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# 10-Year Capital Market Return Assumptions

Calendar Year | 2017

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BNY Mellon Fiduciary Solutions is a leading provider of fiduciary management solutions and assists clients in developing an appropriate investment strategy, selecting investment managers and oversight/reporting.

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## About the Assumptions

On an annual basis, BNY Mellon Investment Management develops capital market return assumptions for approximately 50 asset classes around the world. The assumptions are based on a 10-year investment time horizon and are intended to guide investors in developing their long-term strategic asset allocations.

Led by BNY Mellon Fiduciary Solutions, the capital market assumption team consists of more than 30 investment professionals including investment strategists, economists, financial advisors, manager research specialists and portfolio managers.

We developed the initial baseline assumptions 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 10 years and provides supporting details behind the data.**

## Elevated Uncertainty in 2017

Before providing details surrounding our assumptions, we first want to note the elevated level of policy uncertainty at the moment that could manifest itself in ways that result in changes to our return assumptions. Examples include a material change in U.S. tax policy or de-globalization events that restrict the movement of capital (financial and/or human). These could have a material impact on assumptions for inflation, sustainable earnings, cost of capital, etc. and may disturb the longer term mean reverting trends that markets have typically exhibited.

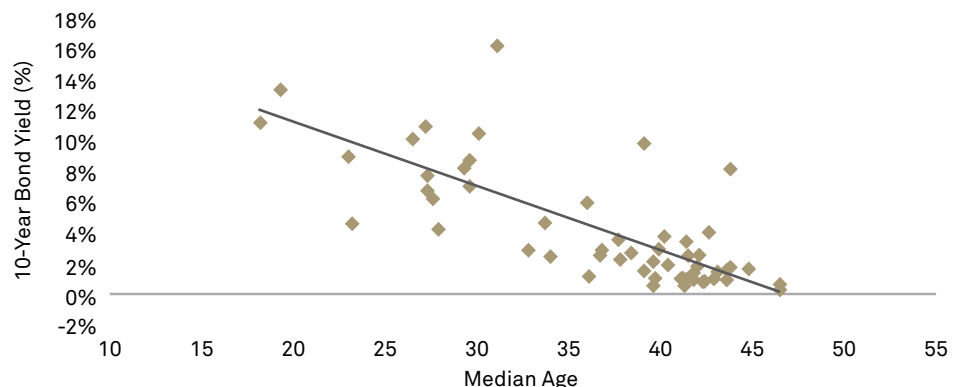
## Aging Population Headwinds

### Median Age vs. 10-Year Government Bond Yields

There can be many reasons for this relationship. Some demographers argue that mature nations grow more slowly and thus are less capital intensive than their developing counterparts. Others would say that older nations are on the back end of the household formation cycle and overall credit demand slows in such an environment. Or perhaps simply, more retired individuals lead to greater demand for fixed income. Causal factors may be debated, but the data points to a meaningful relationship between median age and level of interest rates.

A prominent theme underlying the 2017 Capital Market Assumptions is that of demographics. Research has shown that demographic trends have important relationships with many economic variables.

Generally speaking, as a nation's population ages, the balance of capital tends to shift from debtors to creditors. This phenomenon is best outlined below, which depicts the relationship between the median age of a nation and its respective 10-year government bond yield. A meaningful inverse relationship can be observed in the data, indicating that older countries tend to have lower interest rates.



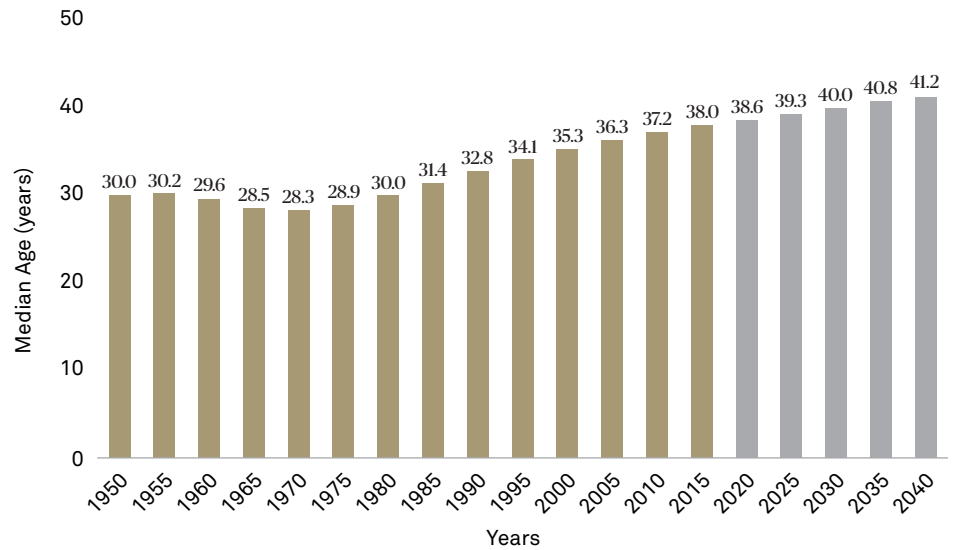
Source: BNY Mellon Fiduciary Solutions, Organisation for Economic Co-operation and Development (OECD), Bloomberg. Data as of December 31, 2015.

## U.S. Median Age

- Actual
- Forecast (Medium Variant)

Looking forward, demographers at the OECD project the median age in the United States to rise from 38.0 years today to 39.3 years in 2025 (see chart to the right). If this holds true, we would expect demographics to serve as a meaningful headwind to potential growth and inflation in the future.

Developing demographic trends of an aging United States population helps support our assumption of a 3.50% 10-year U.S. Treasury yield in 10 years. Growth and inflation may still surprise to the upside over the next 10 years, but it would be despite demographics and not because of them.



Source: BNY Mellon Fiduciary Solutions, OECD. Data as of December 31, 2015.

## Inflation and Real Short-Term Interest Rates

We believe inflation will be less than consensus estimates and market expectations.

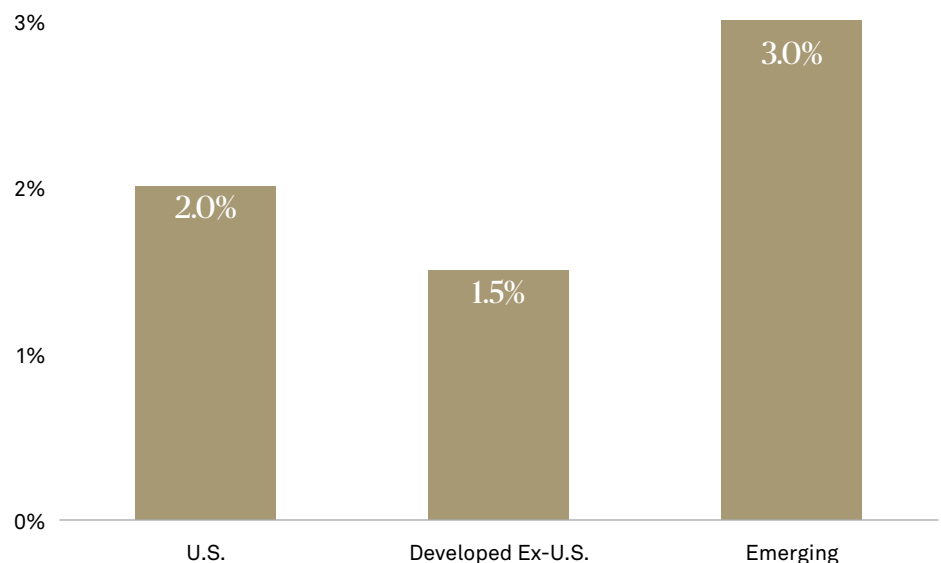
Inflation and real short-term interest rates provide the foundation for expected returns across global asset classes. Both are primary building blocks for developing equity and fixed income returns and eventually alternative asset class returns. Later in this document, we will explain how we used inflation and real interest rates when developing our return expectations. For now, we will focus on inflation and real interest rate expectations over the next 10 years.

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

- 1 | Market expectations based on breakeven rates
- 2 | Consensus forecasts
- 3 | Central bank targets

### 10-Year Annual Inflation Expectations from 2017 to 2026

We forecast U.S. annualized inflation over the next 10 years to be 2.0%, which is in line with the Federal Reserve target but below consensus estimates and market expectations of approximately 2.2%. In the U.S., we believe inflation will be less than consensus estimates and market expectations due to demographic headwinds discussed previously. In the developed world outside of the U.S., we expect inflation to be even lower at 1.5% due to sluggish growth and aging populations. In emerging economies, we expect inflation to be 3.0%, which is in line with consensus forecasts.



Source: BNY Mellon Fiduciary Solutions. Data as of November 30, 2016.

We expect rates to gradually increase from today's levels to the projected rates in five to six years.

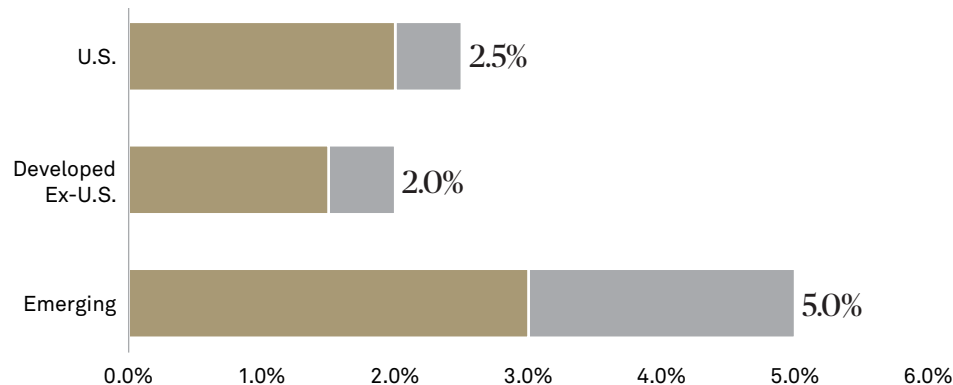
### Projected Nominal Short-Term Interest Rates

- Inflation
- Real Short-Term Interest Rates

To the right 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 in five to six years.

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 low rates in emerging markets. We believe that real short-term interest rates will climb closer to historical averages, but will remain slightly depressed due to limited upward inflation pressure from sluggish growth and demographic headwinds.

We believe that short-term interest rates will normalize over the next five to six years. In the U.S., we expect real short-term interest rates to migrate from well below zero to 0.5%. 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%.



Projected rates in five years for U.S., six years for Developed Ex-U.S., and five years for Emerging. Source: BNY Mellon Fiduciary Solutions. Data as of November 30, 2016.

## 1 Fixed Income Market Return Expectations

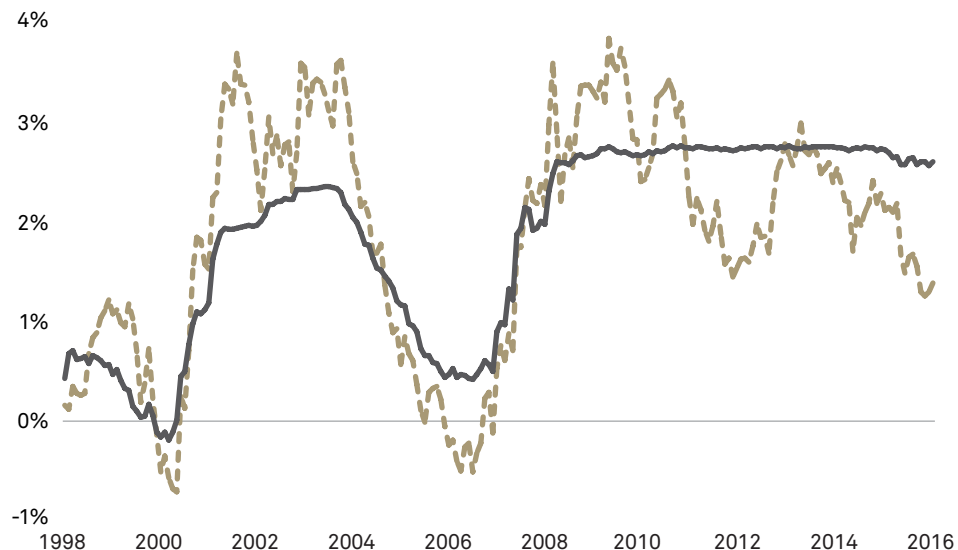
### U.S. Yield Curve Slope

- Actual Slope of Curve (10-Year Yield minus 3-Month Yield)
- Simulated Slope of Curve (10-Year Yield minus 3-Month Yield)

The results of our analysis are shown to the right. The chart compares the actual U.S. 10-year bond slope (10-year yield minus 3-month yield) to simulated results from our regression analysis. The same formula that produces the simulated results is then used to determine the slope of the entire curve based on our expectation of inflation and short-term interest rates.

Our fixed income return assumptions rely on a building block approach to project yields over the next 10 years. We add curve slope and credit spreads when applicable to our normalized short-term interest rates. The result is our expectation of normalized fixed income yields.

For developing additional yield due to maturity, we first look to historical relationships between the slope of the curve, inflation expectations and the level of short-term rates. Based on a regression analysis, our research suggests that inflation expectations and the level of short-term interest rates have some level of predictive power for the slope of the yield curve.



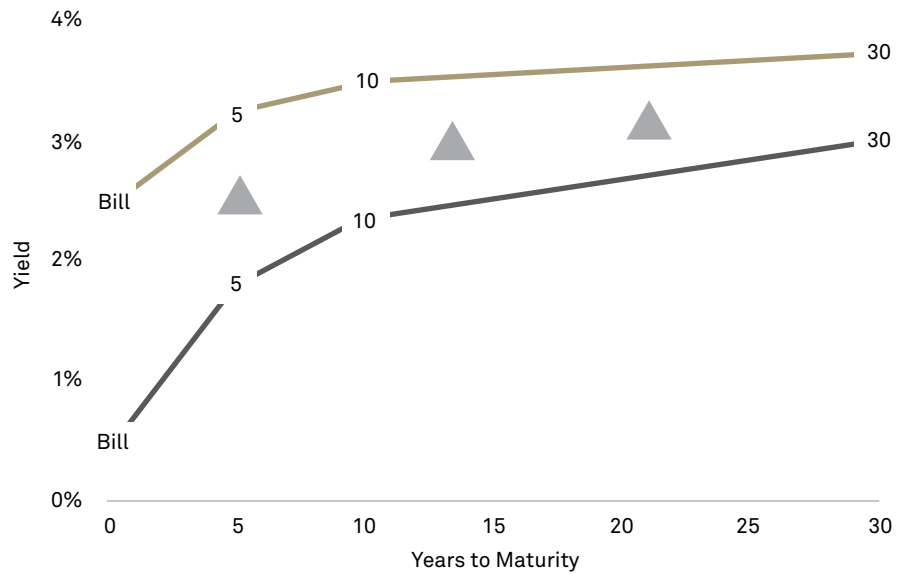
Source: BNY Mellon Fiduciary Solutions, Bloomberg Barclays. Data as of September 30, 2016.

Due to the impact of an aging population, we believe inflation and growth will be limited and result in a flattening of the yield curve.

### U.S. Treasury Yield Curve

- Normalized Interest Rates
- Current Interest Rates

If we relied purely on the model demonstrated above, the difference between the U.S. 10-year bond yield and 3-month bond yield would be approximately 150 basis points. Due to the impact of an aging population, we believe inflation and growth will be limited and result in a flattening of the yield curve. Our revised projection for the difference between the 10-year bond yield and 3-month bond yield is 100 basis points. Overall, we see U.S. Treasury yields rising until they reach a normalized level in five years. We expect curve flattening with the short end of the curve rising about 200 basis points, the 10-year yield rising about 115 basis points, and the 30-year yield rising about 75 basis points.



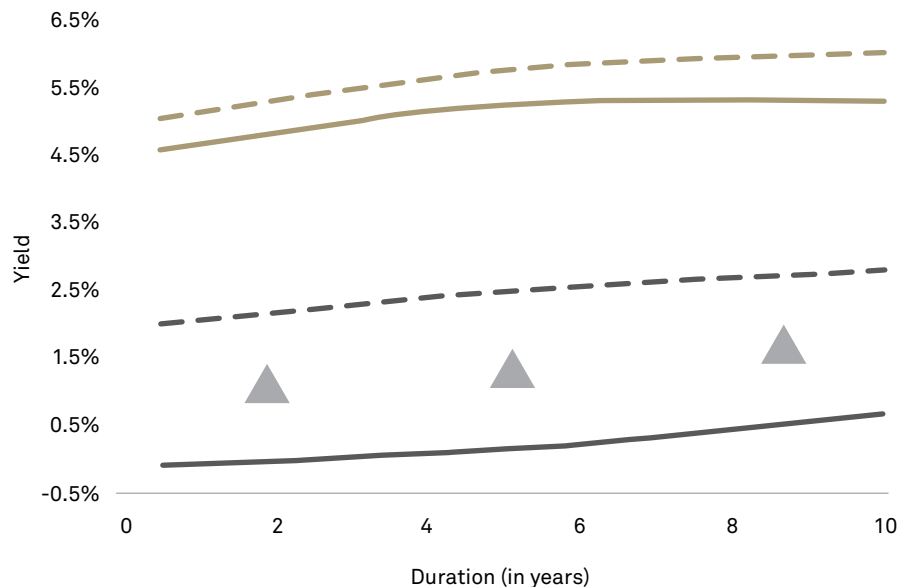
Current Interest Rates as of November 30, 2016.  
 Normalized Interest Rates are projected in five years.  
 Source: BNY Mellon Fiduciary Solutions, Bloomberg Barclays. Data as of November 30, 2016.

We expect the overall level of government bond yields outside the U.S. to remain lower due to subdued inflation and lower growth expectations.

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

- Developed Ex-U.S. Current
- Emerging Current
- Developed Ex-U.S. Normalized
- Emerging Normalized

In the developed world outside of the U.S., we see similar increases in government bond yields due to extremely low current levels. However, we expect the overall level of government bond yields outside the U.S. to remain lower due to subdued inflation and lower growth expectations. Emerging markets will likely also experience rising rates due to normalization, though the increase may not be as pronounced as developed markets.



Current interest rates as of November 30, 2016.  
 Normalized interest rates are projected in six years for Developed Ex-U.S. and five years for Emerging.  
 Source: BNY Mellon Fiduciary Solutions. Data as of November 30, 2016.

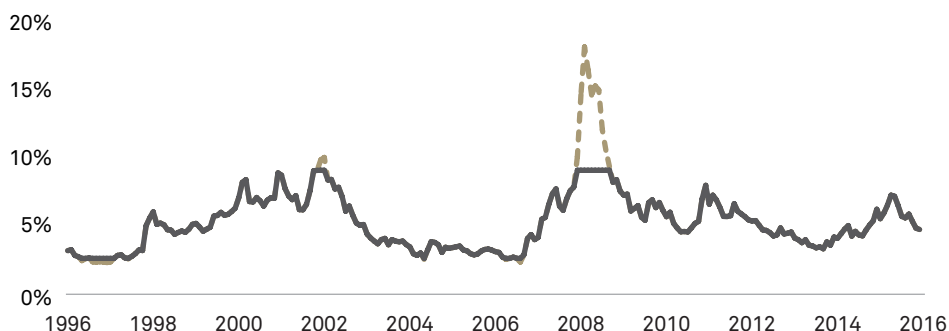
We expect most credit spreads to widen slightly and we also expect default and recovery rates to be in line with historical averages.

### U.S. Corporate High Yield Spread to Treasury

- Historical Spread
- Winsorized Spread

We expect most credit spreads to widen slightly from today's levels to long-term averages because most sectors are currently trading tighter than historical averages. We also expect default and recovery rates to be in line with historical averages.

We expect credit spreads to migrate toward long-term historical averages over a time horizon consistent with our view on interest rate increases. To determine the historical average, we "Winsorize" the data to eliminate skews to the average from extreme events such as the credit crisis. As shown in the chart below, this Winsorize approach applies a floor and ceiling on the data at the 5th and 95th percentiles to eliminate extreme shocks and provide a more consistent data stream for determining the average.



Source: BNY Mellon Fiduciary Solutions, Bloomberg Barclays. Data as of September 30, 2016.

We expect spread sectors that are less sensitive to rising interest rates and emerging markets to perform well.

### 10-Year Fixed Income Expected Returns from 2017 to 2026 (in USD)

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 could help offset poor returns in the near term. We expect spread sectors that are less sensitive to rising interest rates to be among the best performers. We also expect emerging markets to perform well due to higher yields in the current environment and less principal loss from less significant interest rate increases. We expect returns to be lowest in the developed world outside of the U.S., due to extremely low current yields and loss of principal from rising rates.

U.S. Aggregate	2.6%
U.S. Treasury	2.1%
U.S. Treasury Bills	1.8%
U.S. Investment Grade Credit	3.3%
U.S. TIPS	2.1%
U.S. Intermediate Municipal	2.7%
U.S. High Yield	4.9%
U.S. Bank Loans	4.7%
Global Aggregate Ex-U.S.	0.4%
Global Treasury Ex-U.S.	0.2%
Global Corporate Ex-U.S.	1.4%
Emerging Markets Sovereign USD	5.1%
Emerging Markets Corporate USD	4.9%
Emerging Markets Sovereign Local Currency	5.1%

Source: BNY Mellon Fiduciary Solutions. Data as of November 30, 2016. Please see page 13 for a list of representative indices.

The return of the U.S. bond market over 10 years is fairly consistent with the yield of the market at the start of the period.

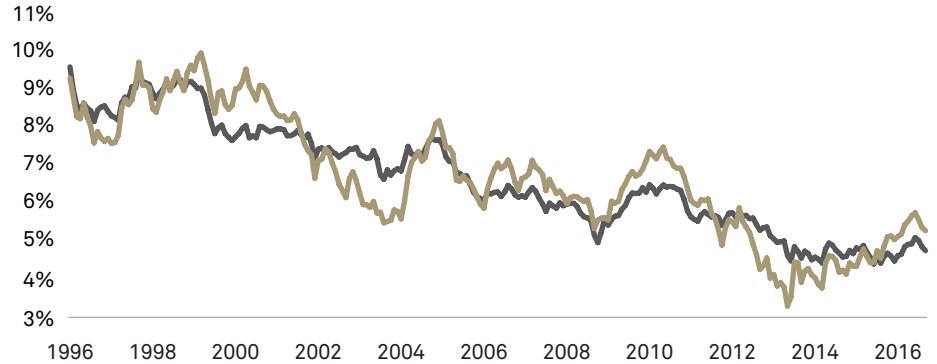
### U.S. Aggregate Index Returns versus Starting Yields

- Yield 10 Years Ago
- 10-Year Annualized Return for Period Ending

#### Comparing Fixed Income Returns to Yields

One technique of affirming our fixed income expected return assumptions is by comparing the returns to current yields in the market. Regardless of where one projects yields to go in the future, the current yield is a strong indicator of future returns. To demonstrate this point, the chart to the right shows rolling 10-year annualized returns of the Bloomberg Barclays U.S. Aggregate Index and compares those returns to the yield of the index at the beginning of the 10-year period.

We have witnessed significant rate movements over the past 20 years, but the return of the U.S. bond market over 10 years is fairly consistent with the yield of the market at the start of the period. Rarely is the difference more than 1%. With yields currently around 2.5%, one should be skeptical of expected returns for U.S. bonds being more than 3.5% or less than 1.5% based on a 10-year horizon. Our expected return for U.S. Aggregate is 2.6% over a 10-year horizon.



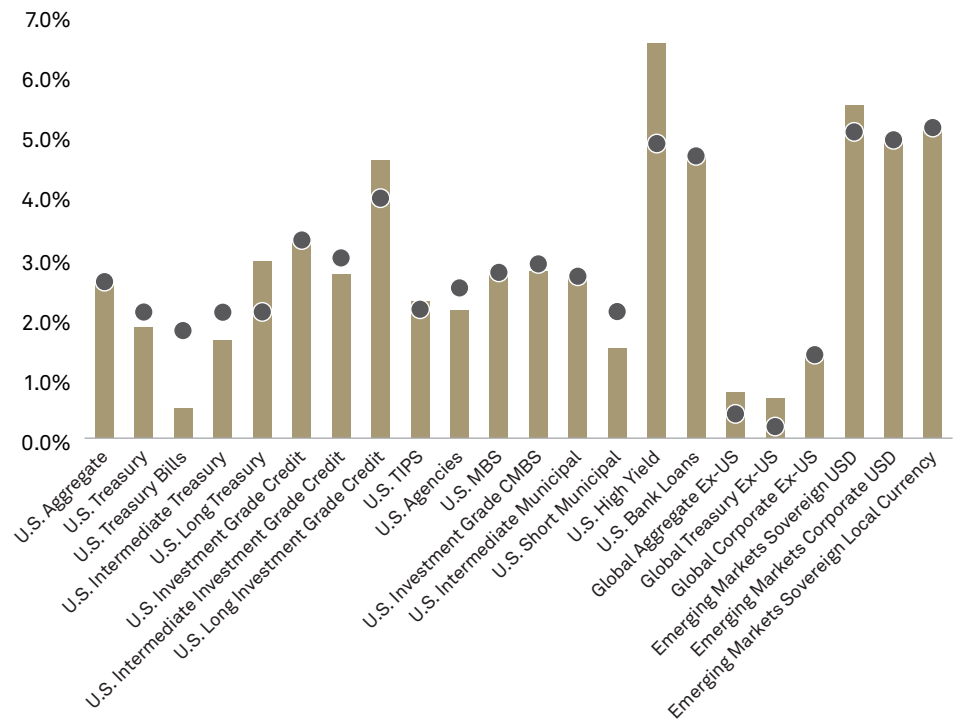
Source: BNY Mellon Fiduciary Solutions, Bloomberg Barclays. Data as of September 30, 2016.

We compare current yields across many fixed income sectors to our expected return assumptions.

### Current Fixed Income Yields versus Expected Returns

- Current Yield
- Expected Return

In the chart to the right, we compare current yields across many fixed income sectors to our expected return assumptions. For most asset classes, the expected return is generally consistent with the current yield. One major exception is high yield fixed income where defaults result in a return less than the current yield.



Source: BNY Mellon Fiduciary Solutions, Bloomberg Barclays. Data as of November 30, 2016.

# 2 Equity Market Return Expectations

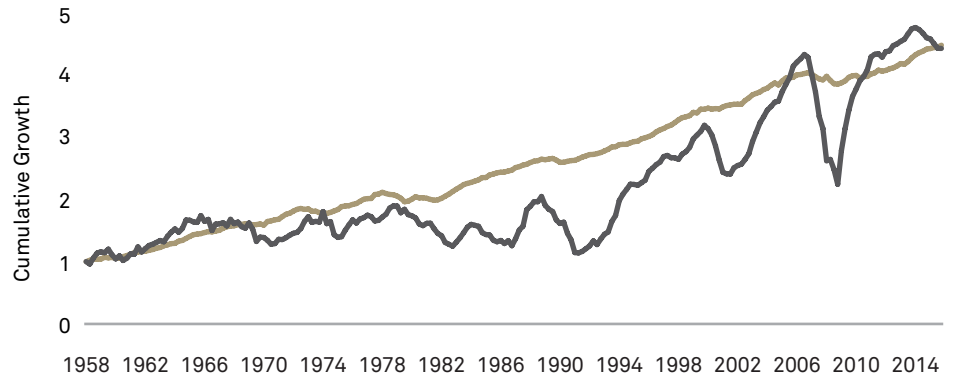
## U.S. GDP versus Corporate Earnings Growth

- U.S. Real GDP
- S&P 500 Index Real Earnings

**Real Earnings Growth:** As a baseline assumption, we assume real corporate earnings growth will be consistent with real GDP growth consensus expectations. As the chart to the right indicates, historically, there is a relationship between corporate earnings growth and GDP growth over a long-term time horizon.

We develop equity assumptions using a building block approach consisting of nominal earnings growth, income return consisting of dividends and stock net buybacks, valuation adjustments and currency adjustments.

**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 2.0%, which assumes Purchasing Power Parity.



Source: BNY Mellon Fiduciary Solutions, Bloomberg Barclays. Data as of September 30, 2016.

In the U.S., 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 2.1% in the U.S., 1.5% in the developed markets outside of the U.S., and 3.9% in emerging markets.

## Dividend Payout Ratios Outside the U.S.

### CHART 1:

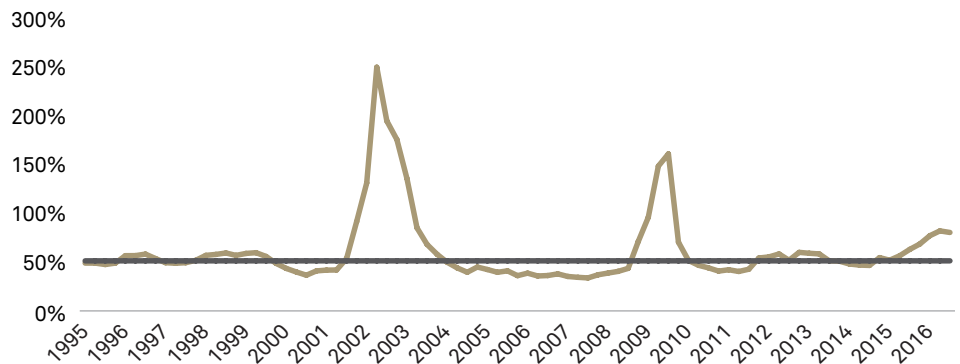
- MSCI EAFE Index Dividend Payment Ratio
- Median

### CHART 2:

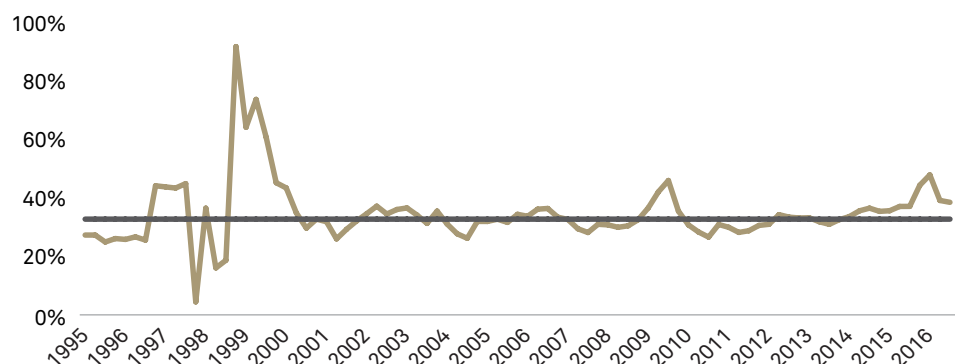
- MSCI Emerging Index Dividend Payment Ratio
- Median

**Dividend/Buyback Yield:** Over the next 10 years, we expect dividend yields to be in line with long-term payout ratios and earnings yield levels. Outside the U.S., we see dividend yields of 3.0% and 2.6% for developed markets and emerging markets, respectively. These figures are based on long-term average dividend payout ratios of 50% for developed markets outside of the U.S. and 35% for emerging markets (see charts to the right). The dividend yield is determined by applying the payout ratio to historical average earnings yield of approximately 6% for developed markets outside of the U.S. and 7.5% for emerging markets.

### CHART 1



### CHART 2



Source: BNY Mellon Fiduciary Solutions, MSCI. Data as of September 30, 2016.



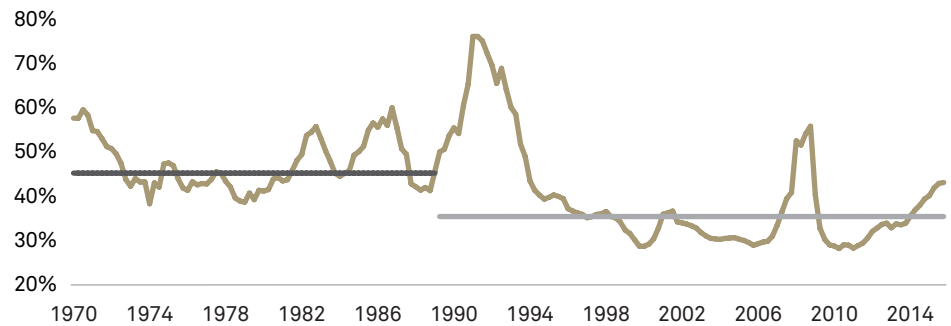
Based on a historical average earnings yield of approximately 6% and payout ratio of 45%, we've assumed a total income return of 2.7% in the U.S.

### Dividend Payout Ratio in the U.S.

- S&P 500 Index Dividend Payout Ratio
- Pre 1990 Median
- Post 1990 Median

To account for income returned to investors via dividends and share buybacks, we've assumed a total payout ratio of 45% in the U.S. Based on a historical average earnings yield of approximately 6%, we've assumed a total yield of 2.7% in the U.S.

In the U.S., we also expect dividend yields to be based on payout ratios and current earnings yield levels, but a simple long-term average cannot be applied to the U.S. for several reasons. During the 1980s, a structural change took place in the way U.S. companies returned capital to shareholders. Prior to the 1980s, capital was predominately returned via dividends with an average payout ratio of approximately 45% of earnings. After the 1980s, the average dividend payout ratio shrank to 35% due to companies replacing dividends with share buybacks as a form of returning capital to investors (see chart below). This structural shift occurred due to changes in tax law that made capital gains more advantageous than dividends for investors and the addition of safe harbor provisions that made share repurchasing less likely to violate share price manipulation rules. Buybacks are less common outside of the U.S. due to different regulatory environments, so no adjustments are made.



Source: BNY Mellon Fiduciary Solutions, S&P Data as of September 30, 2016.

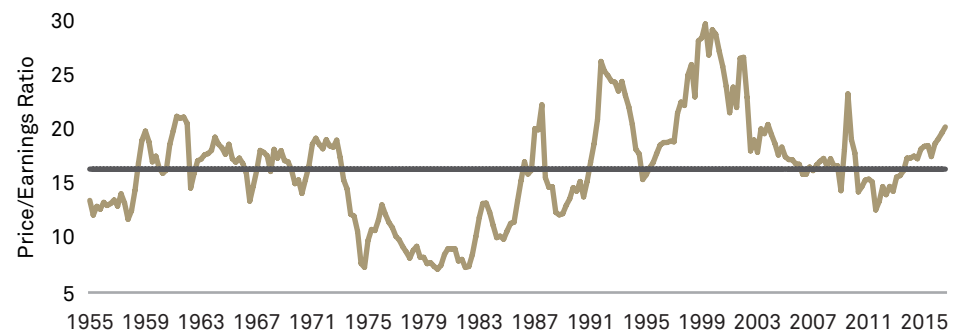
History shows mean reversion of the P/E ratio with an average of approximately 16.5.

### Historical P/E Ratios Relative to the Average

- S&P 500 Trailing Price/Earnings Ratio
- Winsorized Average

The chart to the right shows the price to earnings (P/E) ratio of the S&P 500 index over the past 60+ years. History shows mean reversion of the ratio with an average of approximately 16.5. The current trailing P/E ratio is elevated to a level over 20.

**Valuation Adjustments:** As we will demonstrate later in the paper, changes in equity market valuation are the primary reason why return expectations are different than actual returns going forward. Over the long run, inflation, real earnings growth, and income return are fairly predictable, but valuation changes are not. Given the uncertainty of predicting valuation changes in the future, we are very careful not to make valuation adjustments unless we believe there is strong evidence to support it. For the 2017 assumptions, we believe there is evidence to make modest valuation adjustments for U.S. and non-U.S. developed equity market returns.



Source: BNY Mellon Fiduciary Solutions, S&P Data as of September 30, 2016.

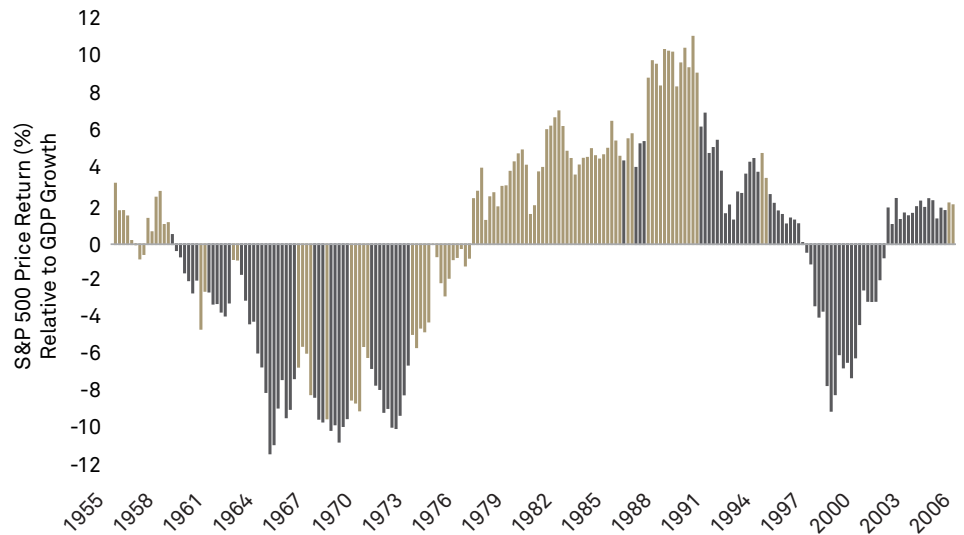
We do not see strong evidence for adjusting returns in emerging markets.

If we assumed full mean reversion over the next 10 years and earnings growth consistent with our outlook, the annualized reduction in return would be 2%, resulting in U.S. equity returns below 5% over the next 10 years. Given the uncertainty of predicting valuation metrics and the possibility of lower ratios due to strong earnings growth, we are only making a 50 basis point adjustment downward for U.S. equity market returns due to valuation concerns. We see similar valuation concerns in non-U.S. developed markets and have implemented a similar adjustment. We do not see strong evidence for adjusting returns in emerging markets.

## S&P 500 Price Return in Excess of Nominal GDP Growth

- S&P 500 P/E Ratio Below Average
- S&P 500 P/E Ratio Above Average

To further illustrate our point, the chart to the right shows future S&P 500 price returns in excess of GDP when P/E ratios are above and below historical averages. Price returns exceed the future growth in GDP by an average of +2% when P/E ratios are below average. Conversely, price returns lag the future growth in GDP by an average of -2% when P/E ratios are above average. However, the chart does demonstrate mixed results in certain periods supporting our view of modest adjustments only when we see clear evidence.

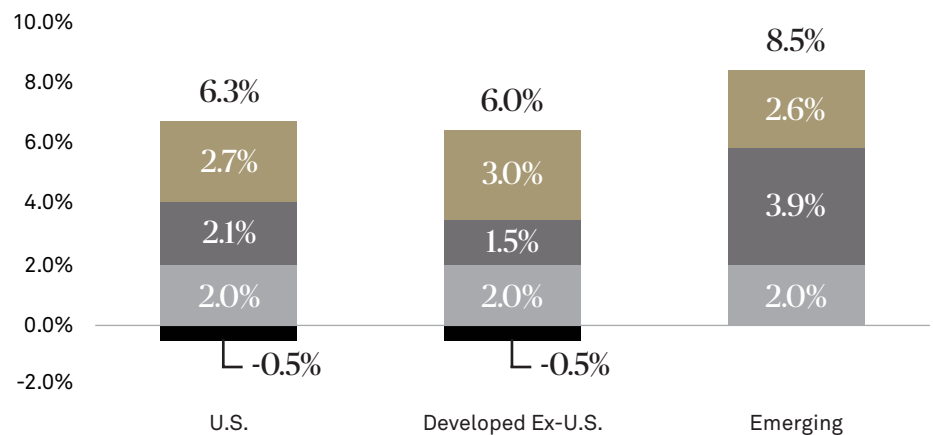


Source: BNY Mellon Fiduciary Solutions, S&P Data as of September 30, 2016.

## Equity Market Expected Returns from 2017 to 2026 (in USD)

- Valuation Adjustment
- Dividend/Buyback Yield
- Real Earnings Growth
- Inflation

Overall, we see global equity market returns ranging from 6% to 9%. We anticipate emerging market equity will lead the way with returns near 9% primarily due to stronger earnings growth. Developed markets outside of the U.S. will likely lag other regions due to lower earnings growth.



Source: BNY Mellon Fiduciary Solutions. Data as of November 30, 2016.

## 10-Year Equity Market Expected Returns from 2017 to 2026 (in USD)

In line with their higher levels of risk, we expect mid and small cap stocks to outperform large cap stocks over the next 10 years.

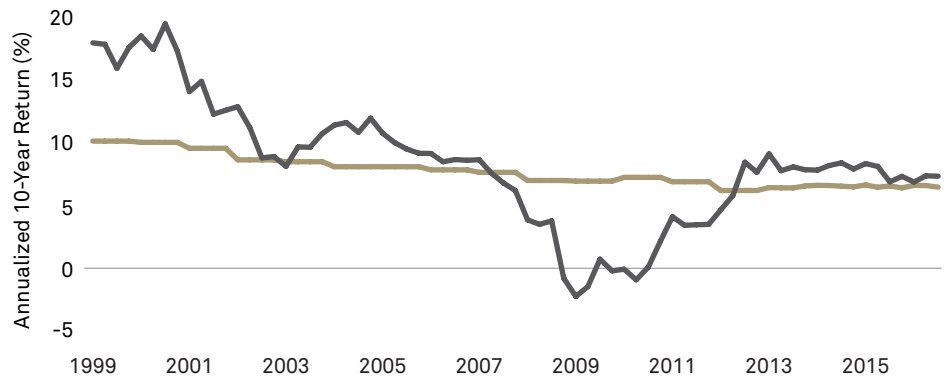
U.S. Equity	6.3%
U.S. Large Cap Equity	6.2%
U.S. Mid Cap Equity	6.7%
U.S. Small Cap Equity	7.1%
International Developed Equity	6.0%
International Small Cap Equity	6.1%
Emerging Equity	8.5%

Source: BNY Mellon Fiduciary Solutions. Data as of November 30, 2016. Please see page 13 for a list of representative indices.

## Actual U.S. Equity Returns Compared to Forecasted Returns

- Forecasted Return
- Russell 3000 Index Total Return

**Back Testing Our Approach to Developing Equity Market Returns:** To validate our building block approach for calculating equity market returns, we have conducted back testing of the approach using more than 15 years of historical data. The chart to the right shows the results of the back test for the U.S. equity market.



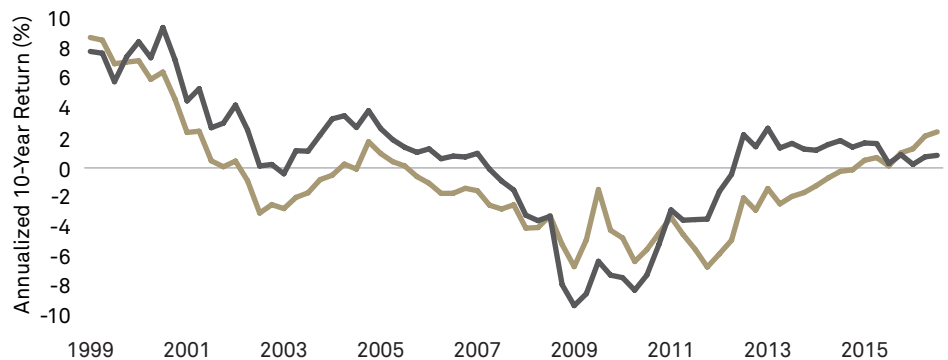
Source: BNY Mellon Fiduciary Solutions, Russell. Data as of September 30, 2016.

## Valuation Changes Explain Majority of Difference between Actual and Forecasted Returns

- Change in S&P 500 Price/Earnings Ratio
- Difference Between Forecasted and Actual Returns

The chart to the right demonstrates this well by comparing the difference between our forecasted returns and actual returns compared to changes in the price-to-earnings ratio of U.S. equity. This indicates our methodology for developing earnings growth and income return is sound with deviations being driven mostly by changes in the P/E ratio. This illustrates the importance of making valuation adjustments to returns when there is a compelling case to do so.

There are certain periods where the forecasted returns track actual returns fairly well such as the 10 years ending in mid-2002 through mid-2007, and 2013 through today. However, there are other periods where market dislocations caused significant deviation such as the credit crisis in 2008/2009 and the technology bubble of the late 1990s. Our research indicates the primary reason for differences between actual and forecast returns is changes in valuation.



Source: BNY Mellon Fiduciary Solutions, Russell, S&P Data as of September 30, 2016.

# 3 Alternative Market Return Expectations

## 10-Year Alternative Market Expected Returns from 2017 to 2026 (in USD)

We believe expected returns for alternative asset classes will generally be in line with publicly traded markets on a risk adjusted basis. To calculate risk adjusted returns, we first determine the beta of the asset class relative to public markets, based on our expectations of return standard deviations and correlations. We apply the beta to the

public market 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 and private real estate, 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.

Hedge Funds	4.3%
Commodities	2.0%
Global Natural Resources Equity	6.3%
U.S. Core Real Estate	4.0%
U.S. REIT	6.3%
Global REIT	6.4%
U.S. Private Equity	7.9%

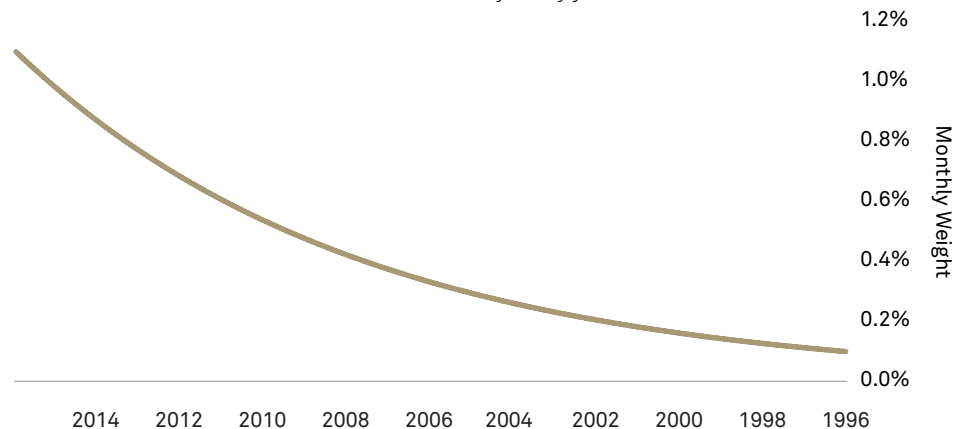
Source: BNY Mellon Fiduciary Solutions. Data as of November 30, 2016. Please see page 13 for a list of representative indices.

# Standard Deviations and Correlations

## Historical Weighting for 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. For determining standard deviations and correlations, we utilized exponential

weighting of the last 20 years of monthly returns. This approach ensures an appropriate covariance matrix and smooths out results on a year by year basis.



Source: BNY Mellon Fiduciary Solutions. Data as of November 30, 2016.

# Portfolio Implications

## Institutional Investor Allocations

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 2017 Capital Market Return Assumptions.

We've also compared the results of the 2017 assumptions to the 2016 assumptions so investors understand how changing capital markets over the past year impact forward looking returns.

Asset Class	Corporate Defined Benefit	Public Defined Benefit	Endowment and Foundation
U.S. Equity	27.0%	27.0%	23.0%
International Developed Equity	11.0%	16.0%	7.5%
Emerging Equity	4.0%	5.0%	2.5%
U.S. Aggregate	8.0%	23.0%	9.0%
Global Aggregate Ex-U.S.	1.0%	2.0%	1.0%
U.S. Long Treasury	15.0%	0.0%	0.0%
U.S. Long Investment Grade Credit	15.0%	0.0%	0.0%
U.S. Private Equity	6.0%	11.0%	16.0%
Global REIT	3.0%	6.0%	8.0%
Hedge Funds	8.0%	7.0%	22.0%
Commodities	2.0%	3.0%	11.0%

Source: Fiduciary Solutions, BNY Mellon Institutional Scorecard, BNY Mellon Master Trust Universe. Data as of November 30, 2016. Please see page 13 for a list of representative indices.

## Portfolio Expected Return and Standard Deviation (2017 to 2026)

Corporate defined benefit plans have a return expectation of 4.9%. This level of return should be sufficient for most frozen well-funded plans, but may not hit the mark for poorly funded plans or plans with high levels of benefit accruals.

Public defined benefit plans, expecting to return 5.3% over the next 10 years, may need markets to perform better than

expectations to hit return targets in the 7–8% range. Public defined benefit plan sponsors may want to consider lower return expectations to reflect lower growth going forward compared to history.

Endowments and foundations that typically target a 5% spending + inflation policy may need to lower their spending policy or risk a reduction in purchasing power going forward.

Metric	Corporate Defined Benefit	Public Defined Benefit	Endowment and Foundation
Expected Return	4.9%	5.3%	5.3%
<i>(Change from 2016 assumptions)</i>	<i>(-0.3%)</i>	<i>(-0.6%)</i>	<i>(-0.6%)</i>
Standard Deviation	9.4%	11.4%	11.6%
<i>(Change from 2016 assumptions)</i>	<i>(-0.2%)</i>	<i>(-0.3%)</i>	<i>(-0.3%)</i>

Source: Fiduciary Solutions. Data as of November 30, 2016.

## Asset Class Expected Returns and Standard Deviations

	Asset Class	Representative Index	Expected Return	Standard Deviation
Equity	U.S. Equity	Russell 3000	6.3%	15.9%
	U.S. Large Cap Equity	Russell 1000	6.2%	15.7%
	U.S. Mid Cap Equity	Russell Mid Cap	6.7%	17.9%
	U.S. Small Cap Equity	Russell 2000	7.1%	20.7%
	U.S. Micro Cap Equity	Dow Jones Wilshire U.S. Micro-Cap	7.0%	22.1%
	Global Equity	MSCI ACWI	6.4%	16.5%
	International Developed Equity	MSCI EAFE	6.0%	17.7%
	International Small Cap Equity	MSCI EAFE Small Cap	6.1%	19.3%
	Emerging Equity	MSCI Emerging	8.5%	23.7%
Fixed Income	U.S. Aggregate	Bloomberg Barclays U.S. Aggregate	2.6%	3.3%
	U.S. Treasury	Bloomberg Barclays U.S. Treasury	2.1%	4.2%
	U.S. Treasury Bills	Bloomberg Barclays U.S. Treasury Bills 3-6 Month	1.8%	0.7%
	U.S. Intermediate Treasury	Bloomberg Barclays U.S. Intermediate Treasury	2.1%	2.9%
	U.S. Long Treasury	Bloomberg Barclays U.S. Long Treasury	2.1%	11.7%
	U.S. Investment Grade Credit	Bloomberg Barclays U.S. Credit	3.3%	5.2%
	U.S. Intermediate Investment Grade Credit	Bloomberg Barclays U.S. Intermediate Credit	3.0%	3.9%
	U.S. Long Investment Grade Credit	Bloomberg Barclays U.S. Long Credit	4.0%	9.7%
	U.S. TIPS	Bloomberg Barclays U.S. Inflation Linked Bonds	2.1%	6.0%
	U.S. Agencies	Bloomberg Barclays U.S. Agencies	2.5%	2.9%
	U.S. MBS	Bloomberg Barclays U.S. MBS	2.7%	2.5%
	U.S. Investment Grade CMBS	Bloomberg Barclays Investment Grade CMBS	2.9%	8.4%
	U.S. Intermediate Municipal	S&P Municipal Bond Intermediate	2.7%	3.7%
	U.S. Short Municipal	S&P Municipal Bond Short	2.1%	1.2%
	U.S. High Yield	Bloomberg Barclays U.S. Corporate High Yield	4.9%	9.7%
	U.S. Bank Loans	CSFB Leveraged Loan	4.7%	6.0%
	Global Aggregate Ex-US	Bloomberg Barclays Global Aggregate Ex-USD	0.4%	8.1%
	Global Treasury Ex-US	Bloomberg Barclays Global Treasury Ex-USD	0.2%	8.1%
	Global Corporate Ex-US	Bloomberg Barclays Global Corporate Ex-USD	1.4%	9.5%
	Emerging Markets Sovereign USD	Bloomberg Barclays EM USD Sovereign	5.1%	10.1%
Emerging Markets Corporate USD	Bloomberg Barclays EM USD Corporate	4.9%	12.1%	
Emerging Markets Sovereign Local Currency	Bloomberg Barclays EM Local Currency Government	5.1%	12.2%	
Alternatives	Absolute Return <sup>1,2</sup>	HFRX Global Hedge Fund	4.1%	5.6%
	Hedge Funds <sup>1,2</sup>	HFRI Fund Weighted Composite	4.3%	6.3%
	Hedge Funds – Equity Hedge <sup>1,2</sup>	HFRI Equity Hedge	5.2%	8.8%
	Hedge Funds – Event Driven <sup>1,2</sup>	HFRI Event Driven	4.4%	6.6%
	Hedge Funds – Macro <sup>1,2</sup>	HFRI Macro	3.8%	5.3%
	Hedge Funds – Relative Value <sup>1,2</sup>	HFRI Relative Value	3.6%	4.5%
	Hedge Funds – Managed Futures <sup>1,2</sup>	SG CTA Index	4.1%	8.4%
	Commodities	Dow Jones UBS Commodities	2.0%	16.3%
	Global Natural Resources Equity	S&P Global Natural Resources Index	6.3%	21.9%
	U.S. Core Real Estate <sup>2</sup>	NCREIF Property Index	4.0%	5.0%
	U.S. Residential Real Estate	S&P/Case-Shiller U.S. Home Price Index	3.4%	2.9%
	Timberland <sup>2</sup>	NCREIF Total Return Timberland	4.2%	5.1%
	Farmland <sup>2</sup>	NCREIF Total Return Farmland	4.8%	7.2%
	U.S. REIT	FTSE NAREIT Equity	6.3%	23.6%
	Global REIT	FTSE EPRA/NAREIT Developed Index	6.4%	20.1%
	U.S. Private Equity <sup>1,2</sup>	Cambridge Associates LLC U.S. Private Equity	7.9%	17.8%
U.S. Venture Capital <sup>1,2</sup>	Cambridge Associates LLC U.S. Venture Capital	8.1%	23.8%	
Energy Infrastructure	Alerian MLP Infrastructure	6.3%	19.8%	

<sup>1</sup> Consistent with the Representative Index, returns are net of management fees.

<sup>2</sup> The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly. For illustrative purposes only. There can be no assurance that the expected returns above will be achieved.

# Asset Class Correlations

■ Negative Correlation

10-Year  
Correlation  
Matrix

		Equity									Fixed Income											
		U.S. Equity	U.S. Large Cap Equity	U.S. Mid Cap Equity	U.S. Small Cap Equity	U.S. Micro Cap Equity	Global Equity	International Developed Equity	International Small Cap Equity	Emerging Equity	U.S. Aggregate	U.S. Treasury	U.S. Treasury Bills	U.S. Intermediate Treasury	U.S. Long Treasury	U.S. Investment Grade Credit	U.S. Intermediate Investment Grade Credit	U.S. Long Investment Grade Credit	U.S. TIPS	U.S. Agencies	U.S. MBS	U.S. Investment Grade CMBS
Equity	U.S. Equity	1.00	1.00	0.97	0.90	0.83	0.96	0.87	0.82	0.77	-0.05	-0.32	-0.11	-0.32	-0.31	0.24	0.25	0.21	0.07	-0.13	-0.12	0.36
	U.S. Large Cap Equity	1.00	1.00	0.96	0.88	0.81	0.96	0.87	0.81	0.77	-0.04	-0.31	-0.11	-0.31	-0.31	0.24	0.25	0.21	0.08	-0.12	-0.12	0.36
	U.S. Mid Cap Equity	0.97	0.96	1.00	0.94	0.87	0.93	0.86	0.83	0.79	-0.02	-0.31	-0.11	-0.32	-0.30	0.28	0.29	0.25	0.11	-0.11	-0.12	0.41
	U.S. Small Cap Equity	0.90	0.88	0.94	1.00	0.94	0.85	0.77	0.76	0.72	-0.09	-0.34	-0.10	-0.34	-0.34	0.18	0.18	0.16	0.02	-0.15	-0.17	0.35
	U.S. Micro Cap Equity	0.83	0.81	0.87	0.94	1.00	0.79	0.73	0.76	0.68	-0.12	-0.37	-0.09	-0.37	-0.37	0.17	0.19	0.14	0.02	-0.19	-0.20	0.33
	Global Equity	0.96	0.96	0.93	0.85	0.79	1.00	0.97	0.92	0.88	0.01	-0.30	-0.09	-0.29	-0.31	0.31	0.33	0.27	0.15	-0.08	-0.09	0.39
	International Developed Equity	0.87	0.87	0.86	0.77	0.73	0.97	1.00	0.95	0.84	0.03	-0.27	-0.07	-0.26	-0.29	0.33	0.35	0.29	0.17	-0.04	-0.06	0.39
	International Small Cap Equity	0.82	0.81	0.83	0.76	0.76	0.92	0.95	1.00	0.83	0.03	-0.27	-0.11	-0.27	-0.29	0.35	0.38	0.29	0.19	-0.06	-0.06	0.39
	Emerging Equity	0.77	0.77	0.79	0.72	0.68	0.88	0.84	0.83	1.00	0.07	-0.22	-0.04	-0.21	-0.23	0.36	0.37	0.32	0.25	-0.01	-0.03	0.37
Fixed Income	U.S. Aggregate	-0.05	-0.04	-0.02	-0.09	-0.12	0.01	0.03	0.03	0.07	1.00	0.89	0.16	0.86	0.83	0.87	0.84	0.84	0.80	0.94	0.89	0.42
	U.S. Treasury	-0.32	-0.31	-0.31	-0.34	-0.37	-0.30	-0.27	-0.27	-0.22	0.89	1.00	0.21	0.96	0.92	0.60	0.56	0.61	0.67	0.91	0.82	0.17
	U.S. Treasury Bills	-0.11	-0.11	-0.11	-0.10	-0.09	-0.09	-0.07	-0.11	-0.04	0.16	0.21	1.00	0.30	0.05	0.00	0.05	-0.05	0.09	0.29	0.26	-0.05
	U.S. Intermediate Treasury	-0.32	-0.31	-0.32	-0.34	-0.37	-0.29	-0.26	-0.27	-0.21	0.86	0.96	0.30	1.00	0.80	0.55	0.55	0.50	0.65	0.91	0.83	0.13
	U.S. Long Treasury	-0.31	-0.31	-0.30	-0.34	-0.37	-0.31	-0.29	-0.29	-0.23	0.83	0.92	0.05	0.80	1.00	0.59	0.47	0.67	0.60	0.76	0.70	0.16
	U.S. Investment Grade Credit	0.24	0.24	0.28	0.18	0.17	0.31	0.33	0.35	0.36	0.87	0.60	0.00	0.55	0.59	1.00	0.97	0.96	0.74	0.74	0.65	0.53
	U.S. Intermediate Investment Grade Credit	0.25	0.25	0.29	0.18	0.19	0.33	0.35	0.38	0.37	0.84	0.56	0.05	0.55	0.47	0.97	1.00	0.86	0.74	0.72	0.65	0.52
	U.S. Long Investment Grade Credit	0.21	0.21	0.25	0.16	0.14	0.27	0.29	0.29	0.32	0.84	0.61	-0.05	0.50	0.67	0.96	0.86	1.00	0.70	0.69	0.61	0.50
	U.S. TIPS	0.07	0.08	0.11	0.02	0.02	0.15	0.17	0.19	0.25	0.80	0.67	0.09	0.65	0.60	0.74	0.74	0.70	1.00	0.72	0.67	0.44
	U.S. Agencies	-0.13	-0.12	-0.11	-0.15	-0.19	-0.08	-0.04	-0.06	-0.01	0.94	0.91	0.29	0.91	0.76	0.74	0.72	0.69	0.72	1.00	0.87	0.32
	U.S. MBS	-0.12	-0.12	-0.12	-0.17	-0.20	-0.09	-0.06	-0.06	-0.03	0.89	0.82	0.26	0.83	0.70	0.65	0.65	0.61	0.67	0.87	1.00	0.19
	U.S. Investment Grade CMBS	0.36	0.36	0.41	0.35	0.33	0.39	0.39	0.39	0.37	0.42	0.17	-0.05	0.13	0.16	0.53	0.52	0.50	0.44	0.32	0.19	1.00
	U.S. Intermediate Municipal	-0.04	-0.03	0.00	-0.07	-0.06	-0.01	0.00	0.01	0.02	0.70	0.57	0.04	0.54	0.53	0.65	0.66	0.60	0.56	0.61	0.59	0.34
	U.S. Short Municipal	-0.12	-0.12	-0.10	-0.13	-0.11	-0.10	-0.08	-0.09	-0.03	0.60	0.53	0.32	0.56	0.39	0.51	0.57	0.41	0.47	0.61	0.58	0.22
	U.S. High Yield	0.69	0.69	0.74	0.67	0.67	0.74	0.72	0.72	0.72	0.20	-0.20	-0.14	-0.22	-0.18	0.54	0.55	0.49	0.32	0.05	0.04	0.62
	U.S. Bank Loans	0.54	0.53	0.60	0.52	0.56	0.57	0.56	0.59	0.54	-0.02	-0.37	-0.14	-0.39	-0.32	0.31	0.35	0.24	0.17	-0.18	-0.14	0.49
	Global Aggregate Ex-US	0.25	0.25	0.26	0.19	0.18	0.38	0.44	0.44	0.42	0.51	0.37	0.07	0.41	0.24	0.54	0.56	0.49	0.56	0.50	0.41	0.36
	Global Treasury Ex-US	0.16	0.16	0.16	0.11	0.09	0.28	0.33	0.34	0.33	0.54	0.45	0.09	0.48	0.33	0.53	0.54	0.49	0.57	0.54	0.45	0.33
	Global Corporate Ex-US	0.46	0.47	0.47	0.39	0.37	0.60	0.67	0.66	0.58	0.36	0.13	0.02	0.16	0.00	0.54	0.58	0.45	0.47	0.34	0.25	0.42
	Emerging Markets Sovereign USD	0.53	0.53	0.55	0.48	0.43	0.60	0.58	0.56	0.68	0.45	0.17	-0.02	0.15	0.17	0.63	0.62	0.60	0.52	0.36	0.36	0.42
Emerging Markets Corporate USD	0.58	0.58	0.61	0.52	0.50	0.64	0.62	0.63	0.70	0.36	0.05	-0.05	0.04	0.04	0.61	0.63	0.55	0.48	0.24	0.28	0.40	
Emerging Markets Sovereign Local Currency	0.62	0.62	0.63	0.57	0.52	0.70	0.69	0.65	0.79	0.35	0.09	0.06	0.11	0.03	0.53	0.53	0.49	0.47	0.30	0.22	0.48	
Alternatives	Absolute Return <sup>1,2</sup>	0.68	0.67	0.72	0.65	0.68	0.73	0.72	0.74	0.68	0.06	-0.22	0.12	-0.21	-0.24	0.33	0.38	0.25	0.20	-0.01	-0.03	0.32
	Hedge Funds <sup>1,2</sup>	0.82	0.81	0.85	0.80	0.83	0.87	0.84	0.85	0.85	0.00	-0.29	0.03	-0.28	-0.31	0.31	0.35	0.25	0.16	-0.07	-0.08	0.33
	Hedge Funds – Equity Hedge <sup>1,2</sup>	0.85	0.84	0.88	0.84	0.85	0.89	0.86	0.86	0.84	-0.05	-0.34	0.03	-0.32	-0.38	0.26	0.31	0.19	0.11	-0.11	-0.12	0.32
	Hedge Funds – Event Driven <sup>1,2</sup>	0.79	0.78	0.83	0.78	0.82	0.83	0.81	0.82	0.79	-0.06	-0.37	0.02	-0.36	-0.39	0.27	0.31	0.20	0.11	-0.14	-0.14	0.31
	Hedge Funds – Macro <sup>1,2</sup>	0.23	0.23	0.26	0.22	0.26	0.29	0.30	0.30	0.35	0.25	0.19	0.20	0.19	0.16	0.28	0.28	0.25	0.26	0.24	0.18	0.12
	Hedge Funds – Relative Value <sup>1,2</sup>	0.66	0.66	0.70	0.61	0.66	0.73	0.72	0.74	0.72	0.09	-0.27	0.01	-0.27	-0.27	0.43	0.48	0.34	0.27	-0.02	-0.02	0.45
	Hedge Funds – Managed Futures <sup>1,2</sup>	-0.09	-0.09	-0.08	-0.10	-0.10	-0.07	-0.06	-0.07	-0.04	0.27	0.33	0.06	0.30	0.34	0.18	0.15	0.19	0.22	0.27	0.19	0.03
	Commodities	0.39	0.39	0.43	0.36	0.36	0.50	0.50	0.50	0.56	0.06	-0.12	0.08	-0.07	-0.21	0.23	0.29	0.15	0.29	0.05	0.00	0.22
	Global Natural Resources Equity	0.72	0.72	0.72	0.65	0.62	0.82	0.81	0.77	0.86	-0.01	-0.26	0.00	-0.24	-0.30	0.27	0.29	0.22	0.21	-0.04	-0.07	0.21
	U.S. Core Real Estate <sup>2</sup>	0.46	0.46	0.50	0.45	0.45	0.45	0.43	0.42	0.33	-0.04	-0.19	-0.02	-0.19	-0.22	0.05	0.10	-0.01	0.18	-0.10	-0.08	0.41
	U.S. Residential Real Estate	0.10	0.10	0.10	0.09	0.13	0.11	0.11	0.13	0.06	-0.08	-0.10	-0.03	-0.14	-0.07	0.00	-0.01	0.00	-0.05	-0.10	-0.15	0.04
	Timberland <sup>2</sup>	0.38	0.38	0.37	0.35	0.29	0.43	0.50	0.42	0.28	0.14	0.13	0.30	0.17	-0.01	0.10	0.12	0.07	0.23	0.24	0.10	0.28
	Farmland <sup>2</sup>	0.34	0.34	0.26	0.29	0.20	0.32	0.34	0.27	0.11	-0.34	-0.21	-0.30	-0.19	-0.23	-0.40	-0.40	-0.36	-0.23	-0.25	-0.26	-0.11
	U.S. REIT	0.67	0.66	0.71	0.67	0.58	0.65	0.61	0.58	0.56	0.25	-0.02	-0.06	-0.04	-0.02	0.43	0.40	0.42	0.29	0.13	0.10	0.61
	Global REIT	0.77	0.77	0.80	0.73	0.66	0.82	0.80	0.78	0.76	0.25	-0.06	-0.07	-0.07	-0.04	0.50	0.49	0.47	0.34	0.12	0.10	0.57
	U.S. Private Equity <sup>1,2</sup>	0.91	0.91	0.89	0.82	0.78	0.88	0.81	0.77	0.76	-0.06	-0.32	-0.06	-0.32	-0.32	0.20	0.22	0.16	0.10	-0.15	-0.13	0.35
U.S. Venture Capital <sup>1,2</sup>	0.71	0.70	0.71	0.75	0.72	0.66	0.59	0.57	0.61	-0.09	-0.26	-0.13	-0.27	-0.24	0.11	0.11	0.10	0.02	-0.15	-0.15	0.23	
Energy Infrastructure	0.49	0.49	0.51	0.44	0.45	0.52	0.51	0.47	0.50	0.01	-0.23	0.02	-0.21	-0.27	0.25	0.29	0.18	0.13	-0.02	-0.06	0.26	

<sup>1</sup> Consistent with the Representative Index, returns are net of management fees.

<sup>2</sup> The Representative Index is not investable. Returns are based on manager averages. Actual results may vary significantly. For illustrative purposes only. There can be no assurance that the expected returns above will be achieved.



Fixed Income (continued)										Alternatives																	
U.S. Intermediate Municipal	U.S. Short Municipal	U.S. High Yield	U.S. Bank Loans	Global Aggregate Ex-US	Global Treasury Ex-US	Global Corporate Ex-US	Emerging Markets Sovereign USD	Emerging Markets Corporate USD	Emerging Markets Sovereign Local Currency	Absolute Return	Hedge Funds	Hedge Funds – Equity Hedge	Hedge Funds – Event Driven	Hedge Funds – Macro	Hedge Funds – Relative Value	Hedge Funds – Managed Futures	Commodities	Global Natural Resources Equity	U.S. Core Real Estate	U.S. Residential Real Estate	Timberland	Farmland	U.S. REIT	Global REIT	U.S. Private Equity	U.S. Venture Capital	Energy/Infrastructure
-0.04	-0.12	0.69	0.54	0.25	0.16	0.46	0.53	0.58	0.62	0.68	0.82	0.85	0.79	0.23	0.66	-0.09	0.39	0.72	0.46	0.10	0.38	0.34	0.67	0.77	0.91	0.71	0.49
-0.03	-0.12	0.69	0.53	0.25	0.16	0.47	0.53	0.58	0.62	0.67	0.81	0.84	0.78	0.23	0.66	-0.09	0.39	0.72	0.46	0.10	0.38	0.34	0.66	0.77	0.91	0.70	0.49
0.00	-0.10	0.74	0.60	0.26	0.16	0.47	0.55	0.61	0.63	0.72	0.85	0.88	0.83	0.26	0.70	-0.08	0.43	0.72	0.50	0.10	0.37	0.26	0.71	0.80	0.89	0.71	0.51
-0.07	-0.13	0.67	0.52	0.19	0.11	0.39	0.48	0.52	0.57	0.65	0.80	0.84	0.78	0.22	0.61	-0.10	0.36	0.65	0.45	0.09	0.35	0.29	0.67	0.73	0.82	0.75	0.44
-0.06	-0.11	0.67	0.56	0.18	0.09	0.37	0.43	0.50	0.52	0.68	0.83	0.85	0.82	0.26	0.66	-0.10	0.36	0.62	0.45	0.13	0.29	0.20	0.58	0.66	0.78	0.72	0.45
-0.01	-0.10	0.74	0.57	0.38	0.28	0.60	0.60	0.64	0.70	0.73	0.87	0.89	0.83	0.29	0.73	-0.07	0.50	0.82	0.45	0.11	0.43	0.32	0.65	0.82	0.88	0.66	0.52
0.00	-0.08	0.72	0.56	0.44	0.33	0.67	0.58	0.62	0.69	0.72	0.84	0.86	0.81	0.30	0.72	-0.06	0.50	0.81	0.43	0.11	0.50	0.34	0.61	0.80	0.81	0.59	0.51
0.01	-0.09	0.72	0.59	0.44	0.34	0.66	0.56	0.63	0.65	0.74	0.85	0.86	0.82	0.30	0.74	-0.07	0.50	0.77	0.42	0.13	0.42	0.27	0.58	0.78	0.77	0.57	0.47
0.02	-0.03	0.72	0.54	0.42	0.33	0.58	0.68	0.70	0.79	0.68	0.85	0.84	0.79	0.35	0.72	-0.04	0.56	0.86	0.33	0.06	0.28	0.11	0.56	0.76	0.76	0.61	0.50
0.70	0.60	0.20	-0.02	0.51	0.54	0.36	0.45	0.36	0.35	0.06	0.00	-0.05	-0.06	0.25	0.09	0.27	0.06	-0.01	-0.04	-0.08	0.14	-0.34	0.25	0.25	-0.06	-0.09	0.01
0.57	0.53	-0.20	-0.37	0.37	0.45	0.13	0.17	0.05	0.09	-0.22	-0.29	-0.34	-0.37	0.19	-0.27	0.33	-0.12	-0.26	-0.19	-0.10	0.13	-0.21	-0.02	-0.06	-0.32	-0.26	-0.23
0.04	0.32	-0.14	-0.14	0.07	0.09	0.02	-0.02	-0.05	0.06	0.12	0.03	0.03	0.02	0.20	0.01	0.06	0.08	0.00	-0.02	-0.03	0.30	-0.30	-0.06	-0.07	-0.06	-0.13	0.02
0.54	0.56	-0.22	-0.39	0.41	0.48	0.16	0.15	0.04	0.11	-0.21	-0.28	-0.32	-0.36	0.19	-0.27	0.30	-0.07	-0.24	-0.19	-0.14	0.17	-0.19	-0.04	-0.07	-0.32	-0.27	-0.21
0.53	0.39	-0.18	-0.32	0.24	0.33	0.00	0.17	0.04	0.03	-0.24	-0.31	-0.38	-0.39	0.16	-0.27	0.34	-0.21	-0.30	-0.22	-0.07	-0.01	-0.23	0.02	-0.04	-0.32	-0.24	-0.27
0.65	0.51	0.54	0.31	0.54	0.53	0.54	0.63	0.61	0.53	0.33	0.31	0.26	0.27	0.28	0.43	0.18	0.23	0.27	0.05	0.00	0.10	-0.40	0.43	0.50	0.20	0.11	0.25
0.66	0.57	0.55	0.35	0.56	0.54	0.58	0.62	0.63	0.53	0.38	0.35	0.31	0.31	0.28	0.48	0.15	0.29	0.29	0.10	-0.01	0.12	-0.40	0.40	0.49	0.22	0.11	0.29
0.60	0.41	0.49	0.24	0.49	0.49	0.45	0.60	0.55	0.49	0.25	0.25	0.19	0.20	0.25	0.34	0.19	0.15	0.22	-0.01	0.00	0.07	-0.36	0.42	0.47	0.16	0.10	0.18
0.56	0.47	0.32	0.17	0.56	0.57	0.47	0.52	0.48	0.47	0.20	0.16	0.11	0.11	0.26	0.27	0.22	0.29	0.21	0.18	-0.05	0.23	-0.23	0.29	0.34	0.10	0.02	0.13
0.61	0.61	0.05	-0.18	0.50	0.54	0.34	0.36	0.24	0.30	-0.01	-0.07	-0.11	-0.14	0.24	-0.02	0.27	0.05	-0.04	-0.10	-0.10	0.24	-0.25	0.13	0.12	-0.15	-0.15	-0.02
0.59	0.58	0.04	-0.14	0.41	0.45	0.25	0.36	0.28	0.22	-0.03	-0.08	-0.12	-0.14	0.18	-0.02	0.19	0.00	-0.07	-0.08	-0.15	0.10	-0.26	0.10	0.10	-0.13	-0.15	-0.06
0.34	0.22	0.62	0.49	0.36	0.33	0.42	0.42	0.40	0.48	0.32	0.33	0.32	0.31	0.12	0.45	0.03	0.22	0.21	0.41	0.04	0.28	-0.11	0.61	0.57	0.35	0.23	0.26
1.00	0.78	0.22	0.11	0.32	0.35	0.22	0.35	0.26	0.24	0.06	0.02	-0.03	-0.02	0.16	0.13	0.20	-0.04	-0.04	0.01	-0.10	-0.02	-0.32	0.20	0.19	-0.03	-0.07	0.13
0.78	1.00	0.12	-0.02	0.31	0.33	0.20	0.26	0.22	0.19	0.00	-0.04	-0.08	-0.07	0.15	0.06	0.16	-0.03	-0.04	-0.08	-0.16	0.06	-0.34	0.04	0.04	-0.10	-0.12	0.11
0.22	0.12	1.00	0.81	0.34	0.25	0.53	0.66	0.72	0.64	0.64	0.71	0.70	0.76	0.15	0.81	-0.15	0.45	0.63	0.53	0.07	0.32	-0.12	0.64	0.73	0.68	0.50	0.61
0.11	-0.02	0.81	1.00	0.10	0.01	0.35	0.40	0.54	0.35	0.63	0.60	0.60	0.69	0.04	0.81	-0.17	0.41	0.45	0.78	0.19	0.05	-0.25	0.50	0.57	0.56	0.34	0.49
0.32	0.31	0.34	0.10	1.00	0.99	0.90	0.43	0.39	0.58	0.23	0.28	0.27	0.23	0.23	0.12	0.12	0.48	0.44	0.11	0.00	0.42	0.21	0.34	0.48	0.20	0.11	0.23
0.35	0.33	0.25	0.01	0.99	1.00	0.82	0.39	0.32	0.52	0.14	0.18	0.17	0.13	0.26	0.13	0.16	0.41	0.36	0.04	-0.02	0.38	0.18	0.30	0.40	0.11	0.05	0.18
0.22	0.20	0.53	0.35	0.90	0.82	1.00	0.49	0.52	0.64	0.44	0.49	0.51	0.48	0.23	0.49	0.00	0.56	0.59	0.28	0.06	0.44	0.21	0.43	0.61	0.42	0.24	0.36
0.35	0.26	0.66	0.40	0.43	0.39	0.49	1.00	0.92	0.84	0.49	0.58	0.53	0.54	0.25	0.60	0.00	0.37	0.56	0.27	0.03	0.34	0.05	0.52	0.64	0.52	0.39	0.33
0.26	0.22	0.72	0.54	0.39	0.32	0.52	0.92	1.00	0.76	0.59	0.65	0.62	0.63	0.22	0.70	-0.07	0.44	0.61	0.36	0.04	0.27	-0.03	0.48	0.63	0.58	0.42	0.36
0.24	0.19	0.64	0.35	0.58	0.52	0.64	0.84	0.76	1.00	0.48	0.64	0.62	0.58	0.28	0.57	-0.02	0.50	0.69	0.25	0.04	0.43	0.15	0.60	0.74	0.58	0.44	0.45
0.06	0.00	0.64	0.63	0.23	0.14	0.44	0.49	0.59	0.48	1.00	0.89	0.87	0.87	0.51	0.84	0.14	0.53	0.67	0.49	0.17	0.32	-0.04	0.42	0.57	0.70	0.53	0.53
0.02	-0.04	0.71	0.60	0.28	0.18	0.49	0.58	0.65	0.64	0.89	1.00	0.98	0.93	0.54	0.83	0.07	0.55	0.81	0.43	0.10	0.34	0.09	0.50	0.69	0.82	0.68	0.55
-0.03	-0.08	0.70	0.60	0.27	0.17	0.51	0.53	0.62	0.62	0.87	0.98	1.00	0.92	0.42	0.81	-0.04	0.54	0.80	0.44	0.12	0.35	0.13	0.51	0.68	0.83	0.70	0.54
-0.02	-0.07	0.76	0.69	0.23	0.13	0.48	0.54	0.63	0.58	0.87	0.93	0.92	1.00	0.34	0.88	-0.08	0.52	0.76	0.51	0.17	0.33	0.05	0.49	0.65	0.78	0.59	0.60
0.16	0.15	0.15	0.04	0.27	0.26	0.23	0.25	0.22	0.28	0.51	0.54	0.42	0.34	1.00	0.26	0.75	0.32	0.40	-0.01	-0.10	0.21	-0.05	0.16	0.26	0.26	0.26	0.18
0.13	0.06	0.81	0.81	0.23	0.13	0.49	0.60	0.70	0.57	0.84	0.83	0.81	0.88	0.26	1.00	-0.08	0.55	0.67	0.57	0.15	0.24	-0.16	0.48	0.63	0.68	0.44	0.64
0.20	0.16	-0.15	-0.17	0.12	0.16	0.00	0.00	-0.07	-0.02	0.14	0.07	-0.04	-0.08	0.75	-0.08	1.00	-0.01	-0.02	-0.14	-0.11	-0.03	-0.07	0.02	0.01	-0.07	-0.06	-0.07
-0.04	-0.03	0.45	0.41	0.48	0.41	0.56	0.37	0.44	0.50	0.53	0.55	0.54	0.52	0.32	0.55	-0.01	1.00	0.69	0.41	0.10	0.47	0.01	0.26	0.41	0.41	0.22	0.46
-0.04	-0.04	0.63	0.45	0.44	0.36	0.59	0.56	0.61	0.69	0.67	0.81	0.80	0.76	0.40	0.67	-0.02	0.69	1.00	0.30	0.02	0.40	0.18	0.40	0.62	0.68	0.51	0.57
0.01	-0.08	0.53	0.78	0.11	0.04	0.28	0.27	0.36	0.25	0.49	0.43	0.44	0.51	-0.01	0.57	-0.14	0.41	0.30	1.00	0.20	0.39	0.12	0.42	0.43	0.50	0.28	0.31
-0.10	-0.16	0.07	0.19	0.00	-0.02	0.06	0.03	0.04	0.04	0.17	0.10	0.12	0.17	-0.10	0.15	-0.11	0.10	0.02	0.20	1.00	0.03	0.02	0.13	0.16	0.09	0.01	0.08
-0.02	0.06	0.32	0.05	0.42	0.38	0.44	0.34	0.27	0.43	0.32	0.34	0.35	0.33	0.21	0.24	-0.03	0.47	0.40	0.39	0.03	1.00	0.48	0.29	0.35	0.37	0.23	0.26
-0.32	-0.34	-0.12	-0.25	0.21	0.18	0.21	0.05	-0.03	0.15	-0.04	0.09	0.13	0.05	-0.05	-0.16	-0.07	0.01	0.18	0.12	0.02	0.48	1.00	0.10	0.14	0.27	0.26	-0.08
0.20	0.04	0.64	0.50	0.34	0.30	0.43	0.52	0.48	0.60	0.42	0.50	0.51	0.49	0.16	0.48	0.02	0.26	0.40	0.42	0.13	0.29	0.10	1.00	0.90	0.58	0.43	0.32
0.19	0.04	0.73	0.57	0.48	0.40	0.61	0.64	0.63	0.74	0.57	0.69	0.68	0.65	0.26	0.63	0.01	0.41	0.62	0.43	0.16	0.35	0.14	0.90	1.00	0.69	0.50	0.42
-0.03	-0.10	0.68	0.56	0.20	0.11	0.42	0.52	0.58	0.58	0.70	0.82	0.83	0.78	0.26	0.68	-0.07	0.41	0.68	0.50	0							

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- Interest rate levels
- Changes to current laws or regulations, and
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