

ASSET ALLOCATION

Is diversification dead? A new look at asset allocation

The perfect storm of the financial crisis nullified the supposed diversification benefits of multi-asset class strategies, but Dr Junhua Lu argues for a range of innovative features that can provide investors with a more efficient and effective diversification strategy

The 2008 crisis was unique in terms of its speed, the jump in correlations and the fall in liquidity. Multiple asset-class returns have headed in the same direction: down. With the exception of government bonds, no asset class – including alternatives – protected investors during the credit crunch. The scope of the sell-off in multiple asset classes during the crisis is unprecedented in modern times.

The broad-based decline is unusual because it caused several concepts of conventional wisdom in finance to be called into question. For example, during this crisis, many fixed-income assets that had been considered relatively safe suffered to some extent; and some alternative asset classes that held up well during previous bear markets in stocks tumbled significantly.

One of the key rationales behind most classic multi-asset class strategies is the supposed diversification benefit offered by the relatively low historical correlations between asset classes. Following the sell-off across many asset classes during the credit crisis, asset allocation strategies receive greater scrutiny and many investors have begun to ask: is diversification dead?

This perfect storm has been driven by the worst credit market crisis and the biggest threat to the global financial system since the 1930s. Coupled with the steep global economic downturn it precipitated, these developments

led to a crisis of confidence that provoked many investors to flee to safety and forced many financial entities to sell other assets in order to de-leverage their balance sheets.

“DIVERSIFICATION IS ILLUSORY WHEN THE ENTIRE FINANCIAL SYSTEM IS IMPERILLED”

Diversification is illusory when the entire financial system is imperilled. In these situations, systematic risk dominates and correlations generally rise sharply, making the portfolio riskier than it initially appeared. Moreover, there has been implicit leverage operating across different asset classes, particularly via hedge funds, which has pulled asset dynamics further together.

Therefore, many classic multi-asset mandates, followed by university endowments and pension funds, failed to protect investors during the current crisis and need to be reconsidered. Specifically, high volatility and correlation revealed previously unnoticed risks in the asset allocation which have to be addressed through enhanced risk management measures.

Many industry practitioners have suggested that there is a need to move away from the classic bond/

equity benchmarks towards a more dynamic asset allocation, to help manage risk over the long term.

In this article, we consider whether diversification benefits are in fact diminishing by investigating the issues associated with traditional asset allocation strategies, which tend to reduce the efficiency and effectiveness of portfolio diversification.

We then propose a new perspective on asset allocation to address the inefficiency and ineffectiveness of traditional portfolio diversification techniques.

DIVERSIFICATION IS NOT DEAD

Fundamentally, it is important to remember that over the short-term, diversification at times may not appear to be effective, but over longer time horizons, it has been valuable, as it avoids generating overly-concentrated portfolios due to poor input estimation.

Most portfolio managers appreciate that the value-added is ultimately dependent on their ability to correctly forecast asset class returns. Managers work hard to create valuable information about future returns, but may not pay as much attention to the estimation errors in the portfolio construction process. Specifically, estimates of long-term expected returns are uncertain, which could affect forecast results in a significant way. A risk-averse investor is interested in realised returns since the start of his or her portfolio, even though they

maintain a long investment horizon.

While all asset classes can suffer at the same time during extreme market conditions, a well-diversified portfolio may still reduce portfolio losses, and smooth out return volatility over the long-term. Therefore, diversification can protect an investor against concentration risk in their portfolios.

Diversification also provides the benefit of "preparing for a rainy day", as it tends to provide protection by building up a buffer of less volatile performance during normal times.

TRADITIONAL FAILINGS

Most traditional techniques to reduce concentration risk in a portfolio might generate false diversification and need to be reconsidered in a more robust way. Traditional asset allocation strategies, especially those based upon the mean-variance framework proposed by Markowitz, are known to suffer from serious drawbacks when applied in practice.

First, optimal portfolios tend to be overly concentrated in a very limited subset of the full assets or securities spectrum. Second, the mean-variance solution is very sensitive to the inputs as small, statistically and economically insignificant changes in these parameters, and notably in expected returns (Merton, 1980), can lead to a significant change in the composition of the portfolio.

Therefore, the resulting optimal portfolios tend to be overly concentrated in a very limited subset of the full asset classes spectrum and might not represent a truly risk-diversified portfolio. To avoid creating an overly-concentrated portfolio, investors usually apply the weight constraints to the underlying asset class components.

The drawback is that it can lead to a very limited diversification of risks if individual risks of the

underlying asset classes are clearly different.

For example, the traditional 60/40 (equities and bonds) or so-called "balanced" portfolios do not offer investors true diversification because the 60 per cent equity allocation actually accounts for almost 95 per cent of the total risk of the portfolio. In a

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sense, 60/40 portfolios put 95 per cent of the "eggs" in one basket. When the stock market suffers a severe downturn as witnessed recently, the 60/40 portfolio would also suffer tremendous losses.

Lastly, the recent market turmoil is likely to increase investor demand for portfolio construction that takes into account extreme market scenarios for various asset classes. Before the crisis, not many portfolio managers fully took into account extreme downside risks when constructing portfolios.

According to the EDHEC European Investment Practices Survey 2008, 95 per cent of the practitioners who responded share EDHEC's opinion that improvements need to be made to portfolio construction practices with the right risk management measures.

Moreover, since the mid 1990s, leading endowments like Harvard and pension funds like Calpers have diversified into alternative asset classes such as commodities and hedge funds to achieve higher risk-adjusted returns. These

alternative asset classes tend to exhibit different risk profiles compared to traditional asset classes like equities and bonds.

The two main conventional approaches to modeling asset returns are based either on a historical or a normal distribution for returns. Neither approach adequately captures unusual behavior of asset prices and returns associated with extreme market scenarios and alternative asset classes.

The historical model is bounded by the extent of the available observations and the normal distribution model inherently cannot produce extreme returns. Therefore, portfolio optimization tools based on normally distributed asset returns (Markowitz) no longer give valid outcomes, as the extreme market scenarios and the inclusion of alternative investments introduce skew and kurtosis (fat tails) to the probability distribution of the returns of a combined portfolio.

It has often been argued that the true return imply a larger probability of extreme returns than that implied from the normal distribution. Traditional risk measures such as standard deviation may underestimate the true risk-characteristics of a portfolio. One needs a distribution with adjustable skewness and kurtosis, which gives a higher probability to outliers than the normal distribution.

A SOLUTION TO THE CURRENT PROBLEMS

To answer our original question, diversification is not dead. Instead, it is the old way of implementing asset allocation strategies that hinders the effectiveness and the efficiency of the benefits provided by portfolio diversification.

To address the above issues associated with traditional asset allocation strategies, the S&P Target Risk Asset Allocation Framework makes use of three innovative features to offer

efficient, risk-sensitive allocations, which provides exposure to multiple asset classes for investors with different risk profiles.

First, to address downside risk, which is obviously a concern for most risk-averse investors, we employ a shortfall, or downside, risk target instead of the traditional total risk target based on the standard deviation.

The purpose is to minimise the likelihood of losing money beyond some acceptable threshold (ie losing 5 per cent is acceptable but more than 15 per cent is not). In other words, we only penalise downside risk (negative returns) which provides an intuitive measure of risk for investors with concerns such as "What is the probability of experiencing losses in my portfolio?", or "How confident can I be of avoiding a failure to attain my investment goals?"

Moreover, it provides for comparability across risk profiles in a transparent manner so that investors can choose a level of downside risk appropriate for themselves, understanding what it means in terms of probability of loss in a given time period.

Second, returns associated with extreme market scenarios and alternative asset classes tend to exhibit negative skewness, so negative returns are on average larger than the positive returns. Furthermore, they have fat tails, which means that there are more and greater outliers.

Even if we combine them, the return distribution of the portfolio is still skewed and has fat tails. In

"TO ADDRESS DOWNSIDE RISK WE EMPLOY A SHORTFALL, OR DOWNSIDE, RISK TARGET INSTEAD OF THE TRADITIONAL TOTAL RISK TARGET BASED ON THE STANDARD DEVIATION"

response to the challenge of larger probabilities of extreme returns, we assume that the portfolio return follows a non-normal distribution by taking into account the higher moments of the return distribution, such as skew and kurtosis. The

downside risk measure based on the non-normal distribution is able to assess the risks of volatile markets and alternative asset classes.

Third, a direct relationship exists between loss contribution to a portfolio from its underlying components and their risk contribution. The risk contribution of the component is the share of total risk of the portfolio which is attributable to this component.

Building portfolios based on the risk contribution budget of the individual underlying asset class can provide a more efficient and effective risk diversification tool for investors.

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Key differentials between traditional asset allocation models and the S&P target risk model	
Traditional asset allocation	S&P target risk model
<ul style="list-style-type: none"> ■ Risk proxy: standard deviation Penalising both upside and downside return 	<ul style="list-style-type: none"> ■ Risk proxy: short fall risk penalising only downside return variations
<ul style="list-style-type: none"> ■ Return distribution assumption: normal distribution. Ignoring skewed returns and fat tails, therefore underestimating the extreme downside risk 	<ul style="list-style-type: none"> ■ Return distribution assumption: non-normal distribution. Considering skewed returns and fat tails, therefore assessing the downside risk appropriately
<ul style="list-style-type: none"> ■ Avoiding concentration risk: asset weights unable to generate truly diversified portfolio 	<ul style="list-style-type: none"> ■ Avoiding concentration risk: Risk contribution constraints Capable of generating truly diversified portfolio



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