



Smarter Beta

Equal Risk Contribution vs. Minimum Variance



Whether driven by extended valuations or concerns over the fragile nature of the recovery, investors and their advisors are increasingly focused on mitigating risk in their portfolios. At the same time, extremely low yields and the potential for increased interest rates has limited the appeal of fixed income as a risk mitigation strategy. Not surprisingly, investors are increasingly turning to low volatility strategies, yet not all such strategies are created equal. Particularly with respect to smart beta, Rothschild argues that an approach called Equal Risk Contribution offers investors a superior solution to minimum variance strategies.

Background: an Overview of Minimum Variance

Before highlighting the benefits of the Equal Risk Contribution (ERC) approach, a review of minimum variance strategies is in order. In his groundbreaking work on designing efficient portfolios, Harry Markowitz noted that investors should consider expected return a desirable thing and variance (i.e., risk) of return an undesirable thing. He further defined the Efficient Frontier as a series of optimal portfolios which maximize the expected return of the portfolio for a given level of risk.

While these concepts were pioneered in the 1950s, the aftermath of the financial crisis has led today's investors to become even more focused on "risk efficiency" as the cornerstone of their portfolio construction process. Investors strive to maximize their expected return per level of risk they accept—in plain terms, "bang for the buck"—when choosing from the near infinite combinations of risky assets to include in their portfolio.

Smart Beta and Minimum Variance

The renewed focus on risk also led investors and asset managers to revisit portfolio construction. This focus, combined with a desire to reduce the levels of fees typically associated with active portfolio management, led to increased interest in so-called “smart beta” strategies. The term smart beta refers to a wide variety of strategies which aim to determine security selection and weighting based on factors other than market capitalization, the primary determinant in most traditional indices. While smart beta strategies utilize a wide range of factors to construct portfolios, including valuation and revenues, low volatility smart beta strategies assign weightings based on volatility in the pursuit of providing diversification and superior risk-adjusted returns. Therefore, volatility is treated as a critical input to the strategy rather than an arbitrary output.

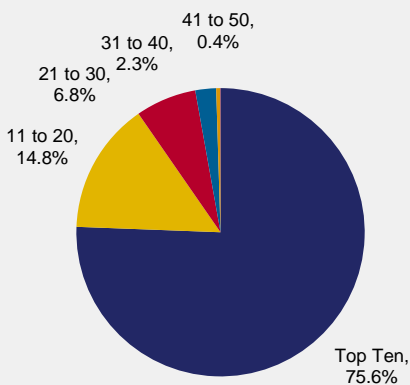
Minimum variance strategies are similar to smart beta strategies but try to achieve the highest possible return when specifically targeting the lowest absolute level of risk. The Rothschild Equal Risk Contribution 2.0 (ERC 2.0) builds upon the current state of smart beta and minimum variance strategies by attempting to improve their effectiveness in reducing drawdown while maintaining their risk-return profiles. Said differently, the strategy attempts to reduce downside risk without giving up all of the upside.

Unlike traditional low volatility strategies, the Rothschild strategy’s first objective is to focus on reducing the frequency and magnitude of drawdowns by removing stocks that have a disproportionate amount of risk. Research suggests that this can provide more appealing relative performance in periods of higher volatility.

Impact of constraints on volatility

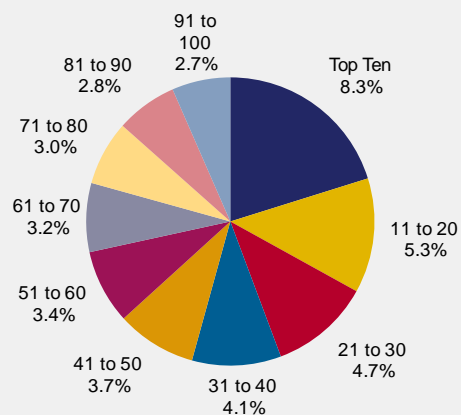
A pure minimum variance portfolio cannot be directly compared to Rothschild’s ERC 2.0 because the former is not practically investible in a real world context. The chart below highlights a significant drawback with a pure minimum variance approach to global investing in that there is a strong concentration in only a few stocks. The first ten stocks of the pure minimum variance portfolio represent over 75% of its total weight, and the following ten stocks represent another 15%. In other words, the 20 first stocks represent more than 90% of the total weight of the portfolio. That level of concentration is unacceptable for an investor who wants to invest in a diversified low-volatility strategy.

Mean Variance



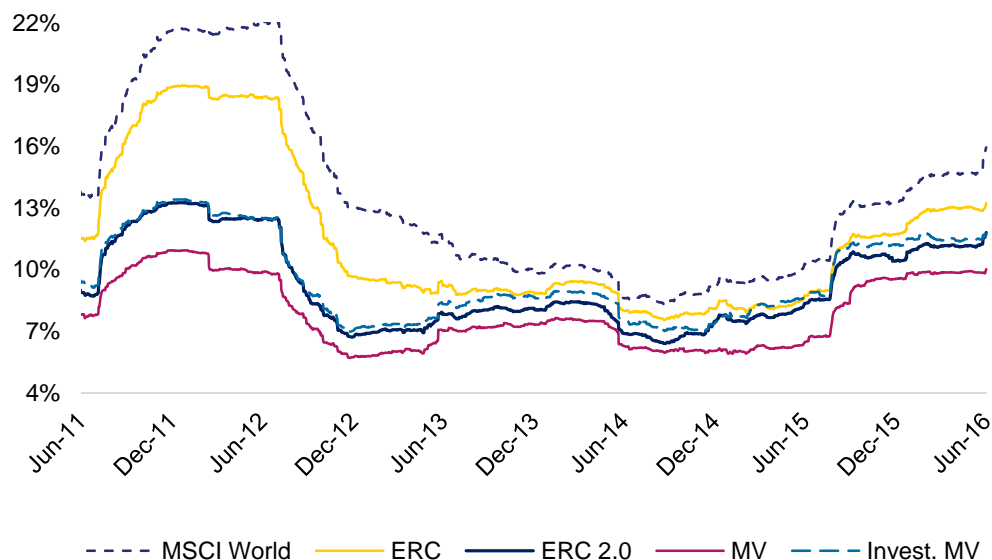
Source: Bloomberg, Rothschild analysis

ERC 2.0



Therefore, many constraints must be added to the strategy in order to make it investible and to reduce the excessive turnover. Generally, these constraints impact the minimum weight per stock, per sector, per country or the maximum spread with the capitalization-weighted benchmark (the MSCI World in this case). Without these constraints, there's no doubt that the pure MV has better volatility reduction than the ERC 2.0 (-44% and -33%, respectively, over five years as of June 30, 2016).

Volatility*



Source: Bloomberg, Rothschild analysis
 * Please see pg. 6 for important disclosures.

Impact of constraints on performance

The necessary constraints of the minimum variance strategy do not dramatically modify its performance. In the two categories of constraints that are added to the minimum variance strategy, the first category aims to increase the diversification of the portfolio. For instance, there could be a minimum exposure per stock or per sector, similar to an equally weighted strategy. The second category of constraints attempts to reduce the excessive turnover of the strategy. Possible rules could include a maximum distance from the benchmark in terms of weights, similar to a capitalization weighted strategy (i.e., the benchmark).

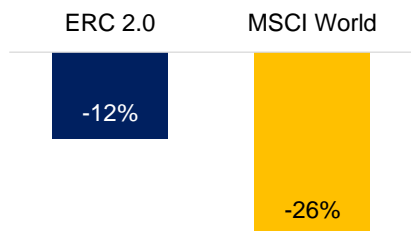
In light of this, when creating an investible minimum variance strategy, the result is a hybrid portfolio of a pure minimum variance strategy, an equally-weighted strategy, and a capitalization-weighted strategy. It could therefore be difficult to explain the causes of the investible minimum variance performance, as performance will depend on the performance and allocation among these three individual strategies.

ERC 2.0: Minimizing Downside while Preserving Upside

Unlike the minimum variance strategy, the ERC 2.0 is a pure strategy and does not require constraints to be diversified and investible. Unlike many strategies, the main objective of the ERC 2.0 is to reduce the drawdown because permanent capital loss is a key concern for investors in the years after the financial crisis. During the last five years, the ERC 2.0 maximum drawdown was more than 50% lower than the MSCI World's maximum drawdown of about -26%.

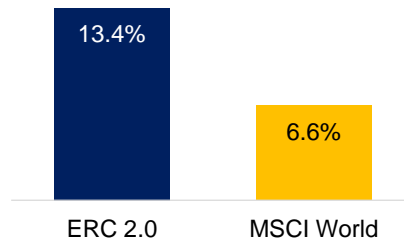
If reducing the drawdown is an efficient way to improve the risk profile of a portfolio, a sensible question investors may ask is “What is the price of this improvement?” While the tradeoff between risk and return has been highlighted throughout this article, the ERC 2.0 has managed to achieve this drawdown reduction while still outperforming the benchmark. The annualized return of the ERC 2.0 strategy has been more than twice as high as the annualized return of the MSCI World.

Drawdown Comparison*



Source: Bloomberg, Rothschild analysis
* Please see pg. 6 for important disclosures.

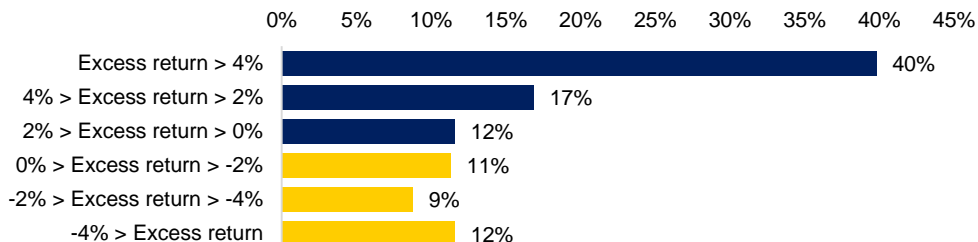
Trailing Return Comparison*



Performance by Time Horizon

While smart beta strategies are dedicated to long term investors with a horizon of over five years, comparing smart beta strategies and ERC 2.0 over short term periods may be useful in highlighting some of their limitations. The chart below compares a one-year investment in the ERC 2.0 strategy with a one-year investment in the investible minimum variance strategy from January 2008 to June 2016. In 40% of the one-year periods within the history of the strategy, the ERC 2.0 outperforms by at least 4%. Additionally, 68% of the time the ERC 2.0 is creates positive excess returns versus the investible minimum variance strategy (positive excess return equal to the sum of the blue horizon bars).

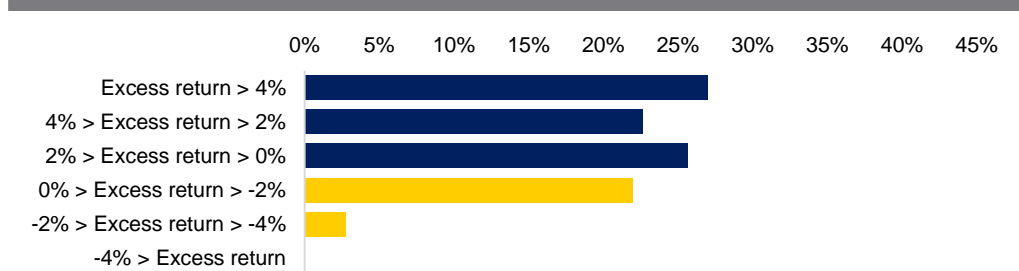
Rolling 1 Year Comparison*



Source: Bloomberg, Rothschild analysis
* Please see pg. 6 for important disclosures.

When we increase the holding period to three years, the ERC 2.0 performance is higher than the investible minimum variance performance about 75% of the time.

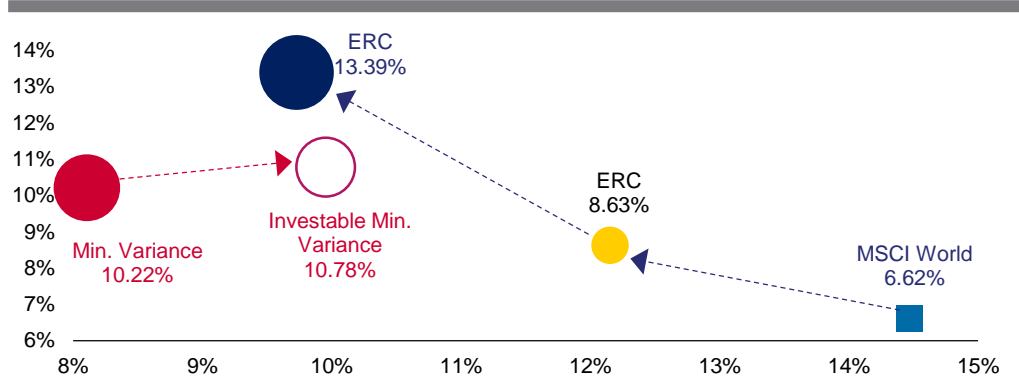
Rolling 3 Year Comparison*



Source: Bloomberg, Rothschild analysis
 * Please see pg. 6 for important disclosures.

It is never simple in asset management to compare strategies, since what is ideal for one investor can be inefficient for another. Nevertheless, comparing both strategies in terms of returns and in terms of volatility can highlight the differences in behavior between these strategies. The last chart below shows the sharp improvement of both the minimum variance portfolios and the ERC 2.0 portfolio in comparison with the MSCI World. However, while the ERC 2.0 and the investible minimum variance have comparable volatilities, the ERC 2.0 strategy has produced an additional annual excess return of 261 basis points.

Risk/Return Comparison*



Source: Bloomberg, Rothschild analysis
 * Please see pg. 6 for important disclosures.

Conclusion

Investors should consider smart beta and risk based strategies for their unemotional and repeatable process. The guiding philosophy behind the creation of ERC 2.0 is that diversification is good, but diversification of risk is even better. Like other risk based strategies, ERC 2.0 uses risk contribution as the input in the model for determining weights; however, Rothschild's approach adds a line-by-line analysis of the risk contribution of each security to remove disproportionately risky assets and ensure that each constituent adds an equal level of risk to the portfolio.

In today's market, risk based solutions allow investors to increase their exposure to the equity market while seeking to reduce future drawdowns. With an eye towards risk management, Rothschild's approach seeks to help clients to accumulate wealth and protect their investments.

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