Multi-factor investing for fixed income

Dr Philip Messow explores the role of active, quantitative investing in corporate bonds

Being able to simultaneously consider large amounts of relevant information is crucial when it comes to making the right investment decisions. In view of the ever-increasing deluge of data, systematic, factor-based investment approaches are becoming all the more important. A decisive force for success is to have an appropriate mix of different factors.

When it comes to answering the question as to what is the right mix of risk and return, it is increasingly clear that looking at the differences between individual asset classes alone is not sufficient. This is because every asset class comprises several factors, each with its own individual risk-return profile. While this offers many opportunities, it also makes investment decisions much more complex. This is where factor investing kicks in.

Implementation of factor strategies

By now, academic research provides extensive analysis on systematic factor strategies that promise extremely attractive returns. However, numerous obstacles prevent investors from putting these single-factor strategies into practice. For instance, liquidity and risk management play decisive roles – yet they are often ignored in studies.

One other aspect is that factor investing has generated a great deal of interest among practitioners, which means that more investors are trying to capture the popular risk premia. As a result, these premia are set to decrease significantly – or even disappear – over the medium term. Therefore it is essential to develop more sophisticated (and thus more complex) factors in order to be able to capture premia in the longer term.

Furthermore, it is necessary to combine single-factor strategies in an intelligent way as part of multi-factor strategies. The way in which the factors are combined is decisive in determining how successful a multi-factor strategy will be. There are two different approaches. With a top-down factor mix, several portfolios are combined, each of which represents its own single-factor strategy. By contrast, an integrated multi-factor approach processes the information at a single-issue level, i.e. bottom up.

As an advantage of the multi-factor approach, single bonds can be selected to provide a well-balanced, positive contribution with regard to a number of

factors. The factor mix identifies issues that have an extremely positive exposure, i.e. a positive impact in relation to one factor, but does not control possible simultaneous negative exposure to another factor.

The choice of different approaches

The effects of these two different approaches can be illustrated by means of an empirical study. In order to illustrate single factor returns, the figure shows long-only-portfolios over a period from January 2005 to December 2018. The investment universe comprises 11,367 bonds ranging from AAA to BBB in ratings.

First, three individual factors were considered: 'Value' – which relates a model spread to the market spread in order to determine the attractiveness of a security's valuation; 'Quality' – which aggregates key parameters, including those relating to profitability, leverage and solvency, and finally 'Equity Momentum' – which measures the risk-adjusted performance of the underlying share over a period of 12 months.

Second, the results of the factor mix strategy and the multi-factor strategy are presented. The former combines three individual factors with a ratio of 40 per cent 'Value', 40 per cent 'Equity Momentum' and 20 per cent 'Quality'.

As a result, it is obvious that the bottom-up multi-factor strategy, with an alpha of 0.95 per cent and an information ratio (IR) of 0.64, is clearly preferable to a capital-weighted benchmark. With an IR of 0.64, the multi-factor strategy also achieves significantly better results than the factor mix's IR of 0.28. Incidentally, it makes obvious sense to add 'Quality', a strategy that displays a negative alpha at single-factor level.

Even if the correlation between 'Value' and 'Quality' is not constant over time, both factors are fundamentally opposed. This is particularly noticeable during times of crisis. In such a scenario, 'Quality' – on average, more expensive than the market average – will become (even) more expensive, but 'cheaper' again when the economy recovers. This trade-off between 'Value' and 'Quality' in corporate bonds means that by adding 'Quality' in times of crisis, unwanted tail risks can be reduced. The cushioning effect of mixing factors in these times more than offsets the marginal performance loss experienced during calm market periods. Thus, the maximum drawdown of the multi-factor strategy (-14 per cent) is markedly lower compared to the Value strategy (-28 per cent) and the benchmark (-17 per cent).

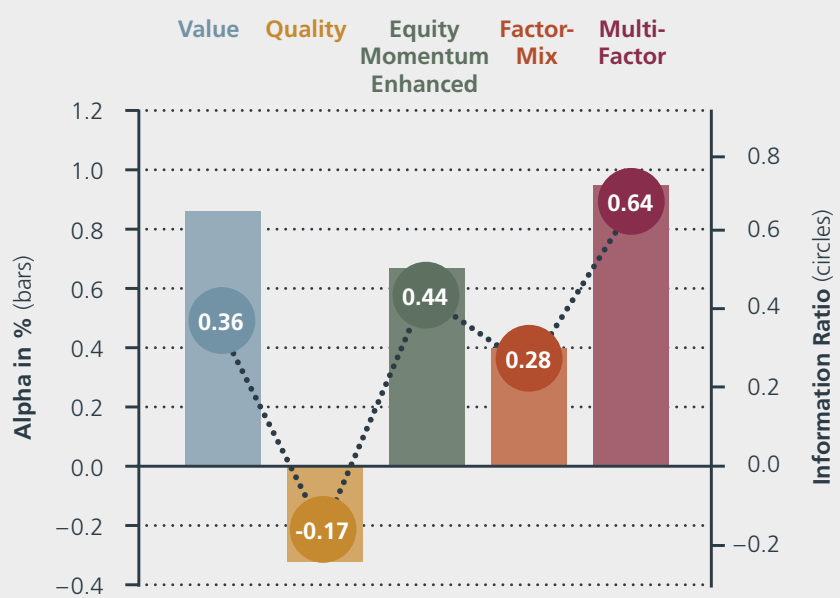
Enhanced risk/return profile

Multi-factor strategies benefit from correlation structures between the factors; as a result, their risk/return profile is significantly more appealing. Whether intentional or otherwise, every bond market investor is exposed to the aforenamed factors.

Hence, it makes sense for any practitioner to manage their factor exposures actively rather than passively, with the aim of maintaining control over factor risks and returns. This applies not least against the backdrop of constant shifts in the factor universe.

In addition to combining sophisticated individual factors, another aspect is important: the structure of the data for analysis and its integration into systematic, factor-based investment approaches. Whereas in the past, structured data served as the basis for investment research, nowadays the analysis of unstructured data (e.g. images, texts, audio) plays an increasingly important role. The latter requires a high-tech infrastructure, with ample performance capability.

Empirical analysis: multi-factor beats factor mix



The returns displayed are calculated after transaction costs, and taking realistic restrictions in terms of liquidity and risk into account (January 2005 to December 2018).

Source: Quoniam

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