



# 10-YEAR CAPITAL MARKET RETURN ASSUMPTIONS

2014

## **BNY Mellon Investment Strategy & Solutions Group (ISSG)**

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## **INTRODUCTION**

More than 30 investment professionals from BNY Mellon Investment Management have joined forces to give investors a glimpse into the future of potential investment returns from global capital markets. Led by the BNY Mellon Investment Strategy & Solutions Group, the team has developed expected returns, standard deviations, and correlations for 50 global asset classes over the next ten years.

The assumptions are intended to guide investors in developing their long term strategic asset allocations.

The initial baseline assumptions were developed using general market expectations and consensus data. The assumptions were then adjusted to reflect views and potential dislocations in global markets, based on research from across BNY Mellon Investment Management.

This document outlines our forecasts for the next ten years and provides supporting details behind the numbers.



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## INFLATION AND REAL SHORT-TERM INTEREST RATES

Inflation and real short-term interest rates provide the foundation for expected returns across global asset classes. Both are primary building blocks for developing equity and fixed income returns and eventually alternative asset class returns. Later in this document, we will explain how we used inflation and real interest rates when developing our return expectations. For now, we will focus on inflation and real interest rate expectations over the next ten years.

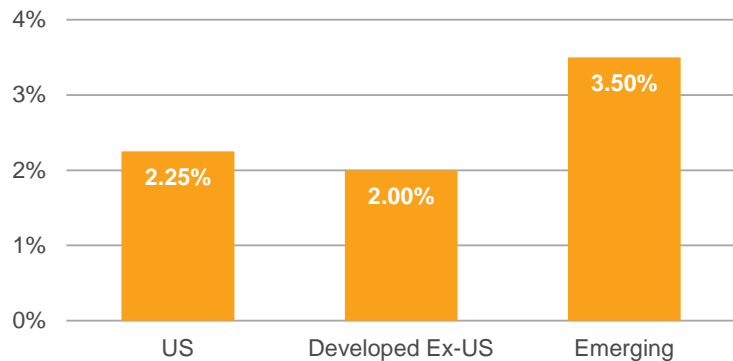
We look at three driving factors to develop the baseline assumptions for our global inflation expectations:

- Market expectations based on breakeven rates
- Consensus forecasts
- Central bank targets

Inflation and real short-term interest rates provide the foundation for return expectations across global markets.

In the U.S., we forecast annualized inflation over the next ten years to be 2.25 percent, slightly higher than the Federal Reserve target of 2 percent but in line with breakeven rates and consensus forecasts. In the developed world outside of the U.S., we expect inflation to be slightly lower at 2 percent, which is in line with consensus forecasts and central bank targets. In emerging economies, we expect inflation to be 3.5 percent, slightly lower than central bank targets but in line with consensus forecasts.

### 10-Year Annual Inflation Expectations



Source: BNY Mellon ISSG

Due to unprecedented efforts from central banks around the globe, nominal short-term interest rates have been driven down near zero. Given positive inflation, the result is negative real short-term interest rates in most developed markets and positive but extremely low rates in emerging markets. We believe that real short-term interest rates will climb closer to historical averages, but will remain depressed due to limited upward inflation pressure from excess global capacity.

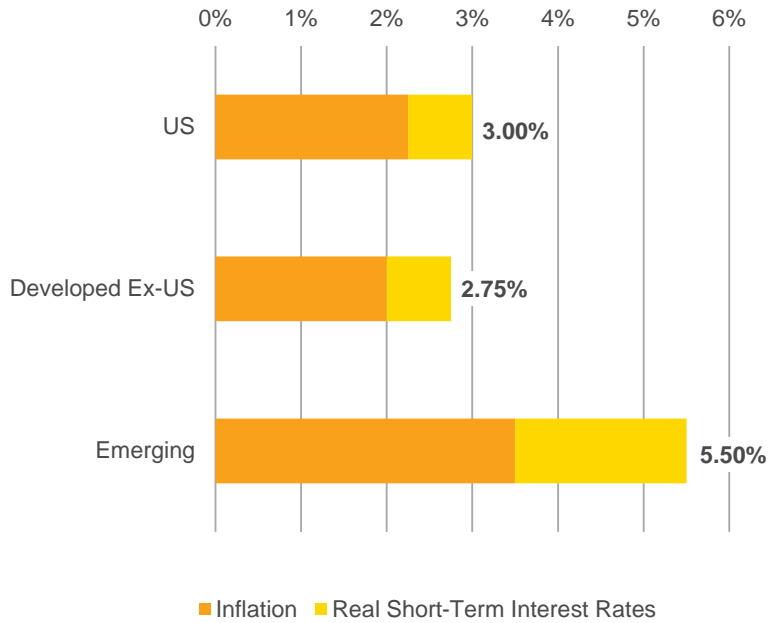
We believe that short-term interest rates will normalize over the next four years. In the U.S., we expect real short-term interest rates to migrate from well below zero to 0.75 percent by 2018. We expect other central banks in the developed world outside of the U.S. to follow suit. In

emerging economies, we expect real short-term interest rates to migrate slightly higher to 2 percent.

Below are our projected nominal short-term interest rates for the U.S., developed markets excluding the U.S. and emerging markets. The nominal rate includes our inflation expectations plus the real rate described previously. We expect rates to gradually increase from today's levels to the projected rates by 2018.

We believe short-term interest rates will reach normalized levels by 2018.

### Projected Nominal Short-Term Interest Rates by 2018



Source: BNY Mellon ISSG

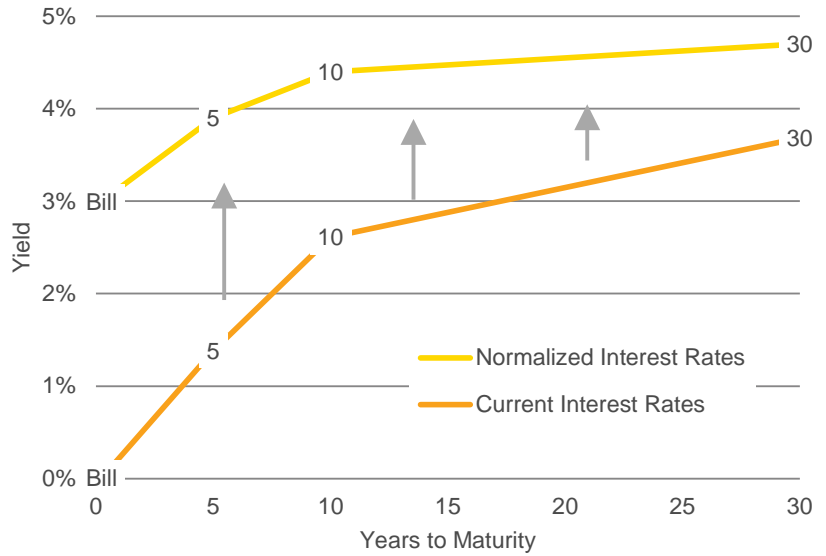
### FIXED INCOME MARKET RETURN EXPECTATIONS

Our fixed income return assumptions rely on a building block approach to project yields over the next ten years. We add expected term premiums and credit spreads when applicable to our normalized short-term interest rates. The result is our expectation of normalized fixed income yields.

We see U.S. Treasury yields rising until they reach a normalized level in 2018. We expect curve flattening with the short end of the curve rising 300 basis points, the 10-year yield rising about 175 basis points and the 30-year yield rising about 100 basis points.

We expect the US Treasury curve to rise and flatten over the next four years.

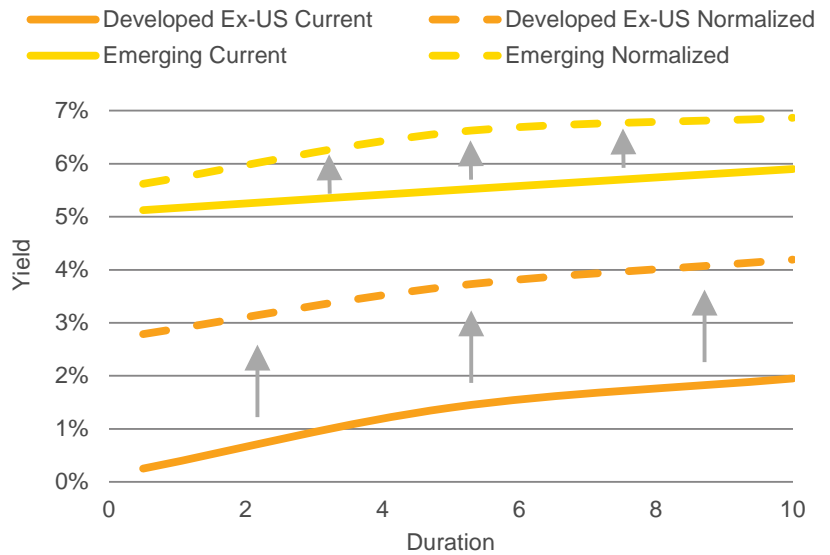
### U.S. Treasury Yield Curve



Source: BNY Mellon ISSG, Barclays

In the developed world outside of the U.S., we see similar increases in government bond yields. We expect the overall level of government bond yields to be slightly lower than the U.S. due to subdued inflation and lower growth expectations. Emerging markets will also experience rising rates due to normalization, though the increase will not be as extreme as developed markets.

### Developed Ex-U.S. and Emerging Market Spot Curves



Source: BNY Mellon ISSG

In the developed world outside of the US, we expect government bond yields to be slightly lower than the US due to subdued inflation and lower growth expectations.

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We believe emerging markets debt, especially local currency, is expected to perform well due to strong growth and currency appreciation.

We expect credit spreads to migrate towards long-term historical averages. Most credit spreads will remain relatively flat with the exception of high yield which is currently trading tighter than historical averages. We also expect default and recovery rates to be in line with historical averages.

Overall, fixed income returns will be suppressed due to low current yields and principal losses due to rising interest rates. However, higher yields in the future will help offset poor returns in the near-term. Spread sectors that are less sensitive to rising interest rates are expected to be the best performers. Emerging markets, especially local currency, are expected to perform well due to strong growth and currency appreciation.

#### 10-Year Fixed Income Expected Returns (in USD)

U.S. Aggregate	2.7%
U.S. Treasury	2.1%
U.S. Treasury Bills	2.1%
U.S. Investment Grade Credit	3.6%
U.S. TIPS	2.3%
U.S. Intermediate Municipal	3.1%
U.S. High Yield	4.8%
U.S. Bank Loans	5.6%
Global Aggregate Ex-US	2.2%
Global Treasury Ex-US	1.9%
Global Corporate Ex-US	3.1%
Emerging Markets Sovereign USD	4.9%
Emerging Markets Corporate USD	5.6%
Emerging Markets Sovereign Local Currency	6.0%

Source: BNY Mellon ISSG

#### EQUITY MARKET RETURN EXPECTATIONS

We use a building block approach consisting of nominal earnings growth, income return, valuation adjustments, and currency adjustments when developing equity assumptions.

##### Inflation

We break down nominal earnings growth into inflation expectations and real earnings growth. Our returns are published in U.S. dollars, so our expected inflation for earnings growth around the world is based on our U.S. inflation expectation of 2.25 percent, which assumes Purchasing Power Parity.

##### Real Earnings Growth

As a baseline assumption, we assume real corporate earnings growth will be consistent with real GDP growth. In the U.S., we expect real earnings growth to be 3 percent, slightly higher than our real GDP growth expectation of 2.75 percent. In the U.S., real earnings per share will grow at a slightly higher rate than real GDP due to increased operating

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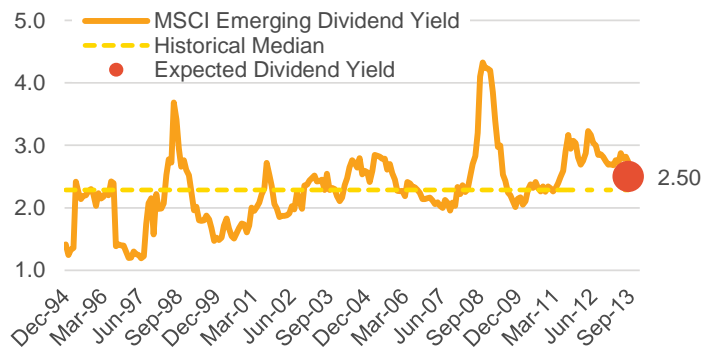
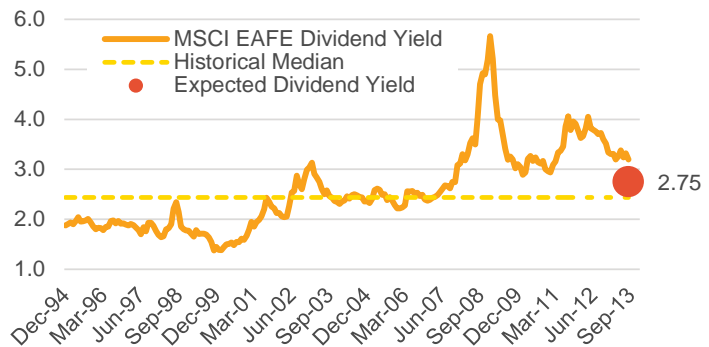
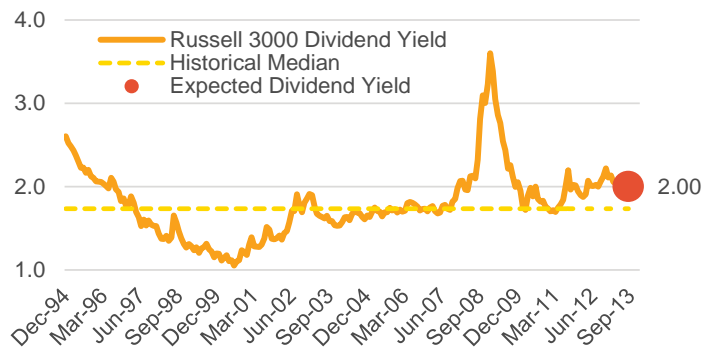
In the US, we expect real earnings growth to be 3%, slightly higher than our real GDP growth expectation of 2.75%.

efficiencies and share repurchasing. In developed markets outside of the U.S. and emerging markets, we believe real earnings growth will be in line with our expectation of regional real GDP growth. We anticipate real earnings growth of 2 percent in the developed markets outside of the U.S. and 4.5 percent in emerging markets.

### Dividend Yield

Over the next ten years, we expect dividend yields to be in line with current yields and 20-year historical averages. In the U.S., we expect equity markets to produce dividend yields of 2 percent, similar to the current dividend yield and slightly higher than historical averages. Outside the U.S., we see dividend yields of 2.75 percent and 2.50 percent for developed markets and emerging markets, respectively. These figures fall between current dividend yields and 20-year historical averages.

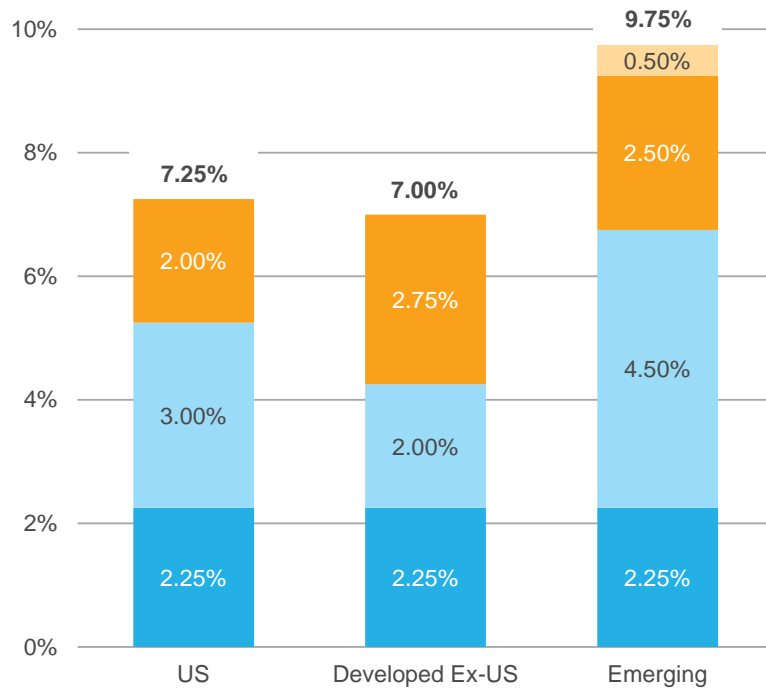
### Global Equity Markets - Historical and Expected Dividend Yields (%)



We expect dividend yields to be in line with current yields and 20-year historical averages.

Source: BNY Mellon ISSG, Russell, MSCI

### Equity Market Expected Returns (in USD)



- Valuation and Currency Appreciation
- Dividend Yield
- Real Earnings Growth
- Inflation

Source: BNY Mellon ISSG

We believe emerging markets equity will lead the way with stronger growth in corporate earnings, strengthening currencies, and higher multiples going forward.

Overall, we see global equity market returns ranging from 7 percent to 10 percent. Emerging market equity will lead the way with returns near 10 percent. Not only do we expect emerging market equity to experience higher returns due to stronger growth in corporate earnings, but we also see additional return due to strengthening currencies and higher multiples. In line with their higher levels of risk, we expect mid and small cap stocks to outperform large cap stocks over the next ten years.

### 10-Year Equity Market Expected Returns (in USD)

U.S. Equity	7.3%
U.S. Large Cap Equity	7.2%
U.S. Mid Cap Equity	8.0%
U.S. Small Cap Equity	8.4%
International Developed Equity	7.0%
International Small Cap Equity	7.5%
Emerging Equity	9.8%

Source: BNY Mellon ISSG

## ALTERNATIVE MARKET RETURN EXPECTATIONS

We believe expected returns for alternative asset classes will generally be in line with public equity markets on a risk adjusted basis. To calculate risk adjusted returns, we first determine the beta of the asset class relative to public equity, based on our expectations of return standard deviations and correlations. We apply the beta to the public equity expected return to determine the expected return of the alternative asset class. For private markets, we add additional return to account for illiquidity. For hedge funds, we add additional return to reflect the residual risk not captured by market returns. The additional return assumes an information ratio of 0.3 multiplied by the residual risk.

Once the baseline numbers were computed, we made adjustments based on our market views. For example, we lowered the expected return for commodities to be consistent with the rate of U.S. inflation primarily due to the futures market trading in contango. Also, we have lowered our return expectations for REITs and real estate to account for rising interest and mortgage rates going forward.

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We believe alternative asset class expected returns will generally be in line with public equity markets on a risk adjusted basis.

### 10-Year Alternative Market Expected Returns (in USD)

Hedge Funds	4.9%
Commodities	2.3%
Global Natural Resources Equity	7.3%
U.S. Core Real Estate	5.6%
U.S. Opportunistic Real Estate	6.6%
U.S. REIT	8.0%
Global REIT	7.7%
U.S. Private Equity	10.7%

Source: BNY Mellon ISSG



## STANDARD DEVIATIONS AND CORRELATIONS

At a high level, our standard deviations and correlations are based on long term historical returns with additional emphasis on near term history. Especially with illiquid asset classes, we've made adjustments for serial correlation and smoothing of historical asset returns.

### 10-Year Return Standard Deviations and Correlations (in USD)

ASSET CLASS	STANDARD DEVIATION	CORRELATION														
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)		
(1) U.S. Equity	18.3%	1.00														
(2) International Developed Equity	20.9%	0.88	1.00													
(3) Emerging Equity	28.1%	0.80	0.87	1.00												
(4) U.S. Aggregate	3.8%	0.04	0.11	0.12	1.00											
(5) U.S. Intermediate Municipal	4.3%	0.03	0.05	0.07	0.64	1.00										
(6) U.S. High Yield	12.1%	0.70	0.71	0.73	0.22	0.28	1.00									
(7) Global Aggregate Ex-US	9.1%	0.34	0.54	0.44	0.54	0.30	0.34	1.00								
(8) Emerging Markets Sovereign USD	12.0%	0.56	0.62	0.70	0.53	0.38	0.69	0.47	1.00							
(9) Hedge Funds	7.2%	0.83	0.85	0.88	0.03	0.07	0.72	0.35	0.60	1.00						
(10) Commodities	18.1%	0.53	0.60	0.62	0.06	-0.05	0.47	0.44	0.41	0.66	1.00					
(11) U.S. Core Real Estate	9.2%	0.55	0.45	0.40	-0.03	0.08	0.61	0.12	0.34	0.53	0.52	1.00				
(12) U.S. REIT	29.6%	0.74	0.69	0.61	0.20	0.17	0.71	0.38	0.56	0.58	0.39	0.53	1.00			
(13) U.S. Private Equity	22.1%	0.98	0.90	0.86	0.03	0.01	0.71	0.32	0.62	0.85	0.53	0.56	0.74	1.00		

Source: BNY Mellon ISSG

## PORTFOLIO IMPLICATIONS

Capital market assumptions are a critical component of portfolio construction for most investors. Many corporate defined benefit pension plans are concerned about meeting or exceeding their liability growth rates. Public pension plans have well-established return targets usually in the range of 7-8%. Endowments and foundations aim to meet their spending goals on an inflation adjusted basis.

Using data from the BNY Mellon Institutional Scorecard and the BNY Mellon Master Trust Universe, we have calculated portfolio expected return and standard deviation for three segments of institutional investors based on our 2014 Capital Market Return Assumptions.

### Institutional Investor Allocations

Asset Class	Corporate Defined Benefit	Public Defined Benefit	Endowment and Foundation
U.S. Equity	28.0%	26.0%	23.0%
International Developed Equity	12.0%	14.0%	6.5%
Emerging Equity	4.0%	5.0%	2.5%
U.S. Aggregate	6.5%	15.0%	6.5%
Global Aggregate Ex-US	6.5%	15.0%	6.5%
U.S. Long Treasury	9.0%	0.0%	0.0%
U.S. Long Investment Grade Credit	17.0%	0.0%	0.0%
U.S. Private Equity	5.0%	10.0%	15.0%
Global REIT	3.0%	5.0%	8.0%
Hedge Funds	7.0%	7.0%	22.0%
Commodities	2.0%	3.0%	10.0%

Source: ISSG, BNY Mellon Institutional Scorecard, BNY Mellon Master Trust Universe

Corporate defined benefit plans receive the greatest boost in expected return due in large part to the increased expected return of long duration fixed income from 2013 to 2014.

### Portfolio Expected Return and Standard Deviation

Metric	Corporate Defined Benefit	Public Defined Benefit	Endowment and Foundation
Expected Return (Change from 2013 assumptions)	5.9% (+1.0%)	6.0% (+0.5%)	6.3% (+0.3%)
Standard Deviation (Change from 2013 assumptions)	12.0% (-0.2%)	13.7% (-0.4%)	14.2% (-1.1%)

Source: ISSG

Corporate defined benefit plans receive the greatest boost in expected return due in large part to the increased expected return of long duration fixed income from 2013 to 2014.

Public defined benefit plans, expecting to return 6.0% over the next 10 years, may need markets to perform better than expectations to hit return targets in the 7-8% range.

Endowments and foundations that typically target a 5% spending + inflation policy may need inflation to remain in the low single digits over the next 10 years in order to reach their objective.

**ASSET CLASS EXPECTED RETURNS  
AND STANDARD DEVIATIONS**

Asset Class		Representative Index	Expected Return	Standard Deviation
Equity	U.S. Equity	Russell 3000	7.3%	18.3%
	U.S. Large Cap Equity	Russell 1000	7.2%	18.0%
	U.S. Mid Cap Equity	Russell Mid Cap	8.0%	21.3%
	U.S. Small Cap Equity	Russell 2000	8.4%	23.9%
	U.S. Micro Cap Equity	Dow Jones Wilshire U.S. Micro-Cap	8.5%	25.6%
	Global Equity	MSCI ACWI	7.4%	19.3%
	International Developed Equity	MSCI EAFE	7.0%	20.9%
	International Small Cap Equity	MSCI EAFE Small Cap	7.5%	23.9%
	Emerging Equity	MSCI Emerging	9.8%	28.1%
Fixed Income	U.S. Aggregate	Barclays U.S. Aggregate	2.7%	3.8%
	U.S. Treasury	Barclays U.S. Treasury	2.1%	4.8%
	U.S. Treasury Bills	Barclays U.S. Treasury Bills 3-6 Month	2.1%	0.5%
	U.S. Intermediate Treasury	Barclays U.S. Intermediate Treasury	2.0%	3.3%
	U.S. Long Treasury	Barclays U.S. Long Treasury	2.6%	12.6%
	U.S. Investment Grade Credit	Barclays U.S. Credit	3.6%	6.1%
	U.S. Intermediate Investment Grade Credit	Barclays U.S. Intermediate Credit	3.1%	4.6%
	U.S. Long Investment Grade Credit	Barclays U.S. Long Credit	4.8%	11.1%
	U.S. TIPS	Barclays U.S. Inflation Linked Bonds	2.3%	7.0%
	U.S. Agencies	Barclays U.S. Agencies	2.5%	3.3%
	U.S. MBS	Barclays U.S. MBS	3.1%	2.9%
	U.S. Investment Grade CMBS	Barclays Investment Grade CMBS	3.3%	12.0%
	U.S. Intermediate Municipal	S&P Municipal Bond Intermediate	3.1%	4.3%
	U.S. Short Municipal	S&P Municipal Bond Short	2.2%	1.3%
	U.S. High Yield	Barclays U.S. Corporate High Yield	4.8%	12.1%
	U.S. Bank Loans	CSFB Leveraged Loan	5.6%	8.1%
	Global Aggregate Ex-US	Barclays Global Aggregate Ex-USD	2.2%	9.1%
	Global Treasury Ex-US	Barclays Global Treasury Ex-USD	1.9%	8.8%
	Global Corporate Ex-US	Barclays Global Corporate Ex-USD	3.1%	11.4%
	Emerging Markets Sovereign USD	Barclays EM USD Sovereign	4.9%	12.0%
Emerging Markets Corporate USD	Barclays EM USD Corporate	5.6%	15.0%	
Emerging Markets Sovereign Local Currency	Barclays EM Local Currency Government	6.0%	15.0%	
Alternatives	Absolute Return <sup>1,2</sup>	HFRX Global Hedge Fund	4.7%	6.4%
	Hedge Funds <sup>1,2</sup>	HFRI Fund Weighted Composite	4.9%	7.2%
	Hedge Funds - Equity Hedge <sup>1,2</sup>	HFRI Equity Hedge	5.9%	9.9%
	Hedge Funds - Event Driven <sup>1,2</sup>	HFRI Event Driven	5.1%	7.5%
	Hedge Funds - Macro <sup>1,2</sup>	HFRI Macro	4.3%	5.8%
	Hedge Funds - Relative Value <sup>1,2</sup>	HFRI Relative Value	4.2%	5.3%
	Hedge Funds - Managed Futures <sup>1,2</sup>	New edge CTA Index	4.5%	8.0%
	Commodities	Dow Jones UBS Commodities	2.3%	18.1%
	Global Natural Resources Equity	S&P Global Natural Resources Index	7.3%	24.2%
	U.S. Core Real Estate <sup>2</sup>	NCREIF Tow nsend Core Index	5.6%	9.2%
	U.S. Value Added Real Estate <sup>2</sup>	NCREIF Tow nsend Value Added Index	5.8%	12.5%
	U.S. Opportunistic Real Estate <sup>2</sup>	NCREIF Tow nsend Opportunistic Index	6.6%	15.9%
	Timberland <sup>2</sup>	NCREIF Total Return Timberland	4.8%	5.3%
	Farmland <sup>2</sup>	NCREIF Total Return Farmland	5.0%	7.7%
	U.S. REIT	FTSE NAREIT Equity	8.0%	29.6%
	Global REIT	FTSE EPRA/NAREIT Developed Index	7.7%	25.2%
	U.S. Private Equity <sup>1,2</sup>	Cambridge Associates LLC U.S. Private Equity	10.7%	22.1%
U.S. Venture Capital <sup>1,2</sup>	Cambridge Associates LLC U.S. Venture Capital	11.0%	29.2%	
Infrastructure	Alerian MLP Infrastructure	7.3%	20.1%	

1. Consistent with the Representative Index, returns are net of management fees. Other indices are gross of fees.

2. The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly.





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