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Going Concern Notes, Downsizing, and Exit

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Abstract

This paper investigates the effect of an accounting standard adopted in March of 2003 that requires management to disclose substantial doubt on the company's ability to continue in a note regarding going concern (GCN) in financial statements. The new requirement provides instructions based on international practice. Consistently, we find that Japanese firms with a GCN are less profitable, more highly leveraged, and smaller than firms without such a GCN, which is quite similar to U.S. firms with a going-concern modified audit opinion. Also, firms that have reached a critical point concerning layoffs, dividend payout regulations, or delisting criteria are more likely to disclose going concern uncertainties. Probably this is aimed to provide information for controlling conflicts of interests among stakeholders. In predicting whether a firm will file for bankruptcy, management's disclosures about going concern status provide statistically and economically significant explanatory power. In terms of the results of the solutions proposed to mitigate disclosed adverse conditions and circumstances, firms with GCNs in their financial statements undertake more aggressive measures in assets, borrowings, and workforce, compared to restructuring efforts of non-GCN firms at critical points of distress. Surviving firms with a GCN tend to experience extended periods of low profitability, although asset turnover improves. Our results are robust in treatment-effect estimators compared with counterfactual outcomes.

Keywords: Going concern note; Accounting standard; Downsizing; exit

JEL classification: M41, M48, G33, G34.

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1. Introduction

Until fairly recently, there was no guidance from the U.S. Generally Accepted Accounting Principles (U.S. GAAP) about the management's responsibility on evaluating whether or not there is substantial doubt about the entity's ability to continue as a going concern or to provide related disclosures in footnotes to the financial statements. However, in August 2014, the Financial Accounting Standards Board (FASB) published an Accounting Standards Update (Subtopic 205-40), which came into force in late 2016. The updated FASB accounting standard is similar to that of the International Accounting Standard (IAS). It mandates going concern disclosures as part of the financial report and requires management to devise a plan to solve problems that are creating going concern uncertainty. After the Norwalk Agreement, there is international convergence of accounting standards, although there are still differences between International Financial Reporting Standards (IFRS), US GAAP, and other accounting standards in other countries (Misawa, 2005; Bar-Hava and Katz, 2016).

Different than going-concern modified audit opinions (GCOs) required by auditing standards in US, the new accounting standards require management to disclose going concern uncertainties in financial statement footnotes regarding going concern to the financial statements and to work out a restructuring plan to resolve disclosed

uncertainties if there is substantial doubt about a company's ability to continues as a going concern. Also, the firm receives an audit opinion regarding both its financial statements and management going concern disclosures. Auditors are required to collect sufficient evidence to assess the feasibility and impact of the management's restructuring plan if there is substantial doubt about a company's going concern status.

Earlier studies have focused primarily on US auditing standards that required GCOs since the beginning of the 1980s. Quite a number of papers find that a substantial number of bankrupt companies did not have a prior audit GCO (Altman 1968, 1982; Menon and Schwartz 1987; Hopwood, McKeown and Mutchler 1989; Mutchler, Hopwood, and McKeown 1997; Shumway 2001). The predictive accuracy of GCOs has been one of the most important issues in accounting research. Recently, Carson et al. (2013) provide a comprehensive survey that GCOs have not been a definitive prediction of bankruptcy.

As to mandatory requirements for management to provide going concern assessments, in Canada only 27% had a specific going concern disclosure in their Management's Discussion & Analysis of Financial Condition and Results of Operations (MD&A) prior to bankruptcy (Ontario Securities Commission, 2010). In the U.K., Uang et al. (2006) find that mandatory directors' going concern statements do not provide incremental information for predicting going concern outcomes. Recently, Mayew, Sethuraman, and

Venkatachalam (2015) find that the management's opinion about going concern reported in the MD&A provides significant explanatory power in predicting whether a firm will cease to operate as a going concern. At the same time, they also find over 60 percent of the sample firms did not provide management opinion about going concern, despite filing for bankruptcy in the year following their 10-K filing that did not contain such management opinions.

In this paper, we investigate the determinants of going concern disclosure requirement in Japan as well as its effects on subsequent bankruptcy filings and corporate restructurings. Since March 2003, the management of a listed company has been required to disclose the firm's going concern status and include a note regarding going concern to the financial statements (GCN) if there is substantial doubt about a company's ability to continue as a going concern, in response to a spate of bankruptcies in Japan that occurred without early warnings in and around 2000. Also, the management is required to devise a restructuring plan to improve the firm's ability to continue operating in the face of going concern uncertainties. The firm receives an audit opinion regarding both its financial statements and its going concern disclosure. Auditors are required to collect evidence to assess the effects and feasibility of the restructuring plan if doubts exist about the firm's going concern status.

Also, we examine whether firms that have reached critical points concerning Japan specific employment practice and regulation such as loss for two consecutive years, declining shareholders' equity or excess liability over debt, are more likely to disclose going concern uncertainties with an announced restructuring plan. Conventionally, loss for two consecutive years is a threshold that is likely to lead to layoff. And it is illegal to pay dividends if shareholders' equity is below the sum of capital and capital reserves. Also, a company will be delisted according to delisting criteria if the state of excess liability over assets persists more than one year.

A firm with an initial GCN is more likely to file for bankruptcy in the subsequent year than peers without disclosing going concern uncertainties. Downsizing is a significant feature of management going concern disclosures. We find that assets, debt, and workforce shrink sharply as a result of proposed restructuring solutions to mitigate disclosed adverse conditions and events about going concern uncertainties. This suggests that managers of firms disclosing uncertainties about business survival recognize that they must downsize; otherwise, they will have to shut down the business. However, subsequent deteriorating profitability suggests the adverse conditions and events disclosed continue, although the subsequent asset turnover improves. The explanatory power of initial GCNs is significant, statistically and economically. For robustness check,

we also estimate treatment effects of GCNs and our results are robust.

This paper contributes to the empirical literature on going concern disclosures as follows. First, we provide important evidence on the effects of accounting standards requirements on disclosure about going concern status. So far, there is little research on management going concern disclosures compared to a large body of studies on US audit GCOs. Also, we find strong influences of exiting international going concern disclosure practice as well as unique features of Japan's management going concern disclosure. A GCN firm has a higher bankruptcy probability and poor subsequent profitability than a non-GCN firm. In particular, we find a GCN leads to most aggressive downsizing, compared to easy restructurings at a critical point of distress without a GCN. It might be difficult to implement early drastic layoffs until approaching to bankruptcy.

The paper is organized as follows. In Section 2, we review the introduction of going concern disclosures in Japan. In Section 3, we describe our hypothesis development and research design. Section 4 describes the data and empirical results. Section 5 offers conclusions.

2. Background

Until the early 1990s, bankruptcy resolutions were rarely employed in large Japanese

firms. Most financially distressed large firms in Japan restructured troubled debt privately with bank intervention, rather than through formal bankruptcy. Beginning in the late 1990s, bankruptcy filings in Japan substantially increased (Xu, 2007). This was quite similar to the bankruptcy wave in the 1980s resulting from the downturn in the U.S. economy. Most bankruptcy filings of listed industrial firms in Japan are clustered in the years 1997–2002, as Appendix B indicates. This is consistent with the timing of the recession of the 1990s in Japan. Even worse, to avoid or delay bankruptcy, impaired banks “evergreened” loans by funding distressed firms to enable them to meet interest payments on outstanding loans (Peek and Rosengren, 2000). As a result, the banks had balance sheets that looked healthier than they were because the banks reported few problem loans and made small loan loss provisions. Eventually, a large number of troubled firms filed for bankruptcy without warning, triggered by bank failures.

Deterioration in the banking system was a result of insufficient bad debt disclosures. Misawa (2005) pointed out that there would have been no delay in disclosures of bad loans if the “net realizable value” (fair value) method according to the U.S. accounting standard had been applied. In the late 1990s, there was a general mistrust in Japanese capital markets among international investors, and the inclusion of a legend such as "This is prepared based on the Japanese accounting standards, not on international

standards" was requested by the Big Five accounting firms in the U.S. (Misawa 2005)[2]. Accordingly, harmonization with IAS, including mandatory management disclosure and audit reporting about going concern uncertainties, emerged as an important issue for revising accounting and auditing standards in 1999. For details, Misawa (2005) analyzed the Japanese government's positions and makes comments on the problems and issues indicated in the Ministry of Finance Memorandum entitled "Adoption of International Accounting Standards in Japan."

The Accounting Standards Board of Japan enacted a requirement for both management disclosures and audit opinions about going concern uncertainties beginning in March 2003[3]. After that, the management of a listed company has been required to disclose the firm's going concern status for a reasonable period (at least one year from the date of the financial statements). Also, the auditors are required to assess the management's disclosure on going concern status. In 2002, the Japanese Institute of Certified Public Accountants Audit Standard Committee Report 74 provided detailed

[2] Misawa (2005) also noted that the legends of cautionary statements were required only for the English version of financial statements based on the Japanese Securities Exchange Law, not in any financial statements of SEC registered Japanese companies prepared based on the U.S. Accounting Standards.

[3] Without any audit standards on going concern uncertainties, auditors had to issue special notes to express doubt about a client's business continuance ability. Till 1999, the Japan Corporate Accounting Principles placed importance on the profit and loss calculation for a particular period, assuming that the particular period and the particular corporation was of on-going concern, as augured in Misawa (2005).

guidance regarding adverse conditions and events that may raise substantial doubt about an entity's ability to continue as a going concern. It indicated that company management should disclose going concern uncertainties in financial statement notes with proposed solutions if adverse conditions and events are ongoing.

This Report 74 also provides specific going concern risk indications related to (1) financial ratios, (2) financial difficulties, (3) operating activities, and (4) other conditions. First, it states that the management should consider the validity of the going concern assumption by examining warning signs from the financial statements, such as a substantial decline in sales, consecutive operating losses or consecutive negative operating cash flow, substantial operating losses, ordinary losses or net losses, substantial negative operating cash flow, or total liability exceeding assets. Regarding financial difficulties, management should assess going concern risks if it is difficult to repay operating debt, to meet loan covenants, to pay off corporate bonds, to raise new capital, to sell major assets as scheduled, or to pay dividends to preferred shareholders. Also, a firm should evaluate its ability to continue operations in the case of termination of transactions or withdrawal of trade credits by main suppliers, substantial losses of market share or of favored customers, lapses of indispensable patents, losses of core personnel, damages, losses, or disposal of indispensable assets, or substantial regulatory

imposition on the business. A significant likelihood of losses from litigation including damages and substantial deterioration of the brand image are other adverse conditions and events that may cast doubt on the firm's ability to continue as a going concern. The auditors issue an unqualified or qualified opinion, or an adverse opinion or disclaimer by assessing the management's going concern disclosure and its proposed solution to mitigate ongoing adverse conditions and events.

In addition to a GCN, related information is required to be adequately disclosed in the "Risks of Business, etc." and "Analysis of Financial Position, Operating Results, and Cash Flows" under the "Business Condition" section in the Annual Securities Report if a firm is at risk of adverse conditions and events. This is also a mandatory requirement in accordance with the Security Exchange Law. It is notable that until March 2003, there were no disclosure requirements like the U.S. Statement of Position (SOP) 94-6 nor were there requirements like the U.S. MD&A. In other words, Japan essentially adopted the U.S. SOP 94-6 and the U.S. MD&A as requirements in addition to the management's going concern disclosure requirement.

According to the mandatory going concern disclosure requirement in Japan, the management must also design a restructuring plan to mitigate adverse events and conditions that are likely to influence the likelihood that the business will survive. This

means that when the management discloses going concern problems, it is also required to find solutions such as reducing excess capacity and debt restructuring, to avoid bankruptcy. Bankruptcy is essentially a method of forcing a reduction of excess capacity as a part of market mechanisms that are intended to help investors and other stakeholders to select firms. To avoid bankruptcy, the management is more likely to undertake actions to restore its financial position. However, we know little about corporate actions in response to management disclosure regarding doubts about a firm's going concern ability. In this paper, we also examine subsequent corporate restructuring activities and operating performance following GCNs as well as subsequent exit.

3. Hypothesis Development and Research Design

3.1 Hypothesis Development

To avoid confusion resulting from a lack of experience of going concern disclosure, Report 74 provides instructions based on international going concern disclosure practice. In particular, the report instructs that firms must extensively consider serious or severe issues that may lead to significant adverse conditions and events that raise substantial doubt about an entity's ability to continue as a going concern because it is unlikely that

such adverse conditions and events occur suddenly[4]. In other words, the management is required to disclose state-contingent going concern risk.

Carson, et al. (2013) summarize that studies in the U.S. generally find that auditors are more likely to issue GCOs when companies are less profitable, have higher leverage, and are small. The auditor's decision to issue a GCO signals not only investors, but also the management that a firm has reached a critical point of financial distress. To develop our hypothesis, it is helpful to review critical points of financial distress concerning Japan specific employment practice and regulation. First, a firm is likely to avoid layoffs until it has experienced a net loss for two consecutive years. In Japan, ensuring job security is widely viewed as one of the most important goals of enterprise. To control conflicts between creditors, employees, and shareholders, suffering loss for two consecutive years has been viewed as a critical point of distress for both shareholders and creditors. It is also a warning sign that a firm may fail to maintain job security. The high priority of maintaining job security is based on explicit contracts and, from a stakeholder viewpoint, breaches of explicit contracts might imply a going concern risk for employees.

[4] Moreover, the Report 74 prompts firms to disclose going concern risk in annual reports, business reports even if it does not lead to significant adverse conditions and events.

To protect creditors' interests, the Companies Act prohibits dividend payouts and share buybacks if the shareholders' equity is below the sum of capital and legal capital reserves on the balance sheet. Roughly speaking, a firm is not allowed to pay dividends or repurchase shares if the accumulated retained surplus from capital transactions and profit-loss transactions is negative. Thus, a decline in shareholders' equity below the sum of capital and legal capital reserves is a strong warning sign to shareholders and creditors if the firm's poor performance is prolonged, which is a more serious indicator than loss for two consecutive years. The most severe warning sign is over the state of excess liabilities over assets (resulting in negative equity) because a firm is delisted if it remains in this state for an entire year[5].

Evidence on international going concern disclosure practice suggests that firms with a GCO are less profitable, more highly leveraged, and smaller. Our first hypothesis focuses on the determinants of management going concern disclosures. It is important to examine how international practices of existing going concern disclosures influence the practice of a newly adopted management going concern disclosure requirement. Also, it is natural to consider whether management is more likely to disclose going concern

[5] See Delisting Criteria (1st Section/ 2nd Section) of Japan Exchange Group (https://www.jpx.co.jp/english/equities/listing/delisting/index.html, last visited 11/01/2018).

uncertainties to confirm the firm has reached a critical point of financial distress proper to Japan.

H1: GCN firms are less profitable, have higher leverage, and are smaller than firms without a GCN from management. In particular, firms that have reached a critical point of distress are more likely to disclose going concern uncertainties.

Most previous studies explicitly consider the information content of audit GCOs in predicting subsequent bankruptcy filings. The downsizing feature of going concern opinions has not been fully explored. Notably, Nogler (1995) find a significant link between debt restructuring activities of going concern opinion firms to subsequent successful long-term resolution, defined as subsequent receipt of an unqualified opinion. The literature of corporate finance indicates financially distressed firms should downsize (Franks and Torous, 1994; Jensen, 1993, Kang and Shivdasani, 1997; Gilson, 1989, 1990; Gilson, John and Lang, 1990; Weiss, 1990). Otherwise, they have to file for bankruptcy

If a firm has going concern uncertainties, the management is required to construct a plan to restore the firm to a healthy financial position. Thus, a GCN provides not only information for bankruptcy prediction but also provides information about impending financial distress resolution. It is also important to examine whether a GCN provides incremental information about downsizing. Our second hypothesis is on subsequent

downsizing and exit of firms with a GCN.

H2a: Firms with a GCN have a higher probability of bankruptcy than firms without a GCN.

H2b: Firms with a GCN downsize more and prolong lower profitability than firms without a GCN.

3.2 Research Design

We first estimate the determinants of initial GCNs using a logit model.

$$Probability\ (GCN)_t = \beta_0 + \sum \beta_k X_{kt} + \mu_t$$

where GCN is an indicator variable that equals 1 if management has disclosed going concern uncertainties in a GCN, and 0 as otherwise. β_k is the coefficient related to a variable X_k. Our explanatory variables include both financial ratios and market variables, as in previous studies. Additionally, we include dummy variables for critical points of financial distress such as the threshold for layoffs, low shareholders' equity concerning dividend payout regulations, and an excess of liabilities over assets with respect to delisting criteria of the stock exchange.

Next, we follow prior research (Shumway 2001; Beaver et al. 2005) and use hazard

models to evaluate the incremental ability of management going concern disclosures to predict bankruptcy. We estimate the following discrete-time logistic model:

$$Probability\ (FAIL1)_{t+1} = \gamma_0 + \gamma_{GCN} GCN_t + \sum \gamma_k X_{kt} + \epsilon_t$$

where FAIL1 is an indicator variable that equals 1 if the firm files for bankruptcy at time t + 1, and 0 as otherwise.

To examine the effect of GCNs on subsequent outcomes, we regress each downsizing activity (downsizing in assets, downsizing in tangible assets, debt restructuring, and labor force layoff in the subsequent year) respectively on current financial positions and operating performance as well as current management going concern disclosure.

$$DOWNSIZING_{t+1} = \theta_0 + \theta_{GCN} GCN_t + \sum \theta_k X_{kt} + \mu_t$$

Nogler (1995) developed a new model to examine the auditor's decision to lift a GCO by focusing on successful resolution of audit GCOs, as evidenced by subsequent receipt of an unqualified opinion. Our study focus on the effects of management GCNs on subsequent operating performance.

$$Operating\ Performance_{t+1} = \delta_0 + \delta_{GCN} GCN_t + \sum \delta_k X_{kt} + \omega_t$$

3.3 Robustness Check

Ideally, we would observe the subsequent outcome of a GCN and the counterfactual outcome. However, it is not possible to observe what would have happened to a firm if the management had not disclosed existing doubt about the firm's ability to continue as a going concern. Moreover, management's going concern disclosures are endogenously determined. For a robustness check, we employ methodologies to estimate the effects of GCNs in an environment with endogeneity and unobservable counterfactual outcomes.

We implement inverse probability-weighted regression-adjustment (IPWRA) estimators for the effects of GCNs on exit and downsizing (see Appendix C for details). The IPWRA estimators are known as "Wooldridge's double-robust" estimators (Wooldridge, 2007, 2010). Our estimators are robust in an environment with endogeneity and omitted variables.

4. Empirical Results

4.1 Data and Sample Selection

We use the FINANIALQUST database to identify listed non-financial firms with an initial GCN during the period from March 2003 through February 2009. Since we are interested in bankruptcy filings subsequent to the going concern disclosure, we obtain our sample of bankrupt firms from the TSR bankruptcy database in the period from 2003

through 2016.

Our sample begins with 508 firms that have an initial GCN. We excluded seven firms that had a prior bankruptcy filing. Among the remaining sample, 55 do not have requisite financial data and market data. This leaves us with 446 firms with an initial GCN. The annual data in the latest year prior to an initial GCN forms the basis for the 446 GCN firm-year observations. Our non-GCN firm-year observations consist of all firm-year observations without a GCN. To focus on initial GCNs, subsequent annual data of a firm after its initial GCN is excluded. Also, firm-year observations after a bankruptcy filing are excluded.

4.2 Descriptive Statistics

As seen in the first row of Table 1, we have 19,863 firm-year observations without a GCN and 446 firm-year observations included an initial GCN to the financial statements. Of the 446 firms with an initial GCN, 31 filed for bankruptcy in the subsequent year, and 26 firms (46.4% of total bankruptcies) went bankrupt without a prior GCN. Around the time of the global financial crisis of 2008, 9 out of the 24 firms (37.5%) filed bankruptcy with a prior GCN.

Table 2 provides descriptive statistics for the variables used in our empirical

analyses, for the GCN firm observations and non-GCN firm-year observations separately. We provide detailed definitions of each variable in Appendix A. Relative to firms disclosing going concern uncertainties, firms that do not face going concern problems, on average, have higher profitability (as measured by ROA), higher liquidity (as measured working capital to total assets, WATCA), higher asset turnover, measured by the ratio of sales to assets (TRNVR), and lower leverage (LEV). The variable DEF_FP2 indicates more than half of the GCN firms report a loss in two consecutive years, and 70% have negative surplus (shareholders' equity below the sum of capital and capital reserves on the balance sheet), shown by the variable DEF_SURP. Moreover, 9% of GCN firms have liability exceeding assets (EXDEBT). Relating to market performance, firms disclosing going concern uncertainties have a smaller capitalization relative to the market average (LRELSIZE), a significantly negative rate of return relative to the market (ABROR12M) and a high volatility (SSSE) compared to the firm-year observations that did not have going concern problems.

In addition to variables used in previus bankruptcy hazard models, we include financial institutional ownership (RFIN), managerial ownership (RMNG), and institutional investors' ownership (RINST) to control for bank–firm relationship, incentives of management, and monitoring by institutional investors. Except for

management ownership, GCN firms have a lower financial institutional ownership and institutional ownership.

Relating to subsequent outcomes, GCN firms have a higher bankruptcy probability. Also, Table 2 shows that firms with a GCN restructure their total assets (Δln(ASSET)), tangible assets (Δln(TASSET)), debt(Δln(DEBT)), borrowings (Δln(BORROWINGS)), and labor force (Δln(LABOR)) more aggressively than their peers. Also, we find significant differences in sales growth (Δln(SALES), change in profitability (ΔROA) and change in asset turnover(ΔTRNVR).

The univariate test results in Table 2 suggest that GCN firms are less profitable, have higher leverage, and are smaller than non-GCN firms, similar to the U.S. firms with an audit GCO. In particular, firms that have reached a critical point of distress such as two consecutive years of losses, declining shareholders' equity, or an excess of liabilities over assets are more likely to disclose going concern uncertainties. To mitigate disclosed adverse conditions and events, the firms subsequently engage in aggressive downsizing of assets, borrowings, and labor workforce compared with non-going concern firm-year observations. Next, we turn to multivariate analyses.

4.3 Determinants of Going concern Notes and Incremental Predictive Power

Previous studies generally find that auditors are more likely to issue GCOs when companies are less profitable, have higher leverage, have lower liquidity, and are relatively small (Carson, et al., 2013). We follow prior research on the determinants of audit GCOs and consider WCTA, ROA, LEV, and the TRNVR, as well as dummy variables for losses in two consecutive years, for negative accumulated retained income, and for debt exceeding assets. In addition to financial variables, we include market variables and ownership structure variables.

We predict the coefficients on WCTA, ROA, TRNVR, LRELSIZE, and ABROR12M to be negative and the coefficients on LEV, DEF_FP2, DEF_SURP, EXDEBT, and SSSE to be positive. For ownership structure, RFIN, we expect a company with a close bank–firm relationship to be less credit constrained, and thus less likely to disclose going concern uncertainties, all other things being equal. Monitoring behavior by institutional investors (RINST), such as "voting with their feet" might accelerate going concern uncertainties, all else unchanged. We predict that the management with higher RMNG might hesitate to disclose going concern uncertainties., Table 3 shows each variable has a coefficient with a sign consistent with our predictions and significance at the 1% level except WCTA and RMNG. We find that the Pseudo-R^2 is 43.4 percent. This result suggests that management going concern disclosure decisions are related to financial

variables and market variables. This is quite similar to the determinants of GCOs in US. Also, firms reaching a critical point of financial distress are more likely to disclose going concern uncertainties. This suggests uniqueness of the practice of the newly adopted going concern disclosure requirement.

To examine whether management going concern disclosures have incremental explanatory power in predicting bankruptcy after controlling for financial statement-based variables and market-based variables, Table 4 provides results of estimating Model 1 (financial statement and market-based variables only) and Model 2 (GCN variable, market-based variables and financial statement-based variables). Interestingly, among all three market-based variables, only the coefficient for LRELSIZE is statistically significant and in the expected direction. Contrary to the results reported in Beaver et al. (2005, 2012) and Mayew et al. (2015), the stock return variable ABROR12M and the volatility variable SSSE have a coefficient in the expected direction but are not significant at the 10% level. High institutional ownership is positively related to subsequent bankruptcy filing and is significant at the 1% level if all else is unchanged. The coefficients on ROA and WCTA are significant but not in the expected direction.

The Pseudo-R2 is 31.3 percent for the model with market and financial variables only. In Mayew et al. (2015), the market and financial variables together register a Pseudo-

R2 of 21.57. When we consider the incremental contribution of management GCNs, Table 4 shows that the coefficient on GCN is positive and statistically significant. The incremental Pseudo-R2 for GCN is 4.5 percent. In comparison, Mayew et al. (2015) find an incremental Pseudo-R2 of 1.77 percent for management going concern opinions and a much smaller incremental contribution of 0.35 percent for MD&A linguistic contents. These results are in support of our hypothesis H2a. Qualitatively, the predictive ability over a one-year horizon of management going concern disclosures in our study is similar to the U.S. management going concern opinions.

4.4 Subsequent Downsizing and Prolonged Poor Performance

As noted in Carson et al. (2013), bankruptcy is one of the possible outcomes for a firm receiving a GCO. To date, downsizing efforts or debt restructurings around management going concern opinions or disclosures have not been fully explored. We now turn to the impacts of management going concern disclosures on downsizing. To examine the effects of going concern notes on subsequent downsizing, we regress downsizing in the subsequent year on current going concern disclosures, financial conditions, and market variables. As Table 5 indicates, the coefficient on the GCN variable is economically and statistically significant in all regressions. GCN firms reduce their assets 19.8% more

than their non-GCN peers. Likewise, the reduction of tangible assets in a GCN firm is 17.5% more, all else unchanged. Together with aggressive downsizing in assets, we find significant debt restructuring of 15.8% and borrowing reduction of 18.2% subsequent to an initial GCN. Moreover, firms reduce their labor force at an average of 12.4% subsequent to including an initial GCN. In all regressions, the coefficients on variables DEF_FP2 and DEF_SURP are significantly negative. However, downsizing is much smaller following a financial distress for non-GCN firms, as indicated by the coefficients on variables DEF_FP2 and DEF_SURP.

Regarding labor restructuring, in previous studies, Japanese firms are shown to be less likely to implement voluntary or early retirement programs until a firm's performance declines beyond a certain threshold, for instance, experiencing two consecutive years of losses (Noda and Hirano, 2013). Our results suggest there are three steps for downsizing. In addition to the threshold for voluntary or early retirement program implementation, a firm implements additional labor downsizing when it does not have enough regulatory surplus to pay dividends as poor performance persists. More importantly, downsizing is most aggressive when a firm discloses doubts about its ability to continue as a going concern. We shed new light on new critical points that may lead to more aggressive subsequent layoffs if performance continues to decline following two

consecutive years of losses.

Conventional Japanese financial reports provide information for management to control conflicts of interests. To employees, loss for two consecutive years are a warning signal regarding job security, indicating that the firm may fail to maintain lifetime employment. As Japanese firms are prolonging poor performance, based on the newly adopted going concern disclosure requirement, a management GCNs might provide much more severe warning signals to employees, shareholders, and creditors from a stakeholder viewpoint. In other words, management going concern disclosures might provide information for controlling conflicts of interests among stakeholders[6].

Table 6 provides information on continued poor performance subsequent to an initial GCN. First, sales decline substantially due to aggressive downsizing in assets. Perhaps because of sale or disposal of assets with low utilization rates, there is an increase in asset turnover. Profitability of non-GCN firms recovers after financial distress perhaps because of downsizing and debt restructuring, but profitability for a GCN firm drops by 3.3%. This suggests that an initial GCN also provides information about a high likelihood of prolonged poor performance. In summary, our results suggest that the

[6] See Cordery and Sinclair (2017) for dual objectives (decision-usefulness and stewardship) for general purpose financial reporting of both monetary and non-monetary information.

management of a company with disclosed going concern problems recognizes going concern uncertainties, and thus undertakes aggressive actions to restore its financial position.

4.5 Robustness

To examine the robustness of the incremental explanatory power of management going concern disclosures, we now implement IPWRA estimators for the effects of initial GCNs on subsequent exit and downsizing. The results are easy to interpret and insightful. We mainly focus on treated effects among GCN firms (treated sample). ATET indicates the effects of initial GCNs and *POmean* is the average counterfactual outcome.

First, the average bankruptcy probability among GCN firms would not have been significantly different from 0% (POmean in Column (1), Table 7). It is 5.9% higher (ATET in Column (1) of Table 7)[7] and is significant at the 1% level when they have information regarding going concern uncertainties which is required to disclose. This suggests that the predicting power of GCN in Table 5 is very robust.

To survive, a GCN firm significantly restructures its assets[8] (ATET in Column 2 of

[7] Likewise, the average effect of initial GCNs on subsequent bankruptcy probabilities among all firms is smaller, at 2.43%.
[8] ATEs for downsizing in assets and downsizing in tangible assets are quantitatively similar.

Table 7) 20.06% more than it would have in the absence of such disclosed information about going concern uncertainties. The average effect of initial GCNs on downsizing of tangible assets is 18.8%, which is significant at the 1% level (ATET in Column 3 of Table 7). Also significantly, a GCN firm lays off 11.09 percent of its labor force, on average (ATET in Column 4 of Table 7). This suggests the robustness of the results about the effects of GCNs on downsizing in assets, downsizing in tangible assets, and layoffs in Table 5. More importantly, regardless of severe financial positions, GCN firms would have done nothing until the management felt certain of the going concern uncertainties (POmeans in Column 2, Column 3, and Column 4).

In contrast, POmeans in Column 5 and Column 6 of Table 7 show that the GCN firm would have cut back on debt significantly even without going concern uncertainties because of its adverse financial conditions[9]. Also, disclosing going concern uncertainties significantly accelerates debt restructuring, and the reduction of debt almost doubles. Again, the results for debt restructuring in Table 5 are robust.

We now turn to the robustness of results on subsequent changes in sales, asset turnover, and profitability. As can be seen from Column (7) of Table 7, the counterfactual

[9] We find no significant debt restructuring among all firms (ATE) even having going concern uncertainties. Interestingly, borrowing would have increased significantly if all firms had been facing doubt on their abilities as going concern.

potential change in sales is not significantly different from 0% (POmean). Because of the strong effect of a GCN on the downsizing of assets, the decline in sales is 10.93% (ATET in Column (7)). For profitability, the counterfactual potential ROA recovers by 5.35% (POmean in Column 8) but the drop of ROA in GCN is 7.56%. This suggests that management going concern disclosures provides information looking forward in regard to deteriorating profitability.

Finally, we find improvement in asset turnover. Perhaps because of debt restructuring, the increase in asset turnover is 0.0295 (POmean in Column (9)). Aggressive downsizing of assets following a GCN results in an additional 0.0966 increase in asset turnover (ATET in Column (9)). In Table 2, GCN firms have lower asset turnover than non-GCN firm-year observations. Our results suggest the elimination of idle or underutilized assets might contribute to the improvement.

5. Conclusions

In this paper, we investigate the effects of the accounting standard requiring management GCNs on subsequent bankruptcy, as well as the effects on subsequent corporate restructurings. We observed that GCN firms are less profitable, higher leveraged, and smaller. In particular, firms that have reached a critical point of distress,

such as two consecutive years of losses, declining shareholders' equity, or liabilities that exceed assets which meets the thresholds for layoffs, dividend payout regulation and delisting criteria, are more likely to disclose going concern uncertainties. We find that management's disclosures about going concern provide significant explanatory power in predicting whether a firm will file for bankruptcy, statistically and economically. As a result of management's proposed restructuring solutions, assets shrink, borrowings contract, and the workforce declines following the going concern uncertainty disclosure. Subsequent asset turnover improves slightly but profitability continues to deteriorate.

We provided new important evidence on mandatory management going concern disclosure requirements. In an environment where neither financial statements nor audit reports provide information about going concern risks, the audited mandatory management going concern disclosures provide information on the likelihood of subsequent downsizing as well as bankruptcy filing to interested parties. After April 2009, following the revised accounting and audit standards regarding going concern uncertainties, the management is not required to disclose going concern uncertainties if the adverse conditions and events are resolvable. The new rules only require management to discuss resolvable risks and uncertainties. It is quite similar to the Statement of Position 94-6 in the U.S. Future research can examine the effects of the

management's opinions about reported going concern uncertainties on subsequent outcomes.

A limitation to this study is that we do not control for audit opinions. Most audit opinions are unqualified (i.e., they do not express concern about the firm's ability to continue as a going concern) and auditors typically repeat contents in the GCN in additional details. Indeed, we found few cases of qualified opinions, adverse opinions, and disclaimers during our sample period. Also, it is not possible to observe asset or labor force downsizing in firms filing for bankruptcy in the subsequent year because bankrupt firms often do not make timely filings.

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Table1 Sample, Going concern Notes and Bankruptcies

	Firm-years without a going concern note		Firm-years with a going concern note	
Fiscal Year	Obesevations	Failures in a year	Obesevations	Failures in a year
2002	2390	7	75	6
2003	3226	0	58	3
2004	3251	1	39	3
2005	3320	1	38	0
2006	3354	3	69	2
2007	3344	9	117	13
2008	978	5	50	4
sum	19863	26	446	31

Table 2 Descriptive Statistics

	Fimrs without Going Concern Note				Fimrs with Going Concern Note				t-stat of Diff. in Means		Z-stat of Diff. in Medians	
	mean	median	sd	N	mean	median	sd	N				
FAIL1	0.00	0	0.04	19863	0.07	0	0.25	446	-27.42	***	724.88	***
TQ1	1.03	0.76	1.44	19863	1.16	0.89	1.63	446	-1.77	*	23.86	***
ROA	0.10	0.08	0.18	19863	-0.02	0.00	0.10	446	13.83	***	348.65	***
TRNVR	1.16	1.01	0.67	19863	1.07	0.93	0.78	446	2.63	***	10.59	***
WCTA	0.18	0.18	0.22	19863	0.06	0.05	0.31	446	11.88	***	47.52	***
LEV	0.52	0.53	0.21	19863	0.74	0.78	0.27	446	-21.48	***	157.39	***
DEF_FP2	0.06	0	0.24	19863	0.50	1	0.50	446	-37.92	***	1343.05	***
DEF_SURP	0.08	0	0.27	19863	0.70	1	0.46	446	-47.47	***	2028.89	***
EXDEBT	0.00	0	0.01	19863	0.09	0	0.28	446	-41.19	***	1566.14	***
LRELSIZE	-10.00	-10.22	1.67	19863	-11.57	-11.68	1.33	446	19.62	***	234.72	***
ABROR12M	0.08	-0.01	0.83	19863	-0.20	-0.28	0.60	446	7.2	***	123.37	***
SSSE	2.45	2.17	1.19	19863	4.37	4.01	2.63	446	-32.37	***	258.85	***
RMNG	0.07	0.01	0.12	19863	0.07	0.00	0.12	446	1.04		14.66	***
RFIN	0.18	0.16	0.14	19863	0.08	0.05	0.10	446	14.43	***	159.75	***
rinst	0.09	0.03	0.12	19863	0.04	0.00	0.11	446	7.63	***	147.88	***
Δln(ASSET)	0.02	0.01	0.15	19580	-0.22	-0.22	0.26	404	30.68	***	227.37	***
Δln(TASSET)	0.02	-0.01	0.23	19572	-0.21	-0.11	0.45	399	19.71	***	171.52	***
Δln(DEBT)	0.01	0.00	0.23	19580	-0.20	-0.18	0.34	404	18.59	***	140.71	***
Δln(BORROWINGS)	-0.02	-0.03	0.47	16641	-0.29	-0.20	0.56	367	10.92	***	87.25	***
Δln (LABOR)	0.04	0.02	0.14	19499	-0.12	-0.09	0.23	403	22.41	***	164.69	***
Δln (SALES)	0.04	0.03	0.16	19583	-0.12	-0.11	0.29	408	18.03	***	121.08	***
ΔROA	-0.01	0.00	0.05	19574	-0.02	-0.01	0.10	404	6.06	***	5.82	**
ΔTRNVR	0.01	0.01	0.16	19575	0.13	0.09	0.33	404	-13.53	***	31.7	***

Table 3 The Determinants of Going Concern Notes

	(1)	(2)	(3)
VARIABLES	gcn	gcn	gcn
ROA	-8.578***	-12.036***	
	(-7.21)	(-9.31)	
TRNVR	-0.304***	-0.117	
	(-3.05)	(-1.34)	
WCTA	0.224	0.316	
	(0.62)	(0.84)	
LEV	3.887***	3.546***	
	(8.80)	(8.09)	
DEF_FP2	0.965***	1.058***	
	(6.66)	(7.41)	
DEF_SURP	1.214***	1.564***	
	(7.66)	(10.04)	
EXDEBT	2.632***	2.603***	
	(3.26)	(3.36)	
LRELSIZE	-0.377***		-0.537***
	(-6.66)		(-9.31)
ABROR12M	-0.755***		-1.274***
	(-3.40)		(-5.68)
SSSE	0.175***		0.528***
	(4.22)		(13.05)
RMNG	0.061		-1.244***
	(0.12)		(-2.67)
RFIN	-3.326***		-1.112*
	(-4.31)		(-1.79)
RINST	1.757***		1.684***
	(2.60)		(3.41)
Constant	-10.577***	-6.156***	-11.256***
	(-14.62)	(-19.61)	(-17.52)
Observations	20,309	20,309	20,309
Pseudo R-squar	0.434	0.376	0.221

Z-statistics clustered in firms in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 4 Going Concern Notes and Subsequent Bankruptcies

	(1)	(2)
VARIABLES	FAIL1	FAIL1
GCN	2.116***	
	(5.39)	
ROA	0.345***	0.309**
	(5.06)	(2.24)
TRNVR	-1.064***	-1.179***
	(-3.97)	(-4.52)
WCTA	2.421***	2.452***
	(4.14)	(4.34)
LEV	7.350***	8.334***
	(6.50)	(6.97)
TQ1	-0.077	-0.080
	(-0.31)	(-0.24)
DEF_FP2	-0.550	-0.229
	(-1.40)	(-0.60)
DEF_SURP	0.734*	1.085***
	(1.89)	(3.07)
EXDEBT	-1.677*	-1.061
	(-1.77)	(-0.99)
LRELSIZE	-0.545***	-0.663***
	(-3.99)	(-4.72)
ABROR12M	0.019	-0.167
	(0.12)	(-0.65)
SSSE	0.022	0.035
	(0.34)	(0.60)
RMNG	-1.270	-1.307
	(-0.91)	(-0.97)
RFIN	-1.680	-2.644*
	(-1.27)	(-1.89)
RINST	2.401**	3.122***
	(2.13)	(2.93)
Constant	-16.339***	-17.966***
	(-8.69)	(-9.39)
Observations	20,309	20,309
Pseudo R-squared	0.358	0.313

Z-statistics clustered in firms in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5 Going Concern Notes and Subsequent Downsizing

	ΔIn(ASSET)	ΔIn(TASSET)	ΔIn(DEBT)	ΔIn(BORROWINGS)	ΔIn(LABOR)
GCN	-0.198	-0.175	-0.158	-0.182	-0.124
	(14.07)***	(7.14)***	(8.42)***	(5.87)***	(9.64)***
TQ1	0.029	0.025	0.029	0.031	0.023
	(6.36)***	(5.07)***	(6.64)***	(3.84)***	(6.25)***
ROA	0.042	0.066	0.014	0.137	0.052
	(1.39)	(1.38)	(1.27)	(1.94)*	(1.25)
TRNVR	0.009	0.009	0.008	0.012	0.007
	(4.38)***	(2.74)***	(2.84)***	(1.96)**	(3.67)***
WCTA	0.004	0.073	-0.013	-0.039	0.025
	(0.49)	(5.04)***	(1.05)	(1.64)	(3.09)***
LEV	-0.006	0.033	-0.075	-0.045	-0.001
	(0.65)	(2.14)**	(5.72)***	(1.58)	(0.07)
DEF_FP2	-0.037	-0.053	-0.035	-0.061	-0.040
	(5.76)***	(5.63)***	(4.28)***	(3.89)***	(6.64)***
DEF_SURP	-0.038	-0.048	-0.057	-0.093	-0.024
	(5.70)***	(4.50)***	(6.95)***	(6.18)***	(4.05)***
EXDEBT	0.089	0.003	-0.085	-0.140	0.008
	(1.68)*	(0.03)	(1.25)	(0.82)	(0.24)
LRELSIZE	0.012	0.010	0.011	0.007	0.008
	(7.70)***	(5.35)***	(6.11)***	(1.90)*	(5.82)***
ABROR12M	0.016	0.010	0.008	-0.006	0.006
	(2.72)***	(2.94)***	(2.10)**	(0.86)	(2.15)**
SSSE	0.005	0.004	0.010	0.005	0.003
	(2.51)**	(1.73)*	(4.58)***	(1.26)	(2.22)**
RMNG	0.065	0.050	0.051	0.035	0.039
	(6.03)***	(2.76)***	(3.12)***	(0.98)	(3.56)***
RFIN	-0.040	-0.091	-0.060	-0.136	-0.096
	(3.11)***	(5.20)***	(3.69)***	(4.13)***	(7.79)***
RINST	-0.078	-0.020	-0.100	-0.002	-0.008
	(5.19)***	(1.00)	(4.88)***	(0.05)	(0.56)
_cons	0.106	0.059	0.123	0.042	0.088
	(5.24)***	(2.36)**	(5.41)***	(0.92)	(4.60)***
Adj. R-squared	0.186	0.078	0.083	0.022	0.136
Observations	19,984	19,971	19,984	17,008	19,902

*** p<0.01, ** p<0.05, * p<0.1

Table 6 Going Concern Notes and Subsequent Operating Performance

	ΔROA	ΔTRNVR	Δln(SALES)
GCN	-0.033	0.085	-0.138
	(6.35)***	(4.74)***	(8.71)***
TQ1	0.000	-0.007	0.023
	(0.25)	(4.55)***	(5.53)***
ROA		-0.020	0.029
		(1.30)	(1.46)
TRNVR	0.001		-0.016
	(2.53)**		(7.29)***
WCTA	-0.017	-0.003	-0.005
	(6.71)***	(0.37)	(0.57)
LEV	-0.005	0.050	0.036
	(1.85)*	(6.69)***	(3.55)***
DEF_FP2	0.025	0.022	-0.011
	(13.59)***	(3.40)***	(1.54)
DEF_SURP	0.017	0.026	-0.014
	(8.40)***	(4.07)***	(1.92)*
EXDEBT	0.062	-0.057	0.022
	(4.05)***	(0.84)	(0.39)
LRELSIZE	-0.000	-0.000	0.012
	(1.50)	(0.34)	(7.04)***
ABROR12M	0.006	-0.000	0.017
	(4.48)***	(0.05)	(3.21)***
SSSE	-0.003	-0.004	0.001
	(5.86)***	(3.24)***	(0.48)
RMNG	0.007	-0.044	0.023
	(2.12)**	(4.05)***	(1.86)*
RFIN	0.036	-0.038	-0.084
	(12.81)***	(4.24)***	(6.08)***
RINST	-0.015	0.024	-0.066
	(3.73)***	(2.13)**	(4.17)***
_cons	-0.009	0.010	0.145
	(2.36)**	(0.89)	(6.98)***
Adj. R-squared	0.055	0.025	0.099
Observations	19,978	19,979	19,991

*** p<0.01, ** p<0.05, * p<0.1

Table 7 Treatment Estimators for Subsequent Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	FAIL1	Δln(ASSET)	Δln(TASSET)	Δln(DEBT)	Δln(BORROWINGS)	Δln(LABOR)	Δln(SALES)	ΔROA	ΔTRNVR
ATET	0.0590	−0.2006	−0.1880	−0.1109	−0.1401	−0.1128	−0.1093	−0.0746	0.0966
	(4.40)***	(12.61)***	(6.65)***	(5.27)***	(3.74)***	(8.29)***	(5.07)***	(9.39)***	(4.72)***
Pomean	0.0084	−0.0170	−0.0255	−0.0901	−0.1500	−0.0109	−0.0059	0.0535	0.0295
	(1.32)	(1.26)	(1.49)	(6.69)***	(5.94)***	(1.19)	(0.34)	(7.31)***	(2.32)**
N	20,244	19,918	19,905	19,918	16,974	19,836	19,925	19,913	19,913

*** p<0.01, ** p<0.05, * p<0.1

Appendix A Variable Definitions

GCN	An indicator variable that takes the value of 1 for firms that disclose going concern uncertainties in financial statement notes, and zero otherwise
FAIL1	An indicator variable that takes the value of 1 when the firm fails within a year, and zero otherwise
TQ1	Market to book ratio: (capitalization + book liability)/assets
TRNVR	Sales / total asset
ROA	EBITDA / total asset at the end of the previous year
DEF_FP2	An indicator variable that takes the value of 1 when the firm runs net income loss for 2 terms in row, and zero otherwise
DEF_SURP	An indicator variable that takes the value of 1 when the firm runs negative retained earnings, and zero otherwise
EXDEBT	An indicator variable that takes the value of 1 for firms whose liability exceeds its asset, and zero otherwise
LEV	Debt/total asset
WCTA	(Current asset-current liability)/assets
RMNG	Share-holding ratio of managers
RFIN	Share-holding ratio of financial institutions
RINST	Share-holding ratio of institutional shareholders
ABROR12M	Abnormal return relative to the TOPIX index over the past 12 months
SSSE	Idiosyncratic risk derived from market model

Variable Definitions (cont'd)

Δ ln(ASSET)	Annual growth rate of assets over the subsequent year
Δ ln(TASSET)	Annual growth rate of tangible asset over the subsequent year
Δ ln(DEBT)	Annual growth rate of debt over the subsequent year
Δ ln(BORROWINGS)	Annual growth rate of borrowings over the subsequent year
Δ ln(LABOR)	Annual growth rate of employment over the subsequent year
Δ ln(SALES)	Annual growth rate of sales over the subsequent year
Δ ROA	Annual change of ROA over the subsequent year
Δ TRNVR	Annual change of TRNVR over the subsequent year

Appendix B

Time series of bankruptcy filings under Corporate Reorganization Law,
Civil Rehabilitation Law and Liquidation Law of Japan in the years of 1987–2002

Year	Number of Corporate Reorganization filing	Number of Civil Rehabilitation filing	Number of Liquidation filing	Total
’87-‘96	10	-	0	10
‘97	6	-	0	6
‘98	4	-	3	7
‘99	2	-	0	2
‘00	3	7	1	11
‘01	3	12	1	15
‘02	8	14	5	27

Banks, security companies, housing loan companies and insurance companies are excluded

Data Source: Xu(2007)

Appendix C

We denote the probability of bankruptcy with a GCN as $P_{GCN=1}$, and the counterfactual bankruptcy probability conditional on no GCN as $P_{GCN=0}$. Hypothetically, we could then average the difference between $P_{GCN=1}$ and $P_{GCN=0}$ across all the sample firms to obtain a measure of the average impact of GCNs. Unfortunately, it is impossible to observe a specific firm having a GCN and not having one. Also, it is impossible to observe the firm's bankruptcy probability under both circumstances.

We employed the treatment-effect estimators to estimate the efficacy of GCNs using observational data. We considered firm i which has no note so that we observed outcome $y_{GCN=0,i}$. What would $y_{GCN=1,i}$ be for the same firm if it issues a note on going concern uncertainties? We call $y_{GCN=1,i}$ the potential or counterfactual outcome for that firm with no note. For firm j with a GCN, we observed $y_{GCN=1,j}$, so $y_{GCN=0,j}$ would be the counterfactual outcome. Treatment-effect methods can account for this missing-data problem.

We estimated three parameters. The potential-bankruptcy means (POmeans) are the means of $y_{GCN=1}$ and $y_{GCN=0}$. The average GCN effect (ATE) is the mean of the difference ($y_{GCN=1}$-$y_{GCN=0}$). Finally, the average conditional effect on bankruptcy of a GCN (ATET) is the mean of the difference ($y_{GCN=1}$-$y_{GCN=0}$) among the firms that actually report a GCN.

$y_{GCN=1}$ or $y_{GCN=0}$ is the observed outcome variable, t (1 for a GCN, 0 for no GCN) is the GCN variable, x is a vector of covariates that affect bankruptcy outcome, and z is a vector of covariates that are related to disclosure on going concern uncertainties. The bankruptcy functional forms conditionally on going concern disclosures are.

$$y_{GCN=1} = \begin{cases} 1 & if \;\; x'\beta_0 + \epsilon_0 > 0 \\ 0 & if \;\; x'\beta_0 + \epsilon_0 \leq 0 \end{cases}$$

$$y_{GCN=0} = \begin{cases} 1 & if \;\; x'\beta_1 + \epsilon_1 > 0 \\ 0 & if \;\; x'\beta_1 + \epsilon_1 \leq 0 \end{cases}$$

where β_0 and β_1 are coefficients to be estimated, and ϵ_0 and ϵ_1 are error terms that are not related to x or z. This potential-outcome model separates each potential outcome into a predictable component, $x'\beta_t$, and an unobservable error term, ϵ_t. Let $\mu(x, t, \beta_t)$ denote a conditional-mean bankruptcy probability $E(y|x, t)$, conditional on covariates x, and going concern disclosure t. The bankruptcy functional form for $\mu(x, t, \beta_t)$ is $\Phi(x\beta_t)$. $\Phi(\cdot)$ is the cumulative normal distribution function.

The going concern variable t depends on both financial statement and market information as follows:

$$t = \begin{cases} 1 & if \;\; z'\gamma + \eta > 0 \\ 0 & otherwise \end{cases}$$

where γ is a coefficient vector, and η an unobservable error term that is not related to

either x or z. $\mathrm{p}(\mathrm{z},\mathrm{t},\gamma)$ denotes the conditional probability model for the probability that a firm has a GCN conditional on covariates z. The functional form is the normal cumulative distribution function $\Phi(\mathrm{z}\gamma)$.

The three parameters of interest are:

(1) the potential-bankruptcy mean (POmean) $\alpha_0 = E(y_0)$

(2) the average GCN effect (ATE) $\tau = E(y_1 - y_0)$; and

(3) the average GCN effect conditional on GCN (ATET) $\delta = E(y_t|t = 1)$.

The potential-bankruptcy estimators and the ATE estimators use normalized inverse probability weights. The non-normalized weights for firm i and going concern disclosure t are $d_i(t) = t_i(t)/p(z_i, t, \hat{\gamma})$, and the normalized weights are $\overline{d_\iota}(t) = N_t d_i(t)/\sum_i^N d_i\,(t)$. Here N_t is the number of observations for going concern disclosure t, and $t_i(t) = 1\ \ if\ \ t_i\ (t) = t;\ t_i(t) = 0\ \ if\ \ t_i\ (t) \neq t$.

The non-normalized conditional inverse probability weights are $f_i = p(z_i, \tilde{t}, \hat{\gamma})/\ p(z_i, t, \hat{\gamma})$, and the normalized conditional inverse probability weights are $\overline{f_\iota} = Nfd_i/\sum_i^N f_i$. The normalized conditional inverse probability weights are used to estimate the average GCN effect conditional on disclosing going concern uncertainties.

The downsizing functional forms conditionally on going concern disclosures are.

$$y_0 = \ x'\beta_0 + \epsilon_0$$

$$y_1 = \ x'\beta_1 + \epsilon_1$$

where β_0 and β_1 are coefficients to be estimated, and ϵ_0 and ϵ_1 are error terms that are not related to *x* or *z*. This potential-outcome model separates each potential outcome into a predictable component, $x'\beta_t$, and an unobservable error term, ϵ_t.e let $\mu(x, t, \beta_t)$ denote a conditional-mean downsizing $E(y|x, t)$ conditional on covariates *x* and going concern disclosure *t*.