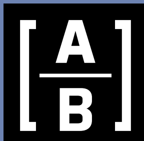
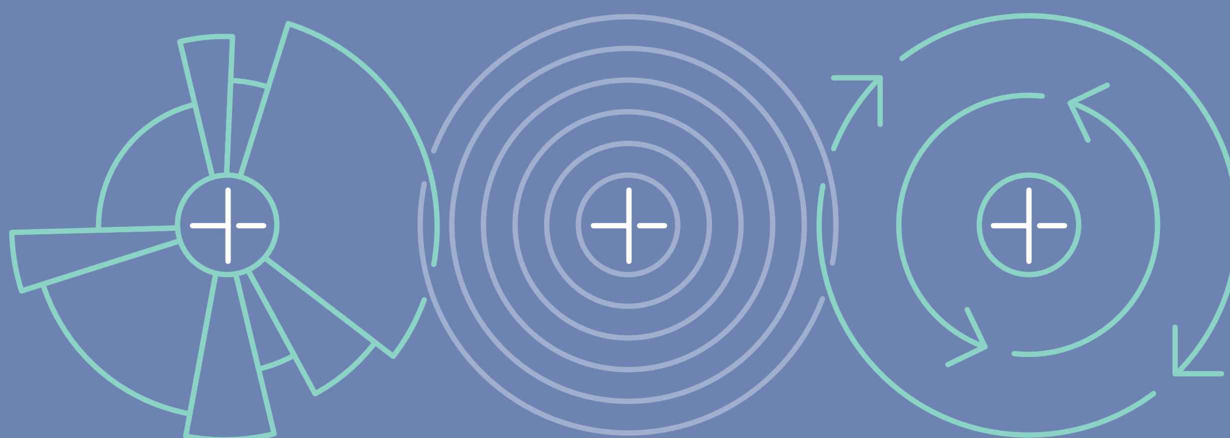
DECEMBER 2017



SCIENCE AND ART

A FRAMEWORK TO UNLOCK MULTI-ASSET OPPORTUNITIES



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IN THIS PAPER: Strategic allocation poses big challenges today—and multi-asset portfolios can help. But simply combining off-the-shelf strategies can create unwanted risk/return exposures and make it harder to manage drawdowns. To expand opportunities while effectively managing risks, a multi-asset solution must be unconstrained, integrated and dynamic.

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INSTITUTIONAL INVESTORS ARE WRESTLING WITH BIG CHALLENGES IN STRATEGIC ALLOCATION TODAY

Expected returns for stocks and bonds are low, causing asset owners to look beyond traditional asset classes to meet their objectives. Regulatory oversight and fee pressures are rising, supporting a massive shift from active to passive strategies. And secondary investment objectives, such as yield or environmental, social and governance (ESG) considerations, are growing more important.

A diversified portfolio that includes multiple asset classes and strategies may be able to address these challenges, but it can be a tall order to design, implement and adapt such a solution. Current industry practice is to set asset-class targets and then allocate active risk to the managers within each asset class. However, this approach may limit the range of diversifying strategies evaluated. And it may make it harder to spend fee budgets on the most attractive alpha opportunities.

What's more, the returns of many off-the-shelf investment products are actually a package of different return sources, so investors may end up paying for return drivers they don't want. This could lead to a buildup of common risk exposures, making it harder to manage portfolio drawdowns.

DESIGNING A BETTER MULTI-ASSET FRAMEWORK

Multi-asset solutions have the flexibility to invest in a wide range of strategies that cut across traditional asset-class silos, creating a single, cohesive strategy.

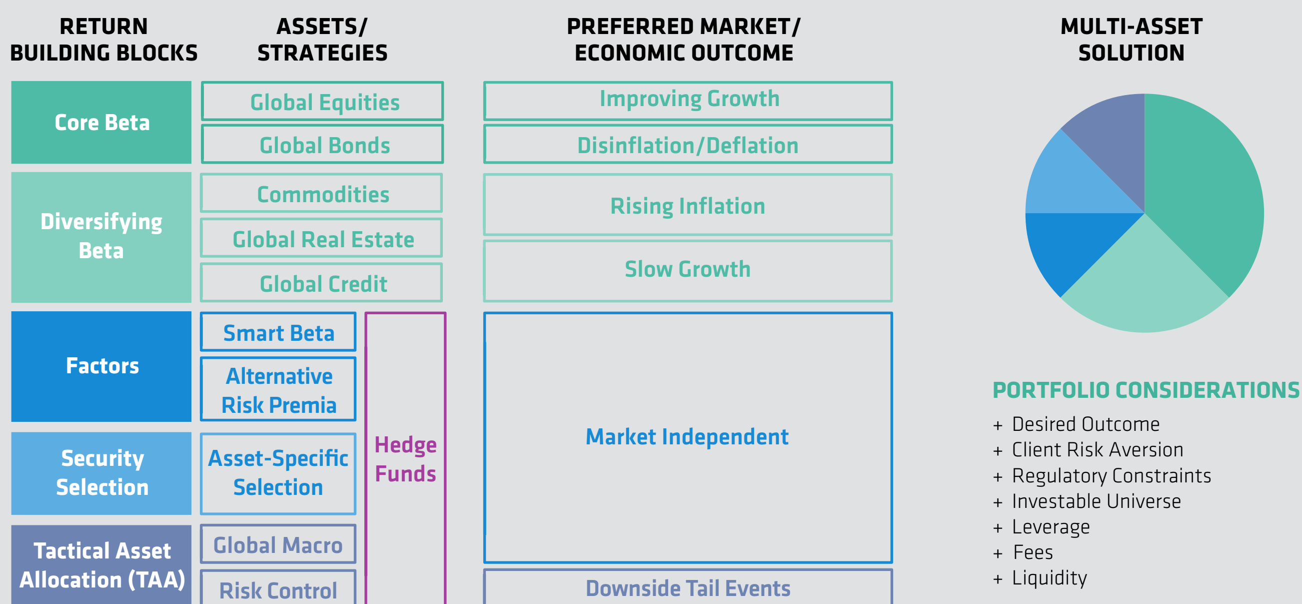
In our view, because of their potential to employ an unconstrained opportunity set, fully integrate return sources to efficiently target outcomes, and manage risk dynamically, multi-asset solutions should make up a growing part of institutional portfolios.

But it takes a mix of science and art to design an effective multi-asset solution. Fundamental judgment informs quantitative tools; the insights from these tools help identify current controversies.

Essentially, science and art are integrated in order to:

+ Identify the return building blocks that form the foundation of a multi-asset solution. These return streams should be persistent and uncorrelated with each other.
+ Assess the risk-adjusted return potential of each building block above that of stocks and bonds, as well as its ability to diversify and reduce losses.
+ Use portfolio-construction tools to combine return sources and tailor solutions to satisfy a diverse set of investment guidelines and portfolio outcomes.

DISPLAY 1: A MULTI-ASSET SOLUTION FRAMEWORK



Source: AllianceBernstein (AB)

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+ Employ flexible implementation and dynamic risk-management tools to make sure portfolios efficiently access required exposures and avoid a buildup of common risks.

As we see it, getting both the science and art of multi-asset investing right will be the key for investors to meet their long-term return objectives and weather the next major market downturn.

IDENTIFYING THE RETURN BUILDING BLOCKS

Diversifying into return streams beyond traditional stocks and bonds presents opportunities and risks. We group these return types into five building blocks, spanning the spectrum from alpha to beta (*Display 1, page 1*). We believe these building blocks should form the foundation of a multi-asset solution, with specific allocations driven by clients' objectives: growth, income, inflation protection, uncorrelated returns or downside protection.

Let's take a closer look at these building blocks.

Core betas are global stocks and bonds. They provide exposure to the equity risk premium and bond risk premium—the extra yield investors get for taking interest-rate risk in government bonds. We call these "core" betas because their premiums are robust, time-tested and don't cost much. They also complement each other: stocks often perform best when growth is improving, and bonds do well when growth and inflation are declining.

Diversifying betas are assets such as commodities, real estate and global credit. They're often quite sensitive to the movements of stocks and bonds, but their ability to offer something of their own makes them attractive. Inflation diversifiers like commodities flourish when inflation is rising. Income diversifiers, such as high-yield bonds and emerging-market debt, are global credit investments whose high-income yields are often favored when economic growth is slow and volatility is low. Real estate is a bit of a hybrid, offering high income and some inflation protection, because it benefits from rising rent prices over time.

Factors are systematic strategies that compensate investors for taking certain risks, including value and momentum. They can be harvested in long-only form (smart beta) or long/short form (alternative risk premia), and their excess returns tend to be uncorrelated with stock and bond markets.

Security-selection strategies must be evaluated based on the alpha they deliver after adjusting for any beta or factor exposures. The actual return derived from a manager's skill is valuable, but it's also costly and hard to spot ahead of time, creating the risk of not capturing that advantage. Our research suggests that identifying manager-specific alpha is critical because it tends to be much more persistent than outperformance versus a benchmark.[1]

Tactical asset allocation (TAA) strategies add value by using market signals or views to time investment decisions—often with the goal of providing downside protection or tail-risk protection. There's some skepticism about these strategies because of their small opportunity set: They invest across a few dozen markets, not thousands of securities, like stock and bond pickers. This tends to limit the potential value of TAA strategies outside of large market downturns.

ASSESSING THE RETURN BUILDING BLOCKS

In our view, these building blocks can contribute to a multi-asset solution through:

1. **Excess Returns:** A positive Sharpe ratio (return per unit of risk) that's attractive and persistent over time.

2. **Diversification:** Attractive performance in environments where stocks and bonds are likely to underperform their long-run risk premium (such as rising inflation).

3. **Drawdown Protection:** Protective features that help reduce losses during sharp market drawdowns or bear markets.

We can assess these contributions by isolating the part of each return source that isn't driven by stock and bond beta (the core betas).[2] In other words, what can each return source deliver over and above those two traditional asset classes?

1 Andrew Chin and Piyush Gupta, "Using Prime Alpha to Separate Skill from Luck in Fixed-Income Strategies," *The Journal of Investing* (Summer 2017).

2 Regressions are used to calculate each return source's historical betas to stocks and bonds , wherever significant betas exist. The forward month's returns are then calculated after adjusting for stock and bond exposure. This residual return is the unique component of each strategy's performance that is evaluated.

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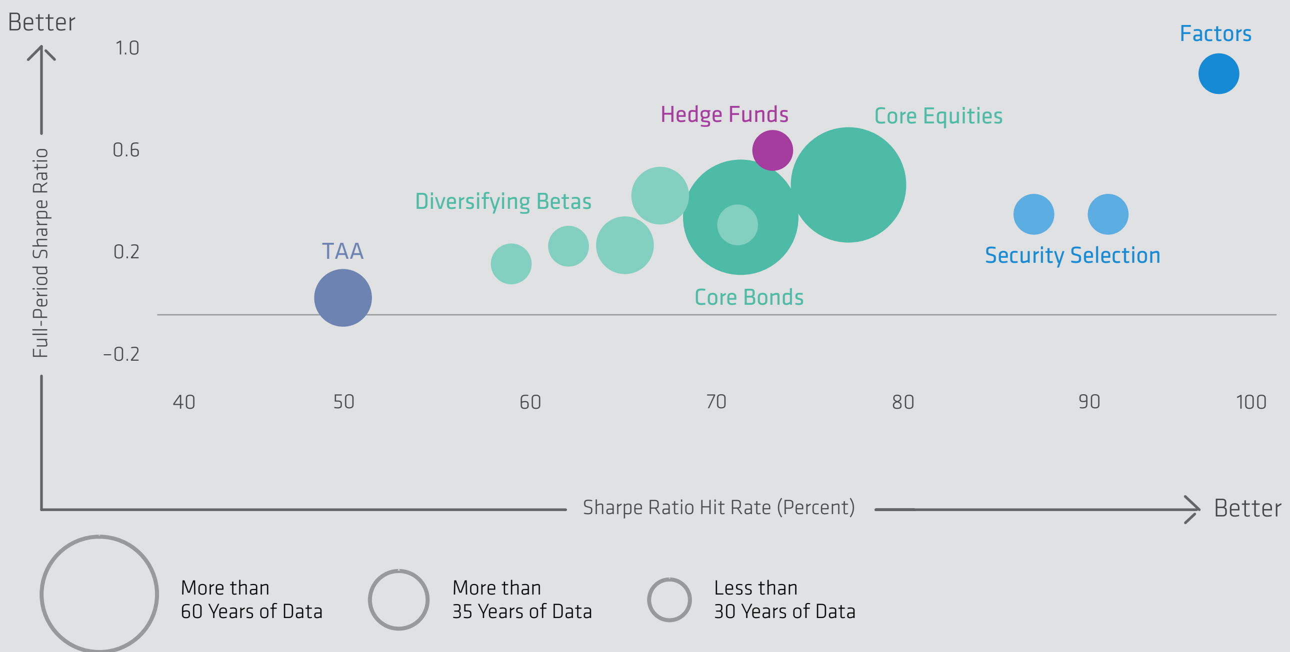
DISPLAY 2: HOW MULTI-ASSET RETURN SOURCES STACK UP

Historical Risk-Adjusted Performance



Past performance does not guarantee future results.

Based on monthly excess returns from January 1, 1950, through July 31, 2017, except security selection, which is through December 31, 2015

Bubble size indicates number of observations. Returns are in excess of their stock and bond betas, wherever significant betas exist. The Sharpe ratio hit rate represents the percentage of time the rolling three-year Sharpe ratio was positive. Core equities are represented by the MSCI World Index and core bonds by the Bloomberg Barclays Global Aggregate Bond Index. Diversifying betas include commodities (Bloomberg Commodity Index), REITs (FTSE EPRA/NAREIT Developed Index), high-yield credit (excess of Bloomberg Barclays Global High-Yield Bond Index), emerging-market equity (MSCI Emerging Market Index, Unhedged) and emerging-market bonds (J.P. Morgan Emerging Market Bond Index). Factors are alternative risk premiums, represented by the Fama-French Size, Quality, Value and Momentum factors for developed markets. Hedge funds are represented by the HFRI Fund of Funds (FOF) Composite Index. TAA is represented by a proprietary AB tactical signal used to control volatility. Security selection uses data from Andrew Chin and Piyush Gupta, "Using Prime Alpha to Separate Skill from Luck in Fixed-Income Strategies." *The Journal of Investing* (Summer 2017).

Source: Bloomberg, Bloomberg Barclays, FTSE, Hedge Fund Research, J.P. Morgan, Kenneth R. French, MSCI and AB

Display 2 shows how effectively and consistently each building block has delivered positive excess returns. These investments should deliver both higher risk-adjusted returns on average (high Sharpe ratios) and returns that are consistently positive over an average investment horizon.

In the display, bubbles represent different return sources, with the bubble's size representing the amount of available historical data for that return source. Longer track records make us more confident in a given building block because we've observed it in many different environments.

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Stocks and bonds are in the center, with Sharpe ratios between 0.3 and 0.4 and high hit rates, meaning greater return consistency. Investors should expect to be able to harvest these types of excess returns over long time horizons.

Diversifying betas cluster to the left of and below stocks and bonds. They have some excess return potential, but they haven't delivered it as consistently. For most multi-asset portfolios, diversifiers' biggest value is their ability to diversify across market and macro environments, but they can also deliver on secondary objectives. For example, income diversifiers may play a bigger role in portfolios targeting a certain income level; inflation diversifiers may be emphasized more in real return strategies.

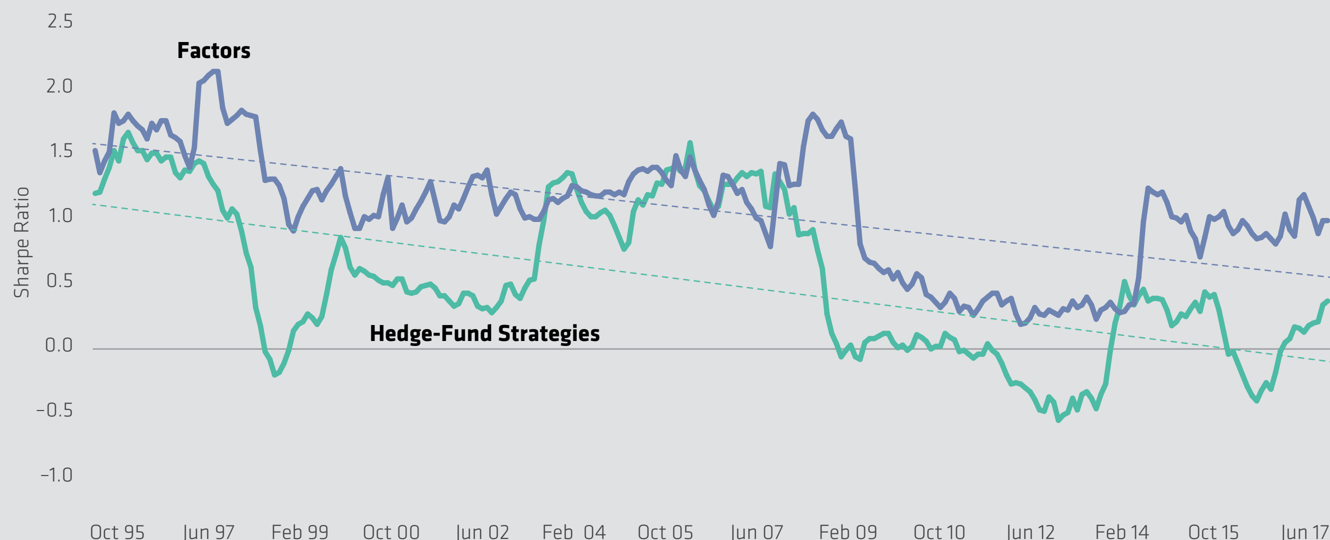
TAA strategies score poorly on both the level and consistency of their Sharpe ratio. From this perspective, TAA strategies don't appear to fit well into multi-asset solutions at first glance. However, drawdown protection matters, too. TAA strategies are often negatively correlated with stocks, so they can still improve a portfolio's risk-adjusted returns even if they don't contribute excess returns.

Factor and hedge-fund strategies, on the other hand, seem like the best place to focus all a portfolio's risk budget, because they've delivered the best combination of Sharpe ratio and hit rate. However, these strategies have a much shorter history than other building blocks, so they haven't been observed over as wide a range of market cycles as other categories.

Also, the risk-adjusted returns of factor and hedge-fund strategies have been declining, particularly over the past decade (*Display 3*). The main reason? Strong returns attract more investment, which leads to overcrowding and reduced return potential. This can make

DISPLAY 3: DON'T RELY ON AVERAGES ALONE—PERFORMANCE PATTERNS CHANGE

Rolling Five-Year Sharpe Ratios



Past performance does not guarantee future results.

Through July 31, 2017

Hedge-fund strategies are represented by the HFRI FOF Composite Index. Factor strategies are represented by equal-weighted Fama-French Value, Momentum, Size and Quality factors.

Source: Hedge Fund Research, Kenneth R. French and AB

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> It can be risky to rely on historical averages alone.

it harder for managers to sustain high levels of outperformance. But while the return expectations for these strategies should be lower going forward, the strategies' ability to produce returns and diversify still makes them valuable.

All these building blocks satisfy the first criteria of delivering positive Sharpe ratios, and each brings something different to the table in multi-asset solutions. But it's critical to develop forward expectations for each building block, because performance trends and market environments evolve over time.

WHY DIVERSIFICATION ALWAYS MATTERS

Portfolios don't operate in a static environment—they must navigate a wide range of macro and market conditions. So it's vital to diversify across many assets and strategies that thrive in different environments.

In the short term, the diversification question is: How resilient is an asset class or strategy likely to be in a market shock?

The global financial crisis is often categorized as a market event where "diversification failed." It's true that all asset classes with equity beta were affected in that prolonged and deep equity drawdown. But several multi-asset building blocks, such as high-quality bonds and TAA, actually posted strong returns.

Over longer time horizons, diversification is even more important: Long periods of underperformance can be devastating to a portfolio's ability to achieve its objectives. Because the market environment evolves over time, it's critical to understand what drives each return source, and the environments in which it's likely to perform best.

Stocks and bonds, for example, flourish when growth is rising and inflation is falling. In the 1980s (*Display 4, page 6*), a simple combination of these two would have been very strong. The combination has outperformed so far this decade, too, as growth and market volatility have stabilized since the financial crisis. But it's risky to simply assume that the success of this strategy will continue, because the valuation and interest-rate starting points of the 1980s and the past decade are very different from today's.

In other environments, stocks and bonds have struggled. During the stagflation of the 1970s, both failed to beat cash over an entire decade! A 60/40 portfolio would have fallen short, too—with much more risk. Inflation-sensitive diversifiers like commodities, on the other hand, delivered fantastic returns—and would have helped a balanced portfolio deliver solid results over that time period.

The high volatility and stagnant growth of the 2000s, meanwhile, favored income-oriented diversifiers as well as factor and hedge-fund strategies. TAA strategies were poor performers over their full history, but produced a substantial Sharpe ratio in the 2000s, providing important ballast during the decade's biggest market storms—the bursting of the dot-com bubble and the global financial crisis. In the 2010s, core betas delivered very strong risk-adjusted returns.

Because macro and market conditions continue to evolve, there's a clear takeaway with regard to diversification: over the past five decades, investors seeking a portfolio that delivered consistent returns would have wanted exposure to all these return sources.

That takeaway is just as true today. For example, yields are still very low, so bonds aren't likely to deliver as big a risk premium as they have in the past. Bond "proxies" can play that role, though—and with more attractive return outlooks. REITs, gold and certain defensive currencies have become highly correlated with fixed income. Choosing from these bond substitutes offers investors diversification and downside-risk reduction—as well as better valuations.

Inflation-sensitive assets can play a role, too. Many investors reduced their exposure to these investments because emerging markets and commodities produced some of the worst returns in the past decade, with inflation pressures largely absent. Today, inflation seems poised to rebound, so we think it's time to rebalance back into these investments—and enhance portfolio diversification.

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DISPLAY 4: CHANGING ENVIRONMENTS—WHY DIVERSIFICATION ALWAYS MATTERS

	1970s	1980s	1990s	2000s	2010s
	Inflation Spike & Decelerating Growth	Declining Inflation & Increasing Growth	Falling Inflation & Stable Growth	Volatility Spike & Decelerating Growth	Declining Volatility & Stable Growth
60/40 Portfolio Return	**–1.0%**	**7.0%**	**5.0%**	**–0.7%**	**7.5%**
Higher ↑			**Factors and Hedge Funds** 1.3	**Factors and Hedge Funds** 0.9	**Core Bonds** 1.2
			Core Bonds 0.9	**Core Bonds** 0.8	**Core Equities** 0.8
		Core Equities 0.7	**Core Equities** 0.5	**Income Diversifiers** 0.4	**Factors and Hedge Funds** 0.8
	Inflation Diversifiers 1.3	**Core Bonds** 0.4	**Income Diversifiers** 0.4	**TAA** 0.4	**Income Diversifiers** 0.6
60/40 Portfolio, Long-Term Sharpe Ratio 0.4					
	TAA 0.1	**Inflation Diversifiers** 0.2	**Inflation Diversifiers** 0.1	**Inflation Diversifiers** 0.3	**TAA** –0.4
	Core Bonds 0.1	**TAA** –0.3	**TAA** –0.2	**Core Equities** –0.1	**Inflation Diversifiers** –0.5
Lower ↓	**Core Equities** –0.1	**Income Diversifiers** –0.3			

Sharpe Ratio (Higher ↑ / Lower ↓)

Past performance does not guarantee future results.

Data based on monthly excess returns from January 1, 1970, through July 31, 2017

Returns are in excess of their stock and bond betas, wherever significant betas exist. Core equities represented by the MSCI World Index, core bonds by the Bloomberg Barclays Global Treasury Bonds Index, income diversifiers by 50% Bloomberg Barclays Global High-Yield Index and 50% EPRA/NAREIT Developed Index, inflation diversifiers by the Bloomberg Commodity Index, factors and hedge funds by 50% HFRI FOF Composite Index and 50% equal-weighted Fama-French Value, Momentum, Size and Quality factors. TAA is represented by a proprietary AB signal used to control volatility.

Source: Bloomberg, Bloomberg Barclays, FTSE, Hedge Fund Research, Kenneth R. French, MSCI and AB

ROAD TESTING MULTI-ASSET PORTFOLIO DESIGN

It's clear that each return building block can contribute to a multi-asset solution, with the specific combination depending on what the intended outcome is. For example, a portfolio targeting a specific return would likely focus on a relatively balanced mix of all five return sources, whereas a portfolio targeting an income level would likely lean heavier on income diversifiers. Portfolio design is also influenced by specific constraints, including leverage restrictions, limits on derivative use, and credit-quality standards.

We can use a general approach to illustrate the value of employing a broad, diversified set of return building blocks. *Display 5, page 7,* plots the returns for three hypothetical portfolios—each designed for a return objective of cash + 5% with 8% long-run volatility:

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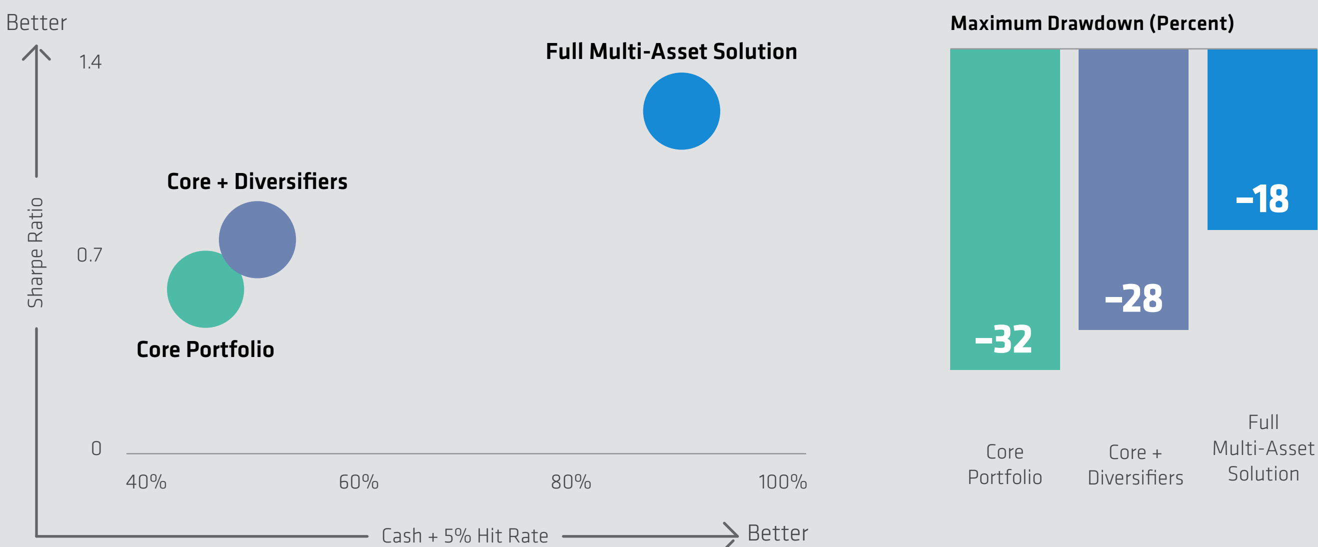
+ A core portfolio investing in a typical 60/40 blend of large-cap stocks and core bonds
+ A multi-asset solution called "core plus diversifiers" that incorporates diversifying betas and TAA into the core solution. A client with leverage and derivative constraints might use this strategy.
+ A full multi-asset solution that can invest across all return sources and use some leverage to increase diversification

Judging from historical Sharpe ratios and hit rates (the percentage of rolling five-year returns that beat the cash + 5% benchmark), the full multi-asset solution would have delivered superior results with greater consistency.

Because of the 60/40 portfolio's heavy equity risk, it would have experienced the largest drawdowns over the simulation period, with big losses during the bursting of the tech bubble and the global financial crisis. A core-plus-diversifiers portfolio, on the other hand, would have performed better and increased the hit rate, beating the benchmark 53% of the time, with somewhat smaller drawdowns.

The unconstrained, integrated full multi-asset solution clearly would have been the most effective of the three portfolios. By using the broadest set of return sources from across the alpha-beta spectrum, it would have raised the hit rate to 89% and delivered the highest risk-adjusted returns. The full multi-asset solution also would have experienced the smallest drawdowns over the full period because TAA

DISPLAY 5: ADDING DIVERSIFICATION IMPROVES RETURN AND RISK



Past performance does not guarantee future results.
From December 1990 through July 2017
Hit rate is calculated as the percentage of time five-year rolling portfolio returns exceeded the cash + 5% hurdle (shown post-1990 due to data availability). The core portfolio is 60% MSCI World Index and 40% Bloomberg Barclays Global Treasury Bond Index. The core-plus-diversifiers portfolio combines equity/bond exposures similar to the core portfolio with TAA, commodity, REIT, emerging-market and high-yield assets. The true multi-asset solution adds the four Fama-French factor strategies and the HFRI FOF Composite Index strategy to the core-plus-diversifiers portfolio.
Source: Bloomberg, Bloomberg Barclays, FTSE, Hedge Fund Research, Kenneth R. French, MSCI and AB

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and factor and hedge-fund strategies would have lowered its equity sensitivity. This design would have been especially effective during the 2007–2009 global financial crisis.

The diversification of risk tells a compelling story: In the core 60/40 portfolio, all the risk comes from its equity allocation (and virtually none from bonds). In the full multi-asset solution, including TAA with equity reduces the equity risk to 64% of the portfolio—the rest comes from diversifying betas, core bonds and factors.

So expanding the opportunity set and integrating a broader array of return sources can make a portfolio far more likely to achieve its objectives consistently over time. Full flexibility provides the biggest advantage, but even incorporating a few adjustments within the context of a client's guidelines and constraints has the potential to deliver real improvement.

IMPLEMENTATION: THE LINE BETWEEN SUCCESS AND FAILURE

Putting a multi-asset solution into practice brings everything together: empirical research, projections of future performance, manager and strategy selection, assessments of market behavior in different environments and predictions of how likely the solution is to consistently achieve its objectives.

In our view, poor implementation is much more to blame for bad outcomes than lack of manager insight. Investors may be able to design a highly effective asset allocation, but they still may not get the diversification and risk profile they want by simply combining commercially available products. These products often have unintended exposures that can be hard to manage, so investors might end up adding risk instead of adding diversification.

An actively managed global real estate portfolio, for instance, is actually a package of different exposures. It tends to be sensitive to equity markets, interest rates and credit spreads, as well as to local real estate cycles and fundamentals. Plus, returns will be driven by manager alpha and may have factor exposures such as a small-cap and value bias, depending on the specific manager.

Accounting for these exposures and how they interact with the rest of the solution is easier said than done, particularly because sensitivities can change over time. The prevailing wisdom of the day and peer pressure can lead to unintended crowding—the epicenter of bad risk exposures.

For example, in the years since the financial crisis, investors have been more concerned with deflation than inflation—with good reason. Demographic headwinds, low productivity and the deflationary effects of technology have all crippled nominal economic growth and kept price inflation in check.

These deflationary fears have also prompted many investors to take similar positions, gravitating toward certain high-quality bond segments, low-volatility equities and high-dividend-yielding stocks, and away from commodities, cyclical stocks, inflation-protected securities and deep-value strategies.

The result? Investment strategies that seem distinct could all struggle if growth accelerates and interest rates rise. All the assets in this type of conservative allocation are negatively correlated with interest rates and would likely deliver poor returns when inflation begins to rebound.

To avoid the buildup of common risks, multi-asset solutions need to integrate dynamic risk-management tools. A risk-completion sleeve can aggregate manager positions to control for the unintended buildup of industry, country or factor risks driven by a common theme. The sleeve can then take diversifying positions to reduce unintended risks without hurting returns.

A tactical allocation sleeve, on the other hand, can monitor overall portfolio volatility and exposure to equity and interest-rate beta. It can also use hedging instruments to quickly and efficiently adjust exposures as market volatility and asset correlations change. This type of capability can be critical for managing drawdowns.

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Multi-asset solutions should be unconstrained, integrated and dynamic.

SUMMING IT UP

A well-designed multi-asset solution can help institutional investors tackle the many challenges they face today—including low expected returns from traditional assets, regulatory and governance constraints, and the shift from active to passive. But it takes more than assembling commercially available investment portfolios to get the job done.

Moving beyond equity and interest-rate betas presents opportunities but also risks that must be fully understood and managed dynamically. Diversifying betas have different performance patterns in certain economic environments. Factor strategies may need leverage to make an impact and can be vulnerable to crowding. Security-selection strategies trade market risk for manager-selection risk. TAA strategies pose manager-selection risk and must be integrated to be most effective.

It takes access to wide-ranging expertise across asset classes and markets to do this successfully, as well as the ability to bring all this knowledge and insight together in a cohesive, repeatable framework. For most institutional investors, it's hard to develop and maintain all this expertise in-house. Institutions may also face challenges in pivoting their portfolios as market conditions, risks and opportunities shift, because governance constraints can limit flexibility.

In our view, an effective multi-asset framework must have:

+ **An Unconstrained Opportunity Set.** A multi-asset strategy should look well beyond traditional stock/bond benchmarks to trade off return, diversification and downside protection through a common lens.
+ **Integrated Design and Implementation.** Return sources must be integrated to diversify exposures across macro environments and use capital efficiently to generate sufficient return.
+ **Dynamic Risk Management.** Active risk-management processes should be used to adjust exposures and minimize drawdowns. Rapid responses to changing environments can help reduce short-term losses.

When designed correctly within this framework, we believe that a multi-asset solution can help investors generate high, consistent returns while protecting their portfolios in difficult markets.

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A WORD ABOUT RISK

The market values of the portfolio's holdings rise and fall from day to day, so investments may lose value. **Interest-Rate Risk:** Fixed-income securities may lose value if interest rates rise or fall—long-term securities tend to rise and fall more than short-term securities. The values of mortgage-related and asset-backed securities are particularly sensitive to changes in interest rates due to prepayment risk. **Credit Risk:** A bond's credit rating reflects the issuer's ability to make timely payments of interest or principal—the lower the rating, the higher the risk of default. If the issuer's financial strength deteriorates, the issuer's rating may be lowered and the bond's value may decline. **Inflation Risk:** Prices for goods and services tend to rise over time, which may erode the purchasing power of investments. **Foreign (Non-US) Risk:** Investing in non-US securities may be more volatile because of the political, regulatory, market and economic uncertainties associated with such securities. These risks are magnified in securities of emerging or developing markets. **Currency Risk:** If a non-US security's trading currency weakens versus the US dollar, its value may be negatively affected when translated back into US-dollar terms. **Diversification Risk:** Portfolios that hold a smaller number of securities may be more volatile than more diversified portfolios, since the gains or losses from each security will have a greater impact on the portfolio's overall value. **Derivatives Risk:** Investing in derivative instruments such as options, futures, forwards or swaps can be riskier than traditional investments, and may be more volatile, especially in a down market. **Leverage Risk:** Trying to enhance investment returns by borrowing money or using other leverage tools may magnify both gains and losses, resulting in greater volatility. **Below-Investment-Grade Risk:** Investments in fixed-income securities with lower ratings (commonly known as "junk bonds") tend to have a higher probability that an issuer will default or fail to meet its payment obligations. **Liquidity Risk:** The difficulty of purchasing or selling a security at an advantageous time or price.

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