ADVISOR PERSPECTIVES

Portfolios for Turbulent Times

Robert Huebscher
November 11, 2008

Mark Kritzman is rewriting conventional wisdom about risk and diversification. His concept of "turbulence," a statistical measure of volatility and correlation, allows managers to construct portfolios that are more resilient in today's markets conditions.

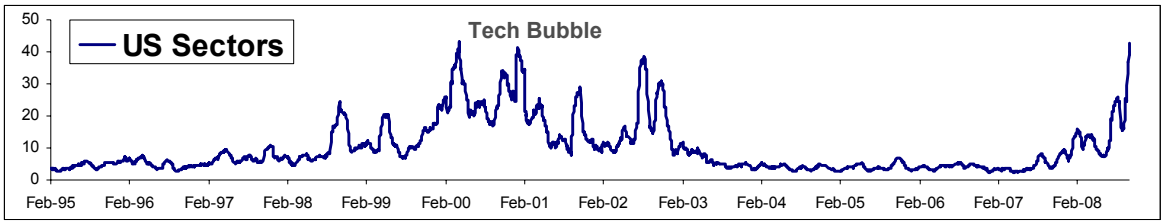
Traditionally, advisors have used software to navigate the efficient frontier, based on estimates of risk (standard deviation) and return by asset class. New research shows that using turbulence can produce portfolios with better risk-return profiles.

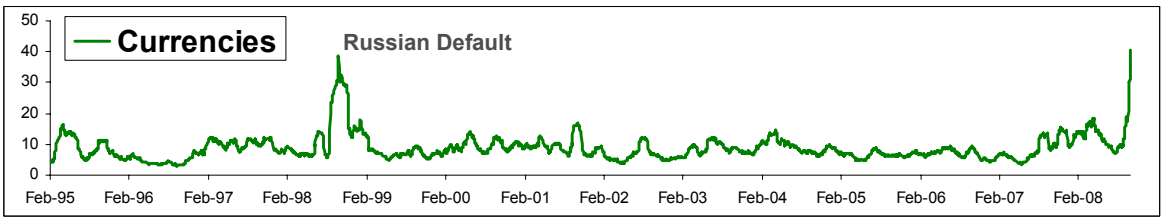
Mark Kritzman, CEO of Cambridge, MA-based Windham Capital Management, presented his research at the FPA annual conference in Boston last month. Kritzman also teaches a course in financial engineering at MIT and serves on the editorial boards of a number of academic publications.

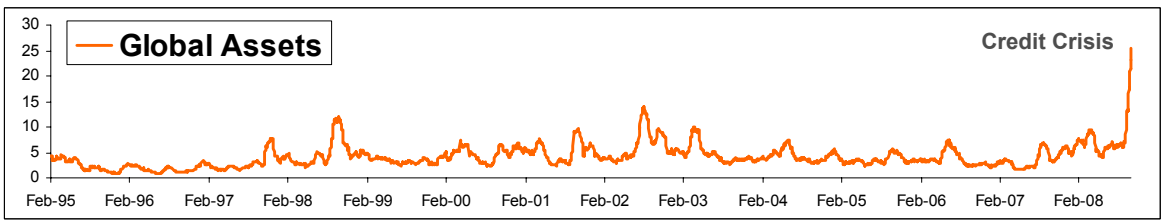
Advisors should construct portfolios differently, Kritzman said at the conference, depending on whether markets are in a quiet or turbulent period. Turbulence is measured by looking at price changes and at correlations between asset classes. Turbulence occurs when these two variables behave in ways that are significantly different from their historical patterns. Conventional measures of volatility, such as the VIX Index (which measures the volatility of the S&P 500), are limited because they measure only one asset class (e.g., equities) and do not look at correlations across asset classes.

The current credit crisis has been accompanied by record levels of turbulence, regardless of the set of assets measured.

ADVISOR PERSPECTIVES







Turbulence levels now rival those seen in the US markets during the tech bubble, and currency market turbulence is now reminiscent of the Russian default. In the global markets, current levels of turbulence are unprecedented.

The data above is a 30-day moving average of the index. Turbulence in the US markets peaked on September 29, the day the first bailout bill was defeated, registering a value of 147.24.

When turbulence arrives may be random, but once it arrives it persists. For example, the following data shows the turbulence index for US markets:

	US Sectors	Currencies	Global Assets
1 Week	22.66	14.39	6.47
2 Weeks	22.19	13.09	6.23
1 Month	21.33	12.18	6.00
Sample Average	**10.00**	**9.00**	**4.00**
10% Threshold	15.99	14.68	7.78
15% Threshold	14.53	13.29	6.74
20% Threshold	13.44	12.24	5.99

These data show how long turbulence lasts, based on whether the turbulence index falls outside a certain threshold. For example, in the US markets, if the turbulence index falls in the top 10% of its historical sample (equating to a turbulence index of 15.99), then for the week following this event the average turbulence (22.66) remains high. Even two weeks or a month after the onset turbulence has not subsided. The importance, for investors, is that they have time to react to turbulence once it arrives.

Building Better Portfolios

Advisors should "build portfolios that are more resilient to turbulence even if they do not know when it is going to happen," Kritzman told conference attendees.

To illustrate how that can be done, Kritzman presented three portfolios, each designed to provide a 7.1% return based on historical data. The first was a "Traditional" portfolio, consisting of 50% US stocks, 30% US bonds, 10% foreign stocks, and smaller percentages of other asset classes. The second was called the "Normal Optimal," and it was constructed with standard asset allocation software (using a mean-variance approach). It was more diversified, with a much lower allocation to US equities (29%), and higher allocations to non-US equities (26%) and fixed income. The third portfolio was the "Turbulent Optimal" portfolio, and it was derived assuming a turbulent environment will prevail. It differs from the Normal Optimal portfolio in that it has an even greater exposure to non-US equities (37%) and added exposure to commodities (12%) and REITs (6%). Kritzman's data show that "hard" assets, like commodities and REITs, perform better in turbulent times. As you shift from a non-turbulent to a turbulent period, Kritzman noted, the benefit of geographic diversification is amplified.

To analyze these portfolios, Kritzman looked at the chance of a bad outcome (defined as a 15% or greater loss) over a five-year period. Although all portfolios are constructed to produce the same theoretical return, the Traditional and Normal portfolios have far greater chances of bad outcomes during the period. In fact, the probability of a 15% loss during a five-year period characterized by turbulence is 25% for the Traditional portfolio, versus 12% for the Normal Optimal portfolio and only 9% for the Turbulent Optimal Portfolio.

Since advisors do not have the infinite time horizons of endowments, the within-horizon risk is "a more meaningful description of a portfolio's exposure to loss," Kritzman said. Advisors can build portfolios that are more resilient to market turbulence "without giving up significant wealth."

Protecting Alpha in Turbulent Markets

In addition to constructing more resilient portfolios, advisors can use certain strategies to protect and enhance alpha during turbulent periods. For instance, Kritzman's research shows that value performs much better than growth, and large cap much better than small cap, during turbulent periods.

Value normally outperforms growth, as Eugene Fama and Ken French demonstrated in 1992. But Kritzman showed that in turbulent periods the value premium soars to 23 basis points, rather than value's typical one basis point deficit in calm periods. Essentially, the value premium found by Fama and French exists only in turbulent periods; in calm periods it is negligible.

While Fama and French found that small cap outperforms large cap overall, Kritzman shows that turbulence reverses that effect. Large cap has a 14 basis point advantage over small cap in a turbulent market, versus a 37 basis point premium for small cap during quiet periods.

Kritzman's results held up quite well in the turbulent months of September and October. The Russell 1000 (large cap) outperformed the Russell 2000 (small cap) by 180 basis points, although both indices were down substantially. The Russell 1000 value outperformed the Russell 1000 growth by 380 basis points. These relationships held in non-US markets as well, as the MSCI EAFE large cap index outperformed the corresponding MSCI small/mid cap index by 510 basis points. The MSCI value index outperformed its growth counterpart by 30 basis points.

There are two likely explanations for this reversal in turbulent times: Large cap companies outperform because of a flight to safety that drives up their prices, and value outperforms growth because value typically has less volatility. In turbulent markets, investors flock to less volatile assets.

Kritzman also discussed the currency carry trade, which his firm, Windham Capital, employs for its institutional clients. This trade involves selling the currency of a country that has a low interest rate and purchasing the currency of a country with a high interest rate, usually using leverage, thereby capturing the difference in the two rates. This strategy is one of the most historically reliable ways of producing alpha. By cutting back on this strategy when the markets become more turbulent, Kritzman shows that the alpha of the strategy can be increased.

Implications for Advisors

Windham originally developed these tools for its institutional clients, and it recently expanded its offering to financial advisors. They offer a couple of software packages, including the Windham Financial Planner, that include a full suite of traditional financial planning tools, along with market forecasting, risk estimation, and portfolio optimization. Within this software is the requisite data for all asset classes, updated daily from Windham's database. Users can monitor market turbulence on a daily or monthly basis, and the system will recommend portfolio changes at the outset of a period of turbulence.

There are between 50 and 75 advisory firms currently using Windham's tools in the US. Lucas Turton, Vice President of Marketing at Windham, explained that Windham's software tools "appeal to those advisors that want portfolio construction and risk management. Those who outsource portfolio construction tend to be less interested."

The volume of inquiries for their tools has spiked along with the markets' volatility in October, Turton said.

Many advisors use Windham's tools to communicate strategies to clients. "Advisors want to explain to clients how much money can be lost with certain strategies, along with the consequences of certain asset allocations when turbulence occurs," Turton said.

Windham's tools do not predict when turbulence will occur and they should not be confused with market-timing strategies. They would not have recommended, for example, going to cash in earlier this year. But they will recommend portfolios that perform better, based on historical data, during turbulent periods.