Voluntary Reporting Incentives and Reporting Quality: Evidence from a Reporting Regime Change for Private Firms in Taiwan*

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1. Introduction

A great deal of research has been devoted to the examination of the effect of financial reporting incentives on financial reporting quality (Chen, Sun, and Wang 2002; Ball, Robin, and Wu 2003; Ball and Shivakumar 2005; Burgstahler, Hail, and Leuz 2006; Ball, Robin, and Sadka 2008; Barth, Landsman, and Lang 2008; Givoly, Hayn, and Katz 2010). Often, this issue is explored in a setting where financial reporting is mandatory and proxies for reporting incentives are constructed based on, for example, corporate governance models in different countries, differential demand for reporting between private and public firms, and between debt and equity markets. It is often difficult to clearly capture reporting incentives. We identify a natural experiment in Taiwan that potentially helps us better understand the effect of reporting incentives on reporting quality.

Before 2001, Taiwan's Company Act imposed a mandatory public financial reporting requirement on privately held firms with contributed capital exceeding a certain threshold. In 2001, this mandatory reporting requirement was rescinded. Because this reporting regime change, some private firms have discontinued public financial reporting while others have continued this practice, revealing their reporting incentives. We define continuing firms as voluntary reporting firms and discontinuing firms as nonvoluntary reporting firms and compare their reporting quality. An important merit of this comparison is that we identify firms' endogenous incentives for financial reporting while keeping reporting standards constant, which enables us to draw a clearer link between reporting incentives and reporting quality. We find that financial reporting quality, as reflected in incidences of reporting small positive earnings, accounting conservatism, abnormal accruals, earnings smoothness, and auditor choices, is higher for voluntary reporting firms than for nonvoluntary reporting firms. We also find that voluntary reporting firms have better corporate governance practice, as reflected in CEO–chairman duality and the deviation between control and cash flow rights, than nonvoluntary reporting firms. These differences in reporting

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quality and corporate governance translate into a lower cost of debt for voluntary reporting firms. Finally, we also introduce publicly listed firms and find that they generally have the highest reporting quality, the best corporate governance practice, and the lowest cost of debt. As financial reporting is a condition for private firms seeking future public listing in Taiwan, we argue that reporting incentives associated with the prospect of external financing likely play an important role in driving reporting quality.

We make several contributions to the financial reporting literature. First, we provide additional evidence that reporting incentives are important in determining reporting quality. By keeping reporting standards constant, we are better able to attribute the difference in reporting quality to the difference in reporting incentives. We argue that voluntary reporting firms have incentives for financial reporting while nonvoluntary reporting firms lack those incentives. We show that voluntary reporting firms have higher reporting quality than nonvoluntary reporting firms. In addition, by focusing on firms' decisions to report or not to report at all based on their incentives, we pick up a measure of comprehensive financial disclosure to the general public as opposed to firms' reactions to partial or incremental changes in reporting standards (Barth et al. 2008; Armstrong, Barth, Jagolinzer, and Riedl 2010; Li 2010). Further, we potentially add to the "going dark" literature (Marosi and Massoud 2007; Leuz, Triantis, and Wang 2008; Engel, Hayes, and Wang 2007; Doidge, Karolyi, and Stulz 2010) by suggesting that poor reporting quality due to a lack of reporting incentives can be associated with the decision to cease public financial reporting.

Second, recent research has compared the reporting quality of publicly listed and privately held firms to determine whether capital markets enhance reporting quality or create pressure for firms to manipulate earnings (Ball and Shivakumar 2005; Burgstahler et al. 2006; Teoh, Welch, and Wong 1998a, 1998b; Givoly et al. 2010). As publicly listed firms are very different from privately held firms, it would be erroneous to entirely attribute public firms' higher (lower) reporting quality to a higher economic demand for accounting information (higher capital market pressure on earnings manipulations). Our focus on private firms minimizes this problem.

Third, prior studies implicitly assume that private firms' stakeholders have a homogeneous demand for their financial information (Ball and Shivakumar 2005). We relax this assumption and introduce variation in reporting incentives among private firms. Knowledge about private firms' reporting quality can further enhance our understanding of the effect of capital markets on firms' financial reporting quality.

This paper proceeds as follows. Section 2 provides background information on Taiwan's institutional settings, reviews the literature, and develops our hypothesis. Section 3 describes our measures of reporting quality, corporate governance and the cost of debt. Section 4 presents main results and section 5 presents sensitivity analyses results. Section 6 summarizes and concludes.

2. Institutional background in Taiwan and hypothesis development

Financial reporting for private firms in Taiwan

Taiwan generally followed the frameworks of U.S. GAAP before 2003. Since 1999, it has been working on modifying its accounting standards toward the International Financial Reporting Standards (IFRS).[1] Taiwan aims to fully adopt the IFRS by 2013.

1. For example, the first standard (#34) based on the IFRS "Accounting for Financial Instruments" was formulated on December 25, 2003 and became effective on January 1, 2006. The next one (#35) "Accounting for Asset Impairments" was formulated on July 1, 2004 and became effective on January 1, 2005. The third one (#36) "Financial Instruments: Presentation and Disclosure" was formulated on June 23, 2005 and became effective on January 1, 2006. "Accounting for Share-based Compensation" [#39] and "Accounting for Insurance Contracts" [#40] based on the IFRS followed in 2007 and 2008.

Before 2001, the mandatory public reporting requirement applied to both publicly listed firms and privately held firms with contributed capital exceeding a certain threshold, which was TWD 200 million after 1981 and TWD 500 million after 2000.[2] Reporting firms are required to prepare and file audited financial statements and other documents with the relevant securities regulatory authority. These firms must follow reporting guidelines in Taiwan's Securities and Exchange Act. Firms that are not required to report financial information only follow regulations in Taiwan's Company Act and their regulatory authority is the Ministry of Economic Affairs which is also a regulatory authority for reporting firms. Reporting firms (publicly listed or privately held) have an additional regulatory authority, the Financial Supervisory Commission, which is the counterpart to the SEC in the United States, for investor protection purposes.

All reporting firms have the following obligations: (i) Financial reporting. Following Article 36 of Taiwan's Securities and Exchange Act, firms are required to prepare and file audited annual and semi-annual financial statements with the Financial Supervisory Commission by the end of the fourth month after the fiscal year for annual reports and by the end of the second month after the first half of the current fiscal year for semi-annual reports. (ii) Audit by regulators. Following Articles 38 and 39 of the Securities and Exchange Act, 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 restatements and impose fines.[3] (iii) Share diversification. Privately held reporting firms have to comply with the share diversification requirement when they seek external capital. They have to issue a certain percentage of their shares to the general public.

The reporting requirement for privately held firms was rescinded in 2001. Mandatory reporting was originally enacted to increase share diversification through transparent financial reporting so that outside investors could benefit from the access to firms' financial information. More specifically, some of the potential benefits associated with mandatory reporting are: (i) an increase in share liquidity; (ii) the use of share-based compensation to attract competent employees; (iii) an increase in firm transparency; and (iv) the ease of obtaining external financing. Of course, there are also potential benefits associated with voluntary reporting: (i) a reduction in reporting cost; (ii) an increase in firms' operating flexibility; and (iii) a reduction in compliance cost and litigation cost (Tseng 2007, written in Chinese).

Mandatory reporting has an unintended consequence. Many medium or small size firms in Taiwan are family businesses not keen on seeing their family interest diluted by issuing shares to outsiders. To these firms, mandatory reporting brings mostly costs but not benefits. There is evidence that many firms keep their contributed capital just below the legal threshold to avoid financial reporting (Lin, Liu, and Chen 2004, written in Chinese). Therefore, the mandatory reporting requirement ignores some firms' lack of a need for external financing and therefore the desire for public reporting. The executive and legislative councils of Taiwan, in passing the amendment to Article 156 (which governs mandatory financial reporting) of the Company Act on June 1, 2001, stated that the financial reporting decision should be made by a (private) firm's board of directors or major shareholders, not by the government.

Since 2001, privately held firms have had discretion over financial reporting. Of course, publicly listed firms continue to report. If a private firm decides to discontinue the

2. TWD stands for Taiwan dollar. During our sample period 1997–2005, roughly 32 Taiwan dollars were equivalent to one U.S. dollar.

3. The Financial Supervisory Commission is well equipped to carry out vigorous law enforcement and comprehensive supervision as it has quasi-judicial power. Its Financial Examination Bureau has the power to question people and to search the premises of organizations. Source: www.fscey.gov.tw.

reporting practice, it can obtain permission from the regulatory authority and become a nonreporting firm. While some private firms have chosen to discontinue financial reporting (nonvoluntary reporting firms), many have continued the reporting practice (voluntary reporting firms). We focus on a comparison of reporting quality between voluntary reporting private firms and nonvoluntary reporting private firms for our main analysis. We also consider publicly listed firms as a further benchmark for comparing financial reporting incentives.

Literature

Recent research on the IAS or the IFRS suggests that financial reporting quality relies to a great extent on the presence of a set of high-quality standards. For example, Barth et al. (2008) show that in various countries, firms voluntarily adopting the IAS evidence improvement in financial reporting quality, as reflected in earnings smoothness, incidences of reporting small gains, timely loss recognition, and value relevance.[4] Armstrong et al. (2010) examine European stock markets' reaction to sixteen events associated with the adoption of the IFRS. They find that firms, especially banks, with low-quality preadoption information, experience positive returns, suggesting investors' perceived benefits of IFRS adoption associated with an increase in information quality. Li (2010) provides evidence that the European Union's mandatory adoption of the IFRS is associated with a reduction in the cost of equity capital in countries with strong legal enforcement. This line of research suggests that standards are important in determining reporting quality, or at least the market perceives it this way.

Other studies, however, show that adopting a set of presumably superior accounting standards does not necessarily lead to an improvement in reporting quality. For example, Ball et al. (2003) provide evidence that four East Asian economies — Hong Kong, Malaysia, Singapore, and Thailand, with accounting standards heavily influenced by common law origins that are considered of high quality — have low financial reporting quality. Chen et al. (2002) show that an attempt to harmonize China's accounting standards with the IAS does not achieve its goals of improving China's accounting practices. In these studies, family ownership, informal personal relationship, banks and political influences likely contribute to the low reporting quality in the above economies. This line of research suggests that incentives are important in determining reporting quality.

Researchers have examined whether capital markets demand high reporting quality and thus enhance reporting quality, or create pressure for earnings manipulations and thus reduce reporting quality, by comparing reporting quality of private versus public firms. Results are mixed. Ball and Shivakumar (2005) compare reporting quality between U.K. private and public firms that are subject to the same set of accounting standards. They find that public firms have higher reporting quality as reflected in the asymmetric timeliness of gain and loss recognitions (conservative reporting). Similarly, Burgstahler et al. (2006) document that in the European Union private firms exhibit a higher level of earnings management (as reflected in the propensity to report small losses, the magnitude of accruals, earnings smoothness, and the correlation between accruals and cash flows) than public firms. Further, using international data that capture differences in countries' financial infrastructure and variation in capital markets' demand for financial reporting, Ball et al. (2008) show that debt markets' (and not equity markets') high demand for timeliness and conservatism drives financial reporting quality. Therefore, it appears that the demand for high-quality financial reporting is more important than the capital market pressure for

4. Of course, a caveat of their study is that the pre–post change in reporting quality between adopters and nonadopters in a difference-in-difference approach is largely insignificant or can sometimes be potentially significant in the opposite direction.

earning management in determining reporting quality. On the other hand, Givoly et al. (2010) provide evidence that while public equity firms report more conservatively, consistent with their greater litigation risk and agency cost, they have lower quality accruals and higher propensities to manage income than private equity firms with public debt, consistent with their being more opportunistic. Of course, private equity firms with public debt are not exactly private and can also be subject to capital market pressure.

This approach of comparing private versus public firms subject to the same reporting standards is innovative but not without problems. Private and public firms are different on many dimensions. The presence of hard information such as stock prices, earnings forecasts, and analyst recommendations for public firms enables financial statement users to process information in a more efficient manner (Petersen 2004; Berger, Miller, Petersen, Rajan, and Stein 2005; Sunder 2006). A direct comparison between them is not always appropriate.

Overall, the above studies suggest that standards are important but perhaps not enough to create high reporting quality all by themselves. If firms lack reporting incentives due to reasons such as cultures, legal systems and enforcement, ownership structure, governance, and so forth, a superior set of accounting standards may not necessarily lead to high reporting quality. Our intuition is that, while not denying the role of standards, reporting incentives are important in determining reporting quality.

Reporting incentives revealed

The natural experiment in Taiwan potentially helps us understand the above problem. After the reporting requirement in Taiwan's Company Act was rescinded for private firms in 2001, some continued the reporting practice while others discontinued the practice. Therefore, we identify incentives for financial reporting while keeping standards constant. Continuing (voluntary reporting) firms have incentives for financial reporting while discontinuing (nonvoluntary reporting) firms lack incentives for financial reporting.

But what incentives? A possible reason that private firms voluntarily continue financial reporting is to have their shares publicly listed in Taiwan. There are two ways that a firm can have its shares publicly listed. It can have its shares traded at the Taiwan Stock Exchange (TWSE) or have its shares traded at the GreTai Securities Market. Both forms are considered public listing, though the criteria for the latter are less stringent. If a private firm aims to become publicly traded at TWSE (GreTai), it has to be a reporting firm during the three (two) most recent years. From the beginning of 2002 to the end of the first quarter of 2009, 41.79 percent of the voluntary reporting firms in our sample became publicly listed at TWSE and 62.91 percent of them became publicly listed at either TWSE or GreTai. These large percentages suggest that an important incentive for firms to continue financial reporting is the desire to obtain external financing. Firms also understand the adverse capital market consequence of having low quality financial reporting (Graham, Li, and Qiu 2008; Chen, Cheng, and Lo 2010) and prepare themselves well before seeking external financing. This pattern is consistent with the literature linking external financing to reporting quality (Ball and Shivakumar 2005; Ball et al. 2008; Burgstahler et al. 2006). In our case, we argue for the possibility that firms keen on obtaining external financing discipline themselves with higher financial reporting quality even before they go to the external financing market.[5]

5. Many reasons can trigger firms' incentives to manipulate financial information apart from the presence or the lack of external financing needs. For example, executive compensation contracts are often tied to earnings figures or the value of stocks or options which create such incentives (Balsam 1998; Bergstresser and Philippon 2006; Ibrahim and Lloyd 2011). Firms may also manipulate financial information because they have to deal with banks or minority shareholders.

We examine differences in financial reporting quality for voluntary and nonvoluntary reporting firms under the same reporting regime. We thus have a setting that more clearly identifies incentives without a simultaneous standard change.[6] In addition, we pick up the presence or the absence of comprehensive public financial disclosure to the general public as firms in our study decide to report or not to report at all based on their reporting incentives.[7]

Hypothesis

Based on the above discussion, we argue that voluntary reporting firms have incentives for public financial reporting and nonvoluntary reporting firms lack those incentives. Voluntary reporting firms make their financial statements meaningful and informative. Nonvoluntary reporting firms publish financial statements merely to fulfill the reporting requirement as evidenced by their revealed preference to withdraw from the reporting practice once the requirement is removed. We formulate the following hypothesis:

HYPOTHESIS. *Voluntary reporting firms have higher financial reporting quality than nonvoluntary reporting firms.*

Apart from financial reporting, we also examine differences in corporate governance and the cost of debt between voluntary and nonvoluntary reporting firms. As corporate governance practice and the cost of debt are associated with or potentially consequences of financial reporting (Chen and Yeh 2002; Fan and Wong 2002; Ahmed, Billings, Morton, and Stanford-Harris 2002; Francis, LaFond, Olsson, and Schipper 2005; Ball et al. 2008), we expect voluntary reporting firms to have better corporate governance and a lower cost of debt than nonvoluntary reporting firms.

It is important to note that researchers have examined "going dark" for public firms, a setting similar to our private firms ceasing financial reporting. Going dark in the United States means that a public firm deregisters from the SEC and delists from a major stock exchange while still having a relatively large number of shareholders.[8] Therefore, the firm ceases the SEC reporting obligations (Leuz et al. 2008). The going dark literature mainly focuses on reasons why firms go dark. For example, firms with few growth opportunities, great insider ownership, low institutional ownership, or poor future performance, or firms under distress, tend to deregister (Marosi and Massoud 2007; Leuz et al. 2008). We argue that poor reporting quality due to a lack of reporting incentives is potentially associated with a private firm's decision to cease financial reporting. We also recognize that reporting cost can play a role in firms' decisions to cease financial reporting. For example, a reason for going dark in the United States is the increased compliance cost due to the passage of the Sarbanes-Oxley Act in 2002 (Engel et al. 2007; Leuz et al. 2008; Doidge et al. 2010). However, we argue here that reporting cost can influence the decision to cease financial reporting through affecting reporting incentives.

Of course, incentives associated with the prospect of accessing external financing can produce an outcome opposite to our expectation. Even though our voluntary reporting firms are not publicly traded yet, they may be already under capital market pressure and have desires to manipulate earnings (Teoh et al. 1998a, 1998b). They may manipulate earnings toward a certain target to produce a history of seemingly strong financials in

6. To determine if standards affect reporting quality, it is important to keep incentives constant. To determine if incentives affect reporting quality, it is important to keep standards constant. However, in Ball et al. 2003, Barth et al. 2008, Armstrong et al. 2010, and Li 2010, incentives and standards are often manipulated together.

7. Of course nonfilers still prepare financial statements but these financial statements are not made widely and publicly available.

8. Public firms in the United States can deregister if they have fewer than 300 holders of record, or fewer than 500 holders of record and less than $10 million of assets in each of the prior three years (Leuz et al. 2008).

order that they are received more favorably in the capital markets when seeking external financing in the future. They may also attempt to reduce earnings volatility in order to be perceived as having low risk and thus command high prices when going public. In addition, there are costs associated with voluntary disclosure (Dye 1985). If this effect is strong, voluntary reporting firms can have lower financial reporting quality than nonvoluntary reporting firms which are less likely to seek external financing and thus are less likely to be under capital market pressure. This possibility adds tension to our hypothesis. Toward the end of this study, we introduce publicly listed firms and compare them with voluntary and nonvoluntary reporting private firms to further determine whether capital markets enhance or reduce reporting quality.

3. Measures of reporting quality, corporate governance, and the cost of debt

Reporting quality

Due to a lack of stock prices for our sample of private firms, we adopt only accounting-based measures of reporting quality, such as incidences of small positive earnings, asymmetric timeliness of gain and loss recognition (conservatism), abnormal accruals, earnings smoothness, and auditor choices. Based on our hypothesis, we expect voluntary reporting firms to have a lower likelihood of reporting small positive earnings, more conservative reporting, lower abnormal accruals, less smooth earnings, and a higher likelihood of hiring big auditors than nonvoluntary reporting firms.

Incidences of small positive earnings

Many studies point out that managers manipulate earnings to meet or beat certain thresholds (Burgstahler and Dichev 1997; Degeorge, Patel, and Zeckhauser 1999; Bhattacharya, Daouk, and Welker 2003; Jiang 2008). Popular thresholds are zero earnings, increasing earnings, and meeting or beating analyst forecasts (Brown and Caylor 2005). We use the zero-earnings threshold and examine the difference in the incidences of negative earnings avoidance between voluntary and nonvoluntary reporting firms. We estimate the following logistic regression based on Barth et al. 2008:

$$\text{Prob}(SPOS_{it} = 1) = \theta_0 + \theta_1 NV_{it} + \theta_2 SIZE_{it} + \theta_3 LEV_{it} + \theta_4 CFO_{it} + \theta_5 TURN_{it} + \theta_6 GROWTH_{it} + e1_{it}, \quad (1)$$

where *SPOS* is an indicator variable that equals 1 if earnings scaled by the beginning total assets is between 0 and 0.01, and 0 otherwise; *NV* is an indicator variable that equals 1 for a nonvoluntary reporting firm and 0 otherwise; *SIZE* is the logarithm transformation of total assets; *LEV* is leverage computed as total liabilities scaled by total assets; *CFO* is operating cash flow scaled by total assets; *TURN* is current net sales scaled by total assets; *GROWTH* is current growth in net sales.

Loss avoidance indicates earnings manipulations and is evidence of low reporting quality. Voluntary reporting firms keen on tapping external financing want to avoid being perceived as earnings manipulators and therefore have lower incidences of small positive earnings than nonvoluntary reporting firms ($\theta_1 > 0$).[9] We expect the effects of *SIZE*, *LEV*, and *GROWTH* to be positive and the effect of *CFO* to be negative (Davis, Soo, and Trompeter 2009).

9. Of course, if we strictly follow Barth et al. 2008, then *SPOS* would be an independent variable while *NV* would be the dependent variable. The implication of their design in our setting is that a firm reporting small positive earnings is more likely to be a nonvoluntary reporting firm than a voluntary reporting firm. When we switch the positions of *SPOS* and *NV* in (1), our result supports this prediction, consistent with Barth et al. 2008. Our specification is more intuitive for our setting.

Conservatism

Basu (1997) defines earnings conservatism as "earnings reflects bad news more quickly than good news". As privately held firms lack stock prices, we follow Ball and Shivakumar 2005 and use the following model to detect the difference in conservatism between voluntary and nonvoluntary reporting firms:

$$\Delta NI_{it} = \beta_0 + \beta_1 NEG_{it} + \beta_2 \Delta NI_{it-1} + \beta_3 NEG_{it-1} \cdot \Delta NI_{it-1} + \beta_4 NV_{it} + \beta_5 NV_{it} \cdot NEG_{it-1} + \beta_6 NV_{it} \cdot \Delta NI_{it-1} + \beta_7 NV_{it} \cdot NEG_{it-1} \cdot \Delta NI_{it-1} + e2_{it}, \quad (2)$$

where ΔNI represents the change in earnings for the current period (current period earnings minus previous period earnings) scaled by beginning of the period total assets; NEG_{it-1} is an indicator variable that equals 1 if ΔNI_{it-1} is negative and 0 otherwise. ($\beta_2 + \beta_3$) represents the effect of declining earnings on changes in earnings for voluntary reporting firms and β_3 measures their level of conservatism. We should have $\beta_3 < 0$. ($\beta_2 + \beta_3 + \beta_6 + \beta_7$) represents the effect of declining earnings on changes in earnings for nonvoluntary reporting firms and ($\beta_3 + \beta_7$) measures their level of conservatism.

While standard setters (FASB, IASB) have not viewed conservatism as desirable, in academic circles it is a major feature of reporting quality and is important in contracting (Watts 2003). Debtholders demand conservatism as they assume firms' downside risks but not upside potentials. Conservatism holds managers more responsible for poor investment decisions by deferring their earnings-based compensation. Conservatism enables shareholders to take protective actions upon receiving bad news in a timelier manner. Many studies have supported the usefulness of accounting conservatism. For example, Zhang (2008) shows that conservatism is beneficial to both creditors and debtors. Garcia Lara, Garcia Osama, and Penalva (2009) provide evidence that conservatism can reduce the cost of litigation and contracting.

Firms accessing the capital markets report more conservatively (Ball and Shivakumar 2005). Because financial reporting is required of firms planning on accessing the external capital markets, we expect voluntary reporting firms to report more conservatively than nonvoluntary reporting firms ($\beta_7 > 0$).

Abnormal accruals

The magnitude of abnormal accruals is another measure of reporting quality. We use the signed abnormal accruals, *AbnAcc*, and the absolute value of abnormal accruals, |*AbnAcc*|, to proxy for reporting quality. We first estimate a cross-sectional modified Jones model adjusted for prior year performance following Kothari, Leone, and Wasley 2005 and obtain the residuals, *AbnAcc*. We then estimate the following model to detect the difference in the magnitude of accruals between voluntary and nonvoluntary reporting firms:

$$AbnAcc_{it} \text{ or } |AbnAcc_{it}| = \mu_0 + \mu_1 NV_{it} + \mu_2 SIZE_{it} + \mu_3 LEV_{it} + \mu_4 CFO_{it} + \mu_5 TURN_{it} + \mu_6 GROWTH_{it} + \mu_7 ROA_{it} + e3_{it}. \quad (3)$$

Large signed accruals suggest that a firm has a tendency to manage earnings higher while a large absolute value of accruals suggests that a firm has low quality accruals, both indicating earnings management and low reporting quality. We expect voluntary reporting firms to have lower signed and absolute values of accruals than nonvoluntary reporting firms ($\mu_1 > 0$). We expect the effect of *SIZE* to be negative (Dechow and Dichev 2002), the effect of *GROWTH* to be positive (Chen, Lin, and Lin 2008), and the effect of *CFO* to be negative (Dechow 1994).

Earnings smoothness

Smooth earnings is often considered evidence of earnings manipulations. Barth et al. 2008 find that firms applying the IAS experience an increase in earnings volatility, indicating that these firms' managers are less likely to smooth earnings. Following them, we use the following regression to estimate earnings smoothness:

$$\Delta NI_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 LEV_{it} + \alpha_3 CFO_{it} + \alpha_4 TURN_{it} + \alpha_5 GROWTH_{it} + e4_{it}, \quad (4)$$

where ΔNI is the change in earnings scaled by beginning total assets; $SIZE$ is the logarithm transformation of total assets; LEV is leverage computed as total liabilities scaled by total assets; CFO is operating cash flow scaled by total assets; $TURN$ is current net sales scaled by total assets; $GROWTH$ is current growth in net sales. We use two approaches to estimate the variance of earnings change residuals. First, we use the full sample to estimate parameters of (4) and then compute the variances of earnings change residuals for voluntary reporting firms and nonvoluntary reporting firms. Second, we estimate parameters of (4) using voluntary and nonvoluntary reporting firms separately and then compute the variances of earnings change residuals.

We expect managers of nonvoluntary reporting firms to be more likely to smooth earnings than voluntary reporting firms, and therefore the variance of the residual should be higher for voluntary reporting firms than for nonvoluntary reporting firms, $\sigma^2{}_{NV=0} > \sigma^2{}_{NV=1}$, where NV equals one for a nonvoluntary reporting firm and zero otherwise.

We note that earnings smoothness as a measure of reporting quality is controversial. An opposite view is that smoothing improves earnings informativeness when managers with private information use discretion in communicating their assessment of future earnings (Tucker and Zarowin 2006). If that is the case, then we should have $\sigma^2{}_{NV=0} < \sigma^2{}_{NV=1}$.

Auditor choices

Reporting quality can potentially be reflected in a firm's auditor choice and/or a firm can use its auditor choice to signal to the market its superior reporting quality. We estimate the following regression model to detect the difference in the tendency to hire big auditors between voluntary and nonvoluntary reporting firms:

$$\begin{aligned}\text{Prob}(AUDITOR_{it} = 1) = {} & \rho_0 + \rho_1 NV_{it} + \rho_2 SIZE_{it} + \rho_3 LEV_{it} + \rho_4 CFO_{it} + \rho_5 TURN_{it} \\ & + \rho_6 GROWTH_{it} + \rho_7 ROA_{it} + \rho_8 CR_{it} + \rho_9 QR_{it} + \rho_{10} AGE_{it} + e5_{it}. \quad (5)\end{aligned}$$

If a firm hires a Big 8, 6, or 4 auditor, the dependent variable $AUDITOR$ takes a value of 1, and it takes a value of 0 otherwise.[10] CR is the current ratio defined as current assets divided by total assets. QR is the quick ratio defined as current assets minus inventory divided by current liabilities (Chaney, Jeter, and Shivakumar 2004). AGE is firm age. All other variables are as defined earlier.

There is an economic rationale that voluntary reporting firms are more likely to hire big auditors than nonvoluntary reporting firms. Big auditors are associated with high reporting quality, such as lower absolute values of discretionary accruals (Becker, DeFond, Jiambalvo, and Subramanyam 1998), and higher earnings response coefficients (Teoh and Wong 1993). Voluntary reporting firms keen on obtaining external financing

10. Endogeneity could be present here. While we argue that reporting quality can be reflected in a firm's auditor choice and/or a firm can use its auditor choice to signal its reporting quality, voluntary and nonvoluntary firms are different on many other dimensions. Our controls for major firm characteristics potentially alleviate this concern.

value high-quality reporting and therefore hire big auditors. Further, big auditors potentially reduce firms' cost of external financing. Nichols and Smith (1983) find that the stock market reacts more favorably when a client switches to a Big N auditor than when it switches to a non–Big N auditor. Firth and Smith (1992) find that clients of Big N auditors incur less IPO underpricing than clients of non–Big N auditors. Therefore, voluntary reporting firms hire big auditors to reduce their cost of capital. We expect $\rho_1 < 0$. The effects of *SIZE*, *LEV*, *CR*, and *QR* should be positive based on Chaney et al. 2004.

Corporate governance

CEO–chairman duality

CEO–chairman duality is an indication of poor corporate governance. Dechow, Sloan, and Sweeney (1996), Carcello and Nagy (2004) and Farber (2005) show that the probability of financial fraud increases in firms where CEOs also serve as chairmen of the board. Dey (2008) points out that the CEO's role as the chairman of the board of directors causes agency conflict. Patton and Baker (1987) and Booth, Cornett, and Tehranian (2002) find that board monitoring effectiveness reduces with CEO–chairman duality. To detect a difference in the probability of duality between voluntary and nonvoluntary reporting firms, we estimate the following regression equation:

$$\begin{aligned}\text{Prob}(DUAL_{it} = 1) =& \kappa_0 + \kappa_1 NV_{it} + \kappa_2 SIZE_{it} + \kappa_3 LEV_{it} + \kappa_4 CFO_{it} + \kappa_5 TURN_{it} \\ &+ \kappa_6 GROWTH_{it} + e6_{it}, \quad (6)\end{aligned}$$

where *DUAL* equals 1 for a firm with duality and 0 otherwise.

Firms with poor corporate governance do not appreciate transparent high-quality financial reporting, because high-quality reporting reduces managers' ability to expropriate shareholders. Chen and Yeh (2002, written in Chinese) find a positive association between earnings management and CEO–chairman duality in Taiwan. Therefore, firms with duality likely have low incentives to report quality financial information. We expect nonvoluntary reporting firms to have a higher likelihood of CEO–chairman duality than voluntary reporting firms ($\kappa_1 > 0$).

Deviation between control and ownership rights

The deviation of a controlling shareholder's control rights from its ownership rights is another indication of poor corporate governance. This deviation causes a decrease in firm value (Claessens, Djankov, and Lang 2000; Claessens, Djankov, Fan, and Lang 2002; La Porta, Lopez-de-Silanes, Shleifer, and Vishny 2002; Lemmon and Lins 2003) and hurts minority shareholders as well as creditors. To detect the difference in the extent of this deviation between voluntary and nonvoluntary reporting firms, we estimate the following regression equation:

$$\begin{aligned}&(Control_{it} - Ownership_{it}) \\ &\text{or } (Control_{it}/Ownership_{it}) = \varphi_0 + \varphi_1 NV_{it} + \varphi_2 SIZE_{it} + \varphi_3 LEV_{it} + \varphi_4 CFO_{it} \\ &\qquad + \varphi_5 TURN_{it} + \varphi_6 GROWTH_{it} + e7_{it}, \quad (7)\end{aligned}$$

where *Control* is a controlling shareholder's percentage of control rights and *Ownership* is a controlling shareholder's percentage of ownership rights.

The deviation between control and ownership rights is negatively associated with the informativeness of accounting numbers (Fan and Wong 2002) and reduces managers' incentives to disclose financial information. We therefore expect nonvoluntary reporting

firms to have a larger deviation between controlling shareholders' control rights and ownership rights than do voluntary reporting firms ($\phi_1 > 0$).[11]

Cost of debt

Francis et al. (2005) and Ahmed et al. (2002) suggest that one benefit of high-quality financial reporting is a reduction in the cost of capital. Further, Ball et al. (2008) show that the debt market's demand for timeliness and conservatism drives financial reporting quality. In addition, Graham et al. (2008) and Chen et al. (2010) demonstrate that poor financial reporting, as reflected in restatements, increases firms' borrowing costs. Francis, Nanda, and Olsson (2008) show that poor earnings quality reduces bond rating. To determine if a high level of reporting quality associated with voluntary reporting firms translates into some benefits, we compare the cost of debt for voluntary reporting and nonvoluntary reporting firms. We expect voluntary reporting firms to have a lower cost of debt than nonvoluntary reporting firms. To test this prediction, we estimate the following regression using loan pricing (Mansi, Maxwell, and Miller 2004):

$$COD_{it} = \lambda_0 + \lambda_1 NV_{it} + \lambda_2 ROA_{it} + \lambda_3 LEV_{it} + \lambda_4 SIZE_{it} + \lambda_5 QR_{it} + \lambda_6 RF_{it} + e8_{it}, \quad (8)$$

where *COD* (the cost of debt) is the weighted-average interest rate of new loans initiated with loan amounts as weights for each firm; *LEV* is financial leverage measured as the ratio of total liabilities to total assets; *ROA* is return on assets; *QR* is quick ratio; and *RF* is a risk-free rate that equals the average of the 91-day Taiwan treasury bill interest rates. If there is no information on 91-day treasury bills during a year, we calculate the average of the 182-day treasury bill interest rates or the average of 273-day treasury bill rates if there is no information on 182-day treasury bill rates. We expect $\lambda_1 > 0$.

We include five control variables following prior literature (Sengupta 1998; Jiang 2008). We expect *ROA* and *SIZE* to be negatively associated with the cost of debt and *LEV* to be positively associated with the cost of debt (Kim, Simunic, Stein, and Yi 2011). The quick ratio reflects firms' ability to cover short-term liabilities and therefore should affect loan rates (Penman 2007; Wild, Subramanyam, and Halsey 2003). We include quick ratio (*QR*) and expect it to have a negative effect on loan rates. We also control for the risk-free rate (*RF*) and expect a positive coefficient on *RF*.

4. Empirical results

Sample selection

We cover firms during the period 1997–2005. Because some of the regression analyses require two past years' accounting information, our variables are from 1995 to 2005. We obtain data from Taiwan Economic Journal (TEJ). If a firm ceased financial reporting after 2001 but before or during 2005, we define it as a nonvoluntary reporting firm.[12] Based on the way we define nonvoluntary reporting firms, we obtain financial information for them from the time they started financial reporting or the start of our sample period to the year before they ceased financial reporting. As for voluntary reporting firms, we obtain their financial information after they started financial reporting or the start of our sample period.

11. In the literature, these two governance measures, duality and deviation, are usually used as independent variables. In our case, we use them as dependent variables and we do not predict the expected effects of control variables on them. We only predict the effect of nonvoluntary reporting on these governance measures. Further, we do not explore the issue of causality as it may well be the case that poor corporate governance is a reason for nonvoluntary reporting. This is beyond the scope of this study and can be a topic for future research.

12. Of course, we run the risk of misclassifying a nonvoluntary reporting firm as a voluntary reporting firm if it ceased reporting after 2005, the end of our sample period.

The sample selection process is presented in Table 1. We start with 17,221 firm-year observations for private firms during 1997–2005. We delete 91 firm-year observations that belong to delisted public firms. These firms continue financial reporting after delisting. Being 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. Because financial reporting is mandatory for private firms before 2001, these firms ceased reporting because they stopped doing business or their contributed capital levels fell below the reporting threshold. We also delete 1,608 firm-year observations that belong to firms conducting IPOs during the sample period. We exclude 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. Further, we delete 2,223 firm-year observations missing accounting information before we go to any specific regression analysis. We are left with 10,207 firm-year observations (representing 1,458 firms), among which 2,621 (representing 379 firms) belong to nonvoluntary reporting firms and 7,586 (representing 1,079 firms) belong to voluntary reporting firms.[13] Final sample size varies when we use different measures of reporting quality, corporate governance, or the cost of debt (refer to Table 1 for details, sample size ranked from the largest to the smallest).[14]

Descriptive statistics

Table 2 compares nonvoluntary reporting and voluntary reporting firms on several dimensions. Voluntary reporting firms have higher operating cash flow, smaller size and lower leverage than nonvoluntary reporting firms. They appear to have lower incidences of small positive earnings, a higher probability of hiring Big 8, 6, or 4 auditors, and a lower level of signed or absolute value of accruals than nonvoluntary reporting firms, suggesting some preliminary support for our hypothesis that reporting quality is higher for voluntary reporting firms than for nonvoluntary reporting firms. They also have higher earnings changes and growth than nonvoluntary reporting firms, suggesting that voluntary reporting firms may have incentives to raise external capital to fund their growth.[15]

Comparing reporting quality between voluntary and nonvoluntary reporting firms

Incidences of small positive earnings

A high incidence of small positive earnings is evidence of earnings manipulations and therefore low-quality financial reporting. Table 3 reports results based on all available observations. All regression *t*-statistics are based on Huber-White's robust standard errors that correct for heteroskedasticity and firm-level clustering. We find that the coefficient on *NV* is positive and significant (0.458, $z = 3.42$), suggesting that nonvoluntary reporting

13. A majority of the firm-year observations is in the electronics industry (53.49 percent). This is followed by the chemical industry (7 percent), electric industry (4.47 percent), construction industry (3.40 percent) and textiles industry (2.56 percent). Results from subsequent sensitivity analysis are largely unaffected by firms in the electronics industry, except in terms of conservatism as nonvoluntary reporting firms in the electronics industry appear to be more conservative than nonvoluntary reporting firms in other industries. The proportion of voluntary reporting firms appears high. We speculate that many private firms have plans for public listing in the near future and thus continue financial reporting. Inertia might also play a role as our sample period ends in 2005 and we cannot rule out the possibility that some firms stop financial reporting after 2005.

14. Sample attrition rate appears to be large. This is due to the fact that TEJ's coverage of privately held firms is not as good as its coverage of publicly listed firms. When we repeat the sample selection process for publicly listed firms for a comparison, we find that the sample attrition rate for publicly listed firms is considerably lower than that for privately held firms.

15. One potential reason that nonvoluntary reporting firms manipulate accounting information is their desire to mask deteriorating financial performance, for instance, from minority shareholders. We conduct a probit analysis of the probability of the discontinuing reporting decision and find that discontinuing firms have lower profitability and fewer growth opportunities (untabulated).

TABLE 1
Sample selection process

Selection mode (by firm-years)	All firms #Obs.	Nonvoluntary reporting firms #Obs.	Voluntary reporting firms #Obs.
Private nonfinancial firms that published their financial statements 1997–2005	17,221		
Less: 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	(2,223)		
Initial sample for analysis	10,207	2,621	7,586

	All firms		Nonvoluntary reporting firms		Voluntary reporting firms	
Variables of interest	#Obs.	#Firms	#Obs.	#Firms	#Obs.	#Firms
Earnings conservatism						
Initial sample for analysis	10,207	1,458	2,621	379	7,586	1,079
Less: Missing variables	(3,245)		(596)		(2,649)	
Final sample	6,962	1,329	2,025	365	4,937	964
Small positive earnings						
Initial sample for analysis	10,207	1,458	2,621	379	7,586	1,079
Less: Missing variables	(3,793)		(1,858)		(1,935)	
Final sample	6,414	1,168	763	151	5,651	1,017
Corporate governance						
Initial sample for analysis	10,207	1,458	2,621	379	7,586	1,079
Less: Missing variables	(5,995)		(2,100)		(3,895)	
Final sample	4,212	998	521	110	3,691	888
Auditor choice						
Initial sample for analysis	10,207	1,458	2,621	379	7,586	1,079
Less: Missing variables	(6,188)		(1,918)		(4,270)	
Final sample	4,019	827	703	151	3,316	676
Abnormal accruals						
Initial sample for analysis	10,207	1,458	2,621	379	7,586	1,079
Less: Missing variables	(7,208)		(2,407)		(4,801)	
Final sample	2,999	727	214	47	2,785	680
Cost of debt						
Initial sample for analysis	10,207	1,458	2,621	379	7,586	1,079
Less: Missing variables	(7,347)		(2,189)		(5,158)	
Final sample	2,860	853	432	118	2,428	735

TABLE 2
Descriptive statistics

	Nonvoluntary reporting firms				Voluntary reporting firms				Difference	
Variable	Mean	Median	Std. Dev.	*n*	Mean	Median	Std. Dev.	*n*	Mean	Median
CFO	−0.011	0.011	0.179	992	0.030	0.041	0.186	5919	−0.041***	−0.030***
SIZE	13.418	13.493	1.461	2612	13.379	13.332	1.524	7173	0.039	0.161***
LEV (%)	72.686	46.989	514.913	2612	49.146	46.953	52.611	7173	23.540***	0.036
SPOS	0.105	0.000	0.307	1094	0.063	0.000	0.243	7029	0.042***	−0.000***
ΔNI	−0.047	−0.002	1.410	2241	0.038	0.010	1.039	6102	−0.085***	−0.012***
AbnAcc	0.018	0.010	0.162	914	0.000	−0.011	0.153	3689	0.018***	0.021***
$\lvert AbnAcc \rvert$	0.121	0.086	0.109	914	0.111	0.077	0.106	3689	0.010***	0.009***
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***
AUDITOR	0.717	1.000	0.451	2199	0.738	1.000	0.440	5897	−0.021*	0.000*

Notes:

CFO is operating cash flow scaled by total assets. *SIZE* is the logarithm transformation of total assets. *LEV* is leverage computed as total liabilities scaled by total assets. *SPOS* is an indicator variable that equals 1 if earnings scaled by the beginning total assets is between 0 and 0.01, and 0 otherwise. ΔNI is the change in earnings from the previous period scaled by beginning total assets. *AbnAcc* is signed abnormal accruals and $\lvert AbnAcc \rvert$ is the absolute value of abnormal accruals computed based on Kothari, Leone and Wasley 2005. *TURN* is current net sales scaled by total assets. *GROWTH* is current growth in net sales. If a firm hires a Big-8, 6, or 4 auditor, the dependent variable *AUDITOR* takes a value of 1, and it takes a value of 0 otherwise. ***, ** or * indicate significance level at 0.01, 0.05 or 0.10, using a two-tailed *t*-test (Wilcoxon *z*-test), respectively.

firms are more likely to manage earnings toward small positive figures to avoid losses and therefore have lower quality financial reporting than voluntary reporting firms, supporting our hypothesis.

Conservatism

Nonvoluntary reporting firms should be less conservative than voluntary reporting firms. Table 3 presents results. The coefficient on $NEG_{it-1} \cdot \Delta NI_{it-1}$ is negative but insignificant (-0.027, $t = -0.90$). Therefore, in our sample, voluntary reporting firms demonstrate no evidence of conservatism. The coefficient on $NV \cdot NEG_{it-1} \cdot \Delta NI_{it-1}$ is positive and significant (0.716, $t = 3.12$), suggesting that nonvoluntary reporting firms are more aggressive in recognizing earnings, supporting our hypothesis that they have lower reporting quality than voluntary reporting firms.

Abnormal accruals

Nonvoluntary reporting firms should have larger abnormal accruals than voluntary reporting firms. Table 3 presents the results. When signed abnormal accruals *AbnAcc* is used, the coefficient on *NV* is positive and significant (0.010, $t = 2.10$). When the magnitude of abnormal accruals $\lvert AbnAcc \rvert$ is used, the coefficient on *NV* is also positive and significant (0.014, $t = 2.12$). It appears that nonvoluntary reporting firms are more likely to have income increasing accruals and large magnitude of accruals and therefore have lower reporting quality than voluntary reporting firms.[16]

16. We also compute accrual quality following Francis et al. 2005 using industries and a five-year rolling window to estimate parameters. However, the coefficient on *NV* is insignificant.

TABLE 3
Comparison of reporting quality between voluntary reporting and nonvoluntary reporting firms

Incidences of small positive earnings	Coefficient	*z*-stat
Intercept	−5.226***	−8.67
***NV* (+)**	**0.458*** **	**3.42**
SIZE (+)	0.161***	3.81
LEV (+)	0.010***	3.95
CFO (−)	−0.574**	−2.50
TURN (+/−)	−0.033	−0.39
GROWTH (+)	−0.006	−0.58
Pseudo R^2	0.0243	
% (correct classification)	92%	
LR	85.01***	
Number of observations	6,414	

Conservatism		Coefficient	*t*-stat
Intercept	β_0	0.025***	5.24
NEG (+/−)	β_1	0.040*	1.86
ΔNI_{it-1} (−)	β_2	0.034	1.26
$NEG{\cdot}\Delta NI_{it-1}$ (−)	β_3	−0.027	−0.90
NV (+/−)	β_4	0.032*	1.77
$NV{\cdot}NEG_{it-1}$ (+/−)	β_5	−0.080***	−2.86
$NV{\cdot}\Delta NI_{it-1}$ (+/−)	β_6	−0.738***	−3.12
$\boldsymbol{NV{\cdot}NEG{\cdot}\Delta NI_{it-1}}$ **(+)**	$\boldsymbol{\beta_7}$	**0.716*** **	**3.12**
Adjusted R^2		0.0360	
F-statistic		38.09***	
Number of observations		6,962	

Hypothesis tests	Coefficient	*F*-stat
$\beta_3 + \beta_7$	0.689***	9.19
$\beta_2 + \beta_3$	0.007	0.28
$\beta_2 + \beta_3 + \beta_6 + \beta_7$	−0.014	0.81

	AbnAcc		*|AbnAcc|*	
Abnormal accruals	Coefficient	*t*-stat	Coefficient	*t*-stat
Intercept	−0.368***	−5.91	0.415***	8.65
***NV* (+)**	**0.010** **	**2.10**	**0.014** **	**2.12**
SIZE (−)	0.018***	5.99	−0.017***	−7.03
LEV (+/−)	−0.006	−0.45	0.033***	2.57
CFO (−)	−0.820***	−26.67	−0.187***	−8.40
TURN (+/−)	−0.018***	−4.82	0.013***	4.02
GROWTH (+)	−0.000	−0.19	0.000**	2.07
ROA (−)	0.582***	26.47	0.219***	10.20
Adjusted R^2	0.6879		0.1579	
F-statistic	945.15***		81.30***	
Number of observations	2,999		2,999	

(The table is continued on the next page.)

TABLE 3 (Continued)

Earnings smoothness			
Use full sample to estimate parameters			
Model specifications	$\sigma^2_{NV=0}$	$\sigma^2_{NV=1}$	Diff. (+)
Without industry indicator	0.3255	0.0275	0.2980***
With industry indicator	0.3241	0.0286	0.2955***
Use voluntary and nonvoluntary reporting firms separately to estimate parameters			
Model specifications	$\sigma^2_{NV=0}$	$\sigma^2_{NV=1}$	Diff. (+)
Without industry indicator	0.3253	0.0210	0.3043***
With industry indicator	0.3239	0.0210	0.3029***

Auditor choices	Coefficient	*z*-stat
Intercept	−5.519	−9.02
***NV* (−)**	**−0.405*****	**−3.98**
SIZE (+)	0.551***	12.11
LEV (+)	−0.006***	−3.79
CFO	0.170	1.05
TURN (+)	0.106*	1.92
GROWTH (+/−)	−0.000	−1.08
ROA (+/−)	−0.007*	−1.82
CR (+)	0.135**	2.03
QR (+)	−0.078	−1.03
AGE (+/−)	−0.044***	−9.67
Pseudo R^2	0.0570	
% (correct classification)	76%	
LR	249.67***	
Number of observations	4,019	

Notes:

NV equals 1 for a nonvoluntary reporting firm and 0 otherwise. NEG_{it-1} is an indicator variable that equals 1 if ΔN_{it-1} is negative and 0 otherwise. *ROA* is return on assets. *CR* is the current ratio defined as current assets divided by total assets. *QR* is the quick ratio defined as current assets minus inventory divided by current liabilities. *AGE* is firm age. Refer to Table 2 for definitions of other variables.***, **, and * indicate significance levels at 0.01, 0.05, and 0.10, respectively.

Earnings smoothness

Smooth earnings suggest the presence of earnings manipulations. Results are reported in Table 3. When we use the full sample to estimate parameters of (4) without (with) industry adjustment, the smoothness measure is 0.3255 (0.3241) for voluntary reporting firms, significantly higher than 0.0275 (0.0286) for nonvoluntary reporting firms. When we estimate parameters of (4) separately for voluntary reporting and nonvoluntary reporting firms and then compute our smoothness measure, we obtain qualitatively similar results. To the extent that earnings smoothness is a result of earnings manipulations, we conclude that voluntary reporting firms are less likely to manipulate earnings through smoothing earnings than nonvoluntary reporting firms, supporting our hypothesis that voluntary reporting firms have higher reporting quality than nonvoluntary reporting firms.

Auditor choices

We predicted earlier that voluntary reporting firms are more likely to hire Big N auditors than nonvoluntary reporting firms. Results are reported in Table 3. The coefficient on *NV*

TABLE 4
Comparison of corporate governance between voluntary reporting and nonvoluntary reporting firms

Duality	Coefficient	*z*-stat
Intercept	4.740***	4.15
***NV* (+)**	**0.480***	**1.83**
SIZE (+/−)	−0.415***	−4.89
LEV (+/−)	0.395	0.99
CFO (+/−)	0.791**	2.41
TURN (+/−)	0.114	1.02
GROWTH (+/−)	0.000	0.09
Pseudo R^2	0.0305	
% (correct classification)	64%	
LR	166.03***	
Number of observations	4,212	

Deviation between control and ownership rights	*Control − Ownership*		*Control / Ownership*	
	Coefficient	*t*-stat	Coefficient	*t*-stat
Intercept	−11.708	−1.54	0.215	0.31
***NV* (+)**	**5.117****	**2.50**	**0.360***	**1.73**
SIZE (+/−)	1.445**	2.55	0.127**	2.47
LEV (+/−)	−0.016	−0.75	−0.006***	−2.66
CFO (+/−)	−3.180*	−1.72	−0.706***	−3.38
TURN (+/−)	0.709	0.85	0.036	0.44
GROWTH (+/−)	−0.001	−1.02	−0.000	−0.49
Adjusted R^2	0.0254		0.0188	
F-statistic	19.29***		13.89***	
Number of observations	4,212		4,033	

Notes:

NV equals 1 for a nonvoluntary reporting firm and 0 otherwise. *DUAL* equals 1 for a firm with CEO–chairman duality and 0 otherwise. *Control* is controlling shareholder's percentage control rights and *Ownership* is controlling shareholder's percentage ownership rights. Refer to Table 2 for definitions of other variables. ***, **, and * indicate significance levels at 0.01, 0.05, and 0.10, respectively.

is negative and significant (−0.405, $z = -3.98$), supporting our prediction that voluntary reporting firms are more likely to hire high-quality auditors than nonvoluntary reporting firms. While Chaney et al. (2004) show that private firms do not pay a premium on high quality auditors, we show that voluntary and nonvoluntary reporting firms do sort themselves into different groups based on their auditor choices.[17]

17. It would be interesting to establish whether (a) nonvoluntary reporting firms fail to meet a certain implicit threshold and therefore have low reporting quality; or (b) nonvoluntary and voluntary reporting firms both meet a certain implicit threshold but voluntary firms excel better. Audit opinions represent a third party's assessment of firms' future viability. If (a) is true, then nonvoluntary reporting firms should have a higher probability of receiving going concern audit opinions than voluntary reporting firms. If (b) is true, then there should be no difference in the probability of receiving going concern audit opinions between them. We find that nonvoluntary reporting firms have a higher probability of receiving going concern audit opinions (untabulated). Therefore, it appears that nonvoluntary reporting firms fail to meet a certain implicit threshold and as a result have low reporting quality.

Comparing corporate governance between voluntary and nonvoluntary reporting firms

CEO–chairman duality

As discussed earlier, we expect that nonvoluntary reporting firms are more likely than voluntary reporting firms to have their CEO also serving as the chairman of the board, and therefore show duality. Table 4 presents the results. The coefficient on *NV* is positive and significant (0.480, $z = 1.83$), supporting our prediction.

Deviation between control and ownership rights

We predicted earlier that nonvoluntary reporting firms have a larger deviation between control and ownership rights than voluntary reporting firms. Table 4 presents the results. The coefficient on *NV* is positive and significant (5.117, $t = 2.50$, using absolute deviation; 0.360, $t = 1.73$, using relative deviation), supporting our prediction.

Comparing the cost of debt between voluntary and nonvoluntary reporting firms

Our bank loan sample consists of 2,860 firm-year observations from 1997 to 2005. In Table 5, the coefficient on *NV* is positive and significant (0.270, $t = 2.16$), suggesting that nonvoluntary reporting firms have a higher cost of debt than voluntary reporting firms. This result supports our prediction that a high level of reporting quality (and better corporate governance) associated with voluntary reporting can potentially translate into a lower cost of debt. Coefficient signs on control variables are consistent with our expectations with those on *LEV*, *SIZE*, and *RF* significant.[18]

5. Sensitivity analyses

Using a single firm-year observation for each firm

The above analysis is based on the assumption that if a firm ceases the reporting practice, it is always a nonvoluntary reporting firm before it ceases the practice. It is possible that some firms ceasing the reporting practice may initially be filing financial information with the regulatory authority on a voluntary basis. For example, they may have plans to be listed in Taiwan's stock exchanges in the near future. Subsequently however, due to various reasons (poor performances, less need for external capital, etc.), they choose to cease the reporting practice when the reporting requirement was rescinded after 2001. In other words, these firms are not necessarily constrained by the reporting requirement all the time before 2001. However, based on our earlier classification, all firm-year observations for these firms are classified as nonvoluntary reporting firm-year observations while potentially a portion of these observations should really be classified as voluntary reporting firm-year observations.

To alleviate this problem, we utilize only the firm-year observation right before a firm ceases financial reporting and classify it as a nonvoluntary reporting observation. Correspondingly, we also include only the last firm-year observations for firms that continued the reporting practice after 2001. We then compare these two groups of firms to test our hypothesis. Results are reported in Table 6. Control variables for regression analyses are included but not tabulated to save space. We find that nonvoluntary reporting firms have

18. It is likely the case that voluntary reporting firms are more likely to have observations post-2001 than nonvoluntary reporting firms. To have a more balanced sample (in terms of reporting years per firm) for voluntary and nonvoluntary reporting firms, we exclude post-2001 observations for both types of firms and repeat analyses in Tables 3, 4, and 5. We obtain qualitatively similar results (untabulated). We also define nonvoluntary reporting firms as those that stopped reporting immediately (in 2001) and reestimate all our regression models. Regression results (untabulated) based on immediate stoppers show that voluntary reporting firms have better reporting quality (except in terms of conservatism, which is insignificant between voluntary and nonvoluntary reporting firms), better corporate governance, and a lower cost of debt than nonvoluntary reporting firms.

TABLE 5
Comparison of the cost of debt between voluntary reporting and nonvoluntary reporting firms

Cost of Debt	Coefficient	*t*-stat
Intercept	6.005***	13.02
***NV* (+)**	**0.270****	**2.16**
ROA (−)	−0.006	−1.31
LEV (+)	0.003**	2.13
SIZE (−)	−0.278***	−8.36
QR (−)	−0.000	−1.01
RF (+)	0.870***	49.07
Adjusted R^2	0.6050	
F-statistic	191.35***	
Number of observations	2,860	

Notes:

NV equals 1 for a nonvoluntary reporting firm and 0 otherwise. *COD*, the dependent variable, is the weighted-average interest rate of new loans initiated with loan amounts as weights for each firm. *RF* is risk-free rate. Refer to Table 2 for definitions of other variables. ***, **, and * indicate significance levels at 0.01, 0.05, and 0.10, respectively.

higher incidences of reporting small positive earnings, are less conservative in reporting, have higher accruals and absolute values of accruals, have smoother earnings, and are less likely to hire big auditors than voluntary reporting firms, again supporting our hypothesis. Further, using a one-year observation for each firm, the coefficients are larger for incidences of small positive earnings, conservatism, abnormal accruals, and auditor choices. Therefore, using one-year observations potentially captures incentives better. As for corporate governance, the coefficient on *NV* is insignificant for duality. However, it is positive and significant for the deviation between control and ownership rights. Again, nonvoluntary reporting is associated with a higher cost of debt and the evidence is more pronounced when we use a one-year observation for each firm.

Matched-sample tests

As an alternative, we conduct matched-sample (based on year, industry, and firm size) tests. Cram, Karan, and Stuart (2009) point out three problems with researchers' use of choice-based or matched-based sample: (i) use of unconditional analysis, when analysis conditional on the effects of the matching variables is needed; (ii) failure to control for the effects of imperfectly matched variables; and (iii) failure to reweight observations according to different sampling. For problem (i), Cram et al. (2009) suggest using the conditional logit regression model which recognizes matched (case-control) pairs. Our analysis suffers less from problem (ii), because we also include firm size in regressions. For problem (iii), following Cram et al. (2009), we use the sampling rate information when applying the reweighting of observations.

We repeat analyses used in Tables 3, 4, and 5 and summarize the results in Table 7. Control variables for regression analyses are included but not tabulated to save space. For indicator dependent variable models, we use the conditional logit. For continuous dependent variable models, we use the weighted OLS. We find that nonvoluntary reporting firms have higher incidences of reporting small positive earnings, are less conservative in financial reporting, have higher level of absolute value of abnormal accruals, and have smoother earnings than voluntary reporting firms. However, we do not find that these two types of firms differ in auditor choices. As for corporate governance, nonvoluntary

TABLE 6
Sensitivity analysis: Using a single firm-year observation for each firm

Reporting quality				
Incidences of small positive earnings		Coefficient		*z*-stat
NV (+)		0.731**		2.28
Number of observations		745		
Conservatism		Coefficient		*t*-stat
$NV \cdot NEG \cdot \Delta NI_{it-1}$ (+)		1.719***		4.37
Number of observations		1,000		
	AbnAcc		*|AbnAcc|*	
Abnormal accruals	Coefficient	*t*-stat	Coefficient	*t*-stat
NV (+)	0.021**	2.33	0.022*	1.65
Number of observations	346		346	
Earnings smoothness				
Use full sample to estimate parameters				
Model specifications	$\sigma^2_{NV=0}$		$\sigma^2_{NV=1}$	Diff. (+)
Without industry indicator	0.19992		0.01406	0.18586***
With industry indicator	0.19913		0.01428	0.18485***
Use voluntary and nonvoluntary reporting firms separately to estimate parameters				
Model specifications	$\sigma^2_{NV=0}$		$\sigma^2_{NV=1}$	Diff. (+)
Without industry indicator	0.19958		0.00581	0.19377***
With industry indicator	0.19876		0.00560	0.19316***
Auditor choices		Coefficient		*z*-stat
NV (−)		−0.625*		−1.70
Number of observations		346		
Corporate governance				
Duality		Coefficient		z-stat
NV (+)		0.155		0.63
Number of observations		587		
	Control − Ownership		*Control / Ownership*	
Deviation between control and ownership rights	Coefficient	*t*-stat	Coefficient	*t*-stat
NV (+)	5.382**	2.48	0.306**	2.10
Number of observations	587		559	
Cost of debt				
Variables		Coefficient		*t*-stat
NV (+)		0.521***		3.02
Number of observations		409		

Notes:

We offer a comparison of reporting quality, corporate governance, and the cost of debt between voluntary reporting and nonvoluntary reporting firms using one-year observations for each firm: the year before it ceases financial reporting for a nonvoluntary reporting firm, and the last year available for a voluntary reporting firm. *NV* equals 1 for a nonvoluntary reporting firm and 0 otherwise. Refer to Tables 2, 3, 4, and 5 for definitions of other variables. We only show variables of interest to save space. ***, **, and * indicate significance levels at 0.01, 0.05, and 0.10, respectively.

reporting firms have larger deviation between control and ownership rights than voluntary reporting firms. However, they do not differ in the incidences of duality. Finally, we do not find that these two types of firms differ in the cost of debt. Overall, matched-sample test results are slightly weaker but should be still considered supportive of our hypothesis that voluntary reporting firms have higher financial reporting quality than nonvoluntary reporting firms.

Comparison of voluntary and nonvoluntary reporting private firms with publicly listed firms

We focus on private firms in this study. However, it would be interesting to also compare publicly listed firms that have to report under the securities law with voluntary and nonvoluntary reporting private firms. Publicly listed firms have incentives for high-quality reporting (Ball and Shivakumar 2005; Burgstahler et al. 2006) and/or are under pressure to manage earnings (Teoh et al. 1998a, 1998b). We compare these three groups of firms together. We define an indicator variable *PL* that equals 1 for a publicly listed firm and 0 otherwise. *PL* is added to regression models (*PL* and its interactions with NEG_{it-1}, ΔNI_{it-1}, and $NEG_{it-1}\cdot\Delta NI_{it-1}$ are added to the conservatism model).

Table 8 reports the results. We omit tabulating control variables to save space. For financial reporting based on the incidences of reporting small positive earnings, conservatism, abnormal accruals, and auditor choices, we find the pattern that nonvoluntary reporting private firms have the lowest reporting quality while publicly listed firms have the highest reporting quality. However, publicly listed firms also appear to have the smoothest earnings. This result may not necessarily be in conflict with those based on other measures. As discussed earlier, smoothness as a measure of reporting quality is controversial as smoothness may actually help improve earnings informativeness (Tucker and Zarowin 2006). Therefore, publicly listed firms may still have the highest reporting quality based on earnings smoothness.

As for corporate governance, we do not find that the effect of public listing has an impact on duality. However, it significantly reduces the deviation between control and ownership rights. Therefore, publicly listed firms appear to have the best corporate governance practice among the three groups of firms. We also find that publicly listed firms have the lowest cost of debt among the three groups of firms. Overall, we conclude that publicly listed firms have the highest reporting quality and the best corporate governance practice, and consequently the lowest cost of debt, among the three groups of firms.[19]

Financial reporting quality before and after 2001 for voluntary reporting firms

If continuing reporting firms report purely on a voluntary basis, then their reporting quality should not be a function of whether they are in a mandatory reporting regime or a voluntary reporting regime. In other words, the reporting quality for voluntary reporting firms should be the same before and after 2001. On the other hand, in a voluntary reporting regime, reporting firms may lower their reporting quality simply because they perceive

19. To understand the effect of going public better, we offer a comparison of voluntary reporting firms that subsequently go for IPOs and voluntary reporting firms that do not subsequently go for IPOs. We find that IPO-voluntary firms have a smaller likelihood of reporting small positive earnings, a higher likelihood of hiring Big N auditors, and a lower cost of debt than non–IPO-voluntary firms. However, they have smoother earnings, less conservative reporting, and a slightly higher level of the absolute value of accruals and duality. Next, we compare pre-IPO (one year) and post-IPO (one year) situations for voluntary reporting firms. We find that, after IPOs, voluntary reporting firms have a lower level of the deviation between control and ownership rights and a lower cost of debt than before IPOs. However, their earnings becomes smoother and they have a higher likelihood of reporting small positive earnings than before IPOs. Overall, results based on the going public decision are weaker and are sometimes in the opposite direction.

TABLE 7
Sensitivity analysis: Matched sample tests

Reporting quality				
Incidences of small positive earnings (Conditional logistic)	Coefficient			*z*-stat
NV (+)	0.378**			2.17
Number of observations	306			
Conservatism (Weighted OLS)	Coefficient			*t*-stat
$NV \cdot NEG \cdot \Delta NI_{it-1}$ (+)	0.386*			1.70
Number of observations	2,200			
	AbnAcc		*|AbnAcc|*	
Abnormal accruals (Weighted OLS)	Coefficient	*t*-stat	Coefficient	*t*-stat
NV (+)	0.009	1.52	0.013*	1.70
Number of observations	698		698	
Earnings smoothness				
Use full sample to estimate parameters				
Model specifications	$\sigma^2_{NV=0}$	$\sigma^2_{NV=1}$		Diff. (+)
Without industry indicator	0.1119	0.0218		0.0901***
With industry indicator	0.1117	0.0218		0.0899***
Use voluntary and nonvoluntary reporting firms separately to estimate parameters				
Model specifications	$\sigma^2_{NV=0}$	$\sigma^2_{NV=1}$		Diff. (+)
Without industry indicator	0.1114	0.0212		0.0902***
With industry indicator	0.1112	0.0212		0.0900***
Auditor choices (Conditional logistic)	Coefficient			*z*-stat
NV (−)	−0.359			−1.21
Number of observations	200			
Corporate governance				
Duality (Conditional logistic)	Coefficient			*z*-stat
NV (+)	0.121			0.82
Number of observations	420			
	Control − Ownership		*Control / Ownership*	
Deviation between control and ownership rights (Weighted OLS)	Coefficient	*t*-stat	Coefficient	*t*-stat
NV (+)	5.572***	2.66	0.274**	2.36
Number of observations	1,078		1,078	
Cost of debt				
Cost of debt (Weighted OLS)	Coefficient			*t*-stat
NV (+)	0.174			1.09
Number of observations	842			

Notes:

We offer a comparison of reporting quality, corporate governance, and the cost of debt between voluntary reporting and nonvoluntary reporting firms using the matching method of Cram, Karan, and Stuart 2009. *NV* equals 1 for a nonvoluntary reporting firm and 0 otherwise. Refer to Tables 2, 3, 4, and 5 for definitions of other variables. We only show variables of interest to save space. ***, **, and * indicate significance levels at 0.01, 0.05, and 0.10, respectively.

TABLE 8
Sensitivity analysis: Comparison of voluntary and nonvoluntary reporting private firms with publicly listed firms

Reporting quality				
Incidences of small positive earnings		Coefficient		*z*-stat
NV (+)		0.400***		2.86
PL (−)		−0.261***		−2.64
Number of observations			14,598	
Conservatism		Coefficient		*t*-stat
$NV{\cdot}NEG{\cdot}\Delta NI_{it-1}$ (+)		0.850***		3.76
$PL{\cdot}NEG{\cdot}\Delta NI_{it-1}$ (−)		−0.998***		−7.24
Number of observations			14,903	
	AbnAcc		*|AbnAcc|*	
Abnormal accruals	Coefficient	*t*-stat	Coefficient	*t*-stat
NV (+)	0.011*	1.69	0.016**	2.42
PL (−)	0.005	1.18	−0.016***	−5.40
Number of observations	11,260		11,260	

Earnings smoothness

Use full sample to estimate parameters

Without industry indicator

$\sigma^2_{NV=PL=0}$	$\sigma^2_{NV=1}$	$\sigma^2_{PL=1}$	Diff (*NV* = *PL* = 0 vs. *PL* = 1)	Diff (*NV* = 1 vs. *PL* = 1)
0.3307	0.0239	0.0112	(−) 0.3195***	(−) 0.0127***

With industry indicator

$\sigma^2_{NV=PL=0}$	$\sigma^2_{NV=1}$	$\sigma^2_{PL=1}$	Diff (*NV* = *PL* = 0 vs. *PL* = 1)	Diff (*NV* = 1 vs. *PL* = 1)
0.3302	0.0240	0.0111	(−) 0.3191***	(−) 0.0129***

Use voluntary, nonvoluntary reporting firms, and listed firms separately to estimate parameters

Without industry indicator

$\sigma^2_{NV=PL=0}$	$\sigma^2_{NV=1}$	$\sigma^2_{PL=1}$	Diff (*NV* = *PL* = 0 vs. *PL* = 1)	Diff (*NV* = 1 vs. *PL* = 1)
0.3253	0.0210	0.0100	(−) 0.3153***	(−) 0.0110***

With industry indicator

$\sigma^2_{NV=PL=0}$	$\sigma^2_{NV=1}$	$\sigma^2_{PL=1}$	Diff (*NV* = *PL* = 0 vs. *PL* = 1)	Diff (*NV* = 1 vs. *PL* = 1)
0.3239	0.0210	0.0100	(−) 0.3139***	(−) 0.0110***

Auditor choices	Coefficient	*z*-stat
NV (−)	−0.364***	−3.74
PL (+)	0.165***	2.66
Number of observations	11,259	

Corporate governance		
Duality	Coefficient	*z*-stat
NV (+)	0.462*	1.85
PL (−)	0.122	1.29
Number of observations	10,253	

(The table is continued on the next page.)

TABLE 8 (Continued)

Deviation between control and ownership rights	*Control − Ownership* Coefficient	*t*-stat	*Control / Ownership* Coefficient	*t*-stat
NV (+)	4.886***	2.83	0.318*	1.77
PL (−)	−3.793***	−5.93	−0.264***	−3.55
Number of observations	12,311		12,311	

Cost of debt		
Cost of debt	Coefficient	*t*-stat
NV (+)	0.498***	3.60
PL (−)	−0.383***	−5.16
Number of observations	6,616	

Notes:

We offer a comparison of reporting quality, corporate governance, and the cost of debt among voluntary reporting private firms, nonvoluntary reporting private firms, and publicly listed firms. *NV* equals 1 for a nonvoluntary reporting private firm and 0 otherwise. *PL* equals 1 for a publicly listed firm and 0 otherwise. Refer to Tables 2, 3, 4, and 5 for definitions of other variables. We only show variables of interest to save space. ***, **, and * indicate significance levels at 0.01, 0.05, and 0.10, respectively.

a reduction in reporting intensity. For voluntary reporting firms, we do not find a difference in the probability of reporting small positive earnings or the level of reporting conservatism before and after 2001. There is no change in signed abnormal accruals before and after 2001, while the absolute value of abnormal accruals declines after 2001. The probability of hiring a Big N auditor actually increases after 2001, reflecting a possible trend that firms tend to hire Big N auditors when they grow. However, earnings become smoother after 2001, indicating a decline in reporting quality. Finally, we do not find a difference in corporate governance before and after 2001. Overall, evidence indicates that voluntary reporting firms generally maintain their reporting quality after 2001.

Potential caveats in our reasoning

Our results suggest that incentives are important. However, the literature also shows that superior standards are important (Barth et al. 2008; Armstrong et al. 2010; Li 2010). We do not deny the role of standards. A set of superior reporting standards can potentially overcome incentive differences. For example, better disclosure rules can make firms' financial statements more transparent to its stakeholders and in turn improve reporting quality. It is possible that Taiwan's reporting standards before 2001 were of low quality. When standards are of low quality, the role of incentives in shaping reporting quality might be more prominent.

Further, as nonvoluntary reporting firms face different or even conflicting incentives, voluntary reporting firms having higher reporting quality relative to nonvoluntary reporting firms does not necessarily mean that external financing prospects lead to higher reporting quality in absolute terms. Rather the results can be attributed to the incentives of nonvoluntary reporting firms to engage in earnings manipulation. In other words, it is not clear that benchmarking voluntary reporting firms against nonvoluntary reporting firms allows sorting out the impact of incentives on reporting quality. However, we believe that the introduction of publicly listed firms to our analysis potentially helps us sort out the impact of capital market incentives on reporting quality.

6. Conclusion

This paper adds to our understanding of the effect of reporting incentives on reporting quality. The rescission of the mandatory financial reporting requirement on private Taiwan firms in 2001 provides an excellent opportunity to examine this issue. After the rescission, some private firms continued the reporting practice (voluntary reporting firms) while others ceased the reporting practice (nonvoluntary reporting firms). An important merit of conducting our analysis based on this reporting regime change is that we identify differences in incentives while keeping standards constant, therefore capturing the endogeneity of reporting decisions. Voluntary reporting firms likely have incentives for financial reporting while nonvoluntary reporting firms likely lack incentives for financial reporting, when both types of firms are under the same reporting regime. By comparing the reporting quality of these two types of firms, we are better able to determine the role of reporting incentives on reporting quality.

We find that the quality of financial reporting, based on the propensity to report small positive earnings, conservatism, abnormal accruals, earnings smoothness, and auditor choices, is higher for voluntary reporting firms than for nonvoluntary reporting firms, supporting the notion that incentives contribute to quality financial reporting. Further, voluntary reporting firms also have better corporate governance practice than nonvoluntary reporting firms. The differences in reporting quality and corporate governance translate into a lower cost of debt for voluntary reporting firms. Finally, publicly listed firms appear to have the highest reporting quality and the best corporate governance practice, and therefore the lowest cost of debt. Our study suggests that reporting incentives play an important role in determining reporting quality.

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