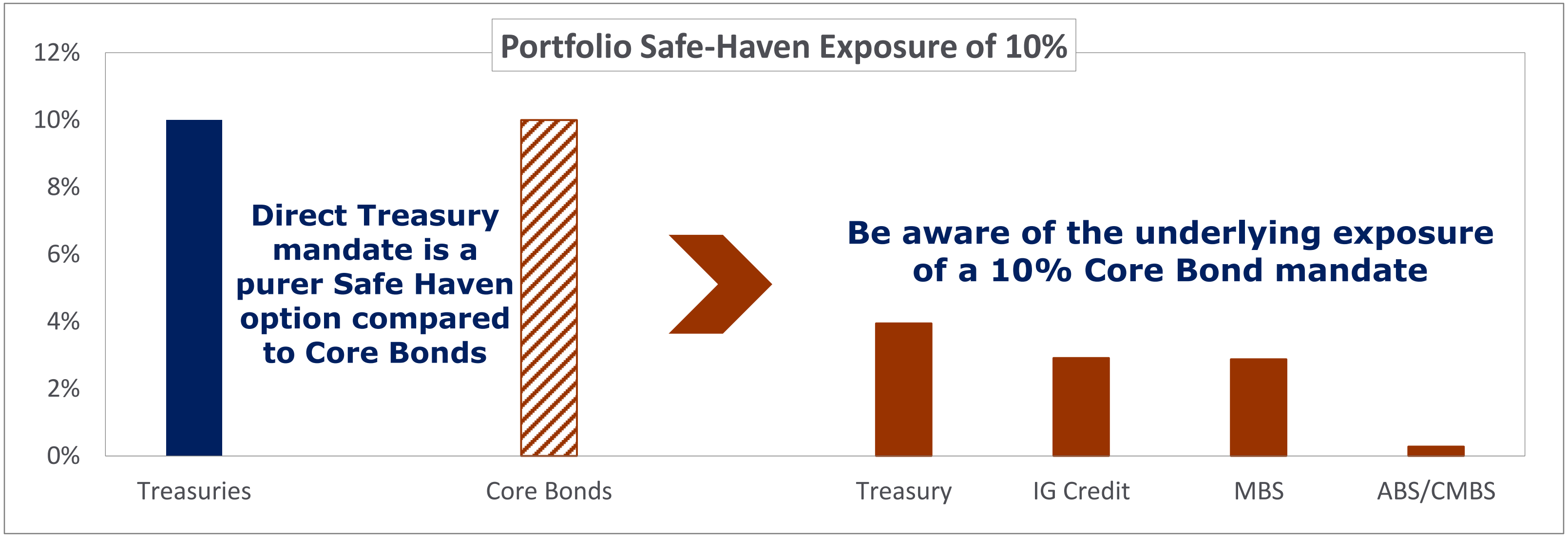
STRATEGIC VIEWS

We recommend investors hold a stand-alone Treasury mandate to service overall portfolio liquidity needs

Direct or "look-through" Treasury exposure of 10% or more is critical to influence portfolio outcomes in times of market stress

We encourage investors to understand their underlying safe-haven exposure relative to their strategic objectives

Look to control the safe-haven beta exposure and be aware that Core Bond strategies can stray from a safe-haven mandate



Source: Barclays, FactSet, NEPC

RETURN-SEEKING CREDIT

RETURN-SEEKING CREDIT
STRATEGIC VIEWS

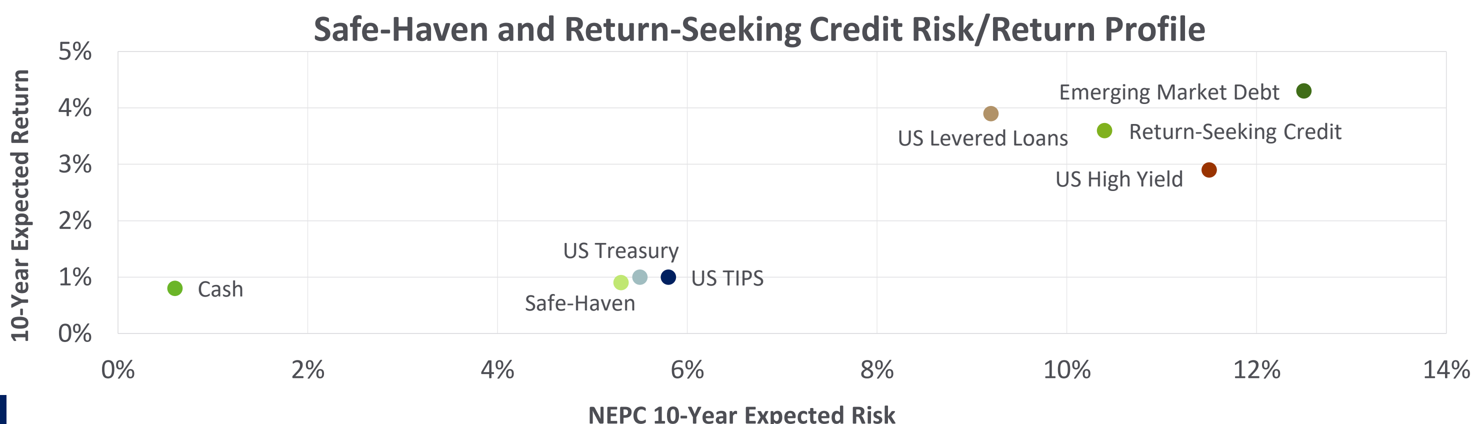
For many investors, fixed income target allocations are applied with a broad brush with conflicting objectives

The goal of safety vs return are in conflict and the need for liquidity and downside protection can be overlooked when reaching for yield

We recommend investors create distinct strategic targets for safe-haven fixed income and return-seeking credit

Separate strategic targets align the objective and benchmark for each mandate and highlight the role each play in a portfolio

We encourage investors to acknowledge the conflicting objectives of safe-haven vs return-seeking assets

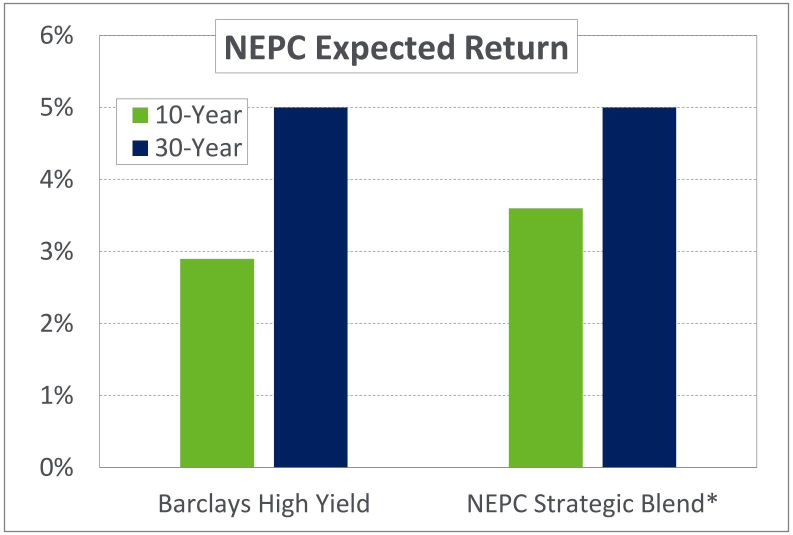


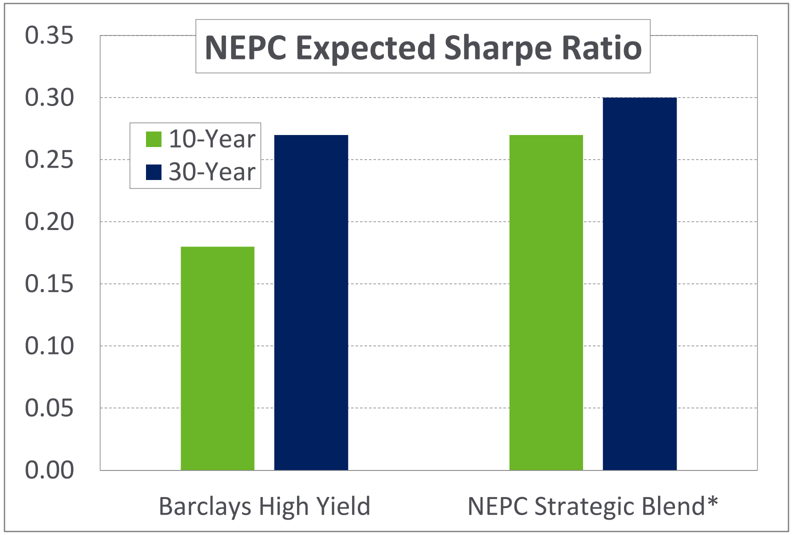
RETURN-SEEKING CREDIT
STRATEGIC VIEWS

We believe a strategic blend of high yield, levered loans, and emerging market debt offer an improved beta profile for return-seeking credit relative to US high yield

This strategic mix has exhibited a similar return profile versus high yield with a meaningful reduction in volatility

- The strategic blend of 50% high yield, 25% levered loans, and 25% blended EMD represents a diversified credit beta and a transparent opportunity cost to evaluate credit implementation options





Source: Barclays, S&P, JPM, FactSet, NEPC Capital Market Assumptions

*NEPC Strategic Blend represents 50% High Yield, 25% Levered Loans (Bank Loans), 25% Blended Emerging Market Debt

APPENDIX

KEY MARKET THEMES

ASSESSING THE KEY MARKET THEMES

AS OF 12/31/20

Theme	Dormant	Faded	Neutral	Prevalent	Dominant
Virus Trajectory *No Change in Status*					**Dominant**
Permanent Interventions *No Change in Status*					**Dominant**
Globalization Backlash *No Change in Status*				**Prevalent**	
China Transitions *No Change in Status*			**Neutral**		

Virus Trajectory

No Change in Status

- Virus Trajectory continues to be the dominant force driving global economic outcomes
- Market sentiment improved with successful vaccine candidates, though concerns remain around distribution, logistics, and supply of the vaccine
- Uncertainty remains as worsening COVID-19 trends and a potential new strain of the virus may impact the timing of an economic recovery

Permanent Interventions

No Change in Status

- Permanent Interventions continues to be the dominant force driving global markets upward
- In the US, a fifth coronavirus relief package worth about $900 billion was passed. In Europe, the Central Bank expanded its emergency bond-buying program by €500B and extended the program

Globalization Backlash

No Change in Status

- The importance of the theme may increase in coming years as the lasting impact from the pandemic is seen
- The world will likely be faced with an amplified wealth divide given economic and labor market disruptions, which historically has driven more volatile political outcomes

China Transitions

No Change in Status

- US-China tensions escalated as President Trump signed two executive orders that prohibited US investors from owning a select number of corporate securities from China and banned transactions with some Chinese software applications
- President-elect Biden has promised a policy review in 2021 regarding the US policy posture with China

VIRUS TRAJECTORY

DEFINING THE THEME

KEY MARKET THEME: *VIRUS TRAJECTORY*

The Virus Trajectory theme reflects the uncertain path of how the pandemic and global economic activity interact

The scope and duration of virus containment efforts severely disrupted the global economy

Successful distribution of COVID-19 vaccines shortens the timeline of the theme

A significant increase in the pace of vaccinations will be needed to aid a rapid recovery for the global economy

The lasting influence of the pandemic is uncertain as the extent of the economic scars have yet to be fully realized

Despite relative improvement in economic data, recent data points highlight lingering disruptions in businesses and the labor market

Plausible economic paths range from a rapid economic recovery, to a K-shaped recovery, to a depression

The Virus Trajectory theme began in 2020 and could conclude in 2021, but broad socio-economic effects will be felt for years

INVESTMENT CONSIDERATIONS

KEY MARKET THEME: *VIRUS TRAJECTORY*

The wide range of scenarios pulls investor focus from the extremes of vaccine optimism to a renewed outbreak

The pandemic has amplified our PI theme, fueling fiscal and monetary expansion to the benefit of equity markets

For risky investments, it raises the question "do valuations matter?"

A rapid vaccine rollout can unleash economic exuberance and benefit highly cyclical assets and value stocks

However, the risk of an extended economic downturn and prolonged deflationary environment remain

In such an environment, nominal government bonds offer relief

Continuum of Virus and Economic Paths

Health Risk	Calibration Between Health Risks and Economic Costs	Economic Cost

THEMATIC MACROECONOMIC RISKS

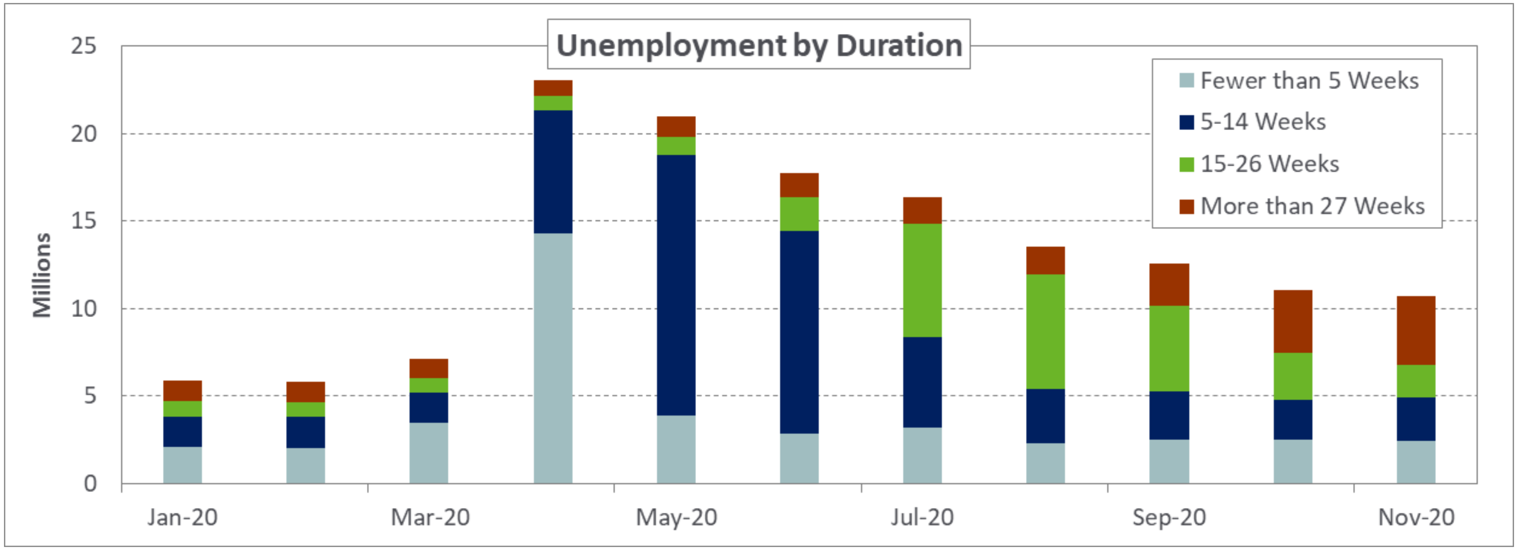
KEY MARKET THEME: *VIRUS TRAJECTORY*

Economic dislocation from the pandemic is widespread

The negative consequences vary across the globe but can be found in labor markets, consumer spending, productivity, and imbalances

The lingering damage from the pandemic is unclear and represents the largest economic disruption of our time

Labor markets are generally slow to recover and the pandemic may leave a lasting impact on the long-term unemployed



Source: Department of Labor, FactSet

POTENTIAL OUTCOMES AND IMPLICATIONS
KEY MARKET THEME: *VIRUS TRAJECTORY*

	Description	Market Implications
Base Case	Virus containment efforts aimed at slowing the spread of COVID-19 will shape the trajectory of a recovery. Increased monetary and fiscal stimulus offset some of the economic disruption, but economic growth and labor markets are likely to take longer to normalize than historical recessions suggest.	Market volatility remains at elevated levels. Low interest rates are here to stay but there is increased volatility around the path of inflation. Large deflationary pressures remain and are paired with a stimulative fiscal response. Opportunities may be available for investors willing to take on greater strategic equity exposure. Impact of Virus Trajectory looks to recede within 12 months.
Economic Depression	Period of extreme economic disruption characterized by unemployment levels greater than 10% and falling consumer spending levels. Waves of changing containment rules damage consumer confidence, limiting economic activity even during less restrictive times. Massive government fiscal relief measures look to plug holes in GDP but the lack of economic dynamism reduces productivity.	Combined fiscal and monetary policies are MMT-like with outsized volatility in global currency regimes. Relative benefits to the yuan and dollar. Extreme deflationary pressures offer value in nominal local government debt (e.g. US Treasuries). An unprecedented economic disruption across industries and countries. Patience is required as equity markets reprice and the credit default cycle is elevated. Maintaining liquidity is a first order priority, but look to allocate surplus liquidity to distressed investments.
Rapid Vaccine Roll-Out	Combination of dynamic containment and expansive distribution of vaccines lead to a rapid path of economic recovery in 2021. Fiscal policy relief and stimulus fill the economic gap to restore economic normalization.	Strongly positive for all cyclical assets and a potential catalyst for value-oriented equities. Provides path for moderately higher inflation as fiscal policy expansion drives economic growth. Begins a period of post-pandemic economic exuberance with consumer spending growth across all corners of the economy.

PERMANENT INTERVENTIONS

DEFINING THE THEME

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

Global markets are defined by central bank market interventions and permanent fiscal support

The pandemic has supercharged the Permanent Interventions theme with outsized support and fiscal relief

Market sentiment is now a key central bank policy pillar of equal standing to inflation and employment mandates

Low interest rates and a fragile economic environment force central banks to grow balance sheets and liquify the global financial system

Without meaningful inflation pressures, the path of monetary policy does not normalize and an environment of low interest rates persists

We believe permanent fiscal intervention is the baseline

Weak economic growth trends in the developed world underpin political tensions and motivate a significant fiscal debt expansion

Permanent Interventions boosts investor sentiment and enhances our long-term return outlook for risk assets

We believe central banks across the globe will continue to expand balance sheet assets to sustain an environment of excess liquidity

DEFINING THE THEME CONTINUED

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

The removal of central bank measures and fiscal stimulus would reveal the global economy's structural weakness

The dynamics of muted inflation pressures and low economic growth drive a combined monetary and political response

As debt-to-GDP levels rise, the necessity of central bank intervention is reinforced to maintain low interest rates

Nominal economic growth rates must exceed sovereign bond yields to forestall a sovereign debt crisis, as seen in the Eurozone in 2010

We see the Permanent Interventions theme muting the normal fluctuations of the business cycle

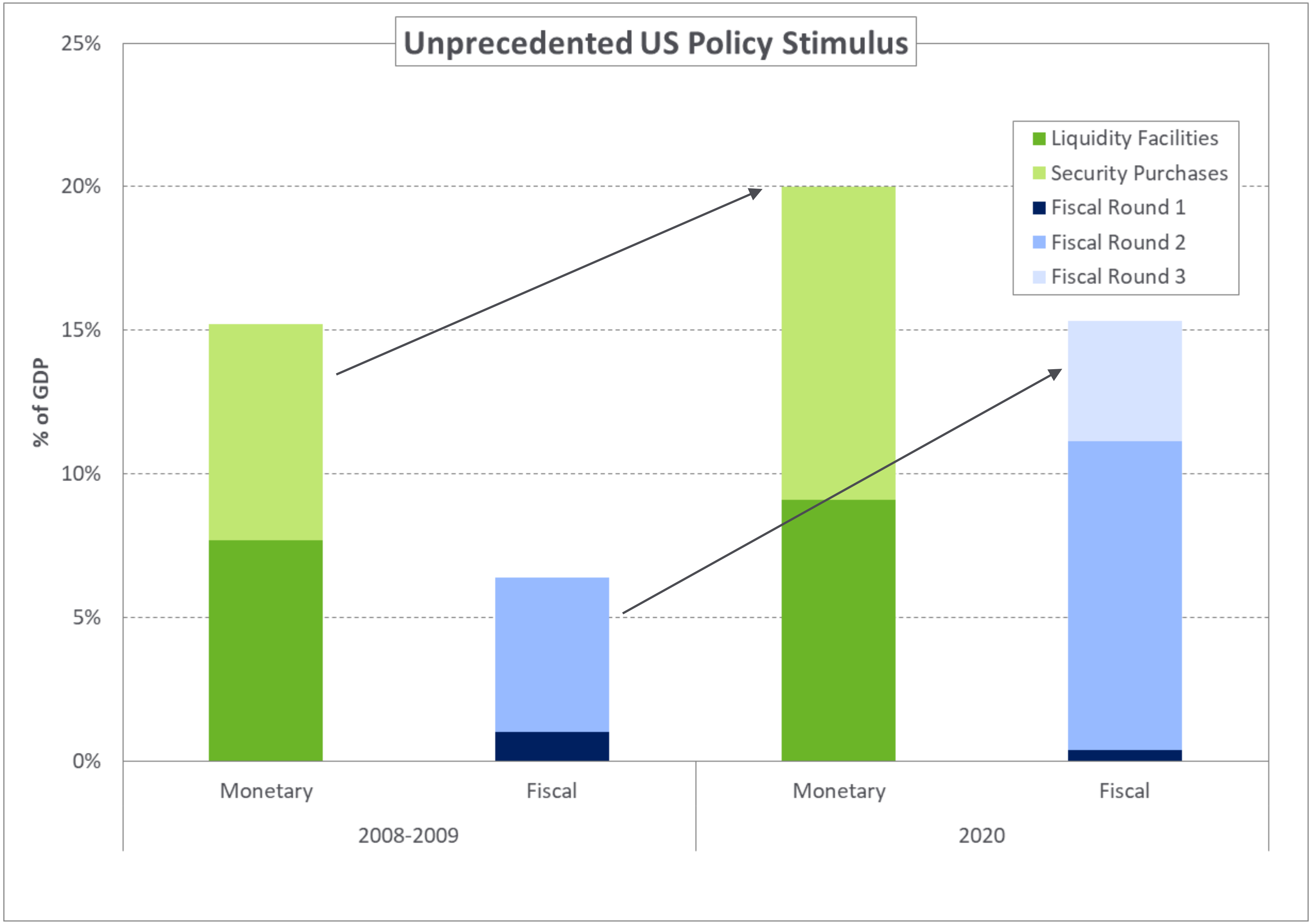
This potentially leaves no safety net in an economic downturn should central bank and fiscal interventions be limited or exhausted

The new regime reflects permanent easy monetary policy, surplus liquidity, and fiscal debt growth

Investors have yet to fully discount the combined favorable equity market conditions and heightened long-term macro tail-risks

ELEVATED PERMANENT INTERVENTIONS

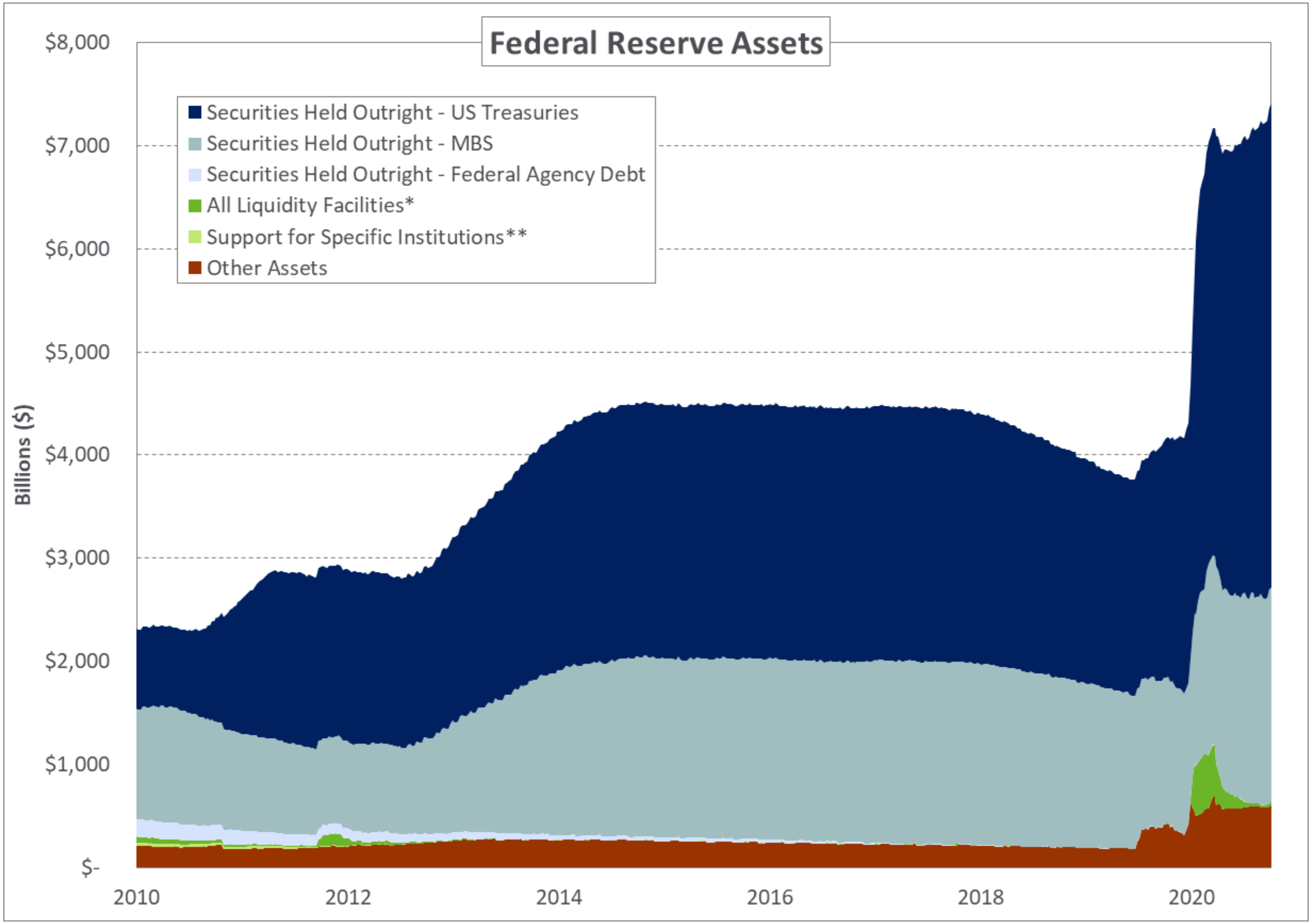
KEY MARKET THEME: *PERMANENT INTERVENTIONS*



Source: NEPC, Federal Reserve
Fiscal Rd 1: 2008 – Economic Stimulus Act ($152B); 2020 – CPRSA/Families First ($91B); Fiscal Rd 2: 2008 – Am. Recovery & Reinv. Act ($787B); 2020 – CARES Act ($2.3T); Fiscal Rd 3: 2020 – Consolidated Appropriations Act ($900B)

ELEVATED PERMANENT INTERVENTIONS

KEY MARKET THEME: *PERMANENT INTERVENTIONS*



Sources: Federal Reserve, FactSet, NEPC; *All Liquidity Facilities includes term auction credit, primary credit, secondary credit, seasonal credit, Primary Dealer Credit Facility, Asset-Backed Commercial Paper, Money Market Mutual Fund Liquidity Facility, and central bank liquidity swaps; **Support for Specific Institutions includes credit extended to AIG and Maiden Lane LLCs

INVESTMENT CONSIDERATIONS

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

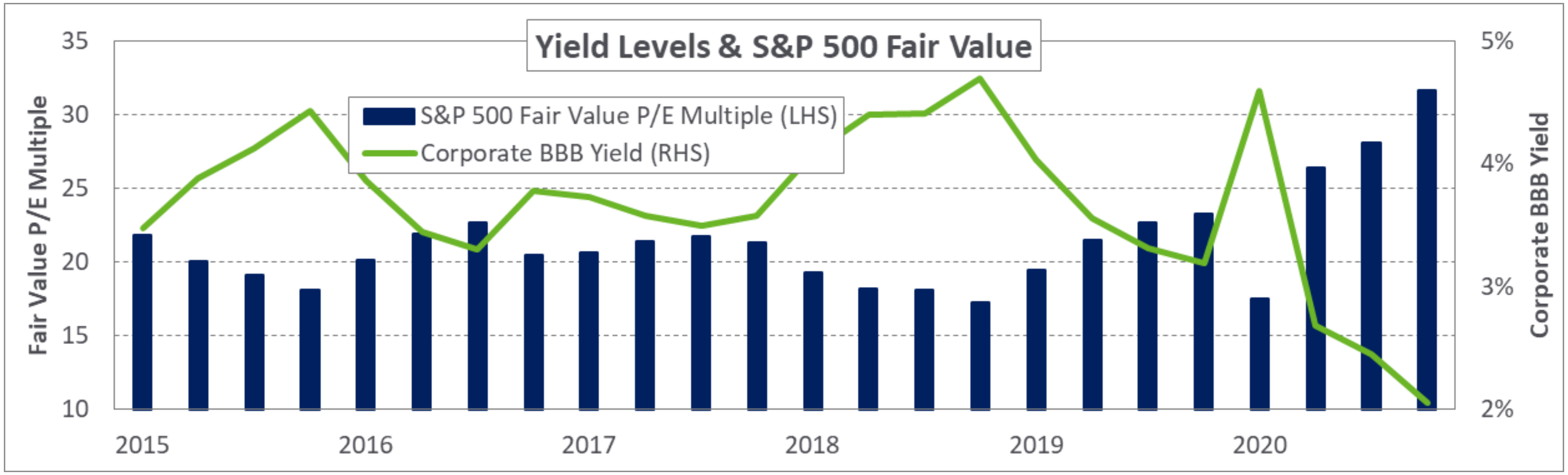
Permanent Interventions sustains high P/E multiples and equity valuations become a less potent market signal

Low interest rates generate higher values when discounting future cash flows and increase valuation levels for equity markets

The supportive policy environment is favorable to equity

Investors enjoy high profit margins relative to history as the surplus of central bank liquidity benefits holders of capital relative to labor

However, proactive tightening of monetary policy damages market sentiment and exposes the fragile nature of market dynamics



Source: FactSet, S&P, Bloomberg

THEMATIC MACROECONOMIC RISKS

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

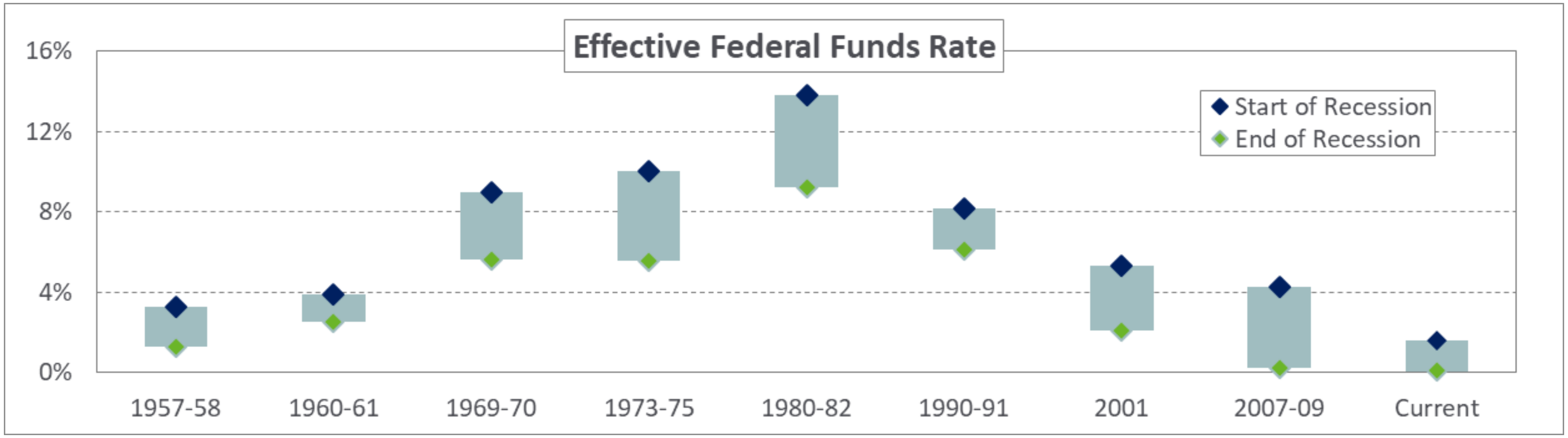
History shows economic weakness can overwhelm the system in the absence of extraordinary policy measures

In such a deflationary environment, nominal government bonds offer one of the few attractive risk-adjusted returns profiles

The withdrawal of central bank intervention and fiscal support displaces traditional macroeconomic risks

Permanent Interventions gradually fuels tail-risks as moral hazard is absorbed into the financial system and markets nationalize losses

Actions by central banks and governments to lessen the economic impact of COVID-19 have increased the dominance of the theme



Source: FactSet, Federal Reserve

POTENTIAL OUTCOMES

KEY MARKET THEME: *PERMANENT INTERVENTIONS*

	Description	Long-Term Market Implications
The New Normal	NEPC base case expectation of a permanent regime of easy monetary policy, surplus market liquidity, and fiscal debt growth paired with muted inflation levels	Favorable to equities relative to safe-haven fixed income, with risk assets benefiting from above average corporate profit margins and low interest rates. The normal fluctuations of a business cycle are subdued but macro tail-risks continue to build
Political Dysfunction	Interconnected with NEPC's Globalization Backlash theme, political conflict disrupts the full intervention of fiscal stimulus	Economic growth rates are lower as fiscal stimulus lacks permanence. Developed economies are at a greater risk of a downturn and central bank intervention has limits to improve economic growth. Favorable to long duration fixed income and tactically favorable to risks assets following frequent bouts of market volatility
Back to Normal	Economic trend growth rates and inflation levels normalize along with market and business cycles	Expected period of low investment returns for all assets classes as real interest rates normalize. Requires a repricing of risk premia to incorporate a neutral fiscal policy and the withdrawal of central bank intervention
Inflation	A material increase in inflation would be a severe tail-risk outcome for investors as the market discounts almost no probability of above average inflation levels	Significant repricing of market expectations and risk premia likely generate permanent losses of capital among some segments of equity and fixed income markets. Potential cause and/or effect is a devaluation of developed market currencies and a breakdown of the US dollar's reserve currency status
Japanification	This outcome is largely driven by a demographic crisis, with Europe being the most severely exposed. China is at risk, but racing to increase per-capita GDP levels before the population ages. The US demographic profile is relatively positive compared to other nations	Favorable to long duration fixed income with severe deflationary pressures and low growth rates. Fiscal and monetary intervention is not a cure, but mitigates the full economic damage. Central banks control bond prices across the yield curve, severely distorting the cost of capital and corporate capital structures. The impacted regions experience a "lost decade" of investment returns

12/31/2020 ASSET CLASS ASSUMPTIONS

MACRO ASSUMPTIONS

INFLATION OVERVIEW

Inflation is an essential building block for developing asset class return assumptions

Inflation assumptions are model-driven and informed by multiple inputs for both the US 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 US inflation expectation continues to reflect minimal expected inflation pressures over the long-term

We anticipate near-term volatility in our inflation assumptions as market-based inflation expectations discount the full range of economic scenarios associated with the pandemic and response

Region	10-Year Inflation Assumption	30-Year Inflation Assumption
United States	2.0%	2.2%

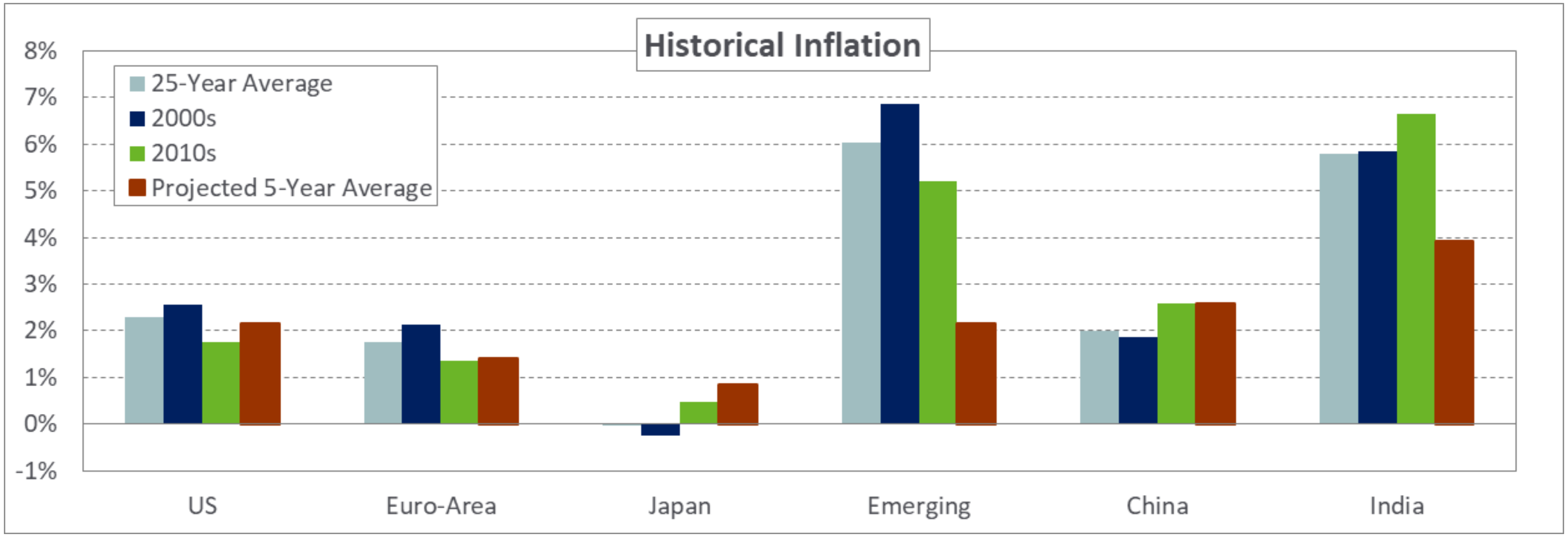
GLOBAL INFLATION

Core inflation remains well below central bank targets

COVID-19, globalization, aging demographics, and deflationary technology trends are inflation headwinds influencing markets

Global inflation break-even expectations suggest inflation will be near current levels for the long-term

Emerging market inflation remains above the developed world, but is significantly lower than long-term averages



Source: IMF, FactSet, NEPC

US CASH EXPECTATIONS

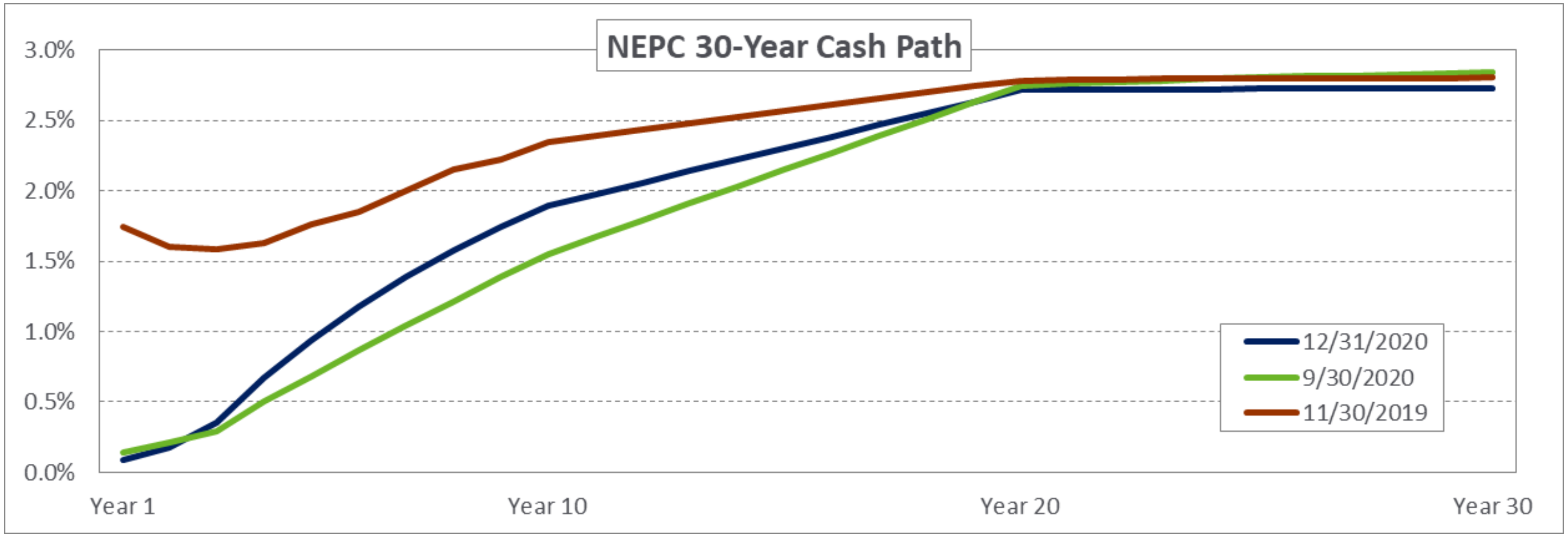
Cash is a foundational input for all asset class returns

The assumption is a direct building block input and is a relative value factor (cash + risk premia) in long-term return projections

Cash assumptions reflect inflation and real interest rates

US nominal rates are near historic lows for NEPC forecasts

Market expectations of suppressed real rates and minimal inflation create a slow trending path for cash to reach NEPC's long-term target



Source: Bloomberg, FactSet, NEPC

GLOBAL INTEREST RATE EXPECTATIONS

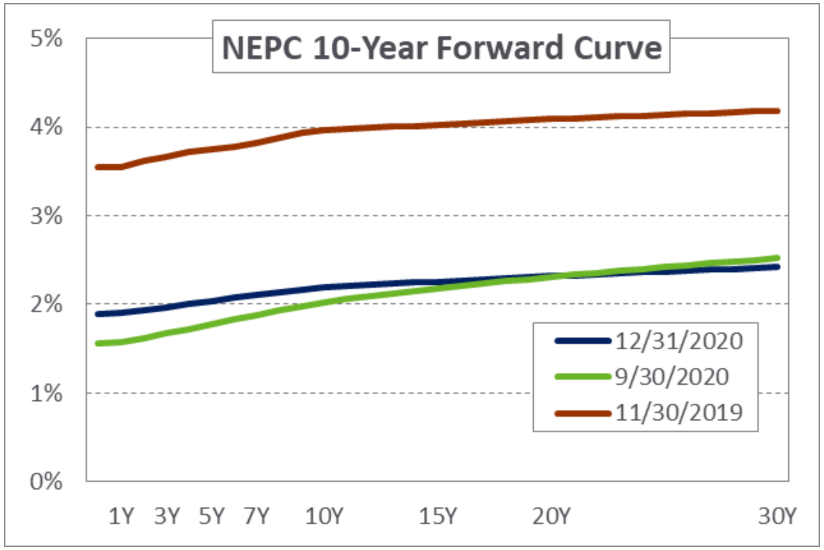
Negative real yields reflect central bank intervention

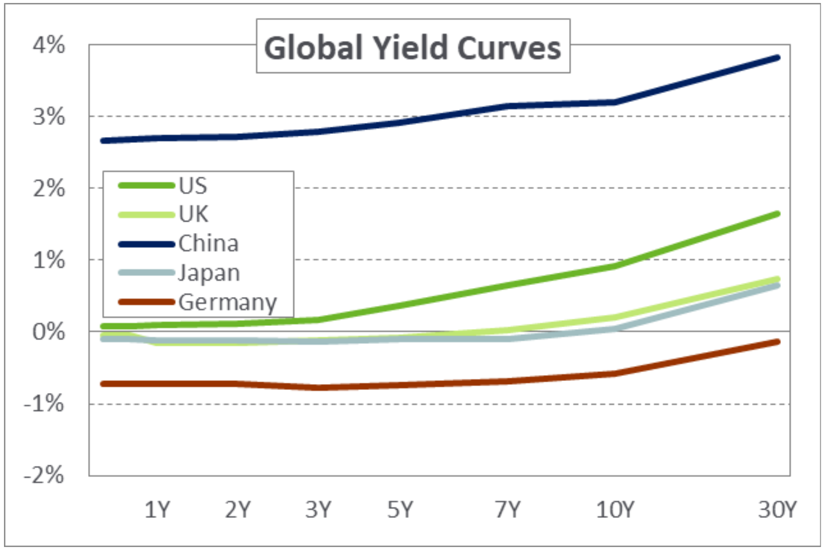
Low real rates depress returns for all assets in the long-term

The Fed's easy policy and low inflation suppress long term yield forecasts

The outlook for Japan and Europe bonds are poor due to negative nominal yields

Emerging market interest rates are higher relative to the developed world





Source: (Top) FactSet, NEPC
Source: (Bottom) FactSet, NEPC

EQUITY ASSUMPTIONS

EQUITY ASSUMPTIONS OVERVIEW

Equity return assumptions have declined from the prior quarter as stock prices have rebounded sharply

Discounting future earnings with lower interest rates supports higher equity valuation multiples over time

- Price-to-earnings and profit margin multiples have been adjusted higher to reflect our Key Market Theme of *Permanent Interventions*

Consider higher strategic equity targets as the long-term return differential relative to fixed income is wide

We recommend that strategic asset allocation targets for emerging market equity reflect an overweight

- The return assumption for emerging equity is highest among public equity and we encourage sourcing from EAFE exposure

NEPC encourages a modest strategic bias to small-cap relative to exposure in the MSCI ACWI IMI

EQUITY: ASSUMPTIONS

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

Asset Class	12/31/20 10-Year Return	Change from 09/30/20
US Large-Cap Equity	5.4%	-0.4%
US Small/Mid-Cap Equity	5.7%	-0.7%
US Microcap Equity	6.6%	-0.6%
Non-US Developed Equity	5.9%	-0.3%
Non-US Developed Small-Cap Equity	6.1%	-0.3%
Emerging Market Equity	7.5%	-0.5%
Emerging Market Small-Cap Equity	8.1%	-0.4%
China Equity	7.0%	-
Hedge Fund - Equity	4.0%	-0.3%
*Global Equity**	*6.2%*	*-0.4%*
*Private Equity**	*9.3%*	*-0.7%*

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

EQUITY: REAL EARNINGS GROWTH

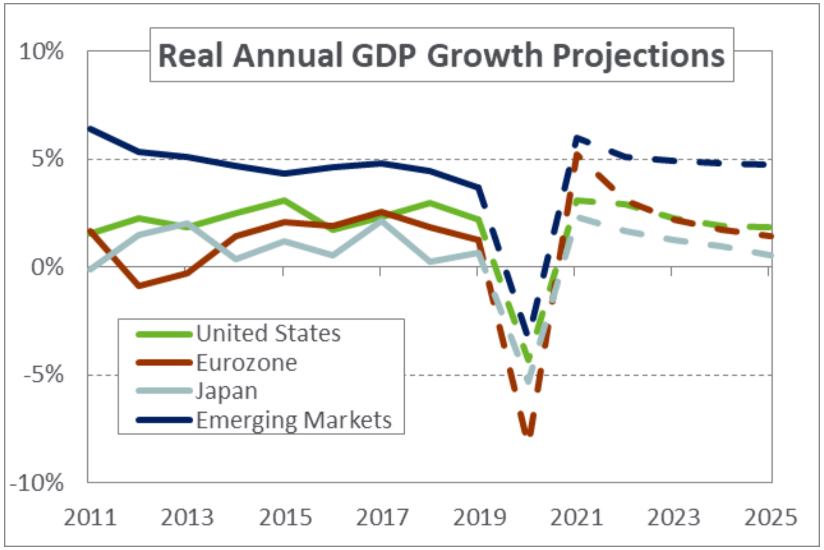
Global growth rates reflect the concerns of COVID-19 and US-China trade tensions

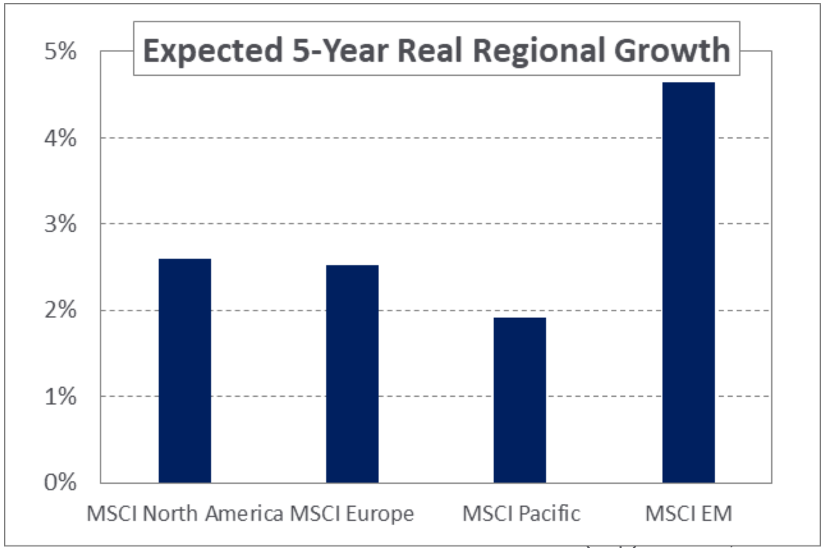
Regions more reliant on EM for revenue generation are forecasted to enjoy higher real earnings growth

- Non-US stocks benefit from a greater portion of revenue from EM than US stocks

Small-caps have elevated long-term targets for real earnings growth relative to large-cap equities

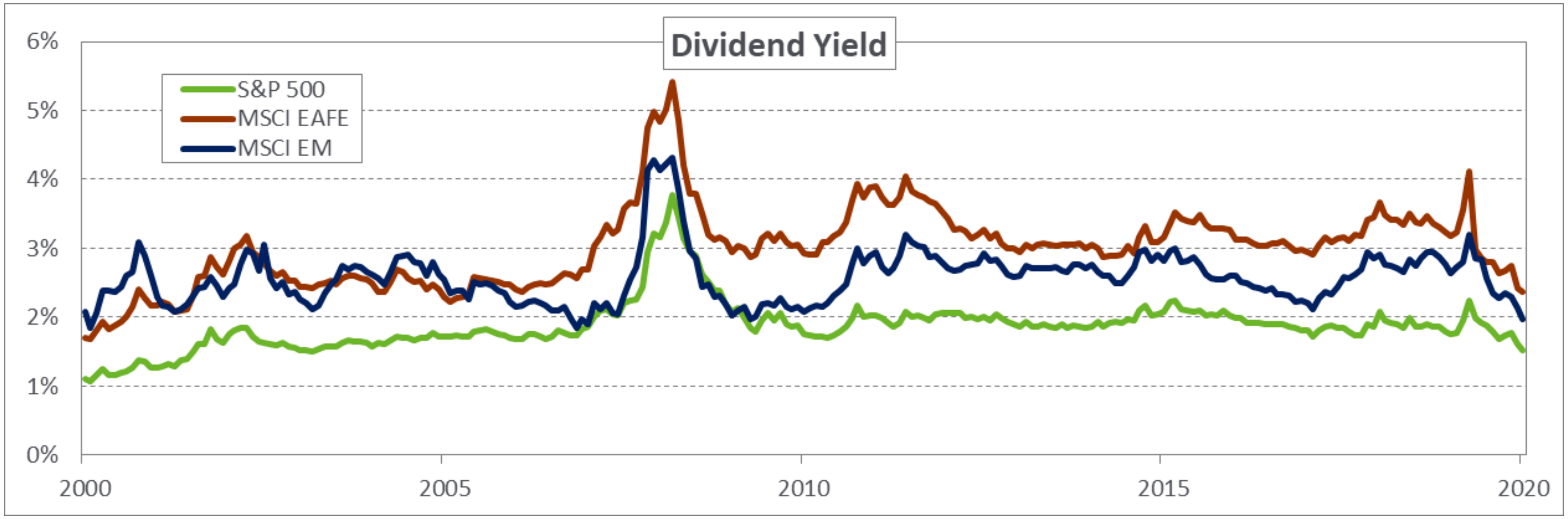
- This suggests a forward-looking risk premium for small- & mid-caps over large-cap





Source: (Bottom) IMF, MSCI, FactSet, NEPC

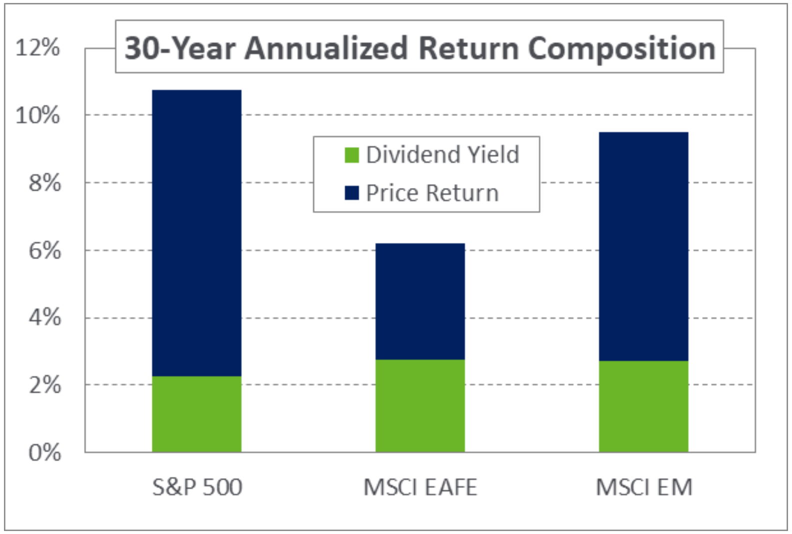
EQUITY: DIVIDEND YIELD



The 20 year terminal value estimate for the S&P 500 dividend yield is 2.50%

Non-US stocks offer higher dividend yields relative to the US over the long-term

Terminal value dividend yield inputs for MSCI EM and EAFE are 2.5% and 3.0%



Source: (Top) S&P, MSCI, FactSet, NEPC
Source: (Bottom) S&P, MSCI, FactSet, NEPC

EQUITY: VALUATION

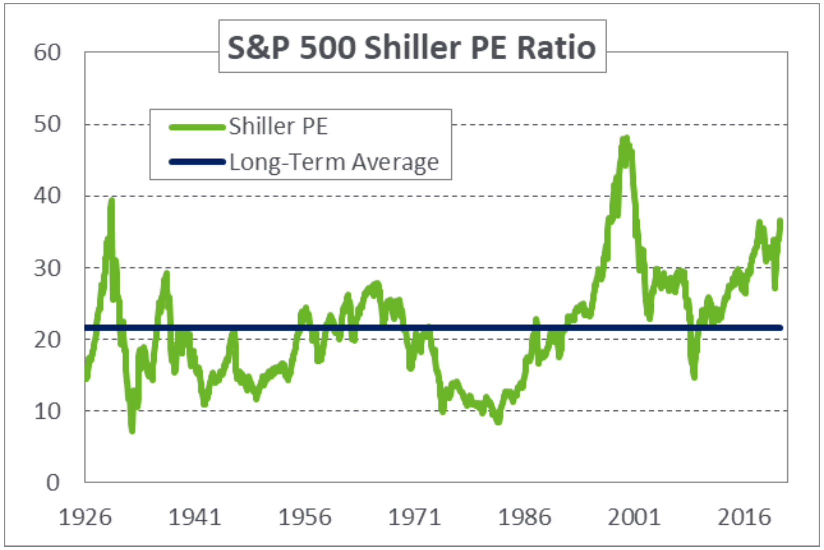
US large-cap stocks appear overvalued relative to long-term averages

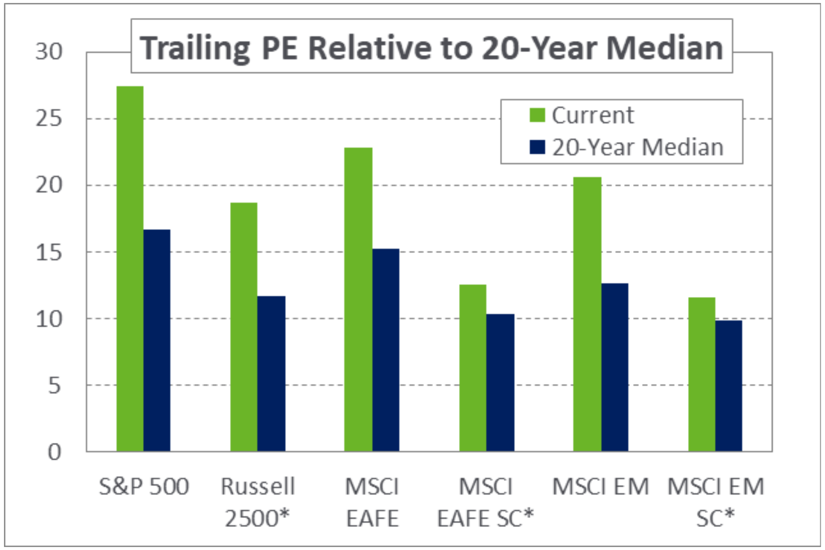
Yet low interest rates and inflation can support higher P/E levels

P/E terminal value inputs are higher for the US and reflect easy Fed policy and low interest rates levels

EAFE P/E levels reflect a less constructive market outlook

Emerging market equities offer an attractive total return opportunity relative to developed markets

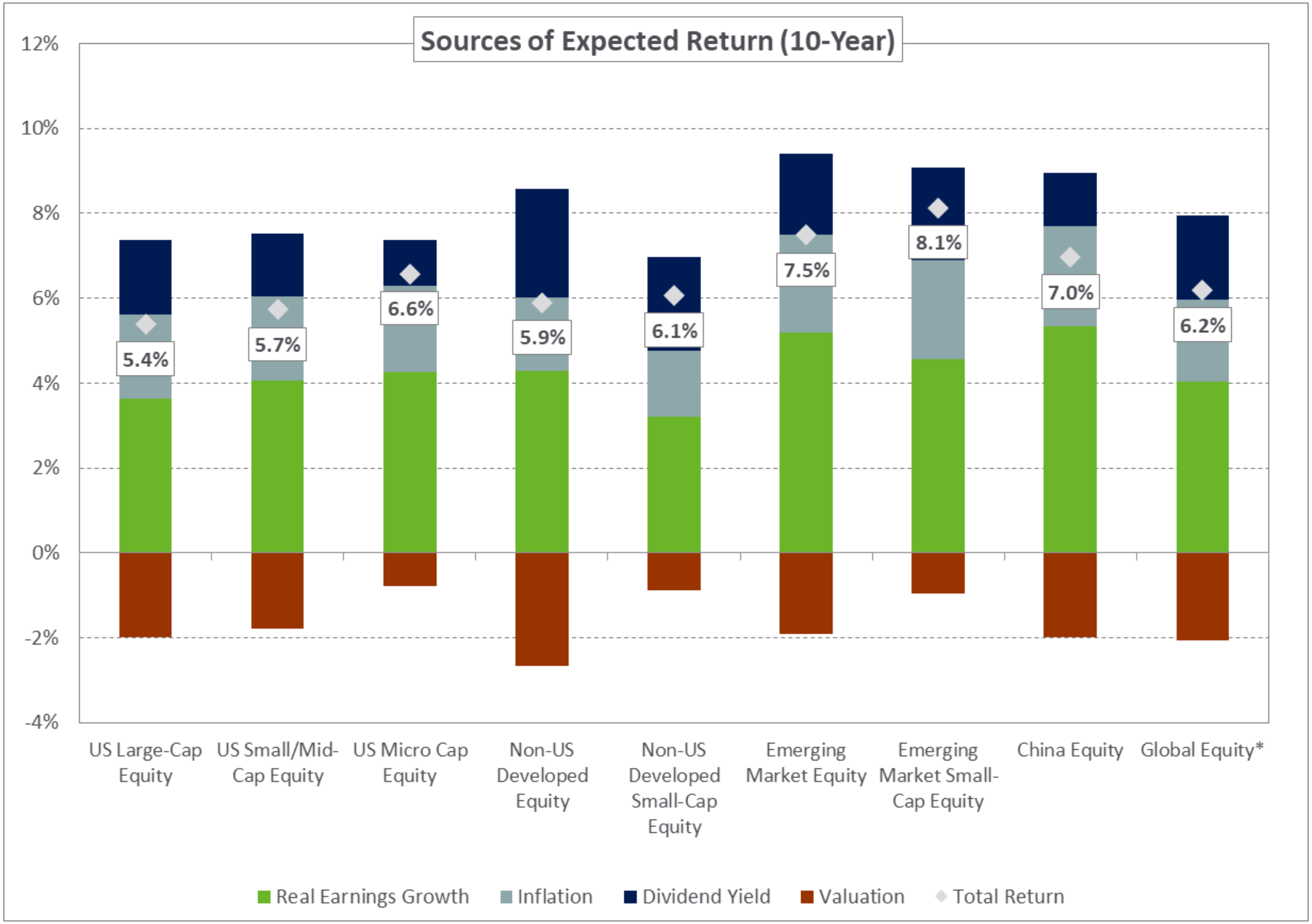




Source: (Top) S&P, Shiller, NEPC; long-term average beginning in 1926

Source: (Bottom) S&P, Russell, MSCI, FactSet, NEPC; *Small cap indices valuations based on EV/EBITDA multiples; MSCI EM Small Cap median calculated since 3/31/2003

EQUITY: BUILDING BLOCKS



Source: NEPC
*Calculated as a blend of other classes

FIXED INCOME ASSUMPTIONS

FIXED INCOME ASSUMPTIONS OVERVIEW

Credit return assumptions are lower from the prior quarter with credit spreads continuing to tighten

While return assumptions are low for safe-haven assets, we continue to endorse a dedicated Treasury allocation

We recommend a strategic blend of 50% US Treasuries and 50% TIPS for total return focused investors

Safe-haven instruments may differ by investor

The fixed income profile and duration should reflect risk objectives, liability/commitment structure, and desire for capital efficiency

Return-seeking credit investments look to earn income and exploit shifts in credit spreads and market cycles

We believe a strategic blend of 50% high yield, 25% levered loans, and 25% blended EMD offers an improved beta profile for return-seeking credit relative to US high yield

FIXED INCOME: ASSUMPTIONS

Fixed Income Building Blocks	
Illiquidity Premium	The return expected for investments with illiquidity risk
Government Rates Price Change	Valuation change due to shifts in the current yield curve to forecasted rates
Credit Deterioration	The average loss for credit assets due to defaults and recovery rates
Spread Price Change	Valuation change due to shifts in credit spreads over the duration of the investment
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	12/31/20 10-Year Return	Change From 09/30/20
US TIPS	1.0%	+0.2%
US Treasury Bond	0.9%	+0.3%
US Corporate Bond	2.2%	-0.2%
US Mortgage-Backed Securities	1.2%	+0.4%
US High Yield Corporate Bond	2.9%	-0.7%
US Leveraged Loan	3.9%	+0.1%
Emerging Market External Debt	3.0%	-1.0%
Emerging Market Local Currency Debt	5.0%	-0.4%
Non-US Government Bond	0.6%	-
US Municipal Bond (1-10 Year)	1.1%	+0.1%
US High Yield Municipal Bond	2.8%	-0.5%
Hedge Fund - Credit	3.9%	-0.2%
*US Aggregate Bond**	*1.4%*	*+0.2%*
*Private Debt**	*6.1%*	*-0.2%*

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

FIXED INCOME: CREDIT SPREADS

Credit spreads are broadly below long-term medians

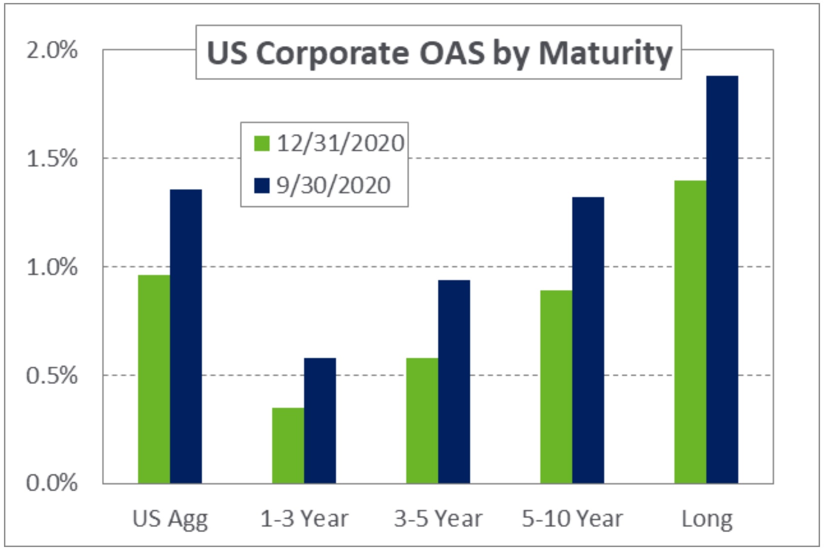
Spreads tightened in the last quarter across credit qualities

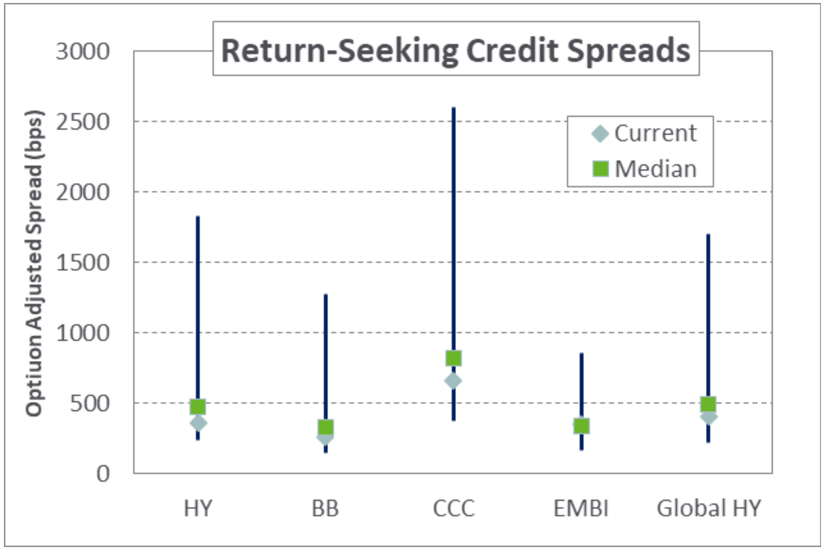
Lower spread levels reduce future return expectations

Credit spread assumptions reflect potential disruption

With a record number of BBB rated corporates, fallen angel downgrades are a greater risk

Default and recovery rates assumptions are based on long-term history





Source: (Top) Barclays, FactSet, NEPC
Source: (Bottom) Barclays, JPM, FactSet, NEPC; as of 12/31/2000

FIXED INCOME: RATES PRICE CHANGE

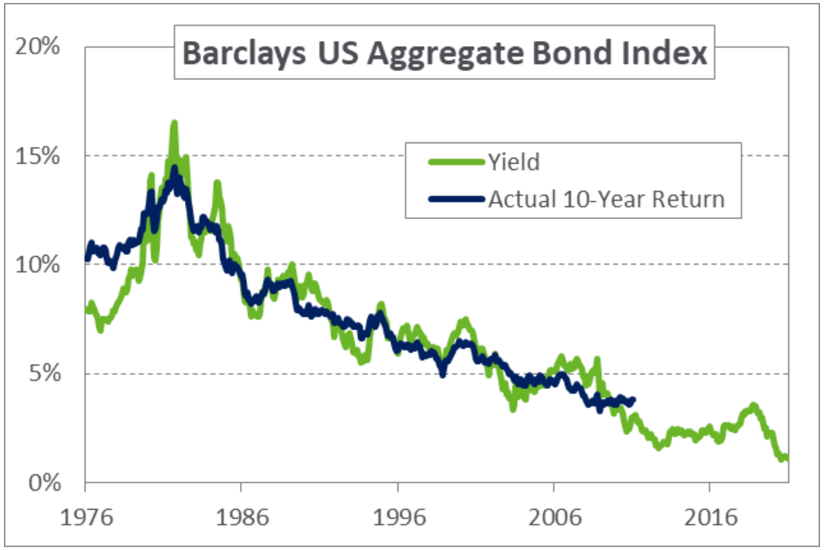
Rates price change reflects shifts in interest rates, the yield curve, and roll down

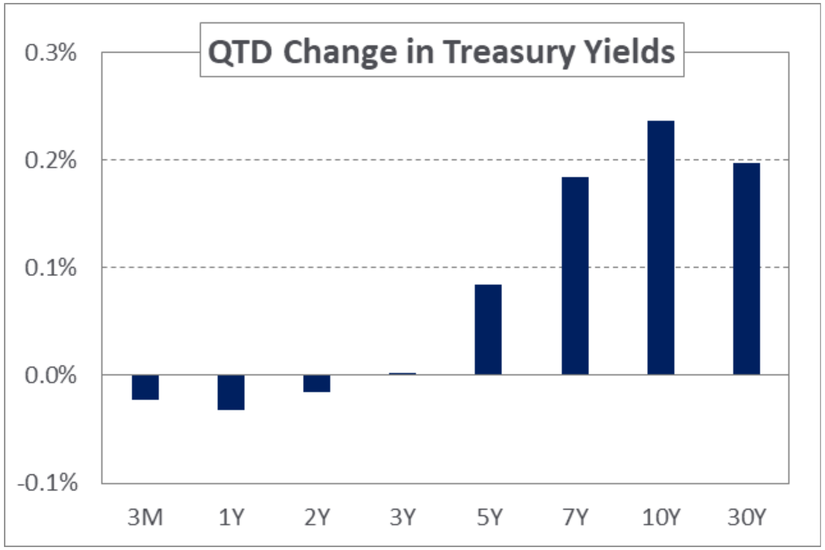
- Roll down refers to the price change due to the aging of a bond along the yield curve

Rates price change is a big component of total return

- Interest rate increases are a headwind to future returns

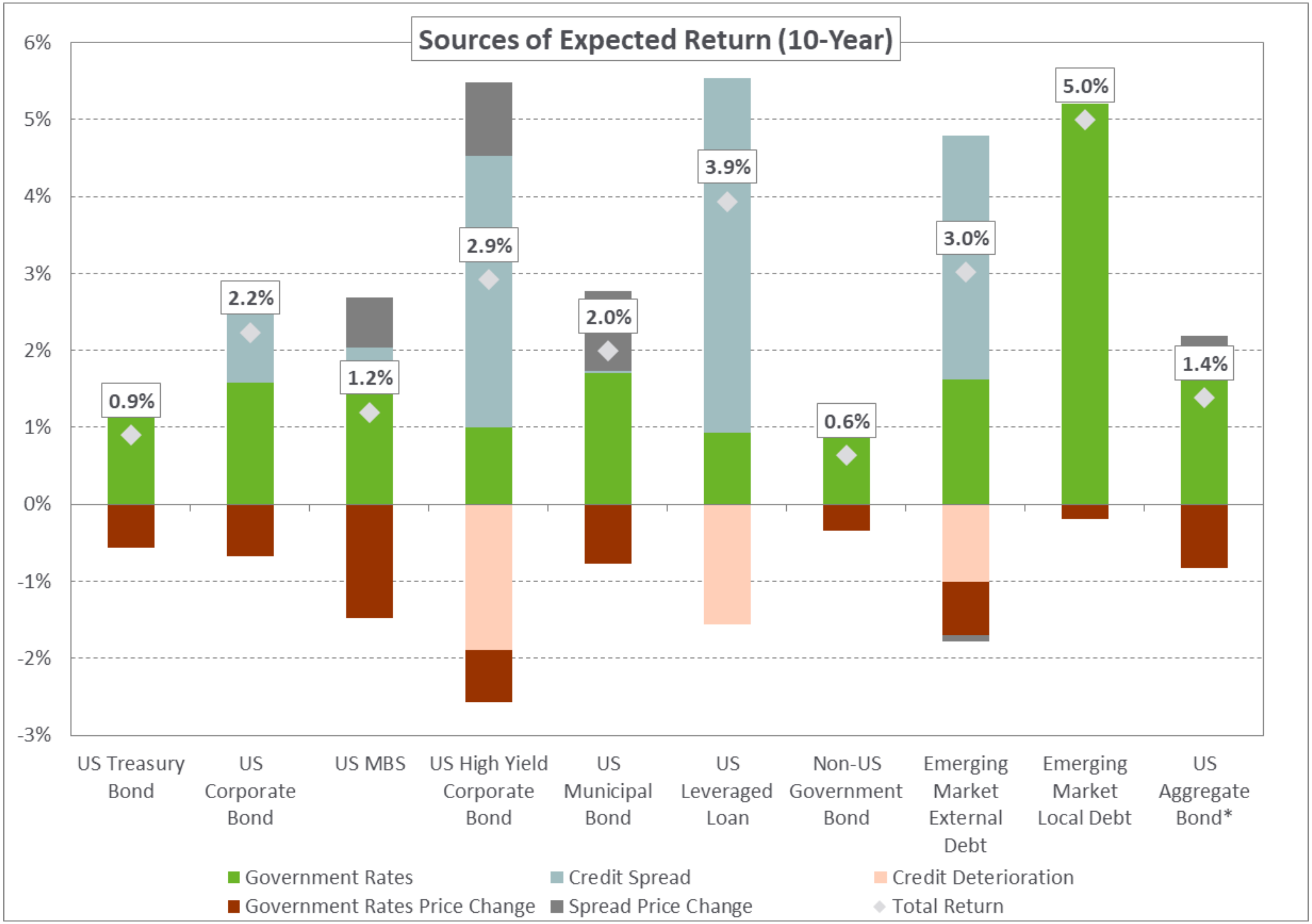
Roll down offers relief for rising rates when the yield curve is steep





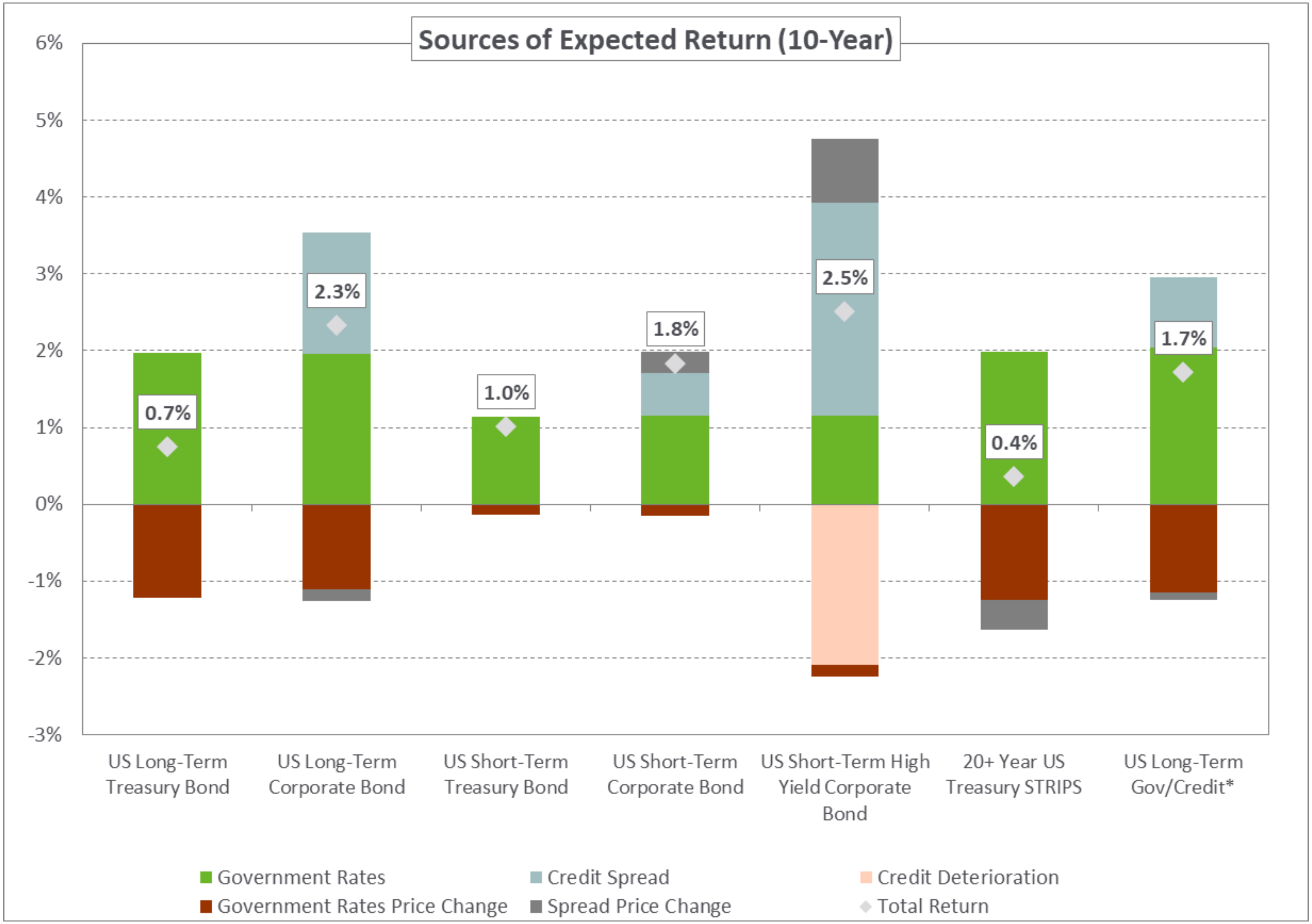
Source: (Top) Barclays, FactSet, NEPC
Source: (Bottom) FactSet, NEPC

FIXED INCOME: BUILDING BLOCKS



Source: NEPC
*Calculated as a blend of other classes

FIXED INCOME: BUILDING BLOCKS



Source: NEPC
*Calculated as a blend of other classes

REAL ASSET ASSUMPTIONS

REAL ASSET ASSUMPTIONS OVERVIEW

The strategic outlook for real assets reflects a high level of uncertainty due to subdued inflation expectations

Real assets offer a meaningful portfolio diversification benefit, but are exposed 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

Inflation-sensitivity and portfolio objectives influence an investor's strategic allocation to real assets

We encourage investors to remove commodity futures from strategic allocation targets due to persistent negative roll yield

Strategic targets to Gold should be carefully weighed relative to the long-term macroeconomic environment

Gold exposure can be a challenge to investor risk-tolerance given its volatility profile and lack of a consistent risk premium

REAL ASSET: ASSUMPTIONS

Real Assets Building Blocks	
Illiquidity Premium	The return expected for investments 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 paths as defined by TIPS breakeven and NEPC assumptions
Growth	Market-specific real growth based on a weighted-average derived from country revenue contribution and GDP growth
Real Income	The inflation-adjusted income produced by the underlying tangible or physical asset

Asset Class	12/31/20 10-Year Return	Change From 09/30/20
Commodity Futures	0.9%	+0.3%
Midstream Energy	7.4%	-0.6%
US REIT	5.5%	-0.2%
Global Infrastructure Equity	5.9%	-0.3%
Global Natural Resources Equity	6.7%	-0.4%
Gold	2.9%	N/A
Core Real Estate	4.4%	+0.2%
Non-Core Real Estate	5.5%	+0.4%
Private Debt - Real Estate	*4.1%*	*+0.2%*
Private Real Assets - Natural Resources	*8.0%*	*-0.2%*
Private Real Assets - Infrastructure	*5.4%*	*-0.1%*

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

REAL ASSET: REAL INCOME

Equity-Like: Real income is inflation-adjusted dividend

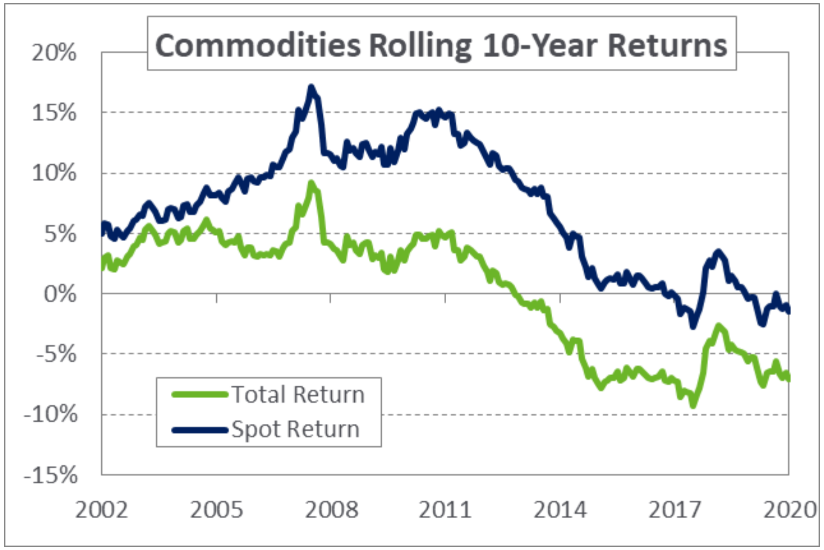
Includes public infrastructure, REITS, midstream energy, and natural resource equity

Real Estate: Real income is net operating income

NOI growth exhibits a cyclical economic pattern

Commodities: Real income includes collateral return

Collateral is based on a cash proxy over the time horizon



Real Assets Yields	9/30/20	12/31/20
Midstream Energy	9.9%	7.9%
Core Real Estate	4.4%	4.3%
US REIT	4.1%	3.8%
Global REIT	4.8%	4.3%
Global Infrastructure Equity	4.1%	3.1%
Global Natural Resources Equity	4.5%	3.5%
US 10-Yr Breakeven Inflation	1.6%	2.0%
Commodity Index Roll Yield*	-6.7%	-0.1%

Source: (Top) Bloomberg, FactSet, NEPC
Source: (Bottom) NCREIF, Alerian, NAREIT, S&P, FactSet, NEPC
*Commodity Index Roll Yield represents a proprietary calculation methodology

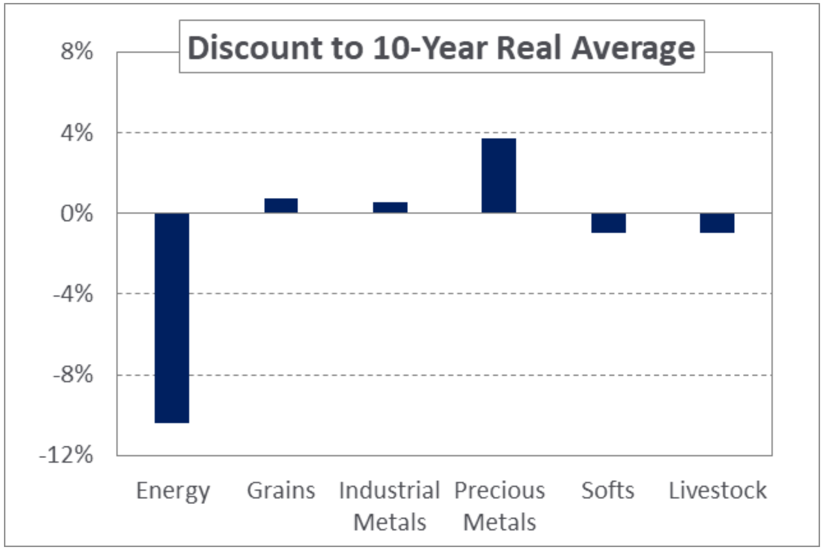
REAL ASSET: VALUATION

Commodity valuations are based on the long-term real average of spot prices

- Energy commodity prices are trading below their long-term real averages

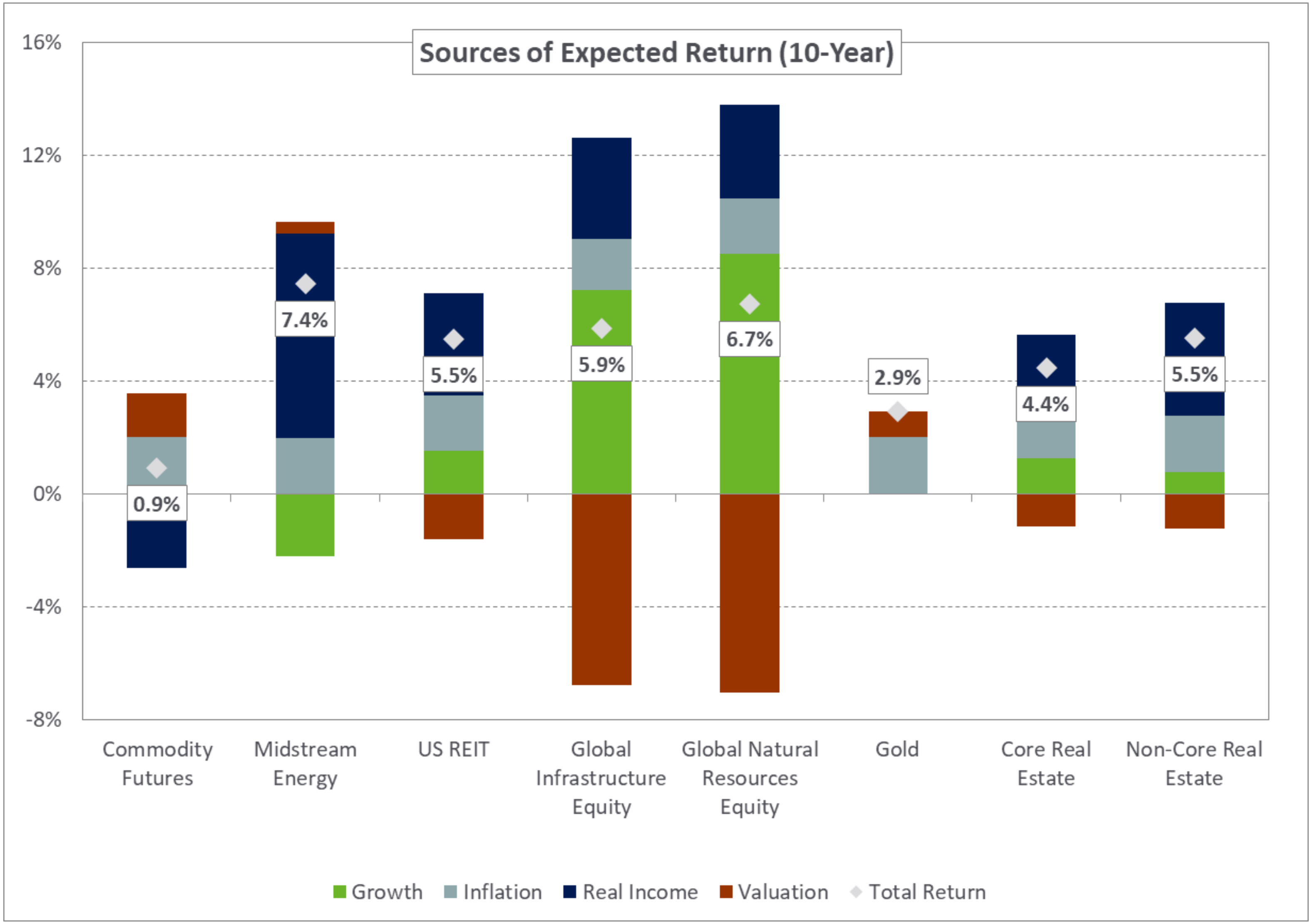
Valuation assumptions for other real assets are based on various valuation inputs

- Cap rates are used for core real estate and price-to-cash flow from operations is used for midstream energy



Source: (Top) FactSet, NEPC
Source: (Bottom) FactSet, NEPC

REAL ASSET: BUILDING BLOCKS



Source: NEPC

ALTERNATIVES

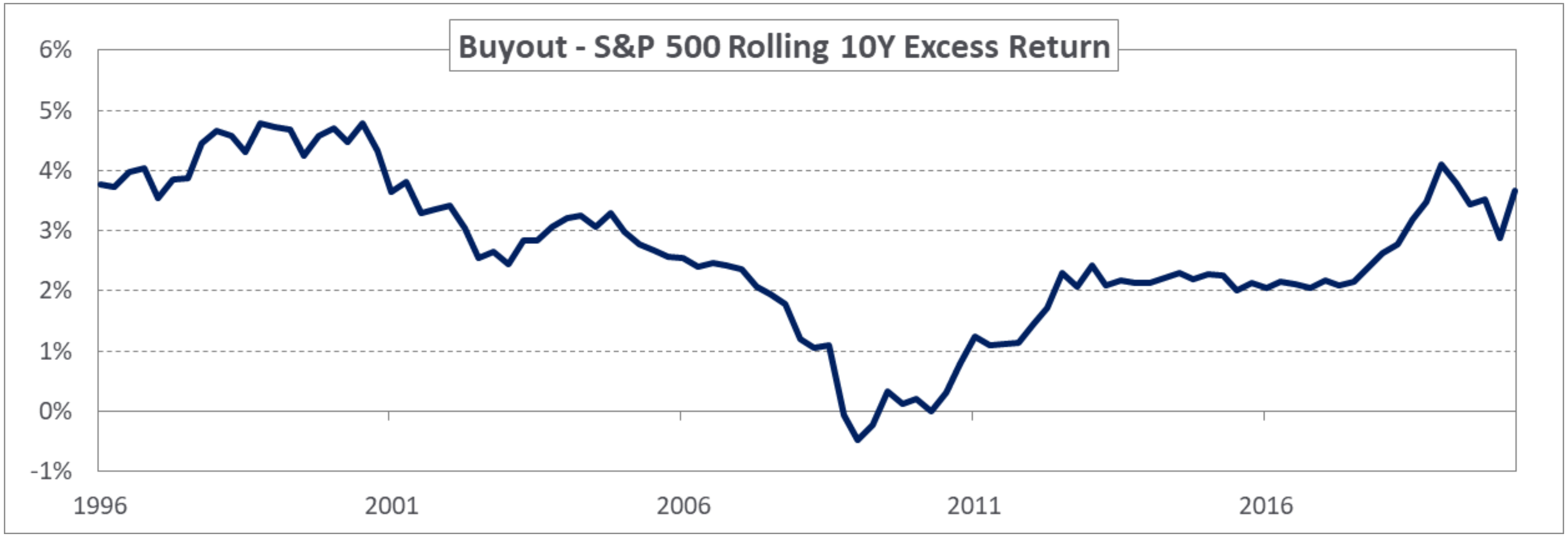
ALTERNATIVES METHODOLOGY

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

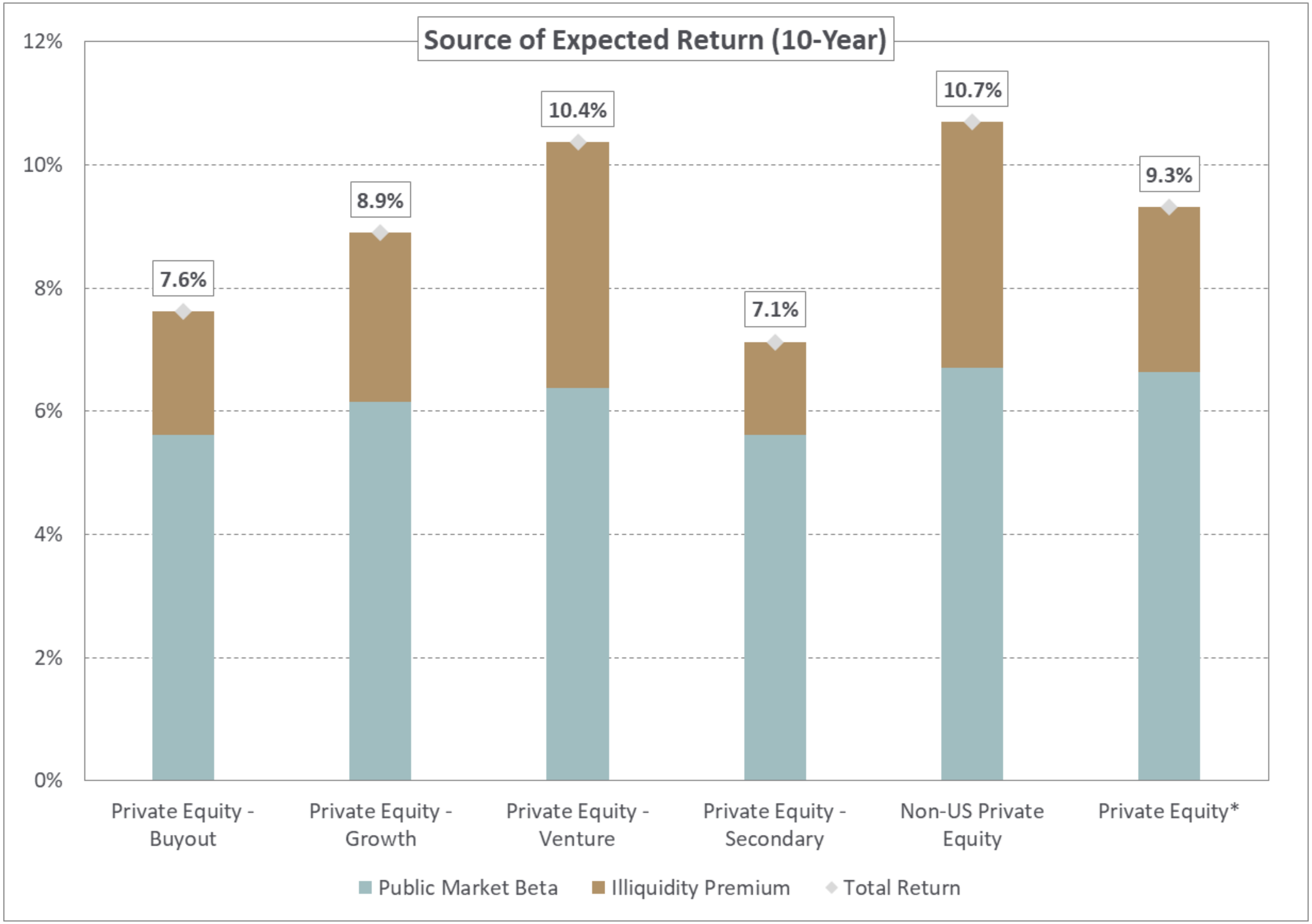
Hedge fund assumptions are constructed from betas to public markets with an added alpha assumption

Alpha based on historical manager universe performance relative to a market-based benchmark



Source: Thomson One, S&P, FactSet

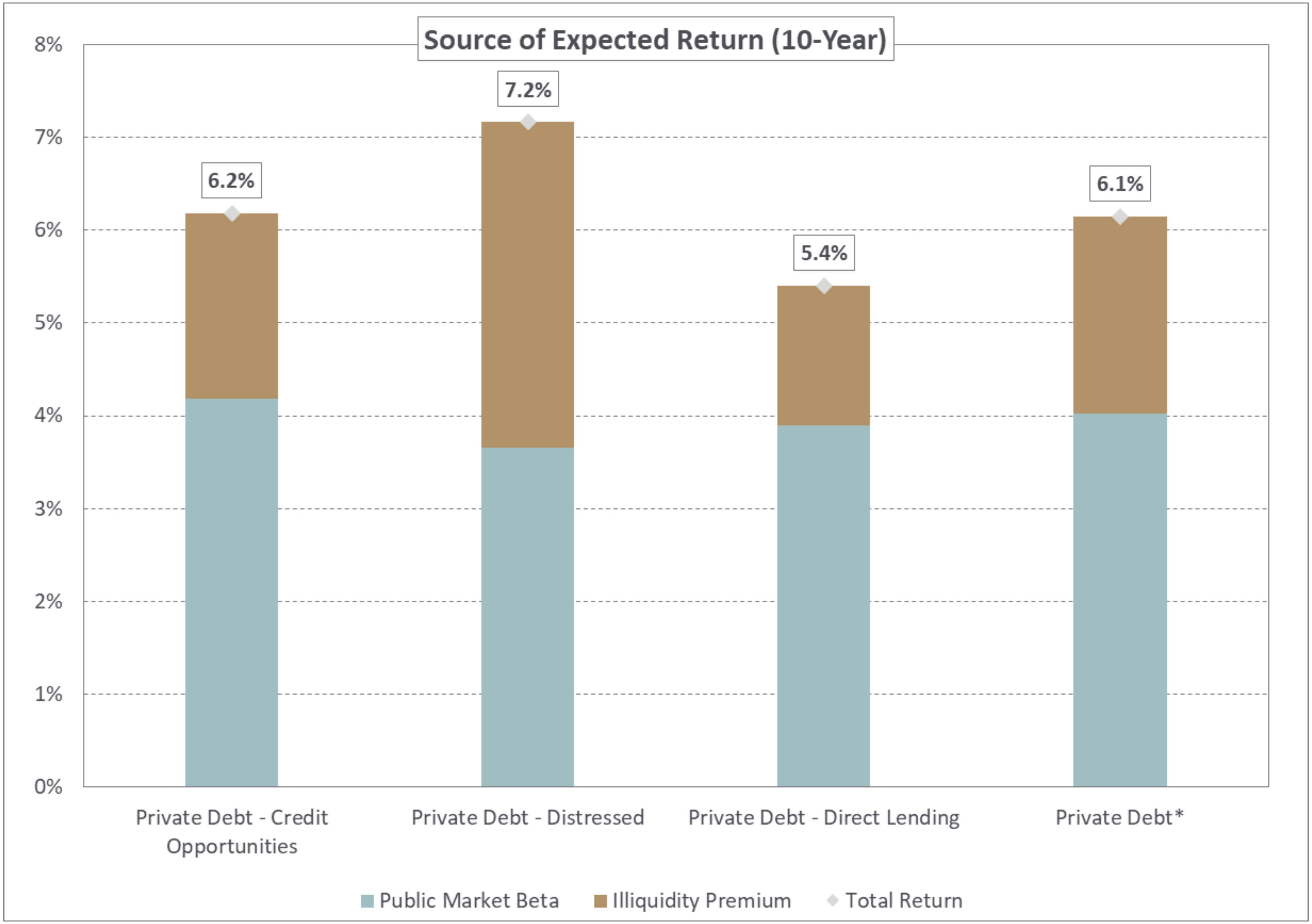
PRIVATE EQUITY BUILDING BLOCKS



Source: NEPC

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

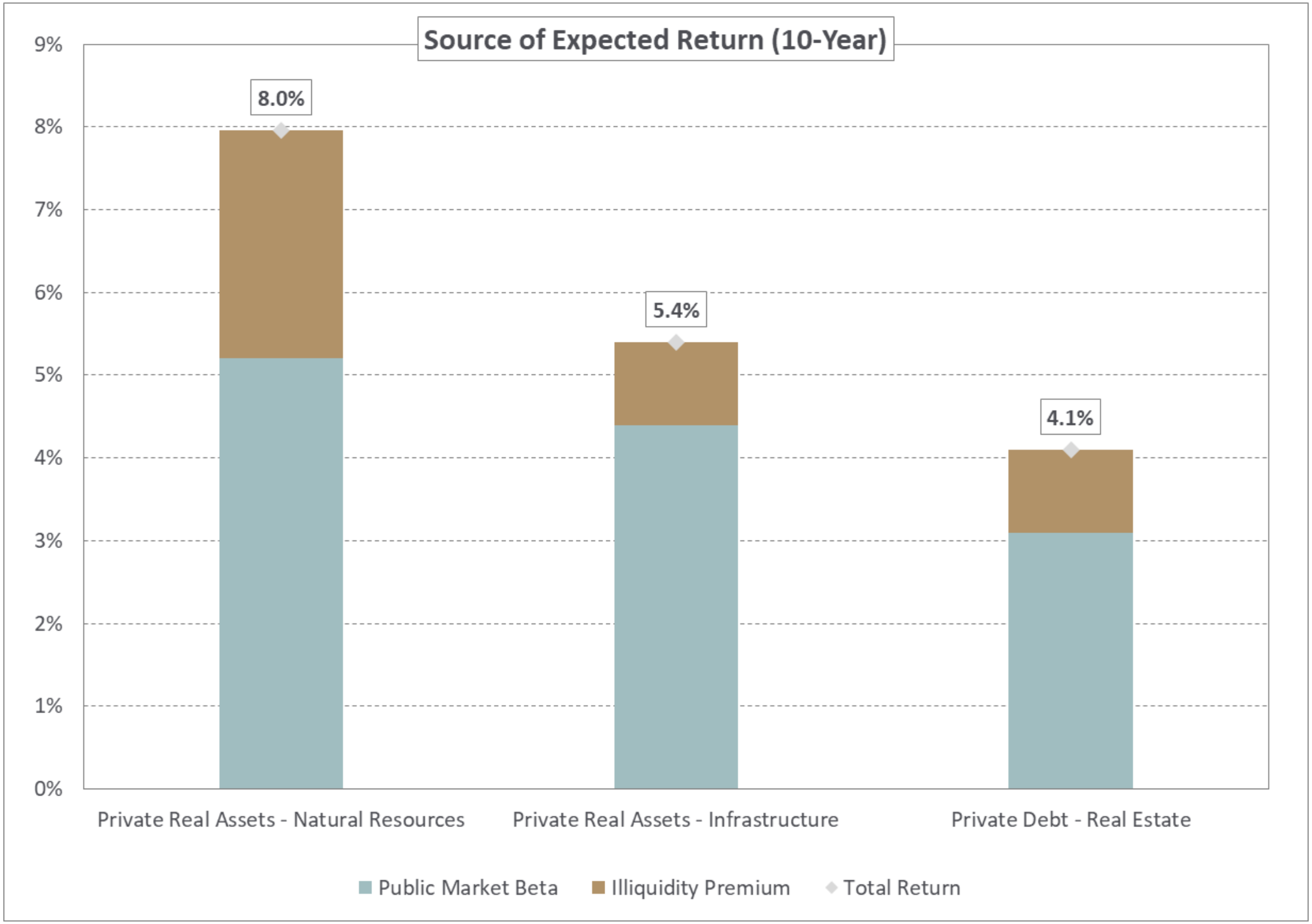
PRIVATE DEBT BUILDING BLOCKS



Source: NEPC

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

PRIVATE REAL ASSET BUILDING BLOCKS



Source: NEPC

10-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
Inflation	2.0%	1.6%	+0.4%
Cash	0.8%	0.6%	+0.2%
US Leverage Cost	1.2%	0.9%	+0.3%
Non-US Cash	0.0%	0.0%	-
US Large-Cap Equity	5.4%	5.8%	-0.4%
US Small/Mid-Cap Equity	5.7%	6.4%	-0.7%
Non-US Developed Equity	5.9%	6.2%	-0.3%
Non-US Developed Equity (USD Hedge)	6.1%	6.6%	-0.5%
Non-US Developed Small-Cap Equity	6.1%	6.4%	-0.3%
Emerging Market Equity	7.5%	8.0%	-0.5%
Emerging Market Small-Cap Equity	8.1%	8.5%	-0.4%
Hedge Fund - Equity	4.0%	4.3%	-0.3%
Private Equity - Buyout	7.6%	8.3%	-0.7%
Private Equity - Growth	8.9%	9.6%	-0.7%
Private Equity - Venture	10.4%	11.0%	-0.6%
Private Equity - Secondary	7.1%	7.8%	-0.7%
Non-US Private Equity	10.7%	11.0%	-0.3%
China Equity	7.0%	7.0%	-
US Microcap Equity	6.6%	7.2%	-0.6%

10-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
US TIPS	1.0%	0.8%	+0.2%
US Treasury Bond	0.9%	0.6%	+0.3%
US Corporate Bond	2.2%	2.4%	-0.2%
US Mortgage-Backed Securities	1.2%	0.8%	+0.4%
US High Yield Corporate Bond	2.9%	3.6%	-0.7%
US Leveraged Loan	3.9%	3.8%	+0.1%
Emerging Market External Debt	3.0%	4.0%	-1.0%
Emerging Market Local Currency Debt	5.0%	5.4%	-0.4%
Non-US Government Bond	0.6%	0.6%	-
Non-US Government Bond (USD Hedge)	0.8%	0.9%	-0.1%
US Municipal Bond	2.0%	2.0%	-
US Municipal Bond (1-10 Year)	1.1%	1.0%	+0.1%
US High Yield Municipal Bond	2.8%	3.3%	-0.5%
Hedge Fund - Credit	3.9%	4.1%	-0.2%
Private Debt - Credit Opportunities	6.2%	6.6%	-0.4%
Private Debt - Distressed	7.2%	7.7%	-0.5%
Private Debt - Direct Lending	5.4%	5.3%	+0.1%
US Securitized Bond	1.8%	1.6%	+0.2%
US Collateralized Loan Obligation	2.3%	2.1%	+0.2%
US High Yield Securitized Bond	2.3%	1.8%	+0.5%
US High Yield Collateralized Loan Obligation	4.6%	4.6%	-

10-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
US Short-Term TIPS (1-3 Year)	1.1%	0.8%	+0.3%
US Short-Term Treasury Bond (1-3 Year)	1.0%	0.7%	+0.3%
US Short-Term Corporate Bond (1-3 Year)	1.8%	1.6%	+0.2%
US Short-Term High Yield Corporate Bond	2.5%	2.6%	-0.1%
US Intermediate-Term TIPS (3-10 Year)	0.9%	-	-
US Intermediate-Term Treasury Bond	1.0%	-	-
US Intermediate-Term Corporate Bond	2.3%	-	-
US Long-Term Treasury Bond (10-30 Year)	0.7%	0.4%	+0.3%
US Long-Term TIPS (10-30 Year)	1.0%	0.8%	+0.2%
US Long-Term Corporate Bond	2.3%	2.8%	-0.5%
20+ Year US Treasury STRIPS	0.4%	0.0%	+0.4%
US Corporate Bond - AAA	1.5%	1.5%	-
US Corporate Bond - AA	1.6%	1.7%	-0.1%
US Corporate Bond - A	1.9%	2.0%	-0.1%
US Corporate Bond - BBB	2.5%	2.9%	-0.4%
US Corporate Bond - BB	3.9%	4.4%	-0.5%
US Corporate Bond - B	3.0%	3.8%	-0.8%
US Corporate Bond - CCC/Below	-3.4%	-2.4%	-1.0%
US Taxable Municipal Bond	2.5%	2.5%	-
10 Year US Treasury Bond	0.9%	0.5%	+0.4%
10 Year Non-US Govt. Bond (USD Hedge)	-0.1%	-0.1%	-

10-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
Commodity Futures	0.9%	0.6%	+0.3%
Midstream Energy	7.4%	8.0%	-0.6%
US REIT	5.5%	5.7%	-0.2%
Global Infrastructure Equity	5.9%	6.2%	-0.3%
Global Natural Resources Equity	6.7%	7.1%	-0.4%
Gold	2.9%	-	-
Core Real Estate	4.4%	4.2%	+0.2%
Non-Core Real Estate	5.5%	5.1%	+0.4%
Private Debt - Real Estate	4.1%	3.9%	+0.2%
Private Real Assets - Natural Resources	8.0%	8.2%	-0.2%
Private Real Assets - Infrastructure	5.4%	5.5%	-0.1%
Hedge Fund - Macro	3.6%	4.1%	-0.5%
*Global Equity**	6.2%	6.6%	-0.4%
*Private Equity**	9.3%	10.0%	-0.7%
*US Aggregate Bond**	1.4%	1.2%	+0.2%
*Private Debt**	6.1%	6.3%	-0.2%
*US Long-Term Government/Credit**	1.7%	1.8%	-0.1%
*Hedge Fund**	4.0%	4.3%	-0.3%

*Calculated as a blend of other asset classes

30-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
Inflation	2.2%	2.1%	+0.1%
Cash	1.9%	1.8%	+0.1%
US Leverage Cost	2.2%	2.1%	+0.1%
Non-US Cash	1.1%	1.2%	-0.1%
US Large-Cap Equity	6.3%	6.4%	-0.1%
US Small/Mid-Cap Equity	6.6%	6.8%	-0.2%
Non-US Developed Equity	6.5%	6.6%	-0.1%
Non-US Developed Equity (USD Hedge)	6.7%	7.0%	-0.3%
Non-US Developed Small-Cap Equity	6.8%	6.9%	-0.1%
Emerging Market Equity	8.4%	8.7%	-0.3%
Emerging Market Small-Cap Equity	8.6%	8.9%	-0.3%
Hedge Fund - Equity	5.0%	5.2%	-0.2%
Private Equity - Buyout	8.5%	8.7%	-0.2%
Private Equity - Growth	9.8%	10.0%	-0.2%
Private Equity - Venture	10.7%	10.9%	-0.2%
Private Equity - Secondary	8.0%	8.2%	-0.2%
Non-US Private Equity	10.7%	10.9%	-0.2%
China Equity	7.8%	8.1%	-0.3%
US Microcap Equity	7.4%	7.6%	-0.2%

30-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
US TIPS	2.1%	2.1%	-
US Treasury Bond	2.0%	1.9%	+0.1%
US Corporate Bond	3.7%	3.7%	-
US Mortgage-Backed Securities	2.3%	2.2%	+0.1%
US High Yield Corporate Bond	5.0%	5.2%	-0.2%
US Leveraged Loan	4.8%	4.7%	+0.1%
Emerging Market External Debt	4.5%	4.8%	-0.3%
Emerging Market Local Currency Debt	5.1%	5.3%	-0.2%
Non-US Government Bond	1.7%	1.5%	+0.2%
Non-US Government Bond (USD Hedge)	1.9%	1.8%	+0.1%
US Municipal Bond	2.3%	2.3%	-
US Municipal Bond (1-10 Year)	1.9%	1.9%	-
US High Yield Municipal Bond	3.9%	4.1%	-0.2%
Hedge Fund - Credit	5.3%	5.4%	-0.1%
Private Debt - Credit Opportunities	7.0%	7.1%	-0.1%
Private Debt - Distressed	7.8%	7.9%	-0.1%
Private Debt - Direct Lending	7.4%	7.0%	+0.4%
US Securitized Bond	3.1%	3.0%	+0.1%
US Collateralized Loan Obligation	3.3%	3.1%	+0.2%
US High Yield Securitized Bond	4.5%	4.3%	+0.2%
US High Yield Collateralized Loan Obligation	5.7%	5.6%	+0.1%

30-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
US Short-Term TIPS (1-3 Year)	2.0%	2.0%	-
US Short-Term Treasury Bond (1-3 Year)	2.0%	1.9%	+0.1%
US Short-Term Corporate Bond (1-3 Year)	3.7%	2.8%	+0.9%
US Short-Term High Yield Corporate Bond	3.5%	3.3%	+0.2%
US Intermediate-Term TIPS (3-10 Year)	2.1%	-	-
US Intermediate-Term Treasury Bond	2.1%	-	-
US Intermediate-Term Corporate Bond	3.8%	-	-
US Long-Term Treasury Bond (10-30 Year)	1.9%	1.8%	+0.1%
US Long-Term TIPS (10-30 Year)	2.0%	2.0%	-
US Long-Term Corporate Bond	3.8%	4.0%	-0.2%
20+ Year US Treasury STRIPS	1.7%	1.5%	+0.2%
US Corporate Bond - AAA	2.8%	2.8%	-
US Corporate Bond - AA	2.9%	2.9%	-
US Corporate Bond - A	3.3%	3.3%	-
US Corporate Bond - BBB	3.9%	4.0%	-0.1%
US Corporate Bond - BB	5.6%	5.8%	-0.2%
US Corporate Bond - B	4.9%	5.1%	-0.2%
US Corporate Bond - CCC/Below	-0.8%	-0.5%	-0.3%
US Taxable Municipal Bond	3.9%	3.9%	-
10 Year US Treasury Bond	2.3%	2.1%	+0.2%
10 Year Non-US Govt. Bond (USD Hedge)	1.1%	1.1%	-

30-YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**12/31/2020**	**9/30/2020**	**Delta**
Commodity Futures	3.3%	3.6%	-0.3%
Midstream Energy	7.3%	7.9%	-0.6%
US REIT	6.7%	6.8%	-0.1%
Global Infrastructure Equity	6.6%	6.7%	-0.1%
Global Natural Resources Equity	7.0%	7.2%	-0.2%
Gold	3.7%	-	-
Core Real Estate	5.6%	5.5%	+0.1%
Non-Core Real Estate	7.0%	6.9%	+0.1%
Private Debt - Real Estate	5.2%	5.1%	+0.1%
Private Real Assets - Natural Resources	8.5%	8.9%	-0.4%
Private Real Assets - Infrastructure	6.6%	6.8%	-0.2%
Hedge Fund - Macro	4.7%	4.7%	-
*Global Equity**	7.0%	7.2%	-0.2%
*Private Equity**	10.1%	10.3%	-0.2%
*US Aggregate Bond**	2.7%	2.6%	+0.1%
*Private Debt**	7.5%	7.3%	+0.2%
*US Long-Term Government/Credit**	3.1%	3.1%	-
*Hedge Fund**	5.2%	5.4%	-0.2%

*Calculated as a blend of other asset classes

PRIVATE MARKETS COMPOSITES

Assumed public market beta composites for private market return assumptions are detailed below:

Private Equity:

Private Equity – Buyout: 25% US Large Cap, 75% US Small/Mid Cap
Private Equity – Secondary: 25% US Large Cap, 75% US Small/Mid Cap
Private Equity – Growth: 50% US Small/Mid Cap, 50% US Microcap
Private Equity – Venture: 25% US Small/Mid Cap, 75% US Microcap
Private Equity – Non-US: 70% International Small Cap, 30% Emerging Small Cap
PE Composite: 34% Buyout, 34% Growth, 15 % Non-US, 8.5% Secondary, 8.5% Venture

Private Debt:

Private Debt – Direct Lending: 100% Bank Loans
Private Debt – Distressed: 20% US Small/Mid Cap, 60% US High Yield, 20% Bank Loans
Private Debt – Credit Opportunities: 34% US SMID Cap, 33% US High Yield, 33% Bank Loans
Private Debt Composite: 50% Direct Lending, 25% Credit Opportunities, 25% Distressed

Private Real Assets:

Private Real Assets – Energy: 30% Comm., 35% Midstream, 35% Public Resource Equity
Private Real Assets - Infra/Land: 30% Commodities, 70% Public Infrastructure
Private Real Estate Debt: 50% CMBS, 50% Core Real Estate

DECEMBER FLASH

TOTAL FUND PERFORMANCE SUMMARY (GROSS)

	Market Value ($)	% of Portfolio	Policy %	1 Mo (%)	3 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
							Ending December 31, 2020					
Total Fund Composite	**1,283,400,697**	**100.0**	**100.0**	**2.5**	**7.9**	**14.1**	**11.5**	**8.7**	**9.9**	**8.2**	**7.6**	**Apr-97**
Policy Index				*2.5*	*7.8*	*12.8*	*10.2*	*7.7*	*8.8*	*7.6*	*7.5*	*Apr-97*
Allocation Index				*2.6*	*7.7*	*13.2*	*10.7*	*--*	*--*	*--*	*--*	*Apr-97*
Total US Equity Composite	**336,741,219**	**26.2**	**23.0**	**4.3**	**15.0**	**25.1**	**19.8**	**13.7**	**15.5**	**14.0**	**9.2**	**Jul-97**
Russell 3000				*4.5*	*14.7*	*25.2*	*20.9*	*14.5*	*15.4*	*13.8*	*8.6*	*Jul-97*
US Equity Allocation Index				*4.9*	*15.4*	*26.1*	*21.8*	*14.4*	*15.4*	*13.5*	*--*	*Jul-97*
Total International Equity	**221,528,523**	**17.3**	**17.0**	**5.0**	**16.8**	**27.7**	**16.4**	**8.0**	**11.3**	**5.9**	**5.4**	**Jul-97**
MSCI ACWI ex USA				*5.4*	*17.0*	*24.3*	*10.7*	*4.9*	*8.9*	*4.9*	*5.0*	*Jul-97*
Total Fixed Income Composite	**375,664,916**	**29.3**	**30.0**	**1.2**	**3.3**	**5.0**	**8.8**	**5.8**	**6.2**	**4.9**	**5.6**	**Jul-97**
Fixed Income Policy Index				*0.1*	*0.7*	*1.3*	*7.5*	*5.3*	*4.4*	*3.8*	*5.3*	*Jul-97*
Total Real Assets Composite	**44,411,350**	**3.5**	**7.0**	**0.0**	**0.0**	**6.6**	**-4.9**	**2.9**	**5.8**	**6.0**	**6.4**	**Jul-03**
NCREIF Property Index 1 Qtr. Lag				*0.7*	*0.7*	*-0.3*	*2.0*	*5.1*	*6.3*	*9.4*	*8.4*	*Jul-03*
Cash Composite	**20,472,639**	**1.6**		**0.0**	**0.0**	**0.0**	**0.2**	**1.2**	**0.8**	**0.4**	**1.3**	**Dec-03**
91 Day T-Bills				*0.0*	*0.0*	*0.0*	*0.5*	*1.5*	*1.1*	*0.6*	*1.3*	*Dec-03*
Hedge Fund Composite	**131,681,824**	**10.3**	**8.0**	**1.7**	**4.0**	**7.4**	**7.0**	**5.2**	**4.5**	**5.0**	**5.0**	**Jan-11**
HFRI FOF: Conservative Index				*1.9*	*5.1*	*7.9*	*5.7*	*3.7*	*3.4*	*2.8*	*2.8*	*Jan-11*
Private Equity Composite	**150,400,226**	**11.7**	**10.0**	**0.0**	**0.1**	**8.4**	**7.8**	**13.8**	**14.1**	**13.7**	**12.7**	**Jul-08**
C|A US All PE (1 Qtr Lag)				*0.0*	*0.0*	*9.4*	*2.1*	*9.2*	*10.6*	*12.4*	*9.8*	*Jul-08*
Private Debt	**2,500,000**	**0.2**	**5.0**	**0.0**	**0.0**	**0.0**	**--**	**--**	**--**	**--**	**0.0**	**Jun-20**
S&P/LSTA Leveraged Loan TR				*1.3*	*3.8*	*8.1*	*3.1*	*4.0*	*5.2*	*4.3*	*8.1*	*Jun-20*

Fiscal year end 6/30.

All history prior to 3/1/2019 was provided by AndCo.

TOTAL FUND PERFORMANCE DETAIL (GROSS)

	Market Value ($)	% of Portfolio	Policy %	1 Mo (%)	3 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
							Ending December 31, 2020					
Total Fund Composite	**1,283,400,697**	**100.0**	**100.0**	**2.5**	**7.9**	**14.1**	**11.5**	**8.7**	**9.9**	**8.2**	**7.6**	**Apr-97**
Policy Index				*2.5*	*7.8*	*12.8*	*10.2*	*7.7*	*8.8*	*7.6*	*7.5*	*Apr-97*
Allocation Index				*2.6*	*7.7*	*13.2*	*10.7*	*--*	*--*	*--*	*--*	*Apr-97*
Total Equity Composite	**558,269,742**	**43.5**	**40.0**	**4.6**	**15.7**	**26.2**	**18.2**	**11.2**	**13.6**	**10.6**	**7.9**	**Apr-00**
MSCI ACWI IMI				*5.0*	*15.7*	*25.1*	*16.3*	*9.7*	*12.1*	*9.1*	*5.3*	*Apr-00*
Total US Equity Composite	**336,741,219**	**26.2**	**23.0**	**4.3**	**15.0**	**25.1**	**19.8**	**13.7**	**15.5**	**14.0**	**9.2**	**Jul-97**
Russell 3000				*4.5*	*14.7*	*25.2*	*20.9*	*14.5*	*15.4*	*13.8*	*8.6*	*Jul-97*
US Equity Allocation Index				*4.9*	*15.4*	*26.1*	*21.8*	*14.4*	*15.4*	*13.5*	*--*	*Jul-97*
Large Cap Composite	**279,244,804**	**21.8**	**19.0**	**3.7**	**13.3**	**24.1**	**18.3**	**13.2**	**14.8**	**13.9**	**9.3**	**Apr-01**
Russell 1000				*4.2*	*13.7*	*24.5*	*21.0*	*14.8*	*15.6*	*14.0*	*8.6*	*Apr-01*
LSV Asset Management SMA	67,997,892	5.3		4.8	20.1	25.4	-1.5	3.3	9.1	11.4	9.4	May-00
Russell 1000 Value				*3.8*	*16.3*	*22.8*	*2.8*	*6.1*	*9.7*	*10.5*	*7.0*	*May-00*
Westfield Capital Management SMA	110,595,533	8.6		2.9	10.5	25.0	35.3	22.2	20.0	15.9	18.1	Jul-10
Russell 1000 Growth				*4.6*	*11.4*	*26.1*	*38.5*	*23.0*	*21.0*	*17.2*	*18.9*	*Jul-10*
BlackRock Equity Index Non-Lendable Fund	100,651,378	7.8		3.8	12.1	22.2	18.4	--	--	--	20.1	Dec-19
S&P 500				*3.8*	*12.1*	*22.2*	*18.4*	*14.2*	*15.2*	*13.9*	*20.1*	*Dec-19*
Small/Mid Cap Composite	**57,496,415**	**4.5**	**4.0**	**7.4**	**23.6**	**30.7**	**27.0**	**16.0**	**17.9**	**14.9**	**12.8**	**Apr-93**
Russell 2500				*7.6*	*27.4*	*34.9*	*20.0*	*11.3*	*13.6*	*12.0*	*10.7*	*Apr-93*
William Blair SMA	20,653,055	1.6		6.6	21.5	31.8	33.4	20.4	19.7	16.9	13.7	Jun-06
Russell 2500 Growth				*8.6*	*25.9*	*37.7*	*40.5*	*19.9*	*18.7*	*15.0*	*11.7*	*Jun-06*
ICM Small Company - ICSCX	15,813,604	1.2		6.8	30.1	33.1	3.8	4.7	11.6	10.5	11.6	Apr-93
Russell 2000 Value				*7.9*	*33.4*	*36.8*	*4.6*	*3.7*	*9.7*	*8.7*	*9.7*	*Apr-93*
Brown Capital Small Company Strategy SMA	21,029,756	1.6		8.6	21.0	27.9	46.3	25.0	23.1	--	20.9	Aug-11
Russell 2000 Growth				*9.3*	*29.6*	*38.9*	*34.6*	*16.2*	*16.4*	*13.5*	*13.9*	*Aug-11*

Howard County Retirement Plans

TOTAL FUND PERFORMANCE DETAIL (GROSS)

	Market Value ($)	% of Portfolio	Policy %	1 Mo (%)	3 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
							Ending December 31, 2020					
Total International Equity	**221,528,523**	**17.3**	**17.0**	**5.0**	**16.8**	**27.7**	**16.4**	**8.0**	**11.3**	**5.9**	**5.4**	**Jul-97**
MSCI ACWI ex USA				*5.4*	*17.0*	*24.3*	*10.7*	*4.9*	*8.9*	*4.9*	*5.0*	*Jul-97*
International Developed Markets Composite	**138,218,803**	**10.8**	**12.0**	**4.1**	**16.5**	**24.8**	**13.1**	**7.5**	**9.1**	**6.9**	**4.5**	**Mar-08**
MSCI EAFE				*4.6*	*16.0*	*21.6*	*7.8*	*4.3*	*7.4*	*5.5*	*3.2*	*Mar-08*
Mondrian International Equity Fund, L.P.	62,239,304	4.8		3.4	17.9	19.6	-3.7	0.9	5.5	5.0	1.9	Dec-07
MSCI EAFE				*4.6*	*16.0*	*21.6*	*7.8*	*4.3*	*7.4*	*5.5*	*2.3*	*Dec-07*
Baillie Gifford EAFE Pure K - BGPKX	75,979,499	5.9		4.6	15.4	29.4	28.8	--	--	--	15.2	May-18
MSCI EAFE				*4.6*	*16.0*	*21.6*	*7.8*	*4.3*	*7.4*	*5.5*	*4.6*	*May-18*
International Emerging Markets Composite	**83,309,720**	**6.5**	**5.0**	**6.7**	**17.4**	**32.7**	**22.0**	**8.7**	**15.8**	**3.7**	**7.2**	**Feb-06**
MSCI Emerging Markets				*7.4*	*19.7*	*31.1*	*18.3*	*6.2*	*12.8*	*3.6*	*5.9*	*Feb-06*
GQG Partners Emerging Markets Equity Fund	58,309,720	4.5		7.1	16.1	36.3	34.9	--	--	--	27.5	Dec-18
MSCI Emerging Markets				*7.4*	*19.7*	*31.1*	*18.3*	*6.2*	*12.8*	*3.6*	*16.1*	*Dec-18*
Arga Emerging Markets Equity Fund	25,000,000	1.9		--	--	--	--	--	--	--	--	Jan-21
MSCI EASEA				*4.8*	*16.3*	*21.0*	*5.6*	*3.7*	*7.0*	*5.2*	*--*	*Jan-21*
Total Fixed Income Composite	**375,664,916**	**29.3**	**30.0**	**1.2**	**3.3**	**5.0**	**8.8**	**5.8**	**6.2**	**4.9**	**5.6**	**Jul-97**
BBgBarc US Aggregate TR				*0.1*	*0.7*	*1.3*	*7.5*	*5.3*	*4.4*	*3.8*	*5.2*	*Jul-97*
Core Fixed Income Composite	**285,390,909**	**22.2**	**22.0**	**0.6**	**1.9**	**3.7**	**10.0**	**--**	**--**	**--**	**9.5**	**Mar-19**
BBgBarc US Aggregate TR				*0.1*	*0.7*	*1.3*	*7.5*	*5.3*	*4.4*	*3.8*	*8.3*	*Mar-19*
Dodge & Cox SMA	127,516,013	9.9		0.7	2.6	4.2	10.1	6.5	6.1	5.1	5.2	May-10
BBgBarc US Aggregate TR				*0.1*	*0.7*	*1.3*	*7.5*	*5.3*	*4.4*	*3.8*	*3.9*	*May-10*
PIMCO Total Return	132,345,978	10.3		0.4	1.3	3.0	9.7	5.9	5.3	4.4	4.6	May-10
BBgBarc US Aggregate TR				*0.1*	*0.7*	*1.3*	*7.5*	*5.3*	*4.4*	*3.8*	*3.9*	*May-10*
State Street Global Advisors TIPS	25,528,918	2.0		1.1	1.6	4.6	11.0	5.9	5.1	3.8	4.0	Nov-09
BBgBarc US TIPS TR				*1.1*	*1.6*	*4.7*	*11.0*	*5.9*	*5.1*	*3.8*	*4.0*	*Nov-09*
Emerging Markets Debt Composite	**49,572,143**	**3.9**	**4.0**	**4.6**	**12.6**	**13.6**	**5.0**	**--**	**--**	**--**	**7.7**	**Mar-19**
JP Morgan GBI EM Global Diversified TR USD				*3.5*	*9.6*	*10.3*	*2.7*	*3.0*	*6.7*	*1.5*	*6.2*	*Mar-19*
Colchester Local Markets Debt Fund	49,572,143	3.9		4.6	12.6	13.6	5.0	4.8	9.3	--	8.5	Oct-15
JP Morgan GBI EM Global Diversified TR USD				*3.5*	*9.6*	*10.3*	*2.7*	*3.0*	*6.7*	*1.5*	*6.4*	*Oct-15*
Absolute Return Fixed Income	**40,701,865**	**3.2**	**4.0**	**0.8**	**2.4**	**4.2**	**--**	**--**	**--**	**--**	**2.2**	**Mar-20**
3-Month Libor Total Return USD				*0.0*	*0.1*	*0.1*	*0.6*	*1.8*	*1.5*	*0.9*	*0.3*	*Mar-20*
Payden Absolute Return Bond Fund PYAIX	40,701,865	3.2		0.8	2.4	4.2	--	--	--	--	2.2	Mar-20
3-Month Libor Total Return USD				*0.0*	*0.1*	*0.1*	*0.6*	*1.8*	*1.5*	*0.9*	*0.3*	*Mar-20*

Howard County Retirement Plans

TOTAL FUND PERFORMANCE DETAIL (GROSS)

	Market Value ($)	% of Portfolio	Policy %	1 Mo (%)	3 Mo (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
							Ending December 31, 2020					
Total Real Assets Composite	**44,411,350**	**3.5**	**7.0**	**0.0**	**0.0**	**6.6**	**-4.9**	**2.9**	**5.8**	**6.0**	**6.4**	**Jul-03**
NCREIF Property Index 1 Qtr. Lag				*0.7*	*0.7*	*-0.3*	*2.0*	*5.1*	*6.3*	*9.4*	*8.4*	*Jul-03*
Cash Composite	**20,472,639**	**1.6**		**0.0**	**0.0**	**0.0**	**0.2**	**1.2**	**0.8**	**0.4**	**1.3**	**Dec-03**
91 Day T-Bills				*0.0*	*0.0*	*0.0*	*0.5*	*1.5*	*1.1*	*0.6*	*1.3*	*Dec-03*
Hedge Fund Composite	**131,681,824**	**10.3**	**8.0**	**1.7**	**4.0**	**7.4**	**7.0**	**5.2**	**4.5**	**5.0**	**5.0**	**Jan-11**
HFRI FOF: Conservative Index				*1.9*	*5.1*	*7.9*	*5.7*	*3.7*	*3.4*	*2.8*	*2.8*	*Jan-11*
Magnitude International Class A Eligible	65,354,421	5.1		0.6	2.5	6.3	7.2	4.7	3.7	4.9	4.9	Jan-11
HFRI FOF: Conservative Index				*1.9*	*5.1*	*7.9*	*5.7*	*3.7*	*3.4*	*2.8*	*2.8*	*Jan-11*
Blackstone Partners Offshore Fund LTD	66,327,403	5.2		2.8	5.4	8.6	6.8	5.4	5.2	--	5.1	Mar-11
HFRI FOF: Conservative Index				*1.9*	*5.1*	*7.9*	*5.7*	*3.7*	*3.4*	*2.8*	*2.8*	*Mar-11*
Private Equity Composite	**150,400,226**	**11.7**	**10.0**	**0.0**	**0.1**	**8.4**	**7.8**	**13.8**	**14.1**	**13.7**	**12.7**	**Jul-08**
C|A US All PE (1 Qtr Lag)				*0.0*	*0.0*	*9.4*	*2.1*	*9.2*	*10.6*	*12.4*	*9.8*	*Jul-08*
Private Debt	**2,500,000**	**0.2**	**5.0**	**0.0**	**0.0**	**0.0**	**--**	**--**	**--**	**--**	**0.0**	**Jun-20**
S&P/LSTA Leveraged Loan				*1.3*	*3.8*	*8.1*	*3.1*	*4.0*	*5.2*	*4.3*	*8.1*	*Jun-20*

Magnitude International Class A Eligible is preliminary as of 12/31/2020.

TOTAL FUND PERFORMANCE DETAIL FOOTNOTES

Performance is preliminary for 12/31/2020.

Fiscal year ends 6/30.

Policy index consists of: 19% Russell 1000 / 4% Russell 2500 / 12% MSCI EAFE / 5% MSCI Emerging Markets / 20% BBgBarc US Aggregate TR / 2% BBgBarc US TIPS TR / 4% 3-Month Libor Total Return USD / 4% JP Morgan GBI EM Global Diversified TR USD / 5% S&P/LSTA Leveraged Loan TR / 7.0% NCREIF Property Index 1 Qtr. Lag / 8% HFRI FOF: Conservative Index / 10% Private Equity Composite.

Allocation index consists of: Weighted index of underlying managers to their respective benchmark.

Fixed Income Policy index consists of: 100% BBgBarc US Aggregate TR.

Real Estate, Real Assets and Private Equity investments are valued as of 06/30/2020 and adjusted for capital calls and distributions through 09/30/2020.

All history prior to 3/1/2019 was provided by AndCo.

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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