

4TH QUARTER • 2017

ENDOWMENTS QUARTERLY

A LOOK AT ASSET ALLOCATION AND TOTAL RETURNS
FOR US ENDOWMENTS AND FOUNDATIONS

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 408 US endowments and foundations that participated in our quarterly survey. The average market value of participating long-term investment portfolios was \$1.3 billion. The median value was \$301.3 million.

EXAMINING RETURNS

The mean return of the US endowment and foundation universe was 3.3% for the quarter ended December 31, 2017.¹ Trailing one-year returns averaged 15.0%. Returns for the trailing one-year period ranged from 18.2% at the 5th percentile to 11.7% at the 95th percentile.

Per the Consumer Price Index, the rate of inflation was -0.1% for fourth quarter 2017 and 2.1% for the trailing one-year period. Adjusting nominal returns to reflect inflation, the average real return for US endowments and foundations increases to 3.4% for the fourth quarter and falls to 12.6% 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.

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 it has actually taken. For this reason, we have split institutions out into subcategories in Figure 13 based on their allocations to private investments.

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

Institutions that had an allocation of over 15% to private investments over the last five years reported an average Sharpe ratio of 1.66, 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. Figure 7 explores this relationship and illustrates how general asset allocation structures vary across the four performance quartiles of the overall participant group. In this figure, 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 Figure 7 provides the context of the market environment for the period. Private investment indexes are pooled horizon internal rates of return (IRRs) net of fees, expenses, and carried interest, and 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 natural resources and real estate outperformed their respective mPME reference index for the trailing one-year period, while private equity and venture capital both underperformed their respective benchmarks.³

Public equities produced the best returns of the major asset class strategies for the trailing one-year period. The MSCI Emerging Markets Index led the way with a 37.3% return, followed by the MSCI EAFE Index (25.0%) and the Russell 3000® Index (21.1%). 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 (57.3%) while those in the bottom quartile had the lowest average allocation (36.1%).

ONE-YEAR ATTRIBUTION. Although 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. We do not have the level of detailed data that is necessary to perform a precise attribution analysis, but 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.

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.

3 Private investment benchmark IRRs and mPME returns are for the period of 1/1/17 to 9/30/17. Data for the quarter ending 12/31/17 is not yet available due to the delayed reporting by private investment funds.

Figure 8 illustrates the results of an estimated attribution analysis based on the one-year return and beginning fiscal year asset allocation of 392 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.⁴

As is usually the case, the attribution analysis estimates that the vast majority of mean trailing one-year total return for the participant group could be explained by asset allocation. US equities, which returned 21.1% and had one of the highest allocations among the detailed asset classes, had the greatest impact of all the asset class return contributors (4.7%). Global ex US developed equities (3.9%) and emerging markets equities (2.7%) also made significant positive contributions to overall portfolio performance.

Figure 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 (17.1%) while the bottom performance quartile had the lowest (14.1%). The model also estimates that implementation decisions were responsible for some of the dispersion in performance between top and bottom performers. On average, the top quartile of performers added 0.5% through implementation decisions while the bottom quartile lost value (-1.8%).

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 December 31 valuations become available, fourth 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 (October 1, 2016, to September 30, 2017).

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 fourth quarter 2016, a quarter in which three of the four private indexes generated positive returns. A portfolio using

⁴ 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 lagged methodology would likely report a higher 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 be greater for portfolios with larger allocations to private investments.

CAMBRIDGE ASSOCIATES PRIVATE INVESTMENT INDEX RETURNS

	One Quarter				
	End-to-End Pooled Return (%)				
	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017
US Private Equity	4.6	3.9	3.5	3.9	NA
US Venture Capital	-0.1	3.3	1.3	3.2	NA
Real Estate	1.4	2.9	3.7	3.2	NA
Natural Resources	7.7	2.1	-0.4	1.6	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. Figure 9 organizes the participant group into four quartiles based on the trailing ten-year investment return. Each institution's asset allocation was averaged across the 11 December 31 periods from 2007 to 2017. The four quartiles in the heat map table represent the average of the institutions within each quartile.

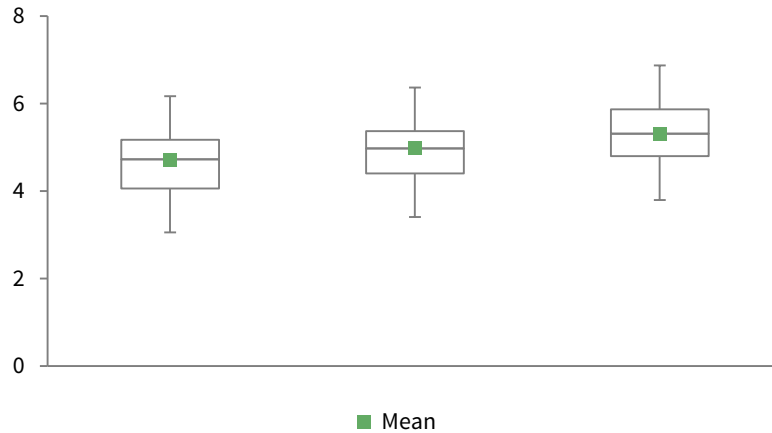
Among the asset class benchmarks, three out of four private investment strategies either equaled or outperformed their public market counterparts on an mPME basis over the past ten years. Accordingly, the top quartile of performers over the ten-year period reported the highest average allocation to illiquid private investments, and 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 next page 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 5.3%, approximately 60 basis points higher than the median return reported by portfolios with little to no private investment allocation. The distribution of 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.

RANGE OF 10-YR RETURNS BY PRIVATE INVESTMENT ALLOCATION

As of December 31, 2017 • Percent (%)



	Private Investment Allocation		
	Under 5%	5% - 15%	Over 15%
5th Percentile	6.4	6.3	6.6
25th Percentile	5.2	5.4	5.9
Median	4.7	5.0	5.3
75th Percentile	4.1	4.4	4.8
95th Percentile	3.5	3.8	4.0
Mean	4.7	5.0	5.3
<i>n</i>	52	83	90

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

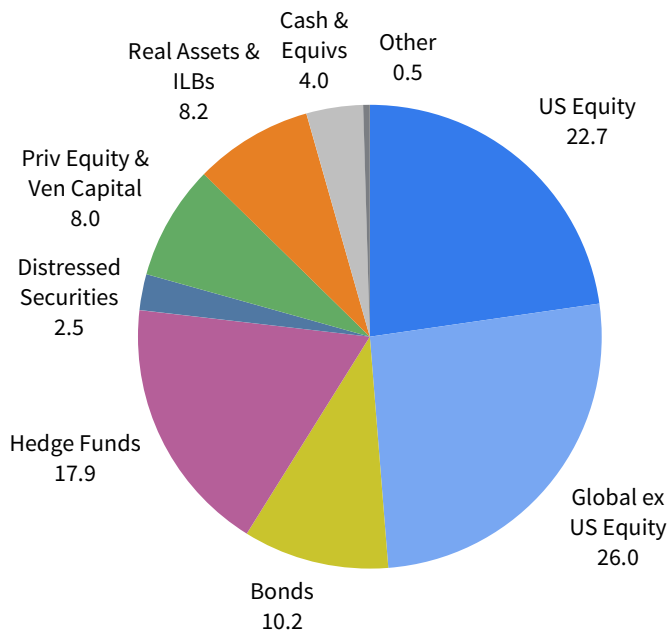
Notes: Each institution's private investment allocation represents the mean for the 11 December 31 periods from 2007 to 2017. Returns are annualized.

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. Figure 10 shows that the top performance quartile had a mean asset class return of 4.7%, approximately 0.8 percentage-points higher than the bottom performance quartile. The top performance quartile also added another 1.4% through implementation decisions while the bottom performance quartile added little value (0.1%) through active management of the portfolio. ■

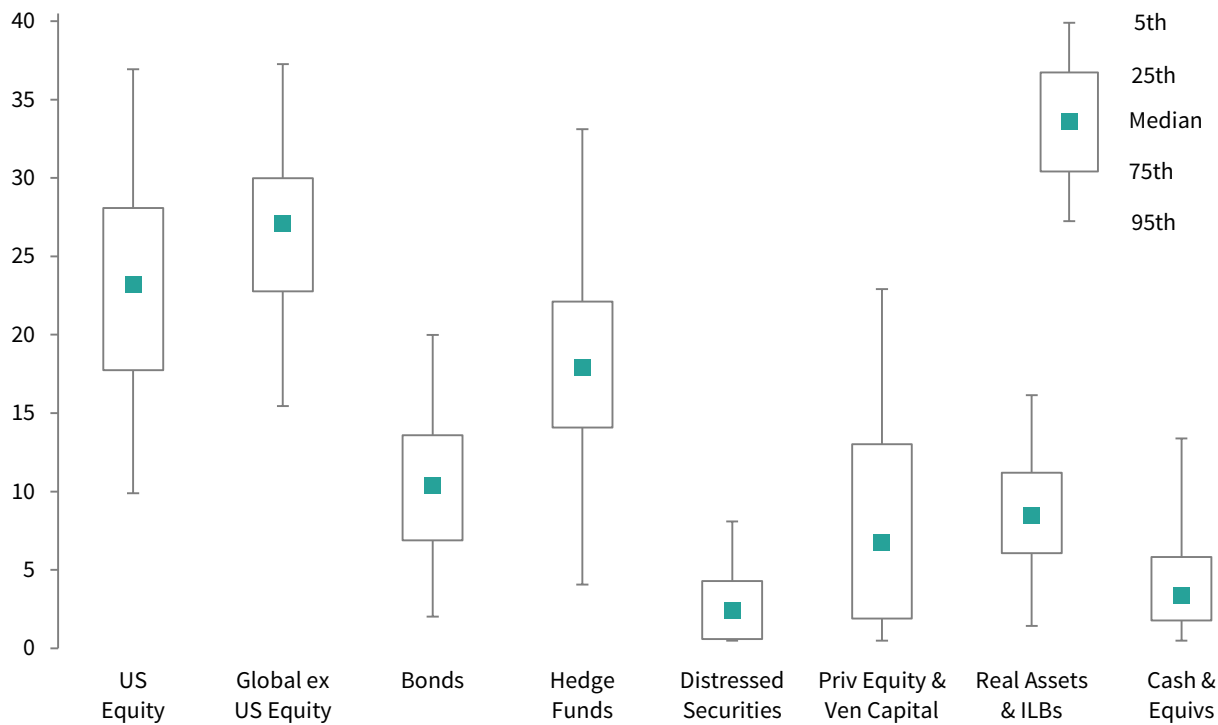
FIGURE 1. ASSET ALLOCATION SNAPSHOT: US ENDOWMENTS AND FOUNDATIONS

As of December 31, 2017 • Percent (%)

Mean Asset Allocation



Distribution by Asset Class: Asset Allocation



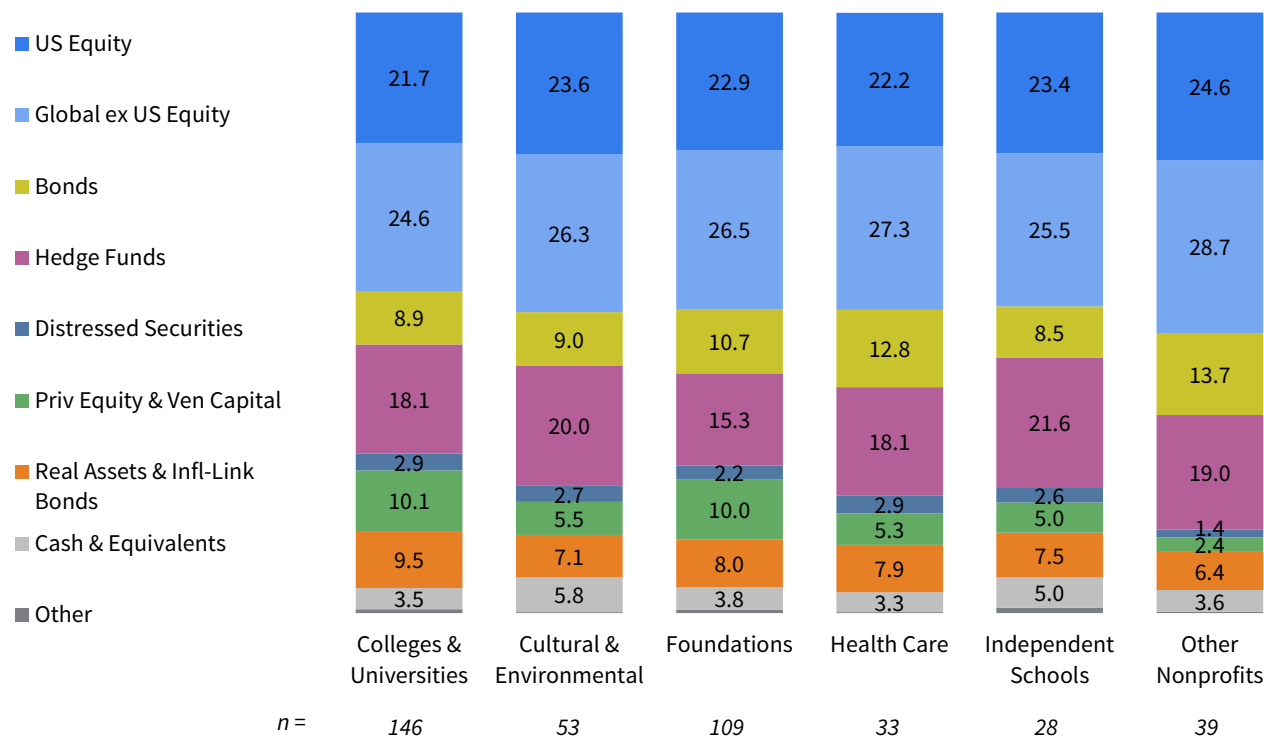
Source: Endowment and foundation data as reported to Cambridge Associates LLC.

Note: Analysis includes data for 408 institutions.

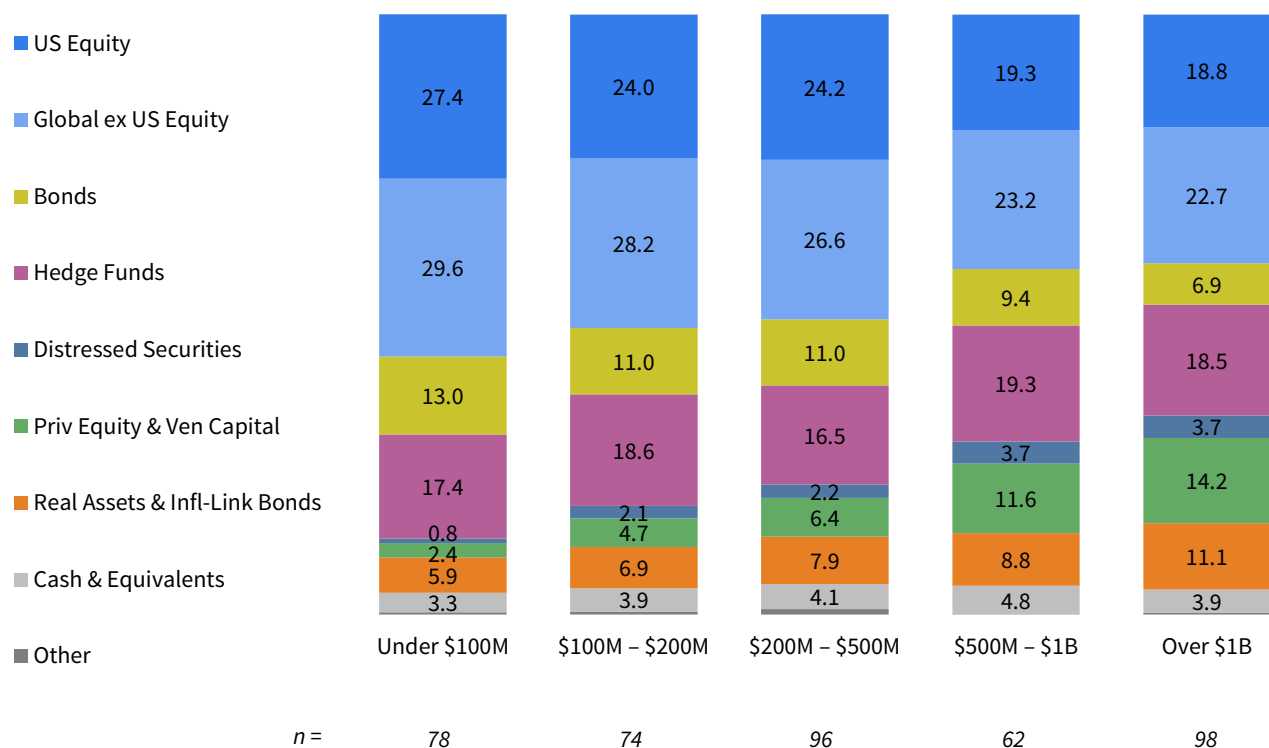
FIGURE 2. SUMMARY ASSET ALLOCATION: US ENDOWMENTS AND FOUNDATIONS

As of December 31, 2017 • Percent (%)

By Peer Group



By Asset Size



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

FIGURE 3. DETAILED ASSET ALLOCATION BY PEER GROUP: US ENDOWMENTS AND FOUNDATIONS

As of December 31, 2017 • Percent (%)

	Colleges & Universities <i>n = 146</i>		Cultural & Environmental <i>53</i>		Foundations <i>109</i>		Health Care <i>33</i>		Independent Schools <i>28</i>		Other Nonprofits <i>39</i>	
	Mean	Med	Mean	Med	Mean	Med	Mean	Med	Mean	Med	Mean	Med
US Equity	21.7	21.9	23.6	24.4	22.9	21.9	22.2	24.2	23.4	22.5	24.6	25.9
Global ex US Equity	24.6	24.7	26.3	28.2	26.5	26.6	27.3	27.5	25.5	26.0	28.7	28.9
Developed Markets	16.3	16.0	17.4	18.4	17.6	17.9	19.3	18.2	17.3	18.3	20.0	19.3
Emerging Markets	8.4	8.3	8.9	9.3	8.9	9.0	8.0	8.0	8.2	8.1	8.8	8.7
Bonds	8.9	8.7	9.0	8.3	10.7	9.9	12.8	13.6	8.5	8.9	13.7	11.9
US Bonds	7.8	8.2	7.9	7.4	9.5	8.9	11.2	11.4	7.8	8.2	11.9	11.2
Global ex US Bonds (DM)	0.5	0.0	0.3	0.0	0.4	0.0	0.5	0.0	0.2	0.0	0.6	0.0
Global ex US Bonds (EM)	0.3	0.0	0.5	0.0	0.4	0.0	0.7	0.0	0.3	0.0	0.9	0.0
High-Yield Bonds	0.3	0.0	0.3	0.0	0.5	0.0	0.5	0.0	0.3	0.0	0.3	0.0
Hedge Funds	18.1	17.2	20.0	18.6	15.3	16.1	18.1	18.0	21.6	21.4	19.0	17.7
Long/Short Hedge Funds	7.5	6.4	6.7	5.4	5.4	4.9	7.5	6.5	9.6	7.3	6.0	5.3
Absolute Return (ex Distressed)	10.7	10.6	13.3	12.1	9.9	10.0	10.6	10.6	12.0	10.4	13.0	12.3
Distressed Securities	2.9	2.5	2.7	1.7	2.2	1.8	2.9	1.7	2.6	1.5	1.4	0.2
Hedge Fund Structure	1.6	1.1	1.8	0.4	1.2	0.0	2.1	1.2	1.3	0.0	0.9	0.0
Private Equity Structure	1.3	0.8	0.9	0.5	1.0	0.7	0.9	0.0	1.3	0.8	0.5	0.0
PE & VC	10.1	9.2	5.5	3.4	10.0	8.8	5.3	2.2	5.0	4.3	2.4	0.5
Non-Venture Private Equity	4.8	4.3	2.6	1.3	3.9	3.0	2.5	0.9	2.7	2.0	0.8	0.0
Venture Capital	4.4	3.5	2.2	0.5	4.7	2.4	2.1	0.9	1.6	0.8	1.2	0.0
Other Private Investments	0.9	0.2	0.7	0.0	1.3	0.3	0.7	0.0	0.7	0.1	0.4	0.0
Real Assets & Infl-Linked Bonds	9.5	9.4	7.1	7.0	8.0	8.0	7.9	7.6	7.5	5.8	6.4	6.3
Private Real Estate	2.2	1.5	1.2	0.2	1.7	0.9	1.5	0.2	1.6	0.0	0.5	0.0
Public Real Estate	0.5	0.0	0.4	0.0	0.4	0.0	0.5	0.0	0.1	0.0	0.5	0.0
Commodities	0.5	0.0	0.6	0.0	0.8	0.0	0.5	0.0	0.5	0.0	0.5	0.0
Inflation-Linked Bonds	0.4	0.0	0.7	0.0	0.3	0.0	0.5	0.1	0.3	0.0	0.5	0.0
Private O&G/Nat Resources	3.1	2.9	1.8	0.4	2.2	1.4	1.4	0.6	2.1	1.2	1.0	0.0
Timber	0.2	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.0	0.0	0.0
Public Energy/Nat Resources	2.5	2.2	2.3	1.8	2.6	2.1	3.3	3.0	2.7	2.5	3.3	3.2
Cash & Equivalent	3.5	2.6	5.8	3.2	3.8	2.8	3.3	1.7	5.0	3.3	3.6	3.1
Other Assets	0.6	0.0	0.1	0.0	0.5	0.0	0.2	0.0	0.9	0.0	0.2	0.0

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

FIGURE 4. DETAILED ASSET ALLOCATION BY ASSET SIZE: US ENDOWMENTS AND FOUNDATIONS

As of December 31, 2017 • Percent (%)

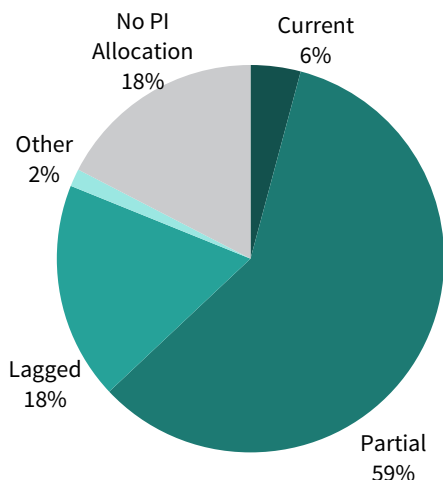
	All Endow & Fdn <i>n = 408</i>		Under \$100M <i>78</i>		\$100M – \$200M <i>74</i>		\$200M – \$500M <i>96</i>		\$500M – \$1B <i>62</i>		Over \$1B <i>98</i>	
	Mean	Med	Mean	Med	Mean	Med	Mean	Med	Mean	Med	Mean	Med
US Equity	22.7	22.7	27.4	27.7	24.0	23.4	24.2	24.2	19.3	18.9	18.8	17.1
Global ex US Equity	26.0	26.6	29.6	29.5	28.2	28.2	26.6	26.6	23.2	23.8	22.7	23.0
Developed Markets	17.4	17.5	21.2	21.2	19.0	19.3	17.9	18.1	15.0	15.3	14.3	14.2
Emerging Markets	8.6	8.6	8.4	8.6	9.2	9.1	8.7	8.7	8.2	8.1	8.4	8.2
Bonds	10.2	9.9	13.0	12.4	11.0	11.4	11.0	11.2	9.4	8.7	6.9	6.6
US Bonds	9.0	8.7	11.7	11.8	9.7	10.5	10.0	9.8	8.2	8.5	5.6	5.6
Global ex US Bonds (DM)	0.4	0.0	0.3	0.0	0.3	0.0	0.4	0.0	0.4	0.0	0.6	0.0
Global ex US Bonds (EM)	0.4	0.0	0.4	0.0	0.8	0.0	0.3	0.0	0.5	0.0	0.2	0.0
High-Yield Bonds	0.4	0.0	0.5	0.0	0.3	0.0	0.4	0.0	0.3	0.0	0.5	0.0
Hedge Funds	17.9	17.4	17.4	16.8	18.6	17.6	16.5	16.2	19.3	18.5	18.5	18.2
Long/Short Hedge Funds	6.8	5.8	5.5	4.4	6.5	5.4	5.8	5.0	7.6	7.1	8.6	7.5
Absolute Return (ex Distressed)	11.1	10.7	11.9	10.6	12.1	12.0	10.7	10.8	11.8	10.9	9.8	9.5
Distressed Securities	2.5	1.9	0.8	0.0	2.1	1.4	2.2	2.0	3.7	3.6	3.7	3.0
Hedge Fund Structure	1.5	0.3	0.4	0.0	1.2	0.0	1.3	1.0	2.2	1.7	2.2	1.9
Private Equity Structure	1.0	0.6	0.3	0.0	0.9	0.6	0.9	0.5	1.5	1.2	1.5	1.0
PE & VC	8.0	6.3	2.4	0.0	4.7	3.6	6.4	5.5	11.6	10.2	14.2	13.4
Non-Venture Private Equity	3.6	2.5	0.6	0.0	1.7	0.7	2.6	2.0	6.1	5.3	6.8	7.0
Venture Capital	3.5	1.7	0.9	0.0	1.8	0.6	2.9	1.4	4.6	3.4	6.8	5.8
Other Private Investments	0.9	0.1	0.9	0.0	1.3	0.7	0.9	0.7	0.9	0.3	0.5	0.0
Real Assets & Infl-Linked Bonds	8.2	8.0	5.9	6.1	6.9	7.2	7.9	7.9	8.8	8.4	11.1	10.3
Private Real Estate	1.7	0.8	0.5	0.0	0.5	0.0	1.2	0.7	2.1	1.4	3.6	3.0
Public Real Estate	0.4	0.0	0.3	0.0	0.3	0.0	0.5	0.0	0.6	0.0	0.5	0.0
Commodities	0.6	0.0	0.9	0.0	0.6	0.0	0.7	0.0	0.3	0.0	0.6	0.0
Inflation-Linked Bonds	0.4	0.0	0.5	0.0	0.7	0.0	0.4	0.0	0.2	0.0	0.4	0.0
Private O&G/Nat Resources	2.3	1.5	0.5	0.0	1.6	0.7	1.7	1.3	2.9	3.0	4.4	4.5
Timber	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.3	0.0
Public Energy/Nat Resources	2.7	2.3	3.3	2.9	3.2	2.8	3.3	3.1	2.4	2.4	1.3	0.1
Cash & Equivalents	4.0	2.9	3.3	2.1	3.9	2.4	4.1	3.0	4.8	4.1	3.9	2.6
Other Assets	0.5	0.0	0.4	0.0	0.5	0.0	0.9	0.0	0.1	0.0	0.3	0.0

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

EXHIBIT 5. PERFORMANCE REPORTING METHODOLOGIES: US ENDOWMENTS AND FOUNDATIONS

As of December 31, 2017

Performance Reporting Methodology



By Asset Size

	Current Basis	Partial Basis	Lagged Basis	Other	No PI Allocation
Under \$100M	1%	51%	—	1%	46%
<i>n</i>	1	40		1	36
\$100M – \$200M	—	72%	—	—	28%
<i>n</i>		53			21
\$200M – \$500M	—	85%	2%	1%	11%
<i>n</i>		82	2	1	11
\$500M – \$1B	13%	61%	19%	2%	5%
<i>n</i>	8	38	12	1	3
Over \$1B	8%	28%	61%	3%	—
<i>n</i>	8	27	60	3	

Current Basis

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

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

Partial Basis

Total investment pool return for the trailing one-year period includes marketable asset performance for January 1, 2017, to December 31, 2017. Private investment portion of the investment pool reflects actual performance for January 1, 2017, to September 30, 2017, and a flat return (0%) for October 1, 2017, to December 31, 2017.

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

Lagged Basis

Total investment pool return for the trailing one-year period includes marketable asset performance for January 1, 2017, to December 31, 2017, and private investment performance for October 1, 2016, to September 30, 2017.

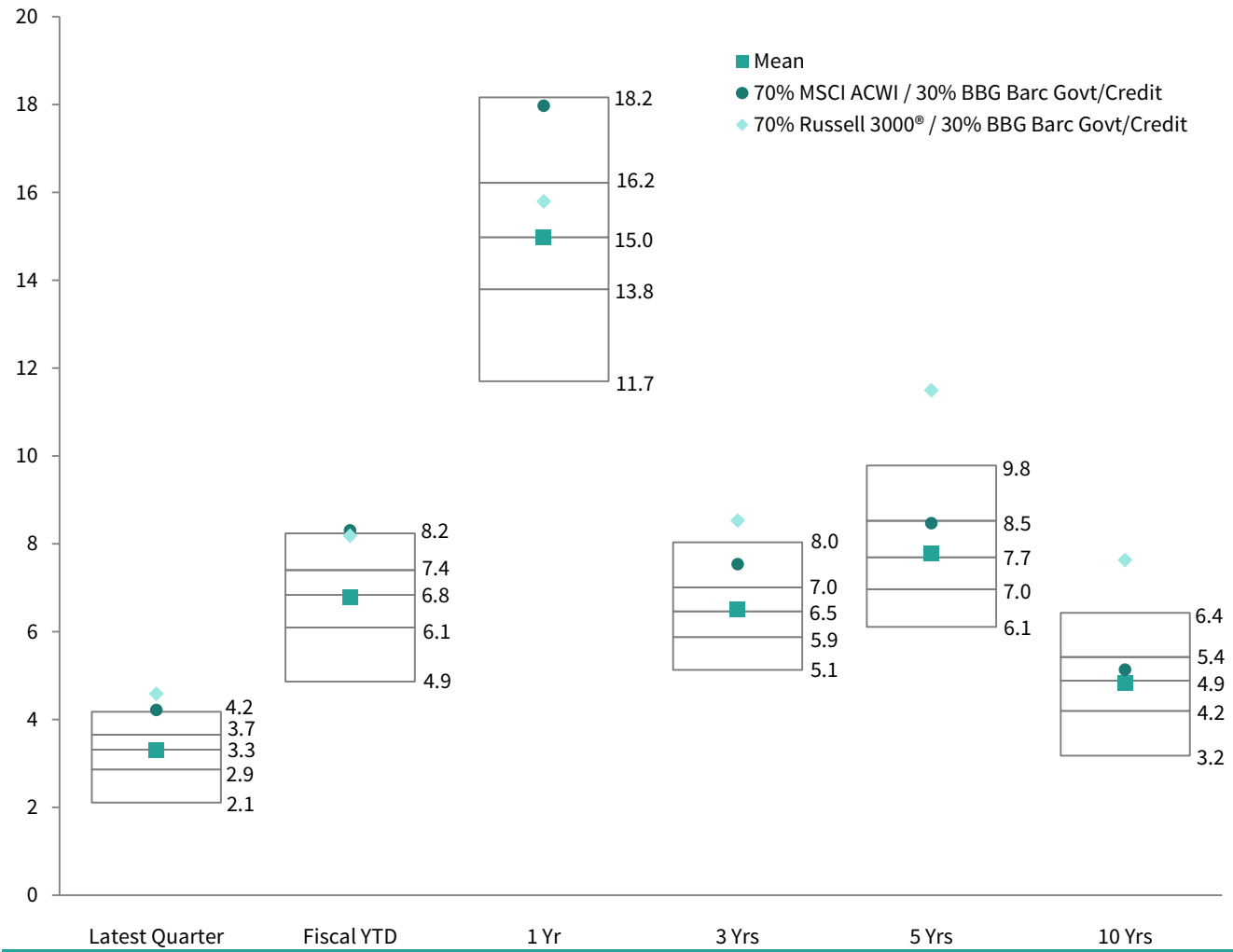
Marketable Assets				
4Q16	1Q17	2Q17	3Q17	4Q17
Private Investments				

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

Notes: Analysis includes data for 408 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.

FIGURE 6. NOMINAL RETURN PERCENTILES: US ENDOWMENTS AND FOUNDATIONS

Periods Ended December 31, 2017 • Percent (%)



	Latest Quarter	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
■ Mean	3.3	6.8	15.0	6.5	7.8	4.8
<i>n</i>	408	408	408	404	397	368
● 70% Global Equities / 30% US Bonds	4.2	8.3	18.0	7.5	8.5	5.1
◆ 70% US Equities / 30% US Bonds	4.6	8.2	15.8	8.5	11.5	7.6

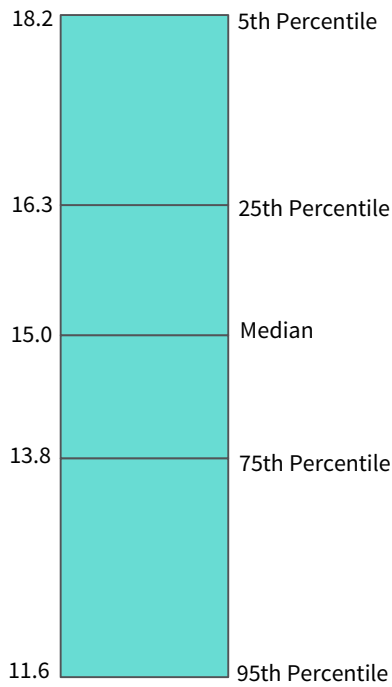
Sources: Endowment and foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Frank Russell Company, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

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). Total returns for the MSCI ACWI are net of dividend taxes for global ex US securities. US equity performance represented by Russell 3000®. US bond performance represented by Bloomberg Barclays Government/Credit Bond Index.

**FIGURE 7. 1-YR ASSET ALLOCATION OF TOP AND BOTTOM PERFORMERS:
US ENDOWMENTS AND FOUNDATIONS**

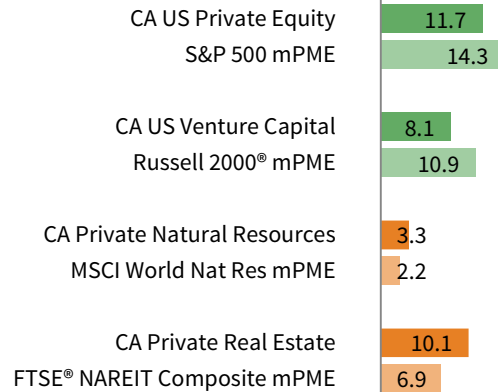
As of December 31, 2017 • Percent (%)

1-Yr Return Distribution

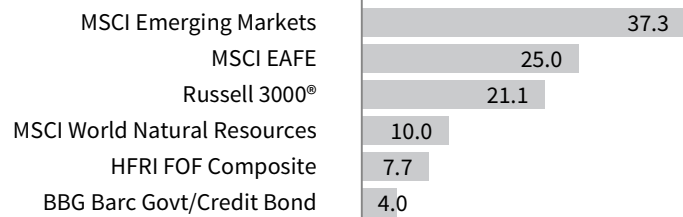


1-Yr Index Returns

Private IRRs and mPME IRRs*



Public Index AACRs



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

Quartile	US Equity	DM ex US Eqty	EM Equity	Bonds	Hedge Funds	Dist Sec	PE & VC	Priv RA	Pub RA & ILBs	Cash	Other
Top Quartile	28.6	20.1	8.6	11.4	14.8	1.7	4.3	2.3	4.5	3.5	0.2
2nd Quartile	23.7	17.3	8.3	10.8	17.2	2.7	6.9	3.6	5.1	3.9	0.3
3rd Quartile	20.5	16.0	7.9	10.1	18.9	3.0	8.8	4.7	4.8	4.7	0.6
Bottom Quartile	16.7	12.6	6.8	8.8	23.5	3.5	12.6	6.3	3.6	5.1	0.3
E&F Universe Mean	22.4	16.5	7.9	10.3	18.6	2.8	8.1	4.2	4.5	4.3	0.4

Divergence of Asset Allocation from Mean



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, Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.

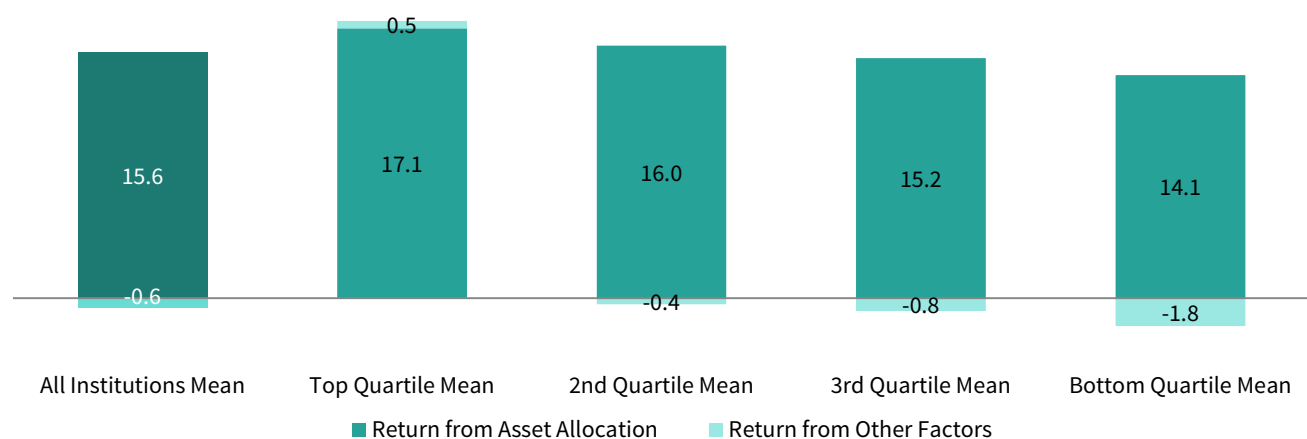
Note: Analysis includes data for 392 institutions.

* 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 1/1/17 to 9/30/17.

FIGURE 8. 1-YR RETURN ATTRIBUTION ANALYSIS BY PERFORMANCE QUARTILE: US ENDOWMENTS AND FOUNDATIONS

As of December 31, 2017 • Percent (%)

1-Yr 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	22.2	21.1	4.7
Global ex US Equity-Developed Mkts	15.6	25.0	3.9
Global ex US Equity-Emerging Mkts	7.2	37.3	2.7
Long/Short Hedge Funds	8.5	13.3	1.1
Absolute Return (ex Distressed)	10.8	6.7	0.7
Non-Venture Private Equity	3.7	11.7	0.5
US Bonds	8.9	4.0	0.4
Public Energy / Natural Resources	3.1	10.0	0.3
Venture Capital	3.6	8.1	0.3
Private Real Estate	1.9	10.1	0.2
Private Oil & Gas / Natural Resources	2.2	3.3	0.1
Distressed-Private Equity Structure	1.2	9.6	0.1
Distressed-Hedge Fund Structure	1.8	7.7	0.1
Other Private Investments	0.8	9.9	0.1
Global ex US Bonds-Emerging Mkts	0.5	10.3	0.0
Global ex US Bonds-Developed Mkts	0.4	10.3	0.0
Public Real Estate	0.5	9.3	0.0
Cash & Equivalents	4.7	0.9	0.0
High Yield Bonds	0.5	7.0	0.0
Inflation-Linked Bonds	0.5	3.0	0.0
Commodities	0.7	1.7	0.0
Timber	0.2	2.1	0.0
Other	0.2	0.9	0.0

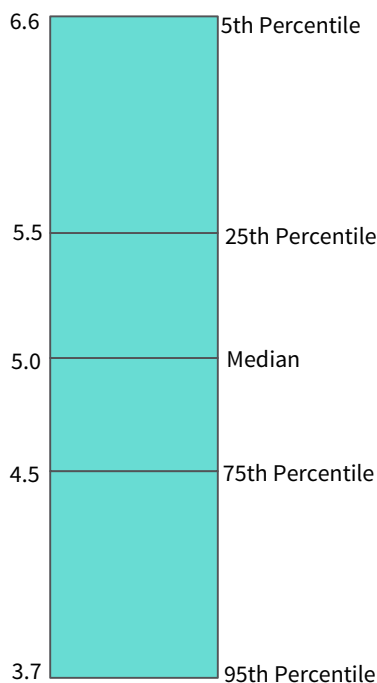
Sources: Endowment and foundation as reported to Cambridge Associates LLC. Index data provided by Barclays, Bloomberg L.P., BofA Merrill Lynch, Cambridge Associates LLC, Citigroup Global Markets, Frank Russell Company, FTSE International Limited, Hedge Fund Research, Inc., J.P. Morgan Securities, Inc., MSCI Inc., The 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 392 institutions that provided beginning year asset allocation. Mean asset allocation is as of December 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.

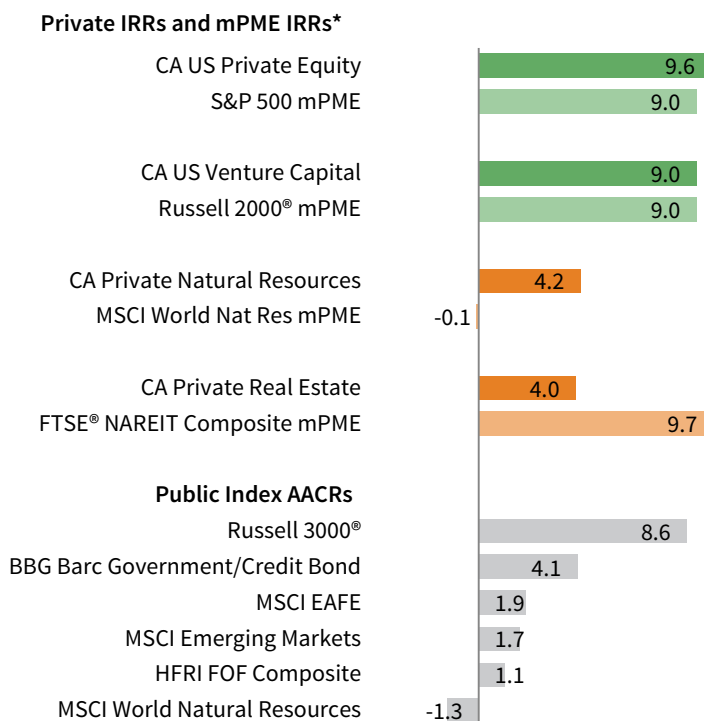
**FIGURE 9. 10-YR ASSET ALLOCATION OF TOP AND BOTTOM PERFORMERS:
US ENDOWMENTS AND FOUNDATIONS**

As of December 31, 2017 • Percent (%)

10-Yr Return Distribution

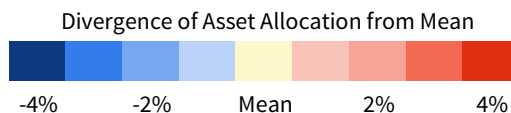


10-Yr Index Returns



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

Quartile	US Equity	DM ex US Eqty	EM Equity	Bonds	Hedge Funds	Dist Sec	PE & VC	Priv RA	Pub RA & ILBs	Cash	Other
Top Quartile	20.9	13.7	6.4	9.8	18.3	3.4	11.8	8.0	4.0	3.5	0.2
2nd Quartile	20.6	13.2	6.5	11.0	20.9	3.6	9.3	5.7	4.8	4.1	0.4
3rd Quartile	21.7	15.8	6.6	13.8	18.8	3.1	6.5	4.0	6.2	3.2	0.3
Bottom Quartile	20.4	15.4	6.8	14.9	18.5	2.8	5.4	3.0	7.3	4.9	0.5
E&F Universe Mean	20.9	14.5	6.6	12.3	19.1	3.3	8.3	5.2	5.6	3.9	0.3



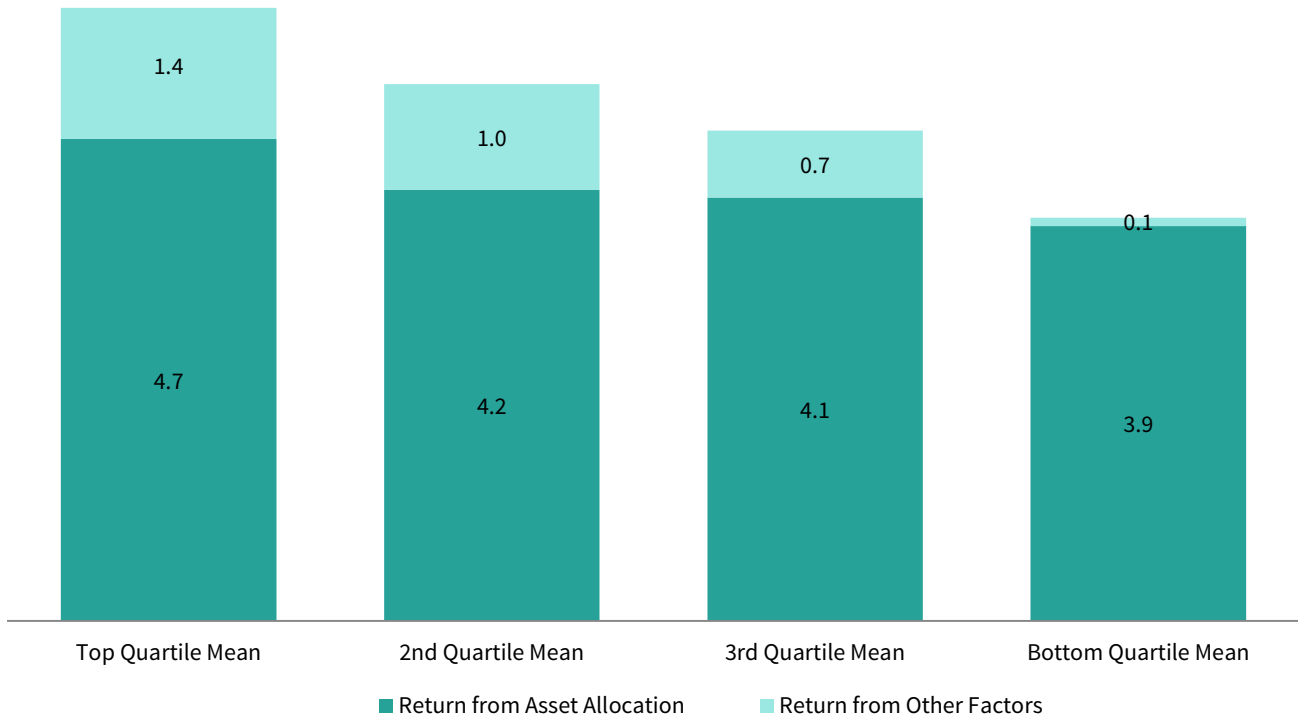
Sources: Endowment and foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Cambridge Associates LLC, Frank Russell Company, FTSE International Limited, Hedge Fund Research, Inc., MSCI Inc., the National Association of Real Estate Investment Trusts,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

Note: Analysis includes data for 225 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 1/1/08 to 9/30/17.

**FIGURE 10. 10-YR ATTRIBUTION ANALYSIS BY PERFORMANCE QUARTILE:
US ENDOWMENTS AND FOUNDATIONS**

As of December 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., The 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 225 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.

FIGURE 11. NOMINAL TOTAL RETURN SUMMARY BY PEER GROUP: US ENDOWMENTS AND FOUNDATIONS

Periods Ended December 31, 2017 • Percent (%)

	Latest Qtr	Fiscal YTD	Average Annual Compound Return			
			1 Yr	3 Yrs	5 Yrs	10 Yrs
Colleges & Universities						
5th Percentile	4.2	8.1	17.4	8.1	9.9	6.4
25th Percentile	3.6	7.4	16.0	7.2	8.7	5.4
75th Percentile	2.9	6.0	13.8	6.0	7.3	4.4
95th Percentile	2.3	4.9	11.8	5.3	6.4	3.3
Mean	3.3	6.7	14.8	6.6	8.1	4.9
Median	3.3	6.7	14.8	6.6	8.0	4.9
<i>n</i>	146	146	146	145	144	134
Cultural & Environmental						
5th Percentile	4.7	8.6	18.8	8.7	10.0	6.4
25th Percentile	3.7	7.4	16.7	7.2	8.8	5.5
75th Percentile	3.0	6.3	14.2	6.2	7.1	4.6
95th Percentile	2.2	5.0	12.7	5.5	6.3	3.2
Mean	3.6	7.1	15.7	6.8	8.0	5.0
Median	3.3	6.9	15.4	6.7	7.8	5.2
<i>n</i>	53	53	53	53	53	48
Foundations						
5th Percentile	4.2	8.5	18.0	8.7	9.8	6.5
25th Percentile	3.6	7.4	16.1	7.0	8.5	5.5
75th Percentile	2.8	6.1	13.8	6.1	7.2	4.3
95th Percentile	1.9	4.8	11.7	5.3	6.4	3.2
Mean	3.2	6.8	15.0	6.6	7.8	4.8
Median	3.2	6.9	15.1	6.5	7.6	4.8
<i>n</i>	109	109	109	106	103	95
Health Care						
5th Percentile	4.2	8.2	18.2	7.4	9.0	6.2
25th Percentile	3.7	7.4	16.0	6.9	7.9	5.2
75th Percentile	3.1	6.4	13.7	5.5	6.5	4.1
95th Percentile	2.6	5.8	12.2	5.0	5.8	3.3
Mean	3.3	6.9	15.0	6.1	7.3	4.6
Median	3.3	7.0	14.7	6.0	7.2	4.6
<i>n</i>	33	33	33	33	33	33
Independent Schools						
5th Percentile	3.9	7.8	17.1	6.8	8.6	6.1
25th Percentile	3.6	7.1	15.5	6.5	8.2	5.4
75th Percentile	2.6	5.8	12.7	5.6	6.6	3.8
95th Percentile	2.1	4.6	11.0	4.2	5.4	3.0
Mean	3.1	6.4	14.1	6.0	7.3	4.8
Median	3.3	6.5	14.2	6.2	7.1	5.0
<i>n</i>	28	28	28	28	28	26
Other Nonprofits						
5th Percentile	4.1	8.0	19.0	7.4	9.0	5.6
25th Percentile	3.7	7.4	17.0	6.7	7.5	5.0
75th Percentile	3.1	6.6	14.2	5.6	6.4	4.0
95th Percentile	2.5	5.6	11.3	5.1	5.9	3.4
Mean	3.4	6.9	15.4	6.1	7.0	4.4
Median	3.5	7.0	15.4	6.0	6.7	4.3
<i>n</i>	39	39	39	39	36	32

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

FIGURE 12. NOMINAL TOTAL RETURN SUMMARY BY ASSET SIZE: US ENDOWMENTS AND FOUNDATIONS

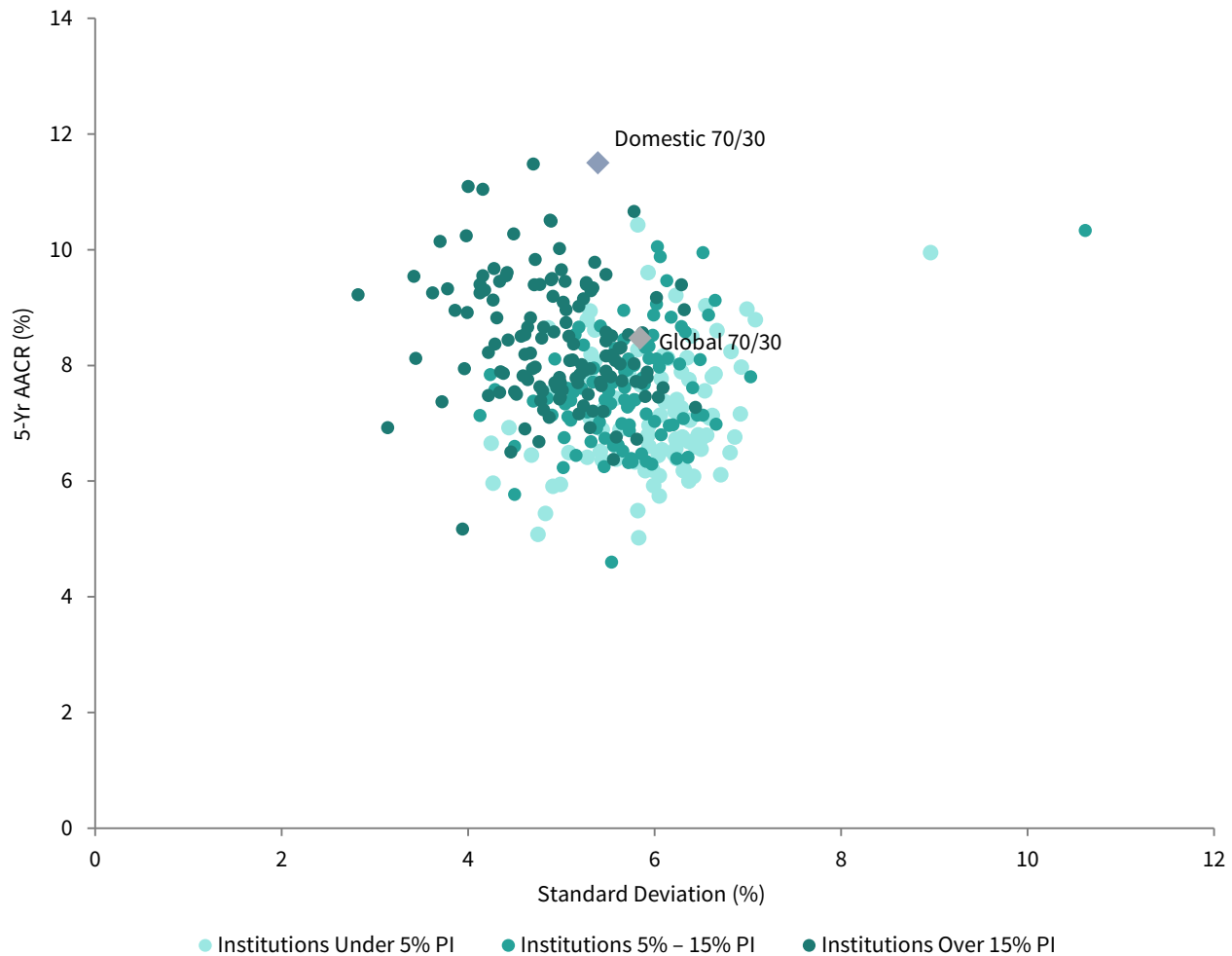
Periods Ended December 31, 2017 • Percent (%)

	Latest Qtr	Fiscal YTD	Average Annual Compound Return			
			1 Yr	3 Yrs	5 Yrs	10 Yrs
Under \$100M						
5th Percentile	4.2	8.3	18.6	7.5	8.9	6.0
25th Percentile	3.8	7.6	16.9	6.7	7.9	4.9
75th Percentile	3.2	6.6	14.0	5.6	6.4	3.8
95th Percentile	2.4	5.6	11.2	4.9	6.0	2.6
Mean	3.5	7.0	15.3	6.2	7.2	4.3
Median	3.5	7.1	15.6	6.3	7.0	4.3
<i>n</i>	78	78	78	75	70	60
\$100M – \$200M						
5th Percentile	4.3	8.2	18.5	7.8	8.9	5.8
25th Percentile	3.7	7.6	16.5	6.7	7.8	5.1
75th Percentile	2.9	6.4	14.7	5.8	6.5	3.9
95th Percentile	2.2	5.3	12.2	5.0	6.0	3.2
Mean	3.5	7.1	15.7	6.3	7.2	4.5
Median	3.4	7.0	15.6	6.2	7.1	4.5
<i>n</i>	74	74	74	74	73	68
\$200M – \$500M						
5th Percentile	4.3	8.4	18.2	7.7	9.2	6.2
25th Percentile	3.6	7.5	16.5	6.8	8.1	5.3
75th Percentile	3.0	6.4	14.3	5.9	7.0	4.2
95th Percentile	2.4	5.3	12.7	5.3	6.2	3.3
Mean	3.3	6.9	15.3	6.4	7.6	4.7
Median	3.3	6.9	15.1	6.4	7.5	4.7
<i>n</i>	96	96	96	96	96	91
\$500M – \$1B						
5th Percentile	3.8	7.8	18.0	7.6	9.4	6.1
25th Percentile	3.5	7.3	15.3	6.8	8.2	5.4
75th Percentile	2.6	5.9	12.9	5.9	7.5	4.5
95th Percentile	1.7	4.5	10.3	5.1	6.5	3.6
Mean	3.0	6.4	14.0	6.3	7.9	4.9
Median	3.1	6.4	14.2	6.3	7.9	5.0
<i>n</i>	61	61	61	60	59	52
Over \$1B						
5th Percentile	4.1	8.1	17.2	8.9	10.5	6.7
25th Percentile	3.6	7.2	15.6	7.6	9.5	5.9
75th Percentile	2.8	5.7	13.3	6.4	7.9	4.9
95th Percentile	2.1	4.8	11.7	5.7	7.1	4.1
Mean	3.2	6.5	14.5	7.1	8.8	5.4
Median	3.2	6.4	14.5	7.2	8.7	5.3
<i>n</i>	97	97	97	97	97	95

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

FIGURE 13. STANDARD DEVIATION AND SHARPE RATIO: US ENDOWMENTS AND FOUNDATIONS

5 Yrs Ended December 31, 2017



	All Institutions	Mean by PI Allocation			70/30 Benchmarks	
	Mean	Under 5%	5% – 15%	Over 15%	Domestic	Global
5-Yr AACR	7.8	7.2	7.6	8.4	11.5	8.5
Standard Deviation	5.5	6.0	5.7	4.9	5.4	5.8
Sharpe Ratio	1.41	1.17	1.28	1.66	2.02	1.39
<i>n</i>	325	90	100	135		

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 December 31 periods from 2012 to 2017. The Domestic 70/30 benchmark is composed of 70% Russell 3000® / 30% Bloomberg Barclays Government/Credit. Total returns for the MSCI ACWI are net of dividend taxes for global ex US securities.

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