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Organic benchmarks for university endowments

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Executive summary

University endowments evaluate their performance relative to that of their peers, which are typically defined as endowments of similar asset size. However, if endowments subject themselves to such ad hoc performance benchmarks, they may diverge from the objectives of their universities. This divergence can introduce frictions and detract the endowment from focusing on managing assets. In this work, I study the feasibility of using organic benchmarks, that is, returns indices created using peer university characteristics, as an alternative to asset size-based benchmarks. I find that organic benchmarks are beneficial especially to larger universities and that considering these benchmarks versus the traditional size-based ones has a positive impact on a variety of university characteristics. However, the weak predictive power of tracking of organic benchmarks, corroborated with some ambiguity of the predicted effects, hint to the conclusion that in creating a benchmark, a "one-size-fits-all" approach may not be best and instead organic benchmarks should be university-specific. I further document that following size benchmarks while ignoring organic benchmarks is detrimental to performance and to a set of university characteristics. In a capital appreciation horse race, $1 invested in endowments outperforming organic benchmarks in the past beats the dollar invested in past underperforming endowments. Similarly, $1 invested in endowments closely tracking an organic benchmark outperforms the dollar invested in those endowments with high tracking errors, but only for value-weighted portfolios.

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1. Introduction

University endowments manage nearly half a trillion dollars and aim to assist universities in achieving their objectives. Because universities highlight the performance of these pools of financial assets, especially to their donors, endowments are compelled to act competitively in support of their institutions. This competition gives rise to the question of an appropriate measure and a set of peers to evaluate the performance of a university endowment. Peer universes widely used in current practice, such as those based on the size of the endowment, are unlikely to capture all possible university objectives.

The objective of this study is to tease out the utility function[1] of a particular university endowment. While the economics literature proposes a variety of functional forms for utility functions (the reader may consult Eeckhoudt, Gollier and Schlesinger (2005) for a comprehensive reference of using utility functions in economics), anecdotal evidence does not appear to support the existence of a mathematical formula capturing the preferences of either the typical endowment or those of its affiliated university.

Moreover, although other models, such as those of Merton's (1993), Hansmann's (1990) or Hoxby's (2012), view the university and its endowment as a monolithic structure, the organizational form of many endowments is that of a private nonprofit entity that is independent of the university. The fact that the university and the endowment are separate entities makes it more difficult for their objectives to perfectly align, as decision makers for the endowment may have different objectives compared to those of the university decision makers. This claim is supported by Brown and Tiu's (2015) empirical observation that the rule by which endowments contribute to their respective universities changes often–suggesting the possibility of misalignment between endowment and university objectives, with the endowment ideally adjusting dynamically to converge to the university goal.

To further elaborate, recent attempts to explain why endowments are large relative to their universities' budgets and are simultaneously risky, as in Gilbert and Hrdlicka (2015), make the case for the existence of a rivalrous utility function[2] according to which the university decision makers attempt to maximize the production of a non-public good. Examples of such a non-public good include prestige, building grandiose buildings, luxurious facilities, or gaining special access to university sports events, which do not contribute to the production of human capital or to the creation of knowledge that could be described as the university's raison d'être. If university decision makers, for example, value being credited for increasing the value of the assets of their institution rather than generating human capital (which takes time to develop and cannot be easily credited to the current university administrators), then they may decide to simply increase the size of the endowment.

It therefore comes as no surprise that asset size of the endowment is one of the criteria habitually used in evaluating endowment performance. The 2014 NACUBO-Commonfund Study of Endowments, for example, divides institutions studied by endowment size as early as on the first page. Further, anecdotal evidence supporting the importance of size is furnished by most investment consultants to university endowments, who routinely include peer comparisons based on size in their performance reports. The relatively new endowment management model of an outsourced chief investment officer attempts to capitalize on this tendency, boasting that it may offer economies of scale to smaller endowments and thus construct investment portfolios that emulate those of larger institutions.

[1] I refer to a utility function in the sense that an endowment decides the composition of its investment portfolio by maximizing its utility function. For example, an endowment may want to hold the portfolio with the highest Sharpe ratio, or minimize downside risk relative to payout plus inflation.

[2] The existence of a rivalrous utility function for an endowment means that those maximizing this rivalrous function will seek other things from the endowment in addition to the payout made to the university. For example, some trustees will also want to accumulate wealth in excess of what the endowment needs to generate for the university.

In addition to serving as a proxy for university prestige, endowment size as a characteristic to construct performance benchmarks is further promoted, albeit indirectly, by the literature reporting that larger endowments outperform. For example, Lerner, Schoar, and Wang (2008) report that larger endowments have better access to venture capital and other private investments, and therefore exhibit superior performance. Brown, Garlappi, and Tiu (2010) find that size and performance are positively related. Larger endowments, such as those of Yale or Harvard, promote diversified asset allocation models focused on alternative assets (such as that pioneered by Swensen (2009)), which smaller universities often seek to emulate. From this perspective, it is understandable that university endowments in turn seek to track or to outperform indices constructed using either large endowments, or containing endowments from an "aspiring size" category.

The dangers of such an investment approach are twofold. First, universities associated with similarly large endowments may be dissimilar in their goals. For example, a small liberal arts college with a large endowment is perceptibly different from a large public university, yet their endowments may be similar in size. Second, as Tuo (2016) argues, larger endowments owe their higher returns partly to taking more risk. Tracking a portfolio of large endowments may therefore give rise to an increase in financial risk, and in turn, arguably cause frictions when the university associated with the endowment is not prepared to accept those risk increases. For example, a university whose budget relies a great deal on payouts from the endowment may find itself lacking resources if excessive risk taking leads to sharp declines in endowment value.

Dimmock (2012) argues that background risk–that is, university-specific risk–plays a role in the investment process of endowments, and this research attempts to incorporate it in the endowment investment management process. Since the utility function of the university is difficult to estimate directly, in order to avoid endowments following ad hoc performance indices while focusing at the same time on the particularities of their institutions, in this study I propose the construction of performance benchmarks that are based on university characteristics. Because such indices are representative of endowments associated with universities sharing similar objectives, an endowment following these benchmarks is more likely to align itself with its university's goals.

However, in order for this approach to be viable, I need to make two assumptions. The first is that although endowment objectives may temporarily diverge from those of the university, in aggregate the former tends to be close to the latter. The second is that portfolio returns alone are sufficient to align the endowment's objectives to those of the university. It is fair to say that neither of these assumptions is trivial. For example, related to the first assumption, if the endowment management profession and the donors are in agreement that size of the endowment is more important than what the endowment contributes to the support of the university and the generation of human capital, then endowment and university goals may diverge in perpetuity, with the endowment preoccupied to grow rather than to propel the university ahead of its peers. As for a counterexample where the second assumption is violated, one can easily imagine some university characteristic that is difficult to infer from endowment returns alone. For example, a university may use resources from the endowment to increase its tuition discounts while another may use the funds to hire more chaired professors, and it would be difficult or even impossible to assess how the endowment payouts are spent (and implicitly what the university objectives are) by only observing endowment returns. Another observation is that my analysis is limited to financial assets and excludes quasi-endowments[3] because of data limitations.[4]

Accepting the assumptions outlined above, I proceed to sort universities based on characteristics other

[3] Quasi-endowments are endowment funds designated by an organization's controlling body, rather than the donor, and may be spent completely. We focus on endowments that much ensure intergenerational equity.

[4] Ehrenberg (2009) makes the point that universities own financial as well as non-financial assets.

than endowment size. Specifically, I consider (i) tuition discounts offered by the university (excluding federal or state funds); (ii) the endowment-per-student; (iii) the degree to which the university budget relies on endowment payouts; (iv) donations; and (v) total enrollment. I first explore whether endowments differ when their organic characteristics are different. In this vein, I find that endowments belonging to different organic terciles (that is, terciles constructed by sorting the endowments based on organic characteristics) have different performance and asset allocations. One particular organic benchmark, university budget contribution, produces the most statistically significant and consistent performance and asset allocation differences between these terciles.

I then explore whether tracking or outperforming organic benchmarks impacts endowment performance, risk taking, and university characteristics subsequently. The results of these tests are mixed: for example, outperforming the organic benchmark based on enrollment subsequently reduces donations, while merely tracking it has the opposite subsequent effect. Furthermore, however ambiguously organic benchmarks may be in predicting changes in university characteristics, size of the endowment, which has been used traditionally as comparison criterion, has similarly ambiguous effects.

I also study whether universities whose endowments compare favorably to a size-based benchmark but unfavorably to an organic benchmark experience subsequent declines in certain characteristics. I find that, for a large set of characteristics considered, this is indeed the case. Finally, I document that larger endowments which track organic benchmarks experience more growth.

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 explains the methodology I use and highlights the main results. Section 4 concludes.

2. Data and descriptive statistics

The primary source of information on endowment characteristics comes from the National Association of College and University Business Officers (NACUBO), an organization founded in 1962 to represent higher education institutions and affiliated foundations throughout the United States, Canada, and Puerto Rico. Since 1984, NACUBO has surveyed its members[5] on a variety of topics, from the performance and organization structure of their endowments to university-specific financial characteristics such as tuition discounts provided to students. Despite the fact that endowments self-report to these surveys, the database is free of survivorship biases (see Brown, Goetzmann, Ibbotson and Ross (1992)) as it includes endowments, which reported in the past but decided to no longer participate in the survey. Additionally, the data is not backfilled, as endowments reporting in one particular year are offered the choice to complete that year's survey but not to fill in the questionnaires for any of the years they did not participate. In order to minimize problems related to interpreting and merging data compiled by different administrators of the surveys, I use the study from the 2014 NACUBO-Commonfund Study of Endowments. Therefore, the data starts in 2002 and continues through 2014.

The data from the NACUBO surveys is complemented with data on university characteristics as reported in the Integrated Post-Secondary Education Data System (IPEDS), available from the National Center for Education Statistics (NCES). I merge the NACUBO and IPEDS datasets and construct a database containing information about a total of 898 universities, spanning the 2002–2014 period. While the IPEDS database focuses on universities, NACUBO surveys are centered on universities endowments, and the correspondence between the two is not always one-to-one. When a university is associated with multiple endowment pools,[6] I aggregate the different pools into a single portfolio,

[5] Throughout the years, NACUBO has partnered with a number of institutions providing services to the higher education industry in order to administer its surveys. Currently, the partner organization is TIAA. Former partner organizations are TIAA-CREF (1988 to 1999), Cambridge Associates (2000-2008), and the Commonfund (2009 to 2017). Prior to 1988, the NACUBO Investment Committee performed the analysis by itself.

[6] One example is that of the State University of New York at Buffalo, which until 2009 had one endowment managed locally in Buffalo and another managed centrally by the SUNY system in Albany. These pools merged into a foundation entirely managed in Buffalo in 2009.

which I then link to the respective university. When an endowment portfolio is linked to several universities,[7] I associate the flagship with the endowment. In this manner, one endowment pool corresponds to exactly one university in the final dataset.

Table 1

Panel A: Endowments

Year	AUM ($ bil.)	Enrollment (thousands)	Tuition disc.	N
2002	166.503		27.06%	526
2003	166.669		27.10%	570
2004	192.151		27.66%	597
2005	202.844		27.45%	606
2006	231.247		27.13%	636
2007	254.891		27.14%	644
2008	250.982		27.50%	750
2009	265.607	6,070	27.58%	766
2010	301.186	6,359	27.78%	749
2011	354.527	6,294	28.84%	759
2012	350.494	6,249	28.75%	764
2013	385.591	5,991	29.76%	766
2014	440.338	6,224	30.73%	806
All sample				898

Panel B: Main variables

	Mean	P25	Median	P75
Alternatives	15.42%	0.00%	11.30%	25.10%
Volatility	9.77%	8.95%	9.89%	20.75%
Return	6.82%	0.00%	10.10%	15.28%
Alpha	1.25%	-1.73%	1.54%	4.24%
Tuition disc.	24.14%	16.74%	27.79%	37.51%
AUM ($ mil.)	409.80	36.86	84.58	247.40
Enrollment	8,486	1,791	3,505	10,500
Payout	4.62%	4.00%	4.79%	5.10%
End Per Student ($ thousand)	86.05	8.27	24.08	65.45
Donations ($ mil.)	9.13	0.88	2.57	6.98
Budget contributions	9.55%	0.81%	3.60%	10.30%

[7] For example, the University of Texas Investment Management Company manages the endowments of all the University of Texas System campuses, not just those of the flagship, the University of Texas at Austin.

A summary of the data can be found in Panel A of Table 1. The count of survey participants increased from 526 endowments and foundations, managing around $166 billion in 2002, to 806 endowments controlling nearly half a trillion dollars in 2014. For all but two years, the total assets controlled by the endowments in the database increased, reflecting that positive investment returns over the 2002–2014 timespan, combined with donations, surpassed the payouts endowments made to their universities.

Most of the variables used in this study either come directly or are constructed from the NACUBO database. To begin, total endowments assets, one-year investment returns, payout rates, number of full-time equivalent students enrolled, and whether the university is public or private are taken directly from the NACUBO database. The summary statistics of these variables are reported in Panel B of Table 1. Exploring the summary statics presented in the panel, we confirm what other authors (for example, Acharya and Dimson (2007); or Brown, Garlappi and Tiu (2010)) have reported. For example, the average size of an endowment is around $409 million while the median is about $84 million, suggestive of the presence of a few large endowments in the NACUBO sample. The summary statistics on donations suggest that an average of around 2-3% of the endowment increase is due to new additions to the portfolio (e.g., median donations of $2.57 million is around 3% of the median endowment size of $84.58 million). This in turn indicates that most of the increase in the assets managed by endowments is due, at least in the sample period examined in this study, to investment returns. Such an intuition is confirmed by the statistics on investment returns; an average of almost 7% for the entire sample, coupled with average donations of around 2%, would suffice to cover the average endowment payout of around 5% while also preserving or increasing the purchasing power of endowments. To see this, consider that inflation between 2002 and 2014 was, as measured by the Consumer Price Index, 2.3% per annum. Adding donations (on average, 2.2%) and portfolio returns (on average, 6.8%) while subtracting payouts (on average, 4.6%) produces a net return of 4.4%. These rough estimations put the grand average of real endowment returns at 2.1%. While these numbers are simple panel averages, they nevertheless convey a certain degree of success of the endowment model.

By contrast, the increase in enrollment in the institutions reporting to NACUBO and presented in Panel A of Table 1 is relatively small, with the number of full time-equivalent students growing from 6 million in 2009 (when my data on enrollment starts) to 6.2 million in 2014. Similarly, the endowment tuition discount–calculated using IPEDS data as the ratio between institutional grants applied to tuition to total tuition revenue–increased only slightly, from around 27% in 2002 to almost 31% in 2014. If we assume that the endowments' role is to help universities expand their educational offer and to offer deeper discounts on the cost of higher education, the relatively successful real rate of increase in endowment size of 2.1% cannot be readily mapped to the modest increases in both student enrollment and tuition discounts offered by universities.

3. Organic benchmarks and size benchmarks

In order to compare whether endowments differ by asset allocation, risk taking, and performance characteristics when their universities have different characteristics, I first demean alternative asset allocations, volatility of the policy portfolio and Sharpe ratios[8] of the endowment every year, and sort universities into terciles based on the size of the endowment, as well as based on the five organic characteristics mentioned in the introduction.

[8] Alternative assets are all the asset classes that are not traded publicly. The policy portfolio is the explicit target asset class weights an endowment adopts as part of its investment policy. Sharpe ratios are the ratios of mean excess returns (in excess of the risk-free rate) and the volatility of returns.

For each such tercile, I calculate the mean of the (time demeaned) alternative allocations, returns, alphas, and Sharpe ratios, and report the high-minus-low differences in Table 2. To visually highlight these differences, those which are statistically significant are reported in bold font and those which are positive on a green background.

Table 2

	Alternatives	Ret	Alpha	SR
Size	**19.99%**	**1.37%**	**1.29%**	-0.02
Tuition discount	**6.08%**	**-0.25%**	0.17%	-0.13
Endowment per student	**17.91%**	0.06%	**1.05%**	-0.17
Budget contribution	**14.28%**	**0.32%**	**16.26%**	**0.07**
Donations	**-4.21%**	**-0.30%**	-0.23%	-0.03
Enrollment	**4.71%**	-0.07%	0.03%	0.24

Differences in mean alternative allocations, mean returns (Ret), alphas and Sharpe ratios (SR) between the high and the low terciles of size, tuition discount, endowment-per-student, budget contributions, donations and enrollment. Numbers in bold are statistically significant at better than 10% confidence levels.

From Table 2, it is apparent that for size as well as for all organic criteria except donations, endowments of the highest tercile have higher allocations to alternatives. Furthermore, for most of the criteria employed, endowments in the highest tercile also have higher returns and alphas (although the differences are not always statistically significant). However, the difference in Sharpe ratios is positive only for the case when budget contributions and enrollment are used to form terciles, and statistically significantly positive only for the former. For most criteria, Sharpe ratios of the endowments in the high tercile are smaller than those of the lower tercile, suggesting that larger endowments, endowments associated with universities offering higher tuition discounts, or with universities having larger endowments per students, as well as endowments raising more in donations, all take more risk when adjusted for investment performance. As coarse as this analysis is, it identifies that organic benchmarks are at least as good as size in terms of differentiating endowments, and it documents that when universities have different organic characteristics, their endowment performance relative to their peers with different organic benchmarks is in turn different.

In order to establish the usefulness of organic benchmarks as a tool to help future endowment performance or other university characteristics, for each endowment and organic or size-based benchmark I first measure (i) whether an endowment conforms to the benchmark[9] and (ii) whether an endowment outperforms that benchmark. I then measure the effect of endowments either conforming to benchmarks or outperforming them using regression analyses. The results of these regressions using year-to-year changes are reported in Table 3. Panel A of the table summarizes the effect of conforming to a benchmark in the current year on changes in the following year in allocation to alternatives, on changes in alpha, in endowment volatility, payouts, donations (expressed in U.S. dollars), tuition discounts, enrollment (in thousands of students), and in endowment per student (in thousands U.S. dollars). The positive effects of following a benchmark are highlighted in green,[10] while the statistically significant effects are reported in bold font.

[9] Conforming to a benchmark is defined as having small tracking error relative to that benchmark. For example, an endowment conforms to its size benchmark if that endowment's performance is the closest to that of the average (or value weighted) performance of the size tercile to which the endowment belongs.

[10] Note that a negative change in volatility is interpreted as a positive change for the endowment.

Table 3

Panel A: Conforming to benchmarks and changes in performance, asset allocation, and university characteristics. Alt represents allocation to alternatives, alpha is value added, End per student is endowment size divided by number of full-time equivalent students.

	Alt	Alpha	Volatility	Payout	Donations ($ mil.)	Tuition disc	Enrollment (,000)	End per student ($,000)
Size	-0.022	**0.205**	0.007	-0.644	-5.032	-0.004	0.051	**-38.669**
Tuition discount	0.005	**0.048**	-0.003	-0.146	-6.510	0.029	-1.858	**-84.329**
Endowment per student	-0.022	**0.063**	0.001	-0.116	0.000	-0.027	-0.374	-0.843
Budget contribution	1.379	**-6.497**	0.008	-0.316	**14.685**	-0.008	-0.740	**-117.35**
Donations	0.012	0.014	0.005	0.081	**0.000**	-0.008	3.832	**-55.607**
Enrollment	-0.059	-0.038	-0.000	-0.402	**23.681**	0.003	-1.332	**-42.780**

Panel B: Outperforming benchmarks and changes in performance, asset allocation, and university characteristics

	Alt	Alpha	Volatility	Payout	Donations ($ mil.)	Tuition disc	Enrollment (,000)	End per student ($,000)
Size	-0.003	**-0.158**	0.001	-0.396	2.658	0.010	2.555	27.672
Tuition discount	0.020	**-0.165**	0.003	-0.294	0.783	0.035	2.179	**-36.529**
Endowment per student	0.024	**-0.193**	0.002	0.593	0.000	0.002	2.779	-30.946
Budget contribution	-0.595	2.655	0.003	-0.356	4.331	0.004	2.799	-28.789
Donations	0.008	**-0.170**	-0.001	-0.211	0.000	0.009	3.366	**-35.552**
Enrollment	-0.018	**-0.181**	-0.000	0.485	**-23.759**	0.008	2.316	**-36.452**

From the Table 3, Panel A, it is apparent that although conforming to a size benchmark predicts an increase in enrollment, this change is statistically insignificant. When compared to the other criteria on which organic benchmarks are built, size appears to be the weakest predictor of positive outcomes: conforming with size is related to only one positive outcome, and even that relationship is insignificant. By contrast, three other organic benchmarks stand out relative to the one based on size: donations; tuition discounts; and enrollment.

In even more contrast to the size-based index, some of these organic benchmarks predict positive changes in characteristics that are statistically significant (namely predicting a significant effect for donations and alpha). I conclude that there is no special reason to conform to a size-based benchmark while ignoring organic benchmarks, and in several instances, conforming to organic benchmarks produced superior results for the university.

With respect to outperforming benchmarks, Panel B of Table 3 documents that the impact of outperforming a size-based benchmark is similar to that of outperforming benchmarks based on endowment-per-student, donations, or enrollment (outperforming any of these benchmarks predicts that four or five endowment characteristics will change positively). In this case, however, none of these positive predicted changes are statistically significant. Taken at face value, these results reinforce the intuition conveyed by Panel A of Table 3 that size as a criterion to compare endowment performance is not special; organic benchmarks fare just as well. Furthermore, the panels highlight differences between conforming to benchmarks and outperforming them. Outperforming may lead to excess risk taking and performance reversals, as it is the case for the benchmark based on enrollment; conforming to this benchmark predicts statistically significant positive changes in donations, while outperforming it predicts that donations will decline.

Since size does not appear to play any special role as a criterion on which performance evaluation should be based from the results in Table 3, I turn my attention to document the effects of endowment performance comparing favorably with a size benchmark while at the same time faring worse when evaluated against an organic benchmark. The results of these tests are summarized in Table 4. Similar to Table 3, I use bold fonts for statistically significant results and I highlight in crimson those instances in which comparing favorably to size-based benchmarks and unfavorably to organic benchmarks predicts negative changes in university or endowment characteristics.

Table 4

Panel A: Conforming to size, not conforming to an organic benchmark

	Alpha	Volatility	Payout	Donations ($ mil.)	Tuition disc	Enrollment (,000)	End per student ($,000)
Tuition discount	0.001	0.000	-0.020	-0.504	**-0.003**	-0.116	**-3.823**
Endowment-per-student	-0.004	-0.000	-0.053	0.000	**-0.007**	-0.143	**-4.669**
Budget contribution	-0.023	0.000	0.034	0.293	0.001	-0.242	**-5.320**
Donations	0.000	**0.001**	0.002	0.000	-0.000	0.456	-0.562
Enrollment	**0.005**	0.000	-0.067	**1.644**	**-0.004**	-0.437	-0.388

Panel B: Outperforming a size benchmark, underperforming an organic benchmark

	Alpha	Volatility	Payout	Donations ($ mil.)	Tuition disc	Enrollment (,000)	End per student ($,000)
Tuition discount	-0.004	-0.000	-0.071	0.139	-0.002	-0.025	-2.698
Endowment-per-student	-0.006	0.002	-0.074	-0.000	0.006	-0.038	-4.028
Budget contribution	**-0.546**	0.001	-0.031	-0.045	0.004	-0.067	-1.717
Donations	0.001	0.000	-0.090	0.000	0.002	-0.018	0.546
Enrollment	**-0.016**	-0.000	-0.002	0.093	0.007	-0.029	-4.018

From Panel A of Table 4, it is apparent that conforming to a size benchmark while not conforming to an organic benchmark predicts a decrease for a number of characteristics. For example, ignoring the organic benchmark while adhering to a benchmark based on size will negatively impact the endowment per student for *any* organic benchmark considered. Tuition discounts and endowment-per-student stand out as organic benchmarks which, once ignored, impact the largest number of university characteristics. Panel B of Table 4 highlights the same conclusion, outperforming size benchmarks while underperforming organic benchmarks based on tuition discounts, the endowment-per-student, or budget contributions predicts negative changes for a number of university and relative endowment performance characteristics.

Finally, it is easy to quantify the effect of comparing favorably to organic benchmarks by calculating the growth of $1 invested in a portfolio of endowments that outperform (or conform to) size or organic benchmarks versus the growth of same amount invested in those endowments which underperform (or do not conform to) the same organic benchmarks. Table 5 reports the differences in the growth of $1 invested in 2004 and ending in 2014 (as we have complete data for all variables starting only with 2005) in the endowments that are outperforming/conforming to organic benchmarks and those which do not.

Table 5

Outperforming minus underperforming endowments, $1 invested in 2004

	Value Weighted	Equally Weighted
Tuition discount	0.1013	0.0513
Endowment-per-person	0.0930	0.0583
Budget contribution	0.1050	**0.0769**
Donations	0.0433	0.0656
Enrollment	**0.1190**	0.0637
Size	0.0997	0.0171

Table 5 emphasizes those benchmarks for which the difference between the dollars allocated in 2004–2014 to endowments outperforming/conforming to benchmarks and to those which do not are the greatest. More precisely, benchmarks based on university budget contributions from the endowment (for value-weighted[11] investing) and on enrollment (for value-weighted investing) are the ones yielding the largest differences.

The results in Table 5 are corroborated by Figure 1, which presents the growth of $1 invested in outperforming/underperforming endowments (in Panel A) and similarly, the growth of $1 invested in endowments conforming to their benchmark versus $1 invested in those non-conforming. The organic benchmark used in Figure 1 is based on budget contributions, but the picture looks virtually similar for any other characteristic I use in benchmark construction.

From Figure 1, we observe that outperforming the organic benchmark helps growth when we equally weight or value weight the investments. However, conforming to the organic benchmark helps mostly larger endowments (the value-weighted conforming investment portfolio appreciates more than the non-conforming one, while for equal weighting the relationship is reversed).

[11] A value-weighted portfolio weights every asset with a weight equal to its market capitalization divided by the capitalization for the entire market. This is in contrast to an equal-weighted portfolio in which every asset has the same weight.

4. Conclusions

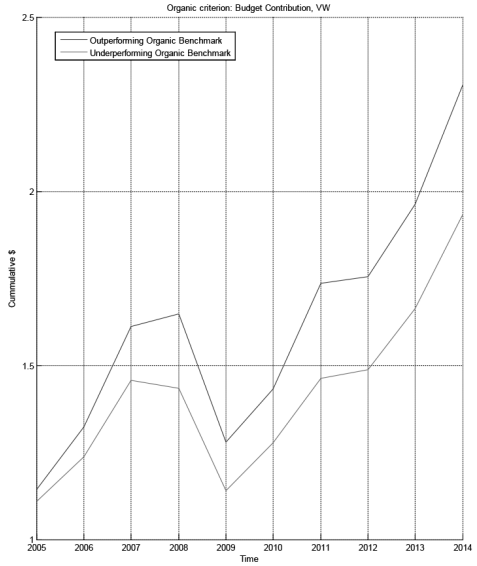
In this study, I have documented that organic benchmarks–that is, benchmarks based on characteristics of the university rather than of the asset size of an endowment–are important in predicting changes at the university as well as at the endowment level. I also showed that using size benchmarks rather than organic benchmarks could be detrimental to the endowment and to the university. The question remaining regards the practical use of these results.

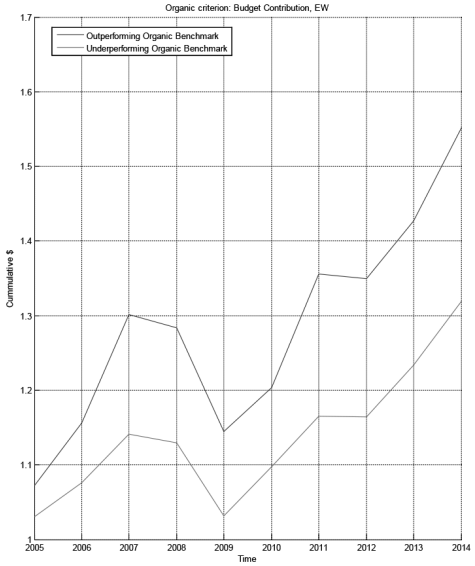
First, since various university characteristics are correlated, and the hypothetical utility function and objectives of the university are weighted differently, it is nearly impossible to produce a universal organic benchmark that would apply to any endowment. Instead, consideration should be given to those areas where the university seeks to improve the most, and organic benchmarks predicting improvements in those areas, as well as those predicting significant worsening of the same areas, should not be ignored. Second, an endowment should be mindful of the impact of using endowment size as a criterion to construct performance evaluation benchmarks. More precisely, an endowment may wish to contrast the benefits of using a size-based benchmark (as measured by the improvement in characteristics predicted by the size-based benchmark illustrated in Table 3) with the risks of ignoring a particular organic benchmark (these are the risks that characteristics decline as documented in Table 4). Third, and last, the applicability of organic benchmarks should be judged relative to more precisely defined universes of peers, as delineating only by terciles of university characteristics as I do in this study may not furnish the granularity needed to derive practical applications.

While this work is preliminary, it documents a link between the performance of university endowments and the evolution of university characteristics. While not perfect, the existence of this relationship is encouraging: endowments seem to be linked at least in some ways to their universities' goals. This link could be adopted and formalized by the methods used to evaluate endowment relative performance.

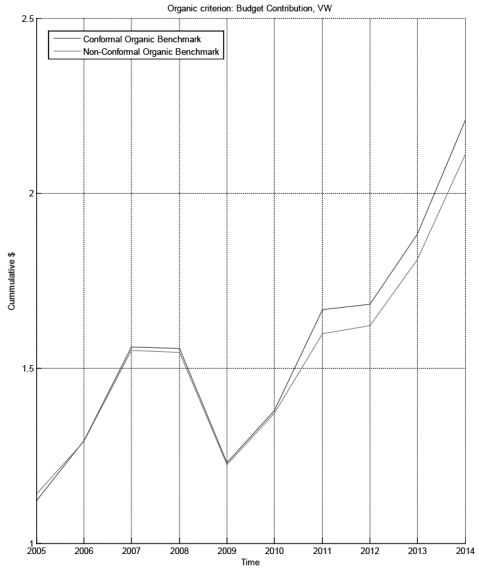
Figure 1. Growth of $1 and budget contributions

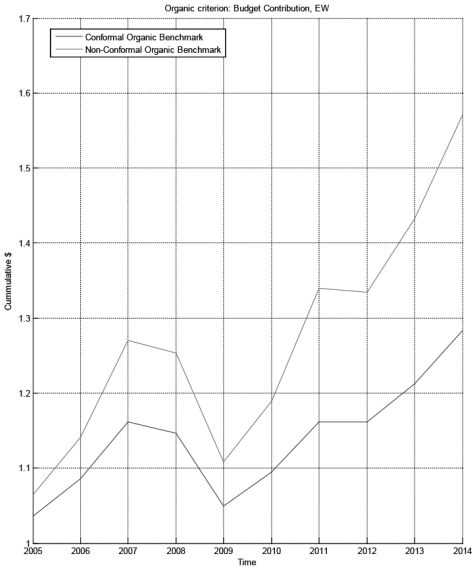
Panel A: Growth of $1 invested in endowments outperforming/underperforming the organic benchmark based on budget contributions





Panel B: Growth of $1 invested in endowments conforming/not conforming to the organic benchmark based on budget contributions





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About the author

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