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Is Rebalancing the Source of Factor Premiums?

DAVID BLITZ

Some argue that the mere mechanism of rebalancing increases returns and that this explains the success of factor investment strategies. Although factor strategies need rebalancing to maintain their exposures, we argue that it is unlikely that this is their source of added value, for a number of different intuitive reasons. More formally, we then discuss the finding that rebalancing's effect on return may just as well be negative instead of positive. All in all, the causality is more likely to be the other way around: rebalancing cannot explain factor premiums, but when rebalancing generates a higher return, this may actually be because of implicit factor exposures.

FACTOR STRATEGIES REQUIRE REBALANCING

Factor investment strategies are designed to harvest established factor premiums, such as value, momentum, or low-volatility premiums. One feature all factor investment strategies have in common is that they require periodic rebalancing, as stocks' factor characteristics can change over time. For instance, a value strategy selects stocks that are cheap on valuation ratios, such as the price to earnings ratio (P/E). As time goes by, however, some of these stocks may become expensive on these measures, at which point investors must replace them with fresh value stocks in order to maintain the strategy's factor profile. Without rebalancing, a factor investment strategy's factor exposures would gradually deteriorate until no exposure at all was left, so rebalancing is an essential aspect of factor investment strategies.

The importance of rebalancing for factor investment strategies leads some to wonder whether this rebalancing mechanism could be the actual source of factor premiums. This view is implicitly supported by a number of articles that argue that rebalancing by itself can already generate a return premium over the market. For instance, see Fernholz et al. [1998], Erb and Harvey [2006], and Bouchev et al. [2012]. Note that the rebalancing premium also goes by other names, such as diversification return or volatility return. Given that mere rebalancing can generate a return premium and that rebalancing is an essential feature of factor investment strategies, a natural question is whether rebalancing is the source of factor premiums. In what follows we will argue that this notion is incorrect, i.e., that rebalancing is not the source of factor premiums.

It is important to distinguish between two types of rebalancing: rebalancing to maintain exposure toward a certain factor and rebalancing to bring portfolio weights back to (or closer to) their starting weights.

REBALANCING TO MAINTAIN FACTOR EXPOSURES

In this section, we provide three intuitive arguments against the notion that rebalancing to maintain exposures toward factors such as value, momentum, and low volatility is also the source of the premiums associated with these factors.

Mirror-Image Factor Portfolios Rebalance Just As Much... And Underperform

The studies that have documented the existence of factor premiums typically sort stocks into various mutually exclusive portfolios, e.g., quintile or decile portfolios. If we consider the value premium, for instance, these studies find that the outperformance of cheap (e.g., low P/E) stocks is mirrored by a similar-sized underperformance of expensive (high P/E) stocks. Similarly, the outperformance of past-winner stocks (momentum) is mirrored by a similar-sized underperformance of past-loser stocks, and the superior risk-adjusted performance of low-volatility stocks is mirrored by a similarly sized inferior risk-adjusted performance of high-volatility stocks. In other words, factor premiums are quite symmetric on the positive and negative sides.

Crucially, portfolios with attractive factor exposures and their counterparts with unattractive factor exposures involve similar amounts of rebalancing. For instance, maintaining exposure to cheap stocks and maintaining exposure to expensive stocks require similar amounts of rebalancing. So portfolios with opposite factor exposures exhibit opposite market-relative performances, despite having similar rebalancing characteristics. It is clear therefore that factor exposures, not the rebalancing mechanism, are driving their performances. In fact, given that the outperformances of portfolios with attractive factor exposures are mirrored by similar-sized underperformances of portfolios with unattractive factor exposures, it follows that the net contribution of rebalancing is about zero.

Factors Behave Very Differently, Which Argues against One Underlying Driver

Another argument against the notion that factor premiums arise from rebalancing is the fact that factors such as value, momentum, and low volatility behave very differently. Value and momentum even have a negative correlation, as stocks with strong momentum tend to become more expensive, while a large price decline tends to make stocks cheaper. In addition, value and momentum both have the tendency to select more risky stocks, thereby going directly against the low-volatility effect.

The explanations for value, momentum, and low-volatility put forward in the literature are also quite different. For instance, value is a contrarian strategy that seems to exploit long-term investor overreaction, while momentum is a trend-following strategy that seems to exploit medium-term investor underreaction. The different factors are

also recognized as separate phenomena in widely accepted asset pricing models, such as the Fama–French three-factor model or the Carhart four-factor model. Given all this evidence that the various factor premiums represent independent, distinct phenomena, it appears highly unlikely that they would actually share a single underlying driver such as rebalancing. Put differently, where is the study that shows that the three- and four-factor models can be replaced by a much simpler two-factor model consisting of just the market factor and one clearly defined rebalancing factor premium?

Many Factor Strategies Do Not Need Much Rebalancing to Begin With

Another argument is that many factor investment strategies do not need much rebalancing to begin with. Consider the low-volatility factor, for example. The low-volatility anomaly is documented in studies that consider volatility measured over the past one month, one year, three years, five years, or even ten years. Clearly, low-volatility strategies based on very short-term volatility measures require quite some rebalancing, but as the estimation period for past volatility lengthens, less and less rebalancing effort is needed. A portfolio based on past 10-year volatility hardly changes from month to month and comes pretty close to a buy-and-hold strategy.

Investors interested in harvesting the value premium or the small-cap premium do not need a lot of rebalancing either. Chow et al. [2011] show that a fundamental index, which is designed to capture the value premium, only requires an annual (one-way) turnover of about 15%, meaning that positions are held, on average, for almost seven years. Capturing the small-cap premium also requires few rebalancing efforts, as one can simply invest in a capitalization-weighted small-cap index that is largely buy-and-hold. Given that many factor investment strategies require so little rebalancing, it is hard to argue that, nevertheless, it is the rebalancing mechanism that really drives their return.

REBALANCING TO GET BACK TO STARTING WEIGHTS

In the previous section, we discussed rebalancing aimed at maintaining exposure toward a certain factor. In this section, we shift the discussion to rebalancing with nothing more in mind than bringing back portfolio weights

to their starting levels. Weights always have a tendency to move away from their initial values, because different stocks have different returns. Without rebalancing, stocks that do well get a larger weight at the expense of those that underperform.

Hallerbach [2014] analytically derives a closed-form solution for the return generated by rebalancing. The rebalancing return is equal to the difference between two terms, which he denotes as “volatility return” and “dispersion discount.” Crucially, both of these terms are always positive, so the difference between the two, i.e., the rebalancing return, can either be positive, zero, or negative. This implies that rebalancing can be beneficial or harmful, depending on the circumstances. For instance, low correlations between portfolio stocks help to boost the volatility return, leading to a higher rebalancing return, while a high dispersion in portfolio stocks’ long-term growth rates boosts the dispersion discount, leading to a lower rebalancing return.

Because the theoretical results are inconclusive, empirical tests are needed to assess whether the rebalancing return is more likely to be positive or negative. Hallerbach [2014] conducts various empirical tests, but again the results turn out to be mixed: the rebalancing return is sometimes positive and sometimes negative. We can therefore conclude that rebalancing is neither theoretically nor empirically a reliable source of return.

Rebalancing back to starting weights can change a portfolio’s factor exposures. For instance, consider an investor who simply buys and holds the market portfolio versus an investor who also starts out with the market portfolio, but after some time decides that the portfolio weights should be rebalanced back to what they used to be at a certain point in the past. This rebalancing is likely to induce small-cap, value, and reversal exposures, as the investor sells stocks that have become expensive, strong performers, or big parts of the portfolio in favor of stocks that have become cheap, weak performers, or small parts of the portfolio. Consistent with this notion, Chow et al. [2011] find that a popular rebalancing strategy, the diversity-weighted indexing approach of Fernholz et al. [1998], exhibits this kind of factor exposure. Moreover, these factor exposures can explain most of the performance. In other words, there may indeed be a causal relation between rebalancing and factor premiums, but factor premiums are not explained by rebalancing. Indeed, it is the other way around: positive returns from rebalancing may be attributed to implicitly induced exposures to classic factor premiums.

SUMMARY

This article argues against the notion that factor premiums arise from the rebalancing that factor investment strategies need to maintain desired exposures. For one, the outperformance of portfolios with attractive factor exposures is mirrored by a similarly sized underperformance of portfolios with unattractive factor exposures. As both portfolio types involve a similar amount of rebalancing, it is clear that factor exposures, not the shared rebalancing mechanism, drive their returns. In addition, different factors behave quite differently, have different explanations, and are widely regarded as distinct phenomena. This makes it quite unlikely that they are a manifestation of the same, shared, underlying driver. The fact that many factor investment strategies do not require much rebalancing to begin with also makes it unlikely that these modest amounts of rebalancing are the main driver of their return. We conclude that rebalancing is not the source of factor premiums.

There is also rebalancing to bring portfolio weights back to their original values. Theoretically, this has an effect on return that can be positive, zero, or negative, and the empirical evidence also paints a mixed picture. Thus, the rebalancing premium is not a consistent source of return in the first place. A final observation is that rebalancing back to starting weights can induce implicit exposures to some of the classic factor premiums, which can explain why simple rebalancing sometimes appears to be rewarding. Altogether, this implies that if there is a causal relationship, it is more likely to be the other way around: rebalancing cannot explain the existence of factor premiums, but a positive return from rebalancing may be driven by implicitly induced factor exposures.

ENDNOTE

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