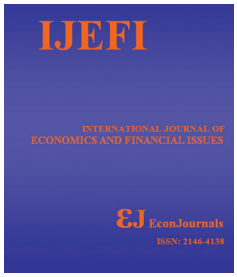

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The Roles of Institutional Investors and Insiders in Earnings Management around Initial Public Offering Firms in Taiwan

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ABSTRACT

This paper examines the influence of the proportion and stability of insider's and institutional shareholdings on earnings management after initial public offerings (IPOs) firms in Taiwan, covering data in Taiwan Stock Exchange and GreTai Securities Market from 2000 to 2009. We apply performance-matched discretionary accruals (DA) and performance-matched real earnings management as dependent variables to depicting earnings management behavior. The empirical findings show that managers with unstable high shareholdings tend to perform accruals management to fit the threshold in the 2nd year and the 3rd year after IPOs. Further, institutional investors with unstable high shareholdings incline to courage firms to manipulate DA for short-term trading profits in all 3 years after IPOs.

Keywords: Insiders, Institutional Investors, Earnings Management, Initial Public Offering
JEL classifications: G34, M41

1. INTRODUCTION

The performance goal of the company, which was set before initial public offerings (IPOs), often needed to be reset to meet the expectation of outside investors during or after IPOs. In the financial market, the stock price is often used by the outside investors as the most important index to evaluate the performance of a firm. As a result, managers are likely to carry out upward earnings management to increase the stock price during or after IPOs, and to increase insider trading profits and their own compensation at the same time. Ritter (1991) finds that the stock returns of 1526 companies within 3 years after IPOs in the United States from 1975 to 1984 are significantly lower than the returns of those of the approximate size in the same industries. Teoh et al. (1998) argue that the IPO-year abnormal discretionary accruals (DA) and the abnormal stock returns after the issue are negatively correlated because firms' stock prices are adjusted downwards due to investors' wrong judgment caused by earnings management. The literature wisdoms have shown that IPO firms popularly engage in managing upward earnings so it results in the negative correlation between the future stock returns and earnings management (Healy and Wahlen, 1999; Dechow and Skinner, 2000; DuCharme et al., 2001; Dechow and Schrand, 2004; Katz, 2006; Morsfield and Tan, 2006; Lo, 2008).

Investors are often selling the stocks if they are dissatisfied with the firm's performance after IPOs. Therefore, managers whose position is threatened by the bad performance of the firm are likely to manage earnings to meet investors' expectation. This initiates a few studies to investigate the factors affecting earnings management behavior of managers after IPOs. Balatbat et al. (2004) investigate the correlation between ownership structure and operating performance of IPO firms in Australia and find that their performance is likely to become worse in the first 4 years post-listing. By using China IPO companies as samples, Chang et al. (2010) analyze the factors affecting firm's long-term performance in 3 years after the IPO but only ownership structure has a positive impact on the post-IPO 1st year performance. Generally, studies on IPO companies focus on the analysis of the factors affecting post-IPO earnings, in particular, the impact of insider ownership on earnings performance (Li et al., 2005; Gleason et al., 2008; Chang et al., 2010).

Compared with insiders, institutional investors have a considerable information advantage as well. They may have relationships with

venture capitalist and underwriters or they may be the largest clients of the hosting underwriters. Boehmer et al. (2006) find that institutional investors have capability to obtain better long-run returns than market returns after IPOs through more allocations of resources and private information. Chemmanur and Hu (2005) argue that institutional investors can avail the information advantage to gain the abnormal returns in the few months after the IPO. Hence, institutional investors have the information advantage regarding the earnings reports and even force or collude with managers to manipulate earnings for short-term interests.

The previous studies classify institutional investors into short-term and long-term investors. Short-term institutional investors are regular stock traders and can tempt managers to carry out earnings management to obtain trading profits. Bushee (1998) argues that institutional investors with high shareholdings and regular trading often tempt managers to carry out myopic investment behaviors. Therefore, to comply with the interests of these short-term institutional investors, managers often sacrifice research and development costs for long term development to achieve the expected earnings goals (Smith and Watts, 1982; Narayanan, 1985; Stein, 1989; Lee et al., 2013). However, institutional investors with long-term holdings can obtain profits from operation. They thus have incentives to monitor managers for a long term and prevent firms' earnings management. Koh (2007) investigates the relationship between institutional investors and accrual earnings management, finding that long-term institutions can effectively alleviate earnings manipulation. Shuto and Iwasaki (2011) also argue that institutional investors with stable shareholdings can convince managers to reduce the fluctuations of firm earnings to carry out earnings management. Hence, the proportion and stability of institutional shareholdings will affect earnings management after IPOs.

Most previous studies measured earnings management by DA. In recent years, some studies start to apply real earnings management to exploring issues relating to its measurement (Roychowdhury, 2006; Cohen and Zarowin, 2010; Chi et al., 2010; Eldenburg et al., 2011; Alhadab et al., 2013). Zang (2012) indicates that there are a tradeoff between DA and real earnings management so managers can use them as substitutes. He also recommends that these two measures should be considered in earnings management issues. Thus, this study contributes to discuss the impact of the proportion and stability of insider's and institutional shareholdings on post-IPO earnings management.

By using the IPO firms on Taiwan Stock Exchange and OTC market during the period from 2000 to 2009, insiders are divided into directors (directors and supervisors) and managers, and institutional investors are classified as foreign and domestic (investment trusts and securities dealers) institutional investors. Accrual-based and real earnings management are used as the earnings measures. The study analyzes the impact of the proportion and stability of ownership shareholdings on earnings management within 3 years after IPOs. The major findings are as follows. First, from the second to the 3rd year after IPOs, managers with unstable high shareholdings are likely to carry out DA to achieve the earnings goal. Second, institutional investors with unstable high shareholdings tempt managers to manipulate DA to gain short-term benefits from stock trading, particularly for the local institutional investors. The findings suggest that IPO firms may possibly carry out earnings management to meet the expectative performance in the first few years after IPOs and increase their survival.

This paper is organized as follows. Section 1 introduces the research motivations and purposes. Section 2 presents the literature review and research hypothesis. Section 3 describes the source of empirical data and the research model. Section 4 discusses the empirical results, and conclusions are offered in the final section.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

2.1. The Relationship between Insider Shareholdings and Earnings Management

Insider's trading behavior is regarded as one of private information disclosure. For a long time, insiders will be suspected of being insider trading if they trade a block of shares. In order to deal with the insider trading problem, declaration is compulsory for insiders with transferring more than a specific amount of shares. Moreover, the trading should be completed in the period of transfer to prevent gaining benefits from insider trading. But investors have no idea what is the exact time of the insiders to trade. Meanwhile, the company has the motivations for earnings management when insiders are trading their shares. Hence, the relationship between changes in insider shareholdings and earnings management should be explored. For instance, the signaling hypothesis examines that investors know whether firms are communicating private information with market, or damage minority shareholders to gain their personal profits when making a discretionary decision. Chang et al. (2003) investigate the relationship between the continuous changes in shareholdings of insiders and earnings management. They find that companies with reduced insider shareholdings are most likely to engage in opportunistic earnings management while those with increased insider holdings are very likely to engage in earnings management of signaling.

Similarly, manager's trading behavior indicates their expectation about firm performance as they match discretionary accounting choices to their trading to gain private benefits (Beneish, 1999). Darrough and Rangan (2005) examine the impact of IPO firms on earnings management, finding that managerial selling shares have a positive and significant relationship with earnings management. This indicates that managers can carry out upward earnings management to sell their shares to maximize own wealth. According to Alhadab et al. (2013), DA in the 1st year following IPOs are more than that in the offering year, and the companies with high levels of DA and real earnings management during the IPO have worse stock returns in 3 years after the IPO.

Regarding the solving of the agency problem, previous studies suggest that directors and supervisors are responsible for corporate governance to prevent managers using self-serving behavior to hurt shareholder interests. With the continuous outbreak of the financial reporting frauds of enterprises, outside investors begin to doubt the

roles of the directors and supervisors in corporate governance and argue that directors and supervisors may manipulate the earnings by controlling over the accounting choices. However, there is no research consensus regarding the effects of the supervision by directors and supervisors. The directors and supervisors with high shareholdings can spare no efforts to protect shareholder's interests so preventing managers from engaging in improper decision.

Agrawal and Mandelker (1990) argue that largest shareholder with concentrated shareholdings have incentives to supervise managers to increase the firm value. Young et al. (2012) also find that boards with high independence and professionalism play the key role of preventing real earnings management in studying the U.S. listed companies. This indicates the directors and supervisors have a duty of supervision to protect shareholders. However, the directors and supervisors with concentrated shareholdings may also result in desire of capital gains or entrenched control rights to carry out earnings management by colluding with managers to report opaque finances. Jensen and Ruback (1983) indicate that larger shareholders with the control rights are more likely to plunder company's assets to harm minority shareholders.

The literature shows that the proportion of insider shareholdings affects company earnings management. Additionally, for the solidification of the control rights, shareholding stability also affects the manipulation of company earnings. According to the previous literature, this study proposes the following hypotheses:

H1a: In the IPO firm if insiders with high or unstable shareholdings, managers will be more likely to engage in DA but less likely to perform real earnings management, which harms the long-term firm performance.
H1b: In the IPO firm if directors and supervisors with high or unstable shareholdings, managers will be more likely to engage in DA but less likely to perform real earnings management, which damages the long-term firm performance.
H1c: In the IPO firm if managers with high or unstable shareholdings, managers will be more likely to carry out DA but less likely to perform real earnings management, which harms the long-term firm performance.

2.2. The Impact of Institutional Shareholdings on Earnings Management

It is easier for institutional investors to gather information because they have funds and research teams. They are believed to enjoy significant information advantage. Boehmer et al. (2006) find that institutional investors can receive favorable share allocations and private information, and thus obtain returns better than the market after the IPO. As institutional investors have the information advantage of the earnings data, they can conspire with managers to manipulate the earnings to get the short-term benefits. Bushee (2001) empirically finds that most institutional investors are short-term investors preferring near-term earnings. Hence, the management realizes that block shares will be sold if firm performance is not good, so it will engage in the upward earnings management towards short term. Therefore, institutional investors with unstable shareholdings will cause the management to manage earnings for myopic interests.

Chen et al. (2007) argue that institutions with long-term concentrated shareholdings have more benefits from monitoring and are more capable of supervising managers to prevent them from harming long-term performance. Bushee (1998) also finds institutional investors with high long-term shareholdings can effectively decrease managing earnings behaviors of the companies through real earnings activities to meet the desired goals. In Taiwanese capital market and financial regulations, foreign institutional investors are regarded as long-term institutional investors since it is the purpose of Securities and Futures Commission to open the market to foreigners. According to Huang and Shiu (2009), foreign institutional investors have experienced experts, resources and capability to engage in firm research. And they can be the best enterprise consultants for the sake of long term investment experiences. It shows that some Taiwanese institutional investors will learn and even copy the foreign institutional investment strategy. However, compared to foreign institutions local institutions are more familiar with the domestic investment environment and the IPO company management. Without the limitation on short-term selling of stocks, local institutional investors are more likely to collude with managers to carry out earnings management to get short-term profits. According to the above literature, this study proposes the following hypotheses:

H2a: IPO firms held by institutional investors with higher or more stable shareholdings are less likely to engage in DA or real earnings management.
H2b: IPO firms held by foreign institutional investors with higher or more stable shareholdings are less likely to engage in DA or real earnings management.
H2c: IPO firms held by domestic institutional investors with higher or more stable shareholdings are less likely to engage in DA or real earnings management.

3. RESEARCH METHODS

3.1. Data Sources

We collect 792 IPO companies listed on Taiwan Stock Exchange and the Gre Tai Securities Market from 2000 to 2009. After deleting the data of 6 companies in the financial and insurance-related industries, 6 companies without earnings management data, and 7 companies without financial and shareholding data, 773 companies are used in this study for analyzing the impact of insiders and institutional investors on earnings management in the issue year and the following 3 years after the IPO. The industry distribution of sample firms is shown in Table 1. There are 143 IPO companies in the electronic parts/components industry and accounts for 18% of the total. The semiconductor industry and optoelectronic industry include 87 IPOs (10%) and 83 IPOs (10%) respectively. The tourism, food and rubber industries include the least samples size with fewer than 3 IPO companies. Data of IPO companies are obtained from Market Observation Post System while the financial data of the companies, and insider and institutional shareholdings are obtained from Taiwan Economic Journal database.

3.2. Research Models

According to the suggestion from Zang (2005), the performance-matched earnings management will include return on assets (ROA)

Table 1: The sample distribution of listed companies

Industry	Number	Percentage	Industry	Number	Percentage
Food	3	0.39	Semiconductor	87	11.25
Plastic	9	1.16	Communications/internet	55	7.12
Textile	9	1.16	Information service	33	4.27
Electric machinery	38	4.92	Electronic products distribution	35	4.53
Electronic Parts/components	143	18.50	Other electronic	57	7.37
Biotechnology/medical care	36	4.66	Computer/peripheral equipment	71	9.18
Chemical	16	2.07	Building material/construction	23	2.98
Iron/steel	16	2.07	Tourism	1	0.13
Rubber	2	0.26	Electrical/cable	5	0.65
Shipping/transportation	4	0.51	Oil, gas/electricity	6	0.78
Trading/consumers' goods	8	1.03	Other	33	4.27
Optoelectronic	83	10.74	Total numbers	773	100.00

in Jones' modified DA suggested by Dechow et al. (1995) and in real earning management as described by Roychowdhury (2006), respectively. First, Jones model with matched DA is estimated as follows:

$$MDA_{i,t} = \frac{TA_{i,t}}{A_{i,t-1}} - \left[\hat{\alpha}_0 + \hat{\alpha}_1 \left(\frac{1}{A_{i,t-1}} \right) + \hat{\alpha}_2 \left(\frac{\Delta SALES_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}} \right) + \hat{\alpha}_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}} \right) + \hat{\alpha}_4 ROA_{i,t} \right] \quad (1)$$

where $TA_{i,t}$ denotes the total accruals defined as net income minus the operating cash flows taken from the statement of cash flows. $A_{i,t-1}$ is the total assets for firm i in year t-1. $\Delta SALES_{i,t}$ is the difference in operating revenue of firm i between years t and t-1. $\Delta AR_{i,t}$ is the difference in net accounts receivable of firm i between years t and t-1. $PPE_{i,t}$ is the total fixed assets of firm i in year t. $ROA_{i,t}$ denoting ROA for firm i in year t is defined as net income divided by total assets. The performance-matched DA (*PMDA*) equal firm's *DA* minus matched firm's DA (MDA).

To measure real earnings management, cash flow from operation (CFO), production costs (PCost) and discretionary expenses (DExpense) are taken as measures of earnings manipulation. The method employed as presented below could impact the level of three measures. First, excessive price discounts and overproduction will cause abnormally high production costs, therefore lower CFO. Second, reducing discretionary expenditures will give rise to abnormally low DExpense, but higher CFO. Therefore, given fixed sales revenue, real earnings manipulation could cause abnormally low CFO and DExpense while increasing abnormal production costs. Therefore the earnings management model is proposed as follows:

$$\frac{CFO_{i,t}}{A_{i,t-1}} = \hat{\alpha}_0 + \hat{\alpha}_1 \frac{1}{A_{i,t-1}} + \hat{\alpha}_2 \frac{SALES_{i,t}}{A_{i,t-1}} + \hat{\alpha}_3 \frac{\Delta SALES_{i,t}}{A_{i,t-1}} + \hat{\alpha}_4 ROA_{i,t}, \quad (2)$$

$$\frac{PCost_{i,t}}{A_{i,t-1}} = \hat{\alpha}_0 + \hat{\alpha}_1 \frac{1}{A_{i,t-1}} + \hat{\alpha}_2 \frac{SALES_{it}}{A_{i,t-1}} + \hat{\alpha}_3 \frac{\Delta SALES_{i,t}}{A_{i,t-1}} + \hat{\alpha}_4 \frac{\Delta SALES_{i,t-1}}{A_{i,t-1}} + \hat{\alpha}_5 ROA_{i,t}, \quad (3)$$

$$\frac{DExpense_{i,t}}{A_{i,t-1}} = \hat{\alpha}_0 + \hat{\alpha}_1 \frac{1}{A_{i,t-1}} + \hat{\alpha}_2 \frac{SALSE_{i,t-1}}{A_{i,t-1}} + \hat{\alpha}_3 ROA_{i,t}, \quad (4)$$

where $CFO_{i,t}$ is CFO of company i for period t. $PCost_{i,t}$ is production costs of company i for period t. $DExpense_{i,t}$ is DExpense of company i for period t including those for advertising, R&D, selling and administrative expenses. $SALES_{i,t}$ denotes sales revenue of company i for period t. $\Delta SALES_{i,t}$ is defined as sales revenue of company i for period t minus that for period t-1. $SALES_{i,t-1}$ is sales revenue of company i for period t-1. $\Delta SALES_{i,t-1}$ is defined as sales revenue of company i for period t-1 *min*us that for period t-2.

The equations 2-4 are deducted from the actual values of firm's three real earnings, respectively, namely matched abnormal CFOs, matched abnormal production costs and matched abnormal DExpense. Subsequently, these three matched abnormal real earnings measures are subtracted from the abnormal CFOs, the abnormal production costs and the abnormal DExpense, respectively. Thus performance-matched CFOs (PMCFO), performance-matched production costs (PMPC) and performance-matched DExpense (PMDE) can be obtained. In order to capture the total effects of earnings management, the three performance-matched real earnings measures are combined to form the combined performance-matched real earnings management measure (CBPM) which is equal to PMPC minus PMCFO and PMDE.

This study employs PMDA and CBPM as dependent variables to explore the impact of the proportion and stability of insider's and institutional shareholdings on earnings management from the issue year to the 3rd year after IPOs. Therefore, this study proposes the following regression model:

$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 Z_i + \sum_{j=1}^{9} \alpha_j C_j + \varepsilon_i \quad \ldots \quad (5)$$

where Y_i presents $PMDA_i$ and $CBPM_i$ in the issue year and the following 3 years after the IPO as dependent variable respectively. Independent variables, X_i and Z_i are the average and standard deviation of owner's shareholdings form the issue year to the following years after the IPO. For example, in the issue year, the average and standard deviation are of the 12 months shareholdings from the beginning to the end of the issue year. In the 1st year after

the IPO, the average and standard deviation are covering the data of the 24 months shareholdings over the period from the beginning of the IPO year through the end of the next year.

The X_i variable indicates the proportion of insider's shareholdings ($Insider_i$) defined as the sum of the shareholdings of directors, supervisors, managers and principal stockholders divided by outstanding shares; the proportion of director shareholdings ($Director_i$) defined as the sum of the shareholdings of directors and supervisors divided by outstanding shares; and the proportion of foreign institutional shareholdings (FIO_i) defined as the sum of foreign institutional shareholdings divided by outstanding shares, respectively. The Z_i variable denotes the proportion of institutional shareholdings (IO_i) and defined as the sum of the shareholdings of foreign, investment trusts, funds and securities dealers divided by outstanding shares; the proportion of manager shareholdings ($Manager_i$) defined as the sum of managers shareholdings divided by outstanding shares; and the proportion of domestic institutional shareholdings (DIO_i) defined as the sum of the shareholdings of investment trusts, funds and securities dealers divided by outstanding shares, respectively.

C_i represents control variables including the number of board directors (BD_i); the percentage of independent directors ($IndependentDirector_i$) defined as the percentage of independent directors against the number of board members; non-duality of chairman and general manager ($NODUAL_i$) equal to 1 for non-duality of board chairman and general manager, zero otherwise; firm size ($Size_i$) defined as the natural logarithm of the number of employees; leverage ratio ($Leverage_i$) defined as total liabilities divided by total assets at the end of the year; Big Four auditors ($Auditor_i$) equal to 1 if the company has a big-4 auditor and zero otherwise; changing rate of Taiwanese GDP ($DGDP_i$) defined as the current year GDP minus the previous year GDP divided by the previous year GDP; the returns of Morgan Stanley Capital International Index ($MSCI_i$) defined as the current MSCI minus the previous MSCI divided by the previous MSCI; market category (MAR_i) equal to one for the firms listed on Taiwan Stock Exchange and zero otherwise.

4. EMPIRICAL RESULTS

4.1. Descriptive Statistics of Empirical Data

The variables in this study are divided into 4 years samples including the issue year and the following 3 years after the IPO. The basic statistical data, the mean and the median of the PMDA and the performance-matched real earnings management (PMPM) for the IPO issue year and the following 3 years, are shown in Panel A, B, C and D in Table 2. It shows that there is no significant skewness except the DA in the 3rd year after the IPO. According to the above results, the DA in the issue year are the highest and tend to decrease within 3 years after the IPO. In the 3rd year after the IPO, there may be downward earnings management. In the IPO issue year the real earnings activities are at the minimum level and then increase in the following 3 years after the IPO.

Regarding insider shareholdings (Insider) for the IPO year, the average is at the highest level (0.506), then decreasing in the years after the IPO. The shareholding average values of directors and supervisors (Director) and managers (Manager) in the IPO year are also at the highest (0.298 and 0.020), and tend towards decrease in the years after the IPO. As expected, insiders start to sell their holdings in which the share liquidity increases when the freezing period expires after the IPO. Regarding institutional shareholdings (IO), the average holding proportion in the IPO year also is highest and its value is 0.093, but tends to decrease within 3 years after the IPO. The average of shareholdings of domestic institutions (DIO) in the IPO issue year is 0.048 but decreases to 0.028 in the 3rd year after IPOs by about 2%. On the contrary, the average shareholdings of foreign institutions (FIO) increase from 0.054 for the IPO year to 0.056 for the 3rd year after IPOs by 0.1%. This indicates that many foreign institutional investors give positive evaluation about IPO companies and tend to increase shareholdings.

Except the number of independent directors (*IndependentDirector*), there are no significant changes in other control variables. The average number of *BD* is 6.61, that is about 7 directors; leverage average (*Leverage*) is around 0.37. The ratio of independent directors against the number of BD is 0.201 for the IPO year, and 0.240 for the 3rd year after the IPO. This result suggests that the importance of corporate governance is concerned after the IPO.

4.2. The Relationship between Ownership Structure and Earnings Management

The basic statistics shown in the previous section present quiet different changes for variables such as DA (PMDA), real earnings management (CBPM), insider shareholdings or institutional shareholdings. Therefore, this study employs earnings management estimates as dependent variables and insider shareholdings (Insider), institutional shareholdings (IO) and other variables as the independent variables to analyze the impact of ownership on earnings management. Table 3 illustrates the empirical results of the relationship between owner shareholdings and earnings management in post-IPO 3 years. It shows only impact of insider shareholdings on DA is significantly positive in the post-IPO 1st year. The institutional shareholdings associated with real earnings management have a significant and negative impact in the IPO year and within 3 years after IPOs at the 10% significant level. But they have a significant and positive impact on DA in the IPO year and the following 3 years after the IPO at 5% significant level. The real earnings management measures decrease by 4.33 (0.284 × 15.25) of the lagged value of the total assets and the DA measures increase by 0.11 (0.0485 × 2.26) of the lagged value of the total assets when the institutional shareholdings increase by one standard deviation for the IPO year. Therefore, the hypothesis (H1a) is partially supported but the hypothesis (H2a) is not supported.

Regarding other control variables, firm size (Size) and real earnings management have a negative and significant relationship but firm size is significantly positive correlated with DA. The relationship between financial leverage (Leverage) and real earnings management is positive, but it has a negative correlation with DA at the significance level of 5%. This suggests that when institutional investors hold large number of shares of large

Table 2: Descriptive statistics for earnings management, ownership shareholdings and other control variables

Variables	Mean	Median	Maximum	Minimum	SD
Panel A: Statistics for listed companies in the IPO issue year					
PMDA	0.0107	0.0096	0.1891	−0.2614	0.0402
CBPM	0.0343	0.0399	1.5808	−2.3869	0.281
Insider	0.5061	0.4931	0.9814	0.1716	0.1495
Director	0.2982	0.2687	0.9804	0.0535	0.1404
Manager	0.0199	0.0113	0.2078	1.44E-06	0.0263
IO	0.0932	0.0613	0.5542	3.36E-05	0.0998
FIO	0.0542	0.0193	0.7979	1.39E-06	0.0962
DIO	0.0477	0.0232	0.501	3.59E-05	0.0642
BD	6.6067	7	15	3	1.51
IndependentDirector	0.2009	0.2857	0.6	0	0.1703
NODUAL	0.6118	1	1	0	0.4876
Leverage	0.3647	0.3624	0.8882	0.0436	0.1548
DGDP	382,991	503,753	732,514	−236,632	304,816
MSCI	−0.0093	0.0494	0.707	−0.4809	0.3161
Size	5.4992	5.4786	10.1931	1.7918	1.2651
Auditor	0.6478	1	1	0	0.478
MAR	0.4627	0	1	0	0.4989
Panel B Statistics for listed companies in the post-IPO 1st year					
PMDA	0.0072	0.0079	0.2389	−0.3147	0.0447
CBPM	0.0607	0.0591	1.4756	−1.5504	0.2455
Insider	0.4737	0.4588	0.9559	0.1515	0.1422
Director	0.2813	0.2489	0.9495	0.0533	0.133
Manager	0.0176	0.0094	0.2177	1.43E-06	0.0232
IO	0.0841	0.0481	0.6899	2.04E-06	0.1042
FIO	0.0546	0.0202	0.6761	7.11E-07	0.0893
DIO	0.0383	0.0186	0.3222	2.69E-06	0.0502
BD	6.6221	7	15	3	1.5575
IndependentDirector	0.2163	0.2857	0.6	0	0.1649
Table II Panel B (continued)					
NODUAL	0.6118	1	1	0	0.4876
Leverage	0.3746	0.3644	0.8432	0.0376	0.1595
DGDP	400,169	503,753	1,381,020	−236,632	385,898
MSCI	0.0802	0.0704	0.707	−0.4809	0.2849
Panel C Statistics for listed companies in the post-IPO 2nd year					
PMDA	0.002	0.0033	0.1626	−0.366	0.0456
CBPM	0.081	0.0762	1.014	−0.958	0.2082
Insider	0.4631	0.4502	0.9564	0.1609	0.1415
Director	0.2725	0.2419	0.9495	0.0521	0.1306
Manager	0.0159	0.0082	0.2168	1.42E-06	0.022
IO	0.0809	0.0422	0.683	1.22E-06	0.1031
FIO	0.0543	0.0184	0.6758	3.56E-07	0.0891
DIO	0.0321	0.0144	0.3287	1.35E-06	0.044
BD	6.608	7	15	3	1.5544
IndependentDirector	0.2338	0.2857	0.6	0	0.1579
NODUAL	0.6118	1	1	0	0.4876
Leverage	0.3758	0.3681	0.8907	0.0397	0.1607
DGDP	525,866	521,619	1,381,020	−236,632	335,825
MSCI	0.0727	0.0704	0.707	−0.4809	0.2805
Panel D Statistics for listed companies in the post-IPO 3rd year					
PMDA	−0.0016	0.0029	0.154	−1.0522	0.059
CBPM	0.0643	0.0673	1.0367	−1.0178	0.2122
Insider	0.4553	0.4441	0.9574	0.1504	0.1411
Director	0.2649	0.2359	0.9495	0.0508	0.1284
Manager	0.0149	0.0076	0.2167	1.41E-06	0.0216
IO	0.0804	0.0426	0.6818	6.32E-07	0.1032
FIO	0.0556	0.0195	0.6757	3.90E-07	0.0896
DIO	0.0283	0.0128	0.4092	8.98E-07	0.0412
BD	6.6093	7	15	4	1.5765
IndependentDirector	0.2397	0.2857	0.6667	0	0.1531
NODUAL	0.6118	1	1	0	0.4876
Leverage	0.3728	0.3614	0.9045	0.0196	0.1687
DGDP	522,081	577,859	1,381,020	−346,212	390,733
MSCI	0.0865	0.0704	0.707	−0.4809	0.2375

PMDA: Performance-matched discretionary accruals, CBPM: Performance-matched real earnings management, Insider: A proportion of insider shareholdings defined as the sum of the shareholdings of directors, supervisors, managers and principal stockholders divided by outstanding shares, Director: A proportion of director shareholdings defined as the sum of the shareholdings of directors and supervisors divided by outstanding shares, Manager: A proportion of manager shareholdings, IO: A proportion of institutional shareholdings defined as the sum of the shareholdings of foreign, investment trusts, funds and securities dealers divided by outstanding shares, FIO: A proportion of foreign institutional shareholdings, DIO: A DIO defined as the sum of the shareholdings of investment trusts, funds and securities dealers divided by outstanding shares, BD: A number of board directors, IndependentDirector: A percentage of independent directors defined as the percentage of independent directors against the number of board members, NODUAL: Non-duality of chairman and CEO equal to one for non-duality of board chairman and CEO, zero otherwise, Leverage: Leverage ratio defined as total liabilities divided by total assets at the end of the year, DGDP: Changing rate of Taiwanese GDP defined as the current year GDP minus the previous year GDP divided by the previous year GDP, MSCI: Returns of Morgan Stanley Capital International Index defined as the current MSCI minus the previous MSCI divided by the previous MSCI, Size: Firm size defined as the natural logarithm of the number of employees, Auditor: Big four auditors equal to one if the company has a big-4 auditor and zero otherwise, MAR: Market category equal to one for the companies listed on Taiwan Stock Exchange and zero otherwise

Table 3: The regression results of ownership shareholdings and earnings management

Variables	CBPM				PMDA			
	0 year	1 year	2 year	3 year	0 year	1 year	2 year	3 year
Constant	0.2652	−0.0030	0.1346	0.0922	−0.0072	0.0059	0.0174	−0.0182
	(0.1296)**	(0.0736)	(0.0648)**	(0.0594)	(0.0233)	(0.0135)	(0.0123)	(0.0265)
Insider	−0.1751	0.0200	−0.0101	−0.0115	0.0120	0.0180	0.0042	0.0267
	(0.1132)	(0.0548)	(0.0490)	(0.0549)	(0.0195)	(0.0106)*	(0.0124)	(0.0227)
IO	−0.2841	−0.2365	−0.1656	−0.2674	0.0485	0.0380	0.0376	0.0472
	(0.1525)*	(0.0829)***	(0.0736)**	(0.0939)***	(0.0226)**	(0.0133)***	(0.0125)***	(0.0166)***
BD	−0.0048	0.0102	0.0063	0.0066	−0.0012	0.0002	−0.0015	−0.0017
	(0.0083)	(0.0061)*	(0.0051)	(0.0047)	(0.0014)	(0.0011)	(0.0011)	(0.0014)
IndependentDirector	−0.1099	−0.0779	−0.0556	−0.0290	0.0379	0.0369	0.0107	0.0062
	(0.0819)	(0.0669)	(0.0484)	(0.0447)	(0.0153)**	(0.0119)***	(0.0106)	(0.0111)
NODUAL	−0.0398	0.0241	−0.0185	−0.0367	0.0040	0.0014	0.0004	0.0093
	(0.0311)	(0.0181)	(0.0152)	(0.0156)**	(0.0052)	(0.0034)	(0.0034)	(0.0043)**
Size	−0.0229	−0.0339	−0.0349	−0.0252	0.0018	0.0034	0.0054	0.0087
	(0.0114)*	(0.0080)***	(0.0067)***	(0.0080)***	(0.0017)	(0.0017)**	(0.0016)***	(0.0028)***
Leverage	0.4735	0.5334	0.4047	0.2918	−0.0381	−0.0871	−0.0937	−0.0895
	(0.1100)***	(0.0606)***	(0.0486)***	(0.0502)***	(0.0186)**	(0.0114)***	(0.0147)***	(0.0133)***
Auditor	0.0030	0.0299	−0.0033	0.0126	−0.0112	−0.0084	−0.0087	−0.0082
	(0.0332)	(0.0200)	(0.0164)	(0.0167)	(0.0050)**	(0.0037)**	(0.0033)***	(0.0037)**
DGDP	−1.19E-08	−2.59E-08	−2.88E-08	2.05E-09	3.92E-09	−7.27E-09	−5.76E-09	−6.68E-09
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)**	(0.0000)	(0.0000)*
MSCI	−0.1392	−0.0632	−0.0653	0.0195	0.0172	−0.0036	−0.0133	0.0019
	(0.0477)***	(0.0324)*	(0.0254)**	(0.0264)	(0.0088)*	(0.0056)	(0.0052)**	(0.0079)
MAR	−0.0859	−0.0245	0.0175	−0.0006	0.0210	0.0068	0.0050	−0.0013
	(0.0478)*	(0.0196)	(0.0166)	(0.0171)	(0.0098)**	(0.0035)*	(0.0036)	(0.0063)
Observations	236	707	722	725	236	707	733	740
Adj. R^2	0.1920	0.1567	0.1591	0.1029	0.1031	0.1282	0.1520	0.1111

0 year: The issue year; 1 year: The first year after the IPO; 2 year: The second year after the IPO, 3 year: The third year after the IPO. The definitions of other variables are the same as Table 2. Standard errors are indicated in parentheses. *,**,*** denote statistical significance at the 10%, 5% and 1% levels (two-tailed), respectively

companies with low financial leverage, the companies tend to carry out DA to replace real earnings management to detriment firm's future growth.

Next, the samples of insiders are classified as two groups, the directors and supervisors (*Director*) and the managers (*Manager*). As shown in Table 4, in the second to the 3rd year after IPOs, managerial shareholdings and real earnings management have a negative and significant relationship at the 5% significant level; however, it has positive and significant impacts on DA from the 1st year to the 3rd year after the IPO. The relationship between directors and supervisors shareholdings and earnings management has barely a positive and significant impact on accruals for the 1st year. It indicates that companies are more likely to conduct DA than conduct real earnings management to harm future value of the firm if the managerial shareholdings are higher within 3 years after the IPO. This suggests that the holding proportion of directors and supervisors in the hypothesis (H1b) is not confirmed. However, the finding that managers with higher shareholdings lead to DA within the 3 years after the IPO supports the hypothesis (H1c) partially.

Similarly, we classify institutional investors into foreign and domestic institutional investors and examine their impact on earnings management. The empirical results are shown in Table 5. In particular, the *DIO* and real earnings management have a negative significant relationship at the 5% significant level; their impact on DA is positive and significant at 10% significant level within 3 years after the IPO. However, the FIO in the post-IPO 3rd year has a negative and significant impact on real earnings management. Hence, if local institutional shareholdings are higher, the company is more likely to carry out accruals manipulation to replace real earnings management that is harmful to firm's future value. Therefore, the hypotheses (H2b and H2c) are not supported.

4.3. The Impact of the Proportion and Stability of Ownership Shareholdings on Earnings Management

The empirical results shown in the previous section depict that for the IPO firms the influence of insiders and institutional shareholdings on earnings management can be uncertain. In order to investigate this issue further, owner's shareholdings are partitioned into quintile from the lowest to the highest. The samples of the highest and lowest groups are used to examine whether the average or the median of earnings management of the two groups are different. Table 6 presents that when the proportion of insider shareholdings is higher, firm DA will be higher, especially for the second and the 3rd year after IPOs shown in Panel B and Panel D. Regarding the impact of institutional shareholdings on earnings management, when institutional shareholdings are higher, DA will be higher and real earnings management will be relatively lower. As shown in Panel A to Panel D in Table 6, for both the mean and the median, the difference tests on real earnings management are significantly for the issue year and the following 3 years after IPOs; the difference tests on DA are significantly for the issue year and the 3 years after IPOs. Especially, the impacts of local institutional investors on earnings management possess the same significant difference.

Table 4: The regression results of director, supervisor and manager shareholdings and earnings management

Variables	CBPM				PMDA			
	0 year	1 year	2 year	3 year	0 year	1 year	2 year	3 year
Constant	0.0627	0.1061	0.1688	0.2005	0.0265	−0.0228	−0.0181	−0.0390
	(0.0773)	(0.0763)	(0.0545)***	(0.0523)***	(0.0124)**	(0.0146)	(0.0115)	(0.0232)*
Director	−0.0378	0.0035	0.0472	−0.0701	0.0051	0.0178	0.0061	0.0167
	(0.0673)	(0.0517)	(0.0525)	(0.0582)	(0.0092)	(0.0102)*	(0.0108)	(0.0139)
Manager	−0.1693	−0.1424	−0.7119	−0.6640	−0.0241	0.0957	0.1871	0.2115
	(0.3582)	(0.2960)	(0.3044)**	(0.3065)**	(0.0455)	(0.0566)*	(0.0613)***	(0.0828)**
BD	−0.0034	0.0015	0.0028	0.0044	−0.0005	0.0002	−0.0010	−0.0013
	(0.0063)	(0.0053)	(0.0050)	(0.0047)	(0.0010)	(0.0011)	(0.0011)	(0.0013)
IndependentDirector	−0.1007	−0.1143	−0.0578	−0.0331	0.0236	0.0335	0.0161	0.0037
	(0.0759)	(0.0660)*	(0.0554)	(0.0462)	(0.0117)**	(0.0136)**	(0.0128)	(0.0119)
NODUAL	−0.0113	0.0280	−0.0119	−0.0355	0.0043	0.0036	0.0031	0.0105
	(0.0210)	(0.0175)	(0.0155)	(0.0157)**	(0.0032)	(0.0037)	(0.0036)	(0.0044)**
Size	−0.0197	−0.0305	−0.0391	−0.0311	0.0014	0.0060	0.0073	0.0096
	(0.0088)**	(0.0078)***	(0.0070)***	(0.0079)***	(0.0016)	(0.0018)***	(0.0018)***	(0.0028)***
Leverage	0.5509	0.3777	0.2721	0.1532	−0.0691	−0.0621	−0.0596	−0.0527
	(0.0751)***	(0.0578)***	(0.0487)***	(0.0533)***	(0.0122)***	(0.0129)***	(0.0115)***	(0.0110)***
Auditor	−0.0074	0.0224	−0.0120	0.0090	−0.0116	−0.0097	−0.0097	−0.0071
	(0.0205)	(0.0196)	(0.0165)	(0.0170)	(0.0034)***	(0.0038)**	(0.0035)***	(0.0038)*
DGDP	−9.83E-08	−4.84E-08	5.16E-08	4.12E-09	1.22E-09	1.27E-08	4.15E-09	7.72E-09
	(0.0000)***	(0.0000)	(0.0000)**	(0.0000)	(0.0000)	(0.0000)**	(0.0000)**	(0.0000)
MSCI	−0.0750	−0.0315	−0.0300	−0.0203	0.0041	0.0019	0.0050	0.0037
	(0.0279)***	(0.0235)***	(0.0270)	(0.0276)	(0.0051)	(0.0061)	(0.0053)	(0.0061)
MAR	−0.0023	−0.0236	0.0240	0.0007	0.0091	0.0072	0.0059	−0.0017
	(0.0229)	(0.0194)	(0.0168)	(0.0178)	(0.0036)**	(0.0037)*	(0.0038)	(0.0061)
Observations	543	669	717	758	543	669	728	773
Adj. R^2	0.1469	0.0903	0.0966	0.0472	0.0966	0.0919	0.0849	0.0608

0 year: The issue year, 1 year: The first year after the IPO, 2 year: The second year after the IPO, 3 year: The third year after the IPO. The definitions of other variables are the same as Table 2. Standard errors are indicated in parentheses. *,**,*** denote statistical significance at the 10%, 5% and 1% levels (two-tailed), respectively

Table 5: The regression results of foreign and domestic shareholdings and earnings management

Variables	CBPM				PMDA			
	0 year	1 year	2 year	3 year	0 year	1 year	2 year	3 year
Constant	0.1063	0.0074	0.1459	0.1823	0.0151	0.0135	−0.0016	−0.0297
	(0.0866)	(0.0836)	(0.0601)**	(0.0561)***	(0.0139)	(0.0138)	(0.0117)	(0.0260)
FIO	−0.0220	−0.0265	−0.0589	−0.2181	0.0343	0.0217	0.0184	0.0297
	(0.2040)	(0.1212)	(0.0914)	(0.1194)*	(0.0333)	(0.0148)	(0.0145)	(0.0241)
DIO	−0.4435	−1.0392	−0.6911	−0.6370	0.0642	0.1151	0.1804	0.1880
	(0.2177)**	(0.2482)***	(0.1898)***	(0.2646)**	(0.0341)*	(0.0351)***	(0.0363)***	(0.0432)***
BD	−0.0091	0.0040	0.0050	0.0032	−0.0002	0.0006	−0.0009	−0.0012
	(0.0077)	(0.0071)	(0.0060)	(0.0051)	(0.0014)	(0.0013)	(0.0013)	(0.0015)
IndependentDirector	−0.1353	−0.0368	−0.1230	−0.0440	0.0453	0.0343	0.0141	0.0061
	(0.0839)	(0.0696)	(0.0570)	(0.0444)	(0.0156)***	(0.0133)**	(0.0122)	(0.0121)
NODUAL	−0.0288	0.0111	−0.0204	−0.0466	0.0038	0.0016	0.0027	−0.0115
	(0.0296)	(0.0198)	(0.0171)	(0.0173)	(0.0048)	(0.0035)	(0.0039)	(0.0051)**
Size	−0.0235	−0.0212	−0.0303	−0.0231	0.0011	1.42E-05	0.0038	0.0085
	(0.0119)**	(0.0094)**	(0.0077)***	(0.0090)**	(0.0017)	(0.0017)	(0.0019)**	(0.0034)**
Leverage	0.5770	0.4825	0.2993	0.1208	−0.0545	−0.0645	−0.0506	−0.0477
	(0.1015)***	(0.0682)***	(0.0573)***	(0.0568)**	(0.0158)***	(0.0119)***	(0.0124)***	(0.0123)***
Auditor	−0.0161	0.0175	−0.0079	0.0156	−0.0087	−0.0044	−0.0099	−0.0113
	(0.0315)	(0.0234)	(0.0183)	(0.0188)	(0.0045)*	(0.0039)	(0.0038)***	(0.0043)***
DGDP	1.41E-08	−5.06E-08	2.95E-08	−1.54E-08	−3.63E-09	1.64E-08	6.19E-09	4.35E-09
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)***	(0.0000)	(0.0000)
MSCI	−0.1711	−0.0533	−0.0443	−0.0201	0.0205	0.0031	0.0054	0.0002
	(0.0472)***	(0.0276)*	(0.0273)	(0.0275)	(0.0079)***	(0.0058)	(0.0053)	(0.0065)
MAR	−0.0149	−0.0007	0.0241	0.0037	0.0066	0.0014	0.0047	−0.0030
	(0.0325)	(0.0235)	(0.0186)	(0.0187)	(0.0070)	(0.0039)	(0.0039)	(0.0062)
Observations	217	556	607	641	217	556	613	652
Adj. R^2	0.2342	0.1341	0.1300	0.0638	0.1217	0.0902	0.0787	0.0675

0 year: The issue year, 1 year: The first year after the IPO, 2 year: The second year after the IPO, 3 year: The third year after the IPO. The definitions of other variables are the same as Table 2. Standard errors are indicated in parentheses. *,**,*** denote statistical significance at the 10%, 5% and 1% levels (two-tailed), respectively

Table 6: The test of differences between earnings management of firms held by owners with high and low holding proportion

Panel A the test of differences between CBPM averages									
IPO year	InsiderQ1	InsiderQ5	t-test	DirectorQ1	DirectorQ5	t-test	ManagerQ1	ManageQ5	t-test
0 year	0.0829	0.0247	1.5328	0.1056	0.0054	2.7464***	0.0298	0.0138	0.5181
1 year	0.0293	0.0758	−1.8190*	0.0802	0.0901	−0.4019	0.0722	0.0473	0.9477
2 year	0.0930	0.0897	0.1404	0.0692	0.0867	−0.8096	0.0985	0.0625	1.5674
3 year	0.0483	0.0576	−0.3943	0.0617	0.0386	0.9770	0.0825	0.0297	2.1238**
IPO year	IOQ1	IOQ5	t-test	FIOQ1	FIOQ5	t-test	DIOQ1	DIOQ5	t-test
0 year	0.0910	0.0020	1.8693*	0.0402	0.0160	0.5559	0.0940	0.0129	1.7219*
1 year	0.0908	−0.0236	3.8115***	0.0742	0.0456	0.9649	0.1012	−0.0521	4.8859***
2 year	0.1150	0.0154	3.8807***	0.1339	0.0368	3.5605***	0.1231	0.0057	4.3623***
3 year	0.0703	−0.0260	3.5810***	0.0676	−0.0028	2.6209***	0.1116	−0.0189	4.5525***
Panel B the test of differences between PMDA averages									
IPO year	InsiderQ1	InsiderQ5	t-test	DirectorQ1	DirectorQ5	t-test	ManagerQ1	ManageQ5	t-test
0 year	0.0053	0.0160	−2.2768**	0.0060	0.0121	−1.2667	0.0123	0.0155	−0.7404
1 year	0.0032	0.0066	−0.6856	0.0059	0.0119	−1.2884	0.0064	0.0143	−1.5311
2 year	0.0000	0.0025	−0.5023	−0.0013	0.0042	−1.3004	−0.0058	0.0108	−2.7926***
3 year	−0.0093	0.0003	−1.1766	−0.0100	0.0030	−1.6323	−0.0104	0.0064	−2.0240**
IPO year	IOQ1	IOQ5	t-test	FIOQ1	FIOQ5	t-test	DIOQ1	DIOQ5	t-test
0 year	0.0169	0.0220	−0.7336	0.0126	0.0165	−0.5903	0.0119	0.0174	−0.8097
1 year	−0.0010	0.0170	−3.8053***	0.0042	0.0122	−1.4877	0.0026	0.0238	−3.4453***
2 year	−0.0053	0.0169	−4.3750***	0.0002	0.0088	−1.5616	−0.0118	0.0241	−6.4288***
3 year	−0.0058	0.0130	−3.6512***	−0.0018	0.0080	−1.7441*	−0.0164	0.0219	−7.2833***
Panel C the test of differences between CBPM medians									
IPO year	InsiderQ1	InsiderQ5	Z-test	DirectorQ1	DirectorQ5	Z-test	ManagerQ1	ManageQ5	Z-test
0 year	0.0645	0.0433	1.2280	0.0647	0.0400	2.4551**	0.0404	0.0251	0.1203
1 year	0.0477	0.0459	1.2231	0.0668	0.0524	0.2328	0.0497	0.0467	0.7652
2 year	0.1026	0.0712	0.7614	0.0554	0.0690	0.7516	0.0920	0.0655	1.6766*
3 year	0.0450	0.0666	0.2802	0.0587	0.0551	0.8858	0.0790	0.0381	1.8673*
IPO year	IOQ1	IOQ5	Z-test	FIOQ1	FIOQ5	Z-test	DIOQ1	DIOQ5	Z-test
0 year	0.0858	−0.0195	1.8758*	0.0203	0.0550	0.4332	0.0530	−0.0509	2.1869**
1 year	0.0832	−0.0011	4.3255***	0.0683	0.0340	1.6349	0.0968	−0.0159	5.2050***
2 year	0.0959	0.0206	3.9258***	0.0984	0.0294	3.7767***	0.1137	0.0023	5.1897***
3 year	0.0780	0.0215	3.3588***	0.0673	0.0380	2.0748**	0.1081	0.0042	4.6230***
Panel D the test of differences between PMDA medians									
IPO year	InsiderQ1	InsiderQ5	Z-test	DirectorQ1	DirectorQ5	Z-test	ManagerQ1	ManageQ5	Z-test
0 year	0.0075	0.0129	2.1319**	0.0084	0.0094	0.9146	0.0072	0.0150	0.8010
1 year	0.0077	0.0060	0.5416	0.0124	0.0065	0.0634	0.0053	0.0128	1.8103*
2 year	0.0022	0.0028	0.2855	0.0022	0.0028	0.5127	0.0007	0.0097	2.3405**
3 year	0.0032	0.0021	0.5504	0.0023	0.0027	1.3612	−0.0025	0.0042	2.2482**
IPO year	IOQ1	IOQ5	Z-test	FIOQ1	FIOQ5	Z-test	DIOQ1	DIOQ5	Z-test
0 year	0.0109	0.0209	1.0658	0.0137	0.0175	1.3689	0.0095	0.0161	0.9764
1 year	0.0007	0.0173	5.5102***	0.0038	0.0161	3.0978***	−0.0001	0.0213	5.2304***
2 year	−0.0010	0.0105	4.2576***	0.0013	0.0087	2.0279**	−0.0037	0.0191	7.1700***
3 year	−0.0040	0.0121	5.3651***	−0.0004	0.0117	3.4602***	−0.0074	0.0194	7.7257***

0 year: The issue year, 1 year: The first year after the IPO, 2 year: The second year after the IPO, 3 year: The third year after the IPO. InsiderQ1: The insider shareholding percentage in the lowest quintile, InsiderQ5: The insider shareholding percentage in the highest quintile; DirectorQ1: The director and supervisor shareholding percentage in the lowest quintile, DirectorQ5: The director and supervisor shareholding percentage in the highest quintile, ManagerQ1: The manager shareholding percentage in the lowest quintile, ManagerQ5: The manager shareholding percentage in the highest quintile, IOQ1: The institutional shareholding percentage in the lowest quintile, IOQ5: The institutional shareholding percentage in the highest quintile, FIOQ1: The foreign institutional shareholding percentage in the lowest quintile, FIOQ5: The foreign institutional shareholding percentage in the highest quintile, DIOQ1: The domestic institutional shareholding percentage in the lowest quintile; DIOQ5: The domestic institutional shareholding percentage in the highest quintile, The definitions of other variables are the same as Table 2. Standard errors are indicated in parentheses. *, **, *** Denote statistical significance at the 10%, 5% and 1% levels (two-tailed), respectively

In the following we will examine shareholding stability mentioned in the hypothesis. First, according to the standard deviation of insider and institutional shareholdings (Insidersd, IOsd) as stability variables, samples are divided into quintiles from the lowest to the highest. The interaction terms of the proportion and the standard deviation of ownership shareholdings are used as the independent variables to analyze the impact of ownership stability on earnings management as shown in Table 7. The influence of insider stability on earnings management is not clear. However, its impacts on DA are relatively positive and consistent; in particular, insider stability has significant impact on DA at 10% significant level in the 1st year after IPOs. This suggests that in post-IPO years, no matter how shareholding stability is, insiders intend to drive the firm manager to perform DA.

The impacts of institutional shareholding stability on earnings management are relatively certain. For all 3 years after IPOs, institutional shareholding stability and real earnings management have a negative and significant relationship at 10% significant level; meanwhile, the impacts of institutional shareholding stability

Table 7: The regression results of owner holding stability and earnings management

Variables	CBPM				PMDA			
	0 year	1 year	2 year	3 year	0 year	1 year	2 year	3 year
Constant	0.2900	0.0542	0.1565	0.1699	−0.0066	−0.0063	−0.0104	−0.0440
	(0.1250)**	(0.0776)	(0.0596)***	(0.0612)***	(0.0236)***	(0.0144)	(0.0123)	(0.0309)
Insider×InsidersdQ1	−0.0888	0.0447	−0.0168	−0.0330	0.0385	0.0097	0.0110	0.0400
	(0.1241)	(0.0732)	(0.0567)	(0.0639)	(0.0238)	(0.0122)	(0.0130)	(0.0255)
Insider×InsidersdQ2	−0.1358	−0.0194	−0.0386	−0.0352	0.0178	0.0247	0.0061	0.0268
	(0.1095)	(0.0631)	(0.0610)	(0.0726)	(0.0218)	(0.0123)**	(0.0142)	(0.0276)
Insider×InsidersdQ3	−0.2295	−0.0205	0.0114	0.0146	0.0179	0.0122	0.0051	0.0197
	(0.1215)*	(0.0603)	(0.0599)	(0.0654)	(0.0214)	(0.0121)	(0.0164)	(0.0261)
Insider×InsidersdQ4	−0.2804	−0.0659	−0.0132	0.0082	0.0269	0.0365	0.0107	0.0277
	(0.1540)*	(0.0705)	(0.0610)	(0.0612)	(0.0284)	(0.0142)**	(0.0140)	(0.0212)
Insider×InsidersdQ5	−0.3236	0.0313	−0.0613	0.0248	0.0052	0.0220	0.0017	0.0234
	(0.1228)***	(0.0719)	(0.0633)	(0.0682)	(0.0222)	(0.0133)*	(0.0138)	(0.0256)
IO×IOsdQ1	0.9628	0.8046	−0.2337	−0.2612	−0.0377	−0.2250	−0.1401	−0.1269
	(0.5668)*	(0.4238)*	(0.2543)	(0.5417)	(0.0771)	(0.1549)	(0.0911)	(0.0984)
IO×IOsdQ2	−0.8711	−0.0566	0.2415	−0.2867	0.0574	−0.0073	−0.0407	−0.0711
	(0.4432)*	(0.1385)	(0.1435)*	(0.2964)	(0.1414)	(0.0273)	(0.0270)	(0.1018)
IO×IOsdQ3	−0.4590	−0.0842	−0.1028	−0.0429	0.0997	0.0330	0.0510	0.0415
	(0.4494)	(0.1252)	(0.1923)	(0.1788)	(0.0806)	(0.0215)	(0.0412)	(0.0325)
IO×IOsdQ4	−0.2349	−0.4110	−0.2536	−0.2337	0.0246	0.0413	0.0757	0.0679
	(0.2400)	(0.3759)	(0.0983)**	(0.1121)**	(0.0314)	(0.0381)	(0.0202)***	(0.0274)**
IO×IOsdQ5	−0.2870	−0.3818	−0.2185	−0.3476	0.0657	0.0619	0.0536	0.0735
	(0.1540)*	(0.0929)***	(0.0984)**	(0.1228)***	(0.0274)**	(0.0158)***	(0.0158)***	(0.0197)***
BD	−0.0100	0.0068	0.0049	0.0045	−0.0019	0.0002	−0.0009	−0.0010
	(0.0086)	(0.0061)	(0.0053)	(0.0049)	(0.0015)	(0.0011)	(0.0012)	(0.0015)
IndependentDirector	−0.0978	−0.0570	−0.1110	−0.0628	0.0376	0.0293	0.0170	0.0136
	(0.0844)	(0.0668)	(0.0531)**	(0.0457)	(0.0155)*	(0.0125)**	(0.0118)	(0.0121)
NODUAL	−0.0522	0.0198	−0.0199	−0.0372	0.0020	0.0012	0.0010	0.0103
	(0.0314)*	(0.0184)	(0.0156)	(0.0163)**	(0.0051)	(0.0035)	(0.0036)	(0.0045)**
Size	−0.0223	−0.0270	−0.0330	−0.0247	0.0012	0.0020	0.0049	0.0085
	(0.0109)**	(0.0085)***	(0.0072)***	(0.0082)***	(0.0019)	(0.0017)	(0.0017)***	(0.0029)***
Leverage	0.4765	0.4039	0.3024	0.1253	−0.0346	−0.0474	−0.0480	−0.0526
	(0.1095)***	(0.0602)***	(0.0512)***	(0.0559)**	(0.0189)*	(0.0122)***	(0.0115)***	(0.0118)***
Auditor	0.0234	0.0304	0.0012	0.0151	−0.0105	−0.0083	−0.0095	−0.0095
	(0.0332)	(0.0210)	(0.0167)	(0.0177)	(0.0053)*	(0.0037)**	(0.0034)***	0.0039)**
DGDP	3.65E-10	−6.37E-08	4.18E-08	2.01E-09	7.39E-09	5.49E-09	4.05E-09	7.44E-09
	(0.0000)	(0.0000)*	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
MSCI	−0.1351	−0.0305	−0.0472	−0.0012	0.0150	−0.0012	0.0019	0.0007
	(0.0486)***	(0.0259)	(0.0259)*	(0.0279)	(0.0091)	(0.0063)	(0.0055)	(0.0063)
MAR	−0.0876	−0.0267	0.0154	0.0026	0.0218	0.0068	0.0061	−0.0015
	(0.0500)*	(0.0224)	(0.0169)	(0.0179)	(0.0101)**	(0.0037)*	(0.0037)	(0.0063)
Observations	236	707	722	725	236	707	733	740
Adj. R^2	0.2159	0.1178	0.1195	0.0528	0.1032	0.0873	0.0723	0.0646

0 year: The issue year, 1 year: The first year after the IPO, 2 year: The second year after the IPO, 3 year: The third year after the IPO. InsidersdQ1: The standard deviation of insider shareholding percentage in the lowest quintile, InsidersdQ2: The standard deviation of insider shareholding percentage in the second quintile, InsidersdQ3: The standard deviation of insider shareholding percentage in the third quintile, InsidersdQ4: The standard deviation of insider shareholding percentage in the fourth quintile, InsidersdQ5: The standard deviation of insider shareholding percentage in the highest quintile, IOsdQ1: The standard deviation of institutional shareholding percentage in the lowest quintile, IOsdQ2: The standard deviation of institutional shareholding percentage in the second quintile, IOsdQ3: The standard deviation of institutional shareholding percentage in the third quintile, IOsdQ4: The standard deviation of institutional shareholding percentage in the fourth quintile, IOsdQ5: The standard deviation of institutional shareholding percentage in the highest quintile; The definitions of other variables are the same as Table 2. Standard errors are indicated in parentheses. *, **, *** denote statistical significance at the 10%, 5% and 1% levels (two-tailed), respectively

on DA are significantly positive at the 5% level under the situation that there are large changes in the proportion of their shareholdings (IO×IOsdQ5). The results indicate that institutional investors tempt to manage DA to gain short-term trading benefits when they reduce shareholdings of firms which engage in real earnings management.

Similarly, the impacts of shareholding stability of directors, managers, foreign institutions and domestic institutions on earnings management are examined respectively. As shown in Table 8, the impacts of directors' shareholding stability (Directorsd) on earnings management are still unclear. One reason behind is possibly because they interfere with earnings management is based on their different needs. Nevertheless, in the second and the 3rd year after IPOs, managerial shareholding stability (Managersd) negatively impacts on real earnings management but positively impacts on DA under the case of unstable holdings. Those with unstable high holdings intend to use DArather than real earnings management to detriment firm's future growth to meet the goal of earnings management. Hence, H1b is not confirmed, while managers' shareholding stability in H1c is confirmed.

Table 8: The regression results of insider holding stability and earnings management

Variables	CBPM				PMDA			
	0 year	1 year	2 year	3 year	0 year	1 year	2 year	3 year
Constant	0.0481	0.1023	0.1647	0.2108	0.0275	−0.0202	−0.0191	−0.0435
	(0.0841)	(0.0794)	(0.0552)***	(0.0538)***	(0.0140)**	(0.0152)	(0.0117)	(0.0240)*
Director×DirectorsdQ1	0.0338	−0.0056	0.0276	−0.1192	0.0077	0.0085	0.0066	0.0292
	(0.0903)	(0.0529)	(0.0605)	(0.0704)*	(0.0145)	(0.0105)	(0.0129)	(0.0172)*
Director×DirectorsdQ2	−0.0004	0.0665	0.1567	−0.1346	−0.0107	0.0224	0.0113	0.0617
	(0.1111)	(0.1021)	(0.0867)*	(0.0893)	(0.0185)	(0.0141)	(0.0191)	(0.0225)***
Director×DirectorsdQ3	−0.0120	0.0431	0.1064	−0.0731	0.0051	0.0338	0.0311	0.0347
	(0.1031)	(0.0765)	(0.0817)	(0.0912)	(0.0174)	(0.0174)*	(0.0172)*	(0.0199)*
Director×DirectorsdQ4	−0.0066	−0.0186	0.0263	−0.0501	0.0092	0.0093	0.0130	0.0041
	(0.0863)	(0.0837)	(0.0692)	(0.0759)	(0.0123)	(0.0148)	(0.0151)	(0.0190)
Director×DirectorsdQ5	−0.0531	−0.0401	0.0632	−0.0347	0.0008	0.0266	−0.0020	−0.0003
	(0.0745)	(0.0777)	(0.0723)	(0.0686)	(0.0097)	(0.0156)*	(0.0136)	(0.0148)
Manager×ManagersdQ1	−0.1464	0.1743	−0.8049	0.4291	0.1770	−0.0590	0.0740	0.1912
	(1.3162)	(0.6111)	(0.7546)	(1.1699)	(0.2377)	(0.0988)	(0.0993)	(0.2574)
Manager×ManagersdQ2	0.3280	0.1483	0.7063	−0.8296	0.0304	0.0025	0.0423	0.2416
	(0.7544)	(0.8888)	(0.8391)	(0.9338)	(0.1397)	(0.1452)	(0.1741)	(0.1896)
Manager×ManagersdQ3	0.1453	−1.2260	−1.7971	−2.5240	−0.2664	0.2469	0.2673	0.7464
	(0.9311)	(0.7564)	(0.8969)**	(1.4534)*	(0.1691)	(0.1607)	(0.1396)*	(0.2512)***
Manager×ManagersdQ4	0.2403	−0.2554	−1.3567	0.0010	0.0196	0.1698	0.1286	0.0669
	(0.6795)	(0.8297)	(0.6209)**	(0.4061)	(0.0939)	(0.1140)	(0.1097)	(0.0834)
Manager×ManagersdQ5	−0.3356	−0.0808	−0.7559	−0.8567	−0.0268	0.0944	0.2212	0.2220
	(0.4204)	(0.3492)	(0.3683)**	(0.3858)**	(0.0458)	(0.0669)	(0.0764)***	(0.0955)**
BD	−0.0033	0.0019	0.0022	0.0042	−0.0004	−0.0001	−0.0011	−0.0013
	(0.0066)	(0.0055)	(0.0050)	(0.0047)	(0.0010)	(0.0012)	(0.0012)	(0.0013)
IndependentDirector	−0.0955	−0.1120	−0.0483	−0.0263	0.0230	0.0327	0.0170	0.0007
	(0.0794)	(0.0669)*	(0.0557)	(0.0467)	(0.0121)*	(0.0137)**	(0.0131)	(0.0119)
NODUAL	−0.0116	0.0290	−0.0123	−0.0337	0.0043	0.0037	0.0035	0.0101
	(0.0214)	(0.0175)*	(0.0158)	(0.0159)**	(0.0032)	(0.0037)	(0.0037)	(0.0044)**
Size	−0.0195	−0.0307	−0.0387	−0.0311	0.0015	0.0058	0.0073	0.0097
	(0.0088)**	(0.0078)***	(0.0071)***	(0.0080)***	(0.0016)	(0.0018)	(0.0018)***	(0.0028)***
Leverage	0.5551	0.3840	0.2714	0.1373	−0.0710	−0.0627	−0.0602	−0.0458
	(0.0775)***	(0.0607)***	(0.0492)***	(0.0539)**	(0.0126)***	(0.0133)***	(0.0115)***	(0.0111)***
Auditor	−0.0069	0.0225	−0.0099	0.0062	−0.0123	−0.0099	−0.0098	−0.0068
	(0.0207)	(0.0198)	(0.0166)	(0.0172)	(0.0034)***	(0.0038)***	(0.0035)***	(0.0037)*
DGDP	−9.77E-08	−4.87E-08	4.79E-08	4.53E-09	5.86E-10	1.12E-08	3.86E-09	7.74E-09
	(0.0000)***	(0.0000)	(0.0000)*	(0.0000)	(0.0000)	(0.0000)*	(0.0000)	(0.0000)
MSCI	−0.0730	−0.0332	−0.0297	−0.0191	0.0038	0.0023	0.0052	0.0030
	(0.0283)**	(0.0236)	(0.0272)	(0.0279)	(0.0050)	(0.0061)	(0.0054)	(0.0061)
MAR	−0.0036	−0.0256	0.0232	0.0020	0.0090	0.0071	0.0058	−0.0021
	(0.0234)	(0.0195)	(0.0168)	(0.0179)	(0.0036)**	(0.0037)*	(0.0038)	(0.0062)
Observations	543	669	717	758	543	669	728	773
Adj. R^2	0.1370	0.0839	0.0967	0.0456	0.0925	0.0885	0.0809	0.0671

0 year: The issue year, 1 year: The first year after the IPO, 2 year: The second year after the IPO, 3 year: The third year after the IPO. DirectorsdQ1: The standard deviation of director and supervisor shareholding percentage in the lowest quintile, DirectorsdQ2: The standard deviation of director and supervisor shareholding percentage in the second quintile, DirectorsdQ3: The standard deviation of director and supervisor shareholding percentage in the third quintile, DirectorsdQ4: The standard deviation of director and supervisor shareholding percentage in the fourth quintile, DirectorsdQ5: The standard deviation of director and supervisor shareholding percentage in the highest quintile, ManagersdQ1: The standard deviation of manager shareholding percentage in the lowest quintile, ManagersdQ2: The standard deviation of manager shareholding percentage in the second quintile, ManagersdQ3: The standard deviation of manager shareholding percentage in the third quintile, ManagersdQ4: The standard deviation of manager shareholding percentage in the fourth quintile, ManagersdQ5: The standard deviation of manager shareholding percentage in the highest quintile, The definitions of other variables are the same as Table 2. Standard errors are indicated in parentheses. *, **, *** denote statistical significance at the 10%, 5% and 1% levels (two-tailed), respectively

The impacts of foreign and local institutional investors on IPO earnings management are shown in Table 9. The empirical results suggest that foreign institutional shareholding stability (FIOsd) has an inconsistent impact on earnings management and this possibly because that some foreign institutional investors are not familiar with IPO firm managers. Therefore, its impacts on earnings management are inconsistent. For all 3 years after the issue year, local institutions with unstable high holdings have a negative impact on real earnings management but a positive impact on DA at 10% significant level. This suggests that local institutional investors are more familiar with the IPO managers rather than have advantageous in the capital market. Hence, they can affect managers in earnings management to achieve the goal of short-term benefits under the situation that their shareholdings are high and instable. This finding depicts that both domestic and foreign institutional shareholding stability in H2b and H2c are not supported.

Table 9: The regression results of institutional holding stability and earnings management

Variables	CBPM				PMDA			
	0 year	1 year	2 year	3 year	0 year	1 year	2 year	3 year
Constant	0.0795	0.0105	0.1441	0.1743	0.0169	0.0148	−0.0010	−0.0261
	(0.0888)	(0.0864)	(0.0618)**	(0.0561)***	(0.0142)	(0.0143)	(0.0119)	(0.0261)
FIO×FIOsdQ1	−0.1505	−0.5100	0.0868	−0.6309	0.0558	−0.0565	−0.0451	0.1264
	(0.5351)	(0.4946)	(0.1959)	(0.0868)***	(0.1905)	(0.0626)	(0.0593)	(0.0126)***
FIO×FIOsdQ2	3.3274	−0.1172	−0.2375	0.5580	−0.5886	0.0043	0.0417	−0.0811
	(1.5520)**	(0.1536)	(0.3606)	(0.4929)	(0.1902)***	(0.0221)	(0.0629)	(0.1173)
FIO×FIOsdQ3	0.7470	−0.2003	0.1829	−0.2841	−0.0975	0.0238	−0.0305	−0.1447
	(0.5513)	(0.1770)	(0.3274)	(0.4880)	(0.0752)	(0.0339)	(0.0543)	(0.1394)
FIO×FIOsdQ4	0.1990	−0.0927	−0.0232	−0.0149	0.0938	0.0093	0.0315	0.0057
	(0.4011)	(0.1838)	(0.1790)	(0.1565)	0.0566)*	(0.0283)	(0.0362)	(0.0246)
FIO×FIOsdQ5	−0.1609	0.1202	−0.0514	−0.1994	0.0096	0.0288	0.0110	0.0332
	(0.2277)	(0.2093)	(0.1086)	(0.1540)	(0.0381)	(0.0264)	(0.0164)	(0.0250)
DIO×DIOsdQ1	0.3250	−3.4702	−5.4833	−11.0900	0.2269	1.1997	−0.1983	3.0713
	(0.8484)	(1.2067)***	(5.6695)	(18.2692)	(0.1913)	(0.1817)***	(2.5286)	(1.7148)*
DIO×DIOsdQ2	−0.8194	−0.3303	−2.9983	−6.0686	0.0171	0.2246	0.7416	1.4014
	(0.6401)	(0.7053)	(1.0991)***	(2.1352)***	(0.1068)	(0.1359)*	(0.2399)***	(0.3337)***
DIO×DIOsdQ3	−0.6484	−0.9916	−2.3250	−2.8175	0.0961	0.2144	0.6053	0.7580
	(0.5695)	(0.5746)*	(0.6980)***	(0.7933)***	(0.1085)	(0.1523)	(0.1538)***	(0.1330)***
DIO×DIOsdQ4	−1.1025	−1.8536	−1.0317	−0.6294	0.0127	0.1221	0.4563	0.3645
	(0.5828)*	(0.5655)***	(0.3906)***	(0.7193)	(0.1108)	(0.1028)	(0.0794)***	(0.1409)***
DIO×DIOsdQ5	−0.3681	−0.9899	−0.6811	−0.7242	0.0616	0.1108	0.1560	0.1912
	(0.2220)*	(0.2526)***	(0.1999)***	(0.2672)***	(0.0341)*	(0.0334)***	(0.0354)***	(0.0422)***
BD	−0.0080	0.0040	0.0046	0.0048	−0.0001	0.0008	−0.0008	−0.0013
	(0.0077)	(0.0071)	(0.0059)	(0.0051)	(0.0014)	(0.0013)	(0.0013)	(0.0015)
IndependentDirector	−0.1488	−0.0283	−0.1206	−0.0347	0.0462	0.0335	0.0136	0.0027
	(0.0829)*	(0.0712)	(0.0572)**	(0.0440)	(0.0155)***	(0.0134)**	(0.0120)	(0.0121)
NODUAL	−0.0313	0.0140	−0.0195	−0.0408	0.0041	0.0015	0.0025	0.0103
	(0.0296)	(0.0201)	(0.0171)	(0.0171)**	(0.0049)	(0.0035)	(0.0039)	(0.0051)**
Size	−0.0212	−0.0203	−0.0287	−0.0226	0.0010	−0.0003	0.0031	0.0079
	(0.0126)*	(0.0094)**	(0.0079)***	(0.0090)**	(0.0018)	(0.0017)	(0.0019)	(0.0034)**
Leverage	0.5757	0.4810	0.2947	0.1114	−0.0559	−0.0651	−0.0469	−0.0470
	(0.1054)***	(0.0681)***	(0.0589)***	(0.0575)*	(0.0158)***	(0.0124)***	(0.0122)***	(0.0124)***
Auditor	−0.0016	0.0215	−0.0094	0.0124	−0.0103	−0.0048	−0.0098	−0.0106
	(0.0320)	(0.0237)	(0.0186)	(0.0188)	(0.0044)**	(0.0039)	(0.0038)**	(0.0043)**
DGDP	1.29E-08	−6.42E-08	3.89E-08	−9.24E-09	−4.25E-09	1.54E-08	3.29E-09	2.38E-09
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)**	(0.0000)	(0.0000)
MSCI	−0.1696	−0.0633	−0.0398	−0.0169	0.0216	0.0030	0.0045	−0.0003
	(0.0477)***	(0.0292)**	(0.0271)	(0.0270)	(0.0080)***	(0.0059)	(0.0053)	(0.0065)
MAR	−0.0199	−0.0040	0.0322	0.0107	0.0083	0.0008	0.0027	−0.0058
	(0.0358)	(0.0238)	(0.0191)*	(0.0188)	(0.0072)	(0.0039)	(0.0040)	(0.0062)
Observations	217	556	607	641	217	556	613	652
Adj. R^2	0.2389	0.1348	0.1303	0.0764	0.1273	0.0883	0.0954	0.0777

0 year: The issue year, 1 year: The first year after the IPO, 2 year: The second year after the IPO, 3 year: The third year after the IPO. FIOsdQ1: The standard deviation of foreign institutional shareholding percentage in the lowest quintile, FIOsdQ2: The standard deviation of foreign institutional shareholding percentage in the second quintile, FIOsdQ3: The standard deviation of foreign institutional shareholding percentage in the third quintile, FIOsdQ4: The standard deviation of foreign institutional shareholding percentage in the fourth quintile, FIOsdQ5: The standard deviation of foreign institutional shareholding percentage in the highest quintile, DIOsdQ1: The standard deviation of domestic institutional shareholding percentage in the lowest quintile, DIOsdQ2: The standard deviation of domestic institutional shareholding percentage in the second quintile, DIOsdQ3: The standard deviation of domestic institutional shareholding percentage in the third quintile, DIOsdQ4: The standard deviation of domestic institutional shareholding percentage in the fourth quintile, DIOsdQ5: The standard deviation of domestic institutional shareholding percentage in the highest quintile; The definitions of other variables are the same as Table 2. Standard errors are indicated in parentheses. *, **, *** denote statistical significance at the 10%, 5% and 1% levels (two-tailed), respectively

5. CONCLUSION

This study analyzes the impact of insiders and institutional investors on earnings management of Taiwan IPO companies for the issue year and the following 2 years after the IPO. We apply PMDA and performance-matched real earnings management as dependent variables, and insiders, institutional investors and other control variables as independent variables to performing empirical model. The empirical results suggest that the impacts of insider shareholdings on earnings management are not consistent in 2 years after the IPO. The impacts of directors and supervisors shareholding on earnings management are alike for the post-IPO 1st year, and it shows a positive and significant impact on earnings management. Additionally, manager shareholdings have a significant and negative impact on real earnings management from the 2nd year to the 3rd year after IPOs, but a positive impact on accruals for the 1st year through the 3rd year after IPOs. The results indicate that companies will perform DA rather than real earnings

management, which damages their future value, to achieve performance goals when managerial shareholdings are higher since the post-IPO 1st year. Regarding the impacts of institutional shareholdings on IPO earnings management, we find that they have a negative and significant association with real earnings management but a significantly positive correlation with DA from the issue year to the 3rd year after the IPO. Especially for local institutional investors, their shareholdings have a negative and significant impact on real earnings management but a significantly positive impact on accruals in the following 3 years after the IPO. Therefore, companies held by higher local institutional shareholdings tend to perform DA to meet the earnings threshold.

This study also uses the standard deviation of ownership shareholdings as stability variables to explore the relationship between their holding stability and IPO earnings management. The results indicate that insider shareholding stability has a consistently positive impact on DA. Especially, the managerial shareholding stability for the post-IPO second and the 3rd year has significant impacts. This suggests the company will carry out DA when they ar7e with unstable high shareholdings. Regarding the impacts of institutional shareholding stability on earnings management, institutional investors with unstable high shareholdings have a significantly negative impact on real earnings management but a positive and significant impact on DA within 3 years after the IPO. It thus can be concluded that institutional investors with unstable high shareholdings tend to tempt the company to perform DA to gain short-term trading benefits, particularly for the local institutional investors.

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