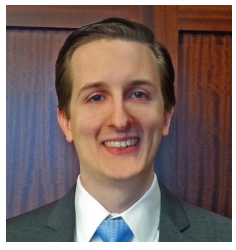
Taking Control of Your Risk Allocation

By John Huss and Michael Mendelson



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Risk parity strategies are built on a few simple observations and the implications that immediately follow. Risk-adjusted returns across asset classes are more similar than not, most traditional portfolios concentrate risk in just one asset class, and investing in each market pays off, but not necessarily at the same time. This leads to a straightforward conclusion: adding a risk-balanced portfolio to a traditional asset allocation should increase its risk-adjusted return and provide much needed diversification. That's a powerful statement in support of risk parity, but it still leaves a couple of important questions unaddressed. First, should we seek to be risk-balanced only on average over time, or to be risk-balanced at each point in time? Second, does risk parity conflict with a preference for active asset allocation, or is choosing to tilt the risk budget away from balance consistent with the logic of risk parity?

We see risk parity as a better starting point from which to express the full range of active asset allocation views, but we don't believe deviations away from risk parity should be driven merely by changes in the market risk environment. Instead, to the extent possible, the risks investors take should be their active choice, not a passive consequence of changing market volatility.

CONSISTENT DIVERSIFICATION

Market risk levels evolve through time and follow different paths for each asset class. Unless proactively managed, a risk parity strategy (really any asset allocation strategy) tends to become unbalanced across assets as well as variable in total risk. Held passively, it rarely remains on its targets for either. For example, in some periods, like 2008, portfolio volatility may become uncomfortably high at the very same time diversification is reduced. During this period, equity and credit risks quadrupled, but government bond risk merely doubled. By comparison, in periods like 1979 to 1981, sharp increases in bond volatility could make a risk-balanced portfolio overly concentrated in interest rate risk. Fortunately, the structure of risk parity portfolios enables us to maintain better risk balancing and steadier total portfolio risk through a dynamic approach to asset exposures.

Figure 1 shows how a portfolio that is only risk diversified on average (i.e. "Static Risk Parity") becomes risk concentrated in some situations. However, by dynamically adjusting asset exposures as the market risk environment changes, we may maintain a much better balance. The risk concentrations in static risk parity portfolios, though much less severe than those of traditional portfolios, still can become uncomfortable for investors to hold in the most hostile market environments. These concentrations also degrade portfolio Sharpe ratio. Similarly, Figure 2 shows that a static risk parity strategy, by failing to control total portfolio risk through time, can realize much higher risk in some market environments than others, reducing time diversification and concentrating risk over short periods. While this is also true for traditional portfolios and more difficult to manage, a risk parity investor can vary exposures though time to counteract much of the adverse effect.

Altogether, Figure 1 and Figure 2 show that through volatile market periods, a dynamic risk parity portfolio may maintain better risk diversification and experience less variation in its overall level of risk. That is, while being risk-balanced (only) on average is better than being risk concentrated, better still is to be risk-balanced all of the time. That requires some ability to forecast risk and a willingness to rebalance the portfolio to adapt to changing forecasts. The good news is that risks can be forecast to an imperfect but useful extent and risk is easier to forecast than returns. Dynamic risk parity uses changing risk forecasts to decrease position sizes when asset volatility rises and increase them when asset volatility falls (though only within limits). It is the reasonable ability to forecast risk that allows investors to choose their risks instead of having risks chosen for them by the vagaries of the market environment.

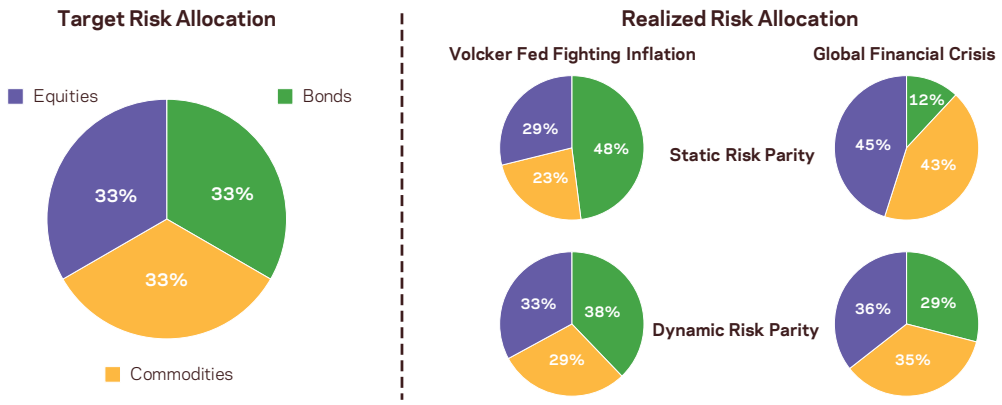
ACTIVELY CHOOSING AGAINST BALANCE

A strategic risk parity allocation (one that doesn't express tactical views) is a well-balanced portfolio an investor might want to own for the long term. For many investors, a strategic risk parity allocation fits their overall portfolio even if they prefer to take meaningful active allocation views – they simply choose to take those views outside of their risk parity allocation. Other investors prefer the ability to express tactical views anywhere in their portfolio, and the structure of a risk parity portfolio can readily accommodate this choice. Risk parity offers an excellent starting point from which to take active views as it allows investors to get meaningfully over- or underweight each asset class as suggested by those views. In contrast, traditional portfolios possess such highly concentrated equity risk that most plausible active allocations will still remain risk concentrated in equities.

The hurdles for active management to add value to a risk parity allocation are several: reduced diversification; the potential for higher portfo-

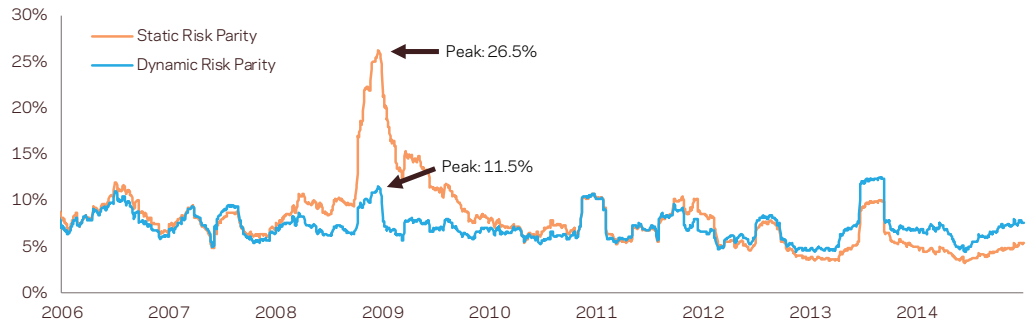
Figure 1: Dynamic risk management can better maintain diversification in periods of unusual asset volatility*

Volatility contribution for a simple risk parity portfolio of equities, bonds and commodities



*Source: AQR. Static and dynamic realized risk allocation pie charts are based on hypothetical simple risk parity portfolios. Both portfolios are composed of developed equities, developed nominal bonds and commodities. Static risk parity exposures remain constant while dynamic risk parity adjusts exposures based on changes in volatility forecasts. "Volcker Fed fighting inflation" scenario is based on realized volatility contribution for 120 days ending September 30, 1980. "Global financial crisis" scenario is based on realized volatility contribution for 120 days ending April 30, 2009.

Figure 2: A static exposure strategy is a variable risk strategy**
Realized volatility of static and dynamic risk parity strategies

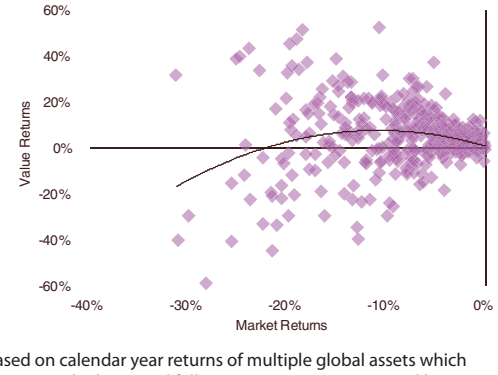


**Source: AQR. Static and dynamic realized volatility based on hypothetical portfolios. Both portfolios are composed of developed equities, developed nominal bonds and commodities. Static risk parity exposures remain constant while dynamic risk parity adjusts exposures based on changes in volatility forecasts.

Figure 3: Active views can exhibit some, but not nearly certain downside protection***

3a. Downside asset returns vs. 12-month trend following

3b. Downside asset returns vs. common value signals



***Source: AQR. Scatter plots and quadratic models of best-fit are based on calendar year returns of multiple global assets which include equity, nominal bond and commodity markets normalized to 10% volatility. Trend following returns are generated by going long or short the asset in proportion to its past 12-month return. Value returns are long or short the asset based on the level relative to history of Shiller E/P ratios for equity markets, real bond yields for nominal bond markets and 5 year reversal for commodity markets.

lio risk; and transaction costs. As any active tilt applied to a risk parity strategy is a tilt away from diversification, it can reduce the Sharpe ratio unless it provides enough net-of-transaction-cost return to compensate. We believe that active risk parity strategies can overcome these obstacles and the best way to do so is to incorporate a diverse set of active views, appropriately scaled for the best risk/reward tradeoff.

Active risk parity strategies that utilize a combination of different predictive signals – e.g. time series trends, value, fundamental momentum, relative value, and carry – should be more likely to outperform a strategic-only risk parity allocation than an active strategy that relies only on a single signal or theme. In addition to the return boosting benefits diversified signals can provide, some, but not all, of the active themes we favor also may have risk management benefits when added to an investor's portfolio.

WHEN ACTIVE MANAGEMENT IS (AND ISN'T) RISK MANAGEMENT

We believe that active views (like having a value bias) are about seeking return, not about managing risk. Managing risk means attempting to control for the uncertainty around outcomes, not increasing the probability that your views will eventually be correct. But there are circumstances in which risk management does interact with the choice of active views. For example, we find that even a simple version of trend following – a strategy that buys winners and sells losers based off of recent absolute performance – can reduce tail risks; a consequence of that strategy having had some bias toward outperformance during significant bear markets (see Figure 3a). This is in part due to the tendency of large market drawdowns to evolve over an extended period of time, giving trend following signals the potential opportunity to add value by developing meaningful underweight positions in the assets that are falling in price. It is also important to note that this relationship has only been true on average; it won't work this way every time.

Contrast the experience shown in Figure 3a with the results presented in Figure 3b, where we examine another common approach to forming active asset allocation views, the use of valuation metrics (like market aggregate earnings to price ratio) to time markets. With a value-based timing strategy, an investor forms an allocation based on an asset's cheapness relative to its own history. This strategy is a useful complement to trend following much of the time, but it's not a strategy with risk management benefits. That is, the performance of value-based timing strategies has not tended to show beneficial properties during significant bear markets. Though some commentators would have us believe that you can't go wrong 'buying cheap and selling dear,' the reality is that even if we really knew underlying asset values, there is nothing to keep cheap assets from getting cheaper or expensive assets from getting more expensive for a very long time. Nevertheless, a value-based strategy may still be useful when combined with trend following signals as these two approaches tend to be negatively correlated.

PUTTING IT ALL TOGETHER

Amidst the discussion of how best to implement a risk parity strategy, we believe investors should keep in mind that the most important thing is to diversify across asset classes by risk rather than by capital. But, by targeting diversification and consistent total portfolio risk at each point in time, investors are able to more fully realize the benefits of that central decision to risk-balance. And, by applying sensibly proportioned and diversified tactical tilts to risk parity, investors may generate additional uncorrelated returns with little loss of diversification. Some of these active views may also provide modest risk management benefits, but no one should be under the illusion that tactical tilts are a suitable replacement for disciplined risk management. By starting with a more diversified allocation, maintaining that diversification by managing risk through time, and then adding value through active management, we find that risk parity can help investors take the risks they want to take and avoid the ones they don't – all accomplished while also getting better risk-adjusted returns than a traditional portfolio. This, in fact, has been our realized experience over nine years of managing risk parity strategies.