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Choose Your Betas: Benchmarking Alternative Equity Index Strategies

Amenc, Noël;Goltz, Felix;Lodh, Ashish

Research Analyst: Zhang Yaquan

Overview

Alternative equity index strategies, or advanced beta strategies, attempt to generate outperformance over standard market indices. In the past years, these strategies have seen widespread growth. In this article, the authors propose three diversification-based weighting schemes and assess their performance in combination with various stock selection strategies. Furthermore, they benchmark commercially available advanced beta strategies by flexibly combining the results of the different choices for the key steps in strategy construction. The methodologies proposed in the article have significant implications in strategy construction and analysis.

Conceptual Considerations

Stock selection and stock weighting constitute two steps of index construction. To improve standard cap-weighted indices and obtain the declared objective[1], one can make use of either or both steps. Stock selection is an explicit and transparent way of tilting a portfolio towards desired stock characteristics or risk factor exposures; whereas a diversification weighting scheme achieves the objective by taking into account how different stocks interact when combined into a portfolio.

A large variety of advanced beta strategies exist to combine the two methods.[2] However, it is not entirely clear whether stock selection or diversification would be the most appropriate way to reach a given investment objective. In the article, the authors discussed the stock selection and diversification decisions of some commercially available alternative equity indices and their respective objectives. To achieve the same aim, different indices adopt different approaches.[3] To achieve multiple aims, some indices even adopt approaches that are in conflict with one another.[4]

Disentangling Stock Selection and Diversification

Three sample diversification-based weighting schemes are proposed. They are:
1. ***Minimum-volatility weighting with norm constraints*** (GMV-NC). Overall portfolio volatility is minimized subject to a norm constraint on portfolio concentration[5].
2. ***Efficient maximum-Sharpe ratio weighting*** (Efficient MSR). The objective of this approach is Sharpe ratio maximization.
3. ***Maximize-decorrelation weighting*** (MDC). Volatility is minimized by exploiting the risk-reduction effect stemming from low correlations as opposed to overweighting low-volatility stocks solely.

To analyze weighting schemes' performance relative to the performance of stock selection, each diversification scheme is paired with a stock selection decision of similar objectives for comparison purposes. A simplified tabulation of the comparison results are shown in Table 1. The results suggest that the stock selection approaches cannot match the portfolio diversification techniques in terms of attaining the stated objectives. A diversification scheme is able to reach an overall risk-award objective more effectively and at lower levels of portfolio concentration than stock selection.

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[1] Possible objectives are low volatility and low market beta.

[2] 18 alternative equity indices, including Russell Defensive, S&P 500 Equal-weighted and S&P 500 Low Volatility, are listed in Exhibit 2 of the article.

[3] To minimize risk, Russell Defensive weights low volatility stocks by their market cap and the S&P 500 low Volatility Index weight the stocks by the inverse of their volatility.

[4] The S&P GIVI Index selects stocks based on low risk and weights them based on their intrinsic value.

[5] In the article, portfolio concentration is measured by effective number of stocks in the portfolio which is the reciprocal of the Herfindahl Index.

	GMV NC	Efficient MSR	MDC
Objective	Low volatility	High Sharp ratio	Low correlation
Alternative Selection Scheme	Low volatility selection	High Sharp ratio selection	Low correlation selection
Improvement of Objective	6%	16%	4%

Table 1: Attainment of Objective through Diversification vs. through Stock Selection

In addition, the authors suggest that certain exposures of diversification-based strategies in the full universe (value tilt problem for example[6]) can be corrected by a suitable stock selection decision. The results of analysis show a proper match of stock selection and weighting scheme can not only obtain the desired risk exposures, but also enhance the ability of weighting schemes to achieve their respective objectives[7].

Benchmarking Popular Advanced Beta Equity Methodologies

By constructing advance beta benchmarks that have similar objectives and constraints, the authors compare these proprietary diversification techniques with two types of commercial strategies, namely:

1. *Defensive equity strategies.* All diversification schemes are able to reduce the volatility of the S&P 500 Low Volatility Index.[8] The Russell Defensive Index has 6.1% lower volatility when a diversification scheme with light liquidity constraints is applied for the consistency of objectives[9]. The MSCI Minimum Volatility Index has 11.6% lower volatility when GMV-NC and sector constraints are applied instead of stock-level constraints.
2. *Fundamental equity indexation strategies.* All of the diversification schemes, when applied to fundamental stock selection, have more impressive returns in achieving their respective aims. The authors further conclude that the fundamental weighting approaches forget that diversification is an important source of value added.

Conclusion

In the article, the authors provide a logical framework for alternative beta index construction, which consists of stock selection and weighting scheme. They demonstrate that diversification-based weighting schemes can maintain the attractive characteristics of alternative beta indices, whereas stock selection can be effective in neutralizing the factor tilts often inherent in such indices. A proper combination of the two approaches can be used to construct customized benchmarks for investors. The procedure can also be a reference in improving the performance of a portfolio to get a more attractive risk-reward tradeoff and a better exposure to certain risk. Moreover, their strategies can be used as benchmarks to assess the performance of commercial index offerings.

[6] Diversification schemes applied to the entire universe may end up overweighting value stocks. The problem can be avoided by the exclusion of value stocks.
[7] All matches in the article show an enhanced performance except for GMV-NC applied to high-volatility stocks, which compare the return between lower volatility and the broad cap-weighted index (S&P 500).
[8] To benchmark the S&P 500 Low Volatility Index, low-volatility selection, which is the approach used by the index itself, is used in stock selection step.
[9] The Russell Defensive Index tries to achieve both low volatility and high liquidity.

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