The Influence of Institutional and Insider's Ownership on Accrual and Real Earnings Management

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Abstract

I utilize both the performance-modified accrual earnings measures and real earnings measures to investigate the influence of stability and proportion of ownership on earnings management before earnings announcement. The empirical results suggest that institutions with substantial yet unstable shareholdings can push managers to manipulate accruals for profitable opportunities, and those with lower holdings cannot. I also find the more substantial the insider shareholdings, especially from directors, the more significant the impacts on discretionary accruals.

Keywords: Discretionary accruals; real earnings management; institutional ownership; insiders; ownership stability

JEL Classification Numbers: G23, G32, G34, M40, M41

I. Introduction

There are increasing studies with two contrasting views for the roles of institutional investors in earnings management. Short-term institutions with frequent trading would encourage managers to manipulate earnings in order to seek short-term gains (Bhide (1993)). Bushee (1998) suggests that institutions with high levels of shares and high turnover trading encourage myopic investment behavior which sacrifices research and development (R&D) for short-term earnings. Conversely, long-term or sophisticated institutions serve as monitors and will mitigate earnings management behavior (Bange and De Bondt (1998)). Koh (2007) examined the association between institutional investors and discretionary earnings management, suggesting long-term institutional investors can mitigate aggressive earnings management. Furthermore, institutional investors, especially foreign ones, have become more important than before in the emerging markets. With abundant capital they have significant impacts on economic development of these countries. Yuan *et al*. (2008) find the positive impacts of mutual fund ownerships on firm performance in China. Ghon Rhee and Wang (2009) examine the causality between foreign institutional ownership and liquidity in Indonesian stock market. They find that foreign institutional holdings have negative impacts on liquidity due to high holdings from concentrated ownership. Huang and Shiu (2009) examine the local effects of equity ownership by domestic or foreign institutional investors in Taiwan, finding that foreign institutional investors enjoy a long-run information advantage

over domestic ones. Hsu and Wang (2013) also find that foreign institutional investors are more likely to monitor managers for firms listed in Taiwan.

It is believed that insiders usually know more about the value of the firm than outsiders, and can influence the information about firm value through earnings management. Piotroski and Roulstone (2004) indicate the direct link between insider trading activities and the flow of future earnings information, suggesting that insiders, especially directors and managers, with superior knowledge about future performance can create incentives to manipulate reported earnings. Thus insiders trading provide a signal about earnings manipulation (Ramy Elitzur and Yaari (1995)).

There are substantial studies using discretionary accruals as measures to examine the impact of firm ownership structure on accounting earnings management. In addition, many studies also suggest that firms increasingly resort to real earnings management to achieve earnings threshold. Zang (2012) suggests that accrual manipulation is negatively associated with real manipulation, indicating managers treat the two as substitutes. Due to the agency problem or the entrenchment effect, management decisions depriving the rights of minority owners are indisputable when the governance mechanism is ineffective. Managers turn to real earnings management if the costs of litigation risk and outside scrutiny are high. Although long-term institutions can implicitly monitor the detrimental decision of manipulating earnings, the results of my study find that they cannot prevent the incidence of real earnings management if their holdings are low.

Previous researchers primarily investigate the impact of ownership structure on accruals management. My study offers insights into whether the proportion and stability of insider's or institutional holdings serve as the pivotal factors affecting firm's accruals or real activities. These issues are not explored yet in the literature, especially in emerging markets. I am interested in knowing whether the tradeoffs between real and accrual manipulations are affected by their determinants. Using a sample of listed firms in Taiwan during the period from 2002 to 2011, I focus on the influence of insiders and institutional investors on matched accruals and real earnings management. I find that high and unstable holdings by institutions can pressure managers to manipulate accruals, yet low institutional ownership has failed to prevent managers to undertake real earnings manipulation which deteriorates firm's value. And I also find the more substantial the insider shareholdings, particularly from directors, the more significant the impacts on discretionary accruals.

The remainder of this paper is organized as follows: Section II reviews literature and develops the hypotheses; Section III describes the research methodology, including variable

definitions and empirical models; Section IV discusses and analyzes the empirical results; the final Section offers the conclusions.

II. Literature Review and Hypothesis Development

One strand of studies emphasizes that the role of institutional investors is monitoring and influencing corporate managers. Chen *et al.* (2007) and Koh (2007) indicate that institutions with larger and longer holdings obtain more benefits from monitoring, so they are more likely to do so. Consistent with this argument, Bushee (1998) finds these institutions are associated with less manipulation in real earnings management. Long-term institutional investors encourage the management to focus on firm performance and forbid opportunistic self-serving actions. On the other hand, short-term institutional investors are fixated on short-term performance and trade heavily on earnings information. This stimulates managers to manipulate earnings since poor performance leads to immediate stock sales. Therefore, institutions with low and unstable holdings prefer myopic earnings management (Bushee (1998)), and have less incentive to prevent managerial opportunism. Ke and Ramalingegowa (2005) document that the changes in stock ownership of transient institutions are positively associated with the contemporaneous earnings surprises.

Numerous studies focus on the relationship between insider trading and earning management. Park and Park (2004) find the positive relationship between discretionary accruals and insider sales, indicating that managers may have undertaken passive opportunistic strategies by trading their stocks following high earnings. Beneish and Vargus (2002) argue that accruals and insider trading are observable signals of private managerial information which can be used to distinguish between informative and opportunistic earnings management. The relationship between earnings management and insider trading is further analyzed by Sawicki and Shrestha (2008), who find evidences that insiders manipulate earnings downward/upward when buying/selling stocks. However, all these studies ignore that institutional investors can impact on the relationship between insider trading and earnings management. I focus on this issue and find the association between earnings management and insider trading presents interesting variation whilst firms are held by various institutions. Institutional investors with high and stable holdings can effectively deter insiders from manipulating earnings, but those with low and unstable holdings cannot forbid their behavior. The following hypotheses are addressed:

H1a: Institutions with high and stable holdings can effectively forbid the manager to manipulate earnings which are forced by insiders before earnings announcements.

H1b: Institutions with low and unstable holdings can encourage the manager to manipulate earnings which are forced by insiders before earnings announcements.

In Taiwan, institutional investors are usually classified in three types: foreign institutions, local mutual funds and investment trusts, and local securities dealers. Foreign institutions tend to be long-term investors since it is the purpose of Securities and Futures Commission to open the market to foreigners. Their investment trends have being studied by many local institutions and academics. Their investment portfolios are even duplicated by some local institutions as well as individual investors.

Accordingly, I consider the following hypotheses:

H2: Foreign institutions with high and stable holdings can more effectively prohibit managers from manipulating earnings than domestic ones before earnings announcements.

Insiders engaging in earnings manipulation are supported by a survey from Graham *et al.* (2005). Zang (2005) finds managers use real and accrual manipulations as substitutes. If insider managers or directors are opportunists, they will employ earnings management to obtain private benefits. The empirical results in Park and Park (2004) depict that insiders, especially directors and managers, before selling their own stocks would have intentionally increased current-period earnings through discretionary accruals. Directors with stable holdings may pressure managers to manifestly manipulate accruals, but not real earnings to the detriment of firm value. Firm managers may consider the cost of litigation risk and outside scrutiny before affecting earnings management as pressured by directors. I therefore develop the following hypotheses:

H3a: High and stable director holdings can pressure managers to lean towards manipulating discretionary accruals but not to real earnings management before earnings announcements.

H3b: After considering the litigation risk and outside scrutiny, managers with low and unstable holdings tend towards real earnings management before earnings announcements.

III. Methodology and the Model

A. Earnings management

This study adopts the performance-modified measures of discretionary accrual and real earning management as described by Kothari *et al.* (2005) and Zang (2005), respectively. I include return on assets (ROA) in Jones' cross-sectional model. Therefore, Jones model with matched discretionary accruals (*MDA*) is estimated using the equation presented by Koh (2007) with extra ROA in the current year. The measure of performance-matched discretionary accruals (*PMDA*) equals firm's discretionary accruals minus matched firm's discretionary accruals (*MDA*).

Subsequently, I apply the models developed by Dechow *et al.* (1998) to generating three matched normal levels of real activities. The following cross-sectional regression for each industry and calendar year is used to estimate the matched normal CFO:

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

where $A_{i,t-1}$ is the total assets for firm i in year t-1. $SALES_{i,t}$ is the operating revenue of firm i in year t. $\triangle SALES_{i,t}$ is the change in operating revenue of firm i between years t and t-1. $ROA_{i,t}$ denoting return on assets for firm i in year t is defined as net income divided by total assets. Therefore, I can acquire the performance-matched CFO (*PMCFO*) as the abnormal CFO less the matched abnormal CFO. The latter is defined as actual CFO subtracted by the matched normal CFO. The former is actual CFO minus the normal CFO obtained from the estimated coefficients of Eq. (1) excluding ROA.

Roychowdhury (2006) denotes that if firms manage sales upward to increase reported earnings in any year, they can exhibit unusually low residuals from the regression of discretionary expenses in that year, even when they do not reduce discretionary expenses. To avoid this similar problem, the matched normal levels of discretionary expenses are expressed as the following:

$$\frac{DExpense_{i,t}}{A_{i,t-1}} = \left[\hat{\alpha}_1 \left(\frac{1}{A_{i,t-1}} \right) + \hat{\alpha}_2 \left(\frac{SALES_{i,t-1}}{A_{i,t-1}} \right) + \hat{\alpha}_3 ROA_{i,t} \right]. \quad (2)$$

The variables in the above equation are the same as in Eq. (1) except $SALES_{i,t-1}$ which is the operating revenue of firm i in year t-1. The matched abnormal discretionary expenses are the difference between actual values and the matched normal discretionary expenses estimated from Eq. (2). The performance-matched discretionary expenses (*PMDE*) are calculated by subtracting the matched abnormal discretionary expenses from the abnormal discretionary expenses which are actual discretionary expenses minus the normal discretionary expenses estimated from Eq. (2) without ROA term.

The performance-matched production costs (*PMPC*) are defined as abnormal production cost reduced by matched abnormal production costs. The former is actual production costs minus the normal production costs calculated as Eq. (3). The latter is actual production costs minus the matched normal production costs. To estimate the matched normal production costs I use Eq. (3) with added ROA as another explanatory variable.

$$\frac{PCost_{i,t}}{A_{i,t-1}} = \left[\hat{\alpha}_1 \left(\frac{1}{A_{i,t-1}} \right) + \hat{\alpha}_2 \left(\frac{SALES_{i,t}}{A_{i,t-1}} \right) + \hat{\alpha}_3 \left(\frac{\Delta SALES_{i,t}}{A_{i,t-1}} \right) + \hat{\alpha}_4 \left(\frac{\Delta SALES_{i,t-1}}{A_{i,t-1}} \right) \right], \quad (3)$$

where $\triangle SALES_{i,t-1}$ is the change in operating revenue of firm *i* between years *t*-1 and *t*-2. The other variables are similar to those in Eq. (1).

B. Model specifications and control variables

I perform the pooled and panel models using the regression equations. The dependent variables in the regression include the performance-matched discretionary accruals measure (*PMDA*) and the performance-matched real earnings management measure (*CBPMRM*). In order to capture the total effects of real earnings management, three measures are combined as a comprehensive metric defined as the combined performance-matched real earnings management measure (*CBPMRM*) which is equal to *PMCFO* plus *PMDE* less *PMPC*. Hence, manipulating real earnings upwards leads to abnormally low *CBPMRM*.

The independent variables contain the means and the standard deviations of both monthly insider ownership proportion (*Insider*) and monthly institutional ownership proportion (*IO*) over one or two years prior to the earnings announcement at the end of the calendar year. Insiders are classified into *Manager* and *Director* (including directors and supervisors). The institutions contain foreign institutions (*FIO*) and domestic institutions (*DIO*) which are mainly mutual funds and stock dealers. The control variables are defined as follows:

SlackLeverage: defined as the industry average leverage less the firm leverage, where leverage is the ratio of total debt to total assets;

SlackDebtEBITDA: defined as the industry average debt-to-EBITDA less the firm's debt-to-EBITDA;

Size: defined as the natural logarithm of the market value of equity;

MTB: market-to-book ratio, market value of equity divided by book value;

Auditor: a dummy variable equal to one if the firm has a Big-4 auditor and zero otherwise;

AuditorOpinion: a dummy variable equal to one for a firm receiving a clean unqualified opinion and zero otherwise;

$YearDummy_{it}$: the year dummy, which is one if firm *i* belongs to the samples in year *t*, zero otherwise.

C. Samples and descriptive statistics

The samples are comprised of 12,312 firm-year observations for non-finance firms listed on Taiwan Stock Exchange and OTC market from 2002 to 2011. I collect my financial data from Taiwan Economics Journal (TEJ) industrial and research files over the sample period, and require at least eight observations in each industry group for each year to calculate the discretionary accruals metrics and real earnings management proxies.

Table I Descriptive statistics for dependent and independent variables

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
PMDA	0.0039	0.0051	0.7771	-1.2472	0.0523
PMCFO	0.0030	0.0047	0.7197	-1.3025	0.0750
PMPC	-0.0036	-0.0052	1.0813	-0.7803	0.0759
PMDE	0.0002	0.0005	0.2186	-0.3523	0.0236
CBPMRM	0.0068	0.0117	1.1852	-2.1719	0.1610
IO_1	0.0965	0.0455	0.7681	5.61E-07	0.1306
IOSD_1	0.0157	0.0080	0.3180	0	0.0210
FIO_1	0.0792	0.0276	0.7525	8.26E-07	0.1223
FIOSD_1	0.0107	0.0038	0.3180	0	0.0180
DIO_1	0.0224	0.0074	0.5703	5.09E-07	0.0389
DIOSD_1	0.0109	0.0051	0.1326	0	0.0146
Insider_1	0.4261	0.4121	0.9671	0.0163	0.1605
InsiderSD_1	0.0227	0.0149	0.2585	0	0.0251
Director_1	0.2332	0.2018	0.9470	0.0013	0.1346
DirectorSD_1	0.0116	0.0035	0.3106	0	0.0229
Manager_1	0.0108	0.0037	0.2526	2.28E-07	0.0205
ManagerSD_1	0.0020	0.0004	0.1182	0	0.0059
IO_2	0.0951	0.0468	0.9427	1.40E-06	0.1267
IOSD_2	0.0230	0.0141	1.1431	0	0.0293
FIO_2	0.0776	0.0282	0.7434	5.84E-07	0.1184
FIOSD_2	0.0163	0.0070	0.3423	0	0.0243
DIO_2	0.0208	0.0078	0.7481	2.60E-07	0.0335
DIOSD_2	0.0143	0.0079	1.1353	0	0.0218
Insider_2	0.4273	0.4129	0.9586	0.0396	0.1579
InsiderSD_2	0.0333	0.0250	0.2661	0	0.0295
Director_2	0.2365	0.2067	0.9514	0.0013	0.1334
DirectorSD_2	0.0190	0.0096	0.3065	0	0.0271
Manager_2	0.0107	0.0038	0.2301	1.14E-07	0.0198
ManagerSD_2	0.0032	0.0009	0.1256	0	0.0074
SlackLeverage	0.0031	0.0086	0.5256	-0.6872	0.1596
SlackDebtEBITDA	-0.2225	0.4579	11232	-7839	205
Size	14.8812	14.7242	21.3622	10.9344	1.4380
MTB	2.2561	1.0465	1112	0.1248	15.8574
Auditor	0.7605	1	1	0	0.4268
AuditorOpinion	0.2985	0	1	0	0.4576

Note: *PMDA*: performance-matched discretionary accruals, equaling discretionary accruals minus matched discretionary accruals; *PMCFO*: performance-matched cash flow from operation, equal to abnormal cash flow from operation less matched abnormal cash flow from operation; *PMPC*: performance-matched production cost, defined as abnormal production cost reduced by matched abnormal production cost; *PMDE*: performance-matched discretionary expenses, defined as abnormal discretionary expenses reduced by matched abnormal discretionary expenses; *CBPMRM*: combined performance-matched real earnings management, equal to *PMCFO* plus *PMDE* less *PMPC*; *IO_1* (*IO_2*): the means of institutional ownership proportions during one (two) year(s) before earnings announcement at the end of calendar year; *IOSD_1* (*IOSD_2*): the standard deviations of institutional ownership proportions during one (two) year(s) before earnings announcement at the end of calendar year; *FIO_1* (*FIO_2*): the means of foreign institutional ownership proportions during one (two) year(s) before earnings announcement at the end of calendar year; *FIOSD_1* (*FIOSD_2*): the standard deviations of foreign institutional ownership proportions during one (two) year(s) before earnings announcement at the end of calendar year; *DIO_1* (*DIO_2*): the means of domestic institutional ownership proportions during one (two) year(s) before earnings announcement at the end of calendar year; *DIOSD_1* (*DIOSD_2*): the standard deviations of domestic institutional ownership proportions during one (two) year(s) before earnings announcement at the end of calendar year; *Insider_1* (*Insider_2*): the means of insider holdings during one (two) year(s) before earnings announcement at the end of calendar year; *InsiderSD_1* (*InsiderSD_2*): the standard deviations of insider holdings during one (two) year(s) before earnings announcement at the end of calendar year; *Director_1* (*Director_2*): the means of director holdings during one (two) year(s) before earnings announcement at the end of calendar year; *DirectorSD_1* (*DirectorSD_2*): the standard deviations of director holdings during one (two) year(s) before earnings announcement at the end of calendar year; *Manager_1* (*Manager_2*): the means of Manager holdings during one (two) year(s) before earnings announcement at the end of calendar year; *ManagerSD_1* (*ManagerSD_2*): the standard deviations of Manager holdings during one (two) year(s) before earnings announcement at the end of calendar year; *SlackLeverage*: leverage, defined as industry average leverage less firm leverage; *SlackDebtEBITDA*: debt to EBITDA, equal to industry average debt-to-EBITDA less firm's debt-to-EBITDA; *Size*: firm size, measured as natural logarithm of equity's market value; *MTB*: market-to-book ratio, measured as market value of equity divided by book value of equity; *Auditor*: equal to one for firms with Big-4 auditors, zero otherwise; *AuditorOpinion*: auditor's opinion, equal to one for firms receiving clean unqualified opinions, zero otherwise.

After excluding firms with insufficient data, my final samples contain 8,474 firm-year observations. Table I provides descriptive statistics for variables used in my models. As shown in columns 1 and 2, the means (median) of the performance-matched earnings management measures are positive except the performance-matched production costs. The means (medians) of the performance-matched discretionary accruals (*PMDA*) and the combined performance-matched real earnings management (*CBPMRM*) are 0.39% (0.51%) and 0.68% (1.17%) of the total assets in the prior year, respectively. These values are significantly low and the distribution of *CBPMRM* is slightly skewed. The mean of the

overall institutional ownership proportion equals 10% which is two times its median. The distribution of the institutional samples is significantly skewed to the right. The mean (median) of the foreign institutional shareholdings, at around 8% (3%), is higher than that of the domestic ones. The mean and the median of insider holdings both approach 43%. The mean of the director and supervisor holdings is significantly higher than that of the manager shareholdings. The values are highly volatile for control variables of slack in debt-to-EBITDA and market-to-book ratio.

IV. Empirical Results and Analysis

A. The impact of ownership structure on earnings management

I first examine the impacts of the level and stability of institutional and insider's holdings on firm's earnings management. From Table II, the Lagrange multiplier test or Hausman test is statistically significant (p-value <0.01). The results from the fixed effects models are optimal. Three proxies in real earnings management (i.e. *PMCFO*, *PMDE* and *PMPC*) provide similar results as those of combined real earnings measures. The results in Table II exhibit the influence from the level and stability of institutional or insider's holdings during one or two years on the performance-matched discretionary accruals measure (*PMDA*), and on the combined performance-matched real earnings management measure (*CBPMRM*). The means and standard deviations of one-year institutional ownership proportions (*IO_1*, *IO_SD1*) associated with *PMDA* or *CBPMRM* are significantly positive at 0.05 levels. The findings denote that the institutions with high and unstable holdings not only allow accruals management by the firm, but they may have pressured the managers to maintain short-term earnings growth in order to find profitable trading opportunities. Due to increasing litigation risk, firms using discretionary accruals turn to manage real activities, which is consistent with the prediction of Zang (2005). In two-year samples, there is a positive correlation between average holdings (*IO_2*) and *CBPMRM* with 0.01 significance level. Nevertheless, the standard deviations of institutional holdings (*IO_SD*2) are negatively but insignificantly associated with *CBPMRM* which is distinguishable from one-year observations. Institutions investing substantially in firms with the intention to hold over a long horizon have incentives for managers to avoid real earnings activities. The impacts of one-year insider's holdings and stability (*Insider_1*, *Insider_SD1*) on *PMDA* or *CBPMRM* are positive and significant at 0.05 levels except the coefficient of insider's stability which only affects *PMDA*. This indicates that the higher the insider holdings, the more upward the discretionary accrual manipulation. However, the real earnings activities are not popular for firms with insiders of high and stable holdings. There are some similarities between one-year and two-year groups of insider holdings though only the average holdings (*Insider_2*) in two-year samples are positively and significantly associated with earnings management.

Subsequently, I will classify institutional investors as foreign or domestic ones, and insiders as directors or managers, to examine their respective influences over earnings management. The one-year and two-year average holdings of foreign or local institutions (*FIO_1*, *FIO_2*; *DIO_1*, *DIO_2*) are both positively and significantly associated with *CBPMRM*. The coefficients of average holdings by local institutions are also positively and significantly associated with *PMDA* for both one-year and two-year groups. The findings suggest that both institutions significantly reduce incidence of real earnings activities by their substantial investments in firms, whilst domestic institutions do not prevent their large holding firms from manipulating discretionary accruals.

In addition, the impacts of the director's average holdings (*Director_1*, *Director_2*) on earnings management are significant and positive, but the impacts of the standard deviations of their holdings (*Director_SD1*, *Director_SD2*) on earnings management are negative with 1 % significance for one year group. This suggests that firms with high director holdings show more significant discretionary accruals than real earnings management.

B. Robustness test of the impacts of ownership on earnings management

From the empirical results described above, the impacts of the standard deviations on earnings management are uncertain, no matter they are from foreign or domestic institutional holdings, or from director or manager holdings. I therefore partition the standard deviations into quintiles from the lowest to the highest based on both one-year and two-year ownership holdings. The measure of ownership stability in the *i*th quintile equals one if its standard deviation is in the *i*th quintile, zero otherwise. For example, *IOSD1_1* is equal to one if the standard deviation of its one-year institutional holding is classified in the lowest quintile. The impacts on earnings management by the interaction between each ownership proportion and its stability are examined with considerations of control variables as discussed in earlier Section.

Table II Regression of earnings management on institutional ownership, insiders and other variables

Variables	*PMDA*						*CBPMRM*					
Constant	-0.1779 ***	-0.1908 ***	-0.2555 ***	-0.2984 ***	-0.1756 ***	-0.1800 ***	-0.3973 ***	-0.4194 ***	-0.4893 ***	-0.4864 ***	-0.4459 ***	-0.4432 ***
	(0.0155)	(0.0155)	(0.0152)	(0.0147)	(0.0146)	(0.0147)	(0.0416)	(0.0416)	(0.0456)	(0.0421)	(0.0393)	(0.0395)
IO_1	0.0229 **						0.0975 ***					
	(0.0102)						(0.0274)					
IO_SD1	0.0826 **						0.2110 **					
	(0.0332)						(0.0893)					
IO_2		0.0175						0.1002 ***				
		(0.0111)						(0.0297)				
IO_SD2		0.0253						-0.0409				
		(0.0250)						(0.0672)				
Insider_1	0.0512 ***						0.1916 ***					
	(0.0075)						(0.0201)					
Insider_SD1	-0.0280						-0.1493 **					
	(0.0232)						(0.0624)					
Insider_2		0.0625 ***						0.2115 ***				
		(0.0079)						(0.0212)				
Insider_SD2		0.0219						-0.0033				
		(0.0215)						(0.0578)				

Table II (continued)

Variables	*PMDA*			*CBPMRM*		
FIO_1	0.0097			0.0863 ***		
	(0.0091)			(0.0271)		
FIO_SD1	-0.0011			0.0447		
	(0.0335)			(0.1002)		
FIO_2		0.0052			0.0643 **	
		(0.0103)			(0.0295)	
FIO_SD2		-0.0120			-0.0409	
		(0.0284)			(0.0812)	
DIO_1	0.0794 ***			0.2692 ***		
	(0.0213)			(0.0636)		
DIO_SD1	-0.0830			0.4948 ***		
	(0.0513)			(0.1535)		
DIO_2		0.0795 ***			0.5085 ***	
		(0.0285)			(0.0814)	
DIO_SD2		-0.0550			-0.1220	
		(0.0356)			(0.1017)	
Director_1			0.0482 ***			0.2859 ***
			(0.0094)			(0.0253)

Table II (continued)

Variables	*PMDA*						*CBPMRM*					
Director_SD1					-0.0802 ***						-0.1852 ***	
					(0.0250)						(0.0673)	
Director_2						0.0518 ***						0.2926 ***
						(0.0100)						(0.0268)
Director_SD2						-0.0133						-0.0321
						(0.0233)						(0.0626)
Manager_1					0.0696						0.1707	
					(0.0492)						(0.1320)	
Manager_SD1					0.2059 *						0.1974	
					(0.1066)						(0.2863)	
Manager_2						0.0554						0.1298
						(0.0547)						(0.1470)
Manager_SD2						0.3240 ***						0.1522
						(0.0965)						(0.2597)
SlackLeverage	0.0857 ***	0.0868 ***	0.0653 ***	0.0787 ***	0.0872 ***	0.0867 ***	0.3193 ***	0.3223 ***	0.3413 ***	0.3420 ***	0.3249 ***	0.3206 ***
	(0.0061)	(0.0062)	(0.0059)	(0.0059)	(0.0062)	(0.0062)	(0.0165)	(0.0167)	(0.0176)	(0.0169)	(0.0165)	(0.0166)
SlackDebtEBITDA	1.26E-06	1.11E-06	1.33E-06	1.42E-06	1.29E-06	1.29E-06	-1.13E-06	-1.54E-06	-5.84E-06	-5.71E-06	-1.32E-06	-1.51E-06
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Table II (continued)

Variables	*PMDA*						*CBPMRM*					
Size	0.0107 ***	0.0113 ***	0.0175 ***	0.0205 ***	0.0113 ***	0.0114 ***	0.0208 ***	0.0218 ***	0.0334 ***	0.0327 ***	0.0248 ***	0.0243 ***
	(0.0010)	(0.0010)	(0.0011)	(0.0010)	(0.0010)	(0.0010)	(0.0027)	(0.0027)	(0.0032)	(0.0029)	(0.0026)	(0.0026)
MTB	-0.0002 ***	-0.0002 ***	-0.0022 ***	-0.0025 ***	-0.0002 ***	-0.0002 ***	-0.0005 ***	-0.0005 ***	-0.0027 ***	-0.0018 ***	-0.0005 ***	-0.0005 ***
	(0.0000)	(0.0000)	(0.0002)	(0.0001)	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0006)	(0.0004)	(0.0001)	(0.0001)
Auditor	-0.0025	-0.0029	0.0002	0.0026	-0.0021	-0.0020	-0.0089	-0.0100	-0.0057	-0.0022	-0.0072	-0.0083
	(0.0026)	(0.0026)	(0.0023)	(0.0023)	(0.0026)	(0.0026)	(0.0069)	(0.0070)	(0.0069)	(0.0067)	(0.0069)	(0.0069)
AuditorOpinion	0.0041 ***	0.0040 ***	0.0016	0.0022 *	0.0042 ***	0.0042 ***	0.0132 ***	0.0125 ***	0.0105 ***	0.0123 ***	0.0130 ***	0.0129 ***
	(0.0015)	(0.0015)	(0.0013)	(0.0013)	(0.0015)	(0.0015)	(0.0040)	(0.0040)	(0.0038)	(0.0038)	(0.0040)	(0.0040)
Observations	8474	8378	6664	7106	8,474	8,474	8474	8378	6664	7106	8,474	8,474
Adj. R^2	0.2545	0.2540	0.3404	0.3632	0.2505	0.2518	0.4284	0.4242	0.4822	0.4954	0.4290	0.4276
LM test	499.79 ***	489.63 ***	505.99 ***	575.85 ***	526.49 ***	519.96 ***	1348.29 ***	1311.05 ***	1,024.94 ***	1,152.23 ***	1402.40 ***	1393.82 ***
Hausman test	144.34 ***	165.26 ***	251.74 ***	336.92 ***	134.73 ***	148.30 ***	150.17 ***	175.00 ***	206.45 ***	233.57 ***	185.11 ***	184.97 ***

Note: Variables are defined in Table I. The standard errors are reported in parentheses. LM test indicates Lagrange multiplier test. *, ** and *** indicate significance level at 10%, 5% and 1%, respectively.

The fixed effects models in Table III are still optimal. I find that the interactions between the proportions of institutional ownership and their stability from fourth to fifth quintile (*IOSD1_4* to *IOSD1_5*; *IOSD2_4* to *IOSD2_5*) are positively and significantly ($p \leq 0.01$) associated with earnings management, suggesting that the firms heavily invested by institutions with unstable holdings are inclined to manipulate discretionary accruals. However, the interactions between the insider holding proportions and their standard deviations in each quintile (*InsiderSD1_1* to *InsiderSD1_5*; *InsiderSD2_1* to *InsiderSD2_5*) impact positively and significantly on earnings management ($p \leq 0.01$), so the firms with high proportion of insiders have opportunities for discretionary accrual management. My empirical results provide partial supports for hypothesis H1b, but not for hypothesis H1a.

The interactions between the proportions of foreign or domestic institutional ownership and their ownership stability (*FIOSD1_1* to *FIOSD1_5*; *FIOSD2_1* to *FIOSD2_5*; *DIOSD1_1* to *DIOSD1_5*; *DIOSD2_1* to *DIOSD2_5*) are shown in Table III. The interaction terms of *FIO_1* and *FIOSD1_1*, *FIOSD1_2* and *FIOSD1_3* are negatively associated with *PMDA,* and the coefficients of *FIO_1*×*FIOSD1_1* and *FIO_1*×*FIOSD1_3* are significant at 10% level. However, the coefficients on *FIO_1*×*FIOSD1_2* to *FIO_1*×*FIOSD1_5* and *FIO_2*×*FIOSD2_1* to *FIO_2*×*FIOSD2_5* associated with *CBPMRM* are all positive and significant ($p < 10\%$). The interaction terms between domestic institutional holdings and their standard deviations in the fourth and fifth quintile are positively and significantly associated with earnings management at the 5% level. The results suggest that firms heavily and stably invested by foreign institutions are found to mitigate earnings management, while those heavily and unstably invested by domestic institutions are found to have discretionary accrual manipulation. The results are in line with H2.

Table III Regression of earnings management on the interaction terms of institutional ownership and insiders, and other variables

Variables	*PMDA*						*CBPMRM*					
Constant	-0.1787 ***	-0.1882 ***	-0.2476 ***	-0.2965 ***	-0.2078 ***	-0.2006 ***	-0.4004 ***	-0.4148 ***	-0.5086 ***	-0.4959 ***	-0.5259 ***	-0.4894 ***
	(0.0155)	(0.0155)	(0.0152)	(0.0148)	(0.0152)	(0.0149)	(0.0418)	(0.0417)	(0.0456)	(0.0423)	(0.0411)	(0.0406)
IO_1×IOSD1_1	0.0239						0.0915 *					
	(0.0191)						(0.0514)					
IO_1×IOSD1_2	0.0002						0.0739					
	(0.0177)						(0.0476)					
IO_1×IOSD1_3	0.0254 *						0.0818 **					
	(0.0132)						(0.0357)					
IO_1×IOSD1_4	0.0237 **						0.1325 ***					
	(0.0114)						(0.0307)					
IO_1×IOSD1_5	0.0335 ***						0.1121 ***					
	(0.0103)						(0.0278)					
IO_2×IOSD2_1		0.0237						0.1068 *				
		(0.0204)						(0.0549)				
IO_2×IOSD2_2		0.0075						0.0703				
		(0.0189)						(0.0508)				
IO_2×IOSD2_3		0.0049						0.0788 **				
		(0.0144)						(0.0388)				

Table III (continued)

Variables	*PMDA*		*CBPMRM*	
IO_2×IOSD2_4		0.0267 **		0.0984 ***
		(0.0123)		(0.0331)
IO_2×IOSD2_5		0.0205 *		0.0968 ***
		(0.0110)		(0.0295)
Insider_1×InsiderSD1_1	0.0504 ***		0.1933 ***	
	(0.0080)		(0.0215)	
Insider_1×InsiderSD1_2	0.0491 ***		0.1867 ***	
	(0.0079)		(0.0213)	
Insider_1×InsiderSD1_3	0.0529 ***		0.2012 ***	
	(0.0079)		(0.0213)	
Insider_1×InsiderSD1_4	0.0527 ***		0.1980 ***	
	(0.0078)		(0.0211)	
Insider_1×InsiderSD1_5	0.0520 ***		0.1839 ***	
	(0.0078)		(0.0209)	
Insider_2×InsiderSD2_1		0.0568 ***		0.2103 ***
		(0.0084)		(0.0227)
Insider_2×InsiderSD2_2		0.0607 ***		0.2107 ***
		(0.0083)		(0.0223)

Table III (continued)

Variables	*PMDA*			*CBPMRM*		
Insider_2×InsiderSD2_3	0.0632 ***			0.2262 ***		
	(0.0083)			(0.0222)		
Insider_2×InsiderSD2_4	0.0647 ***			0.1999 ***		
	(0.0082)			(0.0221)		
Insider_2×InsiderSD2_5	0.0645 ***			0.2105 ***		
	(0.0082)			(0.0221)		
FIO_1×FIOSD1_1		-0.0431 **			0.0934	
		(0.0198)			(0.0592)	
FIO_1×FIOSD1_2		-0.0027			0.1292 **	
		(0.0175)			(0.0524)	
FIO_1×FIOSD1_3		-0.0271 *			0.1137 **	
		(0.0149)			(0.0446)	
FIO_1×FIOSD1_4		0.0114			0.1198 ***	
		(0.0104)			(0.0311)	
FIO_1×FIOSD1_5		0.0112			0.0793 ***	
		(0.0090)			(0.0271)	
FIO_2×FIOSD2_1			0.0061			0.1606 ***
			(0.0216)			(0.0619)

Table III (continued)

Variables	*PMDA*	*CBPMRM*
FIO_2×FIOSD2_2	-0.0023	0.1096 *
	(0.0196)	(0.0562)
FIO_2×FIOSD2_3	0.0285 *	0.0791 *
	(0.0161)	(0.0461)
FIO_2×FIOSD2_4	-0.0018	0.0909 ***
	(0.0120)	(0.0342)
FIO_2×FIOSD2_5	0.0043	0.0582 **
	(0.0101)	(0.0289)
DIO_1×DIOSD1_1	-0.1598	0.0153
	(0.1764)	(0.5287)
DIO_1×DIOSD1_2	0.0164	-0.1778
	(0.1097)	(0.3288)
DIO_1×DIOSD1_3	0.1629 **	0.2958
	(0.0686)	(0.2056)
DIO_1×DIOSD1_4	0.0911 ***	0.3566 ***
	(0.0343)	(0.1029)
DIO_1×DIOSD1_5	0.0552 ***	0.4076 ***
	(0.0165)	(0.0495)

Table III (continued)

Variables	*PMDA*	*CBPMRM*
DIO_2×DIOSD2_1	-0.4770 *	0.8180
	(0.2703)	(0.7735)
DIO_2×DIOSD2_2	-0.0987	-0.1090
	(0.1580)	(0.4522)
DIO_2×DIOSD2_3	0.0432	0.2334
	(0.0891)	(0.2550)
DIO_2×DIOSD2_4	0.1092 ***	0.2907 **
	(0.0418)	(0.1196)
DIO_2×DIOSD2_5	0.0452 **	0.4449 ***
	(0.0205)	(0.0586)
Director_1×DirectorSD1_1	0.0587 ***	0.2428 ***
	(0.0105)	(0.0285)
Director_1×DirectorSD1_2	0.0549 ***	0.2776 ***
	(0.0110)	(0.0298)
Director_1×DirectorSD1_3	0.0559 ***	0.2735 ***
	(0.0107)	(0.0289)
Director_1×DirectorSD1_4	0.0576 ***	0.2761 ***
	(0.0107)	(0.0289)

Table III (continued)

Variables	*PMDA*	*CBPMRM*
Director_1×DirectorSD1_5	0.0500 ***	0.2511 ***
	(0.0102)	(0.0276)
Director_2×DirectorSD2_1	0.0648 ***	0.2905 ***
	(0.0112)	(0.0307)
Director_2×DirectorSD2_2	0.0655 ***	0.3134 ***
	(0.0114)	(0.0310)
Director_2×DirectorSD2_3	0.0661 ***	0.3173 ***
	(0.0113)	(0.0307)
Director_2×DirectorSD2_4	0.0655 ***	0.3137 ***
	(0.0111)	(0.0302)
Director_2×DirectorSD2_5	0.0666 ***	0.2993 ***
	(0.0103)	(0.0281)
Manager_1×ManagerSD1_1	0.0774	0.3256 *
	(0.0728)	(0.1974)
Manager_1×ManagerSD1_2	0.0044	0.1054
	(0.0983)	(0.2667)
Manager_1×ManagerSD1_3	0.1608 *	0.2881
	(0.0864)	(0.2343)

Table III (continued)

Variables	*PMDA*						*CBPMRM*					
Manager_1×ManagerSD1_4					0.1478 **						-0.0022	
					(0.0641)						(0.1739)	
Manager_1×ManagerSD1_5					0.1550 ***						0.3540 **	
					(0.0532)						(0.1443)	
Manager_2×ManagerSD2_1						0.0338						0.3976
						(0.0956)						(0.2608)
Manager_2×ManagerSD2_2						-0.0224						-0.0648
						(0.0996)						(0.2719)
Manager_2×ManagerSD2_3						0.1269						0.2724
						(0.1036)						(0.2825)
Manager_2×ManagerSD2_4						0.1241 *						-0.0143
						(0.0741)						(0.2021)
Manager_2×ManagerSD2_5						0.1574 ***						0.2222
						(0.0546)						(0.1490)
SlackLeverage	0.0857 ***	0.0868 ***	0.0650 ***	0.0785 ***	0.0837 ***	0.0812 ***	0.3201 ***	0.3229 ***	0.3430 ***	0.3405 ***	0.3196 ***	0.3094 ***
	(0.0061)	(0.0062)	(0.0059)	(0.0059)	(0.0063)	(0.0062)	(0.0165)	(0.0167)	(0.0176)	(0.0169)	(0.0170)	(0.0168)
SlackDebtEBITDA	1.13E-06	1.19E-06	1.40E-06	1.61E-06	4.07E-07	2.97E-07	-1.33E-06	-1.39E-06	-5.71E-06	-6.10E-06	-4.40E-06	-2.12E-06
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

Table III (continued)

Variables	*PMDA*						*CBPMRM*					
Size	0.0108 ***	0.0112 ***	0.0170 ***	0.0203 ***	0.0136 ***	0.0129 ***	0.0209 ***	0.0214 ***	0.0350 ***	0.0333 ***	0.0297 ***	0.0265 ***
	(0.0010)	(0.0010)	(0.0011)	(0.0010)	(0.0010)	(0.0010)	(0.0027)	(0.0027)	(0.0032)	(0.0029)	(0.0027)	(0.0027)
MTB	-0.0002 ***	-0.0002 ***	-0.0022 ***	-0.0025 ***	-0.0003 ***	-0.0002 ***	-0.0005 ***	-0.0005 ***	-0.0027 ***	-0.0018 ***	-0.0008 ***	-0.0004 ***
	(0.0000)	(0.0000)	(0.0002)	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)	(0.0006)	(0.0004)	(0.0002)	(0.0001)
Auditor	-0.0026	-0.0031	0.0001	0.0027	-0.0013	-0.0028	-0.0084	-0.0097	-0.0050	-0.0012	-0.0020	-0.0090
	(0.0026)	(0.0026)	(0.0023)	(0.0023)	(0.0026)	(0.0026)	(0.0069)	(0.0070)	(0.0069)	(0.0067)	(0.0071)	(0.0070)
AuditorOpinion	0.0041 ***	0.0039 ***	0.0014	0.0022	0.0042 ***	0.0040 ***	0.0130 ***	0.0125 ***	0.0107 ***	0.0125 ***	0.0144 ***	0.0136 ***
	(0.0015)	(0.0015)	(0.0013)	(0.0013) *	(0.0015)	(0.0015)	(0.0040)	(0.0040)	(0.0038)	(0.0038)	(0.0040)	(0.0040)
Observations	8474	8378	6664	7106	8000	8129	8474	8378	6664	7106	8000	8129
Adj. R^2	0.2538	0.2540	0.3421	0.3639	0.2923	0.2807	0.4276	0.4241	0.4814	0.4956	0.4539	0.4404
LM test	449 ***	439 ***	487 ***	536 ***	612 ***	542 ***	1328 ***	1300 ***	937 ***	1073 ***	1306 ***	1329 ***
Hausman test	159 ***	159 ***	273 ***	348 ***	141 ***	166 ***	167 ***	165 ***	252 ***	244 ***	181 ***	188 ***

Note: *IOSD1_1* to *IOSD1_5* and *IOSD2_1* to *IOSD2_5*: the quintile institutional stability during one (two) year(s) before earnings announcement at the end of calendar year, defined as a dummy variable coded 1 if their standard deviation is *i*th quintile, *i* from 1 to 5, 0 otherwise; *InsiderSD1_1* to *InsiderSD1_5* and *InsiderSD2_1* to *InsiderSD2_5*: the quintile insider stability during one (two) year(s) before earnings announcement at the end of calendar year, defined as a dummy variable coded 1 if their standard deviation is *i*th quintile, *i* from 1 to 5, 0 otherwise; *FIOSD1_1* to *FIOSD1_5* and *FIOSD2_1* to *FIOSD2_5*: the quintile foreign institutional stability during one (two) year(s) before earnings announcement at the end of calendar year, defined as a dummy variable coded 1 if their standard deviation is *i*th quintile, *i* from 1 to 5, 0 otherwise; *DIOSD1_1* to *DIOSD1_5* and *DIOSD2_1* to *DIOSD2_5*: the quintile domestic institutional stability during one (two) year(s) before earnings announcement at the end of calendar year, defined as a dummy variable coded 1 if their standard deviation is *i*th quintile, *i* from 1 to 5, 0 otherwise; *DirectorSD1_1* to *DirectorSD1_5* and *DirectorSD2_1* to *DirectorSD2_5*: the quintile director-holding stability during one (two) year(s) before earnings announcement at the end of calendar year, defined as a dummy variable coded 1 if their standard deviation is *i*th quintile, *i* from 1 to 5, 0 otherwise; *ManagerSD1_1* to *ManagerSD1_5* and

ManagerSD2_1 to *ManagerSD2_5*: the quintile managerial holding stability during one (two) year(s) before earnings announcement at the end of calendar year, defined as a dummy variable coded 1 if their standard deviation is *i*th quintile, *i* from 1 to 5, 0 otherwise; Other variables are defined in Table I. The standard errors are reported in parentheses. LM test indicates Lagrange multiplier test. *, ** and *** indicate significance level at 10%, 5% and 1%, respectively.

Table III also presents the influences of the interactions between the proportions of director or manager holdings and their holding stability (*DirectorSD1_1* to *DirectorSD1_5*; *DirectorSD2_1* to *DirectorSD2_5*; *managerSD1_1* to *managerSD1_5*; *managerSD2_1* to *managerSD2_5*) on earnings management. The results show that the interaction terms of director holding proportions and their holding stability are all positively and significantly associated with earnings management at the 1% level, denoting that firms with large director holdings, no matter stable or not, intend to undertake discretionary accrual manipulation, but do not use real earnings manipulation to sacrifice long-run firm value. The coefficients on *manager_1*×*managerSD1_3*, *manager_1*×*managerSD1_4*, *manager_1*×*managerSD1_5*, *manager_2*×*managerSD2*_4 and *manager_2*×*managerSD2_5* associated with *PMDA* are all significantly positive at 10% level. It suggests that managers with unstable and large holdings undertake discretionary accruals manipulation. Only H3a is partially supported.

V. Conclusion

The influences of institutional investors and insider owners on discretionary accruals or real earnings management are extensively explored in this study with various performance-matched measures. Considering the nature of their holdings, and using 8,474 firm-year observations in Taiwan between 2002 and 2011, I find the following results:

Firstly, the institutions that invest heavily and unstably in firms may impose on managers for upholding short-term earnings growth in order to discover profitable opportunities, whilst the ones with low holdings do not monitor manager's real earnings manipulating activities. The higher the insider holdings, the more significant the discretionary accrual manipulation, but these insiders are more hostile towards the real earnings manipulation.

Secondly, the firms substantially invested by institutions, regardless of foreign or domestic ones, can significantly reduce real earnings manipulation while those heavily and unstably invested by domestic institutions attempt to increase discretionary accruals and those stably invested by foreign institutions significantly alleviate accrual manipulation.

Thirdly, the directors are the dominant drivers of accrual management, but they do not undertake real earnings management which affects future profitability.

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