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Article

Gender diversity and earnings management behaviours in an emerging market: a comparison between regression analysis and FSQCA

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

Gender diversity and earnings management behaviours in an emerging market: a comparison between regression analysis and FSQCA

Le Huu Tuan Anh^{1,2} and Nguyen Vinh Khuong^{1,2*}

Abstract: The study explores the relationship between gender diversity board (GDB) and earnings management (EM) with state-ownership (SOE) and firm growth as moderating factors. Based on the data of 404 Vietnamese listed firms in 2015–2019, the feasible generalized least squares (FGLS) method and further tests are employed to confirm the results. Furthermore, this research compares the results of multiple regression analysis (MRA) with a recently developed panel data fuzzy-set qualitative comparative analysis technique (fsQCA). The findings suggest that women on board (WOB) is negatively related to accrual based earnings management (AEM), while positive relationships are found with the real earnings management (REM) one. Besides, firms have high proportion of SOE reduce the monitoring role of WOB in deterring EM. For companies that had the increase in revenue, WOB shows a positive and insignificant relationship to AEM as well as REM, respectively. The fsQCA results highlight the configuration of WOB, SOE, FG, and other board

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PUBLIC INTEREST STATEMENT

The study explores the relationship between gender diversity board and earnings management with state-ownership and firm growth as moderating factors. The link between gender diversity board and earnings management is investigated in the research context of Vietnam, an emerging market with an incomplete legal framework in protecting investors. Following the restoration stage of growth, corporate governance and the quality of management boards became one of the most pressing challenges that firms in Vietnam's economy have ever faced, particularly state-owned enterprises that had been equitized. The findings suggest that women on board is negatively related to Accrual-based earnings management, while positive relationships are found with the real earnings management one. The fsQCA results highlight the configuration of WOB, SOE, FG, and other board characteristic proxies that lead to the EM's behavior. This study adds to the existing studies on accounting by providing empirical evidence from the Vietnamese context.

characteristic proxies that lead to the EM's behavior. In short, the moderating role of SOE and revenue expansion is validated. This study adds to the scholarly literature on accounting and corporate governance (CG) by providing empirical evidence from the context of an emerging market, Vietnam.

Subjects: Gender & Development; Business, Management and Accounting; Industry & Industrial Studies

Keywords: female directors; fuzzy-set qualitative comparative analysis; accruals earnings management; real earnings management; state-ownership; firm growth

1. Introduction

Income information helps make economic decisions and anticipate future revenues (Dechow et al., 2010). It is widely understood that managerial aims and attributes impact financial reporting quality and that executives' opportunism tends to lower profits quality. Because accounting standards and financial reporting standards provide company leaders with considerable opportunities for EM, it is no surprise that the study of EM has received much attention in the financial accounting literature. Although EM is not a new issue, it has piqued the interest of a growing number of shareholders, investors, and several studies have been undertaken on it and criteria such as earnings quality (Khuong, Abdul Rahman et al., 2022; Li, 2019); CG (El Diri et al., 2020); financial performance (Ding et al., 2018); audit quality (Orazalin & Akhmetzhanov, 2019). Furthermore, GDB is one of the most critical CG concerns, drawing significant attention from scholars, policymakers and other related parties (Shahab et al., 2019). Much research has suggested that WOB is directly related to EM (Hala, 2019; Kyaw et al., 2015). However, the previous findings were still ambiguous when most of them found the negative relationship between WOB and EM (Arun et al., 2015; Hoang et al., 2017; Kouaib & Almulhim, 2019; Kyaw et al., 2015; Sial et al., 2019; Triki Damak, 2018). While other recent studies argue for the negative side or no correlation of this link (Debnath et al., 2019; Zalata et al., 2021). Due to the fact that the empirical evidence about FDOB-EM relationship is still mixed and controversial, simply applying multiple regression analysis can not provide a complete view about this topic. As a result, panel data and the fsQCA method are applied to unveil equifinal configurations of FDOB with other factors in order to explain for inconsistent prior findings of the link between FDOB and EM.

This study was conducted in Vietnam with the typical characteristics of the stock market and the CG quality (Khuong, Anh et al., 2022). The stock market in Vietnam is a capital market that works on the principle of free and open competition, drawing the money to profitable and secure investment opportunities. Domestic and international investors will be attracted to companies that do well in business and, more importantly, have solid governance. For the Vietnamese economy, the stock market is an essential source of capital. Governance is both a condition and a prerequisite for long-term capital attraction success. With the incorporation of ASEAN governance norms and practices, as well as the OECD scorecard, Vietnam advanced further than two years ago in 2020 in terms of CG quality (ASEAN Corporate Governance Scorecard (ACGS), 2017).

Following the restoration stage of growth, CG and the quality of management boards became one of the most pressing challenges that firms in Vietnam's economy have ever faced, particularly state-owned enterprises that had been equitized (Dang et al., 2020). Despite some progress in terms of women's rights and gender equality in Vietnam, women continue to face barriers in a variety of occupations. Respondents from the Navigo's Group survey on gender equality claimed that they can aware of gender equality. Still, only 44% of them said the employers had adopted gender equality-related rules. Females in Vietnam have a 10% lower average salary than their male counterparts. The underrepresentation of FDOB is caused by a variety of issues, including a lack of public understanding about the role of women in politics, leadership, and management.

All the above reasons are the motivations to conduct this study. The research can contribute to the existing literature in several ways. Firstly, this study uses both AEM and REM techniques as EM measurements to provide a broader view of the EM topic. Secondly, the WOB-EM link is investigated in the research context of Vietnam, a developing country, and an emerging market with an incomplete legal framework in protecting investors as well as ineffectiveness CG mechanism. Thirdly, the factors SOE and FG are controlled as two moderating effects on the WOB-EM relationship. While SOE is typical ownership that prevails in Vietnam (Kabir & Thai, 2017), the FG factor would provide a more comprehensive view about the motivation to manipulate the earnings of managers. To provide a deeper insight into the WOB-EM association along with the impact of SOE, FG, and other board characteristics, the fsQCA method is adopted to explore the above relationship and answer for previous conflicting results. This is the first study controlling SOE and FG as moderating factors that impact on FDOB-EM relationship. In addition, there is no previous research that combined both multiple regression analysis and the fsQCA approach to investigate the FDOB-EM relationship. This will greatly contribute to the EM existing studies and provide useful empirical evidence for future study using the fsQCA technique in this area.

Along with this section, the study includes the following parts: the second section presents the theoretical and hypothesis development. Section 3 includes the research design and research data. In part 4, research findings are provided, followed by conclusions and some recommendations in section 5.

2. Literature review and hypothesis development

2.1. Literature review

This study examines the WOB-EM association, besides the effects of SOE and FG as the moderating role on the WOB-EM relationship are also tested, applying agency and upper echelons theory as key theories. Jensen and Meckling (1976) described an agency relationship as a contract in which the principals permit the agents to execute some function on their behalf, including delegating some decision-making authority to the agent. According to agency theory, shareholders are likely to confront asymmetric information difficulties when managers pursue personal interests rather than maximizing business value. Information asymmetry problems can be reduced via good CG mechanisms (Chung et al., 2010). In this regard, the board of directors (BOD) plays a pivotal in protecting shareholders' interests (García-Ramos & Díaz, 2021).

According to Schipper (1989), EM is the deliberate conduct of the financial statement preparation and presentation process for personal benefit. The executives apply EM to maximize their gains while ignoring users, resulting in increased information asymmetry (Khuong, Abdul Rahman et al., 2022; Obeng et al., 2020). AEM and REM are two common categories of EM. Managers tend to favor accrual accounting to EM through real transactions because accruals are easier to implement and measure (Khuong, Abdul Rahman et al., 2022; Khuong & Anh, 2022). The isolation of EM from AEM is known as REM (Li, 2019; Roychowdhury, 2006), which can help businesses adjust unexpectedly reduced cash flow from operational activities. According to Anagnostopoulou and Tsekrekos (2017), the REM technique is harder to identify because of its nature, which may camouflage into firms' daily activities. On the other hand, previous study has demonstrated that REM had a detrimental effect on future economic performance and business value (Graham et al., 2005).

2.2. Hypothesis development

According to Milliken and Martins (1996), gender diversity on the board can symbolize board diversity in general, and agency theory encourages board diversity. Because a board with varied representation is more balanced, it is less probable for a single person or a small group of people to dominate decision-making, improving the board's independence. Independent boards, in order to fulfill its mandate with shareholders, encourage business openness and prevent management from engaging in opportunistic/self-serving activities like EM, hence increasing the integrity of

financial reporting (Ajinkya et al., 2005; Khuong, Anh et al., 2022). So, FDOB plays a pivotal role in deterring and detecting EM.

The different experiences, expertise, and abilities of female board members strengthen the firm's governance. These elements improve the board's capacity to carry out its crucial role of management oversight and monitoring (Bear et al., 2010) and enhancing the board's independence (Adams & Ferreira, 2009). Thus, if the board detects earnings manipulation, female directors will be more inclined to avoid the potential negative repercussions from earnings misrepresentation than their male counterparts. In other words, the GDB has a negative relationship with EM. Furthermore, Byrnes et al. (1999) stated that in numerous decision-making circumstances, women are more cautious than males. They are more likely than men to move decisively to improve earnings quality since they are more sensitive to reputational harm and the danger of lawsuits. Therefore, it is usually expected that women will approach EM with caution (Gul et al., 2009).

There are also gender disparities in decision-making and risk-taking behavior. Women in business management, on average, hold their companies to higher ethical standards (Pan & Sparks, 2012). They are less likely to take dangers, especially when it comes to financial decisions, and to engage in unethical actions in order to gain personal gain (Gul et al., 2009). So, they would not do actions that might negatively impact on firm in the long term, which means that FDOB plays a pivotal role in deterring EM.

As more women move up the ladder of management, the number of research examining their characteristics has risen in response to their impact on organizational processes and firm and environment factors. The upper echelons theory is a hypothesis regarding the qualities and conduct of senior managers or executives who can influence an organization's result (Hambrick & Mason, 1984). The performance of the company is influenced by several aspects of the executives, such as their experiences, value, personalities, etc. (Hambrick & Mason, 1984). As a result, upper echelons theory asserts that board composition is critical in anticipating a decision-making approach. Financial accounting selection is a component of a firm's strategic choices of top managers. Different financial accounting strategies (conservative or aggressive accounting style) will suit each type of executive based on their qualities (Plöckinger et al., 2016).

When women reach higher levels of management, their qualities will impact the running processes of organizations. Female directors are more cautious and ethical than their male counterparts. Peni et al. (2010) discovered that WOB are less tolerant of opportunistic behavior and, as a result, are less likely to commit fraud or engage in insider trading (Inci, Nagar & Radhakrishnan, 2017) and they tend to detect EM behavior to enhance the financial reporting quality.

According to Huse et al. (2006), women on BODs desire to ask more questions, are more prepared for meetings than men, have greater expectations for their tasks, and want to show extra competence to progress to top positions (Eagly & Carli, 2003). Women have greater conversational abilities, giving them an advantage over men in tasks that require internal and cross-group communication (Schubert, 2006). Consequently, they can perform better in supervising and advisory jobs, reducing the possibility of financially destructive activities.

Finally, while looking for information and assessing managerial choices and actions, a GDB, for example, generates a greater range of viewpoints (Amy J. Hillman et al., 2007). Women may be less prone to groupthink and give a fresh viewpoint on decision-making since they are not part of the "old boys' network." As a result, more information is obtained, and more diversified product-market strategies, along with higher-quality decisions, are produced (Amason, 1996). Previous research indicates the negative effect of FDOB on AEM (Arun et al., 2015; Kouaib & Almulhim, 2019; Zalata et al., 2021) and REM (Hoang et al., 2017; Sial et al., 2019). From agency theory and upper echelons perspective, the following hypotheses are proposed:

Hypothesis H1: GDB has a negative impact on AEM.

Hypothesis H2: GDB has a negative impact on REM.

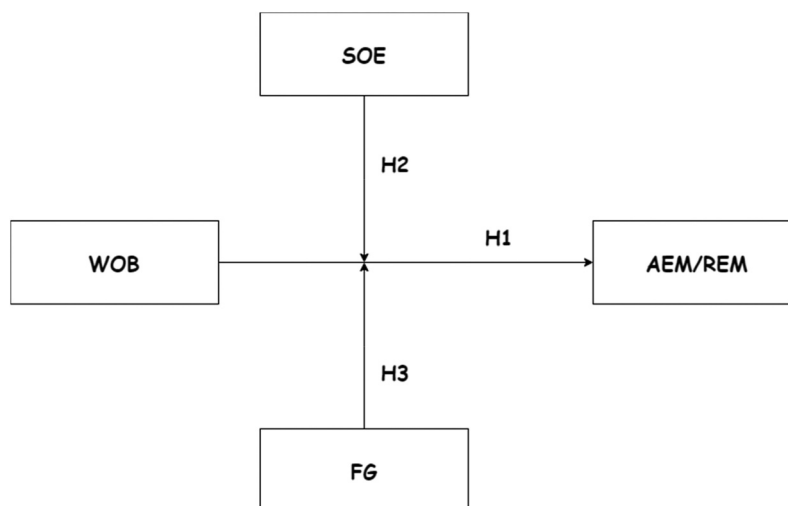
The kind of ownership is one of the factors affecting CG. In Vietnam, SOE accounts for a major fraction in the type of ownership and state-owned companies play an essential role in the economy (Dang et al., 2020). According to resource dependency theory, when companies employ external resources, they will meet dependencies, and responding to these dependencies is an important managerial responsibility. External relationships between both the business and vital sources are a survival strategy for businesses to decrease uncertainty and risk (Pfeffer & Salancik, 1978). As a result, government policies and regulations are viewed as a powerful force that cannot be found in the natural environment (Hillman et al., 1999). Unlike usual companies whose primary objective is to maximize shareholder wealth, SOEs tend to focus on hitting the government targets such as social welfare or political goals, other than profit oriented. Some argue that as SOEs belong to “the public”, no one really owns them, and thus, according to agency theory, managers have a tendency to act on their own interests rather than sticking to shareholders’ one (Nguyen & Nguyen, 2020) so the likelihood of happening earnings manipulation behavior in state-owned companies is higher. On the other hand, top managers of state-owned firms usually perceive that they are “too big to fail,” so they tend to invest in risky investments, resulting in the loss. Thus, corporate managers of state-owned companies will approve the use of accrual-based earnings manipulation more to compensate for the lousy performance or it can be said that the role of FDOB in restraining EM would be reined.

Most people believe that state-owned businesses are more likely to manipulate profits, according to Wang and Yung (2011). This is due to a lack of CG, insufficient market discipline, and multiple conflicts of interest. As a result, managers are more inclined to utilize discretion in reporting accounting information for the benefit of the SOE controls (Wang & Yung, 2011). Thus, FDOB might not perform their responsibility in monitoring the board, which means that the WOB-EM relationship is weaker. Vietnam is overhauling its state-owned companies with a focus on equitization. Many public firms were reformed, with the government still retaining a large share of the equity. However, they have failed to escape the centralization of financial bureaucracy, organizational structure, and management procedures, which has resulted in low CG in state-owned enterprises (Shleifer, 1998) and opportunistic managerial conduct for personal benefit rather for shareholder profit through EM. From above reasons, the following hypothesis is proposed:

Hypothesis H3: SOE moderated the relationship between WOB and EM.

Saeed and Sameer (2017) implied that the annual change in revenue, which reflects a company’s growth possibilities, is referred to as the growth rate. If putting a deeper insight into executives’ view when firms are profitable or growth, they would try to meet the forecasting target in profits and receive the bonus or compensation. Consequently, managers invest in many potential projects with high risk to gain more profit for the business. Risky projects are highly likely to fail, resulting in loss and harming financial status. Managers disguise the loss in this circumstance by using EM to make financial results look nice. On the other side, when a company makes a profit, shareholders are more likely to expect the company to grow in the coming years. This could lead to pressure for managers to meet the firm’s target, so top managers might conduct earnings manipulation to meet the enterprise’s goals. From the arguments mentioned above, the following hypothesis is proposed:

Figure 1. Research model.



Hypothesis H4: The firm growth moderated the WOB-EM association.

Figure 1 describes the model of this study” below the Hypothesis H4.

3. Research design

3.1. Data

With a total of 735 quoted Vietnamese companies, the sample comprises 404 non-financial corporations listed on the Ho Chi Minh Stock Exchange and Hanoi Stock Exchange from 2015 to 2019. The data about the presence of FDOB is manually collected from audit financial statements of those companies. Besides, financial data is obtained from publicly released audited financial statements of listed non-financial companies through Refinitiv Eikon’s DataStream data source.

3.2. Empirical model

Based on the hierarchical regression procedure of Baron and Kenny (1986) to evaluate the moderating effect of SOE and FG on the association between gender diversity and EM, Equations 1, 2 and 3 are employed as below:

$$\begin{aligned}
 AEM/REM_{i,t} = & \alpha + \beta1 * Female_{i,t} + \beta2 * SOE_{i,t} + \beta3 * SIZE_ASSET_{i,t} + \beta4 * LEV_{i,t} + \beta5 * BIG4_{i,t} \\
 & + \beta6 * ROA_{i,t} + \beta7 * ASSETGR_{i,t} + \beta8 * BOARDSIZE_{i,t} + \beta9 * AGE_{i,t} \\
 & + \beta10 * CEODUAL_{i,t} + \beta11 * BIND_{i,t} + Industry_j + Year_j + \epsilon_{it}
 \end{aligned}
 \tag{1}$$

$$\begin{aligned}
 AEM/REM_{i,t} = & \alpha + \beta1 * Female_{i,t} + \beta2 * Rev_grow_{i,t} + \beta3 * SIZE_ASSET_{i,t} \\
 & + \beta4 * LEV_{i,t} + \beta5 * BIG4_{i,t} + \beta6 * ROA_{i,t} + \beta7 * ASSETGR_{i,t} \\
 & + \beta8 * BOARDSIZE_{i,t} + \beta9 * AGE_{i,t} + \beta10 * CEODUAL_{i,t} + \beta11 * BIND_{i,t} \\
 & + Industry_j + Year_j + \epsilon_{it}
 \end{aligned}
 \tag{2}$$

Table 1. Description of variables

Variable	Meaning	Description	Source
AEM	Proxies variables according to Jones (1991) and Kothari, Leone & Wasley, (2005) models	$TAC_{i,t} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \epsilon_{i,t}$ $TAC_{i,t} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta (REV_{i,t} - \Delta R_{i,t})}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \beta_4 ROA_{i,t} + \epsilon_{i,t}$	Jones (1991); Kothari, Leone, and Wasley (2005)
REM	Proxies variables according to Roychowdhury model	$CFD_{i,t} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{REV_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \epsilon_{i,t} \quad (4)$ $PROD_{i,t} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{REV_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_4 \frac{\Delta REV_{i,t-1}}{A_{i,t-1}} + \epsilon_{i,t} \quad (5)$ $DISC_{i,t} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{REV_{i,t-1}}{A_{i,t-1}} + \epsilon_{i,t}$	Roychowdhury (2006)
Fper	The presence of women on the board	The percentage of female directors on the board	Sial et al. (2019); Zalata et al. (2021)
Fdum		the dummy variable: 1 if the board has at least one female director, otherwise 0	Triki Damak (2018)
SOE	State ownership	State ownership rate in enterprises	Nguyen and Nguyen (2020); Wang and Yung (2011)
REV_GROWN	FG in revenue	The change in the firm's total revenue in year t compared to year t-1	Ain, Yuan, Javaid, Usman, and Harris (2021); Saeed and Sameer (2017)
Interaction1_Per	Interaction variable corresponds with independent variables Fper, Fdem and moderating variables SOE, FG.	(Fper - mean score of Fper)*(Soe - mean score of Soe)	Aiken, West, and Reno (1991)
Interaction2_Dum		(Fdum - mean score of Fdum)*(Soe - mean score of Soe)	
Interaction3_Per		(Fper - mean score of Fper)*(rev_grown - mean score of rev_grown)	
Interaction4_Dum		(Fdum - mean score of Fdum)*(rev_grown - mean score of rev_grown)	

(Continued)

Table 1. (Continued)

Variable	Meaning	Description	Source
SIZE_ASSET	Enterprise size	The natural logarithm of total assets;	Triki Damak (2018)
LEV	Firm leverage	The ratio of financial debt to total assets;	
ROA	Return on asset	The ratio between profit after tax and total assets;	
ASSETGR	The change in total assets of the company	(Next year's total assets - previous year's total assets)/Previous year's Total assets	
AGE	Firm age	Log of firm age, which is the time period minus listing date of the firm	
BOARDSIZE	The size of BOD	The number of directors on BOD	
CEODUAL	The chair duality	1 if the CEO is also the chair of the board, otherwise 0	
Bind	The board independence	The proportion of independent members over board size	
BIG4	Audit quality	If the client is engaged with the service of Big4 auditor in financial year, otherwise 0	

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	VIF
aem jones	2014	-0.005	0.107	-0.21	0.219	
aem kothari	2014	-0.004	0.104	-0.206	0.217	
fper	2025	0.145	0.163	0	0.5	3.79
fdum	2025	0.523	0.5	0	1	3.75
r_cfo	2020	0.001	0.113	-0.214	0.228	
r_prod	2001	0	0.133	-0.274	0.234	
size_asset	2025	27.269	1.367	24.865	29.908	1.77
lev	2025	0.227	0.186	0	0.578	1.44
r_disx	2023	-0.003	0.068	-0.094	0.162	
rm_proxy	1998	-0.001	0.098	-0.196	0.196	
big4	1723	0.259	0.438	0	1	1.34
assetgr	2018	0.074	0.18	-0.203	0.535	1.15
roa	2025	0.061	0.054	0	0.19	1.16
boardsize	2025	5.449	0.996	4	8	1.1
age	2025	2.89	0.35	2.303	3.584	1.03
ceodual	2025	0.76	0.427	0	1	1.01
bind	2025	0.624	0.168	0	0.909	1.19
soe	1929	14.616	24.151	0	96.72	1.02
rev_grown	2018	0.131	0.629	-0.949	9.203	1.09

$$\begin{aligned}
 \text{AEM/REM}_{i,t} = & \alpha + \beta_1 * \text{Female}_{i,t} + \beta_2 * \text{SOE/Rev_grow}_{i,t} + \beta_3 * \text{Interaction_term}_{i,t} \\
 & + \beta_4 * \text{SIZE_ASSET}_{i,t} + \beta_5 * \text{LEV}_{i,t} + \beta_6 * \text{BIG4}_{i,t} + \beta_7 * \text{ROA}_{i,t} \\
 & + \beta_8 * \text{ASSETGR}_{i,t} + \beta_9 * \text{BOARDSIZE}_{i,t} + \beta_{10} * \text{AGE}_{i,t} + \beta_{11} * \text{CEODUAL}_{i,t} \\
 & + \beta_{12} * \text{BIND}_{i,t} + \text{Industry}_i + \text{Year}_i + \varepsilon_{it}
 \end{aligned} \tag{3}$$

Table 1 contains detailed descriptions of the research variables.

3.3. Estimation strategy

3.3.1. Panel data regression

Because the research involved panel data, it was required to choose between a fixed-effects model (FEM) and a random effect model (REM). The parameters in the models were estimated using both fixed and random effects models to identify suitable models. The Hausman test was then conducted, assuming that the REM model is more appropriate, and the test results show that the REM model is more appropriate. Then, Breusch-Pagan test and the Wooldridge test are used to check the likelihood of heteroscedasticity and autocorrelation phenomenon, respectively. Finally, FGLS regression is applied to solve the issues with heteroscedasticity and autocorrelation.

3.3.2. The fsQCA approach

To complete the empirical analysis, the fsQCA method is applied. According to Charles C. Ragin (2000), fsQCA method is a recently new approach that compares cases using Boolean algebra. FsQCA has a substantial advantage over other methods since it focuses on causal setups. FsQCA finds combinations of several causes while bridging the gap between qualitative and quantitative research. The fsQCA method is a set of advanced tools for assessing causal complexity. It aids

Table 3. Hierarchical regression results of moderating effects of SOE on FDOB-AEM relationship

AEM	Jones	Kothari	Jones	Kothari	Jones	Kothari	Jones	Kothari	Jones	Kothari	Jones	Kothari
Direct effects												
Fper	0.001 [0.14]	-0.006 [-0.59]	-0.002 [-0.24]	-0.016 [-1.56]	-0.007** [-2.22]	-0.005* [-1.66]	-0.007** [-2.10]	-0.01*** [-3.16]	-0.001 [-0.12]	-0.014 [-1.37]	-0.007** [-2.00]	-0.01*** [-3.02]
Fdum												
Moderator variables												
SOE_Per			0.000 [0.70]	0.000 [1.10]	0.000 [0.66]	0.000 [1.16]	0.000 [0.75]	0.000 [1.08]	0.000 [0.66]	0.000 [1.10]	0.000 [0.66]	0.000 [1.10]
SOE_Dum												
Interaction effects												
Interaction1_Per									0.000 [-0.58]	0.000 [-0.44]		
Interaction2_Dum											0.000 [-0.18]	0.000 [-0.20]
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1710	1710	1622	1622	1622	1622	1622	1622	1622	1622	1622	1622
R ²	0.137	0.097	0.142	0.100	0.136	0.097	0.142	0.100	0.142	0.100	0.142	0.101

t statistics in brackets.

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

researchers in overcoming many of the flaws associated with the most often used technique, MRA (Cuadrado-Ballesteros et al., 2017), which fails to take into account for the complexity that exists in the real world and in research data sets (Woodside, 2017). First and foremost, “MRA is a symmetric test that assesses the impact of an independent or explicative variable on a dependent variable. The effects of explicative factors on the independent variable are both sufficient and necessary requirements to explain its behavior, according to this regression technique. However, most real-life events and relationships are asymmetrical (Charles C. Ragin, 2008), and the same cause might have different outcomes in various situations” (Cuadrado-Ballesteros et al., 2017). When using fsQCA in this circumstance, researchers do not need to develop a causal model that better describes the behavior of the independent variable for their data sets. “To assess the quantity and type of the different causal models that exist among comparable situations,” they must perform (Charles C. Ragin, 1987). Finally, according to Fiss (2011); Schneider and Wagemann (2012), the fsQCA approach can detect conflicts in previous studies.

4. Results and discussion

4.1. Descriptive statistics

Table 2 shows the descriptive statistics for all variables. With an average of seven members on the board, 14.5% of BODs include at least one female director, and 76% of CEOs have dual status. The mean score of SOE is nearly 15%, with the max value being 97%. Moreover, the maximum number of members of the board are 8 and the mean value is 5.449. Furthermore, the multicollinearity test reveals that all independent and control variables have VIF < 10, indicating that the model is free of multicollinearity.

4.2. The moderating effect of percentage of SOE on FDOB-AEM association

The hierarchical regression results of SOE as moderating effect on FDOB-AEM relationship are presented in Table 3. The findings show that FDOB is directly negatively related to AEM. The results are consistent with hypothesis 1, Kouaib and Almulhim (2019), Saona et al. (2020), and Sial et al. (2019). This direct link is because companies with gender-diverse closely oversee their executives and have higher earnings quality (Kouaib & Almulhim, 2019). Furthermore, women are more ethical in business and are less likely than males to engage in immoral behaviors for financial gain, according to a psychological perspective. In other words, FDOB plays a pivotal role in deterring AEM behavior. When looking into supervising functions of BOD, females are regarded as more independent thinking and risk-averse than male directors. They do not belong to “old boys’ networks” (Adams & Ferreira, 2009), so female directors tend to provide better monitoring roles over the management (Ain et al., 2021) and better constrain earnings manipulation through accrual activities.

To test hypothesis H3, moderating effect of SOE on the relationship between FDOB and AEM is controlled. These results mean that the monitoring role of female directors is restrained in firms with high percentage of SOE. Because, it is argued that state-owned companies belong to “the public”, no one really owns them, and thus, managers tend to act on their own interests rather than sticking to shareholders’ one (Nguyen & Nguyen, 2020) so the likelihood of happening earnings manipulation behavior through accrual activities is higher. Furthermore, state-owned firms have a lesser level of regulation in management and supervision, resulting in higher management autonomy and increased EM engagement (Choi et al., 2020). In addition, in corporations where the state keeps a percentage of shares, but the family or founder’s private enterprises retain control, differing owners may have divergent interests or opposing viewpoints, resulting in inspired data manipulation (Choi et al., 2020).

4.3. The moderating effect of percentage of SOE on FDOB-REM association

In terms of the FDOB-REM association (Table 4), the empirical results indicate that the presence of FDOB is positively related to REM. From empirical results, the hypothesis H2 is rejected and these findings contrast to Kouaib and Almulhim (2019); Sial et al. (2019) and are consistent with Debnath et al. (2019). Because manipulation of real earnings is hard to detect than AEM (Graham et al., 2005), managers preferred to apply REM. Because a company employs REM to meet certain

Table 4. Hierarchical regression results of moderating effects of SOE on FDOB-REM relationship

REM	r_cfo	r_prod	r_disx	rm_proxy	r_cfo	r_prod	r_disx	rm_proxy	r_cfo	r_prod	r_disx	rm_proxy	r_cfo	r_prod	r_disx	rm_proxy
Direct effects																
Fper	-0.009 [-0.92]	0.035*** [3.56]	0.008* [1.81]	0.030*** [3.63]	-0.004 [-0.38]	0.037*** [3.54]	0.010** [2.23]	0.033*** [3.94]	-0.004 [-0.42]	0.036*** [3.41]	0.012*** [2.65]	0.032*** [3.72]				
Fdum	-0.001 [-0.32]	0.009*** [3.13]	0.003** [2.48]	0.013*** [4.40]	0.001 [0.25]	0.011*** [3.36]	0.004*** [3.21]	0.014*** [4.71]	0.001 [0.24]	0.011*** [3.30]	0.005*** [3.54]	0.014*** [4.41]				
Moderator variables																
SOE_Per					0.000 [-1.57]	0.000 [0.00]	0.000** [2.03]	0.000 [-0.79]	0.000 [-1.49]	0.000 [-0.04]	0.000** [2.11]	0.000 [-0.62]				
SOE_Dum					0.000 [-1.57]	0.000 [0.15]	0.000** [2.02]	0.000 [-0.99]	0.000 [-1.42]	0.000 [0.12]	0.000** [2.00]	0.000 [-1.03]				
Interaction effects																
Interaction1_Per									0.000 [0.38]	0.000 [0.31]	0.000* [1.91]	0.000 [-0.12]				
Interaction2_Dum									0.000 [0.00]	0.000 [0.04]	0.000*** [3.51]	0.000 [0.96]				
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1710	1710	1710	1710	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706
R ²	0.204	0.129	0.350	0.058	0.204	0.129	0.350	0.058	0.204	0.129	0.350	0.058	0.204	0.129	0.350	0.058

t statistics in brackets.

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

Table 5. Hierarchical regression results of moderating effects of FG on FDOB-AEM relationship

AEM	Jones	Kothari	Jones	Kothari	Jones	Kothari	Jones	Kothari	Jones	Kothari	Jones	Kothari	Jones	Kothari
Direct effects														
Fper	0.001 [0.14]	-0.006 [-0.59]			0.000 [-0.04]	-0.006 [-0.55]			0.000 [0.02]	-0.004 [-0.41]				
Fdum			-0.005* [-1.66]	-0.007** [-2.22]			-0.005 [-1.59]	-0.007** [-2.06]			-0.004 [-1.27]			-0.005* [-1.65]
Moderator variables														
Rev_grow_Per					-0.028*** [-6.68]	-0.019*** [-4.56]			-0.028*** [-6.70]	-0.019*** [-4.56]				
Rev_grow_Dum							-0.028*** [-6.69]	-0.019*** [-4.51]					-0.033*** [-7.75]	-0.023*** [-5.43]
Interaction effects														
Interaction3_Per									0.018 [0.64]	0.026 [0.94]				
Interaction4_Dum													0.029*** [3.56]	0.027*** [3.44]
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1710	1710	1710	1710	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706
R ²	0.137	0.097	0.142	0.100	0.142	0.101	0.136	0.097	0.142	0.100	0.142	0.100	0.142	0.101

t statistics in brackets.

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

Table 6. Hierarchical regression results of moderating effects of FG on FDOB-REM relationship

REM	r_cfo	r_prod	r_disx	rm_proxy	r_cfo	r_prod	r_disx	rm_proxy	r_cfo	r_prod	r_disx	rm_proxy	r_cfo	r_prod	r_disx	rm_proxy
Direct effects																
Fper	-0.009 [-0.92]	0.035*** [3.56]	0.008* [1.81]	0.030*** [3.63]	-0.008 [-0.80]	0.036*** [3.66]	0.009** [2.04]	0.032*** [3.78]	-0.007 [-0.73]	0.037*** [3.72]	0.009** [2.09]	0.033*** [3.79]				
Fdum	-0.001 [-0.32]	0.009*** [3.13]	0.003** [2.48]	0.013*** [4.40]	-0.001 [-0.46]	0.010*** [3.27]	0.003*** [2.68]	0.013*** [4.41]	-0.002 [-0.61]	0.010*** [3.35]	0.003*** [2.79]	0.013*** [4.22]				
Moderator variables																
Rev_grow_Per					0.025*** [6.37]	-0.005 [-1.39]	0.005*** [4.33]	0.022*** [5.53]	0.025*** [6.39]	-0.005 [-1.41]	0.006*** [4.53]	0.021*** [5.19]				
Rev_grow_Dum					0.025*** [6.47]	-0.006 [-1.51]	0.005*** [4.38]	0.021*** [5.43]	0.027*** [6.77]	-0.006 [-1.52]	0.006*** [4.58]	0.022*** [5.61]				
Interaction effects																
Interaction3_Per									0.011 [0.41]	0.015 [0.67]	0.009 [1.03]	0.021 [0.94]				
Interaction4_Dum									-0.014* [-1.80]	0.006 [0.88]	-0.004 [-1.46]	-0.009 [-1.14]				
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1710	1710	1710	1710	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706	1706
R ²	0.204	0.129	0.350	0.058	0.204	0.129	0.350	0.058	0.204	0.129	0.350	0.058	0.204	0.129	0.350	0.058

t statistics in brackets.

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

Table 7. Interaction results with SOE_hi and Rev_hi value

	jones	kothari	r_cfo	r_prod	r_disx	rm_proxy	jones	kothari	r_cfo	r_prod	r_disx	rm_proxy
Fper	0.003 [0.25]	-0.005 [-0.48]	-0.011 [-1.09]	0.034*** [3.38]	0.010** [2.30]	0.029*** [3.38]	-0.002 [-0.22]	-0.007 [-0.68]	-0.006 [-0.57]	0.033*** [3.32]	0.010** [2.34]	0.032*** [3.85]
Fdum	-0.005 [-1.51]	-0.007** [-2.12]	-0.001 [-0.43]	0.009*** [3.06]	0.004*** [2.77]	0.013*** [4.17]	-0.006* [-1.79]	-0.007** [-2.24]	0 [-0.08]	0.008*** [2.79]	0.004*** [3.04]	0.013*** [4.40]
Soe_hi_Per	0.005 [1.40]	0.005 [1.63]	-0.007** [-2.34]	0.003 [0.83]	0 [-0.02]	-0.003 [-1.01]				-0.005 [-1.39]	0.005*** [4.33]	0.022*** [5.53]
Soe_hi_Dum	0.005 [1.45]	0.006* [1.76]	-0.007** [-2.31]	0.003 [0.83]	0 [-0.04]	-0.004 [-1.25]				-0.006 [-1.51]	0.005*** [4.38]	0.021*** [5.43]
Rev_hi_per							-0.021*** [-6.23]	-0.014*** [-4.02]	0.016*** [5.06]	-0.013*** [-4.15]	0.007*** [5.50]	0.015*** [4.99]
Rev_hi_dum							-0.022*** [-6.43]	-0.014*** [-4.21]	0.017*** [5.21]	-0.013*** [-4.15]	0.007*** [5.56]	0.015*** [4.86]
Interaction1_Per	-0.025 [-1.21]	-0.024 [-1.15]	0.012 [0.62]	0.005 [0.26]	0.014 [1.56]	0.004 [0.20]						
Interaction2_Dum	-0.01 [-1.62]	-0.01 [-1.50]	0.005 [0.82]	-0.003 [-0.51]	0.006** [2.37]	0.008 [1.23]						
Interaction3_Per							0.027 [1.35]	0.035* [1.68]	0.002 [0.11]	0 [-0.02]	0.012 [1.44]	0.019 [1.09]
Interaction4_Dum							0.017*** [2.59]	0.018*** [2.71]	-0.008 [-1.27]	0.001 [0.10]	-0.002 [-0.62]	-0.002 [-0.30]
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(Continued)

Table 7. (Continued)

	jones	kothari	r_cfo	r_prod	r_disx	rm_proxy	jones	kothari	r_cfo	r_prod	r_disx	rm_proxy
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1710	1710	1706	1706	1706	1706	1710	1710	1706	1706	1706	1706
R ²	0.137	0.098	0.204	0.353	0.131	0.049	0.145	0.101	0.207	0.355	0.132	0.052

t statistics in brackets.

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

criteria, it has a positive influence on future performance and enhances its market reputation (Gunny, 2010). As a result, implementing REM to a sufficient degree by modifying the sales process or lowering period expenses may improve profits persistence. Hypothesis H1 indicated that FDOB tends to restraint AEM behavior, so female executives would decide to trade-off between REM and AEM to meet the expectation and deal with shareholders in the operating process. These managers would try not to abuse REM to avoid the detrimental effect in the long term.

When controlling the SOE as the moderating factor to the FDOB-REM association, the results revealed that when an enterprise has a high rate of SOE, FDOB constrains REM behaviors. The findings are consistent with Hypothesis H3, because firms with a higher percentage of SOE are usually “too big to fall,” managers do not need to care about earning manipulation to meet the firm’s target in profit. In addition, state-owned firms are considered tools for the government to achieve policy targets. As a result, these firms are also required to disclose more information about the society and the environment and provide higher financial reporting quality.

4.4. The moderating effect of the FG on FDOB-AEM association

The hierarchical regression results of FG as moderating effect on FDOB-AEM relationship are presented in Table 5. For hypothesis H4, the results indicated that despite FDOB significantly contributes to the monitoring function of CG mechanism, FG could mitigate the detecting roles of female executives in earnings manipulation. Different from SOE, the FG usually represents for the expansion and development of companies. These kinds of enterprises could be in the growth or mature stage, and for mature organizations, managers are more inclined to stake their reputation and credibility on reaching earnings targets (Graham et al., 2005). Consequently, executives would choose to apply more AEM, and the female directors are not an exemption when they would be also under pressure to make companies having high firm value.

Besides, the study’s findings are consistent with the Vietnamese context, where there is a disparity between investors compared to developed countries, along with the incomplete legal framework in the Vietnamese context. In addition, Vietnam’s stock markets are still in their infancy, and the quality of public information is relatively low. As a result, manipulating earnings through the AEM technique are likely to appear, and the monitoring function of the WOB would be mitigated.

4.5. The moderating effect of the revenue growth on FDOB-REM association

Table 6 shows the hierarchical regression results of FG as moderating effect on FDOB-REM. When controlling the FG as moderating factor to the relationship between FDOB and REM, the findings show that FDOB do not impact REM behavior with companies that have the growth in revenue through the years. As a result, REM is more damaging to businesses since it has a direct impact on corporate choices and financial flows. Furthermore, when a business grows, it loses control over its expenditure levels, reducing management engagement in the REM (Nagar & Radhakrishnan, 2017). On the other hand, the results in Table 5 show that for the firms have the improve in financial performance, managers tend to apply more AEM behaviors. As a result, to satisfy expectations and interact with shareholders in the operational process, executives of these companies must select trade-offs between REM and AEM. These executives would strive to avoid abusing manipulative profits through REM in order to prevent long-term consequences. In this situation, the advantages of the WOB are still practical when female directors allow a suitable magnitude of EM.

4.6. Robustness check

4.6.1. Moderating effect for firms with major fraction of SOE and high FG index

To solidify the research results about the moderating role of SOE and FG in the FDOB-EM relationship, research sample is distributed according to the level of SOE and FG. Two dummy variables called *Soe_hi* and *Rev_hi* are created, which value is one if companies with SOE and *rev_grown* value is larger than the mean value of the given variables and 0 if vice versa.

Table 8. Interaction results with one-year lag of independent and control variables

	jones	kothari	r_cfo	r_prod	r_disx	rm_proxy	jones	kothari	r_cfo	r_prod	r_disx	rm_proxy
Fper	-0.009 [-0.91]	-0.008 [-0.85]	-0.004 [-0.43]	-0.005 [-0.41]	0.022*** [5.02]	0.025*** [2.73]	-0.018* [-1.86]	-0.021** [-2.19]	-0.001 [-0.15]	-0.009 [-0.87]	0.018*** [4.95]	0.025*** [2.67]
Fdum	-0.001 [-0.42]	-0.001 [-0.48]	-0.002 [-0.53]	-0.002 [-0.70]	0.007*** [5.71]	0.008** [2.49]	-0.007** [-2.25]	-0.008** [-2.53]	-0.001 [-0.47]	-0.002 [-0.71]	0.006*** [5.57]	0.008** [2.55]
Soe_hi_Per	0 [0.69]	0 [1.45]	0 [-0.55]	0 [-0.62]	0.000* [1.73]	0 [-0.26]	0 [0.00]					
Soe_hi_Dum	0 [0.81]	0 [1.49]	0 [-0.50]	0 [-1.07]	0.000** [2.10]	0 [-0.47]						
Rev_hi_per							0 [0.06]	0.001 [0.37]	-0.004 [-0.98]	0.017*** [4.85]	-0.006*** [-4.73]	0.003 [0.63]
Rev_hi_dum							0.002 [0.41]	0.003 [0.71]	-0.006 [-1.37]	0.017*** [4.70]	-0.006*** [-5.17]	0.002 [0.45]
Interaction1_Per	0 [-1.41]	-0.001* [-1.72]	0 [1.25]	-0.001*** [-2.88]	0 [1.59]	-0.001 [-1.58]						
Interaction2_Dum	-0.000*** [-3.20]	-0.000*** [-3.29]	0 [0.97]	-0.000*** [-2.72]	0.000*** [3.53]	0 [0.71]						
Interaction3_Per							-0.067*** [-2.89]	-0.059*** [-2.71]	0.084*** [3.26]	-0.031 [-1.48]	0.021*** [2.66]	0.032 [1.30]
Interaction4_Dum							-0.019** [-2.48]	-0.017** [-2.44]	0.019** [2.33]	-0.004 [-0.63]	0.003 [1.45]	0.009 [1.09]
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(Continued)

Table8. (Continued)

	jones	kothari	r_cfo	r_prod	r_disx	rm_proxy	jones	kothari	r_cfo	r_prod	r_disx	rm_proxy
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1710	1710	1706	1706	1706	1706	1710	1710	1706	1706	1706	1706
R²	0.075	0.038	0.136	0.228	0.117	0.030	0.072	0.034	0.136	0.236	0.117	0.027

t statistics in brackets.

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

The robustness tests results are consistent with hypotheses H3 and H4 (**Table 7**). With firms having a significant proportion of SOE, WOB has no impact on EM through both AEM and REM. This means that female directors in companies with a major fraction of SOE tend to detect and prevent earnings manipulation through accrual and actual transactions to mitigate the detrimental impact on firm value in the future.

Next, hypothesis H4 is confirmed. If firms have a substantial change in income or have a high FG index, FDOB is positively related to AEM and insignificantly associated with REM. The findings prove that managers of these firms are under pressure, so they must apply EM behaviors to meet the forecast earnings. However, WOB still plays a pivotal role in keeping the degree of EM at a suitable level through the trade-off selection between AEM and REM to prevent harmful effects on firm value in the long term.

4.6.2. Moderating effects with one-year lag

According to Bear et al. (2010), the firm value of this year may be the result of operations and CG mechanism in the previous year. So, the regression model with the one-year lag of control and explanatory variables is tested. **Table 8** presents the result of model that include one-year lag of control and independent variables.

For the moderating effect of SOE on the FDOB-EM relationship. The findings suggest that WOB last year is negatively and significantly related to AEM and REM. These indicated that although the monitoring role of FDOB is restricted in SOE. However, when female directors had a strong position and clear voice in the board, they could essentially contribute to monitoring function in deterring EM. To conclude, the role of women in the board still should be considered, whether for state-owned or private companies.

Then, further tests are conducted for the moderating role of FG in the FDOB-EM association. The findings show that if a firm had a significant change in revenue in the previous year, FDOB is negatively related to AEM and positively related to REM in the current year. The explanation is also about the selection of trade-offs between AEM and REM. Because firms had profit in prior years, managers tend to invest in many risky projects with the expectation for high returns in the future. However, risky projects could easily lead to loss and reduce the company's financial performance. Consequently, managers must rise to manipulate earnings to beautify the financial statements, but REM would be preferred in this situation because it could easily adjust unexpectedly reduced cash flow from operational activities more quickly and effectively. FDOB still plays an essential role in keeping the suitable magnitude of EM, and they would not abuse earnings manipulation to prevent the detrimental effect in the long term.

4.7. Panel data fsQCA results

Finally, the outcomes of the fsQCA are presented based on the model that is described by the following equation:

$$AEM/REM = f(Fper; Soe; Rev_grow; SOE; Boardsize; Ceodual; Bind)$$

The analysis was carried out with the help of the fsQCA 3.1 software. When doing fsQCA, calibration is required. Calibration necessitates the establishment of three key points: 0.05 for full non-membership of the set, 0.5 for maximum uncertainty, and 0.95 for full membership of the set. The truth table must be created after calibration to give sample case distributions for all possible causal condition combinations. FsQCA assists researchers in discovering several pathways to a certain outcome (Khuong & Anh, 2022).

The intermediate solution for the fsQCA is shown in **Table 9**. There are three options: presence, absence, or both. According to Ragin et al. (2006), a high score in the result has a low limit of 0.80. Therefore, solutions with a consistency of less than 0.80 are discarded (Khuong & Anh, 2022). As

Table 9. The fsQCA results

Configuration	fper	soe	bsize	bind	ceodual	rev_grow	raw coverage	consistency
1		●	●	~	●		0.184132	0.782429
2	●	●	●			●	0.116035	0.810305
3	●	●	●		●		0.144031	0.805382
4	~	●	●	~		~	0.082359	0.807389
5	●	●		●	●	●	0.102614	0.789632
Solution coverage	0.244625							
Solution consistency	0.754622							
Configuration	fper	soe	bsize	bind	ceodual	rev_grow	raw coverage	consistency
1	~	●	●			~	0.0839571	0.785889
2		●	●	~	~		0.181116	0.786543
3	●		●	~	●	~	0.0874475	0.779775
4	●	●	●	~		●	0.108932	0.827901
5	●	●		●	●	●	0.097423	0.768869
6		●			●	~	0.0671463	0.733604
7	●	●	●		●		0.139584	0.800249
Solution coverage	0.277731							
Solution consistency	0.739629							

● indicates the presence of causal conditions. ~ indicates the absence or negation of causal conditions. The blank cells indicate “don’t care conditions” (Kraus, Ribeiro-Soriano, & Schüssler, 2018).

the results in Table 9 show, there is no one factor that explains the use of EM. On the other hand, multiple complicated combinations of FDOB, SOE, FG, and other board composition indicators can be used to attain varying levels of apply EM.

Specifically, the effect of GDB on the level of EM is sometimes positive, sometimes negative, and occasionally non-correlation with the AEM/REM depending on the combinations with other indicators. For example, firms with GDBs, which have a high percentage of state-ownership, large board and have the growth in revenue through the year, will intend to apply AEM or REM. On the other hand, FDOB would reduce the degree of EM if there has a combination with the independence of BODs. In cases where GDB is not correlated with EM's behavior, the company always has the chair duality (Ceodual). It means that when the company has the duality of the position of CEO and Chairman, the supervisory and advisory role of WOB is not conducted.

Conclusion, the findings of the fsQCA may be useful in explaining earlier mixed evidence and econometric analysis results about the link between GDB and EM. The existence of equifinal solutions in which certain conditions can be present or absent could explain why, in some contexts with specific sample characteristics, the results may show individual variable significance, whereas in others, this significance is not observed or is observed with an unexpected sign.

5. Conclusions and implications

This study has partly contributed to the existing studies about the WOB-EM relationship and shed light on a new approach when exploring this association for future studies. This study expanded the link about the impact of FV on CSR activities in the Vietnamese context with moderating effects of SOE and FG. This is the first study that fully assesses the relationship between FDOB and EM with the moderating role of SOE and FG. Furthermore, no previous work has used both MRA and the fsQCA technique to investigate the link between FDOB and EM. This will contribute significantly to the EM literature review and give valuable empirical evidence for future studies employing the fsQCA approach.

For a sample of 404 Vietnamese listed firms from 2015 to 2019, a dynamic panel data model was used, and agency along with upper echelons theories are used as key theories to build up the theoretical research framework. The research findings suggested that WOB is negatively related to AEM, while positive relationships are found with the REM one. Besides, firms with a higher percentage of SOE reduce the monitoring role of female directors in deterring EM. For companies that had the increase in revenue, WOB showed a positive and insignificant relationship to AEM as well as REM, respectively. Furthermore, the moderating role of SOE and FG is validated through further robustness tests. The fsQCA findings, on the other hand, underline how the EM's behavior is influenced by a mix of WOB, SOE, FG, and other board composition factors.

The research has important implications for investors, enterprises, and regulators. First, managers should enhance the real-time link between current revenues and current expenditures to avoid a mismatch between expenses and current revenues. Second, the policymaker may enhance the legal environment to emphasize safeguarding investors to prevent high-profit businesses' earnings manipulation. Furthermore, businesses can encourage directors to participate in cooperative activities, which might lessen board member disputes while working in groups. Furthermore, corporations should consider incorporating women on BODs, as their participation might improve the board's monitoring role and lessen EM behavior. Furthermore, additional training programs for females should be available once they are appointed to the board to increase their technical knowledge as well as leadership qualities, which might result in a more effective board.

There are several restrictions of this study, which provides new possible avenues for future research. Firstly, these study samples are restricted in Viet Nam, therefore future research should

take into accounts firms from areas having the difference in economies. Secondly, the study sample size needs to be improved in terms of the number of enterprises as well as the length of the research period.

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