



Endowments Quarterly

A Look at Asset Allocation and Total Returns
for US Endowments and Foundations

First Quarter 2017

CAMBRIDGE



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The Cambridge Associates US endowment and foundation universe includes colleges and universities, cultural and environmental institutions, health care institutions, independent schools, and other endowed nonprofit institutions as well as foundations. This report provides asset allocation and return analyses for 413 US endowments and foundations that participated in our quarterly survey. The average market value of participating long-term investment portfolios was \$1.2 billion. The median value was \$277.2 million.

Examining Returns

The mean return of the US endowment and foundation universe was 4.5% for the quarter ended March 31, 2017.¹ Trailing one-year returns averaged 11.4%. Returns for the trailing one-year period ranged from 14.1% at the 5th percentile to 9.0% at the 95th percentile.

Per the Consumer Price Index, the rate of inflation was 1.0% for first quarter 2017 and 2.4% for the trailing one-year period. Adjusting nominal returns to reflect inflation, the average real return for US endowments and foundations falls to 3.5% for the first quarter and to 8.9% for the trailing one-year period.

Risk-Adjusted Performance. Risk-adjusted performance is important to evaluate as it measures the total return relative to the total amount of risk taken by the portfolio. The most common approach to measuring risk-adjusted performance is by the Sharpe ratio, which shows how much return above the risk-free rate (T-bills) the investor has earned per unit of risk (defined as the standard deviation of returns). The higher the Sharpe ratio, the more the investor has been compensated for each unit of risk taken.

¹ Returns are reported on a net of fees basis for 99% of the US endowment and foundation universe.

Risk-adjusted performance comparisons can be complicated when portfolios have significant allocations to private investments. The frequency and timing of private investment valuations can artificially dampen the standard deviation of returns for these assets. Thus, a portfolio with high allocations to private investments can yield a lower volatility statistic that does not fully represent to the amount of risk the portfolio has actually taken. For this reason, we have split institutions out into subcategories in Exhibit 13 based on their allocations to private investments.

Institutions that had an allocation of 15% or more to private investments over the last five years reported an average Sharpe ratio of 1.44, significantly higher than that of the other subgroups with smaller private allocations. While the magnitude of the differences in average Sharpe ratios is partly a function of this group's higher average five-year return, it is also attributable to its lower average standard deviation.

Trailing One-Year Results

Asset allocation is a key contributor to the total return that a portfolio earns. Exhibit 7 explores this relationship and illustrates how general asset allocation structures vary across the four performance quartiles of the overall participant group. In this exhibit, each institution's asset allocation was averaged across the beginning and ending points for the trailing one-year period. The four quartiles in the heat map table represent the average of the institutions within each quartile.

The chart of index returns in Exhibit 7 provides the context of the market environment for the period. Private investment indexes are pooled horizon IRRs net of fees, expenses, and carried interest, while public indexes are

time-weighted returns. Included alongside the private benchmark IRRs are public market returns on a modified public market equivalent basis (mPME). The CA mPME replicates private investment performance under public market conditions and allows for an appropriate comparison of private and public market returns.² The mPME analysis evaluates what return would have been earned had the dollars invested in private investments been invested in the public market index instead. Private equity and private real estate outperformed their respective mPME reference index for the trailing one-year period, while venture capital significantly underperformed public small-cap equities.

Public equities had a strong rally over the trailing year—the Russell 3000®, MSCI EAFE, and MSCI Emerging Markets indexes each generated double-digit returns. Returns for private equity indexes were mixed with non-venture private equity performing strongly but venture capital returning in the low single digits. With the combined public and private equity allocations accounting for over half (54%) of the average portfolio, the differential in returns between public and private equities led to much of the variation of asset allocations between the top and bottom performers for the trailing one-year period. Endowments and foundations that posted a trailing one-year return in the top quartile had the highest combined average allocation to US equities, global ex US developed equities, and emerging markets equities (49.3%) and the lowest average allocation to private equity and venture capital

² Under the CA mPME methodology, the public index's shares are purchased and sold according to the private fund cash flow schedule, with distributions calculated in the same proportion as the private fund, and mPME net asset value is a function of mPME cash flows and public index returns.

(6.6%). In contrast, those in the bottom quartile had the highest average allocations to PE & VC (10.8%) and the lowest allocation to combined public equities (41.4%).

One-Year Attribution. While asset allocation is a key driver of performance, it does not fully explain the variation of returns that are reported across different institutions. The execution or implementation of an asset allocation strategy also contributes to the total returns that portfolios earn. While we do not have the level of detailed data that is necessary to perform a precise attribution analysis, our data do allow us to conduct an estimated analysis that can help illuminate the main drivers of performance for the trailing one-year period.

Exhibit 8 illustrates the results of an estimated attribution analysis based on the one-year return and beginning fiscal year asset allocation of 397 endowments and foundations that provided sufficient data. The portion of the mean participant return that can be attributed to asset allocation is calculated using a blend of representative asset class benchmarks weighted according to each institution's asset allocation. The return from other factors is calculated by subtracting the mean asset allocation return from the mean participant return. This "other" portion of returns is principally driven by implementation or execution decisions, which can include active management and manager selection.³

³ This model assumes that flows to and from investment managers take place on the last day of the fiscal year. In addition, the analysis uses a standard set of asset class benchmarks that may be more or less representative of the asset allocation policy across different institutions. Therefore, the portion of returns from other factors may also include some residual/unattributable asset allocation effects.

The attribution analysis estimates that the vast majority of trailing one-year total return for the mean participant group could be explained by asset allocation. US equities, which returned 18.1% and had one of the highest allocations among the detailed asset classes, had the greatest impact of all the asset class return contributors (3.9%). Notably, all detailed asset classes except for global ex US developed bonds contributed positively to the portion of return earned from asset allocation.

Exhibit 8 also provides a breakdown of the attribution data into the four performance quartiles of the overall group, which highlights the different experiences among institutions. The top performance quartile had the highest mean asset allocation return (11.5%) while the bottom performance quartile had the lowest (10.2%). The model estimates that implementation decisions were responsible for a greater portion of the dispersion in performance between top and bottom performers. On average, the top quartile of performers added 1.9% through implementation decisions while the bottom quartile lost value (-0.7%).

A Note on Performance Reporting

Methodologies. The methodology by which private investment returns are reported can have an impact on peer performance statistics, particularly for trailing one-year periods and shorter. Most participants with private investment allocations in this study reported their trailing one-year private investment returns on a partial basis. Under this method, only three quarters of private returns are incorporated for the trailing one-year period. As March 31 valuations become available, first quarter returns will be restated to reflect actual private performance. The lagged basis was the second most frequently used methodology for institutions with private investment allocations. For these

investors, the trailing one-year return included four quarters of private investment performance (January 1, 2016, to December 31, 2016).

The key difference between these two methodologies is the extra quarter of private investment performance that is incorporated into the lagged basis methodology. For the trailing one-year return that extra quarter was first quarter 2016, a quarter in which only one of the four private indexes (real estate) generated performance above 0%. A portfolio using the lagged methodology would likely report a lower trailing one-year return relative to that calculated using the partial methodology. The impact of using the lagged basis methodology relative to the partial basis methodology will depend on each institution's allocation to the various private strategies as well as its investment return within these strategies.

Cambridge Associates Private Investment Index Returns

	One Quarter				
	End-to-End Pooled Return (%)				
	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017
US Private Equity	0.1	4.0	3.9	4.5	NA
US Venture Capital	-3.3	0.5	3.3	-0.1	NA
Real Estate	2.3	1.4	1.9	1.2	NA
Natural Resources	-2.0	6.4	3.8	7.6	NA

Lagged Basis Partial Basis

Source: Cambridge Associates LLC.

Note: NA indicates data were not available.

Trailing Ten-Year Results

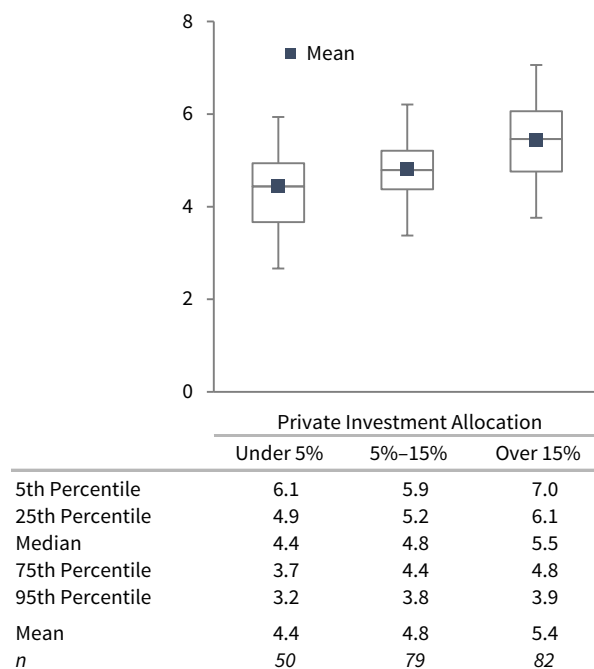
As noted earlier, asset allocation can be a factor in the variation in returns reported across the participant group. Although the analysis of asset allocation structures on a one-year basis is informative, this short-term analysis can lead to different results from one period to the next as market conditions shift. To investigate the impact of asset allocation policies on long-term investment performance, an analysis of data over an extended period is most suitable. Exhibit 9 breaks the participant group down into four quartiles based on the trailing ten-year investment return. Each institution's asset allocation was averaged across the 11 March 31 periods that fell from 2007 to 2017. The four quartiles in the heat map table represent the average of the institutions within each quartile.

Among the asset class benchmarks, most private investment strategies outperformed their public market counterparts on an mPME basis over the past ten years. Accordingly, the top quartile of performers over the ten-year period reported the highest average allocation to illiquid private investments, while the bottom quartile reported the lowest average allocation to these strategies. Institutions that place significant emphasis on peer performance statistics should note the distinction in average asset allocation policies between top and bottom performers, particularly among private investments.

The figure on the right organizes participants into three subgroups based on each institution's trailing ten-year average allocation to private investments. The median ten-year return for portfolios with an allocation of over 15% to private investments was 5.5%, approximately 110 basis points higher than the median return reported by portfolios with little to no private investment allocation. The distribution of

Range of Ten-Year Returns by Private Investment Allocation

As of March 31, 2017 • Percent (%)



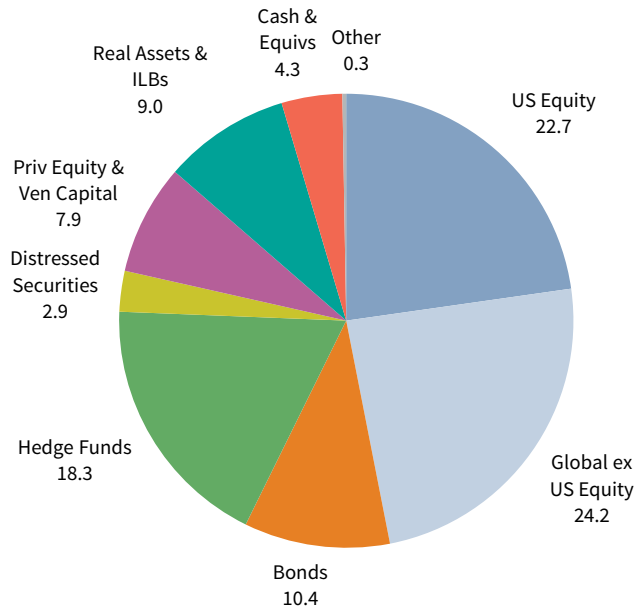
Source: Endowment and foundation data as reported to Cambridge Associates LLC.
Notes: Each institution's private investment allocation represents the mean for the 11 March 31 periods from 2007 to 2017. Returns are annualized.

returns for the three subgroups shows a wide range of results, a disclaimer that portfolios with high allocations to private investments can underperform the overall peer group, while those with low private investment allocations can outperform. However, these ten-year analyses show that allocations to private investments generally are a key factor in a portfolio's relative performance within the overall participant group over the long-term. Institutions that benchmark peer performance should consider the subgroup median that aligns with their own private investment allocation as an alternative or complement to the peer medians that they already use.

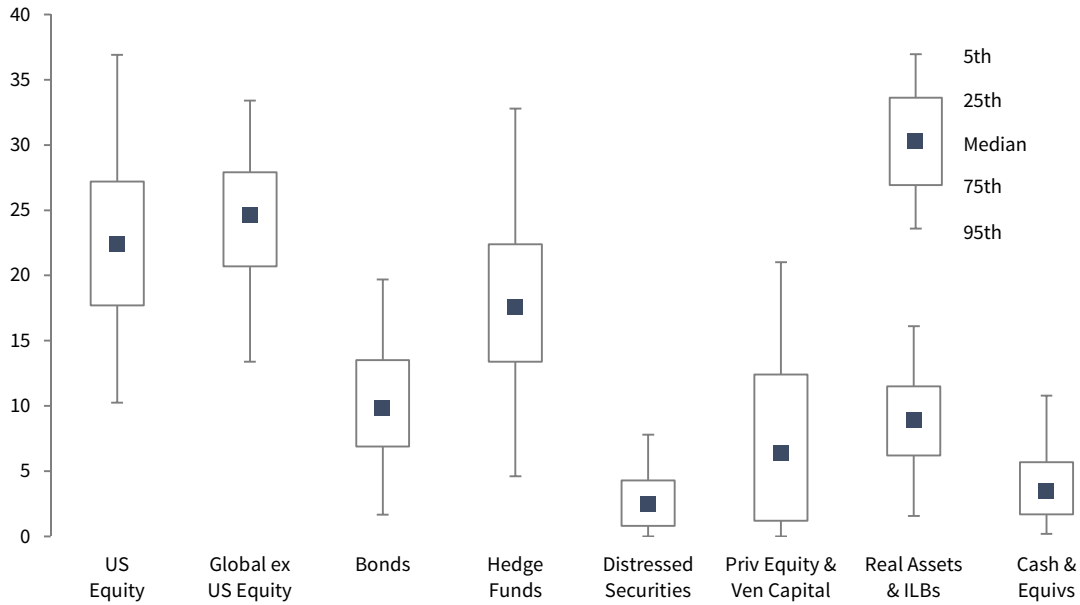
Ten-Year Attribution. The attribution model also points to an outperforming asset allocation structure for the top performance quartile over the last decade. Additionally, the model suggests that implementation decisions were responsible for most of the dispersion in performance between top and bottom performers over this long-term period. Exhibit 10 shows that the top performance quartile had a mean asset class return of 4.4%, approximately 0.9 percentage point higher than the bottom performance quartile. The top performance quartile also added another 1.8% through implementation decisions while the bottom performance quartile added little value (0.2%) through active management of the portfolio. ■

Exhibit 1. Asset Allocation Snapshot: US Endowments and Foundations
 As of March 31, 2017 • Percent (%)

Mean Asset Allocation



Distribution by Asset Class: Asset Allocation

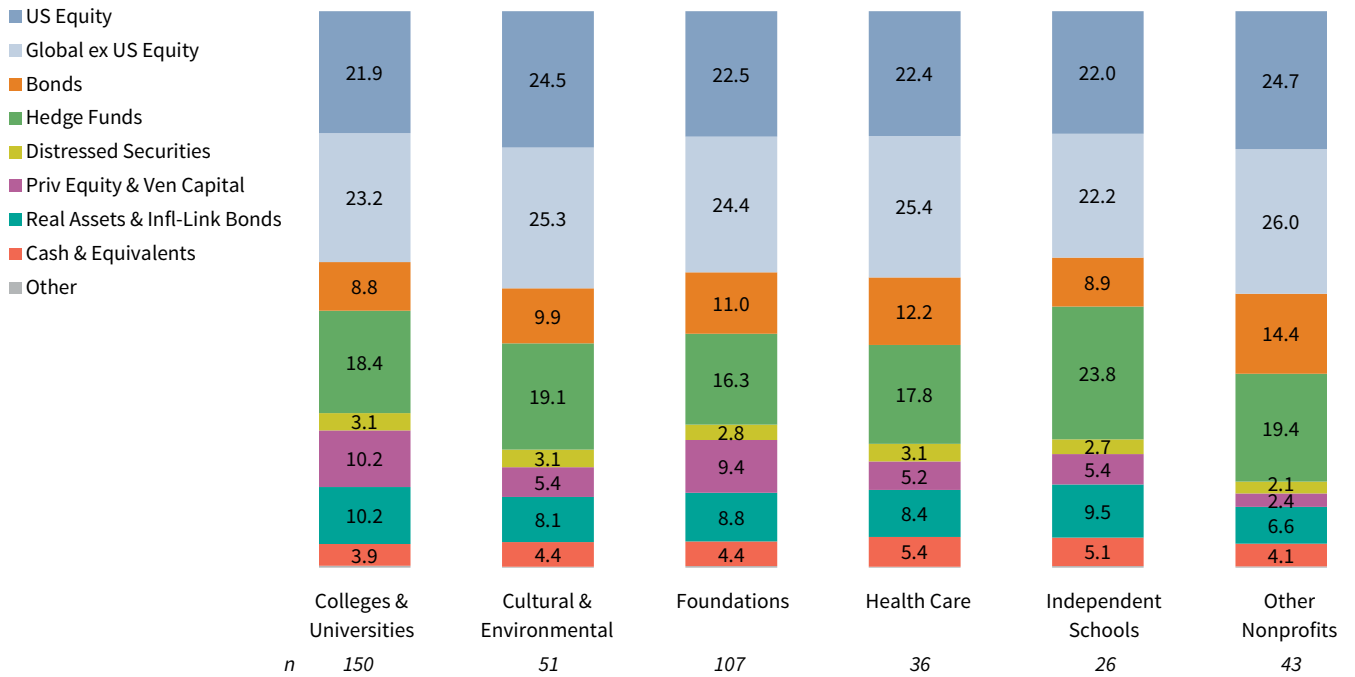


Source: Endowment and foundation data as reported to Cambridge Associates LLC.
 Note: Analysis includes data for 413 institutions.

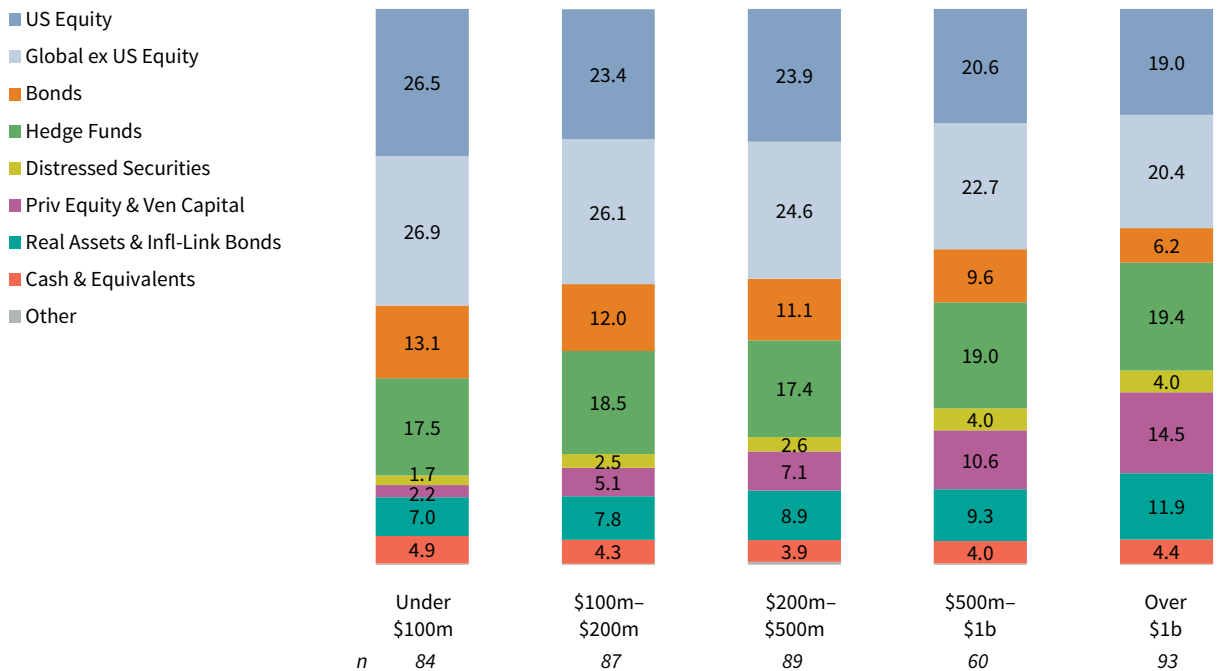
Exhibit 2. Summary Asset Allocation: US Endowments and Foundations

As of March 31, 2017 • Percent (%)

By Peer Group



By Asset Size



Source: Endowment and foundation data as reported to Cambridge Associates LLC.

Exhibit 3. Detailed Asset Allocation by Peer Group: US Endowments and Foundations
As of March 31, 2017 • Percent (%)

	Colleges & Universities		Cultural & Environmental		Foundations		Health Care		Independent Schools		Other Nonprofits	
	<i>n</i> 150		51		107		36		26		43	
	Mean	Med	Mean	Med	Mean	Med	Mean	Med	Mean	Med	Mean	Med
US Equity	21.9	21.9	24.5	22.8	22.5	22.1	22.4	22.8	22.0	20.3	24.7	26.1
Global ex US Equity	23.2	23.4	25.3	26.0	24.4	24.5	25.4	25.0	22.2	21.1	26.0	26.6
Developed Markets	15.6	15.4	17.0	17.5	16.3	16.7	18.1	17.4	15.3	14.0	18.3	18.0
Emerging Markets	7.6	7.5	8.2	8.7	8.1	8.3	7.3	7.4	6.9	6.3	7.7	7.8
Bonds	8.8	8.8	9.9	8.8	11.0	9.8	12.2	11.9	8.9	9.7	14.4	12.5
US Bonds	7.6	7.9	8.4	8.4	9.6	9.2	10.3	9.9	8.1	8.5	12.0	10.8
Developed Markets ex US	0.5	0.0	0.2	0.0	0.4	0.0	0.5	0.0	0.2	0.0	0.8	0.0
Emerging Markets	0.3	0.0	0.6	0.0	0.4	0.0	0.7	0.0	0.3	0.0	1.0	0.6
High-Yield Bonds	0.4	0.0	0.6	0.0	0.6	0.0	0.7	0.0	0.2	0.0	0.6	0.0
Hedge Funds	18.4	17.8	19.1	18.8	16.3	15.9	17.8	17.3	23.8	24.4	19.4	18.9
Long/Short Hedge Funds	8.3	7.3	8.3	7.6	7.3	6.8	8.0	7.6	11.7	9.3	8.3	8.3
Absolute Return (ex Distressed)	10.1	9.9	10.8	10.4	9.0	8.7	9.7	10.1	12.1	10.3	11.1	11.2
Distressed Securities	3.1	2.4	3.1	2.9	2.8	2.6	3.1	2.3	2.7	1.5	2.1	1.7
Hedge Fund Structure	1.8	1.5	2.2	1.9	1.7	1.4	2.3	1.8	1.3	0.8	1.5	1.6
Private Equity Structure	1.3	0.8	0.9	0.4	1.1	0.7	0.9	0.0	1.4	0.8	0.6	0.0
Private Equity & Venture Capital	10.2	9.8	5.4	3.3	9.4	7.2	5.2	2.4	5.4	4.9	2.4	0.4
Non-Venture Private Equity	5.1	4.5	2.6	1.6	3.6	2.8	2.5	1.0	3.0	2.0	0.8	0.0
Venture Capital	4.3	3.5	2.0	0.5	4.8	2.7	2.1	0.9	1.8	1.2	1.2	0.0
Other Private Investments	0.8	0.1	0.8	0.1	1.1	0.3	0.6	0.0	0.7	0.1	0.4	0.0
Real Assets & Infl-Linked Bonds	10.2	9.8	8.1	8.3	8.8	8.9	8.4	8.0	9.5	8.3	6.6	6.5
Private Real Estate	2.4	1.8	1.1	0.2	2.0	0.9	1.8	0.3	2.0	0.1	0.5	0.0
Public Real Estate	0.6	0.0	0.5	0.0	0.4	0.0	0.5	0.0	0.2	0.0	0.7	0.0
Commodities	0.7	0.0	0.7	0.0	1.0	0.0	0.5	0.1	0.7	0.1	0.7	0.0
Inflation-Linked Bonds	0.5	0.0	0.8	0.0	0.3	0.0	0.6	0.2	0.4	0.0	0.6	0.0
Priv Oil & Gas/Natural Resources	3.0	2.7	1.8	0.4	2.1	1.3	1.4	0.4	2.5	1.8	0.9	0.0
Timber	0.3	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0
Public Energy/Natural Resources	2.8	2.5	3.2	2.7	2.8	2.2	3.5	3.3	3.6	3.1	3.2	3.1
Cash & Equivalents	3.9	3.3	4.4	3.9	4.4	3.2	5.4	4.0	5.1	4.9	4.1	3.2
Other Assets	0.3	0.0	0.2	0.0	0.3	0.0	0.2	0.0	0.3	0.0	0.2	0.0

Source: Endowment and foundation data as reported to Cambridge Associates LLC.

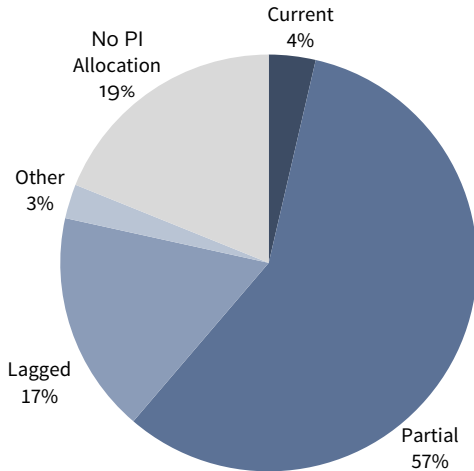
Exhibit 4. Detailed Asset Allocation by Asset Size: US Endowments and Foundations
As of March 31, 2017 • Percent (%)

	All Endow & Fdn		Under \$100m		\$100m– \$200m		\$200m– \$500m		\$500m– \$1b		Over \$1b	
	<i>n</i>											
	413		84		87		89		60		93	
	Mean	Med	Mean	Med	Mean	Med	Mean	Med	Mean	Med	Mean	Med
US Equity	22.7	22.4	26.5	27.0	23.4	22.8	23.9	23.3	20.6	20.7	19.0	17.5
Global ex US Equity	24.2	24.6	26.9	27.6	26.1	26.5	24.6	24.9	22.7	23.2	20.4	21.0
Developed Markets	16.4	16.6	19.3	19.4	17.9	17.8	16.7	17.1	15.2	15.3	13.0	12.8
Emerging Markets	7.8	7.8	7.6	7.7	8.2	8.4	8.0	8.0	7.5	7.4	7.5	7.1
Bonds	10.4	9.8	13.1	12.2	12.0	12.1	11.1	10.4	9.6	9.2	6.2	6.4
US Bonds	8.9	8.8	11.2	11.2	10.3	10.5	9.9	9.2	8.3	8.6	5.0	5.5
Developed Markets ex US	0.4	0.0	0.4	0.0	0.4	0.0	0.4	0.0	0.4	0.0	0.6	0.0
Emerging Markets	0.5	0.0	0.6	0.0	0.8	0.0	0.5	0.0	0.4	0.0	0.2	0.0
High-Yield Bonds	0.5	0.0	0.8	0.0	0.5	0.0	0.4	0.0	0.4	0.0	0.4	0.0
Hedge Funds	18.3	17.6	17.5	16.4	18.5	18.1	17.4	17.3	19.0	19.3	19.4	18.3
Long/Short Hedge Funds	8.2	7.4	9.1	8.2	8.3	8.3	6.5	6.1	8.1	7.3	9.1	8.1
Absolute Return (ex Distressed)	10.1	9.9	8.4	7.4	10.2	10.2	10.9	10.3	11.0	10.8	10.2	9.9
Distressed Securities	2.9	2.5	1.7	1.5	2.5	2.0	2.6	2.3	4.0	3.7	4.0	3.1
Hedge Fund Structure	1.8	1.4	1.3	0.8	1.7	1.4	1.5	1.3	2.3	2.1	2.3	1.8
Private Equity Structure	1.1	0.6	0.4	0.0	0.8	0.3	1.1	0.7	1.6	1.5	1.6	1.1
Private Equity & Venture Capital	7.9	6.4	2.2	0.1	5.1	3.6	7.1	6.1	10.6	9.7	14.5	14.0
Non-Venture Private Equity	3.6	2.5	0.7	0.0	1.8	0.9	3.2	2.4	5.3	4.7	7.1	7.4
Venture Capital	3.4	1.6	0.8	0.0	2.1	0.5	3.0	1.6	4.5	3.4	6.9	5.7
Other Private Investments	0.8	0.1	0.7	0.0	1.2	0.4	0.8	0.4	0.8	0.4	0.6	0.0
Real Assets & Infl-Linked Bonds	9.0	8.9	7.0	7.1	7.8	8.2	8.9	8.8	9.3	8.9	11.9	12.0
Private Real Estate	1.9	0.9	0.8	0.0	0.7	0.0	1.5	0.9	1.9	1.5	4.3	3.6
Public Real Estate	0.5	0.0	0.5	0.0	0.3	0.0	0.6	0.0	0.7	0.0	0.4	0.0
Commodities	0.7	0.0	1.0	0.0	0.7	0.3	0.8	0.3	0.4	0.0	0.7	0.0
Inflation-Linked Bonds	0.5	0.0	0.5	0.0	0.6	0.2	0.5	0.0	0.4	0.0	0.4	0.0
Priv Oil & Gas/Natural Resources	2.2	1.5	0.5	0.0	1.5	0.5	1.8	1.7	2.9	2.9	4.5	4.5
Timber	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.4	0.0
Public Energy/Natural Resources	3.0	2.7	3.7	3.5	4.0	3.8	3.4	3.1	2.7	2.7	1.2	0.0
Cash & Equivalents	4.3	3.5	4.9	3.6	4.3	3.5	3.9	3.7	4.0	3.3	4.4	3.9
Other Assets	0.3	0.0	0.2	0.0	0.2	0.0	0.5	0.0	0.2	0.0	0.2	0.0

Source: Endowment and foundation data as reported to Cambridge Associates LLC.

Exhibit 5. Performance Reporting Methodologies: US Endowments and Foundations
As of March 31, 2017

Performance Reporting Methodology



By Asset Size

	Current Basis	Partial Basis	Lagged Basis	Other	No PI Allocation
Under \$100m	1%	49%	—	1%	49%
<i>n</i>	1	41		1	41
\$100m–\$200m	—	72%	—	—	28%
<i>n</i>		63			24
\$200m–\$500m	1%	80%	4%	3%	11%
<i>n</i>	1	71	4	3	10
\$50m–\$1b	8%	67%	13%	8%	3%
<i>n</i>	5	40	8	5	2
Over \$1b	9%	25%	63%	2%	1%
<i>n</i>	8	23	59	2	1

Current Basis

Total investment pool return for the trailing one-year period includes marketable asset performance and private investment performance for April 1, 2016, to March 31, 2017.

Marketable Assets			
2Q16	3Q16	4Q16	1Q17
Private Investments			

Partial Basis

Total investment pool return for the trailing one-year period includes marketable asset performance for April 1, 2016, to March 31, 2017. Private investment portion of the investment pool reflects actual performance for April 1, 2016 to December 31, 2016, and a flat return (0%) for January 1, 2017 to March 31, 2017.

Marketable Assets			
2Q16	3Q16	4Q16	1Q17
Actual Return			0%
Private Investments			

Lagged Basis

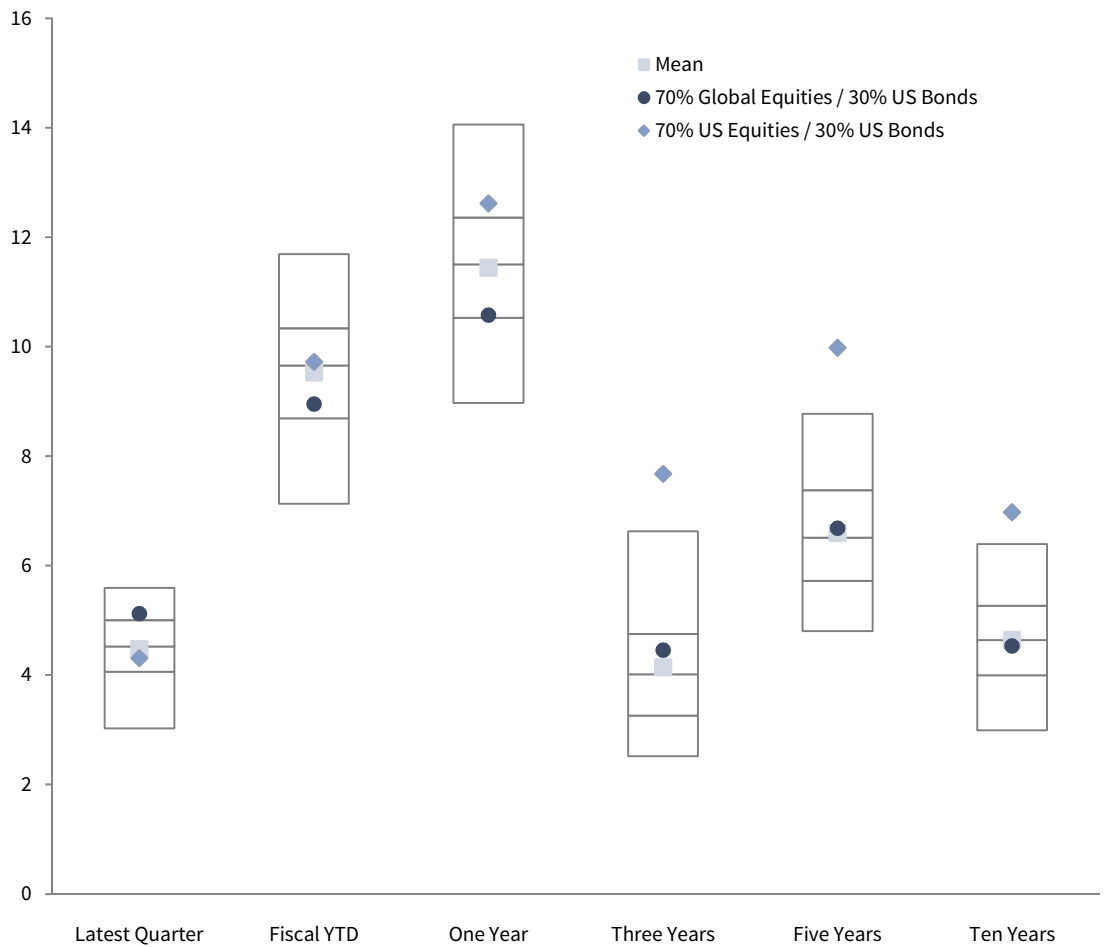
Total investment pool return for the trailing one-year period includes marketable asset performance for April 1, 2016 to March 31, 2017, and private investment performance for January 1, 2016 to December 31, 2016.

Marketable Assets				
1Q16	2Q16	3Q16	4Q16	1Q17
Private Investments				

Source: Endowment and foundation data as reported to Cambridge Associates LLC.

Notes: Analysis includes data for 413 institutions. Private investments include total allocation to non-venture private equity, venture capital, distressed securities (private equity structure), private oil & gas/natural resources, timber, private real estate, and other private investments. Institutions with no significant private investment allocations (<1% of their total investment portfolios) are reflected in the No PI Allocation category in the pie graph and table by asset size.

Exhibit 6. Nominal Return Percentiles: US Endowments and Foundations
 Periods Ended March 31, 2017 • Percent (%)



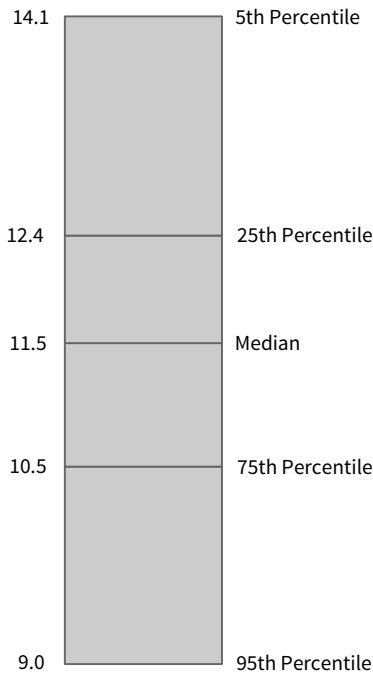
	Latest Quarter	Fiscal YTD	One Year	Three Years	Five Years	Ten Years
5th Percentile	5.6	11.7	14.1	6.6	8.8	6.4
25th Percentile	5.0	10.3	12.4	4.8	7.4	5.3
Median	4.5	9.7	11.5	4.0	6.5	4.6
75th Percentile	4.1	8.7	10.5	3.3	5.7	4.0
95th Percentile	3.0	7.1	9.0	2.5	4.8	3.0
Mean	4.5	9.5	11.4	4.1	6.6	4.6
<i>n</i>	413	413	413	411	404	370
70% Global Equities / 30% US Bonds	5.1	9.0	10.6	4.5	6.7	4.5
70% US Equities / 30% US Bonds	4.3	9.7	12.6	7.7	10.0	7.0

Sources: Endowment and foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Frank Russell Company, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

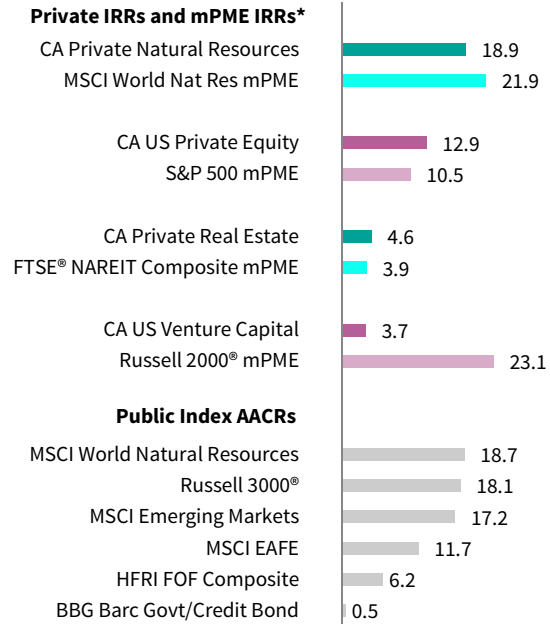
Notes: Three-, five-, and ten-year returns are annualized. The 70/30 simple portfolio benchmarks are calculated assuming rebalancing occurs on the final day of each quarter. Global equity performance represented by MSCI All Country World Index (ACWI). US equity performance represented by Russell 3000®. US bond performance represented by Bloomberg Barclays Government/Credit Bond Index.

Exhibit 7. One-Year Asset Allocation of Top and Bottom Performers: US Endowments and Foundations
As of March 31, 2017 • Percent (%)

One-Year Return Distribution

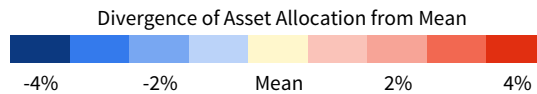


One-Year Index Returns



Mean Asset Allocation by Performance Quartile: March 31, 2016 to March 31, 2017

Quartile	DM ex US		EM Equity	Bonds	Hedge Funds	Dist Sec	PE & VC	Priv RA	Pub RA & ILBs	Cash	Other
	US Equity	Eqty									
Top Quartile	24.5	16.7	8.1	9.7	18.2	3.1	6.6	4.0	5.4	3.5	0.3
2nd Quartile	22.9	17.2	7.8	10.9	18.7	2.7	7.1	3.6	5.1	3.9	0.0
3rd Quartile	21.0	16.0	7.3	10.7	21.1	2.6	8.0	3.9	4.5	4.5	0.3
Bottom Quartile	20.3	14.2	6.9	11.5	19.0	3.2	10.8	5.3	4.1	4.3	0.4
E&F Universe Mean	22.2	16.0	7.5	10.7	19.2	2.9	8.1	4.2	4.8	4.0	0.3



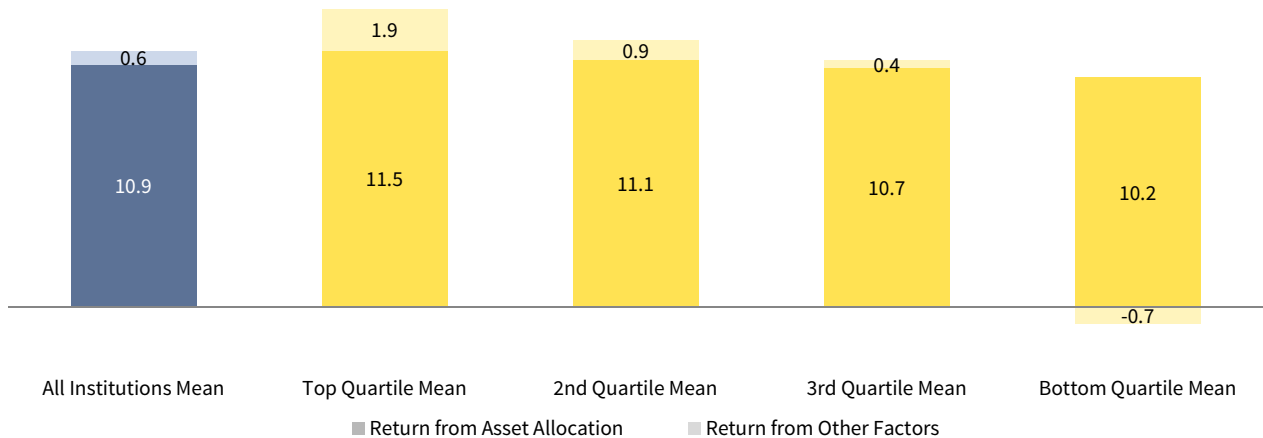
Sources: Endowment and foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Cambridge Associates LLC, Frank Russell Company, FTSE International Limited, Hedge Fund Research, Inc., MSCI Inc., the National Association of Real Estate Investment Trusts, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Note: Analysis includes data for 397 institutions.

* Private indexes are pooled horizon IRRs, net of fees, expenses, and carried interest. The CA Modified Public Market Equivalent (mPME) replicates private investment performance under public market conditions. The public index's shares are purchased and sold according to the private fund cash flow schedule, with distributions calculated in the same proportion as the private fund, and mPME NAV is a function of mPME cash flows and public index returns. Private benchmark IRRs and mPME IRRs are for the period 4/1/16 to 12/31/16.

Exhibit 8. One-Year Return Attribution Analysis: US Endowments and Foundations As of March 31, 2017 • Percent (%)

One-Year Mean Return Attribution Analysis by Quartile



Breakdown of Return from Asset Allocation for All Institutions

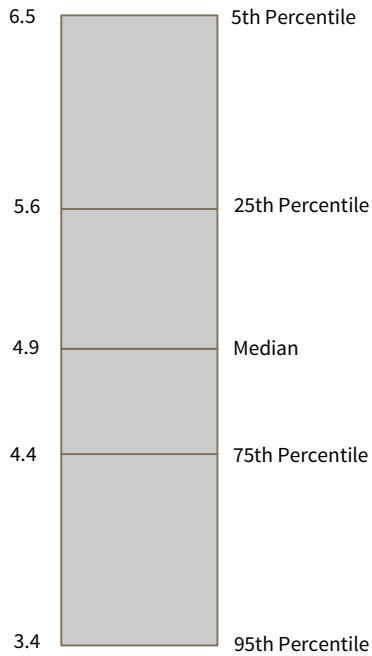
Asset Class	Mean Asset Allocation	Asset Class Benchmark Return	Contribution to Asset Class Return
US Equity	21.8	18.1	3.9
Global ex US Equity-Developed Mkts	15.7	11.7	1.8
Global ex US Equity-Emerging Mkts	7.3	17.2	1.3
Long/Short Hedge Funds	9.3	11.6	1.1
Absolute Return (ex Distressed)	10.7	5.4	0.6
Public Energy / Natural Resources	2.9	18.7	0.5
Non-Venture Private Equity	3.8	12.9	0.5
Private Oil & Gas / Natural Resources	1.8	18.8	0.3
Distressed-Private Equity Structure	1.2	11.0	0.1
Private Real Estate	2.1	4.5	0.1
Distressed-Hedge Fund Structure	1.7	6.2	0.1
Venture Capital	3.7	3.7	0.1
Commodities	0.8	8.7	0.1
High-Yield Bonds	0.4	16.7	0.1
Other Private Investments	0.8	8.3	0.1
Global ex US Bonds-Emerging Mkts	0.6	8.9	0.1
US Bonds	9.3	0.5	0.1
Public Real Estate	0.5	6.5	0.0
Cash & Equivalents	3.8	0.4	0.0
Inflation-Linked Bonds	0.5	1.5	0.0
Timber	0.2	2.9	0.0
Other	0.2	0.4	0.0
Global ex US Bonds-Developed Mkts	0.8	-4.8	0.0

Sources: Endowment and foundation as reported to Cambridge Associates LLC. Index data provided by Barclays, Bloomberg L.P., BofA Merrill Lynch, Cambridge Associates LLC, Citigroup Global Markets, Frank Russell Company, FTSE International Limited, Hedge Fund Research, Inc., J.P. Morgan Securities, Inc., MSCI Inc., National Association of Real Estate Investment Trusts, and the National Council of Real Estate Investment Fiduciaries. MSCI data provided "as is" without any express or implied warranties.

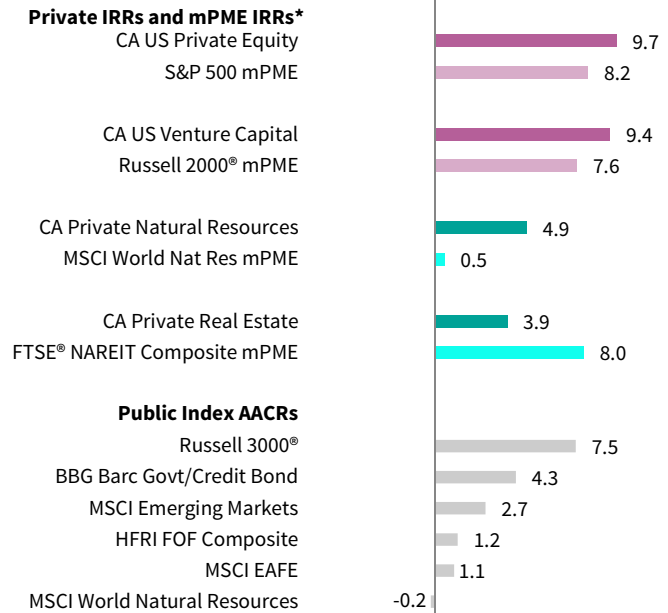
Notes: Includes data for 397 institutions that provided beginning year asset allocation. Mean asset allocation is as of March 31, 2016. The sum of the contribution to asset class return for all categories in the table equals the amount of the total return that was explained by asset allocation. To be consistent with the methodology in which private investment returns are incorporated into the total portfolio composite calculation, private investment benchmark returns are linked quarterly end-to-end returns. This model assumes that flows to and from investment managers take place on the last day of the fiscal year. In addition, the analysis uses a standard set of asset class benchmarks that may be more or less representative of the asset allocation policy across different institutions. Therefore, the portion of returns from other factors shown in the bar chart may also include some residual/unattributable asset allocation effects.

Exhibit 9. Ten-Year Asset Allocation of Top and Bottom Performers: US Endowments and Foundations
As of March 31, 2017 • Percent (%)

Ten-Year Return Distribution

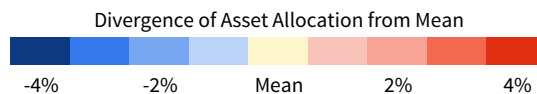


Ten-Year Index Returns



Mean Asset Allocation by Performance Quartile: March 31, 2007 to March 31, 2017

Quartile	DM ex US			Bonds	Hedge			PE & VC	Priv RA	Pub RA & ILBs	Cash	Other
	US Equity	Eqty	EM Equity		Funds	Dist Sec						
Top Quartile	19.5	12.6	6.2	9.3	19.7	3.7	12.5	8.8	3.9	3.7	0.2	
2nd Quartile	21.6	13.8	6.1	11.8	20.6	3.4	8.6	4.9	5.3	3.6	0.4	
3rd Quartile	22.6	16.0	6.4	13.6	17.2	3.1	6.4	4.0	6.7	3.5	0.4	
Bottom Quartile	22.6	16.0	6.3	16.4	17.4	2.4	4.8	2.6	7.2	4.0	0.4	
E&F Universe Mean	21.6	14.6	6.2	12.7	18.7	3.2	8.1	5.1	5.8	3.7	0.4	

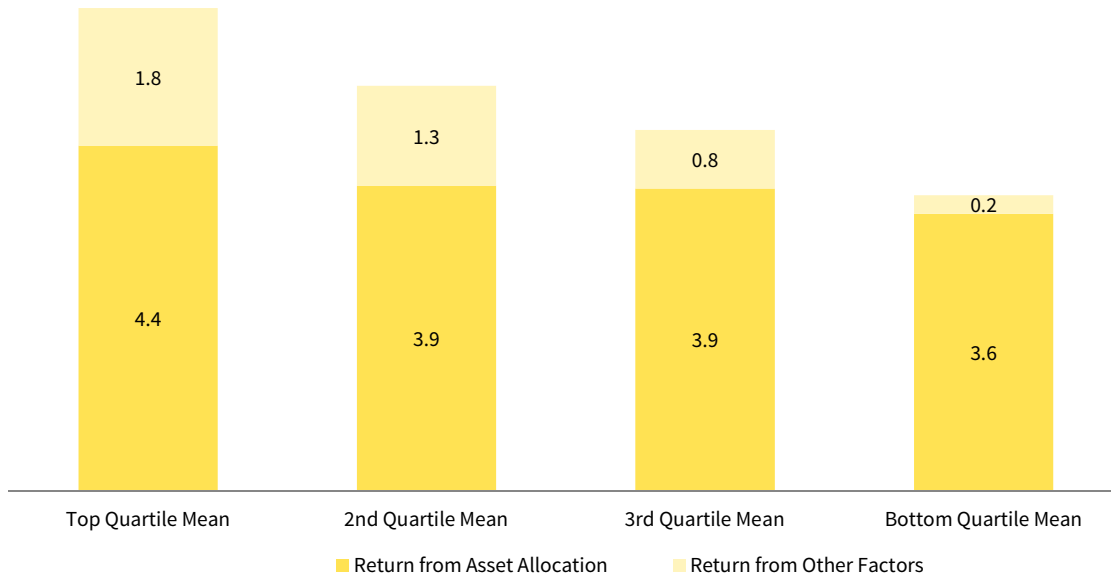


Sources: Endowment and foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Cambridge Associates LLC, Frank Russell Company, FTSE International Limited, Hedge Fund Research, Inc., MSCI Inc., the National Association of Real Estate Investment Trusts, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

Note: Analysis includes data for 211 institutions.

* Private indexes are pooled horizon IRRs, net of fees, expenses, and carried interest. The CA Modified Public Market Equivalent (mPME) replicates private investment performance under public market conditions. The public index's shares are purchased and sold according to the private fund cash flow schedule, with distributions calculated in the same proportion as the private fund, and mPME NAV is a function of mPME cash flows and public index returns. Private benchmark IRRs and mPME IRRs are for the period 4/1/16 to 12/31/16.

Exhibit 10. Ten-Year Attribution Analysis by Performance Quartile: US Endowments and Foundations
 As of March 31, 2017 • Percent (%)



Sources: Endowment and foundation as reported to Cambridge Associates LLC. Index data provided by Barclays, Bloomberg L.P., BofA Merrill Lynch, Cambridge Associates LLC, Citigroup Global Markets, Frank Russell Company, FTSE International Limited, Hedge Fund Research, Inc., J.P. Morgan Securities, Inc., MSCI Inc., National Association of Real Estate Investment Trusts, and the National Council of Real Estate Investment Fiduciaries. MSCI data provided “as is” without any express or implied warranties.

Notes: Includes data for 211 institutions that provided beginning year asset allocation. To be consistent with the methodology in which private investment returns are incorporated into the total portfolio composite calculation, private investment benchmark returns are linked quarterly end-to-end returns. This model assumes that flows to and from investment managers take place on the last day of the fiscal year. In addition, the analysis uses a standard set of asset class benchmarks that may be more or less representative of the asset allocation policy across different institutions. Therefore, the portion of returns from other factors may also include some residual/unattributable asset allocation effects.

Exhibit 11. Nominal Total Return Summary by Peer Group: US Endowments and Foundations

Periods Ended March 31, 2017 • Percent (%)

	Latest Qtr	Fiscal YTD	Average Annual Compound Return			
			One Yr	Three Yrs	Five Yrs	Ten Yrs
Colleges & Universities						
5th Percentile	5.5	11.8	13.9	6.7	9.1	6.3
25th Percentile	4.8	10.5	12.5	5.0	7.6	5.2
75th Percentile	4.0	9.0	10.8	3.7	6.2	4.1
95th Percentile	2.8	7.7	9.4	2.7	5.2	3.2
Mean	4.4	9.7	11.6	4.4	7.0	4.7
Median	4.4	9.8	11.6	4.3	6.8	4.7
<i>n</i>	150	150	150	149	148	140
Cultural & Environmental						
5th Percentile	5.6	12.2	14.2	6.2	8.4	6.1
25th Percentile	5.4	10.8	12.5	4.8	7.4	5.4
75th Percentile	4.2	9.0	11.2	3.4	5.9	4.2
95th Percentile	3.6	7.9	9.9	2.7	4.8	2.9
Mean	4.7	9.9	11.9	4.2	6.6	4.7
Median	4.7	9.8	12.0	4.1	6.4	4.9
<i>n</i>	51	51	51	51	51	47
Foundations						
5th Percentile	5.7	11.6	14.4	6.9	8.9	6.6
25th Percentile	4.9	10.3	12.3	4.7	7.2	5.4
75th Percentile	4.0	8.2	10.2	3.5	5.9	4.1
95th Percentile	3.0	7.2	8.9	2.6	4.8	2.9
Mean	4.4	9.4	11.3	4.3	6.7	4.8
Median	4.5	9.4	11.2	4.0	6.6	4.7
<i>n</i>	107	107	107	107	103	90
Health Care						
5th Percentile	5.4	11.7	13.0	5.2	8.1	5.9
25th Percentile	5.0	10.3	12.1	4.4	6.8	5.1
75th Percentile	4.0	8.5	10.5	2.6	5.0	3.7
95th Percentile	3.2	6.7	8.0	2.1	4.5	3.2
Mean	4.4	9.4	11.0	3.5	6.1	4.4
Median	4.5	9.8	11.5	3.5	6.1	4.3
<i>n</i>	36	36	36	36	36	35
Independent Schools						
5th Percentile	5.4	10.5	12.6	4.9	7.9	6.9
25th Percentile	4.9	9.9	11.8	4.3	6.9	5.3
75th Percentile	3.7	8.2	10.4	3.0	5.3	4.0
95th Percentile	2.5	5.3	8.5	2.7	4.7	2.8
Mean	4.2	8.7	11.1	3.7	6.2	4.7
Median	4.3	9.1	11.1	3.7	5.9	4.9
<i>n</i>	26	26	26	26	26	25
Other Nonprofits						
5th Percentile	5.7	11.0	13.1	4.8	7.3	5.2
25th Percentile	5.2	10.1	12.0	3.9	6.3	4.7
75th Percentile	4.4	8.8	10.5	2.9	5.3	3.7
95th Percentile	3.7	7.3	9.2	2.2	4.4	3.1
Mean	4.8	9.4	11.2	3.4	5.8	4.1
Median	4.9	9.6	11.4	3.3	5.6	4.0
<i>n</i>	43	43	43	42	40	33

Source: Endowment and foundation data as reported to Cambridge Associates LLC.

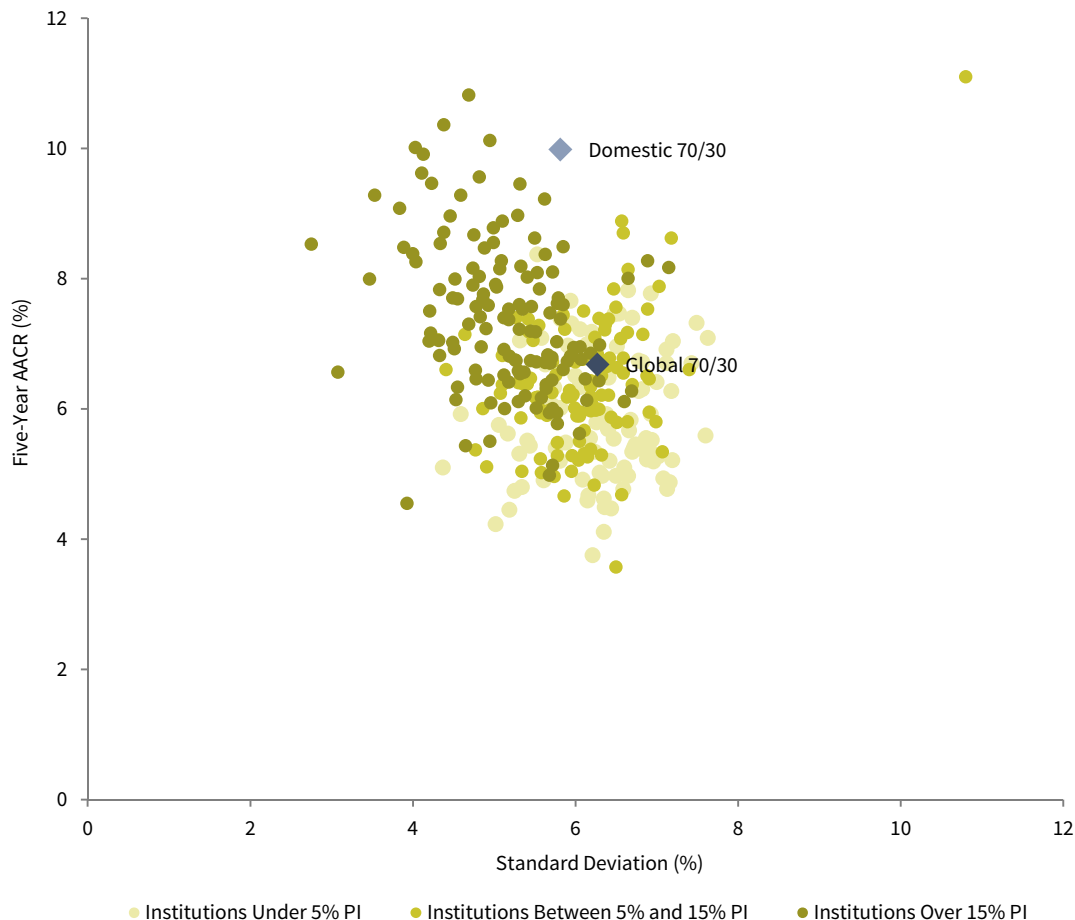
Exhibit 12. Nominal Total Return Summary by Asset Size: US Endowments and Foundations

Periods Ended March 31, 2017 • Percent (%)

	Latest Qtr	Fiscal YTD	Average Annual Compound Return			
			One Yr	Three Yrs	Five Yrs	Ten Yrs
Under \$100 Million						
5th Percentile	5.7	11.5	14.2	5.0	7.5	5.9
25th Percentile	5.4	10.2	12.1	4.1	6.6	4.6
75th Percentile	4.3	8.6	10.5	2.9	5.3	3.4
95th Percentile	3.2	6.7	9.1	2.5	4.6	2.5
Mean	4.8	9.4	11.3	3.6	6.0	4.1
Median	4.9	9.4	11.3	3.5	5.9	4.1
<i>n</i>	84	84	84	82	78	67
\$100 Million to \$200 Million						
5th Percentile	5.6	11.4	13.9	4.8	7.4	5.6
25th Percentile	5.1	10.2	12.3	4.1	6.4	4.9
75th Percentile	4.1	8.6	10.6	2.8	5.1	3.6
95th Percentile	3.5	7.3	9.0	2.2	4.7	2.8
Mean	4.6	9.4	11.3	3.4	5.9	4.2
Median	4.6	9.5	11.5	3.2	5.8	4.2
<i>n</i>	87	87	87	87	86	80
\$200 Million to \$500 Million						
5th Percentile	5.5	11.3	14.1	5.3	8.1	5.9
25th Percentile	4.9	10.3	12.5	4.3	7.1	5.0
75th Percentile	4.2	8.9	10.8	3.5	5.9	3.9
95th Percentile	3.6	7.2	8.9	2.5	5.1	3.2
Mean	4.5	9.5	11.6	3.9	6.5	4.5
Median	4.5	9.7	11.6	3.9	6.4	4.6
<i>n</i>	89	89	89	89	88	82
\$500 Million to \$1 Billion						
5th Percentile	5.3	11.6	13.6	5.8	8.3	6.1
25th Percentile	4.7	10.3	12.3	4.7	7.2	5.2
75th Percentile	3.9	8.8	10.8	3.7	6.4	4.5
95th Percentile	2.9	7.3	8.8	3.0	5.4	3.5
Mean	4.3	9.5	11.4	4.2	6.8	4.8
Median	4.3	9.5	11.4	4.0	6.7	4.8
<i>n</i>	60	60	60	60	59	53
Over \$1 Billion						
5th Percentile	5.4	12.1	14.3	7.8	9.9	7.1
25th Percentile	4.7	10.7	12.7	6.4	8.6	6.0
75th Percentile	3.8	9.0	10.4	4.6	7.0	4.7
95th Percentile	2.5	7.7	9.3	3.7	6.0	4.1
Mean	4.2	9.8	11.6	5.5	7.8	5.4
Median	4.3	9.8	11.6	5.4	7.8	5.3
<i>n</i>	93	93	93	93	93	88

Source: Endowment and foundation data as reported to Cambridge Associates LLC.

Exhibit 13. Standard Deviation and Sharpe Ratio: US Endowments and Foundations
 Five Years Ended March 31, 2017



	All Institutions	Mean by PI Allocation			70/30 Benchmarks	
	Mean	Under 5%	5% – 15%	Over 15%	Domestic	Global
Five-Year AACR	6.6	5.9	6.4	7.4	10.0	6.7
Standard Deviation	5.8	6.3	6.1	5.2	5.8	6.3
Sharpe Ratio	1.17	0.92	1.04	1.44	1.66	1.05
<i>n</i>	339	97	108	134		

Sources: College and university data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Frank Russell Company, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

Notes: Analysis includes only institutions that provided underlying quarterly returns and asset allocation for the last five years. Each institution's private investment allocation represents the mean for the six March 31 periods from 2012 to 2017. The Domestic 70/30 benchmark is composed of 70% Russell 3000® / 30% Bloomberg Barclays Government/Credit and the Global 70/30 benchmark is composed of 70% MSCI ACWI / 30% Bloomberg Barclays Government/Credit.