Institutional Investors' Intervention in Information Asymmetry and Real Earnings Management within Dual-Class and Single-Class Chinese US-Listed Firms

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ABSTRACT

This study aimed to empirically analyse the relationship between information asymmetry and real earnings management in Chinese firms, while also investigating the moderating effect of institutional investors. The study employed a dataset consisting of 105 dual-class and 121 single-class Chinese companies that were listed in the United States from 2017 to 2021. The study utilised panel data and employed a fixed effects model. The study depicted a positive connection between information asymmetry and real earnings management. This correlation remained present in dual-class companies but lacked statistical significance in single-class companies. The results suggested that institutional investors mitigated the influence of information asymmetry on real earnings manipulation. This moderating effect was especially significant in dual-class structures but not in single-class structures. The findings indicated that management should prioritise enhancing information transparency to mitigate the risks linked to real earnings management. The results also suggested that involving institutional investors effectively decreased the risk of earnings manipulation. Furthermore, the study provided important evidence of Chinese companies' real earnings management behaviour, allowing stakeholders to make informed decisions. Furthermore, this study provided new empirical insights that may be useful for emerging economies, including China, as they consider the adoption of dual-class share structures.

Keywords: Information Asymmetry, Real Earnings Management, Institutional Investors, Dual-Class, Single-Class

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INTRODUCTION

As examples of technology titans that have successfully listed in the United States and completed enormous IPO (Initial Public Offering) transactions, many companies have adopted dual-class[1] share structures (multiple voting rights) in recent years. For example, Alibaba had the largest IPO in 2014 when it was listed on the New York Stock Exchange in the United States. Luckin Coffee became the largest Asian company to raise funds in 2019 by being listed on the Nasdaq Stock Exchange in the United States. Companies with a dual-class structure are gaining increasing attention from various parties in the capital market. Although dual-class companies have shown impressive performance after their IPO, numerous concerns have been raised. One consequence of dual-class is the potential for increased information asymmetry, which can facilitate corporate executives' manipulation of earnings to obtain personal gains. Hence, the research explored the correlation between information asymmetry and real earnings management (REM).

Earnings management primarily aims to optimise a company's performance to align with market expectations and satisfy the personal benefits of a particular group. Scholarly research presently categorises earnings management into two main groups: accrued earnings management and real earnings management. Accrued earnings management is a kind of activity in which executives use different accounting methods that are in line with accounting standards to change the information in financial reports in order to reach certain goals (Dechow & Skinner, 2000; Healy & Wahlen, 1999). Real earnings management is the process by which managers regulate and manipulate a company's accounting profits by creating actual trading activities or controlling the timing of relevant corporate activities (Cohen et al., 2008; Roychowdhury, 2006). Real earnings management pertains to practical economic business operations, whereby the outcomes have an impact not only on the present reported earnings but also on the present cash flow of the organisation. Furthermore, real earnings management is characterised by its covert nature and challenging detectability, thereby leading to a growing concern among all parties in the capital market. Hence, this study specifically concentrated on real earnings management.

El Diri (2018) stated that information asymmetry is a key factor contributing to earnings management. Past research in the field of earnings management literature has primarily examined information asymmetry in

[1] The term "dual-class share structures" in this paper denotes a shareholding structure with multiple voting rights, such as dual-class structures, triple-class structures, as well as similar variations.

relation to residual free cash flow (Toumeh et al., 2020), firm performance (Aqabna et al., 2023), CEO characteristics (Elsheikh et al., 2022), and firm characteristics (Ghani et al., 2019). According to studies on earnings management and equity structure, increasing family and institutional ownership ratios reduces accrued earnings management but had no effect on real earnings management, and the quality of external auditing is also insignificant in reducing accrued/real earnings management (Mahyuddin et al., 2020). Current literature does not provide definitive proof or backing for the connection between information asymmetry and real earnings management.

The issue of dual-class structures has been a subject of controversy in previous research. The adoption of one-share, one-vote structures is prevalent and serves the purpose of safeguarding the ownership structures of security holders (Grossman & Hart, 1988; Harris & Raviv, 1988). In single-class structures, each share represents equivalent cash flow rights and voting rights; the more one holds, the more power one has. Dual-class structures, on the other hand, are quite different. Dual-class structures represent having unequal voting rights (Hossain & Kryzanowski, 2019). In other words, each share reflects differing cash flow and voting rights. The dual-class was implemented to safeguard the inventive drive and future-oriented perspective of the company's founders and founding team against immediate market demands. Nevertheless, dual-class also gives rise to governance apprehensions as it could undermine the capacity of external stakeholders to oversee and enforce accountability for the company, thereby heightening the likelihood of insider control.

China is currently the world's second-largest economy and has a huge impact on the global stock market. Chinese companies have become a major source of foreign companies listed in the United States (Liu et al., 2019). As Chinese technology titans (e.g., Jing Dong and Alibaba) chose to list in the US and set record-breaking IPO sizes at the time, these realities have sparked widespread interest and in-depth debate. These corporations decided to list in the US because they used a multiple voting rights ownership structure. Historically, public listing in China was prohibited for corporations utilising such a particular equity structure (Zhang, 2014). Subsequently, beginning in 2018, China has granted the consecutive listing of companies with multiple voting rights on the Hong Kong Stock Exchange (HKSE), Shanghai Stock Exchange (SSE), and Shenzhen Stock Exchange (SZSE). Unfortunately, because China has a very strict prior review procedure in place for the listing of companies with such unique shareholding structures, the process of listing these companies is still moving slowly. Hence, it is imperative to engage in discussions and conduct research on companies in China that have a dual-class share structure.

The Agency theory implies that separating ownership and control rights leads to agency issues (Jensen & Meckling, 1976). Dual-class firms typically allocate their shares into two categories: one with high voting rights but low cash flow rights, and the other with high cash flow rights but low voting rights (CFA Institute, 2018; Gompers et al., 2010; Smart et al., 2008). The founder, team, or management typically possess super-voting rights, and the firm demonstrates a high level of separation between ownership and control. Simply put, the founder, team, or management holds complete authority over the company, while most minority shareholders have no say in its affairs. This provides the founder, team, and management with greater access to internal information, while external investors face challenges in obtaining accurate information about the company, resulting in an increase in asymmetric information. Previous studies have established that a high deviation in cash flow rights from control rights can result in a diminished return-earnings relationship for the firm when insider holdings are concentrated (Fan & Wong, 2002). This is because insiders tend to prefer operating in greater secrecy, which grants them a tighter grip on the firm's information outflow. Based on the evidence mentioned above, it is evident that dual-class structures exhibit low levels of information transparency, which increases the likelihood of earnings management activities.

Earnings management is a representation of agency conflict in listed companies. Referring to the Stakeholder Theory, when managers engage in earnings management to conceal the true financial state of the company for their own benefit, it can harm the interests of external shareholders and other stakeholders. Introducing institutional investors could effectively curb earnings management behaviour. Institutional investors typically possess expert investment analysis and corporate governance capabilities, enabling them to perform thorough monitoring and evaluation of a company's financial reporting and operational decisions. Through the accumulation of a significant number of shares and the utilisation of their voting power, shareholders can establish an influential mechanism to oversee and regulate management activities, thereby limiting their discretion and motivations for manipulating financial results (Miller et al., 2021; Shi et al., 2023). Furthermore, the long-term investment outlook and robust investment strategies of institutional investors can assist managers in prioritising the company's long-term growth and the creation of shareholder value, rather than excessively chasing short-term performance and share price fluctuations (Sakawa & Watanabel, 2020).

The study aimed to present information regarding the factors influencing and limiting earnings management in companies with multiple voting rights in emerging markets. This study examined how information asymmetry affected real earnings management in Chinese concept stocks listed in the

United States, with a particular focus on the role of institutional investors as moderators. The study found that higher levels of information asymmetry led to more frequent real earnings management operations, especially in businesses with dual-class structures. Furthermore, involving external stakeholders like institutional investors can help reduce occurrences of real earnings management and improve the company's information transparency.

The findings of the study help to fill a gap in the existing research. This study included institutional investors as a moderating factor in the relationship between information asymmetry and real earnings management. The study evaluated the earnings management performance of dual-class and single-class firms to analyse the performance of multi-voting companies. This study specifically examined Chinese listed firms, offering empirical evidence to analyse earnings management practices in emerging markets and proposing a new approach to encourage the adoption of dual-class share structures in emerging markets. This study was anticipated to enhance knowledge, expand perspectives, and supplement prior research. Furthermore, it can serve as a supplementary resource for policymakers and regulators to gather evidence in supporting the promotion of implementing multiple voting rights share structures in Chinese and international enterprises.

The paper is structured as follows: Section 1 is the introduction and motivation for the study. Section 2 presents the theoretical background and research hypotheses. Section 3 outlines the research methodology. Section 4 includes the empirical findings and analyses. Section 5 gives the conclusion of the study.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Agency Theory

Most contemporary companies employ an operational framework that separates ownership and management. Consequently, the company's shareholders delegate the operational duties to competent managers, such as the board of directors and senior executives, rather than being directly involved in the day-to-day management tasks. Under this operational framework of separation of powers, conflicts of interest frequently arise. According to agency theory, managers may prioritise their personal benefits over shareholders', resulting in potential harm to shareholders. The conflict arises from a fundamental disparity in the interests of management and shareholders (Jensen & Meckling, 1976). In companies with dual-class structures, agency conflict is more pronounced due to the clear division between cash flow rights and control rights (voting rights); in other words,

having a highly concentrated equity structure worsens conflicts of interest (Cieslak et al., 2021). Furthermore, earnings management refers to the strategic actions taken by managers to pursue their personal gains or fulfil market expectations. In order to address agency problems, corporate governance is considered an effective mechanism for balancing the interests of stakeholders and operators (Zeng & Li, 2021). Institutional investors are crucial components of the corporate governance structure. Institutional investors refer to legally established entities that engage in activities related to investing in securities. Institutional investors can directly impact a company's management activities through their rights or indirectly through their trading activities (Drobetz et al., 2021). According to Ali et al. (2024), there is a direct correlation between the extent of institutional ownership in listed companies in China and the earnings' quality.

Stakeholder Theory

Freeman (2010) developed the Stakeholder Theory, which defines stakeholders as "individuals and groups who have the ability to impact an organisation's goals or the methods it uses to achieve those goals." In brief, anyone who is involved with the company is referred to as a stakeholder. Stakeholders play a crucial role in the operation of a company. According to the Theory, in order to enhance the value of a firm, it is imperative to have the support of stakeholders who share a similar interest in the firm's value (Dumitrescu & Zakriya, 2021; Loy, 2016). Nevertheless, management and majority shareholders engage in earnings management as they strive to assert control and prioritise their own benefits (Sun et al., 2015; Wang et al., 2021). Excessive earnings management has the potential to distort the accounting information of the company. Conversely, stakeholders primarily rely on financial statements to obtain information about the company's status. Without a doubt, earnings management activities have the potential to affect the interests of specific stakeholders, such as minority shareholders. Liu and Li (2013) and Ni (2020) stated that stakeholders should play an active role in monitoring earnings management and maintaining a system of checks and balances with the firm's management. This involvement is crucial for enhancing the credibility of accounting information and ensuring a fair balance of interests among all parties involved.

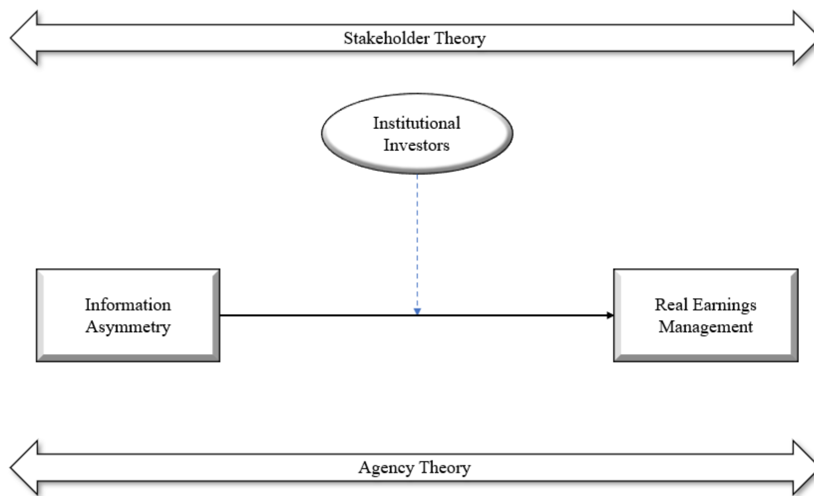

Figure 1: Conceptual Framework

Information Asymmetry and Real Earnings Management

Information asymmetry is the unequal distribution of information among parties involved in market economic activities, leading to an advantage for those with more information (Akerlof, 1970; Arrow, 1963). The asymmetry arises from disparities in the costs, abilities, obstacles, distortions, or delays in obtaining information, as well as variations in the capacity of different participants to comprehend and analyse the same information (Osborne & Rubinstein, 2023; Tiong, 2019; Yimenu & Surur, 2019). Individuals within a company typically possess more detailed information about the company's operations compared to those outside the organisation. They may exploit this knowledge to conceal information that could negatively impact other stakeholders (Bergh et al., 2019). This allows for opportunistic corporate behaviour, such as earnings management. Executives in firms with concentrated control may selectively disclose information to meet market expectations and serve their own interests (Sri et al., 2023).

Real earnings management involves controlling a company's accounting profit by manipulating the timing of actual transactions or activities (Cohen et al., 2008; Roychowdhury, 2006). The activity is secretive and difficult to uncover through external audits (Alhadab, 2018). Management may manipulate earnings under the guise of the company's real business due to market pressures and private interests, which can harm the company's long-term growth and stakeholders' interests. Based on a study by Fan and Wong (2002), concentrated ownership in East Asian companies can result in a

reduced relationship between returns and earnings due to insiders focusing on confidentiality to maintain control over corporate information dissemination. As a result, in dual-class firms, founders or management have more incentives and the ability to manipulate returns in order to maintain control or increase stock value than in single-class firms.

According to El Diri (2018), one of the primary causes of earnings management is communication friction, which stems from information asymmetry between internal and external parties. Company insiders, particularly management, typically possess more precise and up-to-date information about the company. The unequal distribution of information allows management to manipulate financial reporting to their advantage, influencing decisions related to investment, financing, and personal compensation. Additionally, information asymmetry hinders the market's capacity to recognise and limit earnings management, making it challenging for external investors to identify earnings manipulation (Dang et al., 2023). Chung et al. (2023) proposed that improving the readability of accounting reports enhances corporate information and decreases information asymmetry.

Multiple studies have demonstrated that the information environment is more negative and susceptible to speculative behaviour in dual-class firms (Forst et al., 2016; Li & Zaiats, 2017; Lobanova et al., 2019). The substantial gap between cash flow and control rights boosts insiders' control power, enables them to disclose information in their favour selectively, and exacerbates information asymmetry. Fan and Wong (2002) and Chen and Zhao (2017) proposed that individuals or groups with a significant ownership stake in a company may prioritise their personal interests over the company's interests. Companies with a high level of share ownership concentration are more vulnerable to insider influence, which diminishes shareholders' ability to monitor and can lead to speculative activities such as earnings management (CFA Institute, 2018; Hettler & Forst, 2019; Saona et al., 2020). Therefore, this study proposed the following hypothesis:

H1: Information asymmetry positively impacts real earnings management.

Moderating Role of Institutional Investors

An institutional investor refers to a legally recognised entity that is involved in activities related to investing in securities. In many countries, institutional investors have a crucial impact on financial markets. Since institutional investors are becoming more influential in the capital market, studies on their function have increased recently. Institutional investors, who hold large firm shares, help reduce asymmetric information in capital markets. They achieve

this by actively participating in corporate governance and advocating greater company transparency (Chung et al., 2023). According to Boone and White (2015), greater institutional ownership accompanies increasing management disclosure and analyst following proposing that institutional investors might encourage management to provide more accurate and timely information to reduce asymmetric information.

According to the Stakeholder Theory, institutional investors' specialist knowledge, resourcefulness, and attention to information provide them an advantage in reducing earnings manipulation. Gao et al. (2020) found that long-term institutional investors can spot real earnings manipulation by companies. Conversely, companies where institutional shareholders' attention is distracted are more likely to manipulate (Garel et al., 2021). This is due to their long-term investing perspective, where they prioritise long-term business development and shareholder value generation rather than short-term performances and stock price (Kałdoński et al., 2020). It encourages leaders to pursue long-term growth and performance while diminishing earnings manipulation. Based on previous evidence, the study claimed that institutional investors are crucial to information asymmetry and earnings management. Therefore, this study posited the following hypothesis:

H2: There is a moderating effect of institutional investors on the relationship between information asymmetry and real earnings management.

METHODOLOGY

The study utilised secondary data obtained from publicly accessible databases, along with manually compiled data from company financial reports. The data was then analysed using the STATA software to address the research inquiries.

Research Sample and Data

This study analysed how information asymmetry affected real earnings management, with a focus on the moderating role of institutional investors. The research sample consists of Chinese concept stocks that were listed in the United States. This was because China's capital market recently allowed dual-class businesses to list publicly. Due to strict pre-review requirements, such companies are few on Chinese stock exchanges, making empirical research impossible. However, the US capital market, the most advanced in the world, attracts many companies seeking public listing, especially those with multiple voting rights. Recent evidence shows a substantial increase in the number and percentage of US-listed businesses' dual-class IPOs. Aggarwal et al. (2022)

stated that 19% of IPOs in the US from 2017 to 2019 were companies with dual-class. According to the Investor Coalition for Equal Votes (ICEV), throughout 2020 to 2022, dual-class structures will be present in more than 40 percent of tech IPOs and close to 20 percent of non-tech IPOs in the US. According to Liu et al. (2019), China accounts for 59.6% of foreign companies listed in the US, which is a big contributor to foreign companies listed in the US from 2002 to 2012. This study included Chinese US-listed companies with dual-class, ensuring a representative and large sample size. The study sample included 226 Chinese companies listed on US exchanges between 2017 and 2021, excluding financial and public utility companies. The total had 105 dual-class and 121 single-class structures firms.

This study used secondary data from the China WIND database and manually collected data from companies' annual financial reports. The China WIND database is valuable for financial engineering and data warehousing. In Chinese company data research, WIND is highly regarded and cited in Chinese and English publications and academic studies. This study used the WIND database to collect Chinese companies listed on the NYSE, AMEX, and NASDAQ as of 2021. By consulting the annual reports available on the official website of the US Securities and Exchange Commission (SEC), it was ascertained whether these companies had a dual-class or single-class structure. Then, other essential variables were obtained from 2017 to 2021 from the WIND database.

Measurement of Real Earnings Management

Real earnings management is a deceptive financial strategy. It refers to the deliberate and strategic adjustment, reorganisation, or modification of a company's operations, investments, or financing activities in order to manipulate and mould financial information (Ibrahim et al., 2011; Roychowdhury, 2006). Real earnings management typically involves sales, production, and discretionary expense manipulation. These instruments require the cooperation of employees from different departments and are seamlessly integrated into the company's daily operations, demonstrating greater confidentiality. Moreover, real earnings management has surpassed accounting standards limitations, meaning that accounting standards do not bind them. Consequently, it makes it harder to spot real activity manipulation.

This study employed the studies conducted by Roychowdhury (2006) and Cohen and Zarowin (2010) to quantify the extent of real earnings management. It utilised various proxy variables to assess a company's real earnings manipulation comprehensively. To accurately assess real earnings management, we utilised three metrics: abnormal cash flows (Ab_CFO),

abnormal production costs (Ab_PROD), and abnormal discretionary expenses (Ab_DIS).

Abnormal cash flow (Ab_CFO) referred to the company's efforts to modify cash flow inflows and outflows through sales manipulation, collection strategies, and other methods. Abnormal production costs (Ab_PROD) assessed the impact of changes in production size and inventory levels on production costs and surplus. Abnormal discretionary spending (Ab_DIS) represented changes in a company's unusual expense in R&D, advertising, and overheads, which are flexible earnings management tools.

In practice, companies rarely use only the above-mentioned single approach to real earnings management. Thus, this study referred to Cohen and Zarowin (2010) and developed a comprehensive evaluation metric to measure the degree of real earnings manipulation. It illuminated the profound impact of real earnings management on companies' financial status and investors' decisions. In the following regression analyses, the absolute value of this indicator represented the degree of real earnings management. As the indicator's value increases, the degree of real earnings management also increases.

$$\frac{CFO_{it}}{A_{it-1}} = \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{S_{it}}{A_{it-1}} + \beta_3 \frac{\Delta S_{it}}{A_{it-1}} + \varepsilon_{it} \quad (1)$$

$$\frac{PROD_{it}}{A_{it-1}} = \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{S_{it}}{A_{it-1}} + \beta_3 \frac{\Delta S_{it}}{A_{it-1}} + \beta_4 \frac{\Delta S_{it-1}}{A_{it-1}} + \varepsilon_{it} \quad (2)$$

$$\frac{DIS_{it}}{A_{it-1}} = \beta_1 \frac{1}{A_{it-1}} + \beta_2 \frac{S_{it-1}}{A_{it-1}} + \varepsilon_{it} \quad (3)$$

$$REM_{it} = ab_PROD_{it} - ab_CFO_{it} - ab_DIS_{it} \quad (4)$$

Where: CFO represented operational cash flow in period t; PROD represented the production costs in period t; DIS represented the sum of advertising expense, R&D and selling, general & administrative expense. The abnormal CFO (ab_CFO), abnormal production costs (ab_PROD) and abnormal discretionary expenses (ab_DISX) were residuals in the (1) (2) and (3) equations. We used REM as a comprehensive proxy for real earnings management.

Measurement of Information Asymmetry

We followed Pan and Misra's (2021) bid-ask spread method to assess information asymmetry in this study. Previous studies have shown a link between daily bid-ask spreads and market participants' information gaps (Hamrouni et al., 2015; Karpoff et al., 2013). Insiders have an informational advantage over external stakeholders in unequal information distribution. Investors experience different price patterns due to different information levels. A wider bid-ask spread reduces risk for uninformed investors trading with informed investors (Wang & Yang, 2015). Hence, the bid-ask spread is frequently employed as a substitute for information asymmetry. As price difference rises, liquidity falls and information asymmetry rises. To determine the annual average bid-ask spread in this study, we aggregated every individual stock's daily bid-ask spread for the year and divided by the total number of trading days. The natural logarithm of the bid-ask spread was used for regression analysis.

$$\text{spread} = \frac{\sum_{j=1}^{n}(\text{Ask}_{it} - \text{Bid}_{it})}{n}$$

Where: n represented total trading days during the year.

Moderating Variable

Moderating variables affect the independent-dependent relationship's magnitude and nature. The introduction of a new moderating variable is necessary to establish the connection between the independent and dependent variables and contribute to the theory of boundary adjustment (Zhang & Lin, 2011).

In this study, institutional investors served as the moderating variable. Institutional investors play a crucial role in company operations due to their influence and professionalism. The percentage of institutional ownership, the investment strategies they select, and how involved they are in managing the business can impact the relationship between information asymmetry and earnings management (Chung et al., 2023; Gao et al., 2020). An increase in institutional investor shares indicates a greater alignment of interests with the company. Thus, they are more motivated to oversee the company's financial reporting and earnings management, decreasing managers' opportunity to exploit information imbalances and act opportunistically. This, in turn, enhances the transparency of the company's information and the reliability of

its financial reporting. Thus, this study referenced previous studies that measured institutional investors' impact using shareholdings (Ali et al., 2024; Chung et al., 2023; Hope & Wang, 2018).

Control Variables

This study referred to the control variables used in previous studies to assess the relationship between the main variables. Controlling for these variables allows a more precise assessment of information asymmetry's effect on real earnings management and institutional investors' moderating effect. Hence, this study considered various firm-specific factors like corporate governance (board size, independent directors, and CEO duality) and corporate finance (firm size, growth capacity, leverage, and profitability).

The board size, proportion of independent directors, and CEO duality affect the firm's information environment, decision-making transparency, and monitoring. Based on Abad et al. (2018), Liu (2017), and Bao (2020), this study controlled for the following board variables. Board size referred to the total number of directors. The proportion of independent directors was determined by dividing the number of independent directors by the total directors. CEO duality, a dummy variable, was coded as 1 when the CEO was also the board chair.

Corporate finance variables like firm size, growth rate, debt level, and return on assets (ROA) indicate economic scale, growth potential, financial risk, and profitability. These factors can significantly impact the firm's earnings management behaviour. According to Li and Zaiats (2017), Ahad et al. (2018), Dang et al. (2023), and Ali et al. (2024), firm size is the logarithm of a company's end-of-year assets. Growth ability refers to the rate at which a company's operating income increases at the end of the year. Leverage is calculated by dividing a company's total liabilities by its total assets. Profitability, also known as return on assets (ROA), represents a firm's net profit divided by its total assets.

Data Analysis

This study employed panel data and multiple regression analysis to investigate the relationship between variables. First, a variance inflation factor (VIF) test assessed variable multicollinearity. A VIF (variance inflation factor) of 5 to 10 indicates multicollinearity, according to Kim (2019). Heteroskedasticity and autocorrelation were then investigated separately. This study identified heteroskedasticity using the Modified Wald Test. The Ordinary Least Square (OLS) approach may underestimate standard errors if heteroskedasticity is

present (Weng et al., 2019). Additionally, autocorrelation in the regression model can also distort standard errors and estimation. Autocorrelation was detected using the Wooldridge Test, as suggested by Wooldridge (2015). This study utilised clustered robust standard errors to address potential heteroskedasticity and autocorrelation concerns in the model. These standard errors were then used for subsequent analyses.

Panel data, as defined by Wooldridge (2015), is a systematically collected set of data over a specified period (e.g., annually for five years) for a particular group or entity (e.g., individual companies). Pooled ordinary least squares (POLS), fixed effects (FE), and random effects (RE) models are commonly employed to estimate panel data. The Ordinary Least Squares (OLS) model is often used to assess the correlation between dependent and independent variables. Although the estimates display a certain level of consistency, but heteroskedasticity and autocorrelation will make them unreliable. To establish the best model for the study, we conducted a Hausman test to compare the fixed effects and random effects models.

Empirical Model

The study employed a multiple regression model to examine the relationship between real earnings management and information asymmetry, with institutional ownership serving as a moderator. The empirical model proposed in this study was as follows:

Model 1: The Relationship Between Information Asymmetry and Real Earnings Management

$$\begin{aligned} REM = {} & \beta_0 + \beta_1 spread_{it} + \beta_2 board_{it} + \beta_3 indep_{it} + \beta_4 ceo_{it} + \beta_5 size_{it} \\ & + \beta_6 lev_{it} + \beta_7 growth_{it} + \beta_8 ROA_{it} + \varepsilon_{it} \end{aligned}$$

Model 2: The Moderating Effect of Institutional Investors in The Relationship Between Information Asymmetry and Real Earnings Management

$$\begin{aligned} REM = {} & \beta_0 + \beta_1 spread_{it} + \beta_2 board_{it} + \beta_3 indep_{it} + \beta_4 ceo_{it} + \beta_5 size_{it} + \beta_6 lev_{it} + \beta_7 growth_{it} \\ & + \beta_8 ROA_{it} + \beta_9 inst_{it} + \beta_{10} inst_{it} * spread_{it} + \varepsilon_{it} \end{aligned}$$

RESULTS AND DISCUSSION

Descriptive Analysis

Table 1: Descriptive Statistics

Var Name	Obs	Mean	SD	Min	Max
REM	718	0.5561	1.0570	0.0003	8.7199
spread	714	-0.8247	1.1853	-3.3768	2.0908
board	718	6.9847	2.0655	3.0000	16.0000
indep	718	0.5100	0.1535	0.1429	0.8750
ceo	718	0.6379	0.4809	0.0000	1.0000
size	718	5.7823	2.0937	1.3110	10.9992
lev	718	0.5211	0.5398	0.0163	4.3196
growth	718	1.5422	8.4482	-0.9896	70.8565
ROA	718	-0.1743	0.4525	-2.6507	0.5354
dual	718	0.4610	0.4988	0.0000	1.0000
inst	718	0.1490	0.1843	0.0000	0.7442

Table 1 displays the statistical characteristics of the main variables examined in this study from 2017 to 2021. The table exhibits real earnings management (REM) wide variability. The mean of the data was 0.5561, with a standard deviation of 1.0570. The minimum value was 0.0003, while the maximum value was 8.7119. The data showed that real earnings management in different firms varied greatly.

The mean bid-ask spread, which serves as a measure of information asymmetry, was -0.8247, with a standard deviation of 1.1853. The highest value was 2.0908, while the lowest is -3.3768. The data indicated that information asymmetry varied substantially among the sample firms, indicating significant differences in their information environments.

Furthermore, control variables fell into two categories. Regarding corporate governance, the average board size was around 7, with a maximum of 16 and a minimum of 3. This suggests that the boards of the sample firms were generally of an appropriate size, although there were some differences among firms. Variations may be due to company size, governance structure, or management needs. The mean independent director ratio was 0.5100, ranging from 0.1429 to 0.8750. This suggested that some sample companies had fewer independent directors, and that board independence varied considerably. For financial indicators, the average firm size was 5.7823, with a standard deviation of 2.0937, a minimum of 1.3110, and a maximum of 10.9992, indicating that the sample firms ranged in size from small to large. The average leverage was 0.5211, ranging from a minimum of 0.0163 to a maximum of 4.3196, suggesting diversity in the debt profiles in sample firms. Companies with high debt may face increased financial risks and pressure to meet their obligations, which may affect their operational stability and future

growth. Also, the average growth capacity was 1.5422, with a high standard deviation of 8.4482. This suggested low growth for the overall sample of companies, but wide fluctuations. Some companies had grown rapidly, while others had declined. The average ROA was -0.1743, with a standard deviation of 0.4525. The lowest and highest values differed considerably. This suggested that some companies had low profitability or negative returns. Dummy variable "dual" indicated the firm's share structure. It was 1 if the firm has dual-class shares and 0 otherwise.

The average value of the moderating variable institutional investor ownership was 0.1490, with a standard deviation of 0.1843, suggesting that there was variability in the distribution of institutional ownership across different companies. Some companies had a high institutional investor ownership ratio, as the upper limit was 0.7442 while the lower limit was close to zero. Institutional ownership proportions varied widely among different companies. As the percentage of institutional ownership increased, the impact of institutional investors on the company's operations became more substantial.

Correlation Analysis

Table 2: Correlation Matrix

	REM	spread	board	indep	ceo	size	lev	growth	ROA
REM	1.000								
spread	0.012	1.000							
board	-0.097***	0.279***	1.000						
indep	0.025	-0.177***	-0.509***	1.000					
ceo	0.035	-0.041	-0.109***	0.111***	1.000				
size	-0.111***	0.495***	0.378***	-0.208***	-0.090**	1.000			
lev	-0.021	-0.099***	-0.026	-0.042	0.038	-0.092**	1.000		
growth	0.154***	0.099***	0.013	-0.011	-0.052	-0.001	-0.050	1.000	
ROA	0.011	0.065*	0.064*	-0.008	-0.045	0.362***	-0.378***	0.017	1.000
VIF	1.33(mean)	1.41	1.53	1.36	1.02	1.73	1.19	1.02	1.38

Notes: ***, ** and * represent significance at 1%, 5% and 10% level, respectively.

This study first performed Pearson correlation analysis on the variables before regression analysis. The correlation analysis results allowed us to make initial inferences about the relationship and significance of the explanatory

variables for regression analyses on subsequent models. As indicated in Table 2 there was no statistically significant correlation between REM and spread. This finding contradicted the expected relationship and warranted further investigation through subsequent regression analysis. REM was negatively correlated with board size at the 1% significance level, suggesting that a larger board may hinder real earnings management. There was a strong negative correlation between REM and firm size (size) at the 1% level, indicating that larger firms tended to suppress real earnings management. The correlation between growth ability (growth) and REM was statistically significant at the 1% level. Each variable's VIF and average VIF were below five. This suggested that there was no issue of multicollinearity (Kim, 2019).

Results of Multiple Regression Analysis

Model 1: The Relationship between Information Asymmetry and Real Earnings Management

Table 3: Results of the Impact between REM and Bid-Ask Spread

Model 1	Total REM	Dual=1 REM	Dual=0 REM
spread	0.0769*	0.0893**	0.0608
	(1.7024)	(1.9925)	(0.9044)
board	-0.0521**	-0.0637**	-0.0390
	(-2.2413)	(-2.3110)	(-0.9567)
indep	-0.3318	-0.6719*	-0.1172
	(-1.2756)	(-1.8261)	(-0.4101)
ceo	0.0418	0.1719	-0.0771
	(0.5400)	(1.6226)	(-0.6255)
size	-0.0790**	-0.0620	-0.1013*
	(-2.1867)	(-1.2714)	(-1.9351)
growth	0.0183*	0.0545***	0.0005
	(1.8697)	(3.3367)	(0.1203)
lev	0.0679	0.0347	0.0520
	(0.5847)	(0.2757)	(0.3377)
ROA	0.2047	-0.0690	0.2759
	(1.0587)	(-0.3187)	(1.0770)
_cons	1.5452***	1.5356***	1.5729**
	(4.1256)	(3.7522)	(2.6087)
N	714	330	383
R^2	0.1093	0.3335	0.1045
Adj. R^2	0.0849	0.2950	0.0576
Industry/Year	Yes/Yes	Yes/Yes	Yes/Yes
Hausman Test	P-value=0.0073***		
Modified Wald Test	P-value=0.0000***		
Wooldridge Test	P-value=0.0000***		

Notes: ***, ** and * represent significance at 1%, 5% and 10% level, respectively. Asterisks denote the correlation coefficient, the number in brackets is the T-value.

Tables 3 provides a statistic summary of panel data analysis on Chinese companies listed in the US. The analysis focussed on information asymmetry and real earnings management. As shown in Tables 3, the p-value of Hausman test was less than 0.05, and therefore, the fixed effects model was considered the superior choice. Afterwards, a modified Wald test p-value below 0.05 suggested heteroskedasticity in the model. A Wooldridge test with a p-value below 0.05 suggested that the model is affected by autocorrelation. The study used the fixed effects model with cluster-robust standard errors for multiple regression analyses to address these issues.

Table 3 presents a regression coefficient of 0.0769 between information asymmetry and REM. This coefficient was statistically significant at the 10% level. This result indicated that increased information asymmetry motivated firms to engage in more REM practices. Further, the sample firms were categorised into dual-class and single-class. The correlation coefficient between information asymmetry and REM in dual-class firms was 0.0893, which was statistically significant at the 5% level. However, in single-class firms, information asymmetry did not significantly affect REM. These findings suggested dual-class firms' information environments were less effective than single-class. Asymmetric information leds to an increase in the real earnings management operations.

Model 2: The Moderating Effect of Institutional Investors in the Relationship between Information Asymmetry and Real Earnings Management

Table 4: Results of Moderating Role of Institutional Investors

Model 2	Total REM	Dual=1 REM	Dual=0 REM
spread	0.0729**	0.1229***	0.0231
	(2.2279)	(2.6859)	(0.6355)
board	-0.0388*	-0.0548**	-0.0135
	(-1.9022)	(-2.2086)	(-0.4488)
indep	-0.2456	-0.3751	-0.1165
	(-1.0499)	(-1.0982)	(-0.5370)
ceo	0.0244	0.2062*	-0.1517**
	(0.3932)	(1.8946)	(-2.1528)
size	-0.0202	-0.0178	-0.0378
	(-0.7992)	(-0.3536)	(-1.2017)
growth	0.0198**	0.0523***	0.0033
	(2.1536)	(3.3354)	(1.3009)
lev	0.0068	0.0575	-0.0699
	(0.0745)	(0.4769)	(-0.6199)
ROA	0.0408	-0.0926	0.0445
	(0.3096)	(-0.4434)	(0.3008)
inst	-0.4247	-0.5318	-0.2363
	(-1.6277)	(-1.5739)	(-0.6665)

inst*spread	-0.2893**	-0.4659**	-0.1319
	(-2.0491)	(-2.2113)	(-0.8440)
_cons	1.1220***	1.1632***	1.0340***
	(4.5844)	(3.0365)	(3.5236)
N	706	328	377
R^2	0.1349	0.3541	0.1021
Adj. R^2	0.1083	0.3120	0.0490
Industry/Year	Yes/Yes	Yes/Yes	Yes/Yes

Notes: ***, ** and * represent significance at 1%, 5% and 10% level, respectively. Asterisks denote the correlation coefficient, the number in brackets is the T-value.

Table 4 shows the results of panel regressions using institutional investors as a moderating variable from 2017 to 2021. Model 2 employs a fixed effects model with cluster-robust standard errors. The interaction coefficient (inst*spread) was negative and statistically significant at the 5% level. Also, Model 1 showed a positive correlation between information asymmetry and REM across all firms. It implied that when institutional investors were included, the association between information asymmetry and REM was weakened. Institutional investors can prevent the manipulation of actual business operations due to asymmetrical information.

After categorising the sample firms into dual-class and single-class groups, the interaction coefficient (inst*spread) was negatively and statistically significant at the 5% level in dual-class. Conversely, the interaction did not have a statistically significant impact on single-class. Therefore, Model 2 showed that institutional investors moderated the relationship between information asymmetry and REM in dual-class firms but not in single-class firms.

Discussion

The findings from Model 1 confirmed Hypothesis 1, indicating a significant relationship between information asymmetry and real earnings management. As information asymmetry grows, management can more easily hide the company's true condition and participate in opportunistic behaviours. The Agency Theory suggests that asymmetric information exacerbates the agency problem, causing management to prioritise their own interests above those of the company and shareholders. Moreover, the correlation between information asymmetry and real earnings management is statistically significant in dual-class but not in single-class. According to earlier studies (Fan & Wong, 2002; Jiang et al., 2020), controlling shareholders in highly concentrated firms have discretion over accounting disclosure as well as the motivation and ability to manipulate earnings for personal gains. Dual-class exhibit a high division between cash flow rights and control rights, leading to a consolidation of company control among a few individuals. This power concentration increases the vulnerability to insider control and intensifies information asymmetry. The company's founders/team and executives may selectively disclose information to avoid market pressure or undue attention, and they have the incentive and power to control the firm's actions for personal gains. Furthermore, real earnings management is less susceptible to detection by external auditors due to its covert nature (Chowdhury & Eliwa, 2021; M. Alhadab, 2018). It is more convenient for managers

of dual-class to manipulate earnings by using personal control. These findings suggest regulators and investors should monitor dual-class companies' finances and activities more closely.

The results from Model 2 supported Hypothesis 2: information asymmetry encourages real earnings management, but institutional investors can block it. Institutional investors typically own plenty of shares in a firm, have close economic ties to it, and concern about its operating conditions and financial reporting quality, so they have incentives to monitor the firm's earnings management and protect their interests (Ali et al., 2024; Gao et al., 2020). Furthermore, institutional investors, as professionals with extensive research and resource advantages, may thoroughly investigate and analyse a company's financial information, diminishing information asymmetry (Chung et al., 2023). According to the Agency Theory and Stakeholder Theory, information asymmetry leads to increased agency problems, resulting in heightened real earnings management activities. However, institutional investors act as watchdogs, mitigating agency problems, enhancing information transparency, and curbing opportunistic behaviour by companies, ultimately safeguarding stakeholders' interests.

Afterwards, the significant moderating effect of institutional investors on the relationship between information asymmetry and real earnings management still exists in dual-class companies. Based on the Agency Theory and Stakeholder Theory, the overconcentration of control in dual-class firms inevitably renders agency conflict more severe than in single-class. Institutional investors have plenty of shares and exhibit professionalism and independence. They influence the company's decision-making and supervisory mechanisms by participating in management activities, which aids in improving the governance structure of dual-class companies, increasing the transparency of the company's information, and promoting the company's reduction of real earnings management. Although this study found no evidence that institutional investors have a moderating role in single-class firms, it does not mean they are incapable of fulfilling moderating role in such firms. Thus, this study asserts that institutional investors can moderate the relationship between information asymmetry and real earnings management. They effectively improve the company's information environment and limit real earnings management.

CONCLUSIONS

This study analysed how information asymmetry affects real earnings management in Chinese companies listed in the United States and explores the moderating influence of institutional investors. The results indicated that real earnings management activities occur more frequently as the degree of information asymmetry increases. Then, the sample companies were put into two groups based on their share structure: dual-class and single-class. It was found that real earnings management is more strongly linked to information asymmetry in dual-class companies. In contrast, single-class companies did not demonstrate a statistically significant correlation in

this regard. In addition, the research indicated that institutional investors actively help reduce the impact of information asymmetry on real earnings management. This moderating effect of institutional investors remains significant, especially in dual-class firms. The presence of institutional investors can effectively curb the opportunistic behaviour of management, particularly in dual-class companies.

Regardless of the diverse analytical methods employed, it is imperative to exercise caution when interpreting our findings. This study only included 226 Chinese companies listed on US stock exchanges between 2017 and 2021. With the growing number of Chinese dual-class firms, future research may include those listed in Mainland China and Hong Kong. Furthermore, the scope could be expanded by comparing the earnings management practices of dual-class firms in developed countries to those in developing countries. Finally, this study contributes to the existing knowledge and literature regarding real earnings management and institutional investors, along with research pertaining to companies with dual-class structures.

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