Seeking the elusive CPI + 5%

Martin Jaugietis, CFA, Managing Director, Client Portfolio Manager
Lisa Schneider, CFA, Managing Director, Non-profits and Healthcare Systems
Speakers

Martin Jaugietis, CFA
Managing Director,
Client Portfolio Strategy

Lisa Schneider, CFA
Managing Director,
Non-profits and Healthcare Systems

Russell Investments has been providing outsourced CIO solutions to non-profit organizations for over 25 years. Learn more at russellinvestments.com/nonprofits
Late-cycle lean out

We’re in a late-cycle, momentum-driven market, where valuation is at an extreme.

• The U.S. equity market is expensive
• Foreign equities have select pockets of opportunity
• Interest rates remain low
• Inflation is being closely monitored
• Both the earnings and growth outlooks are lackluster
What goes up, must come down

VIX spiked on China growth concerns
VIX spiked on U.S. presidential election

U.S. EQUITIES UP 23% SINCE JANUARY 2016

VIX TRENDING LOW VS. HISTORY

› Markets have had attractive returns with below average volatility
› While volatility has been on pause, it should not be forgotten

Chicago Board Options Exchange (CBOE) Volatility Index, which shows the market's expectation of 30-day volatility using the implied volatilities of a wide range of S&P 500® index options.

U.S. Stocks: Russell 3000® Index; VIX: Yahoo Finance.

Index returns represent past performance, are not a guarantee of future performance, and are not indicative of any specific investment. Indexes are unmanaged and cannot be invested in directly.
Beware of betting big on U.S. stocks

Yale Professor Robert Shiller calculates a Cyclically Adjusted P/E Ratio based on stock price divided by prior 10-year earnings. U.S. stock market is represented by an index created by Professor Shiller. The stocks included are those of large publicly held companies that trade on either of the two largest American stock market exchanges: the New York Stock Exchange and the NASDAQ. Prior to 1926 his data source was Cowles and Associates Common Stocks Index, after 1926 his source has been S&P.

Index returns represent past performance, are not a guarantee of future performance, and are not indicative of any specific investment. Indexes are unmanaged and cannot be invested in directly. Forecasting represents predictions of market prices and/or volume patterns utilizing varying analytical data. It is not representative of a projection of the stock market, or of any specific investment. Average drawdown is the percentage return from period start date to the market trough within the subsequent three years.
Non-U.S. corporate earnings still have room to expand

Emerging market trade has picked up steam
Hawkish shift in central bank rhetoric outside the U.S. vs. positive yield advantage of U.S. Treasuries

10Y Bond yields

- Germany: 0.59%
- Japan: 0.08%
- USA: 2.32%
- UK: 1.31%

SOURCE: Thomson Reuters Datastream, 23 February 2017
Weak core inflation (at least in part) keeping rates lower for longer

US Core Inflation

Source: Thomson Reuters Datastream, Jun 17

BoardSource
Empowering Boards. Inspiring Leadership.
Don’t fight the Fed... in reverse?

FED BALANCE SHEET
- Now: $4.5 trillion
- 2008: $900 billion
- $2.5 trillion in treasuries
- $1.8 trillion on mortgages

SLOW ROLL OFF
- Beginning at $10 billion target per month
- Gradually increasing $50 billion monthly

- Target balance likely to be considerably larger than 2008 levels
- Normalization could increase the 10-Year yield by 10 to 20 bps
- Impact on bond markets should be modest
Do rising rates sink bond returns?

TOTAL RETURN DURING RISING RATE CYCLES

7 prior Fed rate hike cycles since 1980
13 month average cycle length
3.25% average total rate increase


Index returns represent past performance, are not a guarantee of future performance, and are not indicative of any specific investment. Indexes are unmanaged and cannot be invested in directly.
**Russell Investments’ 2017 global market outlook**

### KEY EXPECTATIONS

<table>
<thead>
<tr>
<th>UNITED STATES</th>
<th>EUROZONE</th>
<th>ASIA-PACIFIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late cycle?</td>
<td>Positive momentum</td>
<td>Emerging strength</td>
</tr>
</tbody>
</table>

- **UNITED STATES**
  - 2% GDP growth, with downside risk
  - Q1 corporate earnings good, but likely as good as it gets for 2017
  - No more Fed hikes this year, given soft inflation
  - **Underweight**: Expensive valuations without enough cyclical support

- **EUROZONE**
  - 1.5% GDP growth, with upside potential
  - 5%–10% earnings growth with room to expand
  - Optimistic about business cycle
  - **Overweight**: Strong fundamentals

- **ASIA-PACIFIC**
  - 5% GDP growth
  - More optimistic on developing vs developed countries
  - Valuations slightly expensive given recent performance
  - **Neutral**: Tailwind from resilient global trade, but valuations now slightly expensive

---

*Given expensive valuations, look outside the U.S. and diversify*

---

There is no guarantee the stated expectations will be met.
As of 6/30/2017

Forecasting represents predictions of market prices and/or volume patterns utilizing varying analytical data. It is not representative of a projection of the stock market, or of any specific investment.
In this environment, how could you get to CPI + 5%?

- Be dynamic
- Be a risk manager, not a risk taker
- Go beyond traditional asset classes
- Implement efficiently
Dynamic portfolio management

Dynamic management is designed to allow you to diversify return sources, capitalize on market opportunities, and mitigate risks.

Certain managers have performed better in certain market environments and value can be added or lost based on the timing, or exit, of a manager allocation.

0.35% per annum in missed opportunities or transaction costs

Re-allocating 8% from bonds to equity to maintain expected return

Source: How non-profits can improve upon the endowment model – and make it work for them, Mary Beth Lato, Russell Investments, 10-2017
Be dynamic

CUMULATIVE INDEX PERFORMANCE

Russell Global Index Net (USD)
BofAML Global High Yield Index
Quarterly cycle

8/10/15: bought put protection on equity portfolios
1/26/16: added to High Yield as spreads widened
4/27/16: bought protection on S&P 500 in anticipation of Brexit vote
6/16/16: sold 8% out of the money puts on Eurostoxx

2/11/16: added risk in emerging markets and global equities as Oil price stabilized and capitulation for Brazilian political risk

For illustrative purposes only.
Past performance is no guarantee of future results. Indexes are unmanaged and cannot be invested in directly.
Be a risk manager, not a risk taker

Performance in recent downside events

Returns (%)

Aug 2015
-5.0  -5.6  -6.7

Jan 2016
-4.3  -4.8  -6.3

Q1 2016
1.1  0.6  0.3

* The Multi-Asset Core Plus Strategy Composite Benchmark consists of: 75% Russell Global Index, 50% Bloomberg Commodity Index Total Return (USD), 5% FTSE EPRA/NAREIT Developed Real Estate Index (Net), 5% S&P Global Infrastructure Index Net (USD), 5% BofAML Global High Yield 2% Constrained Index TR USDH, 5% JP Morgan Emerging Market Bond Index Global (USD). This benchmark is appropriate for evaluating the Multi-Asset Core Plus Strategy over a 3 to 5 year horizon. Allocation changes and underlying strategy additions and deletions over time will be captured in the composite index.

Performance is shown gross of fees. Fees will reduce the overall performance of the strategy.

Past performance is not indicative of future results. Indexes/benchmarks are unmanaged and cannot be invested in directly.
Go beyond traditional asset classes

Every investment portfolio should have the following:

- Alpha generating managers
- Diversified sources of beta
- Illiquid assets which provide an expected return premium
- Exposure to alternative risk premia (factor exposures)
- Dynamic portfolio management
What are alpha and beta?

Alpha is the expected excess return generated by a portfolio manager.

Beta is a measure of market volatility and describes how an asset is expected to perform relative to a benchmark of similar assets.

Forecasting represents predictions of market prices and/or volume patterns utilizing varying analytical data. There is no guarantee that any stated results will occur.
Illiquidity and alternative risk premia can also add returns

Illiquidity premiums result from investment in capital assets that can’t be easily sold before they mature.

Alternative risk premia (factor exposures) exploit systematic risks in the markets which can lead to long-term excess returns.
Dynamic portfolio management

The portfolio manager is responsible for adjusting the portfolio exposures, in real time, based on market expectations, to pursue additional returns and mitigate risks.
Bringing it all together

Getting to CPI + 5% means incorporating all these strategies into your portfolio, and implementing them efficiently.

So, how do you do that?

Based on Russell Investments' strategic planning assumptions. See slide 43. For illustrative purposes only. Not meant to represent any actual investment or portfolio allocation.
Efficient implementation is the key

- Capture your intentions in your strategic asset allocation

- Look for providers and managers who will seamlessly and efficiently integrate these concepts into your portfolio construction efforts

- Ensure you have the right resources to manage your investment portfolio dynamically
Your strategic asset allocation (SAA)

Your strategic asset allocation is dependent upon the decisions you make about the following:

- Spending policy
- Desire for perpetuity
- Risk tolerance
- Liquidity needs
Spending policy

Your spending policy outlines your organization’s total expected annual spending and the extent to which the spending is fixed or flexible.

<table>
<thead>
<tr>
<th>SPENDING POLICY</th>
<th>SPENDING RATE</th>
<th>SPENDING METHODOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>4% of 3-year average assets</td>
<td>4%</td>
<td>3-year averaging</td>
</tr>
<tr>
<td>$4 million annually, adjusted for inflation</td>
<td>$4 million</td>
<td>Spending rate adjusted by annual inflation rate</td>
</tr>
</tbody>
</table>
Desire for perpetuity

You have three possible decisions you could make:

1. We wish to exist for as long as possible.
2. We wish to prioritize spending today, and worry about how long we want to exist later.
3. We wish to make a point of spending down our assets over time.
Risk tolerance

Risk tolerance is the amount of risk your organization (and investment committee) is comfortable taking while still being able to sleep at night.

1. What is your *capacity* to tolerate loss?
2. What is your *willingness* to tolerate loss?
3. What is your *perception* of risk?
Liquidity needs

Liquidity allows you to:

1. Meet your spending requirements
2. Deploy your capital opportunistically to take advantage of evolving market conditions
3. Rebalance your portfolio as needed or wanted
4. Meet pre-existing capital commitments

Overallocation to illiquid or presumed liquid investments can cause problems in stressed market environments.
Why is understanding liquidity so important?

<table>
<thead>
<tr>
<th>ACCESS TO CASH</th>
<th>LIQUIDITY LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>Highly liquid</td>
</tr>
<tr>
<td>Quarterly</td>
<td>Liquid</td>
</tr>
<tr>
<td>Less than 2 years</td>
<td>Semi-liquid</td>
</tr>
<tr>
<td>2 to 5 years</td>
<td>Illiquid</td>
</tr>
<tr>
<td>More than 5 years</td>
<td>Highly illiquid</td>
</tr>
</tbody>
</table>

normal market environment

stressed market environment

Highly liquid / liquid
Semi-liquid / illiquid
Highly illiquid
These decisions work together

- **SPENDING POLICY**
  - HIGH
  - LOW

- **DESIRE FOR PERPETUITY**
  - EXIST IN PERPETUITY
  - SPEND DOWN OVER TIME

- **RISK TOLERANCE**
  - HIGH
  - LOW

- **LIQUIDITY NEEDS**
  - HIGH
  - LOW

**AGGRESSIVE** --- **CONSSERVATIVE**

**STRATEGIC ASSET ALLOCATION**
WORKSHOP
Board vs. Investment committee?

The Board of Directors should:

• Set the spending policy for the organization
• Determine the organization’s approach to perpetuity
• Approve the investment policy statement, which includes:
  • Liquidity policy
  • Risk tolerance
• Oversee the results of the Investment committee’s efforts and re-direct where appropriate

The Investment committee should:

• Determine a strategic asset allocation that is designed to meet the organization’s spending, liquidity, risk, and perpetuity needs
• Work with the appropriate providers to construct and dynamically manage the investment portfolio
• Review the results and report to the board at least quarterly
# Finding the right spending policy

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>We have an IRS-mandated spending requirement.</td>
<td>Y</td>
</tr>
<tr>
<td>2</td>
<td>We have the ability to fundraise</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>If ‘Yes’ to question 2, which of the following apply?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>We fundraise to offset our spending needs</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>We fundraise to increase our endowed assets</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>The assets we raise are:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restricted</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>Unrestricted</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>Both restricted and unrestricted</td>
<td>Y</td>
</tr>
<tr>
<td>3</td>
<td>We wish to exist for as long as possible</td>
<td>Y</td>
</tr>
<tr>
<td>4</td>
<td>Spending to support our current beneficiaries is more important than ensuring spending for future beneficiaries</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>If ‘Yes’ to question 4, which of the following apply?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Our goal is to spend down our assets over time</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>Our goal is to adjust our spending to prioritize current beneficiaries, while still existing for as long as possible</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>We intend to fund a significant project in the next few years, which will require additional spending over the short term</td>
<td>Y</td>
</tr>
<tr>
<td>5</td>
<td>We rely heavily on our investment returns to meet our annual spending obligations</td>
<td>Y</td>
</tr>
<tr>
<td>6</td>
<td>We are sensitive to the spending trends of our peers</td>
<td>Y</td>
</tr>
<tr>
<td>7</td>
<td>Other:</td>
<td></td>
</tr>
</tbody>
</table>
# Finding the right spending policy

## YOUR SPENDING POLICY

| | |
|---|---|---|
| Our spending rate is: | | |
| Our spending methodology is: | | |
| We selected this because: | | |
| We were comfortable with our spending during the financial crisis | Y | N | N/A |

Remember, spending more than the inflation-adjusted return generated by your portfolio will lead to a decline in the purchasing power of your assets.

Your spending rate: _____%

+ projected rate of inflation: _____%

+ expenses: _____%

= your target return: _____%
Perpetuity

Remember, you have three possible decisions you could make:

1. We wish to exist for as long as possible.
2. We wish to prioritize spending today, and worry about how long we want to exist later.
3. We wish to make a point of spending down our assets over time.

Which decision are you making? And why?
And do the rest of your decisions align with this one?
## Determining your risk tolerance

<table>
<thead>
<tr>
<th>I could tolerate:</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>CIRCLE A, B, OR C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to a 20% loss in any 1 year</td>
<td>A 20% to 35% loss in any 1 year</td>
<td>A 35% to 50% loss in any 1 year</td>
<td></td>
<td>A, B, C</td>
</tr>
<tr>
<td>Less than 3.5%, so I don’t need a lot of risk to meet my return target</td>
<td>Between 3.5% and 5%, so I need to take a moderate amount of risk to meet my return target</td>
<td>More than 5%, so I need a considerable amount of risk to meet my return target</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My annual spend is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 3.5%, so I don’t need a lot of risk to meet my return target</td>
<td>Between 3.5% and 5%, so I need to take a moderate amount of risk to meet my return target</td>
<td>More than 5%, so I need a considerable amount of risk to meet my return target</td>
<td>A, B, C</td>
<td></td>
</tr>
<tr>
<td>My time horizon is:</td>
<td>Short (1 to 3 years)</td>
<td>Medium (3 to 5 years)</td>
<td>Long term (5 or more years)</td>
<td>A, B, C</td>
</tr>
<tr>
<td>I expect future inflows:</td>
<td>No, I am not able to secure future inflows</td>
<td>Yes, I am able to secure some additional inflows</td>
<td>Yes, I am able to secure significant additional inflows</td>
<td>A, B, C</td>
</tr>
<tr>
<td>There are a number of additional demands on my assets</td>
<td>Yes, there are high demands on my assets</td>
<td>Yes, there are some demands on my assets</td>
<td>No, there are minimal demands on my assets</td>
<td>A, B, C</td>
</tr>
<tr>
<td>Other observations affecting my risk tolerance:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Assessing your liquidity needs

### Establish your cash flow expectations

- Where will your cash come from?
- What is the anticipated timing of those cash flows?
- Is your cash flow steady or variable?  
  - What % is steady and what % is variable?

### Use a variety of approaches to achieve your required liquidity profile

- Do you regularly review the following with your providers and IC? If not, you should start.
  - Asset allocation
  - Spending policy
  - Rebalancing policy
  - Derivatives in your portfolio

### Document and frequently monitor your liquidity profile

- Do you do sensitivity / stress testing of your investment portfolio?
- Are your liquidity needs documented in your IPS?

### Keep up with regulatory changes

- Do you have a source you rely on for regulatory updates? Who is it? Who do you share the information with?
Dynamic portfolio management is a strategic and a tactical decision. You must capture your intent to be dynamic in your IPS, ensure all fiduciaries are aligned with this decision, and incorporate strategies into your investment portfolio that can be managed dynamically.
Capturing your decisions in your IPS

GOVERNANCE
- Mission, purpose, and scope
- Investment time horizon
- Statement regarding fiduciary responsibilities under UPMIFA
- Definition of roles and responsibilities
- Expected return goals and objectives
- Unique circumstances
- Delegation of authority
- Beliefs

INVESTMENT STRATEGY
- Investment philosophy
- Strategic asset allocation
- Restricted and unrestricted investments
- Investment structure and guidelines
- Spending policy
- Liquidity policy
- Risk policy and benchmarks for measurement
- Purchasing power driven decisions
- Sustainable investment policy, if applicable

ACCOUNTABILITY
- Monitoring and review process
- Standards for measuring performance: absolute and relative
- Rebalancing policy
- Handling of spending for underwater funds
- Other operational guidelines
Roles and responsibilities in your IPS

Focus of Board and Investment Committee; OCIO provides guidance

Note: Investment Committee and Staff would own these decisions under Consulting model

BoardSource
Empowering Boards. Inspiring Leadership.
What should you be reviewing?

**QUARTERLY**
- Performance of assets against organizational goals
- Capital market performance / environment
- Discussion with investment committee regarding any concerns which may need board attention

**PERIODICALLY BUT REGULARLY**
- Investment policy statement, including:
  - Spending policy
  - Liquidity needs
  - Any changes in risk tolerance
  - Strategic asset allocation
- Impact of any organizational or regulatory changes which may affect the investment program
Thank you! Questions?
Important information

THIS CONFERENCE MATERIAL WAS CREATED BY RUSSELL INVESTMENTS AS AN EDUCATIONAL TOOL, AND IS NOT FOR FURTHER DISTRIBUTION.

Please remember that all investments carry some level of risk, including the potential loss of principal invested. They do not typically grow at an even rate of return and may experience negative growth. As with any type of portfolio structuring, attempting to reduce risk and increase return could, at certain times, unintentionally reduce returns.

Investments that are allocated across multiple types of securities may be exposed to a variety of risks based on the asset classes, investment styles, market sectors and size of companies preferred by the advisors. Investors should consider how the combined risks impact their total investment portfolio and understand that different risks can lead to varying financial consequences, including loss of principal.

Diversification does not assure a profit and does not protect against loss in declining markets.

The trademarks, service marks and copyrights related to the Russell Investments indexes and other index data as noted are the property of their respective owners.

Russell Investments’ ownership is composed of a majority stake held by funds managed by TA Associates with minority stakes held by funds managed by Reverence Capital Partners and Russell Investments’ management.

Frank Russell Company is the owner of the Russell trademarks contained in this material and all trademark rights related to the Russell trademarks, which the members of the Russell Investments group of companies are permitted to use under license from Frank Russell Company. The members of the Russell Investments group of companies are not affiliated in any manner with Frank Russell Company or any entity operating under the “FTSE RUSSELL” brand.

Copyright© 2017 Russell Investments Group, LLC. All rights reserved. This material is proprietary and may not be reproduced, transferred, or distributed in any form without prior written permission from Russell Investments. It is delivered on an "as is" basis without warranty.

Date of first use: Oct 2017  Al-25911 9-18
### Strategic planning assumptions

**Through December 31, 2016**

<table>
<thead>
<tr>
<th>Equity</th>
<th>Private Limited</th>
<th>Fixed Income</th>
<th>Real Estate</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Equity</td>
<td>EAFE Equity</td>
<td>Emerging Markets Equity</td>
<td>Global Equity</td>
<td>Global Equity as US</td>
</tr>
<tr>
<td>Global Private Equity</td>
<td>US Real Estate</td>
<td>Global Real Estate</td>
<td>Global Infrastructure</td>
<td></td>
</tr>
<tr>
<td>Long Govt</td>
<td>Govt</td>
<td>Long Credit Fixed</td>
<td>Credit Fixed</td>
<td>Long G/C Fixed</td>
</tr>
<tr>
<td>Global High Yield</td>
<td>EM Debt</td>
<td>TIPS</td>
<td>Cash</td>
<td>LIBOR</td>
</tr>
<tr>
<td>Global Commodities</td>
<td>US Listed Real Estate</td>
<td>Global Listed Real Estate</td>
<td>Global Listed Infrastructure</td>
<td>New Hire Hedge Fund</td>
</tr>
<tr>
<td>Inflation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**5 Yr Arithmetic Return**
- 6.4% 8.2% 7.5% 7.2% 8.0%
- 8.4% 5.2% 5.8% 5.4%
- 1.7% 1.9% 2.7% 2.7% 2.3% 2.3% 4.5% 3.3% 2.1% 2.3% 2.4%
- 5.0% 5.8% 6.6% 6.4% 3.5% 2.3%

**5 Yr Volatility**
- 17.3% 19.7% 22.8% 18.0% 19.7%
- 11.5% 11.5% 10.0% 8.1%
- 6.2% 2.1% 6.2% 3.3% 5.6% 3.5% 14.0% 9.0% 4.3% 2.7% 2.8%
- 15.8% 21.4% 20.6% 16.3% 4.6% 2.7%

**10 Yr Arithmetic Return**
- 7.0% 8.0% 8.0% 7.5% 8.0%
- 8.9% 5.7% 6.0% 5.9%
- 2.4% 2.6% 3.5% 3.5% 3.0% 3.1% 4.2% 2.1% 2.7% 3.0% 3.1%
- 5.7% 6.5% 7.0% 7.0% 4.1% 2.1%

**10 Yr Volatility**
- 18.1% 19.3% 22.9% 18.0% 19.3%
- 18.0% 13.6% 11.3% 9.5%
- 5.1% 2.2% 5.1% 2.8% 4.6% 2.7% 13.8% 8.3% 5.2% 4.7% 4.7%
- 16.3% 23.8% 20.6% 16.7% 5.9% 4.7%

**20 Yr Arithmetic Return**
- 7.5% 7.9% 8.3% 7.8% 8.0%
- 9.1% 6.1% 6.3% 6.4%
- 3.1% 3.3% 4.2% 4.2% 3.7% 3.8% 5.7% 4.7% 3.3% 3.6% 3.7%
- 6.2% 7.0% 7.2% 7.4% 4.7% 2.3%

**20 Yr Volatility**
- 18.5% 18.3% 22.7% 17.9% 18.6%
- 21.1% 15.2% 12.3% 10.9%
- 3.9% 4.0% 4.4% 3.8% 3.7% 3.4% 14.3% 8.6% 6.8% 7.2% 7.2%
- 17.1% 24.5% 20.7% 17.4% 8.1% 7.5%

**20 Yr Time-Series Volatility**
- 17.6% 19.8% 22.7% 17.8% 19.7%
- 7.9% 7.4% 6.9% 5.3%
- 8.6% 4.8% 8.3% 5.8% 8.0% 6.1% 13.1% 9.1% 4.6% 1.9% 1.9%
- 16.1% 24.1% 21.0% 16.3% 4.3% 2.0%

**Correlations**

- **US Equity**
  - EAFE Equity: 1.00
  - Emerging Markets Equity: 0.75
  - Global Equity: 0.97
  - Global Equity as US: 0.86

- **Private Limited**
  - Total Return: 1.00
  - Correlation with Total Return: 0.86

- **Fixed Income**
  - Total Return: 1.00
  - Correlation with Total Return: 0.86

- **Real Estate**
  - Total Return: 1.00
  - Correlation with Total Return: 0.86

- **Other**
  - Total Return: 1.00
  - Correlation with Total Return: 0.86

**Correlation values shown are for the 10-year forecast horizon.**

**Assumptions do not take fees into consideration and all returns are assumed gross of fees.**

**Yields**

<table>
<thead>
<tr>
<th>US Long Credit</th>
<th>US TIPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBOR</td>
<td>1.4</td>
</tr>
</tbody>
</table>

**Yield Duration Quality**

- **Long G/C Fixed**
  - Yield: 4.7
  - Duration: 15.0
  - Quality: AA

- **US Listed Real Estate**
  - Yield: 4.3
  - Duration: 6.0
  - Quality: AA

- **Global Real Estate**
  - Yield: 5.5
  - Duration: 13.5
  - Quality: A

**We estimate the performance of an asset class or strategy by analyzing current economic and market conditions and historical market trends. It is likely that actual returns will vary considerably from these assumptions, even for a number of years.**

**References to future returns for either asset allocation strategies or asset classes are not promises or even estimates of actual returns a client portfolio may achieve. Asset classes are broad general categories which may or may not correspond well to specific products.**