Determinants of Carbon Emission Disclosure in Corporate Governance Perspective

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Abstract. Carbon emissions disclosure in Indonesia is low. This research attempts to examine the determinants of carbon emission disclosure in a corporate governance perspective empirically with the variables as follow: managerial ownership, female director size, directors job specifications, independent commissioner size, and commissioners job specifications using stakeholder theory, legitimacy theory, and signaling theory. The sample of this research were companies listed on IDX in 2020 of the basic materials, energy, and industrial sectors as well as those that announced annual reports and sustainability reports. Regression analysis was used with the result that all the independent variables have no effect on the carbon emission disclosure This research had some limitations, the sample was small amount because many companies did not announce sustainability reports. Four of five independent variables using dummy. Future research is expected to use non-dummy in measuring corporate governance. It is hoped that companies will increase be able to disclose carbon emissions and focus on reducing carbon emissions.

Keywords: carbon emission disclosure · corporate governance · carbon accounting

1 Introduction

Global Carbon Project reported that in 2020 Indonesia produced 590 million tons of carbon dioxide [1]. This makes Indonesia ranked tenth as a country with the highest production of carbon dioxide emissions in the world. This release of carbon emissions into the atmosphere contributes to environmental damage that causes climate change. Carbon emission threaten the concept of sustainability. Carbon emission disclosure is a manifestation of the company's commitment for monitoring, managing, controlling, measuring and reporting its environmental performance in implementing environmental management [2].

51/POJK.03/2017 regarding the obligation to implement Sustainable Finance in business activities. [3] explains that companies will disclose information if the company thinks its value will increase by disclosing that information. Corporate governance related to the company's management and control processes. With the implementation of GCG, companies are expected to be motivated to disclose carbon emission, because

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the existence of corporate governance in a company's management is able to encourage management to be transparent, responsible, accountable, fair and full of independence.

Many studies have been done on the determinants of carbon emission disclosure. [4] and [5] found that managerial ownership effects on carbon emission disclosure possitively, not in line with [6] and [7].

Furthermore, [8] revealed that female directors had a significant positive effect on carbon emission disclosure, supported by research by [9]. In contrast, [10] and [11] research. [12] explained that independent commissioners have a positive effect on carbon emission disclosure, contradicts the research of [6, 13], and [14].

The results of research on the determinants of carbon emission disclosure are still diverse. This study attempts to examine the determinants of carbon emission disclosure in the corporate governance perspective empirically with the proxy of managerial ownership, female director size, directors job specifications, independent commissioner size, and commissioners job specifications. The novelty in this study is the first to use the specifications of the job and authorities of directors and commissioners in the environmental aspect as independent variables.

2 Literature Review

2.1 Theoretical Basis

Legitimacy Theory

Legitimacy is a form of public recognition of the company. The status of legitimacy according to [15] means that a company operates within the limits of what is considered appropriate by a particular society, so that its ability to carry out operations can continue.

Signaling Theory

Signaling theory explains that company reports will reveal signals which will ultimately affect the decision-making process by users of the report. Disclosure of carbon emissions conveys a positive signal that companies are taking part in mitigating climate change.

Stakeholder Theory

Support from stakeholders affects the sustainability of the company's life so that companies must get that support [16]. Carbon emission disclosure contains information related to the measurement, recognition, and presentation of carbon emissions. GCG refers to public and private institutions, regarding laws, regulations and public institutions, which simultaneously control the relationship between managers and investors.

Carbon Emission Disclosure.

PSAK Number 1 (Revised 2009) states that several entities make a separate presentation of the financial statements. The report can be a review of the main determinations that affect financial performance, including environmental changes. Carbon emission disclosure contains information related to the measurement, recognition, and presentation of carbon emissions.

2.2 Hypothesis Development

Managerial Ownership Has a Positive and Significant Effect on Carbon Emission Disclosure.

[17] reveals that managerial ownership is a position where the shareholder comes from management who is also a director and commissioner or in making decisions actively contributes. Ownership of these shares makes the directors as managers of the company also act as owners of the company. In the end, increasing the supervisory function of the company, including the environmental aspect, so that management is motivated to disclose carbon emissions, in line with [4] and [5]. So the hypothesis is H_1: Managerial ownership has a positive and significant effect on carbon emission disclosure.

Female Directors Have a Positive and Significant Influence on Carbon Emission Disclosure.

[18] explains that the board of directors with female directors is better at fulfill the needs of various stakeholders. Women with feminine values are generally seen as more empathetic and sensitive, so that with the presence of a female board of directors, that they are able to encourage more responses and evaluations of environmental issues, then to make a carbon emission disclosure. [8] proved that the presence of female directors had a significant positive effect on the disclosure of carbon emissions, supported by [9]. So, the hypothesis is H_2: Female directors have a positive and significant effect on carbon emission disclosure.

Job Specification of Directors Has a Positive and Significant Impact on Carbon Emission Disclosure.

Bosch (1995) and Wallis (2000) in [19] state that an increase in the Board of Directors (BOD) is needed, due to global competition. The effectiveness of the BOD role is carried out collectively in the form of teamwork. Each member of the board of directors has their respective scope of job and responsibilities. This specification of job and responsibilities allows directors to focus more on carrying out their roles. Thus, if in a company there are directors with specific job and responsibilities in the environmental field, it is considered more focused and able to disclose carbon emissions. So, the hypothesis is H_3: Job specification of directors has a positive and significant impact on carbon emission disclosure.

Independent Commissioners Have a Positive and Significant Influence on Carbon Emission Disclosure.

The appointment of independent commissioners through the GMS mechanism, namely individuals from outside the company and affiliated with the members of the board of directors and commissioners and majority shareholder, will strengthen the functioning of the check and balance mechanism in a corporation which is indispensable in CG.

[19] reveals that in companies dominated by independent commissioners, their focus on the compliance aspect is getting bigger, so they can be better to disclose carbon emissions, supported by research by [12] that the independent commissioner has a positive effect on carbon emission disclosure. So, the hypothesis is H_4: Independent commissioner has a positive and significant influence on carbon emission disclosure.

Job Specification of Commissioners Has a Positive and Significant Impact on Carbon Emission Disclosure.

[20] reveals that commissioner board has the responsibility to control the company's management policies and advise the directors. The board of commissioners consists of several people with specification of job and responsibilities so the commissioners can focus more on supervising. If there are commissioners with specific job and responsibilities in the environmental field, then the supervision of environmental aspects can be more focused so that they are considered more capable in carrying out carbon emission disclosure. So, the hypothesis is H_5: Job specifications of commissioners has a positive and significant impact on carbon emission disclosure.

3 Methodology and Data Analysis

This study used an analysis of ordinary least squares (OLS) regression. Samples obtained were Companies listed on the Indonesia Stock Exchange in 2020 in the basic material, energy, and industrial sectors, publish their 2020 annual report and sustainability report. So the number of samples that match the criteria were 47 companies (See Table 1).

3.1 Variable Operation

Managerial ownership is measured by using dummy variables. 1 is given if there is managerial ownership andf 0 if there is no managerial ownership. Female directors are measured by the percentage of female directors. Directors' job specification is measured by using dummy variables. 1 is given if there is environmental aspect on director job description and 0 if there is no environmental aspect on director job description. Independent Commissioner is measured by the percentage of independent commissioners. Commissioner job specification using dummy variables. 1 is given if there is environmental aspect on commissioner job description and 0 if there is no environmental aspect on commissioner job description Carbon emissions disclosure is from [21] measured by using content analysis method.

3.2 Research Model

The research model can be written systematically as follows:

Table 1. Sample

No.	Information	Amount
1	Companies listed on the Indonesia Stock Exchange in 2020 in the basic material, energy, and industrial sectors.	148
2	Companies that do not publish their 2020 annual report	0
3	Companies that do not publish a 2020 sustainability report	(101)
Samples that match the criteria		47

Carbon Emission Disclosure = $\alpha + \beta_1$ Managerial Ownership + β_2 Female Directors + β_3 Directors' Job Specification + β_4 Independent Commissioner + β_5 Commissioners' Job Specification + ε.

4 Research Result and Discussion

4.1 Descriptive Statistics

The standard deviation value is generally smaller than the mean value, meaning that the data is spread out with a relatively small deviation so that the data in this study can be said to be quite good.

In the carbon emission disclosure variable, the minimum value is 0 and the maximum is 17, with an average value of 8.10, meaning that on average the company discloses eight of the eighteen items of carbon emission disclosure recommended by the CDP, meaning the level of disclosure of carbon emissions in basic material sector companies., energy, and industry is still very low.

In the managerial ownership variable, the mean value of 0.62 means that most management owns shares in the companies they manage. Furthermore, the female board of directors variable is known to have a minimum value of 0.00 and a maximum value of 0.43 with an average female board of directors size of 0.09 meaning that female directors are still a minority even in 30 of the 47 sample companies there is no female directors.

The average value of the directors' task specification variable is 0.28, meaning that there are only thirteen companies in the basic materials, energy, and industry sectors that mention the specifications of the duties and responsibilities of directors in environmental aspects, while the average size of independent commissioners is 0.43. The size of independent commissioners is 43% of the total commissioners, this figure is higher than

Table 2. Descriptive Statistics

Desc	CED	MO	FD	JJD	IC	JC
Mean	8.10	0.61	0.09	0.27	0.43	0.06
Med	9.00	1.00	0.00	0.00	0.40	0.00
Max	17.0	1.00	0.43	1.00	1.00	1.00
Min	0.00	0.00	0.00	0.00	0.29	0.00
Std. Dev.	4.85	0.49	0.13	0.45	0.13	0.24
Skew	-0.24	-0.48	1.01	0.99	1.80	3.56
Kurtosis	1.91	1.23	2.68	1.99	7.71	13.7
Jarque-Bera	2.79	7.93	8.29	9.78	68.9	325.
Probability	0.24	0.01	0.01	0.00	0.00	0.00
Sum	381.	29.0	4.39	13.0	20.5	3.00
Sum Sq. Dev.	1084	11.1	0.79	9.40	0.83	2.80
Obss	47	47	47	47	47	47

the minimum obligation of the total commissioners specified, which is 30%. Finally, the average value on the variable of commissioner duty specification is 0.06, meaning that there are only three companies in the basic material, energy, and industrial sectors that mention the specifications of the duties and responsibilities of commissioners in environmental aspects (See Table 2).

4.2 Hypothesis Test

Managerial Ownership has a Positive and Significant Effect on Disclosure of Carbon Emissions.

H_1 is not supported so managerial ownership has no effect on carbon emission disclosure, contradicts the research of [4] but supports the research of [6] and [7]. [6]explained that this is because managers who own company shares tend to focus on financial performance in order to get a return on their investment. The control function owned by the manager does not encourage management to make a carbon emission disclosure that are felt to be incurring large costs. This finding is not in line with the legitimacy theory, where management prefers to focus on financial performance rather than gaining legitimacy from the public by disclosing carbon emissions.

Female Directors Have a Positive and Significant Influence on Disclosure of Carbon Emissions.

H_2 is not supported so the size of female directors has no effect on carbon emission disclosure.These results support the research of [10] also [11] but contradicts the research of [8] and [9]. This finding contradicts the stakeholder theory where companies are not able to fulfill stakeholder interests to provide carbon emission disclosure. Female directors with feminine values unable to encourage companies to disclose carbon emissions. This finding may occur because the presence of women on the board of directors is still very low. This resulted in the research data not being diverse enough to be able to describe the influence of female directors on carbon emission disclosure.

Table 3. T-statistic test

Hypothesis	Coeff	Prob	Results
Managerial ownership has a positive and significant effect on carbon emission disclosure	0.61	0.69	Not supported
Female directors have a positive and significant effect on carbon emission disclosure	1.88	0.73	Not supported
Job specification of directors has a positive and significant impact on carbon emission disclosure	2.52	0.13	Not supported
Independent commissioner has a positive and significant influence on carbon emission disclosure	– 7.17	0.19	Not supported
Job specifications of commissioners has a positive and significant impact on carbon emission disclosure	2.52	0.39	Not supported

Source: Processed data (2022)

Job Specifications of Directors have a Positive and Significant Impact on Disclosure of Carbon Emissions.

H_3 is not supported so the specification of the duties of the directors has no effect on carbon emission disclosure. This result is contrary to the stakeholder theory where it is necessary to increase BOD due to pressure on companies to be involved in community and environmental activities as a development of the stakeholder concept. The existence of a specification of the duties and responsibilities of directors in environmental aspects was not able to increase the company's ability to disclose carbon emissions. This is likely because the number of companies that mention the specifications of the duties and responsibilities of directors in environmental aspects is still very small so that the research data is not diverse enough (See Table 3).

Independent Commissioner Has a Positive and Significant Impact on Disclosure of Carbon Emissions.

H_4 is not supported so the independent commissioner has no effect on carbon emission disclosure. It support the research conducted by [6, 13], and[14], but contradicts the research of [12]. This finding is contrary to the stakeholder theory which requires the company's sensitivity to the demands and expectations of the company's stakeholders. This may occur due to the function of the commissioner that has not been carried out by the independent commissioner properly, that is to monitor and advise director board.

Job Specifications of Commissioners Have a Positive and Significant Impact on Disclosure of Carbon Emissions.

H_5 is not supported so the specification of commissioners' duties has no effect on carbon emission disclosure. This result is not in accordance with the stakeholder theory where the company's executives are unable to answer stakeholder requests to play a role in environmental aspects and gain legitimacy from the community through carbon emission disclosure. This is likely to happen because the number of companies that mention the specifications of the job and responsibilities of commissioners in environmental aspects is still very small, so the research data is not diverse enough.

5 Summary

This study attempts to test the determinants of carbon emission disclosure in the corporate governance perspective empirically with the proxy of managerial ownership, the size of the female directors, job specifications of directors, the size of the independent commissioners, and job specifications of commissioners. Based on the research conducted, it was found that managerial ownership, the size of the female directors, the size of the directors' duties, the size of the independent commissioners, and the specifications of the commissioners' duties had no effect on carbon emission disclosure.

6 Implications/Limitations and Suggestions for Further Research

This study has several limitations, the sample was small amount because many companies did not announce sustainability reports. Four of five independent variables using dummy. Lastly, the measurement of carbon emissions disclosure is subjective. Further research is expected to use non-dummy in measuring corporate governance and develop more standardized measurements of carbon emission disclosures.

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