For professional investors - Marketing communication - March 2021

DIVERSIFYING CREDIT PORTFOLIOS WITH MULTI-FACTOR STRATEGIES

BNP PARIBAS ASSET MANAGEMENT

The asset manager for a changing world

DIVERSIFYING CREDIT PORTFOLIOS WITH MULTI-FACTOR STRATEGIES

The past decade has seen the use of multi-factor investing in corporate bonds increase significantly. Easier access to corporate bond data along and a growing body of research has enabled managers to develop robust factor-based strategies.

As growing numbers of institutional and wholesale investors implementing factor-based strategies or considering doing so, this short study highlights the diversification benefits of adding multi-factor investments to a portfolio.

METHODOLOGY AND SCOPE OF THE ANALYSIS

This study used the performance data from our euro and US dollar Investment Grade (IG) multi-factor strategies, with the series built by chaining simulated performance to live performance (live data starting from February 2018 for euro IG and July 2019 for USD IG).

As a proxy of the average corporate bond strategy, we used both Morningstar and eVestment data. These categories encapsulate a large variety of products, with different investment processes and at times different features. However, the essential purpose of the study is to assess broadly to what degree the returns from multi-factor investments differ from those of 'traditional' strategies.

The returns used in this study are gross of fees. Since Morningstar data is originally net of fees, we adjusted the performance by deducting the impact of management fees, taking 0.50% as the average management fee. As a result, all performance data shown in this the document are gross of fees.

1. Multi-factor investing: A systematic approach to security selection

Multi-factor investing is an investment approach whereby securities are selected based on particular characteristics and attributes (commonly termed 'factors') that have been shown to explain the returns and risk of securities relative to each other over time.

Our research paper "Factor Investing in Corporate Bond Markets: Enhancing Efficacy Through Diversification and Purification!" was published in December 2019 in The Journal of Fixed Income. , The paper demonstrates that corporate bonds with stronger market momentum and from cheaper, more profitable and less risky issuers tend to generate higher risk-adjusted returns than corporate bonds with weaker momentum from more expensive, less profitable and riskier issuers.

Multi-factor investing involves building portfolios that are tilted in favour of such outperforming bonds while controlling for risk and portfolio turnover results in systematic investment strategies. The objective is to outperform market capitalisation-weighted benchmark indices over time.

At its core, multi-factor investing is hence purely a security selection strategy implemented through a systematic investment process. It aims to generate performance only through a relative value approach, i.e. without taking any active view on the direction of interest rates or corporate bond markets.

In that regard, it can differ significantly from the investment process of traditional portfolio managers, where top-down views are regularly combined with issuer analysis to generate performance.
And these differences in the investment process lead to different risk-return profiles.

WHAT MULTI-FACTOR DOES:

- Build a portfolio by selecting the best-ranked corporate bonds across multiple factors
- Align the risk of the portfolio (duration, spread, volatility) with the benchmark
- Integrate turnover and liquidity controls into the core of the rebalancing process
- Operate systematically across the entire investment universe, possibly investing in bonds that are less familiar to credit analysts

WHAT TRADITIONAL MANAGERS MAY DO:

- Implement active top-down region, sector or rating views
- Opt to deviate significantly or durably from the benchmark in terms of risk profile
- Invest outside of the benchmark (e.g. bonds rated below Investment Grade)
- Rely on in-depth assessments of credit analysts for issuer selection

Sources: BNP Paribas Asset Management, as of September 2020. For illustrative purpose only.

2. A different risk-return positioning

The objective of multi-factor investing is to generate alpha through security selection while building portfolios that have no hidden beta, i.e. any directional market risk, either in terms of interest-rate risk or credit risk. That means the strategy maintains the same risk profile as the underlying benchmark, both in terms of interest-rate duration and credit risk.

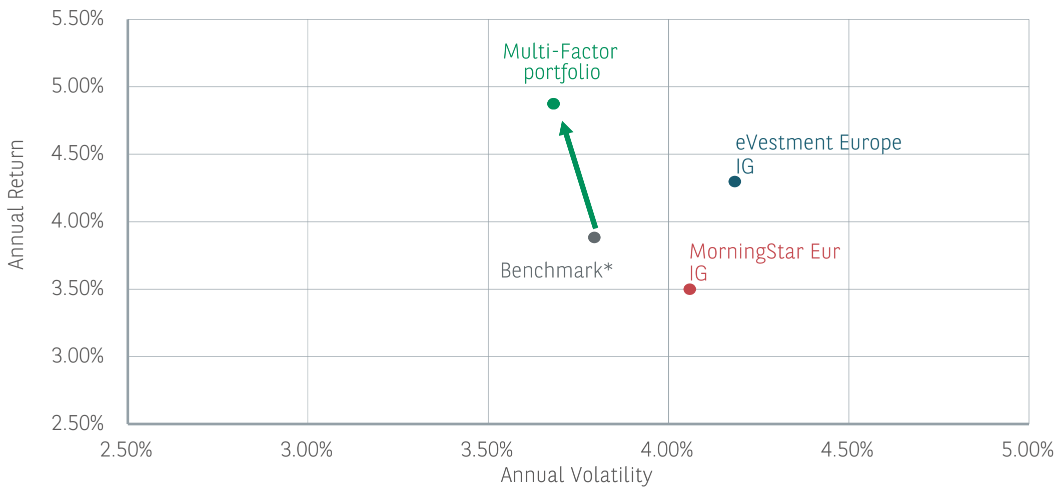
On the other hand, traditional managers often rely on duration management or curve positioning as a source of performance, and allocate dynamically across the credit spectrum based on their market outlook.

Chart A shows the risk-return profile of our multi-factor portfolio compared to the benchmark (ICE BofAML Euro Corporate index), along with the Morningstar and eVestment categories. Since Morningstar data includes fees, fees were applied to the eVestment data and the multi-factor portfolio.

Chart A clearly illustrates the different risk-return profile of the average credit portfolio: Both the Morningstar and eVestment categories point to a higher risk than the benchmark. Given the positive long-term risk premium associated with duration and credit risk, it is not surprising that managers tend to take more duration and/or credit risk than the benchmark to generate performance.

On the other hand, the volatility of the multi-factor portfolio is slightly below that of its benchmark, which indicates that the excess performance is not the result of a higher risk.

Chart A: Return-to-risk of the multi-factor portfolio vs. Morningstar and eVestment
(period: July 2004 to Sept 2020)

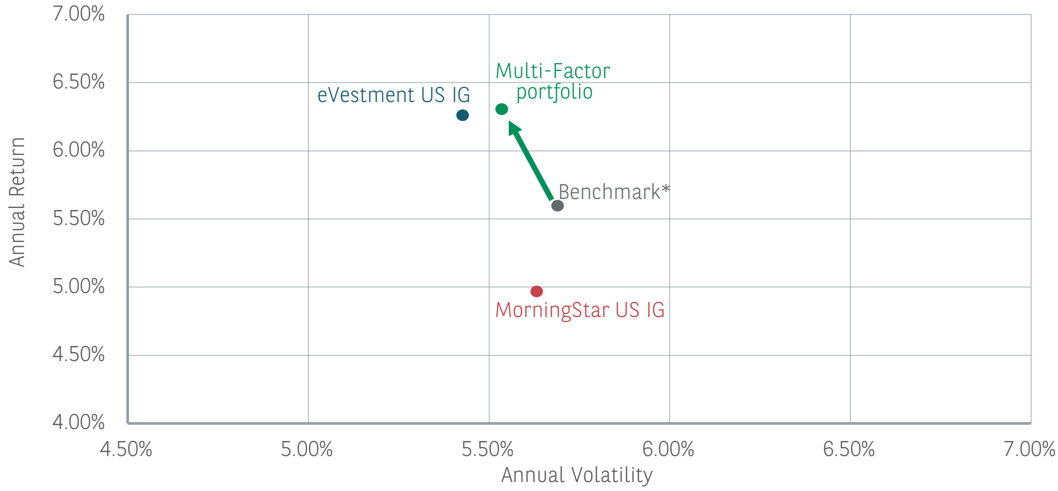


Sources: Morningstar, eVestment, BNP Paribas Asset Management, as of September 2020. Based on gross of fees data. Past performance is no guarantee for future returns. This is for general information only and should not be used as a basis for making any specific investment, business or commercial decisions.

Chart B shows a similar analysis on US dollar Investment grade credit. The multi-factor portfolio also generates a better return than the benchmark, for a slightly lower risk. The results are much less pronounced regarding the peer group categories, as they both exhibit a lower volatility than the benchmark, which tends to indicate that managers are, on average, less prone to take risk relative to their benchmark.

That being said, it should be noted that the volatilities displayed for the eVestment and Morningstar categories are computed on the average returns of the categories. As a result, the volatility of the category tends to be lower than the average volatilities of individual components, due to the diversification effects. All in all, it is equivalent to comparing the risk of one strategy to the risk of a diversified basket of portfolios.

Chart B: Return-to-risk of the multi-factor portfolio vs. Morningstar and eVestment
(period: July 2004 to Sept 2020)



Sources: Morningstar, eVestment, BNP Paribas Asset Management, as of September 2020. Based on gross of fees data. Past performance is no guarantee for future returns. This is for general information only and should not be used as a basis for making any specific investment, business or commercial decisions

Table 1: Risk-return statistics for euro Investment Grade credit
(benchmark is ICE BAML Euro Corporate index)

Jul 2004 - Sep 2020	Morningstar Eur IG	eVestment Europe IG	Multi-factor portfolio	Benchmark
Return	3.50%	4.30%	4.87%	3.88%
Volatility	4.06%	4.18%	3.68%	3.80%
Risk-return ratio	0.86	1.03	1.32	1.02
Max drawdown	-11.92%	-7.82%	-6.28%	-7.21%
Excess return	-0.38%	0.41%	0.99%	
TE	0.99%	0.71%	1.10%	
IR	-0.39	0.58	0.90	
Beta	1.04	1.09	0.93	
Alpha	-0.50%	0.14%	1.20%	

Table 2: Risk-return statistics for US Investment Grade credit
(benchmark is ICE BAML US Corporate index)

Jul 2004 - Sep 2020	Morningstar Eur IG	eVestment Europe IG	Multi-factor portfolio	Benchmark
Return	4.97%	6.26%	6.30%	5.60%
Volatility	5.63%	5.43%	5.54%	5.69%
Risk-Return ratio	0.88	1.15	1.14	0.98
Max drawdown	-17.05%	-13.40%	-14.68%	-16.07%
Excess return	-0.63%	0.66%	0.71%	
TE	2.07%	0.63%	1.87%	
IR	-0.30	1.05	0.38	
Beta	0.92	0.95	0.92	
Alpha	-0.32%	0.87%	1.03%	

Sources for the tables: Morningstar, eVestment, BNP Paribas Asset Management, as of September 2020. Based on gross of fees data. Past performance is no guarantee for future returns. This is for general information only and should not be used as a basis for making any specific investment, business or commercial decisions

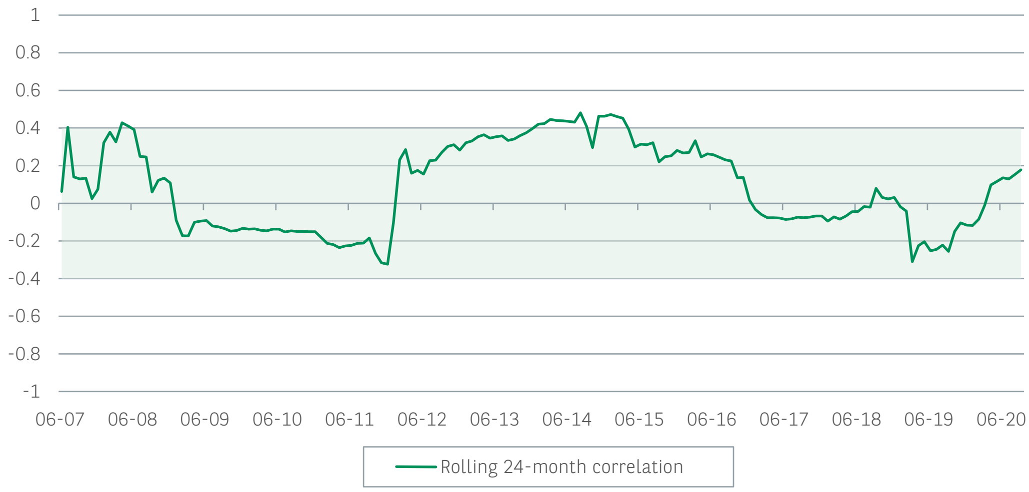
3. A deeper look at the diversification benefits

Investors considering factor-investing strategies may well ask "How should I use it, as another active strategy or in a category of its own?" In other words, should investors have a strategic core allocation to multi-factor products?

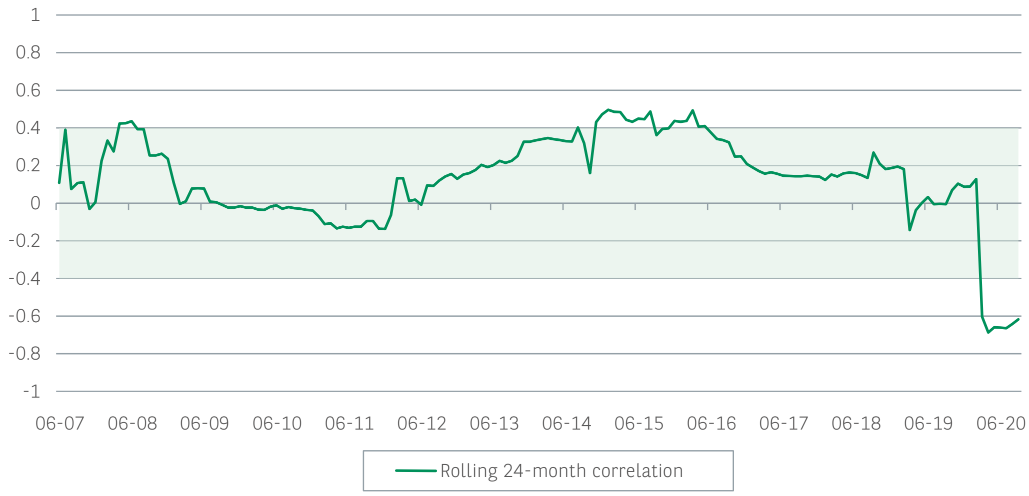
To answer this, one needs to assess whether the excess returns generated by multi-factor portfolios are correlated to the excess returns from traditional strategies.

Charts C, D , E and F show the correlations of excess returns generated by our multi-factor portfolio compared to the peer group category, for both euro and US Investment Grade credit. The correlations are measured over a rolling 36-month window.

Charts C & D: Excess return correlations for euro Investment Grade credit
36-month rolling correlation of excess returns
Multi-factor portfolio vs Morningstar on Euro Inv Grade



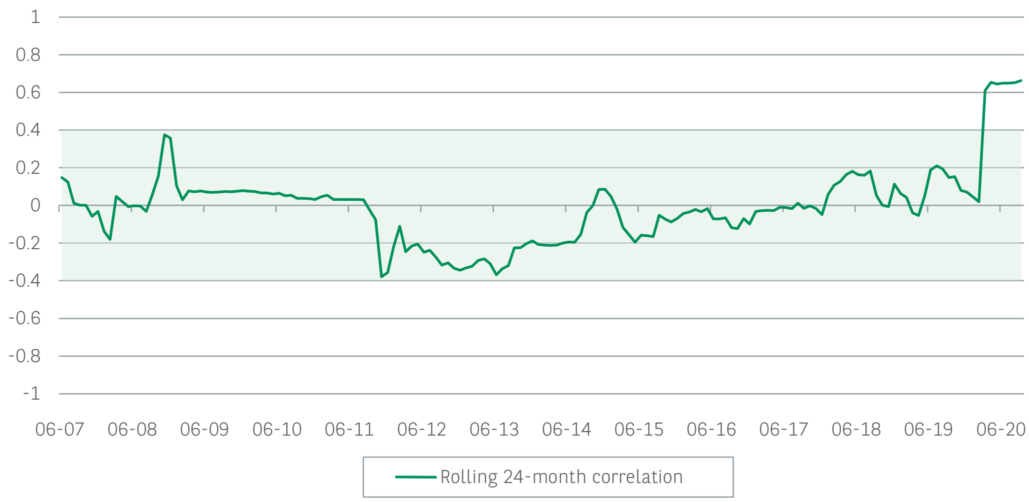
36-month rolling correlation of excess returns
Multi-factor portfolio vs eVestment on Euro Inv Grade



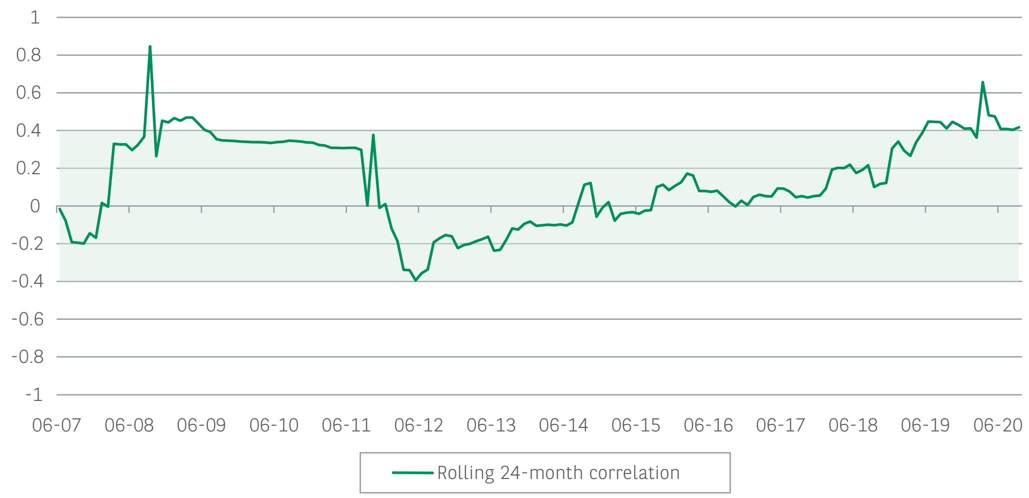
Source for the charts: Morningstar, eVestment, BNP Paribas Asset Management, as of September 2020. This is for general information only and should not be used as a basis for making any specific investment, business or commercial decisions.

Charts E & F: Excess return correlations for euro Investment Grade credit

36-month rolling correlation of excess returns
Multi-factor portfolio vs Morningstar on US Inv Grade



36-month rolling correlation of excess returns
Multi-factor portfolio vs eVestment on US Inv Grade



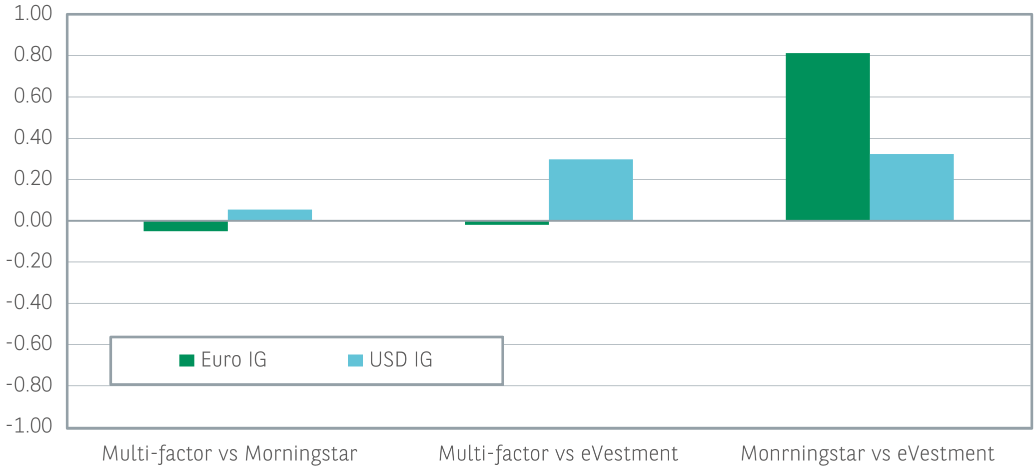
Source for the charts: Morningstar, eVestment, BNP Paribas Asset Management, as of September 2020. This is for general information only and should not be used as a basis for making any specific investment, business or commercial decisions.

The results show no strong structural correlation between the excess returns generated by our multi-factor portfolio versus the excess returns one might expect from traditional managers.

Chart G shows the correlations of excess returns over the full period.

Chart G: Excess return correlations over the full period, July 2004 – September 2020

Full-period correlations of excess returns (from Jul 2004 to Sep 2020)



Source: Morningstar, eVestment, BNP Paribas Asset Management, as of September 2020. This is for general information only and should not be used as a basis for making any specific investment, business or commercial decisions.

Again, the result indicates that the long-term correlations of excess returns between our multi-factor strategy and the performance from traditional managers are relatively low.

This is in line with our expectations, given the difference in investment process and portfolio construction. Besides the fact that multi-factor strategies do not take any directional market positioning, they also tend to operate across a broader investment universe than that typically used by traditional managers. This is because a systematic investment process can rank a very large number of bonds or issuers while active managers usually rely on their credit analysis team.

This observation can be anecdotally confirmed by a simple comparison of the overlap between the issuers in our multi-factor portfolio compared to our traditional portfolio. We looked at the issuers in the portfolio in our euro IG multi-factor strategy and our traditional euro IG portfolio and out of 229 issuers to which the funds had exposure, only 13 were common to both, i.e. approximately 6%.

4. Exploring the optimal combinations of multi-factor and traditional investment approaches

The relatively low correlations in terms of excess return suggest that combining both multi-factor and traditional strategies should improve risk-adjusted returns.

To determine what would be the optimal allocation between both types of investment, we looked at the risk-return of different combinations of multi-factor and traditional. From this, we plotted the resulting ***efficient frontier*** charts. Each dot is a portfolio with a different combination of multi-factor and traditional investments. The labels on the charts indicate the weight of Multi-factor in the mixed portfolio.

These charts only provide a very general view of the optimal combination. Investors should ideally undertake the analysis using their own investments for more relevant results. Additional analyses can also be run on the factor exposure of their existing portfolio, looking at the average factor scores of their bond holdings.

Chart H: Risk/return of a mix of multi-factor and eVestment with varying allocation to multi-factor (euro IG)
Efficient Frontier: Euro IG - Morningstar

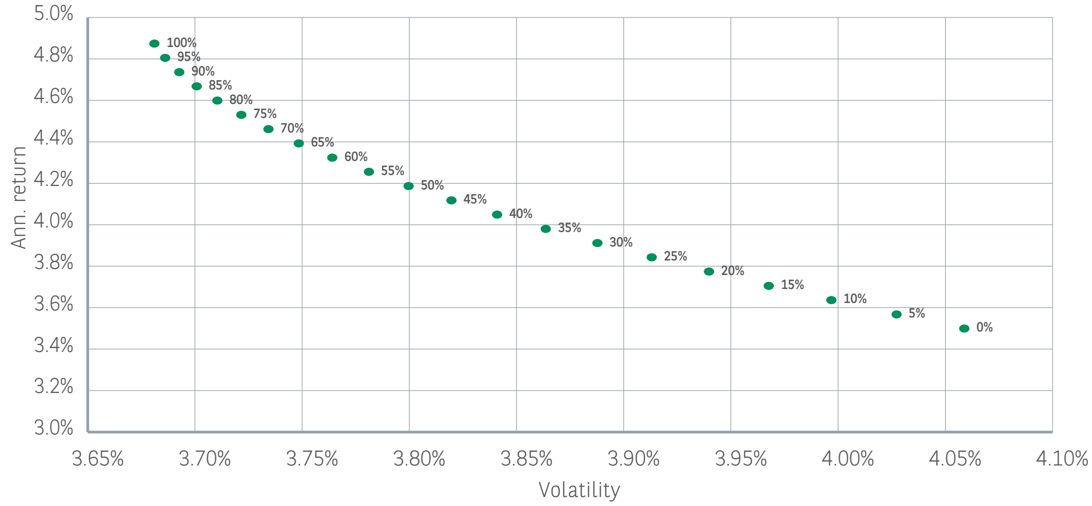
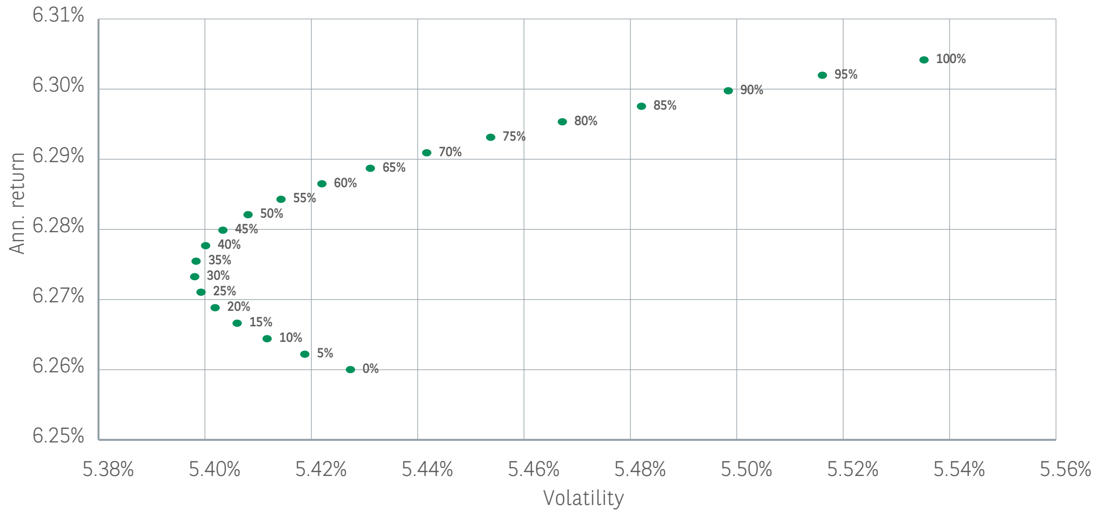


Chart I: Risk/return of a mix of multi-factor and eVestment with varying allocation to multi-factor (US IG)
Efficient Frontier: US IG - eVestments



Using eVestment data, we can see that in euro Investment Grade bonds, allocating to multi-factor improves the overall return while reducing the overall risk. For US Investment Grade, the optimal combination stands at around 30% allocated to multi-factor.

Chart J: Risk/return of a mix of multi-factor and Morningstar with varying allocation to multi-factor (euro IG)

Efficient Frontier: Euro IG - eVestments

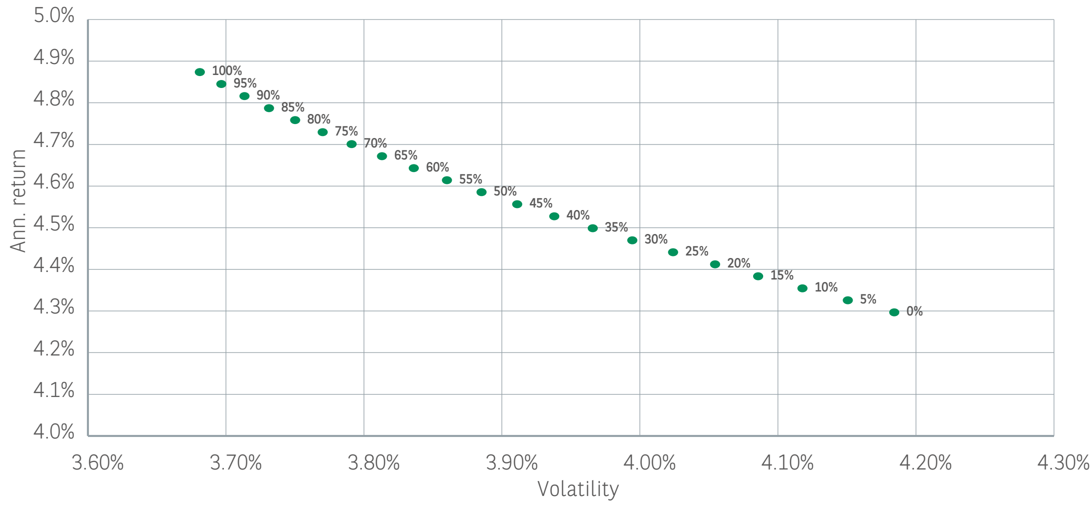
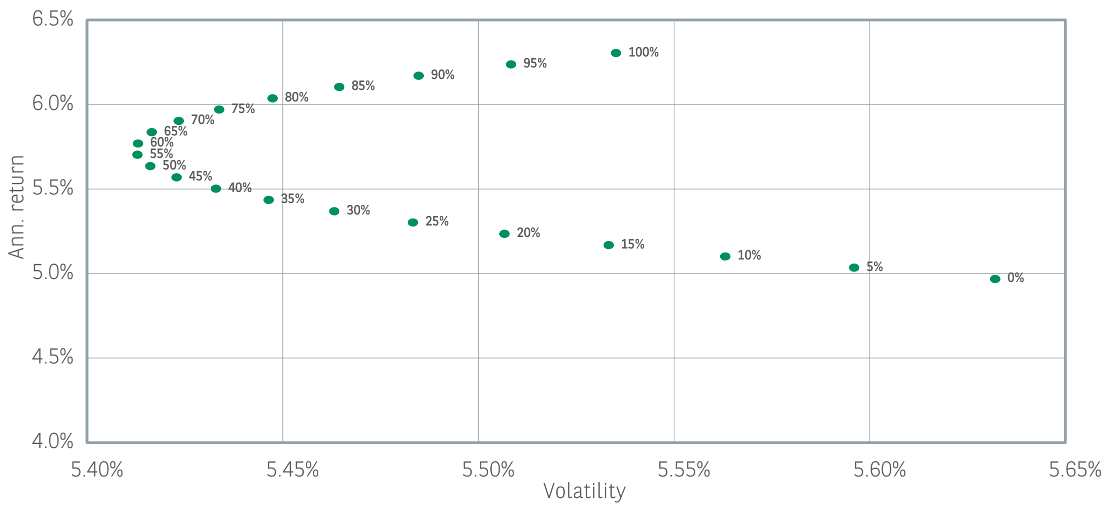


Chart K: Risk/return of a mix of multi-factor and Morningstar with varying allocation to multi-factor (US IG)

Efficient Frontier: US IG - Morningstar



Using the larger Morningstar category, the results are reasonably similar, with a strong improvement for euro Investment Grade as we allocate to multi-factor. In US Investment Grade, the optimal combination stands at around 55% allocated to multi-factor.

All in all, the results point to a minimum allocation of around 30% to multi-factor, so as to optimise the diversification benefits in the portfolio.

Due to the long-term nature of the factor premia and the lack of directional risks relative to the benchmark, there is a strong case for multi-factor strategies to be used as 'core' investments alongside traditional strategies. Based on our analysis, allocating one-third of one's corporate bond investments via a multi-factor approach should help improve the risk-return profile of a corporate bond portfolio.

Conclusion

The combination of multi-factor investing with traditional active credit management approaches can bring diversification benefits for investors. The low correlation between the two types of credit strategies helps to improve the risk-return ratio of the investment, and to diversify the excess returns over the long term. A multi-factor strategy should thus be considered as a strong diversifier in the credit asset class with the ability to reduce risks and drawdown – as recently seen during the COVID-19 crisis.

With long experience in designing, researching and managing multi-factor credit strategies, BNP Paribas Asset Management can offer this diversification benefit to any investor seeking to improve the risk-return profile of their credit investments.

March 2021 - Design: Creative Services BNPP AM - P2103031

INVESTORS' corner

BNP PARIBAS
ASSET MANAGEMENT

The asset manager
for a changing
world