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Earnings management, board of directors, and earnings persistence: Indonesian evidence

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ARTICLE INFO	ABSTRACT
	This research investigates the impacts of earnings management, both accrual earnings management (AEM) and real earnings management (REM), as well as Board of Directors (BOD) on earnings persistence. Accrual earnings management was measured using Modified Jone's Model, and real earnings management was assessed by three measures: abnormal cash flow, abnormal production expenditure, and abnormal discretionary expenditure. In addition, Board of Directors was measured using BOD size and BOD independence. Earnings persistence was measured based on the current year earnings to following year earnings regression coefficients. Using the samples consisting of the manufacturing companies listed at the Indonesia Stock Exchange 2016-2020, the study finds the evidence that accrual earnings management and cash flow of real earnings management negatively affect earnings persistence, while production expenditure, earnings management, discretionary expenditure, BOD size, and BOD independence positively affect earnings persistence.

Introduction

This study investigates the impact of earnings management and the role of Board of Directors (BOD) on earnings persistence. Earnings information is helpful for economic decision-making and forecasting future earnings (P. Dechow et al., 2010). The quality of earnings or the usefulness of earnings for decision-making is the result of real economic performance. In general, companies with higher performance should be associated with higher earnings quality as well (Hsu & Hu, 2016). According to the Conceptual Framework of Accounting information, earnings information should assist the users in determining the amount, timing, and uncertainty of future cash flows. Thus, high earnings quality significantly contributes to the sustainability and persistence of companies in the long run. However, because many variables and proxies can be used to perform earnings assessments, this results in the absence of a single measure for earnings quality (P. Dechow et al., 2010). Therefore, in this study the researchers used earnings persistence to measure the quality of earnings because this measure is widely used.

Earnings persistence is the sustainability and repetition of earnings which show how much the current earnings opportunity can survive in the future (Atashband et al., 2014; Kang & Kim, 2012; Rajizadeh & Rajizadeh, 2013). Previous research has documented a link between earnings quality and earnings persistence (Hung et al., 2018; Kang & Kim, 2012; Pirveli, 2020). Low earnings quality has an impact on future earnings sustainability with the indication of low earnings persistence (Vichitsarawong & Pornupatham, 2015). On the other hand, research on accrual earnings management has been done a lot (Kothari et al., 2005; Meini & Siregar, 2014)which is similar to research on real earnings management (Cohen & Zarowin, 2010; Gunny, 2010; Roychowdhury, 2006). Each of these forms of earnings management affects the company operations and is likely to have long-term effects. Previous research has shown a negative correlation between earnings manipulation through accrual discretion and earnings persistence (Meini & Siregar, 2014). However, previous research has also reported that the relationship between real earnings management and earnings persistence is still quite ambiguous. However, research investigating the relationship between the two types of earning management, namely accrual earnings management and real earnings management, and earnings persistence, is still relatively limited, especially in the emerging markets such as in Indonesia.

The literature on the relationship between earnings management and earnings persistence is mixed, as the findings of the previous research show mixed results. In addition, the amount of previous research investigating the relationship between earnings management and earnings persistence is limited. Hung et al. (2018) find that there is a positive relationship between earnings management and earnings persistence. However, Subramanyam (1996) shows the evidence of accrual earnings management measured using discretionary accrual which can improve

earnings quality and earnings persistence. Pernamasari (2018) conducted research in the Indonesian context and found a negative correlation between earnings management and earnings persistence.

The literature review has found a limited number of previous studies investigating the relationship between earnings management and earnings persistence using accrual earnings management indicators. Using real earnings management method, Machdar et al. (2017) found that earnings quality and real earnings management were positive and negatively associated with company performance. Li (2019) finds that real earnings management associated with abnormal decreases in discretionary costs was associated with decreases in earnings quality. Li's research contributes significantly to the earnings management and earnings persistence literature by testing both measures of earnings management, namely AEM and REM. This provides a complete picture of the association between earnings management and earnings persistence, especially in an emerging market. It is clear that there is still a literature gap in earnings management and earnings persistence (Li, 2019). Therefore, this study fills the gap by exploring the relationship between earnings management, both accrual earnings management and real earnings management, and earnings persistence using the data from Indonesian public companies. To further complement the results of this research, the researchers also includes Board of Directors (BOD) variable because BOD also has an impact on earnings persistence as reported by Kent et al. (2010) and Khasanah and Khafid (2020) as well as Mather and Ramsay (2006). Thus, the purpose of this research is to obtain the evidence on the relationship between earnings management, both accrual and real earnings management, as well as BOD and earnings persistence. The findings of this study contribute to the similar literature by revealing more comprehensive findings.

This paper is organized in the following systematic structure. After presenting the introduction in part 1, section 2 outlines the summary of the literature and the development of hypotheses. Section 3 elaborates the research design and measurement of variables as well as the model specifications. The following is section 4 which discusses the results of the research and the discussion on the results. This paper is deduced by the conclusion, limitations, and suggestions for further research.

Literature Review

This research uses Agency Theory because earnings management issues have an impact on information asymmetry between principals and agents. Agency Theory is a theory that predicts and explains the agency relationship between principals and agents (C. Jensen & Meckling, 1976). This theory states that agency conflict arises when there is a dispute between an owner (principal) and a manager (agent) who should be responsible for maximizing the owner's benefits (Eisenhardt, 1989; Shapiro, 2005).

Agent receives bonus and other benefits based on the earnings targets which has an impact on the emergence of various interests, benefits, and goals. As a result, managers or agents are more likely to prioritize their benefits and well-being. Thus, the goals and benefits that the principal wants to achieve and maximize his or her wealth. This condition leads to the onset of earnings persistence. Principals and agents need information to make decisions. According to Asymmetric Information Theory, one party (agent) has qualified information, while the other party (principal) does not have adequate information, so the principal who does not have complete information has the potential to make inappropriate decisions (Panda & Leepsa, 2017). The investors and creditors residing outside an entity are unlikely to fully understand the information about the financial condition of the company (Hefti, 2017). Adequate information that cannot be obtained from the management will result in an inappropriate decision. Agents perform earnings management to maximize their benefits by ignoring other users of information, and this condition gives rise to information asymmetry, and in turn, will have an impact on earnings persistence (Obeng et al., 2020).

Real Earnings Management and Persistence

The Agency Theory implies that the tendency of agents to maximize personal benefits by conducting profit management practices has an impact on the emergence of information asymmetry between agents and principals. This condition results in the quality of profit, including profit persistence. This research will test the effect of profit management, both real profit management and accrual profit management, on profit persistence. Rahmawati and Krismiaji (2021) and Scott (2015) state that earnings management is the selection of accounting policies or real actions by a manager that affects the earnings to achieve specific goals. Earnings management is classified into two types, namely accrual earnings management (AEM) and real earnings management (REM). Cohen et al. (2008), Cohen and Zarowin (2010), Gunny (2010), and Roychowdhury (2006) state that REM is the separation of earnings management from traditional accrual-based earnings management. The income statement is designed to manipulate the current period earnings by changing the certain information related to company operations. REM can assist organization in adjusting cash flows from unexpectedly low operating activities. This is because company has a policy to lower the prices or extend the credit term to increase current revenue. However, income stability becomes uncertain in the long run as a result of the strategy for extending the credit terms, which in turn also has an impact on increasing the value of receivables. This ultimately poses a risk that the company will not earn

adequate amount of money. These conditions indicate a relationship between earnings stability and earnings adjustment when operating cash flow is affected. In addition, REM abnormally reduces discretionary spending thereby lowering the relationship between current earnings and future cash flows (Li, 2019).

Another way for companies to control costs is to defer research and development costs (Gunny, 2010; Roychowdhury, 2006). Research and development cost-cutting, advertising costs, sales costs, and administrative costs are intended to help increase revenue in the short term. Managers' willingness to cut those expenses enables them to meet the current year earnings targets. Li (2019), Graham et al. (2006), Mizik and Jacobson (2007), and Baber et al. (1991) Li (2019), Graham et al. (2006), Mizik and Jacobson (2007), and Baber et al. (1991) find that greater earnings are usually gained because a company incurs lower than average marketing costs. This implies that the company controls marketing costs to increase earnings. In addition, the company incurs very high production costs due to a decrease in the cost of goods sold, which can affect the increase in the earnings of current period. Thus, it can be concluded that earnings persistence will be affected if real earnings are managed through production cost engineering (Ronen & Yaari, 2008). Recent research conducted by Khuong et al. (2022) shows that real management is associated with varying degrees of earnings persistence. Therefore, the researchers propose the following hypothesis.

H_1: Real earnings management has varied relationships with earnings persistence.

Accrual Earnings Management and Earnings Persistence

Earnings management is the practice conducted by a manager through the use of discretionary accruals to multiple accounts and the adjustment after-tax earnings to meet the purpose of disclosing earnings information in the manager's favor Dechow and Dichev (2002), Meini and Siregar (2014), and Ronen and Yaari (2008). Agency Theory states that profit management practices are carried out to support the interests of agents, namely maximizing the benefits of agents. Accrual profit management is done by discounting the accrual number so that it will produce a profit figure under the wishes of the agent. Recent research has also shown a negative relationship between accrual earnings management and earnings persistence (Meini & Siregar, 2014). This correlation occurs because the manager's desire to manipulate earnings to obtain personal earnings decreases the stability of future earnings (Khuong et al., 2022). Thus, the researchers formulate the following hypothesis.

H_2: Accrual earnings management has a negative relationship with earnings persistence.

Board of Directors and Earnings Persistence

The Agency theory states that one way that can be done to overcome agency problems is by implementing an effective monitoring system. This monitoring is formally carried out by the Board of Directors (BOD). According to Agency theory, BOD independence plays an important role in CG by improving the monitoring and supervision of the management and operations of the company (C. Jensen & Meckling, 1976). It is expected that the interests of diverse stakeholders will be safeguarded and that the value of the company will increase through more transparent information with the participation of a highly independent board (Nguyen et al., 2020). The existence of BOD with board size and board independence attributes will be investigated related to its effect on profit persistence. BOD has two main functions, namely monitoring function and consulting function (Adams, 2009; and Jensen, 1993). Arayssi et al. (2020) and Cheng et al. (2018) state that the monitoring function includes management's vulnerable supervision to ensure that management's interests are aligned with those of shareholders, while the consulting function is required to assist management in identifying, formulating, and implementing long-term business growth strategies, as well as providing advice on other areas related to top-level decision making. Monitoring positions have traditionally been widely investigated. They explores two elements of BOD, namely board size and board independence Click or tap here to enter text.. As the size of BOD grows larger, the board members become more numerous which will generate more opinions and ideas. However, this condition often causes problems in the form of difficulty to reach an agreement for both decision and action. Conflicts in BOD can affect earnings sustainability. BOD with a smaller size is considered to have more effective communication and efficient decision-making process because with fewer board members it is easier to reach agreement in decision making and action (Ahmed et al., 2006; Cohen et al., 2008b). Some previous studies have reported a negative relationship between BOD size and earnings persistence (Ahmed et al., 2006; Hashim & Devi, 2008).

Larger and more independent BOD can assist companies to lower the monitoring costs for the entities. This will certainly have an impact on improving efficiency of the company so that it can later contribute to revenue sustainability. Previous research reported that the size of BOD had a positive effect on earnings persistence (Egbunike & Odum, 2018; Waheed & Malik, 2019). In addition, BOD members who come from outside the company are good monitoring instruments. A large number of BOD members derived from externals is correlated negatively with accounting fraud (Dechow et al., 1996). Previous research has also proven a positive relationship between board independence and earnings persistence or earnings quality (Alves, 2014; Dimitropoulos & Asteriou,

2010). Recent research conducted by Khuong et al. (2022) proves a positive relationship between BOD independence and earnings persistence. Therefore, the researchers set the following hypothesis.

H_{3a}: BOD size positively affects earnings persistence.

H_{3b}: BOD independence positively affects earnings persistence.

Research Method

The samples used in this study are the companies listed at the Indonesia Stock Exchange (IDX). The sample was selected using purposive sampling technique based on three requirements. The first requirement is that the companies are the public companies registered at IDX from 2016 to 2020. The second requirement is that these companies are incorporated into the manufacturing industry, and the third criterion is that these companies have publicly available information. The data came from the capital market database (www.idx.co.id) and the companies' website. The unit of analysis in this study is the company's fiscal year. There are two reasons for choosing manufacturing companies. First of all, manufacturing company is the most complete company of its activities, so it can represent the features of the industry or other sectors. The second reason is that in terms of data, especially the data needed to measure real earnings management, manufacturing companies have all the required data.

Research Variables

Earnings persistence is measured based on the components of the main financial statements (Arayssi et al., 2020; Delvira & Nelvirita, 2013; Kliestik et al., 2021; Ranasinghe et al., 2020; Siekelova et al., 2020; Ticoalu & Panggabean, 2020). Earnings persistence is measured using the following regression equations.

$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1 \text{Earnings}_{it} + \epsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Earnings$_{it+1}$ is earnings per share in year t+1, and Earnings$_{it}$ is earnings per share in year t. The value of earnings persistence is derived from the coefficient value of β_1 of the equation (1).

Earnings management in the form of independent variable consists of accrual earnings management and real earnings management. Accrual earnings management (AEM) is measured by discretionary accrual and calculated using *the Modified Jones Model* (Dechow et al., 1995) with the following equation:

$$TAC_{i,j,t} = \beta_1 \frac{1}{TA_{i,j,t}} + \beta_2 \frac{(\Delta Rev_{i,j,t} - \Delta AR_{i,j,t})}{TA_{i,j,t-1}} + \beta_3 \frac{PPE_{i,j,t}}{TA_{i,j,t-1}} + \varepsilon_{i,j,t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

In equation (2), TAC$_{ijt}$ is the total accrual for company i of industry j in year t divided by the total assets of year t-1; TA$_{ijt-1}$ is the total assets in year $t-1$; ΔREV$_{ijt}$ is company i's income in year t reduced by company i's revenue in year $t-1$ of industry j divided by the total assets in year $t-1$; ΔAR$_{ijt}$ is the company i's receivables in year t minus receivables of company i of industry j in year $t-1$ divided by the total assets in year $t-1$; and PPE$_{ijt}$ is the gross property plant and equipment of company i of industry j in year t divided by the total assets in year $t-1$. ε_{ijt} is the error term or residual value. Accrual discretion (DA) for year t is the absolute residual value of equation (2). The absolute value of accrual discretion (ABSDA) is an accrual earnings management proxy. The higher the ABSDA value, the higher the accrual earnings management value.

Real earnings management (REM), which is also an independent variable, is measured using the models initiated by Roychowdhury (2006). There are three models to measure real earnings management, namely abnormal cash flow, abnormal production costs, and abnormal discretionary costs. The models used are as follows.

$$\text{CFO}_t/A_{t-1} = \alpha_0 + \alpha_1(1/A_{t-1}) + \beta_1(S_t/A_{t-1}) + \beta_2(\Delta S_t/A_{t-1}) + \epsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

$$\text{PROD}_t/A_{t-1} = \alpha_0 + \alpha_1(1/A_{t-1}) + \beta_1(S_t/A_{t-1}) + \beta_2(\Delta S_t/A_{t-1}) + \beta_3(\Delta S_{t-1}/A_{t-1}) + \epsilon_t \dots\dots\dots\dots\dots\dots\dots (4)$$

$$\text{DISEXP}_t/A_{t-1} = \alpha_0 + \alpha_1(1/A_{t-1}) + \beta(S_{t-1}/A_{t-1}) + \epsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

where:

CFO$_t$/A$_{t-1}$	: Operating cash flow of year t divided by total assets of year *t-1*
$\alpha_1(1/A_{t-1})$	: Intercept divided by total assets of year *t-1*
S$_t$/A$_{t-1}$	: Sales revenue of year t divided by total assets of year *t-1*
ΔS$_t$/A$_{t-1}$	: Sales revenue of year *t* minus sales revenue of year *t-1* divided by total assets of year *t-1*
PROD$_t$/A$_{t-1}$	: Production cost of year t divided by total assets of year *t-1*, i.e PROD$_t$ = COGS$_t$ + ΔINV$_t$
ΔS$_{t-1}$/A$_{t-1}$	: Changes in sales revenue of year *t-1* divided by total assets of year *t-1*
DISEXP$_t$/A$_{t-1}$	: Discretionary cost of year t divided by total assets of year *t-1*
S$_{t-1}$/A$_{t-1}$	: Sales revenue of year *t-1* divided by total assets of year *t-1*
ϵ_t	: *Error term* of year *t*

The regression equations (3), (4), and (5) generate normal operating cash flow, normal production costs, and normal discretionary costs. Because this study requires abnormal operating cash flow, abnormal production

costs, and abnormal discretionary costs, so the estimation was done by calculating the accrual earnings management. Abnormal values in real management were also calculated by reducing the total real cash flow, total real production costs, and real discretionary costs with normal operating cash flow, normal production costs, and normal discretionary costs.

Another independent variable used is board composition. There are several ways to measure board composition. The researchers employed two widely used variables, namely board size (BSIZE) and board independence (BIND) as those used by Arayssi et al. (2020) and Cheng et al. (2018). Board members are used as the proxy of board size (BSIZE), and non-executive members are divided by the total number of BOD members to be used to calculate BOD Independence (BIND).

This study also uses several control variables. The control variables in the model are as common as in the previous research of Vichitsarawong and Pornupatham (2015). The first control variable is company size (SIZE) which is measured using a natural log of total assets. SIZE is used to control the variation in the size of company because the size of company is a dominant factor that affects various aspects of company operations. Large companies are more sensitive to the risk of earnings fluctuations than smaller ones (Vichitsarawong & Pornupatham, 2015). Consequently, the persistence of the earnings of large company will be lower than the persistence of small company's earnings. On the other hand, larger companies are predicted by Watts and Zimmerman (1986) to be more likely to choose less risky investments to avoid government interference, which will have an impact in the long run.

The next control variable is the debt-to-asset ratio (LEV) which is measured by dividing total debts with total assets. This variable is used as a control variable because companies with high debt ratio are more likely to have financial problems which in turn affect the rate of earnings persistence. Vichitsarawong and Pornupatham (2015) investigate debt ratio and reveal that debt ratio is negatively associated with earnings persistence.

Model Specifications

To test the hypothesis, the earnings persistence measurement model (1) is expanded to include the variables to be tested. Thus, the model used to test hypothesis 1, i.e. the effect of real earnings management on earnings persistence is as follows.

$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{REMC}_{it} + \beta_3\text{Earnings}_{it}*\text{REMC}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it} \dots\dots\dots(6)$$
$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{REMP}_{it} + \beta_3\text{Earnings}_{it}*\text{REMP}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it} \dots\dots\dots(7)$$
$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{REMD}_{it} + \beta_3\text{Earnings}_{it}*\text{REMD}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it} \dots\dots\dots(8)$$

where:
REMC_{it} = Real earnings management of company *i*'s cash flow in year *t*
REMP_{it} = Real earnings management of company *i*'s production expenses in year *t*
REMD_{it} = Real earnings management of company *i*'s discretionary expenses in year *t*
SIZE_{it} = Company *i*'s size in year *t*, as a control variable
LEV_{it} = Leverage, i.e the company *i*'s debt ratio in year *t*, as a control variable
ϵ_{it} = Company *i*'s term error in year *t*

To test hypothesis 2, the effect of accrual earnings management on earnings persistence, the expansion of model 1 is also used as follows.

$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{AEM}_{it} + \beta_3\text{Earnings}_{it}*\text{AEM}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it} \dots\dots\dots(9)$$

where:
AEM_{it} = Accrual earnings management of the company *i* in year *t*
SIZE_{it} = Company *i*'s size in year *t*, as a control variable
LEV_{it} = Leverage, i.e the company *i*'s debt ratio in year *t*, as a control variable
ϵ_{it} = Company *i*'s term error in year *t*

To test hypotheses 3a and 3b, BOD effect on earnings persistence, regression equations (10) and (11) are used as follows.

$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{BSIZE}_{it} + \beta_4\text{Earnings}_{it}*\text{BSIZE}_{it} + \beta_6\text{SIZE}_{it} + \beta_7\text{LEV}_{it} + \epsilon_{it}. \dots\dots\dots(10)$$
$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_3\text{BIND}_{it} + \beta_5\text{Earnings}_{it}*\text{BIND}_{it} + \beta_6\text{SIZE}_{it} + \beta_7\text{LEV}_{it} + \epsilon_{it} \dots\dots\dots(11)$$

where:
BSIZE_{it} = Company *i*'s BOD size in year *t*
BIND_{it} = Company *i*'s BOD independence in year *t*
SIZE_{it} = Company *i*'s size in year *t*, as a control variable

LEV_{it} = Leverage, i.e the company i's debt ratio in year t, as a control variable
ϵ_{it} = company i's term error in year t

To confirm the test results using models (6) to models (11), the following equations are used.

$$Earnings_{it+1} = \alpha_{it} + \beta_1 Earnings_{it} + \beta_2 REMC_{it} + \beta_3 BSIZE_{it} + \beta_4 BIN_{it} + \beta_5 Earnings_{it}*REMC_{it} + \beta_6 Earnings_{it}*BSIZE_{it}$$
$$+ \beta_7 Earnings_{it}*BIN_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \epsilon_{it}. \dots\dots\dots (12)$$

$$Earnings_{it+1} = \alpha_{it} + \beta_1 Earnings_{it} + \beta_2 REMP_{it} + \beta_3 BSIZE_{it} + \beta_4 BIN_{it} + \beta_5 Earnings_{it}*REMP_{it} + \beta_6 Earnings_{it}*BSIZE_{it}$$
$$+ \beta_7 Earnings_{it}*BIN_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \epsilon_{it}. \dots\dots\dots (13)$$

$$Earnings_{it+1} = \alpha_{it} + \beta_1 Earnings_{it} + \beta_2 REMD_{it} + \beta_3 BSIZE_{it} + \beta_4 BIN_{it} + \beta_5 Earnings_{it}*REMD_{it} + \beta_6 Earnings_{it}*BSIZE_{it}$$
$$+ \beta_7 Earnings_{it}*BIN_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \epsilon_{it}. \dots\dots\dots (14)$$

$$Earnings_{it+1} = \alpha_{it} + \beta_1 Earnings_{it} + \beta_2 AEM_{it} + \beta_3 BSIZE_{it} + \beta_4 BIN_{it} + \beta_5 Earnings_{it}*AEM_{it} + \beta_6 Earnings_{it}*BSIZE_{it}$$
$$+ \beta_7 Earnings_{it}*BIN_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \epsilon_{it}. \dots\dots\dots (15)$$

Results and Discussion

Univariate Analysis

Based on the sampling process as already outlined, the study collected the data of 119 manufacturing companies for the period 2016 to 2020 which produced the observations of 595 companies. Table 1 presents the descriptive statistics of the sample data. The results show that all the variables used in the model assessment have reasonable degrees of variation. For the measurement of persistence variables, Table 2 depicts the mean of year t and year t+1 earnings amounting 190.54 and 180.60 respectively, while the median values of both variables are 78.00 and 8.00 respectively and tend to decrease. Accrual earnings management (AEM) mean (median) value is 0.73 (0.12). Since AEM was measured by absolute numbers, it cannot be seen as the direction of earnings management, whether it decreases (negative) or increases (positive). However, the larger AEM figure indicates the greater accrual earnings management.

Real earnings management (REM) consists of RCFO, RDE, and RPE; each of which has mean (median) value of 0.01 (-0.11), 0.00 (-0.11), and -0.01 (0.11) respectively. From the means, it is known that the direction of real earnings management is positive except RPE earnings management. Table 1 also shows the means of BOD size (BSIZE) and BOD independence (BIN), namely 4.21 and 0.99 respectively, while the medians for both variables are 4.00 and 0.12. From the data, it can be concluded that BOD members in the sample companies are above 4 with the number of independent members less than 1 or less than 20%. Table 1 also indicates that the size of company (SIZE) varies significantly with the range between 4.20 and 8.66 with the mean (median) 6.18 (6.08), while financial leverage (LEV) shows a wider variation with the range from 0.04 to 7.65 and the mean (median) 0.62 (0.52).

Table 1. Descriptive Statistics

	Min	Max	Mean	Median	Std.Dev
$Earnings_{t+1}$	1.00	998.00	180.60	87.00	235.08
$Earnings_t$	1.00	5303.00	190.54	78.00	339.87
RCFO	-0.35	14.13	0.01	-0.11	1.14
RDE	-1.03	14.22	0.00	-0.11	1.11
RPE	-10.39	4.34	-0.01	0.11	1.10
AEM	0.00	106.48	0.73	0.12	5.38
AM	0.00	4.57	0.99	1.00	1.11
BSIZE	2.00	12.00	4.21	4.00	1.79
LEV	0.04	7.65	0.62	0.52	0.63
SIZE	4.02	8.66	6.18	6.08	0.73

Bivariate Analysis

Pearson and Spearman correlations between variables are calculated and presented in Table 2. The test results of correlation matrices for independent variables in Table 2 shows the absence of correlation coefficients above 0.8. This shows that there is no multicollinearity problem. Table 3 presents the correlation between current year earnings ($Earnings_t$) and subsequent year earnings ($Earnings_{t+1}$) which is positive and significant at the level of 1%. This is an early indication that earnings persistence is positive. BOD characteristics represented by BSIZE and BIN are also positively and significantly related with $Earnings_{t+1}$ at the level of 1%. It is also an early indication that board characteristics increase earnings persistence. Nonetheless, more comprehensive testing will be done through regression analysis.

Table 2. Bivariate Correlation

	Earnings$_{t+1}$	Earnings$_t$	AM	BSIZE	RCFO	RDE	RPE	AEM	LEV
Earnings$_t$	.553**								
AM	.151**	.118**							
BSIZE	.296**	.182**	.339**						
RCFO	-.053	-.040	.071	-.028					
RDE	-.052	-.040	.061	-.040	.365**				
RPE	-.100*	-.098*	-.170**	-.073	.027	.027			
AEM	-.031	-.032	.082*	.040	-.012	-.012	-.047		
LEV	-.055	-.066	.025	-.079	-.024	-.039	.123**	.062	
SIZE	.293**	.158**	.204**	.636**	.020	-.007	.051	.039	-.038

**, *. Correlation is significant at the 0.01 level and 0.05 respectively (2-tailed).

Multivariate Analysis

To test the hypotheses, regression models (6) to (11) were used. The regression test results are presented in Table 3. Hypothesis 1 states that real earnings management relates variedly to earnings persistence and was tested by Model 6 for cash flow management, by Model 7 for production expenditure earnings management, and by Model 8 for discretionary expenditure earnings management. As has been explained, the measure of persistence is the correlation coefficient between Earnings$_{it}$ and Earnings$_{it+1}$. Therefore, to find out the effect of real earnings management on earnings persistence, real management variables have to interact with Earnings$_{it}$. Thus, the correlation coefficient of interaction variables between earnings and real management is used to determine the effect of real earnings management on earnings persistence.

Table 3 shows that the interaction coefficients of the two variables have positive values on production expenditure earnings management (Model 7) and discretionary expenditure (Model 8) with the significant rate of 5%. This shows that real earnings management of production expenditure and real earnings management of discretionary expenditure has a positive effect on earnings persistence, while the coefficient of the interaction between Earnings$_{it}$ variables and cash flow earnings management (Model 6) shows a negative value (-0.720) and is significant at the level of 1%. This means that cash flow earnings management has a positive effect on earnings persistence. Overall, it can be concluded that hypothesis 1 is confirmed by the result of the analysis as presented in Table 3.

$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{REMC}_{it} + \beta_3\text{Earnings}_{it}*\text{REMC}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it}................................(6)$$
$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{REMP}_{it} + \beta_3\text{Earnings}_{it}*\text{REMP}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it}. ....(7)$$
$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{REMD}_{it} + \beta_3\text{Earnings}_{it} * \text{REMD}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it}. ....(8)$$
$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{AEM}_{it} + \beta_3\text{Earnings}_{it}*\text{AEM}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it}......................(9)$$
$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{BSIZE}_{it} + \beta_3\text{Earnings}_{it}*\text{BSIZE}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it}............................. (10)$$
$$\text{Earnings}_{it+1} = \alpha_{it} + \beta_1\text{Earnings}_{it} + \beta_2\text{BIND}_{it} + \beta_3\text{Earnings}_{it}*\text{BIND}_{it} + \beta_4\text{SIZE}_{it} + \beta_5\text{LEV}_{it} + \epsilon_{it}................................. (11)$$

Table 3. Regression Analysis

Variable	Model 6 Coefficient	Model 7 Coefficient	Model 8 Coefficient	Model 9 Coefficient	Model 10 Coefficient	Model 11 Coefficient
Intercept	54.418	23.549	100.452	-70.460***	122.580	496.125
Earnings	0.860 ***	0.948***	0.805***	0.999***	0.478***	0.694***
REMC	21.296					
Earnings*REMC	-0.720***					
REMP		-191.416**				
Earnings*REMP		0.075**				
REMD			-23.169			
Earnings*REMD			0.167**			
AEM				0.176*		
Earnings*AEM				-0.019**		
BSIZE					140.322*	
Earnings*BSIZE					0.049**	
BIN						88.765*
Earnings*BIN						0.028**
LEV	-8.780	10.959	-41.261	-4.835	-32.924	-85.051
SIZE	18.425	22.607	24.222	15.961***	-246.819	-63.014
Adj. R²	0.602	0.600	0.596	0.873	0.603	0.766
F-statistic	181.298***	179.933***	176.959***	820.211***	181.506***	390.045

***, **, * show that coefficient is significant at 0.01, 0.05, and 0.10 respectively

Hypothesis 2 states that accrual earnings management has a negative relationship with earnings persistence. Similar to hypothesis 1, in hypothesis 2 this effect of accrual earnings management is known from the correlation coefficient between earnings$_{it}$ variable and the accrual earnings management variable (AEM). In Table 3, column Model 9 shows that the correlation coefficient of interaction variable is -0.019 and significant at the level of 5%. This indicates that accrual earnings management negatively affects earnings persistence. Thus, it can be concluded that hypothesis 2 is confirmed by the result.

Hypothesis 3a states that BOD size positively affects earnings persistence. The test result presented in Column Model 10 of Table 3 shows that the interaction between earnings variable of year t and BOD size (Earnings$_{it}$*BSIZE$_{it}$) has the coefficient value 0.049 which is significant at the level of 5%. This indicates that the size of BOD has a positive effect on earnings persistence. Thus, it can be concluded that hypothesis 3a is confirmed by the result. Hypothesis 3b states that BOD independence positively affects earnings persistence. The test result presented in Column Model 11 of Table 3 shows that the interaction between earnings variable of year t and BOD size (Earnings$_{it}$*BIN$_{it}$) has the coefficient value 0.028 which is significant at the level of 5%. This indicates that BOD independence has a positive effect on earnings persistence. Thus, it can be concluded that hypothesis 3b is confirmed by the result.

To test the consistency of the regression test, the follow-up test was carried out by combining all the individual independent variables into a total regression test, encompassing the regression equation (12), regression equation (13), regression equation (14), and regression equation (15) as follows.

$$Earnings_{it+1} = \alpha_{it} + \beta_1 Earnings_{it} + \beta_2 REMC_{it} + \beta_3 BSIZE_{it} + \beta_4 BIN_{it} + \beta_5 Earnings_{it}*REMC_{it} + \beta_6 Earnings_{it}* BSIZE_{it} + \beta_7 Earnings_{it}*BIN_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \epsilon_{it}. \quad\quad(12)$$

$$Earnings_{it+1} = \alpha_{it} + \beta_1 Earnings_{it} + \beta_2 REMP_{it} + \beta_3 BSIZE_{it} + \beta_4 BIN_{it} + \beta_5 Earnings_{it}*REMP_{it} + \beta_6 Earnings_{it}* BSIZE_{it} + \beta_7 Earnings_{it}*BIN_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \epsilon_{it}. \quad\quad(13)$$

$$Earnings_{it+1} = \alpha_{it} + \beta_1 Earnings_{it} + \beta_2 REMD_{it} + \beta_3 BSIZE_{it} + \beta_4 BIN_{it} + \beta_5 Earnings_{it}*REMD_{it} + \beta_6 Earnings_{it}* BSIZE_{it} + \beta_7 Earnings_{it}*BIN_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \epsilon_{it}. \quad\quad(14)$$

$$Earnings_{it+1} = \alpha it + \beta 1 Earnings it + \beta 2 AEM it + \beta 3 BSIZE it + \beta 4 BIN_{it} + \beta 5 Earnings it*AEM it + \beta_6 Earnings_{it}*BSIZE_{it} + \beta_7 Earnings_{it}*BIN_{it} + \beta_8 SIZE_{it} + \beta_9 LEV_{it} + \epsilon_{it}. \quad\quad(15)$$

Table 4. Regression Analysis

Variable	Model 12		Model 13		Model 14		Model 15	
	Coefficient		Coefficient		Coefficient		Coefficient	
Intercept	464.794		-147.632	***	-154.667	***	-154.585	***
Earnings	0.459	***	0. 483	***	0.492	***	0.487	***
AEM							-0.768	***
Earnings*AEM							-0.003	**
REMC	65.811							
Earnings*REMC	-1.795	***						
REMP			-1.012	*				
Earnings*REMP			0.005	**				
REMD					-4.334	***		
Earnings*REMD					-0.004	***		
BSIZE	43.844		7.596	***	6.542	***	6.695	***
Earnings*BSIZE	0.006	*	0.004	***	0.003	**	0.003	**
BIN	26.880		7.722	*	8.518	***	9.318	***
Earnings*BIN	0.104	***	0.003	**	0.493	***	0.005	***
LEV	-77.155		0.463		-0.275		0.368	
SIZE	-76.175		27.441	***	29.124	***	28.996	***
Adj. R²	0.775		0.652		0.641		0.635	
F-statistic	229.264	***	125.161	***	119.128	***	116.015	***

***, **, * show that coefficient is significant at 0.01, 0.05, and 0.1 respectively

Except for column Model 14, i.e correlation coefficient of Earnings*REMD interaction, Table 4 shows the consistency of the results of the regression test presented in Table 3 although with the level of significance that is not always the same. The Earnings*REMD interaction produces a positive regression coefficient with the significance level 5% if tested individually; however, when it is tested together with the BOD, it produces a negative regression coefficient with the significance level 1%. The researchers suspect that BOD variable also affects the characteristics of discretionary expenditure consisting of research and development costs, advertisement, sales, and

marketing which is based more on management judgment, so it cannot be used freely to do real earnings management. Table 5 presents the comparison of the test results presented in Table 3 and Table 4.

Table 5. Comparison of Results between Table 3 and Table 4

	Table 3		Table 4	
Variable	Coefficient	Sig.	Coefficient	Sig.
Earnings*REMC	Negative	1%	Negative	1%
Earnings*REMP	Positive	5%	Positive	5%
Earnings*REMD	Positive	5%	Negative	1%
Earnings*AEM	Negative	5%	Negative	5%
Earnings*BSIZE	Positive	5%	Positive	1%, 5%,10%
Earnings*BIN	Positive	5%	Positive	1%, 5%

Discussion

The test result of hypothesis 1 which states that real earnings management has varied relationships with earnings persistence confirms the previous research conducted by Graham et al. (2005), Khuong et al. (2022), Mizik and Jacobson (2007), and Li (2019)which also states that real earnings management has an impact on earnings persistence. One of the negative impacts of real earnings management on earnings persistence is cash flow of real earnings management. This is likely the result of excessive operating cash flow engineering by applying looser payment terms so that most of the sales values are still receivable in the longer term. The implementation of REM through increasing sales by providing payment-term leeway or increasing the value of cash discounts Cohen and Zarowin (2010) to make sales of non-current assets when the company is experiencing a decrease in earnings or manipulating discretionary expenses has more direct impact on earnings figures than making efforts to increase production to reduce fixed expenses (Chi et al., 2011).

Gunny (2010) shows that the use of REM has a beneficial impact on the future performance to improve market reputation. Thus, the implementation of REM with a reasonable amount carried out by changing the sales process or reducing the period cost can increase earnings persistence. The previous research has shown that REM negatively affects the future financial performance and value of a company (Cohen et al., 2008a; Graham et al., 2006). The results of the studies confirm that excessive REM abuse can result in a decrease in EP. Manipulating earnings by engineering cash flows or periodic expenses is an easier practice of real earnings management than manipulating real earnings through production expenditure (Khuong et al., 2022). However, the result of this research hypothesis testing which shows that real earnings management through production expenditures and discretionary expenditure has a positive effect on earnings persistence indicates that company managers in Indonesia are more inclined to do real earnings management by engineering production expenditures and discretionary expenditures.

The test result of hypothesis 2 assuming that accrual earnings management has a negative relationship with earnings persistence is consistent with the results of the previous research conducted by Khuong et al. (2022) and Meini and Siregar (2014) which state that accrual earnings management is negatively related to earnings persistence. This is in line with the Agency Theory which postulates that agents (managers) strive to meet personal earnings in various ways. One of the ways is by implementing accrual earnings management. This has an impact on the decline in earnings quality as a predictor of future earnings and cash flow (Tariverdi et al., 2012). Investment decisions made by investors will also be affected because their perceptions are contaminated by accrual earnings management practices undertaken by the management. This in turn will reduce confidence in the real earnings figures and will decrease the efficiency of the stock market (Khuong et al., 2022). On the other hand, management can also hide the real condition of the company earnings performance by implementing earnings management to bring the reported earnings figure closer to the that desired by the market. Even earnings management can also be used to increase earnings persistence (Subramanyam, 1996).

Managers implement AEM to meet their benefits, and this reduces the predictability of the future cash flows and the quality of financial information (Tariverdi et al., 2012). AEM also affects investors' perception which in turn influences the decision to buy the company shares. Consequently, this can bias the company real earnings status from the investors' point of view, thereby lowering the efficiency of financial markets. For example, when a company's earnings do not reach the desired earnings target, then the manager (agent) will use AEM to align the company's earnings with the market expectations and even increase the earnings persistence to hide the company's poor operating results (Subramanyam, 1996). This can lead to misunderstandings about the company's operating performance for some shareholders. Therefore, earnings manipulation using AEM is usually done when the accounting period closes and before the financial statements are issued. Companies also use more accrual operations when their shares are overvalued to maintain price stability for longer time which results in declining earnings quality.

The test result of hypothesis 3a which states that the size of BOD has a positive relationship with earnings persistence confirms the previous research conducted by Ahmed et al. (2006) and Hashim and Devi (2008) but contradicts the findings of the research conducted by Egbunike and Odum (2018), As well as Waheed and Malik (2019). Ahmed et al. (2006) and Hashim and Devi (2008) show that in the context of Indonesia and possibly also in other developing countries, the size of BOD turns out to have a positive impact on earnings persistence. The researchers suspect that the culture developed by the companies in developing countries influences the results although it is necessary to investigate further through an empirical study. Some previous research has suggested that the culture of the developing countries prioritizes togetherness instead of individual sense. Consequently, the larger the size of BOD, the more powerful and accurate the decision to support the existence or improvement of earnings quality or persistence.

The test result of hypothesis 3b stating that BOD independence has a positive effect on earnings persistence confirms the previous research conducted by Alves (2014), Dimitropoulos and Asteriou (2010), and Khuong et al. (2022) who insist that the existence of external and independent BOD members improves the quality of earnings information or earnings persistence. Nonetheless, this result also contradicts the finding of the research conducted by Egbunike and Odum (2018) as well as Waheed and Malik (2019) On the other hand, this finding is in line with the Agency Theory arguing that the existence of independent BOD members improves the quality of company activities and management monitoring (Jensen & Meckling, 1976) With this monitoring quality disclosure, it is expected that the interests of the diverse stakeholders can be met, and the value of the company can be increased through more transparent information due to the presence of BOD members who are independent (Nguyen et al., 2020).

In addition, independent directors allow a company to provide information about social and environmental operations to demonstrate that the company focuses not only on improving financial performance but also on improving social welfare. This result is in line with the Agency Theory and at the same time proves that independent BOD members owned by the sample companies in Indonesia have adequate competence to carry out the optimal monitoring roles so that their existence positively affects earnings persistence.

Conclusion

This study investigates the impacts of earnings management and BOD characteristics on earnings persistence in the companies listed at the Indonesia Stock Exchange. The results show that accrual earnings management (AEM) negatively affects earnings persistence, whereas real earnings management (REM) positively affects earnings persistence proxied by real earnings management production expenditure and discretionary expenditure. In addition, cash flow earnings management has a negative influence on earnings persistence. The results also indicate that the size of BOD and BOD independence have a positive effect on earnings persistence. An additional testing was also done by entering all independent variables of both earnings management and BOD to test the consistency of the results. Except for discretionary expenditure variable of real earnings management, all variables showed consistent results albeit the level of significance that was not always the same.

This study has a limitation because the data used are from 2016 to 2020 when the COVID-19 pandemic was onset. The effects of the pandemic might affect the data in 2020 although it is still at the early stage. Therefore, further research is needed and should take the impact of pandemics on the data used into account, or use the post-pandemic data when the economic conditions are already stable. The further research can also be done by dividing the research period into three categories, namely before the pandemic, during the pandemic, and after the pandemic.

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