

PERSPECTIVES

Fees Eat Diversification's Lunch

William W. Jennings, CFA, and Brian C. Payne

Although diversification is often spoken of as the only free lunch in investing, the authors show that it is not free and that it must be considered in light of its costs. They also show that fees on diversifying asset classes are high relative to their risk-adjusted diversification benefit, with the more exotic asset classes carrying higher price tags. Because there is meaningful cross-sectional variation, fees need to be considered when making strategic asset allocation decisions.

There's no such thing as a free lunch.

—Milton Friedman

In an editorial in this journal, Charley Ellis (2012, p. 4) reframed traditional thinking about investment management fees, saying that they should be measured not as a percentage of assets under management but, rather, as a percentage of active management alpha. He contended that such fees are “astonishingly high.”

In an earlier issue of this journal, Leibowitz and Bova (2005) showed that exposure to the US equity market is the dominant risk driver for most asset classes and 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 (2012) focused on fees relative to active management alpha. In our study, we considered fees relative to the allocation alpha of various asset classes. Coupling the findings of Ellis (2012) and

Leibowitz and Bova (2005), we considered asset class fees relative to their diversification benefit. In this article, we contend that

- most diversifying asset classes have risks characterized chiefly by their exposure to US equity beta, with relatively small, truly diversifying Leibowitz–Bova allocation alphas;
- most diversifying asset classes have higher investment management expenses than do core asset classes; and
- these facts combine to dramatically reduce the true benefits of many asset classes.

Merging the insights of Ellis (2012) and Leibowitz and Bova (2005), we 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 such diversification against the incremental value it adds. In this article, we demonstrate the impact of fees by focusing on their allocation alpha.

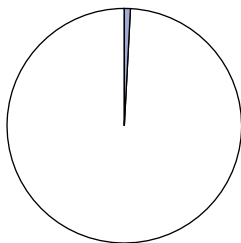
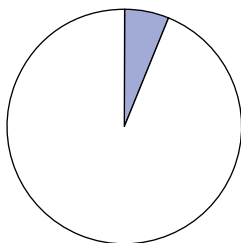
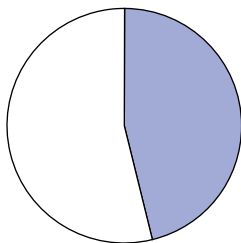
Figure 1 contrasts three perspectives on fees. Panel A depicts the traditional view, in which investment management fees are considered relative to assets under management (AUM). Panel B highlights that fees are larger when considered as a proportion of the expected return. Panel C shows our view—that fees are astonishingly high relative to their allocation alpha.

Investment fees, particularly those on alternative investments, are attracting heightened scrutiny. Government white papers in Australia, Hong Kong, and South Africa lament them. The legislatures of New Jersey and North Carolina recently held hearings about investment fees. Bellwether pensions, like CalPERS in California and Railpen in the United

William W. Jennings, CFA, is professor of finance and investments and Brian C. Payne is associate professor of management at the US Air Force Academy, Colorado Springs, Colorado.

Editor's note: This article was reviewed and accepted by Executive Editor Robert Litterman.

Authors' note: The opinions expressed in this article are those of the authors and do not necessarily reflect the opinions of the US Air Force Academy, the US Air Force, or any other federal agency.

Figure 1. Three Relative Views of the Same Investment Management Fee**A. Fees vs. AUM****B. Fees vs. Return****C. Fees vs. Allocation Alpha**

Kingdom, have retrenched their portfolios over concerns about alternative investments' fees and oversight costs. Ellis (2012), Malkiel (2013), and Sharpe (2013) have highlighted various concerns about fees.

Although 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, which we apply to a third-party

set of capital market assumptions and high-quality investment fee data. We then demonstrate that fees reorder the relative benefits of various diversifying asset classes. After addressing the robustness of our findings, we discuss the investment implications of our research.

Allocation Alpha and Beta

Leibowitz and Bova (2005) showed that exposure to the US equity market is the key driver of portfolio risk for most institutional portfolios.¹ They also showed that the endowment model of investing and the widespread embrace of multiasset diversification have not changed the overall risk profile of typical diversified investment pools. Their main theme is that the US equity market represents the key driver of portfolio risk because most asset classes include significant embedded exposure to the US stock market. Leibowitz and Bova demonstrated this relationship with their allocation beta:

$$\beta_j = \rho_{j,us} \left(\frac{\sigma_j}{\sigma_{us}} \right),$$

where

$\rho_{j,us}$ = the correlation of asset j with US stocks

σ_j = the risk of asset j

σ_{us} = the risk of US stocks

This formula follows naturally from the CAPM.

Table 1 shows, for example, that international stocks have an allocation beta of 0.93 under plausible assumptions; that is, international stocks have exposure to 93% of the systematic risk of US stocks.

After accounting for beta, asset classes have a Leibowitz and Bova (2005) allocation alpha:

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

where

\tilde{r}_j = the return on asset j

\tilde{r}_{us} = the return on US stocks

r_f = the risk-free rate

Table 1. Allocation Alpha and Beta Illustrated

Asset Class	Return	Risk	Correlation				Allocation	
			US Bonds	US Stocks	Int. Stocks	Hedge Funds	Beta	Alpha
US bonds	3%	8%	1.0	0.3	0.3	0.2	0.13	0.68%
US stocks	8	19		1.0	0.8	0.6	1.00	0.00
Int. stocks	8	22			1.0	0.6	0.93	0.48
Hedge funds	5	9				1.0	0.28	1.65

Notes: We chose our assumptions for ease of illustration. In our calculations, we used the Leibowitz and Bova (2005) allocation alpha and beta methodology, with a 1.5% risk-free rate.

The allocation alpha is the expected residual return after accounting for market exposures. Allocation alphas 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 remain after accounting for beta and are uncorrelated with beta. Therefore, they reflect *risk-adjusted diversification benefits*.

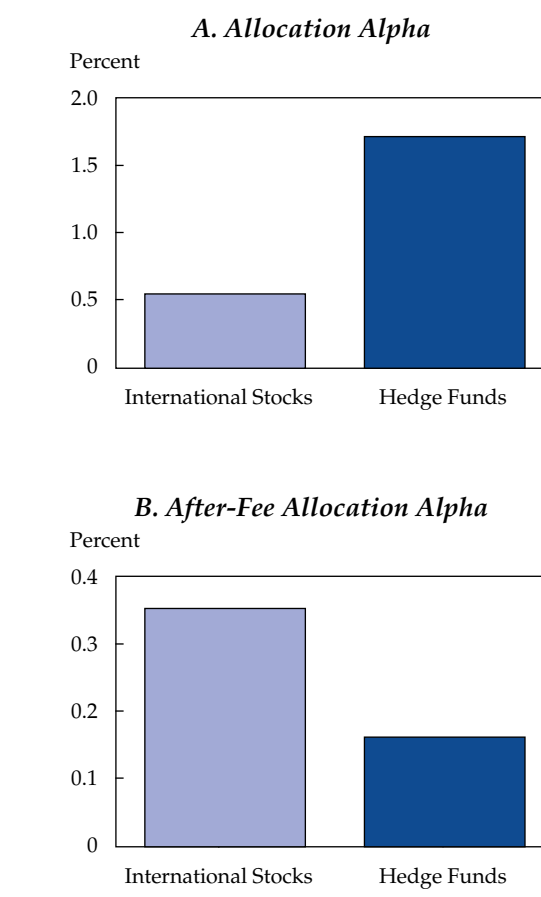
Table 1 shows that international stocks have an allocation alpha of 0.48%, which means that international stocks earn more than the return explained by their co-movement with US stocks. So, international stocks are expected to earn 8.00% from three sources: 1.50% from the risk-free rate, 6.02% from co-movement with the US equity market, and 0.48% from an independent allocation alpha.

Now, let us contrast international stocks with hedge funds in Table 1. Hedge funds have lower risk and return, but their allocation beta is much lower (0.28) and their allocation alpha is much higher (1.65%). As expected, the lower allocation beta means that hedge funds have a weaker link to the US equity market, and the higher allocation alpha means that hedge funds generate an excess return beyond that explained by equities.

Although most such analyses stop here and highlight the greater diversification benefit of hedge funds, we emphasize that investing in new asset classes can be costly. According to survey data, a small institutional investor faces 0.14% in expenses for investing in international stocks passively or 0.50% for investing actively. Passive fees reduce the 0.48% allocation alpha diversification benefit by almost one-third, whereas 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% of assets under management plus 10% of any gains, or 1.50% total. Thus, investment fees consume 91% of the structural benefit of hedge funds.² Despite the seemingly more attractive hedge funds, fees block our small institutional investor from realizing these benefits. As **Figure 2** shows, the after-fee rankings of the two diversifiers switch—indeed, passive international diversification offers more than twice the after-fee allocation alpha of hedge funds.

By combining the insight of Ellis (2012) with the technique of Leibowitz and Bova (2005), we can quantify an insight touched upon in the literature. Brown, Goetzmann, and Liang (2004) and Ibbotson, Chen, and Zhu (2011) emphasized the high costs of some alternative investments. Kahn, Scanlan, and

Figure 2. Effect of Fees on Relative Attractiveness



Siegel (2006, p. 116) stressed that “you should never pay alpha fees for beta performance.” Likewise, we believe that the Leibowitz–Bova framework places a strong emphasis on paying diversification fees only for the diversification benefit portion of an investment—and also emphasizes the importance of looking closely at costs.

Expenses vs. Diversification Benefits

Let us now consider whether diversification, often deemed the only free lunch in investing, is a wholesome meal or empty calories.³

Data. In our study, we used two key data sources: (1) J.P. Morgan’s (JPM’s) “Long-Term Capital Market Return Assumptions: 2013 Estimates and the Thinking behind the Numbers,” a representative publicly available report of asset class risk, return, and correlation assumptions covering 45 asset classes that is updated annually (see Shairp, Werley, and Feser 2012); and (2) a biennial fee survey from Callan Associates, a major institutional investment consulting firm with more than \$2 trillion in advised client assets, whose

data include 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 created an opportunity for us to evaluate real-world investment fees relative to diversification benefits.

Fee Scenarios. In our study, we considered three types of investor—an average small endowment, an average state pension, and a high-quality (fee-advantaged) foundation—that varied by asset size and fee level.⁴ The investors' dollar allocations and fee percentile matter enormously. For example, US small-cap equity managers charge 0.84%, 0.57%, and 0.51% of AUM for our three investors.

Some might take exception to our saying that investors' dollar allocations and fee percentile *matter enormously*, but we stress that these variations are enormous relative to the allocation alphas we observe in the JPM data. This range of fees is one-third of the allocation benefit of small-cap stocks (the 0.84%–0.51% range of fees is more than one-third of the calculated 0.85% allocation alpha); this 33 bp range of fees might be enough to change decisions about the attractiveness of small-cap stocks in determining a strategic allocation.

Fees Eat Allocation Alpha. Illustrating our approach, Table 2 reports and Figure 3 depicts our evaluation of a subset of diversifying asset classes from JPM's "Long-Term Capital Market Return Assumptions." The 11 chosen asset classes are typical diversifiers considered by both institutional investors and private wealth managers.

Fees varied as expected across investor types, with the large state pension generally getting better pricing than the small endowment and the

high-quality foundation generally besting the other two. Contrary to expectations, however, the foundation's fee advantage was not particularly focused on the asset classes with the highest allocation alpha.⁵

Focusing on *incremental* fees because the allocation alpha is an incremental return, Figure 3 shows how big a slice of the pie such fees consume.⁶ The shocking answer is that incremental fees consume half the alpha in nearly 40% of the cases. Even our fortunate foundation investor, with its top-quality fee-negotiating ability and reasonable scale, finds that fees consume the majority of the diversification return for 5 of the 11 diversifying asset classes.

Choosing half the allocation alpha as the breakpoint for unreasonableness is arbitrary. The assets belong to the investor, not to 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 by 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, because it is not "earned" by active managers. Costly access to alternative asset classes is an economic inefficiency, albeit a seemingly persistent one.

The bottom line is that fees consume a meaningful proportion of the allocation alpha of most asset classes, as Table 2 and Figure 3 show. To be fair, they also show some positive after-fee alphas, but we believe these after-fee alphas are smaller than what most institutional investors thought they were getting. Taking fees into account should induce thoughtful consideration and slow the headlong rush to diversify.

Table 2. Fees relative to the Allocation Alpha

Asset Class	Allocation	Small Endowment		State Pension		Quality Foundation	
	Alpha	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 govt. 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

EM = emerging market.

HF = hedge fund.

Notes: We used JPM capital market assumptions and Leibowitz and Bova (2005) allocation alpha methodology; the fee data (total fees) are based on a survey by Callan Associates, an institutional investment consultant. The proportion of allocation alpha lost to *incremental* fees depends crucially on the fees of the funding assets.

Figure 3. Fees' "Slice of the Pie" relative to the Allocation Alpha

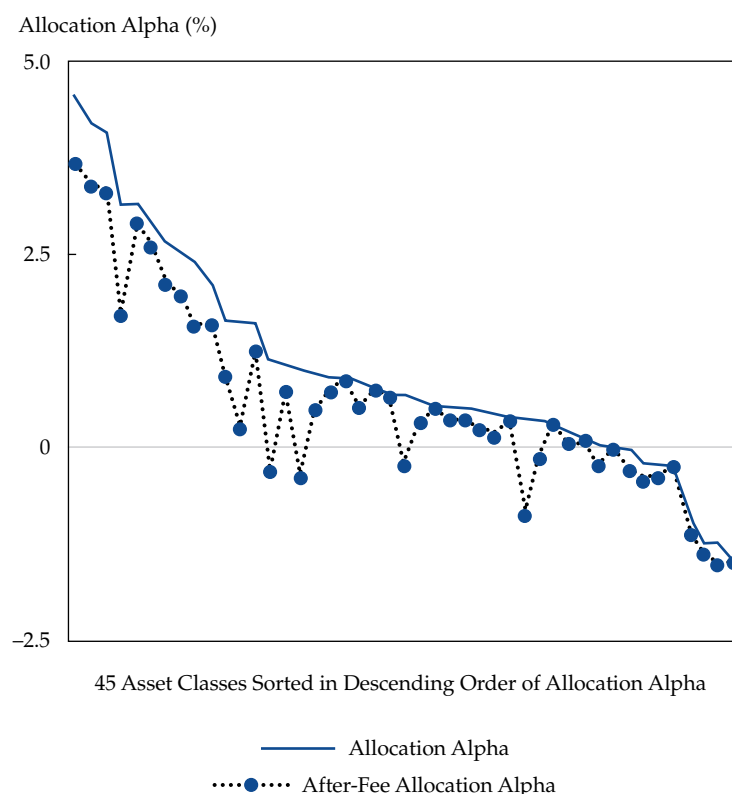
Asset Class	Small Endowment	State Pension	Quality Foundation
US TIPS			
US High Yield			
EM Govt. Bonds			
US Small Cap			
EM Equity			
Private Equity			
Real Estate			
REITs			
Diversified HF			
Event-Driven HF			
Macro HF			

Funds of Hedge Funds. In Table 2, we assume that the investors are using funds of hedge funds. With the 50th-percentile fund-of-funds fees that we assume for the small endowment and state pension, almost all the 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 a 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-funds fees. Recent research has argued that direct investment is cost-effective above \$200 million invested in hedge funds (Agarwal, Nanda, and Ray 2013). Investing directly in either private equity or hedge funds is not always possible, however, in which case investors must negotiate well or seriously consider walking away.

Re-Ranking Desirability. Table 2 focuses on only a handful (11) of common diversifying asset classes to illustrate the impact of fees on the allocation alpha. When we consider all 45 asset classes in JPM's "Long-Term Capital Market Return Assumptions," we obtain similar results. **Figure 4** shows the 45 asset classes sorted in descending order of allocation alpha; the most attractive asset classes are on the left, and 9 unattractive (negative allocation alpha) diversifiers are on the right. Figure 4 also shows that a number of positive allocation alpha asset classes

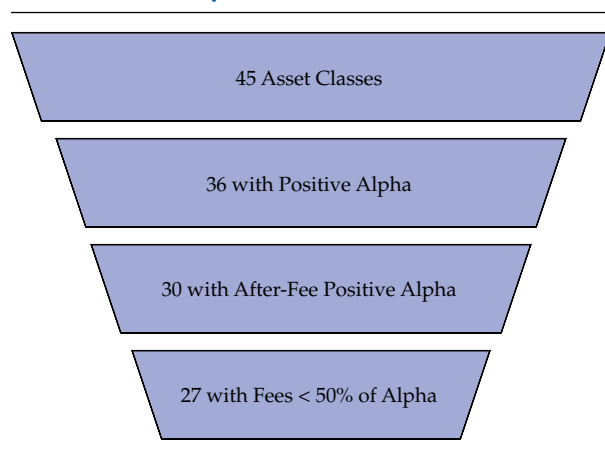
Figure 4. Differential Effect of Fees on Asset Classes

become negative and unattractive when considering incremental fees.

Note also that the fees vary widely and randomly as one evaluates asset classes from 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 simply be a smooth and shifted-lower version of the pre-fee plot. Instead, we see a jagged and variable line.⁹ Thus, fee-agnostic consideration of asset classes is unwise. Fees re-rank desirability.

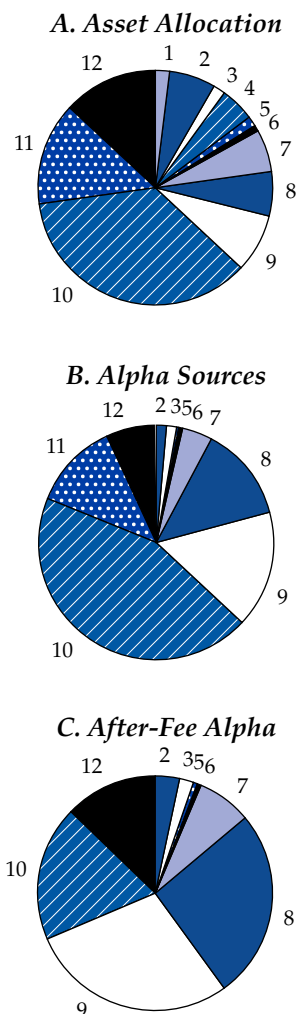
Diversification benefits become negative or tiny or disproportionately absorbed by fees. **Figure 5** shows that the 45 asset classes in JPM's "Long-Term Capital Market Return Assumptions" filter down to 27 acceptable asset classes if an investor requires both a positive after-fee allocation alpha and a reasonable sharing of the pre-fee allocation alpha. Using a one-half alpha threshold as an acceptable fee limit, fully 40% of the asset classes are eliminated from consideration as diversifiers—half of them due to investment management fees alone.

Figure 5. Effect of Fees on the Number of Acceptable Asset Classes



Portfolio Example. **Figure 6** 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 and includes heavy use of alternative assets; core stock and bond allocations are only 21% of the portfolio. We can see that the asset-weighted allocation alpha sources in Panel B do not correspond to those of the asset mix in Panel A. Some asset classes disappear because of no alpha contribution (e.g., US equities), and others change size. Note that the color assigned to each asset class remains the same from panel to panel. We do not identify the asset classes because our point is more general; it is about the changing mix rather

Figure 6. Three Views of the Same Asset Mix



than the exact composition. 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.

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-versus-fee analysis, as Ennis (2005) and Sharpe (2013) showed. In the case of allocation alpha (our measure of diversification benefits), the risk can be large. Leibowitz and Bova (2005, Equation A8) quantified this specific risk as $\sigma_j \sqrt{1 - \rho_{us,j}^2}$. A higher correlation with US stocks ameliorated the riskiness of a particular asset class's allocation. For example, consider diversified hedge funds, which Table 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%. The information ratio is 0.25, one of the most attractive reward-to-risk ratios in JPM's "Long-Term Capital Market Return Assumptions."

These alpha and risk values mean that hedge funds have a 60% chance of delivering allocation alpha in a given year. When we consider fees, however, this probability drops to 52%, 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 dead-weight loss*, whereas the riskiness of the diversification benefit remains, even when the allocation alpha is large.

Robustness and Limitations

We now address the robustness of our findings with respect to capital market assumptions, multifactor models, and passive investing and point out a few caveats.

Capital Market Assumptions. We used a third-party set of capital market assumptions to avoid the perception that we 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. Specific conclusions drawn from Table 2 and Figure 4, however, are dependent on those capital market assumptions.

Nevertheless, our results are generalizable. First, the J.P. Morgan capital market assumptions that we used are representative of institutional investment consultants more broadly; they fall within the interquartile range of the Horizon survey of 23 consultants' capital market assumptions. Second, to check for robustness, we evaluated other capital market assumptions from three other institutional investment consultants as well as the 23-consultant survey average. Although specific asset class magnitudes and conclusions may vary, the overall results from these other inputs support our primary conclusions: (1) Fees frequently offset diversification benefits, and (2) fees reorder the relative attractiveness of diversifying asset classes.

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

Multifactor Models. Although the explanation of institutional investment risks by Leibowitz and Bova (2005) is strikingly elegant, some will view

single-factor alpha as simply unmeasured beta. So, we also evaluated the allocation alphas remaining after accounting for multifactor betas. In selecting a model, we balanced parsimony and inclusiveness and decided on the Fama and French (1993) five-factor model. We calculated 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, Page, and He (2014) and Carhart, Cheah, De Santis, Farrell, and Litterman (2014) found relevant in evaluating the risks of modern multiasset portfolios incorporating alternatives. Importantly, these five factors can be extracted from the capital market assumptions.¹⁰

Our conclusions are robust to the multifactor specification. Multifactor alphas matter insofar as they meaningfully change many one-factor alphas. Under the multifactor specification, more than 64% of the alphas were smaller and more-than-10% changed. Fees, however, continued to absorb much of the diversification benefit. As in Figure 4, allocation alphas can be rendered negative or tiny or be disproportionately absorbed by fees. Although Figure 5 shows that the 45 asset classes are winnowed down to 27 potentially acceptable asset classes in the single-factor case, only 22 asset classes—fewer than half—have a positive value and a reasonable fee sharing in the multifactor case. Similarly, fees meaningfully reorder the relative benefits of different diversifying asset classes in the multifactor setting. Thus, our results are robust in a multifactor setting.

Passive Investing. Our fee data focus on active management. Clearly, indexing is cheaper, and index fund fees would unambiguously consume less allocation alpha. But note that the "slice of the pie" reported in Table 2 and depicted in Figures 3 and 4 focuses on incremental fees, whereby 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's consuming a large share of the (hoped-for) alpha pie; our point is different in that the allocation alpha is separate from the active management alpha.

Note further that specialized passive investments are more expensive than core passive investments. *There are still incremental costs of diversification with indexed alternative investments.* We repeated our analysis with exchange-traded fund expense ratios. Just as with active management, passive management fees can absorb meaningful proportions of the allocation alpha. Incremental passive fees consumed 44% of the allocation alpha, on average. Passive

fees shifted 11% of positive alpha asset classes into negative territory. Even with passive investments, therefore, the incremental costs of diversification meaningfully offset the incremental benefits.¹¹

Other Caveats. Without loss of generality, we focused on external *investment management* fees, an area in which we had high-quality survey data. As Callan Associates (2013, p. 1) noted in its survey, “External investment management fees represent the lion’s share of total fund expenses at 90%.” The other parts of investment costs—staff oversight time, due diligence expenses, transaction costs, and complexity-induced “governance overhead”—are also likely to be 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 used our fee data in a way that presumed 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. Because many managers use relationship pricing, consolidating several small diversifying accounts with one manager promises savings.

Conclusion

Diversification is the foundational principle of modern portfolio construction. We have shown that 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 (2013, p. 107) argued that “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.” Sharpe (2013) demonstrated that seemingly small differences in fees compound to dramatic effect. With our study, we have added to the discussion of the vital, but too often ignored, topic of fees.

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

- Hedge funds
- Private equity
- Global bonds
- Narrow mandates in public equity

In contrast, in our analysis, we found a subset of real assets and emerging-market investments that 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 the following:

- Avoid fund-of-funds expenses. If that is not an option, negotiate well or walk away.
- For smaller investors, consider consolidating assets with fewer managers in order to receive fee discounts.
- Likewise, consider “diversified diversifiers” that package several diversifying asset classes into larger, fee-advantaged accounts (e.g., multiasset 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 (such as our high-quality nonprofit) should 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) approach for conventional investing in a complex world.

The situation for individual investors is perhaps worse. Fees are clearly higher for retail investment vehicles. Further, taxes will reduce allocation alphas (see Jeffrey and Arnott 1993), which means that fees will 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) noted that changing a 60/40 stock/bond mix to a 70/30 mix “may not be a major proposition” and would likely increase return more than seeking active management alpha. We think this strategy is a relevant insight in the context of our study. 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 by diversifying with expensive alternative assets.*

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

We extend our sincere thanks to Nancy Anderson, Tom Brakke, Stephen J. Brown, David Chapman, Charley

Ellis, Paul Erendson, Qi Feng Lau, Jerrold I.W. Mitchell, Michael O’Leary, Brian O’Neal, Barbara S. Pettitt, Elizabeth Pfeuti, Ian Toner, Karl Weinmayer, Callan Associates, participants at the 2014 AFS and 2015 MFA conferences, and an anonymous reviewer.

Editor’s note: This article was reviewed via our double-blind peer review process. When the article was accepted for publication, the authors thanked the reviewers in their acknowledgments, and the reviewers were asked whether they agreed to be identified in the authors’ acknowledgments. Stephen J. Brown was one of the reviewers for this article.



CFA Institute 0.5 CE credit

Notes

1. In *Capital Ideas Evolving*, Peter Bernstein (2007) highlighted the Leibowitz and Bova (2005) model as one of six key practitioner advances since the 1991 publication of his seminal *Capital Ideas: The Improbable Origins of Modern Wall Street*. The Leibowitz and Bova (2005) model is also covered in Leibowitz (2005) and Leibowitz and Bova (2007).
2. $1.50\%/1.65\% = 91\%$. Capital market return assumptions, like those in Table 1 for hedge funds and private equity, are typically net of fees but gross of fund-of-funds fees. Thus, the appropriate comparison is the fund-of-funds 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.
3. Pedersen, Page, and He (2014, p. 34) contended 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) noted that “adding hedge funds... does not yield a free lunch.” Although we acknowledge straining the food metaphor, we note that Leibowitz and Bova (2007) considered whether allocation alphas are “digestible” and Leibowitz (2005) contrasted carnivorous active management with herbivorous “beta grazing.”
4. Our average small endowment had a \$100 million portfolio with 50th-percentile fees; our average state pension had an \$11 billion portfolio with 50th-percentile fees; our high-quality foundation had a \$2 billion portfolio with 90th-percentile (low) fees. This approach reflects Malkiel’s (2013, p. 106) point that “the most sophisticated institutions do not pay the average fees.” Each investor type made a 2% allocation to a particular active manager in the diversifying asset class. In most instances, we exactly matched the fee percentile and the mandated 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 that the pension and foundation used separate accounts and that the (smaller) endowment used funds 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 one included in the fee survey works against finding meaningful differences in after-tax allocation alphas because it induces a parallel shift in Figure 4; that is, our approach is conservative.
5. Interestingly, using incremental fees results in the odd situation of the high-quality foundation, with particularly low fee levels, losing more of its allocation alpha to fees. The reason is that getting 90th-percentile (low) fees is more valuable in (commodity-priced) core bonds and large-cap US stocks than in most diversifying asset classes; thus, the *incremental* cost for the quality foundation is sometimes higher than that for the state pension and the small endowment, which get median fees. This result is not the one we expected when we generated our three fee scenarios.
6. To calculate incremental fees for diversifying assets, we assumed that the money was sourced from core bonds, large-cap US stocks, or some combination thereof. Bonds funded 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 by 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 a fee of 0.50% on high-yield bonds, which is higher than its 0.24% fee on core bonds. This incremental 0.26% fee consumes 24% of the 1.09% allocation alpha. Our results for the funding source are qualitatively robust to using beta for all assets and to the Jennings (2010) approach, which relies on mean-variance optimization to specify funding sources.
7. For why investment managers should be able to keep the entire active management alpha, see Berk (2005). In contrast, Malkiel (2013, p. 108) noted that “it is hard to think of any other service that is priced at such a high proportion of value,” suggesting that asset owners should keep more of the alpha.
8. Table 2 includes event-driven hedge funds and global macro hedge funds to show that quantities lost to fees vary by type of hedge fund; nonetheless, the incremental fees for all types of hedge funds 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 0.809; the 95% confidence interval (0.654, 0.899) excludes the 1.000 correlation that would hold if fees were irrelevant.
10. The procedure for coming up with multifactor alphas is rather complex. Recall that we examined diversification benefits relative to a particular set of capital market assumptions about future risk, return, and correlation, which is different from calculating a multifactor 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

that we used include large stocks, small stocks, value stocks, growth stocks, intermediate Treasuries, long Treasuries, and intermediate credit as asset classes—which allowed us to calculate risk, returns, and (tediously) correlations for equity, size, value, term, and credit factors. We excluded momentum, catastrophe bonds, and liquidity factors (see Pedersen et al. 2014; Carhart et al. 2014) because there was no way to extract those factors from the JPM capital market assumptions. For all 45 asset classes, we used a common multifactor model. When combined with risk and correlations from the new asset class,

the five factors and regression math allowed us to calculate a standardized multifactor beta relative to the new asset class, which we converted to a normal, unstandardized multifactor beta. From there, it was a simple matter to calculate multifactor alphas.

11. Our robustness analysis of passive management fees necessarily omitted nine asset classes with no passive analog. We relied on exchange-traded funds because data on passive institutional fees are mostly missing from the fee survey data, perhaps underscoring the relevance of our focus on active fees.

References

- Agarwal, Vikas, Vikram Nanda, and Sugata Ray. 2013. "Institutional Investment and Intermediation in the Hedge Fund Industry." Working paper (June).
- Amin, Gaurav S., and Harry M. Kat. 2003. "Stocks, Bonds, and Hedge Funds: Not a Free Lunch." *Journal of Portfolio Management*, vol. 29, no. 4 (Summer): 113–120.
- Berk, Jonathan B. 2005. "Five Myths of Active Portfolio Management." *Journal of Portfolio Management*, vol. 31, no. 3 (Spring): 27–31.
- Bernstein, Peter L. 1991. *Capital Ideas: The Improbable Origins of Modern Wall Street*. Hoboken, NJ: John Wiley & Sons.
- . 2007. *Capital Ideas Evolving*. Hoboken, NJ: John Wiley & Sons.
- Brown, Stephen J., William Goetzmann, and B. Liang. 2004. "Fees on Fees in Funds of Funds." *Journal of Investment Management*, vol. 2, no. 4 (July/August): 39–56.
- Brown, Stephen J., Greg N. Gregoriou, and Razvan Pascualau. 2012. "Diversification in Funds of Hedge Funds: Is It Possible to Overdiversify?" *Review of Asset Pricing Studies*, vol. 2, no. 1 (June): 89–110.
- Callan Associates. 2013. "Cost of Doing Business Survey: Executive Summary."
- Carhart, Mark, Ui-Wing Cheah, Giorgio De Santis, Harry Farrell, and Robert Litterman. 2014. "Exotic Beta Revisited." *Financial Analysts Journal*, vol. 70, no. 5 (September/October): 24–52.
- Ellis, Charles D. 2010. *Winning the Loser's Game: Timeless Strategies for Successful Investing*, 5th ed. New York: McGraw-Hill Education.
- . 2012. "Investment Management Fees Are (Much) Higher Than You Think." *Financial Analysts Journal*, vol. 68, no. 3 (May/June): 4–6.
- Ennis, Richard M. 2005. "Are Active Management Fees Too High?" *Financial Analysts Journal*, vol. 61, no. 5 (September/October): 44–51.
- Fama, Eugene F., and Kenneth R. French. 1993. "Common Risk Factors in the Returns of Stocks and Bonds." *Journal of Financial Economics*, vol. 33, no. 1 (February): 3–56.
- Ibbotson, Roger G., Peng Chen, and Kevin X. Zhu. 2011. "The ABCs of Hedge Funds: Alphas, Betas, and Costs." *Financial Analysts Journal*, vol. 67, no. 1 (January/February): 15–25.
- Jeffrey, Robert H., and Robert D. Arnott. 1993. "Is Your Alpha Big Enough to Cover Its Taxes?" *Journal of Portfolio Management*, vol. 19, no. 3 (Spring): 15–25.
- Jennings, William W. 2010. "A Simple Stock-Bond Categorization of Alternative Investments." *Journal of Investing*, vol. 19, no. 4 (Spring): 31–49.
- Kahn, Ronald N., Matthew H. Scanlan, and Laurence B. Siegel. 2006. "Five Myths about Fees." *Journal of Portfolio Management*, vol. 32, no. 3 (Spring): 56–64.
- Leibowitz, Martin L. 2005. "Alpha Hunters and Beta Grazers." *Financial Analysts Journal*, vol. 61, no. 5 (September/October): 32–39.
- Leibowitz, Martin L., and Anthony Bova. 2005. "Allocation Betas." *Financial Analysts Journal*, vol. 61, no. 4 (July/August): 70–82.
- . 2007. "Gathering Implicit Alphas in a Beta World." *Journal of Portfolio Management*, vol. 33, no. 3 (Spring): 10–18.
- Malkiel, Burton G. 2013. "Asset Management Fees and the Growth of Finance." *Journal of Economic Perspectives*, vol. 27, no. 2 (Spring): 97–108.
- Maynard, Robert M. 2013. "Conventional Investing in a Complex World." *Journal of Investing*, vol. 22, no. 1 (Spring): 57–73.
- Pedersen, Niels, Sébastien Page, and Fei He. 2014. "Asset Allocation: Risk Models for Alternative Investments." *Financial Analysts Journal*, vol. 70, no. 3 (May/June): 34–45.
- Shairp, David, Anthony Werley, and Michael Feser. 2012. "Long-Term Capital Market Return Assumptions: 2013 Estimates and the Thinking behind the Numbers." Technical report, J.P. Morgan Asset Management (October).
- Sharpe, William F. 2013. "The Arithmetic of Investment Expenses." *Financial Analysts Journal*, vol. 69, no. 2 (March/April): 34–41.

Copyright of Financial Analysts Journal is the property of CFA Institute and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.