Pricing ESG risk in credit markets: reinforcing our conviction

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To analyse credit risks with greater precision, we developed a pricing model last year to capture the influence of environmental, social and governance (ESG) factors on credit spreads. It showed a convincing relationship between ESG risk and credit spreads, manifesting as an ESG-risk curve.

After expanding this research, we found this relationship between ESG risk and credit spreads to be reinforced.

Expanding our time horizon

In Q3 2016, we launched a collaborative effort among several teams – Credit, EOS at Federated Hermes (EOS), Global Equities and Responsibility – to produce a quantitative study to analyse the link between ESG factors and credit spreads.

The genesis of the work was the Credit team's desire for a model to price the ESG risk of debt instruments. While years of intellectual capital had been spent on pricing operating and financial risks – the core credit risks – there was no equivalent for ESG. Necessity being the mother of invention, the credit team worked with colleagues specialising in equity investment, corporate engagement and responsible investing to price ESG risk in credit markets.

First, a quantitative rendering of ESG risks for each credit issuer was required. The team had an advantageous starting point: the set of QESG Scores generated by the Global Equities team, which rank each stock worldwide in accordance with its ESG risk. Using a proprietary model, the equity team combines quantitative, company-specific ESG research from Sustainalytics, Bloomberg, the Carbon Disclosure Project and Trucost with qualitative insights from EOS, gained through in-depth engagements with companies on their ESG matters. Importantly, the score not only captures a company's current level of ESG risk exposure but also its direction of travel. The highest score, denoting superb ESG policies and practices, is 100, and the lowest is zero.

These quantitative scores provided a numeric value to represent ESG risks, which the credit team had for many years assessed qualitatively. We regressed those values against the spreads of credit default swaps (CDS) instruments – which provide the purest reflection of credit risk – to determine the nature and strength of the relationship between the ESG risks captured by the QESG Scores and credit spreads. Indeed, we found that a relationship existed, even when controlling for credit risk as reflected by credit ratings. This enabled us to generate a curve reflecting the implied spreads attached to QESG Scores based on an ordinary least squares regression model.[1] For a full explanation of this study, including methodology and results, read our research paper, "Pricing ESG risk in credit markets".

In this update, we expand this analysis to include the past year of price action. We now have an additional 500 or so data points, resulting in a total of 1,676 data points over a seven-year period and a more robust test for the link between ESG risk and credit spreads.[2]

ESG risk and credit spreads: the relationship is reinforced

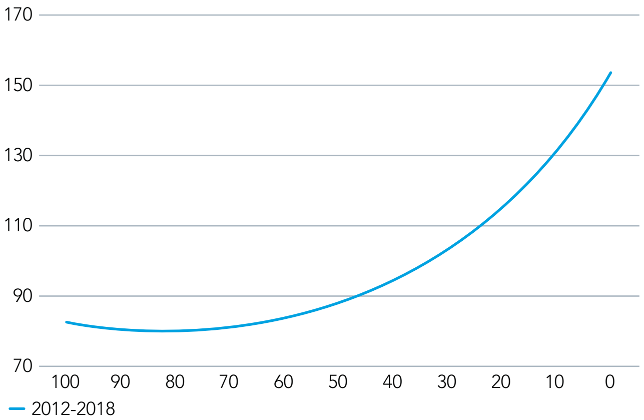
We are encouraged by the results, which show that the explanatory power of the model has strengthened given the broader time horizon. Running the analysis with more data yields an increase in R-squared to 51%, meaning that the explanatory power of the relationship between QESG Scores and CDS spreads has increased.

1. The results of this regression analysis can be found in the appendix. The regression is estimated using robust standard errors.
2. We intend to update the paper on an annual basis.

Chart 1 shows a steeper ESG-risk curve than what was generated in the last test: instruments from issuers with higher QESG Scores benefit from narrower CDS spreads, and those with poorer QESG Scores suffer spreads that widen more aggressively as ESG practices deteriorate (see figure 1).

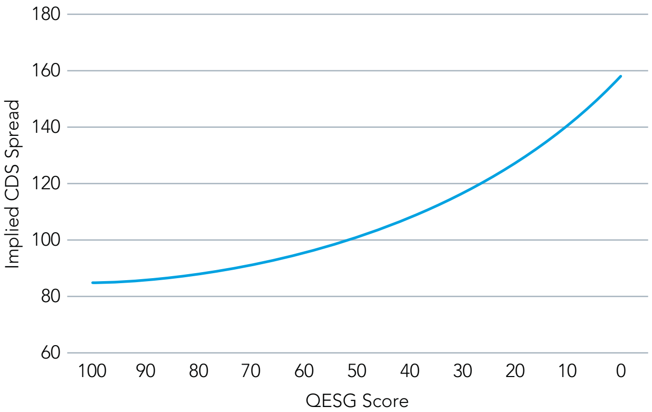
Figure 1. The relationship between implied CDS spreads and QESG Scores

2012-2018



For illustrative purposes only.

2012-2016



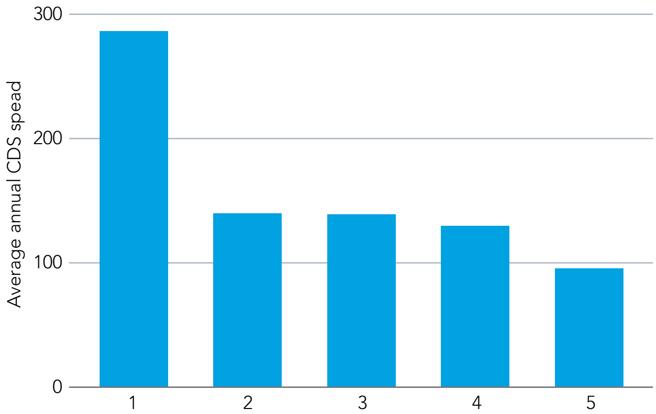
For illustrative purposes only.

This curve illustrates how punitive an increase in ESG risk can be for a company: credit spreads widen sharply as ESG policies and practices worsen. It also indicates the investment opportunities that improving ESG stories represent, as the risk of instruments moving up the curve should be reassessed and the investment cases of those moving down the curve revisited. We also suspect that the flatness of the curve for issuers with higher QESG Scores is associated with the convexity of credit spreads during a period in which spreads have tightened, particularly in the US market and at the front end of the curve.

The foundation of the ESG-risk curve is based on the relationship between the quality of corporate issuers' ESG behaviours and their credit spreads. As figure 2 shows, companies with the weakest QESG Scores, forming quintile one, have the widest spreads and those with the highest QESG Scores, forming quintile five, have the tightest spreads. This relationship remains consistent with our original study and also with the three sub-scores: for environmental risk (QE), social risk (QS) and governance risk (QG). Compared to our first study, the gap between the first and fifth quintiles has widened further, indicating a much stronger relationship between CDS spreads and QESG Scores.

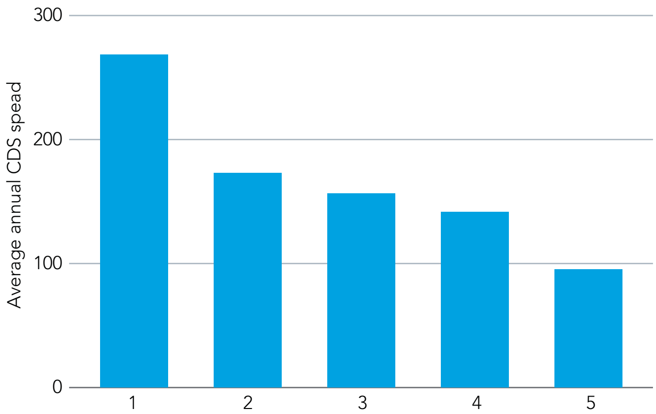
Figure 2. Average annual CDS spreads by QESG quintile: the gap between the best and worst ESG performers has widened over time

2012-2018



Source: Own calculations using data sourced from Federated Hermes International Global Equities and Bloomberg, as at June 2018. Corrected for outliers.

2012-2016



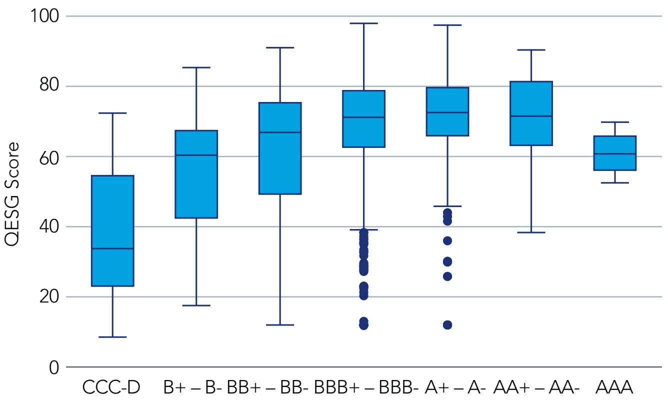
Source: Own calculations using data sourced from Federated Hermes International Global Equities and Bloomberg, as at February 2017. Corrected for outliers.

Credit ratings do not completely capture ESG risks

Running the analysis again reinforced another of our conclusions from last year: that there is a wide dispersion of QESG Scores within each credit-rating band (see figure 3). As a result, although there is generally a positive relationship between credit ratings and QESG Scores, we believe that this dispersion of QESG Scores shows that credit ratings do not sufficiently capture ESG risks. As such, investors must conduct separate analyses and pricing of ESGs risks to gain a fuller picture of an issuer's risk.

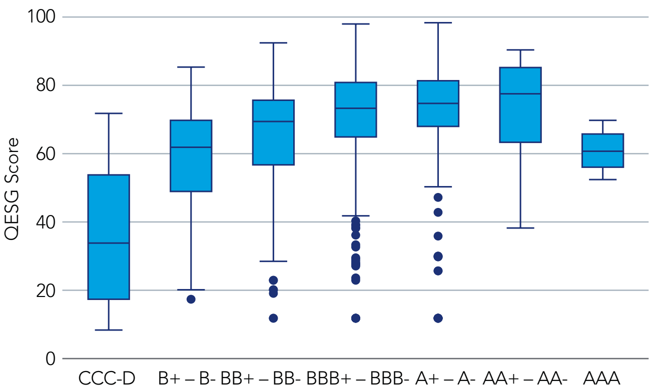
Figure 3. Distributions of QESG Scores by credit ratings: the devil is in the dispersion

2012-2018



Source: Own calculations as at June 2018. ESG data sourced from Federated Hermes International Global Equities and credit ratings from Fitch Ratings.

2012-2016



Source: Own calculations as at February 2017. ESG data sourced from Federated Hermes International Global Equities and credit ratings from Fitch Ratings.

Reassuring consistency

Our conclusions in the original study remain valid – even after adding a large number of additional data points. The key points from both analyses are consistent:

1. Issuers with higher QESG Scores have tighter implied credit spreads than those with lower QESG Scores, and we can factor this into our analysis of companies. We believe this is associated with the convexity profile of credit spreads and relates to systematic factors.
2. Even after controlling for credit risk, there is still a significant correlation between CDS spreads and the ESG performance of companies.
3. The model helps identify mispriced issuers based on their ESG characteristics. Investors should be wary about issuers with very low credit spreads and a very poor ESG performance, and take a second look at those with high spreads but strong ESG performance.

We are encouraged that our second study, based on the same methodology as the first but using more data points, strengthens our conviction in the robustness of our model for pricing ESG risk in credit markets. It also reinforces the necessity of independent analysis to identify improving ESG behaviours that are not reflected in tighter credit spreads, and to avoid companies whose deteriorating ESG practices could lead to underperformance.

Appendix

Regression output for the pricing model

This table presents the regression output of the underlying regression for our pricing model. It takes the form: ln(Annual average CDS spread)$_{t-0}$ = Constant + b1 *QESG Score$_{t-1}$ + b2 *(QESG Scoret-1)^2 + b3 *Credit rating$_{t-1}$ + error. The CDS spreads are measured at t0 while the explanatory variables are measured in t-1, one year before.

	Ln(annual average CDS spread)
QESG Score	-0.0165***
	(0.003)
(QESG Score squared)	0.0001**
	(0.018)
Credit rating	-0.6180***
	(0.000)
Constant	7.5245***
	(0.000)
R-squared	51.01%
Number of observations	1,676

***, **, * indicate statistical significance at the 1%, 5%, and 10% levels.

Appendix 2: Implied CDS spreads

QESG	Implied CDS spread, 2012-2018	Implied CDS spread, 2012-2016
100	83.1	85.7
90	80.5	86.3
80	79.7	88.0
70	80.5	90.9
60	83.0	94.9
50	87.3	100.3
40	93.8	107.4
30	102.9	116.2
20	115.3	127.3
10	131.8	141.2
0	153.8	158.5

Source: Own calculations as at September 2018. Based on data from Bloomberg.

This was published in October 2018 before Hermes Investment Management rebranded as the international business of Federated Hermes

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