Original Article

The Supervisory Board Size, Independence, and Profitability

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Abstract: This investigation aims to verify the relationship between supervisory board size, independence, and profitability with firm size as the control variable. The population comprises the non-financial companies forming the KOMPAS 100 Index between 2017 and 2022. This study employs the quantitative approach; therefore, it applies (1) simple random sampling to take samples, where the Slovin formula determines the total samples, and (2) t-statistic for hypothesis verification of the coefficients of the pooling data regression model. After analyzing 30 firms as the samples, this research demonstrates a positive inclination of supervisory board size and independence toward profitability, effectively controlled by firm size. With two outcomes, this research recommends that the General Shareholders Meeting empower the external supervisory board to create better management performance reflected through increased profitability. As a requirement, the criteria for choosing the supervisory board must be based on various proficiencies to help top management overcome challenging issues.

Keywords: Agency Theory, Capital Market, Company Ability to Financially Profit, Resource Dependence Perspective, Top Managers.

I. INTRODUCTION

The profits are attractive for some stakeholders. Earnings Before Interest And Taxes (EBIT) appeal to creditors because of their claimed interest (Gitman & Zutter, 2015). Indeed, if Earnings After Tax (EAT) are still positive, the company can meet its obligation to creditors (Riadi et al., 2023). Besides, these profits, quantified by return on assets, will positively affect the stock price as a reflection of shareholder wealth (Chandra et al., 2019; Iskandar et al., 2024; Sanusi, 2023).

Additionally, the company can continue its business by allocating budgeted profits from retained earnings to investment (Pangestuti et al., 2022). When allocating retained earnings to investments, managers sometimes spend money on unnecessary projects, contributing to their wealth and not benefiting their stockholders, such as buying luxurious apartments or private jets (Titman et al., 2018). Therefore, the supervising boards are vital to handle this issue (Kijkasiwat et al., 2022). For countries adopting a one-tier board system, the Board Of Directors (BOD) supervises the top managers (Khan et al., 2020), and this governance system has been adopted by the United Kingdom, Australia, Canada, the United States (Khan et al., 2020), and Malaysia (Tanujaya, 2022). Meanwhile, in the two-tier system, the commissioner board acts as the supervisor for BOD (Khan et al., 2020), and examples of countries adopting this system are China (Noureldeen et al., 2024) and Indonesia (Astami et al., 2024; Tanujaya, 2022).

Several researchers have attempted to verify the relationship between supervising board size and profitability. Utilizing a single country-based capital market, they find a positive effect (Dwiyanti et al., 2023; Hossain et al., 2020; Mukhibad & Nurkhin, 2020), a negative influence (Kufo & Shtembari, 2023), and a meaningless impact (Bashir et al., 2023; Kweh et al., 2019). Using two countries, Daniyal and Rafique (2024) locate a negative tendency in India and Pakistan. Unfortunately, Kijkasiwat et al. (2022) affirm a positive tendency by employing multiple country-based stock markets.

Besides supervisory board size, several researchers have tried to attest to the relationship between SB independence and profitability. After employing a single country-based capital market, they validate a positive impact (Bashir et al., 2023; Hossain et al., 2020; Kufo & Shtembari, 2023) and a negative influence (Kweh et al., 2019). In their research, Daniyal and Rafique (2024) locate a negative tendency in Pakistan and a meaningless propensity in India. Kijkasiwat et al. (2022) affirm a positive propensity by employing multiple country-based stock markets.

Based on this contradiction, this study tries to apply these profitability determinants to non-financial companies that have become part of the KOMPAS 100 index in Indonesia by using the firm size as the control variable by mentioning Kweh et al. (2019), Hossain et al. (2020), Kijkasiwat et al. (2022), and Kufo and Shtembari (2023). According to Hartono (2017), this index comes from a collaboration between the Indonesian Stock Exchange and Kompas, comprising 100 stocks with good market liquidity and high market capitalization belonging to companies with strong fundamental conditions and performance. The insights of this research can assist the related companies in structuring their boards to enhance profitability.

II. LITERATURE REVIEW (SIZE 10 &BOLD)

A) *Supervisory board size and profitability*

Resource dependence theory explains that large supervisory boards benefit the company because they have proficiency and access to market, technology, and material resources. With this proficiency, they can provide competent advice to management (Ning et al., 2010). As a result, the company performs well, as reflected by its profits, as confirmed by Hossain et al. (2020), Mukhibad and Nurkhin (2020), Kijkasiwat et al. (2022), and Dwiyanti et al. (2023). Based on this knowledge, the first hypothesis is as follows.

H_1: The supervisory board size positively influences profitability.

B) *Supervisory board size and profitability*

The supervisory board's independence is one of the company's governance mechanisms (Alijoyo & Sirait, 2022). According to agency theory, the people who are related balance power between insiders and outsiders. This situation differs from the non-presence of an outside supervisory board, where the managers may abuse their power (Dalton & Daily, 1999). Besides, this theory explains that the outside supervisory board will restrict the public-shareholder unaligned decisions of top managers (Chang, 2023), especially when deciding on investments (Kijkasiwat et al., 2022). Indeed, this situation makes the company gainful. In other words, the more portion of the external boards, the more profitable the company is (Kijkasiwat et al., 2022). In their research, Hossain et al. (2020), Kijkasiwat et al. (2022), Bashir et al. (2023), and Kufo and Shtembari (2023) affirm this clarification by exhibiting a positive relationship between the portion of unaffiliated people becoming supervisory board and profitability. Based on this knowledge, the second hypothesis is as follows.

H_2: The supervisory board independence positively affects profitability.

III. RESEARCH METHODS

A) *Population and Samples*

The population studied is the non-financial companies becoming the Kompas 100 Index constituent from 2017 to 2022 in the Indonesian Stock Exchange. Based on this steadiness, 43 companies exist as the sampling frame. Furthermore, this study uses the Slovin formula in Firdaus (2021) to calculate the total samples with an error margin of 10%. After using this formula, the total samples are 30 (rounded). Then, this study takes company as the sample randomly, and their names as a result are: (1) Astra Argo Lestari (AALI), (2) Ace Hardware Indonesia (ACES), (3) Adhi Karya (Persero) (ADHI), (4) AKR Corporindo (AKRA), (5) Aneka Tambang (Persero) (ANTM), (6) Astra International (ASII), (7) Global Mediacom (BMTR), (8) Bumi Serpong Damai (BSDE), (9) Ciputra Development (CTRA), (10) Indofood CBP Sukses Makmur (ICBP), (11) Indofood Sukses Makmur (INDF), (12) Indocement Tunggal Prakarsa (INTP), (13) Comfeed Indonesia (JPFA), (14) Jasa Marga (Persero) (JSMR), (15) Link Net (LINK), (16) PP London Sumatra Indonesia (LSIP), (17) Mitra Keluarga Karyasehat (MIKA), (18) Mayora Indah (MYOR), (19) Perusahaan Gas Negara (PGAS), (20) PP (Persero) (PTPP), (21) Pakuwon Jati (PWON), (22) Summarecon Agung (SCMA), (23) Semen Indonesia (Persero) (SMGR), (24) Summarecon Agung (SMRA), (25) Tower Bersama Infrastructure (TBIG), (26) Timah (TINS), (27) Telekomunikasi Indonesia (Persero) (TLKM), (28) United Tractors (UNTR), (29) Wijaya Karya (Persero) (WIKA), and (30) Waskita Karya (Persero) (WSKT).

B) *Variables*

Profitability acts as the determined variable. The determinants of profitability are the supervisory board size and independence, becoming the primary ones. Meanwhile, company size is a control one:

a. Following Kweh et al. (2019), Hossain et al. (2020), Mukhibad & Nurkhin (2020), Kijkasiwat et al. (2022), Bashir et al. (2023), Dwiyanti et al. (2023), Kufo and Shtembari (2023), and Daniyal and Rafique (2024), this study uses return on assets (ROA) to measure profitability and the total number of people becoming supervisory board to quantify supervisory board size.

b. Following Kweh et al. (2019), Hossain et al. (2020), Kijkasiwat et al. (2022), Bashir et al. (2023), Dwiyanti et al. (2023), Kufo and Shtembari (2023), and Daniyal and Rafique (2024), this study employs the portion of people on the outside supervisor to measure supervisory board independence.

c. Meanwhile, this study applies the natural logarithm of total assets to measure company size as the control variable, as Kweh et al. (2019), Hossain et al. (2020), Kijkasiwat et al. (2022), and Kufo and Shtembari (2023) demonstrate.

C) *Method to collect data*

The investigation uses the return on assets, total assets, supervisory board size, and independence as the secondary data. Hence, it employs the archival technique to get them, as Hartono (2014) recommends. Furthermore, the associated data are obtainable through the annual reports on the official website of each company.

D) *Method to Analyze data*

This investigation employs a regression model with pooling data predicted by the ordinary least square method, as Gujarati et al. (2019) explain. Furthermore, the model is in Equation 1 below.

$$ROA = \beta_0 + \beta_1 SBS_{it} + \beta_2 SBI_{it} + \beta_3 LN(TA)_{it} + \varepsilon_{it} \text{ (Equation 1)}$$

Because of the OLS technique, testing classical assumptions, such as normality, multicollinearity, heteroskedasticity, and autocorrelation, is mandatory. The regression must have distributed errors normally without multicollinearity among determinants and be free from heteroskedasticity and autocorrelation (Gujarati et al., 2019). Moreover, to detect them, this study uses Jarque-Bera (Gujarati et al., 2019), Variance Inflation Factor (VIF) (Ghozali, 2021), Breusch-Pagan-Godfrey (Gujarati et al., 2019), and runs (Ghozali, 2021).

IV. RESULTS

Table 1 presents descriptive statistics for profitability (ROA), supervisory board size and independence (SBS and SBI), and LN(TA) for firm size.
- a. For ROA, the minimum, maximum, and average are -9.22%, 24.18%, and 6.3878%, and the standard deviation is 5.16692.
- b. For SBS, the minimum, maximum, and average are 3, 12, and 5.5833, with a standard deviation of 1.65072.
- c. For SBI, the minimum, maximum, and average are 20%, 75%, 42.53%, and standard deviation is 0.11536.
- d. For LN(TA), the minimum, maximum, average, and standard deviation are 15.30, 19.84, 17.4075, and 1.03804.

Table 1: Descriptive Statistics (N =180 observations)

Variable	Symbol	Minimum	Maximum	Average	Standard deviation
Profitability (%)	ROA	-9.22	24.18	6.3878	5.16692
Supervisory board size (total people)	SBS	3.00	12.00	5.5833	1.65072
Supervisory board independence (%)	SBI	20	75	42.53	0.11536
Firm size (decimal)	LN(TA)	15.30	19.84	17.4075	1.03804

Table 2 exhibits the result of classical assumptions. The normality testing result shows that the residuals have a normal distribution because the probability of the Jarque-Bera exceeds 5%: 0.090092. The multicollinearity does not exist because VIF for SBS, SBI, and LN(TA) is lower than 10: 2.065, 1.167, and 1.940. The result shows that autocorrelation does not happen because the asymptotic significance (2-tailed) of the Z-statistic exceeds 5%: 0.916. For heteroskedasticity, the testing result shows its unavailability because the Chi-square probability of the Observed R-square is higher than 5%: 0.1026.

Table 2: Classical Assumption Testing Result

Classical Assumptions	The related detection	Result	Interpretation
Normality	Jarque-Bera	Probability of Jarque-Bera = 0.090092	Residuals are normal.
Multicollinearity	Variance Inflation Factor (VIF)	VIF for SBS = 2.065, VIF for SBI = 1.167, VIF for LN(TA) = 1.940	Multicollinearity does not occur.
Autocorrelation	Runs based on mode	Asymp. Sig (2-tailed) of Z-statistic = 0.916	Autocorrelation does not occur.
Heteroskedasticity	Breusch-Pagan-Godfrey	Probability of Chi-squared for Observed R-square = 0.1026	Heteroskedasticity is unavailable.

Table 3 presents the estimated regression model result, informing a low adjusted R-square of 0.194258 and a t-statistical probability for SBS and SBI of 0.0144 and 0.0010 with positive sign. The first and second hypotheses are acceptable because these probabilities are lower than 5%. In other words, supervisory board size and independence positively affect profitability.

Table 3: The estimation result of the regression model – The effect of supervisory board size and independence on profitability (ROA)

Variable	Coefficient	Standard Error	t-statistic	Probability
C	38.71389	7.392291	5.237062	0.0000
SBS	0.746201	0.301806	2.472453	0.0144
SBI	10.87824	3.246775	3.350476	0.0010
LN(TA)	-2.362145	0.465166	-5.078066	0.0000
R-square	0.207762	Adjusted R-square		0.194258

III. DISCUSSION

This study proves a positive relationship between supervisory board size and profitability, meaning that the more people appointed to the supervisory board, the more profitable the company will be. Therefore, this evidence confirms the resource dependence theory, postulating that plentiful boards equipped with various expertise are essential to advise managers to elevate profitability. The next question may arise: How many people are in this board position? Ning et al. (2010) suggest these boards be from eight to eleven. Therefore, the upper limit is eleven. Based on this positive tendency of SBS toward profitability, this

study affirms Hossain et al. (2020), Mukhibad and Nurkhin (2020), Kijkasiwat et al. (2022), and Dwiyanti et al. (2023), declaring that more people on the supervising board of top management, the more gainful the companies are.

Additionally, this study effectively proves a positive association between supervisory board independence and profitability, indicating that the more unaffiliated persons become the supervisory board, the more profitable the companies will be. Therefore, this proof confirms the agency theory, explaining that a large portion of supervisory independence is vital to enhance profitability. This board can effectively reduce managerial fulfillment unsuitable for shareholder interest when making investment decisions. By owning this positive inclination, this study brings into line with Hossain et al. (2020), Kijkasiwat et al. (2022), Bashir et al. (2023), and Kufo and Shtembari (2023), stating that the more portion of the outside supervisory board, the more gainful the companies are.

IV.   CONCLUSION

The primary purpose of this research is to examine the effect of supervisory board size and independence on profitability. After reviewing two hypotheses proposed, based on the data of 30 non-financial corporations of the Kompas 100 Index from 2017 and 2022 in the Indonesian Stock Exchange as the samples, this study concludes two pieces of evidence. Firstly, the greater the supervisory board size, the more effective it is in monitoring top managers in generating profits. Secondly, the higher the supervisory board independence level, the higher the company profitability. Based on these results, this study recommends that:\

1. General Shareholders Meeting empower the more external supervisory board to create better management performance, reflected through increased profitability.
2. The next researchers add determinants of profitability such as gender diversity, average frequency of board of commissioner meetings, institutional ownership, and number of audit committees.

Interest Conflicts

The authors declare that there is no conflict of interest concerning the publishing of this paper.

V.   REFERENCES

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