

Research on the Impact of ESG Rating on the Corporate Bonds: Analysis of Yield Spreads and Performance

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ルー チンハン

Lu Tinghuan

Abstract

The primary goal of most businesses is to generate profit, but there is increasing recognition that their responsibilities extend beyond profit-making to include environmental, social, and governance (ESG) factors. ESG investing has become a dominant trend, particularly in green bonds, and is expected to gain further prominence. Although there is substantial research on the relationship between ESG factors and corporate financial performance, the impact of ESG ratings on corporate bond spreads, especially in emerging markets, remains underexplored. This study investigates the connection between ESG ratings and corporate bond spreads, focusing on whether strong ESG performance can reduce financing costs in China's market. Analyzing data from firms listed on the China Stock Exchange from 2009 to 2020, the study examines the effects of ESG ratings on corporate bond spreads in both the current and lagged periods. The results indicate that higher ESG ratings significantly lower corporate bond spreads, with the effect intensifying over time, suggesting a lasting impact of ESG performance on financing costs. The study also observes that the influence of ESG ratings on bond spreads has grown in recent years, particularly following the 2018 inclusion of ESG factors in corporate governance codes by the China Securities Regulatory Commission. Moreover, the nature of the corporation—state-owned versus private—significantly affects bond spreads, with state-owned enterprises benefiting from lower spreads due to perceived creditworthiness. Lastly, while the money supply positively correlates with bond spreads, other macroeconomic factors like Shibor do not. Financial performance indicators, such as interest coverage ratio and return on assets (ROA), show no significant correlation with bond spreads.

Keywords: ESG Rating; Listed Corporations; Bond Spread; Lagging Effects

¹ Lu Tinghuan, Lutinghuan126@gmail.com

Introduction

Research Background

In recent decades, ESG (Environmental, Social, and Governance) discussions have gained prominence in corporate management. Despite its importance, the financial benefits of ESG activities are not always clear in corporate disclosures, making it challenging for managers to evaluate them quantitatively. For many companies, the bond market is a crucial source of external financing, often preferred over equity due to its advantages, such as shorter issuance times. While numerous studies have explored the relationship between ESG ratings and corporate financial performance (CFP), less attention has been paid to the impact of ESG ratings on corporate bond spreads, particularly in emerging markets. As ESG investing becomes more popular, with examples like Japan's GPIF investing nearly \$10 billion based on ESG indices, understanding this relationship is vital. This research aims to address this gap, particularly in the Chinese market, offering insights that could help companies reduce costs and attract investors.

Research Objectives

The primary goal of this research is to investigate the relationship between ESG ratings and corporate bond spreads in China's stock market. While previous research has extensively studied the impact of ESG on corporate financial performance and stock prices, there is a lack of focus on how ESG affects bond spreads, especially in emerging markets. This study aims to fill that gap by examining the short- and long-term effects of ESG ratings on corporate bond spreads.

Research Methodology

This research employs a literature review and empirical testing. First, it reviews existing research on the connection between ESG ratings and corporate bond spreads, using a variety of sources to build a foundation for the study. Second, the research analyzes 3,288 data points from listed companies in China, designing a regression model that considers lagged effects to examine the long-term impact of ESG ratings. The study also tests the influence of yearly changes on ESG ratings.

Research Layout and Organization

This research is divided into six sections: Introduction, Literature Review, Methodology, Data Analysis, Conclusion and Discussion, and Limitations and Further Work. Each section systematically addresses the study's components, from background to future research directions.

Literature Review

ESG Definition

Origin of ESG

The concept of sustainable development was formally introduced in the 1987 UN report Our Common Future[1]. This marked a growing awareness of environmental issues, which expanded to include economic, ecological, and social responsibilities under ESG. Today, ESG stands for Environmental, Social, and Governance, and it is a critical non-financial report for investors focused on sustainability. The following table outlines key ESG factors.

Table 1 ESG Factors

Environmental(E)	Social(S)	Governance(G)
Animal Welfare	Community Relations	Accountability
Biodiversity/Land Use	Controversial Business	Anti-Takeover Measures
Carbon Emissions	Customer Relations/Product	Board Structure/Size
Climate Change Risks	Diversity Issues	Bribery and Corruption
Energy Usage	Employee Relations	CEO Duality
Regulatory/Legal Risks	Human Capital management	Compensation Schemes
Supply Chain Management	Human Rights	Ownership Structure
Waste and Recycling	Labor Standards	Shareholder Rights
Water Management	Responsible Marketing/R&D	Transparency
Weather Events	Union Relationships	Voting Procedures

Source from <https://www.cfainstitute.org/research/multimedia/2015/fundamentals-of-esg-concepts-and-principles>

Different countries have varying ESG reporting standards, but the core requirements are similar, focusing on long-term sustainability beyond immediate financial gains.

Long-Term Management

Understanding ESG starts with differentiating between shareholder and stakeholder theories. Shareholder theory prioritizes maximizing profits for shareholders, while stakeholder theory considers the broader impact on all parties involved with a business, such as employees and communities. Stakeholder theory supports long-term goals, aligning closely with ESG principles[2, 3, 4].

CSR to Quantitative ESG

Corporate Social Responsibility (CSR) has evolved over decades from a broad concept to specific metrics like the "triple bottom line," which assesses social, environmental, and financial impacts. Initially, CSR was seen as a cost due to higher expenses for environmental and social compliance[5]. However, it also helped companies manage risks, cut costs, and develop interdisciplinary skills[6]. With the rise of sustainability awareness, companies realized the interconnectedness of social and environmental factors with their market operations. Reporting standards like the Global Reporting Initiative (GRI) began requiring detailed disclosures on ESG performance, pushing corporations to provide quantitative metrics rather than qualitative assessments[7, 8, 9, 10, 11, 12].

ESG Evaluation and Rating Criteria

ESG rating agencies play a crucial role in helping investors and the public understand a company's sustainability performance. Key rating agencies include Bloomberg, MSCI, Sustainalytics, S&P Global, and Moody's, each using different criteria and methodologies. The variation in ratings often stems from differences in the methods used to assess non-financial data and the selection of ESG-related factors. Understanding these methodologies is essential for companies relying on ESG ratings.

Fixed Income Market

Bonds Overview

The fixed income market, dating back nearly a thousand years, is now the largest financial market globally. Bonds serve as debt instruments where issuers borrow money from investors[13]. Major

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issuers include domestic corporations, municipalities, and governments. Bonds have several key properties, such as issuer type, maturity, and coupon rate. Different types of bonds include RMBS, asset-backed securities, and covered bonds, each with specific characteristics and uses[14].

Corporate Bonds

Structured bonds, including securitized and hybrid securities, represent a significant portion of the corporate bond market. Corporations typically finance long-term investments through bond issuance, which is generally cheaper than other options like equity sales or bank loans. The bond market plays a vital role in funding governments and businesses[15].

Main Types of Corporate Bonds

Corporate bonds vary widely, with most being standard issues with fixed coupons and maturities. The market determines bond yields, influenced by factors like the issuer's creditworthiness and market conditions. Corporate bonds are essential for meeting various financial needs, from short-term liquidity to long-term investments[15].

ESG and Fixed Income Markets

Relationship between ESG and Fixed Income Markets

Compared to research on ESG's impact on corporate performance and stock prices, studies on ESG and fixed income markets are limited. However, the fixed income market is crucial for ESG investors, who can influence corporate practices through bond issuance. For example, Australia's mining sector often funds projects through bonds, allowing investors to scrutinize ESG practices. In the U.S., bond managers are increasingly using ESG criteria to guide investment decisions, potentially influencing corporate behavior[16,17].

Relationship between ESG and Corporate Bonds

Positive Impacts

Research by Polbennikov (2016) and others indicates that high ESG ratings can lead to better bond performance, lower spreads, and reduced credit risk. Studies also show that ESG factors can

enhance portfolio performance by reducing drawdowns and volatility. In China, Yang (2021) found that ESG disclosure significantly lowers credit spreads, particularly for non-state-owned and environmentally friendly companies[18, 19, 20, 21, 22, 23, 24, 25].

Negative and Neutral Impacts

Some studies, like Kjerstensson (2019), found no significant relationship between ESG scores and bond performance, suggesting that high ESG ratings do not necessarily lower required risk premiums in certain markets. Overall, the relationship between ESG ratings and corporate bond spreads remains inconsistent, with most research focused on developed markets. This study aims to bridge the gap by examining the relationship in China, addressing the differences between emerging and developed markets[26].

Methodology

Hypothesis

The first question is raised: Do ESG ratings affect bond credit spreads in China?

H0: Current period of corporate bond spreads have no relationship with the current period of ESG ratings of each corporate in China.

Second, I raised another question: Do ESG ratings have time lags with bond spreads in China?

H1: Current period of corporate bond spread have no relationship with the next first period of corporate bond yield spreads in China.

H2: Current period of corporate bond spread have no relationship with the next second period of corporate bond yield spreads in China.

Data Collection

This study examines the relationship between corporate bond spreads and ESG ratings, focusing on listed corporations in China due to their publicly accessible, transparent data. ESG ratings are primarily available for listed companies, as these firms are typically qualified to issue bonds and have the resources to gain investor trust. Although the listed companies may not represent the entire corporate landscape in China, this analysis serves as a starting point for further research into smaller, private firms.

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The dataset includes listed Chinese corporations from 2009 to 2020, with financial statements, ESG ratings, and macroeconomic data sourced from Wind. After cleaning the data, the final sample consists of 274 companies and 3,288 observations. Data analysis is conducted using R Studio and Stata.

Variables

Dependent Variable

The dependent variable is the corporate bond yield spread, chosen for its ease of calculation and relevance in reflecting economic or market changes. The spread is calculated by subtracting the yield of one bond from another. In cases where a company issues multiple bonds, the bond with a maturity period covering the research period is selected. If multiple bonds meet this criterion, the first issued bond is chosen.

Independent Variable

The independent variable is the ESG rating score. Two third-party ESG rating agencies are used: Russell ESG Rating and Huangzheng ESG Rating.

Definition of Variables

Table 2 Definition of Variables

	Variable	Definition
Independent Variable	Spread	Corporate bond spread
Dependent Variable	ESG_Ratings	Corporate ESG rating scores
Control Variable	Shibor	One-year Shibor rate
Control Variable	Money_Multiplier	The amount of money supply
Control Variable	ROA	Return on assets
Control Variable	EBITperInts	Debt and profitability ratio
Control Variable	Nature of Shareholders	Nature of shareholders, 0 means private, and 1 means national owned corporates

Model Designation

Samples

This paper picked 274 listed corporates in China and the date from 2009 to 2020, which are the public data set. Those samples both have cross-sectional data characteristics and time-series data characteristics which are the panel data set. After cleaning all the missing data for each corporate and each year, we make sure the same corporate has the same observation times, which means the whole panel data is a balanced panel data set.

Three Models

This paper mainly discusses the relationship between corporate bond spreads and ESG rating scores based on several controlled factors. The following models are shown.

Hypothesis 0 model:

$$\begin{aligned} Spread_{i,t} = & \alpha_0 + \alpha_1 ESGRatings_{i,t} + \alpha_2 EBITperInts_{i,t} + \alpha_3 MoneyMultiplier_{i,t} + \alpha_4 ROA_{i,t} \\ & + \alpha_5 Shibor_{i,t} + \alpha_6 StatusShareholders_{i,t} + \varepsilon_{i,t} \end{aligned}$$

Hypothesis 1 model:

$$\begin{aligned} Spread_{i,t} = & \alpha_0 + \alpha_1 ESGRatings_{i,t-1} + \alpha_2 EBITperInts_{i,t-1} + \alpha_3 MoneyMultiplier_{i,t-1} + \alpha_4 ROA_{i,t-1} \\ & + \alpha_5 Shibor_{i,t-1} + \alpha_6 StatusShareholders_{i,t-1} + \varepsilon_{i,t} \end{aligned}$$

Hypothesis 2 model:

$$\begin{aligned} Spread_{i,t} = & \alpha_0 + \alpha_1 ESGRatings_{i,t-2} + \alpha_2 EBITperInts_{i,t-2} + \alpha_3 MoneyMultiplier_{i,t-2} + \alpha_4 ROA_{i,t-2} \\ & + \alpha_5 Shibor_{i,t-2} + \alpha_6 StatusShareholders_{i,t-2} + \varepsilon_{i,t} \end{aligned}$$

Data Analysis

Statistic Description

Based on the collection of the data set, the following is the basic statistic description.

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Table 3 Sample Description

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Spread	3,288	5.607	2.831	0.289	53.01
ESG_Ratings	3,288	6.872	1.206	1	9
EBITperInts	3,288	-15.75	1,986	-108,440	22,120
MoneyMultiplier	3,288	4.790	0.909	3.790	6.618
ROA	3,288	2.862	18.38	-911.7	267.7
Shibor	3,288	3.804	0.962	2.250	5.236
Status_shareholders	3,288	0.609	0.488	0	1

Correlation Test

For a deep understanding of the relationship between a dependent variable and independent variables, this paper makes use of R studio and Stata to do the correlation test for each variable pairwise. The results are in the followings.

Table 4 Correlation Results

	Year	Spread	ESG_Ratings	EBITperInts	MoneyMultiplier	ROA	Shibor	Status_shareholders
Year	1.000							
Spread	.078***	1.000						
ESG_Ratings	-.105***	-.114***	1.000					
EBITperInts	-.011	.011	-.018	1.000				
MoneyMultiplier	.929***	.088***	-.122***	-.005	1.000			
ROA	-.089***	-.005	.078***	.017	-.085***	1.000		
Shibor	.185***	-.006	.036**	.005	-.096***	-.023	1.000	
Status_shareholders	.000	-.115***	.156***	-.015	.000	.028	-.000	1.000

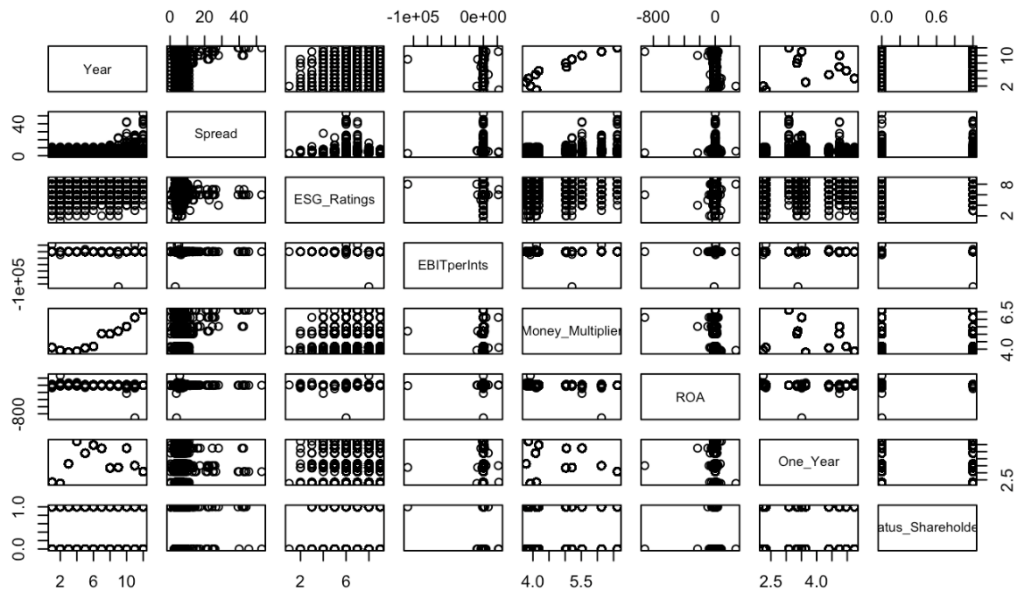


Figure 1 Correlation Results

From the above table and pic, we can find that interest coverage ratio (EBITperInts) and money multiplier (MoneyMultiplier) have a positive correlation with dependent variable spread, and ESG ratings, ROA, Shibor, and nature of status shareholders (Status_Shareholders) have a negative correlation with spread. Second, we can see that the correlations between the explanatory variables show various conditions, such as some have no significant correlation with each other, and some variables have weak correlations.

Based on the basic correlation experience rules that if the absolute value of the correlation coefficient is greater than 0.8, it shows that there is a multicollinearity condition. We have to revise it before we use this model to explain the economic meanings. From the correlation results table, we can draw the conclusion that there is no correlation coefficient greater than 0.8. We can say this model has no multicollinearity effect.

Unit Root Test

Panel data must undergo the unit root test to ensure that the data are stationary and to remove heteroscedasticity in order to avoid the erroneous regression model. The following is the unit root test.

Table 5 Variable Unit Root Test Results

Variable		IPS Test	Conclusion
Spread	t	8.5693	Unstable
	P value	1.0000	
D_Spread	t	-13.2715	Stable
	P value	0.0000	
ESG_Ratings	t	-43.1175	Stable
	P value	0.0000	
EBITperInts	t	-32.2997	Stable
	P value	0.0000	
MoneyMultplier	t	-2.320	Stable
	P value	0.0000	
ROA	t	-30.8161	Stable
	P value	0.0000	
Shibor	t	-2.320	Stable
	P value	0.0000	

From the above table, we can find that variable spread is not stable based on the IPS unit root test. Hence, we continue to perform the first-order difference to test the stationary of the spread. The first-order difference of D_spread shows stationary condition. As a result, there is sufficient evidence to reject the null hypothesis.

1.1 Cointegration Test

Based on the previous unit root test, we'd better use D_spread (first-order difference of spread) inside of spread into the model to further analysis. But some economic explanations might have no meaning. To fix this problem, we should approach the cointegration test to test whether the original variable spread still have a long-term cointegration relationship with the model. If the

spread had a long-term cointegration relationship with other variables, we could still use the original variable spread. The following is the cointegration test.

Westerlund test for cointegration			
H0: No cointegration	Number of panels	=	274
Ha: Some panels are cointegrated	Number of periods	=	12
Cointegrating vector: Panel specific			
Panel means:	Included		
Time trend:	Not included		
AR parameter:	Panel specific		
	Statistic	p-value	
Variance ratio	42.5939	0.0000	

Figure 2 cointegration test Results

From the above cointegration test, we can find that the p-value is less than 0.05, which means the variables have a long-term cointegration relationship with each other. And we could replace spread from D_spread (first-order difference of spread) for further research analysis.

Hausman Test

Hausman test is for panel data to decide to choose the Random Effects Regression Model or Fixed Effects Regression Model. In other words, the Hausman test is mainly used to test whether the random disturbance term is related to the explanatory variable or not. Its basic steps are first to assume that the random disturbance term is uncorrelated with the explanatory variables. And according to the test results, we decided whether to reject the null hypothesis or not. If the test results show rejection of the original hypothesis, it is more reasonable to choose a fixed-effects model for regression analysis. The following are the Hausman test results.

Table 6 Hausman Test Results

Model	Model 1	Model 2	Model 3
t	4.9528	4.6726	3.2682
p-value	0.4217	0.4571	0.6587

Above the Hausman test results, we can find that each model's p-value is greater than 0.05, hence it is better to choose the random model for further research analysis.

Model Results and Analysis

Model 1 Results and Analysis

Table 7 Results of Model 1

	Estimate	Std. Error	Z-Value	P-Value
Intercept	5.3773e+00	4.8595e-01	11.0654	< 2.2e-16 ***
ESG_Ratings	-1.0022e-01	4.9842e-02	-2.0107	0.044359 *
EBITperInts	1.3671e-06	2.0756e-05	0.0659	0.947487
Money_Multiplier	2.6147e-01	4.4735e-02	5.8447	5.074e-09 ***
ROA	9.6449e-04	2.3073e-03	0.4180	0.675934
Shibor	1.2072e-02	4.1482e-02	0.2910	0.771042
Factor (Status_Shareholders)	-6.2754e-01	2.1804e-01	-2.8781	0.004001 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

From the above analysis of Model 1, At a 5 percent level of confidence, we can see that the coefficient of the ESG rating component (ESG Ratings) is significantly negative; its estimate is -0.10022. This indicates that the degree of corporate bond spread will decrease by about 0.1002 units for every unit increase in the ESG rating score at the conclusion of the year term. Hence, companies should increase their ESG rating scores to decrease their issuing bond spreads.

The factor of nature of shareholders for a corporate (Status_Shareholders) stands for whether or not the corporate belongs to a national-owned or private company. We can find that its estimate is significantly negative at the 0.1% confidence level, and its estimate is -0.62754, which means if the corporate were national-owned, the bond spread would be reduced to around 0.62754 units in the same period. It shows that national-owned corporates have the advantage of reducing their bond spreads.

Regarding the macro-factors, we can find that Money supply (Money_Multiplier) has a significant positive impact at the 0.1% confidence level, and its estimate is 0.26147. It indicates that the corporate bond spread will increase by about 0.26147 units for every unit increase in the money supply by the end of the year. However, Shibor shows no significant effects in this model. Hence, not all the central bank's macro interventions could affect the corporate bond spreads.

When it refers to micro-factors, we can find that both ROA (return on assets) and Interest coverage ratio (EBITperInts) have no significant effects on corporate bond spreads. It seems that corporate financial indicators are not very important in affecting corporate bond spreads.

As a result, the first hypothesis has been proven that higher ESG rating scores help corporates lower their bond issuing costs.

Model 2 Results and Analysis

Table 8 Results of Model 2

	Estimate	Std. Error	Z-Value	P-Value
Intercept	5.4528e+00	5.2758e-01	10.3355	< 2.2e-16 ***
ESG_Ratings_Lag1	-1.0553e-01	5.3904e-02	-1.9577	0.050264 .
EBITperInts_Lag1	1.8380e-06	2.1578e-05	0.0852	0.932122
Money_Multiplier_Lag1	3.3233e-01	5.7804e-02	5.7492	8.964e-09 ***
ROA_Lag1	-9.6043e-05	2.4033e-03	-0.0400	0.968123
Shibor_Lag1	-6.6096e-02	4.3976e-02	-1.5030	0.132842
Factor_Lag1 (Status_Shareholders)	-6.2664e-01	2.2609e-01	-2.7717	0.005576 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

The major purpose of Model 2 is to confirm the relationship between the first lagged period of factor ESG rating (ESG_Ratings_Lag1) and no lag period of corporate bond spread. The above table result shows that the first lagged period of ESG rating (ESG_Ratings_Lag1) has a significant negative effect on bond spread at the 10% confidence level, and its estimate is -0.10553, which means for each unit of increase in ESG rating score at the last period of a year, the degree of corporate bond spread will be reduced around 0.10553 units in the current period of a year.

As a result, it proves Model 2's hypothesis that the current ESG rating score will affect the next period of bond spread which could help corporates reduce the issuing costs.

Model 3 Results and Analysis

Table 9 Results of Model 3

	Estimate	Std. Error	Z-Value	P-Value
Intercept	5.1516e+00	5.8261e-01	8.8422	< 2.2e-16 ***
ESG_Ratings_Lag2	-1.4991e-01	5.9442e-02	-2.5219	0.011671 *
EBITperInts_Lag2	5.3578e-06	2.2933e-05	0.2336	0.815273
Money_Multiplier_Lag2	4.2779e-01	7.7651e-02	5.5091	3.607e-08 ***
ROA_Lag2	-4.3926e-03	5.3876e-03	-0.8153	0.414884
Shibor_Lag2	4.5685e-04	4.6674e-02	0.0098	0.992190
Factor_Lag2 (Status_Shareholders)	-6.1096e-01	2.3606e-01	-2.5882	0.009649 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

The major purpose of Model 3 is to confirm the relationship between the second lagged period of factor ESG rating (ESG_Ratings_Lag1) and no lag period of corporate bond spread. The above table result shows that the second lagged period of ESG rating (ESG_Ratings_Lag2) has a significant negative effect on bond spread at the 5% confidence level, and its estimate is -0.14991, which means for each unit of increase in ESG rating score at the last two period of a year, the degree of corporate bond spread will be reduced around 0.14991 units in the current period of a year.

All in all, it proves Model 3's hypothesis that the current ESG rating score will affect the next period of bond spread which could help corporates reduce the issuing costs.

Year's Effects of ESG rating in Model 1

Table 10 Year's Effects on Model 1

	Estimate	Std. Error	Z-Value	P-Value
ESG_Ratings: Factor (Year)2010	2.7229e-02	1.6432e-01	0.1657	0.8683967
ESG_Ratings: Factor (Year)2011	-5.3280e-02	1.7641e-01	-0.3020	0.7626554
ESG_Ratings: Factor (Year)2012	-6.0944e-02	1.7999e-01	-0.3386	0.7349383
ESG_Ratings: Factor (Year)2013	-2.6535e-02	1.8202e-01	-0.1458	0.8841007
ESG_Ratings: Factor (Year)2014	-9.4599e-02	1.9080e-01	-0.4958	0.6200630
ESG_Ratings: Factor (Year)2015	-1.8684e-02	1.8528e-01	-0.1008	0.9196805
ESG_Ratings: Factor (Year)2016	-1.9624e-01	1.8046e-01	-1.0874	0.2769187
ESG_Ratings: Factor (Year)2017	-2.3289e-01	1.8471e-01	-1.2608	0.2074558
ESG_Ratings: Factor (Year)2018	-5.3410e-01	1.9239e-01	-2.7762	0.0055318 **
ESG_Ratings: Factor (Year)2019	-5.8363e-02	2.1403e-01	-0.2727	0.7851141
ESG_Ratings: Factor (Year)2020	-7.4727e-01	2.3404e-01	-3.1929	0.0014217 **

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

The factor (ESG_Ratings: Factor (Year) 20XX) means the coefficient of difference between the base year 2009 and the rest of the years. From the above, we can find that, first, with year increases, the estimates between 20XX and 2009 are increasing more and more. It means that with the year changes, ESG rating scores for each corporate have more influence on the company bond spreads, which will be reduced the cost during the year increasing. Second, we can see that during the years 2018 and 2020, the estimates have a significant negative effect on bond spread at the 99.9% confidence level. The correlations between year effects on ESG rating scores and the corporate bond spreads have become more significant during the last two years.

Conclusion and Discussion

Conclusion

This study focuses on the relationship between ESG ratings and corporate bond spreads in China. Using a dataset of 3,288 samples from listed corporations, the study incorporates macro and micro factors as control variables in the regression models. Key findings include:

ESG Impact on Bond Spreads: ESG ratings have a significant negative effect on corporate bond spreads, with stronger impacts observed in lagged periods. This indicates that higher ESG ratings can reduce financing costs over time, highlighting the long-term value of strong ESG performance.

Yearly Effects: Analysis shows that the impact of ESG ratings on bond spreads increases over time, particularly after 2018, when the China Securities Regulatory Commission incorporated ESG into corporate governance. This suggests that companies in China are improving their ESG practices, which is increasingly reflected in bond spreads.

Corporate Nature: State-owned enterprises benefit from lower bond spreads compared to private companies, likely due to stronger credit backing from the government, which increases investor confidence.

Money Supply and Bond Spreads: Money supply is the only macroeconomic factor with a significant positive effect on bond spreads. Increased liquidity from the central bank lowers loan interest rates, making bond issuance less necessary for financing, while tighter liquidity environments lead to higher bond spreads.

Financial Metrics: Traditional financial metrics, like interest coverage ratio and ROA, do not significantly correlate with bond spreads, suggesting that investors are increasingly valuing potential long-term growth over short-term financial performance, particularly in high-tech firms.

Discussion

ESG is becoming increasingly important, with investments in green bonds and related products on the rise. However, more research is needed to fully understand how ESG ratings influence corporate behavior and investor attraction. This study contributes to this field by highlighting several key insights:

Improving ESG Ratings: Listed companies should focus on enhancing their ESG ratings, as this can reduce financing costs and contribute to long-term societal benefits.

Long-Term Focus: Stakeholders should prioritize long-term goals, such as ESG performance, over

short-term financial metrics. Additionally, state-owned enterprises should offer more support to private companies to balance the financing advantages they inherently enjoy.

Role of the Central Bank: The central bank plays a crucial role in influencing bond spreads through its control of money supply. It should act as a mediator to support companies through varying economic conditions, ensuring a balanced and supportive environment for corporate financing.

Limitations and Further Work

Limitations

This research holds significant value, but it has several limitations:

Sample Representation: While the study includes all listed companies in China, it does not represent unlisted companies, which form the majority in the real world.

ESG Rating Agencies: The study does not account for the varying effects of different third-party ESG rating agencies, which use different methodologies, potentially leading to inconsistent scores for the same company.

Limited Factors: Only two macro and two micro factors were considered, which may not fully capture the broader economic context or corporate specifics.

Geographic Focus: The study is limited to Chinese listed companies, where ESG considerations were adopted later than in Europe, Japan, and the U.S. A longer timeline could provide more accurate results.

6.2 Further Work

To address these limitations, future research should:

Expand the Sample: Include unlisted companies and account for the influence of different ESG rating agencies by creating a composite score from multiple sources to avoid reliance on a single rating.

Broaden Factor Consideration: Incorporate additional macroeconomic factors, company size, and the impact of newly issued bonds to deepen the understanding of ESG's influence on bond spreads.

Include Overseas-Listed Companies: Compare Chinese companies listed abroad with those listed domestically to explore differences in ESG impacts, especially in markets with different regulatory environments.

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