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Article

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Cogent Business & Management

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Nathalia, Cindy; Setiawan, Doddy (2022) : Does board capital improve climate change disclosures?, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 9, Iss. 1, pp. 1-13,
<https://doi.org/10.1080/23311975.2022.2121242>

This Version is available at:

<https://hdl.handle.net/10419/289247>

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To cite this article: Cindy Nathalia & Doddy Setiawan (2022) Does board capital improve climate change disclosures?, Cogent Business & Management, 9:1, 2121242, DOI: [10.1080/23311975.2022.2121242](https://doi.org/10.1080/23311975.2022.2121242)

To link to this article: <https://doi.org/10.1080/23311975.2022.2121242>



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Received: 02 August 2022
Accepted: 01 September 2022

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

Does board capital improve climate change disclosures?

Cindy Nathalia^{1*} and Doddy Setiawan¹

Abstract: Climate change is a global issue faced by many countries that cause enormous damage. This is the biggest challenge for a sustainable economy so firms have to mitigate the risk of climate change. Climate change disclosures can be a way for firms to gain legitimacy from stakeholders. The purpose of the study is to examine the effect of board capital on climate change disclosures. This study consists of 191 bank-year observations of banks listed on the Indonesia Stock Exchange from 2016–2020. Data were obtained from annual reports, sustainability reports, and company websites and were analyzed using regression. The results of the study show that board capital has a positive effect on climate change disclosures. This study examines the dimensions of board capital separately too consisting of networking, education, and experience owned by the board on climate change disclosures. The result shows that networking, education, and experience of the board have a positive effect on climate change disclosures. The board plays a significant role in disclosing information about climate change, so companies need to pay attention to the quality of the board. The board's extensive network, higher education, and background experience will increase climate change disclosures.

Subjects: Economics; Finance; Business, Management and Accounting

Keywords: climate change disclosures; board capital; board networking; board education; board experience

1. Introduction

Climate change is a global issue faced by many countries because it threatens the existence of humans and other living things. The existence of climate change results in extreme weather changes that cause enormous damage in various countries which also have an impact on business activities. In an external press release, the United Nations Framework Convention on Climate Change (UNFCCC) stated that the increase in global carbon emissions of more than 2 billion tons by 2021 was the largest in history. This is the biggest challenge for a sustainable economy, both financial and reputational challenges that companies must address. The long-term impact of climate change has attracted the attention of the governments of 196 countries that have agreed to sign an international agreement on climate change, known as the Paris Agreement.

Countries that signed the Paris Agreement agreed to contribute to reducing global temperature increases by limiting global temperatures to below 2°C or even up to 1.5°C (United Nations, 2015).

In Indonesia, Financial Services Authority has prepared a Sustainable Finance Roadmap to support solving problems caused by climate change. In the Sustainable Finance Roadmap, there is a green taxonomy component which is a classification of business sectors that support environmental protection and management efforts as well as mitigation and adaptation to climate change. Based on the Regulation of Financial Services Authority NO. 51/POJK.03/2017 Article 4(1), financial service institutions are required to prepare a Sustainable Finance Action Plan which is a written document containing the financial industry strategy to implement activities that harmonize economic, social, and environmental aspects. Banks also contribute to the fight against climate change through the use of electronic documents (paperless), water and electricity efficiency (green building), as well as financing environmentally friendly projects (green investing).

Climate change affects business so companies need to adapt and make efforts to reduce risks that may occur (Iriyadi & Antonio, 2021). Businesses can be affected by forest fires, lack of clean water, deteriorating agricultural production, damaged resources, increased risk of infectious disease outbreaks, and also have an impact on economic activity (Ali Ahzar, 2018). Companies are expected to prove that they are careful about environmental pollution and work responsibly to reduce carbon emissions that can trigger climate change (Ahmad & Hossain, 2015). Therefore, many companies in various countries express their views and activities related to climate change issues in annual reports, websites, and sustainability reports (Ali Ahzar, 2018). Companies that contribute to carbon emissions and do not make efforts to overcome them will suffer consequences such as reputation risk, reduced demand, increased operational costs, and fines (Berthelot & Robert, 2011). Companies are under pressure from stakeholders to disclose information related to company activities that affect climate change (Daradkeh et al., 2022). Stakeholders, especially investors, want to know not only how much carbon emissions are issued, but also how the company evaluates the risks, financial impacts, and whether there is a control system related to carbon emissions. Creditors also consider information related to environmental issues to make funding decisions (Kim et al., 2021).

The board of the company has the task of overseeing material risks that may be faced by the company and ensuring the identification of these risks is accompanied by risk management. Board groups with a range of abilities, experience, and knowledge are able to initiate strategic change by assessing threats, evaluating alternatives, and making better decisions (Pan et al., 2020). An effective board will seek to reduce the risk of climate change and respond to stakeholder expectations by increasing disclosures related to climate change (Ben-Amar & McIlkenny, 2015). The risks arising from climate change are also opportunities for companies to develop renewable energy sources, introduce low-carbon products, and support customers to manage carbon emissions.

This study aims to examine the effect of board capital on climate change disclosures. Does the wider the network, the more experience, and the higher the board's education improve climate change disclosures? In addition, this study examines the dimensions of board capital separately consisting of networking, education, and experience owned by the board on climate change disclosures. Previous studies examine the factors that can affect companies to make disclosures. Disclosures will be made by companies with good corporate governance (Bae Choi et al., 2013; Daradkeh et al., 2022), larger board size (Ali Ahzar, 2018; Asare et al., 2022; Nasih et al., 2019; Trireksani & Djajadikerta, 2016), board independence (Al-Mamun & Seamer, 2021; Fuente et al., 2017; Kholmi et al., 2019), the percentage of the number of female boards (Al-Qahtani & Elgharbawy, 2020; Tejado-Romero et al., 2017), board meeting (Wardani & Haryani, 2019), and well-known boards (celebrity board; Shui & Zhang, 2020). Climate change disclosures can also be influenced by the board's background such as education and board experience (Elsayih et al., 2021; Reeb & Zhao, 2013). Research by Reeb and Zhao (2013) shows that board education and experience have an impact on disclosures, but their research has not been able to prove the relationship between board networking and disclosures. There is still less evidence from previous studies whether board capital and each dimension of board capital can increase climate change disclosures. There is also a gap in the sample of previous studies that excluded

the financial sector from the research sample. This study fills the gap by examining climate change disclosures in the banking industry. This research contributes by providing benefits to the literature on how board capital can increase the disclosure of non-financial information of companies. With climate change as a global issue, this research provides information for regulators to encourage companies to reduce carbon emissions.

This study uses the banking industry in Indonesia as a sample with board capital as a factor that is expected to increase climate change disclosures. Indonesia is a developing country that contributes to carbon dioxide and also faces climate change problems. The presence of foreign investors flooding the Indonesian Stock Exchange urges companies in Indonesia to mitigate risks and make disclosures. Indonesia is also responsible for climate change so companies must pay attention to factors that can increase climate change disclosures. Banks participate in combating climate change through the implementation of climate strategies by offering financing products and services for companies that mitigate climate change (Furrer et al., 2012).

In the next section, this study will present a literature review followed by the development of hypothesis. Section 3 describes the sample and research methodology. Section 4 discusses the results and robustness test. Section 5 is the conclusion.

2. Literature review and hypothesis development

The risks arising from climate change will continue to increase from time to time so investors have the right to get information on how the company is dealing with this reality and how the business opportunities from climate change are. This means that the company's response to climate change and environmental degradation is becoming increasingly important (Aggarwal & Dow, 2012). If the company is not able to provide information, there will be a risk that the public will make an assessment of the company based on inaccurate information (Haque & Deegan, 2010). The banking industry has an impact on the environment, such as through the use of paper and the use of energy to operate computers and building operations. Banks can contribute to facing climate change by making loan policies for environmentally responsible companies. One way to convey social and environmental-related business activities is through disclosures (Gnanaweera & Kunori, 2018). Risks and opportunities related to climate change can be material for companies so the Task Force on Climate-related Financial Disclosures (TCFD) encourages companies to start disclosing financial information related to climate. TCFD provides a framework to help companies create reports to convey information related to climate change. Theories that can explain the relationship between board capital and climate change disclosures are legitimacy theory and stakeholder theory.

The company has contracts with stakeholders as well as with the wider community through the interactions that occur. Companies have rights and authority from the community to access resources (Bae Choi et al., 2013). Because these resources are important for survival, companies must ensure to operate within the boundaries and norms prevailing in society to convince stakeholders that the company is legitimate (Berthelot & Robert, 2011). Climate change disclosures can be a way for companies to gain legitimacy. Companies must pay attention to their activities so as not to cause harm to the society. Every bad action of the company can be a legitimacy gap that can harm the company (Ahmad & Hossain, 2015).

Companies exist not only to pay attention to the interests of the company but also to provide benefits to stakeholders. Companies as going-concern entities need resources that can be obtained from stakeholder support to be able to continue operating (Nasih et al., 2019). With the issue of climate change, companies get pressure from stakeholders to convey information related to climate change (Ali Ahzar, 2018). Disclosure is a form of communication between companies and stakeholders because the company management has more information than the stakeholders (Kurnia et al., 2021). Legitimacy theory and stakeholder theory are complementary theories.

2.1. Board capital and climate change disclosures

The board is the highest level in the company management and is also a valuable asset for the company. The board of directors in the company functions to monitor management and provide the resources needed by the company such as advice and suggestion on strategic issues (Ricci et al., 2019) and serves to increase the trust and wealth of shareholders (Brahmana et al., 2019). Meanwhile, the board of commissioners functions to oversee the board of directors in managing the company (Rusli et al., 2020). Board capital is a factor considered by stakeholders because the board is chosen and entrusted to run the company. Stakeholders will benefit if the company has better resources and can also reduce agency costs (Kontesa et al., 2021).

Companies with wider board capital coverage will respond to climate change and allow higher disclosures (Shui & Zhang, 2020). Hillman and Dalziel (2003) interpret board capital as human and social capital owned by the company's board. Human capital includes a range of capabilities and knowledge such as educational background and work experience. While social capital includes potential resources that come from business networks or relationships owned by a person. Boards with high capabilities will maintain their reputation by reducing information asymmetry. The board's experience, education, and business network enable the disclosure of higher-quality information (Reeb & Zhao, 2013). One of the important tasks of the board is to make a policy regarding the company's disclosures.

Companies that can manage assets efficiently will be increasingly encouraged to disclose information because they have optimism and a good reputation (Ariantika & Geraldina, 2019). The board's experience which includes new ways of thinking, beliefs, concepts, and ideas has an impact on the company's strategic decisions including actions in managing risks related to climate change (Elsayih et al., 2021). In

their research, Reeb and Zhao (2013) stated that board capital increases governance efficacy with higher quality disclosures as well. Information in disclosures is needed by stakeholders so that management who can use their abilities, knowledge, and experience is needed to develop and implement business strategies that satisfy stakeholders (Ng & Daromes, 2016).

Research by Shui and Zhang (2020), Dong et al. (2015), Ben-Amar and McIlkenny (2015), and Reeb and Zhao (2013) shows that board capital increases voluntary disclosure and CSR disclosure. Elsayih et al (2021) examining 128 firm-year observations of companies in Australia from 2011–2014 reveal that CEOs play an important role in addressing climate change issues. The research of Sheikh (2019) states that CEO Power, which is indicated by the CEO's ability to manage the company, is negatively related to disclosures. (Al-Qahtani & Elgharbawy, 2020) examining 165 listed companies in UK FTSE 350 found the higher the percentage of boards with industry and financial experience, the lower the level of disclosures. An acceptable argument is that boards with industry and financial experience are more interested in financial and industrial issues. Meanwhile, board diversity (network, experience, and knowledge) is not directly related to the level of corporate awareness of social responsibility. However, this does not mean that it reduces the importance of board diversity (Bear et al., 2010). Meanwhile, research by Chithambo and Taurigana (2017) and (Darus et al., 2020) show that the composition of the board does not show a tendency to encourage disclosures.

The results of the research mentioned above indicate that efforts have been made to examine the relationship between the board and disclosures, but there are still differences in the results of the research. Therefore, this study proposes the following hypothesis:

H₁: Board capital has a positive effect on climate change disclosures.

H₂: Networking, education, and experience of the board have a positive effect on climate change disclosures

3. Research Method Data and sample

This study uses data obtained from annual reports, sustainability reports, and company websites. The object of research is the banking companies listed on the Indonesia Stock Exchange (IDX) from 2016 to 2020 as many as 47 banks. After excluding unique factors from 47 banks, the final sample of this study is 191 bank-year observations. The sample was selected by using a purposive sampling method by considering the availability of the annual report on the IDX. The study used cross-sectional data and a quantitative design method and was processed using EViews 12. The banking sector has an indirect impact on climate change through financial support to industries that have a direct impact on climate change. This research is expected to be a consideration for regulators to support financing for environmentally responsible industries. The involvement of banks in lending policies also contributes to a sustainable economy.

3.1. Variable measurement

Climate change disclosures are measured using an index provided by TCFD. The TCFD recommendations cover four dimensions, namely Governance, Strategy, Risk Management, and Metrics and Targets. Each item in the index disclosed by the company will be given a score of 1, otherwise given a score of 0. With this scoring method, the maximum value that will be obtained by each company is 11, with a minimum value of 0. Previous research using the TCFD index as a climate change disclosures measurement are by Eccles and Krzus (2017), Bose (2021), and Achenbach (2021).

GOVERNANCE	1) Describe the board's oversight of climate-related risks and opportunities.
	2) Describe management's role in assessing and managing climate-related risks and opportunities.
STRATEGY	1) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.
	2) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.
	3) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.
RISK MANAGEMENT	1) Describe the organization's processes for identifying and assessing climate-related risks.
	2) Describe the organization's processes for managing climate-related risks.
	3) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.
METRICS AND TARGETS	1) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.
	2) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	3) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.

Measurement of board capital follows the method Reeb and Zhao (2013) with three dimensions: networking, education, and experience. Another research that uses the method of Reeb and Zhao (2013) is the research of Kontesa et al. (2021) and Brahmana et al. (2019). In this measurement, the education dimension uses measurements from Brahmana et al. (2019). Each level of education is represented by a number from 1 to 9, namely: 1) Under a bachelor’s degree; 2) Bachelor’s degree; 3)

MBA degree; 4) Master’s degree; 5) Doctoral degree; 7) Best 200 undergraduate degrees based on QS University rankings; 8) Top 200 master’s degrees based on QS University ranking; and 9) Best doctoral degree based on QS University ranking. The board capital calculation procedure uses ranking and average value. Each company will be given a score based on three dimensions of board capital. Then the company will be ranked based on this score from year to year. Finally, the rankings are summed and averaged per dimension. Board capital is the average value of the three dimensions.

Networking of the Board	Educational of the Board	Experience capital of the Board
1. Total current number of boards a director sits on during a given year.	1. Total number of director that obtain bachelor’s degree, master’s degree, law degree or medical degree, as well as a PhD degree.	1. Working history: the number of directors who have been a partner in a law firm; have investment bank/venture capital firm expertise; management consulting experience; accounting firm expertise; academic experience.
2. Total current number of nonprofit boards a director sits on		2. Director information on professional certification such as CPA, CFA or certified fraud examiner.
3. Total number of corporate board memberships/the total number of commissioners		3. Number of positions higher than vice president) that directors have held during their lifetime.
4. Number of non-profit boards that a director has served on in the past but is no longer a current member/the total number of independent commissioners		4. count the number of firms with which the directors have worked during their lifetime.
5. Any current or prior government position		5. Others potential director characteristic such as national level honours and awards and membership in professional or industrial association affiliations.

This study uses 5 control variables, namely firm size, profitability, leverage, firm age, and audit firm. Large companies are expected to have better resources where management can identify risks and opportunities related to climate change and be able to provide the information needed by stakeholders (Ararat & Sayedy, 2019). Firm size is measured using the natural logarithm of the company’s total revenue. Companies with high profitability (ROE) are expected to be able to manage their resources with due regard to environmental issues (Daradkeh et al., 2022). Companies with high levels of leverage tend to be pressured by stakeholders to disclose information in order to manage reputational and legitimacy risks (Bui et al., 2020). Leverage is measured by the ratio of debt to total equity. The greater the age of the company, the higher the disclosure related to climate change because the reputation and environmental and social responsibility of the company will be increasingly formed over time (Kılıç & Kuzey, 2019). Firm age is measured by the number of years since the company was founded. The dummy variable is used to indicate

whether a company is audited by the big four audit firm or not. Companies audited by the big four are encouraged to disclose more information (Ding et al., 2021).

3.2. The regression model

The regression model used to test the hypothesis (H1) is Ordinary Least Squares regression (OLS).

$$CCD_{it} = \alpha + \beta_1 BC_{it} + \beta_2 SIZE_{it} + \beta_3 ROE_{it} + \beta_4 LEV_{it} + \beta_5 AGE_{it} + \beta_6 AUDIT_{it} + \epsilon$$

We tested the dimensions of board capital separately (H2) and estimate the following model:

$$CCD_{it} = \alpha + \beta_1 NET_{it} + \beta_2 EDC_{it} + \beta_3 EXP_{it} + \beta_4 SIZE_{it} + \beta_5 ROE_{it} + \beta_6 LEV_{it} + \beta_7 AGE_{it} + \beta_8 AUDIT_{it} + \epsilon$$

Where CCD = Climate Change Disclosures; BC = Board Capital; SIZE = Firm Size; ROE = Profitability ratio as measured by ROE; LEV = Leverage ratio as measured by DER; AGE = Firm Age; AUDIT = big four audit firm or non-big four audit firm; NET = Board Networking; EDC = Board Education; EXP = Board Experience

4. Results and discussion descriptive statistics

The results of the descriptive statistical analysis are shown in Table 1. The independent variable board capital (BC) has an average value of 1.8890 with a maximum value of 4.4667 and a minimum value of 1. The average value of climate change disclosures (CCD) is 2.6649 which shows that among companies in the sample, there are still many who have not fully disclosed information related to climate change with a maximum value of 11 and a minimum of 0. For control variables, the average

firm size value is 27.7199 with a maximum value of 32.0341 and a minimum of 23.1657, thus the sample of this study is large companies. The company's performance can be seen from the profitability ratio with an average value of 2.2893 and a maximum and minimum value of 33.6092 and -54.7039, respectively. The sample company can settle its financial obligations with average leverage of 5.2299 from a maximum value of 14.7485 and a minimum value of 0.0553. The maximum age of the sample company is 125 years and the minimum age is 18 years with an

Table 1. Descriptive statistics

Variable	N	Mean	Std. Dev	Max	Min
CCD	191	2.6649	2.8121	11	0
BC	191	1.8890	0.7953	4.4667	1
NETWORKING	191	2.0471	0.7518	4.8000	1
EDUCATION	191	2.0366	1.1760	5	1
EXPERIENCE	191	1.5832	0.6022	4	1
SIZE	191	27.7199	1.9774	32.0341	23.1657
ROE	191	2.2893	12.1861	33.6092	-54.7039
LEV	191	5.2299	2.5929	14.7485	0.0553
AGE	191	46.5969	23.0425	125	18

Information: CCD = Climate change index disclosed by the company; BC = Average value of networking, education, and experience board; SIZE = Company size; ROE = Return on Equity; LEV = Leverage; AGE = Age of the company since it was founded.

Table 2. Descriptive statistics for dummy variable

Variable	Freq (1)	Freq (0)
AUDIT	54.97%	45.03%

Note: AUDIT = dummy variable, 1 if the company is audited by big four audit firm and 0 otherwise.

average value of 46.5969. The companies in this research sample were audited by both big four and non-big four audit firms with an average score of 0.5497, a maximum score of 1 (big four), and a minimum of 0 (non-big four). In Table 2, there are 54.97% of companies audited by big four audit firm, and 45.03% audited by non-big four audit firm.

4.1. Regression results

In this study, a test was conducted to select the best model to be used. After conducting the Chow test and Hausmann test, the results show that the random effect model is the best estimation model for this study. As shown in Table 3, board capital has a positive effect with a coefficient value of 0.7666 ($p < 0.05$). Therefore, the hypothesis in this study is accepted that board capital has a positive effect on climate change disclosures. The results of this study are in line with the research of Reeb and Zhao (2013) and Shui and Zhang (2020) but contradict the research of Al-Qahtani and Elgharbawy (2020). Uncertainties faced by companies such as climate change will be responded by companies with diverse boards by making more disclosures and higher quality disclosures (Shui & Zhang, 2020). Boards with good skills prefer that the public get more information through disclosures to assess the company's actual performance and assess how the company responds to uncertainties such as the risk of climate change. The practice of climate change disclosures will spread more quickly in the industry if the company has a board with good capabilities or a quality board. This matter in line with the demands from stakeholders for

Table 3. Regression results

	1	2	3	4
BC	0.7666 ** (0.0155)			
NET		0.5872 * (0.0669)		
EDC			0.3827 * (0.0570)	
EXP				0.9320 *** (0.0074)
SIZE	0.5672 (0.0000)	0.6196 (0.0000)	0.6415 (0.0000)	0.5821 (0.0000)
ROE	0.0046 (0.6989)	0.0049 (0.6806)	0.0035 (0.7680)	0.0057 (0.6266)
LEV	-0.0712 (0.2377)	-0.0668 (0.2750)	-0.0695 (0.2535)	-0.0482 (0.4116)
AGE	0.0211 (0.0088)	0.0228 (0.0063)	0.022 (0.0071)	0.0251 (0.0012)
AUDIT	-0.7592 (0.0310)	-0.7198 (0.0436)	-0.7845 (0.0264)	-0.7533 (0.0315)
adj. R2	0.3064	0.2891	0.2992	0.3119
F-Statistics	14.9909	13.8809	14.5215	15.3546
Prob F-Statistic	0.0000	0.0000	0.0000	0.0000
Observation	191	191	191	191

Information: CCD = Climate change index disclosed by the company; BC = Average value of networking, education, and experience board; NET = Board's network value; EDC = Board's education value; EXP = Board's experience value; SIZE = Ln of the company's total revenue; ROE = Ratio of profit after tax divided by equity; LEV = Ratio of debt divided by assets; AGE = number of years since the company was founded; AUDIT = Auditor, dummy variable 1 if the company is audited by big four audit firm and 0 otherwise.

Significance levels: *10%, **5%, ***1%

companies to convey information related to climate change. Companies that disclose more information will also be more favored by investors.

This study also examines the effect of each dimension of board capital separately, namely networking, education, and experience on climate change disclosures. Table 3 shows that networking has a positive effect. This means that the wider the network within the board, the higher the level of climate change disclosures. In their research, Shui and Zhang (2020) argue that boards that have external connections allow companies to respond to climate change through disclosures. The board wants the company to be viewed favorably by investors, the government, and other board connections. The higher the number of board members, the wider the connection, insight, and awareness of the board that can increase climate change disclosures. Furthermore, education has a positive effect, which means that the higher the board's education, the higher the level of climate change disclosures. These results are in line with the research of Chang et al. (2017) where the company benefits from the existence of a highly educated board because the board is free to express opinions and tends to be more committed to disclosures. Boards with higher education have more knowledge and skills to manage the company and make the best decisions for the company such as making climate change disclosures to gain legitimacy. Furthermore, experience has a positive effect where companies with more experienced boards will be more aware of making climate change disclosures. Based on the results of research by Al-Mamun and Seamer (2021), boards that have expertise in the business field as well as those with international experience are more aware of how the environmental impact of business activities will have an impact on company legitimacy. Boards involved in associations, occupying various positions, or working in different companies or industries have a broader view so that they can compare business strategies, risk mitigation, and disclosures between companies or industries. With the influence of board capital that can increase climate change disclosures, companies can look for boards that have good abilities which can be indicated by high education, a lot of experience, and a wide network of work.

This study uses the banking sector as a sample whereas previous studies excluded the financial sector from the research sample. Previous studies examined the effect of board size, board independence, board diversity, board meeting on disclosures, but there is still insufficient evidence whether board capital has an effect on climate change disclosures. The results of this study show that board capital and each dimension of board capital have a positive effect on climate change disclosures.

4.2. Robustness test

We also check the robustness by (i) using the Tobit model. The Tobit model introduced by James Tobin (1958) is a model used for cross-sectional data where some of the data in the sample have a value of 0 for the dependent variable. (ii) The dependent variable that has a value of 0 is excluded from the sample and tested with the OLS model. In this test, only samples that provide disclosures about climate change are used so that the dependent variable contains a value of 1 to 11.

The results in Tables 4 and 5 show that board capital has a positive effect on climate change disclosures, both with the Tobit method and the OLS method. The results of this study are robust.

5. Conclusion

This study examines the effect of board capital on climate change disclosures in Indonesian banking. The results confirm our hypothesis (H_1) that board capital has a positive effect on climate change disclosures by examining 191 bank-year observations listed on the Indonesia Stock Exchange from 2016–2020. This study also examines each board dimension. The results of the study show that board networking, education, and experience have a positive effect on climate change disclosures in accordance with the hypothesis (H_2). Companies that have boards with good skills tend to disclose more information such as climate change disclosures. Board knowledge is an aspect that can affect the governance of a company. Boards with human capital and social capital will pay attention to their reputation by reducing information asymmetry between managers and investors and stakeholders so

Table 4. Tobit method

BC	0.7789 (0.0432)
SIZE	0.6745 (0.0000)
ROE	0.0095 (0.5672)
LEV	-0.0500 (0.4997)
AGE	0.0151 (0.0945)
AUDIT	-0.3924 (0.3612)
Observation	191

Significance levels: 5%

that they will make disclosures (Reeb & Zhao, 2013). The practice of climate change disclosures will be more widespread if the company has a board with good capabilities.

This research provides information for regulators to encourage companies to reduce carbon emissions and make disclosures. This study contributes to the literature on how board capital affects the disclosure of company information. The board plays a significant role in disclosing information about climate change, so companies need to pay attention to quality when selecting a board, such as networking, education, and experience of the board. This research is limited to the sample companies, namely the banking sector in Indonesia. Subsequent research can use a wider sample, namely from other countries and other sectors. Subsequent research can also add moderating variables such as foreign ownership or use other measurements of climate change disclosures such as the Carbon Disclosures Project (CDP) Scores.

Table 5. OLS method

BC	0.7419 (0.0244)
SIZE	0.5584 (0.0001)
ROE	-0.0110 (0.4674)
LEV	-0.0528 (0.4265)
AGE	0.0236 (0.0039)
AUDIT	-1.0999 (0.0032)
adj. R2	0.2846
F-Statistics	11.8061
Prob F-Statistic	0.0000
Observation	164

Significance levels: 5%

Acknowledgements

The Kementerian Republik Indonesia (Ministry of Finance of the Republic of Indonesia) supported this work with a scholarship and research grant for Lembaga Pengelola Dana Pendidikan (LPDP).

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Disclosure statement

The author(s) declare no conflict of interest.

Citation information

Cite this article as: Does board capital improve climate change disclosures?, Cindy Nathalia & Doddy Setiawan, *Cogent Business & Management* (2022), 9: 2121242.

References

- Achenbach, M. (2021). Transparency of climate-related risks and opportunities : determinants influencing the disclosure in line with the task force on climate-related financial disclosures. *Glocality*, 4(1), 1–20. <https://doi.org/10.5334/glo.32>
- Aggarwal, R., & Dow, S. (2012). Corporate governance and business strategies for climate change and environmental mitigation. *European Journal of Finance*, 18(3–4), 311–331. <https://doi.org/10.1080/1351847X.2011.579745>
- Ahmad, N. N. N., & Hossain, D. M. (2015). climate change and global warming discourses and disclosures in the corporate annual reports: A study on the Malaysian companies. *Procedia - Social and Behavioral Sciences*, 172, 246–253. <https://doi.org/10.1016/j.sbspro.2015.01.361>
- Ali Ahzar, F. (2018). Pengungkapan climate change pada perusahaan manufaktur di negara asean. *Jurnal Akuntansi, Prodi Akuntansi – FEB UNIPMA*, 2(2), 336–355.
- Al-Mamun, A., & Seamer, M. (2021). Board of director attributes and CSR engagement in emerging economy firms: Evidence from across Asia. *Emerging Markets Review*, 46(February 2020), 100749. <https://doi.org/10.1016/j.ememar.2020.100749>
- Al-Qahtani, M., & Elgharbawy, A. (2020). The effect of board diversity on disclosure and management of greenhouse gas information: Evidence from the United Kingdom. *Journal of Enterprise Information Management*, 33(6), 1557–1579. <https://doi.org/10.1108/JEIM-08-2019-0247>
- Ararat, M., & Sayedy, B. (2019). Gender and climate change disclosure: An interdimensional policy approach. *Sustainability (Switzerland)*, 11(24), 1–19. <https://doi.org/10.3390/su11247217>
- Ariantika, E. N., & Geraldina, I. (2019). Implikasi kecakapan manajerial pada laporan keberlanjutan dan kinerja perusahaan. *Jurnal Dinamika Akuntansi Dan Bisnis*, 6(1), 39–50. <https://doi.org/10.24815/jdab.v6i1.10815>
- Asare, E. T., Tornam Duho, K. C., & Amegatcher, E. N. (2022). Climate change reporting and corporate governance among asian and African energy firms. *IOP Conference Series: Earth and Environmental Science*, 997(1), 012005. <https://doi.org/10.1088/1755-1315/997/1/012005>
- Bae Choi, 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>
- Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics*, 97(2), 207–221. <https://doi.org/10.1007/s10551-010-0505-2>
- Ben-Amar, W., & McIlkenny, P. (2015). Board effectiveness and the voluntary disclosure of climate change information. *Business Strategy and the Environment*, 24(8), 704–719. <https://doi.org/10.1002/bse.1840>
- Berthelot, S., & Robert, A.-M. (2011). Climate change disclosures: An examination of Canadian oil and gas firms. *Issues In Social And Environmental Accounting*, 5(2), 106. <https://doi.org/10.22164/isea.v5i2.61>
- Bose, S. (2021). An exploratory study on climate-related financial disclosures : International citation: Bose, S., & Hossain, A. In “An exploratory study on climate-related financial disclosures : international evidence” in M. Marzouk and K. Hussainey (E. November. (pp.1-31). Routledge Taylor and Francis Group, Oxford, UK. Forthcoming.
- Brahmana, R., Ung, L. J., & Kiu, J. S. (2019). Does board capital affect the corporate financial distress level? A study from Malaysia. *Kasetsart Journal of Social Sciences*, 40(3), 695–702. <https://doi.org/10.34044/kjss.2019.40.3.04>
- Bui, B., Houque, M. N., & Zaman, M. (2020). Climate governance effects on carbon disclosure and performance. *British Accounting Review*, 52(2), 100880. <https://doi.org/10.1016/j.bar.2019.100880>
- Chang, Y. K., Oh, W. Y., Park, J. H., & Jang, M. G. (2017). Exploring the relationship between board characteristics and CSR: Empirical evidence from Korea. *Journal of Business Ethics*, 140(2), 225–242. <https://doi.org/10.1007/s10551-015-2651-z>
- Chithambo, L., & Tauringana, V. (2017). Corporate governance and greenhouse gas disclosure: A mixed-methods approach. *Corporate Governance: The International Journal of Business in Society*, 17(4), 678–699. <https://doi.org/10.1108/CG-10-2016-0202>
- Daradkeh, H., Shams, S., Bose, S., & Gunasekarage, A. (2022). Does managerial ability matter for corporate climate change disclosures? *Corporate Governance: An International Review*, 61(2). <https://doi.org/10.1111/corg.12436>
- Darus, F., Mohd Zuki, H. I., & Yusoff, H. (2020). The path to sustainability: Understanding organisations’ environmental initiatives and climate change in an emerging economy. *European Journal of Management and Business Economics*, 29(1), 84–96. <https://doi.org/10.1108/EJMBE-06-2019-0099>
- Ding, R., Liu, M., Wang, T., & Wu, Z. (2021). The impact of climate risk on earnings management: International evidence. *Journal of Accounting and Public Policy*, 40(2), 106818. <https://doi.org/10.1016/j.jaccpubpol.2021.106818>
- Dong, Y., Fu, R., Gao, F., & Ni, C. (2015). Determinants and economic consequences of nonfinancial disclosure quality. *European Accounting Review*. <http://ssrn.com/abstract=2555416>
- Eccles, R. G., & Krzus, M. P. (2017). An analysis of oil & gas company disclosures from the perspective of the task force on climate-related financial disclosures. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3091232>
- Elsayih, J., Datt, R., & Hamid, A. (2021). CEO characteristics: Do they matter for carbon performance? An empirical investigation of Australian firms. *Social Responsibility Journal*, 17(8), 1279–1298. <https://doi.org/10.1108/SRJ-04-2020-0130>

- Fuente, J. A., García-Sánchez, I. M., & Lozano, M. B. (2017). The role of the board of directors in the adoption of GRI guidelines for the disclosure of CSR information. *Journal of Cleaner Production*, 141, 737–750. <https://doi.org/10.1016/j.jclepro.2016.09.155>
- Furrer, B., Hamprecht, J., & Hoffmann, V. H. (2012). Much ado about nothing? how banks respond to climate change. *Business and Society*, 51(1), 62–88. <https://doi.org/10.1177/0007650311427428>
- Gnanaweera, K. A. K., & Kunori, N. (2018). *Corporate sustainability reporting: Linkage of corporate disclosure information and performance indicators*. *Cogent Business and Management*, 5(1). <https://doi.org/10.1080/23311975.2018.1423872>
- Haque, S., & Deegan, C. (2010). Corporate climate change-related governance practices and related disclosures: Evidence from Australia. *Australian Accounting Review*, 20(4), 317–333. <https://doi.org/10.1111/j.1835-2561.2010.00107.x>
- Hillman, A. J., & Dalziel, T. (2003). Boards of Directors and Firm Performance: Integrating Agency and Resource Dependence Perspectives. *Academy of Management Review*, 28, 383–396. <https://doi.org/10.2307/30040728>
- Iriyadi, I., & Antonio, Y. (2021). climate change disclosure impact on Indonesian corporate financial performance. *Jurnal Dinamika Akuntansi Dan Bisnis*, 8(2), 117–127. <https://doi.org/10.24815/jdab.v8i2.20424>
- Kholmi, M., Sumarji, S. A., & Zubaidah, S. (2019). Pengaruh corporate governance terhadap kualitas environmental disclosure. *Equity*, 22(1), 26–36. <https://doi.org/10.34209/equ.v22i1.901>
- Kılıç, M., & Kuzey, C. (2019). Determinants of climate change disclosures in the Turkish banking industry. *International Journal of Bank Marketing*, 37(3), 901–926. <https://doi.org/10.1108/IJBM-08-2018-0206>
- Kim, E., Kim, S., & Lee, J. (2021). Do foreign investors affect carbon emission disclosure? Evidence from South Korea. *International Journal of Environmental Research and Public Health*, 18(19). <https://doi.org/10.3390/ijerph181910097>
- Kontesa, M., Lako, A., & Wendy, W. (2021). Board capital effect on firm performance: Evidence from Indonesia. *International Journal of Business and Society*, 21(1), 491–506. <https://doi.org/10.33736/ijbs.3265.2020>
- Kurnia, P., Emrinaldi Nur, D. P., & Putra, A. A. (2021). Carbon emission disclosure and firm value: A study of manufacturing firms in Indonesia and Australia. *International Journal of Energy Economics and Policy*, 11(2), 83–87. <https://doi.org/10.32479/ijeep.10730>
- Nasih, M., Harymawan, I., Paramitasari, Y. I., & Handayani, A. (2019). Carbon emissions, firm size, and corporate governance structure: Evidence from the mining and agricultural industries in Indonesia. *Sustainability*, 11(9), 2483. <https://doi.org/10.3390/su11092483>
- Ng, & Daromes. (2016). Peran kemampuan manajerial. *Jurnal Akuntansi Dan Keuangan*, 13(2), 174–193.
- Pan, Y., Orleans, N., Huang, P., & Gopal, A. (2020). Is board capital a double-edged sword? New entry threats and firm performance: On examining the moderating role of board capital. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3606875>
- Reeb, D. M., & Zhao, W. (2013). Director capital and corporate disclosure quality. *Journal of Accounting and Public Policy*, 32(4), 191–212. <https://doi.org/10.1016/j.jaccpubpol.2012.11.003>
- Ricci, F., Scafarto, V., Moscarini, F., & Della Corte, G. (2019). The concept of board capital in corporate governance research: A structured literature review. 333–348. https://doi.org/10.22495/ncpr_44
- Rusli, Y. M., Nainggolan, P., & Pangestu, J. C. (2020). Pengaruh independent board of commissioners, institutional ownership, and audit committee terhadap firm value. *Journal of Business and Applied Management*, 13(1), 49–66. <http://journal.ubm.ac.id/>
- Sheikh, S. (2019). An examination of the dimensions of CEO power and corporate social responsibility. *Review of Accounting and Finance*, 18(2), 221–244. <https://doi.org/10.1108/RAF-01-2018-0034>
- Shui, X., & Zhang, M. (2020). The role of corporate governance in voluntary carbon disclosure: New insights from board capital and CEO celebrity. *August*.
- Tejedo-Romero, F., Rodrigues, L. L., & Craig, R. (2017). Women directors and disclosure of intellectual capital information. *European Research on Management and Business Economics*, 23(3), 123–131. <https://doi.org/10.1016/j.iedeen.2017.06.003>
- Tobin, J. (1958). Estimation of relationships for limited dependent variables. *Econometrica*, 26(1), 24–36. <https://doi.org/10.2307/1907382>
- Trireksani, T., & Djajadikerta, H. G. (2016). Corporate governance and environmental disclosure in the Indonesian mining industry. *Australasian Accounting, Business and Finance Journal*, 10(1), 18–28. <https://doi.org/10.14453/aabfj.v10i1.3>
- United Nations (2015). *The Paris agreement*. <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>, April 2022
- Wardani, D. K., & Haryani, S. (2019). Dampak corporate governance terhadap pengungkapan lingkungan. *Jurnal Riset Akuntansi Dan Keuangan*, 14(2), 67. <https://doi.org/10.21460/jrak.2018.142.325>



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