Making diversification your beta

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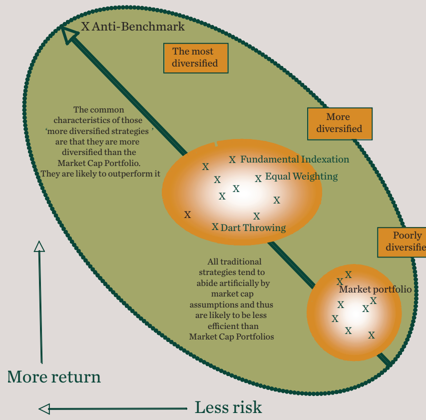
The guys at TOBAM – the $935m quants firm that spun-out from Lehman Brothers last year – have an intriguing graphic in their marketing material which they call “the potato”. It plots the relative risk-adjusted returns of various equity portfolio-construction strategies. The worst performers are traditional active managers and the market portfolio; strategies like fundamental indexation and equal-weighting fare better – but not much better than “dart throwing”; and, of course, TOBAM’s “Anti-Benchmark” approach sits happily right at the top.

“Everyone’s been looking to improve their allocation to beta since the dotcom bubble,” observes TOBAM principal, Michael Gran. “At first they started with the simplest variation – equal weight – and found that even that gives better return for less risk than the market portfolio. Even random portfolios do better. We looked at a whole host of variations – Age of CEO, for example, that worked, too. What unifies all these systematic approaches is that they’ve all been more diversified than the market portfolio. Anti-Benchmark just goes all the way to the most-diversified portfolio possible.”

This is not the most-diversified portfolio in the sense of equally weighting every stock in the universe, which would hide obvious unrewarded concentrations. Anti-Benchmark is related to the diversification benefits of constant-proportion portfolios, but it uses them, not to equally weight assets, but to equally weight risk factors. TOBAM’s systematic process picks up all the significant risk factors driving asset performance and then allocates risk among a basket of stocks to create maximum factor diversification. The underlying theory is demonstrated in a 2008 paper by TOBAM’s founding president, Yves Choueifaty and Yves Coignard, ‘Toward Maximum Diversification’.

There could be several implementation solutions, in terms of different portfolios of stock weightings, that are all close to the optimal factor-diversified portfolio.

“This is not a stockpicking model,” as Gran puts it. “You can pick from a number of subsets, each with a different set of stocks, but each Anti-Benchmark portfolio selected for those subsets will be picking up



nearly the same common factors driving market return. The Anti-Benchmark portfolios end up behaving very similarly to one another, but very differently from the market.”

The similarity in performance observed of these different Anti-Benchmark portfolios – showing that you can vary slightly from the perfectly-diversified portfolio and not see much variation in returns – demonstrates another key point: differentiation between risk factors is far more stable than the level of pair-wise correlations between stocks.

“The important thing for Anti-Benchmark is not really correlation levels but correlation hierarchy,” explains Choueifaty. “And that hierarchy is always pretty stable: BNP will always be less correlated with Peugeot than with SocGen.”

The focus on risk factors leads to relatively high turnover of stock holdings – about 100% per year. But because risk-factor correlations are relatively stable through time, and because there are so many different stock-based solutions to the factor-diversified portfolio, there is no need to rebalance once a month, or even once a quarter. Anti-Benchmark could be rebalanced as infrequently as annually, and it can therefore sit on the sidelines until trading costs are optimal.

“We wait for the market to give us ways to increase diversification, and sometimes even get paid for it,” says Gran.

All the maths is great – but it is good to be reminded of the common-sense basis of the maximum factor-diversified portfolio.

“There is only one way to go if you move away from diversification,” warns Choueifaty. “Gambling. If one risk factor was more rewarding than the others forever, the market would concentrate infinitely as everything was allocated to this factor. But the S&P500 is still the S&P500, not the S&P1. Now, if you don’t think that the market is going to concentrate to 1.0, you should diversify. I’m the only asset manager in the world who can tell clients that I’m not betting with their money.”

If you are never betting on the next big thing, you are much more likely to have decent exposure to it, simply because you will not be concentrated in something else. Backtesting Anti-Benchmark showed that it would have outperformed the market in the dotcom crash (because the downward move was most pronounced in a concentrated set of factors), but also in the recovery (because while the market had concentrated in growth Anti-Benchmark had maintained its weighting to value, which came roaring back). Of course, it might underperform in environments like the dotcom boom, where euphoria gets concentrated in a single factor – but these conditions are much rarer and more short-lived than you might imagine.

“The adverse scenario is when a factor relentlessly continues its price move,” Gran concedes. “But as long as it doesn’t just move in one direction without volatility, Anti-Benchmark can still perform well. Even during the dotcom period it underperformed mostly in the last six months, when the stocks leading the bubble went up – and only up – and the rest of the market just wasn’t going with them. We’ve taken the model back to the 1960s in the US stock market, and we’ve found that the late 1990s is really the only time you get that aberration.”

As Choueifaty observes, most of a pension fund’s risk and return comes from the systematic part of its portfolio – the beta – while most of the time and money gets spent hunting for alpha. No wonder market-cap exposure is still the default solution, despite the whirlpool of risk it brings to a portfolio.

“Dedicate more time to your beta exposure,” he advises. “You will confirm that the market-cap benchmark is not efficient and you need to diversify beta. Anti-Benchmark should really be part of the core portfolio. How could a trustee blame you for allocating? By saying you had diversified too much?”