

MSCI Barra Analytics Research

MSCI Barra employs one of the largest research teams in the index and analytics business, dedicated to building the world's finest index, portfolio, and risk management products.

Analytics Research

Analytics Research at MSCI Barra investigates issues in risk management, transaction analytics, portfolio construction, VaR simulation, and asset allocation, with coverage of all major markets and traded instruments worldwide. MSCI Barra's analytics research database begins in 1975, and the risk models and portfolio analytics are used by over 1000 clients.

Current Research Overview

Equity Factor Modeling

- Development of a new version of the Barra Integrated Model (BIM). The proposed model will allow the integration of the Global Equity Model (GEM2) and BIM global factors in a single framework.
- Finalization of a new and enhanced Europe Equity Model (EUE3). Highlights include the addition of Eastern European countries, a GICS®-based industry structure, and a new specific risk methodology.
- Enhancement of the Australia and Canada risk models (AUE3 and CNE4). These enhancements include new long-horizon (beyond 6 months) and short-horizon (1 to 3 months) variations of the risk model using daily factor returns.
- Development of a new local-model research platform built on the latest modeling techniques and highest-quality data.
- Release of ten years of GEM2 history.

Fixed Income

- Estimation of a new Japan Credit Model.
- Estimation of a new Brazil IPB (Inflation-Protected Bond) model.
- Estimation of several new emerging market local risk models.
- Estimation of swap Shift, Twist, and Butterfly factors.

Alternatives

- Continued refinement of the Hedge Fund Risk Model and Mutual Fund Risk Model.
- Research on a US Private Real Estate Risk Model, the first in a series of private real estate models. Development of new Commodities and Equity Volatility Index models.

Advancements in Risk and Performance Technology

- Barra Extreme Risk (BXR) – a new empirical model of market risk that takes into account gain and loss asymmetry as well as heavy tails. The BXR model also calculates measures such as Barra Extreme Shortfall (xShortfall) and Barra Extreme VaR (xVaR) and enables attribution of xShortfall at asset level and along different dimensions such as styles, sectors, countries, currencies at the portfolio level. Monte Carlo-based measures of forecast VaR.

Advancements in Optimization

- Continued enhancements to the Barra Open Optimizer platform.
- Research into the effects of risk models on portfolio construction efficiency.

Research Database

View MSCI Barra's extensive database of published research papers and archived newsletter articles at www.msribarra.com/research.

Recent White Papers and Publications

Is There a Green Factor? by Chin-Ping Chia, Lisa Goldberg, David Owyong, Peter Shepard, and Tsvetan Stoyanov, Journal of Portfolio Management, Spring 2009, Vol. 35, No. 3.

Climate change has far-reaching implications for the global economy and it is being recognized as a long-term investment theme. In this article, we investigate the unique risk and return characteristics of green stocks, including a study of renewable energy companies. Using the Barra Global Equity Model (GEM2), we find that renewable energy firms are generally smaller and more volatile than the market on average, and have a negative value tilt. In addition, the impact of firm size, sector, style, and geographical distribution do not fully account for the superior performance of these firms. Controlling for all GEM2 risk factors, we find that a statistically significant green factor seems to have emerged in recent years.

Best Practices for Investment Risk Management, by Jennifer Bender and Frank Nielsen, MSCI Barra Research Insight, June 2009

A successful investment process requires a risk management structure that addresses multiple aspects of risk. Here we lay out a best practices framework that rests on three pillars: Risk Measurement, Risk Monitoring, and Risk-Adjusted Investment Management. All three are critical. Risk Measurement means using the right tools accurately to quantify risk from various perspectives. Risk Monitoring means tracking the output from the tools and flagging anomalies on a regular and timely basis. Risk-Adjusted Investment Management (RAIM) uses the information from Measurement and Monitoring to align the portfolio with expectations and risk tolerance.

Refining Portfolio Construction by Penalizing Residual Alpha: Empirical Examples, by Jennifer Bender, Jyh-Huei Lee, and Dan Stefek, MSCI Barra Research Insight, June 2009

Misalignment between alpha and risk factors may create unintended bets in optimized portfolios, as shown analytically in Lee and Stefek (2008). In a March research insight, we introduced a way to mitigate this issue by penalizing the portion of the alpha not related to the risk factors, the "residual alpha." Here, we further illustrate this method with two signals commonly used by portfolio managers. The potential improvement from this method depends on the strategy in question, in particular the degree to which the misalignment of alpha and risk factors erodes information in optimization.

Extreme Risk Analysis, by Lisa Goldberg, Michael Hayes, Jose Menchero, and Indrajit Mitra, MSCI Barra Research Insight, April 2009

Risk can be measured using one of several definitions, including volatility, expected shortfall, and many others. Risk analysis involves gaining deeper insight into the sources of risk and evaluating whether these risks accurately reflect the views of the portfolio manager. In this paper, we show how the same risk analysis (volatility) can be extended to different risk measures (shortfall). This decoupling of measurement and analysis allows for new risk measures to be understood in reference to standard analytics.

International Diversification from a UK Perspective, by Dimitris Melas and Oleg Ruban, MSCI Barra Research Insight, April 2009

The market turmoil of 2008 highlighted the importance of risk management to investors in the UK and worldwide. Realized risk levels and risk forecasts from the Barra Europe Equity Model (EUE2L) are both currently at the highest level for the last two decades. We explore the historical diversification effects of an international allocation for UK investors. We illustrate that investing only in the UK market can be considered an active deviation from a global benchmark. A UK domestic strategy has high concentration, leading to high asset-specific risk and significant style and industry tilts. We show that an international allocation resulted in higher returns and lower risk for a UK investor in the last one, three, five, and ten years. In GBP terms, the MSCI All Country World Investable Market Index (ACWI IMI) — a global index that could be viewed as a proxy for a global portfolio — achieved higher return and lower risk compared to the MSCI UK Index during these periods. The decreases in risk represented by allocations to MSCI ACWI IMI were robust based on four different measures of portfolio risk.

Currency Hedging: A Free Lunch? by Kelly Chang, MSCI Barra Research Insight, April 2009

This Research Insight examines the question of whether currency hedging is a "free lunch" of risk reduction and zero expected returns. Using a long history of hedged and unhedged MSCI indices, we find that hedging does not always reduce risk, nor are mean returns zero. Contrary to some prior studies, we find there is no free lunch for the equity investor. Instead, we conclude that the usual, intuitive relationships hold: Less risk usually means lower returns, and more risk, higher returns. Our research indicates that whether hedging pays off depends not only on the base currency, market, and hedging horizon, but also on the investor's goals of risk reduction or return/risk maximization.

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Refining Portfolio Construction when Alphas and Risk Factors are Misaligned, by Jennifer Bender, Jyh-Huei Lee, and Dan Stefek, MSCI Barra Research Insight, April 2009

The misalignment of alpha and risk factors may result in inadvertent and unwanted bets that may hamper performance. Lee and Stefek (2008) show that better aligning risk factors with alpha factors may improve the information ratio of optimized portfolios. They propose four ways of modifying a risk model to reduce misalignment. Here, we discuss one way to mitigate these problems by modifying the optimization process itself. The objective function is modified to include a penalty term on the residual alpha. In our examples, the method proposed helps to mitigate the mismatch between alpha and risk by assigning a suitable penalty to the residual alpha.

Central Limits and Financial Risk, by Angelo Barbieri, Vladislav Dubikovskiy, Alexei Gladkevich, Lisa Goldberg, and Michael Hayes, MSCI Barra Research Insight, April 2009

Systematic model bias has been implicated in the global recession that began in 2007, and this bias can be traced back to assumptions about the normality of data. Nonetheless, the normal distribution continues to play a foundational role in quantitative finance. One reason for this is that the normal often emerges, without prompting, as the distribution of sums or averages of large collections of random variables. Precise statements of this miracle are known as Central Limit Theorems, and they appear throughout the physical and social sciences. In this note, we review some of the most widely used Central Limit Theorems. Subsequently, we explore the gap between the normal distribution and financial risk. This can be traced to a failure of the financial data to satisfy the assumptions of even the most liberal versions of the Central Limit Theorem.

Portfolio of Risk Premia: A New Approach to Diversification, by Remy Briand, Frank Nielsen, and Dan Stefek, MSCI Barra Research Insight, January 2009

Traditional asset allocation approaches have not provided the full potential of diversification. Here, we introduce a different approach and look at structuring portfolios using risk premia within the traditional asset classes or from systematic trading strategies. We confirm the potential benefits of such an approach by comparing a typical 60/40 equity/fixed income allocation with an equal-weighted allocation across eleven risk premia.

About MSCI Barra

MSCI Barra is a leading provider of investment decision support tools to investment institutions worldwide. MSCI Barra products include indices and portfolio risk and performance analytics for use in managing equity, fixed income and multi-asset class portfolios. The company's flagship products are the MSCI International Equity Indices, which include over 120,000 indices calculated daily across more than 70 countries, and the Barra risk models and portfolio analytics, which cover 56 equity and 46 fixed income markets. MSCI Barra is headquartered in New York, with research and commercial offices around the world.

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