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EARNINGS MANAGEMENT, CEO DOMINATION, AND GROWTH OPPORTUNITIES
- EVIDENCE FROM TAIWAN

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Abstract

Prior research on the relation between corporate governance characteristics and earnings management suggests that corporate governance controls are important to mitigate firm's opportunistic behavior. The study addresses the impact of regulatory changes of the Corporate Governance Best-Practice Principles (CGBPP) on earnings management phenomenon for Taiwanese listed companies. We find that listed firms in Taiwan engage less earnings management following the enactment of the CGBPP. This study also incorporates an important environmental factor, growth opportunities, in this emerging market to examine whether independent (i.e., non-CEO dominated) corporate boards are associated with less earnings management. We find that high-growth firms with independent corporate boards in the post-CGBPP era are associated with less earnings management. In addition, we also provide evidence that independent corporate boards are associated with less earnings management. Overall, our findings shed light on the importance of corporate governance reforms in mitigating opportunistic earnings management behavior in an emerging market where growth-option rich industries are prevalent.

Keywords: CEO dominance; growth opportunities; earnings management; corporate governance, Taiwan

1. Introduction

Recent high-profile accounting scandals involving once well-respected companies such as Enron and WorldCom have raised concerns about the credibility of financial reporting and the quality of corporate governance mechanisms. Earnings management has also been a consistent concern of regulators and practitioners for several years [e.g., Levitt, 1998], because this erodes the quality of financial reporting. Prior studies

address the importance of corporate governance on earnings management in the U.S., U.K., or Canada [e.g., Beasley, 1996; Klein, 2002; Park and Shin, 2004; Peasnell et al., 2005] and in emerging markets [e.g. Kim and Yi, 2006; Chen et al., 2007].

We differ from prior studies [e.g., Chen et al., 2007] that examine the relation between corporate governance characteristics and earnings management by first focusing on whether the magnitude of earnings management measured by discretionary accruals is lowered following corporate governance reforms in Taiwan, because strengthening corporate governance function will enhance the creditability of financial reporting. Furthermore, for responding to calls for more effective governance mechanisms, Taiwan Stock Exchange Corporation (TSEC) and GreTai Securities Market (GTSM) promulgated the Corporate Governance Best-Practice Principles (CGBPP) to restore the eroded public confidence about the integrity of financial reporting. Chen et al. [2007] examine the association between corporate governance mechanisms mandated by the CGBPP and earnings management. However, Chen et al. [2007] did not examine the effect of CEO duality, one of the mandatory features in the CGBPP, on earnings management.[1] In this study, we complement Chen et al. [2007] by investigating the association between CEO domination and earnings management, because CEO dominance reduces a board's effectiveness to provide oversight over managerial decisions and activities [Vance, 1983] and thus is likely to create incentives for opportunistic earnings management. Prior studies find that independent corporate boards provide an effective monitoring mechanism that enhances the board's ability to properly execute its oversight function and discharge its governance responsibility [Lorsch and MacIver, 1989]. Therefore, we posit that firms with independent corporate boards following the enactment of the CGBPP are associated with less earnings management.(Is there any possibility the independent corporate boards even without the CGBPP would have similar results?)

We also differ from prior studies investigating the relation between corporate governance characteristics and earnings management by incorporating the role of growth opportunities, a prevailing environmental factor in Taiwan, because the extent to which corporate governance controls can provide effective monitoring is likely to be conditioned on a firm's production-investment attributes characterized as the mix of assets-in-place versus growth options [Andersen et al., 1993]. Contracting theory suggests that high-growth firms, with lower asset-in-place and higher future discretionary investment expenditures by managers [Myers, 1977], are more difficult to observe and monitor [e.g., Gaver and Gaver, 1993] and thus managers in high-growth firms are more likely to have opportunistic behavior [Watts and Zimmerman, 1986; Skinner, 1993]. Moreover, controls in high-growth firms are less likely to be effective [Andersen et al., 1993], and thus a weak internal control environment has the potential to allow "intentionally biased accruals through earnings management" [Doyle et al., 2007]. Therefore, high growth firms are more likely to engage in earnings management.

Agency theory suggests that corporate controls can align managers' interests with shareholders' interests and thus can mitigate agency conflicts between them [Fama and Jensen, 1983]. When we focus on the control aspects of independent corporate boards that can provide effective oversight function [Lorsch and MacIver, 1989] and also consider the influences of enactment of the CGBPP regulation, we expect the

[1] Chen et al. [2007] did not examine the effect of CEO duality on earnings management, which is due to the data availability. Now, CEO duality data are available in the Corporate Governance Module of Taiwan Electronic Journal database.

positive relation between growth opportunities and earnings management will be moderated by independent corporate boards.

Institutional environments in Taiwan provide an ideal setting for examining the relation between CEO domination, growth opportunities, and earnings management following the regulatory changes of the CGBPP. First, weak corporate governance have been cited as one of the causes of the East Asian financial crisis of 1997 to 1998 [Mitton, 2002]. Since 1998, Taiwan securities regulator, now the Securities and Futures Bureau (SFB), has tired its best to advocate corporate governance to public companies. The newly enacted CGBPP requires firms (i.e., IPO firms in the first stage) starting 2002 to separate CEO and board chairman and enhance the quality of board oversight. Second, high-tech and other growth-driven firms such as Electronics and Electric & Machinery are comprised of more than 60 percent of Taiwan listed companies, which provides us a growth-opportunity setting to examine the relation between corporate governance characteristics and earnings management in this emerging market.

We select the sample from the Market Observation Post System (MOPS) and the Taiwan Economic Journal (TEJ) database, which includes the companies listed on the TSEC and GTSM.[2] Our sample period covers the pre-CGBPP period (year 2000 and 2001) and the post-CGBPP period (year 2002 and 2003), which allows us to examine earnings management phenomenon following the enactment of the CGBPP starting early year 2002, and further examine whether changes in regulation influences the association between earnings management, CEO dominance, and growth opportunities.

In this study, we run a regression model to examine whether earnings management phenomenon becomes less prevalent following the enactment of the CGBPP. We use the CGBPP dummy variable, as the research variable, to capture the role of regulation changes under the CGBPP starting year 2002, whereas earnings management is measured by absolute discretionary accruals. Our results suggest that, as compared to the pre-CGBPP period, listed firms in Taiwan engage less earnings management following the enactment of the CGBPP.

Since this paper focuses on the role of the CGBPP regulation starting 2002, our primary analyses are mainly based on the post-CGBPP sample. We conduct regression analyses to examine whether independent (i.e., non-CEO-dominated) corporate boards, and high-growth firms with independent corporate boards are associated with less earnings management. Growth opportunities are identified by an investment opportunity set (IOS) factor, which is based on three growth proxies (i.e., market-to-book equity ratio, market-to-book assets ratio, and the ratio of property, plant, and equipment to firm value). Our results indicate that high-growth firms are more likely to engage in earnings management. Further, we find that high-growth opportunities firms with independent corporate boards are associated with less earnings management for the post-CGBPP sample.

In order to provide better insights into the implementation of the CGBPP into the firms *not* required to separate CEO and board chairman in the post-CGBPP era, our analyses further focus on the non-IPO firms under the post-CGBPP sample. We continue to find that high-growth firms with independent corporate boards engage in

[2] The MOPS was established by the TSEC and GTSM in June 2002. It provides a channel for public companies to submit all the information required by TSEC/GTSM to http://newmops.tse.com.tw/. The required information is as follows: financial statements, financial forecasts, proxy statements, information related to directors, supervisors, and managers, such as changes in shareholdings and pledges of shares, dividends, material information, etc.

less earnings management. When we further test our hypotheses based on the full sample, we find that firms with independent corporate boards are associated with less earnings management.

Our study extends the existing literature linking corporate governance and earnings management by incorporating growth opportunities, an organizational environmental factor, in an emerging market with growth option-rich industries, and by examining the role of regulatory changes in an emerging market where weak corporate governance is prevalent, which can provide better insights and understanding of how corporate boards respond to changes in regulation for enhancing the integrity of financial reporting. Second, we extend Chen et al. [2007] by investigating the association between CEO domination and earnings management and provide evidence that firms with independent (i.e., non-CEO-dominated) corporate boards are associated with less earnings management while controlling for other features as required by the CGBPP.

The remainder of this paper is organized as follows. The next section presents the corporate governance environment in Taiwan. Section 3 describes the related research and hypothesis development, followed by the research design and sample description in Section 4. Section 5 discusses the empirical test results and additional analyses, and section 6 concludes.

2. Corporate Governance Environment in Taiwan

2.1. Background

Although the concept of "corporate governance" did not appear in Taiwan until the 1997 Asian financial crisis, some internal governance systems, such as enhancing information disclosure and transparency and implementing internal control systems, were required by the Company Law and Securities Law.[3] The regulatory two-tier structure of corporations in Taiwan consists of a board of directors and supervisors, which differs from the board single apex decision control system in public corporations described in Fama and Jensen [1983], but is intended to assume the same oversight responsibilities in the best interests of shareholders.

The board of directors in Taiwan should consist of at least three directors (§192 Company Law), and boards of public companies should include at least five directors (§17 Supplementary Rules to TSEC Listing Rules). This two-tier regulatory structure has a unique characteristic that supervisors are responsible for monitoring the directors while directors are responsible for managing the company. Supervisors in Taiwan do not participate in decision-making or the voting process, but they are designated to monitor the board of directors. They are responsible for providing an independent and objective review of the financial reporting process, internal controls, and the audit function. Therefore, supervisors in Taiwan can wield significant oversight power.

Taiwanese listed companies are characterized by family-control, group-affiliation, cross-shareholding and lower institutional ownership. Family-control is a dominant feature of small- and medium-sized enterprises in Taiwan, and even typical

[3] Neither the Company Law nor Securities Law is sufficient to provide effective mechanisms to monitor the self-interest of managers or owners. Taiwan was heavily dampened by the 1997 Asian Financial Crisis. Several explanations are proposed to explain the 1997 Asian Financial Crisis: unfavorable macroeconomic conditions, weak corporate governance, and lack of reliable accounting information.

of listed companies [Claessens et al., 2000; La Porta et al., 1999; Yeh et al., 2001].[4] Most businesses in Taiwan start from a primary industry and gradually diversify to reduce risk and expand their business. Group-affiliated companies may also use cross-shareholding to strengthen their control; however, funds transferred within the group are less transparent. Under the 2001 amended Company Law (§167), cross-shareholding among affiliated corporations is prohibited. Individual investors, constituting around 80 percent of the trading volume, are the major participants in the Taiwanese stock market.[5] According to a report by the Financial Supervisory Commission (FSC), foreign institutional investors own about 10.9 percent, domestic institutional investors hold 11.6 percent, and domestic individual investors own 75.9 percent of outstanding shares in year 2004 [SFB, 2005].[6]

2.2. The Newly Enacted CGBPP

The Taiwan securities regulator (SFB) has advocated improved corporate governance for public companies since 1998. Well-publicized accounting scandals in the U.S., such as Enron and WorldCom, have triggered the regulator to enact the CGBPP for companies listed on TSEC and GTSM. Its contents consist of protection of shareholders' rights, functions and responsibilities of Boards and Supervisors (i.e., the Supervisory Board), the role of stakeholders in corporate governance, disclosure and transparency, and the special managerial circumstances that companies face [SFI, 2005].

Under the CGBPP, it is mandatory for firms applying for initial public offerings (IPOs) on TSEC (starting February 22, 2002) and GTSM (starting February 25, 2002) to *first* adopt the newly enacted features including: (1) increased board independence (at least two independent directors and one independent supervisor on the board); (2) separation of board chairman and CEO; (3) establishment of independent committees on the board (such as an audit committee, nomination committee, and compensation committee); (4) disclosure of corporate governance practices; and (5) Director & officer liability insurance for board members. Securities firms and other financial institutions, such as banks, funds and insurance companies, have followed suit to develop their own best-practice principles. Starting January 1, 2007, all public companies must establish audit committees to replace independent supervisors, and appoint independent directors as required by the Securities Law (§183 and §14-2).

[4] Claessens et al. [2000] find that 80 percent of management in Taiwanese listed companies are from the controlling family. Yeh et al. [2001] report that 76 percent of Taiwanese listed companies are controlled by family shareholders.

[5] Taiwan opened its securities market to foreign investors in three stages. It first allowed foreign investment in its securities markets indirectly through investment funds in 1982. Then, it opened the market for foreign institutional investors in 1990. In 1996, all foreign institutions and individuals were allowed to invest in Taiwan's securities market.

[6] On July 1, 2004, the Security and Future Commission, the U.S. Securities Exchange Commission [SEC] counterpart in Taiwan, was renamed as the Securities and Futures Bureau (SFB), and is directly governed by the Financial Supervisory Commission [FSC]..

3. Related Research and Hypothesis Development

Agency theory suggests that separation of ownership and control leads to a divergence between manager and owner interests [Jensen and Meckling, 1976].[7] Thus monitoring managerial decisions becomes essential for boards of directors to assure that shareholders' interests are protected [Fama and Jensen, 1983]. However, the fundamental agency problem for listed companies in emerging markets is not a conflict of interest between outside investors and managers as argued by Berle and Means [1932], but a conflict of interest between controlling shareholders and minority shareholders [Shleifer and Vishny, 1997]. Effective monitoring from board of directors is very important to ensure reliable and complete financial reporting. Since earnings management misleads users of financial statements by providing them with false information about a firm's true operating performance, the internal corporate governance of the board of directors serves a monitoring role in constraining the occurrence of earnings management.

3.1. Earnings Management and Corporate Governance Best-Practice Principles

Earnings management has been of consistent concern to regulators [e.g., Levitt, 1998], because it erodes the quality of financial reporting. Prior studies address the importance of corporate governance on earnings management in the U.S., U.K., or Canada [e.g., Beasley, 1996; Bédard et al., 2004; Klein, 2002; Park and Shin, 2004; Peasnell et al., 2005; Xie et al., 2003] and importance of corporate governance in emerging markets [e.g. Kim and Yi, 2006; Chen et al., 2007]. Their results suggest that better corporate governance characteristics are associated with reduced levels of earnings management. Specifically, Chen et al. [2007] examine the linkage between corporate governance mechanisms mandated by regulatory reforms in Taiwan and earnings management. They find that firms with independent supervisors and firms with independent directors having financial expertise are associated with lower levels of earnings management. However, this study differs from Chen et al. [2007] by examining whether earnings management phenomenon becomes less prevalent following the enactment of the CGBPP. Given better corporate governance mechanisms associated with lower levels of earnings management [e.g., Bédard et al., 2004], we expect that firms following the enactment of the CGBPP have lower levels of earnings management than firms before the enactment of the CGBPP.

Hypothesis 1: Ceteris paribus, firms following the enactment of the CGBPP have lower levels of earnings management than firms before the enactment of the CGBPP.

3.2. CEO Dominance following the enacted CGBPP and Earnings Management

Board, the common apex of the decision control system in public corporations, is a market-induced, low-cost mechanism for monitoring management [Fama, 1980; Fama

[7] Prior studies suggest that the fundamental agency problem for listed companies in emerging markets is not conflict of interest between outside investors and managers as Berle and Means [1932] argued, but conflict of interest between controlling shareholders and minority shareholders [Shleifer and Vishny 1997].

and Jensen, 1983]. Boards of directors are charged with ensuring that chief executive officer (CEO) carry out their duties in a way serving the best interests of shareholders [Vance, 1983]. Therefore, boards can be seen as serving as a monitoring device that helps align CEO and shareholder interests. However, CEOs have higher structural power, stemming from their hierarchical position and relational power, based on expertise and prestige, than other organizational members and non-executive directors [Fama and Jensen, 1983]. A CEO who is also the chairperson of his or her firm's board of directors (CEO duality) can dominate the agenda and content of board meetings, give outsiders most of the information they receive about an organization [Mallette and Fowler, 1992, 1028], and control the process of nominating directors, facilitating consideration of individuals who are loyal to the CEO-chairperson [Berg and Smith, 1978].

Such a leadership structure could promote CEO entrenchment, and result in a potential conflict of interest situation that reduces shareholder wealth [Jensen and Meckling, 1976]. Since the CEO in such a case will in fact be monitoring his own decisions and activities, CEO domination will reduce the board's effectiveness to provide oversight over managerial decisions and activities [Vance, 1983]. Moreover, CEO domination may lead to recording important transactions that are not in the best interest of the entity. These arguments suggest that a weak internal control mechanism in a firm, as a result of CEO domination, is likely to have a negative impact on the reliability of the firm's accounting system. Moreover, a weak internal control environment has the potential to allow "intentionally biased accruals through earnings management" [Doyle et al., 2007].[8] Therefore, CEO domination is likely to create incentives for opportunistic earnings management. For example, Dechow et al. [1996] provide evidence that certain elements of corporate governance structures are more commonly associated with earnings manipulations. Specifically, they find that U.S. firms subject to SEC enforcement actions resulting from earnings manipulations are more likely to have an insider dominated board and more likely to have CEO duality. Their results are consistent with the arguments that firms with CEO-dominated boards or insider dominated boards are more likely to be associated with lower levels of monitoring and /or weaker internal control systems.

In Taiwan, under the Article 23 of the newly enacted CGBPP, a TSEC/GTSM listed company should separate CEO and board chairman to strengthen board governance, because in an independent corporate board no single individual has absolute power. Independence of corporate boards has been strongly advocated on the ground that it enhances the board's ability to properly execute its oversight function and discharge its governance responsibility [Lorsch and Maclver, 1989]. Prior studies support the view that independent corporate boards (i.e., board without CEO dominance) improve corporate performance [e.g., Jensen, 1993; Rechner and Dalton, 1991]. Therefore, we expect that the independence of corporate boards in terms of the CEO and chairman being different persons is more likely to result in more effective monitoring and thus less likely to engage in earnings management.

Hypothesis 2: Ceteris paribus, firms with independent corporate boards are associated with less earnings management.

[8] By definition, when there is a material weakness in internal control, there is "more than a remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected [PCAOB 2004, paragraph 9].

3.3. CEO Dominance following the enacted CGBPP, Growth Opportunities, and Earnings Management

Although the newly enacted CGBPP requires a separation of CEO and board chairman to strengthen board governance, the extent to which independent corporate boards (i.e., boards without CEO dominance) can provide effective monitoring is also likely to be conditioned on a number of factors including a firm's production-investment characteristics or attributes. Andersen et al. [1993] suggest that different production-investment attributes characterized in broad terms as the mix of assets-in-place versus growth options are linked to different types of monitoring mechanisms.

The accounting literature has extensively examined the impact of corporate growth opportunities on managerial behavior and decision making [Watts and Zimmerman, 1986]. Firms with high-growth opportunities (i.e., lower assets-in-place) are reflected by a higher proportion of future discretionary investment expenditures by managers [Myers, 1977], and are thus more difficult to observe and monitor [Watts and Zimmerman, 1986; Gaver and Gaver, 1993].[9] Managers in high-growth firms are more likely to have opportunistic behavior [Watts and Zimmerman, 1986; Skinner, 1993], which will further aggravate the situation of lower observability in growth firms. As a result of lower observability of managers' activities and higher probability for managers' opportunistic behavior, growth firms will be more risky than their non-high growth counterparts [Smith and Watts, 1992]. Moreover, controls in high-growth firms are less likely to be effective [Andersen et al., 1993], given the control system that has been installed may keep pace only with the original scale of operations. A weak internal control environment also has the potential to allow "intentionally biased accruals through earnings management" [Doyle et al., 2007]. Therefore, high growth firms are more likely to demonstrate earnings management characteristics. In addition, agency theory suggests that corporate governance controls can align managers' interests with shareholders' interests and thus can reduce agency costs resulting from information asymmetry [Fama and Jensen, 1983].

When we focus on the control aspects of independent corporate boards that can provide effective oversight function and also consider the influences of changes in the CGBPP regulation, we expect the positive relation between growth opportunities and earnings management will be moderated by independent corporate boards. In other words, we posit that independent corporate boards are expected to be associated with less earnings management for firms with high-growth opportunities.

Hypothesis 3: Ceteris paribus, high-growth opportunities firms with independent corporate boards are associated with less earnings management.

4. Research Design and Sample Description

4.1. Development of IOS Factor for Growth Opportunities

Different proxies have been used for growth opportunities in accounting research. Some studies have used a single growth variable as a proxy for growth opportunities

[9] The assets-in-place, which represent tangible assets such as property, plants, and equipment are easily identifiable and their valuation can be easily determined and monitored, whereas the value of investment options, characterized by future investments, are less readily observable. Discretionary expenditures include capacity expansion projects, new product lines, maintenance and replacement of existing assets.

[Baber et al., 1996], while others have developed a composite factor based on several growth variables [e.g., Gaver and Gaver, 1993; Gul and Tsui, 1998;Tsui et al., 2001].

The use of a composite factor analysis has been considered superior to a single observable proxy because it condenses pairwise correlations between observable variables and captures variation common to these observable variables [Baber et al., 1996]. Thus, a single factor can reflect the growth opportunities supported by several observable proxies. The selection of observable proxies to develop the growth factor differs with different studies [Smith and Watts, 1992; Gaver and Gaver, 1993; Skinner, 1993; Baber et al., 1996; Gul and Tsui, 1998; Tsui et al., 2001]. Following Gul and Tsui [1998] and Tsui et al. [2001], we use the following three proxies to reflect the growth opportunities in a firm, and are also used to develop a growth factor for each firm, which is generally known as Investment Opportunities Set (IOS).[10]

The first proxy is market-to-book equity ratio (MBEQ), the ratio of market value of equity to the book value of equity, because the ratio incorporates the value of the firm's future investment opportunities. A higher MBEQ ratio indicates a greater value of growth opportunities. The second proxy is market-to-book assets ratio (MBASS), which represents the ratio of the market value of assets to the book value of assets. A higher ratio of MBASS indicates the ratio of assets-in-place to the market value is lower, which in turn suggests that the value of growth opportunities is high. The third proxy, PPE, is the ratio of gross plant, property, and equipment to the market value of the firm. It has been argued that past investments in gross plant, property and equipment can also characterize assets-in-place [Skinner, 1993]. The higher the PPE is, the higher the assets-in-place will be, and therefore the lower the growth opportunities [Gupta, 1995].

4.2. Discretionary Accruals

Accruals are likely to capture evidence of earnings management because they reflect managers' accounting estimates and accounting choices. Dechow et al. [1995] provide evidence that the modified Jones model is the most powerful model to detect earnings management among the alternative models to measure unexpected accruals. Therefore, we use the cross-sectional modified Jones model and incorporate prior period ROA as suggested by Kothari et al [2005]. The discretionary accruals are estimated as follows. Total accruals are measured as net income minus cash flows from operation.

$$TA_{i,t} = NI_{i,t} - CFO_{i,t} \quad (1)$$

Then discretionary accruals, a proxy for earnings management, are estimated by subtracting nondiscretionary accruals from total accruals, where all accrual variables are scaled by lagged total assets to control for potential scale bias. Normal levels of working capital accruals related to sales are controlled through the changes in revenue adjusted for changes in accounts receivable. Normal levels of depreciation expense and related deferred tax accruals are controlled through the property, plant and equipment. Lagged $ROA_{i,t}$ is added as suggested by Kothari et al. [2005]. Finally, the residual (ε_{it}) from the regression is the discretionary accruals.

[10] The price-based proxies are based on the idea that growth firms will have higher market values relative to assets in place if growth prospects of the firms are at least partially impounded in stock prices.

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_1(\frac{1}{A_{i,t-1}}) + \alpha_2(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}) + \alpha_3(\frac{PPE_{i,t}}{A_{i,t-1}}) + \alpha_4 ROA_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

$$\frac{NDA_{i,t}}{A_{i,t-1}} = \hat{\alpha}_1(\frac{1}{A_{i,t-1}}) + \hat{\alpha}_2[\frac{(\Delta REV_{i,t} - \Delta REC_{i,t})}{A_{i,t-1}}] + \hat{\alpha}_3(\frac{PPE_{i,t}}{A_{i,t-1}}) + \hat{\alpha}_4 ROA_{i,t-1} \quad (3)$$

$$\frac{DA_{i,t}}{A_{i,t-1}} = \frac{TA_{i,t}}{A_{i,t-1}} - \{\hat{\alpha}_1(\frac{1}{A_{i,t-1}}) + \hat{\alpha}_2[\frac{(\Delta REV_{i,t} - \Delta REC_{i,t})}{A_{i,t-1}}] + \hat{\alpha}_3(\frac{PPE_{i,t}}{A_{i,t-1}}) + \hat{\alpha}_4 ROA_{i,t-1}\} \quad (4)$$

where:

$TA_{i,t}$	=	total accruals for company i in year t, defined as above.
$NI_{i,t}$	=	net income before discontinued segments and extraordinary items.
$CFO_{i,t}$	=	cash flows from operations.
$\Delta REV_{i,t}$	=	change in revenue for company i in year t.
$\Delta REC_{i,t}$	=	change in receivables for company i in year t.
$PPE_{i,t}$	=	net property, plant and equipment for company i in year t.
$ROA_{i,t-1}$	=	return on assets for company i in year t-1.
$A_{i,t-1}$	=	total assets for company i in year t-1.
$NDA_{i,t}$	=	nondiscretionary accruals for company i in year t.
$DA_{i,t}$	=	discretionary accruals for company i in year t.
$\varepsilon_{i,t}$	=	residual for company i in year t.

4.3. Regression Model

We first use the following OLS regression model to test whether earnings management phenomenon, measured by absolute discretionary accruals (ADA), becomes less prevalent following the enactment of the CGBPP. We use a dummy variable, CGBPP, to capture the role of regulation changes under the CGBPP starting year 2002.

$$ADA=\alpha+\beta_1 CGBPP+\beta_2\ SIZE+\beta_3\ LEV+\beta_4\ BIG5+\beta_5\ LAGADA+\beta_6\ CFFO+\beta_7\ F\_INSTI+\beta_8\ A\_CHNI+\beta_9\ ROA^2+\beta_{10} IPO \quad (5)$$

where:

ADA	=	absolute value of discretionary accruals calculated by using the modified Jones model after controlling for firm performance.
CGBPP	=	indicator variable, 1 = firms in years 2002 or 2003, and 0= firms in year 2000 and 2001.
SIZE	=	Ln(sales).
LEV	=	ratio of total debt to total assets.
BIG5	=	indicator variable coded 1 if the auditor is a Big 5 audit firm; 0 otherwise.
LAGADA	=	absolute value of discretionary accruals in year t-1 divided by ending total assets in year t-2.

CFFO = operating cash flow deflated by lagged total assets.
F_INSTI = percentage of outstanding common shares held by foreign institutional shareholders.
A_CHNI = the absolute value of change in the current year's income before extraordinary items divided by lagged total assets.
ROA^2 = square of rate of return on lagged total assets.
IPO = indicator variable, 1= an IPO firm; 0 otherwise.

We then replace CGBPP with CEO dominance variables (and growth opportunities factor) in the regression model to test the relation between CEO dominance (CEO), growth opportunities factor (GROWTH), and earnings management (ADA).

$$ADA=\alpha+\beta_1 CEO+\beta_2 GROWTH+\beta_3 CEO*GROWTH+\beta_4 SIZE+\beta_5 LEV+\beta_6 BIG5+\beta_7 LAGADA+\beta_8 CFFO+\beta_9 F\_INSTI+\beta_{10} A\_CHNI+\beta_{11} ROA^2+\beta_{12} IPO+\beta_{13} IPO*CEO \quad (6)$$

where:
CEO = indicator variable, 0 = CEO-dominated board, 1=CEO and board chairman are different persons.
GROWTH = composite factor score obtained from common factor analysis using the following three proxies:
MBEQ = total market value of share outstanding divided by total book value of common equity.
MBASS = (total assets-total common equity + total value of shares outstanding) divided by total assets
PPE = plant, property, and equipment divided by market value of the firm
CEO*GROWTH = interaction between CEO and GROWTH.
IPO*CEO = interaction between IPO and CEO.

The dependent variable proxy for earnings management is the absolute value of discretionary accruals from the modified cross-sectional Jones model [e.g., DeFond and Jiambalvo, 1994; Becker et al., 1998]. This measure captures the combined effect of income-increasing and income-decreasing earnings management. For testing hypothesis 1, the research variable in equation 5 is CGBPP, and we expect its coefficient is significantly negative. For testing hypotheses 2 and 3, the research variables are CEO dominance (CEO), the interaction of CEO dominance and growth opportunities factor (CEO*GROWTH). We expect the coefficient on CEO, and CEO*GROWTH is significantly negative, respectively. The next section briefly explains the role of each of the control variables.

Large companies may have less incentive to engage in earnings management because they are subject to more scrutiny from financial analysts and investors. However, they may have larger discretionary accruals than smaller companies, and thus are more likely to engage in earnings management. Therefore, we control for firm size (SIZE). We control for leverage (LEV) because managers may use discretionary accruals to satisfy debt covenant requirements [DeFond and Jiambalvo, 1994; Sweeney, 1994]. However, DeAngelo et al. [1994] find that financially distressed companies may manage earnings downward to get more concessions from the creditors. Thus, no sign is predicted for this variable.

Prior studies find that firms with Big 5[11] auditors are associated with less earnings management [e.g., Becker et al., 1998; Francis et al., 1999] Therefore, we add a Big 5 indicator variable to capture the effect of a Big 5 auditor on earnings management, and expect a negative coefficient on Big 5. We also add lagged absolute discretionary accruals (LAGADA) to control for the possible effect of prior discretionary accruals that are reversed in the current period to influence the measurement of current period discretionary accruals. Following Lee et al. [2003], we expect the coefficient on LAGADA is positive.

Dechow et al. [1995] find that operating cash flows are negatively associated with discretionary accruals. Therefore, operating cash flows [CFFO] is added as a control variable. Prior studies suggest that institutional shareholders could serve as an effective monitoring mechanism [e.g., Matsumoto, 2002]. In Taiwan, Lee and Liao [2004] find a negative relation between foreign institutional ownership and absolute discretionary accruals. Therefore, we also add foreign institutional ownership (F_INSTI) as a control variable and expect a negative coefficient on F_INSTI. Prior studies suggest that the absolute change in the previous year's income before extraordinary items divided by total assets is positively associated with earnings management [e.g., Bartov et al., 2000; Klein, 2002]. The variable, A_CHNI, is added and its coefficient is expected to be positive. We include squared ROA as Butler et al. [2004] also indicate that the relation between discretionary accruals and profitability may be nonlinear.

For testing hypothesis 1, we add IPO to control for potential incentive of earnings management for IPO firms [Teoh et al., 1998], because IPO firms starting year 2002 are first required to meet corporate governance requirements under the CGBPP. The coefficient on IPO is expected to be positive. For testing hypotheses 2 and 3, we also add IPO*CEO because the CGBPP is mandatory for IPO firms starting 2002 to separate CEO and board chairman, and expect a positive coefficient on IPO*CEO, because management has an incentive to engage in earnings management at the time of an IPO [Teoh et al., 1998].

4.4. Sample Selection

Table 1 provides the details about the sample selection process and sample characteristics. Our sample period covers both the pre-CGBPP period (year 2000 and 2001) and post-CGBPP period (year 2002 and 2003), which allows us to examine earnings management phenomenon following the regulatory changes of the CGBPP starting early year 2002, and the role of corporate governance mechanisms under the CGBPP over earnings management behavior.

Table 1
Sample Selection

Panel A to Panel C: Sample Selection Criteria

	Number of Firm-Year Observations				
Panel A:	**Year 2000**	**Year 2001**	**Year 2002**	**Year 2003**	**Total**
(1)Companies listed in Taiwan Stock Exchange Corporation	531	584	638	669	2,422
(2)Companies listed in GreTai Securities Market	300	333	384	423	1,440

[11] Now Big 4

(3)Companies in Market Observation Post System (MOPS) of TSEC/GTSM	831	917	1,022	1,092	3,862
(4)Exclude - financial service and insurance industries	-54	-63	-68	-68	-253
(5)Exclude - missing financial data in TEJ	-399	-419	-349	-248	-1,415
(6)Subtotal	378	435	605	776	2,194
(7)Exclude-missing data in year 2000 or 2001 for the Pre-CGBPP and Post-CGBPP comparison	-0	-0	-171	-339	-510
Total	378	435	434	437	1,684
Subtotal from (6)	378	435	605	776	2194
Panel B					
(8)Exclude-missing data as to CEO or board chairman from MOPS	-120	-94	-63	-71	-348
(9)Exclude – missing data as to independent directors and supervisors from MOPS	-0	-8	-37	-58	-103
Total (Full Sample)	258	333	505	647	1,743
Panel C	**Year 2000**	**Year 2001**	**Year 2002**	**Year 2003**	**Total**
The Post-CGBPP Sample			505	647	**1,152**

Note:
Since the CGBPP went into effect starting February 22 (February 25) on year 2002 for companies listed in TSEC (GTSM), a company belonging to year 2000 and 2001 (year 2002 and year 2003) is defined as the Pre-CGBPP (Post-CGBPP) sample.

Table 1 (continued)

Panel D: Sample firms by year and by TEJ codes distribution

(1) Full Sample

Industry (Code)	TSEC				GTSM				Total	
	Yr '00	Yr '01	Yr '02	Yr '03	Yr '00	Yr '01	Yr '02	Yr '03	Number	percent
Foods (12)	7	8	12	14	1	1	2	4	49	2.81%
Plastics (13)	13	15	14	15	2	2	2	1	64	3.67%
Textiles (14)	21	20	27	30	3	3	3	4	111	6.37%
Electric & Machinery (15)	12	11	18	21	3	5	8	10	88	5.05%
Appliance & Cable (16)	0	1	0	2	0	0	1	1	5	0.29%
Chemicals (17)	15	16	18	24	2	6	9	14	104	5.97%
Steel & Iron (20)	8	7	11	13	1	2	2	3	47	2.70%
Rubber (21)	0	0	0	1	0	0	1	1	3	0.17%
Electronics (23,24,30)	101	135	205	237	20	41	94	164	997	57.20%
Constructions (25)	12	12	18	18	5	6	6	7	84	4.82%
Transportations (26)	9	12	11	13	0	1	2	2	50	2.87%
Tourism (27)	0	0	0	0	0	0	0	2	2	0.11%
Wholesale & Retail (29)	0	1	2	4	0	0	1	2	10	0.57%
Others (89,98,99)	20	22	27	26	3	6	11	14	129	7.40%
Total	218	260	363	418	40	73	142	229	1,743	100.00%

(2) The Post-CGBPP Sample

Industry (Code)	TSEC		GTSM		Total	
	Yr '02	Yr '03	Yr '02	Yr '03	Number	percent
Foods (12)	12	14	2	4	32	2.78%
Plastics (13)	14	15	2	1	32	2.78%
Textiles (14)	27	30	3	4	64	5.56%
Electric & Machinery (15)	18	21	8	10	57	4.95%
Appliance & Cable (16)	0	2	1	1	4	0.35%
Chemicals (17)	18	24	9	14	65	5.64%
Steel & Iron (20)	11	13	2	3	29	2.52%
Rubber (21)	0	1	1	1	3	0.26%
Electronics (23,24,30)	205	237	94	164	700	60.76%
Constructions (25)	18	18	6	7	49	4.25%
Transportations (26)	11	13	2	2	28	2.43%
Tourism (27)	0	0	0	2	2	0.17%
Wholesale & Retail (29)	2	4	1	2	9	0.78%
Others (89,98,99)	27	26	11	14	78	6.77%
Total	363	418	142	229	1,152	100.00%

We begin our sample selection of companies listed in TSEC/GTSM during the sample period by searching the Market Observation Post System (MOPS). The financial data of the listed companies are selected from the Taiwan Economic Journal (TEJ) database. In Panel A of Table 1, we report 3862 firm year observations for year 2000 to year 2003 (831, 917, 1022, and 1092), respectively. We then exclude 253 observations in the financial services and insurance industries, because the discretionary accruals model does not apply to financial industries. We also exclude 1415 missing financial data in TEJ. To examine whether earnings management phenomenon becomes less prevalent for the Post-CGBPP versus the Pre-CGBPP period, we further eliminate 510 missing data in either year 2002 or year 2003, which leave us 1684 firm-year observations to test our hypothesis 1. For testing hypotheses 2 and 3, we search data for CEO and board chairman, and for independent directors and supervisors from TEJ Corporate Governance Module and MOPS. We further delete 348 observations for missing data as to CEO or board chairman while searching MOPS. After deleting 103 observations for incomplete information regarding the disclosure of independent directors and supervisors, the final sample after satisfying all the data requirements is 1743 firm-year observations for the full sample, as reported in Panel B of Table 1. In Panel C of Table 1, we report the portion of the post-CGBPP sample that has 1152 firm-year observation during year 2002 and 2003 to further analyze the implications of changes in regulation related to the CGBPP.

Panel D of Table 1 provides details about the sample distribution by year and by TEJ industry code. First we report the full sample and then the post-CGBPP sample. The electronics industry has the largest number of companies, with more than 57(60) percent of the total observations in the full sample and the CGBPP sample. The remaining sample companies are widely distributed across TEJ industry codes.

5. Empirical Results

5.1. IOS Growth Factor

The IOS growth factor (GROWTH) for each sample firm is obtained by conducting common factor analysis on three proxies, namely, MBEQ, MBASS, and PPE. The results of factor analysis are reported in Table 2. Panel A reports the communalities of the individual IOS proxies. The communalities are the squared multiple correlation obtained by regressing each of the proxies with the other two proxies. Panel B shows that eigenvalues of the reduced correlation matrix. As the first eigenvalue exceeds the sum of the three communalities, the one common factor fully explains the intercorrelations among the individual measures [Cattrell, 1966; Harman, 1976]. Panel C contains correlations between the common factors and the three proxies. Correlations for all variables are statistically significant, which suggest that the IOS factor captures the underlying construct that is common to all three measures of IOS.

5.2. Descriptive Statistics

Table 3 also provides the descriptive statistics for the post-CGBPP sample in Panel A and the full sample in Panel B, respectively. Since the descriptive statistics are qualitatively similar for both samples, we briefly discuss the post-CGBPP sample only. The mean (median) absolute discretionary accruals are 0.070 (0.049), whereas the mean (median) discretionary accruals are -0.002 (-0.007). On average, 35.2 percent of the firms have CEO dominance, that is, positions of CEO and board chairman are held by the same individual. The mean and median IOS factor, GROWTH, are 0.108 (-0.06) whereas the mean value of the interaction term, CEO*GROWTH, is 0.066.

Table 2

Descriptive Statistics for Dependent and Independent Variables

Statistics related to common factor analysis of three measures of growth opportunities for1743 firms for 2000-2003

(1): Estimated communalities of three growth measures[a]		
MBEQ	MBASS	PPE
0.418	0.434	0.115
(2): Eigenvalues of the reduced correlation matrix of three growth measures		
MBEQ[b]	MBASS	PPE
0.968	-0.048	-0.237
(3): Correlations between the common factor and three growth measures		
MBEQ	MBASS	PPE
0.853***	0.869***	-0.447***

[a] Growth is the composite factor score obtained from common factor analysis using the following three proxies: (i)MBEQ = total market value of share outstanding divided by total book value of common equity; (ii)MBASS = [total assets-total common equity + total value of shares outstanding] divided by total assets; (iii)PPE = plant, property, and equipment divided by market value of the firm.

[b] Harman [1976] and Cattrell [1966] suggest that if the first eigenvalue alone exceeds the sum of the three communalities, this one common factor explains the intercorrelations among the individual measures.

On average, 19.9 (14.8) percent of directors (supervisors) are independent for the CGBPP sample, suggesting a modest increasing trend of establishing independent directors and/or supervisors after the enactment of the CGBPP. Following DeFond et al. [2005], about 20 (20.5) percent of independent directors (supervisors) include financial expert(s) on the board for the post-CGBPP sample.

The mean log sale was 14.98 while the mean debt ratio was 28.2% for the post-CGBPP sample. About 86.6 percent of listed firms are audited by a Big 5 auditor. The mean operating cash flows deflated by lagged assets are 0.067 while foreign institutional shareholders on average own 6.92% of these firms. The mean absolute value of change in the current year's income before extraordinary items divided by lagged total assets is 0.03. On average, 14.1 percent of the post-CGBPP sample is IPO firms.

The unreported Pearson correlation matrix for the dependent and independent variables is discussed for the post-CGBPP sample only. CEO dominance (CEO) is negatively correlated with absolute discretionary accruals (ADA), but it is not significant, possibly reflecting the existence of CEO power in the post-CGBPP era. The correlation between growth opportunity (GROWTH) and ADA is significantly positive. The discretionary accruals (DA) variable is also significantly correlated with the lagged operating cash flows (CFFO) for the CGBPP sample, which is consistent with Dechow et al. [1995]. Other correlation coefficients between variables are small and their VIFs are all between 1 and 4 in both full sample and the CGBPP sample. Therefore, the regression models are relatively free from multicollinearity problems.

Table 3
Descriptive Statistics for Dependent and Independent Variables

Panel A: The Post-CGBPP Sample (n=1,152)

Variable	Mean	Standard deviation	Lower quartile	Median	Upper quartile
ADA	0.070	0.074	0.021	0.049	0.089
DA	-0.002	0.101	-0.056	-0.007	0.042
CEO	0.648	0.478	0.000	1.000	1.000
GROWTH	0.108	0.930	-0.416	-0.060	0.451
CEO*GROWTH	0.066	0.820	-0.232	0.000	0.119
INBD	0.199	0.311	0.000	0.000	0.333
INSR	0.148	0.209	0.000	0.000	0.333
IDFE	0.200	0.400	0.000	0.000	0.000
ISFE	0.205	0.404	0.000	0.000	0.000
SIZE	14.979	1.394	13.994	14.800	15.787
LEV	0.282	0.262	0.005	0.296	0.503
BIG5	0.866	0.340	1.000	1.000	1.000
LAGADA	0.072	0.079	0.019	0.048	0.096
CFFO	0.067	0.122	0.009	0.066	0.126
F_INSTI(%)	6.923	10.979	0.100	2.210	8.195
A_CHNI	0.032	0.069	0.001	0.021	0.056
ROA^2	0.012	0.028	0.001	0.004	0.013
IPO	0.141	0.348	0.000	0.000	0.000

IPO*CEO	0.082	0.275	0.000	0.000	0.000

Panel B: Full Sample (n=1,743)

Variable	Mean	Standard deviation	Lower quartile	*Median*	Upper quartile
ADA	0.069	0.073	0.021	0.048	0.089
DA	-0.004	0.100	-0.057	-0.009	0.039
CEO	0.661	0.474	0.000	1.000	1.000
GROWTH	-0.003	0.998	-0.541	-0.138	0.378
CEO*GROWTH	-0.014	0.845	-0.347	0.000	0.047
INBD	0.131	0.270	0.000	0.000	0.000
INSR	0.098	0.184	0.000	0.000	0.000
IDFE	0.132	0.339	0.000	0.000	1.000
ISFE	0.135	0.342	0.000	0.000	1.000
SIZE	15.057	1.375	14.060	14.893	15.860
LEV	0.343	0.248	0.006	0.393	0.539
BIG5	0.854	0.354	1.000	1.000	1.000
LAGADA	0.069	0.078	0.016	0.044	0.092
CFFO	0.069	0.121	0.010	0.066	0.125
F_INSTI(%)	6.541	10.413	0.070	1.980	7.940
A_CHNI	0.021	0.074	-0.013	0.014	0.049
ROA^2	0.012	0.029	0.001	0.003	0.012
IPO	0.128	0.334	0.000	0.000	0.000
IPO*CEO	0.078	0.268	0.000	0.000	0.000

where:

ADA	: absolute value of discretionary accruals calculated by using the modified Jones model after controlling for firm performance.
DA	: discretionary accruals calculated by using the modified Jones model after controlling for firm performance.
CEO	: indicator variable coded 1 if CEO and board chairman are different persons, 0 =CEO-dominated board.
GROWTH	: composite factor score obtained from common factor analysis using the following three proxies: MBEQ = total market value of share outstanding divided by total book value of common equity. MBASS = [total assets-total common equity + total value of shares outstanding] divided by total assets PPE = plant, property, and equipment divided by market value of the firm
CEO*GROWTH	: interaction between CEO and GROWTH.
INBD	: percentage of independent directors on board.
INSR	: percentage of independent supervisors on supervisory board.
IDFE	: indicator variable coded 1 if at least one independent director is a financial expert.
ISFE	: indicator variable coded 1 if at least one independent supervisor is a financial expert.
SIZE	: Ln(sales).
LEV	: ratio of total debt to total assets.
BIG5	: indicator variable coded 1 if the auditor is a Big 5 audit firm; 0 otherwise.
LAGADA	: absolute value of discretionary accruals in year t-1 divided by ending total assets in year t-2.
CFFO	: operating cash flow deflated by lagged total assets.
F_INSTI	: percentage of outstanding common shares held by foreign institutional shareholders.
A_CHNI	: the absolute value of change in the current year's income before extraordinary items divided by lagged total assets.
ROA^2	: square of rate of return on lagged total assets.
IPO	: indicator variable coded 1 if firm is an IPO; 0 otherwise.
IPO*CEO	: interaction between IPO and CEO.

5.3. Regression Results

Table 4 presents our regression results using the pre-CGBPP and the post-CGBPP sample to test hypothesis 1 to examine whether earnings management phenomenon become less prevalent in the post-CGBPP era. We use CGBPP, a dummy variable, coded as 1 for firms belonging to year 2002 or year 2003 to capture the regulatory effects on earnings management behavior. Since IPO firms are first mandated by the CGBPP to strengthen corporate governance mechanism, we use three different models to test our hypothesis 1. In model 1 and model 2, we use sample firms that simultaneously exist in both the pre-CGBPP and the post-CGBPP sample periods to examine whether earnings management phenomenon becomes less prevalent in the post-CGBPP era. We include IPO firms in model 1, but report only non-IPO firms in model 2 for our full sample period. The coefficient on CGBPP is significantly negative on all three models, suggesting that listed firms in Taiwan engage in less earnings management in the post-CGBPP era.

Table 4
Regression of Absolute Discretionary Accruals on CGBPP and Control Variables: Policy Implication for Regulatory Changes of the CGBPP

Model		1[a]	2[b]	3[c]
Variables	Predicted Sign	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
Intercept		0.023 (0.941)	0.032 (1.317)	-0.052 (-0.386)
CGBPP	-	-0.017 (-4.392)***	-0.015 (-3.860)***	-0.036 (-2.230)**
SIZE	?	0.004 (2.103)**	0.003 (1.745)*	0.011 (1.136)
LEV	?	-0.000 (-3.135)***	-0.000 (-2.850)***	-0.001 (-1.241)
BIG5	−	0.010 (2.437)**	0.008 (1.821)*	0.018 (1.092)
LAGADA	+	0.065 (2.564)***	0.081 (3.114)***	-0.096 (-0.802)
CFFO	?	-0.224 (-4.771)***	-0.183 (-3.889)***	-0.449 (-3.538)***
F_INSTI	−	0.000 (0.416)	0.000 (0.113)	0.002 (0.896)
A_CHNI	+	0.075 (2.451)***	0.055 (1.791)**	0.354 (2.546)***
ROA^2	?	0.749 (6.345)***	0.741 (4.989)***	0.686 (3.411)***
IPO	+	0.013 (1.583)*		
Adj. R-square		0.169	0.143	0.372
F-value		35.151***	29.549***	10.356***
# of sample firms		1,684	1,541	143

*, (**), and (***) indicate significance at the 0.10, (0.05), and (0.01) levels, respectively, one-tailed test where appropriate. We report asymptotic t-statistic in parentheses based on White [1980] standard errors. Variables are defined in Table 3, except for CGBPP, a dummy variable, equaling to 1 for firms belonging to year 2002 or year 2003 and 0 otherwise.
Note:
a: Firms existed in both the Pre-CGBPP sample period (year 2000 or year 2001) and the Post-CGBPP sample period (year 2002 or year 2003).
b: IPO firms existed in both the Pre-CGBPP sample period and the Post-CGBPP sample period.
c: Non-IPO firms existed in both the Pre-CGBPP sample period and the Post-CGBPP sample period.

With respect to the control variables, we mainly discuss model 1 and model 3, because their results are similar. Further, the results in model 2 are based on the IPO firms, which contains only 143 sample observations that are comparatively smaller than those in models 1 and 3. The coefficient on SIZE is significantly positive in models 1 and 3, indicating larger companies have larger absolute discretionary accruals. The coefficient on LEV is significantly negative, suggesting that firms with high leverage ratio may manage earnings downward to get more concessions from the creditors. The coefficient on LAGADA is significantly positive, which suggests that prior discretionary accruals that are reversed in the current period influence the likelihood of earnings management. The coefficient on CFFO is significantly negative, suggesting firms with strong operating cash flow position are less likely to

use discretionary accruals to engage in earnings management. The coefficient on ROA^2 is significantly positive, indicating non-linear relation between discretionary accruals and profitability exists in listed firm in Taiwan. The BIG5 variable is significantly positive in model 1 and model 3, which is inconsistent with the findings of Becker et al. [1998] and Francis et al. [1999] that Big 5 auditors are associated with lower discretionary accruals. The choice of auditor and discretionary accrual choices are both made by managers. To control for this potential self-selection bias, we run a two-stage Heckman model. The results (not reported) for the governance variables are quantitatively unchanged, but the BIG5 variable becomes insignificantly positive.

Table 5 presents the regression results using the post-CGBPP sample (n=1152), because the current study focuses on the role of changes in regulation of the CGBPP.[12] The variable CEO is coded as 1 if the corporate board is independent, that is, non-CEO-dominated board. Hypothesis 2 is tested by examining the coefficient on CEO. A significant negative coefficient indicates that firms with independent corporate boards are likely to engage in less earnings management. A significant positive coefficient on GROWTH indicates that high growth firms are associated with higher likelihood of earnings management. For testing hypothesis 3, we examine the coefficient of the interaction term CEO*GROWTH and predict a significant negative interaction. We use 3 different models in the post-CGBPP sample to test our hypothesis 2 and hypothesis 3.

The coefficient on CEO is negative but not significant in model 1, which is not consistent with Dechow et al. [1996] in that CEO-dominated firms are associated with higher likelihood of earnings management. We find that the coefficient on GROWTH is significantly positive, suggesting that high-growth firms in the post-CGBPP era are more likely to engage in earnings management. The coefficient of the interaction variable CEO*GROWTH is also significantly negative, indicating that high-growth opportunities firms, in the post-CGBPP era, with independent corporate boards are associated with less earnings management, which is consistent with arguments presented in hypothesis 3.

Model 2 add independence (i.e., INBD and INSR) and financial expertise (i.e., IDFE and ISFE) as reported in Chen et al. [2007], because the CGBPP also requires firms on TSEC/GTSM to increase board independence (i.e., Article 24 for directors and Article 43 for supervisors) and to have at least one of the independent directors and supervisors (i.e., Article 28 for directors and Article 51 for supervisors) with professional expertise in accounting or finance.[13] The coefficient on CEO*GROWTH remain significantly negative, which is further consistent with our hypotheses 3.[14]

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[12] Before multivariate regression analyses reported in Table 6, we conduct T tests to examine the differences in absolute discretionary accrual between firms with CEO-dominated and non-CEO-dominated corporate boards and also between firms with high-growth and low-growth opportunities (top and bottom quartiles) for our sample. The results [not tabulated] indicate that the firms with non-CEO-dominated corporate boards [N=747] are not significantly associated with [t= -1.34, p<0.18] lower likelihood of earnings management [mean ADA=0.0671] than firms with CEO-dominated corporate boards [N=405] [mean ADA =0.0736] for the pre-CGBPP sample. However, we find that the mean ADA [0.096] for the top quartile of IOS factor scores [N=288] is significantly [t=7.66, p<0.000] higher than the mean ADA [0.049] of the bottom quartile [N=288] for the CGBPP sample.

[13] INBD stands for percentage of independent directors on board, and INSR represents percentage of independent supervisors on supervisory board. IDFE is a dummy variable coded 1 if at least one independent director is a financial expert whereas ISFE represents another dummy variable coded 1 if at least one independent supervisor is a financial expert. Because the CGBPP only specifies the requirement of the "professional expertise in accounting or finance" for independent directors or supervisors, and does not provide specific qualifications as to professional expertise, we follow DeFond et al. [2005] to define financial experts as either one of the following two categories: a)

Table 5
Regression of Absolute Discretionary Accruals on CEO Domination, Growth Opportunities and Control Variables: The Post-CGBPP Sample

Model		1[a]	2[a]	3[b]
Variables	Predicted Sign	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
Intercept		0.017 (0.775)	0.022 (0.968)	0.017 (0.764)
CEO	–	-0.004 (-0.996)	-0.004 (-0.961)	-0.004 (-1.014)
GROWTH	+	0.019 (3.226)***	0.019 (3.228)***	0.019 (3.291)***
CEO*GROWTH	–	-0.010 (-1.627)*	-0.010 (-1.600)*	-0.009 (-1.444)*
INBD	–		-0.004 (-0.421)	
INSR	–		-0.010 (-0.547)	
IDFE	–		-0.005 (-0.609)	
ISFE	–		-0.001 (-0.192)	
SIZE	?	0.003 (2.255)**	0.004 (2.344)**	0.003 (2.178)**
LEV	?	-0.000 (-1.973)**	-0.000 (-2.446)**	-0.000 (-1.590)
BIG5	–	0.005 (0.805)	0.005 (0.878)	0.002 (0.399)
LAGADA	+	0.113 (3.117)***	0.116 (3.167)***	0.139 (3.398)***
CFFO	?	-0.225 (-3.977)***	-0.227 (-3.988)***	-0.229 (-3.458)***
F_INSTI	–	-0.000 (-0.372)	-0.000 (-0.475)	0.000 (0.103)
A_CHNI	+	0.090 (2.161)**	0.094 (2.239)**	0.066 (1.535)*
ROA^2	?	0.465 (3.994)***	0.453 (3.903)***	0.509 (3.601)***
IPO	+	0.004 (0.319)	0.006 (0.547)	
IPO*CEO	+	0.010 (0.717)	0.010 (0.661)	
Adj. R-square		0.194	0.193	0.212
F-value		22.288***	17.158***	25.160***
# of sample firms		1,152	1,152	990

*, (**), and (***) indicate significance at the 0.10, (0.05), and (0.01) levels, respectively,one-tailed test where appropriate. We report asymptotic t-statistic in parentheses based on White [1980] standard errors. Variables are defined in Table 3.

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accounting financial expert – All directors with experience as a public accountant, auditor, principal or chief financial officer, controller, or principal or chief accounting officer proposed by the SEC. b) *non-accounting* financial expert – All directors with experience as the chief executive officer or president of a for-profit corporation.

[14] We also use different specification of independence [INBDSR, a composite measure of INBD and INSR] and financial expertise [IDISFE, another composite measure of IDFE and ISFE] as additional control variables, the results are qualitatively similar to those reported in model 1 of Table 5. Therefore, we exclude those control variables for our additional analyses in Table 6.

Note:
a: The Post-CGBPP sample.
b: The Post-CGBPP sample excluding IPO firms on year 2002 or year 2003.

Model 3 further examines the non-IPO (n=990) firms under the CGBPP sample, since separation of CEO and board chairman and other requirements are limited to the IPO firms in its first stage. Therefore, examining the non-IPO firms under the CGBPP provides additional insights into the willingness of those firms to pre-adopt the CGBPP and thus employs credible signals to the public.[15] The coefficient on CEO*GROWTH remain significantly negative and thus further support our hypothesis 2, which provides additional insights into the implementation of the CGBPP into the firms not required to separate CEO and board chairman in the post-CGBPP era. With respect to the control variables for all three models, the results are qualitatively similar to those reported in Table 4.

In sum, our findings confirm the role of changes in regulation of the CGBPP by suggesting that earnings management phenomenon becomes less prevalent in the post-CGBPP era. Further, our results suggest that independence of corporate boards in high-growth firms is an important factor in mitigating management's opportunistic behavior in the post-CGBPP era. We also find consistent results in the non-IPO firms under the post-CGBPP sample.

5.4. Additional Analyses

5.4.1. Full Sample Firms and its Variations

We rerun our regressions based on the full sample as reported in Table 6. First, we use the same model specification as reported in model 1 of Table 5 for the post-CGBPP sample. The coefficient on CEO is significantly negative, which is different from the results reported in model 1 of Table 5. This result suggests that Taiwanese listed firms with independent corporate boards are associated with less earnings management. The coefficient on GROWTH is significantly positive, which is similar to the result reported in Table 5, which is consistent with the contracting theory in that growth firms are associated with higher uncertainty that, in turn, makes monitoring of managerial activities more difficult and are associated with more earnings management. However, the coefficient on CEO*GROWTH becomes insignificant.

Further, we add independence (i.e., INBD and INSR) and financial expertise (i.e., IDFE and ISFE) from the perspective of directors and supervisors to control for other requirements specified in the CGBPP as reported in Table 5 to rerun our regression. The results are similar to those reported in model 1, which further confirms that firms with independent corporate boards are associated with less earnings management.

The results for the control variables in both models 1 and 2 in Table 6 are qualitatively similar to those reported in the post-CGBPP sample as reported in Table 5 and Table 5.

In sum, our findings in the full sample suggest that independence of corporate boards is an important factor in mitigating management's opportunistic behavior, but not the firms with high-growth opportunities.

[15] We did run another regression to test our arguments based on 162 IPO firms; however, the coefficients for our research variables are not significant, which might be due to the fact that small simple size results in lack of power, as described in DeFond and Francis [2005, 19].

Table 6
Regression of Absolute Discretionary Accruals on CEO Domination, Growth Opportunities and Control Variables: Full Sample and its Variations

Model		1	2
Variables	Predicted Sign	Coefficient (t-statistic)	Coefficient (t-statistic)
Intercept		-0.005 (-0.245)	-0.003 (-0.161)
CEO	−	-0.006 (-1.568)*	-0.006 (-1.534)*
GROWTH	+	0.013 (4.042)***	0.013 (4.022)***
CEO*GROWTH	−	-0.003 (-0.816)	-0.003 (-0.790)
INBD	−		-0.003 (-0.244)
INSR	−		-0.006 (-0.365)
IDFE	−		-0.005 (-0.655)
ISFE	−		-0.002 (-0.232)
SIZE	?	0.005 (3.200)***	0.005 (3.286)***
LEV	?	-0.000 (-1.082)	-0.000 (-1.668)*
BIG5	−	0.009 (2.043)**	0.009 (2.106)**
LAGADA	+	0.093 (3.291)***	0.095 (3.346)***
CFFO	?	-0.186 (-3.922)***	-0.189 (-3.938)***
F_INSTI	−	-0.000 (-1.686)**	-0.000 (-1.757)**
A_CHNI	+	0.072 (2.504)***	0.077 (2.614)***
ROA^2	?	0.521 (5.287)***	0.513 (5.234)***
IPO	+	0.005 (0.535)	0.007 (0.724)
IPO*CEO	+	0.013 (1.041)	0.013 (1.000)
Adj. R-square		0.159	0.158
F-value		26.303***	20.209***
# of sample firms		1,743	1,743

*, (**), and (***) indicate significance at the 0.10, (0.05), and (0.01) levels, respectively, one-tailed test where appropriate. We report asymptotic t-statistic in parentheses based on White [1980] standard errors. Variables are defined in Table 2, except for YM, a dummy variable, equals to 1 for years equal to 2002 or 2003 when the CGBPP went into effective and 0 otherwise. Model 3 exclude 223 IPO firms in the full sample, namely non-IPO firms in the full sample.

6. Summary and Conclusion

This study examines the earnings management behavior in an emerging market where growth opportunities and weak corporate governance are prevalent. We first examine whether the earnings management phenomenon become less prevalent following the regulatory changes of the CGBPP for Taiwanese listed firms. Then, we examine the relation between CEO dominance and earnings management in a setting of growth opportunities, because the CGBPP requires listed firms to separate CEO and board chairman in this growth option-rich emerging market, and prior study such as Chen et al. [2007] did not examine this CEO dominance issue. In particular, we examine whether firms with independent (i.e., non-CEO-dominated) corporate boards are less likely to be associated with earnings management, because independent corporate boards provide an effective monitoring mechanism that enhance the board's ability to properly execute its oversight function and discharge its governance responsibility. We provide evidence that independence of corporate boards is an important factor to mitigate management's opportunistic earnings management behavior for our full sample covering the pre-CGBPP and the post-CGBPP period.

High growth firms are more likely to engage in earnings management, because managers have private information about the value of future projects and hence their actions are not readily observable to shareholders. In addition, agency theory suggests that corporate controls can align managers' interests with shareholders' interests. When we focus on the control aspects of independent corporate boards that provide effective oversight function and also consider the influences of changes in the CGBPP regulation, we expect the positive relation between growth opportunities and earnings management will be moderated by independent corporate boards. Our findings support contracting theory that high growth firms are more likely to have opportunistic earnings management behavior. More importantly, our results indicate that independent corporate boards are likely to mitigate opportunistic earnings management behavior associated with high-growth opportunities following the regulatory changes of the CGBPP (i.e., for the post-CGBPP sample).

We also find consistent results for the non-IPO firms under the post-CGBPP sample period that are not required to separate CEO and board chairman, which provide additional insights on firms not required by the CGBPP employing a credible signal that they are willing to pre-adopt corporate governance regulations.

In sum, from a policy perspective, our results suggest that independent of corporate boards following the enactment of the CGBPP regulation is an important factor in overseeing the financial reporting process in a setting of high-growth emerging market.

This study is subject to a number of limitations. First, our results demonstrate an association, instead of causation, between CEO dominance, growth opportunities and the likelihood of earnings management. Second, we use the popular cross-sectional modified Jones model to estimate discretionary accruals and incorporate lagged ROA as an additional factor to control for firm performance. However, we do not use performance-matched discretionary accruals as suggested by Kothari et al. [2005]. Therefore, our results may still be subject to the potential concerns of measurement error. Finally, the current study only provides evidence of a relation between corporate governance characteristics and financial reporting quality through publicly disclosed information, but we have very little understanding of the process through

which CEO influences the financial reporting quality. Future research might find a way to examine these processes.

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