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# Earnings Quality and Voluntary Financial Reporting

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## Abstract

Before 2001, Company Law in Taiwan required private firms with capital levels exceeding a certain threshold to file and publish audited financial statements. This requirement was rescinded in 2001 and private firms since have discretions on financial reporting. We take advantage of this regime change and divide private firms into two groups: voluntary reporting firms, those that continue the financial reporting practice after the regime change; and non-voluntary reporting firms, those that cease the financial reporting practice after the regime change. We argue that stakeholders' economic demand for audited financial statements is likely higher for voluntary reporting firms than for non-voluntary reporting firms. We find that the quality of earnings is higher for voluntary reporting firms than for non-voluntary reporting firms. Therefore, we provide support for the argument that factors influencing the quality of financial reporting are based on the economic demand for accounting information rather than on some formally prescribed accounting standards or requirements.

Keywords: *International Accounting, Financial Reporting, Earnings Quality, Loss Avoidance, Income Smoothness, Earnings Conservatism*

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# Earnings Quality and Voluntary Financial Reporting

## 1. Introduction

In recently years, many empirical studies examine the difference in earnings quality between publicly listed and privately held firms (Ball and Shivakumar, 2005; Coppens and Peek, 2005; Burgstahler, Hail, and Leuz, 2006; Peek, Cuijpers, and Buijink, 2008) in the hope of answering the question of whether the presence of the capital market enhances or reduces firms' quality of earnings. The capital market can reduce the quality of earnings because it creates incentives for managers to manipulate earnings, or, it can enhance the quality of earnings due to the presence of high economic demand for quality reporting. These recent studies usually find that a main factor contributing to higher quality of earnings comes from stakeholders' economic demand for financial statements, and not merely from some formally prescribed mandatory rules or regulations.<sup>1</sup> Specifically, privately held firms with lower stakeholders' economic demand for quality accounting information (due to high concentrations of shareholding, for example), have lower quality of earnings than publicly listed firms with higher stakeholders' economic demand for quality accounting information. The above research approach of comparing publically listed firms and privately held firms is innovative but not without problems. Fundamentally, publically listed firms and privately held firms are very different on many dimensions, such as information environment, the need for external capital, analysts following, liquidity, etc. These differences may render these two groups of firms not easily comparable. Adding to this literature, but relying on an approach different from the above that compares the quality of earnings between publicly and privately held firms, we examine earnings quality for private firms only, utilizing a unique

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<sup>1</sup> Most of these studies use data in other countries. In the US, accounting and financial information on private firms is usually available only for firms in certain regulated industries. For example, Beatty and Harris (1998) and Beatty, Ke, and Petroni (2002) study the banking industry; Mikhail (1999) studies the life insurance industry.

regime change in Taiwan that happened in 2001. Our focus on private firms avoids the potential non-comparability problem mentioned above.

Before 2001, Company Law in Taiwan required both publically listed firms and privately held firms whose capital levels exceed a certain threshold to file and publish audited financial statements. In 2001, this mandatory financial reporting requirement for private firms was rescinded. Of course, publically listed firms continue to be required to file audited financial statements. Since this law change, some private firms have decided to withdraw from the practice of financial reporting while others have continued this practice. Private firms' shares are not publicly traded. Therefore, capital market pressure that creates incentives for earnings management or manipulations is likely limited for these firms. We argue that in the absence of capital market pressure, stakeholders' demand for audited financial statements is likely higher for firms that continue the reporting practice than for those that cease the practice, after the mandatory reporting requirement was rescinded. For those private firms that cease the reporting practice, we deduce that they formerly filed and published financial statements merely to comply with the regulations and not because there is a high economic demand for financial reporting from their stakeholders. If we find evidence that earnings quality is higher for private firms that continue financial reporting than those that cease financial reporting, we conclude it is likely that economic demand for quality financial reporting, and not capital market pressure on managers' earnings management incentives, that drives high quality earnings or financial reporting. We believe that this regime change in Taiwan presents an excellent opportunity to study the quality of earnings for private firms as well as to answer the question of whether economic demand or capital market pressure drives high quality earnings.

For our empirical analysis, we divide private firms into those that voluntarily file audited

financial statements (voluntary reporting firms) and those that disclose audited financial statements merely to comply with the disclosure law (non-voluntary reporting firms), as evidenced by their decisions to withdraw from the reporting practice when the mandatory reporting requirement for private firms in Taiwan's Company Law was rescinded. We find that the quality of earnings is higher for voluntary reporting firms than that for non-voluntary reporting firms. Christensen and Demski (2003) argue that an important purpose of accounting is to provide decision makers with decision-useful information defined as valuation-relevant or contract-relevant information. In the absence equity capital market pressure for the private firms that we examine, we argue that the stakeholders of voluntary reporting firms likely have higher economic demand for high quality accounting information than those of non-voluntary reporting firms, as evidenced by reporting firms continued reporting practice that is no longer required by the law. Our finding that the quality of earnings is higher for voluntary reporting firms than for non-voluntary reporting firms provides further support for the view that economic demand determines the quality of accounting information. While this conclusion is essentially the same as Ball and Shivakumar (2005), our setting provides confirmation in an alternative environment and possibly a better chance of answering the above research question.

This paper makes three contributions to the literature. First, publicly listed firms are very different from privately held firms. Recent research comparing public firms and private firms potentially has omitted variable and bias problems. For example, Petersen (2004) and Sunder (2006) point out that the presence of hard information such as stock prices, earnings forecasts and analyst recommendations of public firms enables the users of public firms' financial statements to process information in a more efficient manner (Berger, Miller, Petersen, Rajan, and Stein, 2005). In other words, due to the significant difference between public and private

firms, it is likely difficult to entirely attribute public firms' higher quality of earnings to a higher economic demand for accounting information for these firms that determines the quality of financial reporting. Our study, which focuses only on private firms, largely avoids this problem.

Second, prior studies implicitly assume that private firms' stakeholders have homogeneous demand for these firms' financial information (Ball and Shivakumar, 2005). This is likely not the case. While researchers have a fairly good understanding of public firms' quality of earnings, they do not necessarily have a good understanding of private firms' quality of earnings if they treat private firms as a homogeneous group. We introduce variations in the economic demand for financial information for private firms. A good understanding of earnings quality for private firms is essential for a further understanding of the effect of capital market or the lack of which on earnings quality.

Further, a debate has been going on in Taiwan in recent years on whether the mandatory requirement of financial reporting for privately held firms should be restored, due to a few incidences in which investors were hurt after some private firms ceased the reporting practice. Although our paper does not conduct a cost-and-benefit analysis of mandatory versus voluntary financial reporting, a comparison of earnings quality between voluntary reporting private firms and non-voluntary reporting private firms can potentially help us answer the question of whether or not mandatory reporting requirement can enhance earnings quality and therefore whether there is a potential benefit of restoring the reporting requirement for private firms. If the quality of earnings associated with the mandatory reporting requirement is low, then the benefit of restoring the reporting requirement can be limited or it can have unintended consequences.

Our results are also useful for speculating the effect of the adoption of the international financial reporting standards on the quality of financial reporting. It is perhaps too optimistic to

believe that the international financial reporting standards will consistently improve earnings quality in adopting countries around the world. We show evidence and believe that a major determinant of the quality of financial reporting is the stakeholders' economic demand for quality reporting, and not necessarily a set of prescribed universal rules. The formulation of accounting rules should be based on each country's need and business environment. Blindly adopting a set of universal rules may not necessarily produce the desired results.

This paper is organized as follows. Section 2 provides background information on the institutional settings in Taiwan, reviews the literature, and develops our hypothesis. Section 3 describes various measures of earnings quality. Section 4 presents the empirical results. Section 5 summarizes and concludes.

## **2. Institutional background and hypothesis development**

### *2.1. Institutional background in Taiwan*

Company Law in Taiwan divides limited liability companies into those that are required to file audited financial statements with the regulatory authority and make them available to the general public and those that are not required to file and publish audited financial statements. Before 2001, the Taiwan Company Law mandatorily required all publically listed firms and privately held firms whose capital levels exceeded a certain threshold to file and publish audited financial statements. Private firms with capital levels below the threshold were not required to file and publish audited financial statements. This reporting requirement has since been rescinded for privately held firms. Thus, privately held firms now no longer have to file and publish audited financial statements. However, many private firms continue to publish their audited financial statements while others cease publishing their financial statements. Of course,

publically listed firms are always required to file and publish their audited financial statements. Therefore, in Taiwan, we now have basically four types of firms governed under the Company Law, 1) publically listed firms that are always required to publish financial statements; 2) private firms established before 2001 that continue to publish financial statements or those that are established after 2001 and choose to publish financial statements; 3) private firms that once published financial statements to comply with regulations but now have ceased publishing; and 4) private firms that had never been required to publish financial statements before and after 2001, because they were likely small with low capital levels or they were established after 2001 and never choose to publish their financial statements. We do not study publically listed firms (Type 1). The financial information is not available for Type 4 firms. Therefore, we focus on Type 2 firms (voluntary reporting private firms) and Type 3 firms (non-voluntary reporting firms).

Before developing our main hypothesis, we first provide some detail on the history of the mandatory financial reporting requirement in Taiwan. Mandatory reporting requirement applies to publically listed firms and private firms with capital levels exceeding a certain threshold, which was TWD 200 million after 1981 and TWD 500 million after 2000. The reporting firms are required to prepare financial statements and other documents and file them with the relevant security regulatory authority. These firms must follow reporting guidelines in the Securities and Exchange Law. Firms that are not required to report financial statements only follow regulations in the Company Law and its regulatory authority is the Ministry of Economic Affairs. To recap, the Ministry of Economic Affairs is the regulatory authority for all firms (reporting or non-reporting). Reporting firms (publically listed or privately held) have an additional regulatory authority, Financial Supervisory Commission, for investor protection purposes.<sup>2</sup>

All reporting firms have the following obligations. 1) Financial reporting. Following Section

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<sup>2</sup> The Financial Supervisory Commission is the counterpart to the SEC in the US.



36 of the Securities and Exchange Law, firms are required to prepare annual and semi-annual financial statements and have them audited by audit firms. These audited financial statements are required to be filed with Financial Supervisory Commission before the end of the fourth month after the fiscal year for annual reports and before the end of the second month during the current fiscal year for semi-annual reports. 2) Audit by regulators. Following Sections 38 and 39 of the Securities and Exchange Law, in order to protect investors' interests, the Financial Supervisory Commission can order issuers, security dealers or other related parties to provide reports and reference information. It can also directly audit firms' books. When violations are found, it can order corrections and impose fines. 3) Share diversification requirement. Reporting firms have to comply with the requirement of share diversification when they seek public listing. When seeking public listing, these firms have to issue a certain percentage of their shares to the general public.

After the mandatory reporting requirement was rescinded in 2001, privately held firms have discretions in deciding whether or not to file and publish audited financial statements. If a private firm decides to cease reporting practice, it can obtain permission from the regulatory authority and become a non-reporting firm.

Private firms' ceasing the financial reporting practice is a form of "going dark". The existing literature on "going dark" is mainly focused on corporate delisting in the US. Marosi and Massoud (2004) show that waves of going private in the US mainly occur during two periods, 1980's and 2000's. In the 1980's, public firms delist through leveraged buyouts (LBOs) and management buyouts (MBOs). The purpose of delisting is to create a more efficient ownership structure and distribution rights (Muscarella and Vetsuypens, 1990). Since the original shareholders sell shares with a premium, their profit margin is very high (Lehm and Poulsen,

1989). DeAngelo et al. (1984) find that stock price significantly increases when delisting is announced; however, when a firm fails to delist, its announcement causes stock price to go down.

The second period starts after 2000. Many firms reduce their number of shareholders through being held by street names indirectly in order to circumvent listing requirements (Marosi and Massoud, 2004). Marosi and Massoud (2004) find that after the passage of the Sarbanes-Oxley Act in July of 2002, the increase in cost related to disclosure, governance and internal control is a reason that public firms delist. Empirical results also suggest that low growth, positive cash flow and high insider ownership are also reasons that public firms delist. Weir and Laing (2004) examine the governance characteristics of British delisted firms and find that the probability of delisting increases when CEO and corporate stock ownership is high, or when the CEO is also a member of the board of directors.

To summarize, some important reasons for delisting are corporate performance (Jensen, 1989; Pagano et al., 1998), free cash flow (Jensen, 1986; Lehn and Poulsen, 1989), corporate governance (Weir and Laing, 2004; Marosi and Massoud, 2004), disclosure cost (Brigham, 1995; Marosi and Massoud, 2004; Pagano and Roell, 1998; Ritter, 1987), firm size (Pagano et al., 1998) and information asymmetry reduction (Marosi and Massoud, 2004; Lehn and Poulsen, 1989).

While it is not the focus of our paper to examine why reporting private firms cease financial reporting and therefore go dark, it is necessary to mention a few reasons why they cease financial reporting. Lin and Wang (2006, in Chinese) examine the characteristics of firms ceasing financial reporting in Taiwan and find that on the corporate performance dimension, firms with low growth in return on assets and going concern audit reports tend to cease financial reporting; on the corporate governance dimension, firms with smaller numbers of non-executive directors and whose directors are not managers tend to cease financial reporting; on the

disclosure cost dimension, firms not audited by the big-fours tend to cease financial reporting. Their study also finds that while firms that cease financial reporting have worse performance than reporting firms, there is a non-linear U-shaped relation between the probability of ceasing reporting and firm performance. This result suggests that firms that performance well, have adequate capital and therefore less need to reduce their cost of capital through external financing, have high probability of ceasing financial reporting.

## *2.2. Hypothesis development*

There are two views on how the presence of the capital market affects earnings quality in the literature. One group of researchers argues that the capital market can enhance earnings quality. This line of literature suggests that the presence of the capital market increases the economic demand for higher quality earnings. Therefore, earnings quality should be higher for publically listed firms than for privately held firms. In the US, however, it is difficult to obtain financial information of private firms through public channels. Therefore, this research is constrained by the lack of data for private firms in the US. Different from the US, among members of the European Union for example, rules related to financial reporting are based on legal forms and not based on whether a firm is publically listed or not. In these countries, publically listed and privately held firms are subject to the same generally accepted accounting principles, auditing principles and even tax regulations. Therefore, recently, researchers studying the effects of capital market attributes on earnings quality mainly examine public and private firms in European Union countries. For example, Ball and Shivakumar (2005) compare earnings quality for public and private firms in Britain and find that public firms have higher levels of earnings quality than private firms; Burgstahler et al. (2006), using data from members of the European

Union, find that the presence of the capital market has a positive effect on earnings quality.<sup>3</sup>

Other researchers have argued the opposite. In the capital market, investors rely heavily on financial statements to assess firm performance and value. The market rewards managers for meeting or beating earnings expectations and punish those that fail to do so (Brown and Caylor, 2005). In order to meet or beat market expectations and avoid violating contract terms, firm managers have incentives to manager earnings to investors' desired levels. These earnings management activities reduce earnings quality. Some studies have shown that capital market forces can damage earnings quality. For example, Teoh, Welch and Wong (1998a and 1998b) point out that in order to obtain external financing through initial public offerings and seasoned equity offerings, firm managers have incentives to manage earnings around major financing events. Beatty et al. (2002), studying the US banking industry, show that publically listed firms are more likely to manage earnings to avoid earnings decreases than privately held firms. Of course, a potential problem with examining banks is that they are more heavily regulated than firms in other industries and therefore are very different from other firms. The implication that we can draw from a comparison of public banks and private banks is likely limited.

We follow Ball and Shivakumar (2005) and Burgstahler et al. (2006) and argue that stakeholders' economic demand can enhance earnings quality. A major benefit of our setting is that we only focus on private firms. In Ball and Shivakumar (2005) and Burgstahler et al. (2006), among various other problems for comparing publicly listed firms and privately held firms, the capital market pressure for earnings management or manipulations for public firms may well be present but the effect of economic demand for quality financial reporting may have dominated the effect of the capital market pressure. In our setting of private firms only, we largely avoid of

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<sup>3</sup> Researchers in Taiwan also find that publically listed firms have higher quality earnings than privately held firms in Taiwan, for example, Chi and Chen's (2008) "How Does the Capital Market Affect Earnings Quality? Evidence from Taiwan", *Management Review* 27 (2): 53-69 (in Chinese).

the possibility of capital market pressure and therefore provide a cleaner test of the above proposition.

Before the mandatory reporting requirement for privately held firms was rescinded in 2001 in Taiwan, some scholars in Taiwan were critical about this requirement. For publically listed firms, the separation of management and ownership causes agency cost problems and certain monitoring mechanisms have to be placed in the firms to protect shareholders' interests. The requirement on public firms to provide audited financial statements is one of those mechanisms. For privately held firms, management and ownership are usually combined, that is, major shareholders are often managers of the firms. This combination largely avoids or reduces the agency cost of problems. Therefore, there is less need to impose mandatory reporting requirement on private firms. Without the mandatory reporting requirement, entrepreneurs likely have more flexibility and freedom in operating the firms. Firms have incentives to avoid the costs associated with providing audited financial statements. Studies have shown that many small to medium sized firms or family firms manage their capital levels to just below the required TWD 200 million threshold in order to avoid financial reporting (Hsueh, 2000, in Chinese). Of course, when a non-reporting firm needs external capital, it will have to go through more expensive channels such as bank loans or trade accounts. Firms therefore need to balance the cost and benefit of financial reporting. The inflexibility caused by the mandatory reporting can possibly distort a firm capital structure, increase its cost of capital, and cause perverse incentives.

Based on Ball and Shivakumar (2005) and Burgstahler et al. (2006) who find that publicly listed firms have better earnings quality than privately held firms in European Union countries, and some similar evidence in Taiwan (Chi and Chen, 2008, in Chinese), we expect that in an

environment without the mandatory reporting requirement such as Taiwan, those private firms that continue to publish financial statements (voluntary reporting firms) likely have higher stakeholders' economic demand for accounting information. On the other hand, those private firms that withdraw from publishing financial statements (non-voluntary reporting firms) likely have lower economic demand for accounting information. They publish financial statements merely to fulfill certain requirements by regulators, as evidenced by their revealed preference to withdraw from the reporting practice. Based on the above, we argue that voluntary reporting private firms have high quality earnings than non-voluntary reporting private firms. Therefore, we formulate the following hypothesis:

**Hypothesis:** *Private firms that voluntarily disclose audited financial statements have higher levels of earnings quality than private firms that disclose audited financial statements merely to fulfill mandatory reporting requirements.*

We use three measures of earnings quality, earnings smoothness, incidence of small positive earnings and earnings conservatism, to test our hypothesis. Based on the above hypothesis, we expect voluntary reporting firms to have less smooth earnings, smaller likelihood of reporting small positive earnings, and more conservative earnings, than non-voluntary reporting firms.

### **3. Measures of earnings quality**

This paper examines whether there is a difference in earnings quality between voluntary reporting firms and non-voluntary reporting firms, or to be more specific, we want to know whether firms that voluntarily disclose audited financial statements have higher levels of earnings quality than those that disclose financial statements merely to fulfill some mandatory requirements. There are many measures of earnings quality (or attributes) in the literature. Our study focuses on privately held firms. Due to the lack of stock prices for our sample firms, we

can only rely on accounting based measures of earnings quality, such as earnings smoothness, frequency of small positive earnings and accounting based timeliness of loss recognition, or conservatism

### 3.1. Earnings smoothness

Many studies have found that managers have incentives to smooth earnings. This earnings attribute is especially important as many countries are adopting the International Accounting Standards (IAS) (Barth et al., 2008). Barth et al. (2008) find that firms applying IAS generally evidence an improvement in accounting quality from the pre-adoption period to the post-adoption period. One aspect of an improvement in earnings quality is an increase in earnings volatility, indicating that firm managers are less likely to smooth earnings after IAS adoption. If firm managers manipulate earnings by smoothing it, then earnings volatility should be low and therefore earnings would be smooth. We expect that non-voluntary reporting firms have lower levels of earnings quality, therefore, they are more likely to smooth earnings. We compare the earnings volatility between voluntary reporting firms and non-voluntary reporting firms to determine whether voluntary reporting firms have higher levels of earnings quality. Following Barth et al. (2008), we use the following regression:

$$\Delta NI_t = \beta_0 + \beta_1 SIZE_t + \beta_2 LEV_t + \beta_3 CFO_t + \beta_4 TURN_t + \beta_5 GROWTH_t + e_t, \quad (1)$$

where

$\Delta NI$	: The change in earnings (net income and earnings before extraordinary items and discontinued operations) scaled by beginning total assets.
$SIZE$	: Logarithm transformation of total assets.
$LEV$	: Leverage computed as the percentage of total liabilities divided by total assets.
$CFO$	: Operating cash flow scaled by average total assets.
$TURN$	: Current net sales scaled by total assets.
$GROWTH$	: Current growth in net sales.

$e$  : Regression residual.

Based on earlier discussion, we expect managers of non-voluntary reporting firms to be more likely to smooth earnings than voluntary reporting firms, and therefore non-voluntary reporting firms have low levels earnings quality. In other words, the variance of the residual  $e$  should be higher for voluntary reporting firms than for non-voluntary reporting firms,  $\sigma^2_{D=0} > \sigma^2_{D=1}$ , where  $D$  is dummy variable that equals one for a non-voluntary reporting firm and zero otherwise. We follow prior studies, such as Lang, Raedy, and Yetman (2003), Lang, Raedy, and Wilson (2006) and Barth et al. (2008), for our analysis, by adding firm size, leverage, operating cash flow and so on in our regression.

We use two approaches to estimate the variances of the change in earnings residual. We first use the full sample to estimate the parameters of Equation (1) and then compute the variances of the change in earnings residuals for voluntary reporting firms and non-voluntary reporting firms and compare them. In the second approach, we estimate the parameters of Equation (1) using voluntary and non-voluntary reporting firms separately and then compute their variances of changes in earnings residuals. We also use two measures of earnings, net income and earnings before extraordinary items and discontinued operations, for our analysis.

### *3.2. Incidences of small positive earnings*

Many studies point out that firm managers manage earnings to reach a certain threshold or benchmark (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Bhattacharya et al., 2003). Popular thresholds are negative earnings avoidance, earnings decrease avoidance and meeting or beating analyst forecasts. In this part of the paper, we use the zero-earnings threshold and examine the incidence of negative earnings avoidance. We examine whether there is any



difference in the incidence of small positive earnings between voluntary reporting firms and non-voluntary reporting firms. Following Barth et al. (2008), we use the following logistic regression:

$$\text{Prob}(D_t = 1) = \beta_0 + \beta_1 SPOS_t + \beta_2 SIZE_t + \beta_3 LEV_t + \beta_4 CFO_t + \beta_5 TURN_t + \beta_6 GROWTH_t + e_t, \quad (2)$$

where

<i>D</i>	: A dummy variable that equals 1 for a non-voluntary reporting firm and 0 otherwise.
<i>SPOS</i>	: A dummy variable that equals 1 if earnings scaled by beginning total assets is between 0 and 0.01, and 0 otherwise.
<i>SIZE</i>	: Logarithm transformation of total assets.
<i>LEV</i>	: Leverage computed as total liabilities divided by total assets.
<i>CFO</i>	: Operating cash flow scaled by average total assets.
<i>TURN</i>	: Current net sales scaled by total assets.
<i>GROWTH</i>	: Current growth in net sales.
<i>e</i>	: Regression residual.

In Equation (2), if  $\beta_1$  is positive, then we have evidence that non-voluntary reporting firms are more likely than voluntary reporting firms to manage earnings to meet the positive earnings benchmark, supporting our hypothesis. We use two measures of earnings, net income and earnings before extraordinary items and discontinued operations, for our analysis.

### 3.3. Earnings conservatism

Basu (1997) defines earnings conservatism as “earnings reflects bad news more quickly than good news”. Basu (1997) uses the following regression model to analyze the timeliness of gain and loss recognitions:

$$\Delta X_{it}/P_{it-1} = \beta_0 + \beta_1 NEG_{it} + \beta_2 \Delta X_{it-1}/P_{it-2} + \beta_3 NEG_{it} \cdot \Delta X_{it-1}/P_{it-2} + e_t, \quad (3)$$

where  $\Delta X_{it}/P_{it-1}$  is earnings for Period  $t$  scaled by end of previous period stock price;  $NEG$  is a dummy variable that equals 1 if  $\Delta X_{it-1} < 0$  and 0 otherwise. Since privately held firms lack stock

prices, we follow Ball and Shivakumar (2005) and use previous period earnings as the scalar and modify Basu's (1997) model as follows:

$$\Delta NI_t = \beta_0 + \beta_1 NEG_t + \beta_2 \Delta NI_{t-1} + \beta_3 NEG_t \cdot \Delta NI_{t-1} + e_t, \quad (4)$$

where  $\Delta NI_t$  represents the change in earnings for Period  $t$  (Period  $t$  earnings minus Period  $t-1$  earnings) scaled by beginning of the period total assets.  $NEG_{t-1}$  is a dummy variable that equals 1 if  $\Delta NI_{t-1}$  is negative and 0 otherwise. Basu (1997) suggests that  $\beta_3 < 0$ . Because we study the difference in earnings quality between voluntary reporting firms and non-voluntary reporting firms, we add a non-voluntary reporting dummy  $D$  and change Equation (4) into the following:

$$\begin{aligned} \Delta NI_t = & \beta_0 + \beta_1 NEG_t + \beta_2 \Delta NI_{t-1} + \beta_3 NEG_t \cdot \Delta NI_{t-1} + \beta_4 D_t + \beta_5 D_t \cdot NEG_t \\ & + \beta_6 D_t \cdot \Delta NI_{t-1} + \beta_7 D_t \cdot NEG_t \cdot \Delta NI_{t-1} + e_t. \end{aligned} \quad (5)$$

In the above equation,  $(\beta_2 + \beta_3)$  represents the effect of declining earnings on changes in earnings for voluntary reporting firms and  $\beta_3$  measures their level of earnings conservatism and we should have  $\beta_3 < 0$ .  $(\beta_2 + \beta_3 + \beta_6 + \beta_7)$  represents the effect of declining earnings on changes on earnings for non-voluntary reporting firms and  $(\beta_3 + \beta_7)$  measures their level of earnings conservatism. Therefore, based on the coefficient on  $D_t \cdot NEG_{t-1} \cdot \Delta NI_{t-1}$ ,  $\beta_7$ , we can determine if there is any difference in earnings quality between voluntary reporting firms and non-voluntary reporting firms. If non-voluntary reporting firms have more conservative earnings, then  $\beta_7 < 0$ ; otherwise,  $\beta_7 > 0$ . We expect to have non-voluntary reporting firms to be less conservative,  $\beta_7 > 0$ . To avoid our results being sensitive to different definitions of earnings, following Ball and Shivakumar (2005), we use both net income and earnings before extraordinary items and discontinued operations as our measures of earnings.

## 4. Empirical results

### 4.1. Sample selection

This paper examines whether there are differences in the quality of earnings between voluntary reporting private firms and non-voluntary reporting private firms. We cover firms during the period 1997 to 2005. Since some of the regression analysis requires past two years' accounting information, our variables cover 1995 to 2005. Based on the way we define voluntary and non-voluntary reporting firms, since non-voluntary firms cease to have publically available financial statements after they choose to cease the reporting practice, we can only obtain financial information from the time they start financial reporting to the year before they cease financial reporting. As for voluntary reporting firms, we obtain their financial information after they start financial reporting. If some the firms subsequently become publically listed, we obtain their financial information from the time they starting financial reporting to the year before they become publically listed.

The sample selection process is presented in Table 1. We obtain financial information from the Taiwan Economic Journal database and start with 20,505 firm-year observations for private firms during 1997-2005. We delete 3,284 firm-year observations for financial institutions. Next, we delete 91 firm-year observations that belong to delisted public firms. These firms continue financial reporting after delisting. Because they are formerly public firms, they are likely different from other private firms. We delete 2,623 firm-year observations for firms that ceased reporting before the 2001 law change. Since financial reporting is mandatory for private firms before 2001, these firms ceased reporting likely because their capital level fell below the threshold. Opposite to delisted firms, we also delete 1,608 firm-year observations belonging to firms conducting IPOs during the sample period. We do not include 469 firm-year observations that belong to firms that started reporting after 2001. Therefore, we use a sample of firms whose private status is relatively stable during the sample period. Finally, we delete 5,468 firm-year

observations missing accounting information need for our analysis. We are left with 6,962 firm-year observations for our main analysis, among which 1,873 are related to non-voluntary reporting firms and 5,089 are related to voluntary reporting firms.

#### *4.2. Descriptive statistics*

Table 2 compares non-voluntary reporting firms and voluntary reporting firms on several dimensions. Panel A is based on the largest available sample for every variable using in various analyses. Voluntary reporting firms have higher levels of operating cash flow than non-voluntary reporting. Voluntary reporting firms are smaller than non-voluntary reporting firms, though the difference is tiny. Non-voluntary reporting firms also have higher leverage than voluntary reporting firms. Non-voluntary reporting firms have significantly higher incidences of small positive earnings than voluntary reporting, suggesting preliminary support for our hypothesis. Non-voluntary reporting firms also have lower earnings and lower earnings growth. The results in Panel B based on a common sample are largely similar to those in Panel A.

A possible reason that private firms voluntarily continue financial reporting is that they want to have their shares ultimately listed and traded in a stock exchange. There are two ways that a firm can have its shares traded. A firm can become a publically listed firm. Or, a firm can have its shares traded over-the-counter without being a publically listed firm. This is a market created by the government to enable liquidity for private firms and is likely similar to the pink sheets market in the US. Often, being traded over-the-counter is a prelude to public offerings. Table 3 provides annual incidences of IPOs and/or over-the-counter trading for voluntary reporting firms after 2001 (from the beginning of 2002 to the end of the first quarter of 2009). 41.79% (382/914) of the voluntary reporting firms have IPOs after 2001 and 62.91% (575/914) of the voluntary

reporting firms have IPOs or have their shares traded over-the-counter. Therefore, the likelihood of a voluntary reporting firm have an IPO is quite high. Since financial reporting is a condition for IPOs, we cannot compute the percentages for non-voluntary reporting firms for comparison purposes.

Correlation coefficients are reported in Table 4. For the largest available sample for each variable in Panel A, the correlation between the incidence of small positive earnings and non-voluntary reporting firms is positive and significant for both measures of earnings, providing preliminary evidence that non-voluntary reporting firms tend to manage earnings to beat the positive earnings benchmark. Results based on the common sample in Panel B are largely similar.

### *4.3. Comparing earnings quality between voluntary reporting and non-voluntary reporting firms*

#### *4.3.1. Earnings smoothness*

We first compare earnings smoothness between voluntary reporting firms and non-voluntary reporting firms. We have argued earlier that if stakeholders' economic demand determines the quality of earnings, then earnings should be smoother for non-voluntary reporting firms than for voluntary reporting firms. Smoothed earnings suggests the likelihood of earnings manipulations (Lang, Raedy, and Yetman, 2003; Lang, Raedy, and Wilson, 2006; Barth et al., 2008). The results are reported in Table 5. All regression t-statistics are based on Huber-White's robust standard errors that correct for heteroskedasticity and serial correlations.

When we compare the smoothness of net income for the two groups of firms, using the full sample to estimate the parameters of Equation (1), without industry adjustment, the smoothness measure is 0.3255 for voluntary reporting firms, significantly higher than 0.0275 for non-voluntary reporting firms; with industry adjustment, the smoothness measure is 0.3241 for

voluntary reporting firms, significantly higher than 0.0286 for non-voluntary reporting firms. Using earnings before extraordinary items and discontinued operations, we obtain similar results. When we estimate the parameters of Equation (1) separately for voluntary reporting and non-voluntary reporting firms and then compute our smoothness measure, we again obtain similar results. To the extent earnings smoothness is a result of earnings manipulations, we conclude that non-voluntary reporting firms are less likely to manipulate earnings through smoothing earnings than voluntary reporting firms, supporting our hypothesis that voluntary reporting firms have higher quality of earnings than non-voluntary disclosing firms.

#### *4.3.2. Incidences of small positive earnings*

As discussed earlier, firms may manage earnings to reach certain thresholds, such as previous year's earnings, analysts' forecasted earnings, and positive earnings. We follow Barth et al. (2008) and examine whether there is difference in the incidence of small positive earnings between voluntary reporting and non-voluntary reporting firms. A high incidence of small positive earnings is evidence of earnings manipulations and therefore low quality earnings.

The results are reported in Table 6. *SPOS* is a dummy variable that equals one if earnings scaled by the beginning of the period assets is between 0 and 0.01, and it equals zero otherwise. We use *SPOS* to test our main hypothesis. Since the dependent variable is the likelihood that a firm is a non-voluntary reporting firm, if the coefficient on *SPOS* is positive, then non-voluntary reporting firms are more likely to manage earnings towards small positive numbers, and therefore have lower quality earnings than voluntary reporting firms, supporting our hypothesis. When net income is used to define *SPOS*, the coefficient on *SPOS* is positive and significant (0.450,  $t = 3.35$ ) and when earnings before extraordinary items and discontinued operations is

used to define *SPOS*, the coefficient on *SPOS* is also positive and significant (0.450,  $t = 3.37$ ). These results suggest that non-voluntary reporting firms are more likely to manage earnings towards small positive earnings figures and therefore have lower quality of earnings than voluntary reporting firms, supporting our hypothesis that voluntary reporting firms have higher levels of earnings quality than non-voluntary reporting firms.

#### 4.3.3. Conservatism

As discussed earlier, in earnings based conservatism regression, a negative coefficient on  $NEG_t \Delta NI_{t-1}$  is evidence of conservatism. If non-voluntary reporting firms are less conservative than voluntary reporting firms and therefore have lower levels of earnings quality, then the coefficient on  $NEG_t \Delta NI_{t-1}$  should be less negative for non-voluntary reporting firms. Our main variable of interest  $D_t \cdot NEG_t \Delta NI_{t-1}$  should have a positive sign.

The results are presented in Table 7. When net income is used in the regression, the coefficient on  $NEG_t \Delta NI_{t-1}$  is negative but insignificant (-0.027,  $t = -0.90$ ). Therefore, in our sample, firms as a whole demonstrate no evidence of conservatism. The coefficient on  $D_t \cdot NEG_t \Delta NI_{t-1}$  is positive and significant (0.716,  $t = 3.12$ ), suggesting that non-voluntary reporting firms are more aggressive in recognizing earnings, supporting our hypothesis that they are less conservative than voluntary reporting firms. When we use earnings before extraordinary items and discontinued operations, the coefficients on  $NEG_t \Delta NI_{t-1}$  and  $D_t \cdot NEG_t \Delta NI_{t-1}$  are both insignificant, not supporting our hypothesis.

#### 4.3.4. Further analysis

So far, we have found some evidence that the quality of earnings is higher for voluntary

reporting firms than for non-voluntary reporting firms based on earnings smoothness and the incidences of small positive earnings, and some limited evidence based on earnings conservatism. Our above analysis is based on the assumption that if a firm ceases the reporting practice, it is always a non-voluntary reporting firm before it ceases the practice. A weakness of this assumption is the presence of possible endogeneity. Some firms that cease the reporting practice may initially be filing financial information with regulatory authority on a voluntary basis. For example, they may have plans to have themselves listed in the local stock exchanges in the near future. Subsequently, due to various reasons (poor performances, less need for external capital, etc), they choose to cease the reporting practice after 2001 when the reporting requirement was rescinded. In other words, these firms are not completely constrained by the reporting requirement before 2001. However, based on our earlier classification, all firm-year observations for these firms are classified as non-voluntary reporting firm-years while at least a portion of them should really be classified as voluntary reporting firm-year observations. This approach has the tendency of making it more difficult to find evidence that voluntary reporting firms have higher levels of earnings quality than non-voluntary reporting firms, since a portion of voluntary reporting firm-year observations are mis-classified as non-voluntary reporting firm-years.

To alleviate this problem, we only utilize the firm-year observation right before a firm ceases financial reporting and classify it as a non-voluntary reporting observation, and exclude firm-year observations before that year. Correspondingly, we include firms that are still filing financial information that year as voluntary reporting firm observations. We then compare these two groups of firms to test our hypothesis.

Table 8 presents results comparing earnings smoothness for voluntary reporting firms and non-voluntary reporting firms using one firm-year for each firm. With or without industry



control for the regression model, and using net income or earnings before extraordinary items and discontinued operations, earnings is smoother for non-voluntary reporting firms than for voluntary reporting firms. To the extent that smooth earnings is a result of managerial earnings manipulations, we conclude that the quality of earnings is higher for voluntary reporting firms than for non-voluntary reporting firms, supporting our hypothesis.

Table 9 reports results on the incidence of small positive earnings for voluntary reporting and non-voluntary reporting firms using one firm-year for each firm. The coefficient on *SPOS* is positive and significant (0.816,  $t = 2.62$  for net income and 0.907,  $t = 2.97$  for earnings before extraordinary items and discontinued operations), supporting our hypothesis that the quality of earnings is higher for voluntary reporting firms than for non-voluntary reporting firms.

While there is some support for more conservatism for voluntary reporting firms than for non-voluntary reporting firms, it is not very strong in Table 7. Table 10 presents results comparing voluntary reporting and non-voluntary reporting firms using one firm-year observation for each firm. The coefficient on  $NEG_t \Delta NI_{t-1}$  is negative and significant (-0.611,  $t = -2.12$  for net income and -0.622,  $t = 2.15$  for earnings before extraordinary items and discontinued operations), suggesting the presence of conservatism among all firms. The coefficient on  $D_t \cdot NEG_t \Delta NI_{t-1}$  is positive and significant (1.719,  $t = 4.37$  for net income and 0.901,  $t = 2.13$  for earnings before extraordinary items and discontinued operations), suggesting that earnings is more conservative for voluntary reporting firms than for non-voluntary reporting firms. These results support our hypothesis that the quality of earnings is higher for voluntary reporting firms than for non-voluntary reporting firms.

In sum, our additional analysis shows results similar to or even stronger than our main results. We find that the quality of earnings is higher for voluntary reporting firms than for non-

voluntary reporting firms, based on earnings smoothness, incidence of small positive earnings, and earnings conservatism. Therefore, there are significant differences in earnings quality between these two types of private firms. Our results also potentially help us resolve the debate in Taiwan over whether it is necessary to restore the mandatory reporting rule in recent years. Though we do not conduct a cost-and-benefit analysis of mandatory versus voluntary reporting rules, our results help us understand whether mandatory reporting rules will necessarily improve reporting firms' quality of earnings. Our results appear to suggest that imposing mandatory reporting rules on firms who are reluctant to report financial information due to lack of stakeholder economic demand will not necessarily improve the quality of earnings. Further, our empirical results suggest that an important factor affecting earnings quality is not necessarily laws or regulations but economic demand for quality financial reporting. This conclusion is consistent with Ball and Shivakumar(2005) and Burgstahler et al. (2006) who compare public listed firms with privately held firms. We draw our conclusion based on a sample of more homogeneous private firms.

## **5. Conclusion**

In order to understand the effect of stakeholders' economic demand for financial reporting on the quality of earnings, recently many researchers compare the earnings quality of publically listed firms and privately held firms. These studies find that an important factor determining high quality earnings is stakeholders' economic demand for good financial reporting. But these studies that rely on a comparison of earnings quality between public and private firms face at least two potential problems. First, public and private firms exist in very different environments. Hard information, such as stock prices and analyst forecasts and recommendations associated

with public firms assist users of financial statements to process information more efficiently. In other words, the vast difference between public and private firms causes it difficult to easily attribute the difference in their earnings quality to the difference in economic demand for financial reporting. Second, an implicit assumption in prior research that compares the earnings quality between public and private firms is that stakeholders of private firms have the same degree of economic demand for financial reporting. This assumption may not be valid.

The rescission of the mandatory financial reporting requirement for private Taiwan firms in 2001 provides an excellent opportunity to tackle the above two problems. After the rescission, some private firms continue the reporting practice (voluntary reporting firms) and other cease the reporting practice (non-voluntary reporting firms). By focusing on private firms, we largely avoid the extent of heterogeneity between public and private firms due to the existence of the capital market for public firms. We are also able to relax the assumption that private firms are homogeneous and offer a comparison of two types of private firms.

In an environment without the mandatory reporting requirement for private firms, stakeholders of those that continue to report (voluntary reporting firms) likely have higher economic demand for financial reporting. On the opposite side, stakeholders of those that cease financial reporting (non-voluntary reporting firms) likely have low economic demand for financial reporting. They report merely to comply with regulations on reporting. By comparing the earnings quality of these two types of private firms, we are able to better understand the question of whether stakeholders' economic demand for financial reporting enhances the quality of earnings. We find that the quality of earnings, based on several measures, is higher for voluntary reporting firms than for non-voluntary reporting firms, supporting the notion that economic demand contributes to quality earnings. This finding, combined with Ball and

Shivakumar (2005) and Burgstahler et al. (2006), suggests that a main contributor to quality earnings is likely not law or regulations, but stakeholders' economic demand for financial reporting.

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Table 1. Sample selection process

Selection Mode ( <i>by firm-years</i> )	Number of Observations
Private firms that publish their financial statements from year 1997-2005	20,505
Less: Financial institutions	(3,284)
Delisted during the research period*	(91)
Cease reporting before 2001	(2,623)
IPO during any sample year	(1,608)
Start reporting after 2001	(469)
Missing data needed for analysis	(5,468)
Observations used in main analysis	6,962



Table 2. Descriptive statistics

Panel A: Largest Available Sample										
Variable	<i>Non-voluntary reporting firm</i>				<i>Voluntary reporting firm</i>				<i>Difference</i>	
	Mean	Median	Std. Dev.	n	Mean	Median	Std. Dev.	n	Mean	Median
$CFO_t$	-0.011	0.011	0.179	992	0.030	0.041	0.186	5919	-0.041***	-0.030***
$SIZE_t$	13.418	13.493	1.461	2612	13.379	13.332	1.524	7173	0.039	0.161***
$LEV_t$	72.686	46.989	514.913	2612	49.146	46.953	52.611	7173	23.540**	0.036
$SPOS_t^{Earnings}$	0.105	0.000	0.307	1094	0.063	0.000	0.243	7029	0.042***	-0.000***
$SPOS_t^{XEarnings}$	0.102	0.000	0.303	1094	0.061	0.000	0.240	7029	0.041***	-0.000***
$\Delta NI_t^{Earnings}$	-0.047	-0.002	1.410	2241	0.038	0.010	1.039	6102	-0.085***	-0.012***
$\Delta NI_t^{XEarnings}$	-0.048	-0.002	1.386	2241	0.038	0.010	1.038	6102	-0.086***	-0.012***
$TURN$	0.810	0.659	0.738	1093	0.959	0.776	1.469	7017	-0.148***	-0.117***
$GROWTH$	1.758	0.105	14.804	978	4.624	0.195	106.075	5713	-2.866*	-0.090***

  

Panel B: Common Sample										
Variable	<i>Non-voluntary reporting firm</i>				<i>Voluntary reporting firm</i>				<i>Difference</i>	
	Mean	Median	Std. Dev.	n	Mean	Median	Std. Dev.	n	Mean	Median
$CFO_t$	-0.003	0.015	0.163	870	0.038	0.047	0.180	5298	-0.041***	-0.032***
$SIZE_t$	13.666	13.590	1.282	870	13.590	13.478	1.332	5298	0.076	0.112**
$LEV_t$	47.219	47.130	20.808	870	47.236	46.894	23.863	5298	-0.017	0.236
$SPOS_t^{Earnings}$	0.111	0.000	0.315	870	0.071	0.000	0.256	5298	0.040***	-0.000***
$SPOS_t^{XEarnings}$	0.109	0.000	0.312	870	0.069	0.000	0.253	5298	0.040***	-0.000***
$\Delta NI_t^{Earnings}$	0.013	-0.000	0.148	870	0.047	0.013	0.584	5298	-0.034***	-0.013***
$\Delta NI_t^{XEarnings}$	0.013	-0.000	0.148	870	0.047	0.013	0.584	5298	-0.034***	-0.013***
$TURN$	0.831	0.676	0.714	870	1.004	0.812	1.550	5298	-0.173***	-0.136***
$GROWTH$	1.756	0.098	15.235	870	4.864	0.195	110.121	5298	-3.108*	-0.097***

**Notes:**

\*, \*\*, \*\*\* Difference in mean (median) between the *non-voluntary reporting firm* and the *voluntary reporting firm* significant at the 0.10, 0.05, and 0.01 level using a two-tailed *t*-test (Wilcoxon *z*-test).

Table 3. Frequency of IPOs for voluntary reporting firms

Year	2002	2003	2004	2005	2006	2007	2008	2009	Total
No. (Not including traded private firms)	127	88	74	42	20	13	13	5	382
No. (Including traded private firms)	263	132	128	10	6	33	3	-	575

Table 4. Correlation matrix

Panel A: Largest Available Sample										
Variable	<i>CFO</i>	<i>SIZE</i>	<i>LEV</i>	<i>SPOS</i> <sup>Earnings</sup>	<i>SPOS</i> <sup>XEarnings</sup>	$\Delta N I$ <sup>Earnings</sup>	$\Delta N I$ <sup>XEarnings</sup>	<i>TURN</i>	<i>GROWTH</i>	<i>D</i>
<i>CFO</i>		0.134***	-0.016	-0.014	-0.013	0.113***	0.113***	0.060***	-0.024*	-0.076***
<i>SIZE</i>	0.105***		-0.063***	0.078***	0.075***	0.003	0.003	-0.136***	-0.002	0.011
<i>LEV</i>	-0.063***	0.154***		0.032***	0.032***	-0.054**	-0.055**	0.053**	0.010	0.039***
<i>SPOS</i> <sup>Earnings</sup>	-0.040***	0.078***	0.100***		0.973***	-0.006	-0.007	-0.001	-0.010	0.057***
<i>SPOS</i> <sup>XEarnings</sup>	-0.037***	0.075***	0.098***	0.973***		-0.006	-0.006	0.000	-0.010	0.056***
$\Delta N I$ <sup>Earnings</sup>	0.252***	-0.038***	0.052***	-0.077***	-0.075**		0.994***	0.027**	0.028**	-0.033***
$\Delta N I$ <sup>XEarnings</sup>	0.253***	-0.039***	0.052***	-0.077***	-0.075**	0.996***		0.027**	0.028**	-0.033***
<i>TURN</i>	0.198***	-0.090***	0.342***	-0.003	-0.002	0.254***	0.255**		-0.006	-0.036***
<i>GROWTH</i>	-0.074***	-0.151***	0.009	-0.108***	-0.108**	0.422***	0.423***	0.100***		-0.010
<i>D</i>	-0.092***	0.040***	-0.007	0.057***	0.056**	-0.099***	-0.100***	-0.061***	-0.080***	
Panel B: Common Sample										
Variable	<i>CFO</i>	<i>SIZE</i>	<i>LEV</i>	<i>SPOS</i> <sup>Earnings</sup>	<i>SPOS</i> <sup>XEarnings</sup>	$\Delta N I$ <sup>Earnings</sup>	$\Delta N I$ <sup>XEarnings</sup>	<i>TURN</i>	<i>GROWTH</i>	<i>D</i>
<i>CFO</i>		0.095***	-0.070***	-0.030**	-0.029**	0.192***	0.192***	0.036***	-0.024*	-0.080***
<i>SIZE</i>	0.078***		0.130***	0.073***	0.070**	-0.058***	-0.058***	-0.154***	-0.002	0.020
<i>LEV</i>	-0.115***	0.192***		0.082***	0.082***	-0.043***	-0.043***	0.086***	0.012	-0.000
<i>SPOS</i> <sup>Earnings</sup>	-0.055***	0.072***	0.102***		0.969***	-0.022*	-0.022*	-0.011	-0.010	0.053***
<i>SPOS</i> <sup>XEarnings</sup>	-0.052***	0.070***	0.099***	0.969***		-0.021*	-0.021*	-0.010	-0.009	0.054***
$\Delta N I$ <sup>Earnings</sup>	0.224***	-0.082***	0.000	-0.091***	-0.088**		1.000***	0.011	0.029**	-0.022*
$\Delta N I$ <sup>XEarnings</sup>	0.224***	-0.084***	-0.000	-0.092***	-0.089**	0.996***		0.011	0.029**	-0.022*
<i>TURN</i>	0.147***	-0.146***	0.242***	-0.037***	-0.037***	0.207***	0.209***		-0.005	-0.041***
<i>GROWTH</i>	-0.074***	-0.147***	0.009	-0.109***	-0.110**	0.430***	0.432***	0.103***		-0.011
<i>D</i>	-0.100***	0.030**	0.011	0.053***	0.054**	-0.077***	-0.077***	-0.093***	-0.086***	

Upper (lower) triangular contains Pearson (Spearman) correlation coefficients, \*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively.

Table 5. Earnings smoothness

<b>Panel A:</b> Use full sample to estimate the parameters of Equation (4)						
Model specifications	Net income			Earnings before extraordinary items and discontinued operations		
	$\hat{\sigma}_{D=0}^2$	$\hat{\sigma}_{D=1}^2$	Difference	$\hat{\sigma}_{D=0}^2$	$\hat{\sigma}_{D=1}^2$	Difference
Without industry dummy	0.3255	0.0275	0.2980***	0.3253	0.0275	0.2978***
With industry dummy	0.3241	0.0286	0.2955***	0.3239	0.0285	0.2954***

  

<b>Panel B:</b> Use voluntary and non-voluntary reporting firms separately to estimate Equation (4)						
Model specifications	Net income			Earnings before extraordinary items and discontinued operations		
	$\hat{\sigma}_{D=0}^2$	$\hat{\sigma}_{D=1}^2$	Difference	$\hat{\sigma}_{D=0}^2$	$\hat{\sigma}_{D=1}^2$	Difference
Without industry dummy	0.3253	0.0210	0.3043***	0.3252	0.0210	0.3042***
With industry dummy	0.3239	0.0210	0.3029***	0.3237	0.0209	0.3028***

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively.

Table 6. Incidences of small positive earnings

Variable	Net income		Earnings before extraordinary items and discontinued operations	
	(A)	(B)	(C)	(D)
<i>Intercept</i>	-2.470 (-3.10) <sup>***</sup>	-1.891 (-2.16) <sup>**</sup>	-2.473 (-3.11) <sup>***</sup>	-1.895 (-2.17) <sup>**</sup>
<i>SPOS<sub>t</sub></i>	0.496 (3.71) <sup>***</sup>	0.450 (3.35) <sup>***</sup>	0.494 (3.72) <sup>***</sup>	0.450 (3.37) <sup>***</sup>
<i>SIZE<sub>t</sub></i>	0.051 (0.87)	0.021 (0.34)	0.051 (0.88)	0.022 (0.35)
<i>LEV<sub>t</sub></i>	-0.001 (-0.61)	0.002 (0.62)	-0.001 (-0.61)	0.002 (0.62)
<i>CFO<sub>t</sub></i>	-1.159 (-4.91) <sup>***</sup>	-1.148 (-4.61) <sup>***</sup>	-1.160 (-4.91) <sup>***</sup>	-1.149 (-4.62) <sup>***</sup>
<i>TURN<sub>t</sub></i>		-0.266 (-1.89) <sup>*</sup>		-0.267 (-1.89) <sup>*</sup>
<i>GROWTH<sub>t</sub></i>		-0.003 (-1.32)		-0.003 (-1.32)
Pseudo $R^2$	0.0107	0.0158	0.0106	0.0157
n	6,895	6,414	6,895	6,414

<sup>\*</sup>, <sup>\*\*</sup>, <sup>\*\*\*</sup> Significant at the 0.10, 0.05, and 0.01 level, respectively, based on a two-tailed Z-statistic after robust standard errors corrected for heteroscedasticity and firm-level clustering (in parentheses).

Table 7. Earnings conservatism

	Net Income	Earnings Before Extraordinary Items and Discontinued Operations
<i>Intercept</i>	0.025 (5.24) <sup>***</sup>	0.025 (5.33) <sup>***</sup>
<i>NEG<sub>t</sub></i>	0.040 (1.86) <sup>*</sup>	0.039 (1.81) <sup>*</sup>
$\Delta NI_{t-1t}$	0.034 (1.26)	0.034 (1.26)
<i>NEG<sub>t</sub>ΔNI<sub>t-1</sub></i>	-0.027 (-0.90)	-0.027 (-0.90)
<i>D<sub>t</sub></i>	0.032 (1.77) <sup>*</sup>	0.007 (0.14)
<i>D<sub>t</sub>NEG<sub>t</sub></i>	-0.080 (-2.86) <sup>***</sup>	-0.063 (-1.16)
<i>D<sub>t</sub>ΔNI<sub>t-1</sub></i>	-0.738 (-3.12) <sup>***</sup>	-0.514 (-0.92)
<i>D<sub>t</sub>NEG<sub>t</sub>ΔNI<sub>t-1</sub></i>	0.716 (3.12) <sup>***</sup>	0.492 (0.89)
Adjusted <i>R</i> <sup>2</sup>	0.0360	0.0115
F statistics	(38.09) <sup>***</sup>	(12.59) <sup>***</sup>
n	6,962	6,962
<b>Hypothesis Tests</b>		
$\hat{a}_3 + \hat{a}_7$	0.689 (9.19) <sup>***</sup>	0.465 (0.71)
$\hat{a}_2 + \hat{a}_3$	0.007 (0.28)	0.007 (0.29)
$\hat{a}_2 + \hat{a}_3 + \hat{a}_6 + \hat{a}_7$	-0.014 (0.81)	-0.015 (0.83)

<sup>\*</sup>, <sup>\*\*</sup>, <sup>\*\*\*</sup> Significant at the 0.10, 0.05, and 0.01 level, respectively, based on a two-tailed *t*-statistic (in parentheses).

Table 8. Earnings smoothness (**Sensitivity tests**)

<b>Panel A:</b> Use full sample to estimate the parameters of Equation (4)						
Model specifications	Net income			Earnings before extraordinary items and discontinued operations		
	$\hat{\sigma}_{D=0}^2$	$\hat{\sigma}_{D=1}^2$	Difference	$\hat{\sigma}_{D=0}^2$	$\hat{\sigma}_{D=1}^2$	Difference
Without industry dummy	0.19992	0.01406	0.18586***	0.19995	0.01399	0.18596***
With industry dummy	0.19913	0.01428	0.18485***	0.19916	0.01420	0.18496***
<b>Panel B:</b> Use voluntary and non-voluntary reporting firms separately to estimate Equation (4)						
Model specifications	Net income			Earnings before extraordinary items and discontinued operations		
	$\hat{\sigma}_{D=0}^2$	$\hat{\sigma}_{D=1}^2$	Difference	$\hat{\sigma}_{D=0}^2$	$\hat{\sigma}_{D=1}^2$	Difference
Without industry dummy	0.19958	0.00581	0.19377***	0.19961	0.00579	0.19382***
With industry dummy	0.19876	0.00560	0.19316***	0.19879	0.00559	0.19320***

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively.

Table 9. Incidences of small positive earnings: Sensitivity tests

Variable	Net income		Earnings before extraordinary items and discontinued operations	
	(A)	(B)	(C)	(D)
<i>Intercept</i>	-0.840 (-0.85)	0.089 (0.08)	-0.848 (-0.86)	0.079 (0.07)
<i>SPOS<sub>t</sub></i>	0.803 (2.72) <sup>***</sup>	0.816 (2.62) <sup>***</sup>	0.881 (3.02) <sup>***</sup>	0.907 (2.97) <sup>***</sup>
<i>SIZE<sub>t</sub></i>	-0.046 (-0.65)	-0.094 (-1.22)	-0.046 (-0.65)	-0.094 (-1.22)
<i>LEV<sub>t</sub></i>	0.000 (-0.24)	0.004 (1.15)	0.000 (-0.22)	0.004 (1.17)
<i>CFO<sub>t</sub></i>	-1.735 (-3.15) <sup>***</sup>	-2.086 (-3.34) <sup>***</sup>	-1.733 (-3.14) <sup>***</sup>	-2.080 (-3.32) <sup>***</sup>
<i>TURN<sub>t</sub></i>		-0.512 (-2.43) <sup>**</sup>		-0.517 (-2.46) <sup>**</sup>
<i>GROWTH<sub>t</sub></i>		-0.044 (-1.10)		-0.044 (-1.09)
Pseudo $R^2$	0.0229	0.0463	0.0251	0.0488
n	756	745	756	745

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively, based on a two-tailed Z-statistic after robust standard errors corrected for heteroscedasticity and firm-level clustering (in parentheses).



Table 10. Earnings conservatism: Sensitivity tests

	Net Income	Earnings Before Extraordinary Items and Discontinued Operations
<i>Intercept</i>	0.022 (2.57) <sup>***</sup>	0.023 (2.62) <sup>***</sup>
<i>NEG<sub>t</sub></i>	-0.004 (-0.16)	-0.006 (-0.23)
$\Delta NI_{t-1t}$	-0.078 (-1.08)	-0.078 (-1.07)
<i>NEG<sub>t</sub>ΔNI<sub>t-1</sub></i>	-0.611 (-2.12) <sup>**</sup>	-0.622 (-2.15) <sup>**</sup>
<i>D<sub>t</sub></i>	0.019 (1.26)	-0.045 (-2.95) <sup>***</sup>
<i>D<sub>t</sub>NEG<sub>t</sub></i>	-0.023 (-0.66)	0.043 (1.25)
<i>D<sub>t</sub>ΔNI<sub>t-1</sub></i>	-0.885 (-11.71) <sup>***</sup>	-0.056 (-0.33)
<i>D<sub>t</sub>NEG<sub>t</sub>ΔNI<sub>t-1</sub></i>	1.719 (4.37) <sup>***</sup>	0.901 (2.13) <sup>***</sup>
Adjusted <i>R</i> <sup>2</sup>	0.3459	0.0154
F statistics	(76.48) <sup>***</sup>	(3.23) <sup>***</sup>
n	1,000	1,000
<b>Hypothesis Tests</b>		
$\hat{a}_3 + \hat{a}_7$	1.107 (17.03) <sup>***</sup>	0.279 (0.82)
$\hat{a}_2 + \hat{a}_3$	-0.690 (6.12) <sup>**</sup>	-0.700 (6.26) <sup>**</sup>
$\hat{a}_2 + \hat{a}_3 + \hat{a}_6 + \hat{a}_7$	0.144 (0.29)	0.145 (0.30)

\*, \*\*, \*\*\* Significant at the 0.10, 0.05, and 0.01 level, respectively, based on a two-tailed *t*-statistic (in parentheses).