AXIOMA
Analytics by Qontigo

**QONTIGO'S SUITE OF FIXED INCOME RISK MODELS COVERS:**

- ✓ Rates and Volatilities
- ✓ **Credit: Bonds, CDS, Loans, Notes**
- ✓ Structured Debt and MBS
- ✓ Commodities

# Axioma Credit Spread Risk Models

## Advanced modeling to reliably capture systematic and issue specific credit risk

Powered by proprietary methodologies for issuer classification and spread curve construction, the Axioma Credit Spread Risk Models enable portfolio and risk managers to better understand credit risk through either a parsimonious factor lens or a granular issuer-based approach.

**The Axioma Credit Spread Factor Risk Model** is derived from a cross-sectional regression on thousands of issuer spread returns, with Duration Times Spread (DTS)-based factor exposures. The factor structure incorporates:

> Market factors including market exposure, term spread and beta to market.
> Sector/Industry group factors.
> Credit quality factors.
> Country/region factors.
> Global model with market-specific factors estimated for USD IG, USD HY, Euro, Sterling and Yen.

The factors have been rigorously tested for statistical significance to explain returns and are comparable to the industry-leading Axioma equity factor risk models in capturing factor risk.

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**The Axioma Credit Spread Curve Risk Model** uses the returns of key spread nodes at user-specified terms on thousands of issuer-level spread curves with DTS exposures as granular risk factors, with additional rating spread curves available as proxies. The risk model leverages:

> Over 12,000 full term structure issuer curves across approximately 6,000 issuers, 30 currencies and multiple subordination tiers.
> Over 6,000 full term structure sector-and-rating curves across 30 currencies, 9 regions, 21 ratings and multiple sector/industry levels.
> Proprietary curve construction methodology that efficiently harnesses peer information to support term structures for many issuers, even when issuer-specific data are thin.
> Curve construction based on rigorous mapping of bonds to correct issuer, country, rating and sector and weighted toward most liquid instruments to improve the alignment between the term structure and market liquidity.
> Issuer-specific risk factors that capture full term structure dynamics.

### Key differentiators

✓ **Meaningful risk factors**
Insight into portfolio risk can be gained from statistically significant factors (market, sector, quality, country) or attributed to individual issuers.

✓ **Superior specific risk estimation**
The Factor Model captures granular bond-level specific risk combined with issuer specific risk through estimated residuals returns; the Curve Model embeds issuer specific risk in curve node returns.

✓ **Risk differentiation across spread regimes**
Beyond DTS, risk is further differentiated across quality factors and individual issuer spread curves.

✓ **Models built on issuer spread curves**
Bond exposures and the Curve Models' risk factors are generated from full term structure spread curves; the Factor Model return estimation is based on 9,000 issuer spread returns.

# Axioma Credit Spread Risk Models

## Can be used for:

✓ **Risk Management**
Monitor and manage risk through ex ante risk decomposition.

✓ **Portfolio construction**
Hedge exposures and tilt toward alpha.

✓ **Index replication**
Create tracking baskets to replicate broad fixed income indices.

✓ **Risk attribution**
Attribute portfolio risk to the risk factors, categories or individual issuers.

## Are intended for:

> Risk mangers seeking detailed insight into broad fixed income portfolios.

> Fixed income quant or systematic investors.

> Quantamental hedge funds.

> Sell-side strategy teams focused on fixed income factors.

> Fixed income fund managers pivoting to smart beta strategies.

> Asset managers constructing benchmark-tracking ETFs.

## Our approach

The risk of credit instruments is captured through:

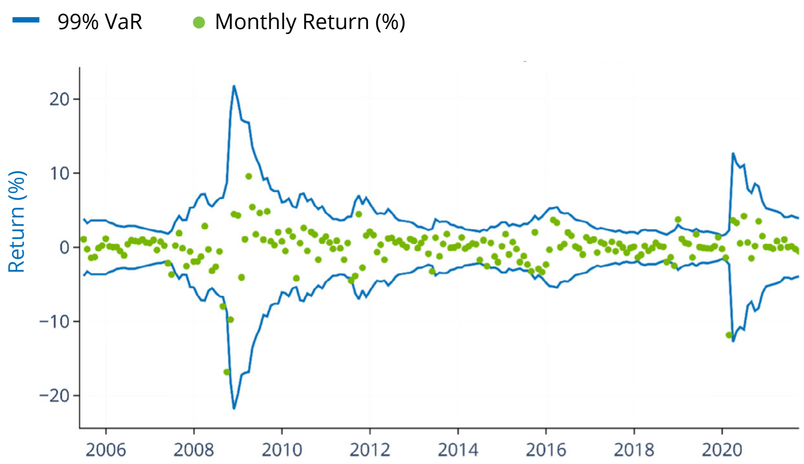
✓ **Detailed insight into credit spread risk**
Coverage for spread risk of corporate, foreign currency sovereign (EM, DM), sub-sovereign, supranational bonds and CDS in all major and minor currencies for IG and HY, both factor-based and granular.

✓ **Granular key rate factors and rate volatility factors**
Coverage for interest rate risk.

✓ **Covariance with multi-asset class risk factors**
Full coverage for fixed income assets, equities, derivatives, commodities and FX.

### Historical performance of US High Yield benchmark ex-ante risk vs realized returns

USD HY: Ex-anteVar vs. ex-post returns, monthly




Source: Qontigo

### Additional details

> **Extensive history:** Extensive history: More than a 20-year history of daily fixed income curves and factor returns.

> **Delivery method:** This model is available in the Axioma Risk™ platform with output that can be directly imported into the Axioma Portfolio Optimizer™.