Sustainability of Agriculture: An Analysis Based on Financial Performance and Good Governance

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Abstract. Strategy to achieve food security is crucial for all countries around the world. This becomes more important for Indonesia as the fourth most populous country. This study evaluates Indonesia’s agricultural sustainability as one of the food security programs. In specific, the evaluation is based on micro-economics point of view by analysing the financial performance of the agricultural industries. This study also examines the role of ownership and external auditors as corporate governance instruments controlling a company achieving its ultimate objective. Conducting a quantitative study and examining Indonesia listed companies for the period of 2003-2018, the results show that most of Indonesia’s listed agricultural companies are not sustained as they were in bankruptcy zone. The ability of companies to manage the costs and commitment to do investments create value for the future, and the role of foreign ownership as one of governance instruments is found to be able to prevent agricultural companies from bankruptcy. The findings bring practical implications on the importance of financial literacy for managers of agricultural industries and good corporate governance practice to ensure the sustainability of agriculture.

1. Introduction
One of the Sustainable Development Goals (SDGs) which is ensuring sustainable food production systems and implementing resilient agricultural practices needs to be achieved by 2030. Agriculture as a source of food security has faced some challenging and complicated problems on-farm and off-farm. On-farm problems which threaten agriculture sustainability are namely but not limited to climate change, extreme weather, drought, flooding and other disasters, degradation of soil quality, land and landscape problems. The on-farm product becomes an input for off-farm activities. The low quality of the input due to the on-farm problems, and other problems including limited investments and factory inefficiency in the end affect the end product of agriculture.

For Indonesia, as the fourth most populous country, the sustainability development goals related to agriculture are important or even more crucial than other non-populous countries. Moreover, for Indonesia as a developing country which commonly faces higher problems in food insecurity, malnutrition, and rural poverty, the agricultural sustainability is argued to be of a higher concern than that of the developed countries [1, 2, 3]. For Indonesia case, statistics on value added of agricultural sector to GDP shows that from 1983 to 2019 the average value was 17.03%, the minimum was 12.72% in 2019 and the maximum value was 24.25% in 1986 [4]. This sharp decreasing trend of agricultural sector to Indonesian economy indeed threatens the food security of the country.
Based on the discussion above, this study attempts to examine agricultural problems by conducting a micro-analysis focusing on financial performance of the agricultural companies as well as the effectiveness of corporate governance practice which is defined as controlling the company to ensure the achievement of the ultimate objective of the company. Indonesia is taken as a case study due to its characteristics as a populous developing country where agriculture becomes a very crucial sector for the economy and food security of the country. The structure of this paper is as follows: literature review and hypotheses development are presented following the background of the study. Then, the paper presents its research methodology, results and discussions. Conclusion and implications of the study conclude the paper.

Agricultural productivity is influenced by agricultural cultivation in the on-farm process as well as off-farm activities in the case of that the raw agricultural products are processed further to produce other manufactured agricultural products. Some of these factors are controllable while some are not. Reduction in labour force and arable land due to extensive structural changes and urbanisation are argued as some of the factors challenging sustainability development of the sector [1, 5]. Another factor is climate change and natural disasters causing land degradation and decline in water level [1, 6, 7]. In specific, macro-analysis studies on agricultural sustainability found that based on Total Factor Productivity (TFP) main factors affecting agricultural productivity are firstly, economic development such as income level, urbanization and industrialization; secondly, human capital, and finally, agricultural trade [1, 3, 8, 9, 10, 11, 12]. Other factors which also found influence in TFP are financial capital, research, government spending, institutional quality and climate [1].

The performance of agriculture based on its value added, as percentage of GDP shows, has been on a decreasing trend during the last 40 years with the lowest being 3.318% in 2018, although in 2019 it increased slightly to 3.547% [13]. This statistic is also supported by findings of studies across nations that state that based on financial performance, agricultural companies suffer financial problems [14, 15-21]. The companies face bankruptcy risks as measured by Altman Z score, experience financial risks such as solvency, efficiency, and profitability. Apart from this finding, few studies found favourable financial performance of agricultural companies [22-24]. As for Indonesia’s case, in addition to the statistics presented in the introduction of this paper, empirical studies also found bankruptcy condition of agricultural companies [19-20].

Literature found that GCG practice benefits companies in terms of easier access to financing, lower cost of capital, better performance, and more favourable treatment of all stakeholders, hence ensuring sort-term performance and sustainability of the company [25-27]. Originally developed from agency theory, in a modern firm, corporate governance argues that monitoring instruments are required to control the agent so that he/she runs the company on behalf of the principals, hence minimising agency costs, information asymmetry, and moral hazards. In a developing country where the market is still emerging, external governance and legal protection for investors is found to be weak, and therefore the regulatory body strengthens the role of internal governance mechanisms such as owner’s control and board governance [25][27]. Following previous studies, in the presence of conflicts of interests between managers and owners, managerial ownership is argued to be an effective incentive alignment that encourages managers to act in the best interests of shareholders [28]. In addition, in the context of emerging markets, foreign ownership is found to be more effective than domestically owned companies [29]. In addition to ownership, external auditor is argued to lessen the asymmetric information between management and shareholders and is found to positively affect company’s performance [31].

Based on the discussion above, this research develops hypotheses as follows.
H1: Foreigner ownership has a negative association to unsustainable financial performance.
H2: Managerial ownership has a negative association to unsustainable financial performance.
H3: Quality of external auditors has a negative association to unsustainable financial performance.

2. Method
This research is a quantitative study which sample is all agricultural companies (classified based on JASICA) listed on the Indonesia Stock Exchange from 2003-2018. Initially the number of observations
was 252 (unbalanced data), however 58 observations were unavailable/inaccessible/incomplete, hence the total number of observations is 194. To test the hypotheses, the model used in this study is stated below.

\[
ROA_{it} = \beta_0 + \beta_1 OWN_{FORit} + \beta_2 OWN_{MNGit} + \beta_3 BIG4it + \beta_4 TOBINit + \beta_5 ROEit + \beta_6 EFFit + \beta_7 CAPINTit + \beta_8 SIZEit + \beta_9 AGEit + \epsilon_{it}
\]

(1)

where:

- \( Z_{it} \) is unsustainable financial performance measured by Altman Z Score for listed companies [15][32]; \( Z > 2.99 \) – safe zone, \( 1.81 \leq Z \leq 2.99 \) – grey zone, \( Z \leq 1.81 \) – distress zone;
- \( OWN_{FORit} \) is foreign ownership;
- \( OWN_{MNGit} \) is managerial ownership;
- \( BIG4it \) is quality of external auditor (big four or not);
- \( TOBINit \) is TOBIN’s Q measuring company’s market performance;
- \( ROEit \) is company’s book performance measured by ROE;
- \( EFFit \) is company’s cost efficiency (COGS/Total Revenue);
- \( CAPINTit \) is company’s capital intensity (Property, Plant, and Equipment (PPE)/total asset);
- \( SIZEit \) is firm size (ln of total asset);
- \( AGEit \) is the periods of a company established.

3. Results and discussion

Table 1 shows that on average the Indonesian agricultural listed companies are in the grey zone of Altman Z-score (average value: 2.863). In specific, only 34% companies are in the safe zone. The table explains further that there is good market performance of Indonesian agricultural companies (mean value of TOBIN: 1.853) but low book performance (mean value of ROE: 0.059). The companies manage its cost quite efficiently (mean value of EFF: 0.7754). Mean value of CAPINT: 0.607 suggests low PPE investments in the sector. The descriptive statistics suggests that in general while many companies are in bankruptcy zone, on average, they can still manage its market performance and costs of sales very well. For governance structure, almost 45.88% of companies are owned by foreigners, 31.44% owned by managers, 57.73% are audited by non-big four auditor.

| Var     | Mean   | Std. Dev. | Min    | Max    |
|---------|--------|-----------|--------|--------|
| Z       | 2.863717 | 3.097261  | -0.91881 | 22.85528 |
| TOBIN   | 1.852889 | 4.340839  | 0.020857 | 37.19243 |
| ROE     | 0.059347 | 0.19827   | -0.61982 | 0.922923 |
| EFF     | 0.775483 | 0.323372  | 0.308785 | 4.091751 |
| CAPINT  | 0.606531 | 0.207936  | 0.131622 | 0.931979 |
| SIZE    | 12.52299 | 0.653954  | 10.45788 | 13.53991 |
| AGE     | 25      | 25.45669  | 3       | 105    |

| Var   | Dummy 0 | Dummy 1 |
|-------|---------|---------|
| OWN_FOR | 105 (54.12%) | 89 (45.88%) |
| OWN_MNG | 133 (68.56%) | 61 (31.44%) |
| BIG4   | 112 (57.73%) | 82 (42.27%) |

| Z Score Area | N | %    |
|--------------|---|------|
| Safe Zone    | 66 | 34%  |
| Grey Zone    | 49 | 25%  |
| Distress Zone| 79 | 41%  |
Table 2. Regression Results.

|        | Z    | Coef. | Std. Err. | z       | P>|z| | [95% Conf. Interval] |
|--------|------|-------|-----------|---------|-----|----------------------|
| d_OWN_FOR | 0.2965 | 0.1612 | 1.84 | 0.0660 | -0.0194 | 0.6124 |
| d_OWN_MNG  | 0.1572 | 0.1925 | 0.82 | 0.4140 | 0.2202 | 0.5345 |
| d_BIG4     | -0.1390 | 0.3694 | -0.38 | 0.7070 | 0.8629 | 0.5850 |
| TOBIN     | 0.6678 | 0.0213 | 31.33 | 0.0000 | 0.6260 | 0.7096 |
| ROE       | 1.7043 | 0.4136 | 4.12 | 0.0000 | 0.8937 | 2.5150 |
| EFF       | -0.7534 | 0.2718 | -2.77 | 0.0060 | -1.2861 | -0.2206 |
| CAPINT    | -2.8615 | 0.5686 | -5.03 | 0.0000 | -3.9759 | -1.7471 |
| SIZE      | 0.2286 | 0.2388 | 0.96 | 0.3380 | -0.2393 | 0.6966 |
| AGE       | -0.0098 | 0.0093 | -1.05 | 0.2950 | -0.0281 | 0.0085 |
| _cons     | 1.2956 | 2.8070 | 0.46 | 0.6440 | -4.2060 | 6.7972 |

a This is significant at α = 10%
b This is significant at α = 1%

Based on Table 2 above, this study can provide statistical evidence for H1 that only foreign ownership associates positively to Z score; foreign shareholders increase Z score (companies in safe zone). This finding supports a previous study [29] which suggests that the effective role of foreign ownership in monitoring the companies could ensure the achievement of financial sustainability. This study also found that company’s market performance, book performance, ability of the company managing its costs and the amount of capital investments influence the sustainability of agricultural companies. This study, however, cannot confirm the previous studies [28, 30] as it couldn’t find any evidence for Hypotheses 2 and 3.

4. Conclusion
The study evaluates the sustainability of Indonesian agricultural companies by analysing the companies’ financial performance. This study also examines the role of corporate governance instruments i.e. foreign ownership, managerial ownership, and external auditors. Using all agricultural companies listed from 2003-2018, the findings show the majority of the companies are in bankruptcy zone. Nevertheless, on average the companies manage their market performance and costs of sales quite well. Only foreign ownership is found to be effective in controlling the companies to prevent bankruptcy. The findings bring practical implications on the importance of financial literacy for managers of agricultural industries. The regulatory also needs to evaluate its GCG related regulations to ensure the effectiveness of governance instruments in achieving the sustainability of agriculture companies. This study can be extended by examining more on the role of governance instruments such as family ownership as recognized as a specific characteristic of Indonesian companies, board governance such as size and independence of the board, and committee under supervisory board.

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