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The Impact of Ownership Structure and Audit Quality on Carbon Emission Disclosure: An Empirical Study from Indonesia

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Abstract

This study investigates the impact of ownership structures and audit quality on carbon emission disclosure. It also examines how audit quality affects the relationship between ownership structures and carbon emission disclosure. This research includes 106 standalone sustainability reports from non-financial companies that were listed on the Indonesia Stock Exchange (IDX) between 2015 and 2018. Our findings show that family and concentrated ownerships convey less information about carbon emissions. Our results fail to demonstrate that disclosure of carbon emissions could be a corporation's approach to respond to stakeholder pressure and public visibility and to provide legitimacy for its existence. We also find a positive and significant association between high-quality (Big4) auditors and carbon emission performance. Our further result suggests that Big4 auditors seem to compromise their high standard quality on auditing family and concentrated ownership firms. They fail to influence their family and concentrated ownership clients to be socially responsible. Policymakers should support the existence of Big4 auditors as a driver of carbon emission performance. Top management should be proactive to tackle carbon emission issues by adopting stakeholder-driven mechanisms and establishing legitimacy with society. Nevertheless, the involvement of family and highly concentrated shareholders in decision-making processes and information disclosure should not be encouraged.

Keywords: Family Ownership, Concentrated Ownership, Audit Quality, Carbon Emission Disclosure

JEL Classification Code: G32, M14, Q56

1. Introduction

This research has two objectives. To start, it examines whether ownership structures and audit quality are related to carbon emission disclosure. Second, using a sample of non-financial enterprises listed on the IDX, it investigates the impact of audit quality on ownership structures and carbon emission disclosure relationships. This research also looks into the impact of a company's political ties, financial performance, and financial debt. Around the world, a range of environmental challenges has become a source of public concern. To justify their actions and assure stakeholders of their disposition and preparedness to safeguard the environment, corporate executives responded to these alerts by voluntarily sharing environmental information (Cho & Patten, 2007). There are laws in Indonesia that address social and environmental issues. The government established the Performance Rating Program in Environmental Management in 1995 to increase the role of Indonesian businesses in the environmental conservation program. In 2007, the government issued Company Law No. 40, which requires firms that conduct business in the field and/or with natural resources to fulfill their social and environmental obligations. In addition, Presidential Regulation No. 71/2011 was adopted to regulate the submission of national greenhouse gas (GHG) inventories regularly. The bill aims to give regular updates on GHG emission change and absorption levels, status, and trends. Carbon emission disclosure is a component of an entity's contribution to environmental and climate change, notably in the context of global warming.

Prior studies in this area mostly focused on Anglo-American companies, where agency conflict between

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professional managers and their geographically dispersed stockholders is prevalent. In Indonesia, however, many businesses are often held by a small group of stockholders, with strong family ties or political affiliations (Fisman, 2001). The majority and minority shareholders face a separate agency dilemma as a result of this. Studying the ownership characteristics in Indonesia is interesting. To begin with, the ownership characteristics of Indonesian businesses differ substantially from those of companies in the United States or the United Kingdom. Indonesian firms tend to be highly concentrated, with roughly 80% of firms listed on the IDX having a majority of the equity owned by a single family (Fan & Wong, 2002). Second, Mobarak and Purbasari (2006) argued that institutional ownership, as well as the foreign investor, has grown significantly after the Suharto era. This could involve a greater supervisory role for institutional and foreign shareholders, assuming that both concentrations of ownership are an effective substitute for corporate board oversight. Third, earlier works (Fisman, 2001; Gul, 2006) indicated that many Indonesian firms have political ties. They argued that political affiliation could increase the risk to external investors as a result of greater insider expropriation, resulting in higher agency costs.

2. Literature Review and Hypotheses

2.1. Literature Review

Stakeholder and legitimacy are the most widely used in explaining social and environmental disclosure studies (Deegan, 2009; Parmer et al., 2010; Roberts, 1992). Parmer et al. (2010) argued that the fundamental assumption of stakeholder theory is that stakeholders are a part of the business environment. Moreover, a company's existence is affected by stakeholders' support. Consequently, a company should effectively manage its key stakeholders and corporate reporting is one media by which corporations could use to manage them. Additionally, Roberts (1992) asserted that the relationships between management and stakeholders are based on normative and moral commitments rather than profits reason. Thus, stakeholders should be given transparent and relevant social and environmental information and carbon emission disclosure is taken into account as a component of the dialogue between corporations and their stakeholders. Suchman (1995) defined legitimacy as general perceptions that the actions of an organization are suitable, needed, or correct within the norms, values, definitions, and beliefs of its larger social system of which the organization may be a part. Thus, corporate organizations continually seek to make sure that their operations meet the expectations of their respective societies (Deegan, 2009). Tilling and Tilt (2010) suggested that low legitimacy may even end in the forfeiture of a corporation's license to operate. Consequently, a corporate organization must ensure its continued legitimacy by identifying and managing its actions. Corporations can disclosure social and environmental information in annual reports as a mechanism to counteract criticisms and gain societal support or influence public perceptions of their activities to establish legitimacy with the society (Henderson et al., 2004).

2.2. Hypotheses

It is argued that family businesses related to greater agency conflicts compared to their counterparts. Family managers are more likely to expropriate the minority shareholder's wealth for their private benefit (Faccio & Lang, 2002). This can be usually done through paying themselves excessive compensation or special dividends, appointing family members to management positions over other better-qualified candidates, or involvement in potentially biased related-party transactions (Anderson & Reeb, 2003). The negative view of family businesses suggests that family ownerships are less socially responsible due to their main purpose is to guard the firms' assets and ownership. Previous findings (Chen & Jaggi, 2001; Vural, 2018) show that family firms have lower levels of overall disclosure. Specifically, Morck and Yeung (2004) document that family firms are less likely to conduct sustainability and social responsibility activities. Likewise, Akrout and Othman (2013) indicated that family firms are negatively related to the extent of voluntary corporate environmental disclosure.

When company ownership is spread, the agency conflicts that result may differ from those that happen when it is concentrated. Conflicts of interest between controlling and minority shareholders become a major concern when a company's ownership is concentrated to the point where one owner has effective control of the company, as is often the case in Asia. According to previous studies, larger levels of concentrated ownership reveal less social information. Chen and Jaggi (2001), for example, indicated that concentrated ownership has a negative connection with the amount of information disclosed. According to Karamanou and Vafeas (2005), higher corporate ownership is linked to poorer disclosure quality. Chau and Gray (2002) found that less ownership concentration is associated with increased voluntary disclosure.

Foreign investors are highly interested in firms that are related to low levels of asymmetric information (Alnabsha et al., 2018). Therefore, the demand for the exposure of environmental reporting is rising to assist the investors to assess the company's performance effectively (Rustam et al., 2019). It is because environmental reporting enables companies to boost stakeholders' trust, assess possible risks related to the execution of business activities, and mitigate the more severe environmental effects of those activities (Sekerez, 2017). Findings documented in several studies clearly support that foreign shareholders are more likely

to report corporate social activities. Some previous studies (Adeniyi & Adebayo, 2018; Wang & Wang, 2015) report a positive and significant relationship between foreign ownership and corporate social responsibility disclosure.

This study also examines the effect of audit quality on disclosure. It is argued that Big4 auditors might deliver higher quality audits compared to non-Big4 (Caneghem, 2004). The Big4 audit firms have strong incentives to maintain a high level of audit quality because they have: (1) a greater number of clients, (2) more technology, highly skilled staffs, and good training programs to conduct audit assignments, and (3) more to lose of reputation (Caneghem, 2004). As a result, it is expected that firms audited by Big4 auditors disclose more information than those non-Big4. Rover et al. (2016) argue that Big4 auditors have a preference to influence their audit clients to disclose the maximum amount of information as possible to reduce the likelihood of possible litigation from the omission of material information. Consistent with Muliati et al. (2021), we assume that Big4 auditors in Indonesia offer equal high audit quality as Big4 auditors around the globe. Thus, this study purposes the hypotheses:

H1: *Family firms disclose less carbon emission information than non-family firms.*

H2: *Concentrated ownership firms disclose less carbon emission information.*

H3: *Foreign ownership discloses more carbon emissions.*

H4: *Firms that are audited by Big4 auditors disclose more carbon emission information.*

H5, H6, H7: *Family-owned, concentrated ownership, foreign-owned firms that are audited by Big4 auditors disclose more carbon emission information.*

3. Methodology

3.1. Data

Unlike most previous studies, this study focuses solely on sustainability reports as a data source to capture and analyze carbon emission information. Thus, this study is important because it provides a deeper analysis of the event firms' carbon emission disclosure communication in separate stand-alone reports. Our sample comprises the firms listed on the IDX that publish the sustainability report for the period 2015–2018. To confirm data homogeneity, we focus on non-financial firms. Total non-financial firms that publish the sustainability report are 108 (2015 = 19, 2016 = 23, 2017 = 32, and 2018 = 34). We exclude two observations due to outlier data points. The statistical analyses are based on a sample of 106 observations. The data to construct proxy measures for the dependent variable is sourced from firms' 2015–2018 sustainability reports. Independent and control variables data is collected directly from annual reports and the Globe Asia Business Magazine.

3.2. Dependent Variable

The dependent variable represents the level of carbon emission disclosure of the sample firms for the years 2015–2018. Following Hardiyansah et al. (2021), this study uses checklist items of carbon emission disclosure (see Table 1) developed by Choi et al. (2013). The unweighting disclosure index approach is used for measuring the dependent variable where each disclosure item is deemed equally important (Cooke, 1993). Thus, a value of one if firm *j* discloses information as determined in the checklist items, otherwise scored zero.

3.3. Independent Variables

Three types of ownership structure (family, concentrated, and foreign ownership) and Big4 auditors are employed as explanatory variables. Family ownership information is collected from the Globe Asia Business Magazine (Globe Asia, 2018), while concentrated ownership, foreign ownership, and Big4 audit firms are collected from the firms' annual reports.

3.4. Control Variables

We include financial leverage to control for the effects of firm risk (Andajani & Agustia, 2021). Agency theory notes that firms with higher levels of financial leverage prefer to disclose more information to satisfy creditors and remove suspicious wealth transfers to shareholders. The financial performance is included in the model as profitable firms tend to disclose more information for differentiating themselves from other firms (Andajani & Agustia, 2021). Finally, the political connection is included as another control variable (Saraswati et al., 2020).

3.5. Empirical Models

We use ordinary least squares multiple regression as the main statistical technique to test the hypotheses. The regression models are defined in the following equations:

$$CED_i = \alpha_i + \alpha_{i123}OwStru_i + \alpha_{i4}AudQual_i + \alpha_{i5}PolCon_i + \alpha_{i6}Lev_i + \alpha_{i7}ROE_i + \varepsilon_i \quad (1)$$

$$CED_i = \alpha_{i123}OwStru_i + \alpha_{i4}AudQual_i + \alpha_{i567}OwStru_i \times AudQual_i + \alpha_{i8}PolCon_i + \alpha_{i9}Lev_i + \alpha_{i10}ROE_i + \varepsilon_i \quad (2)$$

Note: CED = takes the value of 1 if the firm discloses information as determined in the checklist items and 0 otherwise. OwStru = family, concentrated, and foreign ownership. Family Firm (Fam) = takes the value of 1 if the firm is considered as family-owned and 0 otherwise. Concentrated ownership (OwnCon) = the percentage of

Table 1: The List Checklist of Carbon Emission Disclosure

Category	Coding	Carbon Emission Details
CC	CC1	1. Assessment/description of the risks (regulatory, physical, or general) relating to climate change and actions are taken or to be taken to manage the risks
	CC2	2. Assessment/description of current (and future) financial implications, business implications, and opportunities of climate change
CE	CE1	3. Description of the methods used in calculating GHG emissions (e.g. GHG protocol or ISO)
	CE2	4. Existence external verification of quantity of GHG emission- if so by whom and on what basis
	CE3	5. Amount of GHG Emissions – metric tones CO2-emitted
	CE4	6. Disclosure of scopes 1 and 2, or related to the direct GHG emissions
	CE5	7. Disclosure of GHG emissions based on the sources (e.g. coal, electricity, etc.)
	CE6	8. Disclosure of GHG emissions based on the facility or level of segment
	CE7	9. Comparison of the amount of GHG emissions with last year
EC	EC1	10. Total amount of energy consumption (e.g. tera-joules or petajoules)
	EC2	11. Total amount of energy used from renewable sources
	EC3	12. Disclosure based on types, facilities, or segments
RC	RC1	13. Detail of plans or strategies to reduce GHG emissions
	RC2	14. Specification of GHG emissions reduction target level and target year
	RC3	15. Emissions reductions and associated costs or savings
	RC4	16. Cost of future emissions factored into capital expenditure planning
AC	AC1	17. Indication of which board committee (or other executive body) has overall responsibility for actions related to climate change
	AC2	18. Description of the mechanism by which the board (or other executive body) reviews the company's progress regarding climate change

Note: CC: Climate change: risks and opportunities; CE: Carbon emissions; EC: Energy consumption; RC: Carbon emission reduction and cost; AC: Carbon emission accountability.

outstanding shares owned by the top-1 ownership. Foreign ownership (Foreign) = the percentage of outstanding shares owned by foreign shareholders. Audit quality (AudQual) = takes the value of 1 if the auditor of the company is a Big-4 audit firm and 0 otherwise. Political connection (Polcon) = takes the value of 1 if the firm meets one among of the criteria (a) the firm is state-owned, (b) the firm's top officers are a member of parliament, (c) the firm's top officers hold or have held positions in the government. Leverage (Lev) = total debt to total equity ratio. Firm's performance (ROE) = net income to total equity ratio.

4. Results and Discussion

4.1. Descriptive Statistics

Table 2 presents the carbon emission disclosure per item for 2015–2018. The total amount of EC1 is the most disclosed item (88.89%, 82.61%, 87.10%, and 82.35%). It is followed by the CE3 (66.67%, 65.22%, 58.06%, and 58.82%) and the least disclosed item is AC1 (0%, 0%, 0%, and 2.94%). Overall, the number of items disclosed is increased from 27.47% in 2015 to 29.25% in 2018.

Table 3 depicts the descriptive statistics for independent and control variables. Panel A shows continuous, while Panel B presents the dummy regression variables.

Panel A indicates the ownership concentration of Indonesian listed firms is relatively higher (60.39%) compared to France, Brazil, Australia, Canada, the UK, Japan, and the USA (Richter & Weiss, 2013). This result is in line with Claessens et al. (2000), who report that the Indonesian ownership concentration is significantly higher compared to most other countries. There is a big gap in the mean of Foreign with its median, which specifies that our dataset is positively skewed. An average Lev is 1.40% with a median of 0.98%. The mean ROE is 17.15%, starting from –72.41% to 135.80%. Panel B reports that 32.08% of the sample firms are owned by family members. Additionally,

Table 2: Carbon Emission Disclosure Per Item in 2015–2018

Coding	Carbon Emission Details	2015	2016	2017	2018
CC1	1. Assessment of the risks and actions taken or to be taken to manage the risks	0.00	4.35	0.00	0.00
CC2	2. Assessment of financial implications, business implications, and opportunities of climate change	0.00	4.35	0.00	0.00
CE1	3. Methodology used to calculate emissions	33.33	26.09	32.26	38.24
CE2	4. External verification of quantity of emission	5.56	13.04	3.23	5.88
CE3	5. Total amount of emissions	66.67	65.22	58.06	58.82
CE4	6. Disclosure of scope direct emissions	33.33	26.09	32.26	29.41
CE5	7. Disclosure of sources	22.22	26.09	29.03	29.47
CE6	8. Disclosure of facility or segment level	16.67	17.39	29.03	29.41
CE7	9. Comparison of emissions with previous years	61.11	56.52	45.16	47.06
EC1	10. Total amount of energy consumed	88.89	82.61	87.10	82.35
EC2	11. Quantification of energy used from renewable sources	11.11	26.09	25.81	35.29
EC3	12. Disclosure by type, facility, or segment	44.44	52.17	61.29	58.82
RC1	13. Detail of plans or strategies to reduce emissions	61.11	47.83	48.39	61.76
RC2	14. Specification of emissions reduction target level and target year	16.67	17.39	3.23	5.88
RC3	15. Emissions reductions and associated costs or savings	38.46	35.29	40.91	54.55
RC4	16. Cost of future emissions factored into capital expenditure planning	5.56	0.00	3.23	5.88
AC1	17. Indication of which board committee has responsibility for actions on climate change	0.00	0.00	0.00	2.94
AC2	18. Mechanism by which the committee or board of directors review the company's progress regarding climate change	0.00	8.70	3.23	2.94
Mean		27.47	27.78	27.24	29.25

Note: CC: Climate change: risks and opportunities; CE: Carbon emissions; EC: Energy consumption; RC: Carbon emission reduction and cost; AC: Carbon emission accountability.

Table 3: Descriptive Statistics

Panel A-Continuous Variables	Mean	Median	Std. Dev	Min	Max
Concentrated ownership (OwnCon)	60.39	60.03	14.65	10.19	84.99
Foreign ownership (Foreign)	25.09	0.00	33.70	0.00	87.00
Leverage (Lev)	1.40	0.98	1.57	–2.11	11.91
Firm's performance (ROE)	17.15	10.54	32.27	–72.41	135.80
Panel B-Categorical Variables				**Freq.**	**% tage**
Family Firms				34	32.08
Non-Family Firms				72	67.92
Political connection firms				39	36.79
Non-political connection firms				67	63.21
Audit Quality (Big4)				88	83.02
Non-Big4				18	16.98

36.79% of Indonesian firms are politically connected. Finally, 83.02% of the sample firms are audited by Big4 which indicates that Big4 auditors continue the main audit service provider in Indonesia.

4.2. Correlations

The correlation results (not included for brevity) are not fully supportive of our hypotheses. The negative of Fam and OwnCon and positive of Foreign related to CED are as expected. Yet, these relationships are not significant. However, as hypothesized, the finding shows a positive and significant correlation ($p < 0.01$) between AudQual and CED. The magnitudes of the correlations amongst the independent variables are all below the critical limit of 0.80, thus multicollinearity does not arise in regression models (Cooper & Schindler, 2003).

4.3. Multivariate Regression Results

Table 4 presents the results of regression for testing hypotheses H1 to H7. Panel A tests the impact of ownership structure and audit quality on carbon emission disclosure (H1 to H4). Panels B to D consider the effects of audit quality in moderating the link between ownership structure and carbon emission disclosure (H5 to H7). Regression model estimates presented in Panels A to D are all significant (F-statistic $p < 0.01$). All the variance inflation factor values (results not included for brevity) are below 10 providing additional evidence that multicollinearity is not an issue. Panel A shows that family ownership is negative and significantly related to carbon emission disclosure ($\beta = -0.199$, $p < 0.01$). Thus, H1 is supported. Our finding supports prior studies (e.g., Akrout & Othman, 2013; Vural, 2018) that document family firms are less inclined to provide disclosure than non-family firms do. This is consistent with the notion that family owners typically appoint family members into executive positions. Thus, they have direct control and influence to avoid costly public disclosures.

Accordingly, family-controlled firms are less socially responsible compared to their counterpart. Panel A also indicates that the coefficients for concentrated ownership are negative and highly significant ($\beta = -0.003$, $p < 0.01$), thus supporting H2. Our result supports the premise that is controlling shareholders have greater incentives to maximize their wealth at the expense of minority shareholders, and hence they are likely to obscure and delay the disclosure of related information (Claessens et al., 2000).

In a study of East-Asian firms, Fan and Wong (2002) reveal that concentrated ownership firms avoid disclosure

Table 4: Regression Results

	Panel A		Panel B		Panel C		Panel D	
	Beta	***t*-statistic**	**Beta**	***t*-statistic**	**Beta**	***t*-statistic**	**Beta**	***t*-statistic**
(Constant)		6.188*		6.833*		4.038*		6.024*
Fam	–0.199	–3.382*	0.181	1.125	–0.265	–4.025*	–0.198	–3.289*
OwnCon	–0.003	–2.989*	–0.004	–3.454*	0.001	0.114	–0.003	–2.882*
Foreign	–0.002	–1.805	–0.002	–2.289**	–0.002	–2.375**	–0.001	–0.735
AudQual	0.151	3.411*	0.128	2.909*	0.410	3.134*	0.151	3.333*
PolCon	–0.157	–2.378**	–0.195	–2.957*	–0.226	–3.104*	–0.156	–2.296**
Lev	–0.016	–1.751	–0.020	–2.251**	–0.014	–1.599	–0.016	–1.739
ROE	0.001	0.758	0.001	0.856	0.001	0.874	0.001	0.736
Fam * AudQual			–0.607	–2.526*				
OwnCon * AudQual					–0.007	–2.097**		
Foreign * AudQual							0.001	0.051
Model Summary								
Adj. *R*-Squared	0.193		0.235		0.220		0.185	
F-Statistic	4.597*		5.032*		4.703*		3.973*	
Sample Size	106		106		106		106	

Note: * and ** indicate significance at $p < 0.01$ and $p < 0.05$ (based on two-tailed tests).

of proprietary information about their rent-seeking activities. Similar to some prior findings (Chen & Jaggi, 2001; Karamanou & Vafeas, 2005), this study shows that higher levels of concentrated ownership disclose less corporate and social information. The directional sign on the coefficient for Foreign is negative and not significant. Thus, H3 is not supported. Finally, the coefficient on AudQual is positive and significant at $p < 0.01$ associated with CED, therefore, supporting our H4. Firms that are audited by Big4 auditors disclose more carbon emission information than their counterparts. With reference to control variables, the coefficient on PolCon is negative and significant at $p < 0.05$, suggesting that firms with high political connections disclose less carbon emission information. The coefficients for Lev and ROE are negative and positive; however, statistically not significant. The interaction term, Fam × AudQual (Panel B), has a negative and highly significant (at $p < 0.01$) relationship with CED, meaning that Big4 audit firms that are viewed as high-quality auditors fail to moderate the link between family ownership and carbon emission disclosure. Family firms that are audited by Big4 auditors continue to disclose less carbon emission information. This result fails to support our H5. Similarly, Panel C reports that the interaction term of OwnCon × AudQual is negative and significant at $p < 0.05$. Thus, the result does not support H6, suggesting that the interactive effect of Big4 auditors and concentrated ownership fails to have a significant positive impact on the carbon emission disclosure. Moreover, Panel D shows that the coefficient on Foreign × AudQual is positive. However, it is statistically insignificant.

4.4. Robustness Check

Previous research (Alipour et al., 2019; Laidroo, 2009) has shown that environmental disclosure differs between industries and time periods. As a result, we do an additional analysis (see Table 5) to account for industry and year effects to ensure that the primary conclusions are reliable. The Hausman test recommends that fixed-effect estimates should be used to control unobserved industry and year-specific factors. The primary findings provided in Table 4 are typically similar to the results of multiple regression analysis from the fixed effect test. One difference of note, the explanatory powers (adjusted R^2) in Table 5 are slightly larger than those reported in Table 4.

Table 5: Regression Results (After Controlling for Year and Industry)

	Panel A		Panel B		Panel C		Panel D	
	Beta	***t*-statistic**	**Beta**	***t*-statistic**	**Beta**	***t*-statistic**	**Beta**	***t*-statistic**
(Constant)		3.566*		3.998*		2.472*		3.545*
Fam	–0.161	–2.433**	0.087	0.554	–0.227	–3.146*	–0.167	–2.492*
OwnCon	–0.002	–1.944**	–0.002	–2.214**	0.001	0.752	–0.002	–1.944**
Foreign	–0.002	–2.702*	–0.002	–2.954*	–0.003	–3.190*	–0.004	–1.877
AudQual	0.117	2.449**	0.105	2.202**	0.366	2.880*	0.121	2.504*
PolCOn	–0.142	–2.194**	–0.167	–2.545*	–0.204	–2.913*	–0.152	–2.297**
Lev	0.001	0.096	–0.002	–0.202	0.003	0.272	0.001	0.129
ROE	–0.001	–1.687	–0.001	–1.663	–0.001	–1.595	–0.001	–1.461
Fam * AudQual			–0.406	–1.739				
OwnCon * AudQual					–0.007	–2.106**		
Foreign * AudQual							0.002	0.751
Year dummies	Yes		Yes		Yes		Yes	
Industry dummies	Yes		Yes		Yes		Yes	
Model Summary								
Adj. *R*-Squared	0.338		0.353		0.363		0.335	
F-Statistic	4.151*		4.178*		4.320*		3.932*	
Sample Size	106		106		106		106	

Note: * and ** indicate significance at $p < 0.01$ and $p < 0.05$ (based on two-tailed tests).

5. Conclusion

The relationship between ownership structures and carbon emission disclosure is investigated in this study. We also examine the impact of audit quality on carbon emission disclosure and assess the role of audit quality in the relationship between ownership structures and carbon emission disclosure. Our data back up the claim that family and concentrated ownership businesses are less socially responsible than their peers. Family and concentrated ownership do not improve a company's visibility or help management communicate with external stakeholders by revealing more information about carbon emission operations. Our results fail to demonstrate that disclosure of carbon emissions could be a corporation's approach to respond to stakeholder pressure and public visibility and to provide legitimacy for its existence. Moreover, our study reports a significant positive association between Big4 and carbon emission disclosure, suggesting that Big4 auditors enhance their audit clients to care for conserving the environment. Finally, our hypotheses suggest that Big4 auditors moderate the relationship between the family-owned, concentrated, and foreign-owned firms and the level of carbon emission disclosure, but they are not supported.

Our research contradicts the assumption that Big4 auditors have more authority to persuade their customers to be more socially conscious. One probable explanation is that in Indonesia, the market share of second-tier multinational audit companies has been continuously expanding. This provides more possibilities for businesses to choose their auditors, and it may have an impact on Big4 auditors' efforts to encourage family and highly concentrated businesses to continue their environmental actions. The following are some of the contributions made by the findings of this study. First, unlike earlier studies, this one conducts in-depth research on the family, concentrated, and foreign businesses in a context other than developed markets. Second, considering the limited research regarding Indonesia connected to these concerns, this study makes a significant contribution to the literature in Indonesia.

Our findings have practical and theoretical implications. Big4 auditors, as an essential component of corporate governance and a driver of carbon emission disclosure, should be promoted and supported. Also, to improve the disclosure policy of family and highly concentrated ownerships, more effective regulative enforcement is required. Additionally, all top management should be proactive in tackling carbon emission issues by adopting stakeholder-driven mechanisms and establishing legitimacy with the society. However, the involvement of family and highly concentrated shareholders in corporate decision-making processes and environmental disclosure policy should not be encouraged.

References

Adeniyi, S., & Adebayo, H. O. (2018). Effect of financial leverage on voluntary corporate social disclosure among listed firms on Nigerian stock exchange: A study of selected manufacturing firms. *Academic Journal of Economic Studies*, *4*(3), 18–24. http://www.ajes.ro/wp-content/uploads/AJES_article_1_180.pdf

Akrout, M. M., & Othman, H. B. (2013). A study of the determinants of corporate environmental disclosure in MENA emerging markets. *Journal of Reviews on Global Economics*, *2*, 46–59. https://doi.org/10.6000/1929-7092.2013.6002.6005

Alipour, M., Ghanbari, M., Jamshidinavid, B., & Taherabadi, A. (2019). Does board independence moderate the relationship between environmental disclosure quality and performance? Evidence from static and dynamic panel data Corporate governance. *International Journal of Business and Society*, *19*(3), 580–610. https://doi.org/510.1108/CG-1106-2018-0196

Alnabsha, A., Abdou, H. A., Ntim, C. G., & Elamer, A. A. (2018). Corporate boards, ownership structures and corporate disclosures: Evidence from a developing country. *Journal of Applied Accounting Research*, *19*(1), 20–41. https://doi.org/10.1108/JAAR-01-2016-0001

Andajani, A., & Agustia, D. (2021). Determinants of socio-ecological responsibility disclosures in Indonesia. *Journal of Asian Finance, Economics, and Business*, *8*(2), 0183–0194. https://doi.org/0110.13106/jafeb.12021.vol13108.n13102.10183

Anderson, R. C., & Reeb, D. M. (2003). Public family ownership and firm performance: Evidence from S&P 500. *Journal of Finance*, *58*(3), 1301–1328. https://www.jstor.org/stable/3094581. https://doi.org/10.1111/1540-6261.00567

Caneghem, T. V. (2004). The impact of audit quality on earnings rounding-up behavior: Some UK evidence. *European Accounting Review*, *13*(4), 771–786. https://doi.org/10.1080/0963818042000216866

Chau, G. K., & Gray, S. J. (2002). Ownership structure and corporate voluntary disclosure in Hong Kong and Singapore. *International Journal of Accounting*, *37*(2), 247–265. https://doi.org/10.1016/S0020-7063(02)00153-X

Chen, C. J. P., & Jaggi, B. (2000). Association between independent non-executive directors, family control, and financial disclosures in Hong Kong. *Journal of Accounting and Public Policy*, *19*(4–5), 285–310. https://doi.org/10.1016/S0278-4254(00)00015-6

Cho, C. H., & Patten, D. M. (2007). The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society*, *32*(7–8), 639–647. https://doi.org/10.1016/j.aos.2006.09.009

Choi, B. B., Lee, D., & Psaros, J. (2013). An analysis of Australian company carbon emission disclosures. *Pacific Accounting Review*, *25*(1), 58–79. https://doi.org/10.1108/01140581311318968

Claessens, S., Djankov, S., & Lang, L. H. P. (2000). The separation of ownership and control in East Asian corporations. *Journal of Financial Economics*, *58*(1–2), 81–112. https://doi.org/10.1016/S0304-405X(00)00067-2

Cooke, T. E. (1993). Disclosure in Japanese corporate annual reports. *Journal of Business Finance and Accounting*, *20*(4), 521–535. https://doi.org/10.1111/j.1468-5957.1993.tb00272.x

Cooper, D. R., & Schindler, P. S. (2003). *Business research methods* (8th ed.). New York: McGraw-Hill. Irwin Publishing.

Deegan, C. (2009). *Financial accounting theory* (2nd ed.). New York: McGraw-Hill.

Faccio, M., & Lang, L. H. P. (2002). The ultimate ownership of Western European corporations. *Journal of Financial Economics*, *65*(3), 365–395. https://doi.org/10.1016/S0304-405X(02)00146-0

Fan, J. P. H., & Wong, T. J. (2002). Corporate ownership structure and the informativeness of accounting earnings in East Asia. *Journal of Accounting and Economics*, *33*(3), 401–425. https://doi.org/10.1016/S0165-4101(02)00047-2

Fisman, R. (2001). Estimating the value of political connections. *American Economic Review*. American Economic Association, *91*(4), 1095–1102. https://doi.org/10.1257/aer.91.4.1095

Globe Asia. (2018). *150 Richest Indonesian* in Jakarta. https://jakartaglobe.id/business/globeasia-150-richest-indonesians-june-2016/

Gul, F. A. (2006). Auditors' response to political connections and cronyism in Malaysia. *Journal of Accounting Research*, *44*(5), 931–963. https://doi.org/10.1111/j.1475-679X.2006.00220.x

Hardiyansah, M., Agustini, A. T., & Purnamawati, I. (2021). The effect of carbon emission disclosure on firm value: Environmental performance and industrial type. *Journal of Asian Finance, Economics, and Business*, *8*(1), 123–133. https://doi.org/110.13106/jafeb.12021.vol13108.no.13101.13123

Henderson, S., Peirson, G., & Harris, K. (2004). *Financial accounting theory*. UK: Pearson Prentice Hall.

Karamanou, I., & Vafeas, N. (2005). The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis. *Journal of Accounting Research*, *43*(3), 453–486. https://doi.org/10.1111/j.1475-679X.2005.00177.x

Laidroo, L. (2009). Association between ownership structure and public announcements' disclosures. *Corporate Governance: an International Review*, *17*(1), 13–34. https://doi.org/10.1111/j.1467-8683.2008.00717.x

Mobarak, A., & Purbasari, D. (2006). *Corrupt protection for sale to firms: Evidence from Indonesia* [Unpublished manuscript]. Boulder, Colorado: The University of Colorado.

Morck, R., & Yeung, B. (2004). Family control and the rent-seeking society. *Entrepreneurship Theory and Practice*, *28*(4), 391–409. https://doi.org/10.1111/j.1540-6520.2004.00053.x

Muliati, M., Mayapada, A. G., Parwati, N. M. S., Ridwan, R., & Salmina, D. (2021). Does audit matter in the earnings quality of Indonesian banks? *Journal of Asian Finance, Economics, and Business*, *8*(2), 0143–0150. https://doi.org/0110.13106/jafeb.12021.vol13108.no13102.10143

Parmer, B. L., Freeman, R. E., Harrison, J. S., Wicks, A. C., Purnell, L., & Colle, S. D. (2010). Stakeholder theory: State of the art. *Academy of Management Annals*, *4*(1), 403–445. https://doi.org/410.5465/19416520.19412010.19495581

Richter, A., & Weiss, C. (2013). Determinants of ownership concentration in public firms: The importance of firm-, industry- and country-level factors. *International Review of Law and Economics*, *33*, 1–14. http://doi.org/10.1016/j.irle.2012.08.003

Roberts, R. W. (1992). Determinants of corporate social responsibility disclosure: An application of stakeholder theory. *Accounting, Organizations and Society*, *17*(6), 595–612. https://doi.org/10.1016/0361-3682(92)90015-K

Rover, S., Dal-Ri Murcia, F., & de Souza Murcia, F. C. (2016). The determinants of social and environmental disclosure practices: The Brazilian case. *Environmental Quality Management*, *16*, 5–24. https://doi.org/10.1002/tqem.21406

Rustam, A., Wang, Y., & Zameer, H. (2019). Does foreign ownership affect corporate sustainability disclosure in Pakistan? A sequential mixed-methods approach. *Environmental Science and Pollution Research*, *26*(5), 1–20. https://doi.org/10.1007/s11356-11019-06250-11353

Saraswati, E., Sagitaputri, A., & Rahadian, Y. (2020). Political connections and CSR disclosures in Indonesia. *Journal of Asian Finance, Economics, and Business*, *7*(11), 1097–1104. https://doi.org/10.13106/jafeb.2020.vol7.no11.1097

Sekerez, V. (2017). Environmental accounting as a cornerstone of corporate sustainability reporting. *International Journal of Management Science and Business Administration*, *4*(1), 7–14. http://doi.org/10.18775/ijmsba.1849-5664-5419.2014.41.1001

Suchman, M. C. (1995). Managing Legitimacy: Strategic and institutional approaches. *Academy of Management Review*, *20*(3), 571–610. https://doi.org/10.5465/amr.1995.9508080331

Tilling, M. V., & Tilt, C. A. (2010). The edge of legitimacy voluntary social and environmental reporting in Rothmans' 1956–1999 annual reports. *Accounting, Auditing and Accountability Journal*, *23*(1), 55–81. https://doi.org/10.1108/09513571011010600

Vural, D. (2018). Disclosure practices by family firms: Evidence from Swedish publicly listed firms. *Accounting in Europe*, *15*(3), 347–373. https://doi.org/10.1080/17449480.2018.1479531

Wang, J., & Wang, X. (2015). Benefits of foreign ownership: Evidence from foreign direct investment in China. *Journal of International Economics*, *97*(2), 325–338. https://doi.org/10.1016/j.jinteco.2015.07.006

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