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 construction and risk management tools.

Analytics Research at MSCI Barra investigates issues in risk management, transaction analytics, portfolio construction, VaR simulation, and asset allocation. MSCI Barra's analytics research database begins in 1975, and the Barra risk models and portfolio analytics are used by approximately 1,000 clients.

Risk Modeling – Ongoing Research & Development

Equity

- Ongoing development of a new generation of the Barra Integrated Model (BIM) including integration of the Global Equity Model (GEM2) factors as BIM global factors
- Finalization of our new Asia-Pacific regional model (ASE1) which will include developed and emerging markets in the region

Fixed Income

- Research on six new fixed income component models: (1) Japan credit model; (2) locally-denominated debt models for Colombia, Peru, Argentina, and Chile; (3) addition of GICS®[1]-based sector factors for all developed market models; (4) new maturity term structures for Europe, the UK, and Japan with extended histories; (5) new multi-factor swap spread models for all developed market models; and (6) a Brazil inflation-protected bond (IPB) model
- Research on a China credit model

Alternatives

- Continued refinement of the Hedge Fund Risk Model and Mutual Fund Risk Model
- Research completed on new US Private Real Estate Risk Model
- Completion of research on new Commodities and Equity Volatility Index Models

Advances in Risk and Performance Technology

- Release of Barra Extreme Risk (BxR), a new empirical model of portfolio risk that takes into account return asymmetry as well as extreme events. BxR forecasts Extreme Value at Risk (xVaR) and Extreme Shortfall (xShortfall) at horizons of 1-10 days and attributes risk to styles, industries, countries, currencies, sectors, and assets

Advances in Optimization and Portfolio Construction

- Release of methodology for maximizing the Sharpe ratio
- Release of methodology for setting risk target optimization
- Case studies published on constructing and rebalancing European portfolios
- Research into the effects of risk aversion parameters on optimization
- Enhancements to the Barra Optimizer including trade paring, fixed transaction costs, refinements to the constraint hierarchy
- Research on incorporating shortfall risk in portfolio construction
- Research published on quantifying the impact of constraints on optimized portfolios

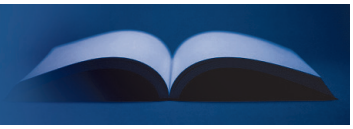
Research Database

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

MSCI Barra

[1] Global Industry Classification Standard (GICS®)

Recent White Papers and Publications



Risk Management

Survey: The Future of Market Risk Management
J Bender, F Nielsen, MSCI Barra (December 2009)

In the wake of the 2008 financial crisis, many asset managers and asset owners are reevaluating their risk management practices. MSCI Barra surveyed a group of 34 institutional investors around the globe to identify what they see as the most important issues for market risk management today and in the future. Based on the responses from the survey a major overhaul appears to be underway across the industry. Participants in our survey identified several important areas of change including a redefinition of the risk management function, improvements in the risk management "toolbox" with a particular focus on liquidity and counterparty risk, stress testing, and enterprise wide risk management.

Portfolio BCP: Applying Business Continuity Practice
R Briand, D Owyong, MSCI Barra Research Insight (October 2009)

Catastrophic events can lead to changes in established practices. This paper argues that organizations may benefit from applying practices used in Business Continuity Planning (BCP) to the management of institutional portfolios. We evaluate a framework to prepare for extreme market events and mitigate their impact. This paper describes the elements of BCP as applied to portfolios, reviews tools and processes to monitor the level of stress in financial markets, and tests the effectiveness of a number of mitigating strategies.

Risk Modeling

Analyzing the Extreme Risk of a U.S Corporate Bond Portfolio
P Chan, L Goldberg, M Hayes, E Tsang, MSCI Barra Research Insight (November 2009)

We used the Barra Extreme Risk (BxR) model to analyze a US dollar-denominated corporate bond portfolio consisting of 2142 distinct issues. As in the case of equities, we observed that the BxR proprietary extreme risk forecasts, xShortfall and xVaR, were higher than Value at Risk and expected shortfall forecasts generated by a conditionally normal model. Further, the impact on xShortfall of tilting the portfolio toward high-yield bonds was materially greater than the impact on volatility, and the discrepancy increased as quality declined. As a result, in our study increasing the weight on investment-grade bonds while lowering the weight on high-yield bonds mitigated tail risk more than it mitigated volatility. This intuitive result reflects the high degree of sensitivity of high-yield bonds to extreme events.

The Long View of Financial Risk
L Goldberg, M Hayes, MSCI Barra Research Insight (August 2009)

An extended history of market returns reveals aspects of financial risk that are not evident over short timescales. The most enduring risk measure is variance, which quantifies short-term regularities in return dispersion. An alternative measure, shortfall, quantifies the risk of extreme market moves, and calls for a deep history to inform its forecasts. Both variance and shortfall are convex, meaning that they tend to promote diversification and can be used in optimization. By offering a long-view counterpart to variance, shortfall can significantly broaden an investor's risk perspective.

Efficient Replication of Factor Returns
D Melas, R Suryanarayanan, S Cavaglia, MSCI Barra Research Insight (June 2009), also published in the Journal of Portfolio Management (Winter 2010 Vol 36 No 2)

We present alternative methods for constructing factor mimicking portfolios in practice. We illustrate how portfolios with a limited number of assets and relatively low turnover can be used to track pure factor returns. We illustrate how these portfolios can be used to hedge out unintended factor exposures of a passive benchmark thus facilitating the optimal management of beta exposure. We also illustrate how they can be used to hedge out unintended factor exposures of an active strategy thus isolating pure alpha and facilitating the management of alternative sources of alpha.

The Importance of Local Factors
A Morozov, J Menchero, MSCI Barra Research Insight (June 2009)

We compare the accuracy of risk forecasts from single-country models and GEM2 for portfolios concentrated in single countries. We find that single-country models provide more accurate risk forecasts, consistent with intuition. This demonstrates the importance of local factor structure for modeling intra-market risk.

Portfolio Construction

Risk Target Optimization
L Kopman, S Liu, MSCI Barra Research Insight (December 2009)

As an alternative to mean-variance portfolio optimization, the Barra Optimizer offers users an option to run risk target optimization. Instead of risk being controlled implicitly with the risk aversion parameters, the risk target is explicitly specified by the user. When the risk target is achievable and efficient, the optimized portfolio will have risk (or tracking error) equal to the specified target. The risk target may be too low due to the problem constraints; it may also be too high, that is, not achievable due to the constraints; or it may not be efficient due to the transaction costs and/or asset returns.

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Forecast Risk Bias in Optimized Portfolios

J Bender, J Lee, D Stefek, J Yao, MSCI Barra Research Insight (October 2009)

When there is noise in a covariance matrix, portfolio optimization tends to underestimate risk forecasts. In this paper, we take a closer look at the connection between estimation error and the underestimation of the risk of optimized portfolios. We pay special attention to the case in which returns have a known factor structure. There, the bias in optimization can be reduced dramatically by using a covariance matrix based on a factor model, rather than one computed from historical asset covariances. Moreover, our analysis reveals that for many active portfolios, the bias in factor-model forecasts is less than previously thought. Lastly, we discuss the role of constraints in mitigating risk forecasting bias.

Decomposing the Impact of Portfolio Constraints

J Bender, J Lee, D Stefek, MSCI Barra Research Insight (August 2009)

This paper analyzes the impact of constraints on portfolio return and risk, extending the insights of previous research in this area. We show that constraints move a manager's portfolio away from the optimal unconstrained portfolio in two ways. First, they may rein in or increase the risk of the portfolio without impairing its information ratio. Second, they may force the portfolio to take unwanted bets that incur risk but yield no return. As a result, a constrained portfolio consists of positions that are aligned with the manager's alphas and positions that are orthogonal to the alphas but are adopted to satisfy the constraints. We illustrate how to measure the risk and return arising from each of these sources and how to drill down to examine the contributions of individual constraints.

Maximizing the Sharpe Ratio

L Kopman, S Liu, MSCI Barra Research Insight (June 2009)

In this paper we introduce a new feature of the Barra Optimizer -- the ability to maximize the Sharpe Ratio (SR) and the Information Ratio (IR). We discuss the portfolio optimization problems that focus on SR and IR, their properties and relationship to the standard mean-variance portfolio optimization problem, and the methods the Barra Optimizer utilizes to solve them.

Global Asset Allocation

A Fresh Look at the Strategic Equity Allocation of European Institutional Investors

X Kang, D Melas, MSCI Barra Research Insight (January 2010)

This paper reviews the current strategic equity allocation policies of European institutional investors. It discusses evidence that challenges separating an equity policy portfolio into domestic/international allocations or regional allocations at the strategic level, and the rationale and potential benefits of an integrated global approach to equity allocation.

Globalization of Equity Policy Portfolios

R Aylur Subramanian, F Nielsen, G Fachinotti, MSCI Barra Research Insight (October 2009)

Globalization has brought about a major rethinking of the equity investment. Thought leaders in the industry are questioning the merit of the existing equity allocation practices and are increasingly looking towards an integrated global equity investment process. The partitioned domestic/non-domestic approach to equity investing may have been built on the grounds of segmented economies, high levels of foreign investment restrictions, and heavily domestically-focused companies, but its validity is being challenged by a changing and more integrated global equity landscape. Traditional arguments supporting a home bias equity allocation are less defensible and certain leading institutional investors are realizing that the segmentation between domestic and international equities at a strategic level is a legacy that may come with important market timing risks and opportunity costs. A more integrated approach to equity investing may be the next stage in the evolution of investment processes and a natural consequence of globalization. A broad and investable global equity benchmark is an integral part of such a process.

Quantifying the Cost of Home Bias – A Japan Perspective

C Chia, MSCI Barra Research Insight (October 2009)

This paper reviews the evolution of the equity allocation policy of Japanese institutional investors and discusses how globalization has altered the global equity landscape and created the basis for a major rethinking of the investment process of global investors. We present the key rationales for an integrated global equity investment process, and explore potential implementation paths for Japanese institutional investors.

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 59 equity and 48 fixed income markets. MSCI Barra is headquartered in New York, with research and commercial offices around the world.