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Is the endowment model dead? This asset allocation approach suggests that, given the perpetual life of many, these asset owners should adopt an aggressive asset allocation, with substantial allocations to alternative and illiquid assets. Universities with large endowments have been early adopters of alternative investments and are well known as sophisticated investors across all areas of alternative investments. The financial success of these investors has been much discussed, even spawning a subset of investors who seek to earn higher returns by following similar investment strategies. Many credit the endowment model, or at least the most articulate description of the endowment model, to David Swensen. Most U.S. colleges and universities with endowment assets in excess of \$1 billion tend to invest large portions of their endowment portfolios in alternative investments, following the example of Yale University. The performance of large and small endowments since 2000, however, indicates that the approach has failed to deliver. Exhibit 1, which is based on the data collected by NACUBO, displays the average performance of the largest endowments and the median performance of all endowments reporting to NABUCO and the performance of a global 60/40 stock/bond exchange-traded fund (ETF) portfolio. The basic statistics are presented in Exhibit 2.

Although the largest endowments have outperformed the simple benchmark, the median performance has significantly underperformed the benchmark, which means that a significant number of endowments have underperformed the benchmark by even a larger margin. Although the reported performance figures are net of fund managers' fees, they are not net of the expenses paid by an endowment to its staff (e.g., CIOs and internal managers) to manage the assets. For example, the tax filings of the Harvard Management Company indicate that it spends about \$200 million per year to manage Harvard's endowment. Given the cost of running these management companies and the lack of performance displayed by many of them, one would think that 15 years is long enough for the leaders of the smaller endowments to realize that they lack the skills, resources, and connections to hire top-tier managers for their investments.

Of course, we do not have to limit ourselves to a simple global 60/40 stock/bond portfolio. Because the broad allocations of the largest endowments are publicly available, we were able to create a benchmark consisting of private as well as publicly traded assets. The return on this portfolio then was replicated in real time (i.e., without looking ahead)

EXHIBIT 1

Performance of NACUBO Indexes and Global 60/40 Stock/Bond

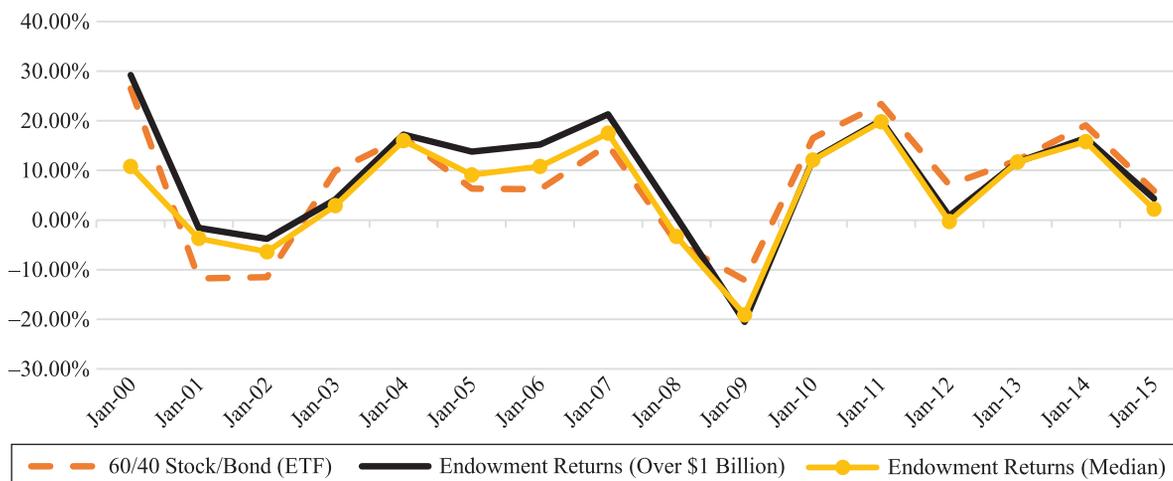


EXHIBIT 2

Basic Statistics of NACUBO Indexes and Global 60/40 Stock/Bond (2000–2015)

	Mean	Std. Dev.
Global 60/40 Stock/Bond (ETF)	7.80%	12.28%
Endowment Returns (Over \$1 Billion)	8.82%	12.15%
Endowment Returns (Median)	5.99%	10.56%

using a large set of liquid ETFs. Exhibits 3 and 4 display the performance of this multiasset ETF portfolio.

As can be seen, the replicating portfolio's performance is remarkably similar to the average performance of the largest endowments. It is important to point out that whereas a typical endowment portfolio includes allocations to illiquid assets, the replicating portfolio and the global 60/40 stock/bond portfolio consist of liquid ETFs. Of course, some endowments have access to top-tier managers and therefore can outperform this replicating portfolio. It appears, however, that many endowments would benefit from reexamining their investment philosophies.

Kathryn Wilkens, PhD, from Quantitative Investment Technology, provided the replication technology to complete this note.

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This issue of *The Journal of Alternative Investments* consists of three parts: factor models, real estate, and direct lending. In “Measuring Factor Exposures: *Uses and Abuses*,” Israel and Ross tackle the foundation of factor investing, a strategy that is becoming increasingly popular these days. The authors note that measuring exposures to factors can be a challenge because investors need to understand how factors are constructed and implemented in their portfolios. They remind investors that without the proper model, rewards for factor exposures may be misconstrued as alpha, and investors may be misinformed about the risks their portfolios truly face. The authors discuss some of the pitfalls associated with regression analysis and how factor design can matter much more than expected. This article should serve as a practical guide for investors looking to measure portfolio factor exposures.

In some senses, the article by Maeso and Martellini picks up where Israel and Ross left off. As mentioned, sophisticated institutional investors have a growing interest in factor investing, a disciplined approach to portfolio management that is broadly meant to allow investors to harvest risk premia across and within asset classes through liquid and cost-efficient systematic strategies without having to invest with active managers. Although it is now well accepted that the average

EXHIBIT 3

Performance of NACUBO Indexes, Global 60/40 Stock/Bond, and Multiasset ETF

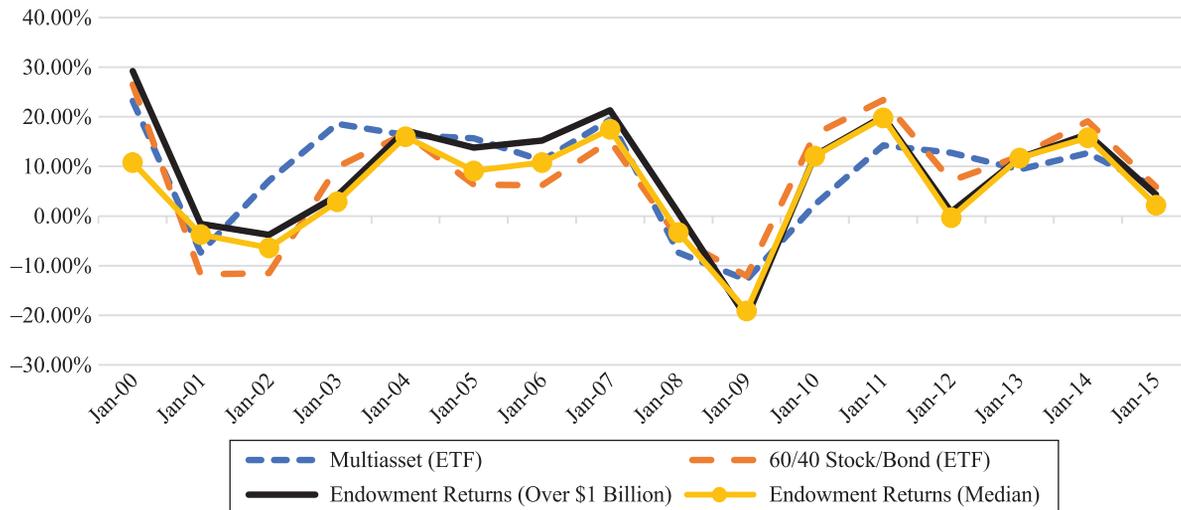


EXHIBIT 4

Basic Statistics of NACUBO Indexes, Global 60/40 Stock/Bond, and Multiasset ETF (2000–2015)

	Mean	Std. Dev.
Multiasset (ETF)	8.81%	10.43%
Global 60/40 Stock/Bond (ETF)	7.80%	12.28%
Endowment Returns (Over \$1 Billion)	8.82%	12.15%
Endowment Returns (Median)	5.99%	10.56%

long-term performance of active mutual fund managers can to a large extent be replicated through a static exposure to traditional long-only risk premia, an outstanding question remains with respect to what the best possible approach is for harvesting alternative long-short risk premia. In “Factor Investing and Risk Allocation: *From Traditional to Alternative Risk Premia Harvesting*,” Maeso and Martellini focus on an empirical approach to analyzing (1) whether systematic rules-based strategies based on investable versions of traditional and alternative factors allow for satisfactory in-sample and out-of-sample replication of hedge fund performance and, more generally, (2) whether suitably designed risk allocation strategies may provide a cost-efficient way for investors to get an attractive exposure to alternative factors, regardless

of whether they can be regarded as proxies for any particular hedge fund strategy.

“To Hedge or Not to Hedge: *Factor Dependence and Skill among Hedge Funds*,” by Jayaraman, Kuhnert, Gubler, and Myers, notes that as average hedge fund performance continues to wane, investors are increasingly seeking objective criteria to distinguish talented hedge fund managers from the herd. Differentiating the contributions of systematic and idiosyncratic factors in a fund’s return stream is one way to accomplish this goal. The authors combine two related, but distinct, measurements of these quantities. Using the commonly used four-factor model, the Fung–Hsieh seven-factor model, and principal components analysis, they find that the hedge funds with the highest factor-adjusted alpha (a proxy for skill) and lowest R^2 (a proxy for factor dependence) to these factor models produce the strongest subsequent returns and factor-adjusted alphas. They also find that those managers with high trailing factor-adjusted alpha have lower exposure to systematic risk factors in general.

In “Limits to Diversification: *Tail Risks in Real Estate Portfolios*,” Stein addresses real estate’s riskiness from a distributional viewpoint. The author argues that several studies have found that real estate returns are best modeled with stable Paretian distributions, which

tend to have fatter tails than normal distributions. The article confirms this finding using NCREIF individual property returns, but the first application of stable distributions to commercial real estate portfolio returns provides evidence that diversification effects ultimately reduce tailedness and, surprisingly, drive the tail parameter toward normality. The article provides further insight by highlighting the importance of a complete view, beyond pure tail parameter considerations. Even when tail parameters reflect normality, the return risk may still be tremendous, and it can only be reduced by diversification effects in property portfolios (and only to a certain, time-dependent extent).

Stelk, Zhou, and Anderson address extreme risks of real estate investment trust (REIT) investments in a multiasset portfolio. Until the recent financial crisis, it was widely believed that adding REITs to a mixed-asset portfolio expanded the efficient frontier and provided superior risk-adjusted returns. More recent evidence suggests that REITs may have higher volatility, Value at Risk (VaR), and expected shortfall than equities in times of increased market volatility, precisely when the stabilizing properties of REITs are most desirable. “REITs in a Mixed-Asset Portfolio: *An Investigation of Extreme Risks*” expands on the emerging literature with two contributions. First, it examines REITs’ impact on the VaR of a portfolio of stocks and bonds over the

last two decades. Second, a new, more accurate method of estimating VaR, Conditional Autoregressive Value at Risk (CAViaR), is used. The more accurate VaR estimates show that adding REITs to the portfolio has no significant impact on VaR until after the financial crisis begins. After the financial crisis begins, adding REITs to a portfolio of stocks and bonds dramatically increases VaR. The results have significant implications for portfolio selection.

In “The Investment Opportunity in U.S. Middle Market Direct Lending,” Nesbitt focuses on an understudied area of the fixed-income market. Direct lending to U.S. middle market companies is drawing increasing interest and capital from investors seeking high current yield and price stability. It is also attracting growing interest from asset managers seeking to replace the traditional role of banks, curtailed by regulation, in middle market financing. Nesbitt creates an index of direct lending assets dating back to 2005 to assist potential investors in understanding the return and risk of this growing asset class and how it compares to other public and private asset classes. The Direct Lending Index is then used to better understand the impact of manager fees and leverage on portfolio return and risk.

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