



RISK PARITY ALLOCATION

Many investors often take on more risk than they realize.

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One well-understood and seemingly well-headed investment axiom is: don't put all your eggs in one basket. Many investors who invest in a balanced portfolio of 60% stocks and 40% bonds think they are diversified but have placed 90% of their eggs in the stock basket. How can this be true? Because size matters. The stock eggs are about nine times as big as the bond eggs. Assume stock and bond returns have an annual standard deviation of 15% and 5% respectively. Then, in terms of variance, stocks are nine times riskier than bonds. Imagine we have six stock eggs of size nine and four bond eggs of size one in two separate baskets. In total, we have an equivalent of 58 (i.e., $6 \times 9 + 4$) eggs, of which 54 are from stocks. Fifty-four out of 58 is about 93%. Our egg analogy might appear simplistic,¹ but the message is clear. While a 60/40 portfolio might appear balanced in terms of capital allocation, it is highly concentrated from the perspective of risk allocation.²

Risk Contribution

Why should investors care about risk contribution? Research shows that it is a very accurate indicator of loss contribution.³ For losses above 2%, stocks, on average, contributed 96% of the losses. For losses greater than 3% or 4%, the contribution from stocks is even higher: above 100%. The data provides empirical evidence for the economic interpretation of risk contribution and it approximates the expected loss contribution from underlying components of the portfolio.

How can investors use these insights to design a portfolio that limits the impact of large losses from individual components? This can be accomplished if investors make sure the expected loss contribution is the same for all components. The result is a risk parity portfolio that allocates risk equally among asset classes.

While a risk parity portfolio can utilize many asset

classes, it helps to illustrate the potential benefits using the stock/bond example. If one compares this risk parity portfolio and the 60/40 portfolio between 1983 and 2005 with the underlying indices, 60/40 portfolios and a leveraged version, some of the return characteristics emerge.

For the 60/40 portfolio, its Sharpe ratio, at 0.67, is lower than that of bonds, which is an indication of poor diversification. In contrast, the risk parity portfolio's Sharpe ratio of 0.87 is higher than that of stocks and bonds.⁴

A risk parity portfolio is well suited to the needs of institutional investors. Given the current challenge

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posed by relatively low returns from most asset classes, investors must seek better alpha sources and extract higher return from their existing market exposure. A risk parity portfolio limits the risk of overexposure to any individual asset class, while simultaneously providing ample exposure to all of them. Investors can then reap the benefits of true diversification, knowing their eggs are placed evenly and safely in many baskets. ■

Endnotes:

1. It neglected any correlation between the stocks and bonds, and it did not square the weights.
2. Another telltale sign of the stocks' dominance is the correlation between the return of the 60/40 portfolio and the Russell 1000 index return. For the period considered, it is above 0.98.
3. Qian, Edward E., 2006, "On the Financial Interpretation of Risk Contribution: Risk Budgets Do Add Up," *Journal of Investment Management*, vol. 4, no. 4.
4. One way to interpret the Sharpe ratio is the return in percentage points for every 1% of risk taken. For example, for every 1% risk taken, the 60/40 portfolio returns 0.67% while the parity portfolio returns 0.87% per annum.