**CREDIT STRATEGY**
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# Bond Alpha Factor: Relative Value Trading for Superior Returns

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Identifying mispriced bonds presents a potentially significant opportunity for investors. Mispricing represents a divergence between the market price of a bond and its value based on fundamental factors, including measured risk factors. Leveraging Moody's fair-value pricing framework, we analyze how discrepancies between Moody's-derived fair-value spreads and market option-adjusted spreads can signal potential mispricing opportunities in the corporate bond market. Our research demonstrates that portfolios constructed using top quintiles of corporate bonds ranked by their Alpha Factor—a measure of mispricing—consistently outperform benchmark indices in delivering cumulative returns across various markets, including during periods of economic stress. These portfolios also exhibit risk exposures lower than or comparable to those of the relevant benchmarks. A case study on AT&T's bonds illustrates how a persistent underpricing Alpha Factor signal can guide tactical investments ahead of a market correction.

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## IDENTIFYING OPPORTUNITIES

Identifying undervalued bonds that potentially offer superior returns is a complex task. Bond prices do not always accurately reflect the risk associated with the issuer or the instrument. This challenge is further compounded by the inherently unpredictable and interconnected nature of global financial markets. Every fluctuation, whether rooted in policy changes, economic indicators, or market sentiment, can significantly alter the investment landscape.

How can investors systematically identify potential mispricing opportunities in the corporate bond market and capitalize on them before the market re-prices to correct the discrepancy? Addressing this challenge is paramount not only for realizing enhanced returns but also for achieving a more stable and resilient investment strategy amidst market uncertainties. In this Credit Strategy article, we show how Moody's Alpha Factor framework can be used to develop corporate bond trading strategies that outperform benchmark indices.

## ALPHA FACTOR: ACTIONABLE INVESTMENT SIGNALS

Moody's provides near real-time, actionable trading signals and other pricing insights for nearly 470,000 corporate bonds globally. Our fair-value pricing framework aids portfolio managers and investors in identifying relative mispricing opportunities in the corporate bond market by leveraging risk information from the more liquid equity market. This, in turn, allows for the construction of investment strategies aimed at delivering superior risk-adjusted cumulative returns.

Mispricing manifests as the difference between Moody's-derived fair-value spread (FVS) and the option-adjusted spread (OAS) observed in the bond market.[1] Our analyses demonstrate that a dynamically rebalanced investment portfolio consisting of instruments that are highly ranked based on their OAS-to-FVS ratio—termed the Alpha Factor (AF)—consistently outperforms market-value weighted benchmark indices across diverse markets. This underscores the AF as a leading signal for capitalizing on potential mispricing opportunities before they are corrected by the market.

In addition to portfolio-level analyses, we examine the case of AT&T, where the gap between its bonds' OAS and FVS narrowed over a five-year period while producing superior cumulative returns. This illustrates how a persistent underpricing AF signal can inform investment decisions before the opportunity fades.

## DEVELOPING A SUPERIOR TRADING STRATEGY

We utilize Moody's fair-value bond pricing framework to explore how one can identify potentially mispriced bonds to construct a portfolio that yields superior cumulative returns. Our methodology employs a risk-neutral valuation framework to price bonds of public firms, incorporating credit signals from the stock market to derive the bond's FVS.

In the Moody's framework, the FVS of a bond is driven by multiple factors, including the cumulative probability of default (PD) of the issuing firm, a loss given default (LGD) associated with the bond's region of issuance and the issuing firm's sector, a market Sharpe ratio associated with the bond's region of issuance and rating class

[1] Many bonds have embedded put and call options, which can distort the observed spread. The OAS reflects a market-observed spread after removing such option-related distortions. We utilize Treasury yields as the reference curve in calculating bond spreads.

(i.e., investment-grade vs. high-yield), and firm size.[2] The cumulative PD incorporates point-in-time market capitalization and financial statement information into the relatively illiquid corporate bond market. An increase in the LGD or cumulative PD signifies heightened credit risk for the firm, leading to a widening of the bond spread. Similarly, an increase in the market Sharpe ratio reflects higher levels of risk-adjusted returns in the overall bond market, driving up the bond spread. On the other hand, larger companies tend to have a lower spread, all else equal, as they typically have easier access to capital to cover debts.[3]

At the aggregate level, a bond's FVS is calibrated to align with the market-observed OAS, on average. Consequently, any discrepancy between the bond’s FVS and OAS indicates potential mispricing. We measure this mispricing using the bond’s AF: the ratio of its OAS to FVS. An AF above one indicates an undervalued bond, signaling a "buy," while an AF below one suggests an overvalued bond, signaling a "sell".

To illustrate the effective use of the AF in portfolio management, we consider the following trading strategy relative to a generic benchmark index. We construct a portfolio comprising bonds in the index with an AF in the top quintile relative to bonds of comparable duration and issuer type (i.e., financial vs. corporate firm).[4] Figure 1 displays the cumulative total returns of these top quintile AF portfolios alongside those of the overall benchmark indices from January 2007 to December 2023 across five different indices based on region and rating class: U.S. investment-grade (“USIG”), U.S. high-yield (“USHY”), Euro investment-grade (“EUIG”), Japan investment-grade (“JPIG”), and APAC ex-Japan investment-grade and high-yield (“APAC ex-JP”).[5] Notably, our observation window includes recent periods of significant economic stress, such as the onset of the COVID-19 pandemic, the 2021-2023 inflationary period, and the central bank interest rate hikes from early 2022 onwards.

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[2] The cumulative PD of a firm represents its probability of default at any time over a specified time horizon and is assessed using Moody’s CreditEdge™ model. In cases where the bond is issued by a private subsidiary of a public company, we utilize the PD of the public parent.

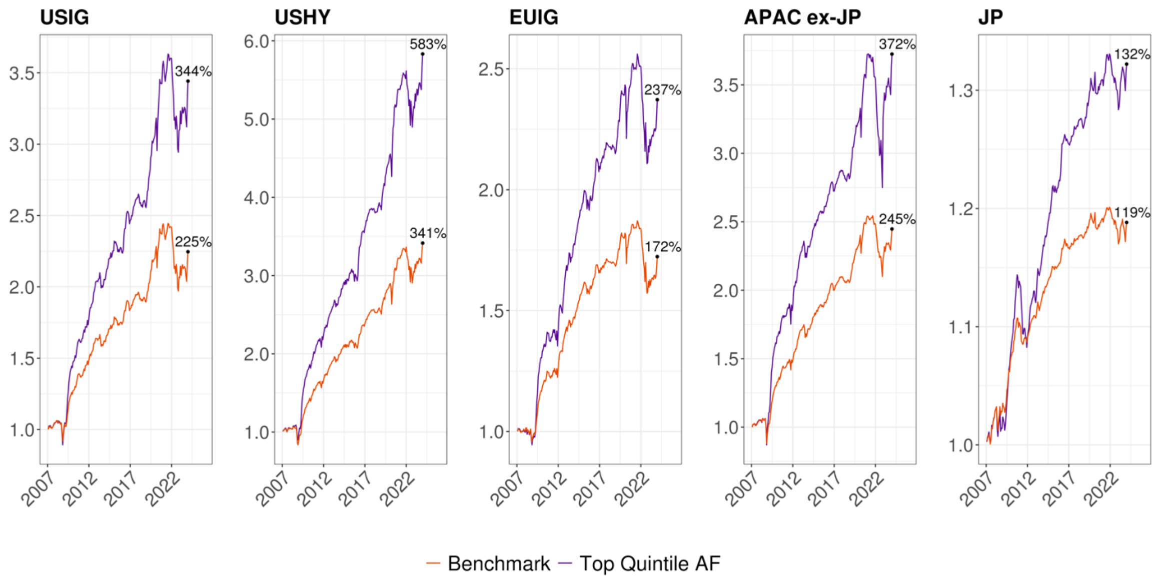
[3] Firm size can act as a proxy for the liquidity premium.

[4] Our portfolio construction applies filters on the amount outstanding to select sufficiently liquid rated bonds from listed firms, and excludes bonds issued by firms whose 1-year deterioration probability – a Moody’s metric assessing the likelihood of a rating downgrade – falls within the top 5 percent or whose Moody’s ratings are at or below Caa1. We categorize bonds into ten distinct buckets based on two issuer types and five duration ranges, except in the JPIG strategy, where we bucket only by issuer type due to the smaller market size. Within each bucket, we select bonds in the top 20 percent by Alpha Factor in each month’s portfolio and weight each bond according to the aggregate market value of its entire issue as represented in the index. For further details, see **Luo, V. and Zhuang, Z. (2024). Moody’s Analytics EDF-Based Bond Valuation Model Version 2.0. Moody’s**.

[5] We use the following ICE BofA indices for benchmarks: ICE BofA US Corporate Index (C0A0), ICE BofA US High Yield Index (H0A0), ICE BofA Euro Corporate Index (ER00), ICE BofA Japan Corporate Index (JC00), and Asian Dollar Corporate Index (ACOR).

**FIGURE 1** Top quintile AF portfolios outperform benchmark indices

Cumulative total returns (January 2007-December 2023)




Note: Cumulative total return curves are normalized to equal 1.0 at the start of January 2007. For example, a cumulative total return of 3.44 (344%) indicates that for every $1 invested at the beginning of January 2007, the final value of that investment is $3.44.

Across all indices, the top quintile AF portfolio consistently outperforms the benchmark index over time, demonstrating the robustness of AF as a trading signal for identifying undervalued bonds. Table 1 further illustrates how the AF portfolio aligns with the overall index in terms of various dimensions of credit risk profile—LGD, duration, and credit rating—while also exhibiting lower duration-matched cumulative PDs.[6] These results indicate that a high AF contributes to achieving superior portfolio performance on a risk-adjusted basis.[7]

[6] Duration-matched cumulative PD refers to the issuer's cumulative PD over a time horizon equivalent to the bond's duration. While the agency rating is more of a through-the-cycle risk metric, the duration-matched cumulative PD is a point-in-time metric that reflects bond-specific characteristics.

[7] Despite higher transaction costs that may be associated with an actively managed portfolio, the degree of outperformance of the top quintile AF portfolios suggests that such costs are comparatively negligible and do not negate the benefits of the investment strategy.

**TABLE 1** Top quintile AF portfolios and benchmark indices are comparable in risk profile

Mean characteristics (Jan 2007-Dec 2023)

| | TOP QUINTILE AF | | | | BENCHMARK INDEX | | | |
|---|---|---|---|---|---|---|---|---|
| INDEX | LGD | DURATION (YEARS) | DURATION-MATCHED CUMULATIVE PD | RATING | LGD | DURATION (YEARS) | DURATION-MATCHED CUMULATIVE PD | RATING |
| USIG | 45% | 7.08 | 3.12% | Baa1 | 46% | 7.35 | 4.09% | A3 |
| USHY | 48% | 5.30 | 2.70% | Ba2 | 49% | 5.43 | 5.54% | Ba3 |
| EUIG | 45% | 6.65 | 4.07% | A3 | 47% | 6.15 | 4.27% | A3 |
| JPIG | 29% | 6.44 | 3.53% | A1 | 28% | 5.29 | 3.80% | A1 |
| APAC EX-JP | 43% | 5.42 | 8.10% | Baa1 | 45% | 5.54 | 10.63% | Baa1 |

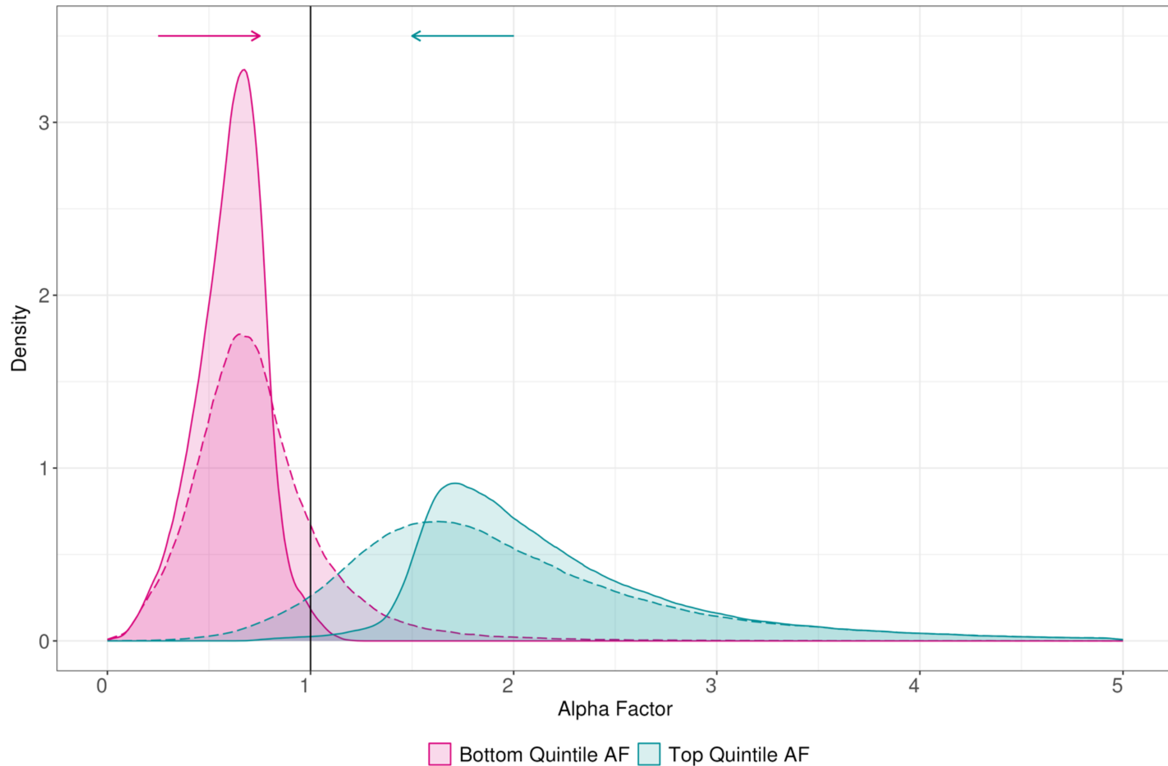
Note: In this table, sample mean statistics are computed using equal weighting for bonds in both the top quintile AF portfolios and the benchmark indices. Ratings are based on issuer SRA ratings from Moody's Ratings. The SRA takes a Moody's-rated entity's actual senior unsecured rating (or senior rating) history when one exists and estimates it when the entity does not have any rated senior unsecured debt in all or part of its rating history. These estimated ratings allow Moody's to meaningfully compare credit quality across entities, regardless of their capital structures.

## "The Alpha Factor serves as a critical indicator for assessing bond relative value, guiding the construction of portfolios that not only yield superior cumulative returns but also maintain a risk profile similar to that of benchmark indices, ensuring an enhanced risk-return tradeoff."

This outperformance may be attributed to the AF's ability to capitalize on inefficiencies in the bond market—stemming from factors such as lower liquidity, information asymmetry, and market fragmentation—relative to the equity market, where these inefficiencies may be less prevalent. If this hypothesis holds true, we would expect the OAS to gradually align with the FVS over time as the market re-prices, leading the AF to tend toward unity. Figure 2 depicts the 12-month movement in top and bottom quintile AF distributions of global corporate bonds from January 2007 to December 2023; solid curves correspond with the AF distributions of bonds at the beginning of every 12-month window, while dashed curves correspond with the AF distributions of the same bonds 12 months later. Over a 12-month period, the AFs for both overvalued and undervalued bonds move towards unity, aligning with the correction of mispricing following the AF's provision of a leading "buy" and "sell" signal. These movements in the AF toward unity suggest that one can develop a relative value trading strategy to capitalize on this mispricing window with timely rebalancing.

**FIGURE 2** AF moves toward unity over 12 months

AF distributions of top and bottom AF quintiles (January 2007 -December 2023)



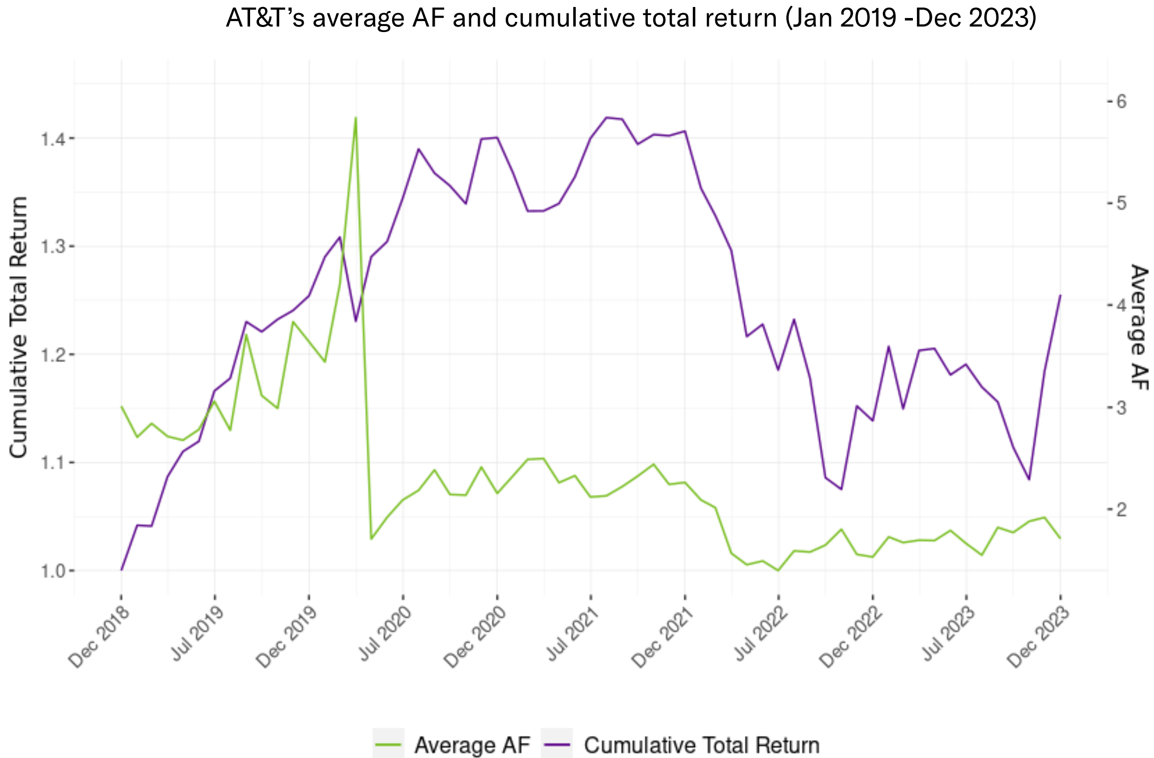

Note: Each month, global liquid bonds with continuous coverage in the indices over the following 12 months are ranked by their AF, and bonds within the top and bottom 20% are chosen. Solid curves correspond with the AF distributions of these bonds at the beginning of every 12-month window, and dashed curves correspond with the AF distributions of the same bonds 12 months later. Kernel density estimation is used to construct the plots.

## ALPHA FACTOR CASE STUDY: AT&T

To delve deeper into how the AF acts as a potential relative value signal, we examine the case of AT&T. From January 2019 to December 2023, AT&T's bond portfolio demonstrated superior cumulative returns despite a downturn in its stock price. Figure 3 illustrates AT&T's average AF and cumulative returns on an equal-weighted portfolio of the company's bonds with sufficient coverage and liquidity over the five-year observation period. In January 2019, AT&T's bonds were underpriced, as reflected by an average AF above one. The degree of underpricing rose with the onset of the COVID-19 pandemic, peaking in March 2020 with an OAS that was nearly six times wider, on average, than the FVS. Amid such volatility, over the entire five-year period, the average AF of the portfolio decreased, moving from 2.72 to 1.71. This trend indicates persistent underpricing in the company's bonds relative to fair value, although it was gradually corrected over time as the bond market incorporated more information.

The trend in cumulative total returns roughly followed the trend in the average AF, peaking in July 2021 with 43% growth and finishing with 26% growth by December 2023. Throughout this period, the portfolio of AT&T bonds consistently outperformed the USIG benchmark index, which gained 17% over the same five-year period.

**FIGURE 3** AT&T's high average AF is followed by superior cumulative returns




Note: Cumulative total return curves are normalized to equal 1.0 at the start of January 2019. We select AT&T's bonds with an amount outstanding of at least USD 300 million and continuous coverage in the USIG index for at least 36 months. Over the five-year period, this portfolio held 49 unique bonds, averaging 42 bonds monthly, with an average bond duration of 11 years.

Moody's fair-value pricing framework serves as an invaluable tool for portfolio managers and investors, providing leading AF signals to identify mispriced bonds. This allows for the construction of relative value trading strategies that yield superior cumulative returns while maintaining a portfolio risk profile similar to that of benchmark indices.

**"Movements in the AF toward unity suggest that one can develop a relative value trading strategy to capitalize on this mispricing window with timely rebalancing."**

## KEY TAKEAWAYS

- → Moody's fair-value pricing framework offers a tactical edge in identifying potentially undervalued bonds, enabling investors to capitalize on transient mispricing opportunities, thereby enhancing risk-adjusted portfolio performance.

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- → Moody's Alpha Factor serves as a critical indicator for assessing bond relative value, guiding the construction of portfolios that not only yield superior cumulative returns but also maintain a risk profile similar to that of benchmark indices, ensuring an enhanced risk-return tradeoff.

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- → The consistent outperformance of high Alpha Factor portfolios across various market conditions relative to benchmark indices underscores the efficacy of the Alpha Factor as a leading signal for trading and investment strategies, while also highlighting the importance of actively managed strategies in exploiting corporate bond market inefficiencies.

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