



C A M B R I D G E A S S O C I A T E S L L C

INVESTMENT PUBLICATIONS HIGHLIGHTS

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Investment Publications Highlights

Summarized by the Published Research Team

“Risk Parity and Diversification” by Edward Qian of PanAgora Asset Management, *The Journal of Investing*, Spring 2011

Investors often focus on correlations among asset classes as the key to improving portfolio diversification. Instead, they should focus on risk diversification, ensuring that different parts of the portfolio generate the same amount of risk. Diversified risk portfolios may generate lower returns than typical equity-oriented portfolios, but risk-adjusted returns will be higher. Further, through the use of leverage, it may be possible to deliver superior diversification and higher total returns through risk parity portfolios.

Investors often think about diversification in their portfolios in terms of low asset class correlations; model portfolios try to minimize correlations among asset classes. A better approach would be to focus on risk diversification—trying to ensure that different parts of the portfolio generate the same amount of risk. On the surface, “risk parity” portfolios might generate lower returns than equity-oriented portfolios, but using leverage can mean achieving superior diversification and higher total returns.

This concept can be made clear by comparing two portfolios. Assume the traditional 60/40 equity/bond portfolio has an expected return of about 4.9%, an annual volatility of returns of 9.6%, and a Sharpe ratio of about 0.40. A 25/75 equity/bond risk parity portfolio, in contrast, has an expected return of approximately 3.6%, volatility of 5.8%, and a Sharpe ratio of 0.45. Many investors understandably would still prefer the higher expected return from the 60/40 portfolio. However, since

the total risk for a 60/40 portfolio is 9.6%, a 25/75 portfolio can be levered by 165% total gross exposure to generate a similar volatility of returns. The resulting portfolio would have a notional exposure of 41% in stocks and 124% in bonds; the 5.3% expected return is higher on an absolute and risk-adjusted basis.

Risk parity portfolios thus can help generate higher returns with the same amount of risk as traditional portfolios, but this is not their only benefit. They can also feature lower overall correlation to other classes and lower equity beta. For example, 60/40 portfolios have high correlations to equity markets and low correlations to bond markets. In contrast, risk parity portfolios, regardless of their level of risk, are equally correlated to stocks and bonds. Given that an asset’s contribution to total portfolio risk is also equal to its loss contribution, a 60/40 portfolio is expected to see equities disproportionately account for losses in a portfolio. In the 60/40 portfolio, for example, equities would be expected to generate 92% of the losses; in risk parity, by definition, they would contribute 50%.

Risk parity techniques can be used in at least two ways in strategic asset allocation. The first is to use it as part of an allocation to alternative investments. The second is to apply it at the overall portfolio level, as the basis of strategic asset allocation. The second suggestion leads some to question whether risk parity techniques, which worked well over the past decade, will continue to outperform a traditional 60/40 portfolio in the years ahead. This misses the point that the 60/40 portfolio lacks diversification due to over-allocating to riskier assets, which is why it has destroyed wealth in the past and why it may do so again in the future.

“The Dangers of Risk Parity” by Ben Inker of GMO, The Journal of Investing, Spring 2011

Risk parity is very attractive if two straightforward assumptions hold: first, that standard deviation is a good estimate of risk, and second, that there are a wide variety of investable asset classes that consistently offer risk premiums. In reality, however, standard deviation is a dangerously limited estimate of true risk, and there may well be very few truly exploitable risk premiums. Adding to the problem, historically low bond yields make the risk of significantly negative bond returns much higher than history would suggest. Thus, a traditional 65/35 portfolio, while far from ideal, seems more likely to offer a decent premium over cash in the long run.

The idea of risk parity is appealing due to its perceived simplicity. Investors can better achieve diversification by allocating equal amounts of “risk” into asset classes, rather than equal amounts of dollars, given markedly different volatilities among various assets. Empirically, risk parity portfolios show more attractive risk/return characteristics than a 65/35 stock/bond portfolio. However, it is far from clear that the assumptions upon which risk parity portfolios are based will hold in the future; thus, more traditional forms of asset allocation may be more attractive.

One questionable assumption is that there are a number of independent asset classes in which investors can expect to earn a risk premium. In reality, the arguments for the existence of risk premiums are stronger in some asset classes than others. Looking at equities, one can argue that companies are willing to pay a risk premium to investors in exchange for receiving permanent capital that bears no payment obligation. For asset classes such as commodities, however, things become more muddled. A producer who

sells a commodity future benefits from the certainty of knowing that input costs can be recouped, but the buyer of the future also benefits, such as when a consumer hedges his input costs. Only if there is an imbalance between sellers of risk and buyers should a risk premium exist. Historically, this may have been the case in commodities; the surplus of sellers of risk was reflected by positive roll yields in the commodity futures market. However, the creation of commodity futures indices has introduced more risk buyers into the market and pushed roll yields negative.

Investors may still want to own commodities, of course, for their other appealing characteristics. For instance, commodities proved a good diversifier during the inflationary 1970s. Even in the absence of a risk premium, an investor that believes the asset class will do very well in an environment in which stocks and bonds perform poorly may want an allocation.

Long-term debt is another example of an asset class in which it is unclear whether investors will continuously be paid a risk premium. For almost all of reliable bond history, there was an upward-sloping yield curve. However, this condition alone was not enough to generate superior returns versus cash. From 1940 to 1981, for example, the yield curve was almost always upward sloping, but bondholders still lost out thanks to higher-than-expected inflation. Specifically, bonds underperformed cash by an annual rate of 0.9% in this period. Many risk parity portfolios today are based on data that start around 1980, conveniently excluding this data.

A separate issue is whether investors today are fully compensated for term premium given currently low interest rates. The ten-year Treasury yield, while well above the yield on bills, remains near the lowest levels witnessed since the 1950s. Therefore, it is mathematically impossible for the ten-year bond to generate a similar return premium

to that achieved since 1982, assuming yields do not go substantially negative. Investors today are making a strong bet that inflation will be non-existent or negative over the next decade. However, assuming inflation is near the 2.3% that the Survey of Professional Forecasters estimates for the 2010–19 period, bond investors are likely to achieve little or no return above inflation. This is clearly a problem for investors contemplating a levered bond investment today.

Aside from the question of whether risk parity portfolios are betting on nonexistent risk premiums, there are also questions around the assumption that they properly quantify the risk embedded in asset classes. It is easy to calculate historical standard deviations, but if they do not properly encapsulate the risk of the asset class, a “safe portfolio” may prove to be anything but. The problem stems from the fact that there is only one run of history. In other words, investors would need to live through the global financial crisis several times over to generate an accurate estimate of the losses from such an event. Further, there is a level of reflexivity in financial markets, which means that securities that had proven safe historically—such as pools of subprime mortgages before 2004—can become less so due to their popularity.

Using asset-backed securities (ABS) as an example, the standard deviation of the spread for credit card-backed ABS rated AAA from 2001 to 2007 was as “high” as 2.5 basis points (bps) in 2002, before remaining close to 1 bp for several years starting in 2005. Any analysis of the risk based on historical volatility would conclude that these assets had almost no risk and thus the appropriate

leverage on these securities would have looked very high (e.g., perhaps 100:1). In 2008 and 2009, however, the standard deviation of their spread increased by a factor of 200. It is not difficult to realize that a risk measure that rises by over two orders of magnitude was clearly an exceptionally poor estimate of true risk.

Treasury bonds have never shown such risks, but investors cannot rule out such a possibility. This is not simply a question of whether the U.S. government defaults—it is a question of leverage. The aforementioned ABS did not default; indeed, risk parity investors are almost invariably levered, and such price volatility can lead at best to the posting of additional collateral and at worst to the closing out of positions by counterparties.

Ultimately, there may well be very few asset classes that offer reliable risk premiums in the long term, and two of the most important for most risk parity portfolios—commodities and government bonds—seem problematic. However, even assuming the risk premiums were stable over time, volatility clearly is not, making standard deviation a limited view of risk. In combination with leverage, the use of standard deviation as the measure of risk may turn temporary losses into permanent ones. On the whole, risk parity portfolios probably offer much lower prospective returns than investors have been led to believe, with significantly higher risk. On the other side of the spectrum, the traditional 65/35 portfolio, while far from ideal, seems likely to offer a decent premium over cash in the long run and should be able to survive either economic depression or sovereign default. ■

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