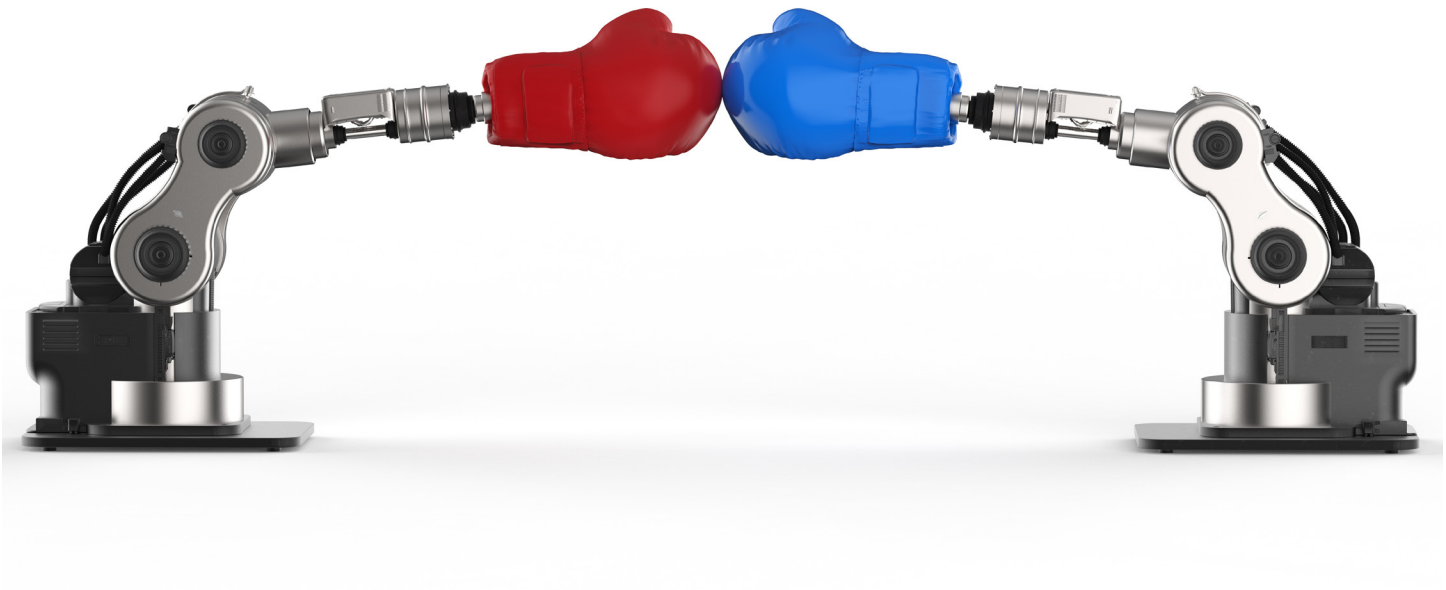

2017 Endowment vs. Public Pension Returns

Michael Karris
Endowbridge Capital

Does the Endowment Model still work?

Judging by large endowments' steady outperformance of a 70% global stock /30% U.S. bond index, the answer is YES. Versus a 60% S&P 500 / 40% US bond index, the answer is not as clear cut.

Even so, the Endowment Model still adds value for a long-term portfolio that uses alternative assets, especially venture capital. The lucrative illiquidity premium has generated superior returns for U.S. endowments versus U.S. public pensions, mainly during the 1990s internet bubble, and until the 2008 financial crisis.

However, the outperformance gap between 20 of the largest endowments and pensions has shrunk since 2008, partly as pensions have increased allocations to alternative assets as they seek the same investment success as endowments. Asset allocation has also helped pensions' recent good performance.

Besides capturing an illiquidity premium, the Endowment Model uses greater diversification, an equity bias, and riskier/uncorrelated assets (e.g., venture capital and emerging markets stocks, oil, and timber) versus a 70/30 portfolio.

However, many smaller investors struggle to run an endowment portfolio, proof that a one size strategy does not fit all investors. Thus, in the spirit of the Endowment Model, a well-designed index fund strategy could also earn superior risk-adjusted returns versus a balanced benchmark. By excluding alternative assets, small investors could avoid many of the drawbacks of the Endowment Model by:

- improving liquidity and transparency,
- reducing fees and complexity, and
- eliminating lock-up provisions and investment gates.

Or by focusing on beta to streamline the Endowment Model, investors could use an index fund strategy alongside top alternatives managers as a sensible modification to long-term investment policy.

The Endowment Model

In the investment world, many folks debate whether the Endowment Model still works.

The Endowment Model is based on the Yale Model, pioneered by Yale's David Swensen, Dean Takahashi and team since 1985. Using the infinite investment horizon of an endowment to its advantage, they diversify across riskier assets than a U.S. 60/40 mix. Yale still captures great value from the illiquidity premium of alternative assets (e.g., private equity like leveraged buyouts (LBOs) and venture capital (VC); real estate; and natural resources). They also use hedge funds for low correlated absolute returns; generally maintain an equity bias; and shun low expected return assets like fixed income.

Most U.S. endowments target a return of about 8%, or roughly 5% spending + inflation, but aim higher than breakeven to achieve real growth to protect against future unforeseen costs like tax threats from Congress. While many investors use the Endowment Model to try to match Yale's legendary results, it does not necessarily guarantee the same great success of the Yale Model.

Endowments Outperform Longer Term

Exhibit 1 depicts the disperse performance of 20 large U.S. endowments over 20 years ending FY 2017, versus a tighter performance range for 20 large U.S. public pensions (that report June 30 fiscal year returns). Returns are reported either gross or net of fees. Over 20 years, we see the Endowment Model has worked very well for top endowment teams. (See Appendix for a simplified version of Exhibit 1).

Many colleges have added great value versus a balanced benchmark like the 70% MSCI ACWI Stock / 30% Bloomberg Barclays U.S. Aggregate Bond. The greater dispersion of endowment track records underscores the importance of asset allocation, manager selection, and investment team skill.

In contrast, the lower dispersion of pension returns implies greater uniformity in strategy, perhaps due to their larger fund sizes. While large U.S. public pensions outperformed a 70/30 with similar risk, they lagged top endowments over the longer term.

Over the 20 years, public pensions were plagued by lower returns AND lower discount rates, which inflated the present value of liabilities. As a result, pensions' funding level ratios (assets/liabilities) fell disproportionately into underfunded status. In a 2017 NASRA report,[1] the average public pension had only 72.1% of the assets needed to meet liabilities, down from 100.8% in 2001.

The 20 large endowments shown in Exhibit 1 represent $263.2 billion of assets, or nearly half of $ 566.8 billion across 809 endowments, as reported in the 2017 NACUBO and Commonfund Study of Endowments (NCSE). Twenty of the largest U.S. public pensions (that report FY June 30 returns) are depicted by blue triangles in Exhibit 1, and represent $2.07 trillion of AUM, or about half of $4.33 trillion in public defined benefit (DB) plan assets per Federal Reserve 2017 data on NASRA.

How did endowments manage to greatly outperform public pensions over the 20 years?

Colleges: Heavy Users of Alternatives

First, endowments were early, heavy users of a wide range of illiquid, lucrative alternative assets. They ramped up use of alternatives during the 1980s-1990s. Venture capital especially drove impressive returns for the top endowments as they basked in the Internet Bubble glory days of the 1990s.[2]

As we know, endowments invest in perpetuity, allowing some to invest aggressively and tolerate illiquidity to maximize returns over generations of students (Read Stephen Mihm's "How College Endowments Learned to Love Risk").

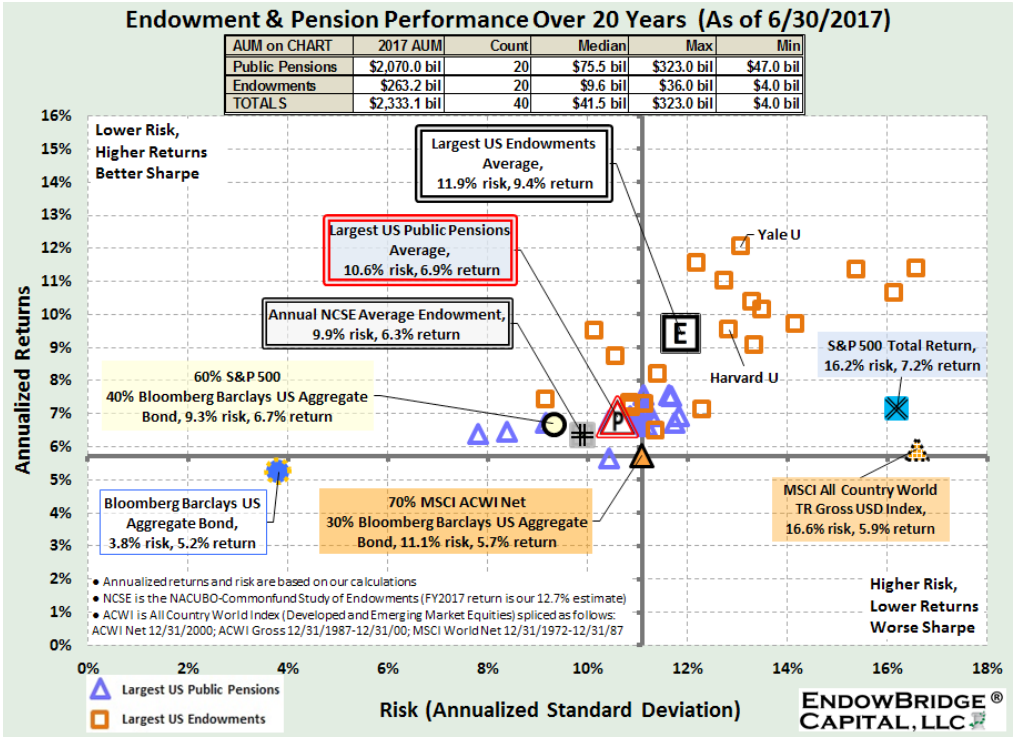

Exhibit 1
Sources: See Appendix

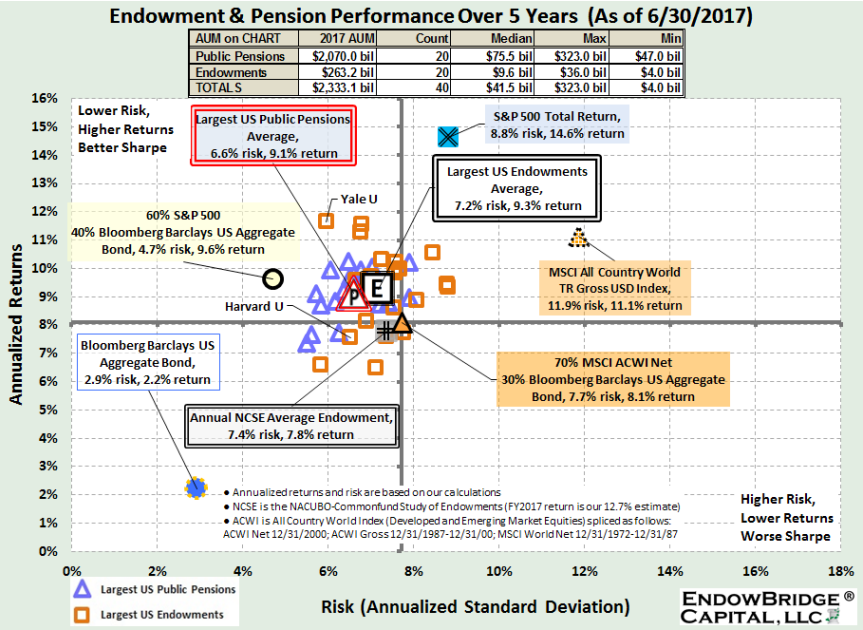

Exhibit 2
Sources: See Appendix

Colleges use endowment funds for student scholarships, endowed professorships, and as income for operating budgets and facilities.

Public employers are also perpetual entities, with pensions having a long horizon of liabilities resulting from a lifetime of payments promised to retirees. Yet, demographics (workforce age), plan design, vesting, and funded status influence the risk of a public pension's asset mix.

Unlike corporate pensions that use mark-to-market (MTM) accounting to value liabilities, public pensions currently use a higher target return to discount liabilities under the Governmental Accounting Standards Board (GASB). Historically, the average of public pension discount rates has been in a narrow range from 8.22% in 1992 to 7.57% in 2016.[3] However, individual discount rates used range from 5.5% to 9%. Notice the similarity of the 8% average target return of public pensions to the 8% return hurdle of endowments. In contrast, as reported by Pensions & Investments,[4] there is a lower 4.39% average discount rate for 100 of the largest U.S. corporate pension plans in 2016.

Historically, public pensions used fixed income as a more precise hedge for liabilities than stocks or alternatives. However, the trends of lower returns, lower bond yields, and a high similar target return have motivated public pensions to diversify with other assets just like endowments.

In contrast, because corporate DB plans use MTM discount rates, they rely more on *Liability Driven Investment* (LDI) strategies, such as the greater use of fixed income, especially long duration bonds, to reduce funded status volatility.

However, there have been recent changes in GASB standards that have increased transparency of government accounting for liabilities.[5] If public pensions were to ever adopt MTM accounting like corporate pensions, perhaps there could be a sea change in public plan asset allocation.

Pensions: Slower to Use Alternatives

Unlike endowments, public pensions only gradually shifted away from the 1950s bond dominant portfolios (96% in 1952),[6] after strict regulations limiting permissible investments were relaxed in the 1980s and 1990s. After suffering the Great Inflation of the 1970s, and the ensuing largest rise in yields in U.S. history, pensions began shifting to stocks in the 1980s and 1990s hoping to increase returns and diversify. Given their large size, they focused on liquid, larger cap stocks, and some alternatives like LBOs and real estate. Stocks grew from 23% of pension assets in 1982 to 67% in 1999.[7] As a result, public pension performance over this period began to resemble that of a 60/40 index.

Interestingly, corporate DB pension allocations to equities and bonds have changed in opposite directions versus public pensions since the Pension Protection Act of 2006. According to a Milliman study of 100 large corporate defined benefit pension plans,[8] average equity allocations decreased during 2016 to 36.1%, "the lowest equity allocation in the 17-year history of the Milliman PFS." In 2005, equities were over 60% of corporate DB assets. Meanwhile, fixed income grew from under 30% in 2005 to 44.1% of corporate DB plans in 2016 per the Milliman PFS.

Pensions: Hindered by Their Size?

Venture capital is an important source of returns for endowments. However, large pensions are likely hindered by their size from committing as much of their portfolios to VC as endowments, given the smaller size/riskier nature of the VC universe compared to large cap stocks. For instance, a Preqin report[9] cites $434 billion of unrealized value for VC as of June 2017, and $190 billion of dry powder. Another report[10] showed about 10% of U.S. public pensions commitments were to VC, with more allocated to buyout funds.

In contrast, the U.S. stock market capitalization totaled $27.4 trillion as of 2016 (source The World Bank). Thus, VC has made a bigger impact on relatively smaller endowment portfolios than on behemoth public pension plans.

Even so, other alternative assets are playing a much bigger role in modern pension portfolios, similar to those of endowments. By our findings (see Exhibit 5 on page 64), we calculate that the 20 public pensions had a 27.1% average allocation to alternatives

in FY 2016, rising from a 16.8% average for pensions in 2008. In contrast, the 20 large endowments had on average 60.5% in alternatives in FY 2016, versus 57.1% in FY 2008.

Since asset allocation is a big driver of returns, it broadly explains much of the performance differences between pensions and endowments.

More Regulated & Conservative

Lastly, unlike endowments, public pensions are more heavily regulated by the federal Internal Revenue Code and other state laws because they have a legal liability to pay employees' pension benefits. Underfunding can mandate state contributions and impact future taxes, or threaten benefit cuts to workers and retirees.

Per NASRA, U.S. public pensions serve 12.8 million active (working) members and 9.1 million annuitants. Problems with the health of public pensions, or even excessive manager fees, can cause major headaches for politicians and fund executives. Between the scrutiny of government agencies and their constituencies, public pension investing can be politically influenced, another reason why pensions tended to be historically more conservative than endowments.

Pensions Gain Over the Short-Term

The previous 20 year chart in Exhibit 1 does not tell the whole story. With pensions using more alternatives, returns are starting to resemble those of endowments, as can be better seen in the shorter five year chart of Exhibit 2.

Even though endowment returns recently ceded ground to public pensions, notice that Yale delivered strong returns. Exhibit 2 shows far less performance dispersion among endowments, which are more in line with pensions. Perhaps this suggests a levelling of the investment playing field between endowments and public pensions.

Also, note the good risk-adjusted returns of the 60% S&P 500 / 40% Bloomberg Barclays U.S. Bonds Aggregate index over the 5 years (upper left quadrant). The 60/40 beats both the pension and endowment averages with lower risk.

Rolling 3 Year Periods Clarify Trends

A single time period chart is only a snapshot in time. To see the forest for the trees, one should look at rolling periods for performance trends.

Before comparing endowments to pensions, Exhibit 3a compares the average rolling 3 year return of 20 large endowments to a 70% MSCI ACWI Stock /30% U.S. Aggregate Bond index. Over a 35 year period (6/30/1982-6/30/2017), endowments enjoyed an average annual excess return of +2.22%, with a risk lower by -0.85%.

While endowments have greatly outperformed the 70/30 from the 1990s until the 2008 financial crisis, the excess return narrowed since the crisis. Overall, Exhibit 3a proves that the Endowment Model still adds RELATIVE value above the 70/30, despite the gravitational pull of weak ABSOLUTE returns currently troubling ALL investors. For instance, while many investors earned healthy returns in FY 2017, the 10 year CAGR will be below 5% for some investors.

Note that the extent of the Model's success depends on the benchmark used, as is seen on the next page in Exhibit 3b. Since the crisis, large endowments have struggled versus the less diversified, U.S. centric 60% S&P 500 / 40% Bloomberg Barclays U.S. Aggregate Bond index. In fact, the bulk of outperformance in Exhibit 3b is limited to the late 1990s to mid-2000s.

Should we be concerned that the U.S. 60 /40 index has been harder for endowments to consistently outperform than the 70% MSCI ACWI Equities / 30% U.S. Aggregate Bond benchmark?

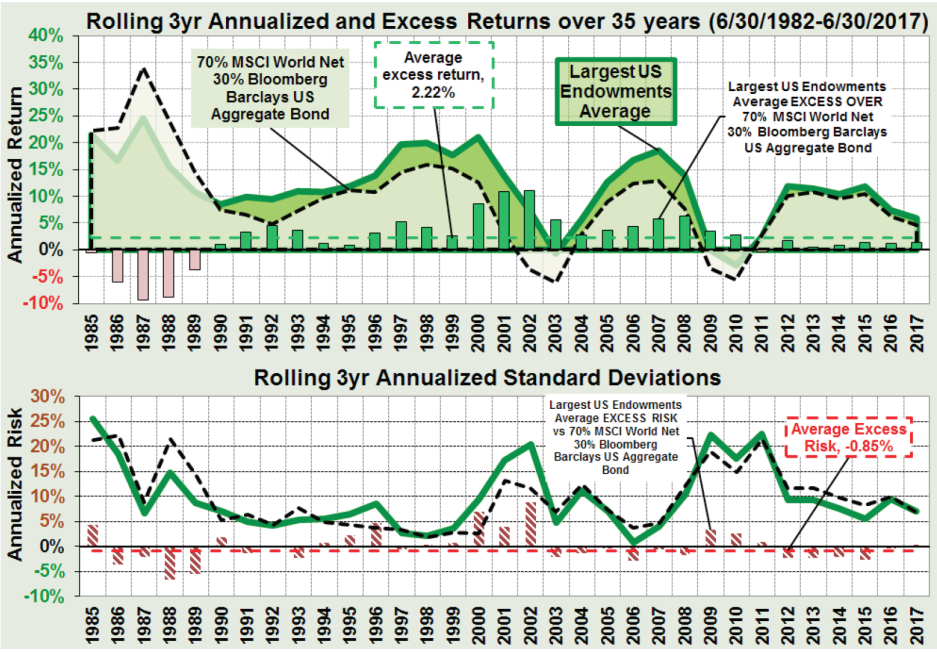

Exhibit 3a: Rolling 3 Year Performance: 20 Large U.S. Endowments vs. Global 70/30 Index

Sources: Data from MSCI All Country World Index, Bloomberg Barclays, and individual college financial and/or investment reports.MSCI ACWI Net since 12/31/2000 is spliced with ACWI Gross 12/31/1987-12/31/2000; MSCI World Net 12/31/1972-12/31/1987

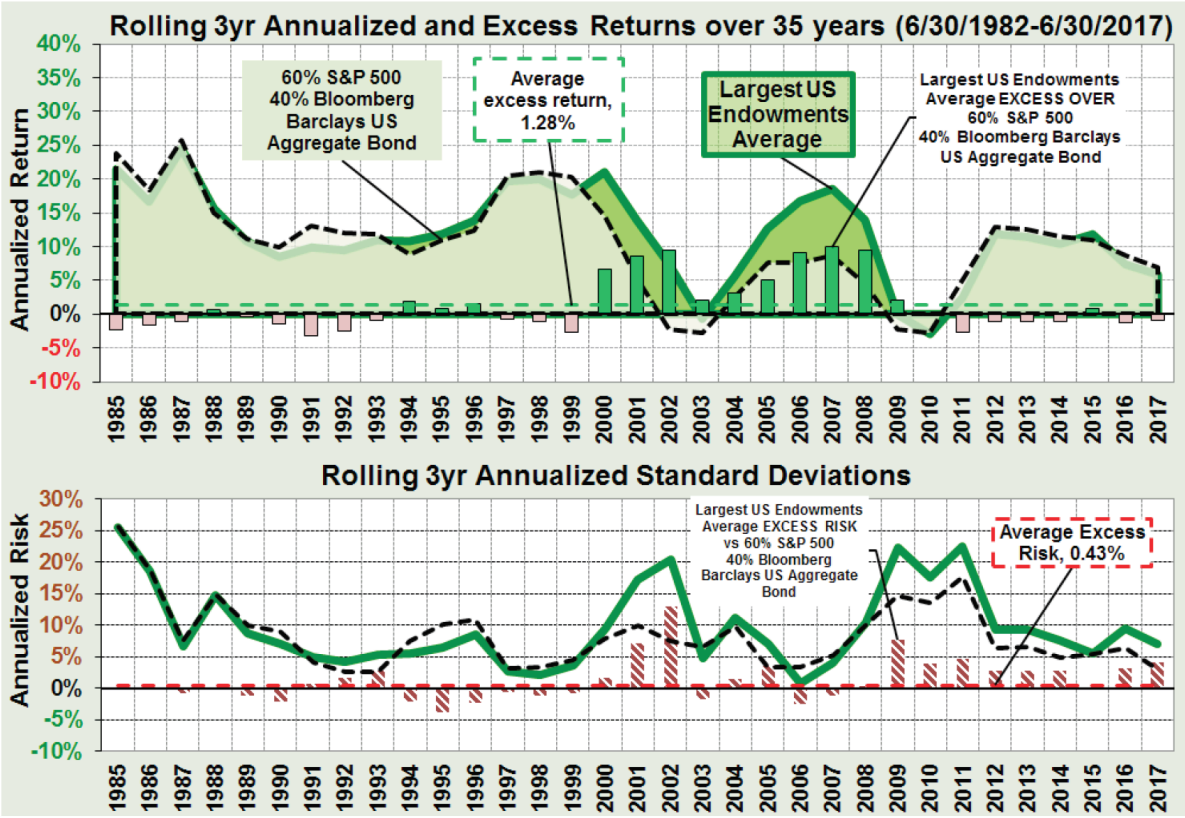

Exhibit 3b: Rolling 3 Year Performance: 20 Large U.S. Endowments vs. U.S. 60/40 Index
Sources: Data from Standard & Poors, Bloomberg Barclays, and individual college financial and/or investment reports.

In Defense of the Endowment Model

The U.S. centric 60/40 is not as well-diversified for most investors. It is essentially a bet on U.S. large cap public stocks / U.S. bonds. Thus, due to the cyclicality of global markets, this index could easily experience periods of underperformance. Thus, diversification is necessary to control risks and increase the chances of earning future outperformance. For instance, the rise in economic dominance of China and emerging markets (EM) countries could easily generate sustained outperformance of EM stocks.

Besides using geographical diversification, the Model uses alternatives to uniquely diversify and add value. For instance, some hedge funds deliver absolute returns to mitigate a bear market, while others, like managed futures, can protect against spikes in volatility. Buyout funds unlock hidden value via the restructuring of companies. Venture capital helps finance new innovative companies like Google, Amazon, and Facebook, and has the potential for high returns. Inflation-linked bonds, real estate, and commodities serve as an inflation hedge and offer low correlated real returns. Thus, diversifying beyond U.S. large cap stocks helps investors cope with global economic challenges.

Lastly, the endowment average masks the great outperformance of top teams versus the 60/40. Despite the recent struggle versus the U.S. 60/40, there is a healthy 1.28% of excess annual return versus it over 35 years, with only 0.43% higher annual risk. Any top college that had settled for the U.S. 60/40 over this period would have lost out. Clearly, the Endowment Model works very well for some colleges over long time periods, so we should not abandon it just yet.

Endowments vs Pensions: Rolling 3 Years

Finally, Exhibit 4 compares endowments to public pensions. Like the prior charts, it also shows considerable endowment outperformance versus public pensions from the early 1990s until the financial crisis. Yet, over the 8 year period from June 30, 2008 to the fiscal year ending FY 2016, large endowments have slightly underperformed with an average annualized return of 5.4%, versus an average 5.5% return for the 20 large pensions.

Have public pensions finally emulated the Endowment Model? It is unclear whether the lead once enjoyed by large endowments has narrowed due to stretched valuations from a flood of capital chasing crowded trades, causing the illiquidity premium to shrink. What is clear is that asset allocation roughly explains some of the outperformance of pensions since FY 2008.

We do not have year-by-year allocation and asset return data for each of the 8 years for this study's 40 institutions to do a proper performance attribution. Instead, if you will excuse us, here are general, back of the envelope calculations using return data from annual NCSE studies to add color.[11] The starting allocations listed below are as of FY 2008, yet there were considerable changes over the 8 years ending FY 2016 (see Exhibit 5). Thus, even though the conclusions below are general at best, the annualized excess

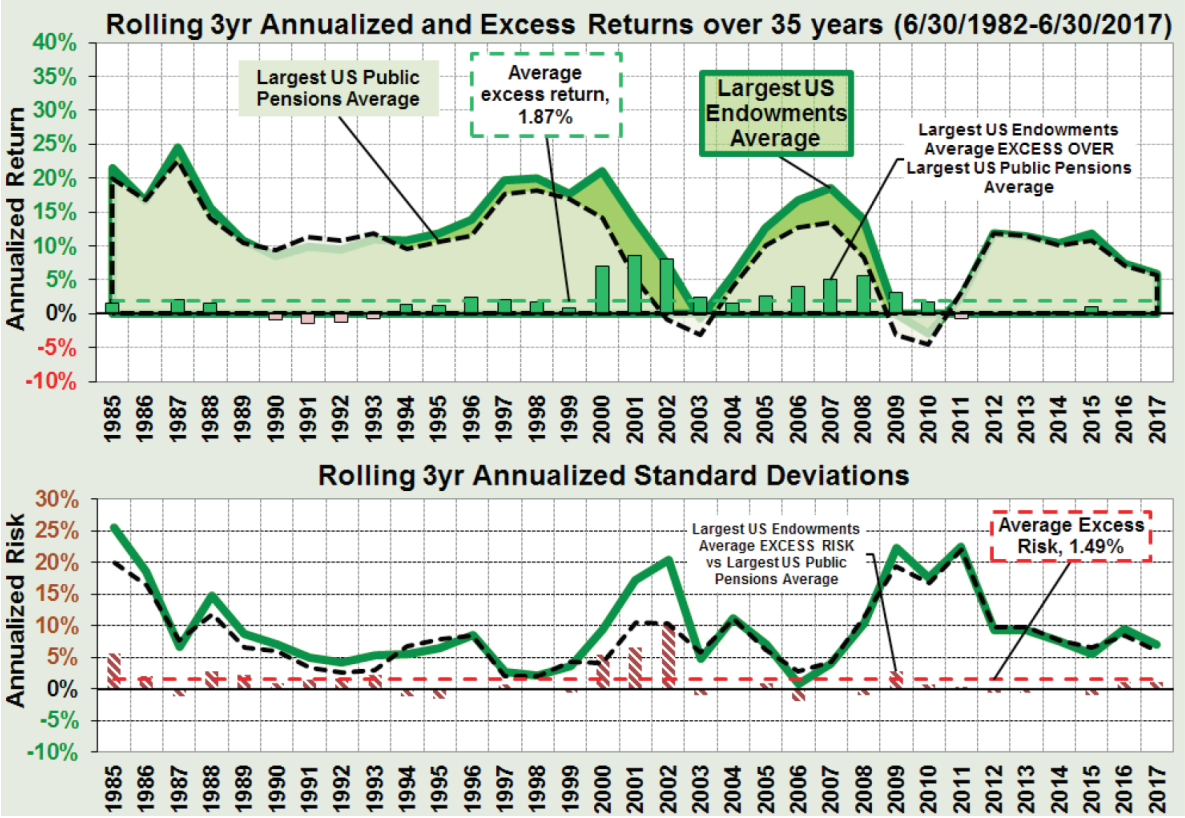

Exhibit 4: Rolling 3 Year Performance: 20 Large U.S. Endowments vs. 20 Large U.S. Public Pensions
Sources: Data from individual college and public pension financial and/or investment reports.

	FY 2008 Averages		FY 2016 Averages			
Asset	20 Large U.S. Public Pensions	20 Large U.S. Endowments	20 Large U.S. Public Pensions	Change vs 2008	20 Large U.S. Endowments	Change vs 2008
Traditional						
Fixed Income	27.7%	10.1%	24.6%	-3.1%	7.7%	-2.4%
Cash	1.4%	1.3%	1.9%	0.5%	2.3%	1.0%
U.S. Equities	34.5%	13.7%	26.4%	-8.1%	12.0%	-1.7%
Non-U.S. Equities	19.6%	17.8%	20.0%	0.4%	17.5%	-0.3%
Subtotal Traditional	83.2%	42.9%	72.9%	-10.3%	39.5%	-3.4%
Alternatives						
Hedged Strategies	1.4%	24.4%	5.2%	3.8%	23.0%	-1.4%
Real Estate	7.4%	9.6%	9.5%	2.1%	8.7%	-0.9%
Private Equity	7.0%	16.7%	9.8%	2.8%	21.3%	4.6%
Natural Resources	1.0%	6.4%	2.6%	1.6%	7.5%	1.1%
Subtotal Alternatives	16.8%	57.1%	27.1%	10.3%	60.5%	3.4%
Total	100.0%	100.0%	100.0%		100.0%	

Exhibit 5: Average Asset Allocations of 20 Large U.S. Public Pensions versus 20 Large U.S. Endowments
Sources: Data from individual college and public pension financial and/or investment reports.

0.1% return for public pensions is very roughly explained by the following:

- The 20 public pensions on average had much higher U.S. public stock FY 2008 exposures (34.5% vs. 13.7% for the 20 endowments), but were underweight better performing private equity (7.0% vs. 16.7%). Private equity had 9-11% annualized returns on average over the 8 years (using NCSE data for the $1+ billion endowments), and outperformed the Russell 3000's annualized 8.7%. Netted, U.S. equity and private equity exposures likely gave a very rough 0.3% overall advantage to the pensions.
- Pensions had higher FY 2008 exposures to bonds (27.7% vs. 10.1% for endowments) on average, which softened the blow from stocks, and helped pensions with the subsequent drop in yields. The Bloomberg Barclays Global Bond Aggregate had a 3.4% annualized 8 year return; the U.S. Aggregate had a 4.8% annualized return.
- However, pensions were typically underweight hedge funds (1.4% vs. 24.4% for endowments). Hedge funds had a 3.8% annualized return over 8 years for the NCSE $1+ billion endowments. The hedge fund underweight likely offset the benefit of the bond overweight above, costing pensions a rough net 0.1%, and reducing their net overall outperformance to 0.2%.
- Pensions on average had lower allocations to natural resources (roughly 1.0% vs. 6.4% for the endowments). Returns were roughly 1.6% annualized over the 8 years for the NCSE $1+ billion endowments. The underweight cost pensions about 0.1% of annualized return, and reduced net overall outperformance to 0.1%.
- Small allocation differences in other assets mostly cancelled each other out. Pensions had a slight underweight in real estate (7.4% vs. 9.6% for endowments) with 1.8% returns for NCSE $1+ billion endowments (low vs REITs due to a lag in reporting). However, pensions were slightly overweight non-U.S. equities (19.6% vs. 17.8% for the endowments), with about 2.0% annualized returns for the NCSE $1+ billion endowments.

Despite the differences in allocations, the trend for public pensions over the 8 years has been a decrease in U.S. stocks and bonds in favor of more foreign equity, real estate, private equity, and other alternatives. Thus, continued convergence of allocations may ensure similar future returns.

The Endowment Model Drawbacks

Overall, the Endowment Model continues to be a success for those with resources to effectively run it. Yet, smaller institutions tend to find the Model challenging to run due to shortcomings such as:

- the high cost to implement it
- high underlying fees, especially painful in a low return environment
- high complexity; poor transparency
- illiquidity (despite growth in secondary markets for alternatives)
- limited access to top alternatives funds
- burden of extensive fund manager due diligence (essential for diversification)
- fund manager transition challenges
- redemption gates and multi-year lock-ups

Some of these disadvantages are magnified during a financial crisis. High fees undermine long-term return goals, and rare fund manager blow-ups create headline risk, with an ensuing backlash from constituencies. Concerns over manager risk can result in over-diversification across fund managers and expensive beta. (Read my LinkedIn article December 9, 2016 "Endowment Diversification & the Beta Trap").

During the last crisis, illiquidity forced some colleges to issue bonds and/or sell assets at a discount to meet budgetary needs, and/or to meet private equity commitment calls.

As a result of these many challenges, smaller endowments on average tend to fall short of their return goals and jeopardize their missions, as can be seen in Exhibit 6.

The Endowment Model Alternative

Is there another way to achieve some of the superior returns of the Endowment Model, and avoid many of the drawbacks?

As we know, the Endowment Model evolved to improve upon a balanced index like the traditional U.S. centric 60/40. In the spirit of the more aggressive investment style of large endowments, we find that a well-designed index fund strategy that targets some of the underlying beta exposures of a typical endowment could add value versus a balanced benchmark.

Exhibit 7 shows a mean variance optimization (MVO) performance analysis of over 1 million random beta portfolios versus benchmarks over a 20 year period ending June 30, 2017. The beta portfolios consist of combinations of index funds we use in our strategy (using total returns, net of fees, and benefitting from dividend reinvestment).

Prior to inception of index funds that have a short history, model returns were created by taking the total return of an index, less a rough hypothetical fee, and splicing these model returns onto the actual return series for these index funds, making the results of this analysis highly hypothetical. Note that model returns are not actual returns.

The graph also displays the performance of 20 of the largest endowments and 20 of the largest U.S. public pensions over this period like in Exhibit 1.

The MVO plot can be broken into 3 areas: the gray region consists of 569,809 unreasonably diversified portfolios (55% of the total) which we define as those with one or more assets making up more than 25% of the portfolio. The dark green area shows 475,807 reasonably diversified portfolios (or 45%% of all beta portfolios) with each asset under a 25% weight. The third region is the efficient frontier on the upper edge of the plot, consisting of portfolios that maximize return for a given risk level. However, note these portfolios tend to be NOT sufficiently diversified.

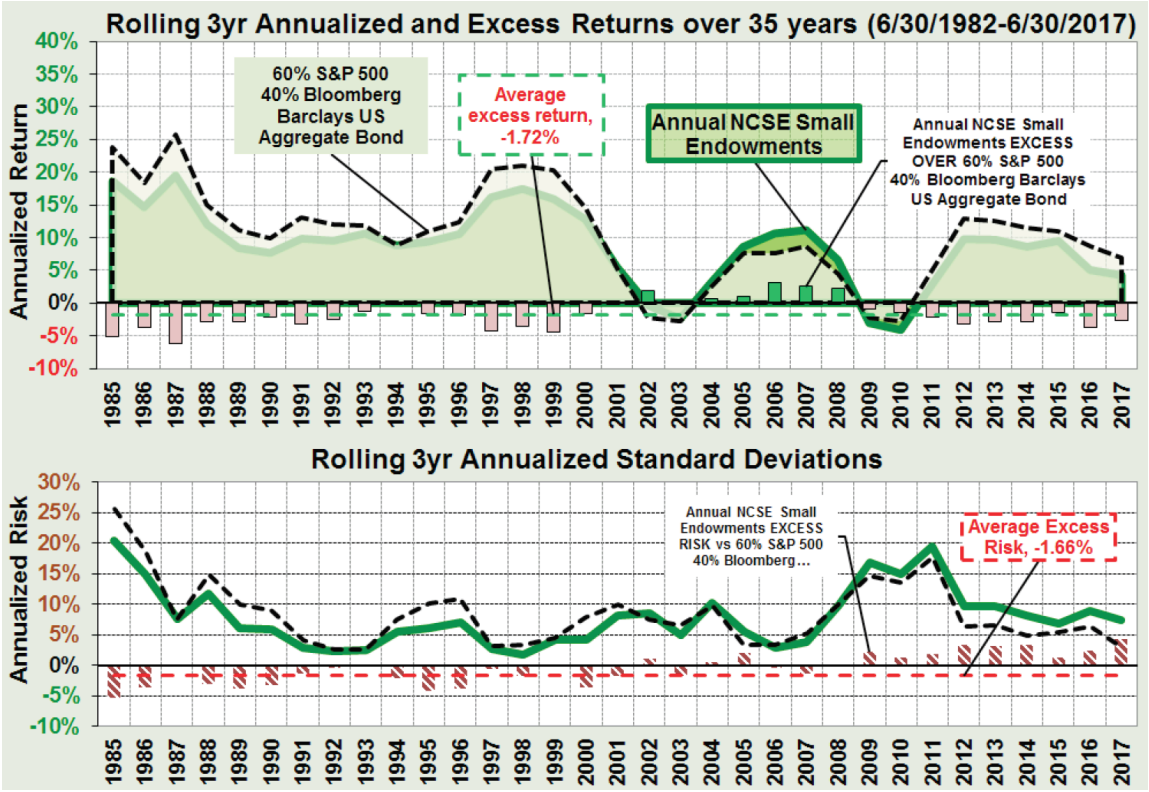

Exhibit 6: Rolling 3 Year Performance: Small Endowments vs. Global 70/30 Index
Sources: Data from MSCI All Country World Index, Bloomberg Barclays, and individual college financial and/or investment reports. MSCI ACWI Net since 12/31/2000 is spliced with ACWI Gross 12/31/1987-12/31/2000; MSCI World Net 12/31/1972-12/31/1987

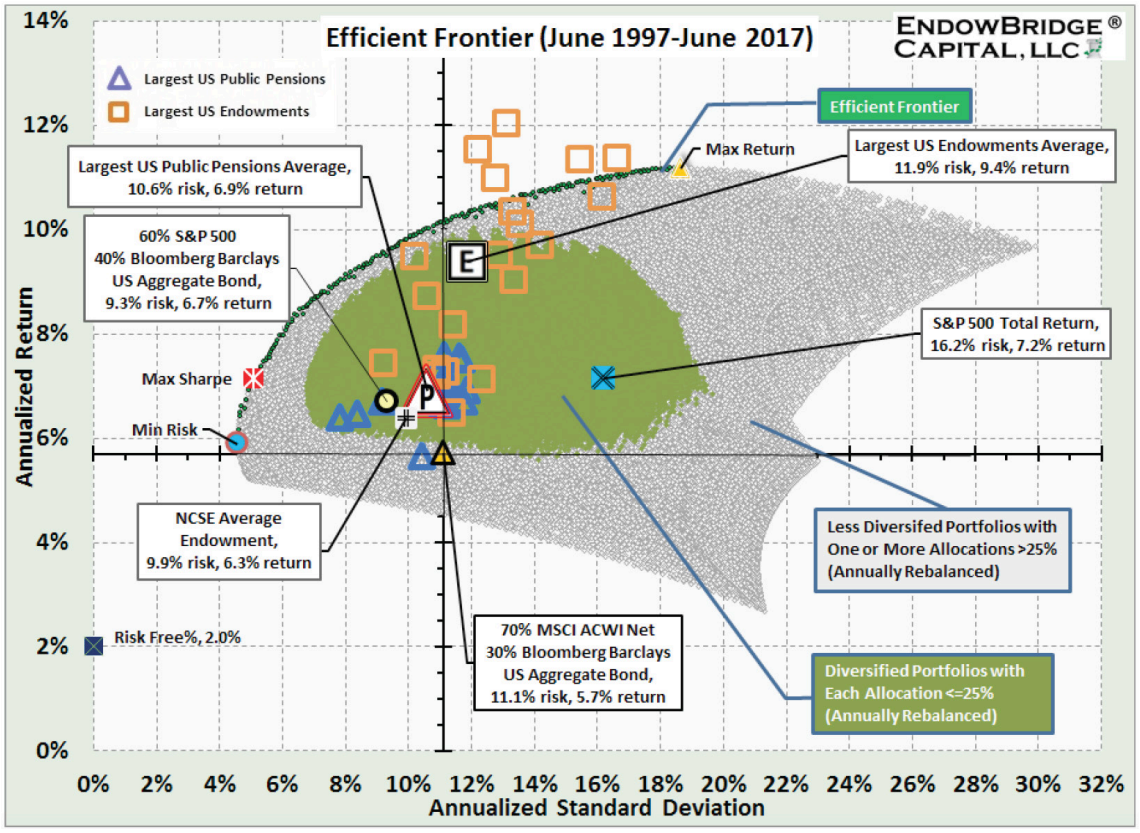

Exhibit 7: Mean Variance Analysis of Beta Index Portfolios vs. Benchmarks for the 20 Year Period Ending June 30, 2017
Sources: Data from MSCI, Bloomberg Barclays, Standard & Poors, NACUBO-Commonfund Study of Endowments, and individual college and public pension financial and/or investment reports. Some institutions only report returns that are GROSS of fees, others are net of fees.

Besides the limitations of using model returns, note there are limitations and caveats of using a MVO analysis, such as the high sensitivity to changes in inputs like risk and return assumptions. Also, Exhibit 7 shows historical results, whereas a more useful analysis would be to use future forecasted risks, covariances, and returns to optimize asset allocation. Again, there is also the potential for unreasonably concentrated portfolios to be output as optimal solutions on the efficient frontier. Lastly, the MVO does not take into account the illiquidity of investments. See my 2016 paper "Efficient Frontier Insights & The Endowment Model" for more details.

While past performance does not guarantee future success, note that there are 89,019 index fund portfolios (8.5% of the total) in the upper left quadrant of the dark green area that outperformed a 70/30 benchmark with lower risk.

Thus, it appears that an index fund strategy could have delivered superior returns and avoided the drawbacks of the Endowment Model by improving upon liquidity, transparency, and fees, while reducing complexity.

As a caveat, an index fund strategy likely would NOT benefit from superior assets like venture capital, especially during a period of irrational exuberance like the Internet Bubble. As Exhibit 7 shows, top endowments delivered returns well above the efficient frontier of beta index portfolios (note that a 10 year chart would tell a different story).

However, our research suggests that some small to mid-sized endowments might be better off with a low-cost index fund strategy. And our actual results of running the EndowBridge Legacy Strategy since June 30, 2013 also corroborates what others like Vanguard[12] and David Swensen[13] have also suggested about the suitability of using index funds for some investors. Others have also written about replicating endowment returns with index funds.[14] Lastly, even the $38.5 billion Nevada pension plan embraces index funds for a substantial portion of their portfolio. (Read my LinkedIn article on "The Allure of an Index Fund Strategy.")

Despite the limitations of the MVO analysis and using the past to predict the future, the main takeaway is that there could be many roads to investment success (and the Endowment Model is not a one size fits all strategy).

Conclusion

Public pensions have recently seen encouraging performance on par with some endowments, owing partly to convergence of allocations between endowment and pension portfolios. Public pensions are likely to continue to embrace riskier assets to improve their underfunded status. Yet, due to lingering portfolio differences between these two types of investors, differences in performance may persist.

The current era of low returns is challenging for all investors. Even top endowments have seen a drop in rolling multi-year returns. Low returns will make it harder for investors to achieve their missions, so creativity may be in order.

In the relentless pursuit of alpha, the investment industry relies upon innovation to deliver the potential for better returns. Portable alpha, 130/30 strategies, high frequency trading, and smart beta are on a long list of innovation, despite sometimes delivering mixed results.

Even the fabled Endowment Model continues to evolve as it tries to match Yale's remarkable success. Some investors struggle to implement the Endowment Model, and fall short of long-term investment goals. As reality check, investors should use a diversified balanced benchmark like the global 70/30 to ensure their efforts ultimately lead to long-term risk-adjusted success.

Institutional investors that consistently fall short of their investment goals should explore other ways to improve returns. Chasing riskier assets to seek higher returns is not always the answer.

Even though recent returns clearly show that the Endowment Model still works for many investors, the high fees of below average alternative assets managers can weigh heavily on performance, especially in a low return environment. Despite facing pressure to lower fees, top fund managers definitely earn their fees, so it is unfair to punish all fund managers equally. However, using some index funds to decrease over-diversification could reduce expensive beta and still leave room for top fund managers.

Lastly, there are many roads to investment success. Using a well-designed portfolio of low-fee index funds could also serve to streamline the Endowment Model. A beta-driven portfolio could give greater control over asset allocation and rebalancing, and bring benefits such as better liquidity and transparency. Even partially using an index fund strategy alongside the best existing alternative asset managers could be a sensible modification to a long-term investment policy.

Appendix

For a clearer, simplified picture of Exhibits 1 and 2, here are the charts WITHOUT the distraction of individual data points for the large endowments and public pensions that make up the averages:

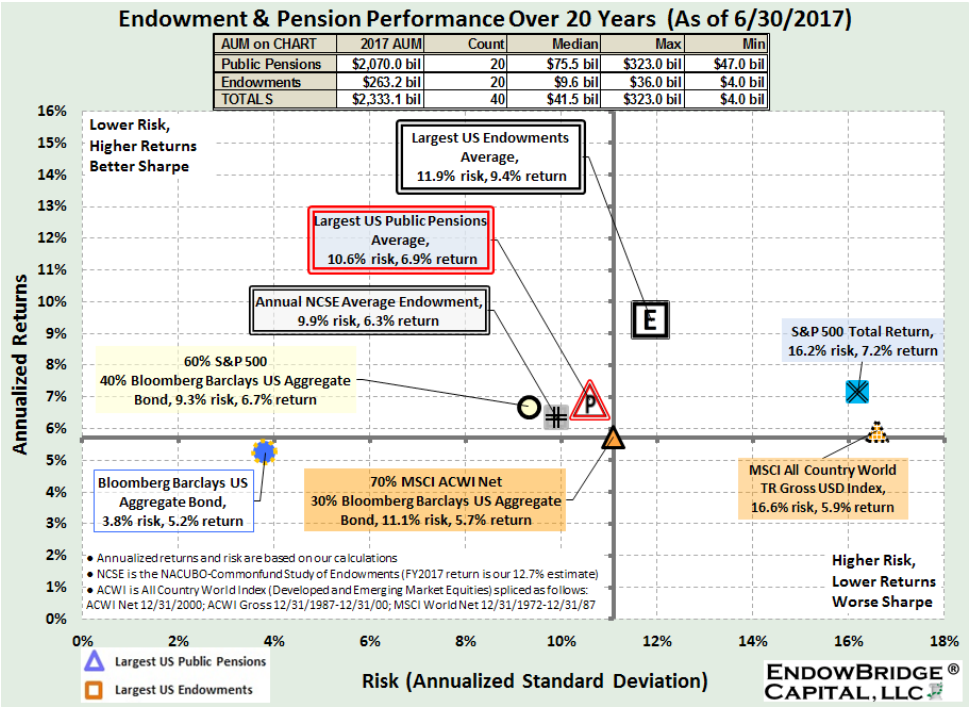

Exhibit 1s: Simplified Endowment and Public Pension Returns versus Annualized Risks for the 20 Year Period Ending June 30, 2017
Note how large endowments have higher returns and higher risk than public pensions and balanced benchmarks over the long-term.
Sources: Data from MSCI, Bloomberg Barclays, Standard & Poors, NACUBO-Commonfund Study of Endowments, and individual college and public pension financial and/or investment reports.

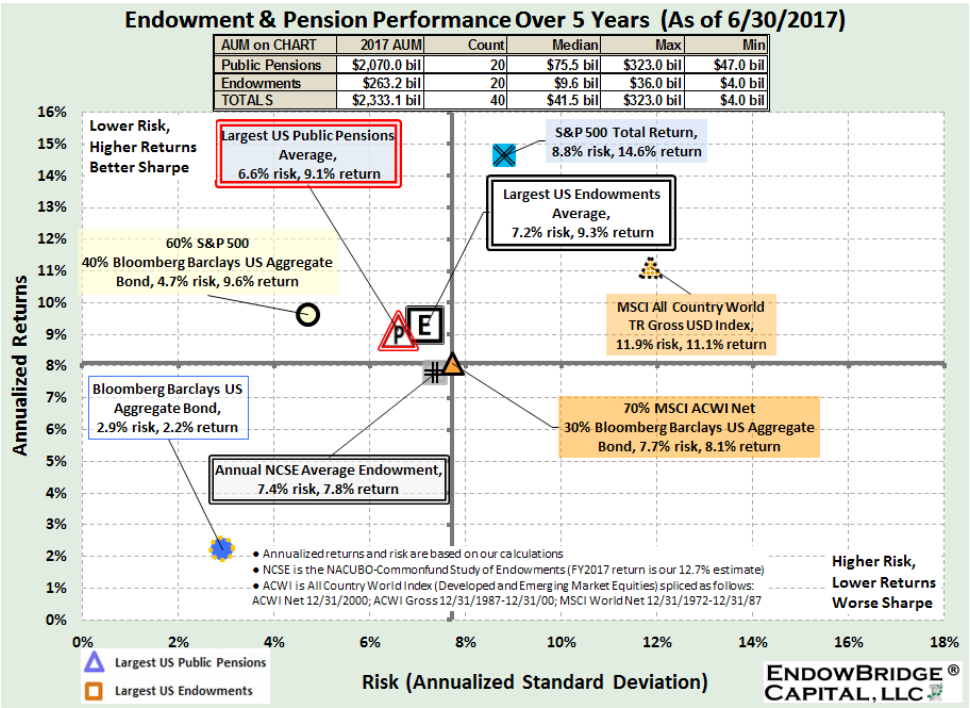

Exhibit 2s: Simplified Endowment and Public Pension Returns versus Annualized Risks for the 5 Year Period Ending June 30, 2017
Shorter-term, large endowments are more in-line with public pensions and balanced benchmarks.
Sources: Data from MSCI, Bloomberg Barclays, Standard & Poors, NACUBO-Commonfund Study of Endowments, and individual college and public pension financial and/or investment reports.

Endnotes

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Author Bio

Michael Karris
EndowBridge Capital

Michael Karris founded EndowBridge® Capital in 2013 with a mission to help small to mid-sized endowments and foundations by improving their investment solutions while delivering superior risk-adjusted returns via a much simpler index fund strategy and vehicle.

Formerly, he was Director of Investments/Trading for Columbia University's endowment focusing on beta rebalancing, hedging overlay strategies, and transition management. He developed analytical tools for risk management and performance attribution.

Michael also worked at JP Morgan Asset Management in fixed income on the Long Duration and Stable Value teams, focusing on portfolio management and analytics for defined contribution & defined benefit pension plans.

Prior to this, he worked at BNP Paribas in Global Fixed Income Sales covering US fund managers, hedge funds, and private banking groups. He has extensive experience in capital markets, working with institutional investors across many asset classes since 1993.

Michael earned an M.B.A. from Northwestern University's Kellogg Graduate School of Management, and a B.S. in Electrical Engineering from the University of California, Los Angeles.

He is a registered investment adviser and holds a NASD Series 65 license (having previously held Series 7, 3, and 63 licenses).