

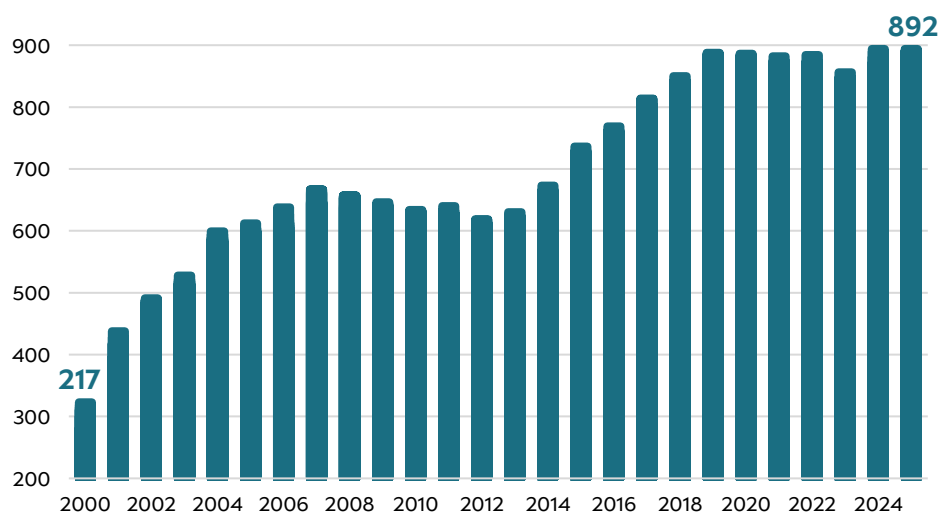
# Optimising performance with quantitative rating systems

## Corporate bonds on the rise

The European corporate bond market has undergone remarkable development since the turn of the millennium. The growing number of issuers and bonds means that investors now have to cover a significantly larger universe (see Figure 1). This trend is expected to continue, as more and more non-European issuers or smaller issuers are issuing new euro-denominated corporate bonds.

**Fig. 1: The number of euro investment-grade issuers has more than quadrupled since the turn of the millennium**

Number of euro investment-grade issuers



Period: 31.12.1999–30.04.2025

Sources: ICE, own calculations

This creates new opportunities, but also challenges, for investors. A quantitative rating system based on a company's key figures helps to ascertain market opinion and pricing. Quantitative rating systems are, therefore, an ideal tool to quickly and objectively assess issuers, while simultaneously meeting the increased analytical effort. They, therefore, play an increasingly important role in the investment process for corporate bonds, such as in the Berenberg Euro IG Credit fund. They can also contribute to improving performance.

## Leveraging the benefits of machine learning and addressing criticisms

We use a proprietary quantitative rating system to efficiently and effectively analyse issuers. This allows us to compare our internal rating with external ratings from agencies such as Moody's, Fitch or S&P. The model uses a company's fundamental data to calculate an implicit rating. The advantage of this method is that companies can be re-

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*The increased number of issuers requires the use of quantitative methods*

*React quicker to financial changes with a "point in time" approach*



rated with updated financial figures – for example, after the publication of quarterly figures – and changes become apparent more quickly. This point-in-time approach differs from the approach used by rating agencies, which typically conduct a credit assessment across an entire economic cycle. This point-in-time approach allows us to react more quickly to financial changes and, therefore, exploit opportunities or reduce risks. Quantitative rating systems aim to predict the external rating of rating agencies based on the fundamental data of the company under consideration. We use a statistical method that leverages the advantages of machine learning. It is based on the stepwise correction of decision tree errors, with the goal of successively minimising the deviation between the implicit ratings and the actual ratings. It can accurately represent both nonlinear relationships and interactions between variables. Nevertheless, the model remains easily interpretable and does not represent a black box.

### The sectoral focus opens up performance potential

The database is a crucial factor for a well-functioning quantitative rating system. For a precise credit assessment, only economically-relevant key figures should be considered. A sufficiently large data set is also important. When training our model, we use over 50 different financial key figures from more than 2,400 companies, over a 10-year period. Since the individual sectors are subject to different economic cycles and business models, we divide these by Global Industry Classification Standard (GICS) sector. A separate rating model is then developed for each of the 11 GICS sectors. As part of the model validation, we use a training and a test data set. This allows us to double-check the accuracy of the model and prevents the model from being applicable only to one data set, but also to new data. Finally, the model identifies the 12 fundamental key figures that best predict the rating of issuers in a sector. On average, the implied rating should correspond to the official rating of the rating agencies. Deviations from the official rating imply that the company should actually be better (or worse) rated and, therefore, a revaluation could take place on the bond market.

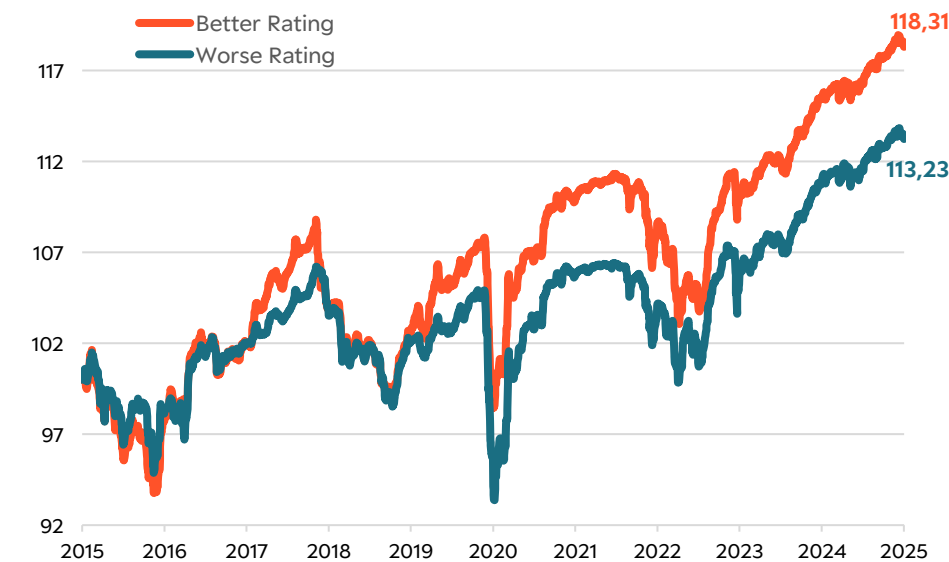
*The database is crucial*

Figure 2 demonstrates that this can work. The orange line represents the performance of an equally-weighted portfolio of bonds that perform better in our quantitative rating than in the rating agencies' ratings. The blue line represents the performance of an equally-weighted portfolio of bonds that receive a lower rating in our method. The portfolios are rebalanced monthly, with the ratings and shadow ratings (implied ratings) based on annual financial statements.



**Fig. 2: Quantitative rating systems can help to improve performance**

Performance comparison between two portfolios resulting from our shadow rating



Period: 31.03.2015–31.03.2025

Sources: ICE, Bloomberg, own calculations

The better-valued portfolio achieved an excess return of 5.08% over the period under review – from March 31 2015 to March 31 2025. This excess return excludes the effect of interest rate changes due to the different maturities of the bonds, meaning that this only represents the contribution of the credit risk component. The two portfolios differ slightly in terms of their rating structure: the portfolio with the better internal rating is rated BBB+, on average, by the rating agencies, while the portfolio with the poorer internal rating is rated A, on average, externally. In our internal rating, however, the average rating of the two portfolios is identical, at A-. The aim of the quantitative approach is to exploit this valuation divergence. The portfolio with better-rated bonds also performs favourably from a risk perspective – with a maximum drawdown of 9.6%, it is better than the benchmark portfolio, which has a drawdown of 12.1%. The historical recalculation shows that our quantitative rating model contributes to the generation of systematic excess returns and can, therefore, represent a valuable building block in portfolio construction.

## Conclusion

Quantitative rating systems make it possible to react quickly to continuously changing conditions – be it due to a constantly growing number of companies, dynamic new issue markets or changes in the fundamental data of individual companies. They show deviations between the external assessments of the rating agencies, whose approach differs in terms of maturity (ie through the cycle versus point in time) and can, therefore, contribute to the systematic improvement of performance. In Berenberg Fixed Income funds and mandates – and particularly in the Berenberg Euro IG Credit fund, with its focus on investment grade bonds – we use the approach described above to analyse the credit quality of individual issuers or investment universes in an objective and standardised manner. This enables us to avoid companies with weak fundamentals, to identify opportunities and thereby optimise the performance of Berenberg Euro IG Credit.

Quantitative rating systems open up performance potential



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**Prof. Dr. Bernd Meyer, CFA**  
Chief Strategist Wealth & Asset Management

## Author



**André Meyer-Wehmann, PhD, CFA**  
Portfolio Manager Fixed Income,  
Wealth & Asset Management

T.: +49 69 91 30 90 – 1195  
E.: andre.meyer-wehmann@berenberg.com

## Co-Author



**Felix Stern, CCrA, CESGA**  
Head of Fixed Income Euro Balanced  
Wealth & Asset Management

T.: +49 40 350 60 – 458  
E.: felix.stern@berenberg.de

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Joh. Berenberg, Gossler & Co. KG  
Neuer Jungfernstieg 20  
20354 Hamburg  
Telefon +49 40 350 60-0  
Telefax +49 40 350 60-900  
[www.berenberg.de/](http://www.berenberg.de/)