Considering alternatives

Lessons from the endowment model

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Alternatives continue to grow

Global AUM of key alternative asset classes, 2005–2013

* Vehicles providing non-accredited investors with exposure to alternatives strategies via registered vehicles: mutual funds, closed-end funds and ETFs.

Source: McKinsey Global Asset Management Growth Cube; Preqin; HFR

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Yale’s asset allocation

Yale asset allocation and value of $100 beginning 1985


Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

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The endowment universe is highly skewed

Endowments by assets and population

90% of all endowments are small or medium

Source: Small (assets under $100 million), medium (assets from $100 million to $1 billion) and large (assets greater than $1 billion) cohorts compiled by Vanguard using the NACUBO-Common fund Study of Endowments. Data as of June 2013.
Large endowments have driven overall success

Annualized returns of endowments by size cohort

Notes: All data for fiscal years ended June 30, 2013.

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Notes: Alternative strategies are defined as: Private equity (leveraged buyouts, mezzanine, merger-and-acquisition funds, and international private equity); marketable alternative strategies (hedge funds, absolute return, market-neutral, long/short, 130/30, event-driven, and derivatives); venture capital; private equity real estate (non-campus); energy and natural resources (oil, gas, timber, commodities, and managed futures); and distressed debt. On-campus real estate is excluded.
Most funds of hedge funds have under performed

Fund of hedge funds relative to a 60/40 benchmark, 1994–2013

Source: Hedge fund, fund of funds dataset retrieved from TASS for a sample size of 2,921, from January 1, 1994 to December 31, 2013.

Note: Return difference is simple the arithmetic difference between the two geometric annual return figures (fund of fund minus 60/40 portfolio) and the same for volatility difference (fund of fund annual volatility minus 60/40 annual volatility). To be included in the sample, a hedge fund must have had at least 36 months of history; however, this filter doesn’t material change the distribution shown above (refer to the appendix). All fund of funds are compared to a 60/40 balanced portfolio during their existence. The 60/40 balanced portfolio excludes cost, and is composed of a 60% equity portfolio and a 40% fixed income portfolio. The equity portfolio is composed of a 70/30 split between domestic (Spliced Total Stock Market) and an international equity (Spliced Total International Stock Index), respectively. The 40% fixed income is the U.S. Barclay’s Aggregate index.

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Private and public equity results are very similar

Private equity performance, 1980–2012

Performance results are for January 1, 1980, through December 31, 2012. Total sample size excluding funds with only one cash flow observation was 2,177. Annualized total return from January 1, 1980, through December 31, 2012, as represented by Dow Jones U.S. Total Equity Market Index (formerly known as the Dow Jones Wilshire 5000 Index) through April 22, 2005; MSCI US Broad Market Index through December 31, 2012. Private equity returns are calculated using a standard IRR (internal rate of return), a dollar-weighted return approach based on aggregated annual cash flows for each private equity fund. The public-market-equivalent (PME+) figures are based on an approach that calculates the hypothetical dollar-weighted return that would have been achieved by investing in a public equity index when the private equity fund makes a capital call and selling a public equity index when capital is distributed back to the investor (Rouvinez, 2003; Ellis, Pattni, and Tailor, 2012).

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Hedge fund correlation has been rising vs. a balanced portfolio

Hedge funds correlation, 1994–2013

All hedge fund categories in the Lipper TASS database were considered for this analysis. To be included in the sample of 5,460 hedge funds, each fund had to have at least 60 months (20 quarters) of continuous history. All funds were compared to a 60% stocks/40% bonds balanced portfolio. The 60%/40% balanced portfolio excludes cost. Stocks were apportioned 70% domestic stocks/30% international stocks, as follows: Domestic equity represented by Spliced Total Equity Market Index (Dow Jones U.S. Total Stock Market Index —formerly known as Dow Jones Wilshire 5000 Index—through April 22, 2005; MSCI US Broad Market Index through June 2, 2013; and CRSP US Total Market Index through June 30, 2014). International equity represented by Spliced Total International Equity Index (Total International Composite Index through August 31, 2006; MSCI EAFE and Emerging Markets Index through December 15, 2010; MSCI ACWI ex USA IMI Index through June 2, 2013; and FTSE Global All Cap ex US Index through June 30, 2014). Fixed income represented by Barclays U.S. Aggregate Bond Index. Purple line shows median rolling correlation against all funds that existed in each time period, and blue shading is the 25th to 75th interquartile range. Each cross-section represents a distribution of correlations across all funds in existence for that period. The analysis spans January 1, 1994, through June 30, 2014, using a rolling 12-quarter period for each fund. Trend line is based on ordinary least squares (OLS) regression of cross-sectional medians.

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Private equity correlations are high

Private equity correlation relative to public equity, 2000–2014

Notes: Correlations are calculated using a rolling five-year correlation based on three-year geometric returns, December 31, 2000, through March 31, 2015. Private equity is represented by Preqin Quarterly Index, public equity represented by Standard & Poor's 500 Index. Time period 9/3/2000 to 3/31/2014.

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Private alternative distributions are wide

Notes: Active fixed income and active equity distributions are based on data provided by Morningstar, for mutual funds domiciled in the U.S. between Jan. 1994 to July 2014. Equity market neutral, dedicated short bias, fixed income arbitrage, convertible arbitrage, event driven, global macro, managed futures, long/short equity and emerging markets distributions are based on data provided by TASS, for hedge funds in existence between Jan. 1994 to July 2014 all U.S. Dollar denominated funds were considered dead or alive in each respective category. Buyout, real estate and venture capital distributions are based on data provided by Preqin. Each distribution is based on an IRR (Internal Rate of Return) calculation from a series of annual cash flows from each fund. Private equity funds which are still alive, the IRR calculation are based on an ending NAV value. Each distribution has been adjusted where the median resides at point zero to emphasize the dispersion. Source: Vanguard Investment Strategy Group.
Private alternatives are active management

Relationship of asset classes to alternative investments

<table>
<thead>
<tr>
<th>Asset class</th>
<th>Equity</th>
<th>Fixed income</th>
<th>Cash</th>
<th>Real estate</th>
<th>Commodities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>Stocks</td>
<td>Bonds</td>
<td>Money market instruments</td>
<td>Equity REITs</td>
<td>Commodity futures</td>
</tr>
<tr>
<td>Private</td>
<td>Private equity</td>
<td></td>
<td></td>
<td>Private real assets</td>
<td>Hedge funds</td>
</tr>
</tbody>
</table>

Source: Vanguard Investment Strategy Group.

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Alpha has been a key driver of large endowment success

Average endowment alpha by size of institution, 2003–2011

Note: HighVista calculated alpha by regressing endowment fund asset class returns against custom benchmarks of public security indexes.

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Large endowments have 3 key advantages

1. Investment expertise

2. Pricing power

3. Access

“Price alone is a reason not to talk with a manager”

First-mover advantage

96% direct

Source: Vanguard research and NACUBO, 2012.
Note: On average, large endowments employ ten full-time investment professionals, while small and medium endowments employ less than one. Ninety-six percent of hedge fund investments made by large endowments are direct (i.e., not via funds-of-funds), while only 50% of hedge fund investments made by small endowments are direct.
Low-cost public funds have performed well vs most endowments

Annualized returns of low-cost active balanced funds versus median and small endowments

<table>
<thead>
<tr>
<th>Percent (%)</th>
<th>5 Years</th>
<th>10 Years</th>
<th>15 Years</th>
<th>20 Years</th>
<th>25 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small endowments</td>
<td>6.0%</td>
<td>6.6%</td>
<td>5.8%</td>
<td>8.0%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Medium endowments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest-decile-cost funds</td>
<td></td>
<td></td>
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</tbody>
</table>

Notes: All data for fiscal years ended June 30, 2013. Results for other periods will vary. Past performance is no guarantee of future returns. There may be other material differences between products that must be considered prior to investing.
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The portfolio construction process with alternatives

Private alternative investments require a thorough, bottom-up approach

Source: Vanguard
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## Conclusion

<table>
<thead>
<tr>
<th>Private alternatives are a more complex form of active management</th>
<th>On average, private alternatives have under performed the public markets</th>
<th>Manager selection, not strategic allocation, is key to success</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a result, low cost public investments remain a viable solution</td>
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