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Asset management

Liquidity

NEED TO KNOW

Despite research into the existence of risk premia in fixed income going back years, the practical application of factor investing in corporate bonds has been slow to take off.

Liquidity constraints make it difficult to mimic approaches widely used in equities.

“At every point in time there is a trade-off between getting exposure to the factors... [and] being able to execute the trade,” says one portfolio manager.

Firms are increasingly looking to use screening techniques to build portfolios with factor exposures that are not overladen with illiquid bonds.

Some have developed strategies based on potential-buy and potential-sell lists rather than defining a fixed target portfolio to allow greater flexibility, based on what bonds are easily available.

Dutch asset manager Robeco is among a handful of factor-investing specialists striving to put their systematic techniques to work in credit. The firm's quant team has identified four characteristics of corporate bonds – 'factors' in industry speak – which it believes deliver a premium to investors. They are borrowed from long-established strategies in equities that tilt portfolios towards value, momentum, low risk or smaller-sized stocks. But in bonds, when the firm tries to put on trades to tilt towards these factors, it struggles to do so about 20% of the time – rendering some of its strategies impossible to implement.

That is even after chopping down the whole universe of corporate bonds into a subset of the most liquid, says Patrick Houweling, quantitative researcher and portfolio manager at Robeco Asset Management. Without doing so, the figure would be well below 50%.

"Smaller bonds and older bonds tend be less liquid and trade less often. Completely ignoring such bonds would shrink our investment universe substantially, resulting in sub-optimal factor exposures. At every point in time, there is a trade-off between getting exposure to the factors on the one hand, but also being able to execute the trade in the first place, and execute it cost efficiently," Houweling says.

Quant investors have seized on credit as the most promising area of fixed-income markets for the application of factor-based strategies because, like equities, the universe of available securities is large. But many practitioners echo Robeco's frustrations about liquidity.

Common characteristics

The standard approach to factor investing in equities identifies cross-sections of stocks that share certain characteristics – such as size, value and momentum – that explain their returns, and goes long on the top quintile while shorting the bottom. This simply “isn’t implementable” in fixed income, says one researcher and portfolio manager in a quantitative hedge fund’s global alternative premia group.

“It used to be that investment banks were making markets in corporate bonds and holding a lot of inventory but that’s really dried up since the financial crisis with the Dodd-Frank Act,” says Shane Shepherd, a director at investment manager Research Affiliates, one of the pioneers of smart beta investing in equities.

“Many of these strategies require a lot of rebalancing. That works well in equities. But it’s really difficult in bonds. Something that requires 100% turnover [a year] is really difficult,” Shepherd adds.

Etienne Vincent, head of quantitative management at BNP Paribas Asset Management, describes how efforts to put theory into practice often encounter real-world obstacles. “You’ll be hitting bid/offers that are so wide it will kill your alpha,” he says. “You might want to buy Coca-Cola debt but not be able to find it. Or you might find it at a price that is too wide.”

Such challenges help explain the sector’s slow pace of growth. At the time of writing, only 7% of the 963 ‘smart beta’ exchange-traded funds are fixed-income funds, according to data from ETF.com, and only half of those are corporate bond ETFs. Combined assets under management in credit factor investing ETFs are \$4.6 billion.

Academic work on risk premia in fixed income goes back to the early 1970s, but the first credit risk premia strategies became available only in the past few years.

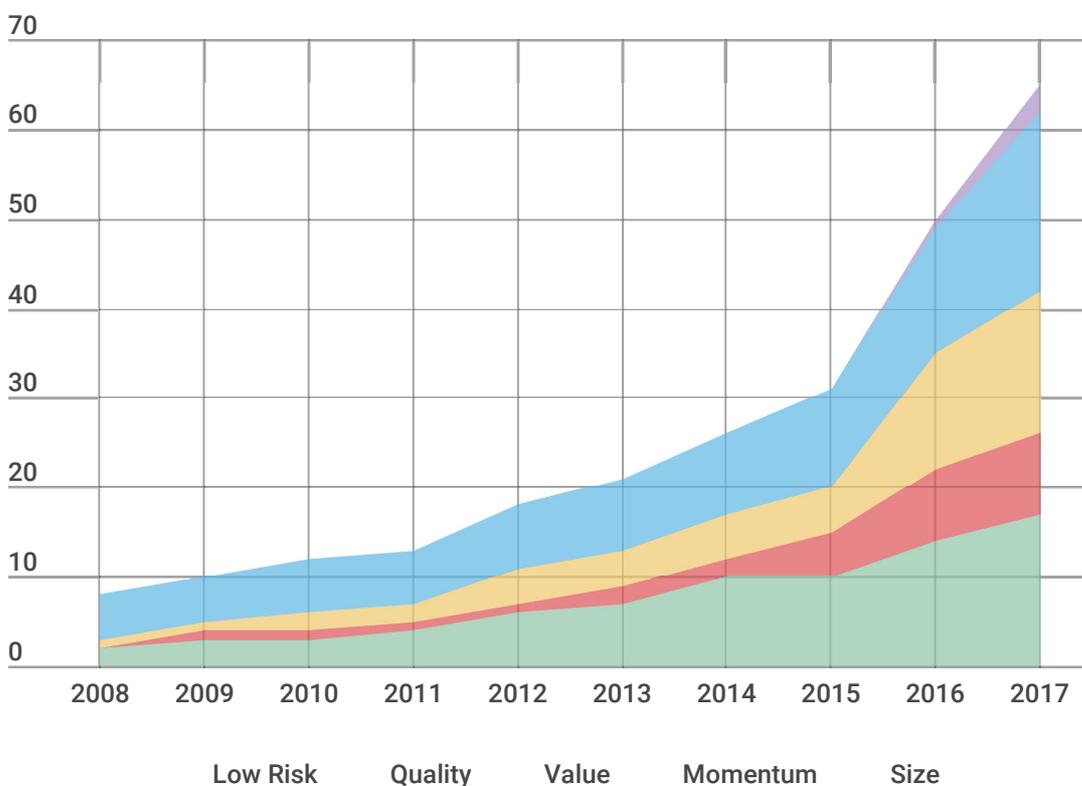
Smart beta fixed income: firmly grounded in academic research

1970–80s: Cap-weighted, eg S&P 500	Black F, Jensen M and Scholes M, 1972 The Capital Asset Pricing Model: Some Empirical Test Studies in the Theory of Capital Markets, Praeger Publishers	Rosen B, Reid K and Lanstein R, 1985 Persuasive Evidence of Market Inefficiencies Journal of Portfolio Management 11 (1985) pp. 9-17		
1990s: style aware, eg value, growth, small	Fama E and French K, 1993 Common risk factors in the returns on stocks and bonds Journal of Financial Economics, 33, 3–56.	Erb C, Campbell R and Viskanta T, 1995 Country Risk and Global Equity Selection Journal of Portfolio Management, 9, Winter, 74-83	Elton E, Gruber M, Agrawal D and Mann C, 2001 Explaining the rate spread in corporate bonds Journal of Finance 56 (1), 247-261	
2000s: alternative weighting, eg fundamental	Gebhardt W, Hvidkjaer S and Swaminathan B, 2005 The cross section of expected bond returns: betas or characteristics." Journal of Financial Economics 75 (1), 85-114	Kozhemiakin A, 2007 Risk Premium of corporate bonds The Journal of Portfolio Management, Vol. 33, No. 2: pp. 101-109	Asness C, Moskowitz T and Pedersen L, 2008 Value and Momentum Everywhere Journal of Finance, vol 68, nr. 3, s. 929- 985	Lin H, Wang J and Wu C, 2011 Liquidity risk and expected corporate bond returns Journal of Financial Economics, Elsevier, vol. 99 (3), pages 628-650, March
2010s: factor-targeted, eg smart beta	Popisil L and Zhang J, 2010 Momentum and reversal effects in corporate bond prices and credit cycles The Journal of Fixed Income, Vol. 20, No. 2: pp. 101 –115	Correia M, Richardson S and Tuna I, 2012 Value Investing in Credit Markets Review of Accounting Studies, 17 (3):572–609	Franzzini A and Pedersen L, 2014 Betting Against Beta Working paper, New York University Stern School of Business	Carvalho R, Dugnonle P, Lu X and Moulin P, 2014 Low risk anomalies in global fixed income The Journal of Fixed Income, Vol.23, No. 4: pp. 51-70

Source: SSGA

Research continues, though, and is gathering speed. The number of published papers jumped fivefold last year compared with 2010 and practitioners have built a solid case that a number of risk premia established in equities translate to fixed income. AQR, for example, has published papers identifying four styles that work in credit. Robeco adds a further two (see box: *Lost in translation?*).

Cumulative number of papers per factor



Source: Robeco

It's when it comes to the practicalities of building investment strategies to harvest those premia that complications stack up.

In academic research, to give a simple example, the profitability of trading strategies is typically analysed by looking at long/short portfolios rather than returns just from the long side. But shorting corporate bonds is beset with operational difficulties and high transaction costs.

Some factors are more challenged than others. The size factor, for example, faces difficulty in that smaller firms, which are seldom included in corporate bond indexes, are typically less liquid. Conversely, low-risk strategies tend to favour larger companies that are more liquid.

Short-term versions of the momentum factor change signal quickly and therefore have higher turnover rates.

In New York, WisdomTree Asset Management has concluded that strategies based on the momentum and size factors are too difficult to implement because of the liquidity challenges. WisdomTree found more potential in the momentum factor in high yield compared with investment grade, but the boost to returns came at the cost of sizable turnover. Meanwhile, the manager's tests on the size factor have shown less potential in both investment grade and high yield.

"We are very much in agreement with the potential applicability of factor investing in the corporate bond space, particularly the quality and value factors. We see less value in momentum and size," says Rick Harper, head of fixed income and currency at WisdomTree.

High turnover is the reason many managers have scrapped short-term momentum as a factor in corporates – instead focusing on longer-term momentum, based on six- to 12-month historical returns, to reach a strategy with much less frequent rebalancing.

"One of the best signals for credit would be a one-day reversal," says one researcher and portfolio manager in a quantitative hedge fund. "But that's a super-high turnover strategy. And that gets destroyed once you account for transaction costs. That one is not implementable."

Robeco and Research Affiliates both think momentum calculated on a one-month basis cannot be profitably traded in credit. German asset manager Deka Investment

also found that the premium from ultra-short-term momentum is cannibalised by turnover.

Demir Bektić, a fund manager in the firm's quantitative portfolio management division, says: "You can't trade such a portfolio on a monthly basis in a corporate bond market. That would be insane turnover of about 1,000% a year. After transaction costs, there would be nothing left."

Meanwhile, to get round illiquidity and turnover costs, asset managers are establishing their own rules around rebalancing frequency, weighting schemes and – especially – factor definition, Bektić says.

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Rick Harper, WisdomTree

This occurs in equities where, for example, there are multiple definitions of value and momentum, but it means credit portfolios based on the same factor may perform completely differently. "Everyone is going in their own direction to some extent, which I think is a little unfortunate because it makes it difficult for investors to sort through everything out there," Research Affiliates' Shepherd says.

WisdomTree manages liquidity by removing the most illiquid bonds from its filters and imposing issue-size minimums on the bonds it will trade. Within high yield, the fund screens out the bottom 5% of the least liquid securities determined by size and seasoning, for example.

BlackRock recently launched two fixed-income factor-based ETFs in the credit space that aim to screen for value and tilt towards quality: the iShares Edge Investment

Grade Enhanced Bond ETF and iShares Edge High Yield Defensive Bond ETF.

The firm says it carries out screening during the portfolio management process for its smart beta indexes to identify liquidity conditions while minimising tracking error to the benchmark. As a result, its smart beta indexes are subsets of much broader indexes and are not any less investable, argues Steve Laipply, head of fixed income at iShares.

“When you are creating rules-based outcomes you have to take care you’re not creating rules that would result in excessive turnover,” he says.

Yielding results

Many practitioners remain optimistic that factor investing in credit can take off, in spite of these challenges.

BNP Paribas’s Vincent describes fixed-income factor investing as the “new frontier” in smart beta because of its potential to provide additional income to yield-hungry investors without taking on further liquidity, duration or credit risk.

“If you believe in behavioural finance and you believe the premia are there for behavioural reasons, you can pretty much apply the ideas [found in equities] to fixed income – even if you don’t have a very large database, even if you don’t have much liquidity,” he says.

BNP Paribas navigates the liquidity problem in corporates by using a potential-buy and potential-sell list with limit prices instead of defining a fixed target portfolio, as is usual in equity strategies. In practice, this would mean that if Coca-Cola is not offered or is too high, the fund could buy Pepsi instead.

Deka Investment takes a similar approach, constructing portfolios with a large number of bonds that do not need to take any single large positions. In the case that a single

bond is not tradeable at all, the firm trades the “nearest neighbour” bond in terms of similar factor exposure.

Meanwhile, at Robeco, quants are busy collating information from various platforms – including trading platforms, where brokers make a market in the more liquid bonds, and pre-trade transparency platforms, supplying information on brokers’ axes and inventory.

“Whenever we need to trade for a factor portfolio, we select a mixture of liquid bonds, which will ‘always’ be available, and illiquid bonds, which are only temporarily available at the time of trading,” Houweling says.

In this way, the firm can strike the right balance between exposure to the factors, and optimal trade execution.

Lost in translation?

Over the past few years, investment manager AQR has published a number of papers on factors in the fixed-income space. The firm currently identifies four styles that work in corporates: value, momentum, carry and defensive.

Put simply, cheaper bonds outperform expensive bonds; a bond's relative performance continues in the near future; higher-yielding bonds earn higher returns than lower-yielding bonds; and higher-quality bonds generate higher risk-adjusted returns than lower-quality bonds.

Dutch asset management company Robeco published [a paper](#) earlier this year exploring how far well-known factors in equities work in credit markets. The group found evidence of value; momentum – based on six-month returns; low risk – high-rated, short-dated bonds produce higher risk-adjusted returns than low-rated, long-dated bonds; and size – bonds issued by

companies with smaller public debt outperform companies with larger public debt.

How do these factors translate in practice? In equities, the value of a stock is determined by fundamental metrics of the company such as book-to-market ratio, price-to-earnings ratio, sales-to-enterprise value.

In corporate bonds, the equivalent might be to look at credit spreads. Robeco, for example, used this “naïve” characterisation of value deliberately to show that even with a simple definition, it was possible to capture the value premium in credit.

However, during implementation, the volatility of the resulting portfolio was excessively high. Robeco found it could capture the value premium more precisely by expanding its models to include equity market and accounting-based risk measures such as the leverage of the firm, profitability, earnings statements and equity volatility.

WisdomTree Asset Management takes a similar approach for its credit exchange-traded funds but describes this as a screen for quality and a tilt towards value.

By incorporating accounting information into its value-factor model, WisdomTree found that companies experiencing deteriorating profitability, increasing leverage and deteriorating cash flow were most susceptible to being downgraded within investment-grade space. Deteriorating or negative cash flows were effective in highlighting those at risk of running into financial distress in high yield.

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