

Ghaleb, Belal Ali Abdulraheem; Hasnah Kamardin; Tabash, Mosab I.

Article

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*Corresponding author: Belal Ali Abdulraheem Ghaleb, Department of Accounting, Hodeidah University, Yemen
E-mail: bel_ac2002@yahoo.com

Reviewing editor:
Muhammad Shafiullah, Economics, University of Nottingham - Malaysia Campus, Malaysia

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FINANCIAL ECONOMICS | RESEARCH ARTICLE

Family ownership concentration and real earnings management: Empirical evidence from an emerging market

Belal Ali Abdulraheem Ghaleb^{1*}, Hasnah Kamardin² and Mosab I. Tabash³

Abstract: The paper examines the effect of family ownership concentration (FMOC) on real earnings management (REM) in manufacturing firms listed on Bursa Malaysia (formerly known as Kuala Lumpur Stock Exchange). Data are gathered from 1,056 firm-year observations for the four-year period from 2013 to 2016. The feasible generalised least square estimation is used to examine the relationships. The results show that FMOC is negatively and significantly associated with REM. This evidence supports the alignment hypothesis that FMOC mitigates managerial earnings management by preventing real activities manipulation. However, the finding of the current study is contrary to the claim that family-controlled firms have lower earnings quality. This study extends previous empirical research by examining the effect of different levels of family control on REM in an emerging market and provides evidence that family firms have less incentive to engage in REM practices. The findings imply that earnings reported in the financial statements of Malaysian manufacturing family firms are more reliable as these firms do not manipulate earnings through real business activities. Policymakers may consider the results of the current study that show family-controlled firms have the motivation to self-monitor their business and avoid earnings manipulation activities.

ABOUT THE AUTHOR

Belal Ali Abdulraheem Ghaleb is an Assistant Professor of Accounting and Auditing at Hodeidah University, Yemen. His research interests include financial accounting and reporting, corporate governance, earnings management, and auditing.

Hasnah Kamardin is an Associate Professor of Accounting at Tunku Puteri Intan Safinaz School of Accountancy, College of Business, Universiti Utara Malaysia, Kedah, Malaysia. Her research interests include firm performance, corporate governance, financial reporting quality, and auditing.

Mosab I. Tabash is currently working as MBA Director at the College of Business, Al Ain University, UAE. He is also a Risk Management Supervisor at the university level. His research interests include Islamic banking, monetary policies, financial performance, risk management, and investments.

PUBLIC INTEREST STATEMENT

This paper examines the effect of family ownership concentration on real earnings management in the Malaysian market. Family ownership concentration is a unique feature of the Malaysian market and earnings management is more pervasive. Inconsistent empirical results regarding the effect of family control on financial reporting quality motivate conducting this research in Malaysia. Thus, the study aims to check whether the alignment theory or entrenchment theory is fitting in the Malaysian market. The study uses secondary panel data that were hand collected from the annual report and Thomson Reuters Datastream. The results revealed that family ownership concentration is negatively and significantly associated with REM, supporting the alignment theory. The results are the same at different levels of family ownership concentration and alternatives regression techniques. The findings of the current study may benefit regulators and policymakers as well as investors interesting in family businesses.

Investors may benefit from this evidence and invest in family firms. Future studies may extend the sample to cover other sectors to check the consistency of the findings. In addition, the paper uses data from Malaysia, a country characterised as a family-controlled market. Thus, the findings may not be similar to those of countries with lower FMOC.

Subjects: Economics; Finance; Accounting

Keywords: family ownership concentration; family-controlled firms; real earnings management; alignment hypothesis; emerging market

1. Introduction

Quality of financial reporting in family businesses is a prominent issue in recent research, and earnings management (EM) is considered as an important trait of financial reporting quality (Cohen et al., 2008; Lin & Shen, 2015; Zang, 2012). Researchers classify earnings management into accrual earnings management (AEM) and real earnings management (REM). Recent empirical evidence shows that firms prefer to engage in REM than AEM, this is because REM is less detectable, even though it is costly compared to AEM (Cohen et al., 2008; Ippino & Parbonetti, 2017). Although several studies have examined the effect of family ownership concentration (FMOC) on EM through discretionary accruals (Ali et al., 2007; Hashmi et al., 2018; Wang, 2006), recent work is now looking at the effect of family control on the practice of REM and AEM (Achleitner et al., 2014; Razzaque et al., 2016), and reports mixed results. The differences in findings are explained by the different institutional settings, which may play a substantial role in the monitoring function and earnings reporting process. It is suggested that findings in developed countries may not be readily generalised to developing countries due to the difference in the degree of ownership concentration and institutional environment (Chi et al., 2015; Fan & Wong, 2002).

Malaysia is an interesting area for the family businesses and financial reporting quality research due to its high levels of ownership concentration in the hand of families or individuals and state, where family firms make up about 70% of Malaysian companies (Amran & Che Ahmad, 2009; Claessens et al., 2000). Malaysia ranks seventh globally in terms of the number of family firms (CSRI, 2017). Thus, agency problem as a conflict of interest between managers and shareholders (type I) may not be prevalent in Malaysia. Instead, agency problem as a conflict of interest between minority and majority shareholders (type II) could be serious (Claessens et al., 2002). Chi et al. (2015) reveal that ownership concentration, less transparency, ineffective corporate governance and weakness of legal systems in East Asia provide greater incentives for the controlling shareholders to manipulate earnings. Enomoto et al. (2015) provide evidence that REM is more prevalent among Malaysian firms than those in other markets. Therefore, family ownership concentration is expected to influence financial reporting quality in Malaysia significantly.

Even though Abdullah and Wan Hussin (2015) report that family ownership constrains the opportunistic behaviour of managers, and also reducing the positive association between related party transactions and REM in the Malaysian market, the current study differs by investigating the direct effect of FMOC on REM. It employs data from a large sample over four years to answer the research question. It also investigates the effect of FMOC on REM at different levels of concentration. Few studies have investigated the effect of family control on REM as an alternative technique of earnings manipulation, especially in Malaysia. Thus, the current study extends previous studies and investigates whether family-controlled firms in the Malaysian market mitigate or exacerbate REM, and in which level of ownership concentration.

The results show that FMOC is negatively and significantly associated with REM, suggesting that family firms are less likely to engage REM in Malaysia. The paper provides evidence that family

firms report “better quality” earnings than their non-family counterparts. In the additional analyses, the results remain the same at different percentages of family ownership concentration, using individual REM measurement and alternative regression estimation. The findings are in line with the results of recent studies that provide evidence for the positive role of family ownership in reducing EM and producing high-quality financial reporting (Achleitner et al., 2014; Boonlert-U-Thai & Sen, 2019; Hashmi et al., 2018; Mohammad & Wasiuzzaman, 2020). However, they contradict the findings of previous studies which suggest that family firms are associated with higher REM (Eng et al., 2019; Razzaque et al., 2016). The results of the current study imply that earnings reported in the financial statements of Malaysian manufacturing family firms are more reliable as these firms do not manipulate earnings through real business activities. Investors may benefit from this evidence in taking the right investment decisions. Policymakers may consider the results of the current study that show family-controlled firms have the motivation to self-monitor their business and avoid earnings manipulation activities.

The rest of this paper is structured as follows. In the next section, we discuss several issues associated with REM. Next, we discuss the theoretical background of family ownership concentration, followed by the development of hypotheses. Then, we describe the research design and discuss the results. The paper concludes with the implications of the results and recommendations for further work.

2. Literature review

2.1. Real Earnings Management (REM)

The accounting literature splits EM into two groups: accruals-based earnings management (AEM) and REM (Graham et al., 2005; Healy & Wahlen, 1999; Roychowdhury, 2006). AEM occurs when managers use the discretion allowed under generally accepted accounting principles (GAAP) to affect reported earnings (Healy & Wahlen, 1999). However, REM occurs when they use real business activities to manage reported earnings (Graham et al., 2005; Roychowdhury, 2006). Roychowdhury (2006) defines REM as “departures from normal operational practices, motivated by managers’ desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations”. REM has received considerable attention recently due to evidence that firms shift their EM practices from AEM to REM (Cohen et al., 2008; Graham et al., 2005; Ipino & Parbonetti, 2017).

Recent studies suggested that firms –under different reasons– have shifted their EM practises from AEM to REM. These reasons are; regulation changes (e.g., Sarbanes-Oxley) that restrict the use of AEM (Cohen et al., 2008; Zang, 2012), tighter accounting standards and the adoption of IFRS (Ewert & Wagenhofer, 2005; Ferentinou & Anagnostopoulou, 2016; Ipino & Parbonetti, 2017), and higher levels of audit quality (Burnett et al., 2012; Chi et al., 2011). However, some studies find that firms use both REM and AEM complementarily (Chen et al., 2012; Das et al., 2017). Researchers claim that REM can be costly to firms and ultimately to shareholders. Several studies find evidence that REM has a negative impact on future cash flows as well as long-term firm value and performance (Cohen et al., 2010; Roychowdhury, 2006). Thus, this paper investigates the use of REM, particularly in an emerging country where firms’ ownership structure is highly concentrated.

2.2. Family ownership concentration and REM

Family firms are characterised by a concentrated ownership structure (Srinidhi et al., 2014), and recent studies show that this concentration has an influence on the quality of financial reporting (Durendez & Madrid-Guijarro, 2018). Two competing hypotheses might explain the relationship between EM and family ownership: alignment and entrenchment hypotheses (Wang, 2006). According to the alignment hypothesis, the presence of larger family shareholdings (represented by the managers) could align the interests of family managers and other principals (shareholders), discouraging management from manipulating earnings. Family firms have more effective monitoring mechanisms and achieve superior performance over non-family firms (Anderson et al., 2003).

Family management members have less incentive to practise EM, and they care about the firm's value and reputation (Alzoubi, 2016; Martinez-Ferrero et al., 2016; Tsao et al., 2019). Further, family firms have superior earnings quality to non-family firms (Boonlert-U-Thai & Sen, 2019; Hashmi et al., 2018). Following the alignment hypothesis, recent empirical studies report a positive role for family control in mitigating REM, as family firms practise less REM than non-family firms (Achleitner et al., 2014; T. Chen et al., 2015; Tian et al., 2018).

However, according to the entrenchment hypothesis, controlling shareholders could expropriate the interests of non-controlling shareholders to increase their wealth, thus encouraging earnings manipulation (Abdullah & Ismail, 2016). Based on the entrenchment effect, managers in family firms have both the incentive and the opportunity to manage earnings; this is because of the traditional notion that family firms are less efficient due to the conflict between controlling shareholders and other shareholders (Fama & Jensen, 1983; Shleifer & Vishny, 1997; Wang, 2006). Wang (2006) argued that family members usually hold significant positions in top management as well as on the board of directors. Thus, due to the weakness in corporate monitoring, these family members are able to manage revenues and expropriate the interests of other shareholders through real business activities. Empirically, Yang (2010) finds an association between larger insider ownership and EM in Taiwanese family firms.

Similarly, Chi et al. (2015) document a positive relationship between family ownership and EM, even though this positive relationship is reduced when independent directors are present on the board. Teh et al. (2017) report that family-controlled firms practise more EM in the Malaysian market through their power and authority over decision making. Razzaque et al. (2016) find that family firms practise more REM than non-family firms in Bangladesh. In a recent study in the US and Chinese markets, the findings show that REM is higher in family firms than in non-family counterparts (Eng et al., 2019).

In sum, the greater monitoring by family management is likely to reduce opportunistic managerial behaviour through real business activities. As previous studies show mixed results about the effect of family ownership concentration on REM. Thus the current study predicts that family ownership concentration significantly affects REM. Thus, the following non-directional hypothesis is proposed:

H1: Family ownership concentration significantly affects REM in the Malaysian market.

3. Research design

3.1. Sample and data collection

The sample of this study comprises all manufacturing companies listed in the Main Market of Bursa Malaysia for the period 2013 to 2016. We extract manufacturing companies from the Emerging Markets Information Service (EMIS) database, which provides details about the company sector and main activities¹. The companies' annual reports available in the Bursa Malaysia website is the primary reference for extracting information on ownership concentration. This is because data related to ownership and other corporate governance structure in Malaysia is not directly available in online or electronic form. Abdul Rahman (2001) posits that the annual reports are considered an important information source in Malaysian companies. Thus, data related to family ownership concentration and corporate governance variables are extracted from companies' annual reports, while other variables data are downloaded from Thomson Reuters Datastream. Companies that changed their financial year end during the sample period were excluded. New and delisted companies during the study period were also excluded because of insufficient data. Companies with missing data during the period from 2011 to 2016 were also excluded as for REM measurement data related to sales is required for the years 2011 and 2012. A list of the final sample of 264

Table 1. Sample of Study

Explanation	Number of Companies
All manufacturing companies listed in the main market	357
Excluded companies:	
Companies changing their end of the financial year	(30)
Newly listed or delisted during the period 2013-2016	(15)
Missing data at any time between 2013 and 2016	(33)
Missing REM data in any period 2011-2016	(15)
Total excluded companies	(93)
The final sample	<u>264</u>
Total of observations (264 companies *4 years)	1056

company (1,056 observations) is used as a reference to extract companies' financial data from their annuals reports and Datastream. Table 1 summarises the sample selection criteria.

The reason for focusing on manufacturing sector is that REM appears to be more pronounced in this sector (Brown et al., 2015; Ge & Kim, 2014; Roychowdhury, 2006). Further, overproduction which is one of the REM strategies is only available in manufacturing firms (Chen et al., 2014; Jarvinen & Myllymaki, 2016). Furthermore, the manufacturing sector plays a significant role in the the Malaysian economy growth. According to the reports of the International Monetary Fund (2016) and the Bank Negara Malaysia (2015), manufacturing sector contributed to Malaysia's Gross Domestic Product (GDP) by 23 per cent, and to Malaysia exports by about 80 per cent in 2015. Yatim et al. (2016) report an increase in foreign investments from developed countries such as from the US and Germany, particularly in the manufacturing sectors. Finally, it was reported that the FDI in the manufacturing sector in 2015 was 44.8 per cent of total FDI in Malaysia (Bank Negara Malaysia, 2015). Therefore, it is crucial to study REM in manufacturing companies.

3.2. Measurement of variables

3.2.1. Real earnings management measurement

According to Roychowdhury (2006), firms manage earnings through real business activities by changing the timing or structure of three types of activity: operating, investing and financial activities. The most common measurements of REM are three proxies: discretionary expenses, sales manipulation and overproduction (Cohen et al., 2008; Roychowdhury, 2006). These measurements should be estimated by year and industry. Each industry-year group should contain at least 15 observations to ensure that there are adequate data for estimating the levels of REM (Roychowdhury, 2006). The current study follows Roychowdhury (2006) and uses Standard Industrial Classification (SIC) codes to classify manufacturing firms into two-digit industry groups (SIC 20–39) based on firms' main activities. The classification results in eleven industry groups. Thus, this paper considers these three measurements of REM estimated cross-sectionally for each year and industry group by employing the following models:

$$\frac{CFO_t}{Assets_{t-1}} = \beta_1 \left(\frac{1}{Assets_{t-1}} \right) + \beta_2 \left(\frac{Sales_t}{Assets_{t-1}} \right) + \beta_3 \left(\frac{\Delta Sales_t}{Assets_{t-1}} \right) + \epsilon_t \quad (1)$$

Where, CFO_t is cash flow from operations in period t . $Assets_{t-1}$ is the lagged total assets. $Sales_t$ are the annual sales. $\Delta Sales_t$ is the change in sales in year t relative to the sales in year $t-1$. The abnormal cash flow from operations (ACFO) is the difference between the actual values and the normal levels of the cash flow from operations calculated as a residual from Equation (1), with a smaller ACFO indicating high REM.

$$\frac{PRC_t}{Assets_{t-1}} = \beta_1 \left(\frac{1}{Assets_{t-1}} \right) + \beta_2 \left(\frac{Sales_{it}}{Assets_{t-1}} \right) + \beta_3 \left(\frac{\Delta Sales_t}{Assets_{t-1}} \right) + \beta_4 \left(\frac{\Delta Sales_{t-1}}{Assets_{t-1}} \right) + \epsilon_t \quad (2)$$

Where, PRC_t is the sum of the changes in inventory (ΔINV) and cost of goods sold ($COGS_t$) during the year. $\Delta Sales_{t-1}$ is the change in last year's sales related to sales for the year before last. Abnormal level of production (APRC) is the difference between the actual values and the normal levels of the production cost calculated as a residual from Equation (2), with a larger APRC indicating high REM.

$$\frac{DIE_t}{Assets_{t-1}} = \beta_1 \left(\frac{1}{Assets_{t-1}} \right) + \beta_2 \left(\frac{Sales_{t-1}}{Assets_{t-1}} \right) + \epsilon_t \quad (3)$$

Where, DIE_t refers to the discretionary expenses during the period t ; it is the sum of advertising expenses, selling, general and administrative (SG&A) expenses and research and development (R&D) expenses (Cohen & Zarowin, 2010; Roychowdhury, 2006)². Abnormal discretionary expenses (ADIE) is the deviation between the actual values and the normal levels of the discretionary expenses calculated as a residual from Equation (3), with a smaller ADIE indicating high REM.

Although Roychowdhury (2006) measured REM using the three proxies mentioned above, recent studies have measured it by using aggregate approach (N. M. Abdullah & Wan Hussin, 2015; Cohen et al., 2008; Eng et al., 2019). According to Cohen et al. (2008), a comprehensive measurement helps to capture the effect of overall REM by computing a single REM variable from all three variables. W. Chi et al. (2011) claim that the three individual REM variables provide richer information, but the REM aggregate indicates the level of overall REM. Further, Eng et al. (2019) argue that the aggregate measure would better capture REM activity than any single measure. Thus, we generate an aggregate measure of REM by multiplying standardised residuals from the level of cash flow from operation in Equation (1) and discretionary expense in Equation (3) by -1 and adding them to the standardised residuals of the production cost from Equation (2) (Cohen et al., 2008; Eng et al., 2019). Hence, the overall REM is calculated by the following equation:

$$REM = ACFO (-1) + APRC + ADIE(-1) \quad (4)$$

3.2.2. Family ownership concentration measurement

Family ownership refers to the ratio of shares held by family members over the firm's shares issued (Anderson et al., 2003; Villalonga & Amit, 2006). The Malaysian Companies Act 2016 (section 197, 2A, p. 208) defines family members as "spouse, parent, child, including adopted child and stepchild, brother, sister and the spouse of the director's child, brother or sister". Information related to family members is available in Malaysian firms' annual reports under the section on profiles of directors. Family ownership concentration is measured in the literature in several ways (S. N. Abdullah & Ismail, 2016; Gonzalez & Garcia-Meca, 2014; Khan et al., 2015; Martinez-Ferrero et al., 2016; Setia-Atmaja et al., 2011). However, we use two known measurements: a continuous variable for substantial family fractional shares ownership not less than 20 percent (Khan et al., 2015; Setia-Atmaja et al., 2011), and a dummy variable which equals "1" when the family ownership concentration is present in the firm and zero otherwise (S. N. Abdullah & Ismail, 2016). Family ownership concentration of 20 percent is considered to be sufficient for effective control and has been used by previous researchers (S. N. Abdullah & Ismail, 2016; Jaggi et al., 2009; Khan et al., 2015; Setia-Atmaja et al., 2011).

3.3. Research model and control variables

This study employs a panel data methodology to test the hypothesis. This methodology addresses potential unobserved firm-level heterogeneity, can handle variability in the data, permits more degrees of freedom, and produces more efficient and consistent results (Baltagi, 2005; Fraile & Fradejas, 2014; Gujarati & Porter, 2009). The panel data methodology has been adopted in previous corporate governance and financial reporting quality studies (S. N. Abdullah & Ismail, 2016; Razaque et al., 2016). The Hausman specification test is used to select between random effects and fixed effects models. Based on the test results, the random effects model was chosen. To detect possible autocorrelation between variables, we employed the Durbin-Watson test. The

Table 2. Measurements of Variables

Variable	Measurement
REM	The aggregate value of the standardised ACFO (-1), standardised APRC, and standardised ADIE(-1) that measure overall REM.
FMOG	The proportion of shares held by controlling family members with not less than 20 per cent of shares in the firm.
SIZE	The natural logarithm of total assets of firm <i>i</i>
LEV	The ratio of total debt to total assets
ROA	The ratio of earnings divided by total assets
MTBV	The ratio of the market value of equity divided by the book value of equity
BIND	The ratio of independent directors on the board
ACFE	The ratio of audit committee members with financial expertise
BIG4	A dummy variable equal to "1" if a firm hired a Big 4 auditor and "0" otherwise
ABDA	The discretionary accruals measured by Jones (1991) model ³
Industry	The industry dummies
Year	The year dummies

value of the test result is 1.19, which indicates that there is an autocorrelation problem in the dataset. The Breusch-Pagan/Cook-Weisberg test was also conducted to check for heteroscedasticity, and the results confirmed the presence of this problem in the research models. Both heteroscedasticity and autocorrelation problems exist in our research model. To correct these two problems, we employ the Feasible Generalised Least Square (FGLS) estimation method (Kouaib & Jarboui, 2016; Mohammad et al., 2016). To this end, we use the following regression model to test the study hypothesis (Table 2 summarises the measurements of variables):

Where REM_{it} is the aggregate measure of the standardised residual of the three REM measurements of firm *i* and year *t*; $FMOG_{it}$ is one of two proxies of family ownership concentration: FMOG is the percentage of equity shares held by family members in firm ownership not less than 20%, and the FMOG dummy equals "1" when the family ownership concentration is present in the firm and "0" otherwise. To capture the effect of governance monitoring on REM, three governance monitoring mechanisms are considered: board independence (BIND), audit committee financial expertise (ACFE), and audit quality (BIG4). We include BIND because previous studies have shown that firms with a high proportion of independent directors have lower EM (Garven, 2015; Jaggi et al., 2009; Kang & Kim, 2012). The literature also provides sufficient evidence that firms with a high proportion of financial experts on audit committees engage in lower EM (N. M. Abdullah & Wan Hussin, 2015; J. W. Lin & Hwang, 2010). BIG4 measures whether the auditor of the firm is from one of the BIG4 audit firms and is included in the research model to control the possible effects of this variable on EM practices. Recent studies state that a trade-off exists between REM and AEM (Cohen et al., 2008). However, others indicate that firms use both REM and AEM (Alhadab et al., 2015). Thus, we include AEM as a control variable, represented by the absolute value of discretionary accruals (ABDA) as measured by Jones (1991) model.

We also control for firm characteristics. Specifically, we control the effect of firm size (SIZE) because previous empirical studies show that the size of the firm is an important element that affects REM (Roychowdhury, 2006). To control the possible effect of the firm's performance on REM, we include return on assets (ROA) in the model. Previous studies also find that leveraged firms engage in REM (Anagnostopoulou & Tsekrekos, 2016). We therefore include firm leverage (LEV) in our model. Dechow et al. (2011) find that firms involved in managing earnings have an abnormal market-to-book ratio (MTBV); we include MTBV as a control variable. The model also includes industries and year dummies to control for time and industry effects (Petersen, 2009).

Table 3. Descriptive Statistics of Continuous Variables

Variable	All Firms				Family Firms				Non-Family Firms				Different Mean			
	Mean	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max	t-value	p-value			
REM	0.000	560	-0.204	2.136	-8.925	9.062	496	0.231	2.234	-14.986	14.355	3.234	0.001***			
FMOG	0.252	560	0.470	0.137	0.200	0.748	496	0.000	0.000	0.000	0.000					
SIZE	19.629	560	19.593	1.071	17.108	22.836	496	19.670	1.384	15.924	24.467	1.012	0.312			
LEV	0.169	560	0.179	0.155	0.000	0.620	496	0.157	0.141	0.000	0.710	-2.308	0.021**			
ROA	0.047	560	0.055	0.066	-0.452	0.276	496	0.038	0.121	-0.743	0.753	-2.907	0.004***			
MTBV	1.432	560	1.086	0.920	0.095	5.940	496	1.822	4.192	-1.070	36.560	4.046	0.000***			
BIND	0.474	560	0.436	0.095	0.125	0.750	496	0.517	0.132	0.250	1.000	11.577	0.000***			
ACFE	0.455	560	0.457	0.188	0.200	1.000	496	0.452	0.195	0.167	1.000	-0.454	0.650			
ABDA	0.054	560	0.050	0.052	0.000	0.612	496	0.060	0.069	0.000	0.634	2.729	0.007***			
Descriptive Statistics of Dichotomous Variables																
Frequency																
Percentage																
1																
0																
FMOG (Dummy)	1056				560				496				53.03%		46.97%	
BIG4 (Dummy)	1056				579				477				54.83%		45.17%	

4. Results

4.1. Univariate analysis

Table 3 presents the descriptive statistics for the variables and univariate test for comparisons between family and non-family firms to determine the potential mean differences over the sample period 2013–2016. The mean value of REM is 0.000. This is the same as the mean value found in Cohen et al. (2008) which measured REM as a total value of the standardised residuals of ACFO, APRC and ADIE. Unlike accrual earnings management, which is usually measured by absolute values of the residuals, REM is calculated for each industry and year with actual values (positive and negative). In addition, the values of the mean and median of REM proxies are represented by the residuals of Ordinary Least Squares (OLS) regressions. Therefore, the mean value of combined REM is almost zero, indicating that manufacturing listed companies in Malaysia practise both upward and downward REM.

Family firms display lower mean values of REM than non-family firms, with a significant difference according to an independent t-test analysis. Additionally, family firms differ significantly in terms of leverage (LEV) and profitability (ROA), as these variables are higher for family than non-family firms. Family firms also have lower levels of growth opportunities (MTBV), board independence (BIND), and discretionary accruals (ABDA) than do non-family firms; and these differences are statistically significant. However, there is no significant difference in SIZE and ACFE across family and non-family firms. Descriptive data related to dichotomous variables are reported in Table 3.

Table 4 documents the correlation coefficient between variables. Correlation results show that FMOC is significantly and negatively correlated with REM. The result suggests that the relationship between FMOC and REM is negative. Importantly, Table 4 shows that multicollinearity is not a serious problem among the variables, as the coefficients are not greater than 0.90 (Hair et al., 2014). Further, the variance inflation factors (VIFs) are also calculated to test for multicollinearity. Multicollinearity exists when the VIF value is more than 10 (Hair et al., 2014). The current study shows that all the VIF values are below 3, as reported in Table 4.

4.2. Multivariate analysis

Table 5 shows the results of the regressions used to test the study hypothesis (H1), which predicts that family ownership concentration (FMOC) significantly affects REM in Malaysian manufacturing firms. The results of the regressions test reported in Table 5 are based on FGLS which correct the heteroscedasticity and serial correlation problems in the research model (Kouaib & Jarboui, 2016; Mohammad et al., 2016). The Wald-chi-square value is strongly significant, showing that the model is valid. Consistent with H1, we find that FMOC (percentage) and FMOC (dummy) are negatively and significantly associated with REM ($p < 0.01$) in both models, which suggests that higher family ownership concentration is associated with lower REM. This result is in line with the alignment hypothesis, which suggests that the presence of more family shareholders aligns the interests with other shareholders and discourages managers from manipulating earnings. The results are also consistent with those of recent empirical studies, that family firms have less incentive to practise EM and report better quality earnings than non-family firms (Achleitner et al., 2014; Alzoubi, 2016; Boonlert-U-Thai & Sen, 2019; Chen et al., 2015; Hashmi et al., 2018; Martinez-Ferrero et al., 2016; Tian et al., 2018; Tsao et al., 2019).

Regarding control variables, the results show that firm size is not associated with REM, which is consistent with the findings of Abdullah and Ismail (2016) that firm size is not significantly associated with EM. Table 5 also shows that LEV is positively and significantly associated with REM, which is in line with the findings of previous studies (Anagnostopoulou & Tsekrekos, 2016; Jie et al., 2017). This could be because firms aim to avoid the violation of debt covenants (Koh, 2003). In addition, Table 5 shows that ROA is negatively and significantly associated with REM, suggesting that firms with good performance are less likely to engage in EM (Abdul Rahman & Ali, 2006). Similarly, the study shows that MTBV is negatively and significantly associated with REM. This result is consistent with the results found in Liu and Tsai (2015), suggesting that firms with high growth

Table 4. Correlation matrix

	REM	FMOC	SIZE	LEV	ROA	MTBV	BIND	ACFE	BIG4	ABDA	VIF
REM	1.000										
FMOC	-0.088***	1.000									1.17
SIZE	-0.015	-0.048	1.000								1.15
LEV	0.153***	0.047	0.227***	1.000							1.17
ROA	-0.280***	0.161***	0.172***	-0.234***	1.000						1.49
MTBV	-0.217***	-0.034	0.146***	-0.181***	0.569***	1.000					1.33
BIND	0.009	-0.287***	-0.095***	-0.022	-0.123***	-0.010	1.000				1.12
ACFE	-0.058*	-0.003	0.009	-0.050	0.044	0.106***	0.020	1.000			1.04
BIG4	0.014	0.021	-0.069**	0.037	-0.046	-0.047	-0.028	-0.154***	1.000		1.04
ABDA	0.222***	-0.080**	-0.025	0.020	-0.084***	0.028	0.035	0.000	0.089***	1.000	1.02

Notes: *** p < 0.01, ** p < 0.05, * p < 0.1. REM = the real earnings management measured as an aggregate value of the standardised ACFO (-1), standardised APRC, and standardised ADIE(-1), FMOC = family ownership concentration (percentage and dummy), SIZE = natural log of total assets, LEV = ratio of total debt to total assets, ROA = return on assets, MTBV = market-to-book value ratio, BIND = proportion of independent directors on the board, ACFE = proportion of audit committee members with financial expertise, BIG4 = a dummy variable equal to 1 if the firm's auditor from one of big four audit firms, zero otherwise, and ABDA = absolute value of the discretionary accrual earnings management.

Table 5. Family ownership concentration and REM by FGLS Regression

Variables	FMOC≥20%			FMOC Dummy		
	Coefficient	t-value	p-value	Coefficient	t-value	p-value
FMOC	-0.75300***	-4.170	0.000	-0.39905***	-4.49	0.000
SIZE	0.02279	0.670	0.503	0.01874	0.55	0.582
LEV	1.41419***	4.580	0.000	1.47344***	4.78	0.000
ROA	-5.14167***	-6.500	0.000	-5.11881***	-6.49	0.000
MTBV	-0.39028***	-7.070	0.000	-0.39305***	-7.13	0.000
BIND	0.16970	0.520	0.602	0.07534	0.23	0.817
ACFE	-0.03987	-0.190	0.849	-0.04445	-0.21	0.833
BIG4	0.00122	0.010	0.988	-0.00979	-0.12	0.906
ABDA	3.45119***	4.550	0.000	3.58006***	4.73	0.000
Constant	-0.30684	-0.420	0.677	-0.19004	-0.26	0.797
Industry	Yes			Yes		
Year	Yes			Yes		
Observations	1,056			1056		
Wald chi2(23)	364.29			371.71		
Prob > chi2	0.000			0.000		

Note: *** p < 0.01, ** p < 0.05, * p < 0.1.

opportunities are less motivated to practice REM to avoid the adverse effect from any surprise earnings (Abdul Rahman & Ali, 2006).

Importantly, corporate governance variables do not appear to influence REM practice in manufacturing firms. For example, BIND does not significantly affect REM. Similarly, ACFE does not support the prediction that an audit committee with a high proportion of financial expertise would improve the quality of financial reporting, including the detection of REM. Audit quality, as measured by BIG4, is also not effective in mitigating REM. These insignificant results suggest that governance monitoring mechanisms are not effective in mitigating earnings manipulation, particularly through real business activities. This could be because ownership concentration limits the corporate governance role in an emerging market. The results also reveal that discretionary accruals (ABDA) are positively associated with REM, suggesting that manufacturing listed firms in the Malaysian market practise both EM types, consistent with evidence that firms use both AEM and REM to manipulate earnings (X. Chen et al., 2013; Roychowdhury, 2006). However, the result does not support the findings documented by some studies that firms shift their EM practice from AEM to REM (Chi et al., 2011; Cohen et al., 2008; Ferentinou & Anagnostopoulou, 2016; Ho et al., 2015; Ipinio & Parbonetti, 2017).

5. Additional tests for robustness

5.1. Alternative measurements of family ownership concentration

The accounting literature reports different measurements of family ownership concentration (FMOC). As mentioned above, this study measures FMOC by the proportion of shares in the hands of family members, not less than 20 percent, following previous studies (Khan et al., 2015; Setia-Atmaja et al., 2011). We also measure FMOC as a dummy variable that equals “1” if family members own at least 20 percent and “0” otherwise (Abdullah & Ismail, 2016). However, some studies measure FMOC by the percentage of shares owned by family members, not less than 5 percent (Gonzalez & Garcia-Meca, 2014). Martinez-Ferrero et al. (2016) measure family firms as a dummy variable taking “1” if the shareholders are family members or an individual with more than 10 per cent and “0” otherwise. Durendez and Madrid-Guijarro

(2018) consider a business to be a family firm if the family holds more than 50 per cent of the capital and family members are present in the management.

These differences in family ownership concentration (FMOC) may reveal different effects on the quality of financial reporting. Management with a high percentage of FMOC have potential controlling power over other parties, and thus a greater desire to expropriate other shareholders' wealth through earnings manipulation. Indeed, Razzaque et al. (2016) suggest that different thresholds of family ownership have different effects on REM. Thus, the current study re-examines the regression model with different thresholds for FMOC (5%, 10%, 30%, 40% and 50%) to provide further evidence of the effect of different family ownership concentration on REM. We find that, similar to the main findings, FMOC mitigates REM at all levels of ownership concentration (results are reported in Table 6).

5.2. REM Individual Measurements

The current paper follows previous studies and measures REM as an aggregate of the three REM measurements proposed by Roychowdhury (2006) (i.e. Chi et al., 2011; Cohen et al., 2008; Eng

Table 6. Alternative Family Ownership Concentration Measurement

Variables	FMOC ≥5%	FMOC ≥10%	FMOC ≥20%	FMOC ≥30%	FMOC ≥40%	FMOC ≥50%
	REM	REM	REM	REM	REM	REM
FMOC	-0.771*** (0.183)	-0.781*** (0.183)	-0.753*** (0.180)	-0.703*** (0.173)	-0.586*** (0.167)	-0.418** (0.178)
SIZE	0.0208 (0.0341)	0.0206 (0.0341)	0.0228 (0.0340)	0.0239 (0.0339)	0.0305 (0.0338)	0.0380 (0.0340)
LEV	1.419*** (0.308)	1.422*** (0.308)	1.414*** (0.308)	1.387*** (0.308)	1.317*** (0.309)	1.246*** (0.309)
ROA	-5.152*** (0.790)	-5.139*** (0.790)	-5.142*** (0.791)	-5.185*** (0.787)	-5.312*** (0.787)	-5.485*** (0.785)
MTBV	-0.388*** (0.0551)	-0.389*** (0.0551)	-0.390*** (0.0552)	-0.389*** (0.0550)	-0.385*** (0.0552)	-0.375*** (0.0552)
BIND	0.154 (0.326)	0.149 (0.326)	0.170 (0.326)	0.228 (0.323)	0.319 (0.324)	0.442 (0.324)
ACFE	-0.0425 (0.209)	-0.0431 (0.209)	-0.0399 (0.209)	-0.0733 (0.206)	-0.0481 (0.207)	-0.0231 (0.208)
BIG4	0.00165 (0.0835)	0.00168 (0.0835)	0.00122 (0.0835)	-0.000748 (0.0834)	-0.00462 (0.0841)	-0.0123 (0.0844)
ABDA	3.456*** (0.758)	3.457*** (0.758)	3.451*** (0.758)	3.443*** (0.758)	3.347*** (0.759)	3.367*** (0.760)
Constant	-0.259 (0.739)	-0.251 (0.739)	-0.307 (0.736)	-0.339 (0.733)	-0.538 (0.728)	-0.774 (0.727)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,056	1,056	1,056	1,056	1,056	1,056
Wald chi2	365.53	366.08	364.29	362.75	356.04	344.92
Prob>chi2	0.000	0.000	0.000	0.000	0.000	0.000

Note: *** p < 0.01, ** p < 0.05, * p < 0.1. Standard errors in parentheses. FMOC ≥5% = family members owned 5 per cent and more of the firm's shares; FMOC ≥10% = family members owned 10 per cent and more of the firm's shares; FMOC ≥20% = family members owned 20 per cent and more of the firm's shares; FMOC ≥30% = family members owned 30 per cent and more of the firm's shares; FMOC ≥40% = family members owned 40 per cent and more of the firm's shares; FMOC ≥50% = family members owned 5 per cent and more of the firm's shares.

et al., 2019; Ferentinou & Anagnostopoulou, 2016; Guo et al., 2015; Jie et al., 2017; Kim & Park, 2014; Li et al., 2016). However, Chi et al. (2011) claim that although the REM aggregate indicates the level of overall REM, the three individual REM variables provide richer information. Thus, we re-examine the regression model for each individual measure of REM (ACFO, APRC, and ADIE) after multiplying ACFO and ADIE by -1 to be consistent with APRC. The results are the same as those reported in the main analysis, suggesting that FMOC plays a significant role in reducing REM through its three individual proxies as well as the aggregate measurement.

5.3. Alternative regression approach

Although we employ the FGLS estimation approach in the main analysis, we further employ panel-corrected standard error (PCSE) regression to strengthen our findings. Researchers claim that the PCSE regression approach corrects for autocorrelation and heteroscedasticity problems (Bailey & Katz, 2011). The PCSE regression results confirm the main findings that FMOC significantly constrains REM⁴. The result suggests FMOC (measured as a percentage and dummy) is a significant variable for monitoring managerial behaviour.

6. Summary and conclusion

The study provides evidence that family ownership concentration has a significant effect on the level of real earnings management (REM) in the Malaysian market. Family-controlled firms are found to practise lower REM than non-family controlled firms. This evidence is consistent across different levels of family ownership concentration, with different measures of REM and alternative regression estimation. The findings support the alignment hypothesis that family members align their interests with minority shareholders. The results support the notion that family firms report a higher quality of earnings and do not manipulate earnings through real activities. Family firms appear to have more incentive for avoiding information asymmetry, monitoring managerial decisions, and avoiding subsequent loss of reputation (Martinez-Ferrero et al., 2016). Policymakers may consider the results of the current study, that family-controlled firms are motivated to self-monitor their business and avoid playing the earnings manipulation game. Investors may benefit from these results and invest in family firms as these firms produce reliable earnings that reflect the real business activity outcomes. The findings of the current study are subject to two limitations. First, the FMOC in our sample only covers manufacturing firms. Thus, these results may not reflect the situation of other sectors. Nevertheless, the results could be generalised to manufacturing firms in similar emerging markets that share the same Malaysian features, especially in Asia. Secondly, our sample is from Malaysia, a country characterised by a family-controlled market; the findings may not be applicable to markets with less family ownership concentration.

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Author details

Belal Ali Abdurraheem Ghaleb¹
E-mail: bel_ac2002@yahoo.com
Hasnah Kamardin²
E-mail: hasnahk@uum.edu.my
Mosab I. Tabash³
E-mail: mosab.tabash@au.ac.ae

ORCID ID: <http://orcid.org/0000-0003-3688-7224>

¹ Department of Accounting, Hodeidah University, Al Hudaydah, Yemen.

² Tunku Puteri Intan Safinaz School of Accountancy, College of Business, Universiti Utara Malaysia, Kedah, Malaysia.

³ College of Business, Al Ain University, Al Ain, United Arab Emirates.

correction

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Note

1. For further information please refer to <https://www.emis.com/>.
2. Advertising and R&D expenses are considered as zero when the data are missing (Cohen & Zarowin, 2010; Roychowdhury, 2006).
3. This study follows Das et al. (2017) and uses the Jones model (Jones, 1991) for measuring ABDA as residual from the following equation: $(\frac{DA_t}{Assets_{t-1}} = \frac{1}{Assets_{t-1}} + \frac{\Delta REV_t}{Assets_{t-1}} + \frac{PPE_t}{Assets_{t-1}} + \epsilon_t)$ where DA_t = Firm's total accruals at year t . $Assets_{t-1}$ = Firm's total assets in year $t-1$. ΔREV_t = Firm's change in sales in year t . PPE_t = Firm's property, plant and equipment at year t .
4. The results of the additional analyses related to individual real earnings management (REM) and panel-

corrected standard error (PCSE) regression are available on request

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