# WILSHIRE AXIOM℠
# THE INDUSTRY STANDARD IN FIXED INCOME ANALYTICS

The **Wilshire Axiom℠** global fixed income portfolio management solution delivers an **integrated platform** for **analytics**, **risk management** and **performance attribution**.

Since **1972, Wilshire Associates Incorporated** has delivered solutions to portfolio managers for analytics, performance attribution and risk management. For **more than 20 years**, **Wilshire Axiom** has been one of the **world's leading solutions** in **fixed income** analytics, performance attribution, risk management, scenario analysis and portfolio optimization. The **Wilshire Axiom** Fundamental Risk and Characteristics System includes the following features.

## Wilshire Axiom Risk Management℠

- Analyze portfolio risk, tracking error and Value at Risk (VaR) arising from market exposures and benchmark differentials
- Compare portfolio versus benchmark duration contributions based on any user-defined grouping scheme, such as sector, quality, maturity range and more
- Identify country, currency, yield curve, sector and quality exposure differentials relative to a benchmark to highlight sources of risk

## Wilshire Axiom Performance Attribution℠

- Decompose returns using two methodologies: factor-based analysis (Wilshire Axiom Global Credit Risk Model℠) and Brinson-style returns-based analysis
- Quantify yield curve, sector, quality, currency, country and mortgage return differentials relative to a benchmark
- Compare ex-ante risk and ex-post return results directly and consistently with any other Wilshire Axiom Global Credit Risk Model reports for an integrated view of risk and performance attribution

## Wilshire Axiom Scenario Analysis℠

- Calculate portfolio return and multiple portfolio statistics (durations, yields, expected prepayment rates and more) through a future horizon date under hypothetical changes to term structures of interest rates, asset spreads and currency exchange rates
- Stress test portfolios and benchmarks based on custom yield curve shifts, currency movements and spread changes, detailing security-level and aggregate effects
- Link average or composite returns to linear and quadratic Wilshire Axiom Optimization tools to create constrained portfolios optimized relative to expected returns

## Wilshire Axiom Optimization℠

- Manage both passive and active strategies
- Choose index, immunization, scenario, dedication or horizon optimization to satisfy investment requirements
- Select from more than 175 data items for screening candidates and 50 constraints to define the optimization

## Historical Database and Historical Pricing

- Comprehensive database representing global fixed income markets on a fully historical basis
- Interact with the complete portfolio history with no difference between historical dates and recent dates
- Produce reports for any date in the database
- View historical spreads, pricing, prepayment estimates, risk estimates, benchmarks and more

## Option Adjusted Spread Calculations

- OAS and option adjusted duration calculations

Wilshire Fixed Income Analytics maintains agreements with several vendors and data providers to supply information to the Wilshire Axiom. Wilshire Axiom manages hundreds of benchmarks, thousands of portfolios and more than 5.1 million fixed income securities. ***Wilshire Axiom includes the following:***

### Interactive Data

- Global coverage for more than 2.8 million taxable securities, including more than 1.6 million MBS deals

### Municipal Security Database

- North American coverage for more than 2.3 million municipal securities

### Markit CMO/ABS Data

- North American coverage for more than 30,000 CMO and ABS deals

### Trepp CMBS Data

- North American coverage for more than 23,000 CMBS deals

### Tullett Prebon Information Services Data

- Global swap market pricing, terms and conditions data

### Moody's Investors Service Ratings/CDO/CLO Data

- Global ratings data (long and short term ratings, classification, watch list and issuer information), CDO and CLO data

### Standard & Poor's Ratings Data

- Global ratings data (long and short term ratings, classification, watch list and issuer information)

### Lewtan Technologies CMO/ABS Data

- European coverage for 5,000 CMO and ABS deals

## Proprietary Multi Factor Global Risk Model

The Wilshire Axiom Global Credit Risk Model incorporates more than 450 risk factors for a comprehensive examination of portfolio performance. ***The Wilshire Axiom Global Credit Risk Model includes the following****:

### Currency Market

- More than 140 currency factors, including North America/Latin America, Europe/Middle East, Africa, Asia Pacific

### Yield Curve (D1, D2, D3)

- Parallel (D1), steepening (D2) and curvature (D3) modeling of 31 countries, including developed and emerging markets

### Sector

- Agency, Bank/Finance, Corp/Industrial, FHLMC MBS, FNMA MBS, GNMA MBS, Inflation-linked, Mortgage, Supranational, Telecom, Utilities-Electric, Utilities-Other, Yankee

### Quality (Investment Grade and High Yield)

- Aa, A, Baa, Ba, B, Caa

### Other Spread

- 15 Yr MBS, Balloon MBS, Euro countries, FHMLC Prepay, FNMA Prepay, GNMA Prepay, Term Spread, Volatility

### Hard Currency Emerging Market

- USD: Argentina, Brazil, China, Colombia, India, Indonesia, Jamaica, Kazakhstan, Lebanon, Malaysia, Mexico, Pakistan, Panama, Peru, Philippines, Russia, Slovakia, South Korea, Thailand, Turkey, Ukraine, Uruguay, Venezuela
- EUR: Argentina, Brazil, Croatia, Kazakhstan, Mexico, Russia, Turkey

* Specific factors depend upon the currency market.

## Portfolio and Benchmark Comparison

- Compare a portfolio against a benchmark, or a portfolio on two different pricing dates

## Wilshire Axiom What If Trade Analysis℠

- Test trade ideas to determine the impact on portfolios versus benchmarks, analytics and predicted risk/TE
- Save hypothetical portfolios for additional analysis, including Wilshire Axiom Compliance Reporting

## System Hosting Option

- System hosted by Wilshire; Wilshire provides hardware and is responsible for all system updates and availability

## Wilshire Axiom API℠/Custom Reporting

- Expose database and portfolio characteristics; run Wilshire Axiom risk and performance attribution analyses within third-party components
- Includes a Microsoft® Excel® *Add-in* to integrate Wilshire Axiom analytics through a set of Wilshire Axiom-specific macros and functions
- Create custom applications and reports

## Automated Batch Reporting

- Run Wilshire Axiom reports as a batch process

## Portfolio Characteristics Reporting

- Communicate risk, return, VaR and characteristics to consultants, clients and prospects
- Display more than 450 fundamental portfolio characteristics
- Produce portfolio time series reports

## Wilshire Axiom Compliance Reporting℠

- Identify deviations from policy mandates
- Define portfolio construction according to rules/goals

## Wilshire Axiom Benchmark Variance℠

- Decompose portfolio relative risk versus a second portfolio, a benchmark or the entire security database using the Wilshire Axiom U.S. Risk Model℠

## Administrative/Security Control℠

- Limit system access to individual users
- Control access to portfolios, benchmarks, report formats, modules, utilities and database securities

## Wilshire Axiom Cash Flow Analysis℠

- Project holdings-generated cash flows through the final effective maturity date or last liability flow
- Incorporate custom rates/schedules

## Industry-Leading Client Service

- **Dedicated Wilshire Axiom Relationship Manager** to assist with training, data research, issue resolution, security modeling and enhancement requests
- Access to **Wilshire Technical Support** and **Wilshire Structured Finance Group**


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