

## A new challenge to factor-based investing

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Robert Huebscher | Advisor Perspectives | 02 December 2015

Disciples of factor-based investing need to respond to a new challenge. According to Mark Kritzman, investors will be better served by a strategy based solely on allocating to asset classes.

Kritzman is the founding partner and chief executive officer of Boston-based Windham Capital Management. He spoke on 9 November at Windham's annual research summit in Boston. His presentation was based on a paper, "[Facts about Factors](#)" which he co-authored with Paula Cocoma, Megan Czasonis and David Turkington of State Street Global Advisors.

By factor-based investing, Kritzman means more than just attributes like value, size and momentum. He is also including allocations to fundamental factors such as inflation and economic growth, as well as what he calls "principal components". Principal components are based on a statistical analysis that breaks down the universe of stocks (or other assets) into subgroups that are uncorrelated to one another.

Instead of a factor-based approach, Kritzman advocated adjusting allocations to asset classes based on overall market risk – a metric he calls turbulence. He believes that markets are macro-inefficient, that is, asset classes are over- and under-valued at points in time. His firm manages assets through separately-managed accounts and sub-advised mutual funds, based on those principles.

Let's look at the four reasons factor-based investing is inferior to asset-class-based investing, according to Kritzman.

### THE FOUR FLAWS IN FACTOR-BASED INVESTING

Kritzman gave four reasons why he dislikes investing in factors.

Proponents of factor-based investing, Kritzman said, often make the claim that factors are less correlated than assets and, therefore, offer greater diversification benefits. That claim, he said, is false. "The idea that factors provide more opportunity for diversification than assets is nonsense," he said. Many of the claims of diversification benefits, according to Kritzman, rely on misleading data. He said that is because researchers use short positions to give factors the appearance of greater diversification.

Since investing in factors ultimately requires selections of individual assets, he said it is "mathematically impossible" to create a more diversified portfolio with factors than with assets.

The second myth about factors, he said, is that they reduce the "noise" when compared to assets. This claim relates to the fact that, when securities are consolidated into factors, the means of the returns of those groupings are less noisy than the means of the returns of securities. But this would be just as true if securities were consolidated into asset classes, Kritzman pointed out, adding that consolidation does not reduce noise in covariances.

The third claim about factor investing that Kritzman countered was that factors are easier to predict than asset classes. Some people, he said, are more skilled at predicting factors than asset classes – and vice versa. He said this argument is investor specific and cannot be tested generically. But, those who choose to predict factors face the additional challenge of predicting how these factor values map onto factor mimicking asset groupings.

"At the end of the day, you must invest in assets," Kritzman said. The mapping of factors to assets introduces a potential error that does not exist in an investing strategy based solely on assets, Kritzman argued, and so it puts factors at a disadvantage.

His final critique of factor investing is that it increases estimation error – that is, the ability to use historical data to project future returns. Both factors and assets are subject to three common sources of error: small-sample error, independent-sample error; and, interval error. And, factor investing, unlike investing directly in assets, is also subject to mapping error.

Interval error has been largely ignored by academics and practitioners, Kritzman said. It stems from the mathematical principle that risk increases in proportion to the square root of time. For example, to extend a monthly risk estimate to an annual estimate, one multiplies by the square root of 12. In practice, however, that process is unreliable, Kritzman said, because assets are often auto-correlated (returns in one period are correlated with returns in prior periods). If autocorrelation is higher, then risk is greater over shorter time periods than what would be predicted mathematically using historical data.

This is particularly true in the bond market. Kritzman gave an example of how interval error can distort and even invalidate purported results. A prominent paper in the *Financial Analysts Journal* claimed to show that a risk-parity strategy outperformed a 60/40 portfolio using data going back to the 1920s. Kritzman argued this result was invalidated when it was revealed that it contained interval error. Once the data was corrected to adjust for the fact that returns were serially correlated, the 60/40 portfolio was shown to outperform the risk-parity portfolio by the nearly same amount that the FAJ article had claimed it underperformed.

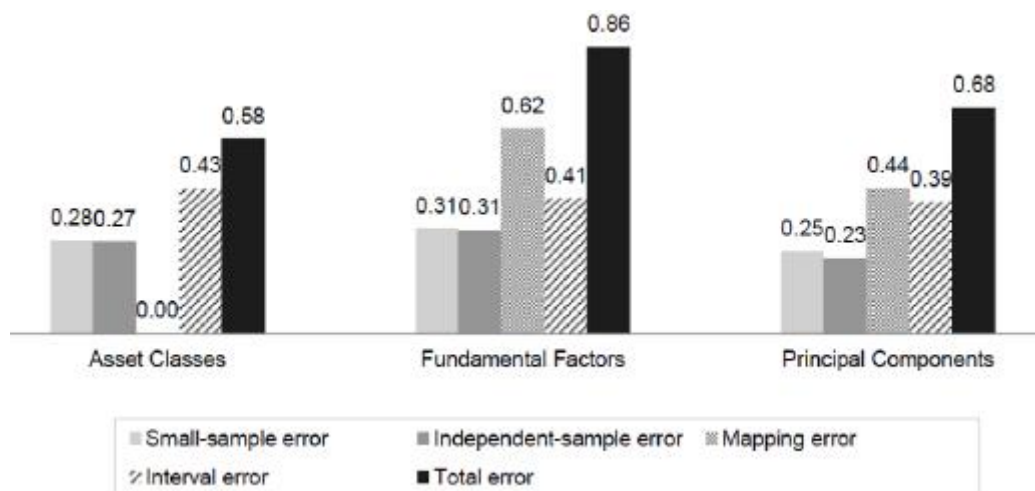
Kritzman said that similar misrepresentations have been found in studies of hedge-fund performance – once the data was corrected, the migration of funds between top- and bottom-performing quartiles was much greater than had been reported in original studies.

### MEASURING THE SOURCES OF ERROR

Kritzman has measured all four sources of error to determine whether assets or factors are more stable. He constructed three portfolios – one with six asset classes; one with six fundamental factors; and, one with six principal factors. The results are shown in Figure 1.

The four bars show the four types of errors for each of the three portfolios he constructed. The big difference, Kritzman said, is that there is no mapping error when using asset classes.

Figure 1: Asset classes, fundamental factors and principal components



Source: "Facts about Factors" White Paper by M Kritzman, P Cocoma, M Czasonis & D Turkington.

"Asset classes are the most stable," he said, "and will give the most reliable out-of-sample results."

He repeated this experiment using equity-only portfolio, comparing results with allocations based on industries, attributes (value, small-cap and momentum) and principal components. The results were similar.

## IMPLICATIONS

Kritzman advocates using a strategy that focuses on adjusting allocations in core asset classes based on turbulence and risk concentration. Those asset classes can be mispriced in times of stress and fragility, when risk is greater and more concentrated. Those conditions do not indicate that a crash is imminent, however – a crash requires a combination of fragility and bad news. But fragility and turbulence are persistent. Once it arrives, he said it continues often for as long as a couple of weeks.

That strategy contrasts starkly with one based on allocating to factors.

"It has been fashionable to use factors instead of assets when constructing portfolios," Kritzman said, but we need to reexamine the assumptions that underlie that belief. "The case has yet to be made to use factors as building blocks instead of assets," he said.

But factor analysis is valuable for two reasons, according to Kritzman. It can provide useful insights into performance attribution, and understanding factor exposures can identify concentration risk that can be hedged away. Those risks might be undetected if looking only at asset-class exposure.

"Some factors have risk premia or, even better, alpha," he said. "That is a perfectly legitimate argument. But to the extent it is true, those premia are time variant. Some asset classes or industries have risk premia. It is hard to argue that factors are better than asset classes."



*Robert Huebscher is the Founder and CEO of Advisor Perspectives. Bob founded Advisor Perspectives in 2007, following a 25-year career in the financial services and information technology industry. This article is abridged and reproduced with permission from [Advisor Perspectives](#).*

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