DEATH OF DIVERSIFICATION?

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PANELISTS

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AGENDA

I. Diversification is Dead?
II. Challenges to Diversification
III. Benefits of Diversification
DIVERSIFICATION IS DEAD
Yale’s Endowment Learns Hard Diversification Lesson
Over the past decade, the performance of university endowments has lagged behind the U.S. stock market.
— Barron’s, November 18, 2017

Yale Model Comes under Fire For Failing Endowments
— FundFire, March 3, 2016

Warren Buffett: Why Index Funds Trump Hedge Funds
— Kiplinger, January 8, 2018
# Asset Allocation by Institution Size

## 2016 NACUBO-Commonfund Study of Endowments

<table>
<thead>
<tr>
<th>ENDOWMENT SIZE</th>
<th>U.S. EQUITY</th>
<th>INT'L EQUITY</th>
<th>HEDGE FUNDS</th>
<th>PRIVATE EQUITY&lt;sup&gt;1&lt;/sup&gt;</th>
<th>REAL ESTATE</th>
<th>NATURAL RES.</th>
<th>&quot;OTHER&quot; ALTS</th>
<th>FIXED INCOME</th>
<th>CASH / OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; $1 BILLION</td>
<td>13%</td>
<td>19%</td>
<td>20%</td>
<td>21%</td>
<td>7%</td>
<td>8%</td>
<td>2%</td>
<td>7%</td>
<td>3%</td>
</tr>
<tr>
<td>&gt; $500M TO $1 BILLION</td>
<td>20</td>
<td>18</td>
<td>20</td>
<td>12</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>&gt; $100M TO $500M</td>
<td>26</td>
<td>20</td>
<td>16</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>&gt; $50M TO $100M</td>
<td>33</td>
<td>19</td>
<td>11</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td>&gt; $25M TO $50M</td>
<td>38</td>
<td>17</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>&lt; $25 MILLION</td>
<td>44</td>
<td>15</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>24</td>
<td>7</td>
</tr>
<tr>
<td>DOLLAR-WT'D AVERAGE</td>
<td>16</td>
<td>19</td>
<td>20</td>
<td>18</td>
<td>6</td>
<td>7</td>
<td>2</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

Totals may not sum due to rounding.

<sup>1</sup> Private equity consists of venture capital, private equity and distressed debt.
## FY2016 PERFORMANCE AS OF JUNE 30, 2016

### 2016 NACUBO-COMMONFUND STUDY OF ENDOWMENTS

<table>
<thead>
<tr>
<th>ENDOWMENT SIZE</th>
<th>1YR</th>
<th>3YR</th>
<th>5YR</th>
<th>10YR</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; $1 BILLION</td>
<td>-1.9%</td>
<td>6.0%</td>
<td>6.1%</td>
<td>5.7%</td>
</tr>
<tr>
<td>&gt; $500M TO $1 BILLION</td>
<td>-2.2</td>
<td>5.4</td>
<td>5.7</td>
<td>5.3</td>
</tr>
<tr>
<td>&gt; $100M TO $500M</td>
<td>-2.4</td>
<td>4.9</td>
<td>5.1</td>
<td>4.8</td>
</tr>
<tr>
<td>&gt; $50M TO $100M</td>
<td>-1.8</td>
<td>5.1</td>
<td>5.0</td>
<td>4.7</td>
</tr>
<tr>
<td>&gt; $25M TO $50M</td>
<td>-1.6</td>
<td>5.2</td>
<td>5.3</td>
<td>4.7</td>
</tr>
<tr>
<td>&lt; $25 MILLION</td>
<td>-1.0</td>
<td>5.5</td>
<td>5.8</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>EQUAL-WT'D AVERAGE</strong></td>
<td><strong>-1.9</strong></td>
<td><strong>5.2</strong></td>
<td><strong>5.4</strong></td>
<td><strong>5.0</strong></td>
</tr>
</tbody>
</table>

### HIGHER EDUCATION PRICE INDEX (HEPI)

- **1YR**: 2.1
- **3YR**: 2.3
- **5YR**: 2.2
- **10YR**: 2.7

### RUSSELL 3000 INDEX

- **1YR**: 2.1
- **3YR**: 11.1
- **5YR**: 11.6
- **10YR**: 7.4

### MSCI AC WORLD INDEX EX - U.S.

- **1YR**: -10.2
- **3YR**: 1.2
- **5YR**: 0.2
- **10YR**: 1.9

### BLOOMBERG BARCLAYS US AGG INDEX

- **1YR**: 1.9
- **3YR**: 1.8
- **5YR**: 3.3
- **10YR**: 4.4

*Index Source: Lipper.*

*Returns are presented net of fees. Please refer to pages 18-19 for disclosures.*
GLOBAL EQUITY CUMULATIVE TOTAL RETURNS (IN USD)

Cumulative 1-Year

Global Equity Cumulative 1-Year Total Returns

Cumulative Total Return

Dec-16  Mar-17  Jun-17  Sep-17  Dec-17

S&P 500: 37.3%
MSCI EAFE: 25.0%
MSCI Emerging Markets: 21.8%

Data source: Bloomberg, L.P.; Data as of 12/29/2017; USD total return indices used

Cumulative 3-Year

Global Equity Cumulative 3-Year Total Returns

Cumulative Total Return

2014  2015  2016  2017

S&P 500: 38.3%
MSCI EAFE: 29.9%
MSCI Emerging Markets: 25.3%

Data source: Bloomberg, L.P.; Data as of 12/29/2017; USD total return indices used

Cumulative 5-Year

Global Equity Cumulative 5-Year Total Returns

Cumulative Total Return

2012  2013  2014  2015  2016  2017

S&P 500: 108.1%
MSCI EAFE: 46.2%
MSCI Emerging Markets: 23.7%

Data source: Bloomberg, L.P.; Data as of 12/29/2017; USD total return indices used

Cumulative 10-Year

Global Equity Cumulative 10-Year Total Returns

Cumulative Total Return


S&P 500: 126.0%
MSCI EAFE: 21.2%
MSCI Emerging Markets: 18.2%

Data source: Bloomberg, L.P.; Data as of 12/29/2017; USD total return indices used
• U.S. stock market in 2017 was less volatile than any year dating back to 1964.

**CBOE SPX VOLATILITY INDEX**

- ~6 Years Annualized S&P Return = 16.1%
- ~6.5 Years Annualized S&P Return = 4.9%
- ~4 Years Annualized S&P Return = 15.0%
- ~6.5 Years Annualized S&P Return = -0.5%
- ~5 Years Annualized S&P Return = 15.6%

Source: Strategas; data as of 12/29/2017
SELECTIVE ADDITIONS OF ACTIVE MANAGERS

Annual S&P 500 Performance vs. Percentage of Active Managers Outperforming

**OTHER EXPECTED REAL RETURNS ARE LOW**

**Expected Real Return of a Hypothetical U.S. 60/40 Stock/Bond Portfolio**

Data source: Robert Shiller and Standard & Poor's, methodology adapted from AQR. U.S. stocks expected real return calculated from the average of two approaches, calculated as 50% of the earnings yield*1.0875 and 50% dividend yield + 1.75%, both adjustments to account for real earnings growth. Assumes trend annual earnings growth of 1.75% in real earnings per share and 5-year staleness in the average of earnings across time (1.75% x 5 = 8.75%) for earnings yield portion. U.S. bond yield is the government 10-year rate - prior 3-year inflation. Please see appendix for full disclosure.
BENEFITS OF DIVERSIFICATION
ACCOUNT FOR RISK

Risk of a Diversified Portfolio

- Equity: 65%
- Fixed Income: 4%
- Real Assets: 21%
- Diversifying Strategies: 10%

Standard Deviation: 13.4%

Risk of a 60/40 Portfolio

- Equity: 91%
- Fixed Income: 9%

Standard Deviation: 13.3%

Data source: FEG, as of 1/16/2017. A 60/40 Portfolio is 60% equities and 40% fixed income. The Diversified Portfolio is 50% equity, 20% fixed income, 15% real assets, 15% diversified strategies. The 60/40 and Diversified Portfolios are represented by the index within each asset class. Both 60/40 and Diversified Portfolio are hypothetical.
Looking Long-Term

Growth of $100MM
Diversified vs. 60/40 Equity/Bond Portfolio

Annual Distributions
Based on 5% Payout Rate

Data sources: Lipper, Hedge Fund Research Inc., Thomson Reuters; data as of 12/31/2017
For illustrative purposes only. Past performance is not indicative of future results. 60/40 Equity/Bond Portfolio is comprised of the S&P 500 index and the Bloomberg Barclays Capital U.S. Aggregate Index. The diversified portfolio is detailed in the appendix and uses additional equity, fixed income, real assets, and diversifying strategies to broaden allocations beyond the 60/40 portfolio. Portfolio size is assumed at $100 million as a typical endowment size. Starting year of 1972 chosen based on inception of BAGG. Returns presented are Total Returns. Investments cannot be made directly in an index. Please see appendix for full disclosures.
MSCI ACWI ex-U.S. and S&P 500 Index
Price Return 1996 – 2017

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500 Index</td>
<td>18.7x</td>
<td>17.2x</td>
<td>2.1%</td>
<td>2.0%</td>
</tr>
<tr>
<td>ACWI ex-U.S.</td>
<td>14.7x</td>
<td>14.7x</td>
<td>3.2%</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

Note: All Country World Index (ACWI)
Data sources: MSCI, J.P. Morgan, FactSet, Bloomberg, L.P; data as of 6/30/2017. Values shown in USD.
FEG Capital Market Assumptions are hypothetical based on asset category. Please refer to Appendix for full disclosures.
KEY TAKEAWAYS

I. Keep the focus on the long-term

II. Maintain diversification of style, risk and geography

III. Educate you constituents
The 60/40 and Diversified portfolios shown on pages 11, 13, 14 are represented by the index within each asset class. As such, the returns shown in the chart are those of the indices. The results do not necessarily represent the actual asset allocation of any client or investor portfolio and may not reflect the impact that material economic and market factors might have had on investment decisions. Investment results achieved by actual client accounts may differ from the results portrayed. Diversification or asset allocation does not assure or guarantee better performance and cannot eliminate risk of investment loss. Investments cannot be made directly in an index. No representation is being made that any fund or account will or is likely to achieve profits or losses similar to those shown herein. In fact, there are frequently sharp differences between hypothetical performance results and the actual results subsequently realized by any particular trading program. One of the limitations of hypothetical performance results is that they are generally prepared with the benefit of hindsight. In addition, hypothetical trading does not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risk in actual trading. Hypothetical performance results are presented for illustrative purposes only. No representation or warranty is made as to the reasonableness of the assumptions made or that all assumptions used in achieving the returns have been stated or fully considered. Changes in the assumptions may have a material impact on the hypothetical returns presented.
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This data was obtained from the 2016 NACUBO-Commonfund Study of Endowments (NCSE). The study includes a survey of 805 U.S. colleges and universities. The study divided the data into six categories according to size of endowment, ranging from institutions with endowment assets under $25 million to those with assets in excess of $1 billion. Data is for the 2016 fiscal year (July 1, 2015 - June 30, 2016). The National Association of College and University Business Officers (NACUBO) is a membership organization representing more than 25,000 colleges, universities and higher education service providers across the country and around the world. The Commonfund Institute houses the education and research activities of Commonfund and provides the entire community of long-term investors with investment information and professional development programs. NCSE returns are presented net of fees and expenses.

Index performance results do not represent any managed portfolio returns. An investor cannot invest directly in a presented index, as an investment vehicle replicating an index would be required. An index does not charge management fees or brokerage expenses, and no such fees or expenses were deducted from the performance shown.

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The Higher Education Price Index (HEPI) is a measure of the inflation rate applicable to United States higher education; more precisely, the increase in costs in a defined basket of goods and services typically purchased by institutions of higher education. The index is calculated on a fiscal year basis ending each June 30, by the Commonfund Institute, a branch of Commonfund, a non-profit organization devoted to the management of college and university endowments.

The Russell 3000 Index measures the performance of the largest 3000 U.S. companies representing approximately 98% of the investable U.S. equity market. The Russell 3000 Index is constructed to provide a comprehensive, unbiased, and stable barometer of the broad market and is completely reconstituted annually to ensure new and growing equities are reflected.

The MSCI ACWI – Ex. U.S. Index is a market-capitalization-weighted index maintained by Morgan Stanley Capital International (MSCI) and designed to provide a broad measure of stock performance throughout the world, with the exception of U.S.-based companies. The MSCI All Country World Index Ex-U.S. includes both developed and emerging markets.

The Bloomberg Barclays U.S. Aggregate Bond Index is a benchmark index made up of the Barclays Capital Government/Corporate Bond Index, Mortgage-Backed Securities Index, and Asset-Backed Securities Index, including securities that are of investment-grade quality or better, have at least one year to maturity, and have an outstanding par value of at least $100 million.

Information on any indices mentioned can be obtained either through your consultant or by written request to information@feg.com.