Determinants of environmental performance: Evidence from the agriculture industry in Indonesian Stock Exchange

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Abstract. This study aims to examine the determinants of environmental performance on the firms listed in the agriculture sector of the Indonesian Stock Exchange. The analysis technique uses multiple regressions to observe 67 firms listed on the Indonesian Stock Exchange in the agriculture sector during 2016 – 2019. Furthermore, the independent variables consist of return on equity (ROE), firm age, size, leverage, and audit firm; and the dependent is environmental performance. The result shows that return on equity negatively affects environmental performance while firm age, size, and leverage have a positive effect. Furthermore, audit firm does not affect environmental performance in Indonesian Agricultural Firms. Therefore, firms with higher age, bigger sizes, and leverage will likely increase environmental performance even though profitability has decreased. Several factors such as firm age, size, leverage, and profitability should be considered to analyze environmental performance.

1. Introduction

The issue of environmental preservation and sustainability has become a topic of discussion in the last decade. Meanwhile, the utilization of natural resources in the firm's business has a relatively high risk related to environmental pollution and excessive resource exploitation [1]. Therefore, there is serious competition between firms to improve performance, one of which is taking a role in the social responsibility practice.

In Indonesia, social responsibility practice is regulated in Government Regulation no. 47 of 2012 [2] to protect and promote business in the natural resources industry without neglecting social action. Indonesia is an agricultural country that utilizes its natural resources and cannot be separated from the spotlight on social responsibility due to negative environmental risks. Therefore, implementing a policy on corporate social responsibility disclosure is an alternative to compensate for the firm's business operations. Disclosure of social responsibility creates a good reputation [3-5], and the impact encourages firms to perform better and increase stakeholders [6-8]. On the other hand, corporate social responsibility might positively affect earnings management in the banking industry.

Before enacting regulations regarding the disclosure of corporate social responsibility, the World Business Council for Sustainable Development [9] developed the concept of social responsibility. Furthermore, the concept promoted ensures that firms maximize the positive impact of their operations...
by meeting legal, ethical standards, and public expectations in their business activities [9]. The encouragement for creating good activities is raising standards or criteria for corporate social responsibility, such as Global Reporting Initiative [10].

Alan [11] explained that the GRI standard sets forth criteria for determining social responsibility, such as the CEO's statement; organizational profile; Executive summary; Vision and strategy; Organizational Policy and Management System; and performance, including environmental, economic, and social. One of the criteria in social responsibility that should be highlighted is related to the firm's performance in the environment.

The main problem to be built is determinants that affect corporate social responsibility, especially in the environmental field.

1.1. Corporate social responsibility

Corporate social responsibility refers to the voluntary actions of firms to integrate environmental and social concerns into the business to achieve sustainability [12]. The concept of "People, Planet and Profit" proposed by Zak [13] considers the values in predicting the success of the firms, such as economic, environmental, and social. Furthermore, the policy can be a guideline and strategy for the firm to respond to the business environment and risks [14].

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Corporate social responsibility is influenced by several factors and firm characteristics [14]. Disclosure of corporate responsibility depends on firm size, age, profitability, leverage, the board size, legal mechanism, level of enforcement, public awareness, NGO involvement, board chairman, board independence [7,15-17]. Generally, it can be stated that larger and more profitable firms are better at providing CSR disclosures than smaller and less profitable firms.

1.2. Financial performance on social responsibility

Legitimacy theory implies that the firm is bound by a social contract with the community in which it operates. One form of its responsibility is to report environmental, social responsibility to the community [18]. Previous literature measures the financial performance of firms through ROE proxies [1,6-8,19]. The results show that the firms' financial performance and the disclosure of responsibilities to the environment are directly proportional. Therefore, it is hypothesized that:

H1 = ROE has a positive effect on the disclosure of corporate social responsibility.

1.3. Firm age on social responsibility

CSR disclosure can be influenced by age because newly listed firms on the stock exchange focus more on their main business activities. Meanwhile, they will prioritize financial statements and management reports over social responsibility [20,21]. Social incidents can affect the reputation of the firm and its public legitimacy. The firm builds a reputation for increasing legitimacy and good public perception to simplify its activities, which can be achieved by disclosing corporate social responsibility reports. Furthermore, through CSR disclosure, firms try to convince stakeholders that they do not deviate from social goals [3,22]. Based on the statement above, the hypothesis that is built is as follows:

H2 = Firm age has a positive effect on the disclosure of corporate social responsibility.
1.4. Firm size on social responsibility
Large firms tend to have sufficient funds to generate long-term profits, conduct social responsibility and then disclose them in the Financial Statements. This disclosure will increase the loyalty of consumers. However, large firms use more costs for social responsibility activities and will not interfere with their main activities. This is because the costs incurred in conducting these activities are relatively small compared to the firm size. Large firms will have more operating activities than small ones. In their operations, firms have a direct impact on society, both good and bad. Furthermore, firms generate more funds when they are more prominent and can be used for social responsibility activities. Therefore, large firms pay more attention to social problems that occur in society. A few literature found that firm size positively affected the disclosure of social responsibility [3,5,15].
H3= Firm size has a positive effect on the disclosure of social responsibility.

1.5. Leverage on social responsibility
Subramanyam [23] explained that leverage is the amount of funding obtained from debt in a firm's capital structure. Its effect on the disclosure of corporate social responsibility depends on stakeholders. The greater the amount of leverage and disclosure of corporate social responsibility will become greater when creditors are more concerned with social responsibility. Ling and Sultana [24] stated that leverage has a positive effect on corporate social responsibility disclosure. On the contrary, Khan [25] indicated that it has a negative effect on the disclosure of corporate social responsibility.
H4= The level of debt affects the disclosure of social responsibility.

1.6. Audit quality on social responsibility
Steinmeier and Stich [26] found that disclosure of responsibility assisted stakeholders in assessing the extent of firm performance, especially in environmental management. This disclosure in financial statements cannot be separated from being verified by guarantee providers to increase their credibility [26-28]. Furthermore, one provider of financial reporting assurance services is an external auditor. Information that experienced auditors have verified with high credibility guarantees social responsibility well.
H5= Audit quality has a positive effect on the disclosure of social responsibility.

2. Research methods
2.1. Research sample
This study uses secondary data in the form of annual financial statements obtained from the official website of the Indonesia Stock Exchange (IDX) and the firm concerned. In addition, the population was all public agricultural industry firms listed on the Indonesia Stock Exchange in the period 2016 to 2019, with observations of 67 firms in 2016 (Table 1).

| No | Criteria | Amount |
|----|----------|--------|
| 1  | Number of the agricultural industry | 20     |
| 2  | Number of research observations based on samples with a period of 2016 to 2019 = 20*4 Data outlier | 80 (13) |
| 3  | The number of final observations used in the research | 67     |
2.2. Research models and variables

Research models:

\[ ENV = a + \beta_1 ROE + \beta_2 AGE + \beta_3 SIZE + \beta_4 LEV + \beta_5 KAP + e \]

Description:
- \( ENV \) = Corporate Environmental Responsibility
- \( ROE \) = Return On Equity
- \( AGE \) = Firm Age
- \( SIZE \) = Firm Size
- \( LEV \) = Firm Debt Level
- \( KAP \) = Proxy of Audit Quality

The following is a measurement of the independent and dependent variables in this study (Table 2).

| Variable | Definition and Measurement |
|----------|---------------------------|
| Dependent Variable | |
| Social Responsibility-Environmental (ENV) | Measurement using the GRI index 4. The ratio between the environmental criteria in the GRI index and the disclosure of environmental criteria contained in the firm's annual report. |
| Independent Variable | |
| ROE | The firm's ability to generate profits from its equity. The measurement = Profit After Tax / Total Shareholders' Capital. |
| AGE | Firm age. The difference in years between the firm's establishment and the time it operates today. |
| SIZE | Firm size. The measurement = Ln (total assets) |
| LEV | The firm's ability to manage assets from loans (creditors) to generate returns. The measurement = Total long-term debt divided by total assets |
| KAP | Audit quality proxy. Dummy, by giving a value of 1 = to firms with Big 4 KAPs, and 0 = to firms with Big 4 Non-KAPs |

3. Result and discussion

The descriptive statistical (Table 3) shows that the dependent variable used is corporate social responsibility such as environmental responsibility. Disclosure of its value in the results ranges from 0 to 46 percent. This is because the observations of agricultural firms showed that several firms do not disclose their environmental responsibilities. Firms with social responsibility disclosures imply that they are trying to increase transparency to gain trust which has an impact on increasing investment.

| Variable | Mean | Median | Maximum | Minimum |
|----------|------|--------|---------|---------|
| ENV | 0.0687 | 0.0000 | 0.4670 | 0.0000 |
| ROE | 0.0507 | 0.0710 | 0.2820 | -0.7120 |
| AGE | 31.5670 | 25.0000 | 113.0000 | 6.0000 |
| SIZE | 29.1926 | 29.7330 | 31.1530 | 26.5180 |
| LEV | 1.1838 | 1.2385 | 2.7387 | 0.1272 |
| KAP | 0.4627 | 0.0000 | 1.0000 | 0.0000 |
The variables studied were financial performance with ROE as a proxy, firm age, size, debt level, and audit quality. In terms of financial performance and ROE, a minimum and minus value indicates that several firms experience losses in the research process, and the average firm age is around 31 years. This finding implies that the average agricultural firm has been operating for 30 years. The audit quality proxy through the involvement of Big 4 auditors showed that only 46 percent of agricultural firms used the services of auditors with Big 4 specifications.

Table 4. Regression Test Results

|   | 1          | 2          | 3          | 4          | 5          | 6          |
|---|------------|------------|------------|------------|------------|------------|
| REM |           |            |            |            |            |            |
| ROE | -0.0513***| -0.044***  |            |            |            |            |
|     | 0.0008    | 0.0020     |            |            |            |            |
| AGE | 0.0028***  | 0.0015***  |            |            |            |            |
|     | 0.0000     | 0.0000     |            |            |            |            |
| SIZE| 0.0404***  | 0.0336***  |            |            |            |            |
|     | 0.0000     | 0.0000     |            |            |            |            |
| LEV | 0.0133***  | 0.0073*    |            |            |            |            |
|     | 0.0000     | 0.0754     |            |            |            |            |
| KAP |            |            |            |            | -0.0005    | 0.0066     |
|     |            |            |            |            | 0.4597     | 0.2408     |
| Adj R-Squared | 0.0475 | 0.0871    | 0.1549    | 0.0321    | -0.0153 | 0.2058       |
| Prob (F-Statistic) | 0.0422 | 0.0087 | 0.0005 | 0.0078 | 0.9599 | 0.0016 |
| N  | 67         | 67         | 67         | 67         | 67         | 67         |

The result showed that return on equity has a negative effect on environmental performance. This finding implies that good financial performance is not directly proportional to social responsibility disclosure, primarily environmental responsibility, which contradicts the built hypothesis. Financial performance does not affect CSR disclosure [21]. Low or high ROE does not affect CSR disclosure since good or bad financial performance does not affect it. Firms are only interested and focused on making financial statements and perceive that there is no need for non-financial information such as CSR disclosures [29,30].

The regression test results showed that the firm age affected the environmental responsibility in a positive direction (Table 4). The test results imply that firms with long operating periods are trying to improve their quality. One way is by taking part in environmental responsibility reporting. This result is consistent with a few literatures [3,20-22].

Furthermore, the determinant tested was the firm size, and the results conclude its positive effect on corporate environmental responsibility. This result is in line with a few studies before [3,5,15] that conclude big firms with considerable funding will conduct the disclosure of their environmental responsibility in the hope of increasing public loyalty.

Further test results conclude that leverage has a positive effect on corporate environmental responsibility. These results prove that agricultural firms are concerned with the disclosure of environmental responsibility. One of the funds obtained through debtors contributes to environmental responsibility, which is in line with the study of [24]. Finally, this study finds no significant impact of audit firms on environmental responsibility because there was no guarantee that the company would disclose environmental responsibility [5].

4. Conclusion

This study examines the factors affecting the environmental performance of agricultural firms on the Indonesia Stock Exchange. The results show that profitability has a negative effect on environmental performance.
performance. Furthermore, increased profitability will result in to decrease in the firm's environmental performance. Financial and environmental performances are inversely related. Firms focus more on financial than environmental performances, and age has a positive impact on environmental performance. Firms with a high age tend to pay more attention to environmental performance.

This study also confirms the positive impact of firm size on environmental performance. They tend to get the attention of stakeholders and are more careful in conducting activities related to the environment. They also pay greater attention to the environment to form a positive relationship between firm size and environmental performance. Furthermore, leverage has a positive effect on environmental performance. Agricultural firms with a high level of leverage have better environmental performance. However, this study cannot prove the significant impact of choosing an audit firm because the firm does not significantly influence the achievement of environmental performance.

This study focuses on factors that impact environmental performance in agricultural firms on the Indonesia Stock Exchange. Future studies should examine other important impacts, such as ownership structure and corporate governance and strategy. In addition, cross-country studies related to factors affecting environmental performance in the agricultural industry can also be examined.

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References
[1] Devie D, Liman L P, Tarigan J and Jie F 2020 Soc. Responsib. J. 16 73–90
[2] Pemerintah Indonesia 2012 Peraturan Pemerintah Republik Indonesia Nomor 47 Tahun 2012 Indonesia
[3] Cahyani C and Suryaningsih R 2016 Account. Financ. Rev. 1 27–33
[4] Setiawan D, Aryani A, Yuniarti S and Brahmana R K 2019 Int. J. Bus. 24 329–43
[5] Maso L D, Lobo G J, Mazzi F and Paugam L 2020 Contemp. Account. Res. 37 1248–89
[6] Resmi S I, Begum N N, Hassan M M and Hassan M 2018 Am. J. Econ. 4 74–85
[7] Nur F, Saraswati E and Andayani W 2019 J. Din. Akunt. dan Bisnis 6 213–28
[8] Manokaran K R, Ramakrishnan S, Hishan S S and Soehod K 2018 Manag. Sci. Lett. 8 913–32
[9] World Resources Institute and World Business Council for Sustainable Development 2004 The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (World Resources Institute and World Business Council for Sustainable Development)
[10] Global Reporting Initiative 2000 Sustainability Reporting Guidelines on Economic, Environmental, and Social Performance (Boston: GRI) pp 25–31
[11] Willis C A A 2003 J. Bus. Ethics 43 233–7
[12] ACCA 2015 The European Commission’s Multi Stakeholder Forum on Corporate Social Responsibility Available: www.accaglobal.com/sg/en/technical-activities/technical-resources-search/2015/february/ec-forum-on-csr.html [Accessed: 20-Jul-2021]
[13] Żak A 2015 Prace Naukowe Uniwersytetu Ekonomicznego we Wroclawiu vol 387 ed Rojek-Nowosielska M (Wroclaw: Publishing House of Wrocław University of Economics) pp 251–64
[14] Said R M, Teng L L, Senik R and Yusri Y 2020 Int. J. Mod. Trends Bus. Res. 3, no. 12, pp. 48–61, 2020.
[15] Issa A I F 2017 Aust. J. Basic Appl. Sci. 11 1–19
[16] Sunarsih U and Nurhikmah N 2017 Etikonomi 16, 161–72
[17] Joshi G S 2019 J. Manage. 6 1–10
[18] Hu Y Y and Karbhar Y 2015 Thunderbird Int. Bus. Rev. 57 143–61
[19] Lim C 2017 Walden Dissertation and Doctoral Studies 2017 4259
[20] AL-Shubiri F N, Al-abadallat A Z and Orabi M M A 2012 Asian Economic and Financial Review 2 1001–12
[21] Habbash M 2016 Soc. Responsib. J. 12 740–54
[22] Kansal M, Joshi M and Batra G S 2014 Adv. Account. 30 217–29
[23] Subramanyam K R 2014 Financial Statement Analysis vol 11 (New York: McGraw-Hill)
[24] Ling T C and Sultana N 2015 Soc. Responsib. J. 11 513–34
[25] Khan A, Muttakin M B and Siddiqui J 2013 J. Bus. Ethics 114 207–23
[26] Steinmeier M and Stich M 2019 Eur. Account. Rev. 28 177–209
[27] Cohen J R and Roger S 2015 Audit. A J. Pract. Theory 34 59–74
[28] Ballou B, Chen P C, Grenier J H and Heitger D L 2018 J. Account. Public policy 37 167–88
[29] Rofiqkoh E and Priyadi M P 2016 J. Ilmu dan Ris. Akunt 5 2406
[30] Setiawan D, Wibawa A, Arnita V and Prabowo R 2019 Business:Theory and Practice 20 372–8