Fees Eat Diversification's Lunch

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Abstract

Diversification is often spoken of as the only free lunch in investing, yet we show that it is not free and is properly considered only in light of its costs. More-exotic asset classes typically come with a higher price tag. We show that fees on diversifying asset classes are high relative to their risk-adjusted diversification benefit. Because there is meaningful cross-sectional variation, fees need to be part of asset mix decisions and strategic asset allocation.

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In an editorial in this journal, Charley Ellis (2012) reframed traditional thinking about investment management fees, saying they should be measured, not as a percent of assets under management, but rather as a percent of active management alpha. He contends these fees are "astonishingly high."

Earlier in this journal, Leibowitz and Bova (2005) showed that exposure to the U.S. equity market is the dominant risk driver for most asset classes and most portfolios. Their "allocation betas" capture the bulk of the risk in diversified institutional portfolios. After accounting for their allocation beta, an "allocation alpha" remains. This risk-adjusted allocation alpha reflects the true benefit beyond that achievable by simply changing the portfolio beta using core assets.

Ellis focuses on fees relative to active management alpha. Instead, we consider fees relative to different asset classes' allocation alpha. Coupling these findings from Ellis (2012) and Leibowitz and Bova (2005), we consider asset class fees relative to their diversification benefit. We contend that:

- most diversifying asset classes have risks characterized chiefly by their exposure to U.S. equity beta and relatively small truly-diversifying Leibowitz and Bova allocation alphas,

- most diversifying asset classes have higher investment management expenses than core asset classes, and

- these facts combine to dramatically reduce the true benefits of many asset classes.

We merge the insights of Ellis (2012) and Leibowitz and Bova (2005) to show that the fees on diversifying asset classes can be *astonishingly high* relative to their diversification benefit. Extending Ellis's notion of incremental fees, we contend the same for the fees associated with higher-cost diversifying asset classes—that is, investors should consider the cost of diversification against the incremental value-added from that diversification. We demonstrate the fee impact by focusing on fees relative to allocation alpha.

Figure 1 contrasts three perspectives on fees. Panel (a) is the traditional view, where investment management fees are considered relative to assets under management (AUM). Panel (b) highlights that fees are larger as a proportion of the expected return. Panel (c) shows our point of view—that fees are astonishingly high relative to their allocation alpha.

Investment fees, particularly those on alternative investments, are garnering heightened scrutiny. Government white papers in Australia, Hong Kong, and South Africa lament them. The state legislatures of New Jersey and North Carolina recently held hearings over fees. Bellwether pensions, like CalPERS in the U.S. and Railpen in the U.K., have retrenched their portfolios over alternatives'

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Figure 1: Three Relative Views of the Same Investment Management Fee

(a) Fees *versus* AUM   (b) Fees *versus* Return   (c) Fees *vs.* Allocation
Alpha
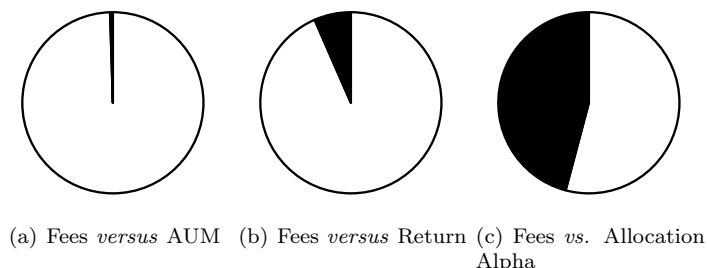
fees and oversight costs. Ellis (2012), Malkiel (2013), and Sharpe (2013) have recently highlighted different concerns over fees.

Diversification is often spoken of as the only free lunch in investing. We show that it is not free. We begin by reviewing the Leibowitz and Bova (2005) model. We then apply this model to a third-party set of capital market assumptions and high-quality investment fee data. We demonstrate that fees re-order the relative benefits of different diversifying asset classes. After addressing the robustness of our findings, we conclude by discussing the investment implications of our research.

Allocation Alpha and Beta

Leibowitz and Bova (2005) show that exposure to the U.S. equity market is the key driver of portfolio risk for most institutional portfolios.[1] They show that the widespread embrace of multi-asset diversification and the Endowment Model have not actually changed the overall risk profile of typical diversified investment pools.

Their main theme is that the U.S. equity market represents the key driver of portfolio risk. This happens because most asset classes include significant embedded exposure to the U.S. stock market. Leibowitz and Bova show this with their allocation beta, $\beta_j = \rho_{j,us} \times \sigma_j / \sigma_{us}$, where $\rho_{j,us}$ is the correlation of asset j with U.S. stocks, σ_j is the risk of asset j, and σ_{us} is the risk of U.S. stocks. This formula follows naturally from the CAPM.

As an example, Exhibit 1 shows international stocks have an allocation beta of 0.93 under plausible assumptions. International stocks have exposure to 93% of the systematic risk of U.S. stocks.

After accounting for beta, asset classes have an allocation alpha:

$$\tilde{\alpha}_j = \tilde{r}_j - \beta_j \left(\tilde{r}_{us} - r_f \right) - r_f$$

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[1] Peter Bernstein (2007), in *Capital Ideas Evolving*, highlighted the Leibowitz and Bova (2005) model as one of six key practitioner advances since his seminal *Capital Ideas* book. The Leibowitz and Bova (2005) model is also covered in Leibowitz (2005) and Leibowitz and Bova (2007).

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Exhibit 1
Allocation Alpha and Beta Illustrated

Asset class		Return	Risk	Correlation with				Allocation	
				a	b	c	d	Beta	Alpha
US bonds	a	3%	8%	1.0	0.3	0.3	0.2	0.13	0.68%
US stocks	b	8%	19%		1.0	0.8	0.6	1.00	0.00%
Int'l stocks	c	8%	22%			1.0	0.6	0.93	0.48%
Hedge funds	d	5%	9%				1.0	0.28	1.65%

Notes: Assumptions are authors' own and are chosen for ease of illustration; calculations use Leibowitz and Bova (2005) allocation alpha and beta methodology with a 1.5% risk free rate.

where $\tilde{r}_j$ is the return on asset j, $\tilde{r}_{us}$ is the return on U.S. stocks, and r_f is the risk-free rate. The allocation alpha is the expected residual return after accounting for market exposures. They are *alphas* in the sense that they are independent residual returns unrelated to overall market movements. They are *allocation* alphas in the sense that they do not depend on active management but are obtainable via strategic asset allocation. Unlike active management alphas, they are non-zero-sum. It is important to stress that *these allocation alphas are inherently risk adjusted*—because they are after-beta and are uncorrelated with beta. They, therefore, reflect *risk-adjusted diversification benefits*.

As an example, Exhibit 1 shows international stocks have an allocation alpha of 0.48%. This means international stocks earn approximately one-half percent more than the return explained by their comovement with U.S. stocks. So, international stocks are expected to earn 8.00% from three sources—1.50% from the risk-free rate, 6.02% from comovement with the U.S. equity market, and 0.48% from an independent allocation alpha.

Contrast international stocks with hedge funds in Exhibit 1. Hedge funds have lower risk and return, but their allocation beta is much lower, 0.28. And hedge fund allocation alpha is much higher, 1.65%. As expected, the lower allocation beta means hedge funds have a weaker link to the U.S. equity market. The higher allocation alpha means hedge funds generate an excess return beyond that explained by equities.

Most such analysis stops here and highlights the greater diversification benefit of hedge funds. We want to emphasize that investing in new asset classes can be costly. Based on survey data, a small institutional investor faces 0.14% in expenses for investing in international stocks passively or 0.50% if investing actively. Passive fees reduce the 0.48% allocation alpha diversification benefit almost one-third, while the active fees completely offset the allocation alpha. In contrast, a small institutional investor accessing hedge funds via a fund-of-funds vehicle faces fees averaging 1-and-10, or 1.50%. Thus, investment fees consume 91% of the structural benefit of hedge funds.[2] Despite the seemingly more-

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[2] 1.50%/1.65% = 91%. Capital market return assumptions like those in Exhibit 1 for hedge funds and private equity are typically net-of-fees, but gross of fund-of-fund fees. Thus, the appropriate comparison is the 1-and-10 fund-of-fund fee *versus* the allocation alpha. The 1.50% fee is calculated as 1% plus 10% of the 5% expected return; we assume no hurdle rate.

attractive hedge funds, fees block our small institutional investor from realizing these benefits. As Figure 2 shows, the after-fee ranking of the two diversifiers switches—indeed, passive international diversification offers more than twice the after-fee allocation alpha of hedge funds.

Figure 2: Fees Change Relative Attractiveness

(a) Allocation Alpha   (b) After-fee Allocation Alpha
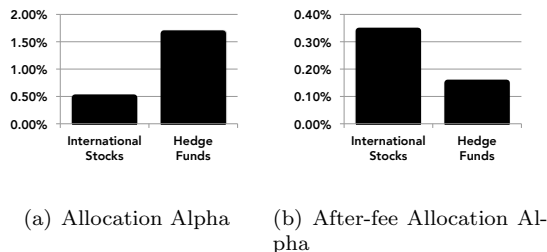
By combining the insight of Ellis (2012) with the technique of Leibowitz and Bova (2005), we quantify an insight touched upon earlier in the literature. Brown et al. (2004) and Ibbotson et al. (2011) emphasize the high costs of some alternatives. Kahn et al. (2006, p. 116) stress, "You should never pay alpha fees for beta performance." Likewise, we believe the Leibowitz-Bova framework places strong emphasis on paying diversification fees only for the diversification benefit portion of any investment; and further, it emphasizes looking closely at costs.

Expenses *versus* diversification benefits

Diversification is often spoken of as the only free lunch in investing. Here, we consider whether it is a wholesome meal or empty calories.[3]

Data. We have two key data sources. First, we use the J. P. Morgan (JPM, hereafter) *Long-term Capital Market Return Assumptions.* This is a representative publicly-available set of asset class risk, return, and correlation assumptions. It covers 45 asset classes and has been updated annually; see Shairp et al. (2012). Second, we have access to a biennial fee survey from Callan Associates, a major institutional investment consulting firm with over $2 trillion in advised client assets. This data includes the average and distribution (*i.e.*, several different percentiles) of both published *and actual negotiated* investment management fees for a variety of asset classes. Together, these two sources create an opportunity to evaluate real-world investment fees relative to diversification benefits.

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[3]Pedersen et al. (2014, p. 34) contend that artificial smoothing leads to "the misconception that alternative asset classes and strategies represent somewhat of a 'free lunch;'" likewise, Amin and Kat (2003, p. 119) note "adding hedge funds...does not yield a free lunch." We acknowledge straining the food metaphor, but note Leibowitz and Bova (2007) considers whether allocation alphas are "digestible" while Leibowitz (2005) contrasts carnivorous active management with herbivore "beta grazing."

Fee scenarios. We consider three investor-types—an average small endowment, an average state pension, and a high-quality (fee-advantaged) foundation—who vary by asset size and fee level.[4] The investors' dollar allocations and fee percentile matter enormously. For example, U.S. small capitalization equity managers charge 0.84%, 0.57%, and 0.51% of assets under management for our three investors.

Some might take exception to our use of "matter enormously," but we stress these are enormous variations relative to allocation alphas we observe in the JPM data. This range of fees is one-third of the allocation benefit of small capitalization stocks (the 0.84%−0.51% range of fees is over one-third of the calculated 0.85% allocation alpha); the thirty-three basis point range of fees might be enough to change decisions about the attractiveness of small capitalization stocks in a strategic allocation setting.

Fees eat allocation alpha. In Exhibit 2, we evaluate a subset of diversifying asset classes from the JPM *Long-term Capital Market Return Assumptions* to illustrate our approach. The 11 chosen are typical diversifiers considered by institutional investors and private wealth managers.

Fees declined across investor types as expected, with the large state pension generally getting better pricing than the small endowment and with the high-quality foundation generally besting both of the others. Contrary to expectations, however, the fee advantage of the foundation was not particularly focused on the highest allocation alpha asset classes.[5]

In Exhibit 2, we ask how big a slice of the pie do fees consume? We focus on *incremental fees* since the allocation alpha is an incremental return.[6] The

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[4]Our average small endowment has a $100 million portfolio and gets fiftieth (50th) percentile fees. Our average state plan has a $11 billion portfolio and also gets 50th percentile fees. Our high-quality foundation has a $2 billion portfolio and gets 90th percentile (low) fees. This reflects Malkiel's point (2013, p. 106) that "the most sophisticated institutions do not pay the average fees." Each investor type makes a 2% allocation to a particular active manager in the diversifying asset class.

In most instances, we exactly matched the fee percentile and mandate size to survey data points for *actual* (negotiated, not published) investment management fees. For hedge funds and private equity, we combined the survey carry-fee data with the JPM capital market assumptions; where fee data differentiated, we assumed the pension and foundation used separate accounts while the (smaller) endowment used fund of funds. Because the list of JPM asset classes was broader than the survey's, we consulted with the survey provider on the appropriate mapping for the missing asset classes and/or supplemented the primary data with two additional fee surveys from other providers. Note that mapping missing asset classes to another one included in the fee survey works against finding meaningful differences in after-tax allocation alphas because it induces a parallel shift in Figure 3; that is, our approach is conservative.

[5]Interestingly, using incremental fees results in the odd situation of the high-quality foundation, with particularly good fee levels, losing more of the allocation alpha to fees. This is because getting 90th percentile (good) fees is more valuable in (commodity-priced) core bonds and large capitalization U.S. stocks than in most diversifying asset classes; thus the *incremental* cost for the quality foundation is sometimes higher than for the state pension and small endowment getting median fees. This is not the result we anticipated when we generated our three fee scenarios.

[6]To calculate incremental fees for diversifying assets, we assumed the money was sourced from core bonds, large capitalization U.S. stocks, or some combination thereof. Bonds funded

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Exhibit 2
How Big a Slice of the Pie?
Fees Relative to Allocation Alpha

Asset class	Allocation Alpha	Small Endowment			State Pension			Quality Foundation		
		Fee	Increment		Fee	Increment		Fee	Increment	
US TIPS	0.52%	0.27%	0.03%		0.30%	0.15%		0.20%	0.16%	
US high yield	1.09%	0.50%	0.26%		0.49%	0.34%		0.46%	0.42%	
EM gov't bonds	0.36%	0.60%	0.36%		0.60%	0.45%		0.53%	0.49%	
US small cap	0.85%	0.84%	0.28%		0.57%	0.30%		0.51%	0.35%	
EM equity	2.91%	0.95%	0.39%		0.55%	0.28%		0.58%	0.42%	
Private equity	0.68%	1.00%	0.44%		1.16%	0.89%		0.72%	0.56%	
Real estate	2.65%	0.76%	0.45%		0.68%	0.50%		0.48%	0.41%	
REITs	0.97%	0.75%	0.22%		0.69%	0.43%		0.66%	0.51%	
Diversified HF	1.63%	1.63%	1.31%		1.51%	1.33%		0.97%	0.89%	
Event-driven HF	1.02%	1.67%	1.29%		1.55%	1.35%		0.99%	0.89%	
Macro HF	3.16%	1.70%	1.42%		1.58%	1.41%		1.00%	0.95%	

Notes: J. P. Morgan capital market assumptions, Leibowitz and Bova (2005) allocation alpha methodology, fee data (total fee) based on an institutional investment consultant's survey. The black sections in the pie charts shows the proportion of allocation alpha lost to *incremental* fees, which depends crucially on the fees of the funding assets.

shocking answer is that the incremental fees consume half the alpha in nearly 40 percent of the cases. Even our fortunate foundation investor, with top-quality fee negotiating ability and reasonable scale, finds that 5 of 11 diversifying asset classes have the majority of diversification return disappearing to fees.

Choosing half the allocation alpha as the breakpoint for unreasonableness is arbitrary. The assets belong to the investor, not the money manager. Why would the money manager be entitled to even one-third or one-quarter of the allocation alpha? The risk is borne by the investor, not the money manager. Whatever one's views on the investor-manager split of an active management alpha,[7] allocation alpha is different; we should not expect managers to be able to retain any positive portion of it in a competitive market, as it is not "earned" by active managers. Costly access to alternative asset classes is an economic inefficiency, albeit a seemingly persistent one.

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diversifying bonds, and stocks funded diversifying stocks; for less-obvious diversifying assets, we used Leibowitz and Bova (2005) allocation betas to determine the proportion funded from stocks. The incremental fee is thus the difference between the fee on the diversifying asset and the fee on the source of funds. (For example, the small endowment faces fees of 0.50 percent on high-yield bonds, which is higher than their 0.24 percent fees on core bonds. This incremental 0.26 percent fee consumes 24 percent of the 1.09 percent allocation alpha.) Results on the funding source are qualitatively robust to using beta for all assets and to the Jennings (2009) approach, which relies on mean-variance optimization to specify funding sources.

[7]See Berk (2005) on why investment managers should be able to keep all active-management alpha. Contrast this with Malkiel (2013, p. 108): "It is hard to think of any other service that is priced at such a high proportion of value," suggesting asset owners should keep more alpha.

The bottom line is that fees consume a meaningful proportion of the allocation alpha from most asset classes. The pie charts in Exhibit 2 show a lot of black—the portion eaten by fees. To be fair, the pie charts do portray some positive after-fee alpha—white in the charts—but we believe it smaller than what most institutional investors thought they were getting. Considering fees should induce thoughtful consideration and slow the headlong rush to diversify.

Funds of hedge funds. In Exhibit 2, we assume the investors are using funds of hedge funds. With the fiftieth percentile fund-of-fund fees we assume for the small endowment and state pension, almost all benefit from diversified hedge funds disappears. Only the high-quality foundation (with very low fees) keeps anything meaningful, but even then it is giving up a significant proportion of the allocation alpha.[8] The benefits of fund of funds—delegation, manager diversification, due diligence, and access—may come at *such a cost* as to offset the benefits of the underlying funds.

One obvious conclusion is to invest directly and avoid fund-of-fund fees. Recent research contends direct investment is cost effective above $200 million invested in hedge funds (Agarwal et al., 2013). Investing directly in either private equity or hedge funds is not always possible, in which case investors must negotiate well or seriously consider walking away.

Re-ranking desirability. Exhibit 2 focuses on only a handful (11) of common diversifying asset classes to illustrate the point. When we consider the full 45 asset classes in the JPM *Long-term Capital Market Return Assumptions*, we obtain similar results. Figure 3 shows the 45 asset classes, sorted in descending order of allocation alpha; the most attractive asset classes are on the left, and nine unattractive (negative allocation alpha) diversifiers are on the right. The figure also shows that a number of positive allocation alpha asset classes become negative and unattractive after considering incremental fees.

Also note that the fees vary widely and randomly as one evaluates asset classes left to right in descending order of allocation alpha. The pre-fee and post-fee sorted asset classes are very different. If fees did not matter, the after-fee plot would just be a smooth and shifted-lower version of the pre-fee plot. Instead, we see a jagged and variable line.[9] Accordingly, fee-agnostic consideration of asset classes is unwise. Fees re-rank desirability.

Diversification benefits become negative, tiny, or disproportionately absorbed by fees. Figure 4 shows that the 45 asset classes in the JPM *Long-term Capital Market Return Assumptions* are filtered down to 27 acceptable asset classes if an investor requires both a positive after-fee allocation alpha and a reasonable sharing of the pre-fee allocation alpha. Using a one-half alpha threshold as an acceptable fee limit, fully forty percent of the asset classes are eliminated from

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[8]Exhibit 2 includes event driven hedge funds and global macro hedge funds to show that quantities lost to fees vary by hedge fund type; nonetheless, the incremental fees for all types of hedge fund of funds are high.

[9]The difference is statistically significant. The Spearman rank correlation coefficient for the pre-fee and post-fee diversification benefit is .809; the 95% confidence interval (.654,.899) excludes the 1.000 correlation that would hold if fees were irrelevant.

Figure 3: Some Attractive Asset Classes Are More Affected by Investment Management Fees than Others
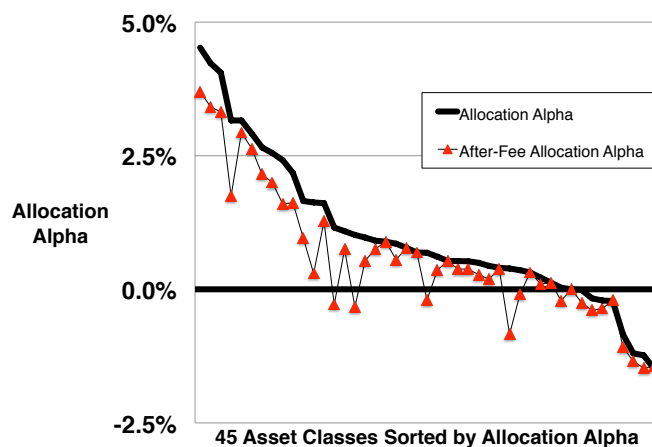
consideration as diversifiers—half of these due strictly to investment management fees.

Figure 4: Considering Fees Filters the Number of Acceptable Asset Classes

Portfolio example. Figure 5 shows three views of the same asset mix. The asset allocation in Panel (a) comes from an outsourced CIO provider of Endowment Model investment solutions. As such, it includes heavy use of alternative assets; core stock and bond allocations are only 21 percent of the portfolio. When we look at the asset-weighted allocation alpha sources in Panel (b), we see it does not correspond to the asset mix in Panel (a). Some asset classes disappear because of no alpha contribution (*e.g.*, U.S. equities) and others change size. Note the coloration assigned each asset class corresponds from panel to panel. We do not identify the asset classes because our point is more general—it is about the changing mix rather than the exact composition. However, when we incorporate our fee data in Panel (c), the mix changes even more significantly. Again, some asset classes disappear and others change size. These three

charts show that the relative importance of different diversifiers changes when investors account for fees.

Figure 5: Three Views of the Same Asset Mix

| (a) Asset Allocation | (b) Alpha Sources | (c) After-Fee Alpha |
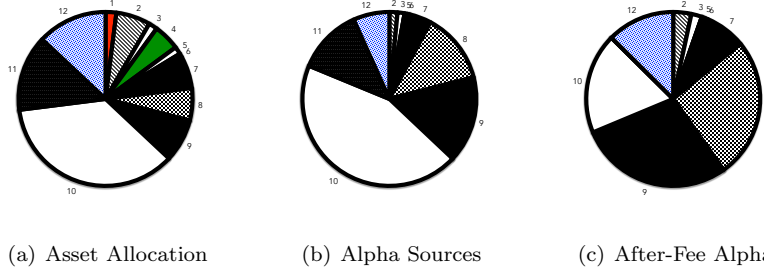
The coloration assigned each asset class does not change from panel to panel. We do not identify the asset classes because our point is about the changing mix rather than the exact composition.

Fees and the *risk* of diversification. The promise of diversification carries risk. Rational investors demand compensation for this risk. Investment management fees can affect this upside-*vs.*-fee analysis, as Ennis (2005) and Sharpe (2013) show. In the case of allocation alpha (our measure of diversification benefits), the risk can be large. Leibowitz and Bova (2005, eqn. A8) quantify this specific risk as $\sigma_j \sqrt{1 - \rho_{us,j}^2}$. The riskiness of a particular asset class's allocation alpha is typically ameliorated by higher correlation with U.S. stocks.

For example, consider diversified hedge funds, which Exhibit 2 shows to have a 1.63% allocation alpha (one of the largest diversification benefits). Per Leibowitz and Bova, this alpha has a risk, or tracking error, of 6.5%. Here, the information ratio is 0.25, one of the most attractive reward-to-risk ratios in the the JPM *Long-term Capital Market Return Assumptions*.

These alpha and risk values mean that hedge funds have a 60 percent chance of delivering allocation alpha in a given year. When we consider fees, however, this probability drops to 52 percent. This is a margin sufficiently close to a coin toss to make investors think twice about the proposed investment. The point is that investment management fees are a *certain deadweight loss* while the riskiness of the diversification benefit remains, even when the allocation alpha is large.

Robustness and limitations

Capital market assumptions. Because we used a third-party set of capital market assumptions, we hope to avoid the perception that we have set up a straw man to support our thesis. We benefited from having a single, consistent perspective on asset class prospects and risks, rather than gathering asset class assumptions from a number of sources. However, specific conclusions from Exhibit 2 and Figure 3 are dependent on those capital market assumptions.

The results are generalizable though. First, the J. P. Morgan capital market assumptions we used are representative of institutional investment consultants more broadly; they fall within the interquartile range of a survey of 23 consultants' capital market assumptions. Second, as a robustness check we evaluate other capital market assumptions from three other institutional investment consultants as well as the 23-consultant survey average. While specific asset class magnitudes and conclusions may vary, the overall results from these other inputs support our primary conclusions—first, that fees frequently offset diversification benefits and, second, that fees re-order the relative attractiveness of diversifying asset classes.

We stress, though, that investors should conduct their own evaluation. As a reviewer noted, "any responsible fiduciary should compare the proposed benefits (appropriately risk adjusted) of any investment to the fees they incur." Investors should decide if their own capital market expectations justify diversifying asset classes *after considering fees.*

Robust to multi-factor models.   While Leibowitz and Bova (2005) is strikingly elegant in explaining institutional investment risks, some will view single-factor alpha as simply unmeasured beta. So we also evaluate the allocation alphas remaining after multi-factor betas. In selecting a model, we balanced parsimony and inclusiveness and decided on the Fama and French (1993) five-factor model. We calculate betas for the market return, size premium, value premium, term premium, and credit spread for each asset class. These factors incorporate much of what Pedersen et al. (2014) and Carhart et al. (2014) find relevant in evaluating the risks of modern multi-asset portfolios incorporating alternatives. Importantly, we can extract the five factors from the capital market assumptions.[10]

Our conclusions are robust to the multi-factor specification. Multi-factor alphas matter insofar as they meaningfully change many one-factor alphas. Over 64% of alphas were i) smaller and ii) more than 10% changed under the multi-factor specification. However, fees continue to absorb much of the diversification benefit. As in Figure 3, allocation alphas can become negative, tiny, or disproportionally absorbed by fees. While Figure 4 shows the 45 asset classes are

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[10]The procedure to come up with multi-factor alphas is rather complex. Recall that we are examining diversification benefits relative to a particular set of capital market assumptions about future risk, return, and correlation. This is different than calculating a multi-factor alpha from historical data. If we augment someone's capital market expectations with historical data on other factors or borrow factor expectations from another firm, we lose the consistent perspective on asset class prospects and risks. The JPM capital market assumptions included large stocks, small stocks, value stocks, growth stocks, intermediate Treasuries, long Treasuries, and intermediate credit as asset classes. This allowed calculating risk, returns, and (tediously) correlations for equities, size, value, term, and credit factors. We exclude momentum, catastrophe bonds, and liquidity factors from Pedersen et al. (2014) and Carhart et al. (2014), for example, because there is no way to extract these factors from the JPM capital market assumptions. For all 45 asset classes, we use a common multi-factor model. When combined with risk and correlations from the new asset class, the five factors and regression math allow calculating a standardized multi-factor beta relative to the new asset class, which we convert to a normal, unstandardized multi-factor beta. From there, it is a simple matter to calculate multi-factor alphas.

winnowed to 27 potentially acceptable asset classes in the single-factor case, only 22 asset classes have a positive value and a reasonable fee sharing in the multi-factor case—fewer than half. Similarly, fees meaningfully re-order the relative benefits of different diversifying asset classes in the multi-factor setting. Thus, our results are robust to a multi-factor setting.

True of passive investing, too. Our fee data focuses on active management. Clearly, indexing is cheaper, and index fund fees would unambiguously consume less allocation alpha. But note that the "share of the pie" in Exhibit 2 and Figure 3 focuses on incremental fees, where an actively-managed investment is funded from an actively-managed source. Because we are using active-minus-active incremental fees, the increment remaining is the fee difference associated with the asset class; the two active portions net out. So, our point is not restricted to an active-only world. Ellis (2012) has already made the point about active management consuming a large share of the (hoped-for) alpha pie; our point is different in that the allocation alpha is separate from active management alpha.

Note further that specialized passive investments are also more expensive than core passive investments. *There are still incremental costs of diversification with indexed alternative investments.* We repeat our analysis with ETF expense ratios. Just as with active management, passive-management fees can absorb meaningful proportions of the allocation alpha. Incremental passive fees consume 44% of the allocation alpha on average. Passive fees shift 11% of positive-alpha asset classes into negative territory. Even with passive investments, incremental costs of diversification meaningfully offset the incremental benefits.[11]

Other caveats. Without loss of generality, we focus on external *investment management* fees, where we have high-quality survey data. However, Callan (2013) notes, "External investment management fees represent the lion's share of total fund expenses at 90%." The other parts of investment cost—staff oversight time, due diligence expenses, transaction costs, and complexity-induced "governance overhead"—are also likely higher for diversifying asset classes (see Brown, Gregoriou, and Pascalau, 2012). So, our narrow focus on management fees is conservative. If, as CalPERS seems to have recently discovered, all-in fees on alternative assets are higher, then fees eat even more of diversification's lunch.

We use our fee data in a way that presumes a small mandate with a particular manager in the diversifying asset class. For a small investor, a reasonable response to fees "eating" alpha is to consolidate funds and have larger accounts with fewer managers, thereby lowering fees. Since many managers use relationship pricing, consolidating several small diversifying accounts at one manager promises savings.

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[11]This passive-management robustness analysis necessarily eliminates 9 asset classes with no passive analog. We rely on ETFs because data on passive institutional fees is mostly missing from the fee survey data, perhaps underscoring the relevance of our focus on active fees.

Conclusion and investment implications

> There's no such thing as a free lunch.
>
> ———————————
> popularized by
> Milton Friedman

Diversification is the foundational principle of modern portfolio construction. We show the so-called "free lunch" of diversification is anything but free. Diversification is properly considered only in light of its costs. More-exotic asset classes come with higher investment management fees. In some cases, the extra fees overwhelm the diversification benefit—that is, fees can offset the return benefit of many seemingly-attractive diversifiers.

Fees matter. Like Ellis (2012), Malkiel claims, "Investors should consider fees charged...not as a percentage of total returns, but as a percentage of the risk-adjusted incremental returns above the market" (2013, p. 107). Sharpe (2013) demonstrates that seemingly small differences in fees compound to dramatic effect. We add to the discussion of the vital, but too-often ignored, topic of fees.

While inferences about asset classes depend crucially on the period- and provider-specific capital market assumptions used, our analysis suggests skeptical, fee-aware scrutiny of the following asset classes:

- hedge funds

- private equity

- global bonds

- narrow mandates in public equity

In contrast, our analysis finds a subset of real assets and of emerging market investments remain attractive even after accounting for their higher fees.

Many investment consultants prefer to separate asset allocation decisions from manager selection and investment vehicle discussions. Our analysis demonstrates that doing so is unwise. Fees are central to investment vehicle and manager evaluation. To paraphrase Ennis (2005), a good diversifying asset class cannot be good irrespective of cost. Too often, fees change the relative attractiveness of diversifying asset classes. *Fee levels need to be part of asset mix decisions and strategic asset allocation.*

Other key implications for investors include:

- Avoid fund-of-fund expenses. If that is not an option, negotiate well or walk away.

- For smaller investors, consider consolidating assets at fewer managers in order to receive fee discounts.

- Likewise, consider "diversified diversifiers" to package several diversifying asset classes into larger, fee-advantaged accounts (*e.g.*, multi-asset real return funds).

- If passive exposure to the diversifying asset class exists, consider indexing. The fee differential (along with the fee level) is often smaller with indexed alternatives.

- Even investors with exceptional fee arrangements (like our high-quality nonprofit) need to be mindful of our results. Advantageous fees can still consume the bulk of a particular asset class's diversification benefit.

More broadly, consider Maynard's (2013) simple investing in a complex world approach.

The situation for individual investors is perhaps worse. Fees are clearly higher in retail investment vehicles like mutual funds. Further, taxes will reduce allocation alphas (like Jeffrey and Arnott, 1993), which means fees consume an even bigger proportion of the after-tax return benefit of diversification. Fees make diversification a potentially greater challenge for individual investors.

Ellis (2010, p. 22) notes that changing a 60/40 stock/bond mix to a 70/30 one "may not be a major proposition" and would likely increase return more than seeking after active management alpha. We think this is a relevant insight in this paper's context. That is, the Leibowitz and Bova (2005) allocation beta may be more important in determining portfolio returns than the diversification allocation alpha—particularly after accounting for fees. *Investors might be wiser to increase their equity allocation than to seek additional returns from diversification to expensive alternative assets.*

We have demonstrated that costs matter in the so-called "free lunch" of diversification. By comparing the incremental benefit of diversification with the incremental cost, we show many seemingly attractive investments lose their luster as diversifiers. We also show that fees re-arrange the relative attractiveness of many diversifying asset classes. While it might seem obvious that diversifying asset classes have higher investment management fees, we think that readers will be surprised by the magnitude of the problem—of how much of the diversification benefit is absorbed by higher fees.

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