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Alpha found: Comparing active multi-asset managers with a passive model

The financial industry debate comparing performance of active and passive management should go beyond a focus on U.S. equity portfolios and also include multi-asset managers.

Our analysis of performance of funds in several multi-asset allocation categories over five-year rolling periods from 1986 through 2016 suggests that multi-asset managers have historically produced positive alpha.

The mean alpha was over 1% net of fees on an annualized basis, translating into "spendable alpha" for investors that can compound over time.

The debate over an active portfolio manager's ability to produce positive alpha often leaves people impassioned on both sides. Critics of active management point to recent history and argue that the average active manager has failed to outperform a stated benchmark net of fees. Proponents of active management acknowledge the recent challenges but emphasize that central bank policies, unique in history and in effect for nearly a decade since the 2008 financial crisis, may have blunted the ability of traditional active managers to produce alpha. When the policies are removed, managers should generate alpha again.

Much of this debate has focused on U.S. equity managers, which is understandable given the size and importance of the asset class. However, the fundamental question of the debate — whether active managers add value — should lead to attention on multi-asset managers, who, in theory, have more tools to add value not only through security selection, but through asset allocation decisions as well.

Alpha is alpha, and investors should be willing to pursue it from any asset class or strategy. If it is demonstrated that active multi-asset managers can generate alpha, the next question for financial advisors should be how to use multi-asset strategies in a portfolio.

Introduction

Evaluating active management

The value proposition for active management is that a manager can choose securities from a defined investment universe and build a portfolio that can outperform general market indexes plus the cost of management and trading. Testing this proposition requires defining the parameters of the performance comparison and methodology, which can take different forms and yield different results. One way to compare performance is to rank the portfolio's peer universe. A second way is to compare the actively managed portfolio with the manager's stated benchmark. But how does one judge a fund that is toward the top of its peer universe, but has lagged its stated benchmark, and vice versa? Additionally, looking at performance solely versus peers or the stated benchmark does not always allow for direct or transparent comparisons, as there could be other factors at play in driving a fund's return. For example, a portfolio may have less overall exposure to the market or have sector weightings that may contribute to the performance differences.

A third way to measure performance that helps to eliminate some of these questions is to apply a risk factor model, which reveals the key drivers of return over a specific period and provides a much more accurate accounting of the value added by the active manager. A risk factor method offers the best potential to illuminate the historical ability of multi-asset managers to produce positive alpha for investors over time.

Data and methodology

A model to represent multi-asset risk factors

Our study applies a return-generating (i.e., risk factor) model to a large sample of multi-asset funds for the 30-year period from 1986 through 2016, and uses monthly returns to estimate the model in Figure 1 below.

A four-factor return-generating model allows for control of specific risk factors that investors can gain exposure to relatively cheaply via passive investments. The three Fama-French factors represent characteristics of broad market exposure as well as market capitalization and style diversification. Since multi-asset funds can have varied exposure to fixed income, the model includes the Bloomberg Barclays U.S. Intermediate Government Bond Index.

FIGURE 1

Multi-asset risk factors model

$$ER_{jt} = a_{jt} + b_{jM}ER_{Mt} + b_{jSMB}R_{SMBt} + b_{jHML}R_{HMLt} + b_{jBOND}R_{BONDt} + e_{jt}$$

- ER_{jt} is the month t excess return to the jth fund

- ER_{Mt} is the Fama-French market excess return factor

- R_{SMBt} is the Fama-French small minus big factor (the company size factor)

- R_{HMLt} is the Fama-French high minus low factor (the value factor)

- R_{BONDt} is the return of intermediate government bonds (the bond market factor), represented as the Bloomberg Barclays U.S. Intermediate Government Bond Index (see the appendix for a full definition of factors)

Data source

The study uses multi-asset fund data from Morningstar's U.S. Category Group defined as "Allocation." This group was simplified by removing all target-date strategies as well as convertible funds. This resulted in seven remaining subcategories:

1. **Allocation — 15% to 30% Equity**

2. **Allocation — 30% to 50% Equity**

3. **Allocation — 50% to 70% Equity**

4. **Allocation — 70% to 85% Equity**

5. **Allocation — 85%+ Equity**

6. **Tactical Allocation**

7. **World Allocation**

Smaller and newer funds were also removed; the study focused on funds with net assets at the strategy level of at least $50M and with five years (60 months) of performance history. To minimize the impact of survivorship bias, funds that were defined as "no longer active" in the Morningstar database are part of the study.

These screening steps arrived at a total of 2,483 individual funds, when including multiple share classes, provided that they had at least 60 consecutive months of returns between 1986 and 2016.

Study parameters: Rolling-return periods over multiple market cycles

With the sample determined, the study considers monthly net-of-fee return data for every fund as well as for each of the four risk factors from the equation in Figure 1, for the period from January 1986 through December 2016. With the first 5-year/60-month period, which ended December 1990, represented as month t, the regression outlined in Figure 1 is calculated for each multi-asset fund. The parameters b_{jM}, b_{jSMB}, b_{jHML}, and b_{jBOND} in Figure 1

represent estimates of average sensitivity or exposure to each of the four factors. The intercept of the regression, a_{jt}, represents an estimate of the average incremental return a specific fund has added over five years. This incremental return represents the portfolio alpha (positive or negative) that an investor would have received separately from the returns generated by the four risk factors.

For every fund, a new alpha term is calculated for every month from December 1990, or from the end of the fund's first full five-year performance period through December 2016. Funds that closed or merged remained in the study, represented by only those five-year periods that they completed. Funds that existed at the beginning of our study, and continued in operation as of December 2016, would have a maximum of 312 alpha values (e.g., 12 months x 26 years). Starting in December 1990, and for every subsequent month through December 2016, an average alpha return across the funds with the necessary 60 months of return history is then calculated. With those results, we can then calculate an average of this new series allowing us to assess not only the average alpha of multi-asset funds, but also how it has changed over time.

Treatment of outliers

To eliminate outlier managers, the average regression r-squared from equation in Figure 1 is another filter. To accomplish this, we rank all funds by r-square and symmetrically trim the top and bottom 5%. The goal is to remove managers that are essentially "closet-indexers" or are not truly representative of the sample group. Screening out the tails leaves the trimmed sample of active multi-asset funds, which is the middle 90% of our initial sample. The funds in the trimmed sample have an average r-squared coefficient in the range of 66%–98%. (Note: In a subsequent step of this analysis, we will return to this 10% cohort to compare the average alpha with the larger trimmed sample.)

Distribution of full sample of multi-asset funds based on current Morningstar category

Morningstar category	Number of funds	Percentage of sample
Allocation — 15% to 30% Equity	158	6%
Allocation — 30% to 50% Equity	444	18%
Allocation — 50% to 70% Equity	864	35%
Allocation — 70% to 85% Equity	345	14%
Allocation — 85%+ Equity	143	6%
Tactical Allocation	147	6%
World Allocation	382	15%
Total	**2,483**	**100%**

Sources: Putnam Investments, Morningstar. See Appendix for Morningstar's definition of each category.

Historical in-sample results

Summary statistics

In addition to analyzing risk-adjusted returns (in that the analysis is examining returns after controlling for specific risk factors), we want to highlight identifying characteristics of our sample funds by showing the distribution of the sample across the seven current Morningstar subcategories (excluding funds that may have moved categories over time) [Figure 2]. Funds that were liquidated or merged are represented in the category that they occupied at the time of the liquidation/merger.

It should be no surprise that more than one third of the funds are in the Allocation — 50% to 70% Equity category because most investors have a risk tolerance that translates into holding a portfolio that has, on average, a 60% equity allocation. More broadly, two thirds of the sample fall into three categories: the 30% to 50%, 50% to 70%, and 70% to 85% Equity allocation categories. Many funds in these categories are default options in retirement plans and are formally called qualified default investment alternatives (QDIAs). A far smaller portion of the funds fall into extremely conservative (i.e., 15% to 30% Equity) or very aggressive (85%+ Equity) categories.

Additionally, Morningstar's enhanced return data for U.S. categories can produce a separate return stream to represent the category average performance. The enhanced return data makes adjustments for new funds, for fund liquidations and mergers, and for funds that may have changed categories. These adjustments help to correct for survivorship bias and provide a better approximation of the true historical performance of the category.

The 30% to 50%, 50% to 70%, and 70% to 85% Equity allocation categories again stand out in the overall sample in terms of age (in months) and asset size (in millions of dollars) [Figure 3]. The World Allocation category, though newer, also sports substantial average net assets. A closer examination of average fees across the seven categories shows that many are tightly dispersed between 80 and 87 bps in the stated expense ratio. It also confirms that investors are typically paying higher expenses for funds with higher equity allocations that are also often perceived to be more active (i.e., Tactical Allocation and World Allocation), and paying less for funds that have more fixed income exposure (i.e., Allocation — 15% to 30% Equity).

FIGURE 3

Expense ratios tend to be higher in funds with more equities or a tactical strategy

Description	Age (in months)	Expense ratio	Net assets ($M)
Allocation — 15% to 30% Equity	358	0.69%	617
Allocation — 30% to 50% Equity	822	0.82	1,959
Allocation — 50% to 70% Equity	1,051	0.87	2,775
Allocation — 70% to 85% Equity	972	0.85	1,988
Allocation — 85%+ Equity	772	0.80	1,157
Tactical Allocation	519	1.37	597
World Allocation	562	1.05	2,749

Sources: Putnam Investments, Morningstar. See Appendix for Morningstar's definition of each category and category average.

Regression results for category averages identify alpha

In addition to applying our return-generating model to test the full sample, we also test each category. A new alpha term is calculated for every month for the five-year rolling return windows from December 1990, or whenever a category had sufficient return history, through December 2016 [Figure 4]. This creates a time series of up to 312 highly overlapping regression parameters.

At first glance, these results confirm several widely held beliefs. First, the category averages have a sensitivity to the Market factor that is consistent with the stated equity allocation and, in most cases, falls comfortably into the stated equity range. For example, the Allocation — 50% to 70% Equity category has an average Market factor weight of 0.64. Next, it appears that most managers also maintain exposure to small-cap stocks and have a bias for value over growth, as demonstrated by positive average values for both the *SMB* and *HML* factors. It also appears that on average, the return generating model we use has a high degree of explanatory power across the seven category averages. This is supported by the high regression r-square values in Figure 4.

Most importantly, the average monthly net-of-fee alpha is positive for the majority, but not all, of the category averages. Four of the seven categories have rather large positive average monthly alpha values, while three (Allocation — 15% to 30% Equity, Tactical Allocation, and Allocation — 30% to 50% Equity) have small, insignificant, and even slight negative average monthly alpha. Despite the latter three categories, it is fair to say that the average monthly alpha for the overall multi-asset fund sample can translate into a mean annualized net-of-fee performance differential. The 11 bps of monthly alpha in the Allocation — 70% to 85% Equity category, for example, can translate into approximately 1.36% of annualized net-of-fee, spendable alpha.

FIGURE 4

Regression results for category averages

Description	Market	SMB	HML	BOND	Regression R2 (%)	Alpha average monthly
Allocation — 15% to 30% Equity	0.29	0.10	0.08	0.64	80	0.02
Allocation — 30% to 50% Equity	0.39	0.04	0.05	0.61	94	-0.02
Allocation — 50% to 70% Equity	0.64	0.00	0.04	0.36	98	0.06
Allocation — 70% to 85% Equity	0.76	0.05	0.01	0.24	97	0.11
Allocation — 85%+ Equity	0.91	0.11	0.06	-0.02	96	0.23
Tactical Allocation	0.64	0.00	0.09	0.42	93	0.01
World Allocation	0.60	0.02	0.06	0.34	84	0.13

Source: Putnam Investments. Numbers represent the average of all values of our time-series regression using the equation in Figure 1. Note: Each category has 312 observations, with the exception of the Allocation — 15% to 30% Equity category, which due to shorter history, has 296 observations.

Alpha over time for sample of multi-asset managers

The average alpha return for each of the 1990–2016 rolling periods is plotted as a time series along with dashed lines indicating the average alpha over the entire time series [Figure 5]. Both sample groups — the trimmed sample and the 10% tails sample — are shown.

These calculations produce several observations:

- The average monthly alpha is +9 bps, which translates into approximately 1.13% in annualized net-of-fee alpha.

- Results showing the median estimate yield similar results, and suggest that the average returns do not appear to be skewed by any large positive or negative outliers.

- Comparatively, the combined 10 percent tails of the sample had consistently more volatile results, with an average monthly alpha of -1 bps (-8 bps of annualized alpha).

In addition to considering month-to-month and long-term average alpha, it is also relevant to the active management debate to know how often alpha has been positive as a percentage of all periods. For the denomina-tor, the sample had 2,483 funds and 312 monthly observations (12 months x 26 years); taking into account funds with history that does not span the entire sample period, the result was 337,487 individual monthly alpha observations. For the numerator, there were 194,767 alpha scores greater than zero. In total, multi-asset funds have produced positive alpha in approximately 58% of the five-year periods covered in this study.
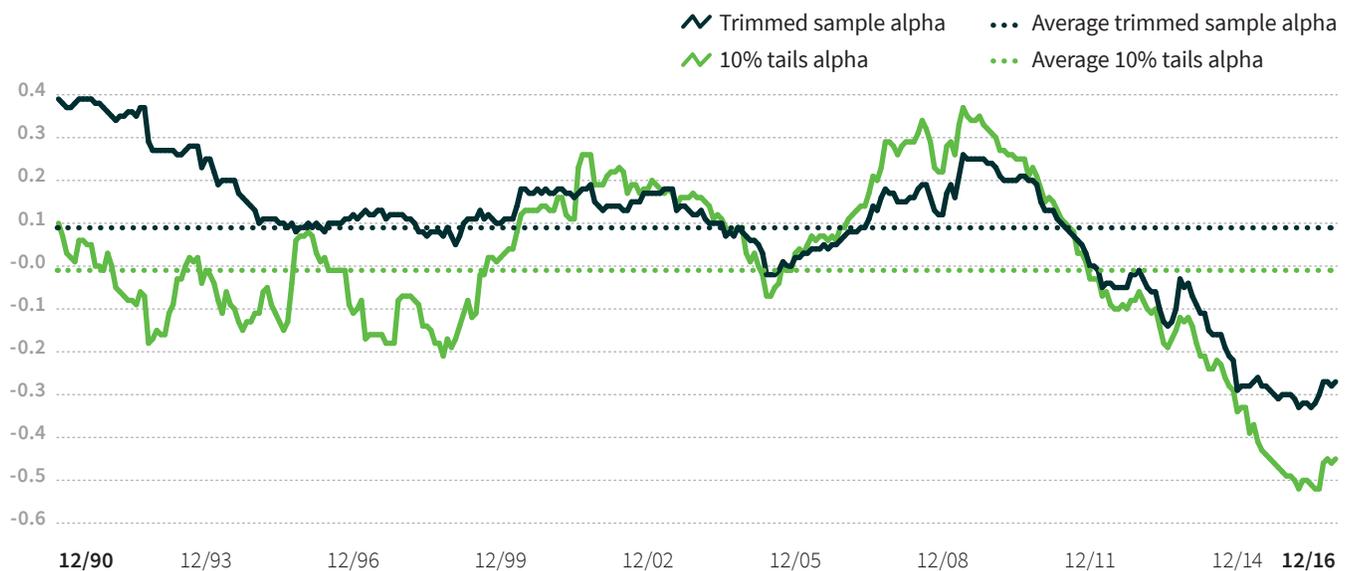
FIGURE 5

Total monthly observations and observations with positive 60-month alpha

|	Trimmed sample	Sample including 10% tail groups
Total number of observations	310,664	24,648
Number of observations > 0	181,622	11,735
Percent of observations > 0	58%	48%

Source: Putnam Investments.

FIGURE 6

Rolling 60-month alpha (vs. Fama-French 3 factor plus bond model)

Source: Putnam Investments.

FIGURE 7

Multi-asset managers' success generating alpha declined as asset correlations increased after 2008
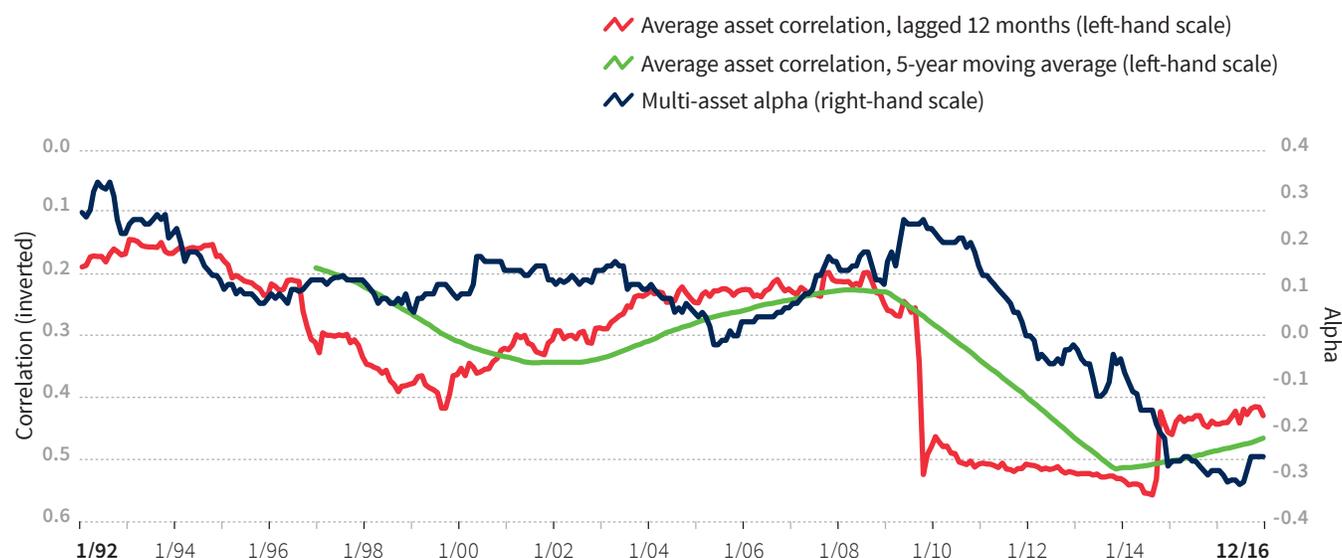
Source: Putnam Investments.

This track record of generating positive alpha began to deteriorate in 2009. The rolling average 60-month alpha fell into negative territory in 2012 and continued to decline until very recently. The onset of this downturn in risk-adjusted performance coincided with the market bottom in 2009 and has persisted through the years of extraordinary monetary policies that have challenged active managers, as described in the introduction. It is worth noting that, during this time period, a well-documented shift in the correlation structure across asset classes occurred, which raised cross-asset correlations and made it more difficult for active managers to add performance through well-timed allocation shifts [Figure 7].

Plotting the rolling 5-year average pairwise correlation across six asset classes (inverted) helps to illustrate this relationship: (1) U.S. investment-grade bonds (Bloomberg Barclays U.S. Aggregate Bond Index), (2) international equities (MSCI EAFE Index), (3) high yield (Bloomberg Barclays High Yield Index), (4) U.S. large-cap stocks (Russell 1000 Index), (5) U.S. small-cap stocks (Russell 2000 Index), and (6) commodities (GSCI) versus the

average multi-asset fund alpha from our sample. The 12-month lag illustrates that it takes some time for the change in correlation structure to flow through to the alpha-generating ability of the multi-asset managers.

Visually, these two series have a correlation of -0.54 to one another, with the average multi-asset fund alpha having a -0.63 beta (-11.2 T-stat) to the average 6-asset-class pairwise correlation. Furthermore, plotting a 60-month moving average of the correlation variable shows that it tracks the alpha variable even more closely. These two series have a correlation of -0.74 with one another, and the alpha term has a beta of -1.08 (-17.6 T-Stat) to the correlation moving average variable.

This illustration sheds light on a few issues. First, it confirms a relationship between the average cross-asset correlation and the alpha that multi-asset managers have produced. Second, there appears to be evidence that correlations have rolled over from their peak, and this has coincided with the average multi-asset fund alpha bouncing off its lows.

The positive monetary impact for investors

The major question for all investors, whether individuals or institutions, is the impact of active management on performance in dollar terms. The enhanced return data for each of the seven category averages can be used to calculate the results of a hypothetical investment in each category over the sample period, which can then be compared with a style benchmark using the same return-generating model from the equation in Figure 1. While there are multiple ways to calculate a style benchmark, in this case, the style benchmark return in each month is calculated as the sum of the return of each factor (i.e., Market, *SMB*, *HML*, and *BOND*) multiplied by the average weight for the category. This style benchmark effectively represents an attempt to mimic the returns of a specific fund using the risk factors from the equation in Figure 1. In theory, it can serve as the portfolio an investor may hold if he/she were attempting to replicate the returns of the referenced category average.

Given that the biggest category by number of funds (35% of the sample fund universe) is the Allocation — 50% to 70% Equity category, we chose it as the proxy for the average multi-asset fund category return for comparison with the style benchmark. As shown earlier [Figure 4] the Allocation — 50% to 70% Equity category had an average monthly net-of-fee alpha of 6 bps. Clearly, over long periods of time, even an incremental increase in return can produce a meaningful impact. A $10,000 investment starting at the beginning of 1986 in the average fund would have grown to just over $96,000, while the same investment in the style benchmark would have grown to just under $79,000, a $17,000 difference. That $17,000 difference is true net-of-fee "spendable alpha" for the investor, thanks to the impact of compounding returns.

FIGURE 8

Hypothetical dollars invested in most popular allocation category outperform thanks to long-term alpha
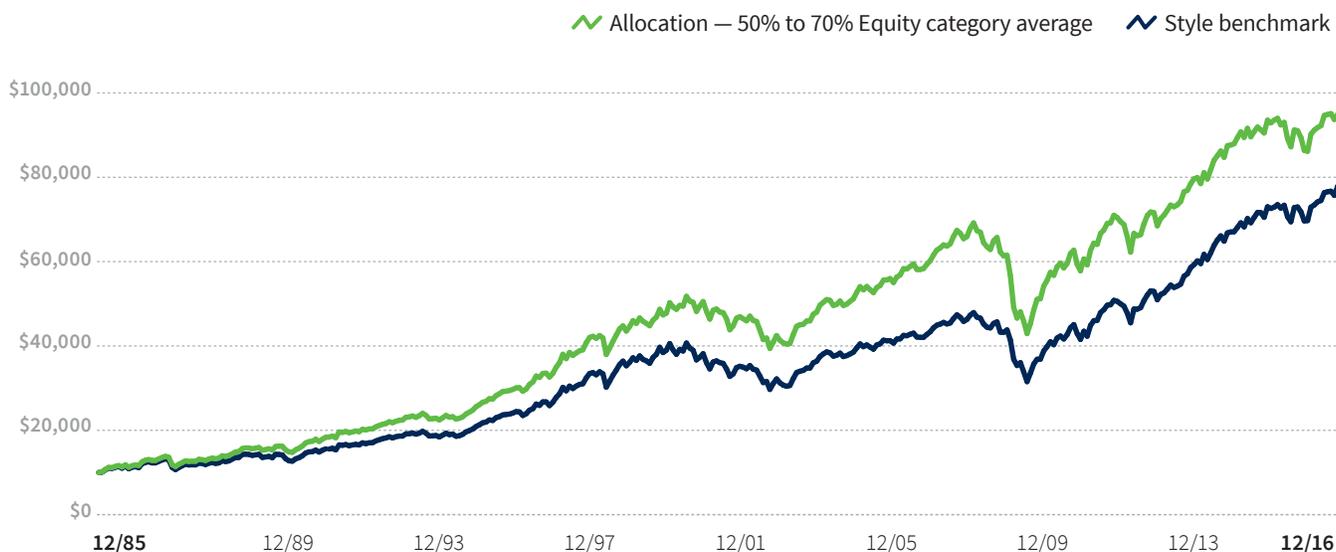
Source: Putnam Investments. Similar charts for other categories in the study can be found in the appendix. Note: Style return is calculated as the sum of the return of each factor (i.e., Market, SMB, HML, and BOND) multiplied by its weight for the time period. Weights are the average of time series calculated using regression from the equation in Figure 1.

Ideas for portfolio strategies and concluding thoughts

With any investment strategy, understanding how to use it in a portfolio is an essential decision. The challenge with multi-asset funds is no different, but it is often regarded as a greater burden given that the typical multi-asset fund does not fit cleanly into any one investment style box. Despite this difficulty, investors are still utilizing multi-asset funds across portfolios in a variety of ways.

Some investors have carved out a specific "flexible/tactical/swing" component of the portfolio, which is not dissimilar to what they would do with a U.S. large-cap or international equity portfolio sleeve. The goal of this specific sleeve is to allow the managers to make the active calls for decisions such as favoring stocks versus bonds, small cap versus large cap, or one country versus another. The shifting allocations of this sleeve will be the main lever that repositions the broader portfolio.

Others use one or multiple multi-asset funds as the "core" of a portfolio, sometimes accounting for 40%–60% of the overall portfolio, and allocate the remaining capital to traditional style-box and/or opportunistic investment strategies. Some investors even use multi-asset funds as an entire portfolio, opting to outsource investment capabilities to a "third-party" manager.

Outside of the more tangible uses of multi-asset funds in portfolio construction, there are other more abstruse strategies. For example, recent increased regulatory burdens can make the appeal of multi-asset funds more intriguing. Larger investors, such as but not limited to institutions, have more recently placed a greater emphasis on partnership with the professional money managers they hire. These partnerships often facilitate open dialogue around investment-related ideas and research.

The debate over the effectiveness of active portfolio managers and their ability to produce positive alpha over time is far from over. Whether or not leadership reverts to active managers, investors can have confidence in the power of diversification as an investment strategy. Building a portfolio that is allocated across multiple asset classes, while no guarantee of investment success, can help stabilize returns across a variety of economic environments. Investors often choose to decide a portfolio's asset allocation themselves, and the results produced by this decision may be difficult to assess.

Stand-alone multi-asset funds have been around for decades, and professional multi-asset managers in many cases have spent their entire careers understanding how asset classes interact with one another, and how each asset's performance has historically varied across cycles. Is it possible that this understanding and added flexibility can translate into a meaningful improvement on benchmark portfolios? The results of the preceding analysis suggest that multi-asset funds on average have produce positive risk-adjusted performance over time.

Advisors should consider taking the opportunity to discuss multi-asset funds with their clients and the possibility of incorporating them into their overall portfolio allocations. Advisors would be able to point to a positive performance record of active multi-asset strategies as well as the diversification that the funds provide.

The results of the preceding analysis suggest that multi-asset funds on average have produced positive risk-adjusted performance over time.

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Appendix

Fama-French factor definitions

Construction: The Fama-French factors are constructed using the six value-weight portfolios formed on size and book-to-market. (See the description of the six size/book-to-market portfolios.)

SMB (Small Minus Big) is the average return on the three small portfolios minus the average return on the three big portfolios:

> SMB = 1/3 (Small Value + Small Neutral + Small Growth) – 1/3 (Big Value + Big Neutral + Big Growth)

HML (High Minus Low) is the average return on the two value portfolios minus the average return on the two growth portfolios:

> HML = 1/2 (Small Value + Big Value) – 1/2 (Small Growth + Big Growth)

Rm-Rf, the excess return on the market, is the value-weight return of all Center for Research in Security Prices (CRSP) firms incorporated in the United States and listed on the NYSE, AMEX, or NASDAQ that have a CRSP share code of 10 or 11 at the beginning of month t, good shares and price data at the beginning of t, and good return data for t minus the one-month Treasury bill rate (from Ibbotson Associates).

See Fama and French, "Common Risk Factors in the Returns on Stocks and Bonds," *Journal of Financial Economics 33* (1993), for a complete description of the factor returns.

Stocks: *Rm-Rf* includes all NYSE, AMEX, and NASDAQ firms. *SMB* and *HML* for July of year t to June of t+1 include all NYSE, AMEX, and NASDAQ stocks for which we have market equity data for December of t-1 and June of t, and (positive) book equity data for t-1.

Morningstar category definitions

Allocation categories by equity percentage

Funds in the following five Allocation categories seek to provide both income and capital appreciation by investing in multiple asset classes, including stocks, bonds, and cash. These portfolios are dominated by domestic holdings and have equity exposures in the ranges specified in the category names:

- Allocation — 15% to 30% Equity
- Allocation — 30% to 50% Equity
- Allocation — 50% to 70% Equity
- Allocation — 70% to 85% Equity
- Allocation — 85%+ Equity

World Allocation

World Allocation portfolios seek to provide both capital appreciation and income by investing in three major areas: stocks, bonds, and cash. While these portfolios do explore the whole world, most of them focus on the United States, Canada, Japan, and the larger markets in Europe. It is rare for such portfolios to invest more than 10% of their assets in emerging markets. These portfolios typically have at least 10% of assets in bonds, less than 70% of assets in stocks, and at least 40% of assets in non-U.S. stocks or bonds.

Tactical Allocation

Tactical Allocation portfolios seek to provide capital appreciation and income by actively shifting allocations across investments. These portfolios have material shifts across equity regions and bond sectors on a frequent basis. To qualify for the tactical allocation category, the fund must have minimum exposures of 10% in bonds and 20% in equity. Next, the fund must historically demonstrate material shifts in sector or regional allocations either through a gradual shift over three years or through a series of material shifts on a quarterly basis. Within a three-year period, typically the average quarterly change between equity regions and bond sectors exceeds 15% or the difference between the maximum and minimum exposure to a single equity region or bond sector exceeds 50%.

Growth of $10,000 charts for remaining six categories

Category average   Style benchmark

Allocation — 15% to 30% Equity

Allocation — 85%+ Equity

Allocation — 30% to 50% Equity

Tactical Allocation

Allocation — 70% to 85% Equity

World Allocation

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Important disclosures: The Bloomberg Barclays Intermediate U.S. Aggregate Bond Index is an unmanaged index of U.S. investment-grade fixed-income securities with remaining maturities of one to ten years.

The MSCI EAFE Value Index is an unmanaged index that measures the performance of equity securities representing the value style in countries within Europe, Australasia, and the Far East.

The Bloomberg Barclays U.S. Corporate High Yield Bond Index is an unmanaged index that measures the USD-denominated, high-yield, fixed-rate corporate bond market.

Russell 1000 Index is an unmanaged index of the 1,000 largest companies in the Russell 3000 Index.

Russell 2000 Index is an unmanaged index of the 2,000 small companies in the Russell 3000 Index.

S&P GSCI Index is a composite index of commodity sector returns that represents a broadly diversified, unleveraged, long-only position in commodity futures.

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