Finance and Investment Oversight

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M.J. Murdock Charitable Trust

December, 2015
Oversight of Finances

• Primary Portion of Fiduciary Responsibly

• Understand Key Drivers of the Finances (Revenue and Expenses)

• Board Level Focused on How Annual Budget Fits with Long-Term Strategic Plan

• Focus on Major Line Items (don’t count paper clips)

• Investments included in the Budget

• Budget versus Actual (look at major variances)
How Boards and Staff Work Together

Board
• Ensures performance of mission and alignment of interests
• Provides adequate resources
• Exercise financial stewardship

Staff
• Ensures multi-year planning
• Adapts to changing needs of community
• Executes strategic plan
• Sets budget
• CEO manages up to Board and down to staff
Investment Oversight
Intergenerational Equity

“The trustees of an endowed institution are the guardians of the future against the claims of the present. Their task is to preserve equity among generations.”

James Tobin
Yale University 1974
## Informed Decision Making

### Policy Drivers | A Framework

<table>
<thead>
<tr>
<th>Four Levers</th>
<th>Intergenerational Equity</th>
<th>Median Spend</th>
<th>Volatility of Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Allocation</td>
<td>↑</td>
<td>↑</td>
<td>↓</td>
</tr>
<tr>
<td>Contributions</td>
<td>↑</td>
<td>↑</td>
<td>↓</td>
</tr>
<tr>
<td>Spending Rate</td>
<td>↑</td>
<td>↓</td>
<td></td>
</tr>
<tr>
<td>Spending Method</td>
<td></td>
<td></td>
<td>↓</td>
</tr>
</tbody>
</table>
Only Real Returns Matter
70% S&P 500, 30% Barclays U.S. Aggregate and 5.00% Spend (Hypothetical Portfolio)
January 1966 – March 2015

Cumulative Inflation-Adjusted Performance

• The equity portion of the hypothetical portfolio is based on monthly returns of the S&P 500 Index (12/65-current quarter end), and the fixed income portion is based on monthly returns of the Barclays U.S. Aggregate Index (01/73-current quarter end) and the Ibbotson Associates Long Term Corporate Bond Index (12/65-12/72). HEPI data from 07/06 to current quarter end is estimated using the Commonfund Institute method based on regression analysis. Returns for this hypothetical portfolio assume that it is rebalanced to 70/30 annually on 1/1/yy and 5% is distributed annually on 1/1/yy.

Source: Ibbotson, Bloomberg, Commonfund Institute
Only Real Returns Matter | The Quest for Alpha

70% S&P 500, 30% Barclays U.S. Aggregate and 5.00% Spend (Hypothetical Portfolio)
January 1966 – March 2015

Cumulative Value (Real Dollars)

+ 100 basis points

HEPI  CPI

$140

$104

$100

$86

$64

Original Market Line

Cumulative Inflation-Adjusted Performance

Source: Ibbotson, Bloomberg, Commonfund Institute

The equity portion of the hypothetical portfolio is based on monthly returns of the S&P 500 Index (12/65-current quarter end), and the fixed income portion is based on monthly returns of the Barclays U.S. Aggregate Index (01/73-current quarter end) and the Ibbotson Associates Long Term Corporate Bond Index (12/65-12/72). HEPI data from 07/06 to current quarter end is estimated using the Commonfund Institute method based on regression analysis. Returns for this hypothetical portfolio assume that it is rebalanced to 70/30 annually on 1/1/yy and 5% is distributed annually on 1/1/yy.
Can you achieve 100 Basis Points of Portfolio Outperformance over Traditional Indices?

Potential Sources of Outperformance (hypothetical example)

- Illiquid Alternative Strategies (19% of asset allocation)
- Traditional Equities and Fixed Income (64% of asset allocation)
- Liquid Alternative Strategies (17% of asset allocation)

<table>
<thead>
<tr>
<th>Basis Points</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-75</td>
<td>Traditional Equities and Fixed Income</td>
</tr>
<tr>
<td>25-35</td>
<td>Liquid Alternative Strategies</td>
</tr>
<tr>
<td>20-30</td>
<td>Illiquid Alternative Strategies</td>
</tr>
</tbody>
</table>

1 Asset allocations based on 2012 NACUBO-Commonfund Study of Endowments ($100-500 million cohort)
Strategic Issues to Be Addressed

- Return Objective
- Active versus Passive Investment Philosophy
- Level of Risk Tolerance
- How to Define Risk
- Allocation to Illiquids
- Execution Methodology
- Allocation to Alternatives (Hedge Funds)
- Social Investing Policies
- Spending Rate
- Oversight and Accountability
- Spending Method
## Spending Methods Used

**Fiscal Year Ending June 30, 2012**

### Total Institutions

<table>
<thead>
<tr>
<th>Method</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spend all current income</td>
<td>4%</td>
</tr>
<tr>
<td>Percentage of moving average</td>
<td>75%</td>
</tr>
<tr>
<td>Decide on appropriate rate each year</td>
<td>11%</td>
</tr>
<tr>
<td>Spend pre-specified percentage of beginning market value</td>
<td>4%</td>
</tr>
<tr>
<td>Average pre-specified percentage spent</td>
<td>5%</td>
</tr>
<tr>
<td>Last year’s spending plus inflation with upper and lower bands</td>
<td>4%</td>
</tr>
<tr>
<td>Weighted average or hybrid method (Yale/Stanford Rule)</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
</tr>
</tbody>
</table>

**Note:** Multiple responses allowed

**Source:** NCSE 2012

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Beware of Agency Risks

• One of the Most Important Jobs of Investment Committee

• Almost all of your agents have different objectives than you Institution

• Beware of these differences they lead to:
  - Narrow Bucket-ism
  - Short term-ism (is running rampant)
  - Indexation
  - Over diversification
  - Too liquid

• Develop Strategy for Value Add and Stick to it
  (This is not easy because you will underperform sometimes)

• Stay away from looking at Short-term returns
## Current View of Social Framework

- **Thematic Investments**
  - Focus on themes and sectors targeting specific market opportunities or trends

- **Program-Related and Impact Investing**
  - Invest in vehicles designed to generate positive social or environmental changes

- **Socially Responsible Investing (SRI)**
  - Avoid investments in potentially “objectionable” companies and/or industries

- **Environmental, Social and Governance (ESG) Integration**
  - Align portfolio with ESG factors that add value or are consistent with mission

### Intentions

- **Actions**
  - Identify and overweight in portfolio
  - Trading Strategies
  - Hedging Strategies
  - Identify private equity and debt vehicles aligned with mission

- **Investment Examples**
  - U.S. Industrial Renaissance
  - Nano Technology
  - Green Bonds
  - Direct Lending
  - Minority Managers
  - Empowering women
  - Tobacco
  - Firearms
  - Carbon-free Fund

- **Quant funds aligned with various E, S or G factors
  - Stranded Assets Swap
  - Clean Tech**
### ESG and Performance: Why Focus On E?

- TABLE: Based on 1st and 5th quintiles
- Source: Style Research, Past performance does not assure future results.
- Performance of ESG Portfolios | 5 Years to End July 2013

<table>
<thead>
<tr>
<th>Region</th>
<th>The “Good”</th>
<th>The “Bad”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S.</strong></td>
<td></td>
<td></td>
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<tr>
<td>E</td>
<td>117</td>
<td>93</td>
</tr>
<tr>
<td>S</td>
<td>89</td>
<td>106</td>
</tr>
<tr>
<td>G</td>
<td>94</td>
<td>116</td>
</tr>
<tr>
<td><strong>United Kingdom</strong></td>
<td></td>
<td></td>
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<tr>
<td>E</td>
<td>117</td>
<td>111</td>
</tr>
<tr>
<td>S</td>
<td>118</td>
<td>102</td>
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<tr>
<td>G</td>
<td>103</td>
<td>108</td>
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<tr>
<td><strong>Japan</strong></td>
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<td></td>
</tr>
<tr>
<td>E</td>
<td>103</td>
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<tr>
<td>S</td>
<td>102</td>
<td>91</td>
</tr>
<tr>
<td>G</td>
<td>95</td>
<td>109</td>
</tr>
<tr>
<td><strong>Eurozone</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>107</td>
<td>93</td>
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<tr>
<td>S</td>
<td>99</td>
<td>105</td>
</tr>
<tr>
<td>G</td>
<td>110</td>
<td>105</td>
</tr>
<tr>
<td><strong>World</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>110</td>
<td>96</td>
</tr>
<tr>
<td>S</td>
<td>96</td>
<td>104</td>
</tr>
<tr>
<td>G</td>
<td>98</td>
<td>109</td>
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<tr>
<td><strong>World Developed</strong></td>
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<td></td>
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<tr>
<td>E</td>
<td>111</td>
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<td>S</td>
<td>95</td>
<td>103</td>
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<tr>
<td>G</td>
<td>99</td>
<td>111</td>
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<td><strong>Emerging Markets</strong></td>
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<tr>
<td>E</td>
<td>103</td>
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<tr>
<td>S</td>
<td>96</td>
<td>112</td>
</tr>
<tr>
<td>G</td>
<td>95</td>
<td>104</td>
</tr>
<tr>
<td><strong>Asia Pacific ex-Japan</strong></td>
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<td></td>
</tr>
<tr>
<td>E</td>
<td>99</td>
<td>96</td>
</tr>
<tr>
<td>S</td>
<td>92</td>
<td>106</td>
</tr>
<tr>
<td>G</td>
<td>94</td>
<td>101</td>
</tr>
</tbody>
</table>
### ADOPTERS vs. NON-ADOPTERS

<table>
<thead>
<tr>
<th>Numbers in Percent</th>
<th>Total Institutions</th>
<th>Total</th>
<th>Private</th>
<th>Public</th>
<th>Total</th>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responding Institutions</td>
<td>191</td>
<td>52</td>
<td>41</td>
<td>11</td>
<td>139</td>
<td>77</td>
<td>62</td>
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<tr>
<td>Socially Responsible SRI</td>
<td>21</td>
<td>77</td>
<td>85</td>
<td>45</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>ESG</td>
<td>8</td>
<td>31</td>
<td>29</td>
<td>36</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Impact Investing</td>
<td>3</td>
<td>10</td>
<td>7</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Divestment of Fossil Fuels</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>None of the Above</td>
<td>69</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>94</td>
<td>92</td>
<td>97</td>
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<tr>
<td>Don’t Know</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Commonfund Study of Responsible Investing ---April 2015
Thoughts on Socially Responsible Investing

• Portfolio Theory States there has to be a risk/return give to a restricted universe

• Fiduciary Challenges
  – Previous and current Donors
  – Additional Cost of Administration
  – Very difficult to achieve

• Seldom Satisfies Constituent Base

• ESG is new SRI Pro Fiduciary

• Limited Divestment (Coal, Oil Sands)

• Alternative Donor Fund
ACTIVE VS. PASSIVE
Statement of problem

Solutions to Problems

• Don’t forget your advantages
• Target macro inefficiency
• Avoid index inefficiencies
• Exploit passive investor biases
• Pursue truly, not seemingly, active investment
Indexes are not Consistently Attractive
S&P 500 Performance Comparison to Institutional U.S. Large Cap Equity Funds Fiscal Year Ending June | Numbers in Percent (%)

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Quartile</td>
<td>9.29</td>
<td>24.6</td>
<td>6.1</td>
<td>34.3</td>
<td>17.0</td>
<td>-20.6</td>
<td>-6.5</td>
<td>22.9</td>
<td>12.1</td>
<td>11.8</td>
<td>23.3</td>
<td>3.5</td>
<td>-8.8</td>
<td>6.4</td>
<td>12.7</td>
<td>23.9</td>
</tr>
<tr>
<td>Median</td>
<td>7.93</td>
<td>21.8</td>
<td>3.9</td>
<td>31.4</td>
<td>14.1</td>
<td>-25.2</td>
<td>-10.5</td>
<td>20.9</td>
<td>10.0</td>
<td>8.9</td>
<td>20.3</td>
<td>0.8</td>
<td>-14.2</td>
<td>-6.3</td>
<td>8.7</td>
<td>20.9</td>
</tr>
<tr>
<td>Lower Quartile</td>
<td>6.03</td>
<td>19.8</td>
<td>0.6</td>
<td>28.9</td>
<td>11.7</td>
<td>-27.9</td>
<td>-13.7</td>
<td>18.5</td>
<td>8.4</td>
<td>6.5</td>
<td>18.2</td>
<td>-0.9</td>
<td>-17.4</td>
<td>-12.1</td>
<td>0.9</td>
<td>15.9</td>
</tr>
<tr>
<td>S&amp;P 500 Index</td>
<td>8.34</td>
<td>20.6</td>
<td>5.4</td>
<td>30.7</td>
<td>14.4</td>
<td>-26.2</td>
<td>-13.1</td>
<td>20.6</td>
<td>8.6</td>
<td>6.3</td>
<td>19.1</td>
<td>0.3</td>
<td>-18.0</td>
<td>-14.8</td>
<td>7.2</td>
<td>22.8</td>
</tr>
<tr>
<td>Percentile Rank*</td>
<td>44</td>
<td>67</td>
<td>34</td>
<td>57</td>
<td>47</td>
<td>60</td>
<td>70</td>
<td>57</td>
<td>71</td>
<td>76</td>
<td>66</td>
<td>57</td>
<td>78</td>
<td>90</td>
<td>56</td>
<td>39</td>
</tr>
</tbody>
</table>

Sources: Frank Russell institutional manager database, Bloomberg.
## Indexes are not Consistently Attractive

Returns | Active vs. Passive | Annualized Returns Ending June 2013

With and Without Survivorship Bias

<table>
<thead>
<tr>
<th></th>
<th>1 YEAR</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>15 YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With</td>
<td>W/Out</td>
<td>With</td>
<td>W/Out</td>
</tr>
<tr>
<td>Upper Quartile</td>
<td>24.6</td>
<td>24.6</td>
<td>8.6</td>
<td>10.6</td>
</tr>
<tr>
<td>Median</td>
<td>21.8</td>
<td>21.8</td>
<td>7.3</td>
<td>7.3</td>
</tr>
<tr>
<td>Lower Quartile</td>
<td>19.8</td>
<td>19.8</td>
<td>6.0</td>
<td>4.6</td>
</tr>
<tr>
<td>S&amp;P 500 Index</td>
<td>20.6</td>
<td>20.6</td>
<td>7.0</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Sources: Frank Russell institutional manager database, Bloomberg
Current Trend in Active Strategies

Some of the Outflows from Domestic Equity Mutual Funds Have Gone to ETFs

- Cumulative flows to and net share issuance of domestic equity mutual funds and index ETFs, billions of dollars; monthly, 2007–2014
- Note: Equity mutual fund flows include net new cash flow and reinvested dividends. Data exclude mutual funds that invest primarily in other mutual funds.
- Source: Investment Company Institute and Commonfund
Current Trend in Passive Strategies

Passive Strategies as a Percentage of Equity Mutual Fund Total Net Assets

Source: Investment Company Institute and Commonfund
Trends in Closet Indexing

Source: Petajisto, Antti. “Active Share and Mutual Fund Performance.”

Passive
Below 20%

Closet Indexers
20-40%
40-60%

Active
20-40%
40-60%
Why 73% of Endowments Actively Manage U.S. Equities
Investment Pool Assets and Benchmark Returns
11 Year Annualized Performance

Annualized Return

8

7

6

5

4

0 5 10 15 20

Standard Deviation

# Two Proof Points – Real World Equity Returns

<table>
<thead>
<tr>
<th></th>
<th>1 Year</th>
<th>3 Year</th>
<th>5 Year</th>
<th>10 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foundation A</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 31, 2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return</td>
<td>6.4%</td>
<td>12.2%</td>
<td>10.4%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Benchmark</td>
<td>5.4%</td>
<td>11.0%</td>
<td>9.3%</td>
<td>6.6%</td>
</tr>
<tr>
<td><strong>Foundation B</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>December 31, 2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return*</td>
<td>7.3%</td>
<td>20.7%</td>
<td>13.9%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Benchmark</td>
<td>5.5%</td>
<td>16.1%</td>
<td>10.8%</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

*Before Investment Management costs
# Active vs. Passive

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong></td>
<td><strong>2.</strong></td>
</tr>
<tr>
<td>Avoid Closet Indexers</td>
<td>Must have long term view for active management to be effective.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3.</strong></td>
<td><strong>4.</strong></td>
</tr>
<tr>
<td>Not all active managers are the same. Resources required.</td>
<td>Endowments are proof of positive relative performance.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5.</strong></td>
<td><strong>6.</strong></td>
</tr>
<tr>
<td>Cost and fees matter.</td>
<td>Alpha needed for Intergenerational Equity.</td>
</tr>
</tbody>
</table>
HEDGE STRATEGIES
Alternatives by Strategy
Steady Increase Alternatives Over 10-Years | 6/30/2013

Source: 2014 NACUBO-Commonfund Study of Endowments, values may not add to 100% due to rounding.
Growth of Hedge Funds
AUM (1990-2013)

Source: HFRI, Bloomberg
The Case for Hedge Funds
Jan 1990-Dec 2013

Cumulative Growth of $1
- HFRI Fund Weighted Composite Index
- Barclays U.S. Aggregate Index
- S&P 500 Index
- 3-Month U.S. T-bills

Source: HFRI, Bloomberg
The Case for Hedge Funds

Time Period Reset (Oct 2002-Dec 2013)

<table>
<thead>
<tr>
<th></th>
<th>Return</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hedge funds used by colleges and universities (avg)*</td>
<td>5.48%</td>
<td>7.6%</td>
</tr>
<tr>
<td>S&amp;P 500 Index</td>
<td>5.33%</td>
<td>16.7%</td>
</tr>
</tbody>
</table>

Last five years HFRI Fund of Fund  2.75%

S&P 500 13.95%

Source: HFRI, Bloomberg, *2013 NCSE
• Appendix
ALTERNATIVES
Alternatives Allocation

Steady Increase of Alternatives Over 10-Years | 6/30/2013

Source: NACUBO-Commonfund Study of Endowments, 2013
### January 2015 Periodic Table of Hedge Fund Returns

Total Returns Ranked in Order of Performance for Key Credit Suisse Hedge Fund Indices

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>20.46%</td>
<td>17.37%</td>
<td>47.35%</td>
<td>13.45%</td>
<td>-12.02%</td>
<td>10.97%</td>
<td>11.05%</td>
<td>11.05%</td>
<td>13.54%</td>
</tr>
<tr>
<td>2007</td>
<td>19.18%</td>
<td>18.06%</td>
<td>20.74%</td>
<td>13.45%</td>
<td>-13.92%</td>
<td>10.97%</td>
<td>11.05%</td>
<td>11.05%</td>
<td>13.54%</td>
</tr>
<tr>
<td>2008</td>
<td>20.25%</td>
<td>17.37%</td>
<td>17.37%</td>
<td>13.45%</td>
<td>-12.02%</td>
<td>10.97%</td>
<td>11.05%</td>
<td>11.05%</td>
<td>13.54%</td>
</tr>
<tr>
<td>2009</td>
<td>19.43%</td>
<td>17.37%</td>
<td>17.37%</td>
<td>13.45%</td>
<td>-12.02%</td>
<td>10.97%</td>
<td>11.05%</td>
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<td>13.54%</td>
</tr>
<tr>
<td>2010</td>
<td>20.25%</td>
<td>17.37%</td>
<td>17.37%</td>
<td>13.45%</td>
<td>-12.02%</td>
<td>10.97%</td>
<td>11.05%</td>
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</tr>
<tr>
<td>2011</td>
<td>20.25%</td>
<td>17.37%</td>
<td>17.37%</td>
<td>13.45%</td>
<td>-12.02%</td>
<td>10.97%</td>
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<td>13.54%</td>
</tr>
<tr>
<td>2012</td>
<td>20.25%</td>
<td>17.37%</td>
<td>17.37%</td>
<td>13.45%</td>
<td>-12.02%</td>
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<td>11.05%</td>
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<td>13.54%</td>
</tr>
<tr>
<td>2013</td>
<td>20.25%</td>
<td>17.37%</td>
<td>17.37%</td>
<td>13.45%</td>
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<td>13.54%</td>
</tr>
<tr>
<td>2014</td>
<td>20.25%</td>
<td>17.37%</td>
<td>17.37%</td>
<td>13.45%</td>
<td>-12.02%</td>
<td>10.97%</td>
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<td>11.05%</td>
<td>13.54%</td>
</tr>
<tr>
<td>2015</td>
<td>20.25%</td>
<td>17.37%</td>
<td>17.37%</td>
<td>13.45%</td>
<td>-12.02%</td>
<td>10.97%</td>
<td>11.05%</td>
<td>11.05%</td>
<td>13.54%</td>
</tr>
</tbody>
</table>

Source: 2015, Credit Suisse Hedge Index LLC.
VENTURE CAPITAL STRATEGIES
Venture Capital Landscape
Fundraising and Market Correlations

Correlations
Venture Capital & Russell 2000 Index
5-Year Rolling | Jan 2000 - Sept 2013

Fundraising
Venture 1992-2013
Dollars in Billions

Sources: VentureSource, Bloomberg, Thomson One.com
Illiquidity Premium | Venture Capital
Public Market Equivalent (PME)

Research Findings
Has Persistence Persisted in Private Equity?

PME Range* Tale of Two Decades

1.99 1990s
1.36 25 year average
0.91 2000s

Research Findings
2013 NACUBO-Commonfund Study of Endowments

Time-weighted return (Y0Y)
10-years ended 6/30/2013

<table>
<thead>
<tr>
<th>Equity Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>7.9%</td>
</tr>
<tr>
<td>Venture</td>
<td>5.8%</td>
</tr>
</tbody>
</table>

Source: Has Persistence Persisted in Private Equity?, April 2013

Persistence in Performance** | Are there good GPs? Historically, yes!

<table>
<thead>
<tr>
<th>Current Fund Quartile</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Total</th>
<th>PME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>49.4%</td>
<td>20.5%</td>
<td>16.9%</td>
<td>13.3%</td>
<td>100%</td>
<td>2.85</td>
</tr>
<tr>
<td>2</td>
<td>28.0%</td>
<td>32.0%</td>
<td>26.7%</td>
<td>13.3%</td>
<td>100%</td>
<td>1.38</td>
</tr>
<tr>
<td>3</td>
<td>27.0%</td>
<td>30.2%</td>
<td>22.2%</td>
<td>20.6%</td>
<td>100%</td>
<td>1.34</td>
</tr>
<tr>
<td>4</td>
<td>3.9%</td>
<td>23.5%</td>
<td>27.5%</td>
<td>45.1%</td>
<td>100%</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Previous Fund Quartile PME

Source: Has Persistence Persisted in Private Equity?, April 2013
PRIVATE EQUITY STRATEGIES
Private Equity Landscape
Fundraising and Market Correlations

Correlations
All Private Equity & S&P 500 Index
5-Year Rolling | Jan 2000 - Mar 2013

Fundraising
U.S. Private Equity 1988-2013
Dollars in Billions

Sources: VentureSource, Bloomberg, Thomson One.com

Governance Workshop Missoula MT
Illiquidity Premium | Private Equity
Public Market Equivalent (PME)

**Research Findings**
Private Equity Performance: What Do We Know?
PME Range*

1.27

≈ Approximately 3% per year

PME Top Quartile = 1.42

Double the median

1.20

**Research Findings**
2013 NACUBO-Commonfund Study of Endowments

**Time-weighted return (YOY)**
10-years ended 6/30/2013

<table>
<thead>
<tr>
<th>Equity Type</th>
<th>7.9% Public</th>
<th>S&amp;P 500 Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.4% Private</td>
<td>2012 NCSE</td>
<td>All Respondents</td>
</tr>
<tr>
<td>11.1% Private</td>
<td>2012 NCSE</td>
<td>&gt;$1 Billion cohort</td>
</tr>
</tbody>
</table>

Source: Burgiss data, Private Equity Performance: What Do We Know? working paper by entitled Harris, Jenkinson and Kaplan; for vintage years 1984 through 2008 with performance through March 2011.
Commonfund Long- and Medium-Term Return Return Forecasts

Commonfund Point-of-View

**Investment Strategies**

<table>
<thead>
<tr>
<th>Equity</th>
<th>Fixed Income</th>
<th>Diversifying</th>
<th>Real Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth</td>
<td>Deflation</td>
<td>Diversification</td>
<td>Inflation</td>
</tr>
</tbody>
</table>

- **Long-Term (20-year)** / **Policy** – estimates based upon historical returns, the academic literature, the expected future equilibrium macroeconomic environment and expected active management excess return.
- **Medium-Term (5-Year) / Cyclical** – estimates based upon historical returns, the academic literature, current valuations, the expected medium term macroeconomic environment and expected active management excess return.
- **Forecasts** are as of January 2014 and runs through end of 2018. (As of August 2014)
Advantages of Long-Term Institutional Investors

1. Institutional investors have a longer timeframe than individuals who tend to have shorter timeframes
2. Unsophisticated investors buy winners/sell losers at inefficient horizons
3. The appeal of dividends and capital gains varies with investor type
4. Most institutional investors do not pay taxes
5. Fees and liquidity can be better for institutional investors
The Rise of the Behaviorists

“Be fearful when others are greedy and greedy when others are fearful”
Do Valuations Matter

P/E and Total Return Over 5-yr. Annualized Periods
Quarterly, 1W 1952 to 1Q 2008

Source: BEA, FRB, J.P. Morgan Asset Management. Data are as of 6/30/2013
Avoid Index Inefficiencies

• **Equities**
  • Market weights not equal-weighted
  • Periodic reconstitution creates telegraphed demands for liquidity (buys, sells)
    – Example 1: Equal-Weight vs. Cap-Weight S&P 500 Index
    – Example 2: Russell 2000

• **Fixed income**
  • Index constituents driven by issuance
  • Index additions occur month end, issuance continuous
  • Odd lots and idiosyncratic plays remain outside indexes
    – Example: JGBs in Citi WGBI
Market Cap vs. Equal Weight
Cumulative Return Chart (02/2004 to 01/2014)

Growth of a Dollar

- Cap Weight
- Equal Weight

Source: Pertrak
What’s In an Index?
Russell Equity Index Market Cap Breaks Not Where You Might Have Expected

Smallest Large Caps < Largest Small Caps

- Bottom 50, Russell 1000
- Top 50, Russell 2000

Market Cap ($mm)

- Market Cap
- Total Sales
- Total Net Income

Divergence at Time of ETF Launch?

- Lowest Market Cap, Russell 1000
- Highest Market Cap, Russell 2000

Source: Horizon Research Group, 2013
Emerging Markets’ Capitalization

Source: MSCI, Bloomberg as of January 31, 2014
Pursue Truly, Not Seemingly, Active Investment

• Passive increasing

• Tracking error and active share both informative about performance

• High active share, low tracking error ideal

• Successful managers need skill, conviction and opportunity
Active Share, Tracking Error and Passive Management

- **Active Share**
  - High
  - Low
  - 0

- **Tracking Error**
  - Low
  - High

- **Diversified stock pickers**
- **Concentrated Stock pickers**
- **Closet indexing**
- **Pure indexing**
- **Factor bets**

Source: Cremers-Petajisto, 2009
Greater Performance Persistence for Active Funds
Excess Net Returns (relative to benchmark after expenses)

Source: Martijn Cremers, Mendoza College of Business; Univ. of Notre Dame
Strategy/Asset Class | Annualized Returns
Over 20 Year Period (1995-2014)

- Source: Blackrock and Dalbar. Average Investor is represented by Dalbar's average asset allocation investor return for retail mutual funds and Commonfund