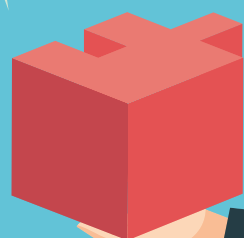
For professional investors - Marketing communication

# FACTOR INVESTING IN EQUITIES AND CORPORATE BONDS: NEUTRALISING BIAS



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BNP PARIBAS
ASSET MANAGEMENT

The asset manager for a changing world

Factor investing is about using style factors such as value, quality, momentum or low risk to tilt portfolios in favour of cheaper (value) outperforming (momentum) stocks or corporate bonds from the most profitable and better managed (quality), less risky companies (low risk). Such an approach is based on strong academic and empirical evidence that these stocks and corporate bonds should deliver the highest risk-adjusted returns.

But the construction of a portfolio can make a huge difference in terms of performance, to the extent that all expected outperformance may be wiped out by poorly constructed, factor-tilted portfolios. Why? Because style factors are not the only factors that explain stock and corporate bond returns. Making sure that other factors do not pollute your portfolio can make all the difference.

Here is a summary of the some of the key factors that explain stock and corporate bond returns and a brief explanation of why this is the case, along with an illustration of how costly poorly-constructed equity and corporate bond factor-based portfolios can be.

## EQUITIES: THE MARKET FACTOR

Several types of factors are known to explain stock returns. The first and most important is the market factor itself, which explains why the stock prices of most companies tend to move in the same direction. It reflects the fact that businesses are exposed to the overall economy and thus, not surprisingly, stock returns are sensitive to shocks in the economy. When investing in equities, investors expect to earn the equity risk premium as compensation for being exposed to this risk.

## EQUITIES: SECTORS, REGIONS AND SIZE

However, the economy is divided into sectors in which businesses provide similar or related products or services and tend to have common operating characteristics. On account of the different nature of their businesses, the relative performance of stocks in different sectors tends to rotate as the overall economy shifts from one stage of the business cycle to the next. For this reason, sectors are a type of factor that explains additional differences in stock returns.

Similarly, in international portfolios, companies operating in different regions tend to be exposed to different regulatory environments and other specific regional constraints, which is why regions are also a type of factor that explain differences in stock returns.

## EQUITIES: STYLE FACTORS

As mentioned at the outset, there is another type of factor that explains additional differences in stock returns beyond those accounted for by exposure to the market factor, to sector, region and size, namely style factors.

Style factors include value, quality, low risk and momentum. They are of particular interest to investors because they tend to predict differences in future stock returns. Research over long periods has demonstrated that stocks with higher future returns tend to be those of companies trading at cheaper valuations (value), that are more profitable and better managed (quality), less volatile (low risk) and that have been outperforming (momentum). A substantial body of research relates the observed empirical outperformance of value, quality, low risk and momentum stocks to investors' behavioural biases.

Factor investing is about taking advantage of style factors to tilt portfolios in favour of value, quality, low risk and momentum stocks. But such an approach can only be part of the story because, as described above, other factors play a role in determining stock returns. If, inadvertently, an investment in a factor-tilted portfolio leaves us with exposures to sectors, regions, size or market factors, then the returns to the portfolio will also be affected by those exposures. It is therefore critcally important to make sure that the factor-tilted portfolio and the benchmark index have similar exposures to sectors, regions, size and to the market factor. Otherwise, any outperformance from picking the right stocks based on style factors may be cancelled out by the consequences of these other factor exposures.

## EQUITIES: THE EVIDENCE

In Diversify and Purify Factor Premia in Equity Markets, a chapter in the book Factor Investing: From Traditional to Alternative Risk Premia published in 2018, we focused on this question. We compared crude approaches to factor investing in which we let the data create sector, size or market exposures, with the more sophisticated approach in which we purified the portfolio by making sure that all these exposures were removed.

The exercise was carried out for a combination of 12 value factors, 16 quality factors, four low risk factors and 10 momentum factors, for MSCI World index stocks, for S&P 500 index US stocks and for Stoxx 600 index European stocks.

The results from the paper are shown below. They compare the information ratio of different approaches to constructing factor-tilted portfolios. Information ratios increase with removal of exposures to the market factor and to size and sectors.
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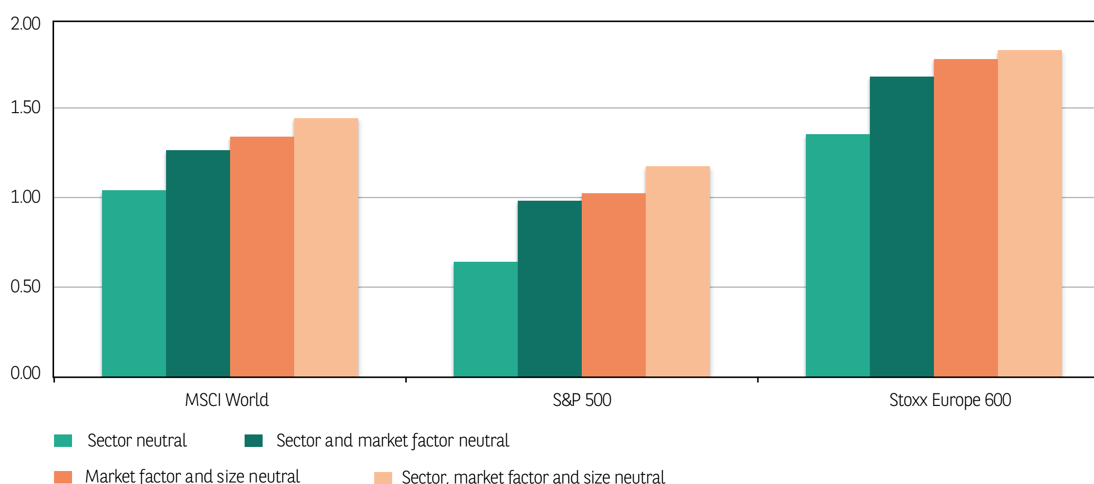
INFORMATION RATIO: EQUITY STYLE FACTORS




Source: 'Diversify and Purify Factor Premia in Equity Markets, in Factor Investing: from Traditional to Alternative Risk Premia, Elsevier (2017).' MSCI, S&P, STOXX, Worldscope, IBES and Exshare. Based on monthly returns. Jan-97 to Nov-16 in USD for the MSCI World index. Jan-90 to Nov-16 in USD for the S&P 500 index. Jan-92 to Dec-98 in DEM followed by Jan-99 to Nov-16 in EUR for the STOXX Europe 600 index. No transaction costs were included. For illustration purposes only. Past performance is not indicative of current or future performance.

## CORPORATE BONDS: SPREAD AND DURATION

Although the same ideas apply to corporate bond markets, it is important to note that returns in bond markets are generated somewhat differently to those in equity markets. A bond investor who holds the bond to maturity earns the yield of the bond provided the issuer does not default. The yield of a bond can be decomposed into that part of the yield the investor would earn from a government bond of the same duration plus a risk premium or 'spread' to compensate for the different probability of defaults among corporates compared to sovereign issuers. This risk premium is usually positive, reflecting the higher probability of default among corporates.

The risk premium is also a function of duration. A lower duration tends to lead to a lower spread reflecting the shorter period during which the investor is exposed to default risk.

However, imbalances between offer and demand as well as changes in the perceived ability of a company to repay debt over longer horizons may lead to lower risk premia for longer duration bonds.

If the investor sells the bond to another investor at a later stage then the price of the transaction will reflect the new negotiated yield. The new risk premium will be a function of the revised duration, offer and demand, the impact of changes in the expected economic conditions on the probability that the issuer will be able to pay down the debt by maturity, and of changes in the idiosyncratic risk associated with the company's business.

## CORPORATE BONDS: SECTORS, CURRENCIES AND SIZE

In much the same way as equities, sectors explain differences in risk premia and how they changes over time and thereby the excess returns of corporate bonds compared to their duration-matched peers.

More important than region, it is the currency in which the bond is issued that is the predominant factor in corporate bond markets: it makes sense to compare bonds issued in the same currency. Companies issue corporate bonds in different currencies primarily to hedge exposures to currency risk but also because of strategic decisions to diversify their investor base or because of constraints on issuance in their local markets. But issuing in different currencies is subject to regulatory differences, which explains, for example, why larger issues tend to be in EUR, GBP and JPY while smaller issues tend to be in USD.

As with equities, the size of a company also helps to explain corporate bond returns. Smaller companies are less able to surmount economic shocks and therefore tend to be at higher risk of default.

## CORPORATE BONDS: STYLE FACTORS

Only recently was it established that style factors play an important role in explaining the future returns of corporate bonds. Just as for equities, corporate bond style factors include value, quality, low risk and momentum.

In our forthcoming paper Factor Investing in Corporate Bond Markets: Enhancing Efficacy (to be published in 2020), we show that when comparing corporate bonds from the same sector with similar duration and risk premia, issued by companies of comparable size, the future average excess return tends to be higher for bonds issued by cheaper companies (value), that are more profitable and better managed (quality), appear less risky (low risk) and have been performing better (momentum). The results were similar for Investment Grade (IG) corporate bonds issued in USD and EUR, and for High Yield (HY) bonds issued in USD.

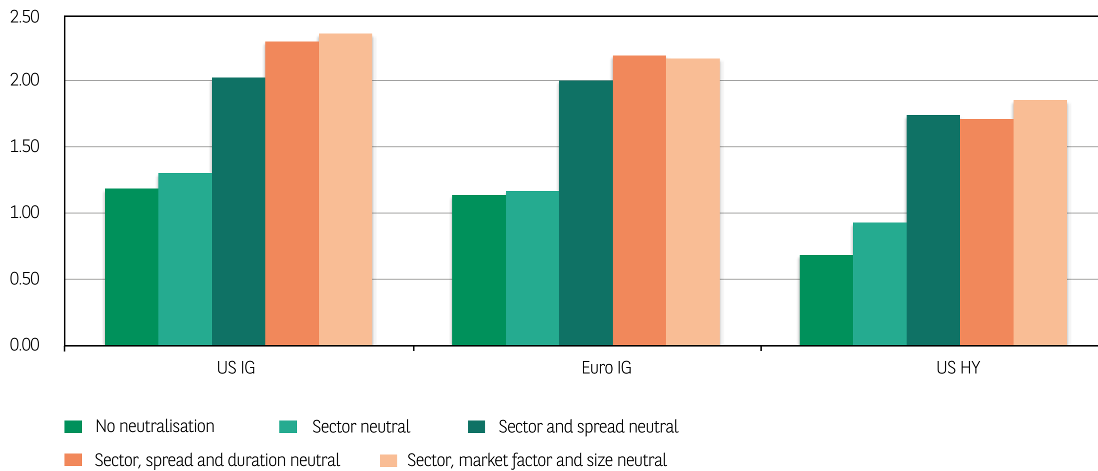
## CORPORATE BONDS: THE EVIDENCE

As with equities, we compared crude approaches to factor investing – where duration, spread, sectors and size are not controlled – with an approach in which we purified the portfolio by making sure that any duration, spread, sector or size biases were removed.

We performed this exercise on a combination of six value factors, 11 quality factors, four low risk factors and 12 momentum factors, for IG bonds in USD and IG bonds in EUR, and for HY bonds in USD.

The chart below shows some of the results, taken from our paper. In the chart, we compare the information ratio of the different approaches to constructing factor-tilted portfolios. The information ratios increase with the removal of exposures to sectors, spread, duration and size.

INFORMATION RATIO: CORPORATE BOND STYLE FACTORS




Source: Diversify and Purify Factor Premia in Equity Markets, The Journal of Fixed Income, Winter 2020. Bank of America Merrill Lynch, Worldscope, IBES and BNP Paribas Asset Management. Based on monthly returns. Jan-00 to Dec-17 in USD for IG USD and in EUR for IG EUR. Jan-03 to Dec-17 in USD for HY USD. No transaction costs were included. For illustration purposes only. Past performance is not indicative of current or future performance.

# CONCLUSION

Quantitative investing is a combination of common sense and scientific methods to build robust portfolios capable of generating higher risk-adjusted returns for investors.

We have discussed the basics of factor investing and have made the distinction between factors that explain differences in the returns of stocks and corporate bonds and style factors that tend to predict future differences in stock or corporate bond returns. The first group includes the market factor, sector, region and size for stocks, while duration, risk premium, sector, currency and size apply to corporate bonds. The second group includes style factors such as value, quality, low risk and momentum. They apply to both stocks and corporate bonds.

When building factor portfolios it is important to control the exposure to the first group of factors by making sure that the portfolio has no tracking error risk relative to a benchmark portfolio resulting from active exposures to them. In turn, all the tracking error risk should result from using style factors to tilt the portfolio in favour of the cheaper, outperforming stocks or corporate bonds from the stock or bonds of the most profitable, best managed and least risky companies.

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