

Barra Extreme Risk – BxR

A new perspective on risk, focusing on extreme gains and losses in your investment strategy

Barra Extreme Risk (BxR) can be used to analyze short-term Volatility, Extreme Shortfall and Extreme Gains using a combination of standard and extreme risk analytics, along the dimensions of Barra factors and portfolio constituents. Easily integrated into many investment platforms, BxR's innovative risk analytics can help you make more informed investment decisions.

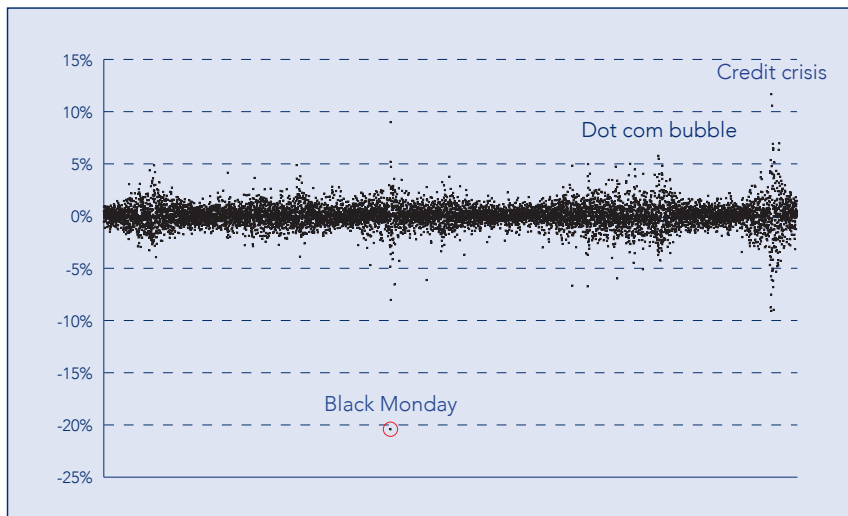
BxR Insights

Multiple Views of Risk — BxR provides forecasts of Volatility, Barra Extreme Shortfall (xShortfall) and Barra Extreme Gain (xGain), as well as analyses of these measures along the dimensions of Barra factors, factor groups, and assets. The BxR analytics are similar to standard Volatility analytics, so extreme risk can be analyzed using familiar tools (Marginal Contributions to Risk, Risk Contribution, Beta, Correlation, X-Sigma-Rho risk decomposition).

Analysis of Extreme Gains and Extreme Losses — BxR allows users to analyze both extreme gains and extreme losses, providing insight into the asymmetry of bets, downside risk, upside potential and subtle diversification opportunities.

A Factor-Based View of History — BxR builds a relevant portfolio history using Barra fundamental factor models, which capture consistent trends due to portfolio characteristics rather than asset holdings. The factor history is adjusted using the new Barra short-term covariance matrix, which expresses the factor history in a way that reflects current market dynamics. The Barra factor framework is an essential ingredient in generating a history that is both deep and relevant.

A New Perspective on Risk — BxR focuses on the extreme returns that have the greatest impact on portfolio performance, providing a complement to Volatility, which forecasts average return dispersion. BxR brings a fresh historical perspective on risk by building its forecasts using a long, consistent view of history.



A long history of daily returns to a major market index reveals frequent outliers, asymmetric gains and losses, and irregular bouts of turbulence. These are separated by calm periods that can last for years, leading to a false sense of security for those who take a short view of history.

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BxR Features

- Supports equity and currency portfolios
- Supports both active and total risk
- Supports all Barra single-country and multi-country risk models with sufficient daily factor returns history

Backed by Leading Research

- BxR implements proprietary analytics and forecasting tools developed in-house by MSCI Barra's analytics research team.

Portfolio Risk Characteristics

- Extreme VaR (xVaR) and Extreme Shortfall (xShortfall) forecasts
- Short-term Volatility forecasts
- Normal VaR and Normal Shortfall benchmarks
- Gain and loss tail analyses

Factor and Asset-level Risk Analysis for xShortfall, xGain and Volatility

- Risk Contributions
- Marginal Contribution to Risk
- Betas

Extreme Correlation

- xShortfall- and xGain-implied correlations between factors and the portfolio, measuring tendency for components to experience extreme returns at the same time
- Standard (Volatility-implied) factor-portfolio correlations
- X-Sigma-Rho risk decomposition of portfolio xShortfall, xGain and Volatility

Three Specific Risk Models

- Asset Empirical model based on asset specific returns, providing detailed convex risk forecasts at the asset level
- Portfolio Empirical model, for cases where only portfolio level returns are available
- Normal model for cases where historical returns data are not available (e.g. portfolios of IPOs)

Other Features

- Configurable confidence levels, including standard 95% and 99% levels, with a maximum of 99%
- Risk horizons of 1-10 days
- Adjustable correlation half-life and Volatility half-life
- Time series of xVaR and xShortfall forecasts, and Normal VaR/Shortfall
- Out-of-sample accuracy statistics for xVaR and xShortfall, and Normal VaR/Shortfall
- Tail statistics based on Extreme Value Theory and corresponding portfolio-level risk forecasts

BxR Technical Highlights

- APIs are available in C++ and Java™
- Library can be incorporated into the MATLAB™ statistics package
- Available for 32-bit Microsoft Windows®, and 32-bit and 64-bit Linux®
- Complete package includes a BxR Developer's Toolkit with detailed reference materials, tutorials, and working sample code for all supported development languages
- Minimal baseline system requirements for most cases

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.

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