

The power of fixed income factor-based investing

The recent performance of traditional bond strategies has left many fixed income investors dissatisfied. In our opinion, passive strategies have allocated investors to indices with lower yields, greater credit risk, increased interest rate risk, significant turnover and fees that create structural underperformance.

The hunt for alpha has induced many traditional active managers to create excessively concentrated portfolios or to introduce surreptitious, volatility-selling strategies with unrecognized correlation risks that, we believe, underperform when investors least expect it.

Frustration with traditional strategies has sparked an increase in the number of fixed-income factor investing strategies, which over the last three years has more than doubled (to over 100). These strategies show promise not only because of their potential to deliver better risk-adjusted returns, but also because their excess returns have low correlations with the excess returns of traditional bond managers and those of other asset classes.

The benefits of well-constructed, multi-factor portfolios allow investors to:

- Earn premiums superior to those of traditional asset class premiums.
- Realize higher returns and lower risk than single-factor portfolios, because some of the factors have low correlations and provide a diversification benefit.

How factor investing works

Risk premiums are the compensation asset holders receive for bearing factor risks. These may be classified as economic scenarios (such as recessions) in which realized cash flows are lower than expected cash flows. Or they could be structural frictions (such as the inability to take short positions in a security) that cause asset prices to be less than fully efficient.

Factor investing focuses on specific drivers of returns across fixed income asset classes rather than defining sources of return from sectors such as credit, mortgages and Treasuries.

Investors able to recognize inefficiencies and bear risks are rewarded with factor return premiums. In short, factor investing focuses on specific drivers of returns across fixed income asset classes rather than defining sources of return from sectors such as credit, mortgages and Treasuries.



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Investable assets comprise factors just as molecules comprise atoms, and these constituent “elements” generate the properties and returns of different asset classes and securities. For example, if we think of hydrogen as interest rate risk and oxygen as credit risk, then H₂O would be investment-grade corporate bonds. We can then create a more volatile substance, such as H₂O₂ (hydrogen peroxide), by adding credit risk and calling it a high-yield bond.

Asset classes and individual securities act as vehicles for delivering the returns of different factors. Rather than use asset class behaviors to construct a portfolio, factor investors use these elemental factors in a way that reflects the risks they are willing to bear and the factor premiums they wish to harvest.

New tools and better data are fueling a transformation in bond market analysis

Factor investing began with equity factor investing in the 1960s and the introduction of the Capital Asset Pricing Model (CAPM), which holds that sensitivity to one factor (systematic risk, represented by β) drives the excess returns of an asset. Arbitrage Pricing Theory and the Fama-French-Carhart model expanded the number of identifiable market factors and allowed for a more refined conception of alpha. The most studied and widely adopted equity market factors are low beta, quality, value, size and momentum.

Over the last two decades, numerous refinements in gathering and analyzing bond trading data have enhanced bond investors’ ability to identify factor risk premiums and construct portfolios capable of harvesting those premiums. The over-the-counter nature of bond trading has historically made collecting and aggregating information about this market difficult and expensive. Traditional bond market trading data is now more comprehensive, more accurate, less expensive and delivered more quickly. More abundant and diverse data sources provide richer information to investors, allowing them to identify and unlock previously unrecognized factor premiums. In addition, electronic trading of individual bonds and credit portfolio trading of bond baskets have lowered trading costs, increased execution speeds and allowed investment managers to reallocate resources to higher-value activities.

Bond factor portfolios are constructed by sorting individual bonds on a particular characteristic (e.g., carry, value or momentum), then buying the highest-ranking bonds and

shorting the lowest-ranking ones. However, shorting corporate bonds is both expensive and operationally challenging (or impossible for long-only investors); therefore, it is important to ascertain whether the theoretical factor risk premiums are obtainable in practice. Fortunately, they are, as we will show below with our approach to corporate bond factor investing.

How we apply the factor investing approach

The foundation of our corporate bond factor investing approach is our multi-factor corporate bond issue selection model, which predicts the one-month forward total return of each corporate bond in the U.S. Investment Grade Corporate Bond universe. It incorporates six predictive quantitative factors:

Fundamental is measured at the issuer level, and is derived from multiple characteristics related to the issuer’s financial leverage, profitability, earnings forecasts, etc. We also find that the issuer’s stock momentum is predictive of bond returns and include it as a component of the fundamental factor.

Carry is a measure of expected return assuming a bond’s price does not change, similar to a yield or spread. We define carry as the Option Adjusted Spread (OAS) of a bond, since the OAS adjusts for interest rate exposure and optionality of the bond and is more appropriate for comparing different bonds.

Value measures the cheapness of a bond relative to its fundamental value. Since credit rating and duration are the key risk factors that affect fundamental values of corporate bonds, we define the value factor as the OAS of the bond after controlling for its credit rating and duration.

Momentum/reversal is based on a corporate bond’s past returns. We did not find persistent positive returns to this factor. Rather, its performance depends on market regime: it exhibits momentum in the risk-on regime but reversal in the risk-off regime.

Credit rating and **Duration**. Bonds with lower credit ratings or longer durations produce higher returns on average. We also find their performance to be regime-dependent, with higher returns in the risk-on regime than in the risk-off regime.

We also examined the size factor, which is defined as the market value of the bond issue. Although we find that bonds with smaller sizes produce higher returns, they tend to be less liquid and are often hard to trade. Therefore, we do not include the size factor in our model.

Although all the factors generate positive excess returns over the long run, we find that the relative performance of the factors varies by market condition. We first develop a market regime indicator that predicts whether the corporate bond index will outperform the duration-adjusted Treasury bond index and classify each month as either a “risk-on” or “risk-off” regime. We then build a separate multi-factor issue selection model for each market regime using multiple regression. We believe this approach allows for factor timing and enhances factor returns. To avoid the many pitfalls of in-sample fitting, we refit the models periodically using only data available at each point in time and use out-of-sample predictions to evaluate model performance.

We assess the efficacy of corporate bond factor investing in two different ways:

- First, we group the bonds into quintiles based on their ranking in each factor and the composite model score and show that bonds in the top quintiles generate higher returns.
- Second, we construct long-only portfolios by maximizing the composite score with realistic portfolio constraints and transaction cost assumptions to demonstrate that the model-driven portfolio generates persistent excess return over the benchmark net of transaction costs.

Evaluating factor performance

We evaluate the performance of each factor and the composite score for the period between 1/2004 and 6/2022. In each month, we rank the bonds by each factor or the composite score and group them into quintiles. We are most interested in long-only portfolios and focus on the relative performance between the top quintile and the corporate bond benchmark. We define the excess return as the difference between the one-month forward total return of the top quintile and the corporate bond benchmark.

It is our belief that most traditional bond managers focus on carry to the exclusion of other factors. Therefore, adding a multi-factor approach can provide diversification at the manager level.

In **Figure 1**, we plot the annualized average excess return and its standard deviation (i.e., the tracking error) for each factor. All factors have positive average excess returns but exhibit different risk/return profiles. For example, the Carry factor has a high average excess return and high tracking error, while the fundamental factor has a low excess return and low tracking error. The composite score produces the highest excess return (3.66%) and only moderate tracking error (3.64%). It is our belief that most traditional bond managers focus on carry to the exclusion of the other factors. Therefore, adding a multi-factor approach can provide diversification at the manager level.

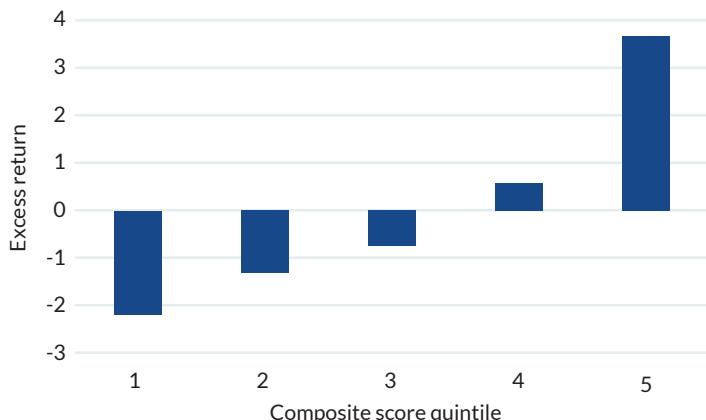
FIGURE 1: ANNUALIZED AVERAGE EXCESS RETURN AND STANDARD DEVIATION (I.E., TRACKING ERROR) FOR EACH FACTOR



Source: Mesirow Analytic Fixed Income. Period between 1/2004-6/2022 Past performance is not indicative of future results. | Model, hypothetical and/or simulated performance information and results do not reflect actual trading or asset, or fund advisory management and the results may not reflect the impact that material economic and market factors may have had, and can reflect the benefit of hindsight, on MFIM's decision-making if MFIM were actually managing client's money. Any securities contained or investment strategies used in the model performance results provided herein do not relate or only partially relate to the advisory services currently offered by MFIM. MFIM's clients may have had results materially different from the results provided.

Figure 2 plots the average excess return of each of the five quintiles of the composite score. The excess return increases monotonically from Q1 to Q5. This further shows that the composite score predicts very well the one-month forward return of corporate bonds.

FIGURE 2: AVERAGE EXCESS RETURN OF EACH QUINTILE OF THE COMPOSITE SCORE



Source: Mesirow Analytic Fixed Income. Period between 1/2004-6/2022 Past performance is not indicative of future results. | Model, hypothetical and/or simulated performance information and results do not reflect actual trading or asset, or fund advisory management and the results may not reflect the impact that material economic and market factors may have had, and can reflect the benefit of hindsight, on MFIM's decision-making if MFIM were actually managing client's money. Any securities contained or investment strategies used in the model performance results provided herein do not relate or only partially relate to the advisory services currently offered by MFIM. MFIM's clients may have had results materially different from the results provided.

How we construct our corporate bond factor portfolios

We construct long-only portfolios using portfolio optimization to maximize exposure to the composite score while taking into consideration transaction costs and portfolio constraints. To estimate transaction costs, we develop a statistical model to predict the bid-ask spread of corporate bonds. The predictors include bond characteristics such as duration and credit rating, as well as macro factors such as the average yield spread of the corporate bond index. We impose realistic portfolio constraints on the active exposure to interest rate, industry and credit rating. We also limit exposure to individual issuers and set minimum position and trading sizes. The portfolio is rebalanced monthly, and we measure the monthly excess return of the portfolio, which is the difference between the return of the portfolio (net of transaction cost) and the corporate bond benchmark.

By incorporating transaction costs and portfolio constraints, we can construct realistic multi-factor portfolios that can consistently outperform the benchmark.

Using this approach, we constructed portfolios over the backtest period between 1/2004 and 6/2022. The annualized returns are 5.89% for the corporate bond factor portfolio and 4.11% for the benchmark. Compared to the benchmark, the factor portfolio generated attractive outperformance with an annualized excess return of 1.78%, tracking error of 2.07%, and information ratio of 0.86.

Conclusion: Pursuing the best of both worlds—higher returns with less risk

A rigorously designed portfolio of multiple corporate bond factors has the potential to produce positive excess returns over the benchmark. A multi-factor composite score and delivers the highest excess return with moderate tracking error, with diversification among multiple factors enhancing return while simultaneously reducing risk. By incorporating transaction costs and portfolio constraints, we can construct realistic multi-factor portfolios that can consistently outperform the benchmark.

Based on these results—combined with continued improvements in bond market data, technology and liquidity—we expect significant growth in corporate bond factor investing.

About Mesirow

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For more information on Mesirow Analytic Fixed Income and factor based portfolios, please contact Jim DeZellar, CFA, Managing Director at 312.595.8660 or visit mesirow.com.

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