An Alpha Opportunity: Low Volatility Equity Strategies

Product Overview

What are low volatility equity strategies?

Low volatility equity strategies, sometimes referred to as managed volatility or minimum variance strategies, seek to deliver equity market returns with significantly less return variability than the capitalization-weighted index.

How do low volatility strategies compare with traditional strategies?

Low volatility and traditional equity strategies have similar return potential, but vary on the risk dimension. Low volatility strategies provide a smoother pattern of returns over time, but have larger deviations (tracking error) from the capitalization-weighted index.

How is this possible?

Unlike the positive relationship between risk and return across asset classes, the relationship within the equity market has followed a different pattern. Stocks with below-average volatility have performed better than expected, while stocks with the highest volatility have performed much worse than expected. Consistent with the evidence of a low volatility alpha, it has been possible to build portfolios tilted towards low volatility stocks that have had market-level returns or better and much lower volatility.

What are the benefits of low volatility investing?

Potential benefits of utilizing a low volatility strategy include:

- Higher Sharpe ratio
- Better asset-liability management
- Lower balance sheet volatility
- Risk budget savings which can be applied to other return-seeking strategies
- Avoiding the tyranny of benchmarks and the crowded trade

Is this something new?

No. Studies appearing as early as the 1970s, using equity market data going back as far as the 1930s, highlighted the shortcomings of the capital asset pricing model and its prediction of a linear relationship between risk and return. Numerous studies since then have noted the unusually good performance for low risk stocks across U.S. and international equity markets alike.

Why is this not widely known?

The intuition supporting a positive risk-return relationship is very strong; it appears that investors have been willing to accept the relationship as a given, even in the face of overwhelming contradictory empirical evidence. Academics may have clouded the issue by dwelling on a host of technical statistical issues and suggesting the possibility of some unidentified, undiversifiable risk factors that might explain the results[1]. Meanwhile, the marketplace tends to be much more return-focused than risk-focused. The idea of getting market-like returns, with 30% less risk is far less saleable than getting 30% more return, with whatever risk. And to the extent that anyone is paying attention to risk, the heavy use of style-box benchmarking has effectively shifted the focus away from the risk of losing money (measured by volatility) to the risk of underperforming a benchmark (measured by tracking error). To manage tracking error, managers are encouraged to match the volatility of the benchmark, leaving greater leeway for taking active bets on industry and individual stocks. Thus, the low volatility alpha has been largely ignored.

> "The heavy use of style-benchmarking has…shifted the focus away from the risk of losing money…to the risk of underperforming a benchmark."

Is volatility predictable?

Yes, this is one of the attractions of low volatility strategies. While past returns don't tell you much about future returns, past volatility does a good job of predicting future volatility. Keep in mind that we are not trying to predict the absolute level of volatility, only which stocks are likely to have below-average volatility and which are likely to have above-average volatility. In short, it's much easier to predict differences in relative volatility than differences in relative returns.

How do you construct a low volatility portfolio? How is it different from traditional equity strategies?

Low volatility strategies start by returning to the original definition of risk and building portfolios by considering the trade-off between expected return and total volatility, not tracking error. Because the returns to high volatility stocks have not been sufficiently high enough to justify their higher risk, there is little reason to hold them if you are no longer attempting to match the volatility of a capitalization-weighted benchmark. Avoiding high volatility stocks naturally leads to a portfolio with less volatility. For diversification purposes, constraints are typically placed on individual stock positions and industry and sector weights.

[1] Size and value were suggested early on as proxies for these unidentified risk factors, and have been taken up in the widespread use of size/style box classifications for manager evaluation and selection.

Because the capitalization-weighted benchmark is largely ignored in the portfolio construction process, low volatility portfolios tend have higher tracking error against the cap-weighted index.

Can you create a 130/30 low volatility portfolio and what are the benefits of doing so?

Yes. In fact, a 130/30 strategy is particularly well suited to extracting the maximum benefit from a low volatility strategy. A typical 130/30 strategy is designed to enhance the return potential of the portfolio by allowing shorting of stocks with low expected returns. Because high volatility stocks have higher risk and lower expected returns, shorting these stocks not only increases the return potential, but also further reduces the volatility of the portfolio. Whereas a long-only low volatility strategy might have an equity beta of 0.70, the beta for a 130/30 low volatility strategy can be as low as 0.55.

What other variations are possible?

Ongoing research is exploring the potential to offer other variations on the low volatility concept, including a beta 1 version using leverage (net equity exposure greater than 100%) and long/short beta zero version which is beta neutral, but not dollar neutral (net equity exposure greater than zero).

When does the strategy do well/poorly?

This gets to the heart of the low volatility alpha, specifically the asymmetrical payoff to low volatility stocks in up and down markets. Low volatility strategies outperform in down markets and underperform in up markets. Because there are roughly twice as many up months as down months over the course of a full market cycle, low volatility strategies would trail the overall market if returns were symmetrical. But instead, in up markets, low volatility stocks trail the market, but not by as much as expected given their beta. And in down markets, low volatility fall even less than would be predicted by their beta. In other words, the upside capture is greater than expected, as is the downside protection. As a result, low volatility strategies have achieved market-level returns or better even in periods where there are more up months than down months. Of course in a long string of up months, low volatility strategies would be expected to underperform.

What are the risks? What could go wrong?

The most obvious risk of a low volatility strategy is the high tracking error versus the capitalization-weighted benchmark, i.e., deviating from the "crowd." This risk will be felt most acutely in rapidly rising markets, where the low volatility strategy will tend to lag significantly behind the market. However, tracking error versus a plan's liabilities may

actually be lower for a low volatility strategy. Another risk is that the high volatility stocks begin to earn outsized returns, in which case the low volatility strategy would have lower returns and lower risk. Low volatility managers must also guard against the risk of being overly concentrated in one or more sectors which suddenly experience a spike in volatility. This is why diversification parameters are critical in the construction of a low volatility portfolio.

How do low volatility strategies fit in my plan structure?

At the highest level, low volatility strategies can fit well in a plan's structure because they better match the liability stream or spending needs of many plans. They provide the higher return potential of equities with less of the volatility penalty. This can enable a higher allocation to equities or alternatively conserving the risk budget to be allocated to other alpha seeking strategies which may entail more volatility. However, they don't fit neatly into an equity plan structured around size-style benchmarks and capitalization-weighted benchmarks. For this reason, some have chosen to place them in an alternatives bucket, along with other non-beta 1 strategies. For those with a more flexible core-satellite structure, low volatility could serve as a lower beta satellite or alternatively as a low risk core around which other higher risk alpha seeking strategies serve as the satellites.

"They provide the higher return potential of equities with less of the volatility penalty."

Is this strategy susceptible to crowding and if so what are the implications?

The fact that low volatility strategies can wreak havoc with traditional plan structures, poses a strong impediment to low volatility becoming a crowded trade. However, should the marketplace eventually move overwhelmingly to low volatility strategies, the following is likely to happen. Low volatility stocks would be bid up in price and high volatility stocks would be bid down in price. Early adopters are likely to benefit from this shift. A similar effect may have occurred with the large-scale adoption of index funds managed against capitalization-weighted benchmarks.

How do low volatility and fundamental "indexing" strategies compare?

Fundamental "indexing" and low volatility strategies are similar in their willingness to deviate from capitalization weighted indices, however, the similarities end there. Fundamental indexing focuses on alternative measures of size (many of which are correlated with valuation metrics) not measures of risk. By contrast, risk is a driving factor of portfolio weights in low volatility strategies. Because risk is not tied directly to valuation, the style exposure for low volatility strategies can vary over time, whereas fundamental "indexes" have a built in value tilt. Currently, for example, low volatility strategies have more of a

growth tilt given the extreme levels of volatility currently associated with segments of the value universe, including financials.

What explains the persistent inverse relationship between volatility and returns?

Investors appear to be more risk averse in declining markets, with low risk stocks declining less than expected. In rising markets, investors appear to be more risk indifferent, with low risk stocks rising more than expected. Various factors may contribute to the overpricing of high volatility stocks including benefits to taxable investors and asset gatherers. High volatility stocks may also be more susceptible to optimistic mis-valuations.

What is the appropriate benchmark for a low volatility strategy?

Benchmarking for low volatility strategies is still evolving. With an equity beta in the 0.5 to 0.8 range, stand-alone capitalization weighted indices are not particularly useful. However, it is possible to beta-adjust the market index to come up with a more appropriate benchmark. For example, if the low volatility strategy has an average beta of 0.70, then the beta-adjusted benchmark would be:

0.70 x cap-weighted index return + 0.30 x risk free return

About Martingale

Martingale Asset Management, founded in 1987 and based in Boston, manages equity portfolios for many of the world's most demanding corporate pension plans, foundations, endowments, public retirement systems, and multi-employer funds. Investing is our only business.

We believe that rigorous and insightful proprietary research conducted within a systematic and disciplined investment process by an experienced and collaborative Investment Team leads to consistently strong investment performance.

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Notes

The views expressed herein are the views of Martingale Asset Management and are based on the firm's own research involving simulations of the retroactive application of a valuation model designed with the benefit of hindsight. As a result, it is possible that actual results based on actual trading, without the benefit of hindsight, may materially differ from the simulated, back-tracked results presented here. Alphas used during the firm's research simulation (when available) were generated from a valuation model in use at each point in time. Further, as with any active equity strategy, there is always the potential for declines in the value of accounts managed pursuant to this strategy. It is possible that market conditions and other economic factors unintentionally impacted the design of this valuation model, thereby producing results that would be difficult or impossible to match without the benefit of hindsight. All investment models are subject to risk, and there can be no assurance that an investment strategy will achieve its stated objective.

Martingale also considered the research of others, as follows:

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