



Sustainable premium of sustainable corporate bonds in Indonesia

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ABSTRACT

This study aims to investigate the sustainable premium on sustainable bonds issued by companies in Indonesia and the influence of the determinants of yield sustainable corporate bonds in Indonesia during 2020-2023. Amid its abundant issuance, the study found that there was no sustainable premium on sustainable corporate bonds in Indonesia during the period of the research. This happened due to the influence of market conditions during the pandemic Covid-19 and post pandemic Covid-19. However, the trend of yield to maturity's movement of sustainable bonds annually tend to go down and flat which implies that risk of sustainable bond also declines as it is on post pandemic era. As for ESG risk, bond's rating, GDP, inflation and bond type are having significant effect on yield to maturity of sustainable bonds, while modified duration and issue terms did not have significant effect on sustainable bonds' yield.

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INTRODUCTION

Global issuance of sustainability bonds has grown rapidly as the increasing awareness of climate and sustainability issues. Eventhough US and Europe market has been the drivers of the sustainable bonds, market in Asia has grown but remain modest in scale (UNDP, 2024). ASEAN's green bond market has already showed promising signs of significant growth, with room for additional expansion (ADB, 2022). In Indonesia, demand for green bonds is growing, driven by Indonesia's focus on sustainable finance and its commitment to the UN Sustainable Development Goals (SDGs). The Indonesian government has been actively promoting sustainable finance initiatives, including the launch of Indonesia's first SDG-linked bond in September 2021 (PwC Indonesia - ESG Team, 2023). The growing demand for sustainable bonds is expected to continue, driven by investors' shifting priorities to ESG metrics and the need for companies to manage physical and energy transition risks. This is driven by investors seeking to align their investments

with their values and benefit from the long-term sustainability benefits these bonds offer (Lhutfi et al., 2024).

Sustainable bonds is related closely with the values of ESG (*Environmental, Social, and Governance*) since its combine green and social financing project as well as the issuers' achievement to meet with the sustainability's target. Since the main difference of sustainable bonds and conventional bonds is on the purpose of the financing, ESG values become one of the considerations for investors. Several studies have shown that ESG ratings can have a positive impact on the pricing of sustainable bonds, especially in the context of green bonds (Dorfleitner et al., 2022). This phenomenon is often referred to as "Greenium", namely investors are willing accept lower returns in exchange for an environmentally friendly of the bond or its issuer (Ahmadi & Feldhütter, 2023). According to report by ADB (2022), the sustainable bonds in ASEAN+3 countries enjoy the greenium that benefit funding costs, build social capital by strengthening an issuer's reputation with stakeholders, gain positive investor recognition, and attract a more diversified investor base. Moreover, the report Climate Bonds Initiative (2021) shows that Indonesia Green Sukuk in early 2021 priced at greenium. Still, the study related with the greenium of green bonds and sustainable bonds that issued by the corporate sectors in Indonesia has not been conducted.

The difference in the premium price of sustainable bonds is a *trade off* from investors on the benefits of bonds for environmental sustainability. Investors who prioritize the environmental and social benefits of bonds may accept lower returns on the environmental benefits financed by sustainable bonds (Löffler Kristin, 2022). ESG ratings can be a signal of a company's commitment to the environment and increased transparency that will reduce information asymmetry. So the label "sustainable bonds" can increase transparency on sustainability and a sustainable premium will exist.

However, currently the coverage of ESG ratings in Indonesia is relatively low, where in 2021 data from the OECD, only 23% of public companies in Indonesia have ESG ratings, compared to other developed countries on average above 50%. In Southeast Asia, ESG ratings for public companies are 68% in Malaysia and 84% in Singapore (OECD, 2023).

Various studies related to ESG ratings with company performance have been conducted which show a relationship between the two. ESG ratings can be one of the signals regarding a company's financial performance because high ESG values can reflect the company's ability to manage risks, both those related to the environment, employee relations, and corporate governance (Pulino et al., 2022). In addition, ESG ratings are also related to the company's sustainability in terms of efficient use of company resources and better company relations with consumers. Specifically, research on the relationship between ESG performance and bond spreads and performance has a positive relationship (Lian et al., 2023).

Research shows that ESG ratings can have a positive impact on the pricing of green bonds in public companies in the United States (Helmig, 2021). According to the research (Wang Juan Wu, 2022) it was found that there was high investor interest in green bonds have an impact on the pricing of green bonds. That is to say that the ESG rating of green bonds has linked with the green premium of the green bonds

Sustainable financing has become trends in finance industry as it helps to address climate change that become the global issues. The value of green bonds issued grew 15 per cent to \$587 billion in 2023, from \$509 billion in 2022, representing two thirds of sustainable bond issuance (UNCTAD, 2023).

Moreover, Research by the Climate Bonds Initiative in 2021 has shown that investors are willing to absorb a "greenium" (lower yield and/or higher price) that is usually associated with green bonds, indicating the strength of demand for green versus traditional bonds (UNCTAD, 2023). The price difference between sustainable bonds and conventional bonds, that called

greenium, meaning the investors are willing to pay (Ahmadi & Feldhütter, 2023). This greenium is seen by investors as a cost for reducing risk (Windmar & Fischer, 2023).

The existence of sustainable bond premiums when associated with modern portfolio theory will show differences, especially in the assumptions of rational investors, efficient markets and expected investment returns (Dorfleitner et al., 2022). In determining the price of sustainable bonds, there is a difference between the price of sustainable bonds and the price of conventional bonds. This phenomenon can be explained by the behavioral theory of finance that investors have irrational behavior and have a number of emotional biases. (Kahneman & Tversky, 1979). Specifically regarding investment instruments with the aim of environmental sustainability, investors have a view to be able to do good for the environment by choosing sustainable investments. This can be seen as an irrational action because sustainable bonds can be priced higher than conventional bonds. The higher price is compensation from the investor's non-financial benefits (Wang Juan Wu, 2022). Therefore, it is necessary to examine whether this price difference really exists.

The demand of sustainable bonds also closely linked with the ESG rating of the issuer company. Research on ESG ratings linked to bond performance has found that bonds with high ESG ratings have outperformed their lower-rated peers when controlling for a range of risks (Windmar & Fischer, 2023). This is because companies with higher ESG scores have a good reputation and are perceived to carry lower long-term risk, and therefore can raise capital at a lower cost (Windmar & Fischer, 2023).

As the view of high ESG scores perceived has low risk, so it is important to note that higher ESG scores of bond issuers are associated with higher short interest rates, lower selling of bonds. This implies that ESG ratings can affect the level of short selling in the corporate bond market where lower ESG performance is associated with higher short rates higher selling. It is seen by investors that low ESG performance is closely related to *default risk* (Li et al., 2024). It also noted that non-standardized ESG rating systems widen bond spreads (Zou et al., 2023).

So, as one of the factors that play significant factors in deciding the investment, the investors' awareness of the ESG score is increasing (Kim & Li, 2021). It is perceived that ESG could become the signal of the company commitment to the sustainability issues and building stakeholders' trust.

Investors' commitment to ESG is reflected in the growth of investors' sustainability strategies (Ditlev-Simonsen, 2022). The ESG ratings can be a signal for investors to see a company's commitment to sustainability and social responsibility that is in line with the values held by investors. Companies that issued sustainable bonds considered practicing sustainability and ESG principles and values are seen as having the potential to reduce credit risk. In turn, ESG ratings complement credit ratings providing additional information on risk and performance (Mendiratta et al., 2021). Companies with higher ESG ratings have better cash flows, higher levels of risk exposure and lower work incidents compared to companies with lower ESG ratings. This can be interpreted that companies with higher ESG ratings have a positive reputation for sustainability can attract more investors, thus becoming an added value in attracting corporate financing.

Furthermore, companies that demonstrate concern for the environment and sustainability reflected in ESG ratings can result in building stakeholder trust in the company's commitment to reducing waste and carbon emissions (Kumar, 2023). The success of a company's business can be seen from the interaction between company stakeholders (customers, suppliers, employees, investors, for example bondholders, communities, managers, and others) in creating company value (Parmar R Edward Freeman Jeffrey S Harrison & Edward, 2010). This relationship can change over time and company executives can manage this relationship to create value. ESG score could become the values that will boost the confidence on the stakeholders.

Several researches in bonds and ESG Score in ASEAN 5 market (Singapore, Thailand, Malaysia, Philippines and Indonesia) showed that ESG Score has a positive effect on companies in the form of lower cost of debt, lowering bond spread, and reduced credit risk (Budiarto & Nainggolan, 2023; Suzandry & Hermawan, 2024). Furthermore, in Indonesia context, research on ESG ratings has been conducted quite a lot by investigate at the positive influence of ESG on company value (Adhi Ryan Edriansyah & Cahyonowati Nur, 2023; Anna Melinda, 2019; Sanjaya, 2023; Utomo Mudzakir & Rini Demi Pangestuti, 2023). While research on ESG ratings and sustainable bonds, especially regarding bond pricing or sustainable bond premium of the corporate sustainable bonds, has never been studied further. This study aims to provide an overview to public companies in Indonesia regarding the existence of sustainable premium and the influence of ESG rating as well as other determinants to yield to maturity of corporate sustainable bonds.

RESEARCH METHOD

This study analyze the sustainable premium of sustainable bonds by comparing the difference between the performance of sustainable bonds and conventional bonds through bond yield to maturity (Grishunin et al., 2023). Moreover, the same approach also used by Wang et al (2019) that investigate risk premium of green bond in China. It is assumed that Yield to Maturity (YTM) of sustainable bonds is at a premium compared to the Yield to Maturity (YTM) of conventional bonds.

Then, it further analyzes the determinants of the YTM of the sustainable bonds using the metrics of ESG risk score, credit rating, issue term, modified duration, Gross Domestic Products and Inflation Rate.

Companies with poor ESG practices have a greater chance of being fined for non-compliance with regulations or the risk of natural disasters due to company operations (Mendiratta et al., 2021). In other words, the companies that implemented ESG values have good risk management. Moreover, ESG ratings can indicate a proactive approach to managing these risks. Companies with lower ESG ratings risk are usually more transparent, especially regarding risk exposure, risk management and governance (Giese et al., 2019). ESG risk ratings can be a signal to investors in corporate governance that the company's management is taking action in the interests and sustainability of the company in the long term. So, the second hypothesis is as follows: Low ESG Risk Value has a positive effect on the YTM of sustainable bonds.

Credit rating of the bond issuers from external parties can reduce asymmetric information related to non-financial aspects and from the investor's perspective, this can increase trust in the use of these bonds (Sabrina, 2019). Credit rating has become one of the factors that determine the investors' decision on bonds' investment.

Another metrics that put into consideration when examine YTM are Issue Term and Modified Duration. The longer the maturity, the higher the duration, and the greater the interest rate risk (Chen, 2022). GDP that reflected the prospects of economy also play important role in YTM. The higher GDP growth will lower the YTM. While inflation rate corresponds with the interest rate of the country of bond issuer. The higher the inflation, the higher demanded yield to compensate for inflation (Grishunin et al., 2023).

The empirical model of the research as follows:

$$Yield = Sustainable + ESG + Rating + Issue Term + Modified Duration + GDP + Inflasi + \delta + \varepsilon$$

Table 1. Variable Explanation

Variable Name	Variable Description																																										
Yield	Yield to Maturity of both sustainable bonds and conventional bonds																																										
Sustainable	Dummy variable for the type of bond, namely 1 for sustainable bonds and 0 for conventional bonds.																																										
ESG	The ESG risk value rating published by BEI in collaboration with Morningstar Sustainalytics. ESG risks are grouped into 5 categories, namely: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Risk Score</th> <th>Category</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>0-10</td> <td>Negligible</td> <td>Considered ESG risks that can ignored</td> </tr> <tr> <td>10-20</td> <td>Low</td> <td>Considered low ESG risk</td> </tr> <tr> <td>20-30</td> <td>Medium</td> <td>Considered moderate ESG risk</td> </tr> <tr> <td>30-40</td> <td>High</td> <td>Considered high ESG risk</td> </tr> <tr> <td>>40</td> <td>Severe</td> <td>Considered severe ESG risks</td> </tr> </tbody> </table>	Risk Score	Category	Description	0-10	Negligible	Considered ESG risks that can ignored	10-20	Low	Considered low ESG risk	20-30	Medium	Considered moderate ESG risk	30-40	High	Considered high ESG risk	>40	Severe	Considered severe ESG risks																								
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Rating	Bond rating issued by the Indonesian Securities Rating Agency (Pefindo). The rating from Pefindo then converted as follows: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Ranking</th> <th>Convert</th> <th>Ranking</th> <th>Convert</th> <th>Ranking</th> <th>Convert</th> </tr> </thead> <tbody> <tr> <td>idAAA</td> <td>17</td> <td>idA -</td> <td>11</td> <td>idB +</td> <td>5</td> </tr> <tr> <td>idAA +</td> <td>16</td> <td>idBBB +</td> <td>10</td> <td>idB</td> <td>4</td> </tr> <tr> <td>idAA</td> <td>15</td> <td>idBBB</td> <td>9</td> <td>idB -</td> <td>3</td> </tr> <tr> <td>idAA -</td> <td>14</td> <td>idBBB -</td> <td>8</td> <td>idCCC</td> <td>2</td> </tr> <tr> <td>idA +</td> <td>13</td> <td>idBB +</td> <td>7</td> <td>idSD</td> <td>1</td> </tr> <tr> <td>idA</td> <td>12</td> <td>idBB -</td> <td>6</td> <td>idD</td> <td>0</td> </tr> </tbody> </table>	Ranking	Convert	Ranking	Convert	Ranking	Convert	idAAA	17	idA -	11	idB +	5	idAA +	16	idBBB +	10	idB	4	idAA	15	idBBB	9	idB -	3	idAA -	14	idBBB -	8	idCCC	2	idA +	13	idBB +	7	idSD	1	idA	12	idBB -	6	idD	0
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Issue Term	The term of the bond until the bond matures.																																										
δ	Unobservable factors that can affect bonds																																										

The data are obtained from statistical data issued by the Indonesia Stock Exchange (IDX) on sustainable corporate bonds and conventional corporate bonds. Bond data is also equipped with bond features such as issue term, yield to maturity, modified duration and bond rating. The data on ESG risk score is also taken from the Indonesia Stock Exchange. Meanwhile, data on inflation and Indonesia's GDP are obtained from the Indonesian Statistics Agency. Period of the data is 2020-2023.

The data analysis empirical model then analyze using panel data regression as it is observed the sustainable bonds and conventional bonds that issued by the public companies in Indonesia during the period of the data. The method of the panel regression model is fixed effect model since the focus of the study is variation within the yields of bonds and the Hausman Test performed to decide the method. Furthermore, the Hausman Test also used to address endogeneity issues with the null hypothesis that "all variables are exogenous variable". As the p-value of was greater than 0.05 so that the null hypothesis is accepted. The Fixed Effects Model helps to address endogeneity by focusing on within-entity changes and controlling for unobserved, time-invariant characteristics, enabling a clearer understanding of causal relationships in panel data.

RESULTS AND DISCUSSIONS

The bonds listed on the IDX in 2020-2023 contained of 1,018 bonds issued by 136 companies. They consist of 888 bonds which are sustainable bonds or have a share of 87% of the total bonds issued. Meanwhile, conventional bonds are 130 bonds or 13% of the total bonds. The following are the results of descriptive statistics from the entire bond sample.

Table 2: Descriptive statistics

Variables	Mean	Std. Dev.	Min	Max
Sustainable	.872	.334	0	1
Issueterm	4.956	2,868	1	30
ModDuration	4.272	1,656	.936	10,937
Rating	14,932	2,445	8	17
Yield	7.075	1,563	2,723	12,728
Inflation	2,917	1,537	1.68	5.51
GDP	2,997	2,989	-2.07	5.31
ESG	24,324	4.658	11.45	29.74

The result of Hausman Test that has been carried out shown that the fixed effect (FE) estimator is the most efficient model, so that panel regression was performed based on FE estimator. However, on the data set there are 2 (two) time invariant variables (issue term and sustainable), so Hausman Taylor estimator is used in FE in order those time invariant variables could be analyzed. The result of the model estimation is shown on table 3. The data analysis also implemented test assumption classic so that it is ensured that data is free from autocorrelation by using Woolridge test, and heteroscedasticity using the Breusch -Pagan test.

Table 3 demonstrated that ESG, Rating, GDP, Inflation and Type Bond are significant while modified duration and issue term do not have significant influence. Sustainable bond has significant and positive relation to YTM compared with conventional bond that can be infer that the entire sustainable bonds are priced higher along with the higher yield. The magnitude of the relation of sustainable bond is 12.5362 to YTM that means that when the bonds have sustainable attributes, they will have higher YTM. The same thing was also found by Grishunin et al (2023) that majority of green bonds in the region Europe in 2007-2021 have no greenium.

The existence of high YTM from sustainable bonds could be explained by investors' views on projects funded by bonds have higher risk than the conventional one because the high cost of the projects that financed by sustainable bonds. Moreover, the data that obtained in this study is in the period of Covid-19 and post Covid-19, which economy's situation is uncertain that reflected in the GDP growth in 2020 is negative and followed by increasing rate inflation after Covid- 19. The same situation also reported by O'Hara & Zhou (2021); Tran & Uzmanoglu (2023); Zhou et al., (2022). Nevertheless, YTM movement from year to year tend to go down and flat which implies that risk bond sustainable down along with post pandemic.

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Table 3 : Panel Regression Results

	(1) Yield
ESG	-.0843*** (.02308)
Rating	-.58187*** (.08827)
ModDuration	.08065 (.30081)
GDP	-.28179*** (.01763)

Inflation	.11544*** (.02347)
Issueterm	.16808 (.14087)
Sustainable	12.53623** (4.89469)
_cons	4.82564 (5.08103)

Standard errors are in parents

*** $p < .01$, ** $p < .05$, * $p < .1$

Although YTM of the sustainable bonds is relatively higher than the conventional bonds, the trend of sustainability will boost the demand of sustainable bonds in Indonesia. It is then can be the driving factor that will improve the issuance and acceptance of sustainable bonds as more investors are involved (Asian Development Bank, 2022). Eventually, the increasing demand will lower the bonds' risk and affected the macroeconomics situation.

The ESG risk score has significant and negative relation to YTM at -0.0843. It means that higher the ESG risk, the YTM will be lower as the ESG risk determine the capabilities of the company in fulfilling its ESG's values. This finding coincides with studies that conduct by Giese et al., (2019; Li et al., (2024); Mendiratta et al., (2021) that found the low ESG risk has positive relation with the higher YTM and vice versa higher ESG risks has effect in lowering YTM. ESG ratings provide additional information on risk and performance that affects the price assessment of bonds. Furthermore, ESG rating risk shows the company's concern for sustainability values that will build investor confidence (Kumar, 2023). As the company more aware of the sustainability, in turn it affects the price and YTM of sustainable bonds.

The bonds' rating has negative and significant relation to YTM at -0.5819. The credit rating that issued by the independent third party reflected the financial credibility of the company shows that the higher credit rating makes the YTM lower. Higher credit rating of bonds is the positive signal for the investor that make them willing to buy bonds at high price, even they know that they will accept lower YTM bonds (Sabrina, 2019).

This study also found that the issue term of the bonds and modified duration have no significant relation to YTM. Although the longer the term of the issue has relation with the compound interest period but it will have no effect since the market price and interest changes.

The macroeconomic variables namely GDP and inflation has significant relation to YTM. GDP has significant and negative relation to YTM at -.28179 that means the higher GDP will lowering the YTM. This finding in line with the study of Greenwood & Vayanos (2008) that also show significant negative relationship of GDP to YTM. GDP reflects economy situation of a country, which means when the economy condition is progressing that reflected in higher GDP as well as manageable inflation rate. GDP, interest rate and inflation rate are closely linked and the changes in one of them will affect the other two. The higher GDP, inflation rate will be manageable and the interest rate will be lowering that eventually will have negative effect to bonds' yield.

Furthermore, as expected inflation's movement parallel with the bonds' yield (positive relation). The same result of the concurrent movement of inflation and bond's yield also in the research that conducted by Bekaert & Wang (2010); and Fabozzi et al., (2007). When the rate of inflation rises, the central bank will raise the interest rate to control the increasing demand so that it can lowering the purchasing power. As the interest rate is higher, it then can make the bonds' yield higher. However, this situation will become a backlash for the bonds that has already issued as the rise of interest rate will reduce the price of the bonds.

The variance of bonds' data on observation is 2.3220 and the variance in bonds of 0.4434 indicates that fluctuation within bonds is smaller compared to the fluctuation between bonds as 96.5% of the total variance in bond's yield is due to differences between the bonds themselves. This

means that the main driver of differences in YTM is the variance between different bonds, not random fluctuations within a single bond.

In nutshell, sustainable bonds have high yield compared with conventional bonds will be resulted more investor attracted to invest in sustainable financing instruments. Yield of sustainable bonds will decrease along with the improvement of macroeconomic condition on post pandemic. ESG risk, credit rating, economy growth and inflation rate are the factors that should put to consideration to obtain the optimal value of bond's yield. Although ESG rating risk is newly implemented in Indonesia, it may encourage companies to improve their rating as it shown the significancy of ESG rating risk to bonds' yield. Further and extensive research should be done to investigate which parts of ESG values that hold more significant effect on bond's yield as well as considering the sustainable washing effect of sustainable bonds.

CONCLUSION

Sustainable bonds issued by companies in Indonesia that are listed on the Indonesia Stock Exchange during the period of pandemic and post pandemic have no sustainable premium compared to conventional bonds. This can be seen from the type of sustainable bonds that have a significant increasing effect on bonds' yield. Furthermore, ESG rating risks have negative effect to bonds' yield due to increased perceived risk of the issuer company which has potential operational issues, regulatory issues, and long-term financial consequences that make lower investor demand. While the bond ratings have positive effect on bonds yield because it can boost the confidence level of the bonds. Macroeconomic factors, GDP and inflation have significant effects on bond's yield.

Even though there is no sustainable premium on sustainable bonds but the increasing issuing of sustainable bonds indicates that investor awareness is starting to grow towards sustainable values that not only have a positive impact on the environment but also on socio-economic factors. Future study is needed to investigate which ESG concerns affect the risk of sustainable bonds, pricing mechanism of sustainable bonds as well as the sustainable washing effects of sustainable bonds.

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