

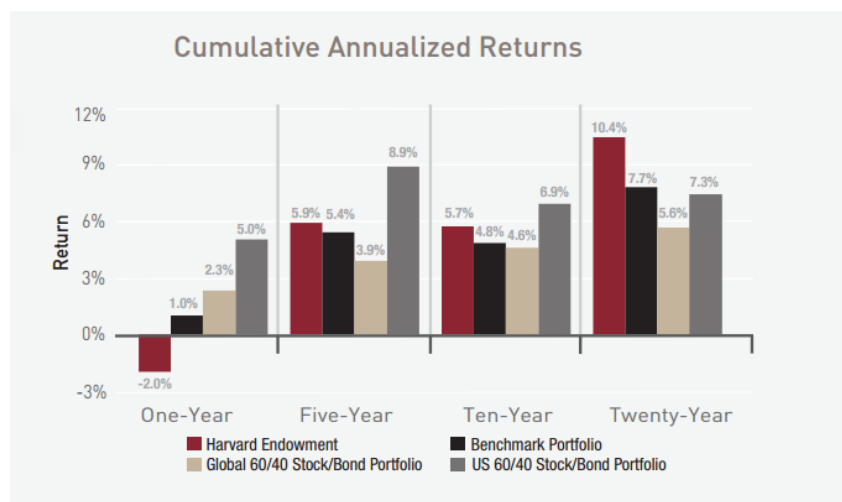
A Simple Approach to the Management of Endowments

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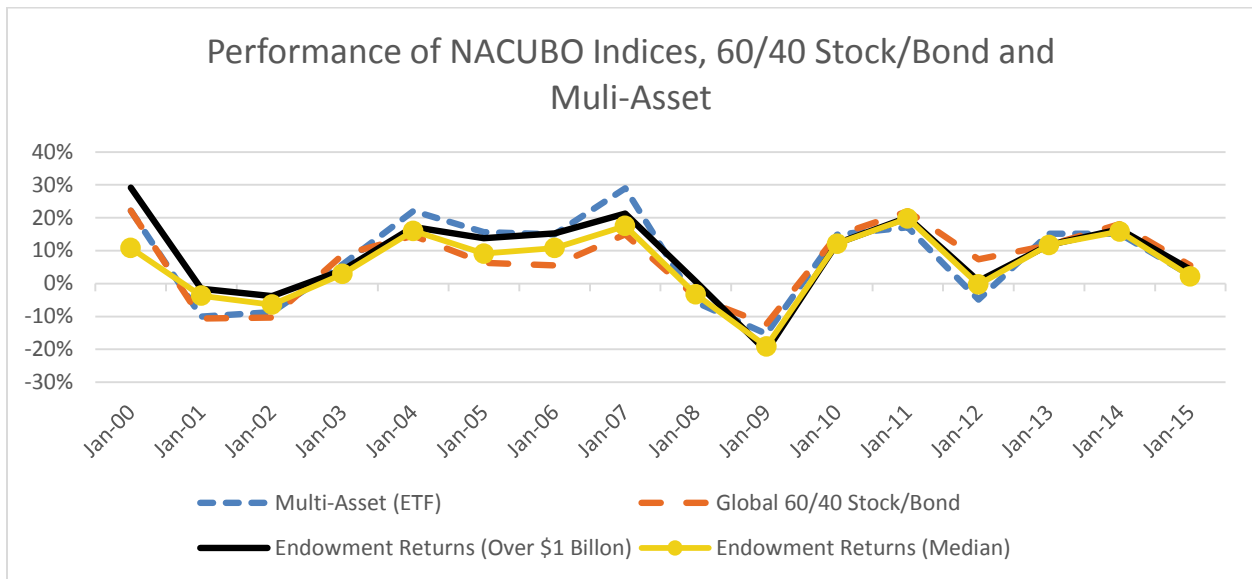
Endowments and foundations are tax exempt and charitable organizations that rely on permanent pools of capital to fund their activities. Institutions such as colleges, universities, hospitals, museums, scientific organizations, charitable entities, and religious institutions own these pools of capital. When well-funded and well managed, an endowment can provide a permanent annual income to the organization, while maintaining the real value of its assets in perpetuity.

These institutions typically lack the internal expertise to manage their assets. Only the largest endowments and foundations have the resources to build an internal team to manage their assets. Small and medium sized organizations may choose to outsource the management of their assets. However, whether they are small or large, managing the assets that fund these organizations' activities costs money. Of course, there is significant economies of scale in managing assets and for the largest endowments and foundations, the ratio of management expenses to total assets is expected to be relatively low. For instance, Harvard Management Company (HMC), which manages Harvard University's endowment, reported around \$200 million in expenses while managing around \$35 billion in assets. This means that Harvard University spends around 0.57% of its endowment to manage its assets. Of course, this figure does not include the fees that HMC paid its outside managers, which is not as relevant since the reported returns are net of these fees. The following chart, which is obtained from HMC's 2016 Annual Report, shows the performance of the fund over the past 1, 5, 10 and 20 years.



While the endowment has outperformed the basic US 60/40 stock/bond portfolio during the past 20 years, it has underperformed this portfolio during the past 1-, 5- and 10-year periods.

NACUBO-Common Fund Study of university endowments reports aggregate annual performances of those organizations that report to the National Association of College and University Business Officers (NACUBO). The following chart displays the annual performance of the largest endowments, median performance of endowments, global 60/40 stock/bond ETFs and a multi-asset portfolio of ETFs. We will discuss this “mystery” multi-asset portfolio later.



We can see that all four indices show remarkable similarities. Interestingly, the median performance of endowments has matched the performance of the largest endowments in recent years. The following table displays the basic statistics:

2000-2015	Mean	Std Dev
Multi-Asset (ETF)	8.11%	13.44%
Global 60/40 Stock/Bond	7.13%	11.24%
Endowment Returns (Over \$1 Billion)	8.82%	12.15%
Endowment Returns (Median)	5.99%	10.56%

The “mystery” multi-asset portfolio consists of various combinations of 23 equity, fixed income and alternative ETFs. It has provided the same rate of return as the largest endowments with slightly higher volatility since 2000. Note that because endowments hold illiquid assets, a significant degree of smoothing is present in their returns.

Two important points must be raised here. First, notice that while endowment returns are net of asset managers’ fees, they are not net of expenses paid by the endowment to its own staff to oversee the endowment. The ETF portfolios are net of all fees, of course. Second, endowment

portfolios contain a significant amount of illiquid assets, which could impose unexpected costs on them. The ETF portfolios consist of the most liquid ETFs.

The above figures raise an obvious question: What is the point of assuming significant illiquidity risk while spending significant amounts of resources to manage these pools of assets, when over the past 15 years their performances have matched those that can be earned by simple allocations to ETFs?

The above performance figures report aggregate numbers and there are bound to be some endowments who significantly outperform or underperform the above ETF benchmarks. For example, some endowments may have access to top tier hedge funds, private equity funds and real asset managers. Of course, not every manager can be top tier. Therefore, the question posed above is more applicable to those organizations that do not have access to these top tier managers. Since small and medium size endowments do not appear to have access to top tier managers that offer illiquid assets (e.g., hedge funds, private equity and real assets), it seems prudent that these funds consider allocations to more liquid and passive products. In addition, they can use available information to select allocations that replicate the performance of the largest endowments using liquid ETFs. In fact, this is how the multi-asset ETF portfolio was created. That is, we used a set of available ETFs to replicate in real time the performance of an index representing the performance of largest endowments.¹ Only past performances of these endowments were used to construct the replicating ETF portfolio, which is held for the following quarter. This means, one can implement this procedure in real time to manage an actual endowment. The procedure requires one to rebalance the portfolio on a quarterly basis. For those who are curious, the following was the tracking portfolio for the first quarter of 2017.

RUSSELL 2000 ETF	Power Shares QQQ ETF	Materials Select Sector SPDR® ETF	Energy Select Sector SPDR® ETF	Red Rocks Global Listed Private Equity	SPDR Dow Jones Global Real Estate ETF	Cash, Short- & Medium- Term Treasuries
23%	24%	7%	8%	15%	14%	9%

Going forward, every quarter we will be posting the holdings of the replicating portfolio in this publication.

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¹ To be precise, an uninvestable benchmark using various indices and factors was created to match the annual returns on endowments as well as their reported allocations to various asset classes. Then this uninvestable benchmark was replicated using various combinations of 23 ETFs. Kathy Wilkens of Quantitative Investment Technology provide the replication program. While this program uses sophisticated algorithm to create the replicating portfolios, simpler approaches that have been proposed in academic and practitioner literature can provide reasonable results. See Chapter 31 of CAIA Level II book, and "Asset Class and Strategy Investment Tracking Based Approaches," Crowder, Kazemi, and Schneeweis, *Journal of Alternative Investments* (Winter, 2011).