Stop Second Guessing Decisions About Asset Allocations: A New Methodology for an Uncertain Economy

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Tucson Electric Power
Important Information

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Jeffrey Saef, CFA
Managing Director, BNY Mellon Investment Management

Jeff manages the Investment Strategy & Solutions Group within BNY Mellon Investment Management. The group focuses on three major functions: advice and strategy, asset allocation and portfolio construction, and multi-asset portfolio management. In this role, Jeff is responsible for developing investment strategy and managing integrated investment solutions for clients that combine investment strategies from across BNY Mellon’s investment boutiques and third party managed strategies. The types of strategies include a variety of single asset strategies, multi-asset strategies, inflation strategies, retirement strategies, income strategies, and absolute return strategies, and serve clients ranging from retail intermediaries to highly sophisticated institutions.

Jeff is the Chairman of the Investment Strategy and Solutions Group (ISSG) Capital Markets Committee, Chairman of the ISSG Investment Committee, and Chairman of the ISSG Portfolio Implementation Committee.

Jeff is based in Boston, and joined BNY Mellon Investment Management in 2008. Prior to his current role, Jeff helped start and manage Pyramis Global Advisors, a Fidelity Investments Company, where he was an executive vice president and director of institutional investment strategies. He has extensive experience in the fixed income area, having spent over a decade as a portfolio manager for both Putnam Investments and Independence Investment Associates.

He received his MBA degree from the F.W. Olin Graduate School of Business at Babson College and his bachelor’s degree from Brown University.

Martha (Marty) Pritz, CFA
Director, Finance, Tucson Electric Power

Marty has been with Tucson Electric Power since 1999. As Director of Finance, Marty is responsible for credit and capital Resources, as well as financial planning and analysis. She holds a Master of Science in Finance from the University of Colorado, Denver campus. She is also a member of the Society of Utility and Regulatory Financial Analysts.
Agenda

1. BNY Mellon Overview

2. A New Framework for Asset Allocation
   a. The path toward regime-based asset allocation
   b. Regime dynamics and asset class behavior
   c. Constructing portfolios in response to changes in macroeconomic expectations

3. UNS Energy Corporation
   a. Plan Overview
   b. Strategic Asset Allocation
   c. Dynamic Investment Possibilities

4. Questions
BNY Mellon Overview
BNY Mellon as of June 30, 2013

INVESTMENT MANAGEMENT
$1.4 trillion in assets under management
5th largest manager of defined benefit assets

INVESTMENT SERVICING
$26.2 trillion in assets under custody and administration
Ranked #1 global custodian vs. peers

INVESTMENT SOLUTIONS
$311 billion in multi-asset, LDI and fiduciary management solutions

FINANCIAL STRENGTH
AA Long-term senior debt: Aa1 by Moody’s, AA- by Fitch, and AA- by S&P

*Pensions & Investments, May, 2013*
**R&M Global Custody Survey, 2012
BNY Mellon Investment Strategy & Solutions Group

Our Mission: We aspire to become a trusted advisor to our clients, understand their investment challenges and develop a solution using the full resources of BNY Mellon Investment Management

- Integrated and Multi-Asset Strategy Client assets under management $10.4bn\(^1\)
  - 134 clients

- Target Global Client Segments
  - Public and Private sector retirement plans
  - Sovereign Wealth Funds, Central Banks
  - Insurance Companies, Financial Institutions
  - Endowments and Foundations
  - Family Offices and High Net Worth Individuals

- Outcome-oriented solutions
  - Pension funding, income needs, absolute return targets, inflation protection, diversification, custom multi-asset strategies

Advice
  - Needs Assessment
  - Thought Partner
  - Refinement of Objectives
  - Customized Research

Design
  - Asset Allocation
  - Portfolio Construction
  - Capital Market Research
  - Sensitivity Analysis

Implementation
  - Manager Research
  - Trading/Rebalancing
  - Reporting & Analysis
  - Risk Management

\(^1\) As of 6/30/2013
Bringing Together the Resources of BNY Mellon

- Customized investment strategy and implementation resources
- Access to broad and deep global capital markets expertise
- Access to dedicated investment professionals by asset class and region

1 A division of The Dreyfus Corporation
2 Does not offer services in the U.S.
3 Joint Venture
4 Minority Interest
5 Services offered in the U.S., Canada and Australia by Pareto Investment Management Limited under the Insight Pareto brand
Fiduciary Management Solutions

Advisory Capabilities
- Assess needs
- Perform custom analysis
- Set strategy
- Design liability hedge
- Monitor progress
- Economic and market review

Manager Selection
- Perform research
- Evaluate managers
- Rate managers
- Select managers
- Monitor managers
- Replace managers

Fiduciary Management
- Manage with discretion
- Portfolio re-balancing
- Client investment reviews
- Management reporting
- Performance attribution

Note: Services delivered through The Bank of New York Mellon
Refer to disclosures following this presentation
The ISSG Advantage
Unique perspectives in the investment management process

Regime Based Asset Allocation
A framework for dynamic macro aware investing

Unexpected Inflation
Portfolio sensitivity and positioning for inflation shocks

Interest Rate Positioning
Interest rate sensitivity analysis for strategic and tactical allocation

Thematic Investing for Emerging Markets
Framework to harness the thematic drivers of emerging market returns

1 ISSG research papers on each of the topics on this page are available on request
A New Framework for Asset Allocation
a. The path toward regime-based asset allocation
The march toward regime-based asset allocation

Old School
- Stocks
- Bonds
- Cash

Rise of Alternatives
- Stocks
- Bonds
- Alternatives

Transition to Macro
- Growth assets
- Inflation hedge
- Deflation hedge

Source: Investment Strategy & Solutions Group. Please see appendix for additional information.
Interplay of asset classes and portfolio roles

<table>
<thead>
<tr>
<th>Traditional Asset Classes</th>
<th>Growth</th>
<th>Inflation</th>
<th>Deflation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equity</strong></td>
<td>U.S. Equity</td>
<td>Energy Equity</td>
<td>Utilities Equity</td>
</tr>
<tr>
<td></td>
<td>Int'l Equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EM Equity</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fixed Income</strong></td>
<td>High Yield</td>
<td>TIPS</td>
<td>Treasuries</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sovereign Debt</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>High Quality Corp.</td>
</tr>
<tr>
<td><strong>Alternatives</strong></td>
<td>Private Equity</td>
<td>Real Estate</td>
<td>Specialty Hedge Funds</td>
</tr>
<tr>
<td></td>
<td>Long-biased HF</td>
<td>Commodities</td>
<td>Interest Rate Products</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Real Assets</td>
<td></td>
</tr>
</tbody>
</table>

Source: Investment Strategy & Solutions Group. Please see appendix for additional information.
A further refinement

"Goldilocks economics" is too simplistic

A richer framework

Source: Investment Strategy & Solutions Group. Please see appendix for additional information.
Revisions explain market behavior better than levels

Inflation versus Bonds

Revision in Expected Inflation and Bond Market Performance

Expected Inflation and Bond Market Performance

Growth versus Stocks

Revision in Expected Growth and Stock Market Performance

Expected Growth and Stock Market Performance

April 1973 to August 2013

Source: Investment Strategy & Solutions Group, Consensus Economics, Philadelphia Federal Reserve. Please see appendix for additional information.
Revisions create regimes

Revisions to Expectations of Growth and Inflation

-10%
-8%
-6%
-4%
-2%
0%
2%
4%
6%
8%

Percentage Point Revision

12M Revision in Expected Inflation 12M Revision in Expected Real GDP

April 1973 to August 2013

Source: Investment Strategy & Solutions Group, Consensus Economics, Philadelphia Federal Reserve. Please see appendix for additional information.
Regimes do not occur sequentially

The conventional image

40 years of regime transitions

April 1973 to August 2013
Source: Investment Strategy & Solutions Group.
Regimes have varying lengths

Regime Lengths

April 1973 to August 2013
Source: Investment Strategy & Solutions Group.
b. Regime dynamics and asset class behavior
**U.S. stock market performance varied by regime**

**Annualized Real Returns of the S&P 500**

<table>
<thead>
<tr>
<th>Regime</th>
<th>Inflation</th>
<th>Growth</th>
<th>Frequency</th>
<th>Real Return</th>
<th>Contribution to Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warming</td>
<td>Steady / Rising</td>
<td>Steady / Rising</td>
<td>42%</td>
<td>8.1%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Perfection</td>
<td>Falling</td>
<td>Rising</td>
<td>16%</td>
<td>14.5%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Cooling</td>
<td>Falling</td>
<td>Falling</td>
<td>24%</td>
<td>12.6%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Too Hot</td>
<td>Rising</td>
<td>Falling</td>
<td>11%</td>
<td>-5.9%</td>
<td>-0.7%</td>
</tr>
<tr>
<td>Too Cold</td>
<td>Falling</td>
<td>Sharply Falling</td>
<td>6%</td>
<td>-26.9%</td>
<td>-2.0%</td>
</tr>
</tbody>
</table>

**All Regimes**

| 100% | 5.8% | 5.8% |

April 1973 to August 2013

Returns calculated using the regimes outlined on slide 25. CPI = 4.3% over the same time period. Please see appendix for additional information.

Source: Investment Strategy & Solutions Group.
Asset performance is regime dependent

Top 5 Assets by Regime (Annualized Real Returns)

<table>
<thead>
<tr>
<th>Warming</th>
<th>Perfection</th>
<th>Cooling</th>
<th>Too Hot</th>
<th>Too Cold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate</td>
<td>15%</td>
<td>13%</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>EM Equity</td>
<td>14%</td>
<td>13%</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>Commodities</td>
<td>14%</td>
<td>13%</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>Intl Equity</td>
<td>16%</td>
<td>14%</td>
<td>13%</td>
<td>11%</td>
</tr>
<tr>
<td>U.S. Equity</td>
<td>14%</td>
<td>13%</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>U.S. Equity</td>
<td>14%</td>
<td>13%</td>
<td>12%</td>
<td>10%</td>
</tr>
<tr>
<td>15+ Yr STRIPS</td>
<td>20%</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Commodities</td>
<td>26%</td>
<td>14%</td>
<td>9%</td>
<td>8%</td>
</tr>
<tr>
<td>TIPS</td>
<td>0%</td>
<td>-1%</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>Global Sovereigns</td>
<td>-10%</td>
<td>-10%</td>
<td>-7%</td>
<td>-6%</td>
</tr>
<tr>
<td>Cash</td>
<td>15+ Yr STRIPS</td>
<td>-32%</td>
<td>-31%</td>
<td>-27%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>-34%</td>
<td>-31%</td>
<td>-29%</td>
<td>-25%</td>
</tr>
<tr>
<td>Commodities</td>
<td>-35%</td>
<td>-33%</td>
<td>-31%</td>
<td>-27%</td>
</tr>
</tbody>
</table>

April 1973 to August 2013

Source: Investment Strategy & Solutions Group. Please see appendix for index descriptions.
## Assets we believe perform better by regime

<table>
<thead>
<tr>
<th></th>
<th>Growth</th>
<th>Inflation</th>
<th>Deflation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perfection</strong></td>
<td>Equity</td>
<td>Fixed Income</td>
<td>Alternatives</td>
</tr>
<tr>
<td>Equity</td>
<td>Equities (especially consumer-related and tech), U.S., Int'l and EM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Income</td>
<td>High Yield Bonds Corporate Bonds</td>
<td>Inflation-Linked Bonds High Yield Bonds</td>
<td></td>
</tr>
<tr>
<td>Alternatives</td>
<td>Private Equity Long-biased Hedge Funds Real Estate</td>
<td>Real Estate Commodities Infrastructure Real Assets Private Equity Gold</td>
<td></td>
</tr>
<tr>
<td><strong>Warming</strong></td>
<td>Cooling</td>
<td>Too Hot</td>
<td>Too Cold</td>
</tr>
<tr>
<td>Fixed Income</td>
<td></td>
<td>Treasuries Global Bonds Corporate Bonds</td>
<td>Inflation-Linked Bonds Global Linkers</td>
</tr>
<tr>
<td>Alternatives</td>
<td></td>
<td>Real Estate Private Equity</td>
<td>Commodities Oil Gold</td>
</tr>
</tbody>
</table>

Source: Investment Strategy & Solutions Group.
Key ideas

1. Changes to *expectations* drive macroeconomic regime shifts and influence asset returns.

2. There are various methods by which investors can express a macroeconomic regime view. Investors need a *dynamic* process in place to capture the changes in expectations.

3. As assets have different returns by regime, we believe insight into the regime probabilities could lead to better performance.

![Hypothetical Pension Plan Real Returns by Regime (net)](image)

April 1973 through August 2013

Please see appendix for further information and index descriptions.
c. Constructing portfolios in response to changes in macroeconomic expectations
Regime awareness can increase performance

We believe:

1. Insight into regime probabilities should lead to better performance.

2. A regime based asset allocation framework requires a systematic approach to estimating regime probabilities.

3. The estimated probabilities can be used to dynamically adjust portfolio exposures.

Source: Investment Strategy & Solutions Group.
Regime probabilities must be estimated

- Created a model* to describe the current state of the economy.
- Model uses levels and revisions in expectations of real economic growth and inflation.

Model Estimated Regime Probabilities Through Time

Actual Regimes

* Multinomial logistic regression is typically used to predict the probabilities of possible outcomes of a predefined, dependent variable, given a set of independent variables.

February 1988 to August 2013

Source: Investment Strategy & Solutions Group.
Dynamically adjusting the regime-based portfolio

RBAA Asset Class Weights Through Time

<table>
<thead>
<tr>
<th>Average Allocations</th>
<th>RBAA</th>
<th>Benchmark*</th>
<th>Minimum Weight</th>
<th>Maximum Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>58%</td>
<td>60%</td>
<td>25%</td>
<td>75%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>33%</td>
<td>34%</td>
<td>18%</td>
<td>75%</td>
</tr>
<tr>
<td>TIPS</td>
<td>5%</td>
<td>6%</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>Commodities</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>10%</td>
</tr>
</tbody>
</table>

February 1988 to August 2013

Source: Investment Strategy & Solutions Group. *Benchmark weights outlined in appendix. Please see appendix for further information and index descriptions.
Dynamically adjusting the regime-based portfolio

**RBAA Excess Returns Through Time**

**RBAA and Benchmark Indices**

**February 1988 to August 2013**

Source: Investment Strategy & Solutions Group. *Benchmark weights outlined in appendix. Please see appendix for further information and index descriptions.*

<table>
<thead>
<tr>
<th></th>
<th>RBAA</th>
<th>Benchmark*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Return</td>
<td>9.5%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Volatility</td>
<td>8.6%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Max Drawdown</td>
<td>-15.2%</td>
<td>-37.0%</td>
</tr>
<tr>
<td>Up Market Return</td>
<td>18.1%</td>
<td>18.8%</td>
</tr>
<tr>
<td>Down Market Return</td>
<td>-18.8%</td>
<td>-23.5%</td>
</tr>
<tr>
<td>Risk Free Rate</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Sharpe Ratio</td>
<td>0.64</td>
<td>0.42</td>
</tr>
</tbody>
</table>
Regime Based Asset Allocation added value historically

1. RBAA outperformed in four of the five regimes including Too Cold, which has been the most damaging regime.

2. In Too Cold and Too Hot regimes the RBAA Portfolio added significant value through protecting against downside returns.

February 1988 to August 2013
Source: Investment Strategy & Solutions Group. *Benchmark weights outlined in appendix. Please see appendix for further information and index descriptions.
Current regime probabilities are relatively benign

<table>
<thead>
<tr>
<th>Regime</th>
<th>Inflation</th>
<th>Growth</th>
<th>Current Forecast Probability*</th>
<th>Historical Average</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warming</td>
<td>Steady / Rising</td>
<td>Steady / Rising</td>
<td>24%</td>
<td>42%</td>
<td>-18%</td>
</tr>
<tr>
<td>Perfection</td>
<td>Falling</td>
<td>Rising</td>
<td>8%</td>
<td>16%</td>
<td>-8%</td>
</tr>
<tr>
<td>Cooling</td>
<td>Falling</td>
<td>Falling</td>
<td>66%</td>
<td>24%</td>
<td>42%</td>
</tr>
<tr>
<td>Too Hot</td>
<td>Rising</td>
<td>Falling</td>
<td>1%</td>
<td>11%</td>
<td>-10%</td>
</tr>
<tr>
<td>Too Cold</td>
<td>Falling</td>
<td>Sharply Falling</td>
<td>0%</td>
<td>6%</td>
<td>-6%</td>
</tr>
</tbody>
</table>

Source: Investment Strategy & Solutions Group. *This view is for September 2013, may not sum to 100% due to rounding
## Current RBAA portfolio: overweight equities

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Current Weight</th>
<th>Benchmark Weight</th>
<th>Active Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>48.6%</td>
<td>33.0%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Int'l Equity</td>
<td>19.9%</td>
<td>18.0%</td>
<td>1.9%</td>
</tr>
<tr>
<td>EM Equity</td>
<td>4.9%</td>
<td>6.0%</td>
<td>-1.1%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>1.5%</td>
<td>3.0%</td>
<td>-1.5%</td>
</tr>
<tr>
<td>Corp. Bonds</td>
<td>5.0%</td>
<td>12.0%</td>
<td>-7.0%</td>
</tr>
<tr>
<td>Global Sovereigns</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Treasuries</td>
<td>7.5%</td>
<td>14.0%</td>
<td>-6.5%</td>
</tr>
<tr>
<td>High Yield Bonds</td>
<td>1.2%</td>
<td>6.0%</td>
<td>-4.8%</td>
</tr>
<tr>
<td>15+ Yr STRIPS</td>
<td>10.0%</td>
<td>0.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>TIPS</td>
<td>0.0%</td>
<td>6.0%</td>
<td>-6.0%</td>
</tr>
<tr>
<td>Commodities</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Cash</td>
<td>1.3%</td>
<td>2.0%</td>
<td>-0.7%</td>
</tr>
</tbody>
</table>

Source: Investment Strategy & Solutions Group. This allocation is for September 2013
UNS Energy: Who We Are
Fully Regulated Electric and Gas Utilities

- NYSE: UNS
- Market cap: $1.8 billion
- Customers: ≈500,000 electric
  ≈150,000 gas
- Territory: > 55,000 sq. miles
- Generation Capacity: 2,420 MW
- 2012 Peak Demand: 2,727 MW
- Utility subsidiaries

Arizona

AFP® Annual Conference
Pension Plan Overview

Asset balance as of June 30, 2013 $290 million

Funded status (PBO basis) 80%

Liability Responsive Allocation 42%
## Asset Allocation

**June 30, 2013**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Cap US</td>
<td>24%</td>
</tr>
<tr>
<td>Small Cap US</td>
<td>5%</td>
</tr>
<tr>
<td>Developed Intl</td>
<td>15%</td>
</tr>
<tr>
<td>Emerging Markets</td>
<td>5%</td>
</tr>
<tr>
<td>Global Listed Real Estate</td>
<td>3%</td>
</tr>
<tr>
<td>US Private Real Estate</td>
<td>5%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>1%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>42%</td>
</tr>
</tbody>
</table>

Actual Holdings approx. equal to Policy Holdings

Policy allows for allocations +/- 2% around targets
Dynamic Investment Possibilities

- **World Equity Fund**
  - Asia
  - Europe/Middle East/Africa
  - Latin America
  - North America

- **Multi-Asset Core Fund**
  - 75% Global Equity
  - 15% Marketable Real Assets
  - 10% Fixed Income
Funded status may be most at risk during Too Cold regimes

1. The BNY Mellon Pension Liability Index for the typical plan had the lowest returns during Warming and Too Hot regimes.

2. Discount rates have declined sharply during Perfection and Too Cold regimes historically.

3. During most macroeconomic environments the benchmark portfolio has kept pace with or exceeded liability proxy returns.

4. Funded status is most at risk during the Too Cold regimes historically.
Summary

1. Asset Allocation decisions should start with a focus on identifying and forecasting regimes.

2. A regime based approach to asset allocation can help to better classify assets, and uncover unintended risks.

3. Regime Based Asset Allocation serves as a useful tool in managing tail risk.

4. Select BNY Mellon Research Documents on this topic available to you:
   - Great Expectations: Regime Based Asset Allocation Seeks Higher Return, Lower Drawdowns
   - Regime Based Scenario Analysis for Better Risk Management
   - ISSG Regime Based Asset Allocation Monthly Update
   - Rate Rise Remedies: Three Approaches
   - Customized Regime Based Asset Allocation: Portfolio Analysis
Questions
Appendix
Asset performance is regime dependent

Annualized Real Returns by Regime

-40% -30% -20% -10% 0% 10% 20% 30%

Return

Warming Perfection Cooling Too Hot Too Cold

April 1973 to August 2013

Source: Investment Strategy & Solutions Group.
RBAA Model Drivers

ISSG has identified additional macroeconomic variables that we believe help in the estimation of regime probabilities.

<table>
<thead>
<tr>
<th>Asset</th>
<th>Weight</th>
<th>Index Name</th>
<th>Start</th>
<th>End</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>33.0%</td>
<td>S&amp;P 500</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>The S&amp;P 500 is an index designed to track the performance of the largest 500 US companies.</td>
</tr>
<tr>
<td>Int’l Equity</td>
<td>18.0%</td>
<td>MSCI EAFE</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>The MSCI EAFE Index (Europe, Australasia, Far East) is designed to measure the equity market performance of global developed markets, excluding the US &amp; Canada.</td>
</tr>
<tr>
<td>EM Equity</td>
<td>6.0%</td>
<td>MSCI EM</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>The MSCI EM Index tracks the performance of Emerging Market Equities. Prior to 1987 the returns are combined with the IFC emerging market returns and the MSCI EAFE index.</td>
</tr>
<tr>
<td>Real Estate</td>
<td>3.0%</td>
<td>FTSE NAIREIT</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>The FTSE/NAIREIT index is designed to track the performance of US Real Estate Investment Trusts.</td>
</tr>
<tr>
<td>Corp. Bonds</td>
<td>12.0%</td>
<td>Barcap US Corporate Agg</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>The Barcap US Corporate Aggregate Index is designed to track the performance of US Investment Grade Corporate securities.</td>
</tr>
<tr>
<td>Global Sovereigns</td>
<td>0.0%</td>
<td>JPM Government Bond Index Global</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>The JPM Government Bond Index Global is designed to track the broad universe of global government bonds. Results simulated before 1985.</td>
</tr>
<tr>
<td>15+ Yr STRIPS</td>
<td>0.0%</td>
<td>Citi 15+ STRIPS</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>The Citi 15+ STRIPS index tracks the performance of US Treasury 15+ year STRIPS. Results simulated prior to 1991.</td>
</tr>
<tr>
<td>Commodities</td>
<td>0.0%</td>
<td>DJ-UBS Commodities</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>Index designed to provide diversified commodity exposure with weightings based on the commodity’s liquidity and economic significance. Results simulated prior to 1997.</td>
</tr>
<tr>
<td>Cash</td>
<td>2.0%</td>
<td>Citi 3 Month Treasury (Cash)</td>
<td>4/30/1973</td>
<td>8/31/2013</td>
<td>The Citigroup Three Month Treasury Bill index tracks the performance of 90 day U.S. Treasury bills. We use data from the Federal Reserve before 1978.</td>
</tr>
</tbody>
</table>
## Model Driver Definitions

<table>
<thead>
<tr>
<th>Series Name</th>
<th>Series Title</th>
<th>Start</th>
<th>End</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>12M Revision in Expected Inflation</td>
<td>12M Revision in Expected Inflation</td>
<td>2/29/1988</td>
<td>8/31/2013</td>
<td>A measure of the aggregate revisions to the forward 12 month US inflation forecast over a twelve month time period.</td>
</tr>
<tr>
<td>12M Revision in Expected Real GDP</td>
<td>12M Revision in Expected Real GDP</td>
<td>2/29/1988</td>
<td>8/31/2013</td>
<td>A measure of the aggregate revisions to the forward 12 month US real GDP forecast over a twelve month time period.</td>
</tr>
<tr>
<td>10-2 Spread minus 5Y Avg OAS minus 5Y Avg</td>
<td>10-2 Spread minus 5Y Avg OAS minus 5Y Avg</td>
<td>2/29/1988</td>
<td>8/31/2013</td>
<td>The ISSG calculates the spread between the constant maturity 10 and 2 year treasury bonds from the FRED database and compares it to its five year average.</td>
</tr>
</tbody>
</table>

## Disclosures

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