

DID ESG RATINGS HELP TO EXPLAIN CHANGES IN SOVEREIGN CDS SPREADS?

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MSCI ESG
RATINGS

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EXECUTIVE SUMMARY

Natural disasters, political upheaval and corruption scandals are just a few of the shocks global investors have had to deal with in recent years. Analysis of environmental, social and governance risk factors at the country level may help investors to better understand the cause and consequences of these events, and how they fit into their sovereign credit risk assessment. This is important not just for global government bond investors, but any investors that need to consider country risk in their portfolio. MSCI ESG Government Ratings are designed to help investors assess these factors and integrate them into their portfolio construction and management process.

But do MSCI ESG Government Ratings offer any more information about sovereign credit risk than what investors already know? Another research study ¹ has suggested a correlation in the past between our ESG scores and sovereign credit default swap (CDS) spreads, a proxy for credit risk, but this may simply suggest ESG factors had already been priced in. In this paper we explore whether there was a relationship between our past ratings and subsequent changes to CDS spreads to determine whether there was additional information that could have helped investors with their analysis of sovereign credit risk.

KEY FINDINGS

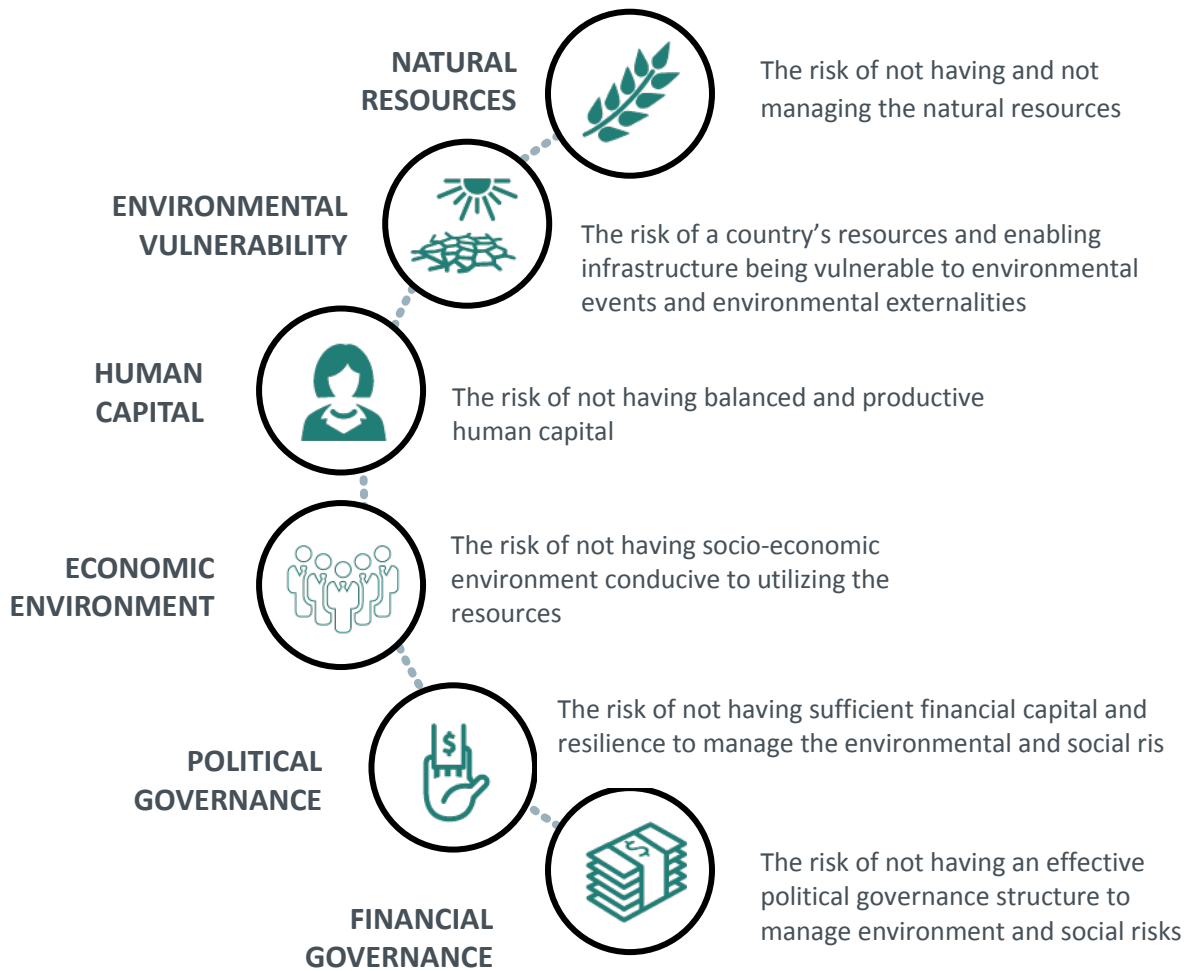
- We find that countries with higher ESG Government Ratings from MSCI ESG research on average saw their CDS spreads narrow by more, or widen by less, than lower-rated counterparts three years later (for the rating period between 2011 and 2014). The relationship between ESG ratings and changes in CDS spreads held within risk groups based on levels of CDS spreads in 2011, .
- We also find that ‘gap’ – the difference between actual CDS spreads and the expected CDS spread based on the ESG score – in 2011 were also correlated with subsequent changes in CDS spreads between 2011 and 2017.
- The correlation between the ‘gap’ and changes in CDS spreads was strongest in Europe, while CDS spreads for countries in Americas on average widened by more than suggested by their ‘gap’ and the opposite held true for countries in the APAC region.

¹ [‘Financial materiality of ESG risk factors for sovereign bond portfolios’, by Dr Steffen Hoerter, Allianz Global Investors](#)

1 HOW DO ESG GOVERNMENT RATINGS HISTORICALLY RELATE TO CREDIT RISKS?

MSCI ESG Government Ratings assess the relative exposure of 198 countries and regions to six environmental, social and governance risk factors (exhibit 1), and their performance on and capacity to manage those risks.:

Exhibit 1: MSCI ESG Research’s Sovereign Ratings Framework



While our ratings are not designed to measure the risk of default, and hence are not directly comparable to sovereign credit ratings and other credit risk indicators, the ESG risks we

identify may have implications for a country's financial strength. For example, poor management of resources could make a country's economic growth rate unsustainable, and weaken public finances in the longer term. Similarly, weak government institutions could lead to mismanagement of financial resources, and impair both a country's willingness and ability to repay debt.

Better understanding of how ESG factors may affect sovereign credit risk can help global government bond investors in their asset selection process. While credit risk is just one of the components determining return for government bond investors, and the relationship between credit risk and bond prices vary based on the specifics of the securities and market conditions, lower credit risk should translate to higher bond prices all else being equal.

Sovereign credit risk is important to understand not just for government bond investors, but also for investors in other asset classes that manage country risks. Sovereign credit risks could be transferred to corporates and financial institutions through a variety of mechanisms, for example taxation and other policy changes, financial market instability and the likelihood of government support. Bedendo and Colla (2015) show that "an increase in sovereign credit spread is associated with statistically and economically significant increase in corporate spreads, and hence firm's borrowing costs"². Silva (2014) examined the negative correlation between sovereign CDS spreads and stock prices, although there is mixed evidence whether the strength of this relationship changed depending on market conditions³.

2 DID ESG RATINGS CORRELATE TO CDS MOVEMENTS?

We first explore this question by looking at the relationship between MSCI ESG Government Ratings and spreads on credit default swaps, a proxy we use to gauge the market assessment of credit risk for a particular sovereign⁴. Fontana and Scheicher (2016)⁵ argue that "in principle, CDS and bonds offer investors a similar exposure to the risk and return of debt issue by government", although they found that this relationship can drift depending

² Bedendo, Mascia and Colla, Paolo, (2015), [Sovereign and corporate credit risk: Evidence from the Eurozone](#), *Journal of Corporate Finance*, **33**, issue C, p. 34-52

³ Paulo Pereira da Silva, 2014, [Sovereign Credit Risk and Stock Markets—Does the Markets' Dependency Increase with Financial Distress?](#), MDPI, Open Access Journal, vol. 2(1), pages 1-23, March.

⁴ Credit default swaps (CDS) are financial instruments that provide the buyer protection against losses from a credit event (such as default or restructuring) for a given period of time, in return for premium payments to the seller (captured by the CDS spread). Wider CDS spreads indicate the buyer is willing to pay more to insure against default, implying higher expected credit risk

⁵ Fontana, Alessandro and Scheicher, Martin, [An Analysis of Euro Area Sovereign CDS and Their Relation with Government Bonds \(November 4, 2010\)](#). ECB Working Paper No. 1271

on market liquidity. Their study suggested that the level and change in CDS spreads are typically reflected in bond yields.

Our dataset consists of 5-year CDS mid-spreads for all 69 countries⁶ available from Thomson as of July 31, 2017. Using this data we find that ESG ratings and scores were indeed correlated with CDS spreads during this period, consistent with findings in other market research⁷.

Exhibit 2: Interquartile Range of Sovereign CDS Spreads, by ESG Rating Group

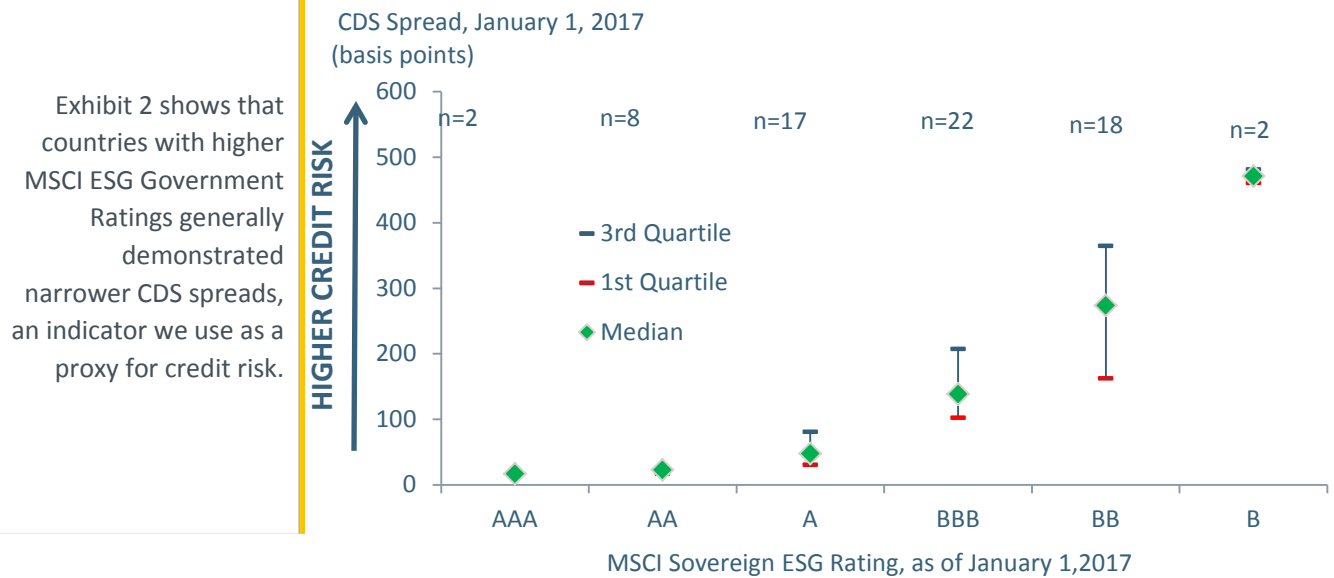


Exhibit 2 shows that countries with higher MSCI ESG Government Ratings generally demonstrated narrower CDS spreads, an indicator we use as a proxy for credit risk.

Source: MSCI ESG Research, Thomson

n= number of observations within rating group

But did MSCI ESG Government Ratings help to explain the variation in subsequent changes to CDS spreads? We examined the ratings at the start of the each year between 2011 and

⁶ Argentina, Australia, Austria, Bahrain, Belgium, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Denmark, Dominican Republic, El Salvador, Estonia, Finland, France, Germany, Greece, Guatemala, Hong Kong, Hungary, Iceland, Indonesia, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Kazakhstan, Latvia, Lebanon, Lithuania, Malaysia, Malta, Mexico, Morocco, Netherlands, New Zealand, Norway, Panama, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Serbia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Thailand, Tunisia, Turkey, Ukraine, United Kingdom, USA, Uruguay, Venezuela, Vietnam

⁷ 'Financial materiality of ESG risk factors for sovereign bond portfolios', by Dr Steffen Hoerter, Allianz Global Investors

2014, and then looked at how much the natural log of CDS spreads⁸ had changed three years after, for a smaller group of 60 countries⁹. Exhibit 3 shows that higher-rated sovereigns typically had spreads that narrowed by more, or widened by less, than their lower-rated counterparts over three years. The rolling 3-year period captures rating changes between 2011 and 2014, and includes 240 observations.

Exhibit 3: Interquartile Range of 3-Year Change in Log CDS Spreads, by ESG Rating Group

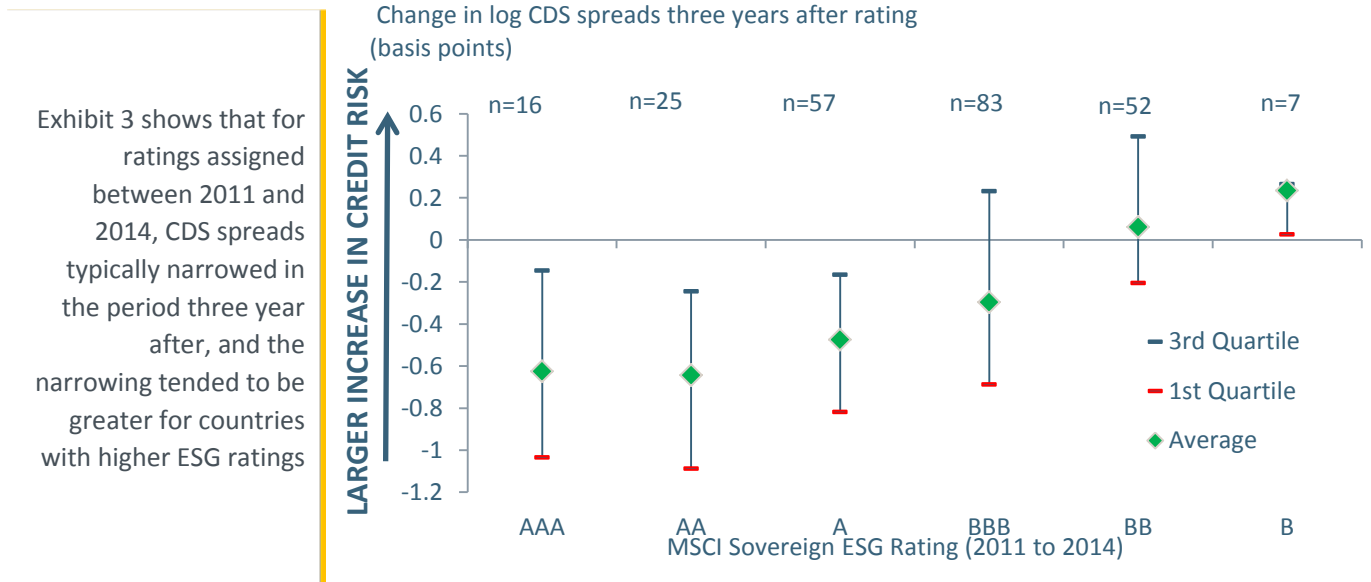


Exhibit 3 shows that for ratings assigned between 2011 and 2014, CDS spreads typically narrowed in the period three year after, and the narrowing tended to be greater for countries with higher ESG ratings

Source: MSCI ESG Research, Thomson, CDS data from January 1, 2011 to January 1, 2017

n= number of observations within rating group

However the relationship shown in Exhibit 3 may have simply been a reflection of better credit quality in higher-rated ESG countries (as indicated by the relationship in Exhibit 2), information that could have already been incorporated in CDS spreads. We attempt to limit

⁸ We use the natural log of CDS spreads given that Exhibit 2 shows the relationship between average CDS spreads and ESG ratings is exponential, hence putting similar weight to small changes at lower levels of CDS spreads as large changes at higher levels.

⁹ Nine countries are omitted from our original dataset of 69 countries. Five countries (Argentina, Cyprus, Jamaica, Greece and Ukraine) had defaulted during our analysis period, making the change in CDS spreads over three years not representative of the change in credit risk over that time. We also omitted three sovereigns (Malta, Singapore, Iraq) that saw no changes in CDS spread for over a year, as there would be little information value from infrequently traded instruments. Finally, Venezuela is excluded as an extreme outlier with CDS spreads exceeding 6000 bps on January 1, 2016,

the influence of information from CDS spreads by aggregating the countries into ‘risk groups’ based on their CDS spreads on January 1, 2011, hence observing changes for countries with similar levels of credit risk according to CDS market prices. We find that the relationship shown in Exhibit 3 held within these risk groups (Exhibit 4), with the exception of AAA-rated economies in the risk group of countries with CDS spreads less than 50 basis points, even with the range of CDS spreads (and hence available information) restricted.

Exhibit 4: Change in Log CDS Spread by ESG Rating Group and Risk Group (2011 to 2017)

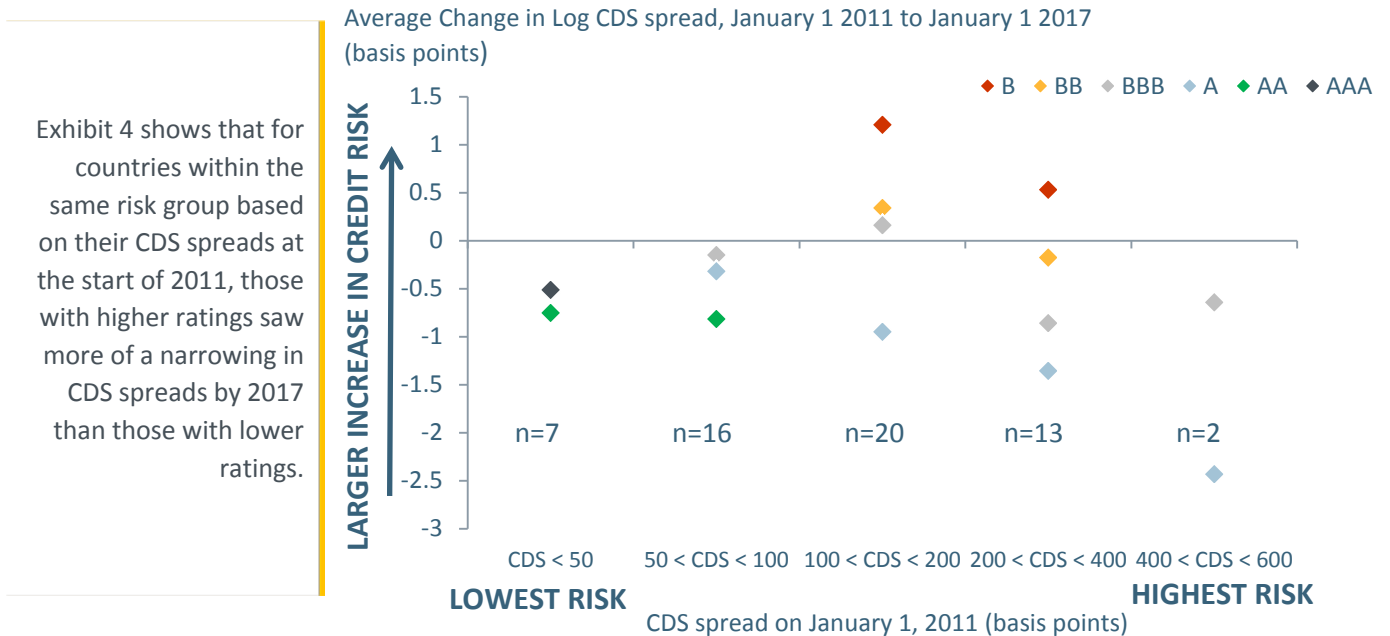


Exhibit 4 shows that for countries within the same risk group based on their CDS spreads at the start of 2011, those with higher ratings saw more of a narrowing in CDS spreads by 2017 than those with lower ratings.

Source: MSCI ESG Research, Thomson

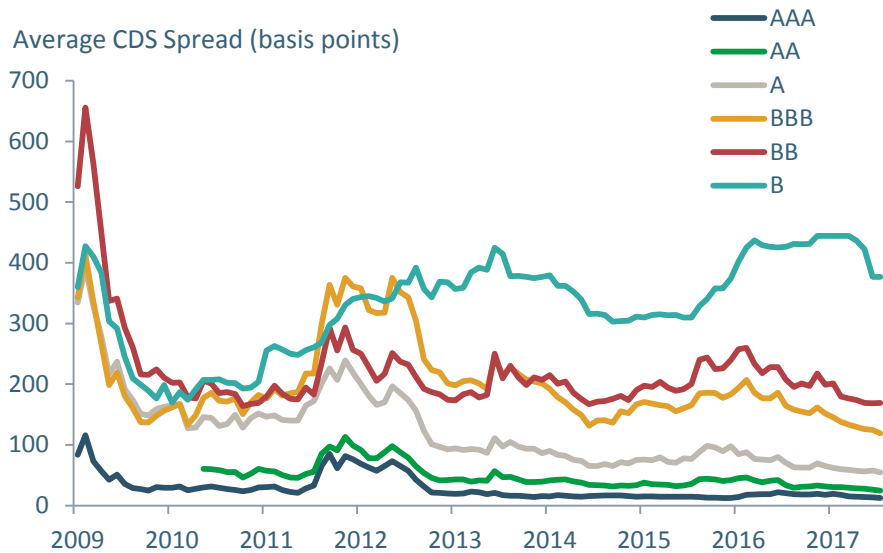
n= number of observations within risk group

Contextually, the time period (January 1, 2011 to January 1, 2017) we used reflected two factors: limited data availability of CDS spreads prior to 2009, and the substantial financial market volatility during this time. Exhibit 4 shows CDS spreads were still trending down in 2010 following a peak at the start of the global financial crisis, and widened sharply once again in the middle of 2011 as the Euro-area sovereign crisis escalated (Figure 4). The analysis period was chosen to filter out the some of the volatility resulting from these events, although no time period can fully negate the impact of overlapping economic cycles across different regions. Repeating the exercise in different time periods indicate the first half of the analysis period (2011 – 2014) contributed more to our finding than the second

half. This partly reflects the lower volatility of CDS spreads in the second half of the study period, reducing the differentiation between countries.

Exhibit 5: Average CDS Spread by 2011 ESG Rating Group

Exhibit 5 shows that sovereign CDS spreads were highly volatile between 2011 and 2013, partly due to the Euro-area sovereign debt crisis at the time. Our analysis timeframe was chosen to minimize the impact of the volatility in this period.



Source: MSCI ESG Research, Thomson, Monthly CDS data between January 31, 2009 and July 31, 2017
Data for 'AA' group starts from April 2010, due to limited data for New Zealand

3 WHAT HAPPENED WHEN CDS SPREADS AND ESG RATINGS DIFFERED?

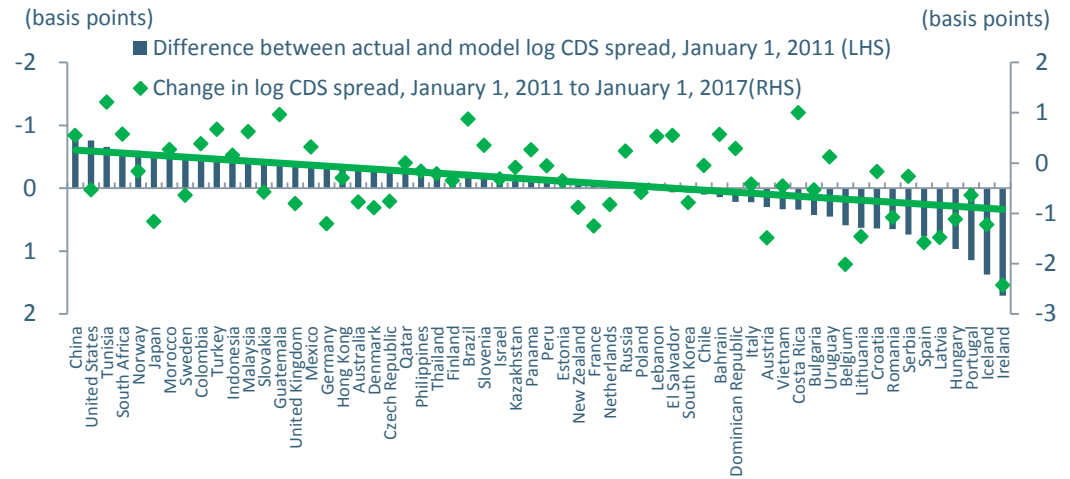
The correlation between ESG Government Ratings and CDS spreads was not perfect, and there are multiple examples where CDS spreads were inconsistent with our ratings based on the relationship we showed in Exhibit 2. We explore this by running a linear regression on log CDS spreads and ESG scores, and use the resulting regression equation¹⁰ to calculate a model log CDS spread for each country based on their ESG scores. We then calculated the difference between the actual log CDS spread and model log CDS spread to generate a measure of the 'gap' between our ratings and CDS spreads. Exhibit 5 shows that Ireland, Iceland and Portugal's actual log CDS spread were very high on January 1, 2011 compared to their model log CDS spread (positive gap), likely due to the banking crisis the country was

¹⁰ Model Log CDS Spread = -0.3956*Government ESG Score + 7.14

dealing with at this time. In contrast, actual log CDS spread were much lower than their model CDS spread (negative gap) for China, US and Tunisia.

Countries on the right of Exhibit 6 had the largest positive gaps (market CDS spreads are higher than implied by ESG scores), and tended to see greater narrowing of CDS spreads between 2011 and 2017.

Exhibit 6: The ‘Gap’ Between Modelled CDS Spreads and CDS Spreads, by Country



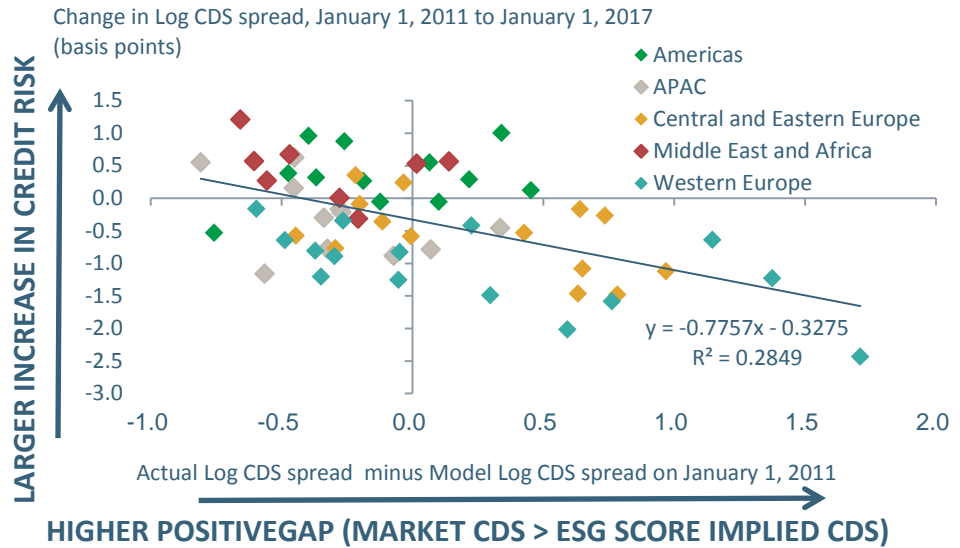
Source: MSCI ESG Research, Thomson

We find that on average log CDS spreads narrowed by more, or widened by less, for countries that had a high market CDS spread relative to their ESG score. A linear regression of these two variables show that 2011 ‘gap’ explained around 28% of the total variation of changes in log CDS spreads between January 1, 2011 and January 1, 2017 ($R^2 = 0.2849$), and the regression coefficient was statistically significant ($t \text{ Stat} = -4.8066$).

Of 23 countries with positive gaps in 2011, 7 were in Western Europe and 7 were in Central and Eastern Europe, and all 14 of these countries saw their CDS spreads narrow in the study period as CDS spreads fell across the region from elevated levels around the Euro-area sovereign crisis. In Exhibit 7 we look at how the relationship holds across different geographic regions to illustrate the extent to which our findings depend on European regional dynamics. The relationship fit particularly well for both advanced and emerging economies in Europe, regardless of whether CDS spreads narrowed or widened over the analysis period. The negative correlation was also maintained with other regions, with the exception of the Americas. Across regions, CDS spreads on average widened more for countries in the Americas than implied by their ESG scores, while the opposite held for countries in APAC.

Exhibit 7: 'Gaps' vs Change in Log CDS Spread, by Region

Exhibit 7 shows that countries with higher positive gaps tended to have a greater narrowing in CDS spreads. This relationship appears to hold at the regional levels, except for the Americas.



Source: MSCI ESG Research, Thomson

4 CONCLUSION

Our paper found a negative correlation between changes in sovereign CDS spreads and MSCI ESG Government Ratings in the period between 2011 and 2017. This relationship held, with the exception of 'AAA' countries with CDS spreads below 50 basis points, within risk groups based on the initial level of CDS spreads in 2011.

We also found that 'gaps' – the differences between actual CDS spreads and model CDS spreads based on ESG scores – in 2011 also showed a correlation with changes in sovereign CDS spreads between 2011 and 2017. The relationship generally held across and within geographical regions, but with some variation and exceptions, notable within the Americas.

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