A Risk Index for Global Private Investors

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The need for new measures of risk, for policy makers as well as private investors, has gained significant attention in the aftermath of the financial crisis (Bisias et al., 2012).[1] In this paper, we address the specific need of a private investor anywhere in the world for an indicator, which accurately and timely reflects changes in the overall risk structure of global financial markets. The two steps of our research thus focus on the determination of this global market portfolio, and the risk measure to serve as the basis for such a risk index.

For the (empirical) global market portfolio of a private investor, we first determine portfolio weights and indices representing asset classes (equity, fixed income, real estate, cash, alternative investments) and regions (Asia-Pacific, North America, Latin America, Europe, Middle East & Africa), drawing on information from the World Wealth Reports of Lynch and Gemini (2011).[2] This results in a global market portfolio as well as region-specific subportfolios. Then, we construct a risk index based on the turbulence index of Kritzman and Li (2010).[3]

This measure is based on the Mahalanobis distance and determines multivariate deviations from the long-run average, given by historical mean and covariance matrix. Its advantages over other risk measures such as implied volatility or VaR are its availability for every asset class (even without liquid option markets), its sensitivity to unusual behavior in both volatility and correlations, and its reliance on just one input parameter type: the portfolio's assets' returns.

Our results confirm the findings of Kritzman and Li (2010), showing that financial turbulence is highly persistent, and in periods of high turbulence returns to risk are substantially lower than usual. Splitting the index into a volatility and a correlation surprise series (Kinlaw and Turkington, 2012),[4] we find correlation surprises to be the main driver of persistence and lower returns to risk (after controlling for volatility surprises). This underlines the predictive power of the index, which makes it a promising tool not only for risk management, but also for forecasting investment performance.

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[2] Merrill Lynch/Cap Gemini (2011): World Wealth Report 2011. Online: http://www.capgemini.com/services-and-solutions/by-industry/_nancial-services/solutions/wealth/worldwealthreport/.

[3] Kritzman, M. and Li, Y. (2010). Skulls, _nancial turbulence, and risk management. Financial Analysts Journal, 66(5):3041.

[4] Kinlaw, W. B. and Turkington, D. (2012). Correlation surprise. SSRN eLibrary. Online: http://dx.doi.org/10.2139/ssrn.2133396