Factor investing in credits: research, implementation, clients

In cooperation with

For professional investors
Introduction

It is hard to overstate the impact of the rise of systematic, or ‘factor’ investing over the last decade. Nearly every day a new ‘factor’ or ‘smart beta’ product is launched, and it’s a topic on the agenda of most asset management conferences nowadays. The main forces driving this change are the prospect of higher risk-adjusted returns, style diversification compared with fundamental strategies and lower fees. However, the adoption of factor investing is concentrated mainly in the equity space, with fixed income so far largely being ignored.

In this joint Kirstein and Robeco study, we examine the current status of fixed income factor investing in the Nordics – how it is perceived, to what extent and how it is implemented – and look at some investor concerns. The second part of the paper looks at the compelling evidence for factor investing in credits based on various research studies. It also examines some of the challenges related to its implementation and addresses some of the concerns, such as crowding and lower liquidity. Finally, we zoom in on how factor strategies can be customized to fulfill specific requirements, using client cases to illustrate this.
Nordic survey on factor investing in credits
1. Executive summary

The objective of this research paper is to examine Nordic investors’ experiences of factor investing with the specific purpose of putting the institutional demand for fixed income risk premiums into perspective. This paper highlights and discusses the perceived benefits and obstacles of swapping risk premiums for traditional fixed income strategies or adding them to existing solutions. In essence, it seeks to uncover the degree to which a risk-based approach to fixed income is perceived as a valuable addition to an institutional portfolio.

This research paper shows that interest in factor investing has developed notably during the past couple of years, and today a large proportion of Nordic investors indicate that they are looking to increase allocations to equity factor strategies — and gradually also to fixed income — in the coming years. Looking specifically at credits, the concept of implementing factor strategies is most popular among the fixed income savvy Danish and Finnish investors and the largest entities in Sweden.

One frequently mentioned reason for implementing factor strategies relates to the growth in scientism in the context of the performance of actively managed strategies. While this has made many investors switch allocation from the traditional space to either alternatives or pure index mandates, dissatisfaction with fundamental active managers has also made investors rethink whether asset classes can be managed using a better approach. This has opened the door to a wide range of different types of strategies, managers and other market participants in the field of risk premium investing. Still, for many investors, the preferred alternative to actively managed strategies has been to take a pure passive approach, despite the clear limitations to maneuvering efficiently in the more illiquid parts of the traditional space. When it comes to fixed income risk premiums, institutional investors have so far seemed to find it challenging to find a specific place for these strategies within their existing asset allocation.

In conclusion, the jury is still out on the true benefits of implementing credit risk premiums. This means asset managers in the field of factor investing are still faced with the task of educating investors on the existence, persistence, and relevance of factor premiums, not least in credits. In general terms, however, Nordic investors seem to be open to considering factor investing, as long as asset managers can prove the long-term value of allocating to risk premiums.
2. Research panel

This study has been prepared by Kirstein A/S and is based on both interviews and quantitative data from 31 institutional investors based in four Nordic countries (Denmark, Sweden, Norway and Finland). The investors were selected to make up a representative universe of the full Nordic market in terms of number, size and origins. One third of the participating investors hold the position of CIO, and the rest of the peer group are fixed income specialists who are either manager selectors or portfolio managers.

2.1 Breakdown of research panel

The combined assets of the investors taking part in this study amount to EUR 435 billion, and this makes up about a third of the total Nordic institutional assets. The breakdown of investors is shown in Figure 1.

Figure 1. Number, size and origins of the research panel

<table>
<thead>
<tr>
<th>Participating investors by country</th>
<th>Total AuM</th>
<th>Participating investors by segment</th>
<th>Total AuM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>6%</td>
<td>Non-pension insurance companies</td>
<td>15%</td>
</tr>
<tr>
<td>Finland</td>
<td>79%</td>
<td>Pension funds</td>
<td>7%</td>
</tr>
<tr>
<td>Norway</td>
<td>14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>34%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-pension insurance companies</td>
<td>10%</td>
<td>Insurance companies</td>
<td>9%</td>
</tr>
<tr>
<td>Pension funds</td>
<td>17%</td>
<td>Full Nordic market</td>
<td></td>
</tr>
</tbody>
</table>

Source: Kirstein Research and Kirstein Intelligence 2015

To provide this research with opinions from the most seasoned investors, Danish investors account for 45% of the participating investors and half of the surveyed assets. Swedish investors account for one third of the asset base in this research, while participating investors in Finland and Norway tend to be smaller in size and account for a small part of the surveyed assets. The universe is intentionally tilted towards pension funds and a number of the largest insurance companies. Overall, we consider the surveyed group to be a representative peer group of Nordic investors, offering a sufficiently robust selection to show how the Nordic market is moving in terms of fixed income factor investing.
3. The slow migration from equity into fixed income risk premiums

The level of interest in factor investing has developed quite rapidly during the past few years among those investors in the survey. Since the financial crisis, the increased attention on managing portfolios with a specific focus on risk management has led to much greater interest in factor-oriented strategies, especially in equity. This is shown in Figure 2. The rationale for implementing factor strategies in institutional portfolios differs quite significantly across the four Nordic countries, both in terms of credits, but also when it comes to equity-related factor investing (only aggregated Nordic numbers are shown).

There is often a notable correlation between investors’ current experience with equity related factors and their level of interest in fixed income risk premiums.

![Figure 2. Interest in fixed income (and equity) factor investing](image)

Question: Please indicate your level of interest in factor investing in fixed income on a scale from 1-5, (1 = low interest, 5 = high interest).
Source: Kirstein Research and Kirstein Intelligence 2015

To the rather fixed-income savvy Danish investors, many of whom are already quite experienced in investing in single factor premiums in separate buckets/strategies, factor investing in credit has been generally well received. Danish investors often say that implementing a factor approach in fixed income portfolios seems to work well with the established risk framework that encompasses the way risk management is structured into the portfolio. The Danish investors were among the frontrunners on equity factor investing and also express the greatest level of interest in fixed income factor investing.
Finnish investors are often seen as the most seasoned fixed income investors in the Nordic region, and therefore investing via factor premiums in credits should not be far from their comfort zone. They also have a long history of managing rather complex fixed income structures which makes them more likely to embrace the theoretical foundation of risk premiums. They have a slightly lower level of interest in fixed income factor investing than the Danish investors, which is mostly because of the larger proportion of smaller investors participating in this study. This provides a clear indication that on the whole the larger entities in Finland are more prepared to take a risk-based approach to credit than the smaller investors. The Finnish level of interest, however, has increased quite significantly between 2015 and 2018, in tandem with the trend in Denmark.

Swedish investors – and particularly the largest investors – indicate a rather high level of interest in a risk premium approach. This is often restricted to a number of the AP Funds, but in this case also more traditional investors are expressing an interest in gaining a better understanding of the benefits of factor investing. Finally, Norwegian investors show relatively limited interest in fixed income factor investing, mostly because they have a relatively conventional approach to fixed income.

As seen in Figure 2, interest in credit risk premiums was quite low across the four Nordic countries in 2015. Since then, a small group of dedicated asset managers have been working on grooming investors perception of the benefits related to credit risk premiums. This study demonstrates that they seem to have been successful and that interest has started to materialize among a wider range of investors.

‘Factor investing has a longer track record in equity, but it is clear that both the academic world and the asset management industry are carrying out a lot of research on fixed income, and this has improved awareness considerably.’

Danish Pension Fund
3.1 A factor-heavy approach

Since the early days of factor investing, year by year factors have become more numerous and more exotic. Figure 3 shows a sample of factors from a risk premium search carried out by the Danish investor Spektrum (subsidiary of Kirstein A/S) in September 2017.

As Figure 3 illustrates, the most common factors offered in the market are value, momentum and carry, followed by the defensive (low volatility) and quality factors. Relating this to conversations with those investors who took part in the study, there seems to be a rather high degree of overlap between the factors that the investment community looks at and what is offered by the asset management community. Less seasoned investors will often only look at a few factors, whereas those with more experience will look at a wide variety – from conventional factors to alternative and even illiquid risk premiums.

This proliferation of factors might suggest that it is better to have more factors rather than less. That said, there seems to be little consensus today among institutional investors as to how many, and more importantly which factors will provide the best returns, diversification benefits etc. in the years to come.
3.2 A resource-heavy approach

One thing common to all the investors taking part in this study is the fact that entities with an above average level of interest in factor investing in credits have the largest investment teams, as shown in Figure 4.

![Figure 4. Interest in fixed income factor investing compared to size of investment team](source: Kirstein Research.

Having a larger team obviously makes it easier to analyze a wider range of fixed income approaches and strategies. It is therefore reasonable to conclude that the apparent hesitance among smaller investors to embrace factor investing in credits is not really a reluctance to do so. It is more a case of resources being stretched, causing new initiatives to often be temporarily shelved. Looking to the future, it is evident that the most sweeping changes are taking place among the largest investors, while the smaller participants mainly follow the actions of these larger players and only adopt some elements of the new strategies. Based on the growing appetite for fixed income risk premiums shown in Figure 2, implementation among the larger investors could make it easier for the smaller players to follow suit.

3.3 A manager-dependent approach

Should we seek external guidance or do it ourselves? This is often a dilemma for many investors, and as Figure 5 shows, this is also very much the case when it comes to fixed income risk premiums.
At one end of the spectrum, it may come as no surprise that the playing field grows concurrently with investors' years of experience. A large proportion of the most experienced investors in the field of factor investing have been scaling up their internal resources to take investments in-house and today the majority have an internal portfolio following one or more factors to some extent. These portfolios are often benchmarked against a strategy from an asset manager, hence the ongoing dependence on asset managers illustrated in Figure 5. From conversations with those investors taking part in the study, it seems that investment banks have served a key role in terms of implementing factor portfolios, and although many investors acknowledge that working with investment banks rarely adds services over and above implementing, the speed and effectiveness of banking algorithms is difficult to neglect. Also, the move from long-only risk premiums to long-short risk premiums has put a number of hedge fund managers back on the map.

At the other end of the spectrum, Figure 5 also suggests that being an early-stage investor in the field of risk premiums calls for additional help and guidance; services over and above 'just' implementation. When asked, investors indicated a clear preference for asset managers in new asset classes, and particularly in the field of fixed income risk premiums.

### 3.4 A multiple-credit approach

The level of interest in fixed income risk premiums has increased significantly since 2015 and one of the main issues for investors is to decide how to implement this approach in their existing portfolio. This is shown in Figure 6.
Three years ago, when we did a similar in-house study on the evolution of factor investing, those questioned mainly considered investment grade and cross credit (typically investment grade-like risk) as feasible areas for implementing credit risk premium strategies. However, sentiment has gradually moved from the more liquid asset classes to also considering factor investing in high yield bonds, for example, to an almost similar degree to high grade bonds. One potential explanation for the increase in high yield may be attributed to Nordic investors’ growing scientism when it comes to the ability of active credit asset managers to beat (or even match) benchmark returns after costs, especially on a risk-adjusted basis. As a result, many investors have been looking for new ways to manage high yield, in particular, causing a preference for pure passive solutions, but also for dedicated factor strategies. Fees and illiquidity, however, often make it difficult for passive strategies to completely match their benchmarks. Overall, it would be fair to conclude that the investors in this study are increasingly looking at the non-investment grade markets.
4. Benefit of credit risk premiums

Investors today are faced with a number of external factors (such as fee pressure, market consolidation, changing regulatory landscapes etc.) that impact decisions regarding institutional investments. As Figure 7 indicates, providing risk-adjusted returns is the main perceived benefit from investing in credit, so the additional benefits and low correlation still seem to be considered as less obvious advantages.

Figure 7. Benefits of factor investing

<table>
<thead>
<tr>
<th>Objective</th>
<th>Early-stage investors</th>
<th>Experienced investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improves risk-adjusted returns</td>
<td>1.2x</td>
<td>1.3x</td>
</tr>
<tr>
<td>Low correlation to the existing portfolio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-cost alternative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easier way to implement ESG</td>
<td>1.3x</td>
<td></td>
</tr>
<tr>
<td>Solvency-optimal solution</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Question: Please indicate what would be your main objectives in selecting a factor-based strategy in fixed income. Please use a scale from 1-5 (1 = low importance, 5 = high importance).

Source: Kirstein Research.

Seeking greater risk-adjusted returns is obviously an important (if not the most important) parameter when seeking new investments for both early-stage and more experienced investors alike, and the search for improved risk-adjusted returns often pushes investors in the direction of asset classes with a lower correlation to their existing portfolios. Managers with a more quantitative approach often offer solutions at a discount to fundamental managers. Therefore, it is rather surprising that fixed income risk premium investing is not yet perceived as a low-cost alternative to traditional strategies. Typically, the largest and most seasoned fixed income investors have been considering the private credit markets when looking to substitute investment grade credit with something else. Private debt appears to be most popular, especially for the largest investors in Denmark and Finland. Norwegian investors are more reluctant to acknowledge the benefits of factor investing, which goes hand-in-hand with their lower level of interest in the field.
From a sell side point of view, investors today are bombarded with solutions that have been structured to serve one specific purpose: to help investors optimize current portfolios in a Solvency II landscape. Again, a bit surprisingly, solely focusing on credit risk premiums is not perceived as a solution to solvency-related matters. Only a couple of the Danish and Finnish Solvency II-regulated investors that took part in this study indicate that Solvency II is one of the reasons for implementing a risk-based approach to fixed income.

When it comes to sustainable investments, interest has grown significantly during the last decade. The investment community has made it a clear priority to improve the carbon footprint of investments, and the pressure from regulators and the public has led to significant improvements in the sustainable investment framework. The Nordics, along with the Netherlands, of course are some of the leaders in this movement. While sustainable investments mostly started out as an equity, and partly real asset, phenomenon, institutional investors have now realized that they should be incorporated throughout the portfolio. This is of course easier said than done. The road to sustainable investments is clearer in equity, where it’s relatively easy to develop approaches such as screening and/or engagement. Interestingly, the more experienced investors in the field of fixed income risk premiums have found it difficult to implement ESG. The investors who took part in this study often mentioned that applying equity screening lists to corporate bonds or excluding certain government bonds from their investment universe is not an optimal approach.
5. Operational concerns

As the previous sections have shown, investors express a solid level of interest in factor investing in fixed income, although some experience a degree of hesitancy when it comes to pulling the trigger. As shown in Figure 8, it is quite clear that concerns differ between the early-stage and the experienced investors. That said, no single concern stands out from the rest, suggesting that investors find it difficult to pinpoint what specifically keeps them from allocating to the approach.

![Figure 8. Concerns regarding fixed income factor investing]

Question: If you were to add a factor-based strategy to (part of) your credit portfolio, please indicate the most likely place for it. Please use a scale from 1-5 (1 = low importance, 5 = high importance).

Source: Kirstein Research.

Crowding is considered the greatest concern among those investors approached. If everybody is chasing value, small cap, momentum and low volatility, what is left for me? This is quite a common issue in factor investing and one which is also cited by equity investors. Concerns regarding crowding are mostly found among early-stage investors, but are also mentioned as the greatest concern for experienced investors. Issues with the perceived crowding in conventional risk premiums seem strongest among the very large-scale Finnish investors and among Danish pension funds.

Sourcing of capable managers is also seen as a concern to many. Whereas the early stage investors indicate concern about where to start looking, the more experienced investors mention a need for managers that offer more complex structures and advice in addition to the product itself. Implementation is key in factor investing, and while the more
experienced have already tackled this issue, early-stage investors are still considering their options. Finally, the more experienced an investor gets in the field of risk premiums, the more emphasis they are likely to put on liquidity.
6. Topics for further discussion

Overall, there still seems to be evidence that Nordic investors have embraced equity factor investing and that many have also started to appreciate the benefits the approach can offer in fixed income. Having said that, execution and implementation of credit risk premium strategies are still rare, and in the sections below we highlight a couple of the topics that still seem to concern investors.

6.1 Live performance

Asset managers still seem to need to convince Nordic investors of the advantages of implementing a credit risk premium approach either in the form of an overlay or as a substitute for traditional portfolios. It is clear that investors still need proof of performance through live strategies and to see that this performance can be maintained in both bull and bear markets. Whereas many Nordic investors seem to be very quick to pull the trigger when it comes to alternative investments, hesitation is quite common when it comes to fixed income, particularly when discussions relate to newly developed fixed income approaches. That said, hesitation does not necessarily mean reluctance. To give an example, in 2015, very few investors saw the potential for private debt, and very few were investing in CLOs, direct lending and other types of structured credit. Today, just three years later, Nordic investors are buying as much private debt as they can. The most interesting question today in terms of factor investing is whether Nordic investors will implement these solutions and if they do, how quickly this will occur. While the interest in fixed income factor investing has increased since 2015, the approach has yet to reach acceptance among a broader audience.

6.2 Added benefits

The investors who took part in this study often allude to how the current market environment to a large extent dictates which approaches are accessible for new investments. Search for yield, ESG requirements, Solvency II, fees, etc. are all variables that investors need to take into account when choosing new investments. According to this research paper, the added benefits (beyond risk-adjusted returns and correlation) from investing in credit factors seem unclear to investors, and while risk premium strategies could provide valuable added benefits to portfolios, these advantages still need to be highlighted by the investment community.
PART II

Research on and implementation of factor investing in credits
In recent years, many asset owners have tilted their equity portfolios to well-known factors, such as low risk, quality, value, momentum, and size. The main force behind this strong trend is the desire to move away from inefficient market value-weighted indices and to benefit from the higher risk-adjusted returns offered by factors. Factor portfolios also offer additional benefits when compared to fundamentally managed active portfolios such as lower fees and style diversification. Investors are increasingly looking beyond their equity portfolios and seeking to reap the benefits of factors in other asset classes too. The application to corporate bonds is now at the forefront of the dissemination of factor investing beyond equities.

In this article, we address three types of questions related to applying factors to corporate bonds. First, foundational questions such as: does factor investing work for credits, what is the added value beyond traditional fundamental management and beyond factor investing in equity markets, and can factor premiums be crowded out? Second, we identify credit-specific implementation challenges, such as dealing with the lower liquidity and higher transaction costs of corporate bonds, choosing between different bonds issued by the same entity, and the difficulty of taking short positions. Finally, we discuss the customization of factor strategies to meet specific requirements. This includes defining the investment universe, choosing factor weights, and incorporating sustainability targets or solvency capital requirements.
1. Convincing evidence on factor investing in credit markets

Factors give access to higher risk-adjusted returns

In our academic paper “Factor investing in the corporate bond market” we show how factors can be defined for corporate bonds, and how a systematic allocation to factors delivers higher risk adjusted-returns than passively investing in the market value-weighted index. We also describe how these factor premiums have their origins in human behavior and how this plays an important role in why they exist. This behavior could either be an irrational bias, such as overreaction, overconfidence or herding, or a rational response to regulation or incentives. This implies that factor portfolios that seek to benefit from these behavioral patterns should work in any asset class.

In Figure 9 we summarize the findings of the academic study by plotting the risk and return of each factor portfolio over the period 1994-2017 for investment grade and high yield credits. We find that each factor delivers a higher risk-adjusted return than the market, by improving the return and/or reducing the volatility. We also observe in our study that each factor has a distinct risk-return profile and that the mutual correlations between the factors are relatively low. Therefore, a multi-factor portfolio mitigates the risk of underperformance, leading to a lower tracking error and higher information ratio than the individual factors.

The results of our study provide a strong motivation for investors to tilt their credit portfolios to factors to obtain better investment results than passively investing in the market value-weighted index. Depending on their investment objective, specific investors may make different choices in designing their factor portfolio, e.g. optimizing return, Sharpe ratio, or information ratio.

Factors in credits add value beyond factors in equities

If asset owners already allocate (part of) their equity portfolio to factors, should factor premiums also be harvested in other markets, or is the equity market alone sufficient? This is an important question so, in our study, we also analyze factor investing in a multi-asset context. We use a hypothetical multi-asset portfolio, allocating 25% each to government bonds, equities, investment grade, and high yield. Figure 10 illustrates our key finding – that replacing a passive credit portfolio with a multi-factor credit portfolio adds about 1% return per annum, without increasing the risk, even if the equity portfolio is already allocated to factors. This is the result of the only modestly positive correlations between equity factors and credit factors, which means that simultaneous allocation to factors in both markets enhances the diversification benefits.

This finding implies that investors should pursue factor investing in multiple markets. This is confirmed by many of the conversations we have had with asset owners all over the world: after successfully applying factor investing in their equity portfolios, they are now broadening its application to other asset classes.
Diversification benefits of a factor strategy

If an asset owner already invests in one or more fundamentally managed active credit strategies, it is logical to ask what a systematic multi-factor strategy brings to the table. After all, both approaches are active investment strategies that deviate from the benchmark. There are, however, several key differences between these two investment styles: the systematic and transparent investment process of a factor-based strategy (compared to the human decision-making process in a fundamental strategy), the balanced exposure to all factors (compared to a focus on a single factor, if any), and the beta-neutral portfolio construction (compared to an active beta policy or structural high-beta bias).

In a 2017 white paper, we show that these differences lead to a low correlation between the outperformance of a multi-factor credit portfolio versus its benchmark and that of fundamentally managed credit portfolios against their respective benchmarks. In that paper we analyze 25 global credit funds and compare their investment results to our Robeco QI Global Multi-Factor Credits (GMFC) fund. The main result is shown in Figure 11, demonstrating a negative correlation between GMFC and the average fund in the peer group. The data also shows that GMFC has one of the highest Sharpe ratios, one of the lowest volatilities, one of the lowest fees, and one of the highest sustainability scores. Therefore, the multi-factor strategy offers diversification benefits when combined with its fundamentally managed peers and also improves a multi-manager credit portfolio in a number of other ways.

Factor premiums unlikely to be crowded out

By definition, all empirical research uses historical data to prove the existence of factor premiums. One could hypothesize that, if many investors around the world were to organize their credit portfolios around factors, the alphas would be crowded out. There are two reasons why we think this is unlikely to happen. First, given that credit factor investing is still only just starting to be adopted by investors, the amount of money managed using factors is an almost negligible percentage of the total market capitalization of the credit market. This is also evident in the correlations in Figure 11: there is currently no other global credit fund with an investment strategy resembling a multi-factor strategy. Secondly, and most importantly, we attribute the existence of factors to human behavior; and this is unlikely to change. For instance, low-risk bonds are unattractive in a benchmarked strategy, as they do not outperform the market. Given the vast amount of money being managed against a benchmark, the perceived attractiveness of low-risk bonds is not likely to change any time soon. Likewise, the value effect exists because investors overreact to news, and overreaction is a deeply engrained human trait.
2. Overcoming implementation challenges

Dealing with bond-specific characteristics
Both stocks and bonds depend on the financial well-being of the issuing company. Therefore, stock returns and bond returns tend to be positively correlated, and variables that can predict stock returns also have predictive power for bond returns. Nonetheless, stocks and bonds are different instruments with their own unique characteristics. Also, a company typically issues only one or two types of stock (common and preferred), but far more bonds, sometimes dozens. And these bonds have different characteristics, such as their maturity date, size, currency, and subordination. These characteristics require careful treatment, especially in defining the factors and designing the investment process. For example, to benefit from the low-risk factor, investors need to be able to distinguish between low- and high-risk bonds from the same issuer. Another example is the value factor, where they have to determine the relative attractiveness of each and every bond. Not all bonds need to have the same valuation: some might be cheap, others expensive. As a final example, the portfolio should be sufficiently diversified across issuers, and not, in what would be an extreme case, only buy bonds issued by one company.

Incorporating illiquidity and transaction costs in the process
In addition to their characteristics, bonds differ substantially in terms of their liquidity. Whereas some bonds trade every day, others trade only infrequently. In the same context, transaction costs vary strongly from one bond to another too. Both research and implementation of factor portfolios need to take these variations in availability and cost into account. We design our factor strategies such that they provide an optimal balance between factor exposures and alpha potential on the one hand, and turnover and transaction costs on the other hand. In our white paper ‘Implementing factor strategies in the corporate bond market’ 3, we describe how liquidity management can be structurally embedded in the investment process and how this leads to cost-efficient implementation for factor portfolios.

Long-only vs. long-short implementation
Roughly speaking there are two main schools of thought on the optimal implementation for factor portfolios: some argue in favor of long-only portfolios, while others prefer a long-short implementation. In the article ‘Factor investing: Long-only versus long-short’ 4 our Robeco equity research colleagues argue that although a long-short approach may be theoretically optimal, it is more sensitive to practical implementation costs, such as transaction costs and borrowing costs. These considerations are even more important for corporate bonds, as in the case of bonds the costs are larger relative to their alpha potential.

An additional argument in favor of a long-only implementation is that, in contrast to the equity market where it is usually quite easy to short stocks, only a small part of the corporate bond universe can actually be shorted. Therefore, the diversification potential of the short portfolio is much poorer than of the long portfolio. The issue of limited breadth also applies to an implementation using credit default swaps (CDS) instead of actual corporate bonds, as liquid CDS are only available for a few hundred companies, as compared to the thousands of companies that issue bonds.

Therefore, we feel that the case for a long-only implementation of factor portfolios is stronger than the argument for long-short implementation. A long-only portfolio can still benefit from the factor strategy’s ability to predict which bonds will underperform. By not investing in bonds that have bad factor scores, the portfolio effectively underweights them versus the benchmark and so when they perform poorly, this results in an outperformance of the portfolio versus the benchmark.

Risks beyond the scope of the factor model
When presenting our factor credit strategies, we are frequently asked whether a multi-factor model can capture all risks of investing in a corporate bond. The fair answer to this is: it cannot. A model is a best-efforts representation of the many risks associated with the bond and its issuer. With the increased availability of data and computational power, models have become richer over time, increasing their ability to better evaluate risks.

Nonetheless, there are still risks that we cannot represent as a numerical value. This may be because of their complexity, or a lack of relevant (historical) data to verify models. Examples include measuring the quality of a company’s management, the impact of new legislation on a company’s business, or the risk of the country in which the company operates. Other challenges for a purely quantitative approach are events that will materially change the company, but are not yet reflected in current data. For example, a company announcing a merger or an acquisition, or splitting-off a part of its business.

Because of these non-quantifiable risks and material events, we incorporate human checks in the investment process of our factor strategies. Before we make an investment in a bond that is top-ranked in the multi-factor ranking model, one of our more than 20 fundamental credit analysts performs a final check to identify risks and events beyond the scope of the model. If they flag such a risk, we do not invest in that bond, and move on to the next investment opportunity. This happens in 5 to 10% of the cases. We may also decide to sell an existing portfolio holding if a new risk is flagged. This happens a few times each year for every portfolio. With these fundamental checks we aim to avoid losers that could be selected using a purely quantitative investment process.
Proven in practice
Robeco has been doing research on factor investing in credit markets since the end of
the 1990s. Since 2005 we have managed an internal multi-factor high yield mandate.
Since 2012, we have been offering factor strategies to external clients too. We find that
the live track records of the various strategies are nicely in line with the backtest results
found in research, in terms of information ratio and Sharpe ratio improvements versus the
benchmark. Today, Robeco manages approximately EUR 5 billion in credit factor investing
strategies, including the flagship strategies Conservative Credits, Multi-Factor Credits, and
Multi-Factor High Yield. Below we discuss various customizations that we have developed
for specific clients.
PART II
Research on and implementation of factor investing in credits
Customization and client cases
1. Defining the investment universe

For any investment strategy it is important that its universe contains a large number of investment opportunities. This is called the ‘breadth’ of the strategy, and according to the fundamental law of active management, it determines its success, together with its skill. Our flagship strategies therefore use a large investment universe.

In the tailor-made solutions that we have developed for specific clients, we often use a customized investment universe. As long as there is sufficient breadth, we are confident that a factor strategy can reach its goals within such a universe. It is important, however, that the client is aware that a strategy will inevitably generate better results in a larger universe than it will in a small one.

We give some examples of customizations below:

- **Ratings**: typically the universe is either investment grade (with some tolerance for downgrades to BBs) or high yield. A German pension fund wanted a pure-investment grade universe and a UK insurer a high yield universe excluding CCCs. A Dutch pension fund and an Asian sovereign wealth fund preferred a combined investment grade + high yield universe, which actually increased the breadth.

- **Currencies**: typically the universe is global, including all currency denominations. Several European clients wanted a euro-only universe. A US dollar-only application is also possible.

- **Maturities**: typically the universe includes all maturities (except for the longest-dated bonds as motivated by the low-risk factor). For a German pension fund we implemented a factor strategy on a 1-10y universe. The maximum time to maturity for the bonds in our Conservative Credits strategies (targeting the low-risk factor) is six years.

- **Sectors**: typically all sectors are included in the investment universe. A German pension fund did not want any financials in its portfolio. For a Dutch health insurer we excluded tobacco names from the investment universe. We also exclude weapon manufacturers for several clients.

It should be noted that irrespective of the definition of the investment universe, we can separately hedge FX, duration, and credit beta exposures to the desired targets using derivatives.

2. Choosing the factor weights

In our multi-factor strategies we provide balanced exposure to all factors, meaning that each factor is equally represented in the portfolio. This results in the best diversification between the factors. The beta of such a balanced strategy is around 1, making it easy to benchmark the portfolio to a standard index.

In dialogue with the client, we can also design strategies that are tilted to one or more specific factors. In such factor-tilted strategies we still incorporate the other factors to avoid undesired negative factor exposures. The most popular choice so far has been for solutions tilting to the low-risk factor. Such a strategy, which we call Conservative Credits, invests in shorter-dated bonds from safer issuers. Given the shorter duration of the portfolio, it is a natural fit for investors with shorter-dated liabilities, such as insurance companies. For an Australian pension fund we developed a strategy that is tilted to the value and momentum factors, optimizing return, instead of the Sharpe or information ratios.

3. Integrating sustainability targets

Clients increasingly aim to improve the sustainability profile of their investment portfolios. At Robeco we have a long track-record in integrating sustainability into the investment process of our strategies. We incorporate sustainability in our factor credit strategies in four specific ways:

- We require the ESG score of the portfolio to be better than the ESG score of the benchmark, as measured by the RobecoSAM SmartESG score. This restriction is used in constructing the portfolio, alongside other risk and allocation restrictions, while the primary goal is to optimize factor exposures.
- As described above, our fundamental analysts conduct a check on risks beyond the scope of the model. This includes ESG-related risks, such as poor governance or large claims resulting from litigation.
- We exclude companies that are on the Robeco Exclusion List. This relates to companies that exhibit controversial behavior (i.e. violations of the UN Global Compact Principles), companies that manufacture controversial weapons, and companies that are involved in the production of tobacco products. We can also exclude more sectors or names from the investment universe to fulfill specific client requests.
- We engage with companies to improve their corporate behavior on environmental, social and/or corporate governance-related issues. The goal of our engagement with companies is to improve their long-term performance and ultimately the quality of the investments we make for our clients.

8. The Robeco Engagement Policy can be downloaded from our website: https://www.robeco.com/docm/docu-robeco-engagement-policy.pdf
We are also able to design strategies that score better on specific sustainability targets. Combining RobecoSAM’s historical company-level sustainability data with our historical bond and equity databases, we can efficiently backtest such customized solutions.

We give several examples of customizations below.

- Instead of the requirement that the portfolio has a better ESG score than the benchmark, a Dutch pension fund was interested in more ambitious targets, e.g. 10, 20 or 30% better than the benchmark. Figure 12 shows the impact of increasing ESG targets on the Sharpe ratio and the outperformance of a factor strategy.

- A Dutch insurance company wanted to reduce the CO2 emission of their investment portfolio. We tested various reduction levels to show the impact on the historical risk and return of their low-risk strategy. Likewise, RobecoSAM has data on the energy consumption, water use, and waste generation of individual companies, which we can use to design strategies that have less environmental impact on these specific aspects versus the benchmark.

- As mentioned above, we can exclude undesired sectors from the investment universe. For several insurance clients we exclude tobacco names. We could also exclude more sectors, such as alcohol, weapons, gambling, and sex.

- A more recent development is to apply positive screening to the investment universe, selecting companies that contribute positively to the UN’s Sustainable Development Goals (SDGs). RobecoSAM has developed a framework that allows us to assess the extent to which a company contributes to one or more of the 17 SDGs.

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**Figure 12: Impact on Sharpe ratio and outperformance of requiring the portfolio’s ESG score to be x% better than the benchmark for a sample investment strategy**

Source: Robeco, RobecoSAM, Bloomberg Barclays, FactSet. Sample period: 2003-2017. The value of your investments may fluctuate. Results obtained in the past are no guarantee for the future.
4. Incorporating Solvency capital requirements

Because factor strategies are highly systematic, they lend themselves very well to the incorporation of other quantitative objectives. Above we mentioned various examples regarding sustainability, here we highlight another, namely integrating Solvency II capital requirements. In our white paper ‘Solvency II integration in factor credit strategies’ we describe our research on this topic much more extensively.

For European insurers, and selected pension funds that are subject to Solvency II regulation, the risk-adjusted return on their investment portfolio is no longer the primary performance measure. Instead, they have shifted their attention to the return on capital, defined as the portfolio return divided by the amount of required solvency capital. Our research shows that under the Solvency II framework the credit risk solvency capital requirement (SCR) is highly correlated with return volatility. Therefore, factor portfolios — providing a higher return on volatility (i.e. Sharpe ratio) — also provide a higher return on SCR than a passive market value-weighted credit portfolio. Moreover, since the SCR and volatility are not perfectly correlated, there is room for improvement. In our white paper, we show that by explicitly incorporating SCR into the investment process we can further improve the return on capital. Depending on their risk appetite and the trade-off between return and return on capital, clients can construct the optimal portfolio. In one case, designed for a Danish pension fund, Figure 13 shows the improvement in return on capital of SCR-integrated multi-factor credit and high yield strategies versus the standard strategies.

Figure 13: Return on capital for global multi-factor credits and global multi-factor high yield strategies, with and without SCR integration

Source: Robeco, Bloomberg Barclays. Sample period 1994-2017. The value of your investments may fluctuate. Results obtained in the past are no guarantee for the future.

Conclusion

The evidence to support implementing a factor-based approach to corporate bonds is clear. Its low correlation with traditional fundamental investment styles also supports this. Implementation challenges exist – some of which are specific to credit markets, such as liquidity and bond issue selection. These make a credit-specific implementation a necessity. Factor strategies can be customized in many ways, for example in terms of factor weights, investment universe, ESG parameters and solvency targets.

Investors in the Nordics are aware of the improved risk-adjusted return benefits and the low correlation advantages factor credit strategies offer. Preferences for an individual factor approach or multi-credit solution vary from one country to another and implementation and sourcing managers remain concerns. But it is clear that here too interest in factor investing in credits is picking up, with Nordic investors considering increased allocations to this investment style, also as an extension of their experience in equity factor investing.
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