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# Institutional Possession, Supervisory Board Size, External Auditor Quality, and Profit Quality

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**Abstract**
This study aims to reveal the determinants of profit quality based on governance factors. Specifically, the proposed factors are institutional possession (IP), supervisory board size (SBS), and an external reputable auditor. Besides, this study intends to examine the IP to moderate the relationship between SBS and profit quality. By employing 12 agricultural companies in the Indonesian capital market for ten years, from 2013 to 2022, this study obtains 120 observations and analyzes the data by regression model with polling data. After that, this study demonstrates that IP, the supervisory board size, and reputable external auditor quality positively affect profit quality. The negative interaction effect between IP and supervisory board size (IP*SBS) on profit quality is available: The smaller the SBS, the higher the profit quality, and this tendency happens when institutional possession decreases. In other words, the IP and SBS have substitution roles to crate profit quality.

**Keywords:** Financial Reporting, Earning Quality, The Big-Four Auditors, Institutional Ownership

## 1. Introduction

Financial reporting timeliness becomes the relevant attribute for public investors to assess its quality (Ashraf et al., 2020), and some scholars confirm that this timeliness is associated with market reaction (Pattinaja, 2023; Tirza & Prasetyo, 2024). In her study, Pattinaja (2023) concludes that firms that publish early have higher market responses than those that publish promptly and late. Meanwhile, Tirza and Prasetyo (2024) demonstrate that the market reacts negatively to companies with interim financial reports on the day of the delay and afterward. Tirza and Prasetyo (2024) declare that companies must pay a fine as a sanction for delayed reporting of financial statements.

Ideally, the financial reports delivered to the capital market should inform the actual condition if they want to be utilized (Gardi et al., 2023). However, not all companies perform in this situation. For example, Enron, an energy company in the United States, deliberately inflated revenue of USD600 million and hid debt of USD1,200 million, and this case was revealed at the end of 2001 (Sulistiyo, 2018). In Indonesia, a similar case occurred in 2002 when Kimia Farma Tbk inflated net profits in its financial reports in 2021 (Herlambang et al., 2017).

The financial reports must have quality if their users want to utilize them. Academically, discretionary accruals based on the model of Jones (1991), Dechow et al. (1995), and Kothari et al. (2005) can be used to measure this quality (Hasan et al., 2022). Besides, the operating cash flow to profit before interest and taxes ratio is another measurement used by scholars (Hanif et al., 2023; Murniati, 2019; Murniati et al., 2018; Ramadan, 2015; Solikhah et al., 2022).

The relationship between institutional ownership and profit quality attracted attention from previous scholars utilizing the capital market data from Indonesia (Murniati, 2019; Murniati et al., 2018; Solikhah et al., 2022), Pakistan and the United Kingdom (Hasan et al., 2022), and Saudi Arabia (Aldoseri & Hussein, 2024). Unfortunately, their consensus disappears. For instance, Murniati et al. (2018), Murniati (2019), Aldoseri and Hussein (2024), and Hasan et al. (2022) show insignificant associations. However, Solikhah et al. (2022) demonstrate a positive tendency of this ownership toward earnings quality.

Similarly, the relationship between supervisory board size (SBS) and profit quality attracted attention from previous scholars utilizing capital market data from Nigeria (Egbunike & Odum, 2018), East African countries (Githaiga et al., 2022), Egypt (El-Dyasty & Elamer, 2023),  Saudi Arabia (Aldoseri & Hussein, 2024). Unfortunately, this inconsistent evidence exists. Egbunike and Odum (2018) display the positive relationship between SBS and profit quality. Aligning with them, Hasan et al. (2022) demonstrate that the more supervisory boards there are, the less discretionary accrual there is, increasing earnings quality. Unfortunately, Githaiga et al. (2022) and El-Dyasty & Elamer (2023) exhibit that the more boards, the higher discretionary accrual, decreasing earning quality. Meanwhile, Aldoseri and Hussein (2024) find no association.

Based on the previous research, the quality of external auditors has a different effect on earnings quality. Utilizing data from the capital market in Thailand, Piyawiboon (2015) proves that the existence of a public accounting firm affiliated with the Big Four can reduce errors in the DA model, which means improving profit quality, confirmed by Hasan et al. (2022) using Pakistan and the United Kingdom firms as their samples and El-Dynasty and Elamer (2023) using the issuers from Egypt. Moreover, Murniati et al. (2018) and Murniati (2019) from Indonesia illustrate the positive influence of external auditor reputation on profit quality, measured by operating cash flows to net earnings before interest and taxes ratio. In contrast, Tridig S. et al. (2022) confirm no relationship.

By mentioning these results, this study analyzes the earnings quality determinants based on institutional ownership (IO), supervisory board size, and reputable external auditors. Because of the inadequate evidence, this study proposes to examine the moderating effect of IO on the association between SBS and profit quality. By proving this impact, this study can contribute to a profit-quality model based on a corporate governance perspective.

Unlike other scholars using manufacturing companies (Egbunike & Odum, 2018; Murniati, 2019; Murniati et al., 2018; Ramadan, 2015; Solikhah et al., 2022), agro and food, resource, technology, and consumer goods companies (Piyawiboon, 2015), retail companies (Tridig S. et al., 2022), non-financial firms (Aldoseri & Hussein, 2024), and all listed enterprises (El-Dyasty & Elamer, 2023; Githaiga et al., 2022; Hasan et al., 2022), this study uses explicitly the agricultural sector in Indonesia. In Indonesia, this sector has become a primary (Arham, 2020), the buffer for national food security and defense (Rumawas et al., 2021), and a supplier of food needs for the community (Setiartiti, 2021).

## 2. Literature Reviews and Hypothesis Development

### 2.1. Agency Theory

The agency theory focuses on the conflict between managers and shareholders. This conflict happens because managers, as agents, do not maximize shareholder interests (Jensen & Meckling, 1976). Instead, they maximize their interests by investing funds into shareholder wealth-unrelated projects, such as buying deluxe jets and apartments and taking luxurious vacations (Titman et al., 2018). Therefore, to prevent managers from these actions, the existing shareholders sell their shares to institutions (Davis & García-Cestona, 2023; Denis & Kruse, 2000) and appoint a supervisory board (Denis & Kruse, 2000).

## 2.2. Institutional ownership and the quality of profit

The institution is one of the owners having shares in a company. Its examples include banks, insurance companies, private foundations, and investment companies (Solikhah et al., 2022). These institutions function as the corporate governance mechanism (Hasan et al., 2022; Javaid et al., 2021), monitoring managers to follow and fulfill their wishes (Solikhah et al., 2022). In their research, Solikhah et al. (2022) point out that institutions with a significant share portion can increase the profit quality, measured by operating cash flow to earnings before interest and taxes ratio. By this explanation, the first hypothesis is stated below.

$H_1$: The institutional possession positively affects the quality of the profits.

## 2.3. Supervisory board size and quality of profit

Effective governance is based on the size of the supervisory board. Agency theory declares that a small board is needed to coordinate effortlessly and effectively monitor management (Lipton & Lorsch, 1992). Therefore, a smaller supervisory board is preferred to reduce earnings management, as Githaiga et al. (2022) and El-Dyasty and Elamer (2023) perform based on the model of Decow et al. (1995) and Kothari et al. (2005), respectively. Thus, the second hypothesis is declared below.

$H_2$: The supervisory board size negatively influences profit quality.

## 2.4. Reputable external auditor and the quality of profit

The use of public accountant firms affiliated with the Big-4 auditor group intends to make the market believe in the quality of the financial report, mirrored by the increase in profit quality. In their study using auditor ordinal classification, Murniati et al. (2018) and Murniati (2019) conclude that the more qualified auditor classification, the more qualified earnings. When earnings management is measured by the discretionary accrual, Piyawiboon (2015), El-Dynasty and Elamer (2023),  and Hasan et al. (2022) exbibit that companies using Big-4 auditors have lower discretionary accrual than those employing non-Big-4. Thus, the third hypothesis is declared below.

$H_3$:     The quality of external auditors associated with the big four positively influences profit quality.

## 3. Research Methods

### 3.1. Variable definition

This investigation involves two kinds of variables. The first dependent variable is profit quality (PQ). Following Ramadan (2015), Murniati (2019), Solikhah et al.  (2022), and Hanif et al. (2023), this research uses the operating cash flow to profit before interest and taxes ratio to measure PQ. The second is institutional possession quantified by the stock portion belonging to the institution by denoting Murniati (2019). The third is supervisory board size, quantified by people in this position by mentioning Githaiga et al. (2022) and El-Dyasty et al. (2023). The fourth is external auditor quality, measured by a dummy variable, DBIG4, i.e., one and zero for the companies utilizing the big four and non-big four, respectively. This quality measurement denotes Kawedar et al. (2021) and Hasan et al. (2022). Finally, as the control variable, this study utilizes firm size measured by the natural logarithm of total assets based on Ramadan (2015), Hamdan (2020),  Hanif et al. (2023), and Hasan et al. (2022).

### 3.2. Population and Samples

This research population is companies in the agricultural companies in the Indonesian capital market, recorded from 2013 to 2022. Based on the record consistency in this period, 19 companies were obtained as a population number (PN). After knowing this number, the next step is to calculate the number of samples (NS) representing the population with the Slovin formulation cited from Firdaus (2021) at an error limit (EL) of 10% (see equation 1).

$$NS = \frac{PN}{1+PN(EL)^2}$$ ..................................................................................... (Equation 1)

By this formula, NS is $\frac{19}{1+19(10\%)(10\%)} = \frac{19}{1.19} = 15.97 \approx 16$ companies. Furthermore, this study uses a simple random sampling method to select them. However, these companies cannot be fully used as samples. Therefore, this study uses trial and error to yield the number of companies with upright estimators to prove the hypotheses and a finding. Based on this technique, this study only utilizes 12 firms: (1) Astra Agro Lestari Tbk. (AALI), (2) Bisi International Tbk. (BISI), (3) Eagle High Plantation Tbk. (BWPT), (4) Dharma Samudera Fishing Industries Tbk. (DSFI), (5) Inti Agri Resources Tbk. (IIKP), (6) PP London Sumatra Indonesia Tbk. (LSIP), (7) Sampoerna Agro Tbk. (SGRO), (8) Salim Ivomas Pratama Tbk. (SIMP), (9) SMART Tbk. (SMAR), (10) Sawit Sumbermas Sarana Tbk. (SSMS), (11) Tunas Baru Lampung Tbk. (TBLA), and (12) Bakrie Sumatera Plantations Tbk (UNSP).

### 3.3. Method to collect the data

In this study, the archive method was used to collect data. According to Hartono (2014), this method helps obtain secondary data. The secondary data used come from:
1. IDX Fact Books 2014, 2015, 2016, 2017, 2018, and 2019 to identify the names and number of agricultural sector companies as the relevant population in this study. These books can be downloaded at https://www.idx.co.id/id/data-pasar/laporan-statistik/fact-book.
2. The annual reports from 2013 to 2022 of the companies becoming the samples. These reports can be downloaded from their official website or www.idx.co.id.

### 3.4. Data analysis method

This study uses a pooling data regression model that combines cross-site data (i) and time series (t) for data analysis. Furthermore, to examine hypotheses one, two, and three, the probability value of the t-statistic of the regression coefficients $\beta_1$, $\beta_2$, and $\beta_3$ in equation two are used.

$PQ_{it} = \beta_0 + \beta_1 IP_{it} + \beta_2 SBS_{it} + \beta_3 DBIG4_{it} + \beta_4 IP*SBS_{it} + \beta_4 LN(TA) + \varepsilon_{1it}$ (Equation 2)

Additionally, this study uses the interaction between institutional possession (IP) and supervisory board size (SBS) to prove new evidence. According to Hartono (2014), interaction is one of the ways to establish a moderating effect (Hartono, 2014). Before estimating the regression coefficients, the classical assumptions, like non-multicollinearity, homoskedasticity, non-autocorrelation, and normality, must be achieved. Then, to perform the related detection, this study uses the matrix correlation, White (Gujarati et al., 2019), runs, and Kolmogorov-Smirnov tests, respectively (Ghozali, 2021).

## 4. Result and Discussion

### 4.1. Descriptive Statistics

Because of a ratio scale to measure profit quality, institutional ownership, and supervisory board size, this study uses total observation (N), maximum, minimum, mean, and standard deviation, as exhibited in Table 1:
- Profit quality calculated by the operating cash flow to profit before interest and taxes ratio has a minimum, maximum, mean, and standard deviation of -1.64, 8.59, 0.8546, and 1.15239.
- Institutional possession quantified by its share percentage has a minimum, maximum, mean, and standard deviation of 3.13, 97.20, 62.5253, and 21.92230.
- Supervisory board size measured by its total has a minimum, maximum, mean, and standard deviation of 2, 9, 4.39, and 1.712.
- Firm size counted by the natural logarithm of total assets has a minimum, maximum, mean, and standard deviation of 12.44, 17.57, 15.7311, and 1.52521.

Table 1: Descriptive statistics for the profit quality, institutional possession, supervisory board size, and company size

| Variable | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| PQ (decimal) | 120 | -1.64 | 8.59 | 0.8546 | 1.15239 |
| IP (%) | 120 | 3.13 | 97.20 | 62.5253 | 21.92230 |
| SBS | 120 | 2 | 9 | 4.39 | 1.712 |
| LN(TA) (decimal) | 120 | 12.44 | 17.57 | 15.7311 | 1.52521 |

Moreover, to measure external auditor quality with a nominal scale, the frequency reflects the firms audited by public accounting firms affiliated with the big four auditors, as presented in Table 2. Based on the data observation from 2013 to 2022, this study obtained five companies that consistently hire non-Big-4 auditors, i.e., SMAR, DSFI, IIKP, TBLA, and UNSP; six firms that steadily employed Big-4 auditors, i.e., BISI, AALI, LSIP, SGRO, SIMP, and SSMS; and one inconsistent firm: BWPT. In 2013 and 2014, BWPT used a non-Big-4 auditor but changed to a big-four auditor between 2015 and 2018 and utilized a non-Big-4 auditor again from 2019 to 2022.

Table 2: Descriptive statistics for external auditor quality

| Description | Firm Code | Total Company | Total Observation |
|---|---|---|---|
| The consistent companies using public accounting firms unaffiliated with the Big Four auditors | SMAR, DSFI, IIKP,TBLA, and UNSP | 5 | 50 |
| The consistent companies utilizing public accounting firms affiliated with the Big Four auditors | BISI, AALI, LSIP, SGRO, SIMP, and SSMS | 6 | 60 |
| The inconsistent companies utilizing public accounting firms affiliated or unaffiliated with the Big Four auditors | BWPT | 1 | 10 |
| Total | | 12 | 120 |

*4.2. Matrix Correlation and Multicollinearity Detection*

Table 3 exhibits the Pearson correlation (PC) matrix among the independent variables (see Panel A) and between the dependent and independent variables (see Panel B). In Panel A, the correlations among independent variables are between 0.029 and 0.801, showing weak to solid power, as Akoglu (2018) declares. The largest is between IP and IP*SBS: 0.801. By mentioning Gujarati et al. (2019) and Ghozali (2021), the multicollinearity does not become a problem in this case because the second regression model estimated demonstrates a significant impact of IP*SBS, supported by a low R-square of 0.146039 (see Table 5). Additionally, the correlation between IP and PQ, SBS and PQ, DBIG4 and PQ, LN(TA) and PQ, and IP*SBS and PQ in Panel B of Table 3 is 0.302, 0.186, 0.247, 0.092, and 0.261, respectively. By referring to Akoglu (2018), it displays weak power because it is less than 0.4.

Table 3: Matrix Correlation Result

| Panel A. Correlation among independent variables | | | |
|---|---|---|---|
| Correlation | Pearson Correlation | Correlation | Pearson Correlation |
| IP ↔ SBS | 0.282 | SBS ↔ LN(TA) | 0.553 |
| IP ↔ DBIG4 | 0.303 | SBS ↔ IP*SBS | 0.801 |
| IP ↔ LN(TA) | 0.391 | DBIG ↔ LN(TA) | 0.332 |
| IP ↔ IP*SBS | 0.766 | DBIG ↔ IP*SBS | 0.142 |
| SBS ↔ DBIG4 | 0.029 | LN(TA) ↔ IP*IBS | 0.536 |
| **Panel B. Correlation between independent and dependent variables** | | | |
| Correlation | Pearson Correlation | Correlation | Pearson Correlation |
| IP ↔ PQ | 0.302 | LN(TA) ↔ PQ | 0.092 |
| SBS ↔ PQ | 0.186 | IP*SBS ↔ PQ | 0.261 |
| DBIG4 ↔ PQ | 0.247 | | |

*4.3. Heteroskedasticity, Autocorrelation, and Normality Testing Results*

By utilizing a White testing result, this study shows that homoscedasticity exists because the probability of Chi-Square based on Obs*R-squared is still insignificant at 1% level: 0.0398 (see Table 4). Furthermore, this study shows that autocorrelation is unavailable because the Z-statistical asymptotic probability (2-tailed) is still above the 5% significant level: 0.271 (see Table 4). Finally, the normality test result is not achieved because the asymptotic probability is lower than 1% level: 0.0000 (see Table 4). According to Bowerman & O'Connell (2003), the central limit theorem declares that the normality can be ignored if the observation is extensive. Using the sample terminology, the large exists if above 30 as the total exists (Misbahuddin & Hasan, 2013). In this research context, the observational number is 120, which is considered gigantic because it is higher than 30.

Table 4: Heteroskedasticity, Autocorrelation, and Normality Testing Results

| The name of the test | Related Model | Statistical Information | Value |
|---|---|---|---|
| Heteroskedasticity: White Testing | RESID^2 = f(IP^2, SBS^2, DBIG^2, LN(TA)^2, (IP*SBS)^2 | Obs*R-squared | 11.65977 |
| | | Probability of Chi-Square (5) | 0.0398 |
| Autocorrelation: Runs testing | Single serial residuals | Median test value | -0.10940 |
| | | Number of runs | 55 |
| | | Z-statistic | -1.100 |
| | | Asymptotic probability (2-tailed) | 0.271 |
| Normality testing: Kolmogorov-Smirnov (KS) | Serial serial residuals | Total observations | 120 |
| | | Z-statistic of KS | 2.054 |
| | | Asymptotic probability (2-tailed) | 0.000 |

*4.4. The estimation result of the regression model*

Table 5 shows the t-statistical probability for regression coefficient IP, SBS, and DBIG4 in the second regression model are 0.0086, 0.0129, and 0.0446. Because these values are significant at $\alpha$ of 5%, the first, second, and third null hypotheses are rejected. Thus, the first, second, and third alternative hypotheses are accepted, declaring that institutional possession, supervisory board size, and external auditor quality positively affect profit quality.

From the same table, the t-statistical probability value for the IP*SBS regression coefficient in the second regression model is 0.0572. Because this value is significant at $\alpha$ of 10%, the moderating effect of institutional ownership on the association between supervisory board size and profit quality is available, supported by the increasing adjusted R-square from 0.126063 in the first model to 0.146039 in the second model.

Table 5: The estimation result of the regression model: The effect of institutional ownership, external auditor quality, and their interaction on profit quality with supervisory board independence as the control variable

| Description | The first regression model without interaction between IO and SBS | | | The second regression model with interaction between IO and SBS | | | Statistical Conclusion |
|---|---|---|---|---|---|---|---|
| Variable | Coefficient | t-statistic | Probability | Coefficient | t-statistic | Probability | |
| C | 1.540203 | 1.354794 | 0.1781 | 0.272122 | 0.208790 | 0.8350 | - |
| IP | 0.013094 | 2.598872 | 0.0106 | 0.040773 | 2.674449 | 0.0086 | $H_1$ is accepted |
| SBS | 0.150234 | 2.108954 | 0.0371 | 0.529977 | 2.525490 | 0.0129 | $H_2$ is accepted |
| DBIG4 | 0.537087 | 2.457566 | 0.0155 | 0.448597 | 2.030870 | 0.0446 | H3 is accepted |
| LN(TA) | -0.155774 | -1.816584 | 0.0719 | -0.191099 | -2.203205 | 0.0296 | - |
| IP*SBS | n.a. | n.a | n.a. | -0.005358 | -1.920961 | 0.0572 | Novelty is confirmed |
| Adjusted R$^2$ | 0.126063 | | | 0.146039 | | | |

*4.5. Discussion*

The first statistical hypothesis examination shows that institutional ownership positively affects profit quality. Institutions with a significant company share can effectively monitor managers through proxy fights. If institutions do it, other candidates with better competence may replace the existing managers performing earning management. Therefore, managers tend to reduce their tendency to manage profits and yield qualified profits. With this positive effect, this study aligns with agency theory in the monitoring context and Solikhah et al. (2022).

The second hypothesis testing exhibits that the supervisory board size positively affects profit quality. Hence, this evidence does not support the agency theory requiring a few supervisory board members. Instead, it affirms the resource dependence theory based on the bulky supervising board members (Villanueva-Villar et al., 2016). Besides, securing essential and precious resources and minimizing uncertainty and transaction costs are part of their ability to elevate firm performance (Pfeffer, 1972; Zahra & Pearce, 1989). In the earnings quality context, this performance is reflected by the decrease in earnings management when the big supervisory boards exist, as documented by Hasan et al. (2022).

The third statistical hypothesis testing illustrates that external audit quality positively affects profit quality. This result indicates that the audit results by public accounting firms affiliated with the Big Four auditors are of higher quality than those of the unaffiliated. This quality is inseparable from auditors' experience and expertise in auditing financial statements. With this positive influence, this study's results are in line with Murniati et al. (2018), Githaiga et al. (2022), and El-Dyasty and Elamer (2023).

Based on the evidence, institutional ownership can strengthen the effect of supervisory board size on profit quality with a negative sign; it indicates the substitution role between the institution and supervisory board in monitoring management. The small board size is needed to elevate earnings quality when institutional ownership increases, and vice versa. In other words, the agency theory recommending the small supervisory board is confirmed.

*4.6. Implications*

Based on these research results, it is recommended that the companies employ a public accounting firm affiliated with the Big Four auditors to guarantee profit quality. To realize this condition, the company must provide much money as compensation to signal the market positively. Additionally, when a portion of institutional ownership is high, the firms are expected to select small members of supervisory boards to create a high-profit quality.

## 5.    Conclusion

This study examines and analyzes the effect of institutional ownership, the quality of external auditors, and the interaction of institutional ownership with reputable external auditors on profit quality in the agricultural sector issuers on the Indonesia Stock Exchange. By analyzing data between 2013 and 2022 and utilizing 12 companies as samples, the study concludes that institutional ownership, supervisory board size, and external auditor quality positively influence profit quality.

Educationally, this study has several limitations. First, the sample size includes only one industrial sector, and second, only two variables were used. These issues provide an opportunity for future investigators to overcome this limitation.
a.   Regarding the first limitation, they are advised to use multi-industry firms, such as non-financial companies. By using them, the conclusions drawn can be broadly valid.
b.   Regarding the second limitation, the following researchers suggested utilizing managerial ownership and supervisory board diversity as additional primary independent variables in their research model.

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