



Environmental disclosure, governance score, and tax avoidance: Evidence from Indonesian energy sector companies

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ABSTRACT

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The goal of the study was to determine how corporate governance (CG) influences tax avoidance, how environmental disclosure (ED) influences tax avoidance, and how CG functions as a moderator for the impact of ED on tax avoidance. Between 2018 and 2021, we conducted 184 observations on 46 energy-related enterprises. The sample technique employed was purposive sampling. We used moderated regression analysis (MRA) regression with the random effects model to verify the hypothesis. According to the research conclusions, ED had no discernible impact on tax avoidance, CG had no bearing on it, and CG did not mitigate the impact of ED on tax avoidance. Tax avoidance is positively impacted by variable control size, MKTB, negatively impacted by ROA, and unaffected by leverage. Because environmental disclosure by energy corporations in Indonesia is still deficient despite being mandated, this research offers implications that could help regulators improve the quality of environmental disclosure. Whether it is still in the meeting with the regulator stage or has already begun to improve governance, provide feedback to regulators so they can keep an eye on the CG implementation in Indonesia.

Contribution/Originality: The contributions of this study describe the ED and CG indexes in energy sector companies in Indonesia, offering empirical information on the impact of environmental disclosures on tax avoidance, the impact of CG on tax avoidance, and the moderating function of CG on the effect of ED on tax avoidance.

1. BACKGROUND

There has been a recent surge in studies pertaining to environmental disclosure (Ahmad & Sulaiman, 2004; Senn, 2018). Previous studies conducted by Deegan, Rankin, and Tobin (2002) and Guthrie and Parker (1989) have revealed that corporate policies and activities are driven by a strategic objective of garnering public attention. This is mostly due to firms' aspiration to establish themselves as legitimate entities within society (Gray, Kouhy, & Lavers, 1995). Businesses want to preserve legitimate connections in the greater social and political environment. Companies will thrive with such credibility, regardless of how well the firm does financially (Deegan & Rankin, 1996). It was discovered that when the public's awareness of environmental concerns grew, corporations increased their reporting of beneficial environmental information.

CSR (corporate social responsibility) components can help businesses satisfy at least particular stakeholder group needs, hence ensuring appropriate overall legitimacy (Fallan & Fallan, 2019). Environmental disclosure is one part of CSR activity efforts. According to the studies on CSR, CSR and tax avoidance have a positive relationship (Lanis &

Richardson, 2013). Corporate tax avoidance refers to strategies used to lower taxes paid by a corporation in contrast to its accounting profit before taxes (Hanlon & Heitzman, 2010). Taxes are viewed as a significant expense for businesses, which reduces the financial flow accessible to proprietors (Suranta, Midiastuty, & Hasibuan, 2020). Therefore, it encourages businesses to use tax avoidance techniques to lower their tax expenses (Chen, Chen, Cheng, & Shevlin, 2010). In this instance, tax avoidance refers to a business strategy used lawfully and securely to avoid breaking any applicable tax laws, according to the methods and techniques that will be used and the advantages and disadvantages contained in the Tax Regulations (Napitupulu, lham, Situngkir, & Edelia, 2019). In the following years, several studies (Davis, Guenther, Krull, & Williams, 2016) validated that more robust CSR is linked to lower effective tax rates. These data provide credence to the idea that while businesses assert that they are socially responsible, they also employ tax avoidance techniques (Sikka, 2013). When a firm exhibits explicit tax aggressiveness, it may respond to the ensuing censure by adhering to legitimacy theory and opting to disclose supplementary corporate social responsibility information. One of the CSR aspects may be used for tax avoidance, and one of the CSR dimensions is environmental disclosure (Abid & Dammak, 2022). On the other hand, environmental activities such as the usage of environmentally friendly materials, substance recycling, and waste treatment are deductible expense costs because they are included in operational activities to obtain, collect, and maintain income. Environmental activities will reduce gross income, which will ultimately make the company's tax burden smaller. Companies with a smaller tax burden will tend to refrain from tax avoidance.

CSR research and tax avoidance are still interesting because previous studies' results need to be more consistent. For instance, Alsaadi (2020) and Abdelfattah and Aboud (2020) discovered that businesses disclose their CSR initiatives as a precaution against the potential negative effects of aggressive tax avoidance methods. On the contrary (Lanis & Richardson, 2013). Socially conscious businesses are less likely to use tax avoidance methods than more socially irresponsible firms. Much study has been done on CSR and tax avoidance, but research on environmental disclosure and tax avoidance still needs to be explored. This research is concerned with environmental disclosure and tax avoidance because environmental disclosure is a crucial issue in Indonesia, especially in the energy sector, where environmental harm is frequently linked to mining, oil and gas, or energy industry operations. Agung, Muhammad, and Michael (2023), where the energy sector is the most significant contributor to corporate greenhouse gas emissions in Indonesia, namely 45.7% in 2019 (<https://iesr.or.id>). Environmental disclosure is also interesting to study because of a change in policy from the government, which was initially voluntary disclosure starting in 2020, to become mandatory disclosure. In addition, tax avoidance cases have often occurred in Indonesia, addressing the issue of the energy industry's businesses, such as PT Adaro Energy Tbk, avoiding taxes.

Previous studies stated that governance mechanisms are one of the things that affect tax avoidance (Dakhli, 2022; Tandean & Winnie, 2016). Governance is a system created to direct the organization's administration professionally to protect all stakeholders' interests. It is built on openness, responsibility, accountability, independence, justice, and equality. CG implementation is essential for companies because CG rules are critical to detecting and preventing counterproductive actions from each person (Honggowati, Rahmawati, Aryani, & Probohudono, 2017). CG implementation will increase stakeholder trust. CG components can carry out supervision to decrease tax avoidance, such as the board of directors, which is a significant institution in a corporation. Building a relationship between shareholders and management, as a result, plays a crucial role in corporate governance (Amran, Ishak, Zulkafli, & Nejati, 2010). A company's independent director objectively affects execution and decision-making, limiting corporate tax avoidance.

CG factors that affect tax evasion include executive compensation, executive personality, corporate size, institutional ownership, the proportion of commissioners, the audit committee, and audit quality influence to avoid tax avoidance (Tandean & Winnie, 2016). Tanjung (2020) has created a CG index based on the governance perspectives of the Organization for Economic Cooperation and Development (OECD) and the Indonesian codes that includes a code of ethics, anti-corruption, insider trading, the largest shareholder, free float, employee share

ownership, CSR, whistle blowing, sanctions, the big 4 auditors, disclosure of the ultimate beneficiary shareholder, independent director, independent commissioner, size of board director, size of the commissioner, and the number of directors and commissioners on the board. This CG index is meant to indicate full implementation throughout the firm. Previous researchers (Abdelmoula, Chouaibi, & Chouaibi, 2022) found that CG is inversely associated with tax avoidance (Amri, Ben Mrad Douagi, & Guedrib, 2023; Wahab, Ariff, Marzuki, & Sanusi, 2017). Meanwhile, Tandeau and Winnie (2016) discovered that CG practices like audit committees have a positive impact on tax evasion. Previous research was limited to testing CG as an independent variable; this study tries to fill in the gaps in previous research, where CG, apart from being an independent variable, is also a moderating variable.

This study employs control variables relating to corporate characteristics: size, Return on Asset (ROA), leverage, and Market-to-Book Value (MKTB). Previous research by Lanis and Richardson (2013) argues that large corporations are likelier to employ tax avoidance strategies and decrease their tax burden because they wield significant economic and political influence. We include leverage (LEV) as a control variable because company executives will tend to provide CSR information to lessen knowledge asymmetry caused by financial institution oversight (Schipper, 1981). Companies with enormous debts will aggressively take advantage of opportunities to get tax deductions due to interest payments (Sari & Tjen, 2016). Our study includes the market-to-book ratio (MKTBK) as a control variable because MKTB represents company growth (Huang, Sun, & Zhang, 2017). Companies with high MKTB ratings are less likely to avoid tax (Abdelmoula et al., 2022). The success of the firm in producing net income from assets increases ROA. The degree of firm profitability has a negative impact on tax avoidance since the more efficiently assets are used to produce profits, the less the company will pay tax, resulting in a reduced corporation tax (Derashid & Zhang, 2003). Businesses that are both efficient and lucrative have a minimal tax burden.

In Indonesia, company attention related to the environment is still very minimal, and this can be seen from the many environmental cases in Indonesia. The Ministry of Environment and Forestry (MEF) noted that there were several energy companies that polluted the environment during 2017-2019. On the other side, community expectations that businesses refrain from producing hazardous waste and stakeholder demands for environmental responsibility are rising (Davenport, Delpont, Blignaut, Hichert, & van der Burgh, 2019). The government formulates various regulations to comply with environmental responsibilities, including the obligation that companies in Indonesia publish sustainability reports, which will take effect in 2020 (Sal Ojk 51, 2017). Mandatory regulations can take the form of laws, norms, or standards (Sari & Sutopo, 2023) limiting companies' pollution-producing activities. The government also encourages companies to operate in accordance with applicable regulations, including not ignoring the environment. This research gives a summary of the environmental disclosures made by energy firms in their sustainability reports.

In growing emerging markets like Indonesia, it is essential that the CG system is working properly (Tanjung, 2020). In comparison to its neighbors, Indonesia's CG practices are still viewed as being subpar. reported in previous studies that Indonesia is ranked lowest compared to countries such as Malaysia and Thailand (Low, 2014). One noteworthy aspect that emerges from the growth of corporate governance (CG) in Indonesia is the significant issue of low compliance rates. By using the Tanjung (2020) CG index, this study contributes by giving an overview of CG scores in Indonesia. By providing a summary of CG scores in Indonesia using the Tanjung (2020) CG index, this research contributes.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Legitimacy Theory, Environmental Disclosure, and Tax Avoidance

The legitimacy theory states that the company's relationship must be harmonious with the government and society (Gray, Dey, Owen, Evans, & Zadek, 1997). The legitimacy theory is also related to the public's view or assessment of the company. When a company wants to gain support or legitimacy from the community, it will report that its activities reflect social values. Therefore, management will tend to disclose its activities through the media to

gain legitimacy. This action is a company statement that they have done what is expected (Lanis & Richardson, 2013). Disclosures made by the company will reduce public concern because the operations of the company follow social values, and the company's existence is not solely aimed at seeking profit but also has concern for the community. This situation will help the company's image. Environmental disclosures are one method of gaining public credibility. Environmental disclosures include details on the impact of a company's past, current, and future environmental management initiatives (Campbell, 2004). Meanwhile, tax avoidance means managing taxes while complying with tax rules. Companies practicing tax avoidance tend to disclose their environmental activities to gain public legitimacy.

2.2. Agency Theory, Corporate Governance, Tax Avoidance

Agency theory explains the occurrence of corporate tax avoidance activity, which leads to the interaction between the principal (principal) and the management (agent). Agency problems can arise when the principal finds it challenging to confirm the actual performance of the agent. Tax avoidance behavior reflects the behavior of self-interested managers by manipulating revenues, resulting in incorrect information. It is consistent with the agency hypothesis, which holds that people are rationally motivated by their own interests in order to acquire as much as possible (Donaldson & Davis, 1991). This activity influences shareholders, reducing the information content of the company's financial statements and raising the possibility of information asymmetry between the corporation and its shareholders. A framework known as corporate governance is required to avoid opportunistic conduct on the part of management. CG is a collection of guidelines, practices, and processes that guide and regulate businesses (Ong & Djajadikerta, 2020). CG is a system that balances the goals of all parties involved to achieve the company's economic and social goals (Giannarakis, 2014). Companies that implement CG elements will operate well because they have a monitoring system that protects the interests of all stakeholders so that they will not engage in tax avoidance.

2.3. Hypothesis Development

Legitimacy theory claims that to carry out their social responsibility, companies (through management) provide data regarding CSR as a component of their conversation with society (Gray et al., 1995). Managers must adhere to the social compact by sharing facts per societal expectations. When management wants to act opportunistically to gain wealth through tax avoidance, it will cover it up with CSR information. CSR disclosure can arise at any stage of the procedure for managing reputation risk (Bebbington, Larrinaga, & Moneva, 2008). The corporation's overt tax avoidance drew substantial public attention since it failed to satisfy society's expectations of paying the appropriate share of taxes (Christensen & Murphy, 2004). Environmental disclosure is the most crucial part of the CSR dimension, so companies that carry out tax avoidance will tend to disclose environmental activities (Abdelfattah & Aboud, 2020). If it is found that environmental performance is positively associated with tax avoidance, the following hypothesis might be constructed based on the above explanation:

H₁: Companies that disclose environmental information will tend to do tax avoidance.

Corporate governance is a system that balances stakeholders' interests, like shareholders, directors, workers, consumers, suppliers, investors, the government, and society (Tiep Le & Nguyen, 2022). Among the company's CG principles are: transparency, accountability, responsibility, and independence. The principle of transparency allows companies to provide stakeholders with substantial, relevant, continuous access to, and understandable information. Accountability, the second CG principle, is required for long-term performance. The third CG principle is "responsibility," which demands that corporations follow the rules and regulations and be accountable to the environment and society. Principles of impartiality ensure that businesses do not monopolize one another and are immune to outside influence. Regarding implementation: Concerning the fifth CG principle, the firm must constantly pay respect to the shareholder's and other stakeholders' interests in carrying out its activities based on the concept of fairness. Implementing CG Principles can help organizations enhance the quality of their environmental reporting (Solikhah & Maulina, 2021).

Corporate governance enables excellent supervision and control, reducing managers' opportunistic behaviors, which can diminish the company's value and, eventually, boost stakeholder protection (Solikhah & Maulina, 2021). Tax avoidance is an opportunistic behavior of managers; managers can use tax avoidance to increase company liquidity (Desai & Dharmapala, 2006). The pillars of corporate governance have an impact on corporate tax avoidance, according to Kovermann and Velte (2019). Legitimacy theory states that companies will publish CSR reports to gain legitimacy from society. Organizations that adopt CG practices are inclined to adhere to all relevant business legislation, encompassing those pertaining to taxation. When managers behave opportunistically by carrying out tax avoidance, the CG mechanism will prevent companies from carrying out tax avoidance. Given the foregoing justification, we construct the following hypothesis:

H₁: Companies with high CG scores are less probable to participate in tax avoidance.

H₂: The CG score weakens the effect of environmental disclosure on tax avoidance.

2.4. Research Model

Research on CSR in tax avoidance has been widely carried out, among others (Abdelfattah & Aboud, 2020; Abdelmoula et al., 2022; Lanis & Richardson, 2013). However, research on environmental disclosure, which is a major part of CSR, is still very limited. Environmental disclosure is crucial in Indonesia, especially for energy sector companies. Environmental disclosure is also interesting to study because of a change in policy from the government, which was initially voluntary disclosure but became mandatory in 2020. Another factor that influences tax avoidance is the CG mechanism. Companies with good CG mechanisms should be able to prevent tax avoidance. Previous research has mostly examined tax avoidance mechanisms using one or several proxies from CG. This research uses the CG index to measure the influence of CG on tax avoidance. The CG index describes the full implementation of CG in the company. Apart from that, this research also tests CG as a moderating variable on the influence of environmental disclosure on tax avoidance. The research model is described as follows:

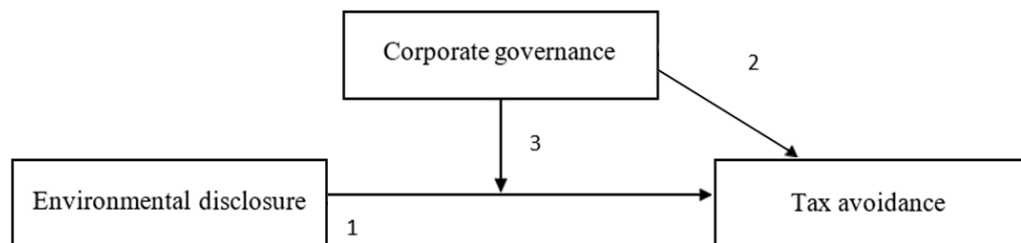


Figure 1. Research conceptual framework.

3. RESEARCH DESIGN

The sample utilized in this study is made up of energy firms listed on the Indonesian stock exchange between 2018 and 2021. The company's annual report served as the study's informational source. A sample of 46 companies was obtained for 4 years, with total observations of 184. The observation period is from 2018 to 2021. This period was chosen because it marks the transition of environmental disclosure from voluntary to mandatory. Environmental disclosure is a component of the sustainability report that companies in Indonesia are required to disclose, and companies listed on the IDX must start disclosing in 2020, per financial services authority regulations (POJK) No. 51. The analysis tool for this study uses random effect regression. The differences between this study and previous research are: 1) Previous research tested CG for tax avoidance by using internal oversight proxies such as the board of commissioners, audit committees, and board characteristics, while the CG used in research used the CG Index developed by the OECD. The CG index represents the full implementation of CG (internal and external monitoring mechanisms within the company. 2) this study fills the gap in previous research using CG variables as a moderating variable between the influence of environmental disclosure and tax avoidance.

Table 1: Research sample.

Table 1. The sampling steps.

Sampling step	Number of firms
Total energy companies 2018 to 2021	296
Negative pre-tax income value	76
Incomplete data	36
Total observations	184

4. RESEARCH VARIABLE

This study's variables are classified as dependent, independent, controlling, and moderating. The effective tax rate (ETR) evaluates tax avoidance, which is the dependent variable in this study. ETR can capture permanent and temporary tax strategies (Dyreng, Hanlon, & Maydew, 2008). ETR is calculated by dividing the current tax burden by pre-tax income. The lower the ETR value indicates, the greater the company's tax avoidance, and vice versa. Control variables include company size (size), leverage, MKTBK, and ROA. The independent variable is the disclosure of the environment and corporate governance. Besides being an independent variable, governance is also a moderating variable. Governance is measured using the OECD's Governance Index (Tanjung, 2020). Variable measurements are displayed in Table 2.

Table 2. Variable measurement.

Variables	Measurement	Source
Tax avoidance	ETR: Tax expense/Profit before tax	(Abdelfattah & Aboud, 2020; Lanis & Richardson, 2013)
ED	GRI standard has 32 indicators categorized as material, energy, water and effluents, biodiversity, emissions, effluents and water aspects, environmental evaluation, and supplier assessment. Given a "1" if the firm reveals and a "0" if the company does not disclose	(GRI, 2020)
CG index	CGindex has 15 indicators, namely Code of Ethics, Anti-Corruption, Insider Trading, the largest shareholder, Free Float, Shared Ownership by Employees, CSR, Whistleblowing, Sanctions, Big 4 auditors, disclosure of the ultimate beneficiary shareholders, Independent Director, Independent Commissioner, the number of board directors, and the Board of Commissioners' size	(Tanjung, 2020)
Size	LN total assets	(Abdelfattah & Aboud, 2020; Abdelmoula et al., 2022; Alsaadi, 2020)
Lev	The book value of the total debt-to-equity ratio.	(Abdelmoula et al., 2022; Alsaadi, 2020)
ROA	the proportion of net income to total assets.	(Abdelmoula et al., 2022; Alsaadi, 2020)
MKTB	comparing the market value of a business to its book value	(Abdelmoula et al., 2022; Alsaadi, 2020)

Random effect regression is used to analyze the influence of environmental disclosures, corporate governance, and the interaction of environmental disclosures and corporate governance. The regression equation used in this study is

$$\begin{aligned} \text{Tax avoidance} = & \alpha + \beta_1 \text{EnvDisclosure} + \beta_2 \text{CG} + \beta_3 \text{EnvDisclosure} * \text{CG} + \beta_4 \text{Size} + \beta_5 \text{ROA} \\ & + \beta_6 \text{Leverage} + \beta_7 \text{MKTB} + e \end{aligned}$$

Table 3. Descriptive statistic.

Variable	Means	Median	Maximum	Minimum	Standard deviation
Tax avoidance	0.197	0.203	0.960	0.081	0.232
Environmental disclosure	0.378	0.406	0.937	0.031	0.196
CG	0.602	0.600	0.866	0.200	0.146
Size	1.214	1.212	1.246	1.151	0.251
ROA	0.029	0.032	0.520	-1.121	0.166
MKTB	-0.507	0.184	13.97	-165.791	12.658
LEVERAGE	0.586	0.543	0.045	0.045	0.315

5. DISCUSSION

Table 3 shows the results of descriptive statistics for all research samples. Tax avoidance has a minimum value of 0.0815, a mean of 0.197, and a maximum value of 0.960. In contrast, environmental disclosure has a minimum value of 0.0312, a mean of 0.3785, and a maximum of 0.9375. While the CG variable has a minimum value of 0.2, a mean of 0.6022, and a maximum value of 0.8667. Control variables size, ROA, MKTB, and leverage have a mean value of 1.2146, 0.0294, -0.5079, and 0.5868.

Table 4 shows the pair-wise correlation matrices between the independent variables in this study. ED and CG are positively related to size; ROA is CG interaction and is negatively related to MKTB and leverage. Positive relations imply that the better the ED, CG, and ED interaction with CG, the higher the size and profitability; conversely, negative relations imply that the greater the ED, CG, and ED interaction with CG, the company's leverage and growth (MKTB) will decrease. Overall, the correlation matrix between variables is weakly related, except for the ED variable with the interaction of the ED variable and CG, where the correlation between these variables is strongly related.

Table 4. Matrix correlation.

Variable	ED	CG	Ed*CG	Size	ROA	MKTB	Leverage
ED	1.000						
CG	0.395***	1.000					
ED*CG	0.928***	0.661***	1.000				
Size	0.591***	0.573***	0.642***	1.000			
ROA	0.291***	0.213**	0.279**	0.291***	1.000		
MKTB	-0.135	-0.085	-0.135	-0.167**	0.144*	1.000	
Leverage	-0.315	-0.162*	-0.337***	-0.040	-0.453***	0.007	1.000

Note: Description *** sign at confidence level of 99%, ** sign at confidence level of 95%, * sign at confidence level of 90%.

5.1. Regression Model Selection

The MRA test does hypothesis testing with a random effect model. The Chow test carried out the selection of the regression model by comparing the common effect and the fixed effect. The fixed effect was the model of choice because the prob result was below 0.0002 (below >0.05), and the Hausman test compared the fixed effect with the random effect. The prob result was 0.6358 (above 5%), so it was continued with the Langrange test by comparing common vs. random, and the prob results are below 0.05. As a result, the best model is the random effect. The MRA (multiple regression analysis) tests using random effects have passed the assumptions of normality, heteroscedasticity, and autocorrelation. However, it fails the multicollinearity test; Gujarati (2017) says that there will usually be high multicollinearity between the independent variable and the interaction variable in the MRA test; however, multicollinearity symptoms are not a big deal and can be ignored if at least one independent variable has a big impact on the regression results. The outcomes are as follows for the random effect regression test:

Table 5 Results the random effect model in the MRA test.

Table 5. Applying the random effect model in the MRA test.

Variables	Tax avoidance		
	Coefficient	T-statistics	Probability
ED	0.193	0.477	0.633
CG	0.052	-0.205	0.837
ED*CG	-0.030	-0.047	0.962
Size	3.074	2,220	0.027**
ROA	0.234	2.157	0.032**
MKTB	-0.008	-6,460	0.000***
Leverage	-0.017	-0.289	0.633
Adj r square	0.249		
Prob f statistics	0.000		

Note: Description *** sign at confidence level of 99%, ** sign at confidence level of 95%.

5.2. Discussion

5.2.1. Effect Environmental Disclosure on Tax Avoidance

According to the findings of the random effect regression data analysis, it was found that the coefficient of environmental disclosure on tax avoidance was 0.1938 with a probability of 0.6338 (> 0.05). As a result, it was determined that environmental disclosure did not impact tax avoidance. This research is consistent with research conducted by Mohanadas, Abdullah Salim, and Pheng (2020), which states that CSR performance has no effect on tax avoidance, and Rini, Adhariyani, and Sari (2023), which finds that environmental disclosure has no effect on tax avoidance.

This study contradicts Choong (2008) and Chouaibi, Rossi, and Abdessamed (2022), who found that the more companies carry out CSR activities, the more tax avoidance the company will do in the meantime. Lanis and Richardson (2013) and Ortas and Gallego-Álvarez (2020) found that the more companies carry out CSR activities, the less tax avoidance the company performs.

The difference in the study's findings from previous studies is probably due to the lack of environmental disclosure activities carried out by Indonesian companies, with a mean value of 0.3785. It is possible to deduce that environmental disclosure's value for energy companies in Indonesia is below average; this is an interesting phenomenon to observe, considering that environmental disclosure is included in one of the indicators in the sustainability report, which has become mandatory and will take effect in 2020 for firms in Indonesia listed on the IDX. The value of environmental disclosure for energy companies in Indonesia starting in 2018, 2019, and 2020, respectively, is 0.37, 0.36, and 0.37, and only experienced a significant increase in 2021, namely 0.41. The environmental disclosure of energy companies can be seen in Figure 2. In addition, the disparity between the findings of this study and earlier studies is due to just evaluating one CSR indicator, namely environmental disclosure, profit, and people elements, not being tested in this study. Profit and people elements are not tested in this study. This also indicates that energy companies in Indonesia do not use environmental disclosure to gain legitimacy from society.

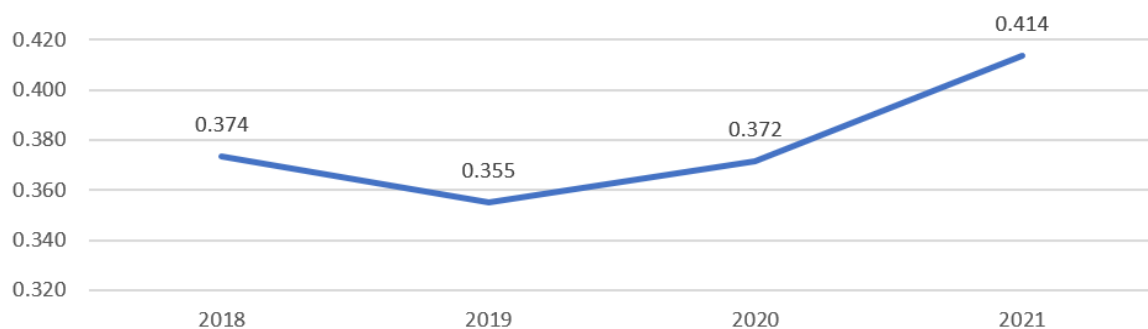


Figure 2. Average total index environmental disclosure of energy companies in Indonesia.

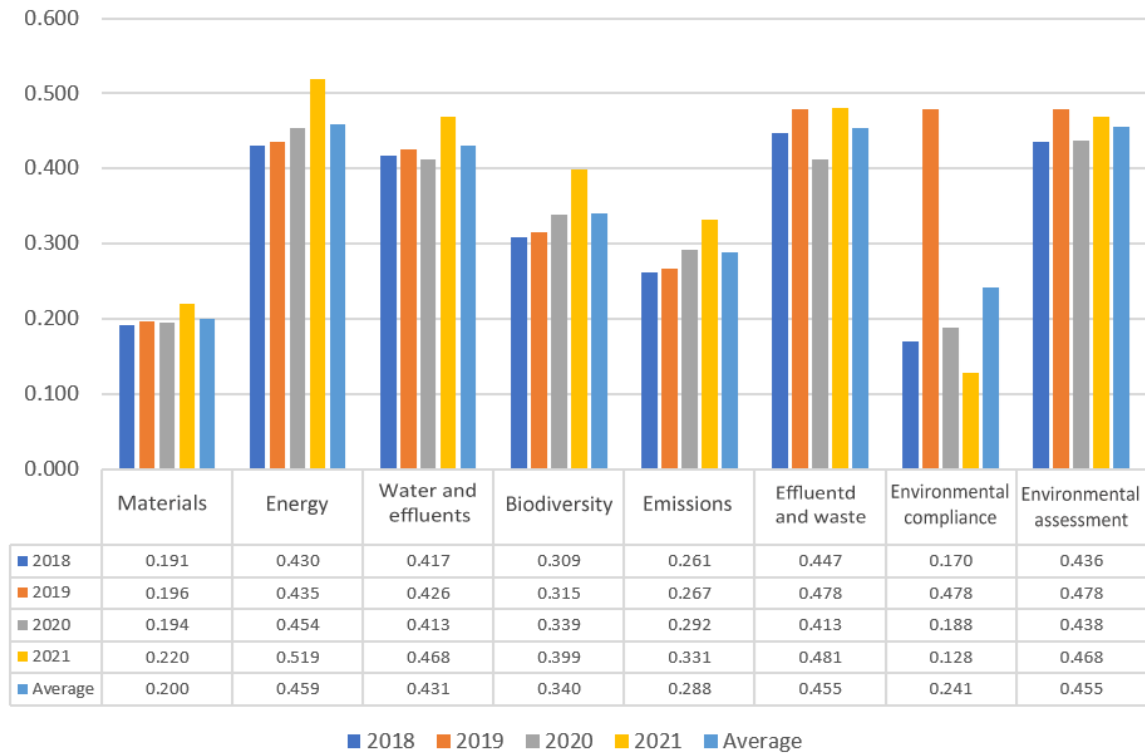


Figure 3. Average sub-index environmental disclosure of energy companies in Indonesia.

Figure 3 illustrates the average sub-index environmental disclosures of energy companies in Indonesia.

Based on Figure 2, it can be seen that all the environmental disclosures of energy companies are still below average (below 0.5). The lowest level of disclosure is in the field of materials, while the highest is in the field of effluent and waste environmental assessment. This phenomenon is quite interesting to observe, considering that environmental disclosures, part of the sustainability report, must be disclosed in 2020. Due to the low level of ED disclosure, further research is needed, considering that primarily Indonesia’s companies use standard GRI guidelines as a reference for preparing sustainability reports. Is the GRI standard not applicable to companies in Indonesia or due to other factors? It can be used as a reference in developing environmental reporting and disclosure policies in Indonesia. This research has implications for regulators.

5.2.2. The Effects of CG on Tax Avoidance and How CG Acts as a Moderator of the Effects of Environmental Disclosure on Tax Avoidance

The data processing findings about the impact of CG on tax avoidance produced are -0.0527 with a probability of 0.8378 using random effect regression. It can be concluded that CG does not affect tax avoidance. The study’s findings don’t line up with existing research Abdelmoula et al. (2022) and Wahab et al. (2017), which found that the CG mechanism has a negative effect on tax avoidance. This study is consistent with Amri et al. (2023), who found that CG mechanisms such as the board of directors and audit committee expertise on tax and finance do not affect aggressive tax strategies. The mean CG values in this study from 2018 to 2021 were 0.598, 0.594, 0.598, and 0.617, respectively, while the mean CG index for 4 years was 0.602. The CG index can be seen in Figure 4. Although the CG index value is above average, the CG monitoring mechanism does not affect tax avoidance practices.

The data processing findings suggest a coefficient of -0.0307 with a probability of 0.9620 for the moderating influence of CG on the link between ED and tax avoidance. These results also indicate that the CG mechanism has no significant effect on the effect of ED on tax avoidance. This study’s findings also show that the CG mechanism in Indonesia has yet to be able to reflect an effective corporate governance mechanism in limiting managers’ deviant behavior in taxation matters. The CG mechanism does not affect tax avoidance. It is also feasible that tax avoidance

is a legal and safe endeavor carried out by businesses without infringing applicable tax requirements by adhering to the methods and strategies that will be utilized, as well as the advantages and drawbacks outlined in the Tax Regulations.

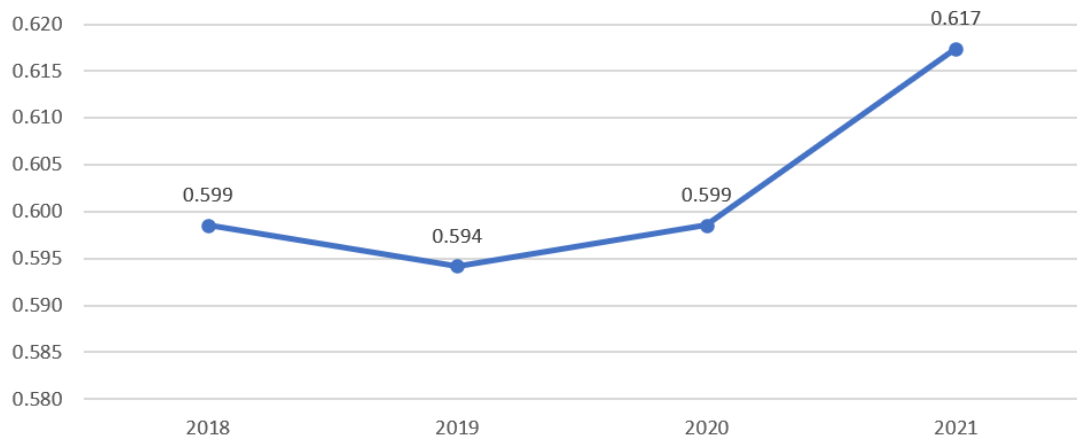


Figure 4. Average total CG index of energy companies in Indonesia.

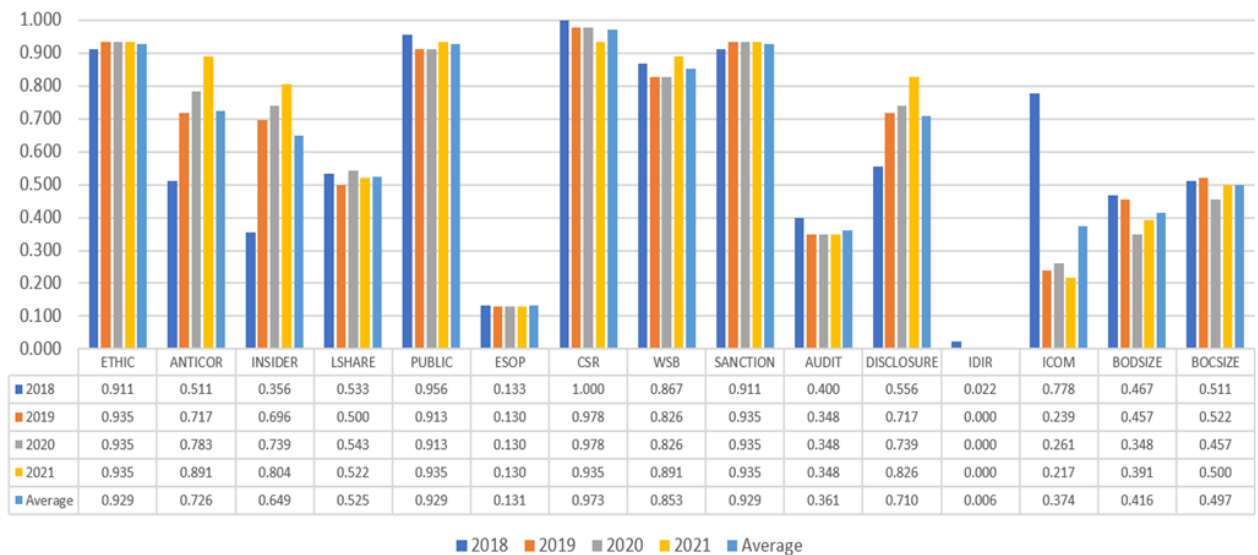


Figure 5. Average sub-CG index of energy companies in Indonesia.

The CG values of energy companies can be sorted from the smallest to the most significant, namely independent directors, shared ownership by employees, the Big 4 auditors, independent commissioners, the number of board directors, the Board of Commissioners' size, the largest shareholder, insider trading, anti-corruption, Whistle blowing, a code of ethics, free speech, and sanctions. The CG scores for each sub-index can be seen in Figure 5. Even though the overall CG score is above average, the external CG oversight function has not been able to oversee management from a tax perspective.

5.2.3. Effect of Size, Profitability, MKTB, and Leverage on Tax Avoidance

Data processing results suggest that size has a positive influence on ETR, which means that size has a negative effect on tax avoidance. This is because the smaller the ETR, the greater the company's tax avoidance. The total amount of assets a company owns serves as a measure of its size. Company size has a negative effect on tax avoidance and this may be due to the large assets followed by the large depreciation expense, so that corporate taxes are small. Companies with large depreciation expenses no longer need to carry out tax avoidance because the taxes are already small. In this study, leverage did not affect tax avoidance. It indicates that mining company managers do not use debt

financing conditions for tax avoidance. ROA in this study positively affects ETR, which indicates that ROA has a negative effect on tax avoidance indicating that the efficiency of asset use is high (company assets are productive assets used to generate profits). MKTB, in this study, has a negative effect on ETR, which means that MKTB has a positive effect on tax avoidance, and this indicates that if a company has a high MKTB value, the company will conduct tax avoidance.

5.3. Additional Test

5.3.1. Model Test Before and After Mandatory Environmental Disclosure

We also tested the effect of environmental disclosure, CG Ed interaction with CG, size, ROA, MKTB, and leverage on tax avoidance before (2018, 2019) and after the mandatory sustainability disclosures (2020, 2021). We conducted the Chow test, Hausman test, and Lagrange test to select the best model, and we selected the common effect result as the best model. The results of the common test ED regression, and the interaction of ED with CG, size, ROA, MKTB, and leverage on tax avoidance before mandatory disclosure can be seen in Table 6. At the same time, the results of the common test regression test after the mandatory sustainability report can be seen in Table 7. The results of the study found that the variables could be ED, and CG, and the interaction of Ed with CG both before and after the mandatory disclosure sustainability report was consistent with the overall test results for 4 years, where there was no influence of ED, CG, and ED interaction with CG on tax avoidance. This result is different from previous research. Previous research tested the relationship between CSR and tax avoidance (Abdelfattah & Aboud, 2020; Lanis & Richardson, 2013; Ortas & Gallego-Álvarez, 2020). While this research only evaluated one CSR indicator, namely environmental disclosure, profit, and people elements, it was tested in this study. Profit and people elements are not tested in this study, and this also indicates that energy companies in Indonesia do not use environmental disclosure to gain legitimacy from society. Control variables before the mandatory disclosure period, namely size, ROA, MKTB, and leverage, do not affect tax avoidance. Variable control size, ROA in the period after mandatory disclosure, has a negative effect on tax avoidance, the MKTB has a positive effect on tax avoidance; and leverage has no effect on tax avoidance. Size has a negative effect on tax avoidance. This indicates that large companies try to comply with regulations by increasing environmental disclosures. It can be seen that the value of disclosures in 2020 and 2021 has increased (see Figure 1). Disclosure of ED requires a sizable fee (Mahmudah, Yustina, Dewi, & Sutopo, 2023) so that companies do not feel the need to carry out tax avoidance. The MKTB variable has a positive effect on tax avoidance. MKTB represents company growth; companies with high growth tend to be aggressive towards taxes. Meanwhile, ROA has a negative effect on tax avoidance, indicating that companies with good performance want to gain legitimacy by showing that the company is tax compliant. Companies with high ROA indicate that their performance is good, so there is no need to be aggressive towards taxes.

Table 6. Results the common effect model in the MRA test (Before the mandatory sustainability report).

Variables	Tax avoidance		
	Coefficient	T-statistics	Probability
ED	-0.145	-0.264	0.792
CG	-0.285	-0.772	0.442
ED*CG	0.813	0.937	0.351
Size	1.826	1.114	0.268
ROA	0.192	1.130	0.268
MKTB	-0.004	-0.600	0.549
Leverage	-0.015	-0.195	0.845
Adj r square	0.1545		
Prob f statistics	0.00218		

Table 7. Results the random effect model in the MRA test (After the mandatory sustainability report).

Variables	Tax avoidance		
	Coefficient	T-statistics	Probability
ED	0.823	3.160	0.124
CG	0.382	-1.121	0.265
ED*CG	-1.315	-1.56	0.121
Size	5.769	3.160	0.002***
ROA	0.222	1.625	0.100*
MKTB	-0.004	-2.450	0.016**
Leverage	-0.041	0.533	0.595
Adj. r square	0.190		
Prob f statistics	0.00070		

Note: Description *** sign at confidence level of 99%, ** sign at confidence level of 95%, * sign at confidence level of 90%.

6. SUMMARY AND CONCLUSION

Using the instance of energy sector businesses in Indonesia, this paper investigates the effect of ED on tax avoidance, the influence of CG on tax avoidance, and the function of CG in weakening ED on tax avoidance in developing nations. The study results stated that the level of environmental disclosure in Indonesia still needs to be improved, with a value below the average (0.3785). Environmental disclosure variables, CG, and CG interactions with ED do not affect tax avoidance. Regulatory efforts are needed through formulating policies and intensifying supervision to increase the vigilance of the private sector in reporting environmental management. Environmental disclosure information made available to stakeholders needs to be improved, considering the lack of environmental disclosures by energy companies in Indonesia. The average value of the CG Index in energy companies in Indonesia is above average (0.6022), but the CG index has no effect on tax avoidance. The consequence of this finding is that CG implementation should not only fulfill obligations but also be implemented CG as an effort to fulfill good governance.

This research has several limitations; it examines CG comprehensively, and future research can be carried out by testing CG indicators to see which the most dominant factor influencing tax avoidance is. This research is limited to testing environmental disclosures on tax avoidance. For future research, other variables besides environmental disclosures include social and governance disclosures. This research was only conducted in one sector, namely the energy company. We suggest testing it on other industrial sectors. The research examines CG comprehensively. Future research can be carried out by testing CG indicators to see which are the most dominant factors influencing tax avoidance. This research is limited to testing environmental disclosure on tax avoidance; future research will examine other variables besides environmental disclosure, such as social disclosure and governance disclosures.

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APPENDIX

Appendix 1 presents Environmental disclosure index based on GRI

Appendix 1. Environmental disclosure index based on GRI.

Indicator	Sub indicator
1. Materials	301-1 Material used by weight or volume
	301-2 Recycled input materials used
	301-3 Reclaimed products and their packaging materials
2. Energy	302-1 Energy consumption in the organization
	302-2 Energy consumption outside the organization
	302-3 Energy intensity
	302-4 Reduction of energy consumption
	302-5 Reduction in energy required for product
3. Water and effluents	303-1 Interaction with water as a shared resource
	303-2 Management of impacts related to disposal water
	303-3 Water withdrawal
	303-4 Drainage of water
	303-5 Water consumption
4. Biodiversity	304-1 Location of operations owned, leased, managed, or nearby
	304-2 Significant impacts of activities, products, and services on
	304-3 Habitat protected or restored
	304-4 IUCN red list species and conservation list species
5. Emissions	305-1 Direct (Scope 1) GHG emissions
	305-2 Energy indirect (Scope 2) GHG emissions
	305-3 Other indirect (Scope 3) GHG emissions
	305-4 GHG emission intensity
	305-5 Reduction of GHG emissions
	305-6 Emissions of ozone depleting substances (ODS)
	305-7 Nitrogen oxides (NOX), sulfur oxides (SOX), and emissions air
6. Effluentd and waste	306-1 Release of water based on quality and destination and or waste generation and significant impacts related to waste
	306-2 Waste by type and disposal method and or management of significant impacts related to waste
	306-3 Significant spillage and/or waste generation
	306-4 Transport of hazardous waste, diverted waste from final disposal
	306-5 Water body affected by release and/or waste sent to final disposal
7. Environmental compliance	307-1 Non-compliance with laws and regulations
8. Supplier environmental assessment	308-1 Selection of new suppliers using criteria
	308-2 Negative environmental impacts in the supply chain and action that has been taken

Appendix 2 presents Corporate Governance CG index based on governance perspectives of the OECD and the Indonesian codes.

Appendix 2. Corporate governance CG index based on governance perspectives of the OECD and the Indonesian codes.

Sub-indexes	Acronym	Description
1. Code of ethics	ETHIC	values of 1 when a company has a codified code of ethics and 0 when it doesn't
2. Anti-corruption	ANTICOR	If a company has an anti-corruption and anti-bribery policy, the dummy variable is 1, otherwise it is 0.
3. Insider trading	INSIDER	values variable is set to 1 if a company has an anti-insider trading policy and 0 otherwise
4. Largest shareholder	LSHARE	If a company has a policy prohibiting insider trading, the dummy variable will be 1; otherwise, it will be 0
5. Free float	PUBLIC	Values variable is 1 if public investors (minority shareholders) own more than 7.5% of the voting rights overall and 0 otherwise.
6. Shared ownership by employees	ESOP	values variable that is set to 1 if a company offers employee stock options and 0 otherwise.
7. CSR	CSR	Values of 1 is set to 1 if a company publishes their CSR initiatives in its annual report and 0 otherwise
8. Whistleblowing	WSB	values of 1 when a company has an internal whistleblowing mechanism and 0 when it doesn't
9. Sanctions	SANCTION	Values 1 if a company provides information about a violation of any laws or regulations governing the stock market and 0 otherwise.
10. Big 4 auditors	AUDIT	If a company engages one of the Big Four international auditing firms, the dummy variable will be 1; otherwise, it will be 0.
11. Disclosure of the ultimate beneficiary shareholders	DISCLOSURE	values equivalent to 1 when a company discloses the ultimate beneficiary share owner and 0 otherwise
12. Independent director	IDIR	If a company has more than one independent director, the dummy variable will be 1; otherwise, it will be 0.
13. Independent commissioner	ICOM	a dummy variable that is 0 otherwise and 1 if the number of independent commissioners on the board is greater than 30%
14. The number of board directors	BODSIZE	Values 1 when a company has 5 to 9 directors on its board and 0 when it doesn't
15. Board of Commissioners' size	BOCSIZE	If a company has 4 to 8 commissioners on the board, values is equal to 1, otherwise it is equal to 0.

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