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The discipline vs complement role of product market competition and market power: Evidence from real earnings management in an emerging market

Fauji Sanusi[1], Yeni Januarsi[2]*, Intan Purbasari[1] and Akhmadi[1]

Abstract: We empirically study the role of product market competition and market power, discipline vs complement role, on real earnings management (REM) in Indonesia. Using 1800 firm-year observations from 2012 to 2020, we discover that the competition has an inverse association with REM, implying that product market competition plays a role in disciplining managers from engaging REM. Despite the negative association observed, we do not have evidence of any significant relationship between market power and REM. These findings hold for a set of robustness tests. We also evidenced that the discipline role of competition in REM will be more pronounced after the Economic ASEAN Community (EAC) period and pre-COVID-19 as well as in small firms and income-increasing firms. Although we cannot include corporate governance variable in our model due to data constrain, to the best of our knowledge, the current study will be the first study examining the role of market competition and market power on REM by considering the external shock, EAC

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PUBLIC INTEREST STATEMENT

Yeni Janauarsi Following the establishment of the ASEAN Economic Community and the global COVID19 pandemic, market competition and market power, particularly in ASEAN's emerging markets, may have an impact on how managers display their profitability figures on financial statements. With the highest COVID19 prevalence and the largest emerging economy in ASEAN, Indonesia may suffer as a result of these characteristics. During this time, manager behavior may be impacted by market competition and market power. In order to get a new and up-to-date understanding of this issue in the emerging market, the current study expands the study of market environment and earnings management utilizing special characteristics from Indonesia's capital market. Our research also investigates on how emerging countries respond to exogenous shocks like COVID19 and AEC on the market environment and earnings management relationship. Our research contributes to the body of knowledge on product market competition, market power, and real earnings management.

period and COVID19, in emerging market such as Indonesia. This study implies that government and capital market regulators need to design and issue new laws or regulations that can encourage the internal governance structure to maximize the potential role of market power to mitigate REM.

Subjects: Asian Studies; Corporate Finance; Business, Management and Accounting

Keywords: market competition; market power; real earnings management; emerging market; discipline role; complementary role

JEL Codes: G30; G32; G34; M21

1. Introduction

Product market competition has been identified as an important external corporate governance mechanism that can benefit a variety of economic outcomes. In recent studies, it was found that product market competition impacts manager behavior in terms of engagement in earnings management (EM). In addition to market competition, market power can influence managers' misreporting of earnings. According to the EM literature, companies can use accrual earnings management (AEM) and/or real earnings management (REM) as channels to accomplish the reported earnings target (Onur Ibrahim & Yelkenci, 2018; Roychowdhury, 2006; Zang, 2012).

Prior research on the relationship between product market competition or market power and earnings management has focused on AEM and data from developed markets (Biswas et al., 2022; Hasan et al., 2022; Marciukaityte & Park, 2009; Markarian & Santalo´, 2014; Tinaikar & Xue, 2009). We know relatively little about the disciplinary effects of product market competition and market power on real activities manipulations in developing economies, such as Indonesia. Our research aimed to fill this empirical void. We focus on REM not only because few empirical studies have focused on the relationship between product market competition and market power to REM, making the relationship less clear, particularly in an emerging economy, but also because REM has a more severe future impact on firm profitability, making it more costly than AEM. As a result, addressing our investigation on real earnings manipulation is critical.

We present two opposing views on the relationship between product market competition and REM. On the one hand, prior research suggests that product market competition can discipline manager and has mechanism to mitigate EM behavior, lending support to disciplinary views. One of the possible explanations is because REM might be expensive under heavy competitive pressure. REM entails real operating procedures such as eliminating unnecessary spending and offering large sales discounts, which might harm a company's competitiveness (Shi et al., 2018). On the other hand, the argument that market competition can act as a supplement (supplement view) to management incentives is supported in the literature. Some research implies that rising market competitiveness can lead to organizational slack (Karuna, 2007), thereby intensifying managers' engagement in EM.

In addition to product market competition, the relationship between market power and REM may support the disciplinary or complement views. Market power refers to a firm's capacity to raise prices while having no effect on demand (Datta et al., 2011). Datta et al. (2011) suggested that when a firm has significant market power, it has greater liquidity and stable cash flow and is less likely to suffer from cash shortfall owing to its ability to set the price and deliver any cost shock to a customer, resulting in less need to manipulate reported earnings. Chang et al. (2019), who documented a similar conclusion, followed this line of reasoning. In this case, market power plays an important role in shaping REM (disciplinary views). However, it is possible that alternative arguments will emerge. One could argue that when enterprises have low market strength but high expectation from shareholder and capital market, they are more likely to face increased pressure, driving them to engage in EM (complement views).

This study investigates whether the disciplinary views or complement views will be claimed on the relationship between product market competition and market power on managerial behaviors to manipulate earnings target *via* real activities manipulation in Indonesia. Indonesia provides interesting characteristics to investigate the market environment and firms' efforts to mask reported earnings. Indonesia's capital market documents a high level of EM, with an aggregate EM score of 18,3, higher than those of Malaysia and the Philippines (Christian et al., 2003). The strength of investor protection in Indonesia was only 5,7 and 5,3 out of 10 in 2017 and 2016, respectively,[1] which means Indonesia suffers from low investor protection. A country with a weak protection for investors will be more likely to engage in EM due to more significant private control benefits. Concerning market competition, Indonesia is one of the ASEAN members that joined in the ASEAN economic community (AEC) starting in 2015. AEC opens the border for foreign direct investment and may cause more competition and changes in market power among firms in an industry. More interestingly, in recent years, Indonesia experienced severe effects of the COVID-19 pandemic. It was recorded as the country with the highest number of COVID-19 cases in ASEAN, which cause high economic uncertainty and may lead managers to engage more in EM, as suggested by previous studies (Al-Thaqeb et al., 2020; Roma et al. 2021). Therefore, Indonesian data was used in this study to examine product market competition, market power, and EM to provide fresh insight from an emerging economy perspective.

Our research makes several contributions to the literature on product market competition, market power, and REM. First, we contribute to the REM literature by demonstrating how market competition can discipline managers who use REM. We found a negative association between product market competition and REM, supporting the disciplining view of product market competition on managers' misreporting of earnings through real activities manipulation. Second, the current study contributes to the product market competition and market power literature from the perspective of an emerging market. We seek to complete earlier studies, such as those by Chang et al. (2019) and Datta et al. (2011) and analyze how product market competition and market power may affect REM while considering the COVID-19 pandemic and the pre- and post-AEC period. We believe that this approach will provide a more complete view of how the market environment influences REM behavior, particularly in an emerging economy. Third, we incorporate data from the COVID-19 pandemic and AEC, and as a result, we contribute to the literature on the emerging market by demonstrating that the external shocks, particularly in Indonesia, has an essential effect on the link between market competition and REM. To the best of our knowledge, this is the first study to investigate the possible effect of the COVID-19 pandemic and AEC on the relationship between market environment and REM in emerging economy, thus providing fresh finding and insight on how external shocks play an essential role for capital market, firms, and regulators.

The remainder of this paper is organized as follows. Section 2 presents the literature review and hypotheses development. The research design incorporating sample formation, measurement of primary and control variables (CVs), and model specification is presented in Section 3. Section 4 presents the empirical findings, whereas Section 5 presents the discussion. Section 6 concludes the paper.

2. Related literature and hypotheses development

2.1. Product market competition and real earnings management (REM)

Economics literature points out that market competition is an essential mechanism for efficient resource allocation and exerts a disciplining effect on managerial inefficiencies (Meyer and Schmidt, 1997; Vickers, 1995). The propensity of managers to engage in EM can be viewed as managerial inefficiencies because EM can cause inefficiencies in resource allocation (Bzeouich et al., 2019; Liu et al., 2021; McNichols & Stubben, 2008). One of the explanations why market competition can discipline managers engage in EM is because higher market pressure causes firms to disclose more information, making it easier for shareholders or investors to compare firms in the

industry in terms of their performance and that of the manager. Thus, competition pressure causes the manager to be more concerned about his/her performance and exert efficient efforts and policies that align with shareholders' interest, dampening the incentive to present misrepresenting financial reports. From the perspective of agency theory, the linkage between market environment and EM can rise as information asymmetry causes managers to engage in EM and needs to be alleviated by creating a suitable monitoring mechanism. When product market competition plays a role in external monitoring for corporate governance, the competition will force and discipline a firm's manager to use devices for efficient monitoring and, thus, mitigate the manager's effort to mask the accounting number. Therefore, according to this theory, product market competition acts as a disciplinary mechanism (Babar & Habib, 2021) and a substitute for managerial incentives, promoting an inverse relationship between product market competition and EM.

Allen and Gale (2000) suggested that competition between firms is a more effective disciplinary mechanism than either internal governance or external monitoring mechanisms. Extant empirical studies provide evidence and explanation on the disciplinary mechanism of product market competition (Laksmana & Yang, 2014; Shi et al., 2018). For instance, Laksmana and Yang (2014) found that low market competition causes managers to engage more in AEM and REM, thus supporting the inverse association between competition and EM. They pointed out that product market competition motivates managers to act in the best interest of shareholders, such as reducing the private control benefit. In addition, because market competition can be used to discipline managers, it can also play governance role and cause firms to provide disclosure to the capital market and principles, thus reducing information asymmetry and enabling them to monitor managerial activities effectively, limiting managers' engagement in EM (Burks et al., 2018; Majeed & Zhang, 2016). Product market competition can also be used to discipline managers engaging in REM because it is more likely to penalize managers involved in any deliberate distortion of earnings, making it costly for managers to engage in REM, as pointed out by Shi et al. (2018), and forcing them to provide more truly and transparent information about the firm's financial performance. This condition may decrease the motivation to engage in EM.

From the practice point of view, the disciplinary role of product market competition can reduce REM as it provides a more effective mechanism to reduce the propensity of a manager to engage in REM. REM operations include offering steep discounts to enhance current period sales, lowering discretionary expenses, and having overproduction, which may destroy a firm's competitiveness. For instance, when a company reduces its discretionary expenditures, such as R&D, it loses its ability to innovate and finds it difficult to maintain its competitive position. In the worst-case scenario, the firm may not survive in the industry, and its future performance may suffer. When a company overproduces, too much inventory storage can increase the cost of holding inventory and reduce its quality, forcing the company to sell at a discounted price and lowering the profit margin. In a competitive market, the prospect of a competing product replacing obsolete inventory with a more contemporary technology can increase firm risk. Overall, because of market competition, managers that engage in REM face an unfavorable environment because the practice is costly and dangerous. On the other hand, product market competition can intensify agency problem and induces REM, which supports the view that market competition act as a complement for managerial incentives (Datta et al., 2011; Mitra & Cready, 2005). One reason is that as competition pressure increases, the profit level decreases, and firms suffer from losses. Such losses can also affect the stock price, putting more pressure on the firms operating in a competitive industry to boost their earnings. REM is likely to become a promising channel to achieve the desirable earning target to maintain reported earnings at the desirable level. Shleifer (2004) supported this argument and posited that a harsh competitive environment puts pressure on managers and gives managers more incentives to mask the reported earnings to influence the stock price.

In addition, a more significant competitive pressure may lead to a higher level of REM because of the managers' career concerns (Hermalin & Weisbach, 2012). The managers' career may be threatened as lousy managerial performance can lead to liquidation, and the firm might change

the CEO or cause him to lose his job. To maintain or even increase the career level and managerial performance, the manager can mask accounting numbers to achieve the earning target. Therefore, managers will more likely engage in REM in a high market competition environment to maintain their career. In line with this contention, Karuna (2007) showed that firms in more competitive industries monitor their CEOs more closely than those in less-competitive sectors, aggravating the problem regarding career. Shi et al. (2018) also support this finding. Finally, market pressure causes managers to misstate the earning number to protect the proprietary information from competitors (Ali et al., 2014; Karuna, 2007; Verrecchia & Weber, 2006).

Overall, the theory and empirical evidence provide conflicting arguments and mixed findings. Therefore, we propose the following alternative hypotheses:

Hypothesis 1A. *Firms facing greater competitive pressure from product markets will be associated with greater REM*

Hypothesis 1B. *Firms facing greater competitive pressure from product markets will be associated with lesser degree of REM*

2.2. Market power and real earnings management (REM)

Previous market power studies suggested that pricing power has an essential effect on managerial incentives and decisions (Datta et al., 2011; Majeed & Zhang, 2016; Mitra & Cready, 2005; Sun et al., 2021). Market power refers to the firms' ability to set higher prices with no material impact on demand (Datta et al., 2011). Despite the vital role of market power in managerial behavior, few empirical papers examined the disciplinary role (substitute effect) or complementing role of market power on REM. In addition, the existing empirical finding on this relationship indicates two opposing views.

On the one hand, pricing power exacerbates the manager's engagement in accounting number misrepresentation through REM, implying that market power serves a complementing role in managerial incentives when REM is used. The proprietary cost theory provides a possible explanation. Following this theory (Verrecchia, 1983; Wagenhofer, 1990), a firm will limit voluntary disclosure to the capital market because of proprietary cost, such as the cost of deriving from disclosing information. Firms with a pricing power may face higher proprietary costs from the competitors' counteractions in response to voluntary disclosure, such as disclosed sales forecast information. The potential costs derived from competitor counteractions cause high- market power firms to be reluctant to disclose their disclosure, protect their private information from their competitor and mislead the market by engaging REM to maintain a competitive advantage. Chin-Lung et al. (2012) evidenced this claim. Dedman and Lennox (2009) and Ellis et al. (2012) supported this argument and provided evidence of firms being more reluctant to disclosing historical sales information as proprietary costs increase.

On the other hand, market power may also alleviate managerial incentives to manipulate real operation activities, which is considered as the force that can discipline managers and support the negative association between pricing power and REM. Firms with substantial market power tend to have a unique product that distinguishes them from other firms and can set a high price because of lower product substitutability. Switching to other firms may be hard for a customer because the product is not a substitute product. Firms will keep receiving orders from buyers, thus earning higher revenues and having less-volatile cash flows. In this case, a firm with a high pricing power will be less likely to engage in REM as it believes that it has stable earnings and cash flow. Another possible explanation is that firms with high market power can satisfy the market expectation regarding the reported earnings and financial performance. However, firms with low market power will be more difficult to achieve the market expectation due to its volatile earnings and cash flows.

Thus, high market power firms will have fewer incentives to manipulate the reported earnings. Datta et al. (2011) conducted the first research on the relationship between market power and discretionary earnings manipulation. They found that companies with lower market power engaged in greater discretionary accruals. In addition, firms with weak market power are more likely to manipulate earnings to meet market expectations on the firm's stock, and a negative association occurs. Their results also implied that higher market power prompts managers to limit the disclosure of private information to the market and lessen the quantity of information obtained by a competitor. In addition, concerns on managerial career outweigh the disciplinary impact of competition. Mitra and Cready (2005) discovered that although firms with greater market power engaged in less REM, these firms still used accrual-based EM, implying inconsistent evidence regarding the role of market power in EM. In recent years, Chang et al. (2019) that higher market power tends to cause managers to engage in AEM, thus not supporting the view that market power can discipline managers from inflating their company's earnings.

To sum up, whether market power serves as a substitute and can discipline managers, or as a complementary role and provides managerial incentives for engaging REM, the proceedings studies show an inconsistent result. Therefore, we propose the following alternative hypotheses:

Hypothesis 2A. *Firms facing greater* market power *will be associated with **greater** degree of REM*

Hypothesis 2B. *Firms facing greater* market power *will be associated with **lesser** degree of REM*

3. Research design

3.1. Sample selection
We started the sample selection process by including all publicly listed firms on the Indonesia Stock Exchange (IDX) and excluding the financial and banking industries due to different characteristics and regulations influencing the EM measurement. During 2012–2020, initially, we documented 4,320 firm-year observations represented by 480 firms. We required at least eight firms for each four-digit GSIC code to be included as our sample and the abnormal level of REM to be calculated (Doukakis, 2014). Furthermore, we deleted firm years with insufficient data to calculate all variables we need in the regression model—finally, the above criteria selection yield in 1800 firm-year observation represented by 200 firms.

3.2. Variable measurement

3.2.1. Measuring *product market competition*
To measure *product market competition*, we used the Herfindahl–Hirschman Index (HHI). The HHI is calculated by squaring the market share or each competing firm and then summing the resulting numbers. The HHI is expressed as follows:

$$HHI = \sum_{i=1}^{N} \left(\frac{Xi}{X}\right)^2$$

where X_i denotes the sales of firm *i*, and *X* is the total sales of all firms in the industry. The HHI can be calculated using either all firms or those based on sales of the largest four companies in each industry (Cremers et al., 2008). In this study, we chose the latter as the measure for market competition.

3.2.2. Measuring market power
We used the adjusted Lerner Index (LI) to measure market power according to the method described by Datta et al. (2011). We calculated the adjusted Lerner Index (Adj_LI) as follows:

$$Adj_{Li} = LI_i - \omega_i.LI_i \tag{1}$$

where:

$$\omega_i = \frac{Sales_i}{\sum_{i=1}^{N} Sales_i} \tag{2}$$

$$LI = \frac{Sales + COGS + SG\&A}{Sales} \tag{3}$$

where $biLbiI_{bii}$ denotes the Lerner Index as defined in Equation (3) for firm i, and $bi\omega_{bii}$ is the proportion of sales of firm i to the total industry sales and calculated as in Equation (2). N is the total number of firms in the industry; Sales, a firm's net sales; COGS, cost of goods sold; and SG&A, sales and general and administrative expenses. The adjusted LI ranges from 0 to 1 with larger values representing greater market power. Firms in a perfectly competitive market have an adjusted LI equal to 0, which implies the nonexistence of market power.

3.2.3. Estimation of REM

To estimate a firm's REM activity, we used the model developed by Roychowdhury (2006), which has been widely adopted in the literature (Bill et al., 2016; Chin-Lung et al., 2012; Doukakis, 2014; Zang, 2012). The REM activity entails abnormal cash flows and discretionary expenses, such as R&D, advertising expenses, and SG&A. Following Roychowdhury (2006), we measured REM using abnormal cash flows, discretionary expenses, and abnormal production cost. First, we estimated the following regressions using data for firms in the same industry classified by four-digit GSIC.

$$\frac{CFO_t}{Asset_{t-1}} = \alpha_1 \frac{1}{Asset_{t-1}} + \alpha_2 \frac{Rev_t}{Asset_{t-1}} + \alpha_3 \frac{\Delta Rev_t}{Asset_{t-1}} + \varepsilon \tag{4}$$

$$\frac{DisExp_t}{Asset_{t-1}} = \alpha_1 \frac{1}{Asset_{t-1}} + \alpha_2 \frac{Rev_{t-1}}{Asset_{t-1}} + \varepsilon \tag{5}$$

$$\frac{Prod_{i,t}}{Assets_{i,t-1}} = \alpha_1 \frac{1}{Asset_{i,t-1}} + \alpha_2 \frac{Sales_{i,t}}{Asset_{i,t-1}} + \alpha_3 \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + \alpha_4 \frac{\Delta Sales_{i,t-1}}{Asset_{i,t-1}} \varepsilon_{it} \tag{6}$$

CFO_t indicates cash flows from operations in year t; Rev_t, is the change in revenues over year t; and $DisExp_t$ indicates the discretionary expenditures. We calculate the discretionary expenditure as sum of R&D, advertising, and SG&A expenses. $Prod_{it}$ refers to the sum of cost of goods sold (COGS) and change of inventory during the year (Cohen & Zarowin, 2010; Roychowdhury, 2006). $Sales_t$ indicates sales in year t; $\Delta Sales_t$ refers to the change in sales over year t. All variables are deflated by total assets at the end of the previous year. The residuals from Equation (4) measure firm i's abnormal cash flow. Following Cohen and Zarowin (2010) and Zang (2012), we multiplied the residual by negative 1 to ensure that a higher value indicates greater REM activity. Similarly, the negative of residuals from Equation 5 is used as the measure of abnormal discretionary expense, with a higher value indicating greater REM activity. We also use the residual from equation (6) as firm i's abnormal production cost. In addition, we calculated REM by summing up the three of abnormal cash flow, discretionary expenses, and production cost (Bill et al., 2016; Cohen & Zarowin, 2010; Sohn, 2016; Zang, 2012). For the robustness test, we used absolute values because managers may engage in REM by using both income-increasing and income-decreasing EM.

3.3. Model specification

The following estimation will be used to test the proposed hypothesis:

$$REM_{i,t} = \beta_0 + \beta_1 PMC_{i,t} + \beta_2 CV_{i,t} + \varepsilon_{it} \tag{7}$$

$$REM_{i,t} = \beta_0 + \beta_1 MP_{i,t} + \beta_2 CV_{i,t} + \varepsilon_{it} \tag{8}$$

$$REM_{i,t} = \beta_0 + \beta_1 PMC_{i,t} + \beta_2 MP_{i,t} + \beta_2 CV_{i,t} + \varepsilon_{it} \qquad (9)$$

Equation (7) empirically tests the effect of product market competition and REM. In this model, we regress REM on product market competition and several control variables (CVs). Equation (8) examines the impact of market power and REM. We regress REM on market power and a set of CVs. In Equation (9), we include all variables into one model to examine the consistency of result when we consider all variables. Thus, we regress REM on product market competition, market power, and all CVs. We expect that coefficient β_1 inEquations (7) and (9) will be statistically significant to support the first hypothesis and provide consistent support for the findings. We also hope for significant results for coefficient β_1 in Equation (8) and β_2 in Equation (9) to support our second hypothesis.

The regressions include several CVs that might influence REM based on prior studies. We include the firm's size (SIZE) because larger firms have more political costs, as pointed out by the political cost hypothesis in the positive accounting theory and are more likely to engage in EM. Also, large firms tend to switch from AEM to REM (Januarsi & Yeh, 2022; Onur Ibrahim & Yelkenci, 2018). Size is measured using the natural logarithmic of total assets. Leverage (LEV), calculated as total liability divided by the total asset, is also included in the regression because firms with a high leverage are more likely to boost earnings to avoid covenant violations (Cohen & Zarowin, 2010). We control for firm growth (GROWTH) proxied by sales growth because a growth firm can face greater pressure to manipulate earnings from the capital market (Lee et al., 2006). We calculate sales growth as the change in Sales scaled by 1-year lagged sales. Following Cohen and Zarowin (2010) and Laksmana and Yang (2014), we control for the firm's litigation risk as EM is subject to litigation punishment (Cohen & Zarowin, 2010). Because REM less likely to be detected, a greater litigation risk should increase REM. Litigation (*LIT*) is defined as a dummy for litigious industries, such as biotech, computer, electronics, and retailing (Cohen & Zarowin, 2010). Claim (CLAIM) is included as a CV as it may affect the firm to avoid negative earnings, thus inducing REM (Bowen et al., 1995; Laksmana & Yang, 2014). It is proxied by labor intensity, which is calculated as 1 minus the ratio of gross PPE to the total assets at the end of the fiscal year. We also include the adoption of International Financial Reporting Standards (IFRS) because the implementation of IFRS can improve disclosure, transparency, and comparability, decrease information asymmetry, and reduce REM, as suggested by previous studies (Doukakis, 2014; Hussein et al., 2019; Ipino & Parbonetti, 2017). IFRS is defined as a dummy variable equal to 1 for a period after 2015 and 0 otherwise. We also include ROA in our model to control profitability that may influence REM (Cohen & Zarowin, 2010; Gunny, 2010; Haw et al., 2004; Kothari et al., 2005; Sohn, 2016). The regressions included firm and year fixed effects to control for heterogeneity across firms and time.

4. Empirical results

4.1. Descriptive statistics and correlation statistics

Table 1 presents the descriptive statistics, and Table 2 shows the correlation matrix between variables. As indicated in Table 1, the mean and median market power values are 0.1839 and 0.1749, respectively, with standard deviations of 0.6579, indicating that market power significantly varies. The large standard deviations in our sample are most likely caused by our sample operating in an emerging economy with low litigation and lax regulation. These characteristics allow high-market power firms to set the desired price at a high level and dominate the industry's setting price when other firms cannot follow the high price level. The mean value of product market competition, as proxied by the HHI index, is 0.2769, with a standard deviation of 0.3224, implying that product market competition is fairly distributed. The low mean value also shows that our sample has a low market concentration index, indicating a high competition level (Tang & Chen, 2020). The mean HHI value is comparable to those found in the studies by Chang et al. (2019) and Laksmana and Yang (2014). The mean value of REM is 0.3552, with a standard deviation of roughly 3,6493, indicating that our sample is highly variable. However, the mean value of REM in the

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Table 1. Descriptive statistics						
	N	**min**	**max**	**Mean**	**Median**	**Std. Dev.**
MP	1800	−22.0514	.9999	.1839	.1749	.6579
PMC	1800	.0693	2.8501	.2769	.1814	.3224
REM1	1800	−15.2253	19.2406	.3552	.2026	3.6493
MTB	1800	−15.07	26.19	1.5169	.81	4.5318
GROWTH	1800	−.82	2.71	.0394	.01	.4192
LEVERAGE	1800	−.09	7.49	.4237	.25	.9068
SIZE	1800	8.57	16.21	12.4186	12.47	1.6533
ROA	1800	−34.7	43.22	3.9617	3.145	10.1532
CLAIM	1800	−110.81	1.2607	.2398	.3903	2.7344

This table reports summary statistics for our main variables and non-dummy control variables. The statistics are based on a maximum of 1800 firm-year observations from the period 2012–2020. MP is the measure of market power using adjusted Lerner Index, while PMC is product market competition measurement. REM1 is the measure for real earnings management. **SIZE** is measured using the natural logarithmic of total assets; **Leverage (LEVERAGE) is** calculated as total liability divided by the total asset; **firm growth (GROWTH)** proxied by sales growth, is calculate as the change in sales scaled by 1-year lagged sales; **Claim (CLAIM) is** proxied by labor intensity, which is calculated as 1 minus the ratio of gross PPE to the total assets at the end of the fiscal year.

current study is larger than that in the study by Laksmana and Yang (2014), supporting that of Christian et al. (2003), who claimed that Indonesia has a high level of EM.

Table 2 presents the correlation matrix between variables in our model. Product market competition and REM have a positive correlation and are significant at 10%, whereas the correlation between market power and REM is negative with a coefficient of −0,010 and is insignificant. This correlation result does not account for other factors influencing REM. Therefore, we cannot rely on this univariate result. Regarding the CVs, we found that GROWTH, SIZE, LEV, and ROA have a significant relationship, whereas other CVs do not document meaningful results. In the next section, we will examine the association between product market competition and market power with REM after controlling for other factors affecting REM (multivariate regression).

4.2. Main result
We used Equations (7) to (9) to test the relationship between product market competition and REM, and the results are presented in Table 3. Column 1 shows the regression with Equation (7), which covers product market competition and the CVs. Column 3 shows the regression with Equation (9), which combines product market competition, market power, and CVs into a single model. We used pooled ordinary least squares regressions with standards error clustered by firm and year (Petersen, 2009). The HHI coefficient in Column 1 shows a negative value (−1.2179) and is significant at the 5% level. Even when all of the variables in Column 3 are combined, the results remain similar, implying that product market competition can discourage managers from engaging in REM and that firms operating in highly competitive environments tend to mitigate the REM behavior. Our findings confirm hypothesis 1b and are consistent with our prediction that firms under higher competitive pressure will have a lower degree of REM. Our findings are also similar with those of Mitra and Cready (2005) and Laksmana and Yang (2014).

We reported the main effect of market power on REM in Columns 2 and 3. Column 2 presents the regression of REM on market power and several CVs. As shown in Column 2, the coefficient of market power is negative (−0,0334). However, we cannot find a significant association with REM. We also found a similar result in Column 3 when we combined all variables into one model, suggesting that market power does not affect the manager from

Table 2. Correlation matrix

Variables	(MP)	(PMC)	(REM1)	(MTB)	(SG)	(LEV)	(SIZE)	(ROA)	(LIT)	(CLAIM)	(IFRS)
MP	1.0000										
PMC	−0.0170	1.0000									
REM1	−0.0100	0.076*	1.0000								
MTB	0.0260	−0.0560	−0.0350	1.0000							
GROWTH	0.073*	−0.0390	0.0360	0.0200	1.0000						
LEVERAGE	0.0000	−0.065*	−0.0420	0.085*	0.0030	1.0000					
SIZE	0.082*	−0.0360	−0.0280	−0.0330	0.0240	0.089*	1.0000				
ROA	0.082*	−0.074*	−0.108*	0.149*	0.175*	0.090*	0.144*	1.0000			
LIT	0.0460	−0.0560	0.0170	−0.0120	0.0210	−0.073*	−0.0280	0.078*	1.0000		
CLAIM	0.0060	−0.0280	−0.0060	−0.0060	−0.154*	−0.0040	−0.0010	−0.0430	0.0340	1.0000	
IFRS	−0.0470	−0.0290	0.0310	−0.066*	0.0260	0.0110	0.0550	−0.144*	0.0000	0.0120	1.0000

This table presents the correlations for all variables used in the model. All continuous variables are winsorized at 1% and 99% percentiles. MP is the measure of market power using adjusted Lerner Index, while PMC is product market competition which measured by HHI index. REM1 is the measure for real earnings management. **SIZE** is measured using the natural logarithmic of total assets; **Leverage (LEVERAGE) is** calculated as total liability divided by the total asset; **firm growth (GROWTH)** proxied by sales growth, is calculate as the change in sales scaled by 1-year lagged sales; **Claim (CLAIM) is** proxied by labor intensity, which is calculated as 1 minus the ratio of gross PPE to the total assets at the end of the fiscal year. Firm's litigation risk (LIT) is defined as a dummy for litigious industries. **The adoption of International Financial Reporting Standards (IFRS) is** defined as a dummy variable equal to 1 for a period after 2015 and 0 otherwise. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

engaging in misreporting of earnings through real activities. In other words, we cannot support our second hypothesis.

As for the CVs, Table 3 shows that LITIGATION and CLAIM are both significant in all regression models, with LITIGATION having a negative coefficient and CLAIM having a positive coefficient. Other CVs, however, did not yield significant results.

4.3. Endogeneity test

Despite the fact that we incorporated a firm fixed effect in our previous model to alleviate the endogeneity problems caused by the omitted variable (Chi, 2005), we conducted an additional test to examine the possible impact of endogeneity by using the lag value of independent variables (Miguel et al., 2004; Nagar & Rajan, 2001; Sohn, 2016). Lagged independent variables are related with simultaneity, where the explanatory and dependent variables are concurrently determined (Sinkin et al., 2008). The endogeneity test result utilizing the lag value is presented in Table 4. We found consistent findings in each model, just as we did in the baseline result

Table 3. Baseline result			
	(1) **REM1**	**(2)** **REM1**	**(3)** **REM1**
PMC	−1.2179**		−1.2189**
	(.5765)		(.5766)
MP		−.0334	−.0342
		(.0363)	(.0362)
MTB	−.0046	−.0039	−.0045
	(.0257)	(.0259)	(.0257)
LEVERAGE	.1486	.1523	.1485
	(.1409)	(.1411)	(.1409)
SIZE	−.188	−.1975	−.1862
	(.2476)	(.2485)	(.2481)
GROWTH	.0576	.0488	.061
	(.2331)	(.2355)	(.2343)
LITIGATION	−2.2927**	−2.3836**	−2.2746**
	(.9725)	(.9804)	(.9767)
CLAIM	.0286***	.0281***	.0287***
	(.0103)	(.0103)	(.0103)
IFRS	−.5088	−.4932	−.5166
	(.4139)	(.41)	(.4143)
ROA	−.0014	−.0012	−.0016
	(.0152)	(.0153)	(.0153)
cons	4.4684	4.1567	4.465
	(3.3877)	(3.375)	(3.3892)
Observations	1800	1800	1800
R-squared	.4556	.4548	.4557

This table examine the association between product market competition and market power with REM using pooled ordinary least square standards error clustered by firm dan year with 1800 firm-year observations. All models including firm-fixed effect dan year fixed-effect. Standard errors are in parenthesis. Firm's litigation risk (*LIT*) is defined as a dummy for litigious industries. **The adoption of International Financial Reporting Standards (IFRS) is** defined as a dummy variable equal to 1 for a period after 2015 and 0 otherwise. All other variables are the same as defined in Table 1. *** $p < .01$, ** $p < .05$, * $p < .1$

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Table 4. Endogeneity test

	(1) REM1	(2) REM1	(3) REM1	(4) REM1	(5) REM1	(6) REM1	(7) PMC	(8) MP
PMC_lag	-.3353*		-.3366*					
	(.1904)		(.1905)					
MP_lag		-.0213	-.0256					
		(.0425)	(.0412)					
PMC				-1.2179**		-1.2189**		
				(.5057)		(.506)		
MP					-.0334	-.0342		
					(.0449)	(.0448)		
REM1							-.0014	-.0015
							(.001)	(.0025)
MTB	-.0041	-.004	-.0041	-.0046	-.0039	-.0045	-.0006	.0024
	(.0256)	(.0255)	(.0256)	(.0252)	(.0254)	(.0252)	(.0004)	(.0035)
LEV	.1533	.155	.154	.1486	.1523	.1485	-.0029	-.0012
	(.1561)	(.1566)	(.1565)	(.1487)	(.14488)	(.1487)	(.0028)	(.011)
SIZE	-.205	-.199	-.2051	-.188	-.1975	-.1862	.009	.0512
	(.2569)	(.2596)	(.2569)	(.2587)	(.26)	(.259)	(.0063)	(.059)
GROWTH	.0502	.0454	.05	.0576	.0488	.061	.01	.0984
	(.2443)	(.2435)	(.2443)	(.2431)	(.2466)	(.2461)	(.01)	(.0766)
LIT	-2.4752**	-2.4056**	-2.4824**	-2.2927**	-2.3836**	-2.2746**	.0858***	.5256**
	(.9984)	(1.0105)	(.9974)	(1.0066)	(1.0166)	(1.0111)	(.0239)	(.2497)
CLAIM	.0285***	.0281***	.0285***	.0286***	.0281***	.0287***	.0005	.0019
	(.01)	(.0101)	(.01)	(.0101)	(.0101)	(.0101)	(.0004)	(.0018)
IFRS	-.4923	-.4895	-.4978	-.3517	-.3192	-.3539	-.0197	-.2292
	(.4251)	(.4248)	(.4248)	(.4484)	(.4447)	(.4486)	(.021)	(.1613)

(Continued)

Table 4. (Continued)

	(1) REM1	(2) REM1	(3) REM1	(4) REM1	(5) REM1	(6) REM1	(7) PMC	(8) MP
ROA	-.0015	-.001	-.0015	-.0014	-.0012	-.0016	-.0003	-.0051
	(.0155)	(.0154)	(.0155)	(.0154)	(.0155)	(.0155)	(.0003)	(.0064)
COV19				-2.1943	-2.1862	-2.1951		
				(1.3385)	(1.333)	(1.3391)		
WUIMED				13.7796	13.6994	13.7823		
				(8.3524)	(8.2978)	(8.3556)		
GDP				-.2345	-.2315	-.2339		
				(.1459)	(.1442)	(.1459)		
Cons	4.3604	4.161	4.3677	4.6423	4.3197	4.6351	.2587***	-.1007
	(3.5071)	(3.55)	(3.5062)	(3.5521)	(3.5611)	(3.5529)	(.0783)	(.7749)
Observations	1799	1799	1799	1800	1800	1800	1800	1800
R-squared	.4555	.4547	.4555	.4556	.4548	.4557	.9222	.2611

This table presents the endogeneity tests using various method. Pooled ordinary least square standards error clustered by firm and year was use in every model. All regression models use firm-fixed effect and year fixed-effect. Except columns (4)—(6), all regressions do not include country factors. All other variables are the same as defined in Table 1. Standard errors are in parenthesis. *** $p < .01$, ** $p < .05$, * $p < .1$

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We also investigated the probability of endogeneity by including country factors in our regression model. Excluding the country determinants from the regression model may result in an omitted variable issue. We included three country factors, such as economic uncertainty and GDP, as well as exogenous shocks, such as the COVID-19 pandemic. Column 4, 5, and 6 in Table 4 show the results after incorporating the country factors. The outcome is the same as in Table 3.

Finally, to test the reverse causality directly (Sohn, 2016), we regress product market competition on REM and market power on REM. The result is presented in Table 4 column 7 and 8. Neither the coefficient on REM in each column are statistically significant. In summary, the endogeneity tests indicate that the key findings in Table 3 are resilient when the endogeneity of market competition and market power variables is controlled for.

4.4. Additional test

4.4.1. Income-increasing vs income-decreasing
Our baseline result does not account for specific conditions where managers can choose the EM pattern. Previous research (Roychowdhury, 2006) demonstrated that the manager has more incentive to engage in income-increasing EM to avoid reporting loss, which is in line with the bonus plan hypothesis. However, another group of researchers found that when firms face extremely bad earnings news, they tend to manipulate income-decreasing earnings by underreporting the earnings (Chin-Lung et al., 2012) and taking *a big bath*, which is in line with the political cost hypothesis. Chin-Lung et al. (2012) and Ipino and Parbonetti (2017) also examined upward and downward EM in their empirical research to show that firms have incentives to manage the reported earnings.

In other words, taking pattern by using either income-increasing or income-decreasing, managers have the motivation to engage in EM. When a manager chooses to engage in REM, he/she realizes that REM is a perfect strategy to achieve the earning target by using an income-increasing pattern. It is because REM techniques, such as giving abnormal discounts, overproduction, and cutting discretionary expenses, will improve the earnings target for the current period. Compared with income-decreasing firms, the disciplining effect of product market competition and market power will likely be evidenced in income-increasing firms. Therefore, we predicted that the coefficient of product market competition and market power will be more pronounced in income-increasing subsamples than income-decreasing ones.

To address this issue, we divided our sample into two subsample groups: the income-increasing and income-decreasing groups. We use the positive and negative value from REM1 to determine whether firms fall under an income-increasing or income-decreasing subsample. Firms with positive REM1 will be classified as an income-increasing subsample, whereas the negative REM1 will be classified as an income-decreasing subsample.[2] Next, we reused Equations (7) to (9), and the results details are available in the supplement document. From Columns 1 and 3, the income-increasing group shows a negative coefficient and is significant at level 10%, whereas Columns 4 and 6 from the income-decreasing group do not offer significant results. This result supports our prediction that the disciplining effect of product market competition and market power will be more likely evidenced in income-increasing firms.

4.4.2. Small vs large firms
Previous studies have demonstrated that although market competition benefits firms by promoting efficiency and reducing managers' engagement in EM, product market competition and MP can also cause negative earnings. Empirical studies documented that competitive pressure is more pronounced among small and medium-sized companies (Vos et al., 2007). However, large companies can experience the negative effect of competition. Geroski (2004)

provided evidence that product market competition can also negatively influence large companies. Thus, in the product market competition literature, which companies benefit more when they operate in a more competitive industry is an empirical question. To address this issue, we further examined whether the relationship between product market competition, market power, and REM will be more pronounced in large or small firms.

We predicted that the association between product market competition, market power, and REM will be more evident in small than in large companies because small companies are more likely to have poor corporate governance mechanisms and low-quality monitoring. Moreover, small firms in Indonesia are more likely to have a lousy quality governance mechanism compared with large firms. For instance, most small firms in Indonesia hire external auditors from small audit firms or non-specialist industry auditors. Contrarily, large firms are more likely to hire BIG 4 and industry specialist auditors. This condition provides insight into how low the governance mechanism is in small firms. Competition pressure is considered an external monitoring mechanism that can discipline managers and act as a potential tool to limit REM for small companies. Thus, small firms will experience more benefits from operating in a highly competitive market. On the other hand, large companies are less likely to be affected by the competitive environment. It is because large companies are more likely to have a stronger internal control system and effective corporate governance mechanisms; thus, the benefit of having external monitoring will be less pronounced in large firms.

We further examined this concern. We divided our sample into 10 decile groups based on the natural logarithm of total assets. The group that fell under the 1st to 5th deciles was considered as small firms, whereas the group that fell under the 6th to 10th deciles were considered as large firms. Then, we repeated the preliminary test on each subsample group. The results details are available in the supplement document. Result from the small firms sub-sample using equation (9) shows that product market competition has a negative coefficient (−1,2936) and is significant at level 5%, but we do not evidence significant findings for the large firms. Again, this result supports our prediction that product market competition negative effect on REM is more evident in small firms.

4.4.3. Accounting for pre- and post-AEC

The AEC began to be implemented in the ASEAN region in 2015. According to the AEC blueprint from the ASEAN Secretariat, the blueprint has four pillars, and we estimated that implementing these pillars will influence the competitive environment in Indonesia. By implementing AEC, not only more trading activities (customer goods and services) and investments flow can enter the Indonesian market but also the competition between companies and industries may become tighter because of more companies entering the industry and softer policies implemented in the industry. In addition, having the competition policy and law which implemented in ASEAN member states (AMS) after AEC period, such as ASEAN regional guidelines on competition policy and law and AEC Blueprint 2015, cause competition environment become a highly competitive economic region. Consequently, product market competition may become an effective external monitoring mechanism and support the discipline role of market competition in both periods, the post- and Pre-AEC. External monitoring will be tighter in the post-AEC because product market competition together with other competition law and policy can act as a strong external corporate governance mechanism and managers are more likely to mitigate the REM behavior in the post-AEC, which will lead to pronounced effect of product market competition on REM in the post-AEC period. However, it is also possible that product market competition can become superior external monitoring in the pre-AEC because market will rely on product market competition in the pre-AEC period as a strong external monitoring and can lowered the REM behavior. Which period will lead to pronounced effect of product market competition on REM is an empirical question.

We first divided the period between 2012 and 2020 into two groups. The first group, pre-AEC, was the period from 2012 to 2015, and the second group, post-AEC, was the period from 2016 to

2020. Then, we conducted regression analysis according to Equations (7) to (9) for each subsample group. Column 1 to 3 in Table 5 present the result from pre-AEC, whereas Column 4 to 6 show the result from post-AEC. Column 3 from the pre-AEC subsample shows that product market competition has a negative coefficient (−1,4813) and is significant at level 1%, but we do not evidence essential findings for the post-AEC group in Column 6. This additional analysis supports the claim that the negative effect of product market competition on REM will be more evident in the pre-AEC period.

4.4.4. Pre- and during COVID-19

The COVID-19 pandemic has had various impacts, including the level of competition in an industry. Indonesia had the highest number of COVID-19 cases in the ASEAN region, with the number reaching more than one million people. As a result, during the COVID-19 pandemic, the industry competition got weaker, potentially affecting EM managerial behavior. We predicted that the negative effect of product market competition on REM behavior will be more pronounced in the pre-COVID-19 period. We provided explanation regarding this prediction based on two arguments. First, in the pre-COVID-19 period, product market competition was considered an essential external monitoring mechanism needed to mitigate the REM behavior. The capital market heavily relied on product market competition as a mechanism for external monitoring to mitigate managers' REM behavior before the COVID-19 pandemic. Thus, this period played a vital role in external monitoring from product market competition. Second, during the COVID-19 period, especially in Indonesia, the government prepared extremely tight monitoring policies, causing external monitoring to run well; tightening the monitoring mechanism causes managers to less likely engage in REM. In other words, during the pandemic, the monitoring mechanism has been running well due to the government's readiness. Thus, we expected the role of product market competition to be stronger in the pre-COVID-19 period.

Table 5, Columns 9 to 12, present the results of the additional tests in the period before and during COVID-19. Columns 9 show that the product market competition coefficient in the pre-COVID-19 period is negative (−1.8898) and significant at the 1% level. In contrast, in Column 12, the coefficient of product market competition in the pre-COVID-19 period is insignificant. These results support our prediction that the negative effect of market competition on REM is more robust in the pre-COVID-19 period.

4.5. Robustness test

We performed an array of robustness checks on the association between product market competition, market power, and REM using alternative measurements of these variables. First, we used three different alternative measures of REM. We used REM2, the absolute value of REM from the main REM measurement,[3] and the absolute value of REM3. REM2 is the sum of abnormal cash flow and abnormal production cost, while REM3 is absolute value from the sum of abnormal cash flow and abnormal production cost. The result based on three alternative measurements is presented in Table 6. This table shows the same effect as in the baseline result in Table 3.

Second, we used three individual REM measurements, namely, abnormal cash flow, abnormal production cost, and abnormal discretionary expense, and the result is available in the supplement document. Although we did not find a significant impact when using abnormal production costs as individual measurements, the other two unique measurements showed consistent results. Thus, we can conclude that the consequence remains robust when using various alternative measures of individual REM. Third, we excluded observations with high HHI to prove that our results do not influence by high HHI firms. To conduct this test, we divided our sample into 10 deciles and excluded firms that fell under the 10th, 9th, and 8th deciles, which considered as high HHI firm's observations. As we expected, the result, which is reported in the supplement document, remains unchanged.

Table 5. Additional test in (1) the Pre-and Post-Economic ASEAN Community (AEC) and (2) Pre and during COVID19

	(1) REM1	(2) REM1	(3) REM1	(4) REM1	(5) REM1	(6) REM1	(7) REM1	(8) REM1	(9) REM1	(10) REM1	(11) REM1	(12) REM1
		Pre AEC			Post AEC			Pre-COVID19			During-COVID19	
PMC	-1.4865***		-1.4813***	-.1787		-.1688	-1.8894***		-1.8898***	-.9827		-.9602
	(.4152)		(.4169)	(1.8498)		(1.8496)	(.498)		(.498)	(1.4646)		(1.4713)
MP		-.1997	-.1866		-.0486**	-.0485**		-.0336	-.0354		-.0284	-.0268
		(.3471)	(.3472)		(.0237)	(.0235)		(.1391)	(.1385)		(.0418)	(.0416)
MTB	-.0094	-.0094	-.0094	.0387	.0394	.0394	.0035	.0047	.0035	-.0067	-.0061	-.0067
	(.0398)	(.0399)	(.0398)	(.0477)	(.0477)	(.0477)	(.0311)	(.0314)	(.0311)	(.0233)	(.023)	(.0233)
LEVERAGE	.2023	.2207	.2088	-.0606	-.06	-.0606	.1431	.1503	.1427	.0322	.041	.0356
	(.2553)	(.2523)	(.2511)	(.1211)	(.1191)	(.1214)	(.1595)	(.1603)	(.1598)	(.0741)	(.0739)	(.0751)
SIZE	-.3627	-.3184	-.3523	-.1437	-.1438	-.1427	-.2242	-.2261	-.2223	-.537	-.5454	-.546
	(.5023)	(.5065)	(.5092)	(.2749)	(.276)	(.2757)	(.3083)	(.3114)	(.3101)	(.8318)	(.8394)	(.83)
GROWTH	.1465	.0949	.1481	.1758	.1888	.1874	.2004	.171	.201	-.029	.0448	.031
	(.402)	(.4039)	(.4023)	(.3009)	(.2989)	(.3036)	(.255)	(.2564)	(.2551)	(.2023)	(.2518)	(.2545)
LITIGATION	-3.5961	-3.2717	-3.5044	-2.5678**	-2.5936**	-2.5627**	-2.3543*	-2.4072*	-2.3365*	-3.7162	-3.8704	-3.7533
	(2.4307)	(2.4776)	(2.4966)	(1.1289)	(1.0584)	(1.1306)	(1.353)	(1.3799)	(1.3698)	(2.5157)	(2.5703)	(2.51)
CLAIM	.0241*	.0235*	.024*	.4209	.4318	.431	.036***	.0352***	.0361***	.3	.2919	.2999
	(.013)	(.0131)	(.0131)	(.3527)	(.3481)	(.3499)	(.012)	(.012)	(.012)	(.3979)	(.4041)	(.4013)
ROA	.0198	.0211	.0201	-.0075	-.0081	-.0081	-.0125	-.0122	-.0125	-.0145	-.0153	-.0155
	(.0314)	(.0314)	(.0314)	(.0141)	(.014)	(.0141)	(.0235)	(.0235)	(.0235)	(.0205)	(.021)	(.021)
Cons	6.8723	5.7354	6.8499	3.1756	3.1593	3.1903	5.0084	4.3103	5.0038	9.328	9.1711	9.4633
	(6.9395)	(6.844)	(6.9459)	(3.6227)	(3.5933)	(3.635)	(4.257)	(4.2454)	(4.2631)	(10.9304)	(10.9313)	(10.9061)
Observations	800	800	800	1000	1000	1000	1400	1400	1400	400	400	400
R-squared	.4955	.4923	.4957	.6655	.6655	.6655	.4135	.4107	.4135	.975	.9749	.975

This table presents additional test using sub sample from (1) pre and post-AEC and (2) pre and during-COVID19. Pooled ordinary least square standards error clustered by firm and year was use in every model. All regression models use firm-fixed effect and year fixed-effect. Firm's litigation risk (*LITIGATION*) is defined as a dummy for litigious industries All other variables are the same as defined in Table 1. *Standard errors are in parenthesis. *** p < .01, ** p < .05, * p < .1*

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Table 6. Robustness test using alternative measurement of total REM

	(1) REM2	(2) REM2	(3) REM2	(4) ABS_REM1	(5) ABS_REM1	(6) ABS_REM1	(7) ABS_REM3	(8) ABS_REM3	(9) ABS_REM3
PMC	-1.2133**		-1.2142**	-.8898*		-.8894*	-.2611***		-.2609***
	(.5819)		(.582)	(.5144)		(.5146)	(.0486)		(.0487)
MP		-.0347	-.0356		.0148	.0141		.0052	.005
		(.0379)	(.0377)		(.049)	(.0487)		(.0076)	(.0077)
MTB	-.004	-.0033	-.004	.0007	.0012	.0007	.0016	.0017	.0016
	(.0259)	(.0261)	(.0259)	(.0254)	(.0255)	(.0254)	(.0046)	(.0047)	(.0046)
LEVERAGE	.1428	.1465	.1428	-.0658	-.063	-.0657	-.0023	-.0015	-.0023
	(.1387)	(.1389)	(.1387)	(.1014)	(.1012)	(.1015)	(.0133)	(.0128)	(.0133)
SIZE	-.1884	-.1978	-.1865	.1195	.1105	.1188	.0473	.0446	.047
	(.2442)	(.2451)	(.2446)	(.2117)	(.2119)	(.2122)	(.034)	(.034)	(.034)
GROWTH	.0521	.0434	.0556	.1844	.1741	.183	-.0034	-.0065	-.0039
	(.2353)	(.2377)	(.2365)	(.2051)	(.2073)	(.2064)	(.0323)	(.0329)	(.0324)
LITIGATION	-2.2609**	-2.3506**	-2.242**	.0112	-.0759	.0036	.1483	.1223	.1456
	(.9589)	(.9669)	(.9632)	(.8546)	(.8606)	(.859)	(.1354)	(.1354)	(.1353)
CLAIM	.0337***	.0333***	.0338***	.0384***	.038***	.0384***	-.0059	-.006	-.0059
	(.0107)	(.0107)	(.0107)	(.0092)	(.0091)	(.0092)	(.0099)	(.0099)	(.0099)
IFRS	-.5215	-.5063	-.5296	-.6324	-.6121	-.6291	-.0528	-.0467	-.0517
	(.4084)	(.4045)	(.4087)	(.3845)	(.3816)	(.3851)	(.0453)	(.0453)	(.0456)
ROA	-.0016	-.0014	-.0017	.007	.0073	.007	.0016	.0017	.0016
	(.0153)	(.0154)	(.0153)	(.0152)	(.0153)	(.0153)	(.0019)	(.0019)	(.0019)
Cons	4.4255	4.1148	4.422	.6675	.4439	.6689	-.3731	-.4386	-.3726
	(3.3419)	(3.3267)	(3.3432)	(2.9218)	(2.9006)	(2.9236)	(.4476)	(.4455)	(.4476)
Observations	1800	1800	1800	1800	1800	1800	1800	1800	1800
R-squared	.4586	.4577	.4586	.4548	.4542	.4548	.2397	.2375	.2397

This table presents robustness test using various total REM. Pooled ordinary least square standards error clustered by firm and industry (double cluster) was use in every model. All regression models use firm-fixed effect and year fixed-effect.. Firm's litigation risk (*LITIGATION*) is defined as a dummy for litigious industries. **The adoption of International Financial Reporting Standards (IFRS) is defined as a dummy variable equal to 1 for a period after 2015 and 0 otherwise** All other variables are the same as defined in Table 1. Standard errors are in parenthesis. *** p < .01, ** p < .05, * p < .1

5. Discussion and conclusions

The current study investigates whether market competition and market power have a disciplinary effect on the behavior of managers engaged in REM. Existing empirical studies have been extensively addressing developed markets to investigate this relationship. This study targeted Indonesia, where competition regulation in the capital market is still growing and which has the highest number of COVID-19 cases, influencing EM behavior. Indonesia also joined the ASEAN AEC, where market competition has tightened but the laws of trading between countries have softened. We obtained the following results using 200 firm-year observations from 2012 to 2020.

The baseline test indicated that product market competition could discipline managers from engaging in REM. In the same vein as economics literature and the agency theory, our finding supports the discipline views, which suggests that market competition is a crucial strategy for improving resource allocation efficiency and disciplining managerial inefficiencies, such as REM, promoting the inverse association between product market competition and REM. When product market competition plays a role in external monitoring, it encourages performance comparisons with peer firms (Meyer & Vickers, 1997; Vickers, 1995), aligning the interests of managers and shareholders. Managers will ultimately prioritize the interests of shareholders and will be less likely to engage in REM. Furthermore, the high comparability with peer firms also increases the quantity of information available in the market or for the public, encouraging companies to present the best earnings information for their shareholders. As a result, the motivation to engage in REM will be reduced in the presence of a high product market competition. This argument is in line with previous empirical findings, which suggest that product market competition can discipline and force managers to act in line with shareholders' interests and provide more and higher-quality accounting-related disclosures (Balakrishnan & Cohen, 2013; Li, 2010). In other words, product market competition plays an essential role in external monitoring that can discipline managers from engaging in REM and reduce the desire to engage in REM. Thus, this study supports the studies by Datta et al. (2011), and Laksmana and Yang (2014).

However, we cannot support our prediction that market power has a disciplining effect on REM, thus our finding opposes with Chang et al. (2019). One possible explanation of this finding was that for an emerging market like Indonesia, even though the company has a pricing power, the company is more likely not to have the motivation to maximize the benefits that may be gained from having this power. Firms prefer not to use pricing power to mitigate REM efficiently. Crocioni (2007) explained how emerging markets cannot maximize the benefit of having market power to give the highest contribution or benefits to the company. In addition, there is also a possibility that for the Indonesian market, firms cannot rely on the pricing power alone to mitigate REM behavior as firms may not consider it a prime motivator or driver for mitigating REM. Firms are more likely to benefit from market competition as the primary tool for reducing managers' REM activity. Several robustness tests confirm our main findings.

The additional analysis revealed that the role of product market competition in reducing REM is stronger in the period after the EAC and the pre-COVID-19 period as well as in small and income-increasing firms. These additional tests also provided new evidence about the relationship between product market competition, market power, and EM from various conditions that typically exist in emerging markets, especially in Indonesia. This study can also overcome the endogeneity problem.

This study provided several implications. First, the Indonesian capital market regulatory and listed firms may use our study as a fresh reference to show the importance of market environment to limit the REM. Also, the discipline role of market competition and market power should provide insightful lessons for them. Firms can design suitable intern corporate governance mechanism which can maximize the benefit from having strong market power, while government and capital market regulators need to design and issue new laws or regulation that can encourage the internal governance structure to maximize the potential role of market power to mitigate REM. Second, we found that product market competition has more role than market power in disciplining managers

from engaging in REM, indicating that listed firms in Indonesia capital market rely more on product market competition in reducing opportunistic behaviors. However, since market power also has a potential effect to discipline manager from having REM, firms must be encouraged to maximize the benefit from pricing power as a potential mechanism to tackle managers' opportunistic behavior when engaging in REM. Finally, to the best of our knowledge, this is the first empirical study to address the effect of external shocks, such as COVID-19 and the AEC period, on the relationship between the market environment and REM in emerging market economies. This suggests that external shocks have an essential effect on REM. Therefore, policy makers need to consider external shock when design future regulation in capital market, while investors and firms in emerging market should take into account potential effect of external shock on managers behavior.

Like most empirical studies, our study cannot avoid several limitations. First, it cannot include control variables from corporate governance mechanisms, such as audit committees and external auditors, as our database does not provide this information. Thus, future study can include corporate governance mechanism variables in the model to overcome the problem on omitted variable. Second, as our research focuses on Indonesian-listed firms, the findings in the current study cannot be generalized to other countries. It is recommended that future study address this issue in ASEAN countries because such countries are also members of the AEC, thus expanding the examination of market competition using broader countries in the ASEAN region to provide more insight into how free trading between countries can affect the REM behavior. Finally, we suggest that future research can examine the moderating role of market power as we cannot provide evidence that market power has a direct effect on disciplining managers from engaging in REM and previous empirical study considered market power as a moderating variable (Tang & Chen, 2020).

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Notes
1. For more detail, please see the Global competitiveness report 2017 and 2016.
2. We also follow Chin-Lung et al. (2012) method to determine income increasing vs income decreasing category. We used ROA to determine whether firms fall under an income-increasing or income-decreasing subsample. ROA with a negative value will be categorized as an income-decreasing subsample, whereas positive ROA will be classified as an income-increasing subsample. The result remains unchanged.
3. Managers may engage in REM by using both income-increasing and income-decreasing EM.

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