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Impact of Gender Diversity on Real Earnings Management: Evidence from BRIC Public Listed Non-Financial Firms

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Abstract

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Keywords: Real Earnings Management, Gender diversity, Corporate Governance

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Abstract

Weak corporate governance (CG) practices have been cited as a major factor that causes financial disasters. However, gender diversity (GD) is considered one of these factors that can reduce the effects of such crises. This study, uses 712 publicly listed firms from 2017 to 2022, to investigate the effect of GD on real earning management (REM). Control variables such as firm size, leverage, current ratio, and state-owned enterprises are also used in this study. The findings of this study report that there is a statistically significant relationship between REM with GD. It means that companies having a female on board less engage in REM. Furthermore, the findings of this study can help policymakers, practitioners, and researchers create focused interventions and strategies that will support GD and sustainable business practices in the BRIC economies. Therefore, results suggest encouraging GD in the board to reduce the level of REM.

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Introduction

CG has gained significant attention after several financial crises that occurred in the past. The main reason for these crises was considered to be poor CG practices (Arnold & McMahon, 2016). However, these practices also encourage earnings management (EM) practices (Claessens et al., 2000). EM reduces the quality of the financial statement, and it also becomes a matter of interest for the organization because it affects stakeholders' interests (Tran et al., 2020). Accrual earnings management (AEM) and REM are two main methods of EM that are studied widely

(Malikov et al., 2018). Managers mostly prefer the AEM method to REM as accruals are easier to execute and quantify (Khuong & Anh, 2022). However, AEM is related to accounting decisions while REM is more closely related to operations decisions and directly affects a firm's cash flows (Galdi et al., 2021).

Globally, several laws and rules have been made to handle EM. The adoption of strong CG structures is the most effective strategy. Good CG practices can minimize the impact of EM if transparency and accountability are incorporated in firms (Abbott et al, 2003). However, gender diversity (GD) is one of the



important factors of CG that has gained considerable attention in recent years. Growing research indicates that GD can have a favorable impact on financial performance (Adams & Ferreira, 2009). The statistically significant connections indicate that "businesses whose boards are in the top quartile of GD are 28% more likely to be successful than their peers financially," according to the McKinsey & Company Diversity Wins Report 2020. While making up 50% of the entire population, women still occupy less than a third of the workforce in businesses, making them a low and underutilized resource (Lagarde, 2013).

One of the financial crises that occurred in the last decade was the global financial crisis of 2008. To overcome the effect of financial crises, emerging countries made a bloc in 2009 named BRIC. The economic bloc consisted of Brazil, Russia, India, and China and then expanded to include South Africa in 2010. BRICS nations also have a strong determination to strengthen the CG system in their respective countries. However, due to the unavailability of South African data, this study is limited to BRIC only.

With the increasing pace of globalization and the emphasis on corporate social responsibility, companies are focusing on GD as an integral part of their strategic goals. It is believed that GD not only promotes economic growth but also improves organizational performance (Bertay et al., 2020). The existing literature supports the idea that GD on corporate boards has been suggested as a potential mechanism to monitor REM and AEM due to the different perspectives and experiences that women may bring to financial decision-making (Umer et al., 2020).

There are numerous studies and reports on gender balance on boards of directors in both industrialized and developing nations, including Pakistan, Norway, and the United Kingdom. However, there are relatively few that address emerging nations. Despite various initiatives taken to enhance women's participation in boards, including training, mentorship, and initiative programs (Branson, 2011), changes are generally occurring, although slowly, especially in developing nations (Lord Davies Report 2011, page 7). While the advantages of GD are widely

acknowledged in the case of AEM, according to my knowledge the impact of GD on REM in BRIC has not yet been studied. That's why this study has taken a keen look at non-financial listed companies in BRIC, encompassing accounting and marketing firms, to analyze GD's effect on REM practices.

The remainder of this paper is organized as follows: section 2 summarizes the previous research and illustrates how our hypotheses have been made. Section 3 discusses the research methodology. Section 4 consists of results and discussions of the findings while section 5 consists of the conclusion of the study.

Literature Review

This study has a strong theoretical background with several theories that have evolved with the passage of time such as agency theory and critical mass theory (CMT). Agency theory states that ownership and control are divided in corporations, leading to an agency problem. Managers may act in their self-interest rather than that of the shareholders. EM is one such method where managers might behave in their own interests rather than the interests of shareholders. According to Adams & Ferreira, (2009), more GD on boards may help to decrease agency issues and improve CG to reduce opportunistic behavior. However, CMT states we should add a specific portion of GD to the board to get the rewards of diversity. The presence of CM of females on board increases the chances for them to be included in decision-making which in turn creates a good impact on corporate performance. Conversely, (Kanter, 1993) reports that having few women in top management may lead to marginalization and isolation.

In recent years GD has gained much importance on corporate boards. According to Adams & Ferreira (2009) and Carter et al. (2003), GD on board has a significant impact on good firm performance. Additionally, GD also reduces risk, enhances decision-making, and makes effective financial strategies in corporate boards (Campbell & Mnguez-Vera, 2007). Moreover, previous research also found a significant association between GD and EM. Terjesen et al., (2013) and Kouaib & Almulhim (2019) report

that companies with more GD on boards are less likely to engage in EM as females by nature are risk averse. However, Adams and Ferreira (2009) also suggest similar results that companies having women in their audit committees are less engaged in EM practices.

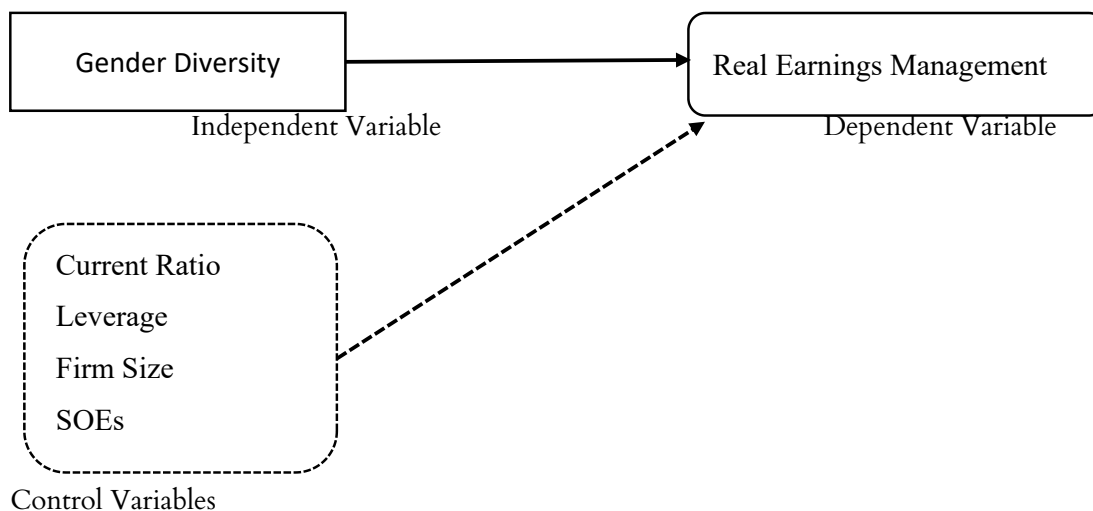
REM and AEM are two main practices that are widely studied by different researchers. However, REM is involved in manipulating the company's actual operations while AEM uses accounting accruals. Schipper and Vincent (2003), report that REM is less common than AEM in the US because it is more successful in obtaining the targeted financial outcome. Similarly, Dechow et al. (2012) also state that REM is more common in countries with weak legal systems. Furthermore, a study by Islam et al. (2020) in Australian companies also confirms that GD boards are associated with lower levels of REM. Pucheta-Martinez et al. (2021) also discovered that GD

in top management is linked to poorer REM levels in Spanish companies.

In contrast, a recent study by Bednar et al. (2020) concluded that female CEOs are less likely than male CEOs to control earnings. According to another study, women managers are more likely to prioritize long-term sustainable growth and adopt a more circumspect approach to managing earnings, both of which can enhance REM. As some research has indicated a negative correlation between GD and EM (Carter et al., 2010; Firth et al., 2006), others (Adams & Ferreira, 2009; Campbell & Mnguez-Vera, 2007; Wang & Clift, 2009) have found no such correlation. Based on the discussion, the following hypothesis has been developed for this study.

Ho = There is no relationship between GD and REM.

Conceptual Framework



Note: In the figure above, gender diversity is taken as an independent variable by taking the female percentage in the overall board of directors denoted by GD, real earnings management is a dependent variable. While current ratio, leverage, SOEs, and firm size are used as control variables and all proxies are calculated as per the literature.

Research Methodology

The study used a quantitative methodology. Secondary data is collected from the annual financial reports of publicly traded non-financial companies in the BRIC economies. Population size consists of BRICS economy-listed non-financial firms. The

sample data consists of 712 firms and data was available for the years 2017 to 2022. The source of data is the Thomson Reuters data stream.

Variables of the Study

The data collected has been analyzed using multiple regression analysis to investigate the GD and REM relationship. REM is measured with Roychowdhury's (2006) and Cohen & Zarowin's (2008) model. The proportion of female board members is the key independent variable, and control variables like firm size, leverage, and current ratio are also included.

Real Earnings Management

REM is the manipulation of financial accounts to achieve predefined earnings targets and serves as a proxy for the dependent variable of this study. We have developed a number of REM proxies in accordance with Roychowdhury (2006); Cohen & Zarowin (2008) and (Masmoudi & Wali, 2020). These proxies are generated using three REM-related strategies: sales manipulation (SM), abnormal production costs (APC), and management of discretionary expenses (DISEXP).

Sales Manipulation

$$\frac{CFO_t}{Assets_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{Assets_{t-1}} + \alpha_2 \frac{Sales_t}{Assets_{t-1}} + \alpha_3 \frac{\Delta Sales_t}{Assets_{t-1}} + et \dots \dots \dots (1)$$

Abnormal Production Cost

$$\frac{COGSt}{Assets_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{Assets_{t-1}} + \alpha_2 \frac{Sales_t}{Assets_{t-1}} + et (2)$$

$$\frac{\Delta INV_t}{Assets_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{Assets_{t-1}} + \alpha_2 \frac{\Delta Sales_t}{Assets_{t-1}} + \alpha_3 \frac{\Delta Sales_{t-1}}{Assets_{t-1}} + et (3)$$

Combining models (2) and (3), we model abnormal production costs as a function of sales in the model (4):

$$\frac{PROD_t}{Assets_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{Assets_{t-1}} + \alpha_2 \frac{Sales_t}{Assets_{t-1}} + \alpha_3 \frac{\Delta Sales_t}{Assets_{t-1}} + \alpha_4 \frac{\Delta Sales_{t-1}}{Assets_{t-1}} + et (4)$$

Table 1

Description of the Variables

Discretionary Expenses

$$\frac{DISEXP_t}{Assets_{t-1}} = \alpha_0 + \alpha_1 \frac{1}{Assets_{t-1}} + \alpha_2 \frac{Sales_{t-1}}{Assets_{t-1}} + et (5)$$

Gender Diversity

GD is an independent variable used in this study. Gender equality is an important economic issue in addition to a moral one. We must establish the conditions necessary for all women to realize their potential if we want to see the global economy reach its full potential (Obstfeld & Maurice, 2017). The percentage of female directors and chairpersons on the board is used to calculate GD.

Control Variable

Since other variables may have an impact on GD and EM, it is necessary to include them as a control variable in the regression model. We have used firm size (FS), current ratio (CR), Leverage (LEV), and State Owned Enterprises (SOEs) are control variables in this investigation.

By taking the logarithm of the firm's total assets, one can calculate the size of the company. Larger companies are more exposed to the public because of their size. As a result, FP is positively impacted by higher business sizes and suffers from low EM practices (Adams & Ferreira, 2004). The ability of a company to pay its short-term obligations and debts is called the current ratio (Delen et al., 2013). The current ratio formula is described below. Current Ratio = Currents Assets/ Current liabilities

The ratio of a company's debt to equity funding is called financial leverage. This study, which is based on the research (Agwan, 2017), measures financial leverage using the ratio of total debts to total assets. Moreover, State-owned enterprises are businesses that are in state ownership to use commerce to achieve their financial goals (Paulsson, 1985).

Variables used in this study are described below in Table 1.

Variables	Name of the Variables	ABB	Definition
Dependent	Real Earnings Management	REM	By adding the absolute value of REM proxies (SM, APC, and DISEXP). While SM and DISEXP proxies will be multiplied by -1.
Independent	Gender Diversity	GD	The proportion of female directors and chairpersons on the Board.
	Firm Size	FS	Log to total assets
Control	Current Ratio	CR	Current assets divided by current liabilities
	Leverage	LEV	Total debt divided by total assets
	State Owned Enterprises	SOE	Firms owned by the state

Data Analysis Techniques

Descriptive statistics, correlation analysis, and multiple regression analysis are all used in this study. The regression analysis tests the relationship between cause and effect (Lind et al., 2011). Descriptive or summary statistics show the kind of data being used (Hair et al., 2010). However, correlation shows how two variables are related to one another (Xiaoqi, 2013).

Ordinary Least Square Assumptions

A single response variable that has been recorded on at least an interval scale is modeled using the generalized linear modeling technique known as ordinary least-squares (OLS) regression. The data must satisfy the four OLS assumptions listed below for the OLS model to run.

The information must follow a normal distribution (Fox, 2015). The data should be uniform and the error term should be constant (Fox, 2015). The data should not contain any outliers (heteroskedasticity) and each disturbance term must be independently distributed and uncorrelated (Fox, 2015). These assumptions violation results in autocorrelation. The OLS estimators become unstable when there is multicollinearity in the data (Fox, 2015).

OLS is the appropriate method of analysis if the aforementioned presumptions are all true. If not, non-parametric methods like Pooled OLS (common constant method), the fixed effect model (FEM), and the random effect model (REM) are used to test the analysis.

Model of the Study

The measurement of REM is based on the Roychowdhury model. To assess the impact of board GD on REM, the study has used the following econometric models:

$$REMit = \alpha + \beta_1 GDit + \beta_2 FS + \beta_3 CR + \beta_4 LEV + \beta_5 SOEs + \epsilon it(6)$$

In the equation, the first REM effect on GD has been examined simply with some control variables.

Where REMit is real earnings management, GDit indicates the presence of women on the board of directors or in senior management positions. Control Variables include; Current Ratio, Firm Size, Leverage, SOEs and α is a constant term.

Results and Discussions

Table 2

Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
REM	0.001	2.043	-21.97	17.555	-1.172	11.775

Variables	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
BGD	7.211	11.064	0.00	60.00	1.584	5.068
LEV	0.451	0.239	0.029	3.464	3.401	32.726
CR	2.015	1.535	0.106	19.308	3.305	20.15
FS	9.228	0.656	7.564	11.585	0.509	3.203
SOEs	0.077	0.266	0.00	1.00	3.185	11.147

Table 02 shows the descriptive statistics of the study. There seems to be little systematic manipulation. However, the maximum and minimum values indicate that there may be a great deal of variation within the organizations, with some perhaps manipulating REM significantly in either direction. In the case of BGD on average 7.2% of females are working as board of directors. This implies that women are still underrepresented on the corporate boards of publicly traded corporations in the BRIC economy. This is consistent with research showing that BGD improves company performance and decision-making (e.g., Adams & Ferreira, 2009). On average the results suggested low REM in the BRIC economy as this is an emerging economy and the results confirm the strong CG and legal practices in the bloc. These results are consistent with (Adams & Ferreira, 2009) suggesting that there might be an

optimal level for GD above which more diversity might cause EM to rise. Different organizations have different capital structures and financial health, as seen by the relatively moderate means and standard deviations of financial indicators like the LEV and CR. The sample's firm size shows that most of the companies are medium to large-sized. With a mean of 0.077, the existence of state-owned businesses indicates a small but noticeable amount of government ownership in the sample. These results taken together, give a thorough picture of the characteristics of the sample and are a great resource for scholars studying corporate finance, governance, and related subjects. The results point to a variety of company behaviors, financial health, and external operating conditions, all of which are consistent with the body of knowledge and research trends in the area.

Table 3

Correlational Analysis

Variables	REM	BGD	LEV	CR	FS	SOE
REM	1.000					
BGD	-0.125	1.000				
LEV	0.099	0.028	1.000			
CR	-0.087	0.001	-0.545	1.000		
FS	0.128	0.275	0.399	-0.323	1.000	
SOEs	0.076	0.060	0.089	-0.093	0.356	1.000

The correlations between the variables under investigation are displayed in Table 03 BGD indicates a negatively significant relationship with REM, which means having a female on board decreases REM as already stated by Islam et al. (2020); Martnez et al. (2021); Schipper & Vincent (2003) that REM is less common in strong legal systems.

Financial variables have weak to moderate correlations with one other and with other variables.

A negative correlation is seen between CR and REM, indicating that companies with more liquidity control earnings manipulations. Except for a moderately positive correlation with FS, the correlation between these variables is in line with earlier research (e.g., Christie, 1990; Bartov, 1993; Ali et al, 2015; Kim et al., 2003; Lobo & Zhou, 2006; Pincus & Rajgopal, 2002; Watts & Zimmerman, 1990). The existence of state-owned enterprises (SOE) demonstrates modest

correlations with most variables, indicating that state-owned firms typically have large sizes and are involved in earnings manipulations. To look for potential multicollinearity among independent variables, the VIF test is run in addition to correlation analysis. A VIF score of higher than 10 indicates significant multicollinearity in the regression analysis, as mentioned by Chatterjee et al. (2000). There is no evidence of multicollinearity in this study because the predicted VIF values for each independent variable are

all substantially lower than the threshold value of 10 and results are reported in appendix 1.

Model Selection

Several diagnostic tests were carried out to determine the appropriate model of analysis. The results of the diagnostic tests recommended a FE model for the analysis. The explanation of diagnostic tests and the regression models are discussed below.

Table 4

Hausman (1978) Specification Test

	Coef.
Chi-square test value	28.565
P-value	0.00

Table 5

Breusch and Pagan Lagrangian Multiplier Test for Random Effects

	Coef.
Chi-square test value	3008.62
Prob > chibar2	0.00

Table 04 reports that the p-value is significant for the Husman test as the p-value is less than 0.05 so the null hypothesis is accepted as well as p-value in Table 05 for the F-test is 0.000, which concludes that the RE

model is a more suitable option than the pooled OLS. So for our analysis, the appropriate model is the FE model.

Table 6

Fixed Effect Model for REM

BGD	0.008** (-2.91)
LEV	0.722** (2.62)
CR	-0.022 (-0.67)
Fsize	0.265 (1.49)
SOEs	0.211 (1.24)
cons	-2.677 (-1.64)

F	4.196
R ²	0.00587
Adjus R ²	0.00478

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 06 reported the results for REM and BGD, the results indicate that BGD is negatively associated with REM while these results are statistically significant means having females on boards decreases REM (Kouaib & Almulhim, 2019; Terjesen et al., 2013; Zalata et al., 2018). Hence null hypothesis is rejected as there is a negative association between BGD and REM. Conversely, variables such as LEV and the existence of SOE indicate statistically significant associations with REM means firms with more debts and involvement of the state also engage in REM activities. However, it is vital to note that the coefficient for firm size is positive and statistically significant, indicating that firm size may significantly affect REM techniques in the sample which means larger firms do REM more as compared to small and medium businesses. Overall findings contribute to our understanding of the causes of REM within

organizations and show the need to incorporate diverse aspects in studying such activities.

Conclusion

The findings suggest that GD on boards has positive effects on the quality and transparency of financial reporting. REM has been demonstrated to have a statistically significant negative relationship with BGD, which means having females on board lessens the REM practices. Further evidence that the influence of these variables may vary depending on the environment or be influenced by other unobserved variables comes from the statistically significant relationships that additional control variables, such as leverage (LEV) and the presence of state-owned enterprises (SOEs), display with EM practices. SOE shows the results the state is engaged in REM activities in the BRIC bloc.

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Appendix I

Variable	VIF	1/VIF
LEV	1.55	0.643254
FS	1.51	0.663696
CR	1.46	0.686506
SOE	1.15	0.868136
BGD	1.10	0.910436
Mean VIF	1.35	

Breusch-Godfrey LM test for autocorrelation

lags(p)	chi2	df	Prob > chi2
1	1659.437	1	0.0000

H0: no serial correlation

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of RE

chi2(1)	=	54.82
Prob > chi2	=	0.0000