ANNUAL REVIEW OF ENDOWMENTS

FISCAL YEAR 2017

CAMBRIDGE
ASSOCIATES

CONTENTS

SIDEBAR

FIGURES

This report summarizes portfolio returns, asset allocation, and related trends for 289 endowed institutions for the fiscal year ended June 30, 2017. When the overall group is broken out by industry type, 164 are colleges and universities, 53 are cultural and environmental institutions, 29 are independent schools, and 43 are other endowed institutions. The 289 participants in this study reported long-term investment portfolio (LTIP) assets as of June 30, 2017, totaling $488 billion. The LTIP size of participants ranged from $10.4 million to $40.9 billion. The mean LTIP size was $1.7 billion and the median was $321.8 million. Seventy-three institutions reported LTIP assets greater than $1 billion, and they controlled 87% of the aggregate LTIP assets.

This year's report takes a closer look at additional portfolio attributes relevant to endowments. Included are exhibits on asset class returns, performance attribution, risk analytics, policy portfolio benchmarking, and uncalled capital commitments to private investments. Our section on investment management structures reviews the use of external managers by asset class and details portfolio implementation techniques. We also have a section that highlights the components of flows to and from the portfolio and how much the LTIP supports institutions' operating budgets. Finally, this year's report examines topics pertaining to governance and investment office staffing. Included are exhibits related to investment committee structure and composition as well as those that detail the average number of personnel in the investment office.

Investment Portfolio Returns

RETURNS IN FISCAL YEAR 2017

Coming off two straight years of disappointing investment performance for endowments, returns bounced back strongly in fiscal year 2017. Global public equities led the way, with the major broad-market indexes producing returns near 20% or higher. Private equities and hedge funds also made healthy contributions to overall portfolio performance. Real assets were mixed, with private strategies performing substantially better than public strategies during the fiscal year. Bond returns, after a strong fiscal year 2016, fell back in 2017 and had a minimal impact on total portfolio returns.

The mean nominal total return earned by participating endowments was 13.0% in fiscal year 2017 (Figure 1). With inflation (as measured by the Consumer Price Index) at 1.6% for the year, the mean real return for all endowments is adjusted to 11.2%. After both inflation and spending are deducted, the mean total return after spending is lowered to 5.9%. A positive real return after spending of this magnitude indicates that participating endowments experienced considerable growth in their purchasing power over the last fiscal year.

Among the various institutions types in this study, endowments of cultural and environmental institutions reported the highest average nominal return (13.4%) for the fiscal year. College and university endowments followed close behind, reporting a mean return of 13.2%. Mean and median returns for fiscal year 2017 for all institution types are listed in Figure 1.

FIGURE 1. TOTAL RETURN SUMMARY
Trailing 1-Yr • As of June 30, 2017 • Percent (%)

						Benchmarks	
	All Endowments	Colleges & Universities	Cultural & Environmental	Independent Schools	Other Endowments	70/30 Domestic	70/30 Global
Total Nominal Returns							
Mean	13.0	13.2	13.4	12.0	12.5	12.6	13.0
Median	13.2	13.2	13.5	12.5	12.6		
n	*289*	*164*	*53*	*29*	*43*		
Total Nominal After Spending							
Mean	7.6	7.8	7.6	6.8	7.4		
Median	7.8	7.8	7.7	7.8	7.3		
n	*190*	*135*	*26*	*21*	*8*		
Total Real Returns							
Mean	11.2	11.3	11.6	10.2	10.7	10.8	11.2
Median	11.3	11.4	11.6	10.7	10.8		
n	*289*	*164*	*53*	*29*	*43*		
Total Real After Spending							
Mean	5.9	6.1	5.8	5.1	5.7		
Median	6.0	6.1	6.0	6.0	5.6		
n	*190*	*135*	*26*	*21*	*8*		

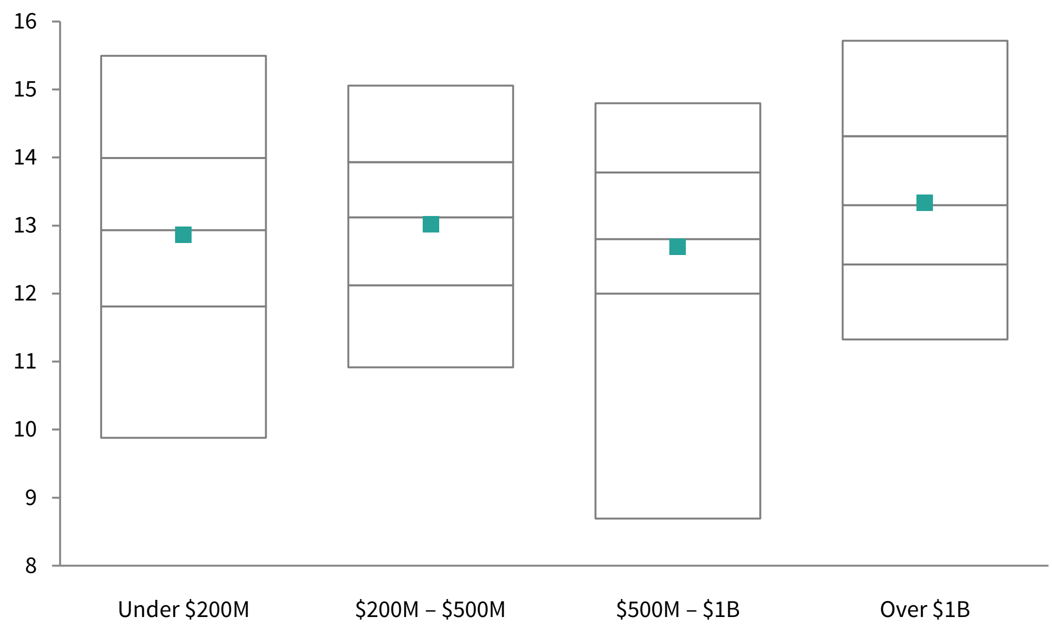
Sources: Endowment data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Frank Russell Company, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

Notes: Real returns are adjusted for inflation as measured by the Consumer Price Index. 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. Returns for the MSCI ACWI are net of dividend taxes for global ex US securities.

When the participant group is broken out into broad asset size groups, those with assets over $1 billion reported the highest average nominal return (13.3%) (Figure 2). Institutions with assets between $200 million and $500 million reported the next highest returns, an average of 13.0%. Figure 2 displays nominal return data for each of the four broad asset size groups, including the dispersion of returns from the 5th to 95th percentiles.

FIGURE 2. NOMINAL RETURN PERCENTILES BY ASSET SIZE

Trailing 1-Yr • As of June 30, 2017 • Percent (%)



	Under $200M	$200M – $500M	$500M – $1B	Over $1B
Mean	12.9	13.0	12.7	13.3
n	*106*	*65*	*45*	*73*

Sources: Endowment data as reported to Cambridge Associates LLC.

Note: Each bar represent a range of percentile returns in the following order: 5th percentile (top), 25th percentile, median, 75th percentile, and 95th percentile (bottom).

Figure 3 displays the range of participant returns across marketable asset classes for fiscal year 2017, and Figure 4 shows the same information for private investment asset classes. The marketable asset class returns are reported as time-weighted returns, and the private investment data are horizon internal rates of return (IRR).[1] The charts that follow in this section provide fiscal year 2017 median performance for the participant group across these asset classes alongside returns for relevant indexes (all index returns are in USD terms).

1 A time-weighted return (TWR) captures the total return earned over time on the initial investment and eliminates the impact of future cash flows. TWRs are appropriate where the investor controls the timing of cash flows. An IRR extracts a return from a cash flow stream composed of the beginning net asset value (NAV) for the time horizon, all inflows and outflows within the period, and the final NAV of the period. IRRs are more appropriate for investments where the fund managers control the decisions of when to call and return capital.

FIGURE 3. DISPERSION OF PARTICIPANTS' ASSET CLASS RETURNS: MARKETABLE INVESTMENTS
Trailing 1-Yr as of June 30, 2017 • Percent (%)

	Public Equity[1]	Global Equity[2]	US Equity	DM ex US Equity	EM Equity	Bonds	Hedge Funds	Public Real Assets[3]	Commodities and Natural Resources	Public Real Estate
All Endowments										
5th Percentile	23.7	27.8	23.3	28.1	27.0	5.5	13.4	5.5	6.1	8.8
25th Percentile	21.9	24.4	20.8	24.2	24.2	2.4	10.3	2.0	2.1	3.0
Median	21.0	20.0	19.6	22.5	22.5	0.8	8.5	-0.4	-0.9	0.7
75th Percentile	19.9	16.3	18.3	20.2	20.2	-0.4	7.1	-2.3	-3.2	-0.4
95th Percentile	17.8	14.1	16.0	16.9	16.1	-3.4	4.8	-6.5	-7.2	-3.8
Mean	20.8	20.9	19.7	22.4	22.0	1.1	8.7	-0.1	-0.5	1.7
n	*219*	*127*	*223*	*215*	*218*	*215*	*224*	*166*	*169*	*43*
Median by Asset Size										
Under $200M	20.5	19.6	19.3	21.9	22.9	0.8	8.0	0.5	-0.5	0.7
n	*92*	*53*	*92*	*86*	*89*	*86*	*90*	*74*	*72*	*13*
$200M – $500M	21.1	19.1	19.5	23.2	23.1	0.8	8.8	-1.0	-1.0	0.7
n	*56*	*33*	*56*	*57*	*56*	*55*	*55*	*53*	*52*	*9*
$500M – $1B	20.7	21.3	19.7	22.1	21.0	-0.1	9.5	0.3	-0.9	0.7
n	*28*	*15*	*33*	*32*	*30*	*31*	*33*	*23*	*23*	*9*
Over $1B	21.4	22.7	20.5	23.8	20.9	1.7	9.1	0.0	-2.2	4.0
n	*43*	*26*	*42*	*40*	*43*	*43*	*46*	*16*	*22*	*12*
Median by Institution Type										
Colleges & Universities	20.9	20.1	19.6	22.8	22.2	0.6	8.9	0.2	-0.9	0.7
n	*115*	*57*	*119*	*114*	*117*	*118*	*121*	*84*	*87*	*26*
Cultural & Environmental	21.3	19.1	19.8	22.5	23.3	0.7	8.4	-0.3	0.0	0.5
n	*44*	*27*	*44*	*43*	*43*	*42*	*43*	*36*	*37*	*8*
Independent Schools	21.1	20.4	19.8	22.2	22.7	0.9	8.1	-1.3	-1.5	0.2
n	*25*	*19*	*24*	*23*	*23*	*19*	*26*	*18*	*17*	*1*
Other Endowments	20.2	21.8	19.1	21.0	22.5	1.1	8.4	-1.2	-1.0	0.5
n	*35*	*24*	*36*	*35*	*35*	*36*	*34*	*28*	*28*	*8*

Source: Endowment data as reported to Cambridge Associates LLC.
[1] Public equity is a composite of global equity, US equity, developed markets ex US equity, and emerging markets equity.
[2] Global equity includes only investment vehicles that have a mandate to invest in US and international markets.
[3] Public real assets is a composite of public real estate, commodities and natural resources, and inflation-linked bonds.

FIGURE 4. DISPERSION OF PARTICIPANTS' ASSET CLASS RETURNS: PRIVATE INVESTMENTS

Trailing 1-Yr as of June 30, 2017 • Percent (%)

	Private Equity[1]	Non-Venture Private Equity[2]	Venture Capital	Private Real Assets[3]	Private Real Estate	Private Natural Resources
All Endowments						
5th Percentile	25.5	30.1	21.7	26.3	16.5	35.7
25th Percentile	16.4	19.2	12.1	14.7	11.0	18.5
Median	13.3	15.8	8.2	10.2	7.8	12.7
75th Percentile	10.4	12.0	4.8	5.2	4.3	5.0
95th Percentile	5.0	4.9	-2.9	-9.5	-4.8	-13.0
Mean	15.5	17.7	8.4	10.5	7.6	12.2
n	*192*	*183*	*159*	*161*	*144*	*165*
Median by Asset Size						
Under $200M	12.5	15.3	7.9	6.9	5.1	9.0
n	*59*	*58*	*37*	*48*	*26*	*41*
$200M – $500M	14.0	15.8	6.2	8.0	6.4	7.3
n	*57*	*57*	*51*	*52*	*40*	*49*
$500M – $1B	13.5	14.9	10.1	10.4	9.9	10.7
n	*31*	*28*	*27*	*28*	*30*	*29*
Over $1B	13.0	16.4	9.9	12.6	8.7	16.1
n	*45*	*40*	*44*	*33*	*48*	*46*
Median by Institution Type						
Colleges & Universities	13.2	15.8	8.1	10.6	8.2	13.3
n	*117*	*111*	*110*	*98*	*104*	*108*
Cultural & Environmental	13.8	15.5	9.8	6.4	6.2	8.8
n	*35*	*33*	*22*	*27*	*25*	*24*
Independent Schools	13.0	16.4	5.3	12.6	7.3	12.2
n	*23*	*23*	*15*	*19*	*10*	*17*
Other Endowments	13.0	14.1	9.0	10.1	10.8	14.5
n	*17*	*16*	*12*	*17*	*5*	*16*

Source: Endowment data as reported to Cambridge Associates LLC.
Note: Private investment return statistics are reported as horizon internal rates of return (IRRs).

[1] Private equity is a composite of non-venture private equity and venture capital.

[2] Non-venture private equity also includes distressed securities that are invested through a private investment vehicle.

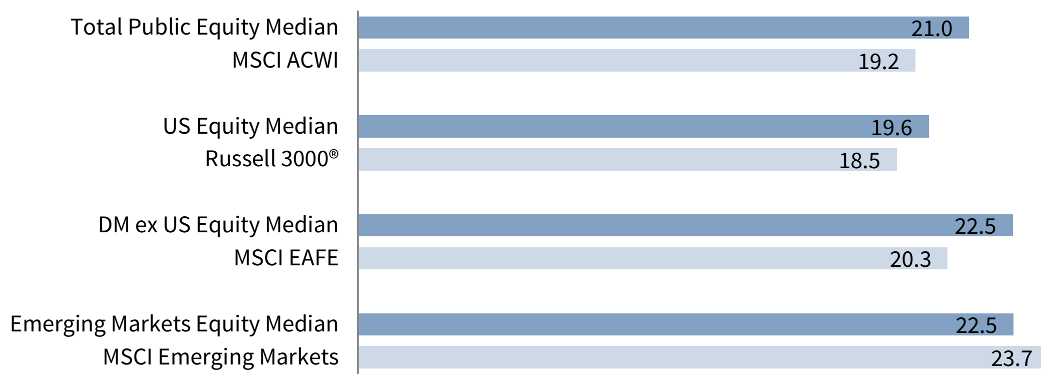
[3] Private real assets is a composite of private real estate and private natural resources.

PUBLIC EQUITY. Public equity returns were strong across all geographic regions in fiscal year 2017. On an index basis, emerging markets equities had the highest trailing one-year return (23.7%), followed by global ex US equities (20.3%) and US equities (18.5%). The median total public equity composite return among participants was 21.0%, outperforming the MSCI ACWI Index by about 180 basis points (bps) (Figure 5).

Most institutions fared well with active management in the developed markets asset classes in fiscal year 2017. The median participant return for global ex US developed equities was 22.5%, a whopping 220 bps higher than the MSCI EAFE Index. For US equities, the median participant return (19.6%) outperformed the Russell 3000® Index by more than 100 bps (Figure 5). Institutions with assets over $1 billion reported the highest median return in both US and global ex US developed equities (Figure 3).

Participants generally did not fare as well in relative terms versus the broad market index in emerging markets. The median participant return (22.5%) was 120 bps lower than that of the MSCI Emerging Markets Index (Figure 5). Institutions with assets between $200 million and $500 million had the highest median return (23.1%) among the three asset size groups, while cultural and environmental institutions reported the highest median return (23.3%) among institution types (Figure 3).

FIGURE 5. PUBLIC EQUITY: MEDIAN PARTICIPANT RETURN VERSUS INDEX RETURNS
Trailing 1-Yr as of June 30, 2017 • Percent (%)

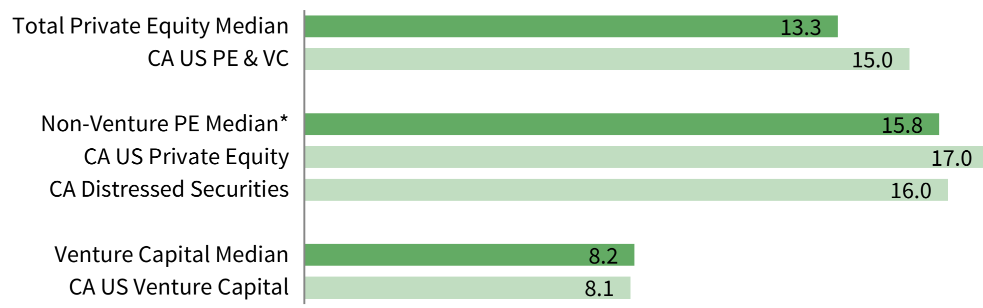


Sources: Endowment data as reported to Cambridge Associates LLC. Index data are provided by Frank Russell Company and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.
Note: Returns for the MSCI indexes are net of dividend taxes for global ex US securities.

PRIVATE EQUITY. The trailing one-year IRR for the Cambridge Associates US Private Equity & Venture Capital Index was 15.0% (Figure 6). Among all participants, the median IRR for the private equity composite was 13.3% for fiscal year 2017. Institutions with assets between $200 million and $500 million reported the highest median composite IRR (14.0%) of the various subgroups (Figure 4).

On a more granular level, the median IRR among all endowments was 15.8% for non-venture private equity and 8.2% for venture capital. The largest endowments reported the highest median IRR for non-venture private equity (16.4%), while those with assets between $500 million and $1 billion reported the highest median IRR for venture capital (10.1%). For both asset classes, the range of returns among all endowments from the 5th percentile to the 95th percentile was approximately 25 percentage points (ppts) (Figure 4).

FIGURE 6. PRIVATE EQUITY: MEDIAN PARTICIPANT RETURN VERSUS INDEX RETURNS
Trailing 1-Yr as of June 30, 2017 • Percent (%)



Sources: Endowment data as reported to Cambridge Associates LLC. Index data are provided by Cambridge Associates LLC.
Note: Private investment return statistics are reported as horizon internal rates of return (IRRs).
* Non-venture private equity also includes distressed securities that are invested through a private investment vehicle.

REAL ASSETS. Real assets consists of a diversified group of investments, including commodities, natural resources, real estate, and inflation-linked bonds. Natural resources and real estate are broken out between public and private investments in this area. Analysis of index returns for private real estate and private natural resources using the CA Modified Public Market Equivalent (mPME) shows that the private strategies significantly outperformed the reference public indexes for fiscal year 2017 (Figure 11).[2]

Among all participants, the median IRR for private natural resources (12.7%) was higher than that of private real estate (7.8%). The median IRR for the overall private real assets composite fell near the middle of these two returns (10.2%), reflecting the nearly equal mean asset allocation for each category among participants (Figure 7). The largest endowments reported the highest median IRR for private natural resources and the overall private real assets composite by considerable margins. As is usually the case, the range of returns among all endowments was quite wide for the overall private real assets composite and the sub-strategies (Figure 4).

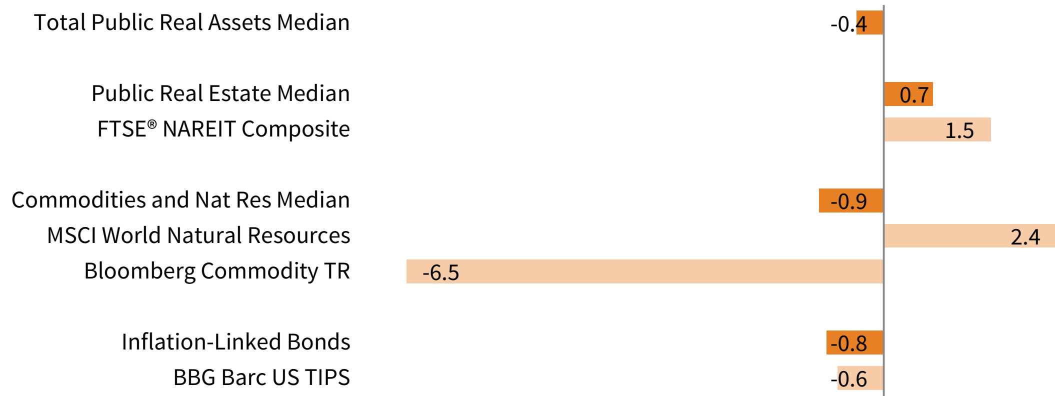
2 Under the CA mPME methodology, the public index's share are purchased and sold according to the private fund cash flow schedule, with distributions calculated in the same proportion as the private fund, and mPME NAV is a function of mPME cash flows and public index returns. The mPME analysis evaluates what return would have been earned had the dollars invested in private investments been invested in the public market instead.

FIGURE 7. PRIVATE REAL ASSETS: MEDIAN PARTICIPANT RETURN VERSUS INDEX RETURNS
Trailing 1-Yr as of June 30, 2017 • Percent (%)

Sources: Endowment data as reported to Cambridge Associates LLC. Index data are provided by Cambridge Associates LLC.
Note: Private investment return statistics are reported as horizon internal rates of return (IRRs).

In public real assets, the median returns of real estate and commodities/natural resources were similar in fiscal year 2017. The median participant return for public real estate was 0.7%, slightly higher than the median return for commodities/natural resources (-0.9%) (Figure 8). The median public real assets composite return was -0.4%. The range of public real assets returns from the 5th percentile to the 95th percentile was approximately 12 ppts, which is substantially narrower than what we have observed in prior years (Figure 3).

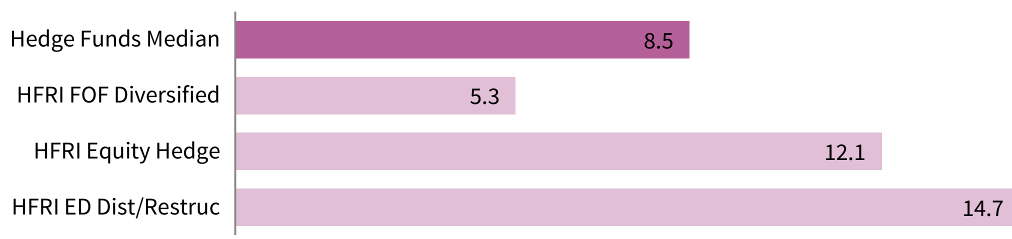
FIGURE 8. PUBLIC REAL ASSETS: MEDIAN PARTICIPANT RETURN VERSUS INDEX RETURNS
Trailing 1-Yr as of June 30, 2017 • Percent (%)



Sources: Endowment data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., FTSE International Limited, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.
Note: Returns for the MSCI World Natural Resources Index are net of dividend taxes for global ex US securities.

HEDGE FUNDS. Hedge funds posted their best returns since fiscal year 2014. The median hedge fund composite return among all endowments was 8.5%. Institutions with assets between $500 million and $1 billion reported the highest median return (9.5%) of the various asset size bands (Figure 3). On an index basis, hedge funds that invest in distressed strategies returned 14.7% and equity-oriented hedge funds returned 12.1%. The HFRI Funds-of-Funds Diversified Index returned just 5.3% (Figure 9).

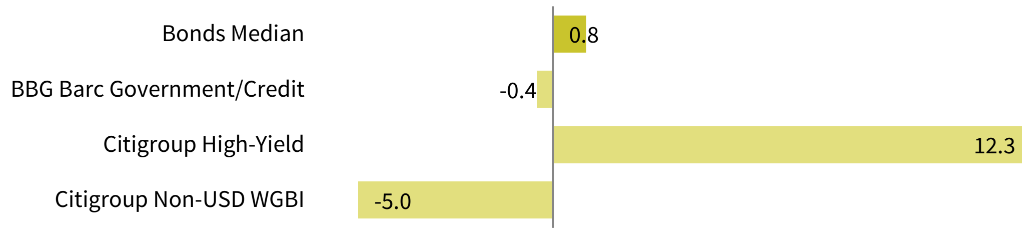
FIGURE 9. HEDGE FUNDS: MEDIAN PARTICIPANT RETURN VERSUS INDEX RETURNS
Trailing 1-Yr as of June 30, 2017 • Percent (%)



Sources: Endowment data as reported to Cambridge Associates LLC. Index data are provided by Hedge Fund Research, Inc.

BONDS. Median participant performance for the bonds composite was just 0.8% in fiscal year 2017, with the largest endowments reporting the highest median return (1.7%) (Figure 3). US bonds, as represented by the Bloomberg Barclays Government/Credit Bond Index returned -0.4% and the Citigroup Non-US Dollar World Government Bond Index return was even lower (-5.0%). Although the Citigroup High-Yield Index returned 12.3%, less than one-fifth (53 of 289) of the participant group reported an allocation to this strategy in fiscal year 2017.

FIGURE 10. BONDS: MEDIAN PARTICIPANT RETURN VERSUS INDEX RETURNS
Trailing 1-Yr as of June 30, 2017 • Percent (%)



Sources: Endowment data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., and Citigroup Global Markets.

ANALYSIS OF TOP AND BOTTOM PERFORMERS IN 2017

Many factors contribute to investor returns, including asset allocation policy and the implementation of that policy. In addition, varying performance measurement methodologies may impact the peer performance statistics reported in this study.

ASSET ALLOCATION. Figure 11 sorts all participating endowments into four quartiles based on fiscal year 2017 investment performance. 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.

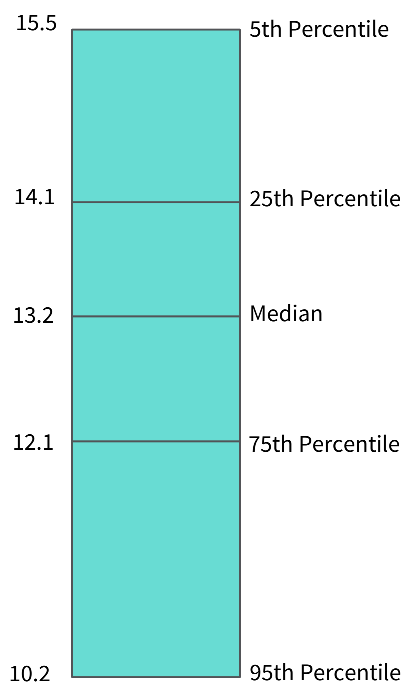
The disparity in asset allocations between the top and bottom performers was largest for public equities, which produced the best index returns of the major asset class strategies listed in Figure 11 for fiscal year 2017. As such, institutions in the top performance quartile had the highest combined average allocation to global public equities (48.8%), while those in the bottom quartile had the lowest average allocation (40.0%). There was also a large differential between top and bottom performers in allocations to bonds and hedge funds. The indexes for these strategies substantially underperformed those of public equities in fiscal year 2017. Institutions in the bottom quartile of performers reported the highest combined average allocation to bonds and hedge funds (35.0%), while those in the top quartile reported the lowest average allocation (27.0%).

ATTRIBUTION. Asset allocation is a key driver of performance, but it does not fully explain the variation of returns that are reported across different institutions. The implementation of an asset allocation strategy also contributes to the total returns that portfolios earn. Although 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 fiscal year 2017.

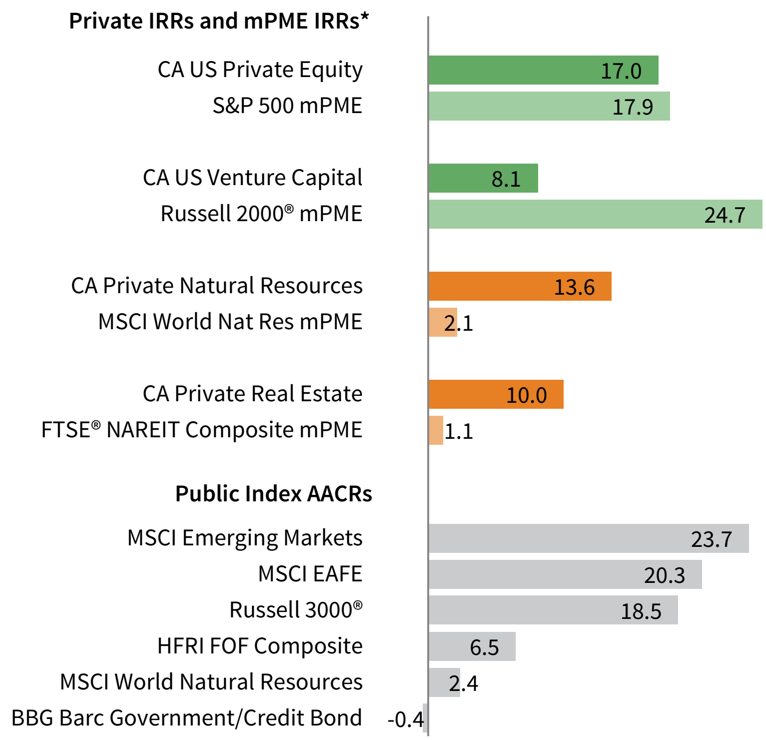
FIGURE 11. 1-YR ASSET ALLOCATION OF TOP AND BOTTOM PERFORMERS

As of June 30, 2017 • Percent (%)

1-Yr Return Distribution



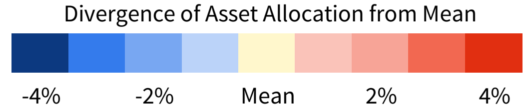
1-Yr Index Returns



Mean Asset Allocation by Performance Quartile: June 30, 2016 to June 30, 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	24.5	16.1	8.2	8.4	18.6	2.9	8.7	5.2	3.5	3.6	0.4
2nd Quartile	21.6	16.5	7.9	10.3	18.9	2.9	8.3	4.6	4.8	3.6	0.6
3rd Quartile	19.9	15.8	7.8	10.3	19.7	2.7	9.5	5.4	4.7	3.8	0.4
Bottom Quartile	19.5	13.5	7.0	11.0	24.0	2.9	8.4	4.6	4.9	4.2	0.1
All C&U Mean	21.4	15.4	7.7	10.0	20.3	2.9	8.7	5.0	4.5	3.8	0.4

Divergence of Asset Allocation from Mean



Sources: Endowment 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 275 institutions. Returns for the MSCI Indexes are net of dividend taxes for global ex US securities.

* 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.

Figure 12 illustrates the results of an analysis based on the one-year return and beginning fiscal year asset allocation of 275 respondents that provided sufficient data. The darker shading on the bar chart represents the portion of the mean participant return that can be attributed to asset allocation and is calculated using a blend of representative asset class benchmarks weighted according to each institution's asset allocation. The lighter shading of the bar is calculated by subtracting the mean asset allocation return from the mean participant return and is the portion of the total return that cannot be explained by asset allocation. This "other" portion of returns is principally driven by implementation or execution decisions, which can include active management and manager selection.[3]

FIGURE 12. ATTRIBUTION ANALYSIS
As of June 30, 2017 • Percent (%)

Asset Class	Mean Asset Allocation	Asset Class Benchmark Return	Contribution to Asset Class Return
	Breakdown of Return from Asset Allocation		
US Equity	21.0	18.5	3.9
Global ex US Equity-Developed Mkts	14.7	20.3	3.0
Global ex US Equity-Emerging Mkts	7.3	23.7	1.7
Long/Short Hedge Funds	9.7	12.1	1.2
Non-Venture Private Equity	4.4	17.0	0.8
Absolute Return (ex Distressed)	11.3	5.3	0.6
Private Oil & Gas / Natural Resources	2.3	13.6	0.3
Venture Capital	3.6	8.1	0.3
Distressed-Hedge Fund Structure	1.8	14.7	0.3
Private Real Estate	2.5	10.2	0.2
Distressed-Private Equity Structure	1.3	15.9	0.2
Other Private Investments	0.8	12.5	0.1
Public Energy / Natural Resources	3.1	2.4	0.1
High Yield Bonds	0.5	12.3	0.1
Global ex US Bonds-Emerging Mkts	0.5	6.0	0.0
Cash & Equivalents	3.7	0.5	0.0
Timber	0.3	3.4	0.0
Public Real Estate	0.5	1.5	0.0
Other	0.2	0.5	0.0
Inflation-Linked Bonds	0.5	-0.6	0.0
Global ex US Bonds-Developed Mkts	0.6	-5.0	0.0
US Bonds	8.8	-0.4	0.0
Commodities	0.7	-6.5	0.0

Sources: Endowment data 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 275 institutions that provided beginning fiscal year asset allocation. Mean asset allocation is as of June 30, 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 horizon returns.

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.

As is usually the case, the analysis estimates that the vast majority of the mean total return for the participant group could be explained by asset allocation in fiscal year 2017. US equity, which returned 18.5% and had the highest average allocation among the detailed asset classes, made the largest contribution to the mean asset class return. Global ex US developed equities and emerging markets equities also made significant positive contributions to overall portfolio performance. Each category's contribution to the mean asset class return is a function of its benchmark return as well as the participant group's average allocation to the category (Figure 12).

Although asset allocation tends to account for most of the return that a portfolio earns, implementation decisions usually explain most of the relative performance among participants. For fiscal year 2017, the attribution model estimates that the average asset allocation return of the top quartile was 170 bps higher than that of the bottom quartile (Figure 13). When looking at the portion of returns explained by other factors, the difference in the average of the top and bottom quartiles was even higher (240 bps).

FIGURE 13. ATTRIBUTION ANALYSIS BY PERFORMANCE QUARTILE
Trailing 1-Yr Return • As of June 30, 2017 • Percent (%)

Source: Endowment data as reported to Cambridge Associates LLC.
Note: Includes data for 275 institutions that provided beginning fiscal year asset allocation.

RETURN CALCULATION METHODOLOGIES. Performance reporting methodologies differ across participants in this study. Institutions that place a significant emphasis on benchmarking peer performance should take note of the following issues.

Private Investments. Nearly 85% of participants in this study report an allocation of 1% or more to private investments. The reporting of fiscal year-end valuations and returns for private investments is often delayed until several months after June 30. Institutions in this study use two main to account for private investments in their fiscal year 2017 total portfolio return. The most frequently used methodology was to report returns on a current basis, meaning the total portfolio return incorporated private investment

PERFORMANCE REPORTING METHODOLOGIES

Current Basis

Total investment pool return for 2017 includes marketable asset and private investment performance for July 1, 2016, to June 30, 2017.

Marketable Assets

3Q16 4Q16 1Q17 2Q17

Private Investments

Lagged Basis

Total investment pool return for 2017 includes marketable asset performance for July 1, 2016, to June 30, 2017, and private investment performance for April 1, 2016, to March 31, 2017.

Marketable Assets

2Q16 3Q16 4Q16 1Q17 2Q17

Private Investments

Methodologies Used by Participants

Asset Size	Current Basis	Lagged Basis	Other	No PI Allocation
Under $200M	62%	0%	0%	38%
n	*66*	*0*	*0*	*40*
$200M – $500M	95%	0%	0%	5%
n	*62*	*0*	*0*	*3*
$500M – $1B	80%	16%	2%	2%
n	*36*	*7*	*1*	*1*
Over $1B	68%	32%	0%	0%
n	*50*	*23*	*0*	*0*
All Institutions	74%	10%	0%	15%
n	*214*	*30*	*1*	*44*

Source: Endowment data as reported to Cambridge Associates LLC.

Notes: Private investments include 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 right-hand column.

valuations for the entire fiscal year period. The second most frequently used methodology was the lagged basis. Under this methodology, private investment valuations lag other assets in the portfolio by one quarter. In essence, the private investment portion of the fiscal year 2017 total return represents performance for the period of April 1, 2016, to March 31, 2017.

When assessing the impact of these two methodologies, it is important to consider private investment returns for both second quarter 2016 and second quarter 2017. With the lagged basis methodology, performance for the former period will be included in the one-year total return calculation, but performance for the latter period will be excluded. For natural resources, the Cambridge Associates private index return for second quarter 2016 was substantially stronger than second quarter 2017 (Figure 14). However, second quarter 2017 returns were stronger than second quarter 2016 for private real estate, venture capital, and distressed securities. Whether or not either reporting methodology would have an advantage over the other in the fiscal year 2017 total return calculation will depend on each institution's allocation across the private investment asset classes and their actual performance in these categories.

FIGURE 14. CAMBRIDGE ASSOCIATES PRIVATE INVESTMENT INDEX RETURNS

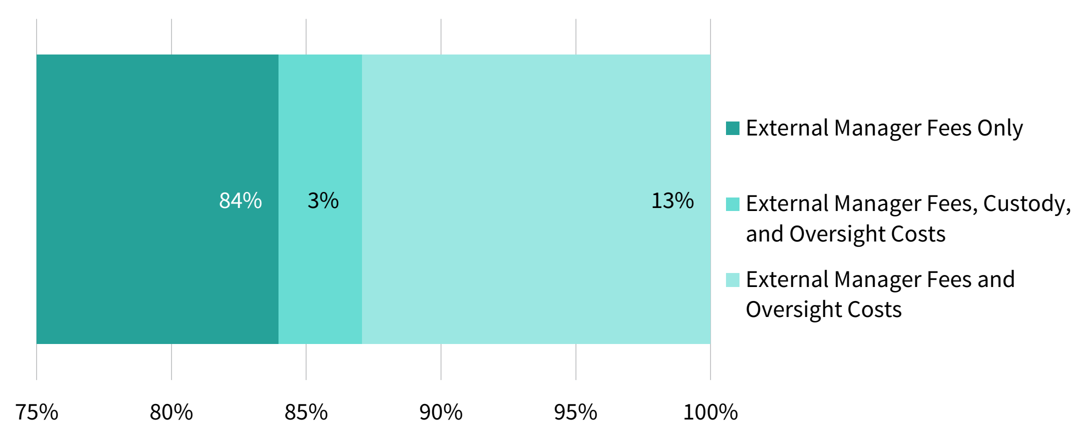
	One Quarter Horizon Pooled Return	
	Q2 2016	Q2 2017
US Private Equity	4.0	3.6
US Venture Capital	0.5	1.4
Distressed Securities	2.6	3.6
Real Estate	1.3	3.6
Natural Resources	6.4	-0.4

Source: Cambridge Associates LLC.

Net of Fee Calculations. Nearly all of the participants (288 of 289) in this study provided performance on a net-of-fees basis. The vast majority (84%) of respondents deduct only asset- and performance-based management fees, while another 3% also deduct custody expenses (Figure 15). The remaining 13% of institutions deduct the aforementioned fee types as well as some combination of investment office oversight expenses. Past Cambridge Associates surveys have shown that the total annual investment office oversight expenses range between 10 bps and 30 bps for most of our endowment clients. Many factors can impact the overall level of costs including staffing levels, overall complexity of the portfolio, and the types of costs recognized. The scale of asset size can also impact statistics in relative terms, as costs in basis points tend to be lower for institutions with a larger asset base.

FIGURE 15. TYPES OF FEES DEDUCTED IN NET RETURN CALCULATION

Fiscal Year 2017 • n = 289



Source: College and university data as reported to Cambridge Associates LLC.

LONG-TERM RETURNS

The mean average annual compound return (AACR) for all endowments was 7.9% for the five-year period ending June 30, 2017 (Figure 16). Institutions with assets greater than $1 billion reported the highest average five-year return (8.9%) (Figure 17). The average return for the most recent five-year period lies in the middle of those that have been reported over the last decade (Figure 18).

The mean nominal AACR for the ten-year period was 4.5% (Figure 16), with the largest portfolios again reporting the highest mean return (5.2%) (Figure 17). The most recent ten-year period is one of the lowest long-term return periods reported over the last decade, surpassing only the ten-year periods ending in fiscal years 2009 and 2010 (Figure 18).

FIGURE 16. TOTAL RETURNS SUMMARY: TRAILING 3-, 5-, AND 10-YR

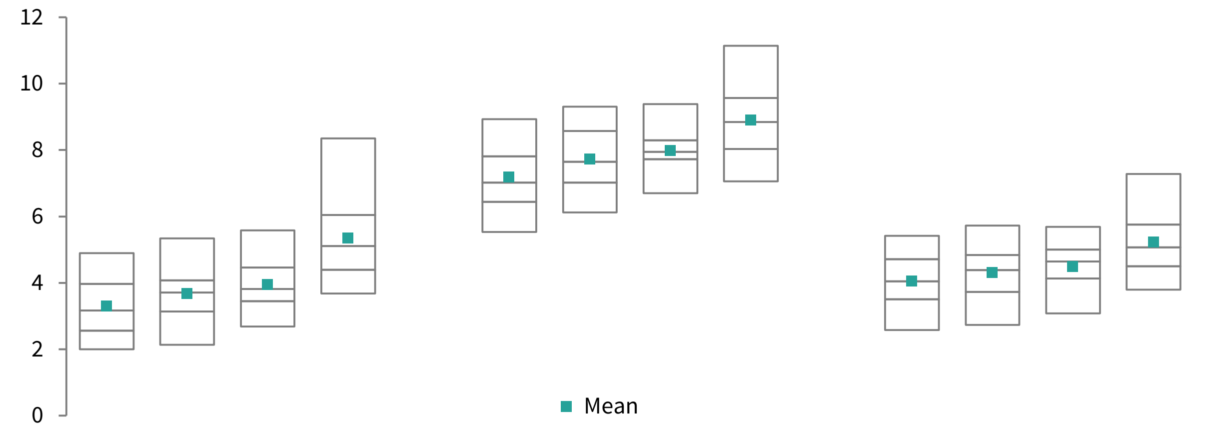
Yrs Ended June 30, 2017 • Percent (%)

	Nominal AACRs			Real After Spending AACRs		
	3 Yr	5 Yr	10 Yr	3 Yr	5 Yr	10 Yr
All Endowments						
Mean	4.0	7.9	4.5	-1.2	2.1	-1.6
Median	3.9	7.9	4.5	-1.2	2.1	-1.6
n	*287*	*284*	*262*	*153*	*145*	*109*
Colleges & Universities						
Mean	4.3	8.2	4.6	-1.1	2.2	-1.6
Median	4.0	8.0	4.6	-1.2	2.2	-1.6
n	*163*	*162*	*153*	*119*	*113*	*94*
Cultural & Environmental						
Mean	4.0	7.9	4.6	-1.5	1.8	-2.3
Median	3.9	7.7	4.7	-1.4	1.9	-2.3
n	*53*	*53*	*48*	*15*	*13*	*5*
Independent Schools						
Mean	3.6	7.4	4.5	-1.6	1.7	-0.6
Median	3.7	7.1	4.7	-2.0	1.4	-1.2
n	*29*	*29*	*27*	*14*	*14*	*9*
Other Endowments						
Mean	3.1	7.0	4.0	-3.1	0.8	-2.8
Median	3.1	6.8	3.8	-3.5	0.0	-2.8
n	*42*	*40*	*34*	*5*	*5*	*1*
Benchmarks						
70/30 Domestic	7.2	10.9	6.8			
70/30 Global	4.5	8.3	4.6			

Sources: Endowment 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: Real returns are adjusted for inflation as measured by the Consumer Price Index. 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. Returns for the MSCI ACWI are net of dividend taxes for global ex US securities.

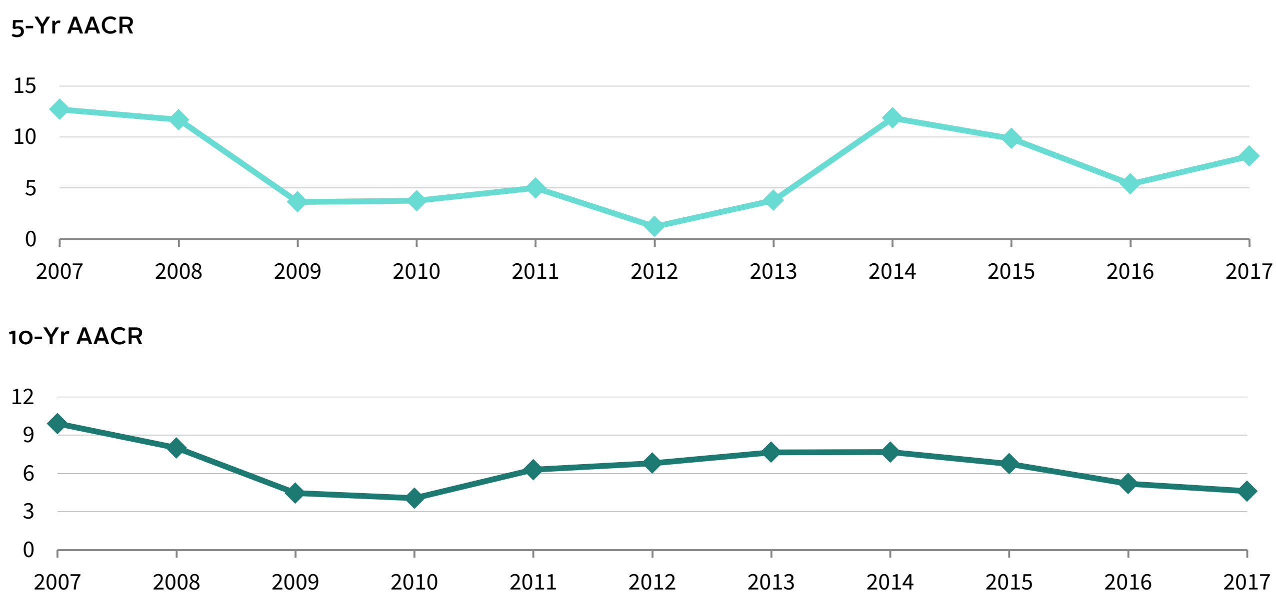
FIGURE 17. NOMINAL RETURN PERCENTILES BY ASSET SIZE: TRAILING 3-, 5-, AND 10-YR
Years Ended June 30, 2017 • Percent (%)



	3 Yr				5 Yr				10 Yr			
	Under $200M	$200M – $500M	$500M – $1B	Over $1B	Under $200M	$200M – $500M	$500M – $1B	Over $1B	Under $200M	$200M – $500M	$500M – $1B	Over $1B
5th %ile	4.9	5.3	5.6	8.4	8.9	9.3	9.4	11.1	5.4	5.7	5.7	7.3
25th %ile	4.0	4.1	4.5	6.0	7.8	8.6	8.3	9.6	4.7	4.8	5.0	5.8
Median	3.2	3.7	3.8	5.1	7.0	7.6	7.9	8.8	4.0	4.4	4.6	5.1
75th %ile	2.6	3.1	3.5	4.4	6.4	7.0	7.7	8.0	3.5	3.7	4.1	4.5
95th %ile	2.0	2.1	2.7	3.7	5.5	6.1	6.7	7.1	2.6	2.7	3.1	3.8
Mean	3.3	3.7	3.9	5.3	7.2	7.7	8.0	8.9	4.0	4.3	4.5	5.2
n	*104*	*65*	*45*	*73*	*101*	*65*	*45*	*73*	*88*	*62*	*40*	*72*

Source: College and university data as reported to Cambridge Associates LLC.
Note: Three-, five-, and ten-year returns are annualized.

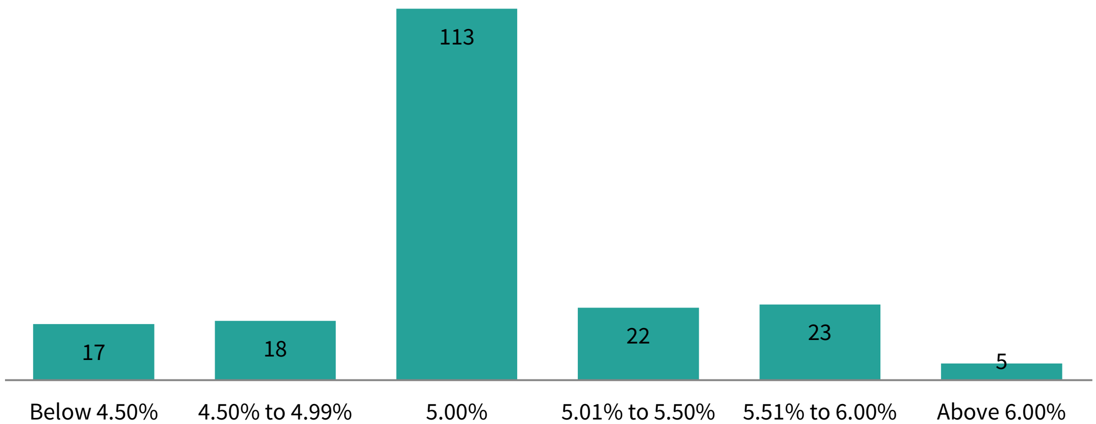
FIGURE 18. ROLLING 5-YR AND 10-YR AVERAGE ANNUAL COMPOUND RETURNS
Years Ended June 30 • Percent (%)



Source: Endowment data as reported to Cambridge Associates LLC.
Note: Analysis includes data for 184 institutions that provided returns for the last 20 years.

To maintain purchasing power for an endowment,[4] institutions must achieve a real return that offsets the average effective spending rate over the long-term. The most common real return objective that participating institutions target is 5% (Figure 19). Most institutions have struggled in maintaining purchasing power of their endowments over the last decade. Through the trailing ten-year period ending June 30, 2017, the average real return after spending was -1.6% (Figure 16), with only 10 of 109 respondents reporting a return above 0%.

FIGURE 19. REAL TOTAL PORTFOLIO RETURN OBJECTIVES



Source: Endowment data as reported to Cambridge Associates LLC.
Note: Graph includes data for 198 institutions that provided a real total portfolio return objective.

RELATIVE RETURNS: SIMPLE PORTFOLIO BENCHMARK. US equities and bonds have been among the top-performing marketable investments over the past ten years, outperforming global ex US equities, hedge funds, and natural resources (Figure 20). Consequently, portfolios that have diversified across these asset classes have considerably lagged a simple 70/30 benchmark that uses a US index for the equity component.[5] The average return for institutions in this study underperformed this simple benchmark by nearly 230 bps (Figure 16) for the trailing ten-year period. Institutions fared better against a 70/30 benchmark that uses a global equity index, with the mean participant return trailing this benchmark by just 10 bps over the ten-year period.

These simple benchmarks help evaluate the decision to adopt the endowment model of investing where the portfolio is allocated across a diverse set of mostly equity-oriented investments, including non-traditional illiquid assets. Although, in retrospect, diversification among the marketable asset classes did not benefit institutions over the trailing ten-year period, it was another key tenet of the endowment model that was a strong contributor to investment performance over this period. Institutions that had the highest allocations to illiquid private investments generally produced the best returns over the last decade.

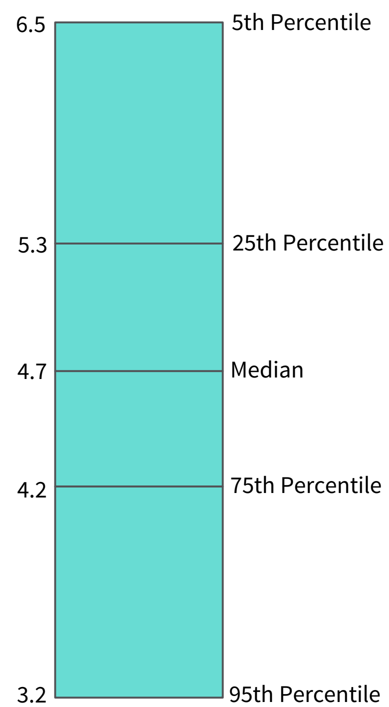
4 In this instance, endowment refers to a single fund with no future inflows. An LTIP, which is a collection of multiple endowments and other long-term funds, can use inflows to maintain purchasing power even if the pool's long-term real return is lower than the spending rate.

5 Among institutions in this study, the mean combined allocation to global ex US equities, hedge funds, and public natural resources and commodities was 46.8%.

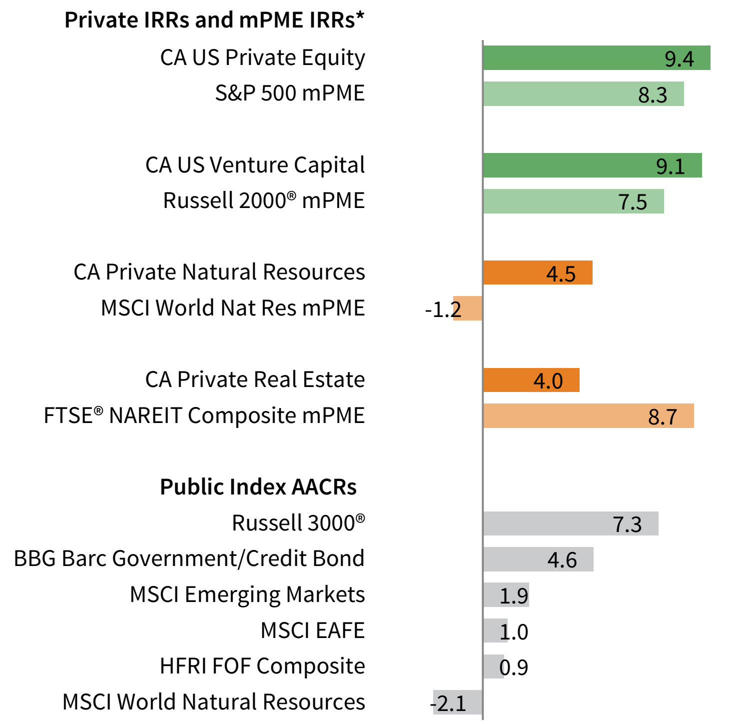
FIGURE 20: 10-YR ASSET ALLOCATION OF TOP AND BOTTOM PERFORMERS

As of June 30, 2017 • Percent (%)

10-Yr Return Distribution



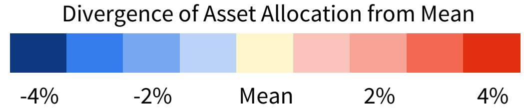
10-Yr Index Returns



Mean Asset Allocation by Performance Quartile: June 30, 2007 to June 30, 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	17.9	12.2	6.0	9.1	19.3	3.8	14.8	10.6	3.5	2.6	0.2
2nd Quartile	20.2	13.0	6.6	10.0	23.1	3.7	9.3	5.6	4.7	3.5	0.4
3rd Quartile	21.2	15.1	6.3	12.5	19.1	3.2	7.4	4.5	6.5	3.4	0.7
Bottom Quartile	20.6	14.6	6.3	13.9	19.2	3.1	7.2	4.2	6.2	4.2	0.6
All C&U Mean	20.0	13.7	6.3	11.4	20.2	3.5	9.7	6.2	5.2	3.4	0.5

Divergence of Asset Allocation from Mean



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

Notes: Analysis includes data for 176 institutions. Returns for the MSCI Indexes are net of dividend taxes for global ex US securities.

* 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.

Among the asset class benchmarks listed in Figure 20, most private investment strategies outperformed their public market counterparts on an mPME basis over the past ten years, including private equity & venture capital. Institutions in the top quartile of performers reported an average allocation of 14.8% to private equity & venture capital over the last ten years, while those in the bottom quartile of performers averaged 7.2%. Similarly, the top quartile of performers reported the highest average allocation to private real assets (10.6%), while those in the bottom quartile reported the lowest average allocation (4.2%).

ATTRIBUTION. Higher allocations to the outperforming private investment asset classes led to the top quartile of performers earning the highest asset allocation return in our attribution model for the trailing ten-year period. The average asset allocation return for the top quartile of performers (4.2%) was 80 bps higher than the average for the bottom quartile of performers (Figure 21). However, similar to our analysis on the trailing one-year data, our attribution model estimates that it was the return from other factors—mainly implementation decisions—that explained most of the dispersion in returns among the peer group for the trailing ten-year period. The top quartile of performers added an average of 180 bps through implementation decisions over the trailing ten-year period, while the average institution from the bottom quartile added an average of just 20 bps through implementation (Figure 21).

The ranges of actual asset class returns across the entire participant group for the trailing five- and ten-year periods are listed in Figures 22 and 23.

FIGURE 21. 10-YR ATTRIBUTION ANALYSIS BY PERFORMANCE QUARTILE

As of June 30, 2017 • Percent (%)

Sources: Endowment data 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 176 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 22. DISPERSION OF PARTICIPANTS' ASSET CLASS RETURNS: MARKETABLE INVESTMENTS
Trailing 5- and 10-Yr • As of June 30, 2017

	Public Equity[1]	Global Equity[2]	US Equity	DM ex US Equity	EM Equity	Bonds	Hedge Funds	Public Real Assets[3]	Commodities and Natural Resources	Public Real Estate
Trailing 5-Yr										
5th Percentile	13.1	14.7	16.6	13.1	8.8	3.7	8.4	3.0	0.5	9.7
25th Percentile	12.0	13.2	15.4	11.7	5.8	2.8	6.5	-0.7	-2.2	8.6
Median	11.3	12.2	14.3	10.6	4.6	2.3	5.5	-3.5	-4.2	7.9
75th Percentile	10.6	11.7	13.3	9.1	3.6	1.7	4.7	-4.7	-6.3	6.9
95th Percentile	9.3	7.9	11.5	7.6	2.3	0.5	3.0	-7.9	-8.5	5.7
Mean	11.3	12.1	14.3	10.4	4.9	2.2	5.6	-2.8	-4.2	7.7
n	*211*	*81*	*216*	*199*	*197*	*199*	*212*	*150*	*149*	*27*
Trailing 10-Yr										
5th Percentile	7.0	9.6	9.8	6.3	5.9	6.6	6.5	2.0	0.4	6.6
25th Percentile	5.6	8.5	8.1	4.3	3.6	5.5	4.7	-0.6	-1.9	6.1
Median	5.1	7.6	7.2	3.3	2.4	4.8	3.7	-2.1	-2.9	4.1
75th Percentile	4.3	6.0	6.5	2.1	1.3	3.8	2.9	-3.5	-4.1	2.3
95th Percentile	3.4	2.2	5.1	0.5	0.4	2.4	1.7	-5.8	-7.5	1.6
Mean	5.1	7.0	7.3	3.3	2.6	4.6	3.8	-2.0	-3.1	4.2
n	*186*	*32*	*189*	*169*	*122*	*161*	*179*	*94*	*82*	*20*

Source: Endowment data as reported to Cambridge Associates LLC.

[1] Public equity is a composite of global equity, US equity, developed markets ex US equity, and emerging markets equity.

[2] Global equity includes only investment vehicles that have a mandate to invest in US and international markets.

[3] Total public real assets is a composite of public real estate, commodities, and inflation-linked bonds.

FIGURE 23. DISPERSION OF PARTICIPANTS' ASSET CLASS RETURNS: PRIVATE INVESTMENTS
Trailing 5- and 10-Yr • As of June 30, 2017

	Total Private Equity[1]	Non-Venture Private Equity[2]	Venture Capital	Total Private Real Assets[3]	Private Real Estate	Private Natural Resources
Trailing 5-Yr						
5th Percentile	23.6	25.2	24.9	13.4	18.0	11.3
25th Percentile	16.2	15.7	18.5	9.7	14.3	4.3
Median	13.8	13.5	13.8	5.8	12.3	1.9
75th Percentile	11.5	11.4	10.1	3.3	10.1	-1.2
95th Percentile	8.5	7.9	5.5	-2.6	2.9	-10.6
Mean	15.3	15.4	13.9	5.8	11.8	1.3
n	*185*	*175*	*145*	*143*	*133*	*136*
Trailing 10-Yr						
5th Percentile	14.0	14.0	17.9	8.8	9.4	12.0
25th Percentile	11.2	10.5	13.2	6.0	6.0	6.4
Median	9.8	8.9	10.9	3.9	3.3	5.0
75th Percentile	8.1	7.4	8.5	1.6	0.9	3.1
95th Percentile	4.7	4.2	4.0	-4.7	-5.6	-2.1
Mean	9.6	8.9	10.9	3.3	2.8	4.6
n	*166*	*155*	*129*	*120*	*110*	*105*

Source: Endowment data as reported to Cambridge Associates LLC.

Note: Private investment return statistics are reported as horizon internal rates of return (IRRs).

[1] Private equity is a composite of non-venture private equity and venture capital.

[2] Non-venture private equity also includes distressed securities that are invested through a private investment vehicle.

[3] Private real assets is a composite of private real estate and private natural resources.

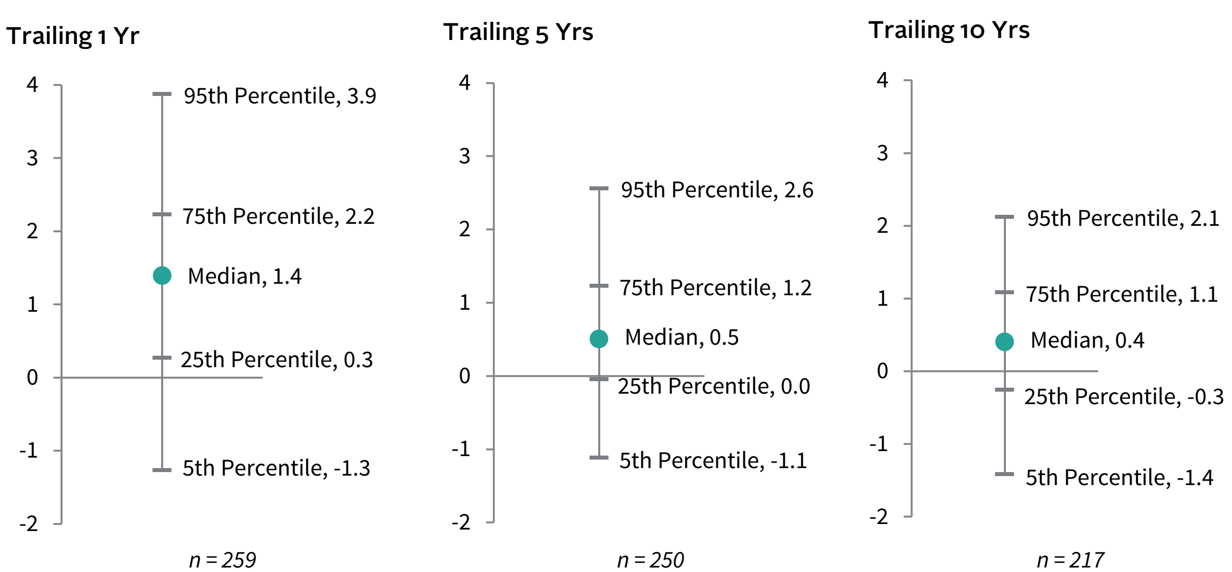
Policy Portfolio Benchmarks

RELATIVE RETURNS. Benchmarking is all about answering the question, "how are we doing?" in ways that are both accurate and relevant to the objectives of the portfolio being measured. Performance results of peers can be informative, but they are not necessarily the most effective benchmark to evaluate an institution's investment performance. Each nonprofit institution has its own unique blend of investment objectives, constraints, and risk tolerances. Therefore, investment policies will vary within a peer group, leading to different asset allocation structures for institutions that may otherwise be considered worthy peers.

The comparison of an institution's return to its policy portfolio benchmark is a better measure for determining whether a portfolio is being successfully managed against its target investment policy. The policy benchmark is typically a blend of indexes that represent the desired portfolio risk exposures without any expression of more active alternatives. In certain asset classes, such as hedge funds and private investments, there are often no investable proxies and other types of benchmarks are used.

Most institution performed well relative to their policy portfolio benchmarks in fiscal year 2017. Over 80% of participating institutions (214 of 259) outperformed their policy benchmark in fiscal year 2017 (Figure 24). The median difference between the total portfolio return and the policy benchmark among all institutions was 1.4 ppts. These results were much better than the previous fiscal year when approximately three-quarters of the peer group underperformed their policy benchmark. Most institutions also fared well versus their policy benchmark over the longer time horizon. The median difference between the total portfolio AACR and the benchmark was 0.5 ppt and 0.4 ppt for the trailing five- and ten-year periods, respectively.

FIGURE 24. RANGE OF OUT/UNDERPERFORMANCE OF TOTAL RETURN VERSUS POLICY PORTFOLIO BENCHMARK
As of June 30, 2017 • Percentage Points



Source: Endowment data as reported to Cambridge Associates LLC.
Note: Data points represent the difference between the total portfolio return and the policy portfolio benchmark return.

POLICY PORTFOLIO BENCHMARK COMPONENTS. Nearly 90% of the respondents (226 of 255) that provided a policy portfolio benchmark use a detailed, asset class–specific benchmark to evaluate the performance of the total portfolio. The other 29 institutions that provided data use a simple benchmark that typically incorporates a broad-based equity market index and a bond index weighted in proportion to the overall risk profile of the portfolio.

For those that use a detailed policy portfolio benchmark, the components of the benchmark should align with the asset classes or role-in-portfolio categories stated in the portfolio's asset allocation policy. Since policy allocations can be set at varying levels of granularity, approaches to benchmarking vary among institutions. One area where this is noticeable is in public and private equities, where 20% of institutions use a single index to benchmark their entire equity allocation (Figure 25). This method is appropriate where there is a broad target allocation to equity stated in the investment policy and there is discretion in choosing the strategies to fill out that allocation.[6] The remaining 80% of institutions assign separate indexes for public and private equities and/or based on geographic orientation.

Where separate indexes were reported for public equities based on geographic orientation, the Russell 3000® Index was cited by 66% of institutions for US equities (Figure 25). A similar proportion of institutions (68%) used a blend of the MSCI EAFE and MSCI Emerging Markets Indexes to measure global ex US equities. This approach is appropriate for institutions that have separate targets to global ex US developed and emerging markets, particularly if the targets are out of proportion to the weightings of the MSCI ACWI ex US Index.

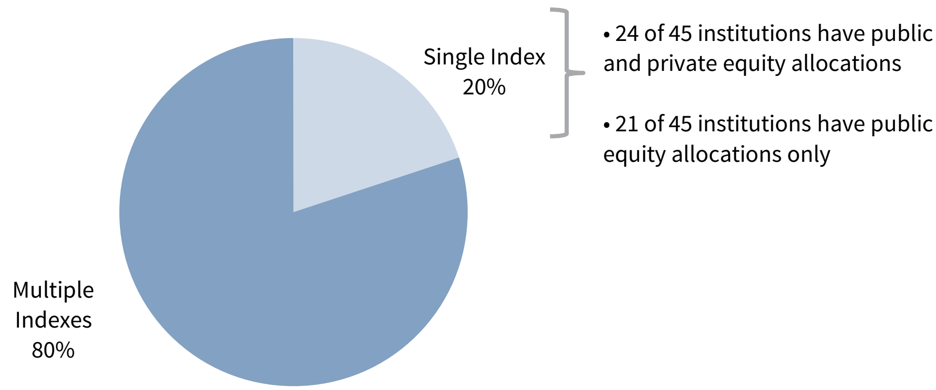
For institutions that benchmark private equity & venture capital separately from public equity, the most common benchmark was a public market index (42%). The use of the Cambridge Associates LLC Private Equity & Venture Capital Indexes was also common, with 41% of respondents using some form of these benchmarks. Of the institutions that use public indexes, just over one-third (24 of 62) add a prespecified percentage or premium (ranging from 2% to 5%) to the index return. The choice of the public indexes reported by institutions varies widely and should be representative of the private equity program's exposure and geographic orientation.

6 Even in such cases where the target allocation to equity is not broken out by public and private substrategies, there is typically a liquidity policy that sets limits on the proportion of the portfolio that can be invested in illiquid private investments.

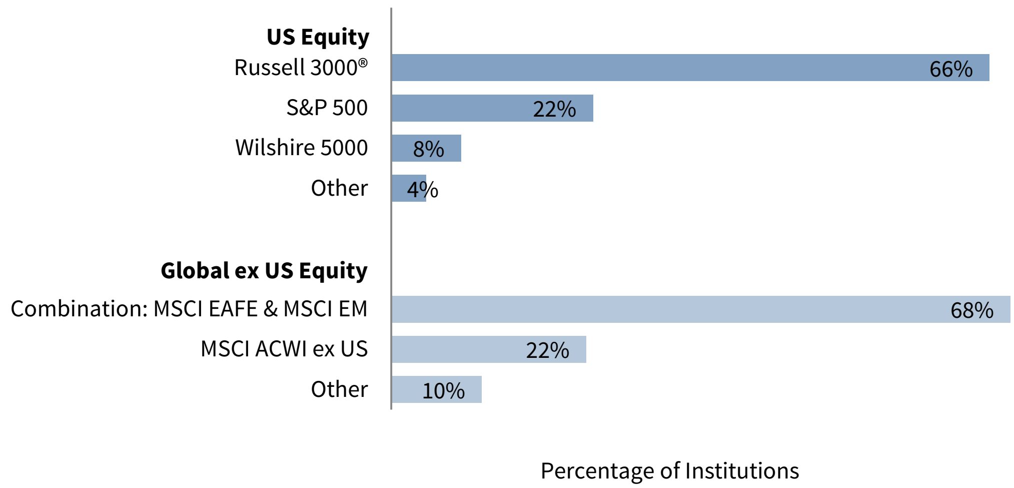
FIGURE 25. FREQUENTLY USED COMPONENTS OF POLICY PORTFOLIO BENCHMARKS: PUBLIC AND PRIVATE EQUITY

As of June 30, 2017

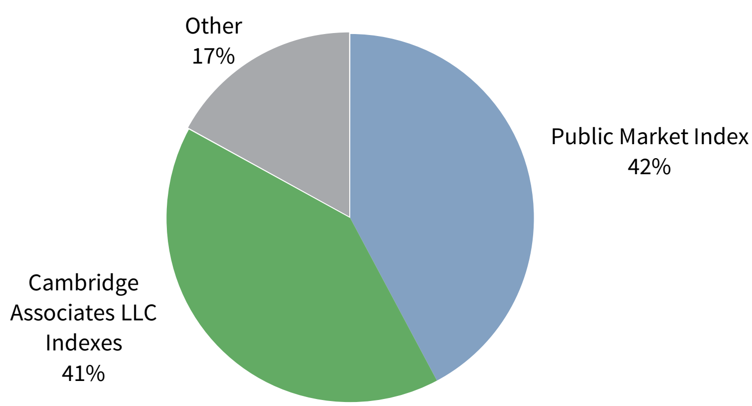
Benchmark for the Entire Equity Allocation *(n = 226)*



Public Equity Indexes Reported by Geographic Orientation *(n = 130)*



Private Equity Indexes *(n = 147)*

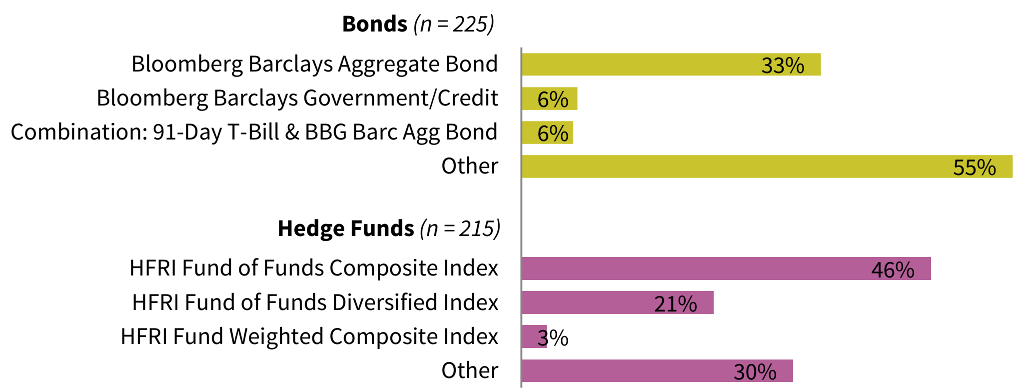


Source: Endowment data as reported to Cambridge Associates LLC.

The use of solely the Bloomberg Barclays Aggregate Bond Index was the most common benchmarking approach for bonds and was reported by 33% of institutions (Figure 26). However, many institutions use unique index combinations to better reflect their underlying bond exposure. Benchmarks should depend on whether allocations are made domestically or globally as well as the type of issuer (sovereign versus corporate, or both). Most respondents use an HFRI index for hedge funds, with the Fund of Funds Composite Index reported by 46% of institutions. For real assets, benchmark combinations are unique across most participants due to the wide variety of strategies under this category.

FIGURE 26. FREQUENTLY USED COMPONENTS OF POLICY PORTFOLIO BENCHMARKS: BONDS AND HEDGE FUNDS

As of June 30, 2017



Source: Endowment data as reported to Cambridge Associates LLC.

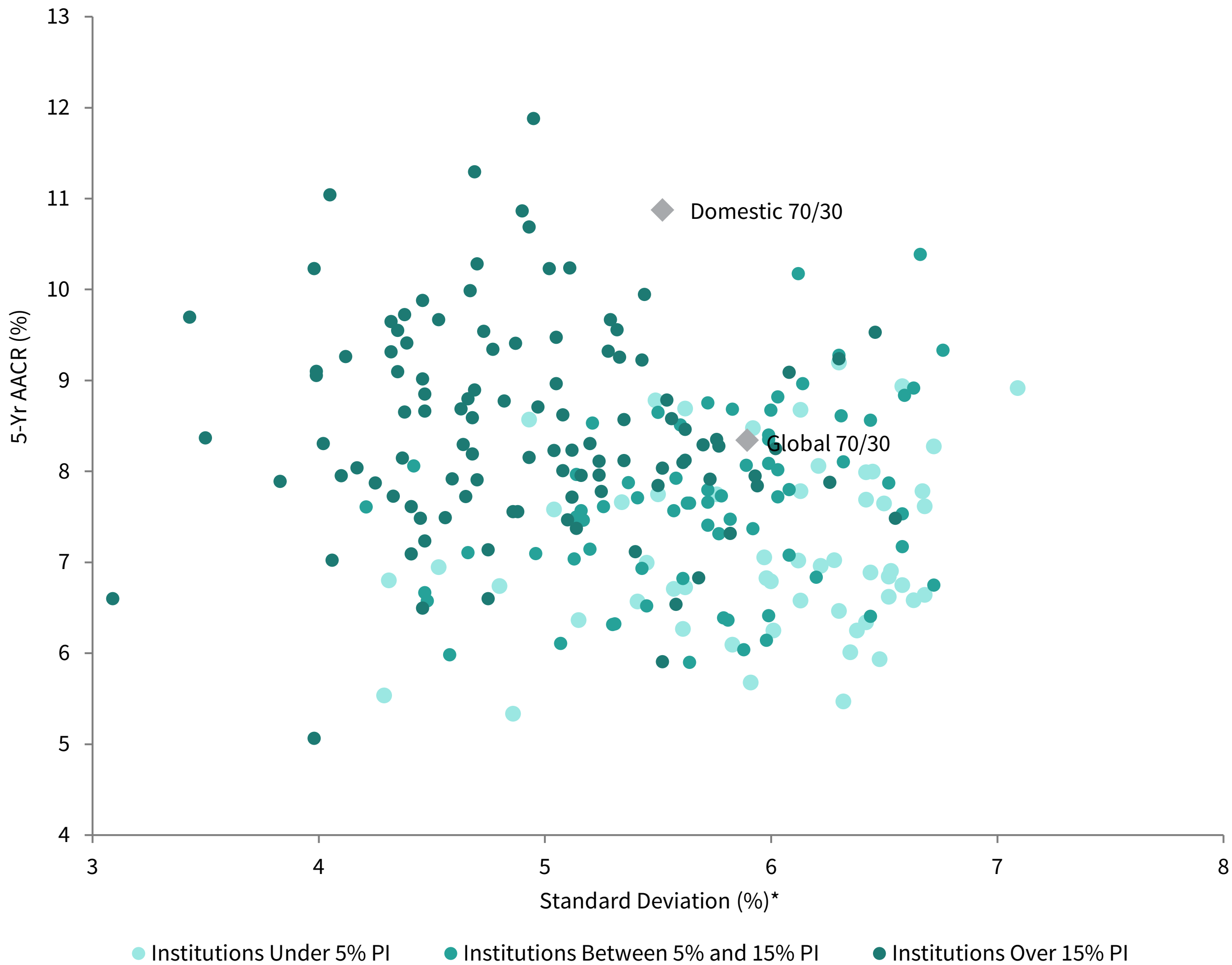
RISK-ADJUSTED PERFORMANCE

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 for the returns of these assets. Thus, a portfolio with high allocations to private investments can yield a lower volatility statistic that does not fully represent the amount of risk it has actually taken. For this reason, we have split institutions out into subcategories in Figure 27 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 1.70, 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.

FIGURE 27. STANDARD DEVIATION AND SHARPE RATIO: US ENDOWMENTS AND FOUNDATIONS
5 Yrs Ended June 30, 2017



	All Institutions	Mean by PI Allocation			70/30 Benchmarks	
	Mean	Under 5%	5%–15%	Over 15%	Domestic	Global
5-Yr AACR	7.9	7.1	7.7	8.5	10.9	8.3
Standard Deviation	5.4	6.0	5.8	4.9	5.5	5.9
Sharpe Ratio	1.45	1.18	1.30	1.70	1.89	1.37
n	*234*	*55*	*71*	*108*		

Sources: Endowment 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 June 30 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. Returns for the MSCI ACWI are net of dividend taxes for global ex US securities.

* Horizontal axis is capped for graphing purposes. One endowment (with 5%–15% PI allocation) reported a standard deviation of 10.6% with a 5-yr AACR of 9.7%.

2017 Portfolio Asset Allocation

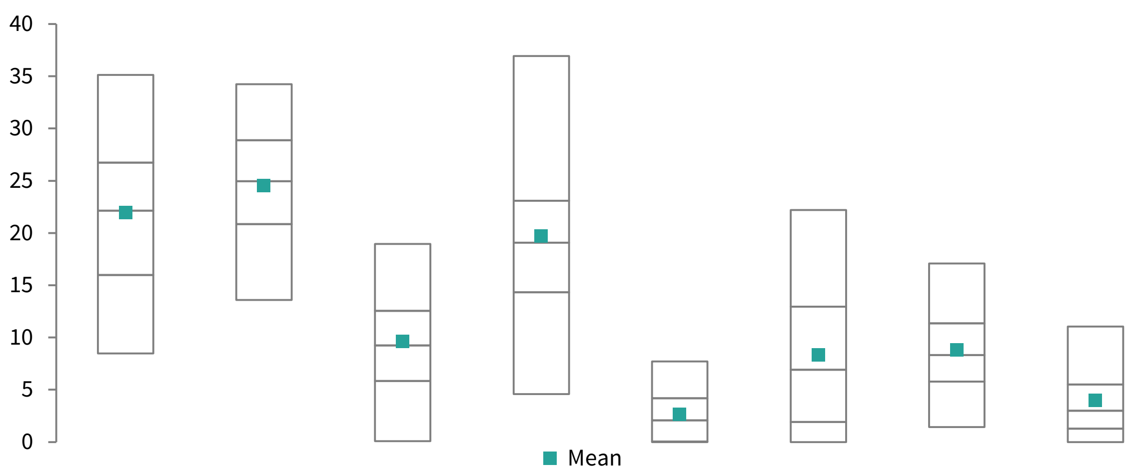
2017 ASSET ALLOCATION

Over 45% of the average LTIP consisted of public equities at June 30, 2017. On average, allocations to global ex US equities (24.6%) were higher than those to US equities (21.9%). Portfolios had significant exposure to alternative assets, with 19.7% allocated to hedge funds and 8.3% allocated to private equity & venture capital, on average. Another 2.6% was allocated, on average, to distressed securities, which are invested through either a hedge fund or private equity–type investment vehicle. Real assets, which consist of a diversified group of public and private assets, made up 8.8% of portfolios, on average. Average allocations to bonds and cash were 9.6% and 4.0%, respectively (Figure 28).

As Figure 29 shows, mean allocations to these broad asset classes vary across different groups of institutions. A key factor in the variation of asset allocations continues to be the total value of assets under management. Smaller portfolios continue to maintain higher allocations to public equities and bonds, while those with assets over $1 billion have the highest allocations to private investments. Also displayed in Figure 29 is a more granular view of allocations within each broad asset class.

FIGURE 28. ASSET ALLOCATION DISTRIBUTION BY ASSET CLASS

As of June 30, 2017 • Percent (%) • n = 289



	US Equity	Global ex US Equity	Bonds	Hedge Funds	Distressed Securities	Priv Equity & Ven Capital	Real Assets & ILBs	Cash & Equivs
5th Percentile	35.1	34.2	18.9	36.9	7.7	22.2	17.1	11.0
25th Percentile	26.8	28.9	12.6	23.1	4.2	13.0	11.4	5.5
Median	22.1	25.0	9.2	19.1	2.1	6.9	8.3	3.0
75th Percentile	16.0	20.9	5.8	14.3	0.1	1.9	5.8	1.3
95th Percentile	8.5	13.6	0.1	4.6	0.0	0.0	1.4	0.0
Mean	21.9	24.6	9.6	19.7	2.6	8.3	8.8	4.0

Source: Endowment data as reported to Cambridge Associates LLC.

FIGURE 29. MEAN ASSET ALLOCATION BY ASSET SIZE AND INSTITUTION TYPE
As of June 30, 2017 • Percent (%)

	Asset Size				Institution Type			
	Under $200M	$200M – $500M	$500M – $1B	Over $1B	Coll & Univ	Cult & Env	Ind Schools	Other Endow
	(n = 106)	*(n = 65)*	*(n = 45)*	*(n = 73)*	*(n = 164)*	*(n = 53)*	*(n = 29)*	*(n = 43)*
US Equity	**25.8**	**22.8**	**18.6**	**17.6**	**20.7**	**23.4**	**23.5**	**23.9**
Global ex US Equity	**27.8**	**25.3**	**21.8**	**20.9**	**23.6**	**25.6**	**24.0**	**27.4**
Developed Markets	19.4	16.6	14.5	13.1	15.6	16.8	16.3	19.1
Emerging Markets	8.4	8.6	7.3	7.8	8.0	8.8	7.7	8.3
Bonds	**11.7**	**10.9**	**8.0**	**6.4**	**8.5**	**9.4**	**8.9**	**14.3**
US Bonds	10.3	10.0	6.9	5.1	7.4	8.2	8.3	12.2
Global ex US Bonds (DM)	0.4	0.3	0.5	0.7	0.5	0.3	0.2	0.6
Global ex US Bonds (EM)	0.7	0.4	0.4	0.2	0.3	0.5	0.2	1.0
High-Yield Bonds	0.4	0.3	0.3	0.4	0.3	0.4	0.2	0.5
Hedge Funds	**20.5**	**18.3**	**20.4**	**19.4**	**18.4**	**21.3**	**23.4**	**20.1**
Long/Short Hedge Funds	7.3	6.4	7.8	9.3	7.7	6.7	10.3	7.2
Absolute Return (ex Distressed)	13.1	11.9	12.6	10.1	10.8	14.7	13.1	12.8
Distressed Securities	**1.5**	**2.5**	**4.2**	**3.5**	**3.0**	**2.6**	**2.6**	**1.4**
Hedge Fund Structure	0.8	1.3	2.5	1.9	1.6	1.7	1.2	0.9
Private Equity Structure	0.6	1.1	1.7	1.6	1.4	0.9	1.3	0.5
PE & VC	**2.7**	**7.2**	**11.6**	**15.5**	**11.3**	**5.6**	**5.1**	**2.6**
Non-Venture Private Equity	1.0	3.2	6.1	8.0	5.6	2.6	2.7	0.8
Venture Capital	1.0	3.0	4.3	7.0	4.8	2.2	1.7	1.4
Other Private Investments	0.6	1.0	1.1	0.5	0.8	0.8	0.8	0.4
Real Assets & Infl-Linked Bonds	**6.0**	**8.3**	**9.7**	**12.7**	**10.1**	**7.2**	**7.7**	**6.7**
Private Real Estate	0.3	1.4	2.5	4.8	2.7	1.1	1.8	0.7
Public Real Estate	0.3	0.5	0.9	0.4	0.5	0.4	0.2	0.5
Commodities	0.6	0.6	0.3	0.5	0.5	0.6	0.6	0.6
Public Energy/Nat Resources	3.2	3.3	2.2	1.0	2.3	2.6	2.5	3.3
Private O&G/Nat Resources	0.9	1.8	3.2	4.9	3.2	1.7	2.1	0.9
Timber	0.0	0.1	0.2	0.5	0.3	0.1	0.2	0.0
Inflation-Linked Bonds	0.7	0.5	0.3	0.5	0.5	0.7	0.3	0.7
Cash & Equivalents	**3.8**	**3.6**	**5.4**	**3.6**	**3.8**	**4.5**	**4.5**	**3.5**
Other	**0.3**	**1.1**	**0.3**	**0.3**	**0.7**	**0.3**	**0.4**	**0.2**

Source: Endowment data as reported to Cambridge Associates LLC.

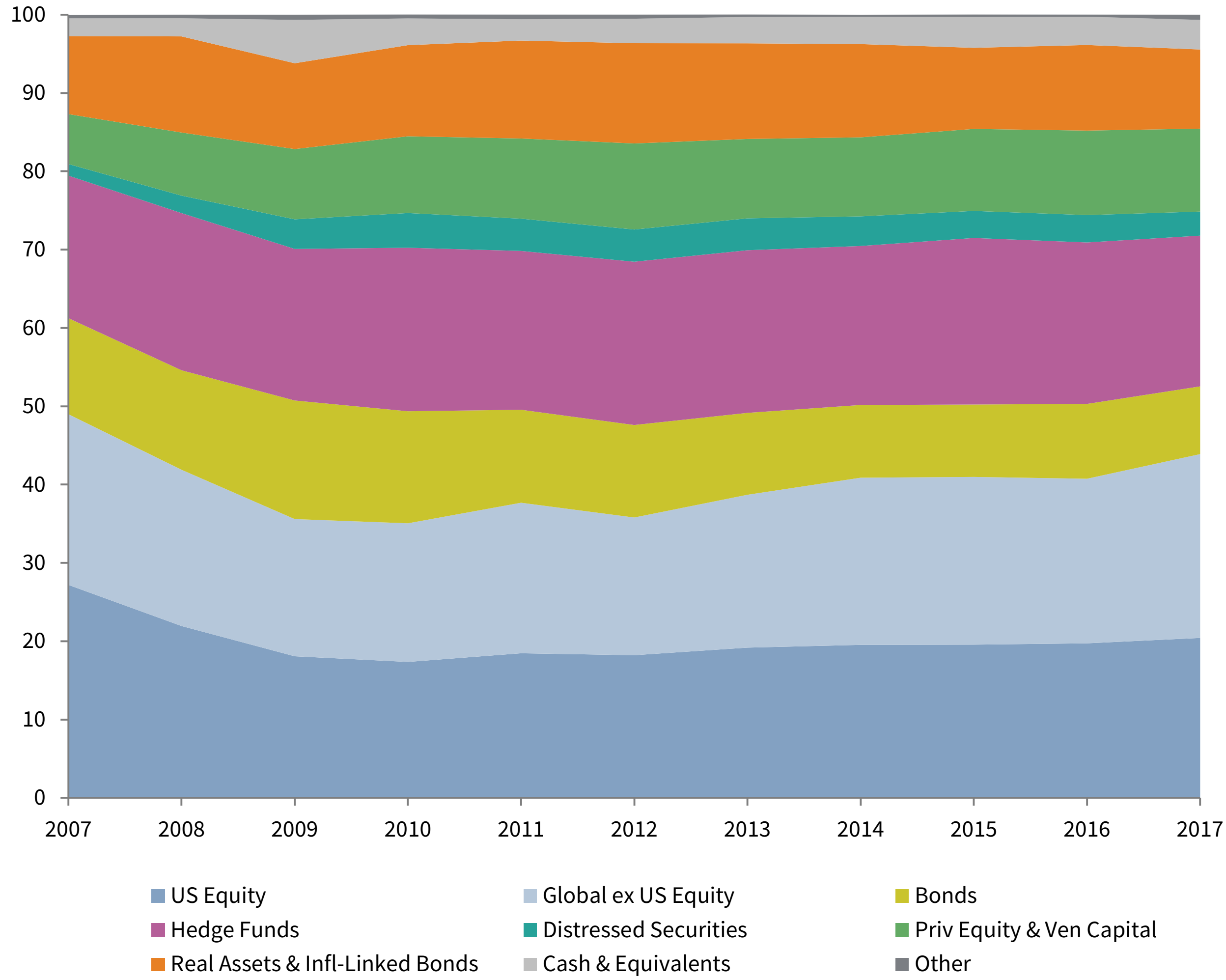
HISTORICAL ASSET ALLOCATION

Average allocations to some of the broad asset class categories at the end of fiscal year 2017 look considerably different than those reported a decade ago (Figure 30). The largest change in average allocations was to US equities, which decreased by 6.8 ppts from 2007 to 2017. The average allocation to bonds declined by 3.7 ppts over the decade. The biggest increases in average allocation were to private equity & venture capital (4.2 ppts) and emerging markets equities (2.9 ppts).

Figure 31 shows the average asset allocation in 2007, 2012, and 2017 for the four broad asset size groups. Institutions with assets between $200 and $500 million reported the largest decrease to US equity allocations over the full ten-year period (7.8 ppts),

FIGURE 30. HISTORICAL MEAN ASSET ALLOCATION TRENDS

Years Ended June 30 • Percent (%)



	Constant Universe											All End
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2017
US Equity	27.2	21.9	18.1	17.4	18.5	18.2	19.2	19.5	19.6	19.7	20.4	21.9
Global ex US Equity	21.8	19.9	17.5	17.7	19.2	17.6	19.5	21.3	21.4	21.0	23.5	24.5
Developed Markets	*16.5*	*14.8*	*12.7*	*12.3*	*13.1*	*11.5*	*12.9*	*14.0*	*14.1*	*13.7*	*15.4*	*16.4*
Emerging Markets	*5.2*	*5.1*	*4.9*	*5.4*	*6.2*	*6.1*	*6.6*	*7.3*	*7.3*	*7.3*	*8.1*	*8.1*
Bonds	12.3	12.7	15.1	14.3	11.9	11.8	10.5	9.3	9.2	9.6	8.6	9.6
Hedge Funds	18.2	20.1	19.4	20.9	20.3	20.8	20.8	20.3	21.3	20.6	19.2	19.7
Distressed Securities	1.5	2.2	3.8	4.4	4.1	4.1	4.1	3.8	3.5	3.5	3.1	2.6
Priv Equity & Ven Capital	6.4	8.1	9.0	9.8	10.2	11.0	10.1	10.1	10.5	10.8	10.6	8.3
Real Assets & Infl-Linked Bonds	10.0	12.3	11.0	11.6	12.5	12.8	12.2	11.9	10.4	10.9	10.1	8.8
Cash & Equivalents	2.3	2.3	5.5	3.4	2.7	3.1	3.4	3.5	3.9	3.6	3.8	4.0
Other	0.5	0.5	0.7	0.5	0.6	0.5	0.3	0.3	0.3	0.3	0.7	0.5

Source: Endowment data as reported to Cambridge Associates LLC.

Notes: Constant universe represents 176 institutions that provided asset allocation data for each year from 2007 to 2017. 'All End' represents 289 institutions that provided 2017 data.

while those with assets under $200 million reported the largest decrease to bonds (4.1 ppts). Each asset size group saw significant increases to private equity & venture capital allocations over the last ten years, with portfolios over $1 billion reporting the largest increase (5.9 ppts). The smallest portfolios reported the largest increase to emerging markets equities (3.9 ppts).

In some instances, changes in portfolio allocations over the most recent five-year period were the opposite of what was observed over the full decade. Since 2012, average US public equity allocations increased for all asset size groups. For both asset size groups above $500 million, the average allocation to private equity & venture capital actually declined slightly over the last five years. Although allocations to real assets increased over the last decade for portfolios above $500 million, the average allocation in fiscal year 2017 was lower than that from five years prior for both of the larger asset size groups.

FIGURE 31. TRENDS IN ASSET ALLOCATION BY ASSET SIZE

Equal-Weighted Means as of June 30 • Percent (%)

	US	Global ex US				Hedge	Dist		RA	Cash
	Equity	Total	Dev	EM	Bonds	Funds	Sec	PE & VC	& ILBs	& Equiv
Under $200M (n = 40)										
2007	31.1	22.2	*17.6*	*4.6*	15.1	16.1	0.9	2.8	8.6	2.6
2012	21.2	19.4	*13.4*	*6.0*	14.9	21.4	3.5	5.3	10.6	3.5
2017	23.7	26.2	*17.7*	*8.5*	11.0	19.1	2.3	5.5	7.8	3.3
Change (ppt)										
2012–2017	2.5	6.8	*4.3*	*2.5*	-3.8	-2.3	-1.2	0.3	-2.8	-0.2
2007–2017	-7.4	4.0	*0.2*	*3.9*	-4.1	3.0	1.3	2.7	-0.8	0.7
$200M – $500M (n = 37)										
2007	29.2	21.9	*16.5*	*5.4*	13.3	16.4	1.2	4.3	10.3	2.9
2012	18.8	18.7	*12.4*	*6.3*	12.9	21.3	4.3	8.2	12.9	2.6
2017	21.4	24.9	*16.5*	*8.4*	10.3	17.8	3.0	8.4	9.1	3.3
Change (ppt)										
2012–2017	2.6	6.2	*4.1*	*2.1*	-2.6	-3.5	-1.3	0.2	-3.9	0.7
2007–2017	-7.8	2.9	*0.0*	*3.0*	-3.0	1.4	1.7	4.0	-1.2	0.5
$500M – $1B (n = 34)										
2007	25.9	21.3	*16.4*	*4.9*	11.3	20.7	1.5	7.2	9.4	2.3
2012	17.4	17.0	*11.2*	*5.9*	11.3	21.3	5.6	11.9	11.8	3.0
2017	18.7	22.6	*14.9*	*7.7*	8.0	19.1	4.3	11.6	10.0	5.4
Change (ppt)										
2012–2017	1.3	5.5	*3.7*	*1.8*	-3.3	-2.2	-1.3	-0.3	-1.9	2.4
2007–2017	-7.2	1.2	*-1.5*	*2.8*	-3.3	-1.6	2.8	4.4	0.6	3.1
Over $1B (n = 65)										
2007	23.3	21.6	*15.4*	*6.2*	9.4	19.3	2.1	10.2	11.9	1.8
2012	15.2	15.7	*9.3*	*6.4*	8.5	20.0	4.1	17.3	16.0	2.8
2017	17.4	20.7	*12.8*	*7.9*	6.2	19.5	3.4	16.1	13.0	3.5
Change (ppt)										
2012–2017	2.3	5.0	*3.5*	*1.6*	-2.3	-0.5	-0.7	-1.2	-3.0	0.7
2007–2017	-5.8	-0.9	*-2.6*	*1.7*	-3.2	0.1	1.3	5.9	1.1	1.7

Source: Endowment data as reported to Cambridge Associates LLC.

Note: Asset sizes are based on June 30, 2017, data.

TARGET ASSET ALLOCATION

Although long-term asset allocation trends clearly show how investment policies have evolved over time, one-year changes in actual allocations can be influenced by factors such as asset returns and rebalancing flows. Using shorter-term data can be misleading in determining whether institutions are altering their long-term asset allocation policies. An analysis of target asset allocations is more suitable for such an evaluation.

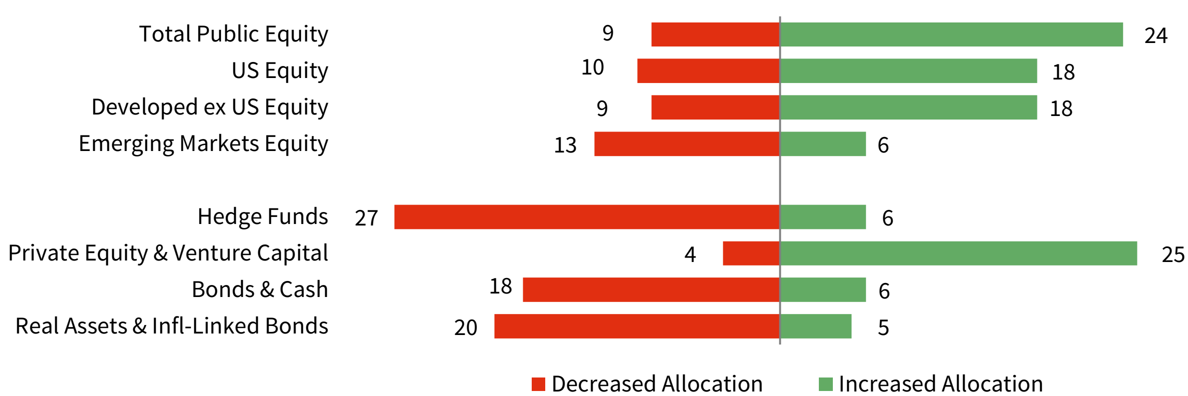
Institutions construct their target asset allocation mix under different frameworks. Of the 261 institutions that provided target asset allocation data, 77% reported data using the traditional asset allocation–centered structure. The remaining institutions reported data using other frameworks, including role-in-portfolio. Under the role-in-portfolio framework, targets are set to broad categories based on the roles that certain investments are expected to play in the portfolio (e.g., growth, deflation-hedging, diversifier).

Our trend analysis on this topic focuses on institutions that reported under the traditional asset allocation–centered framework. Almost half (44%) of these institutions made a change to their policy targets in fiscal year 2017. Institutions with portfolios between $500 million and $1 billion were most likely make changes to their policy targets (52%), while those with portfolios below $200 million were least likely to make changes (33%).

As shown in Figure 32, many institutions are increasing the equity exposure in their portfolio. Nearly one-quarter of respondents (24%) increased their overall target to public equity asset classes, while 9% lowered their target. For private equity & venture capital, 25% of institutions raised their target allocation in 2017, while just 4% lowered their target. Among the other broad asset class categories, the proportion of institutions that lowered their hedge fund target (27%) was over four times as great as the proportion that reported increases. In the last few years, the proportion of institutions lowering their targets to bonds and real assets was considerably higher that the proportion that increased their target allocation. Figure 33 shows detailed data by asset size.

FIGURE 32. CHANGES IN TARGET ASSET ALLOCATION

June 30, 2016 – June 30, 2017 • Percentage of Institutions Increasing or Decreasing Targets



Source: Endowment data as reported to Cambridge Associates LLC.
Note: Real assets includes targets to both public and private assets.

FIGURE 33. CHANGES IN TARGET ASSET ALLOCATION BY ASSET SIZE

June 30, 2016 – June 30, 2017

	Total Equity	US Equity	DM ex US Equity	EM Equity	Hedge Funds	PE & VC	Bonds & Cash	RA & ILBs	Other
Under $200M *(n = 66)*									
Mean Target AA (%)									
2016	49.3	23.3	17.0	8.1	21.5	3.8	15.5	8.9	1.0
2017	50.2	24.2	17.4	7.7	20.5	5.7	15.0	7.7	1.0
% of Inst Making Changes to Targets									
Increased	*20*	*23*	*22*	*6*	*8*	*21*	*5*	*2*	*3*
Decreased	*2*	*2*	*4*	*13*	*21*	*2*	*15*	*21*	*2*
$200M – $500M *(n = 44)*									
Mean Target AA (%)									
2016	43.3	21.2	14.8	7.6	19.5	10.4	14.6	11.5	0.7
2017	43.5	21.2	15.2	7.5	18.3	11.9	14.2	10.9	1.1
% of Inst Making Changes to Targets									
Increased	*23*	*11*	*21*	*10*	*7*	*25*	*7*	*2*	*7*
Decreased	*9*	*17*	*10*	*17*	*30*	*0*	*18*	*20*	*2*
$500M – $1B *(n = 31)*									
Mean Target AA (%)									
2016	39.1	18.1	13.3	8.2	22.7	14.3	12.8	10.7	0.3
2017	40.0	17.7	13.2	8.0	21.1	15.7	11.8	10.8	0.6
% of Inst Making Changes to Targets									
Increased	*26*	*15*	*11*	*6*	*3*	*35*	*0*	*10*	*6*
Decreased	*19*	*15*	*11*	*17*	*35*	*10*	*26*	*16*	*3*
Over $1B *(n = 49)*									
Mean Target AA (%)									
2016	35.7	17.1	12.5	8.4	21.8	16.6	10.2	13.7	1.9
2017	36.6	17.3	12.5	8.4	20.7	17.4	9.9	13.2	2.2
% of Inst Making Changes to Targets									
Increased	*29*	*20*	*10*	*0*	*6*	*24*	*10*	*10*	*8*
Decreased	*12*	*12*	*15*	*4*	*29*	*8*	*16*	*20*	*6*

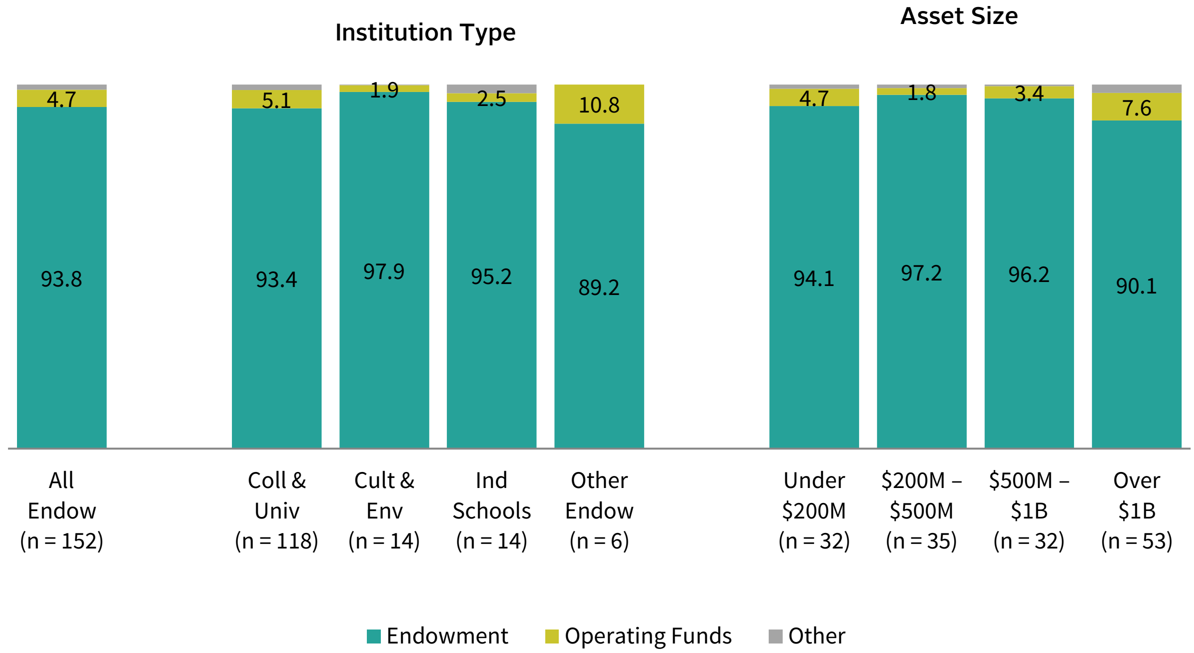
Source: Endowment data as reported to Cambridge Associates LLC.
Note: Asset sizes are based on June 30, 2017, data.

ASSET COMPOSITION

LONG-TERM INVESTMENT PORTFOLIO. The LTIP is the group of assets for which institutions report their asset allocation and returns in this study. Endowment assets compose all or the vast majority of the LTIP for most institutions in this study. On average, 93.8% of the LTIP were endowment assets as of June 30, 2017 (Figure 34). This average composition of the LTIP is similar when the respondent group is broken down across different institution types and asset sizes.

In addition to endowment assets, some institutions invest a portion of their operating funds and/or other assets in the LTIP. On average, operating funds and other assets represented 4.7% and 1.4% of the LTIP, respectively (Figure 34). Examples of other assets in the LTIP include life income and annuity funds, special purpose funds, and assets invested by external organizations.

FIGURE 34. COMPOSITION OF LONG-TERM INVESTMENT PORTFOLIO
Equal-Weighted Means as of Fiscal Year End 2017



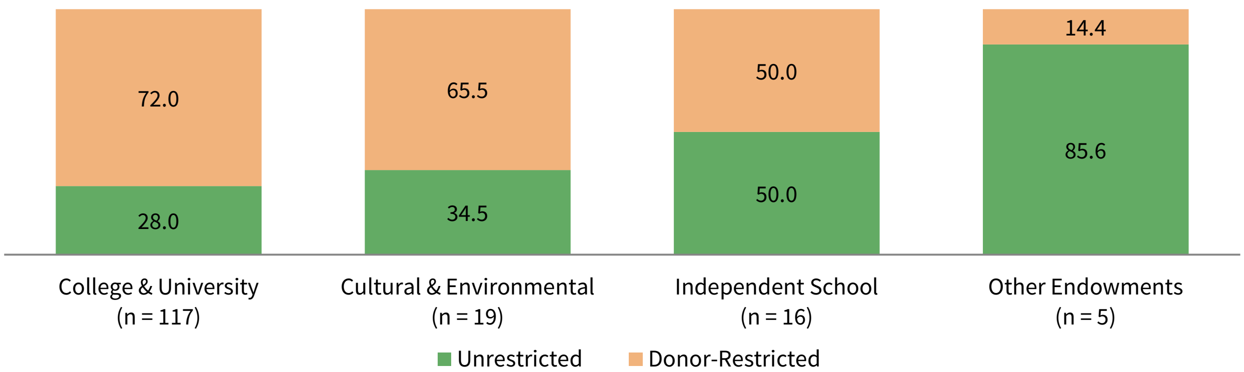
Source: Endowment data as reported to Cambridge Associates LLC.

ENDOWMENT. The endowment for most institutions consists of both donor-restricted and unrestricted funds. Under FASB reporting guidelines, donor-restricted funds are further broken down into permanently restricted funds (i.e., the corpus of a gift to be maintained in perpetuity) and temporarily restricted funds. Donor-restricted funds are designated to be used for a program or a purpose that is specified by the donor. On the other hand, unrestricted funds come with no such requirements on how the funds must be used by the institution. While donors can make unrestricted gifts, this category can also include institutional funds that have been specifically set aside to function as permanent capital (i.e., board-designated endowment funds).

The average composition of the endowment between donor-restricted and unrestricted funds varies considerably among the different institution types in the survey. At colleges and universities, donor-restricted funds represented 72.0% of the endowment, on average. The average proportion was slightly lower at cultural and environmental institutions, where approximately two-thirds (65.5%) of the endowment was donor-restricted. At independent schools, the average composition was split evenly between donor-restricted (50.0%) and unrestricted funds (50.0%). And of the five other miscellaneous endowments that reported data on composition, donor-restricted funds represented just 14.4% of the average endowment fund, on average (Figure 35).

FIGURE 35. CLASSIFICATION OF ENDOWMENT FUNDS

Equal-Weighted Means as of Fiscal Year End 2017



Source: Endowment data as reported to Cambridge Associates LLC.

PRIVATE INVESTMENTS AND UNCALLED CAPITAL COMMITMENTS

One of the core principles of the endowment model is the use of private investments that, in part due to their illiquid nature, offer the potential for higher long-term returns than those of public equities. Participating institutions, particularly those with larger asset sizes, allocate a significant portion of their portfolios to private investments.[7] The average allocation to private investments for portfolios greater than $1 billion was 27.3%, while the average for portfolios less than $200 million was just 4.5% (Figure 29).

Investors should be mindful of the liquidity implications of investing in and funding a private investments program. Uncalled capital represents a commitment of capital to be funded in the future. Annual spending distributions usually represent the biggest liquidity need of a portfolio, but institutions with private investment programs must also consider the potential impact of uncalled capital commitments.

For participants with private investment programs, uncalled capital commitments as a percentage of the total LTIP tends to rise with asset size. For those with asset sizes greater than $1 billion, uncalled capital commitments represented an average of 15.9% of their total LTIP value (ranging from 3.3% to 26.9%, excluding outliers). Likewise, larger portfolios also have a higher ratio of uncalled capital commitments to the LTIP's total liquid assets, which exclude hedge funds and private investments. For institutions with asset sizes greater than $1 billion, uncalled capital commitments represented an average of 34.6% of their total liquid assets (Figure 36).

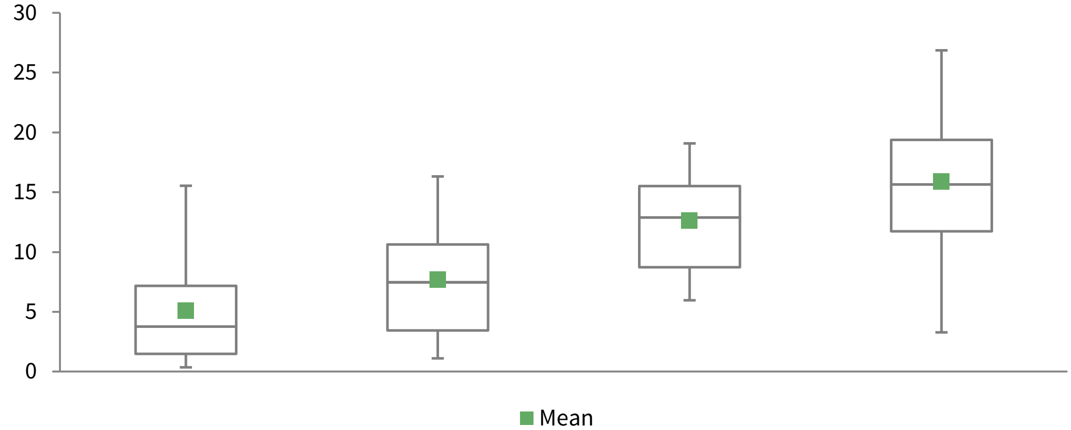
Of the participants that have provided consistent historical data, over 85% (102 of 119) reported an increase in the dollar amount of uncalled capital commitments over the last five years. The median percent change in the amount of uncalled capital commitments among all institutions was 87%. Over the same five-year period, the median percent change in the market value of the LTIP (32%) and the portfolio's liquid assets (45%) was substantially lower. As a result, both of the aforementioned ratios increased for endowments. The trend in the median ratios for the four asset size groups are displayed in Figure 37.

7 Private investments include private equity, venture capital, private distressed securities, private real estate, private oil & gas/natural resources, and timber.

FIGURE 36. UNCALLED CAPITAL COMMITTED TO PRIVATE INVESTMENT FUNDS

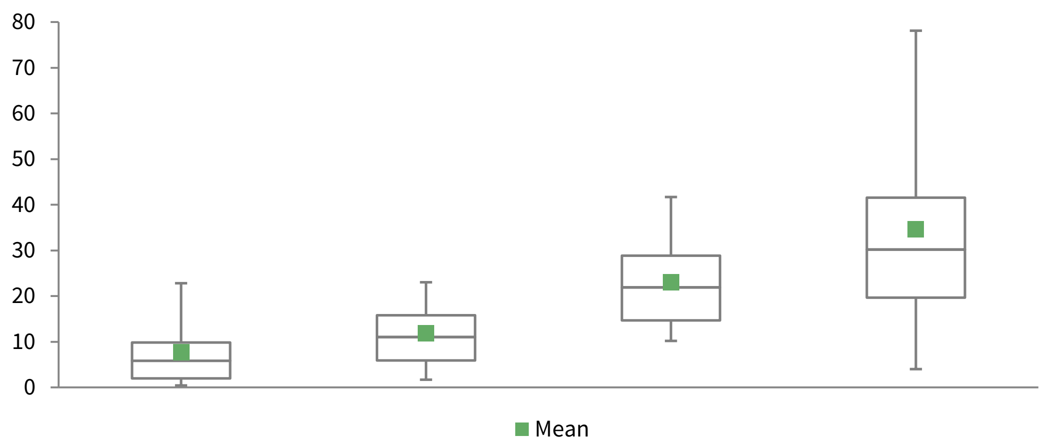
As of June 30, 2017 • Percent (%)

Uncalled Capital Commitments as a Percentage of the Total LTIP



	Under $200M	$200M – $500M	$500M – $1B	Over $1B
5th Percentile	15.5	16.3	19.1	26.9
25th Percentile	7.2	10.6	15.5	19.4
Median	3.8	7.5	12.9	15.7
75th Percentile	1.5	3.4	8.7	11.7
95th Percentile	0.4	1.1	6.0	3.3
Mean	5.1	7.7	12.6	15.9
n	*64*	*58*	*36*	*62*

Uncalled Capital Commitments as a Percentage of the LTIP's Liquid Assets

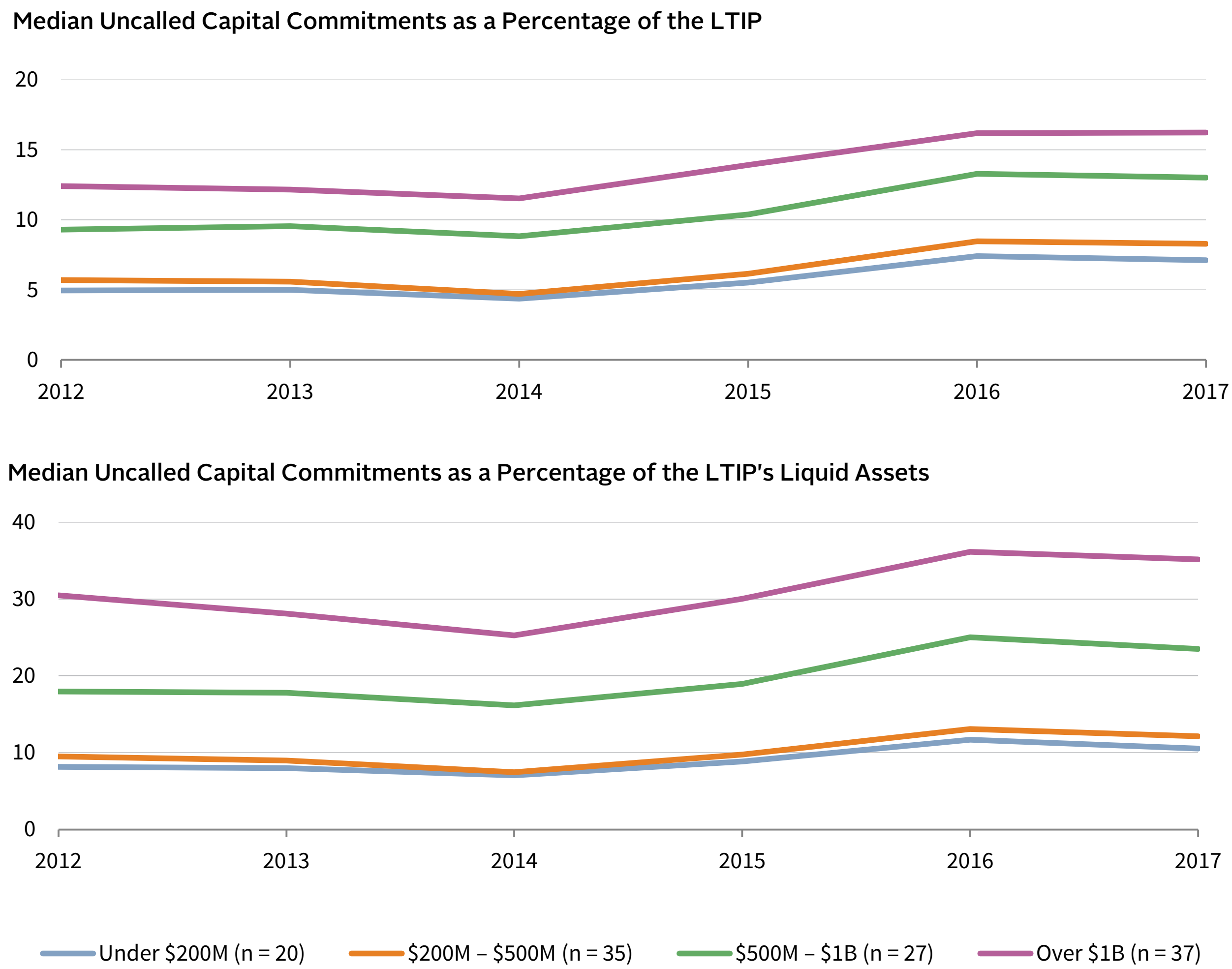


	Under $200M	$200M – $500M	$500M – $1B	Over $1B
5th Percentile	22.8	23.1	41.7	78.1
25th Percentile	9.8	15.8	28.8	41.6
Median	5.8	11.0	21.9	30.2
75th Percentile	2.0	5.9	14.7	19.7
95th Percentile	0.4	1.7	10.2	4.0
Mean	7.7	11.8	23.0	34.6
n	*64*	*58*	*36*	*62*

Source: Endowment data as reported to Cambridge Associates LLC.

Notes: Uncalled capital is the amount committed, but not yet paid in, to private investment funds. Liquid assets consist of all LTIP assets excluding hedge funds and private investments. Private investments include non-venture private equity, venture capital, distressed securities (private equity structure), private oil & gas/natural resources, private real estate, and timber.

FIGURE 37. TREND IN UNCALLED CAPITAL COMMITMENTS TO PRIVATE INVESTMENT FUNDS
Years Ended June 30 • Percent (%)



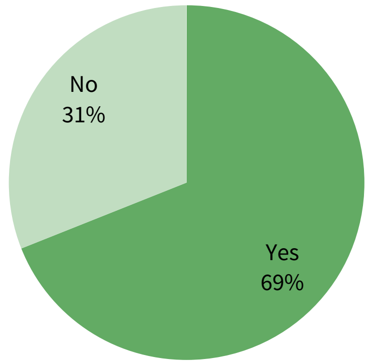
Source: Endowment data as reported to Cambridge Associates LLC.
Notes: Uncalled capital is the amount committed, but not yet paid in, to private investment funds. Liquid assets consist of all LTIP assets excluding hedge funds and private investments. Private investments include non-venture private equity, venture capital, distressed securities (private equity structure), private oil & gas/natural resources, private real estate, and timber.

As the ratios of unfunded capital commitments to assets rise, the potential liquidity risks associated with funding future capitals can increase as well. In recent years, these risks have been mitigated for most institutions due to the self-funding nature of private investment program cash flows. In 2017, 69% of institutions reported that their private investment programs were cash flow positive, meaning the amount of fund distributions was higher than paid-in capital calls (Figure 38). For participants whose private investment fund distributions are not enough to offset new capital calls, the remaining funding of capital calls has to come from cash reserves or other liquidity sources, which could include proceeds from sales of other investment assets in the LTIP.

FIGURE 38. PRIVATE INVESTMENT PROGRAM CASH FLOW

As of June 30, 2017 • n = 219

Was Your Private Investment Program Cash Flow Positive in 2016?



By Asset Size

	Yes	No
Under $200M	67%	33%
n	*43*	*21*
$200M – $500M	67%	33%
n	*43*	*21*
$500M – $1B	69%	31%
n	*24*	*11*
Over $1B	69%	31%
n	*43*	*19*

Source: Endowment data as reported to Cambridge Associates LLC.

Note: Private investment fund programs were considered cash flow positive if fund distributions were higher than paid in capital calls in 2017.

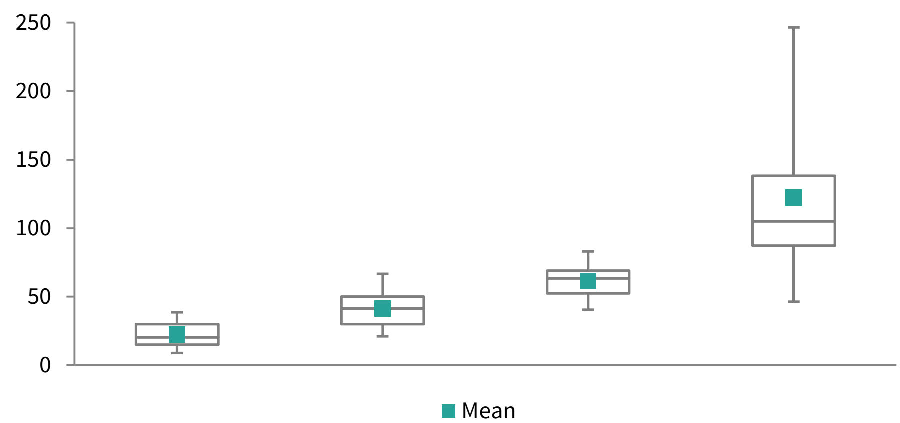
Investment Manager Structures

NUMBER OF EXTERNAL MANAGERS

Many factors contribute to the number of managers employed within an investment portfolio. The scale of total assets under management is a primary factor, as portfolios with more assets generally spread their assets across a greater number of managers. On average, portfolios with assets over $1 billion employed 122 external investment managers in 2017 (Figure 39). In contrast, portfolios with under $200 million employ an average of just 22 managers. For institutions that have provided historical data, the average number of external managers has trended higher over the last five years across all asset size groups (Figure 40).

Even within the broad asset size groups, the range of managers employed can be wide. Within the smallest portfolios, the number of managers employed at the 25th percentile (30) is double the number used at the 75th percentile (15) (Figure 39). For portfolios over $1 billion, there are 247 managers employed at the 5th percentile compared to just 46 at the 95th percentile. Much of the variation can be attributed to the management of alternative asset classes. As Figure 41 shows, the dispersion in the number of alternative asset managers employed, particularly within private investments, is much wider than that of the more traditional equity and bond asset classes. Further detail on these and other asset classes are provided for the four broad asset size groups in Figure 42.

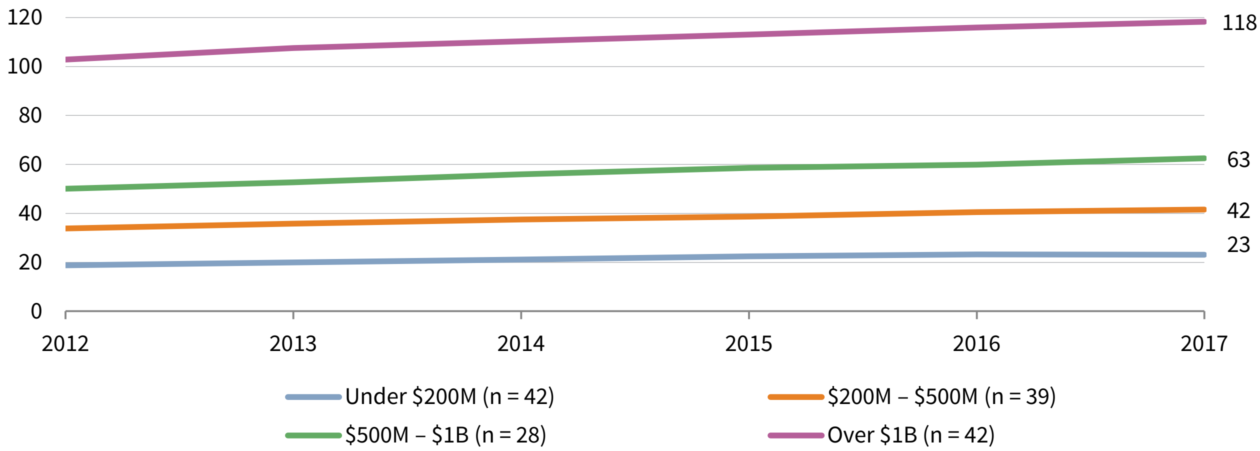
FIGURE 39. NUMBER OF EXTERNAL MANAGERS
As of June 30, 2017



	Under $200M	$200M – $500M	$500M – $1B	Over $1B
5th Percentile	39	67	83	247
25th Percentile	30	50	69	138
Median	21	42	64	105
75th Percentile	15	30	53	87
95th Percentile	9	21	41	46
Mean	22	41	62	122
n	*106*	*64*	*38*	*58*

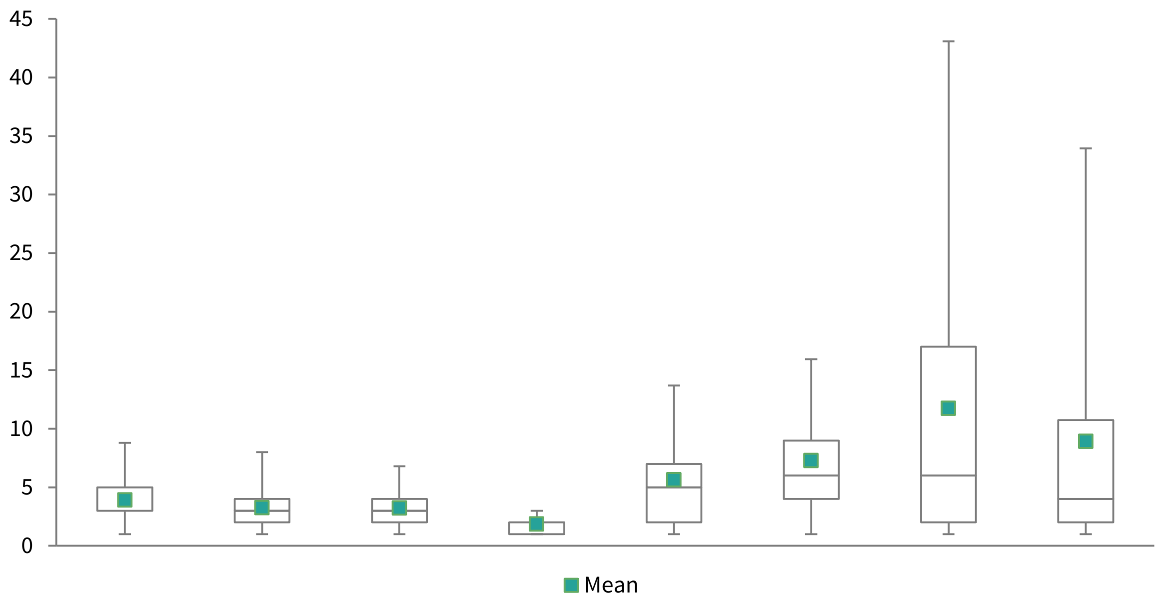
Source: Endowment data as reported to Cambridge Associates LLC.
Note: Funds-of-funds are counted as one separate investment manager.

FIGURE 40. TREND IN NUMBER OF AVERAGE EXTERNAL MANAGERS
2012–17



Source: Endowment data as reported to Cambridge Associates LLC.

FIGURE 41. DISPERSION IN NUMBER OF MANAGERS FOR SELECTED ASSET CLASSES
As of June 30, 2017



	US Equity	DM ex US Equity	Emerging Markets Equity	US Bonds	Long/Short Hedge Funds	Ab Return Hedge Funds	Private Equity	Venture Capital
5th %ile	8	6	7	4	12	15	41	34
25th %ile	5	4	4	2	7	9	17	11
Median	3	3	3	2	5	6	6	4
75th %ile	3	2	2	1	2	4	2	2
95th %ile	1	1	1	1	1	1	1	1
Mean	4	3	3	2	6	7	12	9
n	*265*	*259*	*263*	*243*	*223*	*259*	*213*	*198*

Source: Endowment data as reported to Cambridge Associates LLC.
Notes: Only those institutions with an allocation to the specific asset class have been included. Funds-of-funds are counted as one manager.

FIGURE 42. EXTERNAL MANAGERS BY STRATEGY

As of June 30, 2017

Strategy	Under $500M Average Number of Managers	*n*	$200M – $500M Average Number of Managers	*n*	$500M – $1B Average Number of Managers	*n*	Over $1B Average Number of Managers	*n*
Traditional Equity								
Global Equity	2	*69*	2	*42*	2	*20*	4	*34*
US Equity	3	*104*	4	*63*	4	*40*	6	*58*
Developed ex US Equity	2	*99*	3	*64*	3	*40*	5	*56*
Emerging Markets Equity	2	*101*	3	*63*	3	*40*	5	*59*
Traditional Bonds								
Global Bonds	1	*35*	1	*16*	1	*8*	1	*14*
US Bonds	2	*97*	2	*61*	2	*36*	2	*49*
Developed ex US Bonds	—	*0*	—	*0*	1	*3*	2	*9*
Emerging Markets Bonds	1	*4*	1	*5*	1	*5*	1	*9*
High-Yield Bonds	1	*14*	1	*9*	1	*3*	2	*16*
Hedge Funds								
Long/Short Hedge Funds	3	*76*	5	*58*	6	*36*	10	*53*
Absolute Return (ex Dist Securities)	4	*99*	8	*61*	8	*40*	11	*59*
Distressed Securities								
Distressed (Hedge Fund Structure)	1	*31*	2	*40*	2	*28*	3	*42*
Distressed (Private Equity Structure)	2	*43*	3	*51*	5	*36*	7	*52*
Private Investments								
Non-Venture Private Equity	2	*54*	5	*60*	11	*39*	27	*60*
Venture Capital	2	*43*	3	*56*	7	*39*	21	*60*
Other Private Investments	2	*44*	2	*48*	2	*24*	4	*28*
Real Assets & ILBs								
Private Real Estate	2	*26*	3	*45*	6	*38*	16	*59*
Public Real Estate	1	*15*	1	*14*	1	*15*	1	*17*
Commodities	1	*20*	1	*21*	1	*9*	2	*19*
Inflation-Linked Bonds (TIPS)	1	*17*	1	*14*	1	*4*	1	*9*
Private Oil & Gas / Natural Resources	2	*41*	3	*52*	5	*38*	12	*59*
Timber	1	*1*	1	*8*	2	*9*	2	*29*
Public Energy/Natural Resources	2	*71*	2	*57*	2	*30*	2	*30*
Diversified (Multi-Strategy) RA	1	*26*	1	*8*	1	*4*	3	*3*
Cash (Dedicated Cash Managers Only)	1	*31*	1	*24*	1	*19*	1	*32*
Tactical Asset Allocation	1	*8*	1	*4*	1	*2*	2	*2*
Other	2	*2*	—	*0*	2	*2*	2	*6*

Source: Endowment data as reported to Cambridge Associates LLC.

Notes: *n* indicates the number of institutions that are included in the average number of managers. Only those institutions with an allocation to the specific asset class are included in each category. As a result, the sum of the individual asset classes will not equal the true total average of managers.

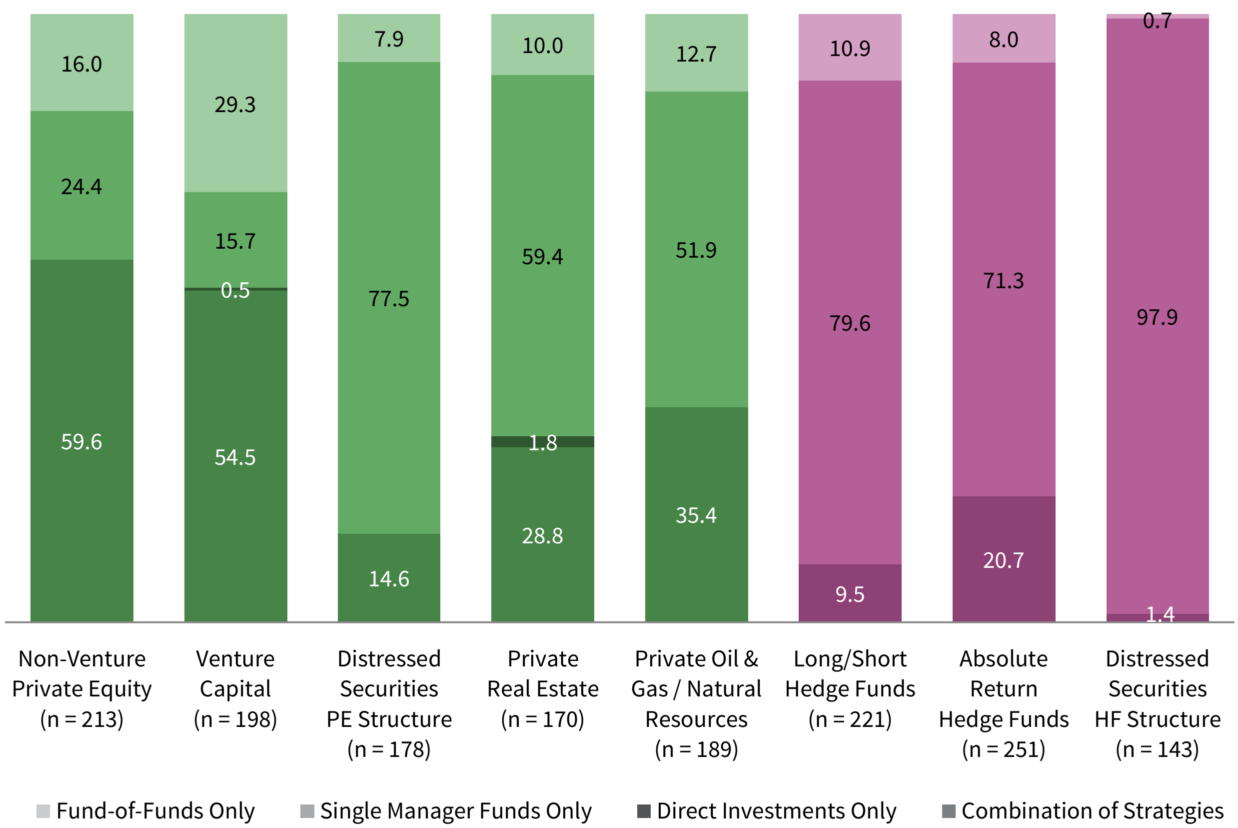
ASSET CLASS IMPLEMENTATION

ALTERNATIVE ASSETS. Institutions can use different strategies when it comes to implementing their alternative asset allocations. For hedge funds, there are two primary types of investment vehicles that institutions use. A single manager fund is a type of investment vehicle where the investment manager makes the decisions for the securities and assets held within the fund. In contrast, a fund-of-funds is a type of strategy where the investment manager invests in a collection of other investment funds. Within each of the hedge fund categories in our asset allocation framework, the vast majority of institutions solely use single manager funds to implement their allocations (Figure 43).

Implementation practices are more varied across private investment asset classes. A combination of single manager funds and funds-of-funds were used by a majority of respondents for non-venture private equity (60%) and venture capital (55%). A sole reliance upon single manager funds was most prevalent with private distressed securities (78%), private real estate (59%), and private oil & gas/natural resources (52%). Smaller portfolios generally employ more funds-of-funds managers than larger portfolios in all private investment asset classes.

FIGURE 43. PORTFOLIO IMPLEMENTATION: PRIVATE INVESTMENTS AND HEDGE FUNDS

As of June 30, 2017 • Percent (%)

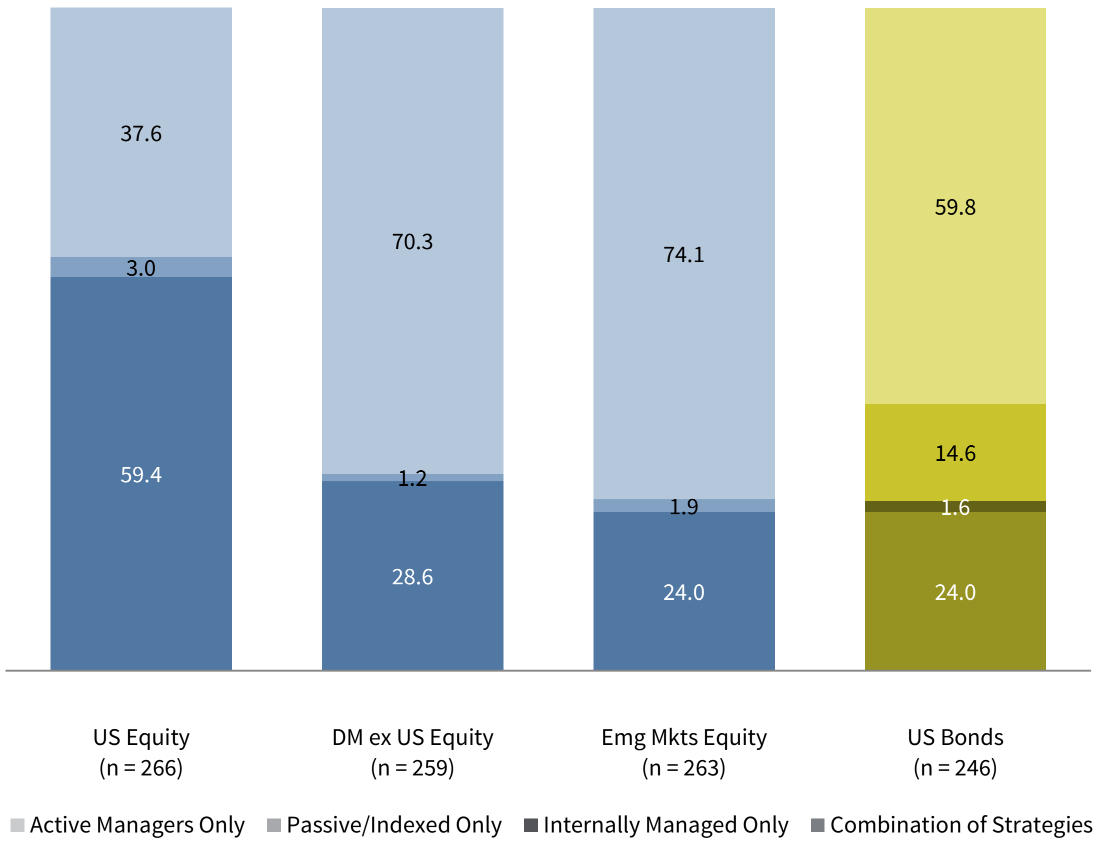


Source: Endowment data as reported to Cambridge Associates LLC.

Note: *n* represents the number of institutions that provided the portfolio implementation for each asset class.

PUBLIC EQUITIES AND BONDS. Of the institutions that provided implementation data on traditional asset classes, 38% used active managers for all of their US equity allocation, while most (59%) use a combination of active and passive implementation (Figure 44). Among those that use a combination of strategies, 65% of the US equity allocation was implemented through active management. For global ex US equities, developed markets and emerging markets allocations were achieved solely through active managers for 70% and 74% of respondents, respectively. For US bonds, 60% of respondents used only active managers for their allocation.

FIGURE 44. PORTFOLIO IMPLEMENTATION: TRADITIONAL EQUITIES AND BONDS
As of June 30, 2017 • Percent (%)



Source: Endowment data as reported to Cambridge Associates LLC.
Note: *n* represents the number of institutions that provided the portfolio implementation for each asset class.

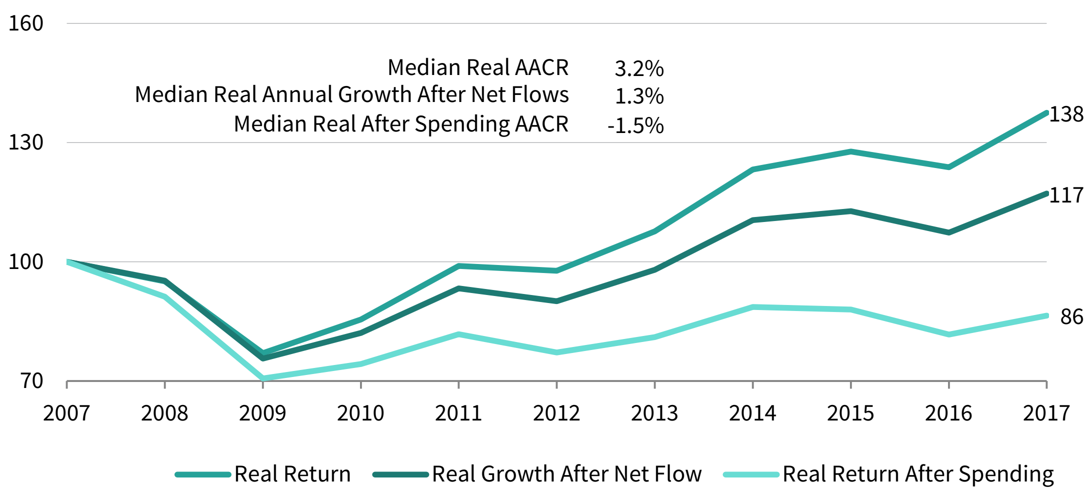
Payout from the Long-Term Investment Portfolio

NET FLOW RATE

Traditionally, endowment health has been evaluated in terms of investment performance and endowment spending or payout rate. A key objective has been to achieve real investment returns that exceed the average annual payout rate over the long term. Figure 45 is based on median data for the group of participants that provided returns, LTIP market values, and spending rates over the last decade. Using median investment performance and starting with an initial investment of $100 in 2007, the portfolio would have grown to $138 in real dollars by the end of fiscal year 2017. After deducting the annual spending distributions from real investment performance, the investment would have fallen to $86, eroding purchasing power by over 10%. This approach omits an important part of the picture: the LTIP is also driven by inflows that come in as gifts, and other funds designated for long-term investment.

FIGURE 45. CUMULATIVE DOLLAR GROWTH AFTER INFLATION, NET FLOWS, AND SPENDING

Years Ended June 30 • Base Year 2007 = $100 • n = 102



Source: Endowment data as reported to Cambridge Associates LLC.

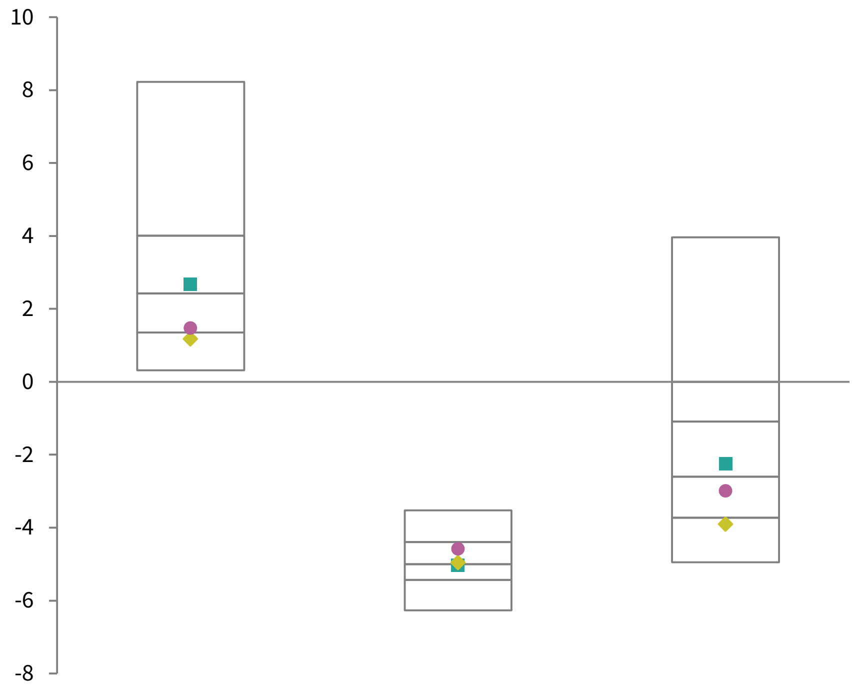
Notes: To limit the impact of outliers, median data are used for each statistic in this exhibit. The median real annual growth after net flows represents the actual growth in the long-term investment portfolio's market value adjusted for inflation.

The combination of the total inflows and outflows for the LTIP constitutes the net flow rate. In the same figure, the actual value of the investment, which incorporates both real investment performance and net flows, is tracked by the middle line and grew by 17% over the ten-year period. Because of the steady inflow from gifts and other additions that most institutions experienced, the actual growth in the portfolio was substantially higher than growth based only on returns after spending. Since maintaining the purchasing power of existing endowment gifts is a key objective in endowment management, the traditional return after spending statistic should not be dismissed. However, this statistic can understate the actual extent of asset growth. By incorporating real investment performance with the overall net flow rate, an institution can better evaluate the trajectory of the LTIP's role in the institution's business model.

The net flow rate is calculated as a percentage of the LTIP market value at the beginning of the fiscal year. As is typically the case, the median (-2.6%) net flow rate for participants in fiscal year 2017 was negative, meaning the amount of withdrawals from the portfolio surpassed the amount of additions for the majority of respondents (Figure 46). The median net flow rate was lowest for cultural and environmental institutions (-3.9%). Colleges and universities and independent schools reported median net flow rates of -2.3% and -3.0%, respectively.

FIGURE 46. INFLOW, OUTFLOW, AND NET FLOW RATES

Fiscal Year 2017



	Inflow Rate	Outflow Rate	Net Flow Rate
5th Percentile	8.2	-3.5	4.0
25th Percentile	4.0	-4.4	-1.1
Median	2.4	-5.0	-2.6
75th Percentile	1.4	-5.4	-3.7
95th Percentile	0.3	-6.3	-5.0
n	*130*	*130*	*130*
Colleges & Universities	2.7	-5.0	-2.3
Cultural & Environmental	1.2	-5.0	-3.9
Independent Schools	1.5	-4.6	-3.0

Source: Endowment data as reported to Cambridge Associates LLC.

Notes: All rates are expressed as a percentage of the beginning year LTIP market value. Included in this analysis are 99 colleges and universities, 13 cultural and environmental institutions, and 16 independent schools. Two other endowments that provided sufficient data for this analysis are included in the percentile distributions.

INFLOW RATE. Endowment gifts typically represent the bulk of the inflows that an LTIP receives. On average, endowment gifts represented 81% of total inflows in fiscal year 2017 among participants. Other types of inflows can include reinvested operating surpluses, capital campaign funds, proceeds from non-portfolio asset sales, and other various types of additions. The inflow rate among all endowments in fiscal year 2017 varied from 8.2% at the 5th percentile to 0.3% at the 95th percentile (Figure 46). Colleges and universities reported the highest median inflow rate (2.7%), followed by independent schools (1.5%) and cultural and environmental institutions (1.2%).

OUTFLOW RATE. The vast majority of outflows consist of distributions determined by the endowment spending policy. On average, spending policy distributions represented 92% of total outflows in fiscal year 2017 among participants. Other types of outflows consist of special one-time appropriations as well as recurring annual distributions to cover administrative costs and expenses. Compared to inflow rates, the range of outflow rates among participants fell within a narrower band, from -3.5% at the 5th percentile to -6.3% at the 95th percentile (Figure 46). The median outflow rate was -4.6% for independent schools and -5.0% for both colleges and universities and cultural and environmental institutions.

SPENDING POLICIES

An institution's spending policy serves as a bridge that links the LTIP and the enterprise. The spending policy should be designed to balance the needs of current and future generations of stakeholders, with the goals of providing appropriate levels of support to operations and preserving, or even growing, endowment purchasing power.[8]

The majority (75%) of responding institutions continue to use a market value–based rule which dictates spending a percentage of a moving average of endowment market values (Figure 47). This rule type emphasizes purchasing power preservation by linking the spending distribution amount directly to the endowment's market value.

The next most common spending rule type is a hybrid policy, which was cited by 12% of institutions. A hybrid spending policy blends the more predictable spending element of a constant growth policy with the asset preservation principle of a market value–based policy and allows an institution to set the appropriate mix that best meets its needs. The rule is expressed as a weighted average of a constant growth rule and a percentage-of-market-value (or average market value over a period of time) rule.

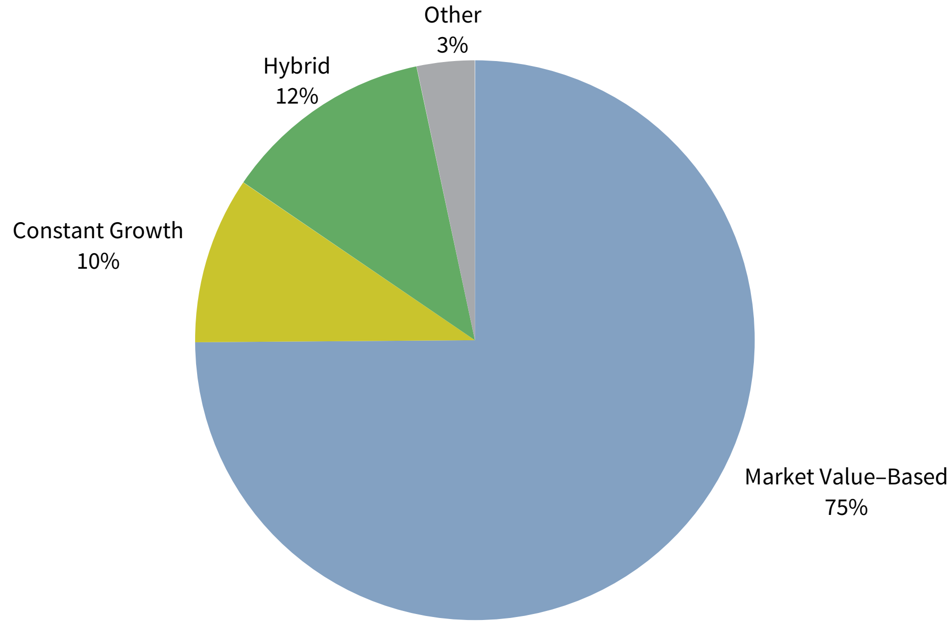
The third most common spending rule type is the constant growth rule, which was used by 10% of institutions. This rule type increases the prior year's spending by a measure of inflation and/or a prespecified percentage. Institutions tend to use this rule type when the endowment is a significant source of operating revenue and volatility in annual spending distributions is less tolerable. Even though the strict application of a constant growth rule produces predictable spending, most institutions using this rule type impose a spending cap and floor based on a percentage of the endowment's

8 For a more in-depth discussion on this topic please see William Prout et al., "Spending Policy Practices," Cambridge Associates Research Report, 2017.

market value, or a moving average of market values. Spending collars essentially transform the constant growth rule to a market value–based rule in times of significant endowment growth or contraction to avoid a complete disconnect between spending and the endowment market value.

FIGURE 47. SPENDING RULE TYPES

Fiscal Year 2017 • n = 239

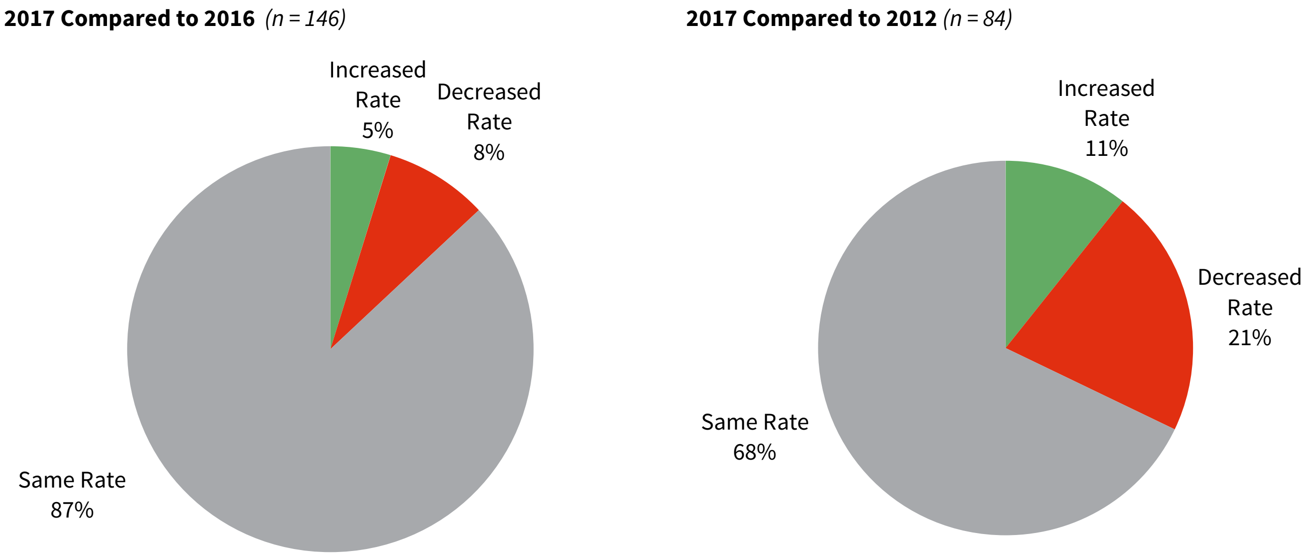


Source: Endowment data as reported to Cambridge Associates LLC.

SPENDING POLICY CHANGES. Spending policy, like investment policy, should reflect a long-term approach to investing and distributions. Since long-term expectations are incorporated, most institutions do not make major changes to their spending policy on a regular basis. Of the 208 institutions that provided a spending policy for the last two years, just three switched to a different spending rule type in fiscal year 2017. Similarly when compared to five years ago, just 6% of respondents (9 of 140) used a spending rule type in fiscal year 2017 that was different than the type of rule used in fiscal year 2012.

For institutions using a market value–based rule, a primary component of the spending calculation is the target spending rate. To preserve the purchasing power of an endowment, the target spending rate must align with the long-term real investment return. While the current low return environment is spurring many institutions to reevaluate their spending policies, most respondents that use this rule type have maintained the same target spending rate over the last several years. Approximately 87% of institutions left their target rate unchanged in fiscal year 2017 compared to 2016 (Figure 48). Looking back even further over the last five years, 68% of institutions have made no changes to their target spending rate.

FIGURE 48. CHANGES IN TARGET SPENDING RATES FOR MARKET VALUE–BASED SPENDING POLICIES
2017 vs 2016 and 2012



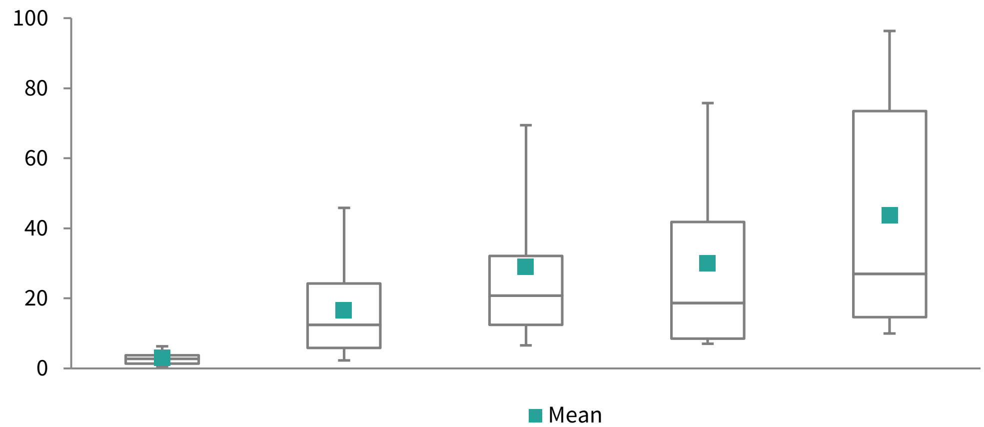
Source: Endowment data as reported to Cambridge Associates LLC.
Notes: Market value–based spending policies base spending on a prespecified percentage of a moving average of market values. Graphs reflect data for the institutions using a market value–based spending policy that also provided the target rate used in their spending calculation for fiscal year 2016 or 2012. If a range was provided, the target spending rate was calculated using the midpoint of the range.

LTIP SUPPORT OF OPERATIONS

Since few nonprofit institutions generate enough revenues from their core operations to break even on their annual operating budgets, many rely on their LTIP to provide additional financial support. The level of LTIP support varies considerably among the institutions in this study. Spending distributions supported 1% or less of the operating budget for some institutions, while for others it is the single largest source of revenue.

Public universities, which receive financial support from state appropriations, generally rely less on the LTIP to fund the operating budget compared to private colleges and universities and other nonprofits. For the 22 public universities that provided data, median support from the LTIP as a percentage of operating expenses was 2.8% in 2017. Median support for private colleges and universities was considerably higher at 12.4% (Figure 49). Among independent schools and cultural and environmental institutions, reliance on the LTIP is higher, as median support of the operating budget was 18.7% and 20.8%, respectively. And median endowment support was 27.0% for the six other miscellaneous endowments that reported data.

FIGURE 49. LTIP SUPPORT OF OPERATIONS
Fiscal Year 2017



	Public Coll & Univ	Private Coll & Univ	Cultural & Environmental	Independent Schools	Other Endowments
5th Percentile	6.4	45.8	69.4	75.8	96.3
25th Percentile	3.8	24.2	32.1	41.8	73.4
Median	2.8	12.4	20.8	18.7	27.0
75th Percentile	1.4	5.9	12.5	8.5	14.6
95th Percentile	0.6	2.2	6.6	7.1	10.0
Mean	2.9	16.6	28.9	30.0	43.7
n	*22*	*83*	*21*	*18*	*6*

Source: Endowment data as reported to Cambridge Associates LLC.
Note: LTIP support of operations is the proportion of the operating budget that is funded from LTIP payout.

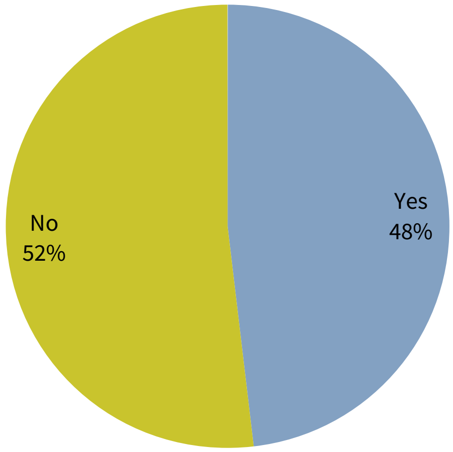
ENDOWMENT PAYOUT COVERAGE RATIOS

As discussed earlier in this section, the endowment spending policy distribution accounts for the vast majority of the annual outflows from the LTIP. Since most spending rules incorporate some measure of the endowment's market value, institutions can be susceptible to decreases in endowment spending following periods of market decline. Similarly, institutions may prefer to avoid liquidating certain assets at depressed prices during market bottoms. In such instances, institutions may seek to replace a portion of endowment spending or supplement it by drawing funds from other liquidity sources. A discussion of data on two coverage metrics that compare the market value of operating funds and the amount available under lines of credit to endowment spending follows. While credit lines and operating funds can be used for many different purposes by an institution, the coverage ratios we show here provide hypothetical markers for colleges and universities to evaluate their endowment payout in relation to these sources of liquidity.

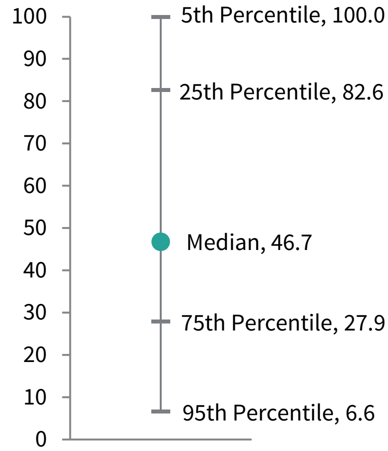
OPERATING FUNDS. Almost half of the institutions that provided data on their operating funds (64 of 133) invest a portion of those funds in the LTIP. The median percentage of operating funds invested in the LTIP was 46.7%, but the percentage varies considerably across respondents (Figure 50).

FIGURE 50. OPERATING FUNDS
Fiscal Year 2017

Operating Funds Invested in the LTIP
(n = 133)



Percentage (%) of Operating Funds Invested in the LTIP
(n = 64)



Source: Endowment data as reported to Cambridge Associates LLC.

There were 113 respondents that reported data on their operating funds and endowment spending policy distribution. The coverage ratio displayed at the top of Figure 51 considers the amount of operating funds outside of the LTIP in relation to the endowment spending policy distribution. The median ratio among all respondents was 1.8. At this level, there would be enough operating funds outside the LTIP to cover slightly less than two years of endowment spending.

For institutions that rely little on the LTIP to support the operating budget, spending distributions are often lower relative to other aspects of the business model. Indeed, the ratio of operating funds outside the LTIP to the endowment spending policy distribution is generally higher among institutions in this study have lower LTIP support. Institutions that have low LTIP support (5% or less) reported a median ratio of 6.9. Respondents with a moderate reliance on LTIP support reported a median ratio of 2.0; those with a high reliance on LTIP support reported a median of 0.9 (Figure 51).

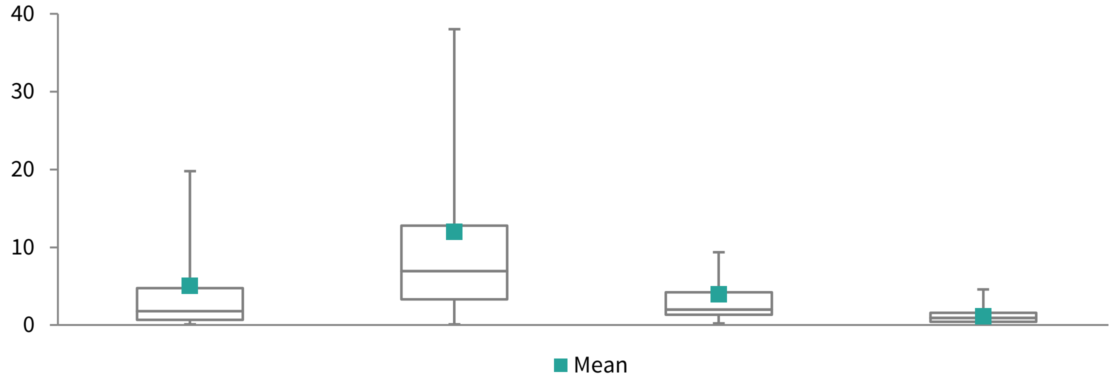
LINE OF CREDIT. There were 81 respondents that reported data on their line(s) of credit and endowment spending policy distribution. Among these institutions, the median ratio of available line of credit to endowment spending policy distribution was 0.7 for fiscal year 2017 (Figure 51). A ratio under 1.0 means that there are not enough funds available to be drawn from the credit lines to replace the entire annual endowment spending policy distribution.

Similar to the coverage ratio that focused on operating funds, this ratio also tends to be higher for institutions that have lower levels of LTIP support. Institutions that rely the least on the LTIP to support the operating budget reported a median ratio of 1.5 (Figure 51). Respondents with a moderate reliance on LTIP support reported a median ratio of 0.7, while those with a high reliance reported a similar median ratio (0.6).

FIGURE 51. ENDOWMENT PAYOUT COVERAGE RATIOS

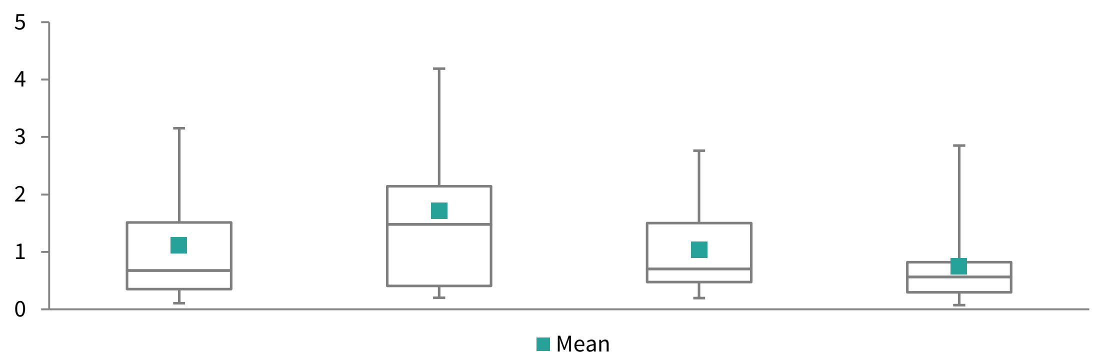
As of June 30, 2017

Ratio of Operating Funds Outside LTIP to Endowment Spending Policy Distribution



	All Institutions	Low LTIP Support	Moderate LTIP Support	High LTIP Support
5th Percentile	19.8	38.0	9.3	4.6
25th Percentile	4.7	12.8	4.2	1.6
Median	1.8	6.9	2.0	0.9
75th Percentile	0.7	3.3	1.3	0.4
95th Percentile	0.1	0.1	0.2	0.1
Mean	5.0	12.0	3.9	1.1
n	*113*	*28*	*49*	*36*

Ratio of Available Line of Credit to Endowment Spending Policy Distribution



	All Institutions	Low LTIP Support	Moderate LTIP Support	High LTIP Support
5th Percentile	3.2	4.2	2.8	2.8
25th Percentile	1.5	2.1	1.5	0.8
Median	0.7	1.5	0.7	0.6
75th Percentile	0.3	0.4	0.5	0.3
95th Percentile	0.1	0.2	0.2	0.1
Mean	1.1	1.7	1.0	0.7
n	*81*	*19*	*39*	*23*

Source: Endowment data as reported to Cambridge Associates LLC.

Notes: Subgroups in this analysis are based on the proportion of the operating budget that is funded from LTIP payout. The subgroups are broken out as follows: low LTIP support, less than 5%; moderate LTIP support, 5% to 20%; and high LTIP support, greater than 20%. Available line of credit is calculated as the total amount of all credit lines net of any amounts drawn against those lines as of June 30, 2017.

Investment Office Staffing and Governance

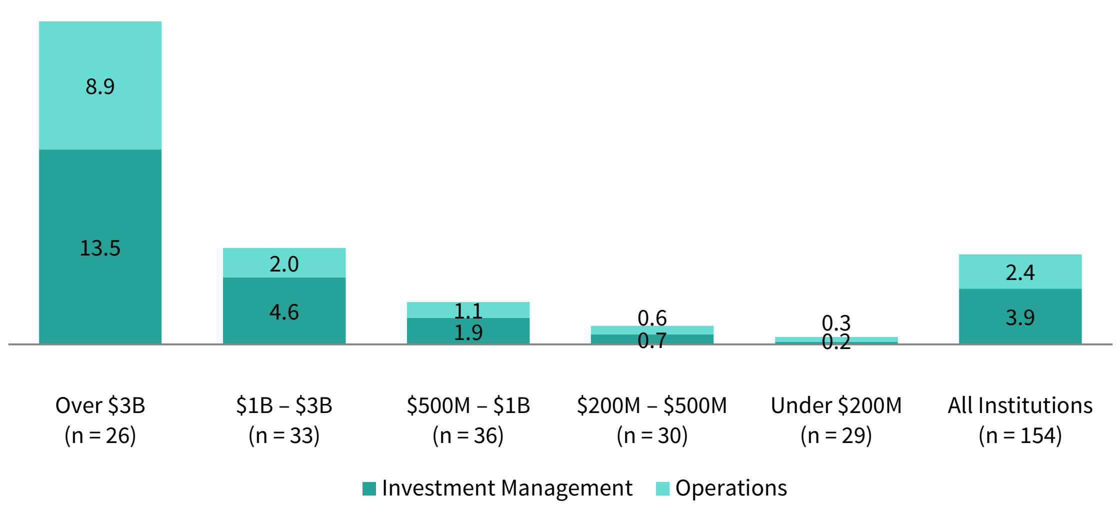
STAFFING

The primary mission of an investment office is to assume day-to-day responsibility for the endowment and other investment assets. This mission will be defined by the set of functions that internal investment office staff will carry out or oversee. Since both the investment philosophy and the demands on the office will vary among institutions, each office will have its own unique profile. Therefore, when evaluating the current structure or anticipated growth of an investment office, it is important to consider not only the size of the asset base, but also the portfolio complexity (whether handled by internal or external resources), the secondary demands on the staff (i.e., treasury functions), the use of outside consultants or advisors, and the level of involvement by boards and committees. Both the number of internal professional investment staff and the depth of specialization required to successfully manage the asset base will fluctuate based on these characteristics.

STAFFING LEVELS. Our survey shows that investment office staffing levels typically correlate with asset size. This is perhaps not surprising as larger portfolios tend to invest with more fund managers and favor a more active investment approach, which can require more resources. Overall, participating institutions employed an average of 6.3 full-time equivalents (FTEs) to manage their investment assets. The largest institutions employed 22.4 FTEs on average, and the smallest institutions maintained 0.5 FTE (Figure 52).

Comparing the breakout of investment management and operations roles, we see the average investment staff consisted of 3.9 investment management and 2.4 operations personnel (Figure 52). This relative ratio of 60% investment management and 40% investment operations staff is mostly consistent across all sizes.

FIGURE 52. AVERAGE STAFFING LEVELS
Fiscal Year 2017 • Number of Full-Time Equivalents (FTEs)



Source: Endowment data as reported to Cambridge Associates LLC.

Personnel consisted of a mixture of senior-, mid-, and junior-level positions. Senior investment professionals typically carry the title of Investment Director or Managing Director and have more than ten years of professional experience. Mid-level professionals can hold the titles of Investment Officer or Associate and bring five to ten years of experience. Junior-level positions are usually recent graduates or those with a few years of experience. Junior positions usually carry the title of Investment Analyst or Associate. Figure 53 provides the average FTEs by asset size and position levels for investment management and operations positions.

CHIEF INVESTMENT OFFICER. The presence of a dedicated Chief Investment Officer (CIO) also correlates with asset size and is most common at larger endowments. Nearly all (97%) of the respondents with endowments greater than $1 billion have a full-time CIO, while 61% of respondents with assets between $500 million and $1 billon indicated they had a CIO in place. The proportion is drastically lower for endowments less than $500 million, where only 7% of respondents have a CIO. It is most common for the CIO to report directly to the president of the institution (Figure 54).

FIGURE 53. AVERAGE INVESTMENT STAFF BY FUNCTION

Fiscal Year • Number of Full-Time Equivalents (FTEs)

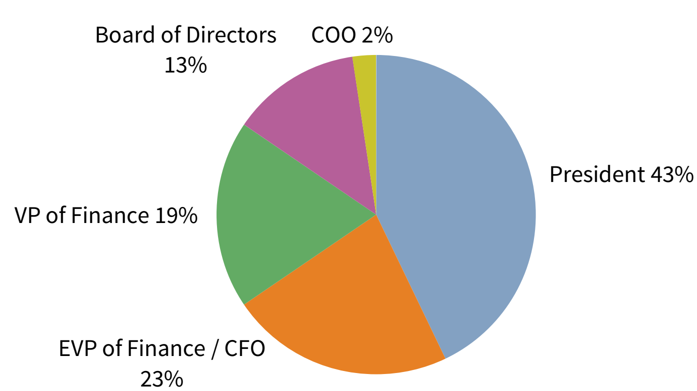
	Investment Management			Operations		
	Senior	Mid	Junior	Senior	Mid	Junior
Over $3B	4.9	4.6	4.0	2.0	4.2	4.5
n	*25*	*23*	*23*	*22*	*23*	*20*
$1B – $3B	1.9	1.7	1.7	1.0	1.0	1.5
n	*28*	*17*	*21*	*19*	*21*	*19*
$500M – $1B	0.9	1.1	1.0	0.6	0.8	0.8
n	*18*	*14*	*13*	*12*	*19*	*19*
$200M – $500M	0.5	1.1	0.9	0.3	0.5	0.8
n	*8*	*3*	*5*	*12*	*9*	*12*
Under $200M	0.1	0.1	0.1	0.2	0.3	0.4
n	*9*	*8*	*2*	*10*	*10*	*11*

Source: Endowment data as reported to Cambridge Associates LLC.

Notes: Office leadership positions (CFO/CIO) are not included in this analysis. Only institutions with personnel at the specific staffing level are included in each category. As a result, the sum of the personnel across each category will not equal the true total investment office FTE.

FIGURE 54. CHIEF INVESTMENT OFFICER REPORTING LINES

Fiscal Year 2017 • n = 84



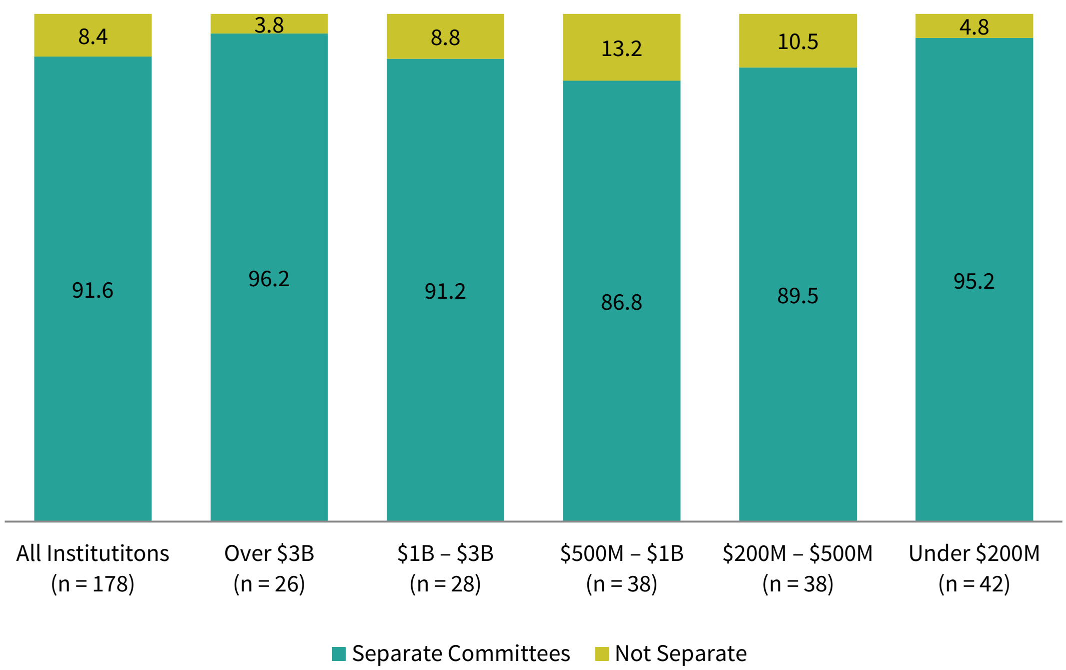
Source: Endowment data as reported to Cambridge Associates LLC.

GOVERNANCE

Good governance is a key factor for a successful investment program. To create the conditions for good governance, endowments should assess whether they have in place the appropriate model for portfolio oversight and management, are upholding their fiduciary responsibilities, and are learning about peer best practices in structure, process, and policies.

INVESTMENT COMMITTEE STRUCTURE. Regardless of asset size, most institutions have separate governing bodies responsible for finance and investments, with 91.6% of all respondents indicating a distinction between these two functions (Figure 55). Although separate, a portion of the investment committee usually also serves on the finance committee; 88% of respondents have at least one person that is a member of both committees. Institutions also indicated that it is important for their Chief Financial Officer to attend investment committee meetings, with 94% reporting such.

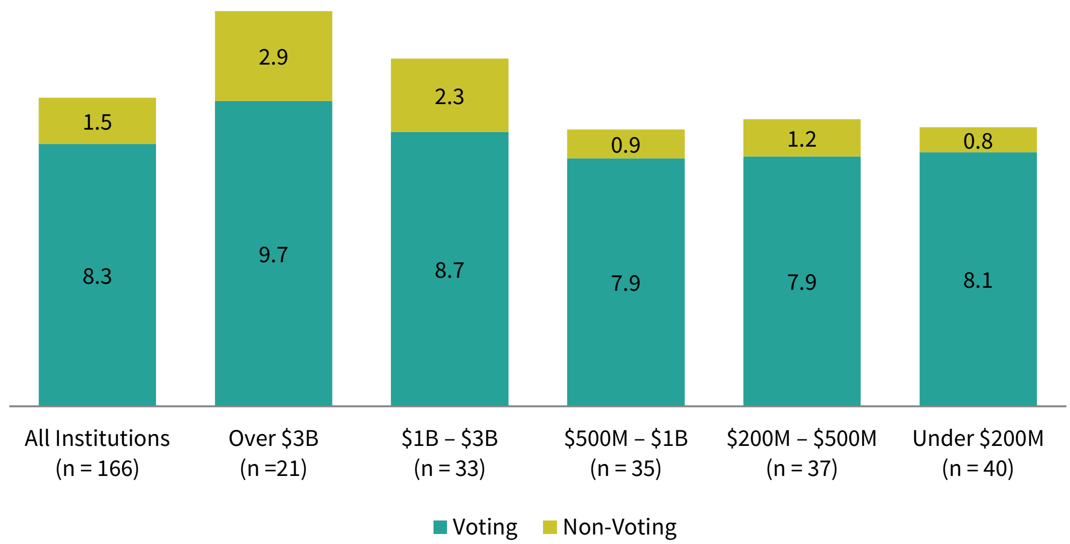
FIGURE 55. INSTITUTIONS WITH SEPARATE INVESTMENT AND FINANCE COMMITTEES
Fiscal Year 2017 • Percent (%)



Source: Endowment data as reported to Cambridge Associates LLC.

INVESTMENT COMMITTEE COMPOSITION. The average investment committee has ten members and the size of the committee tends to be larger for the biggest portfolios. On average, institutions with assets greater than $3 billion had 13 committee members, while those with assets less than $200 million had just nine members (Figure 56). Voting members compose the majority of all committees.

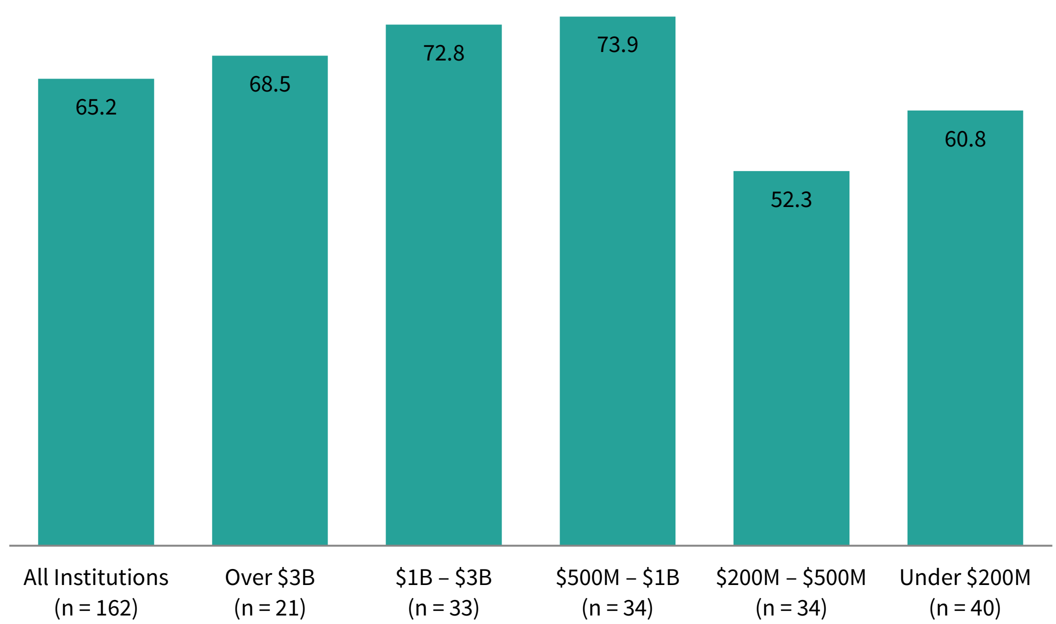
FIGURE 56. AVERAGE NUMBER OF INVESTMENT COMMITTEE MEMBERS
Fiscal Year 2017



Source: Endowment data as reported to Cambridge Associates LLC.

Institutional investment experience is a sought after quality for committee members. Professionals with investment experience compose the majority of the average investment committee for all asset sizes, but the proportion is generally smaller for portfolios with under $500 million in assets (Figure 57).

FIGURE 57. PERCENT OF INVESTMENT COMMITTEE WHO ARE INVESTMENT PROFESSIONALS
Fiscal Year 2017 • Percent (%)

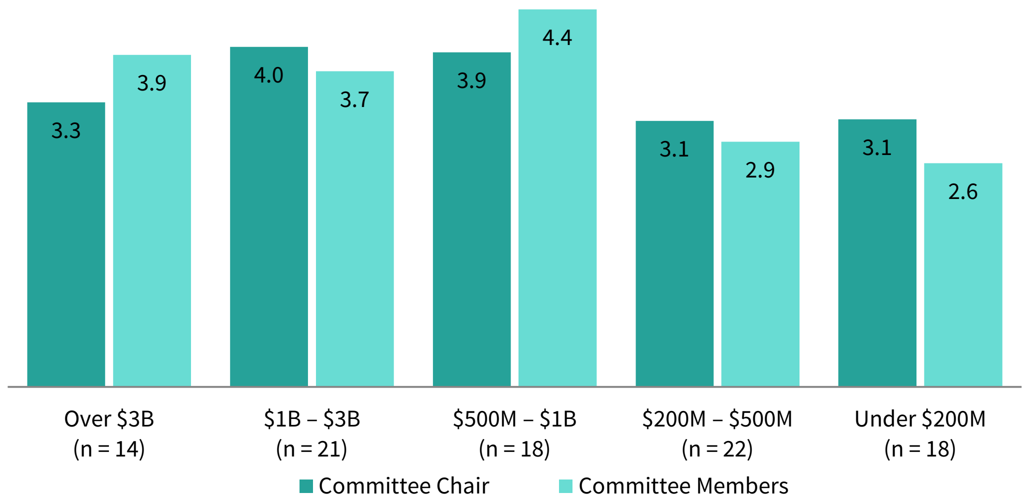


Source: Endowment data as reported to Cambridge Associates LLC.

TERM LIMITS AND LENGTHS. Setting guidelines for terms can help manage member turnover and mitigate committee stagnation, but a majority of respondents indicated they have no term limits for the investment committee. Just 42% of institutions limit the number of terms that the investment committee chair can serve. A similar proportion (39%) of respondents have term limits in place for committee members. Term lengths (in years) for both chairs and committee members are displayed in Figure 58. Institutions with assets between $1 billion and $3 billion reported the longest average term length for the committee chair (4.0 years), while those with assets between $500 million and $1 billion reported the longest average term length for committee members (4.4 years).

FIGURE 58. AVERAGE TERM LENGTHS BY ASSET SIZE

Fiscal Year 2017 • Number of Years



Source: Endowment data as reported to Cambridge Associates LLC.

INVESTMENT COMMITTEE MEETINGS. Our survey responses show that the overwhelming majority of institutions (88%) hold quarterly meetings. Few institutions hold meetings on a more or less frequent schedule, but ad hoc conference calls are a frequently cited occurrence. Regular attendance of investment committee members is critical to proper oversight. Participants indicated that average attendance was strong, at 84%. ■

Notes on the Data

DATA COLLECTION AND RESULTS

This report includes data for 289 endowed institutions. When the overall group is broken out by industry type, 164 are colleges and universities, 53 are cultural and environmental institutions, 29 are independent schools, and 43 are other endowed institutions. All participants provided investment pool data as of June 30, 2017. The notation of n denotes the number of institutions included in each analysis.

CALCULATION OF THE REAL RATE OF RETURN

The real, or inflation-adjusted, rate of return for a given investment is calculated by dividing the nominal total return by the appropriate deflator for the same time period. Throughout the report, the deflation measure used for this purpose is the Consumer Price Index. Note that simply subtracting the deflator from the nominal total return does not result in an accurate computation of real total return. The formula is:

$$\frac{1 + \text{Nominal Total Return}}{1 + \text{CPI-U}} - 1 = \text{Real Total Return}$$

CALCULATION OF THE RETURN AFTER SPENDING

The rate of return after spending for a given investment is calculated by dividing the total return by the effective spending rate for the time period. The effective spending rate is the dollar amount of spending (endowment spending policy distribution and other annual appropriations) for a fiscal year as a percentage of the beginning market value of assets. The effective spending rate does not include investment management fees that are netted out of returns. Note that simply subtracting the effective spending rate from the total return does not result in an accurate computation of total return after spending. The formula is:

$$\frac{1 + \text{Nominal Total Return}}{1 + \text{Spending Rate}} - 1 = \text{Total Return After Spending}$$

CALCULATION OF THE SHARPE RATIO

The Sharpe ratio shows how much return above the risk-free rate (T-bills) the investor has earned per unit of risk (defined as standard deviation of returns). The higher the Sharpe ratio, the more the investor has been compensated for each unit of risk taken. The ratio is a measure of reward relative to total volatility. The formula is:

$$\frac{R_p - R_f}{S_p} = \text{Sharpe Ratio}$$

Where:

- R_p is the arithmetic average of composite quarterly returns,
- R_f is the arithmetic average of T-bill (risk-free) quarterly returns, and
- S_p is the quarterly standard deviation of composite quarterly returns.

BLENDED PORTFOLIO BENCHMARKS

Throughout the report, the 70/30 simple portfolio benchmarks are calculated assuming rebalancing occurs on the final day of each quarter. ■

PARTICIPANTS

COLLEGES & UNIVERSITIES

The University of Akron Foundation
University of Alaska Foundation Cons. Endowment
Allegheny College
American Coll. of Greece & American Univ. of Greece
American University
Amherst College
University of Arkansas Foundation Inc.
College of The Atlantic
Baylor University
Bentley University
Berkeley Endowment Management Company
Bethune-Cookman University
Boston College
Boston University
Bowdoin College
Brown University
Bryant University
Bryn Mawr College
University of California
California Institute of Technology
Carleton College
Carnegie Mellon University
Case Western Reserve University
Centenary College of Louisiana
Chapman University
The University of Chicago
University of Cincinnati
Claremont McKenna College
Clarkson University
Clemson University Foundation
Colby College
Colgate University
Columbia University
Connecticut College
Cooper Union for the Advancement of Science & Art
Cornell University
College For Creative Studies
Dartmouth College
Davidson College
University of Delaware
Duke University
Duquesne University
Emerson College
Emory & Henry College
Emory University
Florida International University Foundation, Inc.
Florida State University Foundation Inc.
University of Florida Investment Corporation
Georgetown University
Georgia Tech Foundation Inc.
Gettysburg College
Goucher College
Grand Valley State University
Hampton University
Harvard Management Company, Inc.
Harvey Mudd College
Haverford College
University of Hawaii Foundation
Hollins University
College of the Holy Cross
Hope College
Houston Baptist University
University of Houston System
Howard University
University of Idaho Foundation, Inc.
University of Illinois Foundation
Indiana University Foundation
Iowa State University Foundation
Johns Hopkins University
Kalamazoo College
KU Endowment
Lafayette College
Lebanese American University
Lehigh University
Lewis and Clark College
Louisiana State University Foundation
University of Louisville
Lycoming College
Macalester College
University of Maine Foundation
Maryland Institute College of Art
MIT Investment Management Company
Mercy College
University of Michigan
Michigan State University
Mount Holyoke College
Mount St. Mary's University
National University
University of Nebraska Foundation
Nevada System of Higher Education
New England Conservatory
New York University
Northeastern University
Northwestern University
Norwich University
University of Notre Dame
Oberlin College
Occidental College
Ohio State University
Ohio Wesleyan University
University of Oklahoma Foundation
Oklahoma State University Foundation
Pace University
University of the Pacific
University of Pennsylvania
Pennsylvania State University
Pepperdine University
University of Pittsburgh
Pomona College
Princeton University
The Principia Corporation
Providence College
Purdue Research Foundation
Randolph-Macon College
Reed College
Rensselaer Polytechnic Institute
University of Rhode Island Foundation
Rice University
University of Rochester
The Rockefeller University
College of Saint Benedict
University of San Diego
San Francisco State University Foundation
Santa Clara University
Scripps College
Seattle University
Simmons College
Soka University of America
University of Southern California
Southern Methodist University
Spelman College

PARTICIPANTS (CONTINUED)

COLLEGES & UNIVERSITIES (CONT)

Stanford University
St. Lawrence University
University of St. Thomas
Swarthmore College
Texas Lutheran University
The University of Texas Investment Management Co.
University of Toronto c/o UTAM
Trinity University
Tulane University
The UCLA Foundation
UNC Management Company, Inc.
UNCG Endowment Partners, LP
Union Theological Seminary
Vanderbilt University
University of Vermont & State Agricultural College
Villanova University
University of Virginia
Virginia Tech Foundation
Washburn University Foundation
University of Washington
Washington College
Washington and Jefferson College
Washington University in St. Louis
Webb Institute
Wellesley College
Wesleyan University
Western New England University
Wheelock College
College of William & Mary Foundation
Williams College
Yale University
Yeshiva University
York College of Pennsylvania

CULTURAL & ENVIRONMENTAL

Atlanta Historical Society
The Vivian Beaumont Theater, Inc.
Boston Symphony Orchestra Inc.
The Brookings Institution
California Academy of Sciences
Chemical Heritage Foundation
The Children's Museum of Indianapolis
Conner Prairie Foundation
Council on Foreign Relations
Cypress Lawn Endowment Care Trust
The Edison Institute
The Evergreens Cemetery
Fallon Paiute-Shoshone Tribe
The Frick Collection
Isabella Stewart Gardner Museum
The J. Paul Getty Trust
Jeremy and Hannelore Grantham Environmental Trust
Hagley Museum and Library
Honolulu Museum of Art
Huntington Library and Art Gallery
Indianapolis Museum of Art Inc.
Institute for Advanced Study
Institute of International Education
Linda Hall Library Trusts
Longwood Gardens, Inc.
Mashantucket Pequot Tribal Nation Endowment Trust
Metropolitan Museum of Art
Minnesota Orchestral Association
Museum of Contemporary Art, Los Angeles
Museum of Fine Arts, Boston
Museum of Fine Arts, Houston
Museum of Modern Art
Museum of Science, Boston
National Gallery of Art
National Geographic Society
NPR Foundation
National Wildlife Federation
New York Philharmonic
The New York Public Library
New York Public Radio
Philadelphia Museum of Art
Ravinia Festival Association
Scenic Hudson Land Trust Inc.
The School of American Ballet
Seattle Art Museum
Smithsonian Institution
The Trustees of Reservations
United Negro College Fund
WGBH Educational Foundation
Wildlife Conservation Society
The Henry Francis duPont Winterthur Museum, Inc.
WNET

INDEPENDENT SCHOOLS

Auditory Learning Foundation
The Blake School
Boston College High School
The Brearley School
Buckingham Browne & Nichols School
The Colburn School
Episcopal School of Dallas
The Fessenden School
Greenwich Country Day School
Groton School
Milton Hershey School Trust
Hockaday School
The Hotchkiss School
Kamehameha Schools
Lakeside School
The Lawrenceville School
The Loomis Institute
The Madeira School
Park Tudor Trust
Phillips Exeter Academy
The Pingry School
Punahou School
The Roxbury Latin School
Salisbury School
Shady Hill School
St. Paul's School
Western Reserve Academy
The Winsor School
Xaverian Brothers High School

PARTICIPANTS (CONTINUED)

OTHER ENDOWMENTS

American College of Surgeons
American Geophysical Union
American Jewish Committee
American Jewish Joint Distribution Committee
The American Society of Hematology
Animal Rescue League of Boston
Armenian Church Endowment Fund
Armenian General Benevolent Union
CASAColumbia
Catholic Church Extension Society
Catholic Investment Trust of Washington
Archdiocese of Chicago
The Church Pension Fund
Claremont University Consortium
Episcopal Divinity School
Federation of Protestant Welfare Agencies
The Felician Sisters of North America, Inc.
Greater New York Hospital Association
Grace Church
HighGround Advisors
The Ignatius Fund
International/American Association for Dental Research
Isidore and Van Gerwen Charitable Trusts
Jewish Child Care Association
Mass. Soc. for the Prev. of Cruelty to Children
Mission Diocese Fund
Massachusetts Society for Prevention of Cruelty to Animals
University of Nebraska Foundation Fund N
Lucile Packard Foundation for Children's Health
The PGA of America, LP
Diocese of Providence
The Rose Hills Foundation
Saint Thomas Church
SGI-USA Endowment
The Sheltering Arms Foundation
Society for Human Resource Management, Inc.
Soka University of America EEF
Southern Poverty Law Center
Sunflower Foundation Health Care for Kansans
United Methodist Health Ministry Fund
United States Tennis Association
Catholic Diocese of Wilmington
Xaverian Brothers USA