



PUEY UNGPHAKORN INSTITUTE
FOR ECONOMIC RESEARCH

ESG and Creditworthiness: Two Contrary Evidence from Major Asian Markets

by

Natthawat Jamprasert, Pornpichaya Kuwalairat,
Narapong Srivisal, Jananya Stienchoak

March 2020

Discussion Paper

No. 129

The opinions expressed in this discussion paper are those of the author(s) and should not be attributed to the Puey Ungphakorn Institute for Economic Research.

ESG and Creditworthiness: Two Contrary Evidence from Major Asian Markets

Natthawat Jamprasert^(a), Pornpichaya Kuwalairat^(b), Narapong Srivisal^(b,c), Jananya Sthienchoak^(b)

(a) Student, Master of Science in Finance (MSF) program, Chulalongkorn Business School

(b) Department of Banking and Finance, Chulalongkorn Business School

(c) Social Innovation Research Unit, Chulalongkorn University

Abstract

Assets managed under sustainable investment criteria have been massively growing during the recent years. Among the criteria, environmental, social and governance (ESG) score leads the group as an important indicator of non-financial quality of a firm, which may reflect value to investors either through higher expected profit or lower risk. In this paper, we focus on the latter by exploring whether ESG score has any impact on the credit rating of firms due to the risk mitigation effect. Ordered logistic regressions were applied on a panel dataset of listed companies in Shanghai and Tokyo Stock Exchanges over 2009 – 2018. The results suggest that only in Japan, having ESG coverage is greatly associated with being awarded higher credit rating. However, just the environmental and governance pillars positively affect the Japanese firms' credit ratings, while the social pillar shows negative effect.

Keywords: *ESG, Issuer Credit Rating, Ordered Logit, China, Japan*

INTRODUCTION

Globally, the sustainable investment criteria are rapidly gaining attentions from investors and asset managers. Among them, environmental, social and governance (ESG) score stands out as the leading indicator of non-financial quality of a firm, as it encompasses many issues that capture almost every aspect of a company's operation including carbon emission, pollution, standards relevant to both employees and customers, supply chain management, community relations, corporate governance, transparency, and business ethics. According to the Global Sustainable Investment Review 2018, assets managed under the sustainable investment estimated USD 30.7 trillion in 2018, a significant growth from within 4-years period as illustrated in Table 1.

Table 1

Global Sustainable Investing Assets from 2014 to 2018 (USD billion)

Region	Performance in 2014	Performance in 2018	Growth in 4-years
Europe	10,775	14,075	31%
United States	6,572	11,995	83%
Canada	729	1,699	133%
Australia/New Zealand	148	734	396%
Japan	45	2,180	4,744%
Total	18,269	30,683	68%

Note: Data from the Global Sustainable Investment Review (GSIA) 2018.

A comprehensive academic survey by Friede, et al. (2015) conducted a vote-count that combined the finding of 2,200 studies on ESG-Corporate financial performance (CFP) relationship and reported that 90% of studies found non-negative relation, where 62.6% of the studies showed a positive correlation between ESG factors and financial performance. Alpha studies such as Barnett and Salomon (2006), Bauer et al. (2006), and Renneboog, et al. (2008) examined abnormal returns on equity investment strategies based on ESG criteria. However, Friede, et al. (2015) and Kolbel and Busch (2017) found that the effect of ESG portfolio returns was neutral compared to conventional strategies due to i) information advantage no longer existed as financial markets as a whole tended to incorporate ESG criteria relatively quickly and ii) ESG alpha was wiped out due to fees.

ESG-risk researches, which are most relevant to the interest of our paper, attempted to explain the link between ESG and firm performance by looking at risk mitigation effect based on stakeholder theory. They suggested that firms have the relationship with different stakeholders in society, including consumers, regulators, and environmental advocates; thus, an increase in social spending could improve stakeholder relationship, which in turn reduced the firms' social cost and increased market opportunities, leading to higher net financial performance and risk reduction (see Freeman (1994) for example). Previous studies took different approaches, methodologies, data sets, and time frames to explore the topic. They explored different measures of risk metrics such as credit default swaps, bond yields, bond spreads, credit risk, cost of debt and equity, and bond ratings, all of which have produced mixed results (see for instance, El Ghouli et al. (2011), Menz (2010), Goss and Roberts (2011), Ge and Liu (2015), and Stellner et al. (2015))

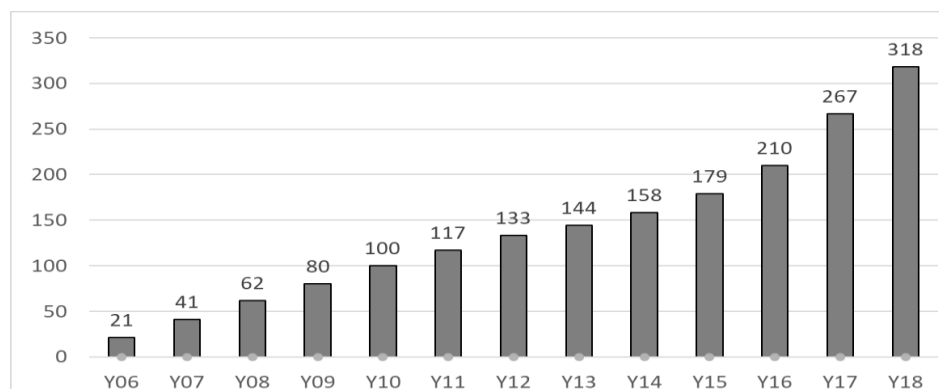
More recent studies explored ESG-fixed income relationships. First, it appeared in Capelle-Blancard et al. (2019) that countries with above-average ESG performance were associated with lower default risk and lower sovereign bond yield spreads. Tang and Zhang (2018) and Zerbib (2019) showed that yield of a green bond was

slightly lower than that of a conventional bond, and stock prices positively responded to green bond issuance upon announcement. Furthermore, Lin and Dong (2018) documented that firms with higher prior history of CSR engagement were less likely to file for bankruptcy when they were in deep financial distress but more likely to experience accelerated recovery from distress. Another study by Li et al. (2018) focusing on ESG disclosure found that disclosure of ESG improved transparency and enhanced stakeholder trust.

Furthermore, signatory's data from the United Nations Principles for Responsible Investment, launched in 2006, suggest that there is a strong interest in ESG from Asia-Pacific region. Figure 1 shows cumulative signatories from 2006 to 2018 from 11 countries. Australia is leading at 136 signatories to date, followed by Japan with 67 signatories. 27 from Hong Kong, 26 from New Zealand, 19 from Singapore and ranked 6th is China with 18 signatories, relative to 2,232 signatories globally.

Figure 1

Cumulative Signatories from Asia-Pacific Countries



Note: Data from the UN's Principle for Responsible Investment 2018

Our paper seeks to advance the knowledge in this area on two fronts. First, we focus on the overall credit rating of a company instead of specific measure of risk metrics to provide a different view on the topic. Secondly, we investigate possible heterogeneity effects by exploring two major Asian markets, namely China and Japan, where firms have important organizational and behavioural differences from those in developed markets. Moreover, Asian is interesting as the previous uptake of ESG investing in Asia was slower than other regions. Oliver Wyman (2018) argued that this was attributed to resource gap, lack of collective effort, and short-termism that tended to prioritize economic growth and focused on short-term returns. However, the perception of investors in Asia toward ESG investing have been dramatically changing. The interest is now strongest in Japan where sustainable investing assets have grown more than 4,500% within just 4-years period.

We apply ordered logistic regressions with a panel dataset of companies listed on Shanghai and Tokyo stock exchange markets in order to document whether having better ESG can affect creditworthiness of a company. Furthermore, we explore at a more micro level to see the effect of each individual pillar of the ESG, namely environmental (E), social (S), and governance (G), on credit rating. We find that, only in Japan, having ESG coverage is greatly associated with being awarded higher credit rating. Particularly, the E and G pillars of the ESG score positively affects the credit rating of firms in Japan statistically, while the S pillar has the opposite impact. In contrast, no effect of ESG disclosure and betterment on creditworthiness is found in China. This paper,

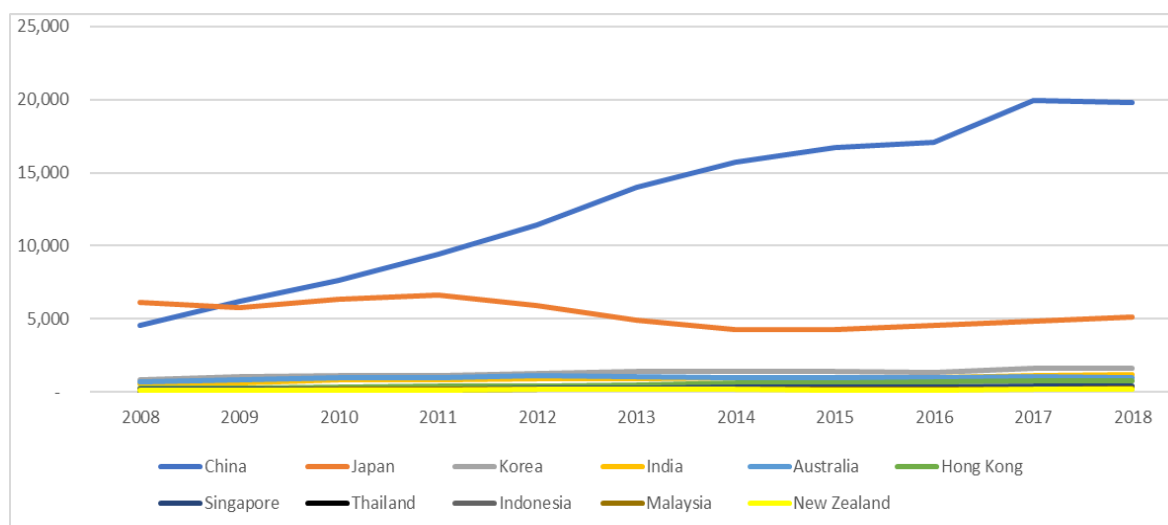
thus, contributes to the ongoing debate on the impact of nonfinancial disclosure on firms' creditworthiness assessment by pointing out heterogeneous effects that may depend on market structures.

PROBLEM STATEMENT

The perception of investors in Asia toward ESG investing has been changing against the backdrop of increasing corporate debt. The region has an increasing commitment to ESG principles with 318 outstanding signatories in 2018 starting with just 21 signatories in 2006. Excluding Australia and New Zealand, Japan has seen an increasing amount of sustainable investing assets within the last 4 years due to structural changes in collective effort¹. Similarly, in China, despite the slower effort to incorporate ESG by private sector, the Chinese government has been pushing for greening economic development since 2014. In parallel, the data from Bank for International Settlements (BIS) show that China's and Japan's non-financial corporate debts are significantly higher than other Asia-Pacific countries (see Figure 2), suggesting that there is a robust credit market in both countries. Nonetheless, both capital and credit market structures of the two countries, Japan and China, are quite distinct. So, it is interesting to examine linkages between ESG and credit market in these two major Asian markets and document possible heterogeneity.

Figure 2

Asia-Pacific Non-Financial Corporate Debt (USD billion)



Note: Data from the Bank for International Settlements (BIS): Credit to Non-Financial Sector Statistics (BIS)

RESEARCH QUESTIONS

As environmental, social, and governance (ESG) becomes on focus of investors in the two major Asian markets with robust credit markets, the important questions are whether the pursuit of ESG disclosure and betterment enhances firms' overall creditworthiness and whether the impacts of ESG on creditworthiness vary across markets. This research investigates the effect of the environmental, social, and governance (ESG) score on credit

¹ Japan's Financial Service Agency (FSA) launched the Japanese Stewardship Code in 2014 that paved way for corporate reform by encouraging sustainable investing practices.

rating of companies from China and Japan. It investigates whether ESG score can have any impact on a non-financial company's creditworthiness; hence, financial risk reduction effect. In the context of credit-rating issuers, the expectation is that credit rating agencies (CRA) would award higher rating for companies with strong ESG profile; then investors would have to charge less interest i.e. expected lower risk premium, when lending companies with higher credit ratings.

PURPOSE OF THE STUDY

The study contributes to the strand of literature that investigates the ESG and risk relationship by adding evidence from Asian markets, namely China and Japan, where previous studies have been solely focused on Europe and US samples. Furthermore, it provides empirical evidence to explore the extent to which ESG material information is transmitted onto credit rating scores. China and Japan are chosen for their similarities in terms of both being major Asian capital markets, having sizable credit market proxied by non-financial corporate debt outstanding, and growing interests in ESG investment. Yet, market structures of the two countries are quite contrast as Japanese market is well developed, but China is still considered emerging economy. Consequently, the finding of this study will also contribute to the ongoing debate on the impact of nonfinancial disclosure on firms' creditworthiness assessment by pointing out whether differences in market structures may lead to distinct impact of ESG on creditworthiness.

RESEARCH METHODS

In order to examine the effect of environmental, social, and governance (ESG) disclosure and performance on creditworthiness, we employ the ordered logistic regression model because the explained variable is of ordinal categories rather than continuous. More precisely, this study uses long-term issuer credit rating as the explained variable, as it represents a forward-looking opinion on overall creditworthiness of a company without specification to any financial obligation or bond issue. The data are drawn from local credit rating agencies (CRA) specific to each market: *Lianhe*, *Chengxin International* and *Brilliance* for companies from China and *Japan Credit Rating Agency (JCR)* and *Rating and Investment Information (R&I)* for those from Japan. We use local rather than standardized global credit rating agencies due to limitation in global rating coverage in Asia. Anyhow, these are among the best information on credit rating available to investors and, therefore, should be link to investors' views toward credit risk levels of the firm. We then recode the ratings into ordinal number by assigning value 8 for rating AAA, 7 for AA+, 6 for AA, 5 for AA-, 4 for A+, 3 for A, 2 for A-, and 1 for BBB+ to BBB- covering the entire investment grade categories. The distributions of the credit ratings in our dataset are tabulated in Table 2.

Table 2

Distributions of Issuer Credit Ratings

Recoded Rating	1 BBB+	2 A-	3 A	4 A+	5 AA-	6 AA	7 AA+	8 AAA	Total
China	23	10	9	14	31	118	159	365	729
Japan	206	276	364	284	314	224	112	59	1,839
Total	229	286	373	298	345	342	271	424	2,568

For the main explanatory variables, we rely on ESG score reports published on Bloomberg Terminal. We use the dummy variable for whether the Bloomberg ESG score for a company is available to proxy for ESG disclosure. To measure ESG performance, we employ, first, the overall ESG score of a company and, second, each of the main pillar scores: environmental (E), social (S) and governance (G). All these scores range from 1, which is the lowest performance, to 100, which means the best. Objectively, the score should reflect internal operation excellence of a company. It shows how well a company can address its ESG concerns through balancing act between various stakeholders' interests and profits; hence, a company with stronger ESG profile should be more desirable for investors. Our study covers a panel of publicly traded companies from Shanghai Shenzhen CSI300 and Nikkei225 during the year 2009 to 2018, excluding firms in financial sectors. Table 3 illustrates the number of companies in our data set.

Table 3

Number of Companies in the Dataset

Country	Index	Total public companies	Excluded/not available	Available data	Available data (%)
China	CSI300	300	116	134	45%
Japan	Nikkei225	225	41	184	82%
Total		525	157	318	61%

In addition, we control for each company's debt-to-total-equity ratio (DE), EBIT-to-total-revenue ratio (*EBITrev*), market capitalization (*mcap*), total revenue (*totrev*), EBITDA, and total assets (*totasset*), as it has been documented in the mainstream literature that these financial variables could affect a company's credit risk and, thereby, rating. All the control variables are retrieved from Thomson Reuters Eikon.

In sum, our study is based on the ordered logistic regression models with the re-coded ordered credit rating as the dependent variable, regressing on

Model I:

$$\beta_0 + \gamma_1 disclosure_i + \beta_2 DE_i + \beta_3 EBITrev_i + \beta_4 mcap_i + \beta_5 totrev_i + \beta_6 EBITDA_i + \beta_7 totasset_i$$

Model II:

$$\beta_0 + \gamma_1 ESG_i + \beta_2 DE_i + \beta_3 EBITrev_i + \beta_4 mcap_i + \beta_5 totrev_i + \beta_6 EBITDA_i + \beta_7 totasset_i$$

Model III:

$$\beta_0 + \gamma_1 E_i + \gamma_2 S_i + \gamma_3 G_i + \beta_4 DE_i + \beta_5 EBITrev_i + \beta_6 mcap_i + \beta_7 totrev_i + \beta_8 EBITDA_i + \beta_9 totasset_i$$

where *disclosure_i* in Model I takes numerical of one when the company *i* has Bloomberg ESG score reported; *ESG_i* in Model II captures the overall Bloomberg ESG score of the company *i*; and *E*, *S*, and *G* in Model III denote the environmental, social, and governance pillar scores respectively. For Model II and III, we first estimate them by using all the companies in the dataset both with or without ESG scores and, subsequently for robustness check, investigate the sub-sample that includes only the companies with available ESG scores.

EMPIRICAL FINDINGS

Table 4 below presents the main findings of our study based on the full samples comprising both the companies with and without Bloomberg ESG scores. The column *Coef* shows the ordered logistic estimates of the coefficients γ of each of the models specified in the previous section. The column *Odds Ratio* provides the exponential values of the estimated γ 's, which capture the impact of a unit change in the ESG-related variable on the odds of receiving better credit rating. As trivial in the table, the estimates of all the models for China fail to have statistical significance, suggesting that ESG seems to have no impact on creditworthiness of the companies listed on Shanghai Shenzhen CSI300. On the contrary, several significance effects are revealed for the companies listed on Japan's Nikkei225. Naturally therefore, the two-country pooled sample estimates are similar to those of Japan, as the results are driven by explanatory power of the Japanese observations.

Table 4

Full-Sample Estimated Coefficients and Changes in Odds of Receiving Better Credit Rating

		Coef.	Odds Ratio	Obs.	Pseudo R2
Model I	Pooled	0.625***	1.868***	2,268	0.107
	China	0.291	1.338	600	0.207
	Japan	0.449***	1.566***	1,668	0.193
Model II	Pooled	-0.008***	0.991***	2,268	0.105
	China	0.001	1.000	600	0.207
	Japan	0.007***	1.007***	1,668	0.192
Model III (Environment)	Pooled	-0.043***	0.956***	2,268	0.127
	China	-0.004	0.996	600	0.208
	Japan	0.009**	1.009**	1,668	0.194
Model III (Social)	Pooled	0.005	1.005	2,268	0.127
	China	-0.002	0.997	600	0.208
	Japan	-0.014***	0.985***	1,668	0.194
Model III (Governance)	Pooled	0.035***	1.035***	2,268	0.127
	China	0.008	1.008	600	0.208
	Japan	0.009*	1.009*	1,668	0.194

***, **, and * indicate statistical significance at 1%, 5%, and 10% level respectively

The result of Model I indicates that availability of Bloomberg ESG score increases the odds of getting better rated by 1.566 times in Japan. A plausible explanation is that Bloomberg ESG coverage may be an indirect result of extra disclosures and sustainable efforts to achieve transparency of a company, which is positively recognized by credit rating agencies in Japan. Similarly, the result of Model II suggests that an ESG score improvement, either by having Bloomberg ESG score or receiving higher score, helps increase the odds of having better credit rating in Japan. Zooming in to the pillar level, we can see that the positive impact on credit rating comes from the environment and governance pillars, while a better social score contributes to an increase in the odds of getting worse credit rating. Our conjecture is that the credit rating agencies in Japan may punish firms with more social contribution as they are prone to incur higher costs without expected returns. However, while more environmentally friendly practice also comes at cost, it is unsurprising to see better credit rating

corresponding to better environmental score in a country like Japan, which stands at the end of the Environmental Kuznets Curve where people are highly concerned of environment. A Japanese company with poor environmental management could be severely punished by clients and partners and, in turn, affected by poorer company's business outlook. Last, a company with better governance can result in better management and more efficient operations.

As for robustness check, we re-estimate Model II and III with the sub-sample that excludes observations without Bloomberg ESG scores. As showed in Table 5, the sub-sample results are largely unchanged, except that the impact of the overall ESG score on better credit rating in Japan becomes insignificant. This is because the previous significance of the ESG score found when using the full sample is driven by the distinct credit ratings between the firms having ESG scores and those that do not. The finding suggests that having ESG score coverage is good for credit rating but having higher ESG score does not always translate to higher credit ratings, partly because there exist countering forces of positive impacts from the environmental (E) and governance (G) pillars and negative impact from the social pillar.

Table 5

Sub-Sample Estimated Coefficients and Changes in Odds of Receiving Better Credit Rating

		Coef.	Odds Ratio	Obs.	Pseudo R2
Model II	Pooled	-0.051***	0.951***	2,015	0.122
	China	-0.001	0.998	574	0.189
	Japan	-0.001	0.998	1,441	0.191
Model III (Environment)	Pooled	-0.043***	0.957***	2,015	0.127
	China	-0.002	0.997	574	0.189
	Japan	0.009**	1.001**	1,441	0.194
Model III (Social)	Pooled	0.006	1.006	2015	0.127
	China	-0.002	0.997	574	0.189
	Japan	-0.015***	0.984***	1,441	0.194
Model III (Governance)	Pooled	0.026***	1.026***	2,015	0.127
	China	0.011	1.011	574	0.189
	Japan	0.013*	1.013*	1441	0.194

***, **, and * indicate statistical significance at 1%, 5%, and 10% level respectively

Finally, we would like to mention limitations of our study. Firstly, as illustrated in Table 2, credit rating variation is very low in China. Out of all the Chinese companies we have in the data set, 88 percent of the credit rating scores are tilted toward AA to AAA. It is possible that this lack of variation in credit ratings causes inadequate statistical power to detect the ESG effect in China. Secondly, ESG calculation methodologies differ across data providers.

CONCLUSION

The study explores linkages between Bloomberg ESG score and performance on issuer's credit rating by providing comparative empirical evidence from two major Asian markets, namely China and Japan. The study runs both pooled and country-level analyses, as well as a sub-sample for robustness check. On the one hand, we

cannot find the relationship between the ESG score and credit rating in China. On the other hand, the results from Japan suggest that having ESG coverage is greatly associated with higher credit rating. However, once having the ESG score, stronger ESG performance does not necessarily translate to higher credit rating because there exist counter effects among the pillars: positive effects of the environmental (E) and governance (G) pillars but negative effect of the other.

ACKNOWLEDGEMENTS

We would like to thank Chulalongkorn Business School and Chulalongkorn Social Innovation Research Unit for the facilitative research environment.

REFERENCES

- Barnett, M., & Salomon, R. M. (2006). Beyond Dichotomy: The Curvilinear Relationship between Social Responsibility and Financial Performance. *Strategic Management Journal*, 27(11), 1101-1122
- Bauer, R., Otten, R., & Rad, A. T. (2006). Ethical Investing in Australia: Is There a Financial Penalty? *Pacific-Basin: Finance Journal*, 14(1), 33-48
- Capelle-Blancard, G., Crifo, P., Diaye, M.-A., Oueghlissi, R., & Scholtens, B. (2019). Sovereign Bond Yield Spreads and Sustainability: An Empirical Analysis of OECD Countries. *Journal of Banking and Finance*, 98(1), 156-169
- El Ghoul, S., Guedham, O., Kwok, C. C., & Mishra, D. R. (2011). Does Corporate Social Responsibility Affect the Cost of Capital? *Journal of Banking & Finance*, 35(9), 2388-2406
- Freeman, E. R. (1994). The Politics of Stakeholder Theory: Some Future Directions. *Business Ethics Quarterly*, 4(4), 409-421
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and Financial Performance: Aggregated Evidence from More than 2000 Empirical Studies. *Journal of Sustainable Finance & Investment*, 5(4), 210-233
- Ge, W., & Liu, M. (2015). Corporate Social Responsibility and the Cost of Corporate Bonds. *Journal of Accounting and Public Policy*, 34(6), 597-624
- Goss, A., & Roberts, G. (2011). The Impact of Corporate Social Responsibility on the Cost of Bank Loans. *Journal of Banking and Finance*, 35(7), 1794-1810
- Kolbel, J., & Busch, T. (2017). *The Link between ESG, Alpha, and the Cost of Capital: Implications for Investors and CFOs*. www.cf-fachportal.de
- Li, Y., Gong, M., Zhang, X.-Y., & Koh, L. (2018). The Impact of Environmental, Social, and Governance Disclosure on Firm Value: The Role of CEO Power. *The British Accounting Review*, 50(1), 60-75

- Lin, K., & Dong, X. (2018). Corporate Social Responsibility Engagment of Financially Distressed Firms and their Bankruptcy Likelihood. *Advances in Accounting*, 43(1), 32-45
- Menz, K. (2010). Corporate Social Responsibility: Is It Rewarded by the Corporate Bond Market? A Critical Note. *Journal of Business Ethics* ,96(1), 117-134
- Oliver Wyman. (2018). *Driving ESG Investing in Asia*. Marsh & McLennan, Asia Pacific Risk Center. Oliver Wyman publication.
- Renneboog, L., Horst, J. t., & Zhang, C. (2008). Socially Responsible Investments: Institutional Aspects, Performance, and Investor Behavior. *Journal of Banking & Finance*, 32(9), 1723-1742
- Stellner, C., Klein, C., & Zwergel, B. (2015). Corporate Social Responsibility and Eurozone Corporate Bonds: The Moderating Role of Country Sustainability. *Journal of Banking & Finance*. 59(1), 538-549
- Tang, D. Y., & Zhang, Y. (2018). Do Shareholders Benefit from Green Bonds. *Journal of Corporate Finance*. <https://doi.org/10.1016/j.jcorpfin.2018.12.001>
- The Global Sustainable Investment Alliance (GSIA). (2018). *2018 Global Sustainable Investment Review*. Retrieved from www.gis-alliance.org
- Zerbib, O. D. (2019). The Effect of Pro-environmental Preference on Bond Prices: Evidence from Green Bonds. *Journal of Banking and Finance*, 98(1), 39-60