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INVITED EDITORIAL COMMENT

The Myth of Diversification: *Risk Factors versus Asset Classes*

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The word 'risk' derives from the early Italian risicare, which means 'to dare.' In this sense, risk is a choice rather than a fate.

—Peter L. Bernstein

Diversification often disappears when you need it most. Consider this. From January 1970 to February 2008, when both the U.S. and World ex-U.S. stock markets—as represented by monthly returns for the Russell 3000 and MSCI World Ex-U.S. indices, respectively—were up more than one standard deviation above their respective full-sample mean, the correlation between them was −17%. In contrast, when both markets were down more than one standard deviation, the correlation between them was +76% (Kritzman and Li [2010]). Should we expect similar asymmetry going forward? We often hear that we live in a "new normal" world in which markets oscillate between two regimes: "risk on" and "risk off." In such a world, diversification across asset classes might work on average, but it might feel like having your head in the oven and your feet in a tub of ice—even though your average body temperature is OK, your chances of survival are low.

Investors have long recognized that economic conditions frequently undergo regime shifts. The economy typically oscillates between 1) a steady, low-volatility state characterized by economic growth, and 2) a panic-driven, high-volatility state characterized by economic contraction.

Evidence of such regimes has been well documented in market turbulence, inflation, and GDP growth. In our new-normal world, regime shifts will continue to cause significant challenges for risk management and portfolio construction.

For example, the recent financial crisis has reinforced the notion that asset class returns are driven by common risk factors, and that risk factor returns are highly regime-specific. Hence, risk factors—as opposed to asset classes—should be the building blocks for portfolio construction (see, for example, Bhansali [2010], Page and Taborsky [2010], and Bender et al. [2010]). Risk factors provide a flexible language with which investors may express their forward-looking economic views and diversify their portfolios accordingly. They include, for example, interest rates, the slope of the yield curve, corporate bond spreads, equity returns, investment style returns (momentum, value, and size), changes in volatility, commodity returns, and changes in liquidity. Practitioners typically measure a portfolio's exposure to a given risk factor as its sensitivity to the risk factor, that is, when the underlying risk factor moves by x percent, the expected impact on the portfolio's return is given by the portfolio's factor exposure times x percent. For example, interest rate durations and equity betas are commonly measured risk factor exposures.

Why should we care? It has been shown that correlations across risk factors are lower than across asset classes, hence, to diversify across risk factors should be more efficient than to diversify across asset classes. Most importantly, diversification across risk factors is more robust to market turbulence. Asset class correlations are typically higher than risk factor correlations because most asset classes contain indirect exposure to equity risk. To complicate things, indirect equity risk is like a virus that remains dormant until the body weakens; it tends to manifest itself during extreme

market moves. The equity factor exposure is always there. But in normal times, investors attribute the returns to real estate or hedge funds or private equity as being the result of good alpha decisions, when in reality they are the result of factor betas like equity, and in bad times, they realize they do own equity factor exposure. Investors are often surprised by how seemingly unrelated risky assets and strategies suddenly become highly correlated with equities during a crisis.

Consider the example of the currency carry trade. According to this strategy, the investor sells lower-yielding currencies to invest in higher-yielding currencies. In normal markets (and on average), this strategy has the potential to be profitable because the high interest rate currencies typically do not depreciate enough over a given period to offset the gain from the interest rate differential embedded in the currency forwards. But during "risk off" panics, which are generally associated with significant equity downturns, the carry trade can produce devastating losses.

Unforeseen market crises are often referred to as tail risk events because of the way they appear on the bell-shaped curves often used to illustrate market outcomes. The most likely outcomes lie at the center of the curve, whereas the unforeseen, less likely events that can wreak havoc on portfolios are plotted at either end—or tail—of the curve. The tail correlation between equities and total returns obtained from being long corporate bond spreads exhibits the same property as the equity-carry trade correlation. The Merton [1974] model explains this relationship based on the firm's capital structure. This model values equity as a call option on the firm's assets and debt as a risk-free rate plus a short put option, and it can be used to measure embedded equity exposure in corporate bond portfolios. As a firm approaches default, equity shareholders get "wiped out" and bondholders become, essentially, equity holders.

Overall, during crises, investors that have not directly diversified their risk factor exposures will find themselves holding two crude asset classes: 1) risk assets and 2) nominally "safe" assets (although all investments carry risk). For tail-hedging purposes, these findings can be used to the investor's advantage. Indeed, proxy hedges such as credit default swap tranches and short carry-trade positions may be cheaper than equity puts and yet still hedge most of the portfolio's equity factor risk exposure.

In summary, when they seek to diversify their portfolios, a majority of investors don't think twice before they average their risk exposures across quiet and turbulent regimes. Consequently, much of the time, investors' portfolios are suboptimal. For example, during the recent financial crisis, correlations and volatilities across asset classes changed drastically, and seemingly diversified portfolios performed poorly.

We suggest a regime-specific approach to portfolio construction and risk management. On average, correlations across risk factors are lower than correlations across asset classes, and risk factor correlations tend to be more robust to regime shifts than asset class correlations. Therefore, a risk factor approach to portfolio construction provides a robust platform for investors to express cyclical and secular macroeconomic views and adapt to regime shifts. Moreover, to view the world in risk factor space may also help investors better understand tail risk and find opportunities for cheap proxy hedging.

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