Annual Analysis of Foundation Investment Pool Returns: Calendar Year 2016

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This report summarizes portfolio returns, asset allocation, investment management structures, and payout characteristics for 112 foundations as of calendar year 2016. The majority of participants are private foundations, 94 of which are classified as non-operating foundations and four as operating foundations. The remaining 14 participants are community foundations. The 112 participants in this study reported investment pool assets as of December 31, 2016, totaling $144.6 billion. The investment pool size of participants ranged from $6.9 million to $40.3 billion. The mean investment pool size was $1.3 billion and the median was $231.4 million. Twenty-four foundations reported investment pool assets greater than $1 billion, and they controlled 85.3% of the aggregate investment pool assets.

This year's report takes a closer look at additional portfolio attributes and investor trends relevant to foundations. Included are exhibits on asset class returns, performance attribution, risk analytics, and policy portfolio benchmarking. We also highlight private investment programs and their impact on portfolio liquidity. Our section on investment management structures reviews the use of external managers by asset class and details portfolio implementation techniques. The report's final section includes exhibits covering payout rates, payout distribution components, and payout objectives.

Investment Portfolio Returns

Returns in 2016

After a down year in 2015, investment performance bounced back into positive territory for foundations in calendar year 2016. Natural resource–related investments rebounded sharply and posted the highest return of the major asset classes. US equities, emerging markets equities, and non-venture private equity also made solid contributions to overall portfolio performance. Returns were more subdued across other asset classes, including venture capital and hedge funds which registered small gains among most foundations.

The mean nominal total return earned by participating foundations was 6.7% in 2016 (Figure 1). With inflation (as measured by the Consumer Price Index) at 2.1% for the year, the mean real return for all respondents is adjusted to 4.6%. There was little disparity in trailing one-year nominal returns when the participant group is broken out into three broad asset size groups. The average return was 6.8% for both smaller and midsized foundations (Figure 2). Participants with assets over $1 billion reported a slightly lower mean return (6.5%).

Figure 1. Summary of Investment Pool Returns
Years Ended December 31, 2016 • Percent (%)

Nominal Total Returns

	Average Annual Compound Nominal Return			
	1 Year	3 Years	5 Years	10 Years
Responding Institutions				
High	12.0	8.8	10.6	7.8
Low	3.1	0.3	3.6	2.3
Mean	6.7	3.4	7.2	4.6
Median	6.7	3.1	7.1	4.6
n	*112*	*112*	*109*	*96*
Mean After Spending	0.8	-1.7	2.2	-0.1
n	*87*	*70*	*52*	*30*
Benchmarks				
70% Russell 3000® / 30% BBG Barc Govt/Credit	9.8	6.9	11.0	6.7
70% MSCI ACWI / 30% BBG Barc Govt/Credit	6.5	3.2	7.3	4.2

Real Total Returns

	Average Annual Compound Real Return			
	1 Year	3 Years	5 Years	10 Years
Responding Institutions				
High	9.7	7.5	9.1	5.9
Low	1.0	-0.8	2.2	0.5
Mean	4.6	2.2	5.7	2.8
Median	4.5	1.9	5.7	2.7
n	*112*	*112*	*109*	*96*
Mean After Spending	-1.3	-2.8	0.8	-1.9
n	*87*	*70*	*52*	*30*
Benchmarks				
70% Russell 3000® / 30% BBG Barc Govt/Credit	7.6	5.6	9.5	4.8
70% MSCI ACWI / 30% BBG Barc Govt/Credit	4.3	2.0	5.9	2.4

Sources: Foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Frank Russell Company, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.
Note: Real returns are adjusted for inflation as measured by the Consumer Price Index.

Survey participants were asked to provide composite returns for the major asset classes in their portfolio. Figure 3 displays the range of participants' returns across marketable asset classes for 2016, while Figure 4 shows the same information for private investment asset classes. The marketable asset class returns are reported as time-weighted returns (TWRs) while the private investment data are horizon internal rates of return (IRR).[1] The charts in this section provide 2016 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 internal rate of return (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 2. Summary of Long-Term Investment Pool Return Percentiles by Asset Size
Years Ended December 31, 2016 • Percent (%)

	1 Year			3 Years			5 Years			10 Years		
	Under $300m	$300m − $1b	Over $1b	Under $300m	$300m − $1b	Over $1b	Under $300m	$300m − $1b	Over $1b	Under $300m	$300m − $1b	Over $1b
5th Percentile	8.7	9.5	8.5	4.0	5.9	7.5	7.8	9.4	10.3	5.7	5.8	6.9
25th Percentile	7.6	8.0	7.3	3.2	3.7	6.5	7.3	7.7	9.5	4.7	5.1	6.4
Median	6.7	7.3	6.5	2.7	3.3	5.6	6.6	7.3	8.8	4.0	4.6	5.5
75th Percentile	5.9	5.3	5.8	1.9	2.9	4.2	5.9	7.1	7.5	3.4	4.3	4.8
95th Percentile	5.0	3.5	3.7	1.5	2.3	3.3	4.7	6.5	7.0	2.4	3.9	4.3
Mean	6.8	6.8	6.5	2.6	3.6	5.5	6.5	7.5	8.6	4.2	4.8	5.6
n	65	23	24	65	23	24	62	23	24	53	23	20
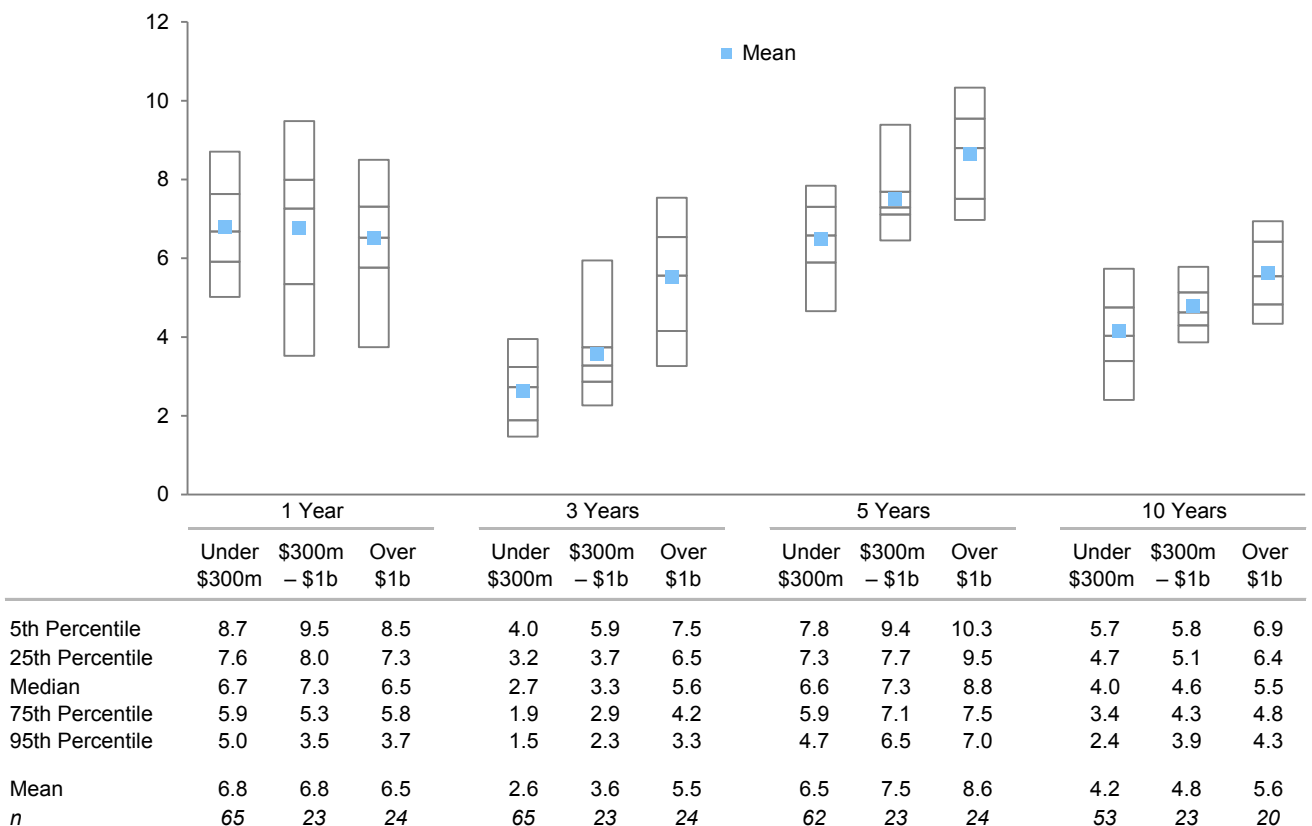
Source: Foundation data as reported to Cambridge Associates LLC.
Note: Three-, five-, and ten-year returns are annualized.

Figure 3. Dispersion of Participants' Asset Class Returns: Marketable Investments (One-Year)
As of December 31, 2016
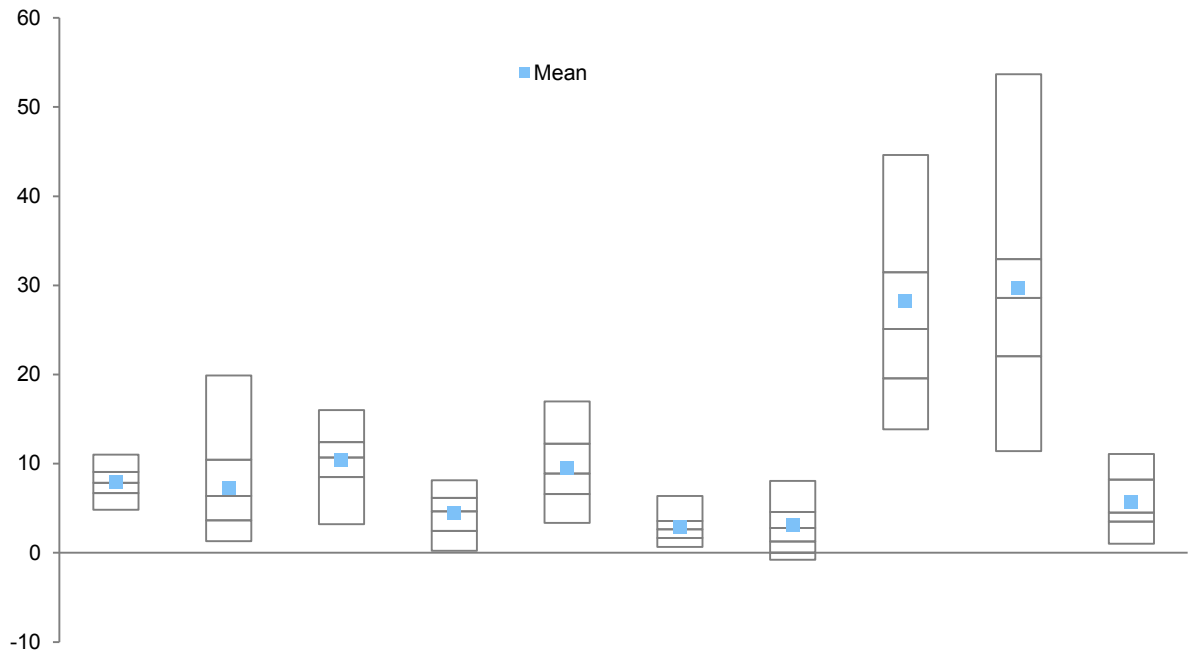
	Public Equity[1]	Global Equity[2]	US Equity	DM ex US Equity	EM Equity	Bonds	Hedge Funds	Public Real Assets[3]	Commodities and Natural Resources	Public Real Estate
5th Percentile	11.0	19.9	16.0	8.2	17.0	6.4	8.1	44.6	53.7	11.1
25th Percentile	9.1	10.5	12.4	6.2	12.2	3.6	4.6	31.5	32.9	8.2
Median	7.8	6.4	10.7	4.7	8.9	2.6	2.8	25.1	28.6	4.5
75th Percentile	6.7	3.6	8.5	2.5	6.6	1.7	1.3	19.6	22.0	3.5
95th Percentile	4.8	1.3	3.2	0.2	3.3	0.7	-0.8	13.8	11.4	1.0
Mean	7.9	7.3	10.4	4.5	9.5	2.9	3.1	28.3	29.7	5.7
n	*98*	*57*	*93*	*91*	*93*	*95*	*95*	*76*	*79*	*17*
Median by Asset Size										
Under $300m	7.9	6.5	10.9	4.4	9.4	2.8	2.2	26.5	28.7	4.9
n	*60*	*33*	*60*	*59*	*57*	*60*	*58*	*50*	*52*	*8*
$300m to $1b	8.7	6.2	10.3	5.2	10.3	1.9	2.7	19.7	27.5	3.8
n	*22*	*16*	*22*	*20*	*21*	*21*	*22*	*18*	*17*	*4*
Over $1b	6.7	5.9	8.1	6.7	5.2	2.2	5.1	22.9	27.6	8.2
n	*16*	*8*	*11*	*12*	*15*	*14*	*15*	*8*	*10*	*5*

Source: Foundation 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 (One-Year)
As of December 31, 2016
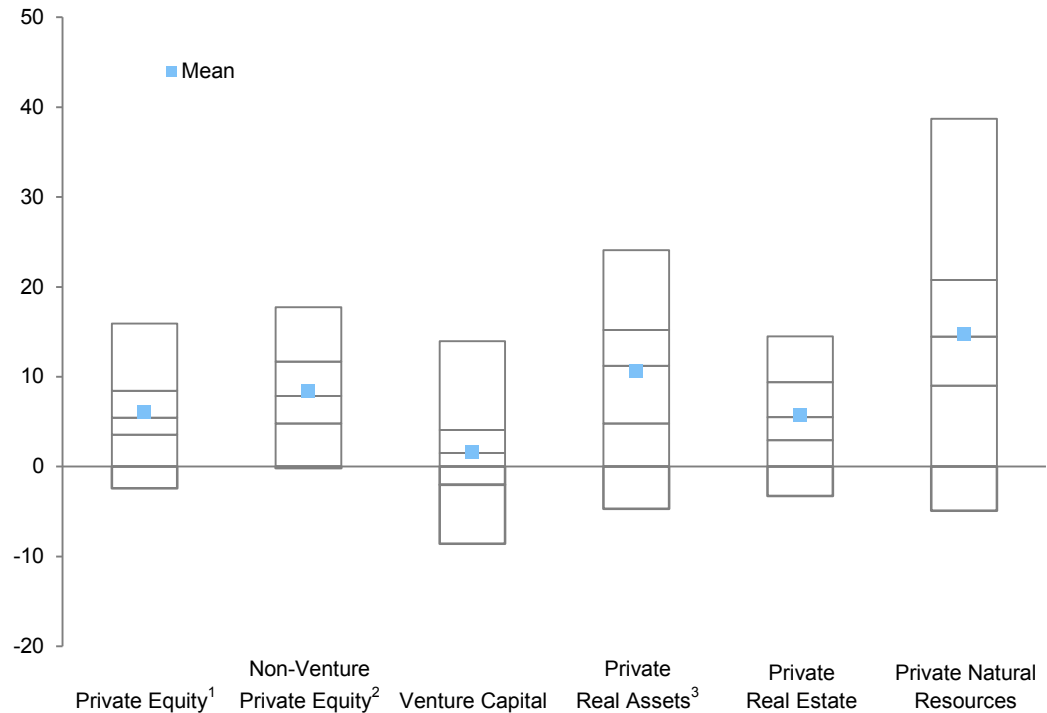
	Private Equity[1]	Non-Venture Private Equity[2]	Venture Capital	Private Real Assets[3]	Private Real Estate	Private Natural Resources
5th Percentile	15.9	17.7	14.0	24.1	14.5	38.7
25th Percentile	8.4	11.7	4.1	15.2	9.4	20.8
Median	5.4	7.9	1.5	11.2	5.5	14.5
75th Percentile	3.5	4.8	-2.0	4.8	2.9	9.0
95th Percentile	-2.4	-0.2	-8.6	-4.7	-3.3	-4.9
Mean	6.0	8.4	1.6	10.7	5.7	14.8
n	82	77	71	70	64	63
Median by Asset Size						
Under $300m	4.6	4.8	0.0	4.1	2.1	7.8
n	46	43	37	40	32	33
$300m to $1b	5.5	9.9	2.1	13.4	5.4	16.7
n	20	21	20	18	17	16
Over $1b	6.1	9.6	1.7	11.4	6.5	12.5
n	16	13	14	12	15	14

Source: Foundation 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 equities represent a significant portion of the portfolio for most foundations in this study.[2] Consequently, the performance of global equity markets is usually a key indicator of which direction foundations' returns are trending. The median total public equity return among participating foundations for 2016 was 7.8%.

US equities, represented by the Russell 3000® Index, returned 12.7% in 2016 (Figure 5). Foundations in this study generally fared poorly versus this benchmark, with the median participant return at 10.7%. Smaller portfolios reported the highest median US equity return (10.9%) while larger portfolios reported the lowest (8.1%). Performance among all foundations varied from 16.0% at the 5th percentile to 3.2% at the 95th percentile, a wider range than what we have observed over the last couple of years (Figure 3).

[2] On average, public equities accounted for 45.1% of the investment portfolio among participating foundations.

Figure 5. Public Equity: Median Participant Return Versus Index Returns
Trailing One-Year as of December 31, 2016
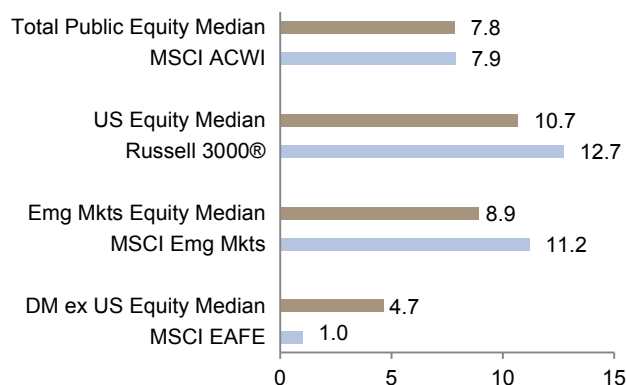
Sources: Foundation data as reported to Cambridge Associates LLC. Index data are provided by Frank Russell Company and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.

Foundations similarly underperformed on a relative basis versus the broad-based market index in emerging markets equities, but fared better in developed ex US equity markets. The median participant return for developed ex US equities was 4.7% compared to 1.0% for the MSCI EAFE Index (Figure 5). In emerging markets, the median participant return was 8.9%, over 200 basis points (bps) lower than the MSCI Emerging Markets Index.

Private Equity. Returns for private equity strategies were mixed in 2016. After several years of strong performance, venture capital produced little in terms of investment performance over the calendar year. On an index basis, non-venture private equity outperformed venture capital for the first time since 2012. The median composite IRR among participants in 2016 was 7.9% for non-venture private equity and 1.5% for venture capital (Figure 6).

For participants in this study, the median IRR for the total private equity composite was 5.4% in 2016 (Figure 6). Foundations with portfolios greater than $1 billion reported the highest median composite IRR (6.1%) (Figure 4). Historically, private equity fund returns have varied considerably more than public equities, underscoring the importance of manager selection within this strategy. The range of returns among foundations for the total private equity composite (18 ppts) was more than twice as wide as that of total public equity composite returns (6 ppts).

Figure 6. Private Equity: Median Participant Return Versus Index Returns
Trailing One-Year as of December 31, 2016

Total Private Equity Median	5.4
CA US PE & VC	10.0
Non-Venture PE Median*	7.9
CA US Private Equity	12.9
CA Distressed Securities	11.7
Venture Capital Median	1.5
CA US Venture Capital	0.3
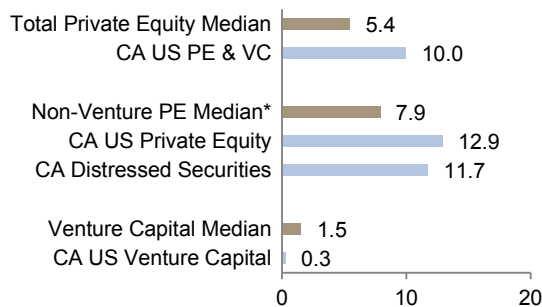
Sources: Foundation data as reported to Cambridge Associates LLC. Index data are provided by Cambridge Associates LLC.
Note: Private investment return statistics are reported as horizon internal rates of return (IRRs).
* Non-venture private equity also includes distressed securities that are invested through a private investment vehicle.

Real Assets. Real assets consist of a diversified group of investments, including commodities, natural resources, inflation-linked bonds, and real estate. 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 CA's Modified Public Market Equivalent (mPME) shows that the private strategies underperformed the reference public indexes for 2016 (Figure 11).[3]

The sharp rebound in natural resources led to a strong year for real assets. In public real assets, natural resources make up the bulk of the allocation for most participating foundations. As a result, the performance for the public real assets composite is driven primarily by this strategy. The median participant return for the public real assets composite was 25.1% and was much closer

[3] 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 net asset value (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.

to the median return reported for commodities and natural resources (28.6%) than the median return of public real estate (4.5%) (Figure 7).

In private real assets, there tends to be more of a balance in asset allocations between the real estate and natural resources categories. The median IRR among participants for the private real assets composite was 11.2% for 2016 (Figure 8). This fell in between the median IRRs for private natural resources (14.5%) and private real estate (5.5%).

Figure 7. Public Real Assets: Median Participant Return Versus Index Returns
Trailing One-Year as of December 31, 2016

Total Public RA Median	25.1
Commodities and NR Median	28.6
MSCI World Nat Res	30.7
Bloomberg Commodity TR	11.8
Public Real Estate Median	4.5
FTSE® NAREIT Composite	9.4

Sources: Foundation data as reported to Cambridge Associates LLC. Index data are provided by Bloomberg L.P., FTSE International Limited, and MSCI Inc. MSCI data provided "as is" without any express or implied warranties.
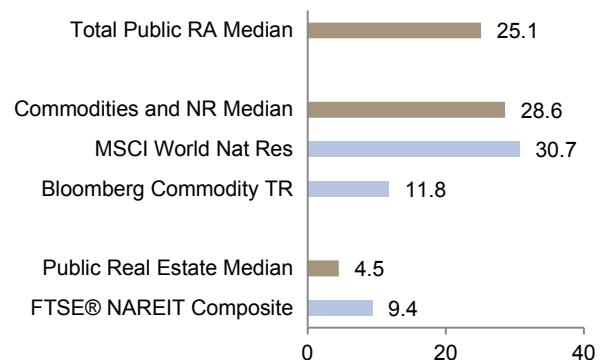
Figure 8. Private Real Assets: Median Participant Return Versus Index Returns
Trailing One-Year as of December 31, 2016

Total Private RA Median	11.2
Private Nat Res Median	14.5
CA Natural Resources	17.0
Private Real Estate Median	5.5
CA Real Estate	6.9
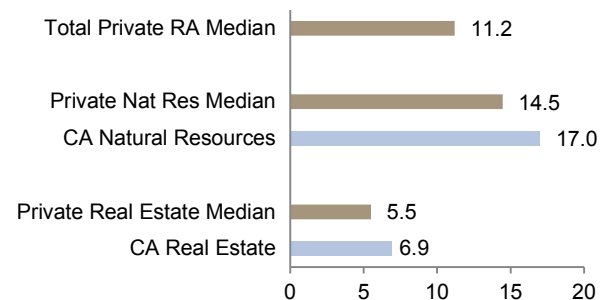
Sources: Foundation data as reported to Cambridge Associates LLC. Index data are provided by Cambridge Associates LLC.
Note: Private investment return statistics are reported as horizon internal rates of return (IRRs).

The varying asset mixes across the diverse sub-strategies of these composites usually contribute to a wide range in returns reported across participants. The range of private real assets IRRs from the 5th percentile to the 95th percentile was 29 ppts (Figure 4). The range of public real assets returns was even wider at 31 ppts (Figure 3). For both composites, foundations at the top end of the return distribution had the highest proportional allocations to the outperforming natural resources asset classes.

Hedge Funds. While hedge funds produced better returns in 2016 compared to the previous year, they were still a drag on portfolio performance for most participant foundations. The median hedge fund composite return among participants was just 2.8% (Figure 9). On an index basis equity-oriented funds outperformed diversified funds-of-funds (5.5% versus 0.4%). The HFRI ED Distressed/Restructuring Index produced the best return (10.6%) of the main sub-strategies in this composite.

Bonds. Median participant performance for bonds was 2.6% in 2016 (Figure 10). US bonds, as represented by the Bloomberg Barclays Government/Credit Bond Index, did slightly better, returning 3.0%. The Citigroup Non-US Dollar World Government Bond Index returned 1.8%. While the Citigroup High-Yield Index returned 17.8%, just 25 of 112 participating foundations reported an allocation to high-yield bonds in 2016.

Figure 10. Bonds: Median Participant Return Versus Index Returns
Trailing One-Year as of December 31, 2016

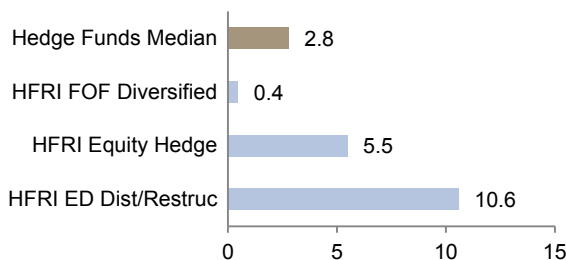|	
Bonds Median	2.6
BBG Barc Govt/Credit	3.0
Citigroup High-Yield	17.8
Citigroup Non-US$ WGBI	1.8

Sources: Foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., and Citigroup Global Markets.
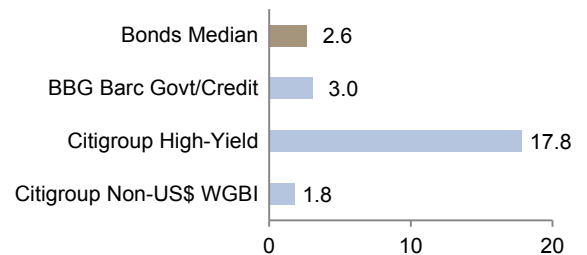
Figure 9. Hedge Funds: Median Participant Return Versus Index Returns
Trailing One-Year as of December 31, 2016

Hedge Funds Median	2.8
HFRI FOF Diversified	0.4
HFRI Equity Hedge	5.5
HFRI ED Dist/Restruc	10.6

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

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Analysis of Top and Bottom Performers in 2016

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. Asset allocation is a key contributor to the total return that a portfolio earns. Figure 11 explores this relationship and illustrates how asset allocation structures tend to vary across the four performance quartiles of the overall participant group. In this exhibit, each foundation'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 foundations within each quartile.
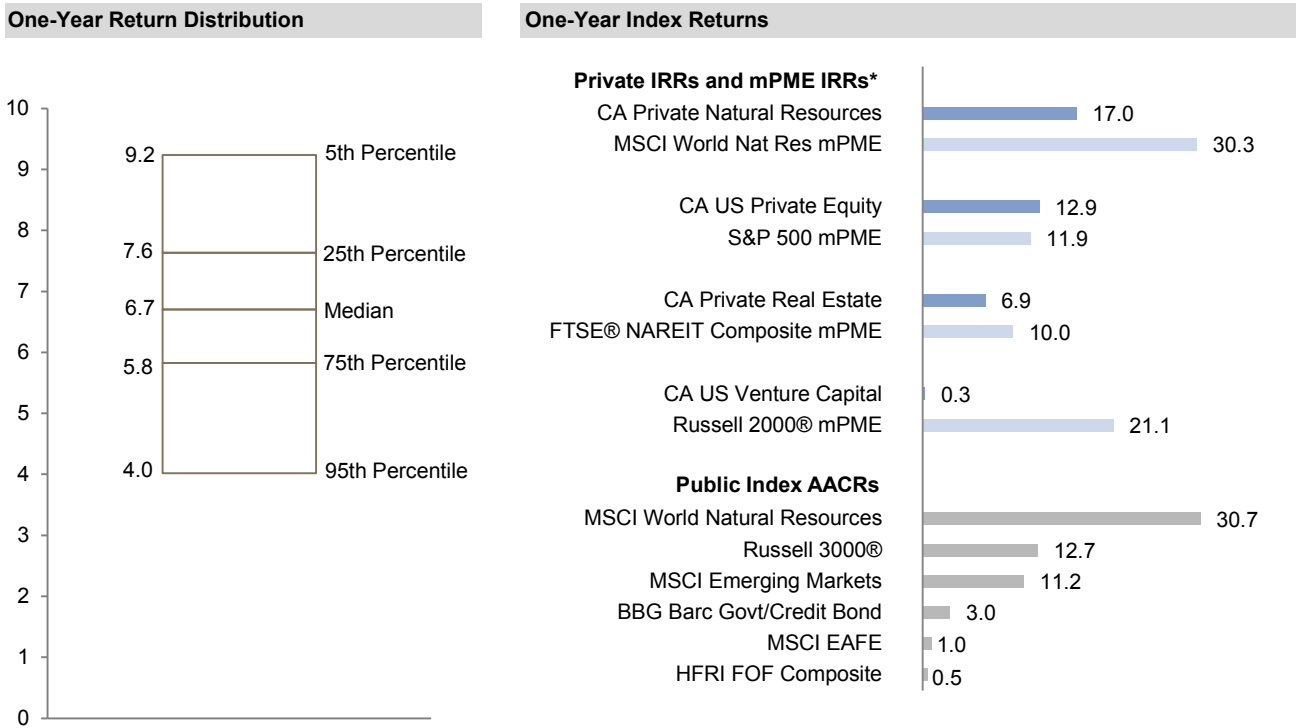
The chart of index returns in Figure 11 provides the context of the market environment for the 2016 period. Private investment indexes are pooled horizon IRRs net of fees, expenses, and carried interest, while public indexes are time-weighted returns. Included alongside the private benchmark IRRs are public market returns on a modified public market equivalent basis. The CA mPME replicates private investment performance under public market conditions and allows for an appropriate comparison of private and public market returns. Most of the private strategies underperformed their mPME reference index in 2016.

As in recent years, the greatest disparity between top and bottom performers continues to be the way in which the overall equity portfolio is allocated. However, the outperformance of public markets in 2016 resulted in a reverse of the trend from recent years. Foundations that posted a trailing one-year return in the top quartile had the highest average combined allocation to public equities (49.1%). Those in the bottom quartile of performers reported an average combined allocation of 40.5%. Conversely, the top quartile of performers reported the lowest average allocation to private equity/venture capital (8.2%), while the bottom quartile of performers had the highest average allocation (12.5%).

Attribution. Asset allocation is a key driver of performance, but it does not fully explain the variation of returns that are reported across different foundations. The execution or 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 in 2016.

Figure 12 illustrates the results of an estimated attribution analysis based on the one-year return and beginning fiscal year asset allocation of 108 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 foundation's asset allocation. The

Figure 11. One-Year Asset Allocation of Top and Bottom Performers
As of December 31, 2016 • Percent (%)

One-Year Return Distribution

Percentile	Value
5th Percentile	9.2
25th Percentile	7.6
Median	6.7
75th Percentile	5.8
95th Percentile	4.0

One-Year Index Returns

Private IRRs and mPME IRRs*

Index	Value
CA Private Natural Resources	17.0
MSCI World Nat Res mPME	30.3
CA US Private Equity	12.9
S&P 500 mPME	11.9
CA Private Real Estate	6.9
FTSE® NAREIT Composite mPME	10.0
CA US Venture Capital	0.3
Russell 2000® mPME	21.1

Public Index AACRs

Index	Value
MSCI World Natural Resources	30.7
Russell 3000®	12.7
MSCI Emerging Markets	11.2
BBG Barc Govt/Credit Bond	3.0
MSCI EAFE	1.0
HFRI FOF Composite	0.5

Mean Asset Allocation by Performance Quartile: December 31, 2015 to December 31, 2016

Quartile	US Equity	DM ex US Equity	EM Equity	Bonds	Hedge Funds	Dist Sec	PE & VC	Private RA	Public RA & ILBs	Cash	Other
Top Quartile	25.0	16.4	7.7	11.7	15.8	2.2	8.2	3.5	5.2	4.2	0.1
2nd Quartile	22.5	16.2	6.8	9.0	19.5	3.4	9.2	4.0	4.7	4.6	0.0
3rd Quartile	20.7	15.0	7.5	11.8	16.8	3.4	10.2	5.1	4.2	4.8	0.4
Bottom Quartile	18.9	14.3	7.3	11.5	18.8	3.0	12.5	5.3	3.6	4.3	0.5
All Fdn Mean	21.8	15.5	7.3	11.0	17.7	3.0	10.0	4.5	4.4	4.5	0.3
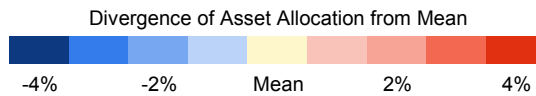
Divergence of Asset Allocation from Mean
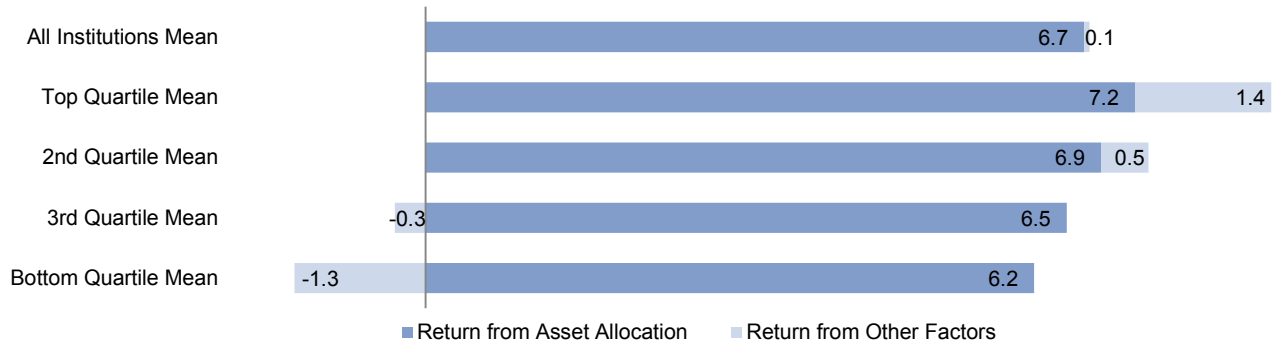
-4%   -2%   Mean   2%   4%

Sources: Foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Cambridge Associates LLC, Frank Russell Company, FTSE International Limited, Hedge Fund Research, Inc., MSCI Inc., the National Association of Real Estate Investment Trusts, Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
Notes: Performance quartiles are based on the trailing one-year return as of December 31, 2016. Mean allocations are for the 2015 and 2016 December 31 periods. Analysis includes data for 108 institutions.
* Private indexes are pooled horizon IRRs, net of fees, expenses, and carried interest. The CA Modified Public Market Equivalent (mPME) replicates private investment performance under public market conditions. The public index's shares are purchased and sold according to the private fund cash flow schedule, with distributions calculated in the same proportion as the private fund, and mPME NAV is a function of mPME cash flows and public index returns.

Figure 12. One-Year Return Attribution Analysis
As of December 31, 2016 • Percent (%)

One-Year Mean Return Attribution Analysis by Quartile

Category	Value 1	Value 2
All Institutions Mean	6.7	0.1
Top Quartile Mean	7.2	1.4
2nd Quartile Mean	6.9	0.5
3rd Quartile Mean	6.5	-0.3
Bottom Quartile Mean	6.2	-1.3

■ Return from Asset Allocation   ■ Return from Other Factors

Breakdown of Return from Asset Allocation for All Institutions

Asset Class	Mean Asset Allocation	Asset Class Benchmark Return	Contribution to Asset Class Return
US Equity	21.6	12.7	2.7
Emerging Mkts Equity	7.1	11.2	0.8
Public Energy / Natural Resources	2.5	30.7	0.8
Long/Short Hedge Funds	8.7	5.5	0.5
Non-Venture Private Equity	4.0	13.0	0.5
US Bonds	9.5	3.0	0.3
Private Oil & Gas / Natural Resources	1.8	16.5	0.2
Private Real Estate	2.4	6.9	0.2
Developed ex US Equity	15.5	1.0	0.2
Distressed-Private Equity Structure	1.2	11.9	0.1
Commodities	1.0	11.8	0.1
Other Private Investments	1.1	6.5	0.1
High-Yield Bonds	0.3	17.8	0.1
Emerging Mkts Bonds	0.6	10.2	0.1
Absolute Return (ex Distressed)	9.9	0.4	0.0
Venture Capital	4.9	0.3	0.0
Public Real Estate	0.4	9.4	0.0
Inflation-Linked Bonds	0.3	4.7	0.0
Cash & Equivalents	4.4	0.3	0.0
Developed ex US Bonds	0.8	1.8	0.0
Distressed-Hedge Fund Structure	1.7	0.5	0.0
Timber	0.2	2.6	0.0
Other	0.2	0.3	0.0

Sources: Foundation 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 108 institutions that provided beginning year asset allocation. Mean asset allocation is as of December 31, 2015. 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 end-to-end returns. This model assumes that flows to and from investment managers take place on the last day of the year. In addition, the analysis uses a standard set of asset class benchmarks that may be more or less representative of the asset allocation policy across different institutions. Therefore, the portion of returns from other factors shown in the bar chart may also include some residual/unattributable asset allocation effects.

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.[4]

The attribution analysis estimates that the virtually all of the mean total return for the participant group could be explained by asset allocation in 2016. US equity, which returned double digits and accounted for over one-fifth of the average portfolio, had the greatest impact of all the asset class return contributors (2.7%). Emerging markets equities and public natural resources also made strong contributions to overall port-folio performance. Notably, all detailed asset classes contributed positively to the portion of return earned from asset allocation.

A breakdown of the attribution data into the four performance quartiles of the overall group highlights the different experiences among institutions (Figure 12). The top performance quartile had the highest mean asset allocation return (7.2%) and the bottom performance quartile had the lowest (6.2%). The model estimates that implementation decisions were responsible for an even greater portion of the dispersion in performance between top and bottom performers. On average, the top quartile of performers added 1.4% through implementation decisions while the bottom quartile lost value (-1.3%).

[4] This model assumes that flows to and from investment managers take place on the last day of the 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.

Return Calculation Methodologies.
Performance reporting methodologies differ across participants in this study. Foundations that place a significant emphasis on benchmarking peer performance should take note of the following issues.

Private Investments. Foundations used two main methodologies to account for private investments in their 2016 total portfolio return. The most frequently used methodology was to report returns on a current basis, meaning the total portfolio return incorporated private investment valuations for the entire calendar year period. The second most frequently used methodology to account for private investments 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 2016 total return represents performance for the period of October 1, 2015, to September 30, 2016.

When assessing the impact of these two methodologies, it is important to consider private investment returns for both fourth quarter 2015 and fourth quarter 2016. With the lagged basis methodology, performance for the former period will be included in the 2016 total return calculation, while performance for the latter period will be excluded. Returns for the CA US private equity and natural resources indexes were significantly stronger in fourth quarter 2016 than fourth quarter 2015, while the earlier period was better for the CA US venture capital and real estate indexes (Figure 13). Whether or not either reporting methodology would have an advantage over the other in 2016

Performance Reporting Methodologies

Current Basis
Total investment pool return for 2016 includes marketable asset and private investment performance for January 1, 2016, to December 31, 2016. Of the 72 institutions using this methodology, 71 used confirmed private investment valuations and one used estimated valuations.

Marketable Assets

| 1Q16 | 2Q16 | 3Q16 | 4Q16 |

Private Investments

Lagged Basis
Total investment pool return for 2016 includes marketable asset performance for January 1, 2016, to December 31, 2016, and private investment performance for October 1, 2015, to September 30, 2016.

Marketable Assets

| 4Q15 | 1Q16 | 2Q16 | 3Q16 | 4Q16 |

Private Investments
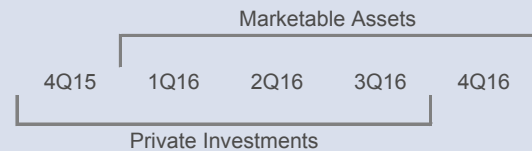
Methodologies Used by Participants

Asset Size	Current Basis	Lagged Basis	Other	No PI Allocation
Under $300m	69%	2%	3%	26%
n	*45*	*1*	*2*	*17*
$300m to $1b	83%	13%	4%	0%
n	*19*	*3*	*1*	*0*
Over $1b	33%	67%	0%	0%
n	*8*	*16*	*0*	*0*
All Institutions	64%	18%	3%	15%
n	*72*	*20*	*3*	*17*

Source: Foundation 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.

Figure 13. Cambridge Associates Private Investment Index Returns

	One Quarter Horizon Pooled IRR	
	Q4 2015	Q4 2016
US Private Equity	0.5	4.5
US Venture Capital	1.6	-0.1
Distressed Securities	0.0	3.7
Real Estate	2.5	1.2
Natural Resources	-8.3	7.6

Source: Cambridge Associates LLC.

will depend on each foundation's allocation across the private investment asset classes and their actual performance in these categories.

Net of Fee Calculations. Nearly all participating foundations (111 of 112) in this study provided performance on a net-of-fee basis. The vast majority (88%) of respondents deduct only asset- and performance-based management fees while another 11% also deduct custody expenses. Only one foundation deducted other investment oversight costs such as staff salaries, travel expenses, and overhead costs (Figure 14).

Figure 14. Calculation of Net Returns
2016

Number of Institutions	*98*	*12*	*1*
% of Institutions	88	11	1
Asset-Based Mgmt Fees	x	x	x
Perf-Based Mgmt Fees	x	x	x
Custody Fees		x	x
Consulting Fees			x
Staff Salaries			x
Travel Expenses			x
Legal Expenses			x
Accounting Expenses			x
IC Meetings Costs			x
Rents/Space Costs			x

Source: Foundation data as reported to Cambridge
Note: Included data for 111 institutions that provided performance on a net-of-fee basis.

Long-Term Returns

The mean average annual compound return (AACR) was 7.2% for the five-year period ending December 31, 2016 (Figure 1). Foundations with assets greater than $1 billion reported the highest average five-year return (8.6%) (Figure 2). For a constant group of foundations that have consistently reported historical performance, the return for the most recent five-year period lies in the middle of those which have been reported over the last decade (Figure 15).

The mean nominal AACR for the ten-year period was 4.6% (Figure 1), with the largest portfolios again reporting the highest mean return (5.6%) (Figure 2). The most recent ten-year period is the second lowest long-term return period reported over the last decade, surpassing only the ten-year period ending in 2009 (Figure 15).

Most foundations, particularly private non-operating foundations that are influenced by government-mandated spending requirements, generally aim to distribute approximately 5% of their portfolio on an annual basis. To maintain purchasing power over the long term, foundations must achieve a real return that offsets this spending rate. Of the foundations that provided a long-term real total return objective, a majority (57 of 91) aim to earn 5% (Figure 16). Virtually all of the remaining foundations have an objective to achieve a long-term real return above 5%. Through the trailing ten-year period ending December 31, 2016, the average real return for participating foundations was just 2.8% (Figure 1). For the foundations that provided spending rates for the last ten years, the average ten-year real return after spending was -1.9%.
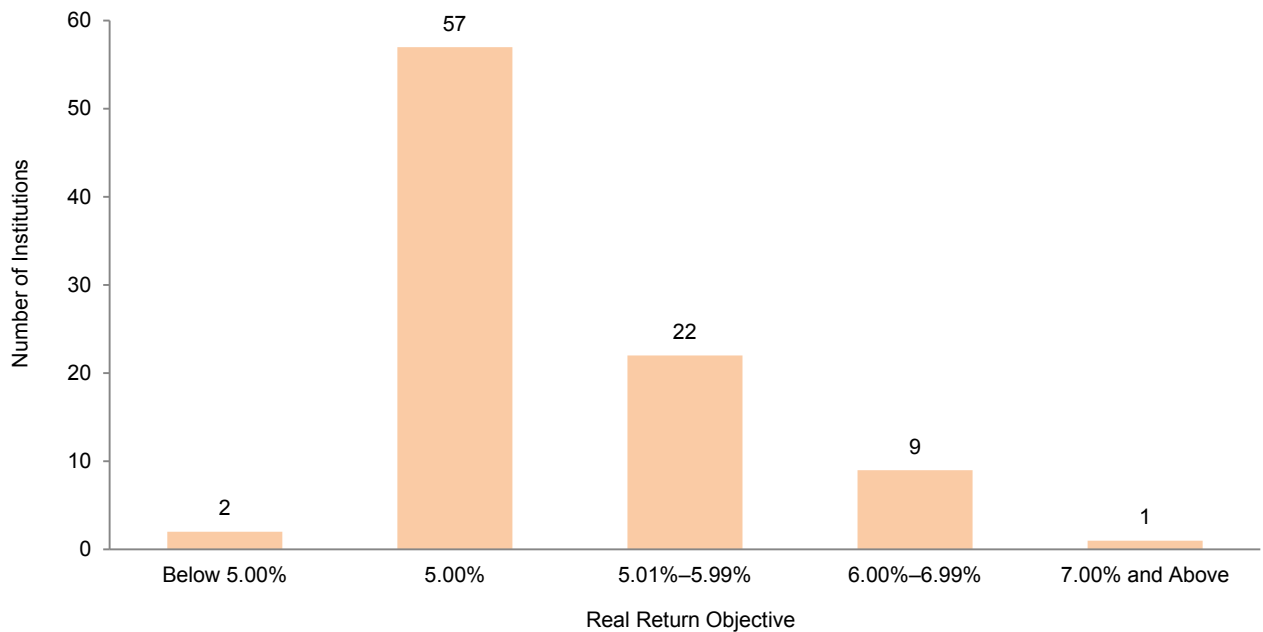
Figure 15. Rolling Five-Year and Ten-Year Mean Average Annual Compound Returns
Years Ended December 31 • Percent (%)
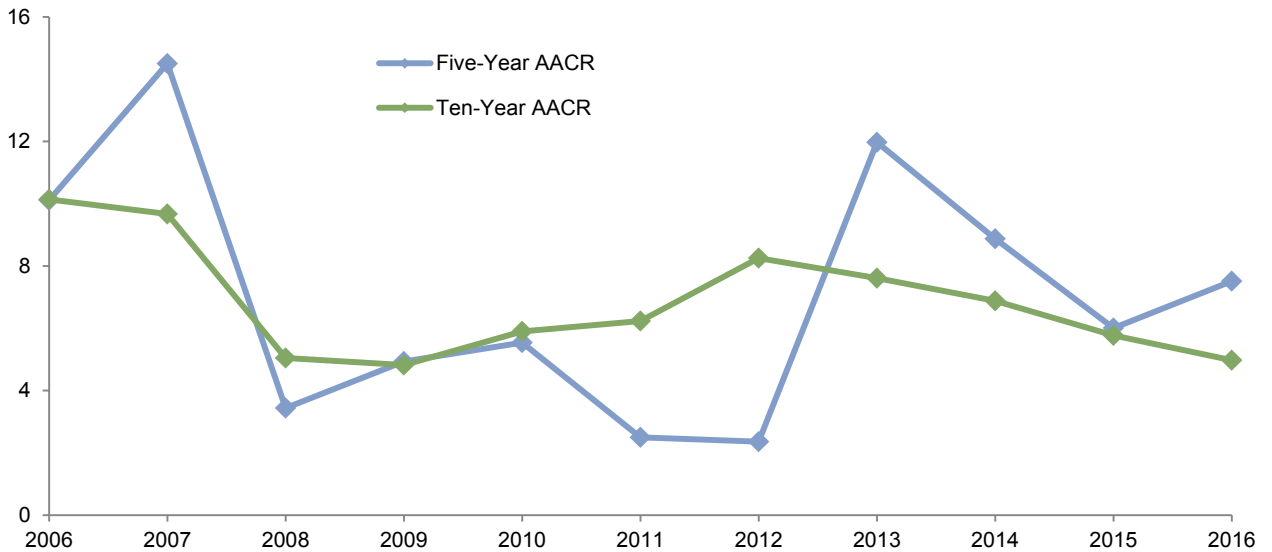
Source: Foundation data as reported to Cambridge Associates LLC.
Note: Analysis includes data for 55 institutions that provided returns for the last 20 years.

Figure 16. Real Total Return Objectives

Source: Foundation data as reported to Cambridge Associates LLC.
Note: Graph includes data for 91 institutions that provided a real total return objective.
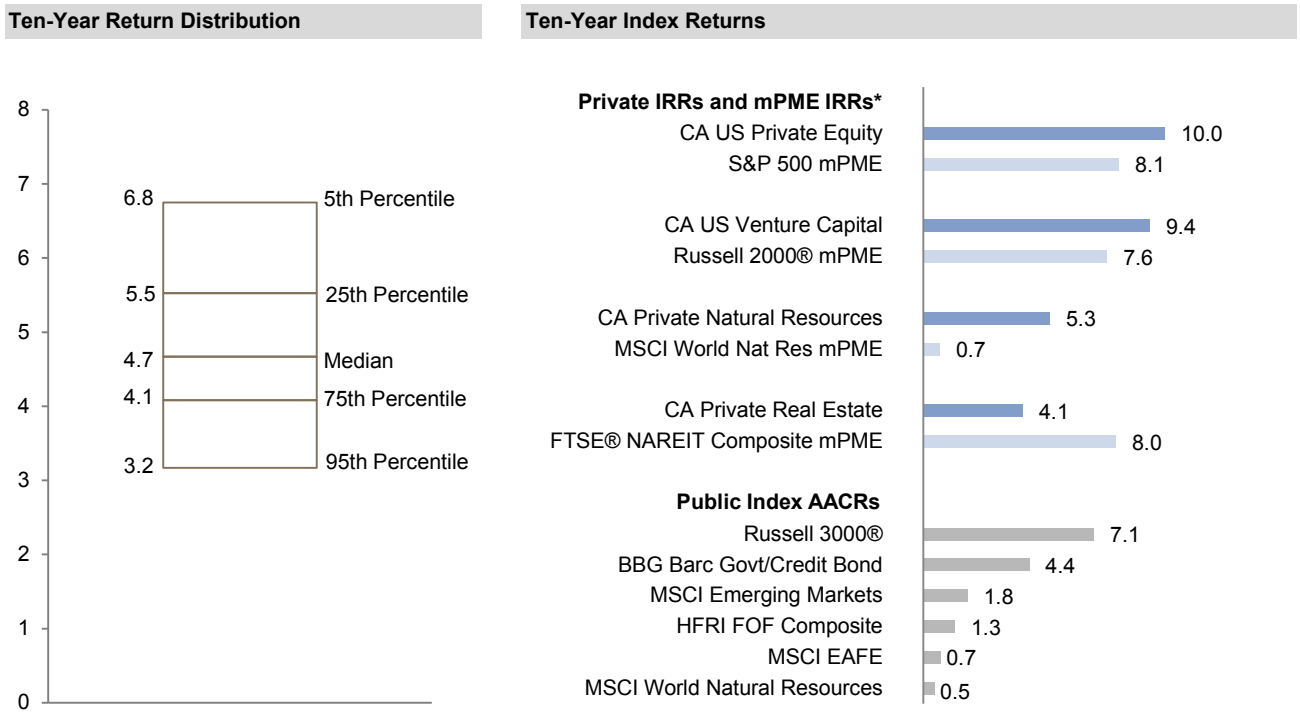
Relative Returns: Simple Portfolio Benchmark. US equities and bonds have been among the top-performing marketable investments of the past ten years, outperforming global ex US equities, hedge funds, and natural resources (Figure 17). Consequently, portfolios that have diversified across these asset classes have considerably lagged a simple 70/30 benchmark that uses a US index for the equity component. The average return for foundations in this study underperformed this simple benchmark by over 200 bps (Figure 1) for the trailing ten-year period. Foundations fared better against a 70/30 benchmark that uses a global equity index, with the mean participant return outperforming this benchmark by 40 bps for the same time period.

These simple portfolio 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. While in retrospect diversification among the marketable asset classes did not benefit foundations over the trailing ten-year period, another key tenet of the endowment model was a boon to investment performance over this period. Foundations that had the highest allocations to illiquid private investments generally produced the best returns for the last decade.

Among the asset class benchmarks listed in Figure 17, most private investment strategies outperformed their public market counterparts on an mPME basis over the past ten years. Foundations in the top quartile of performers reported an average allocation of 12.0% to private equity and venture capital over the last ten years, while those in the bottom quartile of performers averaged just 5.2%. Similarly, the top quartile of performers reported the highest average allocation to private real assets (7.5%) while those in the bottom quartile reported the lowest average allocation (2.3%).

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Figure 17. Trailing Ten-Year Asset Allocation of Top and Bottom Performers
As of December 31, 2016 • Percent (%)

Ten-Year Return Distribution

Percentile	Value
5th Percentile	6.8
25th Percentile	5.5
Median	4.7
75th Percentile	4.1
95th Percentile	3.2

Ten-Year Index Returns

Private IRRs and mPME IRRs*

CA US Private Equity	10.0
S&P 500 mPME	8.1
CA US Venture Capital	9.4
Russell 2000® mPME	7.6
CA Private Natural Resources	5.3
MSCI World Nat Res mPME	0.7
CA Private Real Estate	4.1
FTSE® NAREIT Composite mPME	8.0

Public Index AACRs

Russell 3000®	7.1
BBG Barc Govt/Credit Bond	4.4
MSCI Emerging Markets	1.8
HFRI FOF Composite	1.3
MSCI EAFE	0.7
MSCI World Natural Resources	0.5

Mean Asset Allocation by Performance Quartile: December 31, 2006 to December 31, 2016

Quartile	US Equity	DM ex US Equity	EM Equity	Bonds	Hedge Funds	Dist Sec	PE & VC	Private RA	Public RA & ILBs	Cash	Other
Top Quartile	20.1	12.2	7.3	9.9	18.6	3.4	12.0	7.5	3.9	4.9	0.1
2nd Quartile	21.7	13.8	6.3	11.8	18.1	3.4	10.0	4.9	5.7	4.0	0.3
3rd Quartile	23.1	16.5	6.4	13.5	16.7	2.7	7.1	4.2	7.3	2.5	0.1
Bottom Quartile	21.7	14.9	6.4	16.2	17.5	2.5	5.2	2.3	7.8	5.1	0.4
All Fdn Mean	21.6	14.3	6.6	12.8	17.7	3.0	8.6	4.8	6.1	4.1	0.2
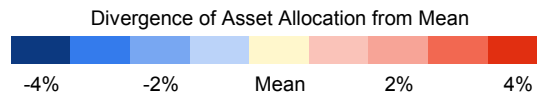
Divergence of Asset Allocation from Mean

-4% -2% Mean 2% 4%

Sources: Foundation data as reported to Cambridge Associates LLC. Index data are provided by Barclays, Bloomberg L.P., Cambridge Associates LLC, Frank Russell Company, FTSE International Limited, Hedge Fund Research, Inc., MSCI Inc., the National Association of Real Estate Investment Trusts, Standard & Poor's, and Thomson Reuters Datastream. MSCI data provided "as is" without any express or implied warranties.
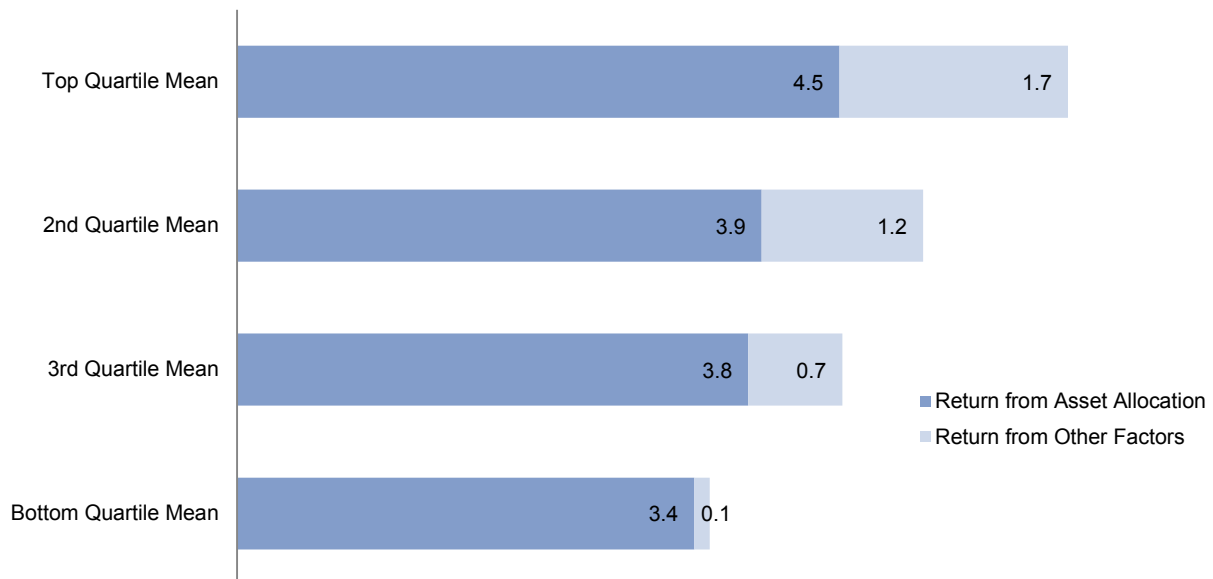Notes: Performance quartiles are based on the trailing ten-year return as of December 31, 2016. Mean allocations are for the 11 December 31 periods from 2006 and 2016. Analysis includes data for 61 institutions.
* Private indexes are pooled horizon IRRs, net of fees, expenses, and carried interest. The CA Modified Public Market Equivalent (mPME) replicates private investment performance under public market conditions. The public index's shares are purchased and sold according to the private fund cash flow schedule, with distributions calculated in the same proportion as the private fund, and mPME NAV is a function of mPME cash flows and public index returns.

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The attribution model also points to an outperforming asset allocation structure for the top performance quartile over the last decade. However, the model also suggests that implementation decisions were responsible for most of the dispersion in performance between top and bottom performers. Figure 18 shows that the top performance quartile had a mean asset allocation return of 4.5%, approximately 1.1 ppts higher than the bottom performance quartile. The top performance quartile also added another 1.7% through implementation decisions while the bottom performance quartile added just 0.1%. The ranges of actual asset class returns across the entire participant group for the trailing five- and ten-year periods are listed in Figures 19 and 20.

Figure 18. Trailing Ten-Year Attribution Analysis by Performance Quartile
As of December 31, 2016 • Percent (%)

Sources: Foundation 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 61 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 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 19. Dispersion of Participants' Asset Class Returns: Marketable Investments
(Trailing Five- and Ten-Year)
As of December 31, 2016

	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 Five-Year										
5th Percentile	11.8	13.2	16.6	10.1	6.4	4.4	8.0	3.1	2.2	13.7
25th Percentile	10.4	11.7	14.8	8.7	3.9	3.1	6.4	0.0	-1.7	11.8
Median	9.7	11.0	13.9	7.7	2.7	2.5	5.5	-2.8	-3.9	10.9
75th Percentile	8.9	9.5	12.9	6.9	1.5	1.6	4.5	-4.4	-5.4	9.6
95th Percentile	8.0	6.2	11.0	5.2	0.5	1.0	3.3	-7.3	-8.2	9.3
Mean	9.8	10.4	13.8	7.9	3.1	2.5	5.5	-2.2	-3.2	11.1
n	*94*	*36*	*88*	*87*	*81*	*88*	*90*	*69*	*68*	*10*
Trailing Ten-Year										
5th Percentile	7.0	8.5	9.1	5.2	6.5	6.2	6.1	2.5	2.0	8.8
25th Percentile	5.2	7.4	7.7	3.8	3.9	5.0	5.1	0.4	0.4	5.3
Median	4.7	5.8	6.9	2.3	2.7	4.4	4.3	-1.0	-1.0	4.0
75th Percentile	3.8	4.1	6.3	1.1	1.7	3.8	3.5	-2.5	-2.0	3.6
95th Percentile	2.6	2.7	5.0	0.1	0.7	2.5	1.5	-4.8	-3.6	2.9
Mean	4.6	5.8	7.0	2.4	3.1	4.3	4.1	-1.1	-0.9	4.9
n	*78*	*11*	*73*	*65*	*56*	*68*	*66*	*44*	*38*	*7*

Source: Foundation 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 20. Dispersion of Participants' Asset Class Returns: Private Investments
(Trailing Five- and Ten-Year)
As of December 31, 2016

	Private Equity[1]	Non-Venture Private Equity[2]	Venture Capital	Private Real Assets[3]	Private Real Estate	Private Natural Resources
Trailing Five-Year						
5th Percentile	21.9	29.4	24.8	10.8	15.8	7.9
25th Percentile	15.6	14.9	16.7	8.9	12.6	3.3
Median	12.9	12.5	12.9	6.2	10.8	2.2
75th Percentile	11.1	11.1	9.9	3.5	8.7	0.4
95th Percentile	7.9	8.1	-1.7	1.3	1.6	-6.4
Mean	14.0	14.4	12.3	6.2	10.3	1.7
n	*74*	*70*	*62*	*61*	*58*	*55*
Trailing Ten-Year						
5th Percentile	14.6	14.7	17.4	10.6	7.3	15.4
25th Percentile	10.9	10.8	13.5	5.5	4.1	6.4
Median	9.8	9.4	11.0	3.8	2.3	4.6
75th Percentile	8.3	8.0	7.5	2.8	0.4	3.5
95th Percentile	4.8	3.9	0.2	-1.3	-6.7	0.2
Mean	9.7	9.4	10.1	3.9	1.8	5.5
n	*54*	*54*	*45*	*47*	*42*	*43*

Source: Foundation data as reported to Cambridge Associates LLC.

Note: Private investment return statistics are reported as 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.
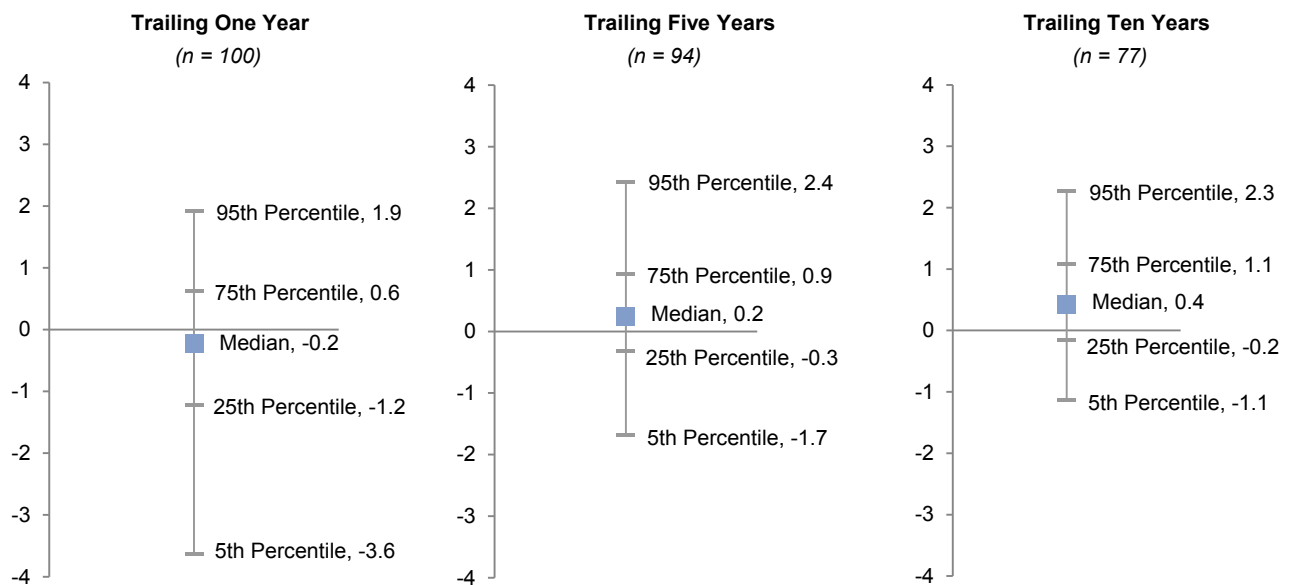
Policy Portfolio Benchmarks

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. Although performance results of peers can be informative, they are not necessarily the most effective benchmark to evaluate a foundation's investment performance. Despite the mandatory spending floor imposed by the government on private foundations, differing objectives on how much to spend as well as varied risk tolerances can lead to different investment policies among a peer group of foundations.

The comparison of a foundation's return to its policy portfolio benchmark is the true mark for determining whether a portfolio is being successfully managed against its target investment policy. The policy bench-

mark 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.

For the foundations that provided performance for their policy portfolio benchmark, the median difference between the total portfolio return and the benchmark was -0.2 ppt for 2016 (Figure 21). Just 43% of respondents earned a return that surpassed their policy portfolio benchmark for the trailing one-year period. Most foundations fared better over the longer time horizon. The median difference between the total portfolio AACR and the policy benchmark was 0.2 ppt and 0.4 ppt for the trailing five- and ten-year periods, respectively.

Figure 21. Range of Out/Underperformance of Total Return Versus Policy Portfolio Benchmark
As of December 31, 2016 • Percentage Points

Trailing One Year
(n = 100)

95th Percentile, 1.9
75th Percentile, 0.6
Median, -0.2
25th Percentile, -1.2
5th Percentile, -3.6

Trailing Five Years
(n = 94)

95th Percentile, 2.4
75th Percentile, 0.9
Median, 0.2
25th Percentile, -0.3
5th Percentile, -1.7

Trailing Ten Years
(n = 77)

95th Percentile, 2.3
75th Percentile, 1.1
Median, 0.4
25th Percentile, -0.2
5th Percentile, -1.1

Source: Foundation 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 all of the respondents (97 of 103) that provided a policy portfolio benchmark use a detailed asset class–specific benchmark to evaluate the performance of the total portfolio. The other six foundations 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 respondents. One area where this is noticeable is in public and private equities, where 18% of foundations use a single index to benchmark their entire equity allocation (Figure 22). This method is appropriate where there is a broad target allocation to equity stated in the policy and there is discretion in choosing the strategies to fill out that allocation.[5] The remaining 82% of foundations 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 44% of respondents for US equities (Figure 22). For global ex US equities, nearly two-thirds of foundations (65%) used a blend of the MSCI EAFE and MSCI Emerging Markets indexes. This approach is appro-

priate for institutions that have separate targets to developed ex US and emerging markets equities, particularly if the targets are out of proportion to the weightings of the MSCI ACWI ex US Index.

For foundations that benchmark private equity and venture capital separately from public equity, 43% use the Cambridge Associates LLC Private Equity and Venture Capital indexes (Figure 22). Another 41% of respondents used a public market index, with the majority of those adding a prespecified percentage or premium (ranging from 2% to 5%) to the index return. The choice of the public indexes reported by foundations varies widely and should be representative of the private equity program's exposure and geographic orientation.
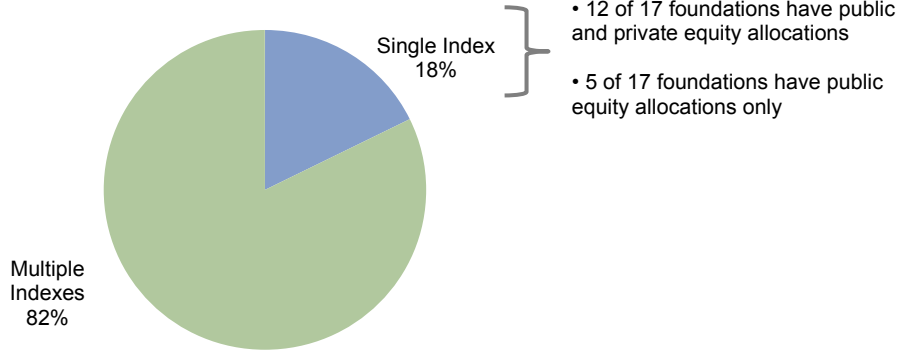
The use of solely the Bloomberg Barclays Aggregate Bond Index was the most common benchmarking approach for bonds and was reported by 31% of foundations (Figure 23). However, many institutions use unique index combinations to better reflect their underlying bond exposure. The choice of benchmark should 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 HFR index for hedge funds, with the Fund of Funds Diversified Index reported by 31% of foundations. For real assets, benchmark combinations are unique across most participants due to the wide variety of strategies under this category.

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[5] Even in such cases where the target allocation to equity is not broken out by sub-strategies, there is typically a liquidity policy that sets limits on the proportion of the portfolio that can be invested in illiquid private investments.
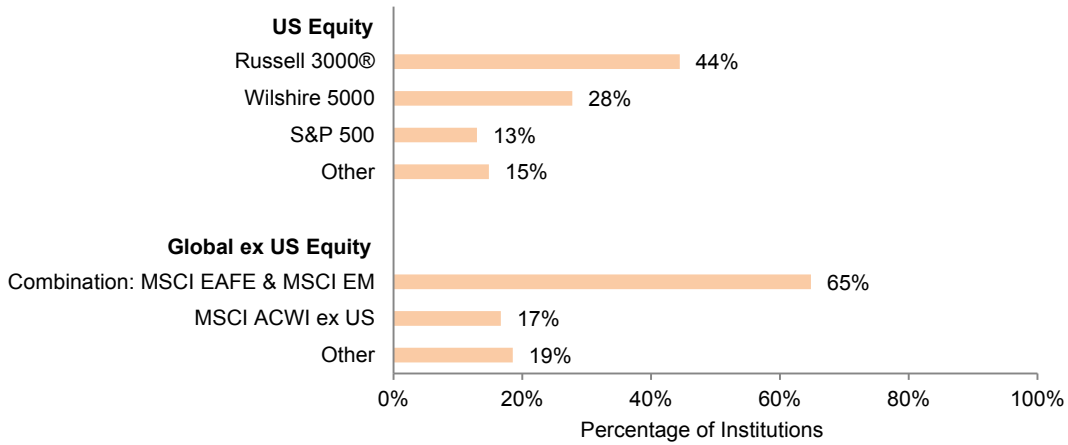
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Figure 22. Frequently Used Components of Policy Portfolio Benchmarks: Public and Private Equity
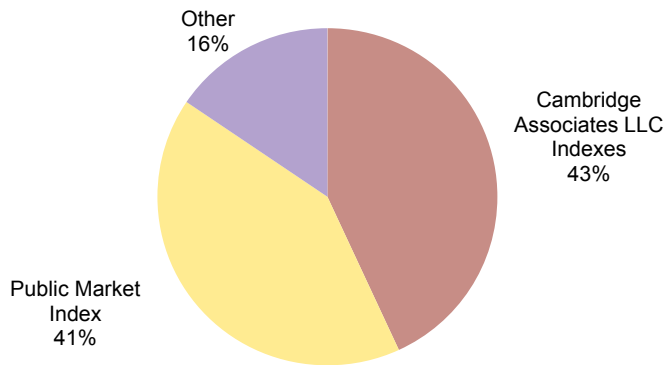As of December 31, 2016

Benchmark for the Entire Equity Allocation *(n = 96)*

Single Index
18%

Multiple
Indexes
82%

- 12 of 17 foundations have public and private equity allocations

- 5 of 17 foundations have public equity allocations only

Public Equity Indexes Reported by Geographic Orientation *(n = 54)*

US Equity

Russell 3000®	44%
Wilshire 5000	28%
S&P 500	13%
Other	15%

Global ex US Equity

Combination: MSCI EAFE & MSCI EM	65%
MSCI ACWI ex US	17%
Other	19%

Percentage of Institutions

Private Equity Indexes *(n = 58)*

Other
16%

Cambridge
Associates LLC
Indexes
43%

Public Market
Index
41%

Source: Foundation data as reported to Cambridge Associates LLC.

Figure 23. Frequently Used Components of Policy Portfolio Benchmarks: Bonds and Hedge Funds
As of December 31, 2016

Bonds *(n = 96)*
- BBG Barc Aggregate Bond — 31%
- BBG Barc Govt/Credit — 5%
- Combination: BBG Barc Agg and Citigroup WGBI — 3%
- Other — 60%

Hedge Funds *(n = 86)*
- HFRI Fund of Funds Diversified Index — 31%
- HFRI Fund of Funds Composite Index — 27%
- 91-Day Treasury Bill + Prespecified Percentage — 5%
- Other — 37%

Percentage of Institutions
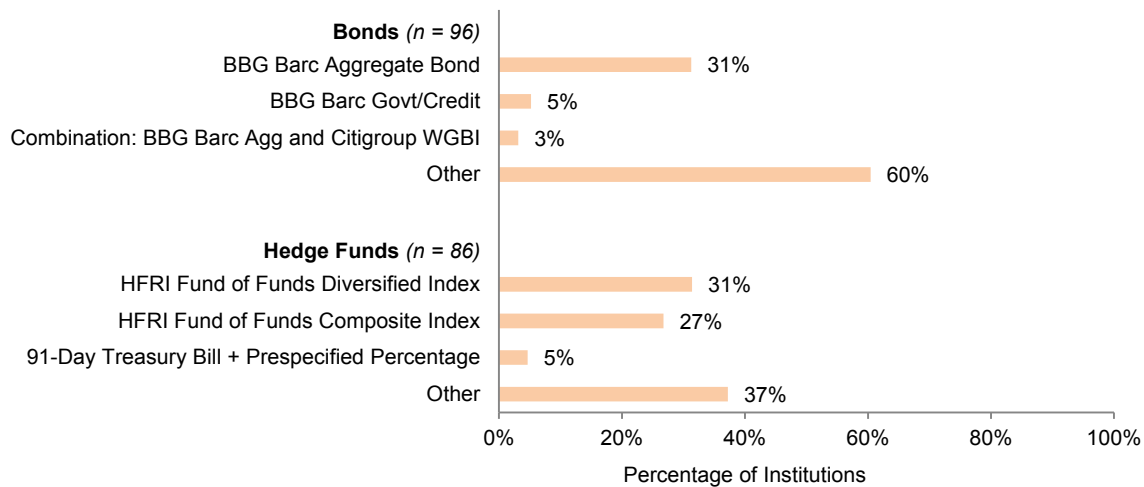
Source: Foundation data as reported to Cambridge Associates LLC.

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 of returns for these assets. Thus, a portfolio with high allocations to private investments can yield a lower volatility statistic that does not fully represent the amount of risk it has actually taken. For this reason, we have split foundations out into sub-categories in Figure 24 based on their allocations to private investments.

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

Figure 24. Standard Deviation and Sharpe Ratio
Five Years Ended December 31, 2016
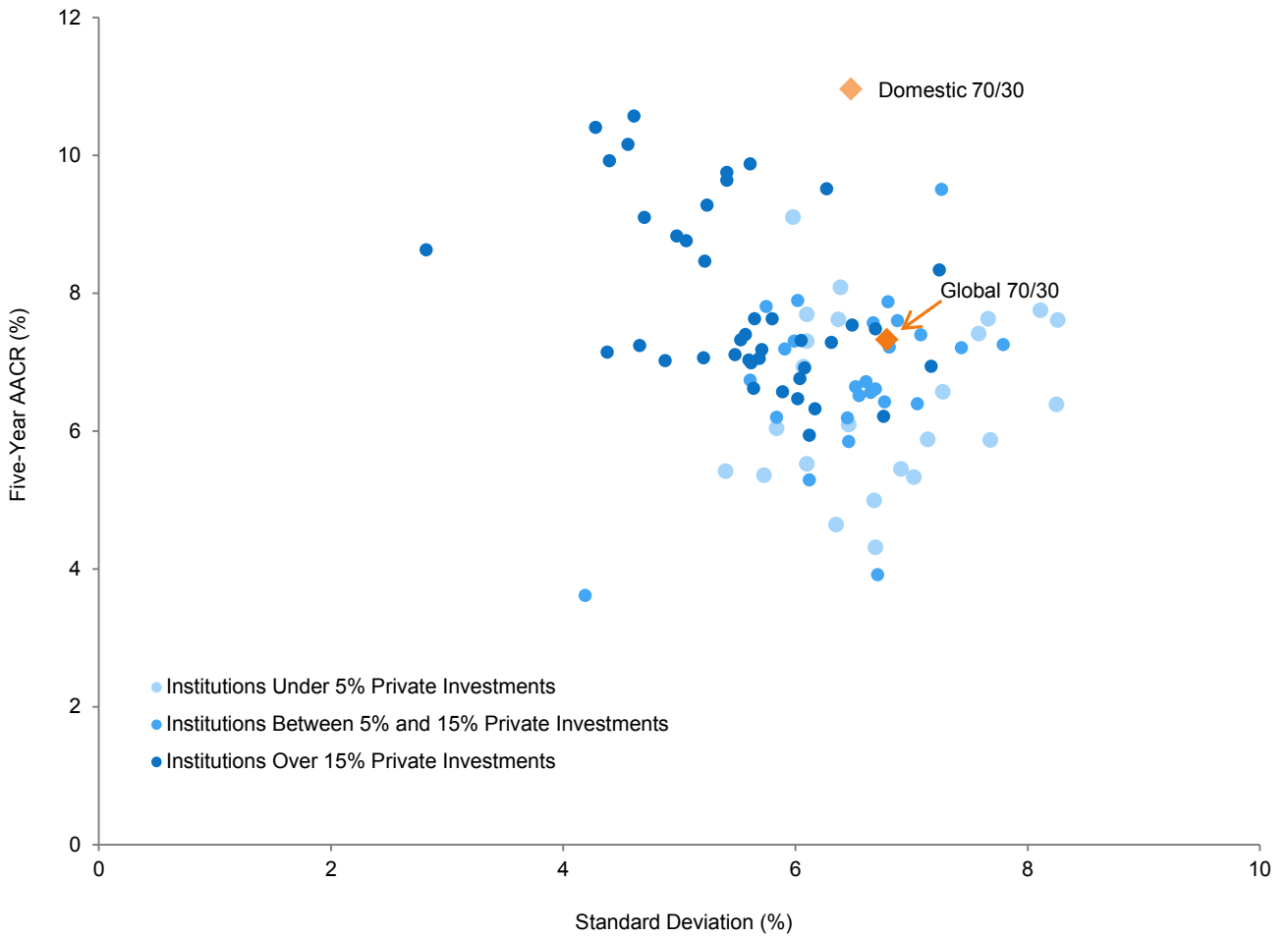
	All Institutions Mean	Mean by Private Investment Allocation			70/30 Benchmarks	
		Under 5%	5% – 15%	Over 15%	Domestic	Global
Five-Year AACR	7.2	6.5	6.7	7.9	11.0	7.3
Standard Deviation	6.1	6.8	6.5	5.5	6.5	6.8
Sharpe Ratio	1.20	0.96	1.03	1.44	1.64	1.07
n	*91*	*24*	*26*	*41*		

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

Notes: 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 2011 to 2016. 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.

Portfolio Asset Allocation
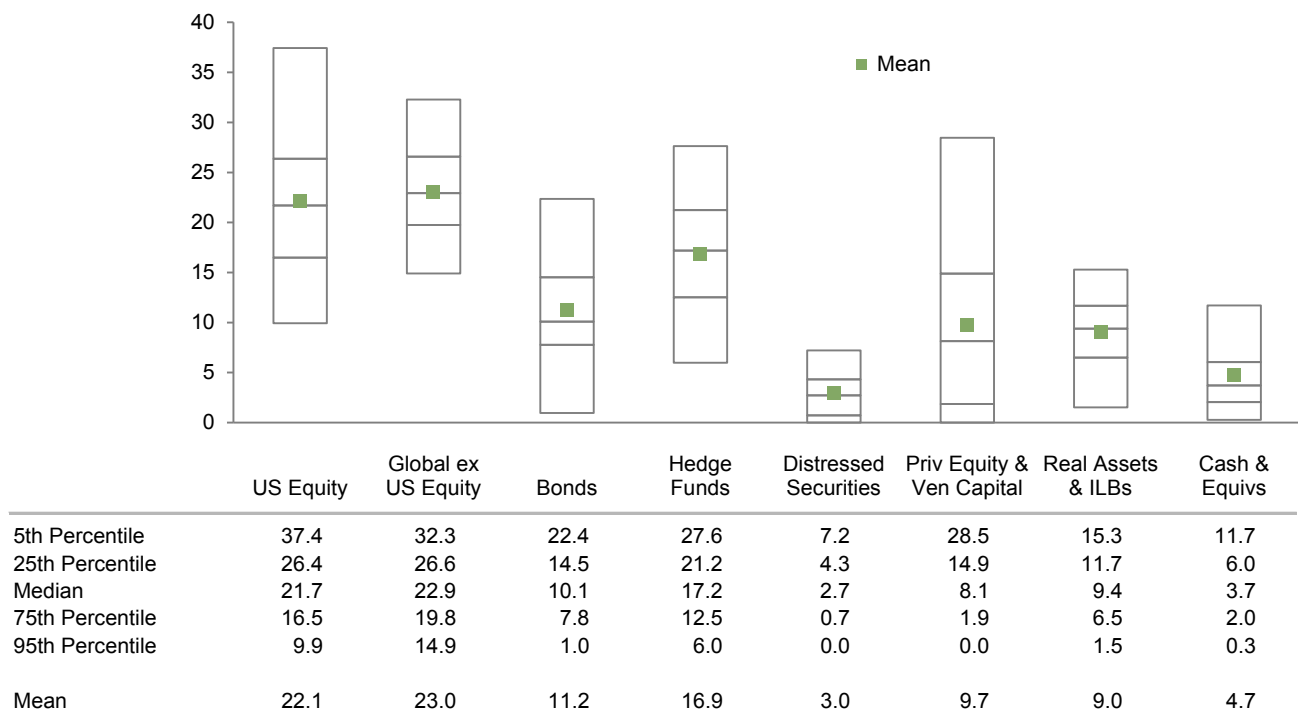
2016 Asset Allocation

Approximately 45% of the average long-term investment portfolio (LTIP) consisted of public equities at December 31, 2016. On average, allocations to global ex US equities (23.0%) were slightly higher than those to US equities (22.1%). Portfolios had significant exposure to alternative assets, with 16.9% allocated to hedge funds and 9.7% allocated to private equity/venture capital, on average. Another 3.0% 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 9.0% of portfolios, on average. Average allocations to bonds and cash were 11.2% and 4.7%, respectively (Figure 25).

As Figure 26 shows, allocations to these broad asset classes vary considerably. 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 larger portfolios have higher allocations to private investments. Also displayed is a more granular view of allocations within each broad asset class.

Figure 25. Asset Allocation Distribution by Asset Class
As of December 31, 2016 • Percent (%) • *n = 112*

	US Equity	Global ex US Equity	Bonds	Hedge Funds	Distressed Securities	Priv Equity & Ven Capital	Real Assets & ILBs	Cash & Equivs
5th Percentile	37.4	32.3	22.4	27.6	7.2	28.5	15.3	11.7
25th Percentile	26.4	26.6	14.5	21.2	4.3	14.9	11.7	6.0
Median	21.7	22.9	10.1	17.2	2.7	8.1	9.4	3.7
75th Percentile	16.5	19.8	7.8	12.5	0.7	1.9	6.5	2.0
95th Percentile	9.9	14.9	1.0	6.0	0.0	0.0	1.5	0.3
Mean	22.1	23.0	11.2	16.9	3.0	9.7	9.0	4.7

Source: Foundation data as reported to Cambridge Associates LLC.

Figure 26. Summary Asset Allocation by Asset Size
As of December 31, 2016 • Percent (%)

| | Under $300m 65 | | From $300m to $1b 23 | | Over $1b 24 | |
n	Mean	Median	Mean	Median	Mean	Median
US Equity	**24.2**	**23.3**	**20.3**	**20.6**	**18.3**	**17.8**
Global ex US Equity	**24.5**	**25.1**	**22.2**	**23.1**	**19.7**	**19.5**
Developed Markets	17.2	17.3	14.6	15.0	11.9	11.8
Emerging Markets	7.3	7.7	7.6	7.8	7.8	7.5
Bonds	**13.3**	**13.3**	**10.0**	**10.0**	**6.7**	**7.9**
US Bonds	11.4	11.1	8.9	9.6	5.6	6.6
Developed ex US Bonds	0.6	0.0	0.2	0.0	0.2	0.0
Emerging Markets Bonds	0.6	0.0	0.4	0.0	0.2	0.0
High-Yield Bonds	0.7	0.0	0.5	0.0	0.6	0.0
Hedge Funds	**16.2**	**16.0**	**17.8**	**17.6**	**17.7**	**17.5**
Long/Short Hedge Funds	7.6	7.0	7.9	7.2	6.7	7.1
Absolute Return (ex Distressed)	8.6	8.0	9.9	10.2	11.0	9.8
Distressed Securities	**2.4**	**2.3**	**3.3**	**3.6**	**4.2**	**2.9**
Hedge Fund Structure	1.6	1.4	1.7	1.5	2.3	1.3
Private Equity Structure	0.8	0.4	1.5	1.8	1.9	1.1
Private Equity & Venture Capital	**5.7**	**3.4**	**12.4**	**9.8**	**18.3**	**16.7**
Non-Venture Private Equity	2.0	0.7	4.5	4.3	7.7	7.6
Venture Capital	2.0	0.5	7.3	5.5	10.1	8.7
Other Private Investments	1.6	0.4	0.6	0.4	0.5	0.0
Real Assets & Infl-Linked Bonds	**8.3**	**8.6**	**9.6**	**10.6**	**10.6**	**10.5**
Private Real Estate	1.5	0.3	1.8	1.5	4.2	3.5
Public Real Estate	0.4	0.0	0.5	0.0	0.3	0.0
Commodities	1.0	0.0	0.6	0.0	0.7	0.0
Inflation-Linked Bonds	0.3	0.0	0.6	0.0	0.2	0.0
Private Oil & Gas/Natural Resources	1.2	0.5	3.1	3.4	3.8	4.0
Timber	0.1	0.0	0.2	0.0	0.2	0.0
Public Energy/Natural Resources	3.8	3.5	2.7	2.5	1.2	0.0
Cash & Equivalents	**5.0**	**3.8**	**4.3**	**4.1**	**4.4**	**3.0**
Other	**0.5**	**0.0**	**0.3**	**0.0**	**0.2**	**0.0**

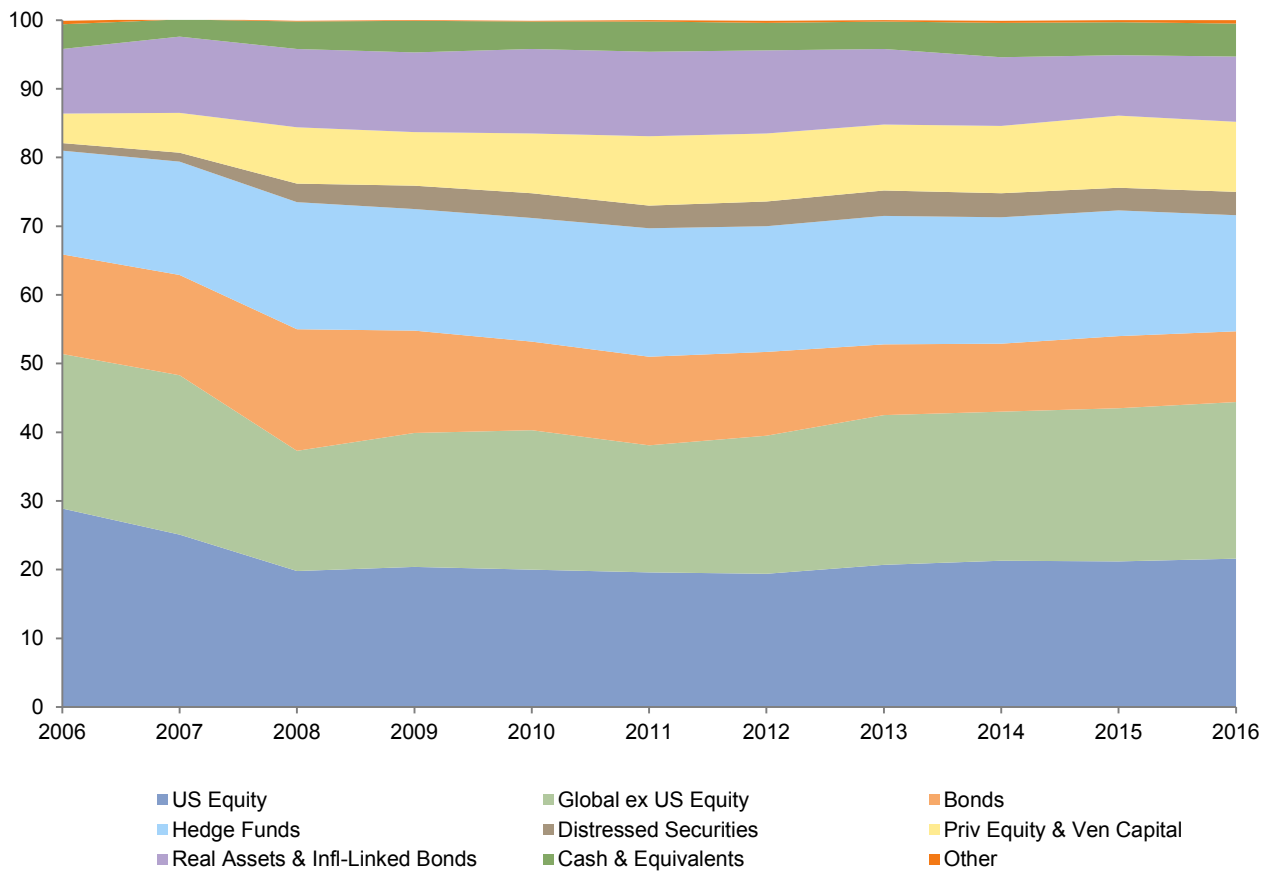Source: Foundation data as reported to Cambridge Associates LLC.

Historical Asset Allocation

Average asset allocations to some of the broad asset class categories at year-end 2016 look considerably different than those reported a decade ago (Figure 27). The largest change in average allocations was to US equities which decreased by 7.3 ppts from 2006 to 2016. The biggest increase was to private equity/venture capital, where the average allocation rose by 5.9 ppts. In both cases, the greatest extent of the changes occurred during the first couple of years of the decade.

Figure 28 shows the average asset allocation of foundations in 2006, 2011, and 2016. Foundations are divided into three broad asset size groups: those with assets under $300 million, from $300 million to $1 billion, and over $1 billion. Over the full ten-year period, US equity allocations declined the most, dropping by at least 6 ppts for all three peer groups. Allocations

Figure 27. Historical Mean Asset Allocation Trends
Years Ended December 31 • Percent (%)

Legend:
- US Equity
- Global ex US Equity
- Bonds
- Hedge Funds
- Distressed Securities
- Priv Equity & Ven Capital
- Real Assets & Infl-Linked Bonds
- Cash & Equivalents
- Other

	Constant Universe											All Inst
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2016
US Equity	28.9	25.1	19.8	20.4	20.0	19.6	19.4	20.7	21.3	21.2	21.6	22.1
Global ex US Equity	22.5	23.2	17.5	19.5	20.3	18.5	20.1	21.8	21.7	22.3	22.8	23.0
Developed Markets	*17.0*	*17.0*	*13.4*	*13.7*	*13.6*	*12.1*	*12.8*	*14.3*	*13.8*	*15.0*	*15.0*	*15.5*
Emerging Markets	*5.6*	*6.2*	*4.2*	*5.8*	*6.8*	*6.4*	*7.3*	*7.5*	*7.9*	*7.4*	*7.9*	*7.5*
Bonds	14.5	14.6	17.7	14.9	12.9	12.9	12.2	10.3	9.9	10.5	10.3	11.2
Hedge Funds	15.1	16.5	18.5	17.7	18.0	18.7	18.3	18.7	18.4	18.3	16.9	16.9
Distressed Securities	1.1	1.3	2.7	3.4	3.6	3.3	3.6	3.7	3.5	3.3	3.4	3.0
Priv Equity & Ven Capital	4.3	5.8	8.2	7.8	8.7	10.1	9.9	9.6	9.8	10.5	10.2	9.7
Real Assets & Infl-Linked Bonds	9.4	11.1	11.4	11.6	12.3	12.3	12.1	11.0	10.0	8.8	9.5	9.0
Cash & Equivalents	3.6	2.5	4.0	4.6	4.0	4.4	4.0	4.0	5.0	4.8	4.8	4.7
Other	0.5	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.3	0.5	0.4

Source: Foundation data as reported to Cambridge Associates LLC.

Notes: Constant universe represents 61 institutions that provided asset allocation data for each year from 2006 to 2016. All institutions represents 112 that provided 2016 data.

Figure 28. Trends in Asset Allocation by Asset Size
Means as of December 31 • Percent (%)

	US Equity	Global ex US			Bonds	Hedge Funds	Dist Sec	PE/VC	RA & ILBs	Cash & Equiv
		Total	DM	EM						
Under $300m *(n = 31)*										
2006	28.9	22.5	*16.9*	*5.6*	15.7	14.2	0.6	3.3	9.6	4.4
2011	20.1	18.9	*13.2*	*5.6*	14.8	18.1	2.6	8.2	11.3	5.7
2016	22.7	23.4	*15.9*	*7.5*	12.3	16.2	3.0	7.6	8.9	5.2
Change (ppt)										
2011–16	2.6	4.5	*2.6*	*1.8*	-2.5	-1.8	0.5	-0.6	-2.4	-0.5
2006–16	-6.2	0.9	*-1.0*	*1.9*	-3.4	2.0	2.4	4.3	-0.7	0.8
$300m to $1b *(n = 14)*										
2006	32.3	24.0	*18.4*	*5.7*	14.1	15.3	1.4	2.4	8.3	2.2
2011	22.6	20.2	*13.4*	*6.8*	12.1	19.3	3.9	7.2	12.0	2.4
2016	22.1	24.6	*16.4*	*8.3*	9.2	18.0	3.5	8.7	9.7	3.8
Change (ppt)										
2011–16	-0.5	4.5	*3.0*	*1.5*	-2.9	-1.3	-0.5	1.5	-2.3	1.4
2006–16	-10.2	0.6	*-2.0*	*2.6*	-5.0	2.8	2.1	6.3	1.4	1.6
Over $1b *(n = 16)*										
2006	26.0	21.3	*15.9*	*5.4*	12.4	16.9	1.9	8.1	10.0	3.4
2011	15.8	16.3	*8.9*	*7.4*	9.7	19.4	4.2	16.4	14.6	3.4
2016	19.0	20.3	*12.1*	*8.2*	7.4	17.1	4.0	16.8	10.6	4.7
Change (ppt)										
2011–16	3.2	3.9	*3.2*	*0.8*	-2.3	-2.3	-0.2	0.3	-3.9	1.3
2006–16	-7.0	-1.0	*-3.8*	*2.8*	-5.0	0.2	2.1	8.7	0.6	1.4

Source: Foundation data as reported to Cambridge Associates LLC.
Note: Asset sizes are based on December 31, 2016, data.

to bonds also declined over the decade for each asset size cohort. Each asset size group saw significant increases to private equity and venture capital over the last ten years, with portfolios over $1 billion reporting the largest increase (8.7 ppts).

Changes in average portfolio allocations were generally more modest over the second half of the decade, and in some cases a reverse of the longer-term trends. Since 2011, combined public equity allocations have increased for each asset size group (Figure 28). After increasing over the first part of the last decade, allocations to hedge funds have declined for all asset size groups since 2011.

Target Asset Allocation

While 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 foundations are altering their long-term asset allocation policies. An analysis of target asset allocations is more suitable for such an evaluation.

Over 90% of survey participants (103 of 112) provided target asset allocation data. Foundations construct their target asset

allocation mix under different frameworks. Of the 103 foundations that provided target asset allocation data, 89 reported data that fits into our traditional asset allocation framework. The remaining foundations 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 foundations whose data fits within the traditional asset allocation–centered framework. About one-third (33%) of these foundations made a change to their policy targets in 2016. Midsized foundations were most likely to make changes to their policy targets (45%) followed by smaller foundations (31%) and larger foundations (24%).

As shown in Figure 29, many foundations are increasing the equity exposure in their portfolio. Approximately 18% of foundations raised targets to private equity and venture capital while only 5% reported a decrease. The proportion of respondents that reported increases to public equity was double the proportion that lowered targets, with much of the differential a result of increases to US and developed markets ex US equities. Among the other broad asset class categories, the proportion of foundations lowering their hedge funds and bonds targets exceeded the proportion that raised them. And similar to the previous year, over 20% of respondents reported a decrease to their real assets target while just 4% reported an increase. Figure 30 shows detailed data by asset size.

Figure 29. Changes in Target Asset Allocation
December 31, 2015 – December 31, 2016 • Percentage of Institutions Increasing or Decreasing Targets
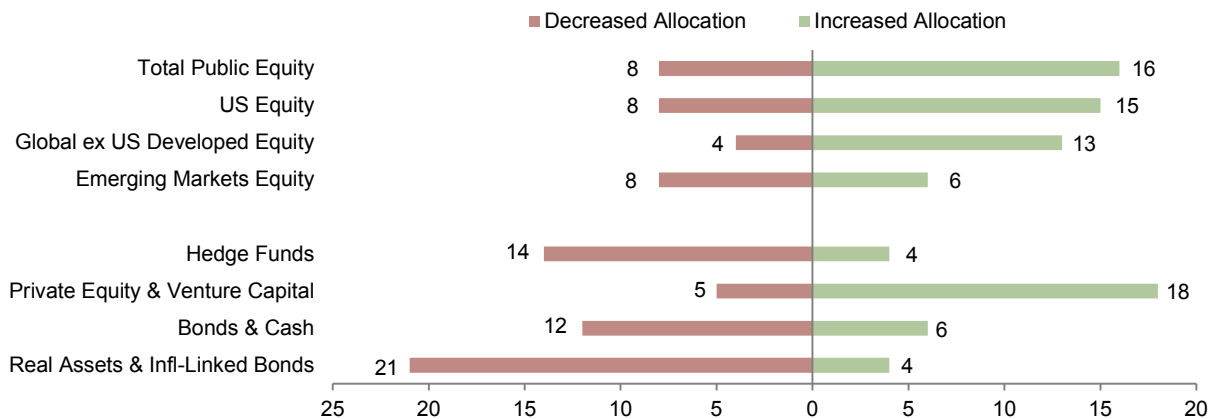
Source: Foundation data as reported to Cambridge Associates LLC.
Notes: Exhibit represents data for 85 foundations that provided target asset allocation data for 2015 and 2016. Only foundations that provided targets by geographic region are included in the statistics for US equity, global ex US equity, and emerging markets equity. Real assets includes targets to both public and private assets. Total public equity is a composite of global equity, US equity, developed markets ex US equity, and emerging markets equity.

Figure 30. Changes in Target Asset Allocation by Asset Size
December 31, 2015 – December 31, 2016

	Total Public Equity	US Equity	Global ex US		Hedge Funds	PE/VC	Bonds & Cash	RA & ILBs	Other
			DM	EM					
Under $300m *(n = 48)*									
Mean Target AA (%)									
2015	46.6	23.0	17.3	7.8	18.9	7.2	16.4	10.0	0.9
2016	46.7	22.5	16.9	7.8	18.6	7.8	16.2	9.7	0.9
% of Inst Making Changes to Targets									
Increased	*13*	*11*	*7*	*3*	*2*	*15*	*4*	*6*	*0*
Decreased	*10*	*9*	*7*	*3*	*8*	*4*	*13*	*15*	*0*
$300m to $1b *(n = 20)*									
Mean Target AA (%)									
2015	42.8	19.9	13.9	7.9	17.1	13.9	14.1	11.3	1.0
2016	44.4	21.0	14.6	7.9	16.5	14.9	13.7	9.6	1.0
% of Inst Making Changes to Targets									
Increased	*30*	*27*	*29*	*7*	*10*	*25*	*5*	*0*	*0*
Decreased	*5*	*7*	*0*	*14*	*30*	*5*	*15*	*35*	*0*
Over $1b *(n = 17)*									
Mean Target AA (%)									
2015	38.0	14.5	11.5	8.1	19.8	15.9	10.4	13.6	2.3
2016	38.1	14.4	12.4	7.8	19.6	16.8	10.6	12.6	2.4
% of Inst Making Changes to Targets									
Increased	*12*	*11*	*13*	*11*	*0*	*18*	*12*	*0*	*6*
Decreased	*6*	*11*	*0*	*11*	*12*	*6*	*6*	*24*	*12*

Source: Foundation data as reported to Cambridge Associates LLC.
Notes: Asset sizes are based on December 31, 2016, data. Only institutions that provided targets by geographic region are included in the statistics for US equity, global ex US equity, and emerging markets equity. Total public equity is a composite of global equity, US equity, developed markets ex US equity, and emerging markets equity.

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 foundations, particularly those with larger asset sizes, continue to allocate a significant portion of their portfolios to private investments.[6] The average allocation to private investments for all participants was 15.4%, while those with portfolios greater than $1 billion had an average allocation of 28.4% (Figure 26).

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. While annual spending distributions usually represent the biggest liquidity need of a portfolio, foundations with private investment programs must also consider the potential impact of uncalled capital commitments.

For participants with private investment programs, the median ratio of uncalled capital commitments as a percentage of the total LTIP value was 9.2% at the end of 2016 (Figure 31). Predictably, foundations with larger asset sizes tend to have a higher ratio. For those with asset sizes greater than $1 billion, the median ratio of uncalled capital commitments to the LTIP market value was 14.2% (ranging from 6.7% to 17.8%, excluding outliers).

Larger foundations also tend to have a higher ratio of uncalled capital commitments to the LTIP's total liquid assets, which exclude hedge funds and private investments. For foundations with asset sizes greater than $1 billion, the median ratio of uncalled capital commitments as a percentage of the liquid assets was 28.1%. For foundations with asset sizes under $300 million, the median ratio was 9.9% (Figure 31).

Of the participants that have provided consistent historical data, approximately two-thirds (41 of 62) reported an increase in the dollar amount of uncalled capital commitments since 2013. Over the same period, the market value of the LTIP and the portfolio's liquid assets declined for most foundations. As a result, both of the aforementioned ratios increased for most foundations. The trend in the median ratios for all foundations and the three asset size groups are displayed in Figure 32.

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

Figure 31. Uncalled Capital Committed to Private Investment Funds
As of December 31, 2016 • Percent (%)

Uncalled Capital Commitments as a Percentage of the Total LTIP
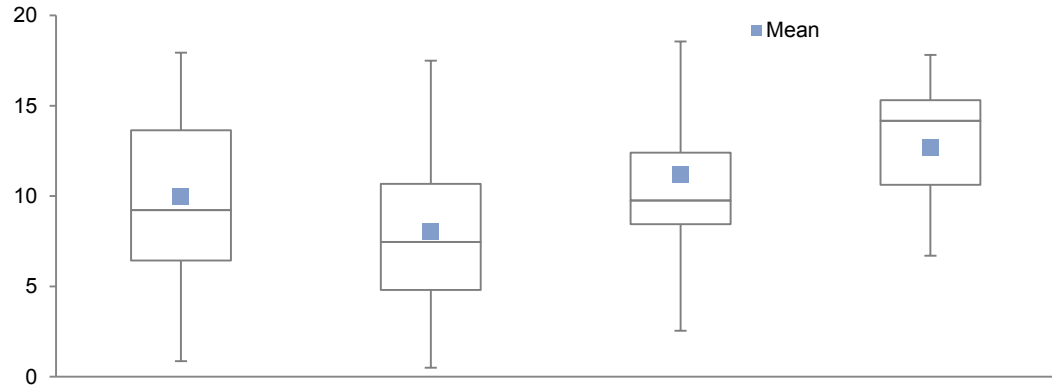
	All Institutions	Under $300 Million	$300 Million to $1 Billion	Over $1 Billion
5th Percentile	17.9	17.5	18.6	17.8
25th Percentile	13.6	10.7	12.4	15.3
Median	9.2	7.5	9.8	14.2
75th Percentile	6.4	4.8	8.4	10.6
95th Percentile	0.9	0.5	2.5	6.7
Mean	10.0	8.0	11.2	12.7
n	*90*	*46*	*21*	*23*

Uncalled Capital Commitments as a Percentage of the LTIP's Liquid Assets
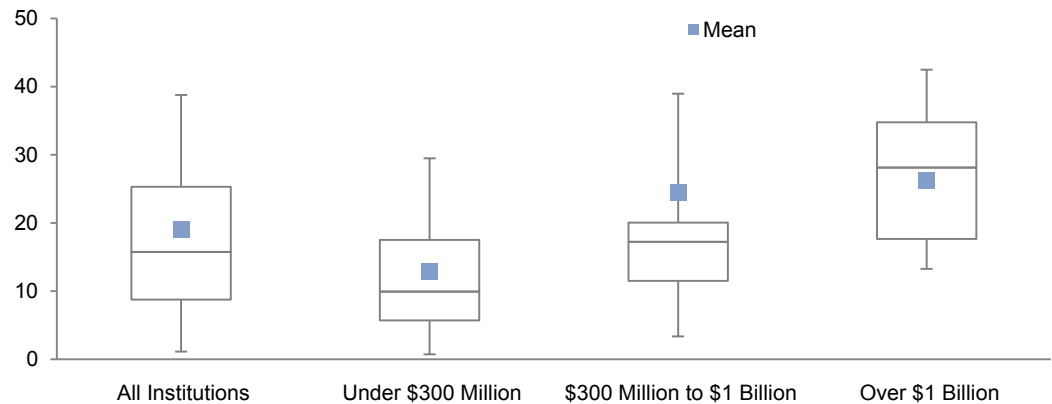
	All Institutions	Under $300 Million	$300 Million to $1 Billion	Over $1 Billion
5th Percentile	38.8	29.5	39.0	42.5
25th Percentile	25.3	17.5	20.0	34.8
Median	15.8	9.9	17.2	28.1
75th Percentile	8.8	5.7	11.5	17.7
95th Percentile	1.1	0.7	3.4	13.3
Mean	19.0	12.9	24.5	26.2
n	*90*	*46*	*21*	*23*

Source: Foundation 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 32. Trend in Median Uncalled Capital Commitments to Private Investment Funds
Years Ended December 31 • Percent (%)

Median Uncalled Capital Commitments as a Percentage of the LTIP
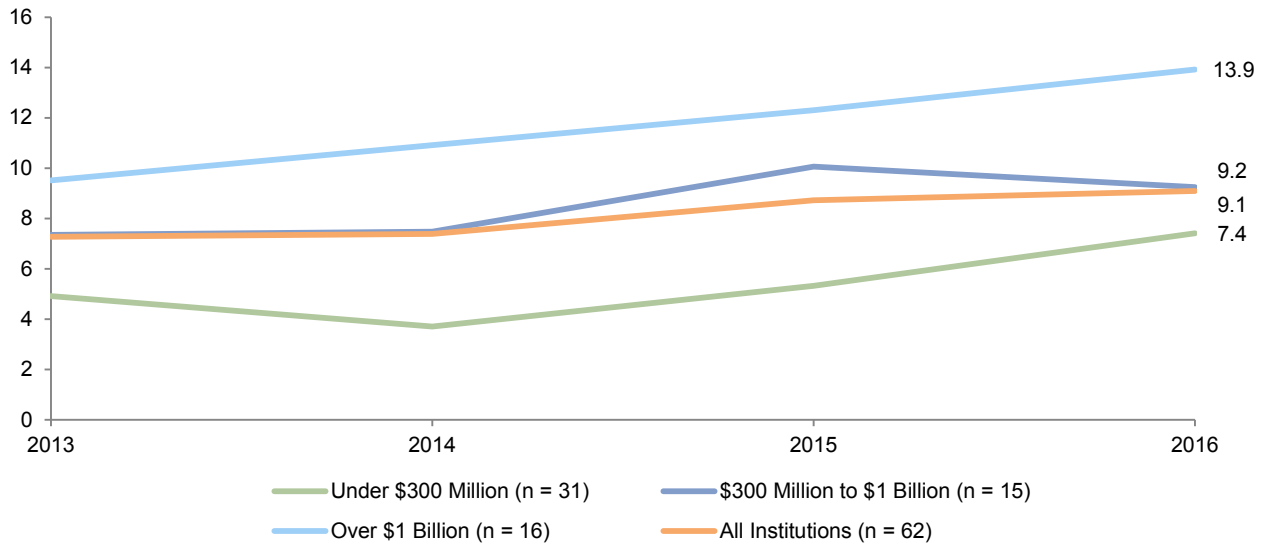
Legend:
Under $300 Million (n = 31) • $300 Million to $1 Billion (n = 15)
Over $1 Billion (n = 16) • All Institutions (n = 62)

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

Legend:
Under $300 Million (n = 31) • $300 Million to $1 Billion (n = 15)
Over $1 Billion (n = 16) • All Institutions (n = 62)

Source: Foundation 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 capital calls can increase as well. In recent years, these risks have been mitigated for most foundations due to the self-funding nature of private investment program cash flows. In 2016, private investment programs for were cash flow positive for 62% of respondents, meaning the amount of fund distributions was higher than paid-in capital calls (Figure 33). For foundations 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 33. Private Investment Program Cash Flow
As of December 31, 2016 • *n = 93*
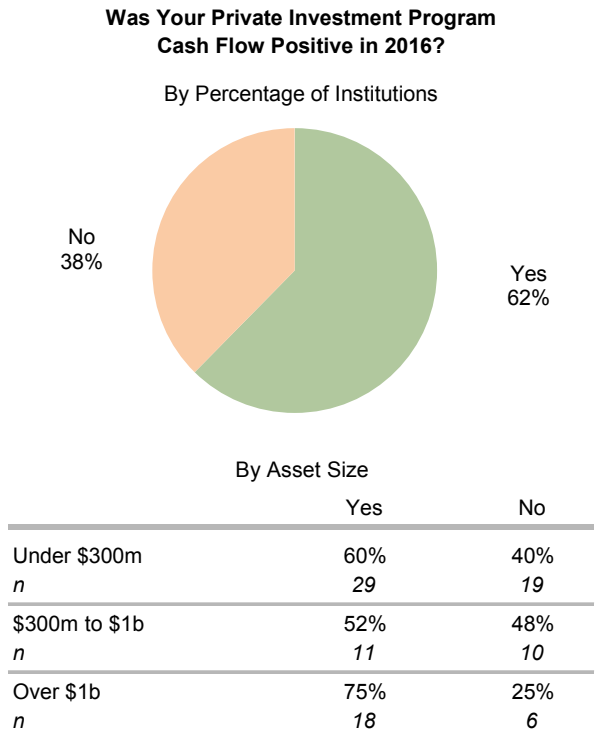
**Was Your Private Investment Program
Cash Flow Positive in 2016?**

By Percentage of Institutions

No
38%

Yes
62%

By Asset Size

	Yes	No
Under $300m	60%	40%
n	*29*	*19*
$300m to $1b	52%	48%
n	*11*	*10*
Over $1b	75%	25%
n	*18*	*6*

Source: Foundation 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 2016.

Investment Management 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, foundations with assets over $1 billion employed 119 external investment managers in 2016 (Figure 34). In contrast, mid-sized portfolios had an average of 61 managers, while smaller portfolios reported even fewer (28). The number of investment vehicles is even higher for each peer group, mainly because of the allocation of capital across multiple funds of the same investment manager in private investment asset classes. For a constant group of foundations that has provided historical data, the average number of external managers has trended higher over the last five years (Figure 35).

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 (38) is more than twice the amount used at the 75th percentile (15) (Figure 34). For portfolios over $1 billion, there are 249 managers employed at the 5th percentile compared to just 51 at the 95th percentile.

Much of the variation can be attributed to the management of alternative asset classes. As Figure 36 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 three broad asset size groups in Figure 37.

Figure 34. Number of External Managers and Investment Vehicles
As of December 31, 2016

External Managers
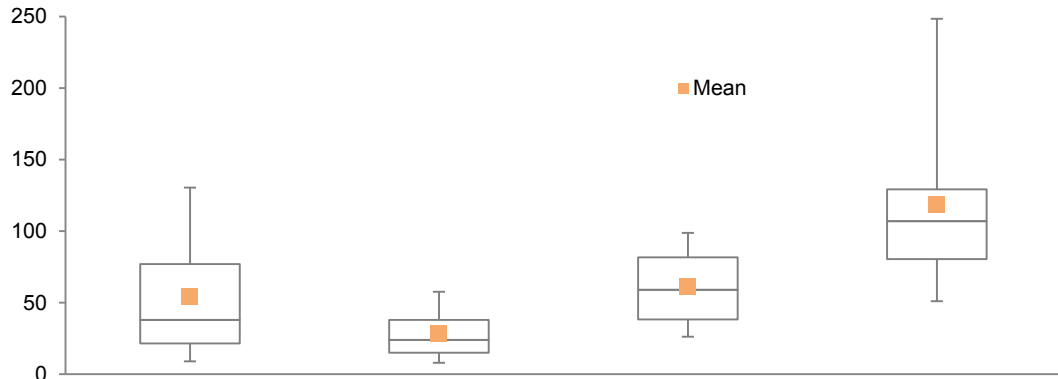
	All Institutions	Under $300 Million	$300 Million to $1 Billion	Over $1 Billion
5th Percentile	131	58	99	249
25th Percentile	77	38	82	129
Median	38	24	59	107
75th Percentile	22	15	38	81
95th Percentile	9	8	26	51
Mean	54	28	61	119
n	*111*	*65*	*22*	*24*

Investment Vehicles
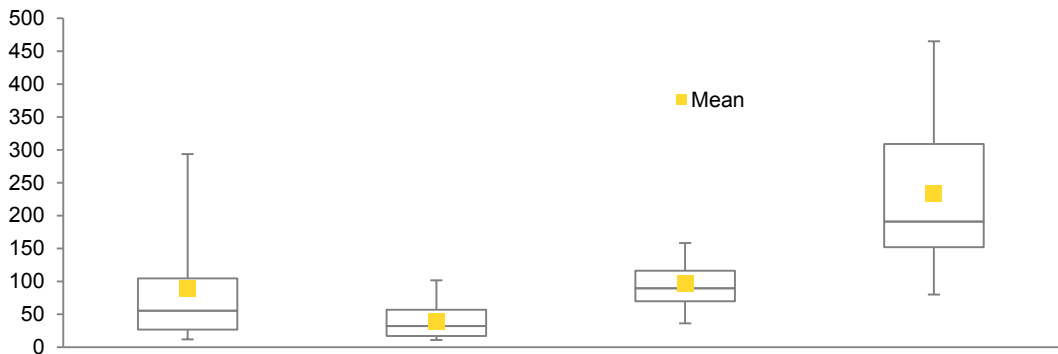
	All Institutions	Under $300 Million	$300 Million to $1 Billion	Over $1 Billion
5th Percentile	294	102	158	465
25th Percentile	105	57	116	309
Median	56	32	90	191
75th Percentile	27	17	70	152
95th Percentile	12	11	36	80
Mean	89	39	96	234
n	*108*	*65*	*22*	*21*

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

Figure 35. Trend in Average Number of External Managers
2011–16

Under $300 Million (n = 47)
Over $1 Billion (n = 14)
$300 Million to $1 Billion (n = 17)
All Institutions (n = 78)
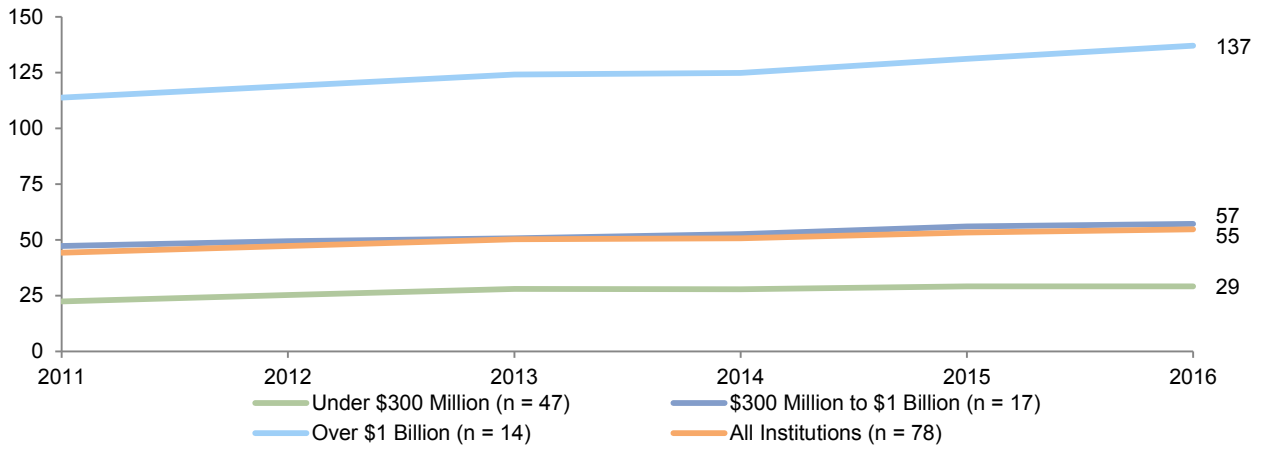
Source: Foundation data as reported to Cambridge Associates LLC.

Figure 36. Dispersion in Number of Managers for Selected Asset Classes
As of December 31, 2016
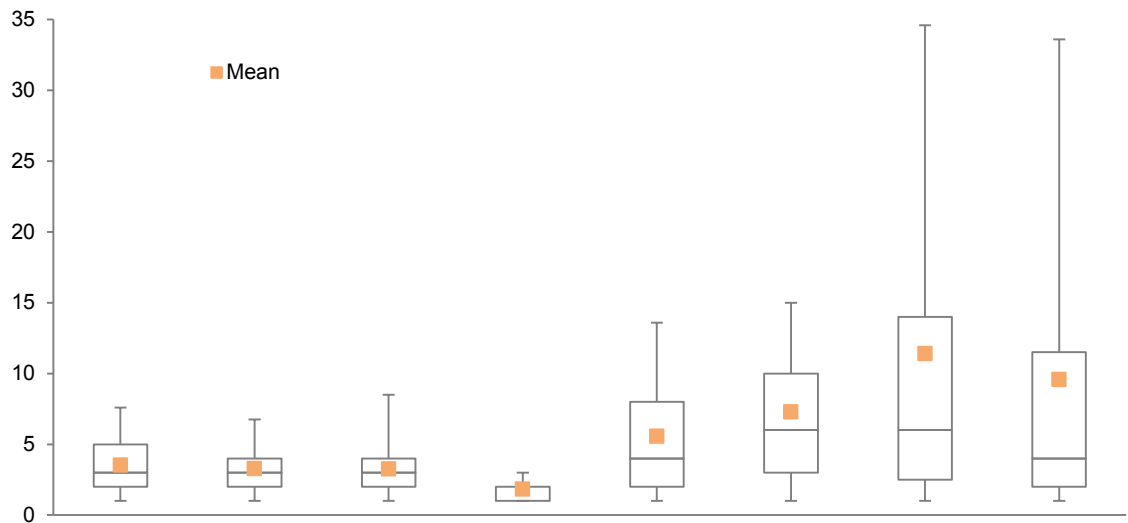
	US Equity	Dev Mkts ex US Equity	Emerging Markets Equity	US Bonds	Long/Short Hedge Funds	Ab Return Hedge Funds	Private Equity	Venture Capital
5th Percentile	8	7	9	3	14	15	35	34
25th Percentile	5	4	4	2	8	10	14	12
Median	3	3	3	2	4	6	6	4
75th Percentile	2	2	2	1	2	3	3	2
95th Percentile	1	1	1	1	1	1	1	1
Mean	4	3	3	2	6	7	11	10
n	109	106	106	102	85	104	83	83

Source: Foundation 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 37. Externally Managed Investment Pool Holdings by Strategy
As of December 31, 2016

Strategy	Under $300 Million			$300 Million to $1 Billion			Over $1 Billion		
	Average Number of			Average Number of			Average Number of		
	Managers	Vehicles	n	Managers	Vehicles	n	Managers	Vehicles	n
Traditional Equity									
Global Equity	2	2	37	2	2	17	3	3	15
US Equity	3	3	64	4	4	22	5	5	23
Developed Markets ex US Equity	2	2	63	4	4	21	5	6	22
Emerging Markets Equity	2	2	62	3	3	22	6	6	22
Traditional Bonds									
Global Bonds	1	1	22	1	1	5	1	1	4
US Bonds	2	2	62	2	2	21	2	2	19
Developed Markets ex US Bonds	1	1	1	2	2	1	1	1	3
Emerging Markets Bonds	1	1	2	2	2	2	1	1	2
High-Yield Bonds	1	1	7	4	7	2	3	5	3
Hedge Funds									
Long/Short Hedge Funds	4	4	43	7	7	22	8	9	20
Absolute Return (ex Dist Securities)	5	6	60	9	10	22	11	13	22
Distressed Securities									
Distressed (Hedge Fund Structure)	2	2	22	2	2	17	3	4	16
Distressed (Private Equity Structure)	2	3	34	4	7	19	8	19	16
Private Investments									
Non-Venture Private Equity	4	7	38	9	17	22	27	55	23
Venture Capital	3	6	40	8	17	20	21	58	23
Other Private Investments	2	4	41	2	3	15	3	5	9
Real Assets & ILBs									
Private Real Estate	3	5	33	6	10	18	14	30	23
Public Real Estate	1	1	9	1	1	4	1	1	6
Commodities	1	1	13	1	1	9	2	4	8
Inflation-Linked Bonds (TIPS)	1	1	2	1	1	7	1	1	2
Private Oil & Gas / Natural Resources	2	4	36	6	10	19	12	28	21
Timber	2	3	4	1	2	8	2	3	11
Public Energy/Natural Resources	2	2	47	2	2	16	2	2	9
Diversified (Multi-Strategy) RA	1	1	12	1	1	2	1	1	1
Cash (Dedicated Cash Managers Only)	1	1	31	1	2	14	1	1	16
Tactical Asset Allocation	2	2	14	1	1	2	3	5	3
Other	4	5	1	—	—	—	3	3	4

Source: Foundation data as reported to Cambridge Associates LLC.
Notes: *n* indicates the number of institutions that are included in the average number of managers and average number
of vehicles. 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 and vehicles.

Asset Class Implementation

Alternative Assets. Of participants that provided portfolio implementation data, more than half (61%) have constructed a hedge fund program that solely uses single manager funds, while just 4% rely only on funds-of-funds. The remaining foundations employ a combination of single manager funds and funds-of-funds (Figure 38). Implementation practices also vary across private investment asset classes. The use of a combination of strategies was most common for the implementation of private equity and venture capital portfolios. A sole reliance upon single manager funds was most prevalent in real estate (61%) and private energy/natural resources (50%). Smaller portfolios generally employ more fund-of-funds managers than larger portfolios in all alternative asset classes, which is not surprising given the typically high minimum investments for alternative asset funds.

Figure 38. Portfolio Implementation: Private Investments and Hedge Funds
As of December 31, 2016 • Percent (%)
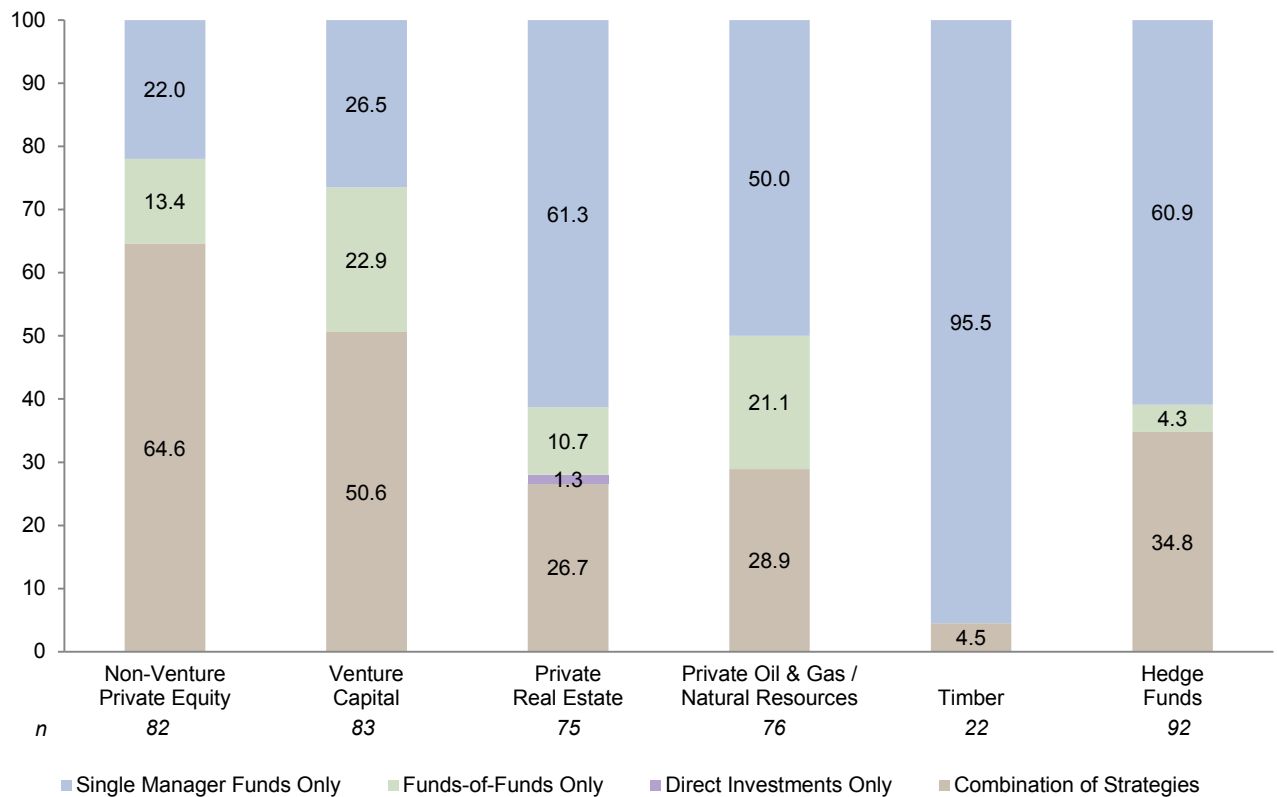
Source: Foundation data as reported to Cambridge Associates LLC.

Public Equities and Bonds. Of the foundations that provided data on their portfolio implementation, 39% used active managers for all of their US equity allocation while most (55%) reported using a combination of active and passive management (Figure 39). Among those that use a combination of strategies, 61% of the US equity allocation was implemented through active management on average. For global ex US equities, developed markets and emerging markets allocations were achieved solely through active managers for 70% and 66% of respondents, respectively. For bonds, a slight majority of respondents used only active managers for their total allocation to US markets (54%).

Figure 39. Portfolio Implementation: Traditional Equities and Bonds
As of December 31, 2016 • Percent (%)
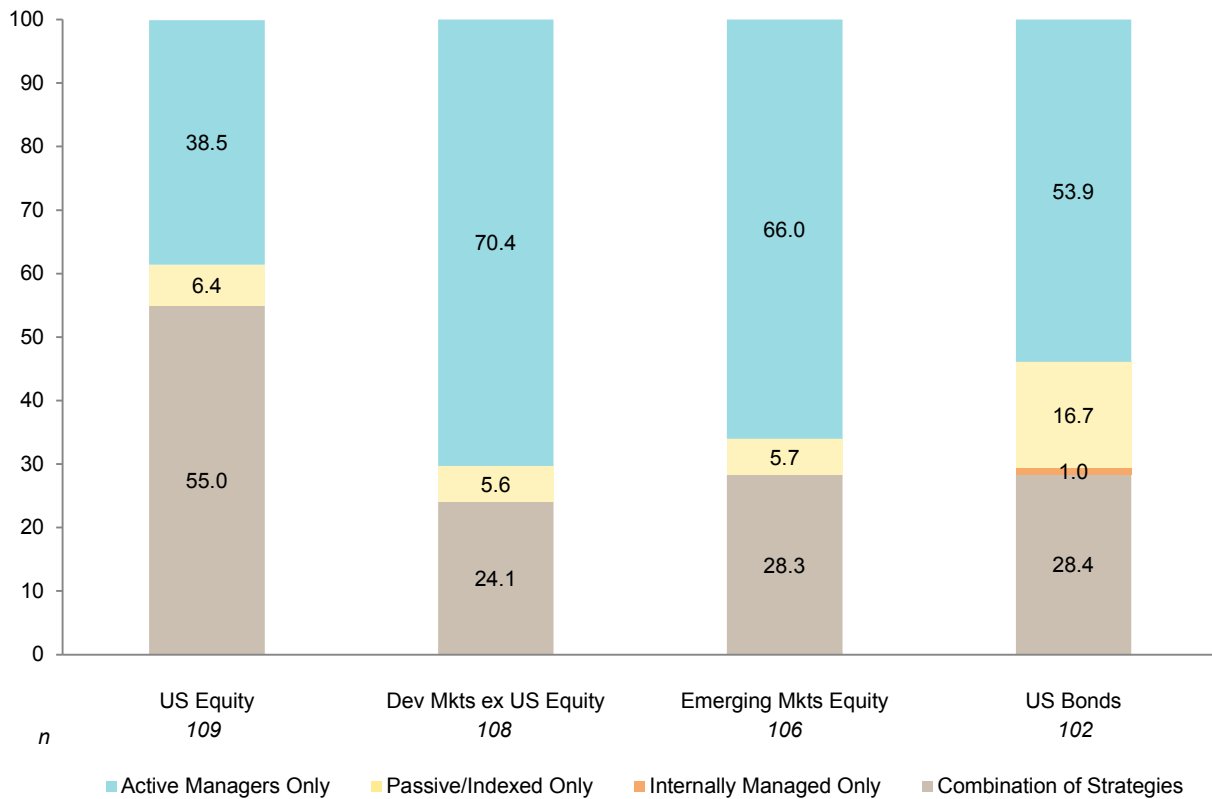
Source: Foundation data as reported to Cambridge Associates LLC.

Payout from the Long-Term Investment Portfolio

Spending Requirements

While all foundations are charitable organizations, specific characteristics and objectives help to distinguish foundations into three broad classification types.

Private foundations, which generally receive funding from a single donor, are defined by the IRS as one of two types: operating or non-operating. While both must meet an annual spending requirement, each is subject to different conditions that determine the minimum spending amount.

Private Non-Operating Foundations. Private non-operating foundations, which make up the majority of participants in this study, are required to make qualifying distributions of at least 5% of their asset value every year. They function primarily as grant-making organizations, providing funding and support to other charitable organizations.

Private Operating Foundations. In contrast, private operating foundations are established not with the intention to fund grants to outside organizations, but to provide funding and support to the foundation's own programs and activities. Bound by an annual spending requirement, private operating foundations are subject to specific guidelines that determine their minimum amount.

Community Foundations. Community foundations are a type of public charity, deriving funds from many donors rather than a single source. They mainly function as grant-making organizations, funding charitable support in the immediate region or locality where they are located. Community foundations are not subject to a minimum spending requirement.

Payout Rates

Annual spending distributions are withdrawn from investment assets to fund grants, direct charitable programs, program-related investments, and administrative expenses of the foundation related to charitable purposes. The payout rate used in this study is the annual spending distribution as a percentage of the beginning year market value of the long-term investment portfolio.

For the 74 private non-operating foundations that provided data in 2016, the median payout rate was 5.4%. As shown in Figure 40, when looking at a constant universe of 26 foundations that provided data from 2007 to 2016, the median payout for 2016 was the second highest reported over the

Figure 40. Median Annual Payout Rate
2007–16 • Percent (%)
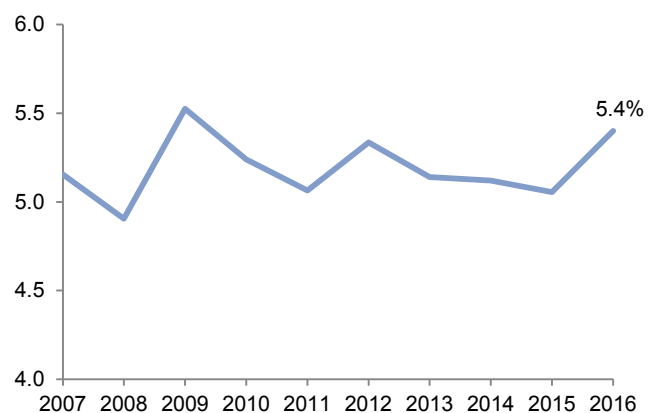
Source: Foundation data as reported to Cambridge Associates LLC.
Note: Data represent the average of 26 private non-operating foundations that provided payout rates for each year from 2007 to 2016.

last decade. The median payout rate for the 11 community foundations that provided data for 2016 was 6.6%, while the median for the two operating foundations was 4.0%.

Components of Payout. Figure 41 takes a detailed look at the different components that compose a foundation's annual payout distribution. For both private non-operating and community foundations, grants are the single largest component of annual payout, making up an average of 77% and 81% of the total payout distribution, respectively. Administrative expenses were the next largest component for both types of foundations. For the two private operating foundations in this study that provided data, the largest component of payout were expenses associated with operating their own charitable programs.

Payout Objectives

Of the 86 private non-operating foundations that provided information about their payout objective, 41% indicated that their objective is to pay out a maximum of the legal requirement. An additional 23% reported an objective of paying out slightly more than the legal requirement, 19% had an objective shaped mainly by program goals, 5% had a payout objective shaped mainly by investment performance, and 13% reported their objective was something other than the aforementioned objectives (Figure 42).

Figure 41. Components of Payout Distribution for Foundation Types
2016 • Percentage (%) of Total Payout

Private Non-Operating Mean *(n = 70)*

Direct Charitable Programs 8.2
Program-Related Inv/Loans 0.8
Other 1.6
Grants 77.2
Admin Expenses 12.2

Community Mean *(n = 10)*

Direct Charitable Programs 5.1
Program-Related Inv/Loans 1.7
Other 3.4
Grants 81.0
Admin Expenses 8.8

Source: Foundation data as reported to Cambridge Associates LLC.

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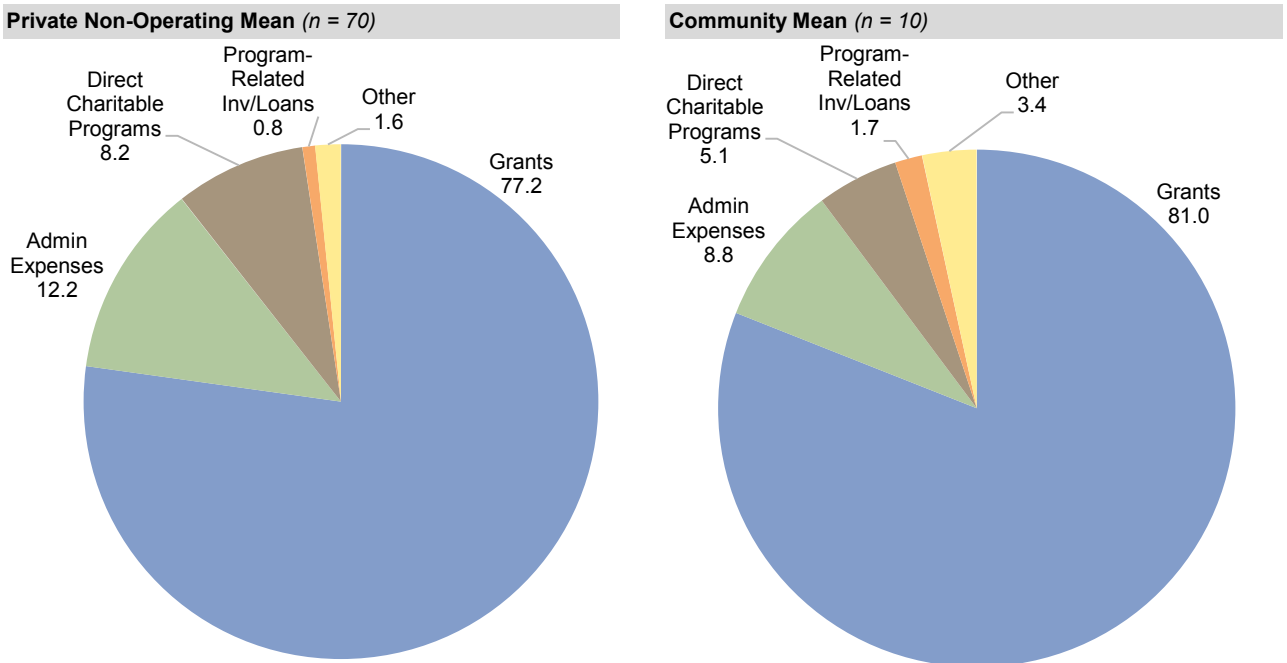
Figure 42. Payout Policy Objectives for Private Non-Operating Foundations
2016 • *n = 86*
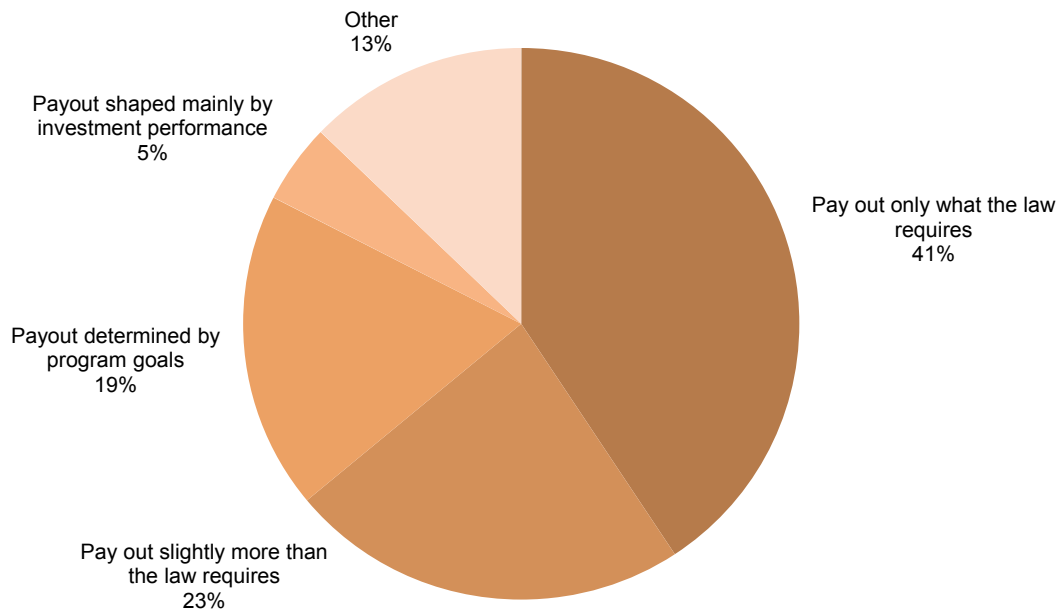
Source: Foundation data as reported to Cambridge Associates LLC.

Of the 13 community foundations in this study that provided a payout objective, five indicated that their objective was shaped mainly by program goals and three stated that payout was shaped mainly by investment performance. The remaining five community foundations reported some other objective.

The three private operating foundations that provided their payout objective stated that it was to pay out slightly more than the legal requirement.

Smoothing Rule. In an effort to avoid fluctuations in their annual spending budget, some foundations will employ a smoothing rule, usually spending a targeted percentage of a moving-average of market values. This helps to bring a level of stability to annual spending distributions, allowing foundations to better forecast future expenditures without the risk of compromising the long-term viability of the portfolio. The use of carryover credits and payments assists private foundations in avoiding penalties in years where underspending may occur.

There were 23 private non-operating foundations in this study that indicated the use of a market value–based smoothing rule to help contain year-to-year spending. As shown in Figure 43, a target spending rate of 5.0% was used by almost two-thirds of these foundations, while the remaining foundations reported a target rate above 5.0%. Smoothing periods ranged from three to five years.

Figure 43. Characteristics of Market Value–Based Smoothing Rules
December 31, 2016

Target Rate

Above
5.0%
35%

Equal to
5%
65%

Smoothing Periods
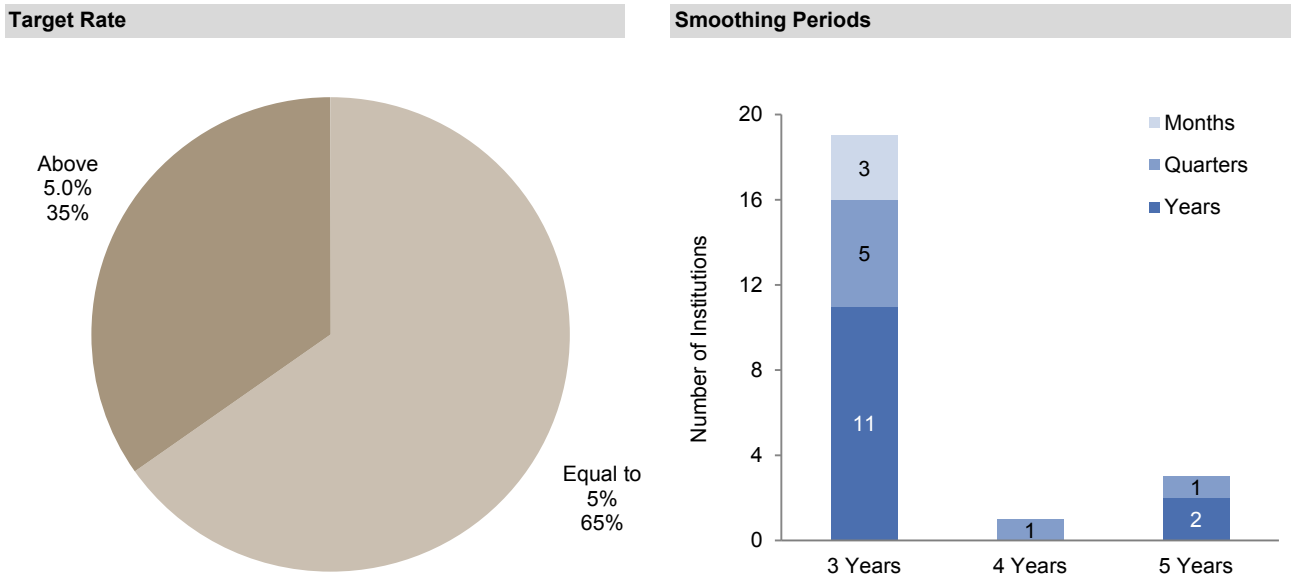
Source: Foundation data as reported to Cambridge Associates LLC
Note: Includes data for 23 private non-operating foundations that indicated the use of a market value–based smoothing rule.

Data Collection and Results

This report includes data for 112 foundations. All participants provided investment pool data as of December 31, 2016. The notation of *n* denotes the number of institutions included in each analysis.

The majority of participants are private foundations, 94 of which are classified as non-operating foundations and four as operating foundations. The remaining 14 participants are community foundations.

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 for the 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:

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

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. ■

Access Strategies Fund
Albany Foundation
The James B. and Lois R. Archer Charitable Foundation
Associated Jewish Community Federation of Baltimore
Atherton Family Foundation
Baltimore Community Foundation
Claude Worthington Benedum Foundation
Marion and Henry Bloch Family Foundation
The Herb Block Foundation
Buena Vista Foundation
The California Endowment
James & Abigail Campbell Family Foundation
Carnegie Corporation of New York
The Annie E. Casey Foundation
Central Indiana Community Foundation, Inc.
The Clarence T.C. Ching Foundation
Circle of Service Foundation
Communities Foundation of Texas
Connecticut Health Foundation, Inc.
The Dana Foundation
The Dan Murphy Foundation
Doris Duke Charitable Foundation
The Duke Endowment
Alfred I. duPont Testamentary Trust
The Enfranchisement Foundation
The Erie Community Foundation
Richard M. Fairbanks Foundation, Inc.
Sherman Fairchild Foundation
Fetzer Institute
The Field Foundation of Illinois Inc.
The Flinn Foundation
The Ford Family Foundation
France-Merrick Foundation
Franklin Southampton Charities
Bill and Melinda Gates Foundation Trust
The Gerber Foundation
Gidwitz Memorial Foundation
Eugene & Marilyn Glick Family Foundation
John T. Gorman Foundation
The Florence Gould Foundation
Grantham Foundation for the Protection of the Environment
William Caspar Graustein Memorial Fund
Greater New Orleans Foundation
The Heinz Endowments
Clarence E. Heller Charitable Foundation
The F.B. Heron Foundation
The Highland Street Foundation
Conrad N. Hilton Foundation
The H & R Block Foundation
The Hyams Foundation
Inasmuch Fdn and Ethics and Excellence in Journalism
InFaith Community Foundation
The Robert Wood Johnson Foundation
Johnson Scholarship Foundation
The Fletcher Jones Foundation
The Shimon Ben Joseph Foundation
Kansas Health Foundation

Ewing Marion Kauffman Foundation
W.K. Kellogg Foundation Trust
Kleberg Foundation
John S. and James L. Knight Foundation
The Kresge Foundation
Forrest C. & Frances H. Lattner Foundation
Leaves of Grass Foundation
John and Catherine MacArthur Foundation
Maine Community Foundation
Mathile Family Foundation
McGregor Fund
The Andrew W. Mellon Foundation
Eugene and Agnes E. Meyer Foundation
Meyer Memorial Trust
Milbank Memorial Fund
The Gordon & Betty Moore Foundation
Moorings Capital LLC
Charles Stewart Mott Foundation
The Mt. Cuba Center Inc.
National Endowment for Financial Education
New Hampshire Charitable Foundation
New York Community Trust
New York State Health Foundation
Orange County Community Foundation
The Oregon Community Foundation
Osprey Cove Foundation
The David and Lucile Packard Foundation
The Ralph M. Parsons Foundation
Virginia G. Piper Charitable Trust
The Pittsburgh Foundation
Nina Mason Pulliam Charitable Trust
The Queen Lili'uokalani Trust
The REACH Healthcare Foundation
Regenstrief Foundation
Winthrop Rockefeller Charitable Trust
The Rockefeller Foundation
Rocky Road Foundations
The Scherman Foundation Inc.
Caroline & Sigmund Schott Fund
The Skoll Foundation
Alfred P. Sloan Foundation
Square One Foundation
The Starr Foundation
The Steelcase Foundation
W. Clement & Jessie Stone Foundation
Stoneman Family Foundation
The Aaron Straus & Lillie Straus Foundation, Inc.
Surdna Foundation Inc.
The Mamoru and Aiko Takitani Foundation
TDC Foundation
The Tinker Foundation
The Wallace Foundation
The Robert A. Welch Foundation
Wenner-Gren Foundation
Zellerbach Family Foundation

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