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Article

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

The impact of foreign ownership, corporate governance on earning management: Fuzzy-set qualitative comparative analysis

Thu Thi Tran¹, Yen Thi Hai Do^{2*} and Nhan Kim Vo³

Abstract: The study examines the effect of foreign ownership, corporate governance index on earning management in 169 listed companies in Vietnam from 2016 to 2020. Fuzzy-set Qualitative Comparative Analysis (fsQCA) method is used to test this relationship. The analysis results show that foreign ownership, corporate governance index negatively affects earning management. In particular, the interaction between foreign ownership and corporate governance index also has a negative effect on earning management. The research provides some implications to help businesses control earning management behavior and provide accurate financial information to stakeholders.

Subjects: Accounting; Corporate Governance; Corporate Finance

Keywords: foreign ownership; corporate governance; earning management; fsQCA

1. Introduction

Earning is a crucial parameter not only for owners but also other stakeholders (Graham et al., 2005). Managers understand this and always want to increase firm performance that ensures the owner's requirements. Moreover, they receive bonuses, benefits and dividends (Xu et al., 2007). Earning management behavior that managers can select to change the financial data of the



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PUBLIC INTEREST STATEMENT

The practical implications of this study can help Vietnamese firms in controlling earning management behavior and reminding stakeholders to carefully consider the financial information. This research pointed out the combination of foreign ownership and corporate governance is an influential factor to control earning management behavior. Our results suggest policy implications for managers in changing corporate governance mechanisms to attract foreign ownership and limit earning management behavior in Vietnamese listed firms.

enterprise. According to Schipper (1989), earning management is the way managers intervene in financial information on purpose. Managers inflate financial data by choosing inappropriate accounting methods or by misreporting payments. Misinformation will cause great damage not only to the owner but also other parties such as lenders, customers, suppliers. Therefore, the solution to control the behavior of earning management is chosen to build corporate governance. Corporate Governance is a system that includes regulations, guidelines on governance. It helps to check and control managers to improve information transparency and accountability with relates (OECD, 2004). Through the regulation of corporate governance, managers need to be more careful when operating and reporting financial information of enterprises (Al-Haddad & Whittington, 2019; Boachie & Mensah, 2022; Shan, 2015). Another factor that is also identified that can limit earning management behavior is foreign ownership. According to Guo et al. (2015) said that foreign ownership have professional qualifications and good governance, but they have limited understanding of the market and cultural environment of the host country. Therefore, they will always closely control business activities to capture accurate financial information. In addition, foreign ownership may come from developed countries, they set strict requirements on financial information transparency, uphold the quality of financial information provided to the outside, so managers will limit earnings management behavior (Guo et al., 2015; Potharla et al., 2021).

The relationship between foreign ownership, corporate governance and earnings management behavior is also explained by agency theory. Jensen and Meckling (1976) argue that the agency problem is the conflict of interest between owners and managers. Earning management behavior is the way in which managers aim for personal interests instead of the owners and it makes the conflict increase (Al-Begali & Phua, 2023; Al-Haddad & Whittington, 2019; Assad et al., 2023). Therefore, solutions on building a corporate governance system and increasing foreign ownership are always paid attention to in order to strengthen the effective control mechanism for managers. Therefore, the first objective of the study is to examine the influence of foreign ownership on earnings management behavior. The second objective, the study examines the influence of corporate governance on earnings management behavior. Finally, the study examines the correlation between foreign ownership and corporate governance with earning management using fsQCA method. This technique is a new point when applied to research compared to previous studies that are often used such as Generalized Method of Moments (GMM), Ordinary Least Squares (OLS), Structural Equation Modeling (SEM).

Vietnam is an emerging economy in Asia. The stock market is still quite young compared to other countries in the region as well as in the world. Therefore, the mechanisms to control financial information of listed companies when published on the stock exchange are still difficult. The recent cases of financial fraud and inflating financial statements in large corporations such as Tan Hoang Minh Group, Tan Hiep Phat Group, and FLC Group are proofs of the weakness in the management system. Moreover, the ownership concentrate belongs a person or a group that increase the behavior of earning management. The research results hope to contribute some scientific and practical. First, we demonstrate that foreign ownership has a negative effect on earnings management behavior. This result reinforces the findings found in previous studies such as Nguyen et al. (2021), Potharla et al. (2021). At the same time, through the results, policy makers and business managers will focus more on attracting foreign ownership and take advantage of them in controlling enterprises. Next, the study found that corporate governance negatively affects earnings management behavior. The results are consistent with the evidence found in previous studies Shan (2015), Al-Haddad and Whittington (2019). Through the obtained results confirm the necessity of the corporate governance system in the enterprise. Corporate governance need to improve the role of control and regulation in business activities. Finally, the study using fsQCA method for the first time proves that foreign ownership and corporate governance are negatively correlated earning management behavior. Through the results, it is emphasized that foreign ownership and corporate governance are necessary and sufficient conditions to contribute to limiting the behavior of earning management, thereby helping to improve firm performance.

The rest of this paper is organised as follows. Section 1 outlines the background. Theoretical literature review is presented in Sections 2. Section 3 reviews the empirical literature review and hypotheses development. Section 4 describes our research design. Section 5 presents the empirical results and discussions. Finally, summary and conclusions are shown in Section 7.

2. Background

Firstly, the study examines the influence of foreign ownership on earnings management behavior in listed companies in Vietnam because of some reasons. First of all, Vietnamese is loosening the policy of attracting foreign investment for economic development such as joining free trade agreements (FTA). Besides, after the COVID-19 pandemic, Vietnam is considered a safe destination for foreign investors because of its consistent policies and institutions, stable and less volatile business environment. Moreover, many financial scandals in large enterprises in Vietnam today stem from capital ownership concentrated on a large group of shareholders, lack of transparency and financial control, lack of accountability for solving problems. Therefore, the study tests the influence of foreign ownership on earnings management behavior is very necessary. It helps firms to realize the importance of foreign ownership in contributing to limiting frauds and improve firm performance.

Secondly, the study examines the influence of corporate governance on earnings management behavior for a number of reasons. From an objective perspective, corporate governance has proven its importance in controlling, regulating and improving corporate governance efficiency (OECD, 2004). The 2008 financial crisis, the collapse of large companies such as Enron, Worldcom proved that the weak corporate governance system was the main cause. Therefore, the corporate governance system is constantly improved by countries in order to protect the economy and create the confidence of foreign investors participating in the market. In Vietnam, the government is increasingly refining corporate governance implementation guidelines such as Circular No. 116/2020/TT-BTC, Law on Enterprises No. 59/2020/QH14 in order to strengthen its influence in corporate governance that ensure information transparency, improve accountability, protect investors, and firm performance. Besides, Vietnamese small and medium-sized enterprises account for about 97% of the total number of enterprises by 2022. It is recommended that enterprises develop a corporate governance system. However, due to the limitation of financial potential, vision and governance capacity, the basic corporate governance system has just been formed in listed companies but has not been completed and strictly followed the guidelines of the OECD. Therefore, the study helps to evaluate the effectiveness of the current corporate governance system in controlling earnings management and then propose appropriate solutions.

3. Theoretical literature review

3.1. Concepts

Foreign Ownership is a source of investment capital under the management of a foreign individual or organization that moves capital into another country's market, whether or not it is a legal entity (OECD & LOCA, 1997). They own a certain percentage of shares in the business and make a profit from this investment. Douma et al. (2006) argue that foreign ownership can exist in the form of capital investment by foreign individuals or organizations. The participation of these actors strongly affects the recipient countries, especially developing countries. Because, foreign ownership promotes development by supplying capital, spill-over of technology and managerial know-how, and competition to improve the efficiency of the markets (Bekaert & Harvey, 2000; Bekaert et al., 2001). From there, they help control financial activities, transparent information and improve corporate accountability.

Corporate governance is a system policies, laws, governance guidelines and audits. It includes a framework of rules designed towards transparency and clarity of relevant information (Buallay et al., 2017). According to OECD (2004), corporate governance includes regulations of the government and economic organizations in order to control all activities in the unit and at the same time

create the trust of the parties. Uwuigbe et al. (2014) emphasized that effective corporate governance will prevent or limit the behavior of earnings management because the control from the governance system causes managers to act in the interests of shareholders.

Earning management is the behavior by which managers increase or decrease the financial data (Fischer & Rosenzweig, 1995). Or Ronen and Yaari (2008) argue that earnings management is a way in which managers use data recognition on an accrual basis to change profit after tax to achieve information disclosure goals. Some benefits that managers get like salary, bonus, stock when the business achieves good firm performance (Scott, 2003). To limit this behavior, many researchers believe that businesses need to focus on diversifying capital ownership structures to reduce the concentration on an individual or group (Nguyen et al., 2021; Potharla et al., 2021), increased oversight from the corporate governance system (Bukit & Nasution, 2015; Elghuweel et al., 2017; Katmon & Farooque, 2015; Shan, 2015).

3.2. Agency theory

Jensen and Meckling (1976) mention conflicts of interest between owners and managers when exercising business authorization. This conflict stems from the owner's desire for good return on investment capital, which has pressured managers to find ways to increase profits and dividends for shareholders. Meanwhile, managers will benefit from executive bonuses and benefits when achieving good business results. Therefore, managers can implement earnings management to ensure the above requirements (Nyberg et al., 2010). To limit this behavior, enterprises need to have a good corporate governance system or the participation of foreign investors to increase control of business performance (Cornett et al., 2009; Krishnan, 2003; Shen & Chilh, 2007).

Some studies have applied agency theory to prove that foreign ownership helps to limit earnings management behavior. For example, the study of Kim et al. (2016) divided into two types of ownership, including domestic and foreign institutions. The results demonstrate that foreign institutions has the advantage of good controllability, reducing the conflict in agency issues between owners and managers, thus limiting earning management behavior than owned by a domestic entity. Similarly, Potharla et al. (2021) also apply the agency theory that foreign ownership has advantages in terms of management experience, independence and objectivity in controlling the behavior of managers. They require managers to ensure the interests of shareholders, reduce information asymmetry, improve the quality of financial statements, and increase the value of enterprises in the market.

Some papers apply agency theory to justify the relationship between corporate governance and earning management. For example, Al-Haddad and Whittington (2019) emphasizes that corporate governance is an effective tool in limiting conflicts in agency issues, helping to reconcile the interests of owners and managers. Corporate governance will both perform the responsibility of monitoring and evaluating the quality of management in order to offer good welfare policies for managers, and at the same time limit their self-interested behavior. Tjaraka et al. (2022) also agree with this view when saying that male CEOs has earning management behaviors than female CEOs, so an effective corporate governance system is needed to monitor CEOs and limit exaggeration of firm performance.

It can be seen that the agency theory explains the impact of foreign ownership and corporate governance on earning management behavior. These components will perform the role of limiting the behavior of managers, requiring managers to ensure good business results, but not by accounting methods to beautify financial statements (Boachie & Mensah, 2022).

3.3. Institutional theory

Institutional theory is considered to be the dominant view related to organization and management in the firm (Tallaki & Bracci, 2019). The theory has been divided into two views: Old Institutional Theory and New Institutional Theory. For the first view, the theory focuses on

clarifying the norms and values of the rules in order to shape the “actions” and “thoughts” of individuals. Selznick’s (1948) institutional model focuses on explaining the coordinated activities or relationships of two or more people in an organization. Parsons (1956) considers the principles and contracts between objects in the organization with the common goal of contributing to the development of society. It can be seen that, at an early stage, the theory focuses on explaining the process of change in organizations (Barley & Tolbert, 1997; Burns & Scapens, 2000). The new institutional is based on three main studies by Meyer and Rowan (1977), DiMaggio and Powell (1982), and Zucker (1977). They explain external pressures such as regulations and policies from Governance to affect firms. The study applies new institutional theory to explain the influence of foreign ownership on earning management behavior. Specifically, the government’s tax and investment incentives have attracted foreign investors to participate more in domestic enterprises. Their participation contributes to control manager, regulation and supervision of business activities in order to improve firm performance.

4. Empirical literature review and hypotheses development

4.1. Foreign ownership and earning management

From the perspective of agency theory, an increase in foreign ownership contributes to stronger regulation of managers’ operating behavior (Jensen & Meckling, 1976). Thereby, managers will limit the adjustment of profits and accurately reflect the actual financial situation of the business. At the same time, foreign ownership may be from developed countries, they have high requirements for the quality of financial information, so they will offer management solutions to control the business situation of enterprises. Jensen and Meckling (1976) pointed out that the participation of foreign ownership also contributes to limiting the problem of agency in enterprises. Foreign investors have independence and objectivity with the activities of enterprises, so their participation in corporate governance will harmonize the interests of managers and owners towards the common goal. The new institutional theory also explains that government policies in attracting foreign ownership to participate in the market. They have contributed to their increased supervision and regulation of governance (DiMaggio & Powell, 1982; Meyer & Rowan, 1977; Zucker, 1977). So, they can decrease earning management behavior.

Some previous empirical evidence has shown that the increase in foreign ownership limits the earning management behavior of enterprises. For example (Potharla et al., 2021), selected non-financial firms in India from 2011 to 2018 to conduct the study. Businesses in the research sample must ensure that the ownership ratio of foreign and domestic institutions is at least 20% in order to measure the influence of these ratios on earning management. The results of OLS regression analysis show that foreign and domestic institutions have a negative effect on profit management. The authors argue that investors are present in the form of organizations that have good governance and control over managers’ behavior in all business activities. They have high requirements on information transparency, reducing information asymmetry between the parties to ensure that the financial position is presented honestly and fairly in the annual financial statements. Therefore, their impact contributes to limiting earning management behavior. Similar results are also found in the study of Nguyen et al. (2021) when analyzing data of 489 non-financial companies listed in Vietnam from 2009 – 2018. They prove that ownership concentration and state ownership have a positive effect on earning management, while managerial ownership and foreign ownership have a negative effect on earning management. However, research by Tran and Dang (2021) suggests that foreign ownership has a positive influence on earnings management. The authors explain that foreign investors are limited in understanding the culture and business environment in the host country. They need to prove their performance compared to other competitors so they tend to adjust their earnings management to attract investor interest in the market. Meanwhile, Aharony et al. (2000) argues that managers will take advantage of the lack of understanding and environmental

culture of foreign investors with the host country to inflate earning management that help to improve good financial results for investors.

The previous empirical evidence has not been consistent. However, when choosing to research at enterprises in Vietnam, we believe that the participation of foreign ownership contributes to limiting earning management behavior. Because the weakness of the supervision system in Vietnamese enterprises has been clearly revealed through many recent financial scandals in large enterprises with high rates of family ownership and domestic ownership. They lack objective supervision, information transparency and accountability to stakeholders. These weaknesses are the strengths of foreign investors. At the same time, according to the report of the Ministry of Planning and Investment, the proportion of foreign ownership is small, so they need to strengthen management supervision channels that obtain honest financial information and to protect their interests.

Based on the above arguments, we propose the following hypothesis:

H₁: Foreign ownership has a negative effect on earnings management.

4.2. Corporate governance and earning management

Agency theory emphasizes that corporate governance contributes to limiting conflicts of interest between owners and managers. Because of the supervision mechanism from the Board of Directors, the Board of Supervisors and Auditors, it has limited the behavior of earning management, helping to provide accurate information about the financial position of the business (Fama, 1980; Fama & Jensen, 1983; Jensen & Meckling, 1976). In addition, corporate governance includes preferential policies for managers such as sales bonuses and benefits, so they need to ensure their executive roles well in order to achieve remuneration. Therefore, earning management behavior will be limited by corporate governance system.

Corporate governance is a system established with the objective of transparent financial information, ensuring the quality of financial information, and limiting information asymmetry among stakeholders (Cohen et al., 2002). Therefore, with an effective control and regulation mechanism, it has shown the role of corporate governance in limiting the behavior of earning management. Shan (2015) examines over 1,012 annual observations of listed companies in China from 2001 to 2005 and show that companies with good corporate governance systems contribute to limited earning management behavior compared to companies with weak corporate governance systems. Because corporate governance includes mechanisms to monitor and regulate managers and business activities, financial information is guaranteed to be provided honestly and reasonably with reality. Similar results are also confirmed by Bukit and Nasution (2015), Elghuweel et al. (2017), Katmon and Farooque (2015). Meanwhile, Al-Haddad and Whittington (2019) looking at corporate governance through capital ownership shows that institutional ownership and manager ownership contribute to limiting earnings management. However, when duality CEO improves to increase earning management behavior.

Over a decade, Vietnam has continuously improved guidelines on corporate governance to ensure compliance with international practices, improve corporate control and protect investors when participating in business activities. In addition, businesses have also learned lessons from recent financial scandals in large enterprises due to the lack of strict inspection and control from the corporate governance system. And the current trend is that investors will pour capital into businesses when they have a good corporate governance system.

Through the above arguments, we propose the following hypothesis:

H₂: Corporate governance has a negative effect on earnings management.

4.3. Foreign ownership, corporate governance and earning management

Foreign ownership and corporate governance are considered to be contributing factors to improving governance efficiency and limiting conflicts between owners and managers (Jensen & Meckling, 1976). These two components, when used well in the firm, can contribute to attracting investment capital and increasing the confidence of shareholders and stakeholders (Bhatta et al., 2022). In addition, foreign ownership contributes to limiting earning management behavior due to their advantages of governance ability, independence, and objectivity in corporate control. They expect financial information provided to investors and related parties to be honest and reasonable, so they will strengthen supervision of managers in earning management (Guo et al., 2015; Nguyen et al., 2021; Potharla et al., 2021; Tran & Dang, 2021). Similarly, a lot of evidence shows that good corporate governance can be a tool to control earning management behavior (Bukit & Nasution, 2015; Elghuweel et al., 2017; Katmon & Farooque, 2015; Shan, 2015). Corporate governance represents a comprehensive monitoring and regulation mechanism of the firm, so the use and circulation of finance is strictly controlled. At that time, it will be difficult for managers to adjust, inflate, or change the results achieved in the period. Some studies show that foreign ownership has a positive influence on corporate governance (Chevalier et al., 2006; Shubita & Shubita, 2019). However, we do not find the correlation of foreign ownership and corporate governance on earning management. Therefore, this study will use fsQCA method to identify this correlation. The proposed hypothesis is as follows:

H₃: The correlation between foreign ownership and corporate governance has a negative effect on earnings management.

5. Research design

5.1. Sampling and data collection

The research sample includes the listed firms in Vietnamese stock market from 2016 to 2020. Data on Corporate Governance, and Earning Management are hand-collected from the annual reports of the sample firms. While other data such as Foreign Ownership, Growth Opportunities Market-to-Book Value, Leverage, Firm Size was collected from Thomson Reuters—Datastream. Initial sample size is 200 firms. However, after excluding 31 firms without Corporate Governance Index data, the final sample consists 169 firms (Table 1).

Although the analysis covers the 2016 to 2020 period, 2015 firm data is collected to compute earning management measures. The firms in the different industries such as Basic Materials, Energy, Consumer Discretionary, Consumer Staples, Energy, Financials, Health Care, Industrials, Real Estate, Technology, Telecommunications, and Utilities. Table 2 shows the detail sample size.

5.2. Research method

This research applied the fuzzy-set Qualitative Comparative Analysis (fsQCA) method. The first step of fsQCA is to convert the raw data into fuzzy-set data by correcting the value of each

Table 1. Data collection

	Number of firms	
<i>Initial sample</i>	200	
<i>Missing data</i>	31	(Missing Corporate Governance data)
<i>Final data</i>	169	

Table 2. Statistics of industries of companies in the study

Industry	Frequency	Percent
Basic Materials	17	1.06
Consumer Discretionary	19	11.24
Consumer Staples	17	1.06
Energy	9	5.33
Financials	4	2.37
Health Care	6	3.55
Industrials	64	37.87
Real Estate	20	11.83
Technology	3	1.78
Telecommunications	2	1.18
Utilities	8	4.74
Total	169	100

Notes: The top and bottom 1 per cent of independent and dependent variables are winsorized to eliminate the effect of outlier bias (Alhadab et al., 2015; Zang, 2012).

variable according to three thresholds: 5%, 50%, and 95% (corresponding to fully outside the set, neither inside nor outside the set, and fully in the set) (Eng & Woodside, 2012; Ragin, 2008). Next, the data is analyzed using fsQCA software to evaluate the necessary and sufficient conditions of foreign ownership and corporate governance to the earning management activities. Compared to conventional quantitative methods, the output of fsQCA method is not similar (Ragin, 2008). These results comprise the combination of the input factors arranging different causal formulas that affect the dependent variables. fsQCA is an analytic technique that allows producing three solutions (complex, intermediate, and parsimonious); however, the intermediate solution is preferred by most researchers due to its high intelligibility (Ragin, 2008). This study examines the hypotheses by identifying different combinations of foreign direct ownership, corporate governance, and control variables for earning management.

5.3. Variable measurement

In this paper, the authors measured earning management as a dependent variable. Independent variables include foreign ownership and corporate governance. Firm size, leverage and growth are control variables (Table 3). Variable measurements are present below:

5.3.1. Earning management

In recent years, Vietnam has shifted from cash basis accounting to accrual basis accounting in order to harmonize with the general trend of the world. At the same time, accrual basis reflects the regulations that economic transactions related to assets, liabilities, owners' equity, revenue and expenses will be recognized at the time of transaction, regardless of when the money is actually received or spent. This practice provides more relevant and complete financial information to stakeholders. However, according to Roychowdhury (2006), accrual basis can be a tool for managers to implement earnings management by:

Inflating revenue by recording transactions arising at the wrong time, implementing discount policies, preferential payment terms in order to sell more goods;

Reduce costs such as research and development costs, selling expenses and inappropriate business administration;

Overproduction compared to demand to reflect low cost of goods sold.

To determine earnings management, researchers rely on total accrual earnings (TA) data. TA consists of two parts, non-discretionary accruals (NDA) reflecting the specific business conditions of each unit and therefore cannot be adjusted by managers, and accrual accounting variables can be adjusted. Adjustments discretionary accruals (DA) through the selection of accounting policies that managers can take advantage of to implement earnings management behavior. The study selects the Jones (1995) model to calculate the values according to the following steps:

(1) Determine the total accrual value, which is the difference between net income and operating cash flow:

$$TA_{it} = NI_{it} - CFO_{it}$$

(2) Determining the parameters value of 1, 2 and 3 with ordinary least square regression:

$$TA_{it}/A_{it-1} = \alpha_1(1/A_{it-1}) + \alpha_2(\Delta REV_{it}/A_{it-1}) + \alpha_3(PPE_{it}/A_{it-1}) + \varepsilon_{it}$$

(3) Using α_1 , α_2 , α_3 value of nondiscretionary accrual can be calculated with the following formula:

$$NDA_{it}/A_{it-1} = \alpha_1(1/A_{it-1}) + \alpha_2(\Delta REV_{it} - \Delta REC_{it}/A_{it-1}) + \alpha_3(PPE_{it}/A_{it-1}) + \varepsilon_{it}$$

Total accruals are the sums of discretionary accrual and nondiscretionary accruals. The value of discretionary accrual, which is an accrual earning management indicator, is calculated by subtracting the total accrual with nondiscretionary accrual:

$$DA_{it}/A_{it-1} = TA_{it}/A_{it-1} - NDA_{it}/A_{it-1}$$

Where:

TA_{it} is the total accrual company i in t period;

NI_{it} the net income company i in t period;

CFO_{it} the operational cash flow company i in t period;

NDA_{it} the nondiscretionary accrual company i in t period;

DA_{it} the discretionary accrual company i in t period;

A_{it-1} the total assets company i in t – 1 period;

ΔREV_{it} the changes in net sales company i in t period;

ΔREC_{it} the changes in receivables company i in t period;

PPE_{it} the property, plant and equipment company i in t period;

α_1 , α_2 , α_3 are parameters obtained from regression equation;

ε_{it} is the error term if company i in t period.

Table 3. Measure other variables in the model

No	Variables	Operationalization	Related reasearch
Independent Variables			
1	Coporate Governance Index (CGI)	CGI = Sum of the binarised corporate governance attribute value. Value ranges from 0 to 5. CGI includes: - Board size: Number of directors on the board. Value greater than or equal to > 5 is 1; 0 otherwise. - Diversity of board: Number of females on the board. Value greater than or equal to > 1 is 1; 0 otherwise. - CEO duality: CEO holds the position of chairman of the board. No is 1, otherwise 0. - Size of audit committee: The number of members in the audit committee. Value greater than or equal to > 3 is 1; 0 otherwise. - Audit firm: Audit firm is Big 4 or non-Big 4. Yes is 1, otherwise 0.	Singareddy et al. (2018)
2	Foreign Ownership (FO)	The percentage of shares owned by foreigners/The total number of shares issued	Min and Bowman (2015) and Al-Matari et al. (2017)
Control Variables			
3	Firm Size (SIZE)	This is measured the logarithm of a firm's total assets	Boachie and Mensah (2022)
4	Leverage (LEV)	This is measured by the total liabilities to total assets. It is represented in logarithm form	Boachie and Mensah (2022)
5	Growth Opportunities (GRWTH)	This is measured by calculating the price-tobook ratio for firm i in year t	Boachie and Mensah (2022)
6	Market-to-Book Value (MTBV)	Market value of equity divided by the book value of equity	Merendino and Melville (2019)

5.3.2. Other variables

6. Empirical results and discussions

This section presents a brief description of data, and the results are analyzed by using the fsQCA software as introduced in the previous section. Necessary condition analysis is the first step in fsQCA. This step examines whether any of the input variables obtain a necessary condition for the

dependent variable. The following step is sufficient condition analysis, which examines how the combination of input variables affects earning management.

6.1. Descriptive statistics and calibration values

The descriptive statistics and calibration values at the levels of 5%, 50%, and 95% are presented in Table 4. Earning management criteria produces a large difference (min = -42.413 and max = 12,681). The mean value of the earning management variable is -0.1759, indicating that listed firms in Vietnam restrict their earning hype or limit their earning management behavior. The sample includes listed firms with foreign ownership and without foreign ownership with the highest rate of foreign ownership being 80%. The average value of foreign ownership is 3.62%, pointing out that Vietnamese firms have a low foreign ownership rate compared to other countries in the similar region. This provides evidence regarding the difficulties for foreign shareholders to influence business administration strategies as well as corporate governance activities at listed firms in Vietnam. The CG index is measured through 6 components, with the smallest value of 0 showing that some Vietnamese firms have not paid much attention to corporate governance. However, the average value of CG index variable is 3, demonstrating that the majority of firms are interested in adjusting measures to improve corporate governance quality. Calibration values are calculated to prepare for the fuzzy-set analysis in the further step.

Table 5 shows the average value of the Corporate Governance Index variable among different sectors. Accordingly, the lowest average Corporate Governance Index belongs to the Energy sector. The Energy sector is the only sector with an average CGI Corporate Governance Index score of less than 3. Technology is a growing industry in Vietnam in recent years, so it's not surprising that this sector has highest Corporate governance Index among sectors (average CGI of Technology Sector = 3.8).

6.2. Necessity analysis

Following Ragin (2008), the fuzzy-set method requires adjusting the data to create three thresholds related to the degree of membership with fuzzy points of 0.95; 0.5 and 0.05 respectively. Each solution shows both present and absent conditions. Necessary conditions for the presence and absence of foreign ownership, corporate governance, and control variables for the presence and absence of earning management are presented in Table 6. The absence of foreign ownership is a necessary condition for both the presence and absence of earning management with consistency higher than 0.9 (0.969198 and 0.968796, respectively).

6.3. Sufficiency analysis

Consistency and coverage are criteria to consider for choosing solutions in fsQCA (Ragin, 2008). This study chose a consistent threshold of 0.9 and an intermediate solution on explaining the research results based on the recommendation of Ragin (2008). Tables (7-9) present the fuzzy-set analysis outcome with the separate effects of foreign ownership, corporate governance, and the combined effects of the two above factors on earning management behaviors.

The results from fsQCA software with a cutoff value of 0.902712 reveal that the combinations of foreign ownership and control variables have an effect on earning management (Table 7). Table 7 confirms two appropriate outcomes ($FO*SIZE*\sim LEV$ and $\sim FO*LEV*MTBV$). The increase of foreign ownership combined with changes in firm size, leverage, and market-to-book-value will reduce earning management behavior. In other words, foreign ownership and earning management consist of a negative relationship, thus, Hypothesis 1 is supported. The overall coverage of the intermediate solution is 79.97%, which asserts the combinations found cover most of the outputs.

Table 8 reports six configurations between corporate governance and control variables for earning management at the cutoff point of 0.907679 and solution consistency of 0.769717. Corporate governance is not a necessary condition for the existence of earning management. The intermediate results note that the combinations of corporate governance with firm size or

Table 4. Summary and calibration values variables (n = 169)

VARIABLES	Mean	Std. Dev.	Min.	Max	Calibration values		
					5%	50%	95%
EM	-0.1759	2.1129	-42.413	12.681	-0.5836	-0.0145	0.2881
FO	0.0362	0.1018	0	0.8	0.057	0.23	0.635
CGI	3.1408	0.9995	0	6	0.3	3	5.7
MTBV	1.2179	1.8282	-1.84	37.33	0.5174	1.425	2.4407
GRWTH	2.6906	2.1055	-0.8851	15.189	0.8423	5.5175	5.3506
SIZE	12.0705	0.7067	8.563	13.799	10.9768	12.1024	13.1737
LEV	0.4978	0.2361	0.00015	1.4763	0.04349	0.51699	0.83694

Table 5. Average value of corporate governance (CGI) through sectors

No.	Setor	Average CGI
1	Basic Materials	3.27
2	Consumer Discretionary	3.23
3	Consumer Staples	3.04
4	Energy	2.91
5	Financials	3.50
6	Health Care	3.23
7	Industrials	3.01
8	Real Estate	3.35
9	Technology	3.80
10	Telecommunications	3.50
11	Utilities	3.10

corporate governance, leverage, and market-to-book-value are sufficient. An extremely consistent combination ($\sim\text{CGI} \cdot \text{LEV} \cdot \text{MTBV}$) of 0.93132 (greater than 0.9) claims strong subsets of the outcome (Ragin, 2008). This finding concluded that corporate governance is found to be negatively correlated with earning management, which supports Hypothesis H2.

Foreign ownership and corporate governance index are insufficient conditions to influence earning management (Table 9). Following Table 9, the proposed solution presents eight configurations affecting earning management. There are two configurations with the appearance of both foreign ownership and corporate governance. These solutions maintain raw coverage in the range of 0.25–0.65 and high consistency (0.87813 and 0.931474) that meet fsQCA's requirements for appropriate output (Eng & Woodside, 2012; Mas-Verdú et al., 2015). Consequently, the combination of foreign ownership and corporate governance (in the opposite direction), and firm size, leverage, and growth (in the same direction) may affect earning management. Solutions also

Table 6. Analysis of necessary conditions (necessary conditions)

Conditions	EM		~EM	
	Consistency	Coverage	Consistency	Coverage
FO	0.114617	0.800539	0.122787	0.784867
~FO	0.969198	0.546949	0.968796	0.500353
CGI	0.755037	0.745608	0.770896	0.696704
~CGI	0.692868	0.767686	0.718518	0.728585
MTBV	0.451599	0.816565	0.464450	0.768575
~MTBV	0.872011	0.640177	0.889150	0.597397
GRWTH	0.675256	0.695236	0.710914	0.669871
~GRWTH	0.679358	0.719716	0.676565	0.655966
SIZE	0.712064	0.747935	0.676639	0.650447
~SIZE	0.667210	0.692740	0.737785	0.701047
LEV	0.715396	0.719391	0.685827	0.631165
~LEV	0.633213	0.687722	0.695089	0.690897

Table 7. FsQCA results - Foreign ownership and earning management

Causal configuration	Raw coverage	Unique coverage	Consistency
SIZE*~GRWTH	0.524172	0.102695	0.851510
~FO*SIZE*~LEV	0.461050	0.045375	0.867795
~FO*LEV*MTBV	0.348700	0.009859	0.896927
SIZE*MTBV	0.379456	0.002062	0.888169
~LEV*MTBV*~GRWTH	0.299812	0.000204	0.899742
Solution coverage: 0.716235			
Solution consistency: 0.799702			
$f_{s_EM} = f(f_{s_FO}, f_{s_MTBV}, f_{s_GRWTH}, f_{s_SIZE}, f_{s_LEV})$.			
Frequency cutoff:1.			
Consistency cutoff:0.902712.			

suggest that increasing foreign ownership and corporate governance at the same time could limit the earning management behavior. The results were achieved to be consistent with Hypothesis H3.

6.4. Discussion of research results

This research develops models to evaluate the separate and combined effects of foreign ownership and corporate governance on earning management. Overall, our fsQCA results support all hypothesis development as mentioned above. The results are consistent with the previous research such as Shan (2015), Tran and Dang (2021). The results are supported agency theory (Jensen & Meckling, 1976) and new institutional theory (DiMaggio & Powell, 1982; Meyer & Rowan, 1977; Zucker, 1977). Paying attention to corporate governance policies and developing appropriate foreign investment attraction policies will improve firm performance. Moreover, it helps firm to limit conflicts of interest between managers and owners (Krishnan, 2003).

In the context of Vietnam, listed firms are often family-owned or have a group of large shareholders. This leads to the behavior of manipulating the business operations for the purposes of large shareholders, then, increasing the earning management behavior. Listed firms with weak corporate governance systems and lose controlling business activities, the frequency of earning management behaviors will be raised. From an institutional perspective, the Vietnamese legal system just stopped at formulating regulations related to foreign investment and corporate

Table 8. FsQCA results - corporate governance and earning management

Causal configuration	Raw coverage	Unique coverage	Consistency
SIZE*~GRWTH	0.524172	0.024433	0.851510
~CGI*SIZE	0.537975	0.041092	0.874157
LEV*~GRWTH	0.528999	0.058045	0.827953
MTBV*~GRWTH	0.355771	0.027583	0.888543
SIZE*LEV*~MTBV	0.548196	0.011491	0.849710
~CGI*LEV*MTBV	0.312572	0.009088	0.931320
Solution coverage: 0.810068			
Solution consistency:0.769717			
$f_{s_EM} = f(f_{s_CGI}, f_{s_MTBV}, f_{s_GRWTH}, f_{s_SIZE}, f_{s_LEV})$.			
Frequency cutoff:1.			
Consistency cutoff:0.907679.			

Table 9. FsQCA results – foreign ownership, corporate governance and earning management

Causal configuration	Raw coverage	Unique coverage	Consistency
~FO*CGI*SIZE	0.529725	0.023277	0.878713
~FO*LEV*~GRWTH	0.521225	0.056594	0.829288
~FO*MTBV*~GRWTH	0.351397	0.024818	0.890932
CGI*SIZE*~GRWTH	0.497087	0.019446	0.874168
~FO*SIZE*LEV*~MTBV	0.541125	0.011106	0.853410
~CGI*SIZE*~LEV*MTBV	0.270914	0.000113	0.937049
~FO*~CGI*LEV*GRWTH	0.309626	0.009020	0.931474
~CGI*SIZE*LEV*GRWTH	0.385304	0.001269	0.902910

Solution coverage: 0.810725

Solution consistency: 0.773724

$fs_EM = f(fs_FO, fs_CGI, fs_MTBV, fs_GRWTH, fs_SIZE, fs_LEV)$.

Frequency cutoff:1.

Consistency cutoff:0.908137.

governance regime. The empirical research helps to confirm the actual situation about the influence of foreign ownership and corporate governance on the adjustment of earning management behavior of Vietnamese listed firms.

6.5. Robustness test

According to agency theory, the conflicts between managers and owners in the delegation process due to the personal interests of the two objects are different. Managers achieve the best performance to increase the income from the owners. Therefore, they have the ability to adjust and maximize performance compared to real value. If firms without a good financial report, managers tend to manage earnings to change performance. Thus, firm performance could have an influence on earning management behavior. These are also confirmed by Tabassum et al. (2015) and Zimon et al. (2021).

Following the above arguments, to further examine the combined effect of foreign ownership and corporate governance on earning management, we added firm performance variable (return on assets—ROA) to the model as an independent variable. Table 10 presents the fsQCA results with the new equation for 169 Vietnam listed from 2016 to 2020.

According to the results obtained from Table 10, the combination of foreign ownership and corporate governance still has significance in reducing earning management as found in the main part of this study. In particular, the combination of three independent variables (FO, CGI, ROA) also has a negative effect on the earning management behavior of listed firms in Vietnam (~FO*~CGI*~ROA*MTBV*GRWTH). It is easily explained because firms with poor performance, the more managers need to manage earnings to overstate performance from bad to excellent. This robustness test states that the main research results are reliable. After adding other factors to the model, the empirical results still report that increasing foreign ownership along with improving corporate governance will reduce earning management behavior in Vietnamese listed firms (Nguyen et al., 2021; Tran & Dang, 2021).

7. Summary and conclusions

This study examines the impact of components such as foreign ownership, corporate governance index, and control variables (firm size, leverage, market-to-book-value ratio, growth) on earning management behavior. The research results were found in a convenience sample of 169 listed firms in Vietnam for the period 2016–2020. This study has shown the impact of foreign ownership and corporate governance on earning management. At the same time, the fsQCA results indicate

Table 10. FsQCA results – foreign ownership, corporate governance, performance and earning management

Causal configuration	Raw coverage	Unique coverage	Consistency
~FO*LEV*~GRWTH*~ROA	0.471612	0.003082	0.858452
~FO*LEV*~MTBV*~CGI	0.513610	0.023254	0.876126
~FO*SIZE*GRWTH*~CGI	0.437388	0.024432	0.875470
~FO*SIZE*LEV*~MTBV*~ROA	0.492509	0.006368	0.865530
~FO*~CGI*~ROA*MTBV*GRWTH	0.261349	0.004260	0.904889
~SIZE*~LEV*~MTBV*~GRWTH*~CGI*~ROA	0.521225	0.056594	0.829288

Solution coverage: 0.847986

Solution consistency: 0.76366

$fs_EM = f(fs_FO, fs_CGI, fs_ROA, fs_MTBV, fs_GRWTH, fs_SIZE, fs_LEV)$.

Frequency cutoff:1.

Consistency cutoff:0.90184.

that the combination of these two factors also has a significant impact on reducing earning management behavior. From that, policy implications are given to limit earning management behavior for Vietnam listed firms. This research makes some contributions in theoretical and practical.

7.1. Theoretical contributions

Theoretically, this study is remarkable compared to previous studies by using fsQCA method instead of traditional quantitative methods for seeking a flexible combination of independent variables affecting dependent variable. The research results demonstrate that foreign ownership and corporate governance have significant in limiting earning management behavior as other studies (Elghuweel et al., 2017; Nguyen et al., 2021; Potharla et al., 2021).

Secondly, fsQCA results indicate a set of many different combined results that impact on earning management. Notably, the interaction between foreign ownership and corporate governance has a negative effect on earning management, which is a new point that has not been discussed in previous studies. Therefore, this study helps Vietnam and other developing countries realize the importance of foreign investment capital and the great role of great corporate governance in supporting successful business operations. labour. This research also assist firms realize the usefulness of applying agency theory to control the arising of earnings management behavior. As such, managers will reach a better overview and orientation on managing corporate governance policies, especially earning management. This empirical findings can serve as as a guide for other researchers to further research and develop this topic in different contexts and countries.

Finally, our findings from this research support the agency theory and institutional theory in developing countries. The findings empirically confirm that firms should strengthen their corporate governance policies and actively promote the investment of foreign investors to increase business efficiency, reducing pressure on managers when get the delegation authority from the owner (Cornett et al., 2009; Shen & Chilh, 2007).

7.2. Practical contributions

In practical terms, the outcome clearly shows that the combination of foreign ownership and corporate governance remains a significant factor to control earning management behaviour. Some practical implications are presented for firms in countries whose economy development are not too different from Vietnam. If Vietnamese firms want to reduce the behaviour of earning management,

firms can increase foreign ownership as well as enhance corporate governance efficiency. To achieve this goal, managers need to limit the behavior of exaggerating financial reporting to impress foreign investors who lack local market knowledge (Aharony et al., 2000; Tran & Dang, 2021).

Furthermore, the research implies that policy regulators and managers should change the appropriate corporate governance mechanism to strengthen investor confidence, thereby minimizing the earning management behavior in Vietnamese listed firms. An appropriate corporate governance mechanism will help shorten the gap of information asymmetries among stakeholders (Cohen et al., 2002). Thus, investors have more confidence in financial transparency and business operations if firms own a good corporate governance system (Shan, 2015). As mentioned above, a strict corporate governance system supports investor protection and reduces financial scandals. If firms maintain a suitable corporate governance system, managers will be strictly controlled and it will be difficult to implement earning management.

The empirical findings emphasized the indispensable role of foreign investment and corporate governance in regulating earning management behaviors. The research results are supported by the agency theory in explaining that the combination of both foreign investment and corporate governance factors affects earning management. Therefore, managers and businesses need to pay attention to the above factors to increase operational efficiency. Regarding the attraction of foreign ownership, the capital attraction policy, the share preference regime and the transparency in publicizing the firms' financial results are the points. Investors will focus on good financial health and good corporate governance firms. Because firms with good corporate governance quality tend to have positive performance and increase the profitability of investors' capital. Vietnamese listed firms can comply with the regulations of public corporate governance in Vietnam, while flexibly applying some corporate governance principles of developed countries.

This study includes some certain limitations. Initially, the research data collected in Vietnam from 2016 to 2020 coincides with the period of time of the US-China trade war, hence, Vietnamese foreign ownership data Vietnam has much different fluctuation. Secondly, during the study period, there were some difficulties in data collection due to the COVID-19 pandemic. Many Vietnamese listed firms went bankrupt or stocks were delisted, thus limiting the samples. Therefore, subsequent researchers may overcome the above problems by collecting data over a longer period or with a larger sample. In addition, future studies could compare research results before and after the crisis to highlight the impact of the US-China trade war or the epidemic on the research problem. Besides, comparing research results between groups of firms with different rates of foreign ownership and Corporate Governance quality is also a possible direction for research. Furthermore, upcoming studies may collect and analyze data of countries with different levels of economic development to compare differences in research results. Especially, the comparison results on the influence of the above relationships between developing countries and developing countries are valuable information for investors when considering investing in two different regions.

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Correction

This article has been corrected with minor changes. These changes do not impact the academic content of the article.

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