

Barra Europe Equity Model (EUE3)

The **Barra Europe Equity Model (EUE3)** can be used by fund managers in the construction, risk management, and performance analysis of European equity portfolios. It has six model versions, which provide different levels of detail in terms of the factor structure, and two forecasting horizons (short-term and long-term). This enables portfolio managers to choose the model version that best matches their investment process.

Key Features

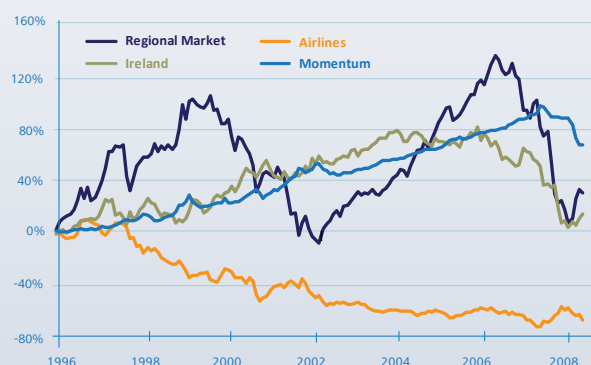
- » Coverage of **29 countries**.
- » **More than 9,000 assets** covered as of January 2009.
- » **Intuitive factor structure**, with industries and countries modeled as offsets to a regional market factor
- » **Twenty-nine industry factors** based on the Global Industry Classification Standard (GICS®).
- » **Nine styles**, including liquidity and earnings yield.
- » **Short- and Long-term (S and L) horizons** strike a balance between accuracy and forecast variability.
- » More accurate risk forecasts and increased explanatory power.
- » Innovative methodologies include robust regression, outlier truncation in the covariance calculation, and an enhanced specific risk model.
- » **Deep model history going back to 1995** facilitates backtesting of investment strategies.
- » **Base, UK-, and Eastern Europe-derived models** offer a choice in level of factor detail.
- » **Daily risk forecast updates** available from July 2008.

Key Benefits

Factors as Drivers of Risk and Return

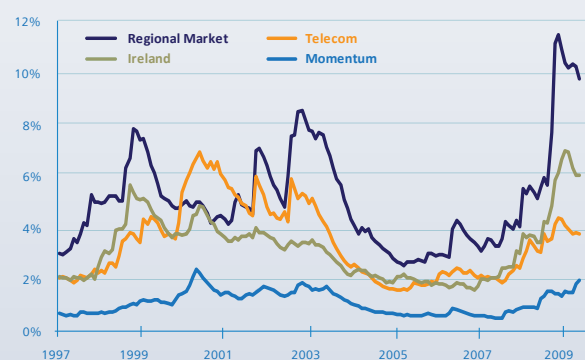
This risk model decomposes equity portfolio risk into a currency part, a local factor part, and an asset-specific part. Industry, country, and style factors are modeled as offsets to a regional market factor. Their returns represent the performance differential to a broad cap-weighted European market index. Regional industry and style factors facilitate the comparison of European assets with similar characteristics. Nine style factors help users explore systematic drivers of return and risk beyond the country and industry factors. Factor returns are estimated by robust cross-sectional regressions of daily asset returns. An adaptive algorithm limits the influence of outlier returns in the covariance calculations. Currency and local factors are modeled identically; the Barra Europe Equity Model uses exponential weighting, split half-lives, and corrects for serial correlation in the factor returns. The charts below show representative examples of factor returns and factor volatility forecasts, and demonstrate the significant level of detail captured by the model.

Cumulative Factor Return



EUE3 cumulative factor returns. Note the temporary outperformance of the Ireland factor, the underperforming Airline factor, and the trending of the momentum factor.

Monthly Factor Volatility



EUE3S factor volatilities. Regional market factor shows crashes and different market regimes. Note comparable average volatility of the Ireland and Telecom factors.

More Accurate Specific Risk

The Barra Europe Equity Model implements a new specific risk model, which combines time-series and cross-sectional components. In most cases, the model uses a history of daily specific returns of each asset, thus creating idiosyncratic forecasts. A structural component is used for assets with insufficient or ill-conditioned time series. The S and L model variants of this risk model offer different levels of responsiveness, not only in the common factor part but equally in the specific risk forecasts.

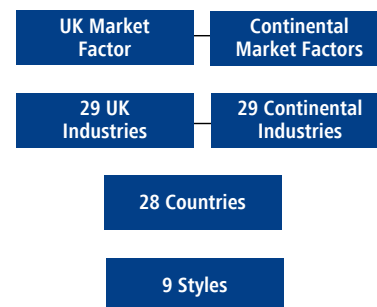
Multiple Model Versions

The Barra Europe Equity Model is available in a base version with a single regional market factor and in two derived versions, which provide additional information in the factor structure by splitting the regional market and industry factors. The figure illustrates the factor structure of EUE3UK, the derived model with enhanced factor detail for the UK market.

Base Model



UK Derived Model



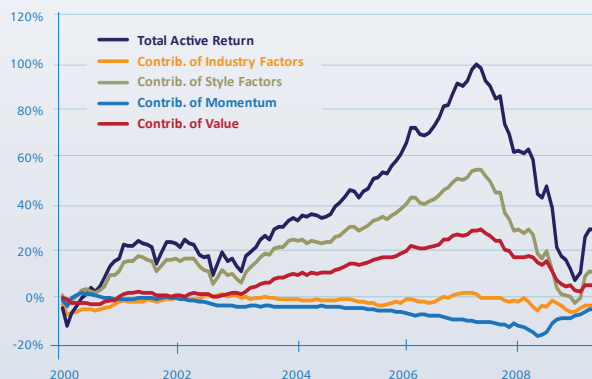
A derived model with separate Eastern European market and industry factors (EUE3EE) is also available. Derived models cater to portfolio managers who wish to carve out and separately analyze industry effects over a smaller subset of European assets.

Performance and Risk Analysis

Managers of European equity portfolios can use the Barra Europe Equity Model to gain more detailed insight into the expected sources that drive risk and diversification. They can use it for balancing investment ideas and in budgeting their risk exposures.

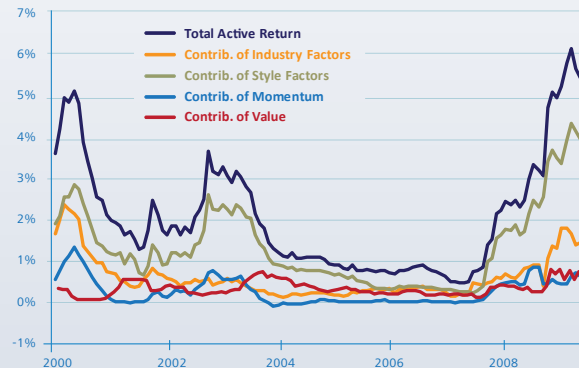
By attributing past performance to the same factors, the model helps portfolio managers understand how their factor bets and the asset-specific returns have contributed to the overall portfolio performance. A high level of detail in the factor structure and a precise specific risk model make it well-positioned to be used by portfolio managers in their analysis of market-neutral portfolios, as well as for traditional long-only portfolios

Cumulative Active Return



Selected contributors to active return and risk of a European value style portfolio, measured relative to a style-neutral regional benchmark. The portfolio was constructed using the EUE3 value style factor. Note considerable outperformance until mid-2007 (left), which is driven by the style tilt toward value. Active risk forecasts (right) use the EUE3S model. Note industry factors contributing to risk but not to cumulative return.

Monthly Active Volatility



msci.com | clientservice@msci.com

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¹ As of March 31, 2013, as reported on July 31, 2013 by eVestment, Lipper and Bloomberg.