“The role of family businesses and active family members in environmental performance”

AUTHORS	Agus Joko Pramono Bahrullah Akbar Bahagia Tarigan Rusmin Rusmin Emita Wahyu Astami

ARTICLE INFO	Agus Joko Pramono, Bahrullah Akbar, Bahagia Tarigan, Rusmin Rusmin and Emita Wahyu Astami (2023). The role of family businesses and active family members in environmental performance. *Environmental Economics*, *14*(1), 91-103. doi:10.21511/ee.14(1).2023.09
DOI	http://dx.doi.org/10.21511/ee.14(1).2023.09
RELEASED ON	Wednesday, 28 June 2023
RECEIVED ON	Wednesday, 19 April 2023
ACCEPTED ON	Thursday, 25 May 2023

JOURNAL	"Environmental Economics"
ISSN PRINT	1998-6041
ISSN ONLINE	1998-605X
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
68	0	7

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

Agus Joko Pramono (Indonesia), **Bahrullah Akbar** (Indonesia),
Bahagia Tarigan (Indonesia), **Rusmin Rusmin** (Indonesia), **Emita Astami** (Indonesia)

THE ROLE OF FAMILY BUSINESSES AND ACTIVE FAMILY MEMBERS IN ENVIRONMENTAL PERFORMANCE

Abstract

There is a growing concern about environmental issues, particularly carbon emissions, in many countries. Indonesia, with its huge population, also suffers from excessive carbon emissions. This study aims to investigate the effect of family businesses on environmental performance, specifically carbon emission disclosure. This study also explores the role of the family supervisory board and management on the quality of carbon emission disclosure. The study employed 62 non-financial family-listed firms in 2017–2019 (186 observations). The analysis found a positive and significant relationship between family enterprises and the disclosure of carbon emissions, implying that family firms expose more information about their carbon emissions. It also revealed a significant positive association between the family supervisory board and carbon emission performance, suggesting that having family members on the supervisory board aligns with policies for reducing and maintaining accountability for carbon emissions. In summary, the findings suggest that family enterprises prefer to exercise their indirect control by holding a position on the supervisory board and owning a substantial percentage of the company's stock corresponding to their socio-emotional wealth agenda. Additionally, there is a non-linear association between family firms and the disclosure of carbon emissions. Carbon emission performance decreases as family share ownership rises to 53.1% but increases when family equity exceeds this cut-off point. Finally, family shareholders in non-polluted firms report higher quality of carbon emission disclosure.

Keywords family firms, family supervisory board, management, environmental quality, carbon emission, socio-emotional wealth

JEL Classification M14, M41, M48

Received on: 19th of April, 2023
Accepted on: 25th of May, 2023
Published on: 28th of June, 2023

Agus Joko Pramono, Dr., Senior Lecturer, Faculty of Economics and Business, Jenderal Soedirman University, Indonesia.

Bahrullah Akbar, Dr., Professor, Institute of Home Affairs Governance, Indonesia.

Bahagia Tarigan, M.Si, Senior Lecturer, Faculty of Business and Humanities, University of Technology Yogyakarta, Indonesia.

Rusmin Rusmin, Ph.D., Professor, Faculty of Business and Humanities, University of Technology Yogyakarta, Indonesia.

Emita Astami, Ph.D., Professor, Faculty of Business and Humanities, University of Technology Yogyakarta, Indonesia. (Corresponding author)

Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

Many nations are now concerned about environmental issues, particularly carbon emissions. Numerous research has been done on firms' carbon emission disclosures, particularly on the variables that may affect the level of carbon emission disclosure (Shen et al., 2020). The majority of research, however, including those by Gray et al. (1995), Iyer and Lulseged (2013), and Baalouch et al. (2019), have concentrated on the United Kingdom, the United States, and countries in Europe. Limited studies have investigated the type and scope of company disclosure in Asia, particularly Indonesia. According to Chau and Gray (2002), Asian businesses are less driven to share information openly than their counterparts in Anglo-American nations. Furthermore, Lam et al. (1994) argue that Asian corporate management and ownership structures significantly impact the information they disclose.

Fan and Wong (2002) and Joni et al. (2020) claim that a family business group controls most Indonesian listed companies, holding many critical positions and a sizable number of the shares. Moreover, Andres (2008) and Prencipe and Bar-Yosef (2011) suggest that a company's

sustainability and reputation are fundamental to the family owners because they have made significant private investments. Consequently, Demsetz and Lehn (1985) argue that family-controlled enterprises tend to place family members or their relatives in vital positions to monitor and control company activities.

Corporations in Indonesia are under intense pressure, both from the internal (domestic) and external (global) communities, to cut carbon emissions (Rokhmawati, 2020). To respond to internal pressure, the Indonesian government, through Regulation No. 70/2009, mandates that Indonesia's manufacturing sector lower its carbon emissions. In response to global carbon emission concerns, the Indonesian government has vowed to cut greenhouse gas (GHG) emissions by 29% by 2030. So Indonesia, with a population of approximately 250 million, has a problem with excessive carbon emissions.

1. LITERATURE REVIEW AND HYPOTHESES

Research on family businesses contends that family management exploits earnings from minority shareholders to their benefit by taking advantage of their highly concentrated ownership (Chi et al., 2015). However, Anderson and Reeb (2003) show that concentrated ownership lessens the typical issues of managerial expropriation in listed family-owned enterprises because their wealth is thoroughly correlated with business welfare. Moreover, Chen et al. (2008) and Wang (2006) argue that the active participation of family members in the company's management will lower the risk of information asymmetry and agency conflicts between owners and managers, resulting in diminished incentives to manipulate earnings or withhold information. Additionally, Andres (2008) documents that families prioritize non-financial objectives and are concerned about company reputation and survival.

This study uses the socio-emotional wealth concept to explain the behavior of family firms, which argues that the primary goal of the family-controlled firm is to protect the family's socio-emotional wealth (Berrone et al., 2012; Brune et al., 2019; Gómez-Mejía et al., 2014; Gómez-Mejía et al., 2007; Stockmans et al., 2010). Socio-emotional wealth refers to the non-financial aspects that support the family's needs, such as family dominance and control, family members' identity, family members' emotional attachment, strengthening social connections, and maintaining the family's image and status in society (Berrone et al., 2012; Berrone et al., 2010; Cennamo et al., 2012). The desire to protect socio-emotional wealth may lead family firms to positive outcomes by actively participating in social projects, which include preserving environmental quality (Cennamo et al., 2012).

Indeed, different socio-emotional wealth reference points may justify family owners varied responses to the different strategic outcomes (Berrone et al., 2012; Cruz et al., 2014). When family owners utilize the family control dimension of the socio-emotional wealth paradigm as their main point of reference, they will focus on overseeing their businesses to safeguard their socioemotional inheritance (Anderson & Reeb, 2004). As a result, they could abstain from corporate social responsibility initiatives that might jeopardize a family's control (Ali et al., 2007). However, if family owners use the family identity dimension as their main point of reference, they must maintain a positive family image. Family firms may emphasize acting socially responsibly since a damaged company reputation could threaten a family's reputation (Adams et al., 1996; Healy & Palepu, 2001; Martin et al., 2016).

Research evidence about how these various socio-emotional wealth reference points affect family firms' engagement in corporate social responsibility is still lacking (Dick et al., 2021; El Ghoul et al., 2016). For example, Ali et al. (2007) and Rees and Rodionova (2015) report that family enterprises show less tendency to disclose their environmental, social, and governance information because doing so allows them to keep or add members to the top management position without interference from non-family shareholders. Graham et al. (2005) note that family owners prefer to provide less

http://dx.doi.org/10.21511/ee.14(1).2023.09

corporate social information to avoid creating a precedent. By disclosing that information, a firm commits to continuing voluntary disclosures, which may be challenging to stop in the future (Diamond & Verrecchia, 1991; Verrecchia, 2001). Accordingly, Ghazali (2007) and Block and Wagner (2014) document that family-run businesses report a lower extent of social disclosure. Nevertheless, many studies have found that family-owned businesses prefer to prioritize non-economic goals (Chrisman et al., 2012), which create socio-emotional wealth (Gómez-Mejía et al., 2007). For example, Dyer and Whetten (2006), Zellweger et al. (2013), and Iyer and Lulseged (2013) found that family business owners are more interested in preserving a company's survival and stepping up its corporate social responsibility efforts. In a similar vein, Berrone et al. (2010), Iyer and Lulseged (2013), and Garcia-Sanchez et al. (2014) report that family entities prefer to exhibit superior environmental quality to maintain the company's image and reputation.

To preserve their wealth, families may employ strategies that assist them in maintaining or even expanding their power and influence on the companies (Cruz et al., 2014). Gómez-Mejía et al. (2007) note that family wealth is closely linked with socio-emotional wealth. Regarding their socio-emotional wealth agenda, families might exercise direct and indirect control on the company's strategic decisions by occupying key executive and governance positions (Chua et al., 1999; De Massis et al., 2013; Gomez-Mejia et al., 2011). In other words, family business owners may employ family members or relatives in vital positions that possibly monitor and control company activities (Demsetz & Lehn, 1985).

Anderson and Reeb (2003), Davids et al. (1997), and Morck et al. (1988) argue that family members holding senior management roles are better able to align the company's interests, leading to improving organizational performance. Specifically, Wennberg et al. (2011) and Casillas et al. (2019) suggest that active family members (those involved in the supervisory and executive or management) might safeguard the company's socio-emotional wealth, even when performance is in decline. Similarly, Ibrahim and Angelidis (1995) show that family management and supervisory boards are frequently more interested in social and ecological problems. Indonesia has a two-tier board structure, separating the governance duties (by the management team) and oversight (by the supervisory boards). The supervisory board has given the board of commissioners the formal name. Therefore, the terms "supervisory board" and "board of commissioners" are used interchangeably throughout the paper.

Based on a literature review, this study aims to explore how family businesses and family representation on supervisory boards (the board of commissioners) and executives (management) affect the quality of carbon emission disclosure of non-financial listed firms. As a result, the hypotheses of this investigation are:

H_1: *Family-run businesses provide more information about their carbon emissions.*

H_2: *Family supervisory boards (board of commissioners) provide more information on carbon emissions.*

H_3: *Family executives (management) provide more information on carbon emissions.*

2. METHODOLOGY

The study uses family-owned non-financial companies publicly listed on the Indonesia Stock Exchange (IDX) from 2017 to 2019. To ensure data uniformity, the paper focuses on non-financial companies because they dominate the Indonesian economy (Craig & Diga, 1998). The family-owned business was initially highlighted in an article published in the July edition of GlobeAsia Magazine (GlobeAsia, 2019). Then, the investigation tracked down each family business group's websites and discovered that 91 companies consistently released their annual reports from 2017 to 2019. Nevertheless, 29 companies are financial institutions or do not offer sufficient information to measure the study's variables. Therefore, the useable sample of this study consists of 62 entities or 186 observations (Table 1).

Table 1. Study sample

No.	Industry group	Observations	Percentage
1	Agriculture	9	4.84
2	Mining	18	9.68
3	Basic industry and chemicals	30	16.13
4	Miscellaneous industry	12	6.45
5	Consumer goods	33	17.74
6	Property, real estate, and building construction	54	29.03
7	Infrastructure, utilities, and transportation	9	4.84
9	Trade, services, and investment	21	11.29
	Total	186	100.00

Note: The sample for this study does not include companies in Industry Group 8 – Finance.

According to Table 1, with 54 observations (29.03%), companies in Industry Group 6 denote the most significant sample. The consumer goods enterprises (Industry Group 5) comprise the second-largest sample, accounting for 33 observations (17.74%). The infrastructure, utilities and transportation, and agriculture firms (Industry Groups 1 and 7, respectively) are the smallest sample, each with nine observations or 4.84%.

This study uses the carbon emission reporting level of the sampled firms as a dependent variable and utilizes a carbon emissions checklist created by Choi et al. (2013). The dependent variable is measured using the unweighted disclosure index technique, which assigns equal weight to each disclosure item. Compared to a weighted index approach, this method is less subjective and judgmental (Cooke, 1993). The study uses family ownership and family members' involvement as predictors for carbon emission disclosure. The proxy for a family firm is the proportion of a firm's outstanding shares held by family members; the minimum is 20% (Arosa et al., 2010). The paper uses two family representations and controls in a firm, considering the family member's participation in the supervisory board (board of commissioners) and executive (management). The current study considers other factors that might affect carbon emission disclosure. It includes corporate governance attributes (board size, board independence, board meeting frequency, members of audit committee, and board gender) in the analysis.

In the literature, good corporate governance and a company's social responsibility are commonly related (Cancela et al., 2020; Cuadrado-Ballesteros et al., 2017; Mallin & Michelon, 2011; Ramon-Llorens et al., 2021; Walls et al., 2012). A return on investment (ROA) is included to control the potential cumulative impact of a corporate's environmental quality. Financial performance can drive corporate commitment to sustainability issues and influence corporate leadership incentives to improve environmental quality (Martinez-Ferrero et al., 2021). The age of a company is another factor that has an impact on corporate social responsibility effectiveness. Companies with a long history may have more special corporate governance skills and have faced more reputation threats associated with better environmental performance (Tran & Adomako, 2021).

The paper employs OLS regression as the primary statistical method to test the questions (hypotheses). The equation below defines the regression models:

$$\begin{aligned} CED_{it} &= a_i + a_{i1}FO_{it} + a_{i2}FACOM_{it} + \\ &+ a_{i3}FADIR_{it} + a_{i4}BSIZE_{it} + a_{i5}BINDP_{it} + \\ &a_{i6}BMEET_{it} + a_{i7}AUCOM_{it} + \\ &+ a_{i8}FEMALE_{it} + a_{i9}ROA_{it} + a_{i10}AGE_{it} + \\ &+ YEAR\ FIXED\ EFFECT_{it} + \\ &+ INDUSTRY\ FIXED\ EFFECT_{it} \cdot \varepsilon_i, \end{aligned} \quad (1)$$

where *CED* = A disclosure index for carbon emission. A company scored one if it discloses information per the checklist's requirements; otherwise scored zero. *FO* = the proportion of a firm's outstanding shares held by family members; the minimum is 20%. *FACOM* = total number of family members holding supervisory (board of commissioner) positions. *FADIR* = the total number of family members in the executive (management) position. *BSIZE* = the number of board of commissioner members. *BIND* = the percentage of independent members on the board of commissioners. *BMEET* = the frequency of annual board of commissioner meetings. *AUCOM* = the total number of audit committee members. *FEMALE* = has a value of one if at least one supervisory board member is female, zero otherwise. *ROA* = the ratio of net income to total assets. *AGE* = the number of years, expressed as a natural logarithm, since the

http://dx.doi.org/10.21511/ee.14(1).2023.09

corporation was founded. *it* = a company *i* in year *t*. *YEAR* and *INDUSTRY FIXED EFFECT* = the industries and year-specific fixed effects.

3. RESULTS AND DISCUSSION

Descriptive statistics and early indications of associations between the key variables are presented in Tables 2 to 4. Table 2 exhibits a firm's disclosure percentage for each carbon emission item by each sample year. Table 2 reports the most frequently reported item: 'Identifying the board committee in charge of climate change initiatives (ACC1)', at 100% annually. Following that is 'CER1– Plans or strategy details to lower emissions' (87.10%, 87.10%, and 88.71%). The companies did not disclose the 'CER4– Future emission costs are taken into capital expenditure planning'. Table 2 also illustrates the upward trend in carbon disclosure from 32.44% in 2017 to 33.96% in 2018 and to 35.66% in 2019. These numbers show a rise in business spending on environmental initiatives.

Table 3 shows the proportion of items disclosed by topic and industry classification. Companies that deal with agriculture (Industry Group 1) disclose the most (61.73%) information about carbon emissions. Companies in the basic industries and chemicals (Industry Group 3) reveal 43.52% of carbon emissions, while those in the trade, services, and investment firms (Industry Group 9) disclose emissions at the lowest rate (22.49%). On average, the accountability of carbon emissions (ACC) classification subject is the highest frequently (88.71%) disclosed by companies in Industry Groups 3 and 7, respectively. The second and third highest disclosures are CCR = Climate change: risks and opportunities (47.58%) and ECA = Energy consumption accounting (42.83%) themes. Interestingly, the sample firms' disclosures for the CEA = Carbon emissions accounting theme are the lowest. With a mean of 34.02%, the carbon emission disclosure score ranges from 22.49% (Trade, services, and investment = Industry Group 9) to 61.73% (Agriculture = Industry Group 1).

Table 4 summarizes descriptive statistics and correlations between variables in the analysis. According to Table 4, family members own an average of 62.43% of the sample company's shares. The average number of family members on the supervisory board (board of commissioner) and executive (management) positions is one, respectively. The average number of board commissioner members is five. The percentage of independent

Table 2. Firm disclosure percentage for each item by year

Code	No.	Disclosure of carbon emission	2017	2018	2019
CCR1	1	Risk assessment and risk management measures implemented or still to be implemented	62.90	61.29	64.52
CCR2	2	Evaluation of benefits and impacts of climate change on the economy and business	32.26	32.26	32.26
CEA1	3	The methodology for calculating emissions	14.52	22.58	19.35
CEA2	4	External evaluation of emission level	9.68	14.52	17.74
CEA3	5	The total quantity of emissions	6.45	3.23	6.45
CEA4	6	Disclosure of the number of direct emissions	1.61	0.00	3.23
CEA5	7	Disclosure of carbon emissions according to their sources	27.42	35.48	40.32
CEA6	8	Revealing facility or segment-level information	30.65	35.48	35.48
CEA7	9	Emission comparison with prior years	0.00	1.61	3.23
ECA1	10	Overall energy consumption	12.90	16.13	20.97
ECA2	11	Amount of energy consumption from renewable sources	33.87	33.87	37.10
ECA3	12	Type, facility, or segment-specific disclosure	77.42	75.81	77.42
CER1	13	Plans or strategy details to lower emissions	87.10	87.10	88.71
CER2	14	Specification of the target year and level of emissions reduction	9.68	4.84	4.84
CER3	15	Emission reductions and related savings and expenses	4.84	8.06	9.86
CER4	16	Future emission costs are taken into capital expenditure planning	0.00	0.00	0.00
ACC1	17	Identifying the board committee in charge of climate change initiatives	100.00	100.00	100.00
ACC2	18	How does the committees or supervisory board evaluate the corporate's climate change performance	72.58	79.03	80.65
Mean			32.44	33.96	35.66

Note: CCR = Climate change risks and opportunities; *CEA* = Carbon emissions accounting; *ECA* = Energy consumption accounting; *CER* = Carbon emission reduction and cost; *ACC* = Carbon emission accountability.

Table 3. Percentage of items disclosed by theme and industry group

No.	Industry group	Disclosure of the theme					Mean
		CCR	CEA	ECA	CER	ACC	
1	Agriculture	100.00%	47.62%	70.37%	44.44%	94.44%	61.73%
2	Mining	91.67%	12.70%	44.44%	23.61%	91.67%	37.96%
3	Basic industry and chemicals	61.67%	26.67%	48.89%	31.67%	100.00%	43.52%
4	Miscellaneous industry	12.50%	10.71%	36.11%	29.17%	83.33%	27.31%
5	Consumer goods	46.97%	21.65%	54.55%	25.76%	84.85%	35.06%
6	Property, real estate, and building construction	36.11%	2.65%	34.57%	21.76%	86.11%	25.21%
7	Infrastructure, utilities, and transportation	27.78%	33.33%	48.15%	27.78%	100.00%	41.36%
9	Trade, services, and investment	26.19%	8.16%	25.40%	15.48%	78.57%	22.49%
The mean of disclosure per the theme		47.58%	15.67%	42.83%	25.40%	88.71%	34.02%

Note: CCR = Climate change risks and opportunities; *CEA* = Carbon emissions accounting; *ECA* = Energy consumption accounting; *CER* = Carbon emission reduction and cost; *ACC* = Carbon emission accountability.

Table 4. Descriptive and correlation data

Variables	MEAN	SD	CED	FO	FACOM	FADIR	BSIZE	BIND	BMEET	AUCOM	FEMALE	ROA
FO	62.43	16.67	0.049	–	–	–	–	–	–	–	–	–
FACOM	1.17	1.31	0.230*	–0.141	–	–	–	–	–	–	–	–
FADIR	1.03	1.20	0.026	–0.059	0.317*	–	–	–	–	–	–	–
BSIZE	4.94	1.79	0.238*	–0.224*	0.281*	–0.006	–	–	–	–	–	–
BIND	41.44	10.10	–0.120	–0.063	–0.146**	–0.069	–0.081	–	–	–	–	–
BMEET	10	3.90	–0.067	–0.204*	0.119	0.004	–0.145**	–0.035	–	–	–	–
AUCOM	3.05	0.32	–0.070	0.045	–0.225*	0.010	0.014	–0.007	–0.169	–	–	–
FEMALE	38.71	–	–0.083**	–0.154*	0.199*	0.167*	0.148**	0.008	0.141	–0.132	–	–
ROA	5.61	6.93	0.074	0.117	0.052	0.155*	0.083	–0.085	–0.028	0.293*	–0.143	–
AGE	34.99	13.12	0.153**	–0.036	0.213*	–0.010	0.110	0.026	0.204*	–0.187**	0.174**	–0.166

Note: * and ** denote significance levels of 1% and 5% (two-tailed).

commissioner members is 41.44%, higher than the 33.33% mandated by the Financial Services Authority Regulation (POJK Number 33 in 2014). The POJK 33 Year 2014 also requires that the board of commissioners hold at least six annual meetings. On average, the frequency for a board of commissioner meetings is ten. The average audit committee has three members. This number complies with the criteria outlined in POJK 55/2015. About 38.71% of the sample observations have at least one female on the board of commissioner members. The low average (5.61%) ROA indicates that family firms struggled financially during the sample years. In addition, the average AGE is 34.99 years.

Table 4 also shows the Pearson correlation results between the variables. The correlation findings do not entirely confirm the research hypothesis. Family ownership (FO) and family directors (FADIR) are positively correlated with carbon emission disclosure (CED); however, they are not statistically significant. Family commissioner (FACOM) is significantly ($p < 0.01$) and positively correlated with carbon emission performance, as predicted. Additionally, the findings show a weak correlation between the independent variables. Therefore, the variables have no severe multicollinearity problems (Cooper & Schindler, 2003). However, the study assesses variance inflation factor (VIF) values to confirm whether multicollinearity issues existed in the regression model (Table 5).

Table 5 reports the findings of the multi-regression analysis considering the year and industry impacts for H_1 and H_2 testing. The regression results in Models I, II, and III show only one independent variable, and Model IV presents the results for all independent variables. Models I through IV indicate that regression model estimates are statistically significant at $p < 0.01$. The fact that all VIF values are less than 10 proves that multicollinearity is not an issue for the statistical model. These outcomes align with Table 4's findings. Models I and IV of Table 5 report that the FO's coefficients are positively and significantly at $p < 0.05$, demonstrating

http://dx.doi.org/10.21511/ee.14(1).2023.09

Table 5. Primary regression – Fixed effect

Variables	Model I		Model II		Model III		Model IV		
	Coef.	*t*-value	Coef.	*t*-value	Coef.	*t*-value	Coef.	*t*-value	VIF
(Constant)	–	3.582*	–	3.850*	–	4.147*	–	2.640*	–
FO	0.010	1.986**	–	–	–	–	0.103	2.250**	1.447
FACOM	–	–	1.887	3.169*	–	–	2.050	3.197*	1.678
FADIR	–	–	–	–	0.980	1.621	0.269	0.430	1.330
BSIZE	1.215	3.093*	0.814	2.054**	1.177	2.995*	0.902	2.264**	1.343
BIND	0.012	0.002	2.883	0.422	0.190	0.027	4.403	0.647	1.118
BMEET	–0.053	–0.236	–0.027	–0.125	0.011	0.051	–0.116	–0.528	1.331
AUCOM	–1.752	–0.747	–0.601	–0.257	–2.086	–0.885	–0.319	–0.136	1.366
FEMALE	–2.356	–1.502	–3.107	–2.012**	–2.956	–1.867***	–3.006	–1.952**	1.341
ROA	–2.659	–0.230	–4.661	–0.410	–5.626	–0.479	–6.280	–0.551	1.480
AGE	–0.008	–0.127	–0.046	–0.728	–0.011	–0.173	–0.038	–0.601	1.614
YEAR FIXED EFFECT	Included		Included		Included		Included		
INDUSTRY FIXED EFFECT	Included		Included		Included		Included		
Summary									
R^2-adjusted	0.362		0.384		0.357		0.396		
F-statistics	7.166*		7.771*		7.036*		7.381*		
Observations	186		186		186		186		

Note: * and ** denote significance levels of 1% and 5% (two-tailed).

that a high proportion of a company's stocks held by family members might enhance the quality of carbon emissions. Thus, H_1 is therefore supported. These results offer credence to the idea that family businesses seek to preserve their excellent reputation, which raises their awareness of sustainability issues and encourages them to take part in environmental initiatives (Chrisman et al., 2012; Dyer & Whetten, 2006; Zellweger et al., 2013). The finding also aligns with Garcia-Sanchez et al. (2014), Iyer and Lulseged (2013), and Berrone et al. (2010), who revealed that family owners care about social rights and corporate reputation by demonstrating better environmental quality. This study shows the benefits of family-owned businesses. A possible reason is likely that family-controlled firms experience fewer agency problems compared to non-family firms (Anderson & Reeb, 2003).

The coefficients on FACOM in Models II and IV are positive and statistically significant ($p < 0.01$) effects on CED, implying that families use their seats on the supervisory board to influence carbon emissions quality indirectly. Thus, these findings support the family supervisory board hypothesis (H_2) and are consistent with the argument that active family members might preserve the firm's socio-emotional wealth (Casillas et al., 2019; Wennberg et al., 2011). The results also support the argument that the family board of commissioner members frequently has a greater interest in ecological matters (Ibrahim & Angelidis, 1995). Models III and IV show that the FADIR coefficient is positive but statistically insignificant, suggesting that family members in managerial or leadership positions do not influence carbon emission performance. Therefore, H_3 is rejected.

This study finds that BSIZE and FEMALE help explain carbon emission performance. The regression coefficients for BSIZE are all positively and significantly ($p < 0.01$ and $p < 0.05$) related to CED. The results suggest that supervisory boards with more significant members are more effective at setting CED agendas and promoting the communication of CED information to meet social needs (Jizi, 2017; Li et al., 2010). The significant positive association between the board of commissioner's size and carbon emission performance aligns with Cancela et al. (2020), Mallin and Michelon (2011), and Walls et al. (2012). The coefficients on FEMALE are negative and significantly associated with CED (see Models II to IV), suggesting that the existence of women on the corporate board of commissioners negatively affects Indonesian companies' disclosure of carbon emissions. The findings fail to verify Jizi (2017) and Cuadrado-Ballesteros et al. (2017), who highlighted that many females on boards are positively associated with corporate social responsibility practices. In

general, women are more aware of others, sensitive to social needs, and stakeholder-oriented, as well as concerned about ethical issues than men (Tate & Yang, 2015). The remaining five control variables (BIND, BMEET, AUCOM, ROA, and AGE) do not significantly affect CED.

This study conducts several additional analyses to strengthen the reliability of the main results. Firstly, the study examines the non-linear effects of family ownership on carbon emissions. Anderson and Reeb (2003) state that family-run businesses can positively or negatively affect firm performance. Companiy performance might improve with greater family ownership. However, the relationship between the two variables can be negative if family ownership is low. The association between family-controlled businesses and carbon emission practices is predicted to be non-linear by these two hypotheses.

Similarly, Boone et al. (2007) argue that the size of the supervisory board represents a trade-off between the firm-specific benefit and cost of monitoring. Therefore, many empirical studies have tried to find the optimal size of a company's board of commissioners. According to Lipton and Lorch (1992), a board should have at most ten members to function optimally and to be less susceptible to manipulation by the assigned commissioner. In comparison, Jensen (1993) suggests that a board should have at most eight commissioners. Table 6 displays the test results for the impact of non-linearities of family ownership, board of commissioners' size, and carbon emission disclosure.

The coefficients of FO and its square reported by Models I and III are negative and positive ($p < 0.10$ and $p < 0.05$), demonstrating a non-linear association between family entities and the disclosure of carbon emissions. Family ownership can lead to different behaviors. The increase in family ownership to 53.1% (the inflection point is not reported) supports the expropriation hypothesis. Beyond this threshold, however, the emission quality improved, supporting the monitoring hypothesis. In other words, carbon emission performance decreases as family share ownership rises to 53.1% but increases when family equity exceeds this cut-off point. The positive and negative coefficients for BSIZE and BSIZE-Square (see Models II and III) indicate that the supervisory board size and carbon emission information are not linearly related. However, these coefficients are statistically insignificant; thus, the results do not confirm a non-linear relationship between the board of commissioners' size and carbon emission performance.

Table 6. Non-linearities test results

Variables	Model I		Model II		Model III	
	Coef.	*t*-value	Coef.	*t*-value	Coef.	*t*-value
(Constant)	–	3.452*	–	2.175**	–	3.055*
FO	–0.432	–1.735***	0.103	2.223**	–0.429	–1.716***
FO-Square	0.444	2.187**	–	–	0.404	2.163**
FACOM	1.914	3.004*	2.018	3.114*	1.892	2.940*
FADIR	0.407	0.654	0.238	0.376	0.384	0.610
BSIZE	0.913	2.319**	1.652	0.841	1.436	0.738
BSIZE-Square	–	–	–0.066	–0.390	–0.046	–0.274
BIND	3.483	0.517	4.184	0.612	3.337	0.492
BMEET	–0.133	–0.608	–0.101	–0.448	–0.121	–0.546
AUCOM	–0.629	–0.271	–0.214	–0.091	–0.553	–0.236
FEMALE	–2.742	–1.795***	–3.096	–1.984**	–2.806	–1.811***
ROA	–4.336	–0.384	–7.146	–0.614	–4.953	–0.429
AGE	–0.055	–0.872	–0.041	0.639	–0.056	–0.894
YEAR FIXED EFFECT	Included		Included		Included	
INDUSTRY FIXED EFFECT	Included		Included		Included	
Summary						
R^2-adjusted	0.409		0.393		0.406	
F-statistics	7.411*		6.984*		7.022*	
Observations	186		186		186	

Note: *, **, and *** denote significance levels of 1%, 5%, and 10% (two-tailed).

http://dx.doi.org/10.21511/ee.14(1).2023.09

Table 7. Large samples and environmentally sensitive firms

Variables	Model I		Model II		Model III	
	Excluding large sample		Polluting firms		Nonpolluting firms	
	Coef.	*t*-value	Coef.	*t*-value	Coef.	*t*-value
(Constant)	–	2.813*	–	0.910	–	2.495*
FO	0.129	1.898**	–0.002	–0.019	0.122	2.620*
FACOM	2.852	3.385*	2.653	1.817***	0.738	1.826***
FADIR	1.239	1.467	3.817	2.588*	–0.340	–0.465
BSIZE	0.688	1.265	1.380	1.310	0.629	1.800***
BIND	0.674	0.730	7.352	0.648	3.518	0.551
BMEET	0.019	0.070	–0.197	–0.246	–0.104	–0.502
AUCOM	–3.311	–1.107	–12.648	–1.411	0.402	0.180
FEMALE	–2.888	–1.428	–8.337	–2.009**	–1.726	–2.076**
ROA	–16.894	–1.063	–2.892	–0.099	15.254	1.031
AGE	–0.106	–1.448	0.345	1.804	–0.022	–0.334
*YEAR FIXED EFFEC*T	Included		Included		Included	
INDUSTRY FIXED EFFECT	Included		Included		Included	
Summary						
R^2-adjusted	0.348		0.321		0.451	
F-statistics	4.678*		2.559*		6.534*	
Observations	132		57		129	

Note: *, **, and *** denote significance levels of 1%, 5%, and 10% (two-tailed).

In the second test, this study excludes firms from a large industry cluster (Property, real estate, and building construction, which comprise 29.03% of the sample size) to ensure that no industry sector dominates the main findings (see Model I of Table 7). The study also analyzes whether alternative tests for disclosing carbon emissions are robust to a sample of companies engaged in environmentally sensitive sectors (see Table 7, Models II and III). Three sectors (Infrastructure, utilities and transportation, Basic and chemicals, and Mining) are designated as polluting under Indonesian Law No. 32/2009. The polluting firms are thus a binary variable with a value of one if included in one of these three industry classifications and zero otherwise.

Model I of Table 7 shows that the coefficients of the FO and FACOM are statistically significant ($p < 0.05$ and $p < 0.01$) and in the same direction as presented in Table 5. Also, the coefficient on FADIR is positive but statistically insignificant. Therefore, these findings support the main results of the regression analysis presented in Table 5. In conclusion, the main results summarized in Table 5 do not drive by an individual industry. Model III of Table 7 indicates a significant influence of family-owned and family supervisory boards on carbon emissions, only robust in non-polluted firms' classification. These findings support Baalouch et al. (2019), who suggest that family-controlled firms and supervisory boards do not primarily use environmental reporting to justify their actions and strengthen their standing among various stakeholder groups.

These findings are significant because they demonstrate how crucial it is to understand the relationship between socio-emotional wealth precepts and families to comprehend the carbon disclosure of Indonesian corporations. The evidence that family entities disclose more information on carbon emissions suggests that families' socio-emotional wealth agenda aligns with the Indonesian government's carbon emission reduction and accountability strategies.

CONCLUSION

This study explores the impact of family businesses and active family members (in the supervisory boards or management) on carbon emission disclosure in Indonesia during 2017–2019. The result shows a significant positive link between family ownership and the disclosure of carbon emissions. The findings align with socio-emotional wealth, which claims that family-owned enterprises frequently have

non-financial goals in addition to their financial objectives. This paper confirms that family supervisory board members exhibit greater carbon emission disclosure. In summary, the results infer that family controlled-firms prefer to use their indirect influence by having a seat on the board of commissioners, and sizable shares ownership corresponds to their socio-emotional wealth agenda. The additional analyses suggest a non-linear association between family-controlled firms and the level of carbon emission disclosure. Low control rights (up to 53.1% of share equity) cause family owners to exert fewer managerial controls, negatively impacting carbon emission performance. Beyond this threshold, however, family owners have complete control over their interests, resulting in increased quality of carbon emissions. Moreover, this study reports that family-controlled enterprises and family supervisory boards are associated with higher carbon emissions in non-polluted business sectors (F-statistics = 6.534). The finding suggests that family firms must implement a more effective environmental exposure strategy for stakeholders as a valuable instrument for their business operations to improve their reputation.

AUTHOR CONTRIBUTIONS

Conceptualization: Agus Joko Pramono, Rusmin Rusmin.
Data curation: Bahagia Tarigan, Rusmin Rusmin.
Formal analysis: Agus Joko Pramono, Rusmin Rusmin, Emita Astami.
Funding acquisition: Agus Joko Pramono, Bahrullah Akbar, Bahagia Tarigan.
Methodology: Agus Joko Pramono, Rusmin Rusmin, Emita Astami.
Project administration: Emita Astami.
Resources: Bahrullah Akbar, Bahagia Tarigan.
Software: Bahrullah Akbar.
Supervision: Bahrullah Akbar, Bahagia Tarigan.
Validation: Agus Joko Pramono, Bahrullah Akbar, Bahagia Tarigan, Rusmin Rusmin.
Writing – original draft: Agus Joko Pramono, Rusmin Rusmin, Emita Astami.
Writing – review & editing: Agus Joko Pramono, Bahrullah Akbar, Bahagia Tarigan, Rusmin Rusmin, Emita Astami.

REFERENCES

1. Adams, J., Taschian, A., & Shore, T. (1996). Ethics in family and non-family owned firms: An exploratory study. *Family Business Review, 9*(2), 157-170. https://doi.org/10.1111/j.1741-6248.1996.00157.x
2. Ali, A., Chen, T.-Y., & Radhakrishnan, S. (2007). Corporate disclosures by family firms. *Journal of Accounting and Economics, 44*(1-2), 238-286. https://doi.org/10.1016/j.jacceco.2007.01.006
3. Anderson, R. C., & Reeb, D. M. (2003). Founding family ownership and firm performance: Evidence from the S&P 500. *The Journal of Finance, 58*(3), 1301-1328. https://doi.org/10.1111/1540-6261.00567
4. Anderson, R. C., & Reeb, D. M. (2004). Board composition: Balancing family influence in S&P 500 firms. *Administrative Science Quarterly, 49*(2), 209-237. https://doi.org/10.2307/4131472
5. Andres, C. (2008). Large shareholders and firm performance – An empirical examination of founding-family ownership. *Journal of Corporate Finance, 14*(4), 431-445. https://doi.org/10.1016/j.jcorpfin.2008.05.003
6. Arosa, B., Iturralde, T., & Maseda, A. (2010). Ownership structure and firm performance in non-listed firms: Evidence from Spain. *Journal of Family Business Strategy, 1*(2), 88-96. https://doi.org/10.1016/j.jfbs.2010.03.001
7. Baalouch, F., Ayadi, S. D., & Hussainey, K. (2019). A study of the determinants of environmental disclosure quality: Evidence from French listed companies. *Journal of Management and Governance, 23*, 939-971. https://doi.org/10.1007/s10997-019-09474-0
8. Berrone, P., Cruz, C., & Gómez-Mejía, L. R. (2012). Socioemotional wealth in family firms: Theoretical dimensions, assessment approaches, and agenda for future research. *Family Business Review, 25*(3), 258-279. https://doi.org/10.1177/0894486511435355
9. Berrone, P., Cruz, C., Gómez-Mejía, L. R., & Larraza-Kintana, M. (2010). Socioemotional wealth and corporate responses to institutional pressures: Do family-controlled firms pollute less? *Administrative Science Quarterly, 55*(1), 82-113. https://doi.org/10.2189/asqu.2010.55.1.82

http://dx.doi.org/10.21511/ee.14(1).2023.09

10. Block, J. H., & Wagner, M. (2014). The effect of family ownership on different dimensions of corporate social responsibility: Evidence from large US firms. *Business Strategy and the Environment, 23*(7), 475-492. https://doi.org/10.1002/bse.1798

11. Boone, A. L., Field, L. C., Karpoff, J. M., & Raheja, C. G. (2007). The determinants of corporate board size and composition: An empirical analysis. *Journal of Financial Economics, 85*(1), 66-101. https://doi.org/10.1016/j.jfineco.2006.05.004

12. Brune, A., Thomsen, M., & Watrin, C. (2019). Family firms heterogeneity and tax avoidance: The role of the founder. *Family Business Review, 32*(3), 296-317. https://doi.org/10.1177/0894486519831467

13. Cancela, B. L., Neves, M. E. D., Rodrigues, L. L., & Dias, A. C. G. (2020). The influence of corporate governance on corporate sustainability: New evidence using panel data in the Iberian macroeconomic environment. *International Journal of Accounting & Information Management, 28*(4), 785-806. https://doi.org/10.1108/IJAIM-05-2020-0068

14. Casillas, J. C., Moreno-Menéndez, A. M., Barbero, J. L., & Clinton, E. (2019). Retrenchment strategies and family involvement: The role of survival risk. *Family Business Review, 32*(1), 58-75. https://doi.org/10.1177/0894486518794605

15. Cennamo, C., Berrone, P., Cruz, C., & Gómez-Mejía, L. R. (2012). Socioemotional wealth and proactive stakeholder engagement: Why family-controlled firms care more about their stakeholders. *Entrepreneurship Theory and Practice, 36*(6), 1153-1173. https://doi.org/10.1111/j.1540-6520.2012.00543.x

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

17. Chen, S. X., Chen, X., & Cheng, Q. (2008). Do family firms provide more or less voluntary disclosure? *Journal of Accounting Research, 46*(3), 499-536. https://doi.org/10.1111/j.1475-679X.2008.00288.x

18. Chi, C. W., Hung, K., Cheng, H. W., & Lieu, P. T. (2015). Family firms and earnings management in Taiwan: Influence of corporate governance. *International Review of Economics and Finance, 36*, 88-98. https://doi.org/10.1016/j.iref.2014.11.009

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

20. Chrisman, J. J., Chua, J. H., Pearson, A. W., & Barnett, T. (2012). Family involvement, family influence, and family-centered non-economic goals in small firms. *Entrepreneurship Theory and Practice, 36*(2), 267-293. https://doi.org/10.1111/j.1540-6520.2010.00407.x

21. Chua, J. H., Chrisman, J. J., & Sharma, P. (1999). Defining the family business by behavior. *Entrepreneurship Theory and Practice, 23*(4), 19-39. https://doi.org/10.1177/104225879902300402

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

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

24. Craig, R., & Diga, J. G. (1998). Corporate accounting disclosure in ASEAN. *Journal of International Financial Management and Accounting, 9*(3), 246-274. https://doi.org/10.1111/1467-646X.00039

25. Cruz, C., Larraza-Kintana, M., Garcés-Galdeano, L., & Berrone, P. (2014). Are family firms really more socially responsible? *Entrepreneurship Theory and Practice, 38*(6), 1295-1316. https://doi.org/10.1111/etap.12125

26. Cuadrado-Ballesteros, B., Martínez-Ferrero, J., & García-Sanchez, I. M. (2017). Board structure to enhance social responsibility development: A qualitative comparative analysis of US companies. *Corporate Social Responsibility and Environmental Management, 24*(6), 524-542. https://doi.org/10.1002/csr.1425

27. Davids, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management Review, 22*(1), 20-47. https://doi.org/10.2307/259223

28. De Massis, A., Frattini, F., & Lichtenthaler, U. (2013). Research on technological innovation in family firms: Present debates and future directions. *Family Business Review, 26*(1), 10-31. https://doi.org/10.1177/0894486512466258

29. Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of Political Economy, 93*(6), 1155-1177. https://doi.org/10.1086/261354

30. Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. *The Journal of Finance, 46*(4), 1325-1359. https://doi.org/10.1111/j.1540-6261.1991.tb04620.x

31. Dick, M., Wagner, E., & Pernsteiner, H. (2021). Founder-controlled family firms, overconfidence, and corporate social responsibility engagement: Evidence from survey data. *Family Business Review, 34*(1), 71-92. https://doi.org/10.1177/0894486520918724

32. Dyer, W. G., & Whetten, D. (2006). Family forms and social responsibility: Preliminary evidence from the S&P 500. *Entrepreneurship Theory and Practice, 30*(6), 785-802. https://doi.org/10.1111/j.1540-6520.2006.00151.x

33. El Ghoul, S., Guedhami, O., Wang, H., & Kwok, C. C. Y. (2016). Family control and corporate social responsibility. *Journal of Banking & Finance, 73*, 131-146. https://doi.org/10.1016/j.jbankfin.2016.08.008

34. 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

35. Garcia-Sanchez, I.-M., Cuadrado-Ballesteros, B., & Sepulveda, C. (2014). Does media pressure moderate CSR disclosures by external directors? *Management Decision, 52*(6), 1014-1045. https://doi.org/10.1108/MD-09-2013-0446

36. Ghazali, N. A. M. (2007). Ownership structure and corporate social responsibility disclosure: Some Malaysian evidence. *Corporate Governance, 7*(3), 251-266. https://doi.org/10.1108/14720700710756535

37. GlobeAsia. (2019). *Family businesses: Maintaining relevance in the modern era*. BeritaSatu Media Holdings, Jakarta.

38. Gómez-Mejía, L. R., Cruz, C., & Imperatore, C. (2014). Financial reporting and the protection of socioemotional wealth in family-controlled firms. *European Accounting Review, 23*(3), 387-402. https://doi.org/10.1080/09638180.2014.944420

39. Gomez-Mejia, L. R., Cruz, C., Berrone, P., & De Castro, J. (2011). The bind that ties: Socioemotional wealth preservation in family firms. *The Academy of Management Annals, 5*(1), 653-707. https://doi.org/10.1080/19416520.2011.593320

40. Gómez-Mejía, L. R., Haynes, K. T., Núñez-Nickel, M., Jacobson, K. J. L., & Moyano-Fuentes, J. (2007). Socioemotional wealth and business risks in family-controlled firms: Evidence from Spanish olive oil mills. *Administrative Science Quarterly, 52*(1), 106-137. https://doi.org/10.2189/asqu.52.1.106

41. Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting & Economics, 40*(1-3), 3-73. https://doi.org/10.1016/j.jacceco.2005.01.002

42. Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate social and environmental reporting a review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing and Accountability Journal, 8*(2), 47-77. https://doi.org/10.1108/09513579510146996

43. Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics, 31*(1-3), 405-440. https://doi.org/10.1016/S0165-4101(01)00018-0

44. Ibrahim, N., & Angelidis, J. (1995). The corporate social responsiveness orientation of board members: Are there differences between inside and outside directors? *Journal of Business Ethics, 14*, 405-410. https://doi.org/10.1007/BF00872102

45. Iyer, V., & Lulseged, A. (2013). Does family status impact US firms' sustainability reporting? *Sustainability Accounting, Management and Policy Journal, 4*(2), 163-189. https://doi.org/10.1108/SAMPJ-Nov-2011-0032

46. Jensen, M. C. (1993). The modern industrial revolution, exit and the failure of internal control systems. *Journal of Finance, 48*(3), 831-880. https://doi.org/10.1111/j.1540-6261.1993.tb04022.x

47. Jizi, M. (2017). The influence of board composition on sustainability development disclosure. *Business Strategy and the Environment, 26*(5), 640-655. https://doi.org/10.1002/bse.1943

48. Joni, J., Ahmed, K., & Hamilton, J. (2020). Politically connected boards, family business groups and firm performance: Evidence from Indonesia. *Journal of Accounting & Organizational Change, 16*(1), 93-121. https://doi.org/10.1108/JAOC-09-2019-0091

49. Lam, K., Mok, H. M. K., Cheung, I., & Yam, H. C. S. (1994). Family groupings on performance of portfolio selection in the Hong Kong stock market. *Journal of Banking and Finance, 18*(4), 725-742. https://doi.org/10.1016/0378-4266(94)00017-4

50. Li, S., Fetscherin, M., Alon, I., Lattemann, C., & Yeh, K. (2010). Corporate social responsibility in emerging markets. *Management International Review, 50*(5), 635-654. https://doi.org/10.1007/s11575-010-0049-9

51. Lipton, M., & Lorch, J. (1992). A modest proposal for improved corporate governance. *The Business Lawyer, 48*(1), 59-77. Retrieved from https://www.jstor.org/stable/40687360

52. Mallin, C., & Michelon, G. (2011). Board reputation attributes and corporate social performance: An empirical investigation of the US best corporate citizens. *Accounting and Business Research, 41*(2), 119-144. https://doi.org/10.1080/00014788.2011.550740

53. Martin, G., Campbell, J. T., & Gomez-Mejia, L. (2016). Family control, socio-emotional wealth and earnings management in publicly traded firms. *Journal of Business Ethics, 133*, 453-469. https://doi.org/10.1007/s10551-014-2403-5

54. Martinez-Ferrero, J., Lozano, M. B., & Vivas, M. (2021). The impact of board cultural diversity on a firm's commitment toward the sustainability issues of emerging countries: The mediating effect of a CSR committee. *Corporate Social Responsibility and Environmental Management, 28*(2), 675-685. https://doi.org/10.1002/csr.2080

55. Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics, 20*(1), 293-315. https://doi.org/10.1016/0304-405X(88)90048-7

56. Prencipe, A., & Bar-Yosef, S. (2011). Corporate governance and earning management in family-controlled companies. *Journal of Accounting, Auditing and Finance, 26*(2), 119-227. https://doi.org/10.1177/0148558X11401212

http://dx.doi.org/10.21511/ee.14(1).2023.09

57. Ramon-Llorens, M. C., Garcia-Meca, E., & Pucheta-Martinez, M. C. (2021). Female directors on boards. The impact of faultlines on CSR reporting. *Sustainability Accounting, Management and Policy Journal, 12*(1), 156-183. https://doi.org/10.1108/SAMPJ-07-2019-0273

58. Rees, W., & Rodionova, T. (2015). The influence of family ownership on corporate social responsibility: An international analysis of publicly listed companies. *Corporate Governance: An International Review, 23*(3), 184-202. https://doi.org/10.1111/corg.12086

59. Rokhmawati, A. (2020). The nexus between type of energy consumed, CO2, emissions, and carbon-related costs. *International Journal of Energy, Economics and Policy, 10*(4), 172-183. https://doi.org/10.32479/ijeep.9246

60. Shen, H., Zheng, S., Adams, J., & Jaggi, B. (2020). The effect stakeholders have on voluntary carbon disclosure within Chinese business organizations. *Carbon Management, 11*(5), 455-472. https://doi.org/10.1080/17583004.2020.1805555

61. Stockmans, A., Lybaert, N., & Voordeckers, W. (2010). Socioemotional wealth and earnings management in private family firms. *Family Business Review, 23*(3), 280-294. https://doi.org/10.1177/0894486510374457

62. Tate, G., & Yang, L. (2015). Female leadership and gender equity: Evidence from plant closure. *Journal of Financial Economics, 117*(1), 77-97. https://doi.org/10.1016/j.jfineco.2014.01.004

63. Tran, M. D., & Adomako, S. (2021). How CEO social capital drives corporate social performance: The roles of stakeholders, and CEO tenure. *Corporate Social Responsibility and Environmental Management, 28*(2), 819-830. https://doi.org/10.1002/csr.2092

64. Verrecchia, R. E. (2001). Essays on disclosure. *Journal of Accounting & Economics, 32*(1-3), 97-180. https://doi.org/10.1016/S0165-4101(01)00025-8

65. Walls, J. L., Berrone, P., & Phan, P. H. (2012). Corporate governance and environmental performance: Is there really a link? *Strategic Management Journal, 33*(8), 885-913. https://doi.org/10.1002/smj.1952

66. Wang, D. (2006). Founding family ownership and earnings quality. *Journal of Accounting Research, 44*(3), 619-656. https://doi.org/10.1111/j.1475-679X.2006.00213.x

67. Wennberg, K., Wiklund, J., Hellerstedt, K., & Nordqvist, M. (2011). Implications of intra-family and external ownership transfer of family firms: Short-term and long-term performance differences. *Strategic Entrepreneurship Journal, 5*(4), 352-372. https://doi.org/10.1002/sej.118

68. Zellweger, T. M., Nason, R. S., Nordqvist, M., & Brush, C. G. (2013). Why do family firms strive for non-financial goals? An organizational identity perspective. *Entrepreneurship Theory and Practice, 37*(2), 229-248. https://doi.org/10.1111/j.1540-6520.2011.00466.x