Tax-Induced Earnings Management in Emerging Markets: Evidence from China

Bingxuan Lin, Rui Lu, and Ting Zhang

ABSTRACT: China issued the New Enterprise Income Tax Law in 2007, which changed the corporate income tax rate from 33 percent to 25 percent and came into effect in 2008. Using the simulated marginal tax rate as an indicator of firms' earnings management incentives, and discretionary current accruals as a proxy for earnings management, we find significant tax-induced earnings management in 2007. However, the downward earnings management becomes less obvious for firms that have a greater percentage of shares owned by state-owned enterprises, have an audit committee on the board, and disclose certified internal control reports.

Keywords: tax incentive; earning management; accruals; Chinese tax law.

Data Availability: All data are available from the second author (contact author) upon request.

INTRODUCTION

Tax incentives play an important role in a firm's earnings management behavior. Many studies have examined firm financial reporting around the Tax Reform Act (TRA) of 1986 in the U.S., and have reported ample evidence of tax-induced earnings management (e.g., Scholes et al. 1992; Guenther 1994; Lopez et al. 1998). However, few studies have explored tax-induced earnings management in emerging markets. Leuz et al. (2003) show that a country's legal and institutional environment influences the properties of reported earnings. Given the unique nature of the institutional, political, and economic environment in emerging markets, the incentives for and effect of tax-induced earnings management can differ greatly from those in developed markets. In this paper we examine whether China's publicly listed firms manipulated earnings in the year immediately preceding an important change in China's tax law—the New Enterprise Income Tax Law (NEIT Law) of 2007. Our investigation of such tax-induced earnings manipulation

Bingxuan Lin is an Associate Professor at the University of Rhode Island, Rui Lu is an Associate Professor at Sun Yat-sen University, and Ting Zhang is an Assistant Professor at the University of Dayton.

19

www.

incentives takes into consideration the effects of China's unique company ownership structure and some key corporate governance characteristics, including the corporate internal control system, the percentage of independent directors, and the presence of an audit committee on the board.

The NEIT Law took effect in January 2008. It reduced the statutory corporate income tax rate from 33 percent to 25 percent and was considered a milestone in China's enterprise income tax reforms. The new law provides a rich setting for researchers to examine how firms responded to the anticipated tax changes. The effect that the NEIT Law has had on enterprises could differ greatly depending on a firm's prior marginal tax rate. For firms with a marginal tax rate that is higher than the new rate of 25 percent, we would expect to observe significant downward earnings management before the implementation of the NEIT Law. However, given various conflicts among stakeholders, firms may not always prefer downward earnings management. For example, some firms might manage earnings upward to show continuous performance improvement. It becomes an empirical question to determine whether tax-induced earnings management actually takes place and, if so, at what magnitude.

A growing number of studies also explore the relationship between earnings management and corporate governance characteristics in both developed and emerging markets.[1] One of the distinctive features of China's publicly traded firms, relative to their counterparts in developed countries, is their highly concentrated ownership and complex, pyramid-like systems of corporate control (Sun and Tong 2003; Claessens et al. 2000). Furthermore, due to the transition from a planned economy to a market economy, state-owned enterprises (SOEs) continue to represent a significant proportion of ownership in many listed companies. We formulate several hypotheses to examine whether firms owned by SOEs and firms with various corporate governance mechanisms exhibited different incentives to manage earnings in response to the anticipated NEIT tax rate reduction.

This study contributes to the literature in the following ways. First, we provide direct evidence of how tax policy change affects the earnings management incentives in an emerging market. Second, we show that firms with a greater percentage of shares owned by SOEs, firms with an audit committee on the board, and firms that voluntarily disclosed a certified internal control report are less likely to engage in tax-based earnings management. Third, we estimate that the aggregate tax revenue loss for government in 2007 was CNY 4,712.4 million (or $646.1 million) due to firms engaging in downward earnings management. This amount accounted for roughly 3.2 percent of the total tax revenues collected from firms with a marginal tax rate greater than 25 percent in 2007. The empirical evidence provides tax and financial reporting policymakers with a better understanding of the potential effect that tax law changes have on firms' earnings management activities. Finally, we use the simulated marginal tax rate (MTR) to determine managers' earnings management incentives after a tax policy change. Lo et al. (2010) use a similar method to study the tax implications of transfer pricing behavior in China; however, studies that apply the marginal tax rate in emerging markets are still quite limited. In their review of recent tax-related research, Hanlon and Heitzman (2010) recommend using MTR to measure earnings management "in order to obtain a broader perspective on the firms' activities." Our findings are particularly important considering the lack of evidence for tax-induced earnings management in developing economies such as China.

The second section describes the institutional background of China's NEIT Law and the ownership structure and corporate governance characteristics of Chinese listed companies. In the third section, we review previous studies and develop our research hypotheses. We describe our

---

[1] For the U.S. evidence see Agrawal and Chadha (2005), Crocker and Slemrod (2005), and Desai et al. (2007). For evidence from the Chinese market, see Jian and Wong (2005), Chen et al. (2006), and Liu and Lu (2007), among others.

www.

research method in the fourth section and present our empirical results in fifth section. The last section concludes the paper.

INSTITUTIONAL BACKGROUND

New Enterprise Income Tax Law in China

The NEIT Law was introduced on March 16, 2007, and came into effect on January 1, 2008. It consolidated two previously separate enterprise income tax regimes for domestic enterprises (DEs) and foreign investment enterprises[2] (FIEs) into a unified standard tax rate of 25 percent, a reduction from the previous statutory rate of 33 percent. A national survey revealed that the tax rate for DEs was, on average, 10 percent higher than that of FIEs (Renqing 2007). Tax incentives, although available for DEs, were very limited.[3] The large difference between DEs and FIEs imposed an unfair tax burden on different enterprises. In the face of growing criticism that the original dual income tax system was unfair to DEs, one of the goals of the NEIT Law was to mitigate such differences without driving out foreign investors by increasing their tax burden.

The long-term objective of the NEIT Law was to effectively lower the corporate tax burden and reduce the tax incentive offered to foreign investors. To ensure a smooth transition to the new tax system, however, the new law allowed FIEs to continue receiving the tax incentives that had been initially granted to them until they expired.[4] Hence, the short-term effects of the NEIT Law could be greatly neutralized for FIEs. This paper focuses solely on the earnings management of DEs because they benefited from the tax rate change immediately, whereas the effect for FIEs was generally longer term.

The principles of income and expense recognition are similar for book and tax purposes in China, with only a few exceptions. For example, for tax purposes, Chinese firms are required to use the straight-line method for fixed assets, whereas for accounting purposes these assets can be depreciated using the straight-line, double-declining-balance, or usage/depletion methods (Lo et al. 2010).[5] Interest on loans is generally deductible, although, as in the U.S., interest on construction projects must be capitalized. Unlike U.S. firms, which can carry forward losses for 20 years and carry losses back for two years, Chinese firms can only carry forward losses for five years and there is no provision for carrying back losses (PwC 2010). These differences require that we incorporate the China-specific accounting rules when computing the marginal tax rates.

In summary, we expect the NEIT Law to mitigate the tax burden for all DEs in the long run, although its effect on firm behavior in the short term would depend largely on their different marginal tax rates in the pre-NEIT period.

---

[2] Based on Article 2 of the "Income Tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises," the term FIE only referred to Chinese-foreign equity joint ventures, Chinese-foreign contractual joint ventures, and foreign-capital enterprises established in China. It specifically excluded foreign investment companies limited by shares. Hence, no exchange-listed companies in China were treated as FIEs for tax purposes.

[3] For example, domestic enterprises in the industries of technology, public utilities, infrastructure, information technology, environmental, and resource recycling also receive preferential tax treatment. In addition, investments in the western region and minority regions are also awarded tax incentives.

[4] Under the original tax system, the Chinese government provided generous tax incentives for FIEs to attract foreign investments. For example, FIEs enjoyed a zero tax rate for the first two profit-making years, followed by a 50 percent reduction for another three years. Local government also provided various tax incentives to FIEs.

[5] In the U.S., for tax purposes, firms may use a variety of accelerated methods for depreciation. Also see Lo et al. (2010) for a detailed discussion of book and tax differences in China.

Ownership Structure of Chinese Listed Companies

China established its stock markets in 1990 as part of a plan to privatize its inefficient state-owned enterprises and to gradually introduce the market economy into its planned-economy regime. Most of the country's listed firms were carve-outs from, or spin-offs of, large SOEs (Liu and Lu 2007). To maintain effective control of these enterprises, the Chinese government floated only approximately one-third of its shares (known as tradable shares) to the public, while holding two-thirds of the shares (known as non-tradable shares) either directly (as government shares) or indirectly (as SOE legal person shares). The tradable shares were sold to the public in domestic and international markets. The non-tradable shares could only be transferred to other investors (including both state and private investors) through private transactions, following the rules set forth by the government.[6]

Privatization in China took a two-step approach (Green 2004). First, SOEs sold a minority stake for exchange listing and became partially privatized. Subsequently, full privatization of some SOEs took place when non-tradable shares owned by the state or a legal person were sold to private entities off-exchange. The listed firms could then be controlled by SOEs or non-SOEs, depending on how many of the firm's non-tradable shares were transferred to private investors. An increasing number of private companies also issued IPOs to access the capital market directly, although it is still much harder for private companies to get approval for an IPO than it is for SOEs. Clearly, SOEs and non-SOEs have different objectives. Unlike non-SOEs that are driven primarily by financial incentives, the government might use SOEs to pursue non-financial objectives such as a stable employment rate or social welfare programs (Dong and Putterman 2003; Lin and Tan 1999). There was ample evidence suggesting that such differences in ownership resulted in differences in firm performance. For example, Qi et al. (2000) show that firm performance is negatively related to the proportion of shares owned by the state.

Corporate Governance Characteristics

The corporate governance characteristics of Chinese firms are also significantly influenced by their ownership structure. Before full privatization, the large or controlling shareholders (SOEs in most cases) employed different kinds of governance mechanisms to exert tight control at the expense of minority shareholders (Liu 2005). The government-controlled ownership structure also resulted in less effective corporate governance mechanisms among Chinese firms. Particularly problematic was the tendency for controlling SOEs to appoint the CEOs or chairmen of listed firms to ensure their representation on various board committees.[7] Listed firms often had no independent nomination committees, which allowed SOEs to exert significant influence over the election of independent board directors through economic or political power. This practice greatly compromised corporate board independence (Liu and Lu 2007). For privately controlled firms, the exploitation of minority shareholders by private controlling shareholders was even more problematic. Unlike an SOE's controlling shareholders, private controlling shareholders did not have political concerns and were more aggressive in maximizing their returns. They often tunneled company resources for the benefit of controlling shareholders (Jiang et al. 2010). As a result,

---

[6] The transfer of these non-tradable shares could be in the form of free transfer between two state entities, or it could be negotiated transfer between the state and private investors based on government regulations on the disposal of state assets.

[7] In our sample, we find that on average 21 percent of the board members are appointed by the controlling shareholder (both SOEs and non-SOEs). However, for firms controlled by SOEs, the average percentage of board members appointed by the controlling shareholder is 28 percent, whereas for firms controlled by non-SOEs the average is less than 20 percent.

China's corporate governance had long been criticized for its lack of protection for minority shareholders, its weak enforcement of security laws, and its under-developed legal environment.

To improve the quality of corporate governance, the Chinese government introduced a series of regulations to assist firms in setting their governance policies. For example, in 2001 the China Securities Regulatory Commission (CSRC) issued the *Guidance for the Establishment of Independent Director Systems by Listed Companies*. This guidance lists specific duties for independent directors. Specifically, independent directors have a fiduciary obligation toward the listed company and all its shareholders. They should safeguard the company's overall interests and, in particular, the lawful rights and interests of minority shareholders.[8] In 2002, the *Code of Corporate Governance for Listed Companies in China* clarified the structure of the board of directors, the composition of the audit committee, and other critical corporate governance regimes. Under this code, the board of directors of a listed company must establish a corporate strategy committee, an audit committee, a nomination committee, and other special committees in accordance with the resolutions reached at the shareholders' meetings, with all committees composed solely of directors. These committees should be chaired by an independent director, with independent directors constituting the majority of the committees. Furthermore, at least one independent director from the audit committee is expected to be an accounting professional. Nonetheless, Li (2003) shows that many companies are still lagging behind in their efforts to follow the policies set forth in the 2001 guidance and 2002 code. Subsequently, the CSRC published the *Regulations on Information Disclosure of Listed Companies* in January 2007 and the *Notice on the Specific Activities of Strengthening Corporate Governance* in March 2007 to ensure that all listed companies are in full compliance with the published policies. The National People's Congress of China also revised its *Company Law* in 2005 to reiterate the importance of corporate governance and require the inclusion of independent directors on corporate boards. In addition, the State Council issued a notice in 2005 that placed great emphasis on improving the quality of corporate governance and recommended that firms establish an effective internal control mechanism.[9] It also addressed important governance issues such as management incentives, the role of the audit committee, disclosure quality, usage of corporate funding, related-party transactions, the expropriation of company resources by controlling shareholders, and so forth.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Tax-Induced Earnings Management in the U.S. Market

Policymakers often change tax laws to reflect economic development or social needs.[10] Numerous studies have presented evidence of earnings manipulation activities around the TRA in the U.S., including those of Gramlich (1991), Porcano (1997), and Lopez et al. (1998). Scholes et al. (1992) report that the tax rate reduction conferred by the TRA gave firms the incentive to defer income recognition and/or accelerate expense recognition in 1986 and 1987 in anticipation of a decline in their tax rate. Guenther (1994) also identifies significant income-shifting behavior in response to the TRA's scheduled tax rate reduction. Maydew (1997) reports that in the post-TRA

---

[8] The 2001 guidance also required that by June 30, 2002, at least two independent directors should be included among the members of the board of directors and by June 30, 2003, at least one-third of the members of the board of directors should be independent directors.

[9] See the *Notice of the State Council on Approving and Forwarding the Opinions of China Securities Regulatory Commission on Improving the Quality of Listed Companies.*

[10] For example, there were four changes in the corporate tax rate on net capital gains in the U.S. between 1974 and 1990, including the TRA of 1986.

period, firms with net operating loss carrybacks deferred operating income and recognized more non-recurring losses, and that these actions helped them to increase the size of their tax refunds.

More recent research has incorporated shareholder ownership and other aspects of corporate governance into the study of earnings management induced by tax-related incentives. Several studies (e.g., Slemrod 2004; Chen and Chu 2005; Crocker and Slemrod 2005; Desai et al. 2007) analyze corporate tax avoidance within an agency framework. Desai et al. (2007), for example, show that the corporate governance system affects the tax revenue level and the sensitivity of such revenues to tax changes. Chen et al. (2010) present empirical evidence that U.S. family-owned firms with concentrated ownership exhibit lower degrees of tax aggressiveness, as they are more concerned with non-tax costs, including those that arise from agency conflicts. Desai and Dharmapala (2008) find the effect of tax avoidance on firm value to be significantly greater for firms with better corporate governance. Consistent with this finding, Hanlon and Slemrod (2009) show that market reactions to news reports of tax sheltering activity are, on average, slightly negative, but become more positive for firms that exhibit better governance.

Earnings Management in the Chinese Market

Earnings management is extensive among Chinese listed firms. Previous studies report a variety of incentives for such management, including manipulating earnings to issue IPOs (Aharony et al. 2000), to offer stock rights (Chen and Yuan 2004; Liu and Lu 2007), to avoid trading restrictions (Chen et al. 2000), and to avoid being delisted from the stock exchange (Liu and Lu 2007). Firms also employ a variety of ways to manage earnings, including related-party transactions (Cheung et al. 2009), transfer pricing (Jian and Wong 2005; Lo et al. 2010), and corporate loans (Jiang et al. 2010), among others.

Extant studies also examine how firms engage in various activities, including earnings management, to minimize tax expenses. Wu et al. (2007) show how Chinese firms exploit various tax incentives to minimize their tax payments. Chan and Mo (2000), however, find that firms report few tax audit adjustments in tax holiday periods, suggesting little incentive to manipulate earnings for tax benefits. Lin (2006) examines the effect of tax holidays on earnings management among foreign-invested enterprises in China, and reports that firms manage earnings to take advantage of the lower tax rates available in tax holiday years. Shevlin et al. (2012) find that Chinese firms shift income from higher- to lower-taxed subsidiaries within a consolidated group to take advantage of different tax jurisdictions. The current study contributes to this line of research by shedding new light on tax-induced earnings management behavior among Chinese firms. It investigates how these firms responded to a change in the tax law, taking into account the effects of firm ownership structure and corporate governance characteristics.

Hypotheses

The NEIT Law stipulated a unified tax rate of 25 percent from the beginning of 2008. Using MTR as a measure of firm tax burden, we expect firms that anticipated a decrease in their marginal tax rates to exhibit deferred income recognition and accelerate expense recognition in 2007, the year before the law's implementation, as shown in Figure 1. Clearly, not every listed DE was subject to the same tax reduction in 2008. Firms that experienced little or no change in their MTR as a result of the NEIT Law are expected to have weak incentives to manage earnings downward.

We also need to consider the cost of tax-induced earnings management when investigating the potential effect of a change in tax policy on corporate behavior. A number of U.S. studies (e.g., Matsunaga et al. 1992; Cloyd et al. 1996; Mills 1998) suggest that these opportunity costs include the possible violation of debt covenants due to reduced net earnings, poor customer relations as a result of delaying finished products, and the possibility of an Internal Revenue Service (IRS) or

FIGURE 1
Timeline and Procedures for Estimating MTR and Determining Firm Earnings Management
Incentive in Anticipation of the New Tax Rate
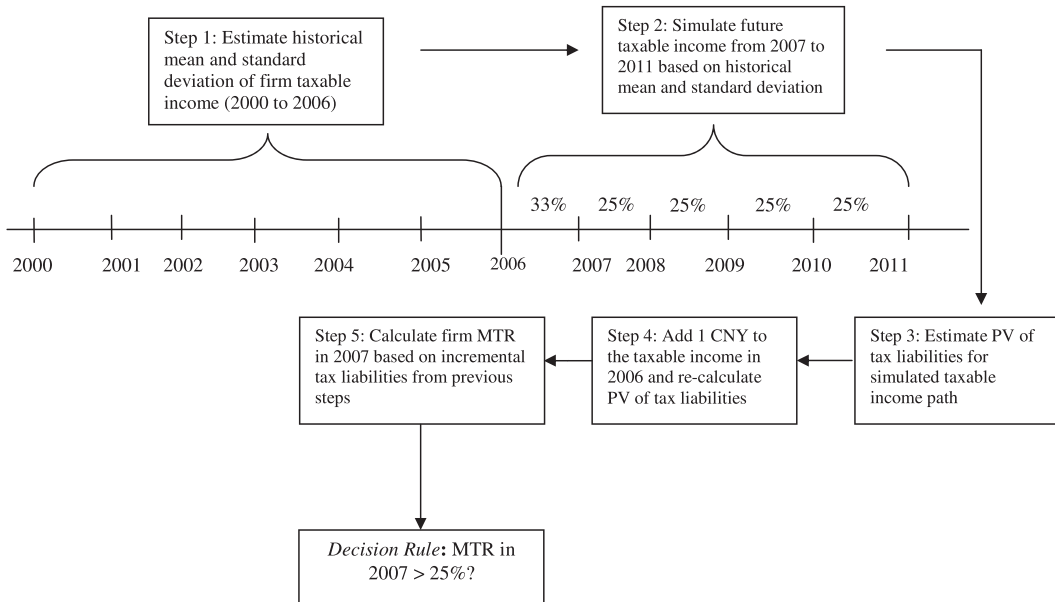
Securities and Exchange Commission (SEC) investigation. Managers thus need to weigh the costs and benefits of tax-induced earnings manipulation activities. In many developing nations such as China, in contrast, such costs can generally be dismissed. China lacks infrastructure and expertise in tax administration (Lin 2006), and firms have weak corporate governance controls for the detection of earnings manipulation (Liu 2005). The country's accounting standards and tax policies are not strictly enforced, and the consequences of earnings management are not as severe as they are in the U.S. Firms that anticipated a fall in their MTR in the post-NEIT period would thus have had a strong incentive to manipulate earnings downward before the law came into force to minimize their tax expenses.

Adopting discretionary current accruals (DCA) as our measure of a firm's earnings management activities, we develop our first hypothesis as follows:

H1: Firms that anticipated a decrease in their income tax rate in the post-NEIT period will have significantly negative DCA in 2007, the year immediately preceding the tax rate change.

Our next hypothesis is related to the effect of firm ownership on tax-induced earnings manipulation behavior. As previously discussed, China's listed firms can be generally classified as either SOEs or non-SOEs, based on their ownership structures.[11] The managers of SOEs and non-

---

[11] In China, listed companies are required to disclose their ultimate controlling shareholder in their annual reports. Therefore, we can see whether firm are controlled by SOEs or non-SOEs. We follow the suggestion of a reviewer and use the percentage of shares owned by SOEs to measure the influence of SOE on the listed companies. Our results using a dummy variable approach are very similar to those reported in the paper that uses the percentage of shares ownership.

SOEs could have different objectives. The latter are under pressure to maximize shareholder wealth by minimizing the amount of tax the firm pays. Hence, in the case of non-SOEs, earnings management seems to benefit both shareholders and managers. The managers of SOEs, in contrast, are government appointees who enjoy "cadre" status and have a certain political rank. These managers are charged with the important objective of generating tax revenue for the government. They are largely evaluated (and compensated) by how much tax revenue their firms generate. Thus, the goals for SOEs tend to reflect the managers' desire to pursue a certain political agenda (e.g., North 1990; Olson 1993), rather than to maximize firm value/shareholder wealth. In fact, *The Performance Evaluation Guideline for SOEs*, published by the Ministry of Finance in 2002 and 2006, clearly states that a key factor in performance evaluation for SOE managers is the firm's overall contribution to society, including the amount of taxes paid to the central and local government. There is even an officially organized, annual ranking of firms by their tax payments. In 2007, SOEs accounted for 89.75 percent of total tax revenue and represented 304 of the top 500 firms with the highest tax payments.[12]

In addition, tunneling incentive—the controlling shareholders' incentive to tunnel firm value or transfer earnings and resources by expropriating minority shareholders—was quite prevalent in the Chinese market (e.g., Claessens et al. 2000; Bai et al. 2004; Liu and Lu 2007; Lo et al. 2010; Jiang et al. 2010).[13] SOEs may be subject to the tunneling incentive because many of the listed firms in China are spin-offs of or carve-outs from large SOEs. The parent SOEs might demand significant returns to subsidize their unprofitable units or replenish their scarce working capital (Liu and Lu 2007; Bai et al. 2004). If such a tunneling incentive is a motivating factor, then SOEs would display a strong intention to manipulate earnings downward to maximize the amount of resources available for tunneling. However, non-SOE firms have been found to be more aggressive in expropriating minority shareholders (Jiang et al. 2010), as they are not monitored by the government, which makes it easier for them to engage in tunneling activities with few or no legal consequences (Chen et al. 2009). Hence, non-SOE firms would have an even greater incentive to manage earnings downward than SOE firms. Given SOEs' strong incentives to increase tax revenue and the more aggressive tunneling incentives for non-SOEs, we propose the following hypothesis:

H2: *Ceteris paribus*, firms with a greater percentage of shares owned by SOEs will report less negative DCA in the year immediately preceding the tax rate change.

The final hypothesis focuses on how some corporate governance mechanisms might influence the earnings management incentives. We use three common measures of corporate governance: the percentage of independent directors on the board, the presence of an audit committee, and voluntary disclosure of the internal control system.[14] We choose these measures to represent the quality of information disclosure and board quality.

Independent directors have been found to affect governance quality, although empirical evidence is mixed. For example, Clarke (2006) shows that independent directors have very little impact on corporate governance in China. Weisbach (1988) reports that independent directors influence the management turnover in poorly performing firms. Rosenstein and Wyatt (1990) find positive market reactions when independent directors are appointed. Klein (2002) and Xie et al. (2003) show that firms with a greater proportion of independent directors are less likely to engage in

---

[12] Source: http://news.sina.com.cn/c/2008-10-11/150616436450.shtml (in Chinese).

[13] We are grateful to one of our referees for offering this insight.

[14] It is worth pointing out that these three mechanisms of corporate governance might not fully capture various aspects of governance quality. Given the complexity of corporate governance, readers should not generalize these results when applying them to the overall quality of governance.

earnings management. In general, we expect firms with more independent directors to have fewer incentives to manage earnings.

The internal control mechanism has been found to greatly affect disclosure quality in the U.S. This is particularly emphasized in the Sarbanes-Oxley Act of 2002. Following the introduction of the disclosure requirement in the U.S., the Shanghai Stock Exchange and the Shenzhen Stock Exchange issued internal control guidelines for publicly traded companies in June and September of 2006, respectively. These guidelines emphasize the importance of internal control and request that firms be audited to evaluate the effectiveness of any internal control system in place, with the expectation that firms will then provide the audit report. However, the two exchanges did not strictly mandate the disclosure of internal control reports or enforce the date of compliance. The release of the certified internal control system became a voluntary behavior. It has been documented that a lack of internal control is associated with a higher risk of accounting fraud, higher turnover rate for auditors, and lower profitability (Ge and McVay 2005; Ashbaugh-Skaife et al. 2007; Feng et al. 2009; Doyle et al. 2007). Based on the signaling framework, Lin and Yao (2009) study the internal control mechanism in China and find that firms with more resources and higher growth potential are more likely to disclose their internal control quality to the public. We expect firms that voluntarily disclose their audited internal control system report to have higher disclosure quality, and to be less likely to engage in earnings management activities.

A well-functioning corporate board usually has an audit committee, compensation committee, strategy committee, and nomination committee. Ho and Wong (2001) investigate public firms in Hong Kong and find that the presence of an audit committee increases the extent of a firm's voluntary disclosure. China's Company Law does not specifically require the setup of any of the above committees. In 2007, the CSRC launched the Campaign for Strengthening Corporate Governance of Public Companies, which requires firms to report to the CSRC and disclose whether they have established an audit committee. Chen and Zhou (2009) find that firms with effective audit committees are less likely to manage earnings. We expect that firms with audit committees are also less likely to engage in tax-induced earnings management. Thus our final hypothesis is stated as follows:

H3: *Ceteris paribus*, firms with better corporate governance mechanisms (higher percentage of independent directors, presence of an audit committee, and voluntary disclosure of internal control system) will have less negative DCA in the year immediately preceding the tax rate change.

VARIABLE CONSTRUCTION AND RESEARCH DESIGN

Variable Construction

The major variables used in this study are firm marginal tax rate (*MTR*), discretionary current accruals (*DCA*), and measures of firm ownership and corporate governance characteristics. We briefly discuss the construction of these variables below, and provide detailed definitions in Appendices A and B.

A key variable in this study is a firm's MTR in the pre-NEIT period. As shown in Figure 1, the MTR is an important indicator that helps to determine whether a firm has the incentive to shift taxable income from a high- to a low-tax period. Following Graham and Mills (2008), we estimate the 2007 MTRs of all firms in our sample using a simulation method, taking the differences between the Chinese and U.S. tax systems and financial reporting into consideration. The simulation process is described in Appendix B.

We measure earnings management by *DCA*. Following previous studies (Cahan 1992; Guay et al. 1996; Bartov et al. 2000; Chung et al. 2002; Kim et al. 2003; Lin 2006), we employ the modified

www.

Jones regression model (Jones 1991; Dechow et al. 1995) to estimate these accruals, which are defined as the difference between reported current accruals and expected current accruals. The estimation process is also discussed in Appendix B.

Regarding the measures of firm shareholder ownership, we compute the percentage of shares held by an SOE (*SOE_OWN*). Governance characteristics are proxied by the percentage of independent directors on the board, the presence of an audit committee, and the voluntary disclosure of a firm's internal control system. Specifically, *IND_DIR_PCT* is defined as the percentage of a firm's independent directors on the board. The independent directors of a listed company are those directors who do not hold any post in the company other than the position of director, and who maintain no relationship with the listed company and its major shareholder that might prevent them from making objective independent judgments.[15] *AUDIT_COMM* is an indicator of whether a firm has an audit committee on its board. Finally, we construct a variable *INTERNAL_CTRL* that equals 1 if a firm discloses its auditor certified internal control report, and is 0 otherwise.[16]

Other variables are related to firms' financial performance, including firm size, profitability, cash flow from operating activities, leverage ratio, capital intensity, inventory intensity, intangible assets, and Tobin's q. These variables, which are defined in Appendix A, have been found to be associated with earnings management behavior in the U.S. and Chinese markets, and are used as control variables in our regression analysis.

Research Design

We construct the following regression model to test our hypotheses:

$$
\begin{aligned}
\frac{DCA_{i,t}}{ASSETS_{i,t-1}} = {} & \beta_0 + \beta_1 MTR\_D_{i,t} + \beta_2 SOE\_OWN_{i,t} + \beta_3 MTR\_D_{i,t} * SOE\_OWN_{i,t} \\
& + \beta_4 AUDIT\_COMM_{i,t} + \beta_5 MTR\_D_{i,t} * AUDIT\_COMM_{i,t} + \beta_6 IND\_DIR\_PCT_{i,t} \\
& + \beta_7 MTR\_D_{i,t} * IND\_DIR\_PCT_{i,t} + \beta_8 INTERNAL\_CTRL_{i,t} \\
& + \beta_9 MTR\_D_{i,t} * INTERNAL\_CTRL_{i,t} + \beta CONTROL + \varepsilon_{i,t}.
\end{aligned}
$$

$$(1)$$

The dependent variable is the earnings management measure—discretionary current accruals (*DCA*). We run this regression in the pre-NEIT period, that is, $t = 2007$. *MTR_D* is a dummy variable that indicates whether a firm's MTR was greater than 25 percent in the pre-NEIT period. If *MTR_D* equals 1, then we expect the firm to have had an incentive to manage its earnings downward in 2007 in anticipation of the tax rate reduction in 2008. Its coefficient, which we expect to be negative, indicates whether firms that anticipated a tax rate reduction in the post-NEIT period had significantly negative DCA in the year immediately preceding the tax rate change (H1). The coefficient of the interaction term *MTR_D * SOE_OWN*, which we expect to be positive, examines whether firms with a larger percentage of shares owned by SOEs had less negative DCA (H2). To test the effect of a firm's corporate governance mechanisms on its earnings management incentives (H3), we add the interaction terms *MTR_D * AUDIT_COMM*, *MTR_D * IND_DIR_PCT*, and *MTR_D * INTERNAL_CTRL* to the regression equation. The coefficients of all variables are predicted to have a positive sign.

---

[15] See *Guidelines for Establishing an Independent Director System in Listed Companies*, issued on August 16, 2001, by the CSRC.

[16] In an annual report, firms may disclose an unaudited internal control report, an audited internal control report, or may not disclose an internal control report. We check the accounting performance (*ROA*) and find no significant difference between the disclosure firms and non-disclosure firms.

We include a number of control variables in the regression equation based on previous studies. To control for the correlation between discretionary accruals and firm profitability (Dechow et al. 1995; Kasznik 1999), we include firm profit (*PROFIT*) in Equation (1). As Chinese listed firms with net losses tend to manipulate earnings aggressively to avoid delisting from the stock market, we include *DLOSS* in the regression model—a dummy variable that equals 1 if a firm has negative *ROE*, and is 0 otherwise. In addition, McNichols (2000) shows that earnings management measures based on the Jones and modified Jones models fail to consider a firm's expected long-term earnings growth rate, which could result in model misspecification. We use Tobin's q (*TOBIN*) as a proxy for a firm's long-term growth rate. To account for a possible correlation between discretionary accruals and cash flows (Dechow et al. 1995), we add *CF* or a firm's operating cash flows (scaled by total sales) to the regression equation. Lagged discretionary accruals (*LAGDCA*) is also included to control for the effects of possible income-smoothing activities adopted by the firm in the years before 2007. We also control for the size effect (DeAngelo et al. 1996; Barth and Elliott 1999), as large firms may be reluctant to report a decline in earnings to avoid a fall in their share price. We use the logarithm of total assets (*LNASSETS*) as our measure of firm size. Finally, in line with previous studies, a number of other control variables are also included in the regression: leverage ratio (*LEVERAGE*) (Graham 1996; Newberry and Dhaliwal 2001), capital intensity (*CAPITAL_ INT*) (Gupta and Newberry 1997), inventory intensity (*INVENTORY_INT*) (Bauwhede and Willekens 2003), and intangible assets (*INTANGIBLE*) (Shevlin et al. 2012).[17] We define these variables in Appendix A.

EMPIRICAL RESULTS

Sample Selection and Descriptive Statistics

We obtain information about China's listed firms from the CSMAR database, provided by the GTA Information Technology Company.[18] One of the key variables is firm simulated MTR in 2007. The observations that we use to simulate MTR in 2007 include all publicly listed, non-financial firms on the Shanghai and Shenzhen Stock Exchanges from 2000 to 2006. The main sample used in the study consists of all listed firms in 2007, one year before the implementation of the NEIT Law. Financial firms and firms with missing total assets data are excluded. We also manually collect the data on firms' disclosure of internal control reports from their annual reports. The initial sample consists of 1,471 firms with available data to estimate *MTR* and *DCA* in 2007. When we include other control variables to conduct the regression analysis, we have a small attrition in sample size.[19]

We report summary statistics for firm *MTR* and other variables in Table 1. All of the continuous variables are Winsorized at 1 percent and 99 percent to minimize the potential influence

---

[17] Another important control variable is foreign operations, as firms tend to place income in lower-tax jurisdictions (e.g., Mills and Newberry 2004; Dyreng and Lindsey 2009). A measure of a firm's foreign operations is the absolute ratio of foreign pretax income to worldwide pretax income, assigning a zero to foreign pretax income for missing values, as suggested by Mills and Newberry (2004). However, we do not have access to foreign pretax income data for Chinese firms. Furthermore, most Chinese companies in our sample have few or no foreign operations.

[18] The CSMAR database provides a wide range of data on China's stock markets, including financial statements, stock prices and returns, tick-to-tick quotes and transactions, corporate events, and corporate governance, among others. Part of this database is accessible through the Wharton School's WRDS platform.

[19] Specifically, when we include Tobin's q and operating cash flow in Model (a) of Table 3, our sample size is reduced to 1,158. The inclusion of capital intensity, inventory intensity, and intangible assets further reduces the sample to 1,079 (Model [b] of Table 3 and Model [a] of Table 4). Finally, the inclusion of corporate governance measures reduces the sample size to 959 observations (Models [b] and [c] of Table 4).

TABLE 1

Summary Statistics

Panel A: Summary Statistics of Marginal Tax Rate, Measures of Firm Ownership Structure and Board Composition, and Financial Measures

	Mean	STD	Min	Q1	Median	Q3	Max	n
MTR	0.184	0.111	0.000	0.103	0.168	0.304	0.330	1,471
SOE_OWN	0.248	0.218	0.000	0.000	0.256	0.441	0.705	1,368
AUDIT_COMM	0.583	0.493	0.000	0.000	1.000	1.000	1.000	1,214
BOARD_ SIZE	17.000	3.810	9.000	15.000	16.000	19.000	32.000	1,203
IND_DIR_NUM	6.020	1.530	3.000	5.000	6.000	7.000	13.000	1,203
IND_DIR_PCT	0.356	0.053	0.140	0.330	0.330	0.370	0.660	1,203
INTERNAL_CTRL	0.298	0.458	0.000	0.000	0.000	1.000	1.000	1,021
ROE	0.089	0.120	−0.616	0.037	0.083	0.141	0.676	1,471
TOBIN	2.131	0.931	0.952	1.475	1.879	2.526	5.946	1,190
PROFIT	0.063	0.180	−1.709	0.019	0.061	0.125	0.572	1,471
LNASSETS	21.471	1.050	19.004	20.726	21.401	22.145	24.422	1,471
CF	0.047	0.119	−2.516	0.005	0.049	0.095	0.901	1,420
LEVERAGE	0.061	0.082	0.000	0.000	0.023	0.093	0.357	1,372
CAPITAL_INT	0.284	0.176	0.006	0.144	0.254	0.404	0.743	1,471
INVENTORY_INT	0.162	0.128	0.001	0.065	0.136	0.224	0.656	1,471
INTANGIBLE	0.045	0.048	0.000	0.011	0.029	0.061	0.254	1,132
ROA	0.042	0.054	−0.236	0.016	0.039	0.066	0.237	1,471
SG	0.254	0.422	−0.653	0.055	0.197	0.364	3.202	1,471

Panel B: Industry Distribution of Marginal Tax Rate

Industry	Mean	STD	Min	Q1	Median	Q3	Max	n (Total = 1,471)	# of Firms with *MTR* >0.25 (Total = 476)	% of Firms with *MTR* >0.25 (Total = 476)
Agriculture/ Forestry	0.093	0.093	0.000	0.006	0.046	0.168	0.330	33	1	3.0%
Mining	0.264	0.077	0.122	0.190	0.305	0.327	0.330	23	14	60.9%
Manufacturing	0.174	0.108	0.000	0.095	0.168	0.273	0.330	869	258	29.7%
Utilities & Gas	0.198	0.100	0.000	0.131	0.195	0.302	0.330	67	23	34.3%
Construction	0.204	0.116	0.000	0.111	0.199	0.330	0.330	31	13	41.9%
Transportation	0.210	0.105	0.000	0.136	0.203	0.320	0.330	66	28	42.4%
Information Technology	0.134	0.091	0.000	0.066	0.133	0.169	0.330	87	14	16.1%
Wholesale & Retail	0.251	0.101	0.000	0.174	0.305	0.330	0.330	94	59	62.8%
Real Estate	0.249	0.098	0.000	0.168	0.304	0.330	0.330	67	40	59.7%
Personal/Social Services	0.210	0.112	0.000	0.118	0.208	0.330	0.330	47	21	44.7%
Conglomerate	0.187	0.115	0.000	0.092	0.168	0.330	0.330	75	4	5.3%
Unclassified	0.168	0.141	0.000	0.000	0.168	0.330	0.330	12	1	8.3%

(continued on next page)

TABLE 1 (continued)

Panel C: Summary Statistics of Discretionary Current Accruals *(DCA)* **and Variables Used to Estimate** *DCA*

	Mean	STD	Min	Q1	Median	Q3	Max	n
CA	0.002	0.124	−0.396	−0.069	0.000	0.069	0.415	1,471
LAG_TOTAL_ ASSETS (mil)	2,965.573	3,718.019	199.287	868.176	1,702.212	3,358.945	26,425.207	1,471
Δ*SALES* (mil)	574.782	1231.750	−709.554	25.788	168.451	567.411	8,847.872	1,471
Δ*AR* (mil)	−45.436	122.426	−575.223	−89.037	−22.850	5.579	387.584	1,471
PPE (mil)	1,112.668	1,926.967	7.094	185.685	420.271	1,082.837	14,840.122	1,471
DCA	0.003	0.142	−0.432	−0.078	0.002	0.080	0.484	1,471
LAGDCA	−0.001	0.101	−0.284	−0.054	0.011	0.070	0.219	1,261

Variables are defined as in Appendices A and B. The industry is defined by the Chinese Public Firms Industry Classification Code. All the continuous variables are winsorized at 1 percent and 99 percent to control for potential outlier influence.

of outliers. *MTR*s varied greatly among China's public firms in 2007, at both the firm (Panel A) and industry levels (Panel B). The mean (median) *MTR* is 18.4 percent (16.8 percent), with a standard deviation of 11.1 percent. The minimum (maximum) *MTR* is 0 (33 percent), and the 75th percentile is 30.4 percent.[20] We also see a large variation in *MTR* across industries in Panel B. The average tax rate ranged from 9.3 percent to 26.4 percent across various industries in 2007. There are 476 firms in our sample with an *MTR* greater than 25 percent. Five industries appear to have a relatively higher percentage of firms with an *MTR* greater than 25 percent. They are wholesale and retail (62.8 percent), mining (60.9 percent), real estate (59.7 percent), personal/social services (44.7 percent), and transportation (42.4 percent). Given the significant industry variations in *MTR*, we control for industry fixed effects in our regression analyses.

Panel A of Table 1 also shows the descriptive statistics for firm ownership, governance characteristics, and financial performance measures. SOEs represent a significant proportion of ownership in China. The average (median) percentage of a firm's total shares owned by SOEs is 24.8 percent (25.6 percent). The average board size is 17, with six independent directors, accounting for approximately 35.6 percent of the total number of board directors. About 58.3 percent of our sample firms have an audit committee on their board and 29.8 percent have voluntarily disclosed audited internal control reports. On average, our sample firms have a total asset of CNY2.1 billion (*LNASSETS* = 21.5), which is equivalent to about $289.6 million.[21] Chinese firms are relatively small compared to their U.S. counterparts. Panel C reports descriptive statistics for the earnings management measures. Average Δ*SALES*, Δ*AR*, and *PPE* are CNY574.8 million, −45.4 million, and 1,112.7 million, respectively. Reported current accruals, or *CA*, account for about 0.2 percent of total assets on average. The average *DCA* (scaled by previous years' total assets) for the sample firms is about 0.3 percent.

---

[20] These summary statistics are comparable to those reported by Lo et al. (2010). Using China's listed firms in 2004 as a sample, Lo et al. (2010) report that the mean (median) *MTR* is 20.10 percent (15.00 percent), with a standard deviation of 10.80 percent.

[21] This conversion is based on a CNY/USD exchange rate of 0.1371 on December 31, 2007.

TABLE 2

Correlation Matrix

Panel A: *DCA* **to** *DLOSS*

	DCA	MTR_D	SOE_OWN	AUDIT_COMM	IND_DIR_PCT	INTERNAL_CTRL	LAGDCA	DLOSS
MTR_D	−0.015							
SOE_OWN	−0.011	0.035						
AUDIT_COMM	0.034	0.016	0.018					
IND_DIR_PCT	0.095	−0.004	−0.073	−0.027				
INTERNAL_CTRL	0.020	0.019	0.104	−0.002	−0.021			
LAGDCA	−0.110	0.007	0.052	0.030	0.014	0.050		
DLOSS	−0.034	−0.112	−0.103	−0.019	−0.017	−0.098	−0.128	
TOBIN	0.043	−0.017	−0.146	−0.046	0.015	−0.045	−0.041	0.060
PROFIT	0.026	−0.031	0.054	0.026	−0.007	0.008	0.034	−0.032
LNASSETS	0.095	−0.012	0.339	0.058	−0.037	0.168	0.099	−0.233
CF	0.051	0.019	−0.017	−0.029	0.030	−0.010	−0.004	0.072
LEVERAGE	0.078	−0.005	0.153	−0.010	−0.006	0.072	0.055	−0.068
CAPITAL_INT	0.051	0.032	0.184	0.019	−0.057	0.039	0.012	−0.012
INVENTORY_INT	0.093	0.043	−0.080	0.063	0.022	0.035	0.084	−0.050
INTANGIBLE	−0.017	0.025	−0.030	0.013	0.063	−0.053	−0.048	0.083

Panel B: *TOBIN* **to** *INVENTORY_INT*

	TOBIN	PROFIT	LNASSETS	CF	LEVERAGE	CAPITAL_INT	INVENTORY_INT
PROFIT	−0.004						
LNASSETS	−0.319	0.048					
CF	0.023	−0.037	−0.046				
LEVERAGE	−0.196	−0.003	0.367	−0.017			
CAPITAL_INT	−0.061	0.034	0.135	−0.031	0.299		
INVENTORY_INT	−0.074	0.023	0.068	0.003	−0.026	−0.449	
INTANGIBLE	0.067	0.053	−0.128	−0.012	−0.009	0.053	−0.187

Variables are defined as in Appendices A and B.

Regression Analysis of Tax-Induced Earnings Management

We first examine the Pearson correlations for the main variables used in the study. As reported in Table 2, *DCA* is inversely correlated with *MTR_D*, suggesting that *DCA* tends to be negative for firms that anticipated a tax rate reduction in the post-NEIT period. *DCA* is negatively correlated with SOE ownership, and positively correlated with several corporate governance measures. There appears to be no significant multicollinearity issue among the major variables.

We now turn to the ordinary least squares (OLS) regression (Equation [1]), controlling for other variables that could potentially affect a firm's earnings management activities. Industry-fixed effects are controlled in all models. The preliminary results are presented in Table 3 where we test

TABLE 3

Regression Result for Discretionary Current Accruals on Timing of Anticipated Rate Reduction

	Expected Sign	(a)	(b)
MTR_D	−	−0.019**	−0.029**
		(0.008)	(0.014)
LAGDCA	−	−0.078**	−0.103***
		(0.025)	(0.026)
DLOSS	−	−0.127***	−0.117***
		(0.025)	(0.025)
TOBIN	+	0.019***	0.025***
		(0.006)	(0.007)
PROFIT	+	0.001	0.001
		(0.002)	(0.002)
LNASSETS	+	0.015**	0.012**
		(0.007)	(0.005)
CF	−	−0.010*	−0.004*
		(0.005)	(0.002)
LEVERAGE	+	0.317***	0.281***
		(0.074)	(0.080)
CAPITAL_INT	+		0.178***
			(0.045)
INVENTORY_INT	+		0.398***
			(0.058)
INTANGIBLE	−		−0.019
			(0.114)
Industry Fixed Effect		Yes	Yes
n		1,158	1,079
Adj. R^2		0.071	0.110

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent levels (one-tailed), respectively.
The dependent variable is discretionary current accruals (*DCA*). *MTR_D* is a dummy variable that equals 1 if the firm had an *MTR* in 2007 that was greater than the new statutory tax rate (25 percent).
Other variables are defined as in Appendices A and B.
The standard errors adjusted for heteroscedasticity are reported in parentheses.

the first hypothesis with *MTR_D* as the variable of interest. In both Models (a) and (b), the coefficient of *MTR_D* is negative and significant, indicating that firms anticipating a reduction in their tax rate tended to reduce their discretionary current accruals. In Model (b), for example, the coefficient of *MTR_D* is −0.029 (t = −2.01). This result indicates that on average, firms with a higher-than-25-percent *MTR* in the pre-NEIT period reduced their *DCA* by 2.9 percent.

The coefficients of the control variables in the regressions generally have the expected signs. *LAGDCA* is negative and significant, which suggests that the firms began smoothing earnings in 2006. Those with net losses (or negative *ROE*) tended to reduce their accruals, as indicated by the negative coefficient of *DLOSS*. Tobin's q (*TOBIN*) is used as a proxy for a firm's long-term growth rate, and has a positive and significant coefficient consistent with McNichols (2000). The coefficient of *LNASSETS* is positive and significant, suggesting that large firms are more likely to increase accruals to avoid declining earnings (DeAngelo et al. 1996; Barth and Elliott 1999). As expected, *CF* has a negative coefficient, which indicates an indirect relation between cash flows

generated from operating activities and discretionary accruals. In addition, the coefficients of *CAPITAL_INT* and *INVENTORY_INT* are significantly positive, suggesting that capital- and inventory-intensive firms tend to have positive discretionary accruals. We find no significant relation between DCA and intangible assets and firm profitability.

In summary, the results in Table 3 support our first hypothesis. That is, firms that anticipated a decrease in their marginal tax rates in the post-NEIT period had significantly negative DCA in 2007, the year immediately preceding the tax rate change.

Effect of Ownership Structure and Governance on Earnings Management

We next consider the effect of firm ownership structure and corporate governance characteristics on earnings management behavior, with the results reported in Table 4. To test H2, we use the interaction term *MTR_D * SOE_OWN* in Model (a) and find that it has a significant and positive coefficient of 0.120 (t = 1.89). This suggests that among firms with the same *MTR*, the downward earnings management incentive tends to be less severe for firms with a higher percentage of shares owned by SOEs. This finding supports H2. Note that the predictability of *MTR_D* remains significant and the results of the other control variables are similar to those reported in Table 3.

Model (b) reports the regression result for the effect of governance characteristics on firms' earnings manipulation incentives (H3). The sample size goes down to 959 observations due to missing values for some corporate governance variables. The coefficient of *MTR_D * AUDIT_COMM* is positive and significant ($\beta = 0.011$, t = 2.34), suggesting that the existence of an audit committee on the corporate board significantly reduced firms' incentives to manage earnings downward in anticipation of the tax rate reduction in the post-NEIT period. Similarly, the coefficient of *MTR_D * INTERNAL_CTRL* ($\beta = 0.017$, t = 2.36) is positive and significant. This indicates that downward earnings management is also weaker for firms that voluntarily disclose their audited internal control reports. In contrast, we find no significant relationship between DCA and the percentage of independent directors. A possible reason is that independent directors in China do not play an effective monitoring role (Shen and Jia 2004; Liao et al. 2009).[22] In reviewing the influence of independent directors in Chinese corporate governance, Clarke (2006) concludes that independent directors have little effect on the way companies are run. Finally, in Model (c), we include *MTR_D*, the shareholder ownership measures, governance characteristics, board composition measures, and other control variables in the full model to test all of our hypotheses, and it is evident that the previous findings continue to hold.

Overall, the findings presented in Table 4 suggest that firms that were more likely to benefit from the tax rate reduction had significantly negative DCA in the pre-NEIT period, and that such earnings management activities were less severe among those with a greater percentage of shares owned by SOEs, those with an audit committee on their board, and those with disclosures of certified internal control systems.

Earnings Management Magnitude and Tax Expense Savings

In this section we estimate the economic significance of the downward earnings management exhibited in 2007. Take the full model—Model (c) of Table 4—as a starting point. The coefficient of *MTR_D* is −0.029 (t = −2.22), indicating that firms with an *MTR* higher than 25 percent in the

---

[22] Shen and Jia (2004) note that, in practice, the election of independent directors is determined solely by the controlling shareholders. These authors also present anecdotal evidence of independent directors being elected simply because they have *guanxi* (connections) with firm management (Shen and Jia 2004, 237). Similarly, Liao et al. (2009) report that the main reason for Chinese firms recruiting independent directors is to help them connect with people who can provide useful resources, rather than to monitor the firm's performance.

www.

TABLE 4

Regression Result for Discretionary Current Accruals on Timing of Anticipated Rate Reduction, Firm Ownership, and Governance Characteristics

	Expected Sign	(a)	(b)	(c)
MTR_D	−	−0.057***	−0.054**	−0.029**
		(0.021)	(0.022)	(0.013)
SOE_OWN	+/−	−0.104*		−0.071
		(0.061)		(0.069)
*MTR_D * SOE_OWN*	+	0.120*		0.098**
		(0.064)		(0.045)
AUDIT_COMM	−		−0.003	−0.017
			(0.025)	(0.030)
*MTR_D * AUDIT_COMM*	+		0.011**	0.031***
			(0.005)	(0.011)
IND_DIR_PCT	−		0.161	0.133
			(0.239)	(0.293)
*MTR_D * IND_DIR_PCT*	+		−0.248	−0.173
			(0.292)	(0.349)
INTERNAL_CTRL	−		−0.012	−0.016
			(0.038)	(0.042)
*MTR_D * INTERNAL_CTRL*	+		0.017**	0.020**
			(0.007)	(0.009)
LAGDCA	−	−0.095***	−0.109***	−0.107***
		(0.026)	(0.027)	(0.030)
DLOSS	−	−0.133***	−0.119***	−0.105***
		(0.025)	(0.027)	(0.037)
TOBIN	+	0.030***	0.027***	0.039***
		(0.007)	(0.007)	(0.009)
PROFIT	+	0.001	0.001	0.001
		(0.001)	(0.002)	(0.002)
LNASSETS	+	0.015**	0.010**	0.032**
		(0.008)	(0.004)	(0.013)
CF	−	−0.002***	−0.003**	−0.028***
		(0.0005)	(0.001)	(0.009)
LEVERAGE	+	0.265***	0.330***	0.207**
		(0.079)	(0.086)	(0.099)
CAPITAL_INT	+	0.212***	0.201***	0.328***
		(0.045)	(0.048)	(0.057)
INVENTORY_INT	+	0.376***	0.415***	0.540***
		(0.057)	(0.062)	(0.082)
INTANGIBLE	−	−0.010	−0.119	−0.033
		(0.114)	(0.131)	(0.150)
Industry Fixed Effect		Yes	Yes	Yes
n		1,079	959	959
Adj. R^2		0.131	0.124	0.137

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent levels (one-tailed), respectively.

The dependent variable is discretionary current accruals (*DCA*). *MTR_D* is a dummy variable that equals 1 if the firm had an *MTR* in 2007 that was greater than the new statutory tax rate (25 percent).

Other variables are defined as in Appendices A and B.

The standard errors adjusted for heteroscedasticity are reported in parentheses.

American Accounting Association

pre-NEIT period reduced their *DCA* by an average of 2.9 percent. Given the average lagged total assets of CNY5.45 billion for those *MTR*-higher-than-25-percent firms, this translates into a reduction in discretionary accruals of CNY157.9 million (or $21.7 million) through downward earnings management.

Note that by managing earnings downward in 2007, the firms with an *MTR* greater than 25 percent successfully shifted their taxable income from a high- to a low-tax period. Even if these firms avoided paying taxes in 2007, they were still subject to the new tax rate of 25 percent in 2008. Therefore, to estimate the amount of tax savings for these firms as a result of downward earnings management, we need to compare their *MTR*s in 2007 with the new tax rate in 2008. The average *MTR* for firms with a higher-than-25-percent tax rate was 31.3 percent in 2007 (not reported in the table). Thus, the average estimated tax expense savings experienced by those higher-tax firms amounted to CNY9.9 million (CNY157.9 million × [31.3 percent − 25 percent]). Given that there are 476 firms with marginal tax rates greater than 25 percent, the aggregate amount is CNY4,712.4 million ($646.1 million). The total tax expenses reported by these firms in 2007 were CNY149.2 billion; thus, the total tax savings amounts to about 3.2 percent of these firms' total tax expenses during that year.

Robustness

Our first robustness test compares the average discretionary current accruals (*DCA*) between the pre- and post-NEIT period. If the reduction of discretionary accruals in the pre-NEIT period was primarily intended to defer tax expenses from a higher-tax-rate period to a lower-tax-rate period, then we would expect to observe an increase in discretionary accruals during the post-NEIT period. We find this is indeed the case. The average *DCA* increased from 0.3 percent in the pre-NEIT period to 0.5 percent in the post-NEIT period, and the difference is significant at the 1 percent confidence level.

We also employ several alternative variables to test the robustness of our findings. We first replace *MTR_D* with *MTR_DIF*, where *MTR_DIF* is the difference between a firm's simulated *MTR* in 2007 and the new tax rate of 25 percent. We also arrange for this variable to interact with several other measures. In addition, as a firm's earnings management incentives are highly correlated with its financial performance, we employ different financial measures in the regression equations, including firm ROA, the sales growth rate, and market capitalization. We again run several different models to test our hypotheses by adding ownership structure and board composition measures sequentially. The results reported in Table 5 remain consistent with our previous findings, albeit weaker.

Finally, we use the effective tax rate (*ETR*) to measure the corporate tax burden (Porcano 1986; Shevlin and Porter 1992; Gupta and Newberry 1997). The *ETR* is defined as (Tax Expense − Deferred Tax Expense)/Profit before Interest and Tax (Porcano 1986). Similar to Wu et al. (2007), we estimate the *ETR* for each firm in the sample from 2004 to 2006, and then employ the three-year average *ETR* as an alternative measure of an individual firm's tax rate in the pre-NEIT period. This measure becomes an alternative indicator of a firm's incentive to manage earnings in 2007. For example, if the average *ETR* for a firm was above 25 percent in the pre-NEIT period, then we expect said firm to have had an incentive to manage earnings in 2007. We replace *MTR* with *ETR* and repeat our empirical tests. In untabulated results, we find that our previous results remain significant.[23]

---

[23] For brevity, we do not tabulate these results in this paper, but they are available from the authors upon request.

TABLE 5

Robustness

	Expected Sign	(a)	(b)	(c)	(d)
MTR_DIF	−	−0.012*	−0.035*	−0.067*	−0.100*
		(0.006)	(0.020)	(0.039)	(0.053)
SOE_OWN	+/−		−0.033		−0.034
			(0.036)		(0.040)
MTR_DIF ∗ SOE_OWN	+		0.184*		0.166*
			(0.108)		(0.094)
AUDIT_COMM	−			−0.010	−0.009
				(0.017)	(0.017)
MTR_DIF ∗ AUDIT_COMM	+			0.027*	0.025**
				(0.015)	(0.013)
IND_DIR_PCT	−			−0.025	−0.039
				(0.136)	(0.135)
MTR_DIF ∗ IND_DIR_PCT	+			−0.055	−0.057
				(0.133)	(0.135)
INTERNAL_CTRL	−			−0.011	−0.013
				(0.027)	(0.028)
MTR_DIF ∗ INTERNAL_CTRL	+			0.029**	0.030**
				(0.011)	(0.015)
LAGDCA	−	−0.090***	−0.085***	−0.090***	−0.089
		(0.022)	(0.024)	(0.025)	(0.025)
SG	−	0.001	0.001	0.001	0.001
		(0.001)	(0.001)	(0.001)	(0.001)
ROA	+	0.006***	0.006***	0.006***	0.006***
		(0.001)	(0.001)	(0.001)	(0.001)
LNMKT	+	0.017***	0.023***	0.018**	0.020**
		(0.006)	(0.007)	(0.008)	(0.008)
LEVERAGE	+	0.230***	0.230***	0.258***	0.263***
		(0.072)	(0.074)	(0.083)	(0.083)
CAPITAL_INT	+	0.165***	0.175***	0.186***	0.188***
		(0.040)	(0.042)	(0.046)	(0.046)
INVENTORY_INT	+	0.347***	0.354***	0.363***	0.366***
		(0.050)	(0.053)	(0.057)	(0.057)
INTANGIBLE	−	−0.108	−0.111	−0.214*	−0.218*
		(0.098)	(0.101)	(0.116)	(0.116)
Industry Fixed Effect		Yes	Yes	Yes	Yes
n		1,005	1,005	959	959
Adj. R^2		0.099	0.102	0.110	0.118

*, **, *** Indicate significance at the 10 percent, 5 percent, and 1 percent levels (one-tailed), respectively.
The dependent variable is discretionary current accruals (*DCA*). *MTR_DIF* is the difference between a firm's MTR in 2007 and the new statutory tax rate (25 percent).
Other variables are defined as in Appendices A and B.
The standard errors adjusted for heteroscedasticity are reported in parentheses.

American Accounting Association

CONCLUSION

To increase its domestic industry and encourage continuing foreign capital inflow, the Chinese government has used strategic tax incentives to direct capital toward various industries and geographical locations. Any significant tax law change is going to have either a long-term or a short-term influence on company behavior. Studies of how firms react to tax law changes will allow regulators and tax bureaus to evaluate the costs/benefits of the new rules and guide them in setting future policies. This is especially important for emerging markets in which tax revenue continues to be an important component of government spending.

China's NEIT Law was introduced in 2007 and came into effect in January 2008. The new law, which can be viewed as China's equivalent to the TRA of 1986 in the U.S., changed the corporate tax rate from 33 percent to 25 percent. This paper examines tax-induced earnings manipulation behavior among Chinese listed firms in response to this anticipated tax reduction.

Using a simulated marginal tax rate, we show that firms that expected lower tax rates after the NEIT Law reported significantly negative DCA in 2007. We interpret this as evidence that firms shifted their taxable income from the higher- to the lower-tax period. The tax-induced earnings management resulted in the loss of roughly CNY4,712.4 million (or $646.1 million) in government tax revenue. Among firms with the same MTR, such downward earnings management incentives tended to be less severe for those with a greater percentage of shares owned by SOEs, those that have an audit committee on the board, and those that voluntarily disclose their audited internal control systems.

REFERENCES

Agrawal, A., and S. Chadha. 2005. Corporate governance and accounting scandals. *Journal of Law and Economics* 48 (2): 371–406.

Aharony, J., C. W. J. Lee, and T. J. Wong. 2000. Financial packaging of IPO firms in China. *Journal of Accounting Research* 38 (1): 103–126.

Ashbaugh-Skaife, H., D. Collins, and W. Kinney. 2007. *The Effect of Internal Control Deficiencies and Their Remediation on Accrual Quality*. Working paper, University of Wisconsin–Madison.

Bai, C., Q. Liu, J. Lu, E. M. Song, and J. Zhang. 2004. Corporate governance and market valuation in China. *Journal of Comparative Economics* 32 (4): 599–616.

Barth, M. E., and J. A. Elliott. 1999. Market rewards associated with patterns of increasing earnings. *Journal of Accounting Research* 37 (2): 387–413.

Bartov, E., F. A. Gul, and J. S. L. Tsui. 2000. Discretionary-accruals models and audit qualifications. *Journal of Accounting and Economics* 30 (3): 421–452.

Bauwhede, H. V., and M. Willekens. 2003. Earnings management in Belgium: A review of the empirical evidence. *Tijdschrift voor Economie en Management* 48 (2): 199–217.

Cahan, S. F. 1992. The effect of antitrust investigation on discretionary accruals: A refined test of the political cost hypothesis. *The Accounting Review* 67 (1): 770–796.

Chan, H. K., and P. L. Mo. 2000. Tax holidays and tax noncompliance: An empirical study of corporate tax audits in China's developing economy. *The Accounting Review* 75 (4): 77–96.

Chen, G. M., M. Firth, D. N. Gao, and O. M. Rui. 2006. Ownership structure, corporate governance, and fraud: Evidence from China. *Journal of Corporate Finance* 12 (3): 424–448.

Chen, G. M., M. Firth, and L. P. Xu. 2009. Does the type of ownership control matter? Evidence from China's listed companies. *Journal of Banking and Finance* 33 (1): 171–181.

Chen, K. C. W., and H. Yuan. 2004. Earnings management and capital resources allocation: Evidence from China's accounting-based regulation of rights issues. *The Accounting Review* 79 (3): 645–665.

Chen, K. P., and C. Y. C. Chu. 2005. Internal control vs. external manipulation: A model of corporate income tax evasion. *Rand Journal of Economics* 36 (4): 151–164.

Chen, S., X. Chen, Q. Cheng, and T. Shevlin. 2010. Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics* 95 (1): 41–61.

Chen, X., and N. Zhou. 2009. *Audit Committee Effectiveness: Evidence from a Government Inspection in China*. Working paper, Binghamton University, SUNY.

Chen, X. Y., X. Xiao, and X. Y. Guo. 2000. Rights issue qualifications and earnings manipulation of listed companies. *Economic Research* 1: 30–36.

Cheung, Y., L. Jing, T. Lu, P. R. Rau, and A. Stouraitis. 2009. Tunneling and propping up: An analysis of related party transaction by Chinese listed companies. *Pacific-Basin Finance Journal* 17 (3): 372–393.

Chung, R., M. Firth, and J. Kim. 2002. Institutional monitoring and opportunistic earnings management. *Journal of Corporate Finance* 8 (1): 29–48.

Claessens, S., S. Djankov, and L. H. P. Lang. 2000. The separation of ownership and control in East Asian corporations. *Journal of Financial Economics* 58 (1-2): 81–112.

Clarke, D. 2006. The independent director in Chinese corporate governance. *Delaware Journal of Corporate Law* 31: 127–224.

Cloyd, C. B., J. Pratt, and T. Stock. 1996. The use of financial accounting choice to support aggressive tax position: Public and private firms. *Journal of Accounting Research* 34 (1): 23–43.

Crocker, K. J., and J. Slemrod. 2005. Corporate tax evasion with agency costs. *Journal of Public Economics* 89 (9-10): 1593–1610.

DeAngelo, H., L. DeAngelo, and D. J. Skinner. 1996. Reversal of fortune dividend signaling and the disappearance of sustained earnings growth. *Journal of Financial Economics* 40 (3): 341–371.

Dechow, P. M., R. G. Sloan, and A. P. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70 (2): 193–226.

DeFond, M., and K. R. Subramanyam. 1998. Auditor changes and discretionary accruals. *Journal of Accounting and Economics* 25 (1): 35–68.

Desai, M. A., and D. Dharmapala. 2008. Tax and corporate governance: An economic approach. In *Tax and Corporate Governance*, edited by Schön, W., 13–30. Berlin, Germany: Springer-Verlag.

Desai, M. A., A. Dyck, and L. Zingales. 2007. Theft and taxes. *Journal of Financial Economics* 84 (3): 591–623.

Dong, X., and L. Putterman. 2003. Soft budget constraints, social burdens, and labor redundancy in China's state industry. *Journal of Comparative Economics* 31 (1): 110–133.

Doyle, J., W. Ge, and S. McVay. 2007. Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics* 44 (1): 193–223.

Dyreng, S. D., and B. P. Lindsey. 2009. Using financial accounting data to examine the effect of foreign operations located in tax havens and other countries on U.S. multinational firms' tax rates. *Journal of Accounting Research* 47 (5): 1283–1316.

Feng, M., C. Li, and S. McVay. 2009. Internal control and management guidance. *Journal of Accounting and Economics* 48 (2-3): 190–209.

Ge, W., and S. McVay. 2005. The disclosure of material weakness in internal control after the Sarbanes-Oxley Act. *Accounting Horizons* 19 (3): 137–158.

Graham, J. 1996. Debt and the marginal tax rate. *Journal of Financial Economics* 41 (1): 41–73.

Graham, J., and L. F. Mills. 2008. Using tax return data to simulate corporate marginal tax rates. *Journal of Accounting and Economics* 46 (2-3): 366–388.

Gramlich, J. 1991. The effects of the alternative minimum tax book income adjustment on accrual decisions. *The Journal of the American Taxation Association* 13 (1): 36–56.

Green, S. 2004. *The Privatization Two-Step at China's Listed Firms*. Working paper, Chatham House, Asia Programme.

Guay, W. A., S. P. Kothari, and R. L. Watts. 1996. A market-based evaluation of discretionary-accrual models. *Journal of Accounting Research* 34 (Supplement): 83–105.

Guenther, D. A. 1994. Earnings management in response to corporate tax rate changes: Evidence from the 1986 Tax Reform Act. *The Accounting Review* 69 (1): 230–243.

www.

Gupta, S., and K. Newberry. 1997. Determinants of the variability in corporate effective tax rate: Evidence from longitudinal data. *Journal of Accounting and Public Policy* 16 (1): 1–39.

Hanlon, M., and S. Heitzman. 2010. *A Review of Tax Research*. Working paper, MIT and University of Oregon.

Hanlon, M., and J. Slemrod. 2009. What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement. *Journal of Public Economics* 93: 126–141.

Ho, S. S. M., and K. S. Wong. 2001. A study of the relationship between corporate governance structures and the extent of voluntary disclosure. *Journal of International Accounting, Auditing and Taxation* 10 (2): 139–156.

Jian, M., and T. Wong. 2005. *Earnings Management and Tunneling Through Related Party Transactions: Evidence from Chinese Corporate Groups*. Working paper, Chinese University of Hong Kong.

Jiang, G., C. M. C. Lee, and H. Yue. 2010. Tunneling through intercorporate loans: The China experience. *Journal of Financial Economics* 98 (1): 1–20.

Jones, J. J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29 (2): 193–228.

Kang, J., M. Liu, and S. Ni. 2002. Contrarian and momentum strategies in the China stock market: 1993–2000. *Pacific-Basin Finance Journal* 10 (3): 243–265.

Kasznik, R. 1999. On the association between voluntary disclosure and earnings management. *Journal of Accounting Research* 37 (1): 57–81.

Kim, J. B., R. Chung, and M. Firth. 2003. Auditor conservatism, asymmetric monitoring and earnings management. *Contemporary Accounting Research* 20 (2): 323–360.

Klein, A. 2002. Audit committee, board of director characteristics and earnings management. *Journal of Accounting and Economics* 33 (3): 375–400.

Leuz, C., D. Nanda, and P. Wysocki. 2003. Earnings management and investor protections: An international comparison. *Journal of Financial Economics* 69 (3): 505–527.

Li, W. 2003. *Survey of Corporate Governance of Chinese Listed Companies*. Tianjin, China: Nankai University Press.

Liao, J., M. Young, and Q. Sun. 2009. *Independent Directors' Characteristics and Performance: Evidence from China*. Working paper, Massey University.

Lin, B., and J. Yao. 2009. Why do listed companies disclose the auditor's internal control reports voluntarily? An empirical study based on the Signaling Theory in China. *Accounting Research* 2: 45–52.

Lin, J., and G. Tan. 1999. Policy burdens, accountability, and the soft budget constraints. *American Economic Review* 89 (2): 426–431.

Lin, K. Z. 2006. The impact of tax holidays on earnings management: An empirical study of corporate reporting behavior in a developing-economy framework. *Journal of Accounting and Public Policy* 41 (2): 163–175.

Liu, Q. 2005. *Corporate Governance in China: Current Practices, Economic Effects, and Institutional Determinants*. Working paper, University of Hong Kong.

Liu, Q., and Z. Lu. 2007. Corporate governance and earnings management in the Chinese listed companies: A tunneling perspective. *Journal of Corporate Finance* 13 (5): 881–906.

Lo, A. W. Y., R. M. K. Wong, and M. Firth. 2010. Tax, financial reporting, and tunneling incentive for income shifting: An empirical analysis of the transfer pricing behavior of Chinese listed companies. *The Journal of the American Taxation Association* 32 (2): 1–26.

Lopez, T. J., P. R. Regier, and T. Lee. 1998. Identifying tax-induced earnings management around TRA 86 as a function of prior tax-aggressive behavior. *The Journal of the American Taxation Association* 20 (2): 37–56.

Matsunaga, S., T. Shevlin, and D. Shores. 1992. Disqualifying dispositions of incentive stock options: Tax benefits versus financial reporting costs. *Journal of Accounting Research* 30 (Supplement): 37–67.

Maydew, E. L. 1997. Tax-induced earnings management by firms with net operating losses. *Journal of Accounting Research* 35 (1): 83–96.

McNichols, M. F. 2000. Research design issues in earnings management studies. *Journal of Accounting and Public Policy* 19 (4-5): 313–345.

Mills, L. F. 1998. Book-tax differences and Internal Revenue Service adjustments. *Journal of Accounting Research* 36 (2): 343–356.

Mills, L. F., and K. J. Newberry. 2004. Do foreign multinationals' tax incentives influence their U.S. income reporting and debt policy? *National Tax Journal* 57: 89–107.

Newberry, K., and D. Dhaliwal. 2001. Cross-jurisdictional income shifting by U.S. multinationals: Evidence from international bond offerings. *Journal of Accounting Research* 39 (3): 643–662.

North, D. C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge, U.K.: Cambridge University Press.

Olson, M. 1993. Dictatorship, democracy and development. *American Political Science Review* 87 (3): 567–575.

Porcano, T. M. 1986. Corporate tax rates: Progressive, proportional, or regressive. *The Journal of the American Taxation Association* 7 (2): 17–31.

Porcano, T. M. 1997. An analysis of capital gains tax-induced earnings management. *International Advances in Economic Research* 3 (4): 395–408.

PricewaterhouseCoopers (PwC). 2010. The People's Republic of China: Tax facts and figures. Available at: http://www.pwccn.com/webmedia/doc/633988857734651860_cn_tax_facts_figures_2010.pdf

Qi, D., W. Wu, and H. Zhang. 2000. Shareholding structure and corporate performance of partially privatized firms: Evidence from listed Chinese companies. *Pacific-Basic Finance Journal* 8 (5): 587–610.

Renqing, J. 2007. Explanation on draft enterprise income tax law. Available at: http://www.china.org.cn/english/2007lh/202110.htm

Rosenstein, S., and J. G. Wyatt. 1990. Outside directors, board independence, and shareholder wealth. *Journal of Financial Economics* 26 (2): 175–192.

Scholes, M. S., G. P. Wilson, and M. A. Wolfson. 1992. Firms' responses to anticipated reductions in tax rates: The Tax Reform Act of 1986. *Journal of Accounting Research* 30 (Supplement): 161–185.

Shen, S., and J. Jia. 2004. Will the independent director institution work in China? *Loyola of Los Angeles International & Comparative Law Review* 27: 223–248.

Shevlin, T., and S. S. Porter. 1992. The corporate tax comeback in 1987: Some further evidence. *The Journal of the American Taxation Association* 14 (1): 58–79.

Shevlin, T., T. Y. H. Tang, and R. J. Wilson. 2012. Domestic income shifting by Chinese listed firms. *The Journal of the American Taxation Association* 34 (1): 1–30.

Slemrod, J. 2004. *The Economics of Corporate Tax Selfishness*. NBER Working Papers 10858. Cambridge, MA: National Bureau of Economic Research.

Sun, Q., and W. H. S. Tong. 2003. China share issue privatization: The extent of its success. *Journal of Financial Economics* 70 (2): 183–222.

Wang, C. 2004. Relative strength strategies in China's stock market: 1994–2000. *Pacific-Basin Finance Journal* 12 (2): 159–177.

Weisbach, M. S. 1988. Outside directors and CEO turnover. *Journal of Financial Economics* 20 (1-2): 431–460.

Wu, L., Y. Wang, B. Lin, C. Li, and S. Chen. 2007. Local tax rebates, corporate tax burdens, and firm migration: Evidence from China. *Journal of Accounting and Public Policy* 26 (5): 555–583.

Xie, B., W. N. Davidson III, and P. J. DaDalt. 2003. Earnings management and corporate governance: The roles of the board and the audit committee. *Journal of Corporate Finance* 9 (3): 295–316.

APPENDIX A

Variable Definitions

MTR	=	Simulated firm marginal income tax rate. The simulation method follows that of Graham and Mills (2008), as described in Appendix B.
MTR_D	=	A dummy variable that equals 1 if a firm has an MTR in 2007 greater than the new statutory tax rate (25 percent), and 0 otherwise.
DCA	=	Discretionary current accruals. Following the modified Jones regression model (Jones 1991; Dechow et al. 1995), *DCA* is estimated as the difference between reported current accruals (*CA*) and expected current accruals. Current accruals (*CA*) for firm *i* in year *t* are measured by the change in accounts receivable plus inventory, less the change in accounts payable plus accrued expenses from year *t*−1 to *t*, scaled by the previous year's total assets. See Appendix B for detailed description. *LAGDCA* is the previous year's *DCA*.
SOE_OWN	=	The percentage of a firm's total shares owned by an SOE.
AUDIT_COMM	=	A dummy variable that equals 1 if a firm has an audit committee on its board, and 0 otherwise.
IND_DIR_PCT	=	The percentage of independent board members, estimated by dividing the number of independent board members (*IND_DIR_NUM*) by board size (*BOARD_SIZE*).
BOARD_SIZE	=	The total number of directors on a firm's board.
IND_DIR_NUM	=	The number of independent directors.
INTERNAL_CTRL	=	An indicator of whether a firm voluntarily discloses its certified internal control report and whether the report is certified by auditors. The data are manually collected from firms' annual reports. There are three types of internal control report disclosures: (1) a firm voluntarily discloses its internal control report, and the report is also certified by auditors; (2) a firm voluntarily discloses its internal control report, but the report is not certified by auditors; and (3) a firm does not disclose its internal control report. *INTERNAL_CTRL* equals 1 when the first case applies, and 0 in the other two cases.
*MTR_D * SOE_ OWN*	=	An interaction variable between *MTR_D* and *SOE_OWN*.
*MTR_D * AUDIT_ COMM*	=	An interaction variable between *MTR_D* and *AUDIT_COMM*.
*MTR_D * IND_ DIR_PCT*	=	An interaction variable between *MTR_D* and *IND_DIR_PCT*.
*MTR_D * INTERNAL_CTRL*	=	An interaction variable between *MTR_D* and *INTERNAL_CTRL*.
MTR_DIF	=	The difference between a firm's *MTR* and the new statutory tax rate of 25 percent.
DLOSS	=	A dummy variable that equals 1 if a firm has a negative *ROE*, and 0 otherwise. *ROE* is estimated by dividing the firm's net income by its total shareholders' equity.
TOBIN	=	Tobin's q is estimated as the market capitalization of the stock (tradable shares multiplied by the stock price at the fiscal year end), plus non-tradable shareholders' equity, plus total debt, divided by total assets.
PROFIT	=	A firm's profitability, measured as net earnings divided by total sales.
LNASSETS	=	The logarithm of a firm's total assets.
LNMKT	=	The logarithm of a firm's total equity market value.
CF	=	A firm's cash flows from operating activities, scaled by total sales.
LEVERAGE	=	Leverage ratio, estimated by dividing the long-term debt (including the current portion of long-term debt) by total assets.

(continued on next page)

APPENDIX A (continued)

CAPITAL_INT	=	Capital intensity; the ratio of net property, plant, and equipment to total assets.
INVENTORY_INT	=	Inventory intensity; the ratio of total inventory to total assets.
INTANGIBLE	=	Intangible assets as a percentage of total assets; intangible assets are the sum of intangible assets, R&D, and goodwill.
ROA	=	Return on total assets, estimated by dividing net income by total assets.
SG	=	1-year sales growth rate.
ΔSALES	=	1-year change in total sales (in millions of CNY).
ΔAR	=	1-year change in accounts receivables (in millions of CNY).

APPENDIX B

Estimation of Marginal Tax Rate and Discretionary Current Accruals

Simulation Process of Firm Marginal Tax Rate (*MTR*)

We follow Graham and Mills (2008) and estimate firm marginal tax rate (*MTR*) using a simulation method. As Lo et al. (2010) suggest, we need to consider the differences between the Chinese and U.S. tax systems when conducting the simulation on the basis of firms' financial statements. One difference is that Chinese firms cannot carry net operating losses backward for a tax refund; instead, these losses can only be carried forward for a maximum of five years to offset future profits. Another difference is that China's listed firms can employ either the tax payable or tax effect method to calculate their tax liabilities. If a firm has an account of deferred tax assets or a deferred tax liability in its financial statement, then it is identified as having employed the latter method; otherwise, it is assumed to have used the former.[24]

A summary of the major *MTR* simulation steps is provided in Figure 1. The first step is to estimate the historical taxable income of each firm from 2000 to 2006, as 2000 is the first year of our sample. For firms using the tax payable method, we set their taxable income as equal to their pre-tax income or net income plus tax expenses. Income from extraordinary items and discontinued operations is excluded. For firms using the tax effect method, their taxable income is set to equal Pre-Tax Income + (Minority Interest + Deferred Tax Expenses [Cash Flow Statement Items])/Effective Tax Rate, where the effective tax rate is estimated by dividing tax expenses by pre-tax income.

In the second step, we forecast future taxable income from 2007 to 2011, as China's tax code allows firms to carry forward a tax loss to offset future profits for a maximum of five years.[25] We begin by calculating the mean and standard deviation of the historical taxable income of each sample firm up to 2006. We next generate/simulate 50 different taxable income forecasts (with the same mean and standard deviation as the historical mean and standard deviation previously estimated) for 2007 to 2011, to account for possible carry-forward effects on the MTR for 2007.

The third step involves estimation of the present value of the tax liabilities for each of the 50 taxable income paths forecast in the second step (Graham and Mills 2008). We adopt 33 percent as the statutory tax rate for 2007 and the new statutory tax rate of 25 percent for 2008 to 2011 to

---

[24] Since the implementation of the new accounting rules, which took effect in January 2007, all firms have been required to adopt the tax effect method to calculate their tax payment.

[25] Graham and Mills (2008) forecast income 22 years into the future because, according to the U.S. tax code, a firm that has a net operating loss can carry back the loss in the two previous years and then carry it forward 20 years into the future.

estimate the tax liability for each of the 50 taxable income paths. We then obtain the present value of each using the one-year household deposit interest rate as a discount rate.[26]

Similar to Graham and Mills (2008), in the fourth step we add one CNY to the taxable income in 2006 and then re-calculate the present value of the tax liabilities along each simulated path. The incremental tax liability estimated in the fourth step, relative to the tax liability calculated in the third step, is the present value of the tax liability arising from earning an extra CNY of taxable income in 2007. In other words, it is the economic MTR (in terms of the CNY value) along a given simulated taxable income path.

The final step is to estimate the average value of the economic MTR for the 50 paths using a firm's MTR in 2007. This average value is adopted to determine whether a firm is motivated to shift taxable income from a higher- to a lower-tax period. Using the same simulation method, we obtain the MTR for each firm in each of the other years based on financial statements (Graham and Mills 2008).

Estimation of Discretionary Current Accruals (*DCA*)

DCA is defined as the difference between reported current accruals (*CA*) and expected current accruals. The *CA* for a firm i in year t is measured by the change in accounts receivable plus inventory, less the change in accounts payable plus accrued expenses from year t-1 to t, scaled by the previous year's total assets, as in Lopez et al. (1998). We employ the following regression model to control for variations in non-discretionary accruals associated with total assets, sales (excluding accounts receivable), and property, plant, and equipment *(PP&E)*.

$$\frac{CA_t}{ASSETS_{i,t-1}} = \alpha_1 \left(\frac{1}{ASSETS_{i,t-1}}\right) + \alpha_2 \left(\frac{\Delta SALES_{i,t} - \Delta AR_{i,t}}{ASSETS_{i,t-1}}\right) + \alpha_3 \left(\frac{PPE_{i,t}}{ASSETS_{i,t-1}}\right) + \varepsilon_{i,t},$$
(A1)

where $\Delta SALES_{i,t}$ and $\Delta AR_{i,t}$ are the change in total sales and accounts receivable from year $t-1$ to t, respectively; $PPE_{i,t}$ is gross PP&E in year t; and ε denotes unspecified random factors. According to Jones (1991), the *SALES* and *PPE* variables are used to control for the non-discretionary component of total accruals associated with changes in operating activities and the level of depreciation, respectively. Dechow et al. (1995) suggest that because all of the revenue changes in the Jones model are assumed to be non-discretionary, the resulting measure of discretionary accruals does not reflect the effect of sales-based manipulation. Thus, the authors modify the Jones model by subtracting the change in account receivables $\Delta AR_{i,t}$ to capture potential revenue manipulation. All variables are scaled by the firm's lagged total assets, $ASSETS_{t-1}$.

The regression is performed cross-sectionally each year for each industry (DeFond and Subramanyam 1998; Kim et al. 2003). Any industry with fewer than 20 observations is excluded, as in Kim et al. (2003).[27] *DCA* is then estimated as the predicted error, ε, or the difference between reported *DCA* and expected accruals, as expressed in Equation (2), which represents the extent to which a firm has manipulated its earnings

$$\frac{DCA_{i,t}}{ASSETS_{i,t-1}} = \left(\frac{CA_{i,t}}{ASSETS_{t-1}}\right) - E\left[\frac{CA_{i,t}}{ASSETS_{i,t-1}}\right].$$
(A2)

---

[26] The discount rate used here is different from that employed by Lo et al. (2010). Following Wang (2004) and Kang et al. (2002), we adopt the one-year household deposit rate in China as the risk-free rate. We assume a constant cross-sectional discount rate by ignoring differences in risk premiums across firms, as in Graham and Mills (2008).

[27] We exclude the broadcasting and publishing industry, as it has only 12 observations. Additionally, 16 observations are excluded, as their industry classification is missing in our database.

Tax-Induced Earnings Management in Emerging Markets: Evidence from China

Bingxuan Lin, Rui Lu, and Ting Zhang

Tax incentives play an important role in a firm's earnings management behavior. A number of studies have examined the firm financial reporting around the Tax Reform Act of 1986 in the U.S., and have reported ample evidence of tax-induced earnings management (e.g., Scholes et al. 1992; Guenther 1994; Lopez et al. 1998). However, a limited number of studies have explored tax-induced earnings management in emerging markets. Leuz et al. (2003) show that a country's legal and institutional environment influences the properties of reported earnings. Given the unique nature of the institutional, political, and economic environment in emerging markets, the incentives for and effect of tax-induced earnings management could differ greatly from those in developed markets.

China issued the New Enterprise Income Tax Law (NEIT Law) in 2007, and it came into effect in 2008. The NEIT Law reduced the statutory corporate income tax rate from 33 percent to 25 percent, and was considered a milestone in China's enterprise income tax reforms. The new law provided a rich setting for researchers to examine how firms responded to the anticipated tax changes. In this paper we examine whether China's publicly listed firms manipulated earnings in the year immediately preceding the NEIT Law of 2007.

We use the simulated marginal tax rate (MTR) as a measure of firm tax burden and discretionary current accruals (DCA) as a proxy for earnings management. We expect firms that anticipated a decrease in their MTRs to exhibit deferred income recognition and accelerate expense recognition in 2007, the year before the law's implementation. Furthermore, we investigate firms' tax-induced earnings manipulation incentives after taking into consideration the effects of China's unique company ownership structure and several key corporate governance characteristics. A distinctive feature of China's publicly traded firms, relative to their counterparts in developed countries, is their highly concentrated ownership, and complex, pyramid-like systems of corporate control (Sun and Tong 2003; Claessens et al. 2000). In addition, due to the transition from a planned economy to a market economy, state-owned enterprises (SOEs) continue to represent a significant proportion of ownership in many listed companies. We formulate several hypotheses to examine whether firms owned by SOEs and firms with various corporate governance mechanisms exhibited different incentives to manage earnings in response to the anticipated NEIT tax rate reduction.

This paper provides direct evidence of how tax policy change affects the earnings management incentives in an emerging market. We show that firms that expected lower tax rates after the NEIT Law reported significantly negative DCA in 2007. We interpret this as evidence that firms shifted their taxable income from the higher to the lower tax period. More important, we find that firms with a greater percentage of shares owned by SOEs, firms with an audit committee on the board, and firms that voluntarily disclosed a certified internal control report are less likely to engage in tax-based earnings management. We also estimate that the aggregate tax revenue loss for government in 2007 was CNY 4,712.4 million (or $646.1 million) due to firms engaging in downward earnings management. This amount accounted for roughly 3.2 percent of the total tax revenues collected from firms with a marginal tax rate greater than 25 percent in 2007. The empirical evidence provides tax and financial reporting policymakers with a better understanding of the potential effect that tax law changes have on firms' earnings management activities.