

# Barra Integrated Model

## A Clear and Comprehensive View of Risk Across Markets, Asset Classes and Currencies

The Barra Integrated Model was designed to provide broad in coverage without sacrificing in-depth analysis. The union of Barra's equity, fixed income and currency models, the Barra Integrated Model captures complex cross-market and cross-asset class relationships while retaining the granularity of each local market model.

### Key Benefits

#### Comprehensive

Analyze risk from a truly global perspective: the Barra Integrated Model covers equities, fixed income, currencies and more for over 56 developed and emerging markets. Each local model is customized to best capture the forces that drive risk and return for that market.

#### Accurate

The Barra Integrated Model thoughtfully combines local market models to capture complex cross-market and cross-asset class relationships. The accurate and detailed risk forecasts provided by the Barra Integrated Model allow you to isolate local and global sources of risk and more precisely align portfolio risk with your intentions.

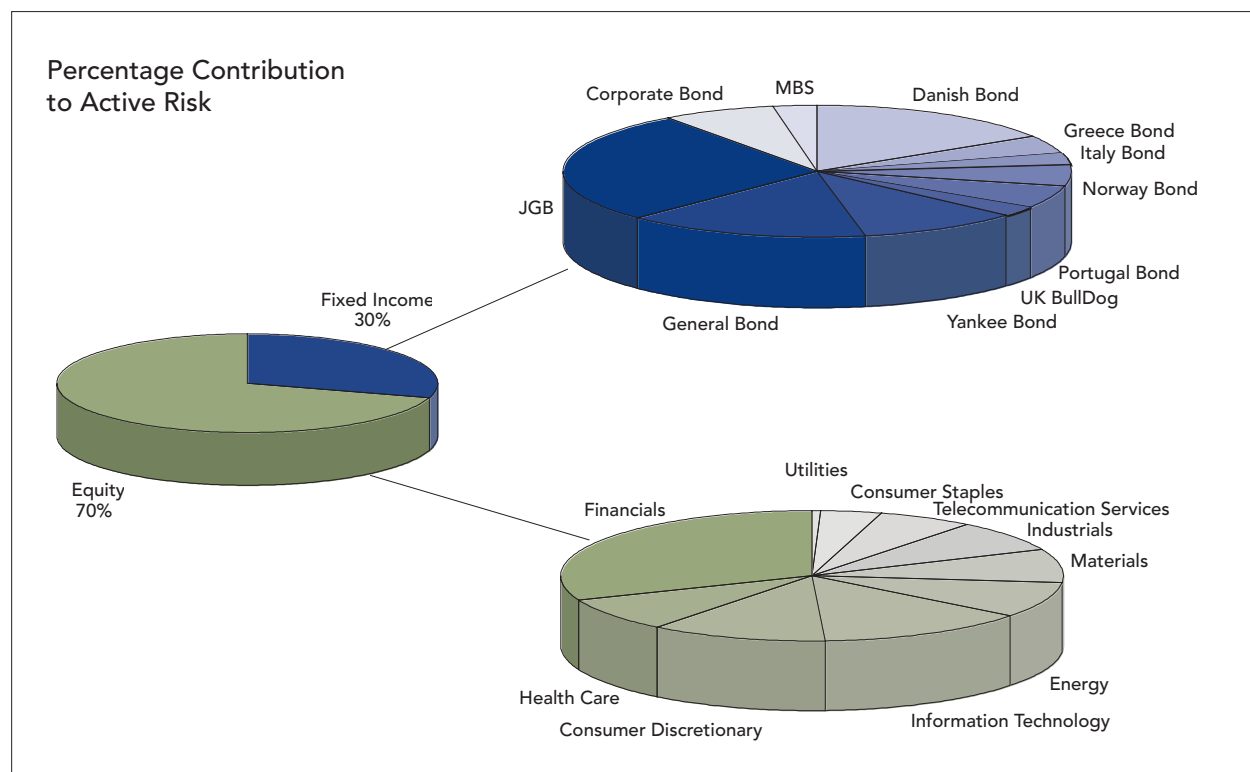
#### Unified

The global, multi-asset class framework of the Barra Integrated Model provides a consistent framework for risk analysis and reporting across portfolios, countries and asset classes.

A portfolio containing securities from one local market will have the same risk forecast in both the relevant local model and in the Barra Integrated Model

#### Insight

Exploit the local sources of return captured by the Barra Integrated Model to construct superior active strategies. Produce more consistent results by combining multiple alpha sources in a global framework.



The above image shows that the percentage of risk contributing to the portfolio's risk is decomposed into 30% fixed income and 70% equity securities. These investments are further decomposed into their corresponding equity and fixed sectors. Note that the percentage of currency risk contributing to the portfolio's risk (which is roughly 2%) has purposely been omitted.

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## Bringing the Models Together

The Barra Integrated Model combines Barra's equity, fixed income and currency models into a single risk model.

**Step 1:** Combine local equity models to capture the relationship between equity securities in different markets. A set of global equity factors explains the covariance of equity factors across local models.

**Step 2:** Combine local bond models to capture the relationship between fixed income securities in different markets. A set of global bond factors explains the covariance of bond factors across local models.

**Step 3:** Bring currencies together to estimate the variance and covariance of currencies for covered markets. Each currency is considered a global factor.

**Step 4:** Combine the global equity, global bond and currency models by using the global factors established above to estimate cross-asset class correlations.

## Delivery Platforms

You can access the Barra Integrated Model via the platform that best fits your investment process and business requirements.

### BarraOne

Interactive risk analysis, trade scenarios, portfolio optimization and risk reporting delivered through a scalable, web-based platform with no software installation or data maintenance required.

### TotalRisk

Measure, monitor and report on risk for all portfolios and product lines in your organization. TotalRisk is an enterprise-level risk management solution, delivered through a customized client-server installation.

### Data Files

For ultimate flexibility and control, integrate data from Barra Integrated Model directly into your processes and systems. Data files provide all the building blocks of our models, including the factor returns series, asset factor exposures and the factor covariance matrix.

## The Barra Integrated Model

A global multi-asset class risk model

### Global Equity Factors

#### Equity Models

Intuitive and observable characteristics are selected to explain equity risk

- Industry factors
- Style factors
- Asset selection

### Global Bond Factors

#### Fixed Income Models

Bond returns are largely explained by yield and swap curve movements

- Interest rate factors (shift, twist, butterfly)
- Credit factors (swap spread, credit factors or emerging market spreads)
- Asset selection

### Global Currency Factors

#### Currency Models

- Estimate currency volatility and correlations from daily returns

*The Barra Integrated Model is composed of a Global Equity, Fixed Income and Currency model to form a global multi-asset class risk model.*

## 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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