ALTERNATIVES

Portfolio Diversification in the Quantum Age

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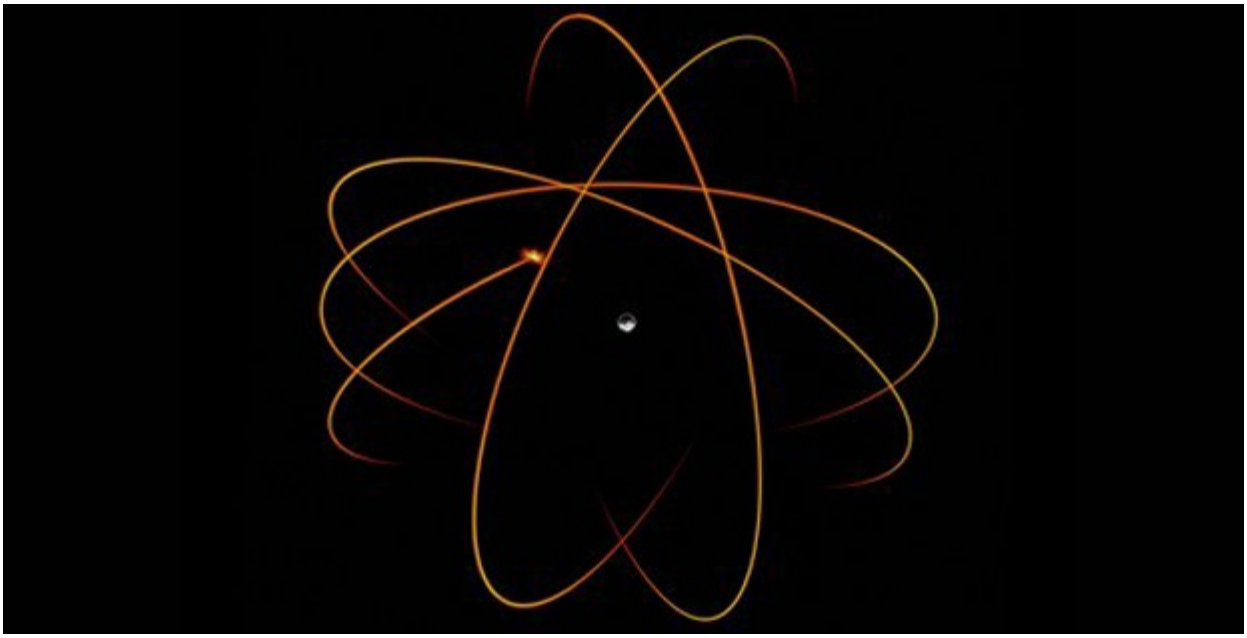

Brooks Ritchey, Senior Managing Director at K2 Advisors, Franklin Templeton Solutions, examines the merits of portfolio diversification when market conditions are particularly volatile and how his team thinks about risk in such an environment.

Under normal circumstances, or when markets are behaving “reasonably” and with normal volatility, the rules to achieve portfolio diversification appear fairly straightforward and stable and conform to the tenets of modern portfolio theory. In these instances mean-variance optimization seems to work very well: complementary and seemingly

uncorrelated assets are combined in a portfolio to diversify systematic or market risk (i.e., beta) and mitigate idiosyncratic or unsystematic risk (associated with a specific asset or security.[1]

So far so good. But what about when things are not so normalized, when things like correlations begin to rise, volatility spikes and selling contagions begin to take hold? In other words, what happens when markets approach extreme environments like that experienced in 2008 (or October 2014 for that matter)? In these instances it is quite clear that the traditional rules/laws of portfolio diversification do not work as well as intended. That is to say, when experiencing severe market stress, a portfolio that seemed diversified under reasonably normal market conditions may quickly become less-diversified–regrettably when diversification is needed most. Again, looking at 2008, in many instances investors bought into a broad array of assets under the assumption that they were uncorrelated, but were then surprised by downside losses when correlations rose. Therein lies the limitation of the mean-variance approach to portfolio optimization. While it has utility in reasonably normal environments, when exposed to extreme market regimes it is meaningfully challenged.

It would seem a better approach to constructing truly diversified portfolios is required. If diversification is the proverbial Holy Grail of investment management—which we believe it is—then we should ensure that we obtain it, and not some facsimile thereof. As markets have become more complex over the years, investment structures more sophisticated and assets across regions and geographies more correlated given certain environments, diversifying via asset classes and regions may no longer be an optimal approach. In our view, we should seek to diversify across risk factors as well.

Risk Factor Diversification

Risk factors, as opposed to tangible assets or securities, represent the abstract components that contribute to portfolio performance. In essence, they are the building blocks for all pricing functions in a portfolio and serve as return drivers. Examples of risk factors include foreign exchange rates, inflation/deflation, commodity prices, interest rates, credit spreads, volatility and investment styles such as value, momentum, etc. In

addition, some risk factors cannot be readily quantified, such as political or regulatory risk, but are no less important to consider when seeking as complete a picture of overall portfolio risk as possible, in our view.

What makes risk factors so effective in terms of building truly diversified portfolios is that, as opposed to an asset class, they may be better insulated from the panic herding and selling contagions that often accompany shifts in the environment. In fact, academic studies have shown that the average correlation across risk factors is significantly lower than the correlation across asset classes, and that risk factor correlations seem to be more resistant to dramatic market shifts.

The Risk Factor

On March 14, 2013, scientists working in Europe reported that, for the first time in history and following a half-century quest, they had confirmed the existence of a particle known as a Higgs boson—the elusive subatomic speck sometimes called the "God Particle." For physicists the world over this was a very big deal, and a very big story (although one would be hard pressed to know this judging from media coverage in the United States, which was virtually non-existent). The Higgs boson is the particle associated with the Higgs field, an energy field that transmits mass to the things that travel through it. Peter Higgs and Francois Englert theorized in 1964 that this is how things in the universe—stars, planets, even people—came to have mass.

We share the story of the great Higgs allegorically, as we like to compare its significance in terms of the universe to the significance of equity beta for its role in portfolio diversification. While there are a host of risk factors that influence portfolio performance at any given time, perhaps none is more pervasive, or more influential than equity beta[2]—investment management's version of the Higgs.

Interestingly, the catalyst behind the move toward risk factor modeling can be traced in large part to the influence of equity market beta in portfolio returns over the last 10+ years. Following the 2001-2003 market downturn, for example, many institutional investors began shifting their asset allocations toward alternative investments such as

private equity and hedge funds, intending to better diversify their portfolios.[3] While the logic behind the move was sound, i.e., adding a variety of assets to their portfolios to enhance diversification, their methodology, we think, was faulty.

That is, while many of the asset classes appeared to be uncorrelated on the surface, their underlying risk factors were clearly not—specifically the exposure to equity market risk. Unfortunately for many it was not until 2008 that this failure was glaringly revealed.

We believe the dislocation of 2008 in fact illustrates perfectly the need for robust risk factor diversification when building portfolios. This is because indirect equity risk in a portfolio often remains dormant, and is not recognized until it surfaces during extreme market moves. In relatively normal periods, investors often mistakenly attribute returns to good alpha decisions, ignoring the idea that in many instances it may be factor betas like equity moving the needle.

For example, tactically using private equity investments as a diversifier against public equity holdings would seem logical on the surface; however, in severe market stress environments this relationship would likely fail as a diversifier. This is because the beta component of many private equity funds is often structurally dependent on public equity market returns (and interest rates).

Similarly, and implicitly, many long-short equity hedge funds incorporate a large element of equity beta as well. We should note that we are not implying that hedge fund strategies cannot be utilized to effectively diversify a portfolio. They can, of course, and often do. But the key is to recognize and measure the underlying risk factors (like equity beta) that drive the returns of those hedge funds, before any meaningful effort to build a diversified portfolio can succeed.

Once we have identified and accurately measured risk factors, we view the next challenge as finding a way to practically gain exposure to those factors to build an optimal portfolio, as the predominance of investment products are offered in some form of asset class. While there are a number of approaches, alternative investments like hedge funds, commodities and currencies can be useful tools, in our view. The desired alpha and beta exposures may also be obtained through a combination of index funds (including ETFs), active and passive mutual funds and systematic beta strategies (variously referred to as risk premia,

alternative beta or quantitative index strategies). At the portfolio level, we think these three types of vehicles can be combined to provide diversified exposure to a number of risk factors and alphas, increasing diversification.

In summary, we believe a factor-based investment approach to allocation theoretically enables the creation of portfolios better diversified and more efficient than traditional methods. While this strategy presents challenges, including the need for active, frequent rebalancing and the creation of forward looking assumptions, ultimately we believe factor based methodologies can be integrated in multiple ways into traditional asset allocation structures to enhance portfolio construction and illuminate sources of risk.

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Note: since the original publication date, a revision to the first paragraph of the text was made on February 23, 2015.

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What Are the Risks?

All investments involve risks, including possible loss of principal. Diversification does not guarantee profit or protect against risk of loss.

1. Correlation is a statistical measure of how two securities move in relation to each other. Negative correlation indicates a relationship in which one increases as the other decreases. Diversification does not guarantee profit or protect against risk of loss.

2. Beta is considered to be a measure of the portfolio's risk relative to the comparison or benchmark index, for example the S&P 500 in the case of US equities (equity beta).

3. Alternative investments cover a varied set of asset classes and strategies that go beyond traditional stocks and bonds. Alternative investment asset classes include real estate, real assets (e.g., commodities, infrastructure) and private equity, while alternative strategies primarily consist of hedge strategies, including use of derivatives. Hedge strategies typically have the ability to utilize short positions (i.e., seeking to profit on a decline in value of an individual security or index) in contrast to traditional mutual fund strategies which typically permit only long positions.

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