

Risk Parity

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Central Issue of the Paper

Mean variance optimization (MVO) is a simple, yet well-regarded asset allocation technique designed to create a portfolio that maximizes its expected level of return for a given level of standard deviation. Many institutions construct diversified portfolios using this simple technique, attempting to maximize their risk-adjusted returns. While popular with many practitioners, MVO does have its drawbacks during implementation. The authors of this paper explore the applicability of constructing a portfolio using a risk parity approach, analyze the historical results, and discuss the benefits and issues with following this approach.

Approach Employed by Paper

Benham, Obregon, and Kaya first start with analyzing a traditional portfolio allocation put together using MVO. Using risk decomposition, the authors show that the risk of a portfolio invested in 65% stocks, 35% bonds, and 5% inflation protected bonds is dominated by equity risk (greater than 90%). In other words, as market fluctuate, this kind of portfolio will move in tandem, even if the magnitude of these moves is low (change low to insignificant?).

Introducing Risk Parity

A way to mitigate this risk is to build a portfolio using a “risk parity” approach. Risk parity portfolios focus on balancing the *risk levels* (as measured by standard deviation) across multiple asset classes so that each asset class contributes an equal amount to the portfolio’s total risk. This approach is different from MVO, which allocates based on *capital invested*. In a risk parity portfolio, higher risk asset classes (such as stocks) require lower levels of capital invested and lower risk asset classes (such as bonds) require higher levels of capital invested. Note that this approach has effectively ignored return expectations so far.

The Result of Risk Parity

The result of this approach is that it moves the portfolio away from 65% of the assets, and 95% of the risk contribution, being invested in stocks, to one where the stock portion of the portfolio contributes an equal amount of *risk* to core bonds and inflation-linked bonds. In *capital invested* terms, this risk parity portfolio has a much lower exposure to stocks (in this case 15% instead of 65%) and a much higher allocation to bonds (56% instead of 35%) and inflation-linked bonds (29% instead of 5%).

Let's Get Those Returns Up!

The benefit of a risk parity strategy is that it can incrementally increase a portfolio's risk-adjusted returns. However, stocks have been dramatically reduced in the portfolio, which means the expected portfolio return has also been dramatically reduced.

How can we increase our expected return? The answer is leverage. Leverage is a key requirement for risk parity. Now that the portfolio has been created, investors can use leverage to increase the expected return to their liking. Regardless of the level of leverage, each asset class's contribution to risk remains roughly equal (33% each).

How Has It Performed?

The authors back-test the performance of risk parity portfolios over multiple time periods, dating back to 1974. Since these portfolios have a much lower allocation to stocks (and higher allocation to bonds) than traditional allocations, risk parity portfolios tend to outperform traditional allocations when stocks are falling and/or interest rates are falling. Conversely, these portfolios underperform traditional allocations during stock recoveries or when interest rates spike.

Findings of the Paper

The authors conclude that investors should consider a few things before allocating to risk parity strategies:

1. Portfolios using risk parity tend to have a higher allocation to bonds, which means they will protect capital in an equity selloff but will typically lag when equities rally.
2. In order to achieve higher rates of return, risk parity portfolios often require leverage. Many asset allocators may not be able or allowed to take on leverage. If they do take on leverage, they should be aware that it can be a double-edge sword. Some might argue that risk parity strategies have the potential for outperformance because some investors are not able or allowed to use leverage and therefore low risk portfolios may go underpriced.
3. Most risk parity portfolios are best when implemented with liquid exchange-traded derivatives, such as futures.
4. Finally, risk parity portfolios look different from peers. Investors in this type of strategy need to be comfortable with tracking error (relative to peers) and potentially underperforming during large equities rally.

While these issues are important for consideration, risk parity portfolios can provide investors with the opportunity for risk diversification and the potential for better Sharpe Ratios.
