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Data Availability
Data are available from sources indicated in the text.

The Real Effects of Going Concern Information on Investment Decisions

Abstract

This study examines the impact of going-concern (GC) information disclosure on firms' investment efficiency, focusing on Japan's revised disclosure system introduced in 2009. The reform establishes a two-stage framework that requires disclosure in the Management Discussion and Analysis (MD&A) when events or conditions are identified that raise significant doubt about the GC assumption. If management's plans are expected to mitigate these concerns, disclosure is limited to the MD&A; however, if material uncertainty remains, more extensive disclosure is required in the financial statement footnotes and audit reports. Using a sample of financially distressed Japanese firms from 2010 to 2020, we document evidence of underinvestment among firms that disclose GC information compared to distressed firms that do not disclose such information. Similar results are observed even when GC information is separated into two stages of disclosure. The results remain robust to the use of entropy balancing and propensity score matching. Further analysis indicates that strong relationships with banks and high-quality audits mitigate underinvestment. Overall, our findings demonstrate the real effects of mandated GC information disclosure and highlight the role of institutional mechanisms in shaping investment behavior.

Keywords: Going concern information, Investment efficiency, Real effects, Banks, Auditors

1. Introduction

The going-concern (GC) assumption is one of three fundamental accounting conventions identified by Gilman (1939). This serves as the core premise for preparing financial statements on an accrual basis. Earnings generally provide a more useful summary measure of firm performance than cash flows, as accounting accruals mitigate the serious timing and mismatching problems associated with cash flows (Dechow 1994; Subramanyam 1996). However, when the GC assumption is in doubt, the ability of accounting accruals to mitigate these timing and mismatch problems deteriorates substantially. In such cases, earnings may become inferior to cash flow as a summary measure of firm performance (Dechow 1994). When cash flow is a more useful measure of firm performance than earnings, it implies a reduction in the value relevance of earnings and signals a decline in earnings quality. Empirical evidence suggests that in financially distressed firms that disclose GC information, such disclosure conveys a decline in earnings persistence to investors (Subramanyam and Wild 1996). Since earnings persistence is a key indicator of earnings quality, the higher the earnings persistence, the higher the earnings quality (Sloan 1996; Dechow, Ge, and Schrand 2010). These findings suggest that the disclosure of GC information reflects lower earnings quality and may prompt stakeholders to adjust their behavior accordingly.

GC information includes private information from management and auditors regarding bankruptcy risks. It provides crucial information to help financial statement users avoid misunderstandings or inappropriate decisions (e.g., Carson, Fargher, Geiger, Lennox, Raghunandan, and Willekens 2013). For example,

suppliers may curtail credit for firms that receive GC information (Menon and Williams 2010). "Warnings can deter suppliers and customers from shipping goods or paying bills and tip the company into a self-fulfilling crisis of cash and confidence" (Financial Times, May 27, 2024). When a GC section is included in an audit report, bank directors become less reliant on firms' financial statements and tend to make unfavorable lending decisions (Höfmann, Pott, and Quick 2024). Furthermore, investors consider default risk based on GC information, as it serves as a distinct risk signal, potentially leading them to adjust their asset allocation or investment style (Taffler, Lu, and Kausar 2004; Aobdia, Fan, Stice, and Wu 2022). Consequently, GC firms may face fundraising difficulties, which in turn could inhibit efficient investment activities. Thus, GC information not only directly communicates bankruptcy risk to stakeholders but also likely constrains management's efficient decision-making through the actions of stakeholders.

In Japan, revised regulations for disclosing GC information came into effect for fiscal years ending March 31, 2009. These revisions introduced a two-stage framework for GC information disclosure, which is unique to Japan. They established the responsibility of both management and auditors to assess the existence of material uncertainty regarding the GC assumption.[1] We refer to the two stages of GC information disclosure as GC1 and GC2, respectively. In the first stage (GC1), disclosures are confined to the Management's Discussion and Analysis (MD&A). In the second stage (GC2), GC information is disclosed not only in the MD&A but also in the footnotes of financial statements and as an emphasis of matter in the audit reports. GC1 applies when events or conditions give rise to significant doubt about the entity's ability to continue as a GC, but management's plans are deemed sufficient to mitigate these conditions; as a result, no material uncertainty regarding the GC assumption exists. By contrast, GC2 applies when, even after considering management's plans to address relevant events or conditions, material uncertainty regarding the GC assumption persists. Consequently, GC1 has a lower bankruptcy risk than GC2. Auditors are responsible for this classification, which depends on their judgment regarding the feasibility of management's plans to address the relevant events or conditions and the existence of material uncertainty.

This study investigates how GC information disclosure in MD&A, financial statements, and audit reports affects the investment efficiency of GC firms. Japan has uniquely adopted a two-stage GC information disclosure system. This institutional setting provides a unique setting to distinguish between GC1 and GC2, which reflect differing levels of bankruptcy risk, and to examine their respective effects on investment efficiency. In particular, the two-stage disclosure framework enables an examination of how GC1 information disclosures, in which the management's plan for addressing GC uncertainties is considered feasible and no significant uncertainty remains, influence corporate behavior.

[1] Japan is one of the countries that introduced ISA 570 at an early stage. A distinctive feature of the Japanese standards is that disclosure in the annual report is mandated even in cases where significant doubt exists but such doubt does not rise to the level of material uncertainty. While the U.S. standards are constructed around the concept of "substantial doubt," the Japanese standards are characterized by adopting the two-tiered concepts of "significant doubt" and "material uncertainty" derived from ISA, while at the same time extending the disclosure obligation in a unique manner. This framework can be interpreted as a manifestation of Japan's institutional commitment to investor protection and the enhancement of confidence in its capital markets.

Since GC information reflects auditors' value-relevant private information (DeFond and Zhang 2014), our analysis addresses whether such disclosures, conveying private information from auditors, affect firms' real economic decisions (i.e., real effects).[2] We further examine whether close relationships with banks influence investment efficiency through the exchange of private information. Additionally, we explore the role of auditor size, which prior research links to a firm's fundraising capacity.

We examine investment efficiency before and after the disclosure of GC information using a 10-year sample period (March 31, 2010, to March 30, 2020), which follows the 2009 revision of the audit standard in Japan. We compare GC firms with financially distressed firms that do not disclose GC information. Our analysis shows that GC firms underinvest relative to financially distressed firms without GC information, with similar results when distinguishing between GC1 and GC2. The findings for GC and GC1 information disclosure are robust to entropy balancing and propensity score matching (PSM) methodologies. The robustness of the results for GC2 is weaker relative to GC1. This study also provides evidence that underinvestment is mitigated in firms with close ties to banks. Furthermore, additional analyses indicate that GC2-disclosing firms audited by the Big 4 audit firms tend to exhibit reduced underinvestment.

This study makes three major contributions to the literature. First, it demonstrates how audit information affects firm behavior. While Chy and Hope (2021) demonstrate that greater auditor conservatism results in more GC modified audit opinions (GC-MAOs) and reduced R&D expenditures, and fewer patents and citations, our study differs in two important respects. We employ broader investment measures that capture the overall firm investment and directly examine the link between GC information disclosure and investment. Given that GC information reflects an auditor's judgment, it can be regarded as audit information (Ahn and Akamah 2022). These findings offer new insights into the influence of audit information on firms' investment decisions (Bae, Choi, Dhaliwal, and Lamoreaux 2017; Shroff 2020). Unlike Chy and Hope (2021), who focus exclusively on GC2 firms, we also examine GC1 information disclosures, which appear only in MD&As (but are mandatory), thereby extending the emerging literature on GC1 information disclosure (Wang 2022; Matkaluk 2023; Krishnan, Krishnan, Lee, and Maex 2024). In particular, by documenting the impact of GC1 information disclosure on firms' investment behavior, our study deepens our understanding of the economic consequences of the two-stage GC information disclosure framework.

Second, this study contributes to the literature on the real effects of accounting information disclosure, particularly on firms' investment decisions. We find that the introduction of the new GC information disclosure requirements brought about changes in investment efficiency. The findings add to the literature examining the impact of the introduction of a new accounting and auditing framework on investment (Biddle,

[2] Real effects, as defined by Leuz and Wysocki (2016, 545), refer to "situations in which the disclosing manager or reporting entity changes its behavior in the real economy (e.g., investment, use of resources, consumption)." For systematic reviews of real effects, see Biehl, Bleibtreu, and Stefani (2024).

Callahan, Hong, and Knowles 2016; Shroff 2016; Kraft, Vashishtha, and Venkatachalam 2018; Kajüter, Klassmann, and Nienhaus 2019). As GC information raises doubts about the assumption of a GC, it affects the perceived quality of accounting information. Thus, this study advances research on how accounting information quality influences investment levels (Biddle and Hilary 2006; McNichols and Stubben 2008; Biddle, Hilary, and Verdi 2009; García Lara, García Osma, and Penalva 2015).

Third, this study extends the literature on the influence of banks on the relationship between accounting information and investments. We present evidence that financially distressed firms required to disclose GC information can maintain investment levels when they have close relationships with banks, as such ties facilitate the exchange of private information through shareholdings. This finding offers a new perspective on the argument that banks monitor overinvestment (Prowse 1990; Flath 1993; Enomoto, Jung, Rhee, and Shuto 2024).

The remainder of this paper is structured as follows. Section 2 explains the GC system, reviews prior research, and develops our hypotheses. Section 3 outlines the research design. Section 4 presents the empirical results, and Section 5 discusses additional analyses and robustness checks. Finally, Section 6 concludes the paper.

2. GC Information Disclosure System, Prior Research, and Hypothesis Development

2.1. GC Information Disclosure System in Japan

In Japan, the disclosure of GC information began in the fiscal year ending March 31, 2003. If "events or conditions that raise significant doubt about the GC assumption" existed within one year from the date financial statements were issued, management was required to footnote this in the financial statements, and auditors had to describe it as an emphasis of matter in the audit report.[3] Following the 2008 global financial crisis (the Lehman Shock), the number of firms with GC information rapidly increased. It has been pointed out that auditors interpret the auditing standards as requiring immediate disclosure of GC information when the events or conditions exist (Business Accounting Council 2009, p. 1). To align these practices with international standards and auditing standards, the Cabinet Office Ordinance on Disclosure of Corporate Affairs and other regulations were revised in 2009 to enhance this practice and provide investors with more useful information regarding bankruptcy risk, resulting in a two-stage disclosure framework for GC information.[4] Under the new auditing standards and other regulations, both auditors and management are responsible for evaluating and reporting the GC assumption.

[3] Prior to fiscal years ending March 31, 2003, management did not disclose GC information in annal reports; auditors noted it as an emphasis of matter in audit reports. During the period from fiscal years ending March 31, 2003, to before March 31, 2009, GC information (then equivalent to GC2) was systematically disclosed by management and auditors in accordance with Generally Accepted Auditing Standards (GAAS), without the involvement of auditor judgment regarding material uncertainty.

[4] As of January 2025, GC information in Japan is disclosed in accordance with the auditing standards, the Cabinet Office Ordinance on Disclosure of Corporate Affairs, the Cabinet Office Ordinance on Audit Certifications of Financial Statements, and other relevant regulations. Unlike IFRS and U.S. GAAP, Japanese accounting standards do not contain explicit provisions regarding the going concern assumption.

Figure 1 illustrates how GC information is disclosed under the current Japanese auditing standards, as shown in Figure 2 by Krishnan et al. (2024). Japan's GC information disclosure framework is broadly consistent with Accounting Standards Update (ASU) 2014-15 in the U.S.[5] Under this framework, GC information is categorized into GC1 and GC2 depending on the severity of bankruptcy risk. First, if no events or conditions raise significant doubt about the GC assumption, disclosure is not required. If such events or conditions exist, the Cabinet Office Ordinance on Disclosure of Corporate Information requires firms to provide disclosures in the "Business Risks" and/or "Analysis of Financial Position, Operating Results, and Cash Flow" sections of the MD&A in the annual report (Form 2, Instructions on Preparation, items (31)(b) and (32)).[6] When management and auditors conclude that management's plans are expected to mitigate relevant events or conditions and that these do not give rise to material uncertainty regarding the GC assumption, GC1 is applied. GC2 applies when material uncertainty regarding the GC assumption persists even after management has implemented plans to address events or conditions. In such cases, in addition to MD&A disclosure, management is required under the Regulation on Terminology, Formats, and Preparation of Financial Statements, Article 8-27 to provide the footnotes in their financial statements, and auditors are required to add an emphasis-of-matter paragraph to the audit report (Japanese Audit Standards Committee Report No. 570, Paragraph 19).[7] Accordingly, GC1 information disclosure is limited to the MD&A and does not include footnotes in their financial statements.

[Insert Figure 1]

By contrast, in the U.S., GC information is disclosed as follows: if substantial doubt about the GC assumption exists within one year after the issuance of financial statements, auditors are required to issue a GC-MAO and include a separate explanatory paragraph in the audit report (FASB 2016; PCAOB 2016, 2017; AICPA 2021). The Financial Accounting Standards Board (FASB) did not mandate the disclosure of management's assessment of the GC assumption until 2016. This requirement was introduced through ASU No. 2014-15 (FASB 2014), which was issued in 2014 and became effective for fiscal years ending on or after December 15, 2016. ASU No. 2014-15 requires explicit disclosure in the footnotes of financial statements when substantial doubt still exists after considering management's plans.[8] Furthermore, it mandates footnote disclosure even when substantial doubt is alleviated.[9]

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[5] Krishnan et al. (2024, 1) describes "the ASU mandates (1) all firms to evaluate whether there is substantial doubt about their ability to continue as a going concern and (2) firms with self-assessed substantial doubt to provide specific new management disclosures in their annual and quarterly filings."

[6] For the official English translation of the Cabinet Office Ordinance on Disclosure of Corporate Information, see: https://www.japaneselawtranslation.go.jp/notice/125/corp_affair_form.pdf

[7] For the official English translation of the Regulation on Terminology, Formats, and Preparation of Financial Statements, see: https://www.japaneselawtranslation.go.jp/en/laws/view/4133

[8] FASB (2014) states that "if, after considering management's plans, substantial doubt about an entity's ability to continue as a going concern is not alleviated as a result of consideration of management's plans, the entity shall include a statement in the footnotes indicating that there is substantial doubt about the entity's ability to continue as a going concern within one year after the date that the financial statements are issued" (FASB ASC 205-40-50-13).

[9] According to FASB (2014), "if, after considering management's plans, substantial doubt about an entity's ability to continue as a going concern is alleviated as a result of consideration of management's plans, an entity shall disclose in the footnotes

A comparison of the Japanese and U.S. systems for GC information disclosure by listed firms reveals broad similarities and two key differences. First, the disclosure of GC information in the financial statement footnotes differs between the two systems. In the U.S., footnotes are required in financial statements even if no substantial doubt exists, whereas in Japan, footnotes are not required if material uncertainty is not recognized. Consequently, Japanese users of GC information can easily ascertain the severity of bankruptcy risk in stages. Second, the descriptions of GC information in audit reports vary. In the U.S., if GC information is noted in financial statements, auditors issue a GC-MAO and include an explanatory paragraph emphasizing the existence of substantial doubt. In contrast, in Japan, information is disclosed in an emphasis-of-matter paragraph without modifying the audit opinion.[10]

2.2. Prior Research and Hypothesis Development

According to previous research, information asymmetry affects investment efficiency by causing underinvestment or overinvestment through adverse selection and moral hazard. Specifically, in the presence of adverse selection, managers raising funds and making investments may engage in overinvestment. Similarly, in moral hazard scenarios, managers' pursuit of self-interest maximization, often resulting in empire building, may lead to overinvestment (Jensen 1986; Blanchard, Lopez-de-Silanes, and Shleifer 1994). Conversely, when investors anticipate such problems, higher capital costs and reduced funding lead to underinvestment (Myers 1984; Myers and Majluf 1984).

The quality of accounting information is crucial in influencing information asymmetry between management and capital providers, and consequently, investment efficiency. High-quality accounting information enhances the accuracy of net present value estimates for investments, thereby mitigating adverse selection. Additionally, high-quality accounting information facilitates monitoring, thereby reducing management incentives for value-decreasing investments, such as empire building, and thus mitigating moral hazard. Therefore, higher-quality accounting information reduces both underinvestment and overinvestment, ultimately improving investment efficiency (Biddle et al. 2009, 113).

External audits can significantly impact investment efficiency by affecting the quality of accounting information. Shroff (2020) investigated firms whose auditors received deficiency-free inspection reports from the Public Company Accounting Oversight Board (PCAOB) international inspection program. These findings suggest that PCAOB inspections enhance the reliability of financial statements, which in turn mitigates information asymmetry between firms and investors. Consequently, this reduces adverse selection

information that enables users of the financial statements to understand all of the following […]" (FASB ASC 205-40-50-12).

[10] The Act Partially Amending the Financial Instruments and Exchange Act, etc., enacted in November 2023, discontinued the mandatory disclosure of first- and third-quarter reports. As a results, the frequency of mandatory GC information disclosure differs. In the U. S., GC information disclosure is mandated quarterly, whereas in Japan, it has been mandatory semi-annually for quarterly accounting periods beginning on or after April 1, 2024. During the sample period of this study, Japan's approach aligned with the U. S. going concern disclosure standard.

and monitoring costs, thereby increasing financing and boosting investments. By contrast, Chy and Hope (2021) demonstrate that increased auditor conservatism constrains accounting discretion, thereby inducing firms to engage in real discretion such as reducing R&D investment.

Stakeholders recognize a firm's bankruptcy risk through the disclosure of GC information. This decreases information asymmetry between management and stakeholders, thereby increasing investment efficiency.[11] As discussed later, the observed effects of GC disclosure on stock prices, the cost of capital, and lending contracts indicate that the market recognizes bankruptcy risk conveyed through GC information as new information. Additionally, management is highly likely to hesitate in disclosing GC information due to concerns about reputational damage and self-fulfilling prophecies. Therefore, the reliability of accounting information for firms disclosing GC information is considered high, implying that management does not conceal information from auditors (Tucker, Matsumura, and Subramanyam 2003; Berglund and Sterin 2025). That is, for firms disclosing GC information, we expect information asymmetry between management and stakeholders to decrease, and investment efficiency to increase.

However, as mentioned in the Introduction, for firms disclosing GC information in which the GC assumption is in doubt, earnings become less persistent and less predictive of their future performance. This increased uncertainty in accounting information can negatively affect a firm's financing and reduce its investment efficiency. For firms that disclose GC information, the quality of accounting information, including earnings, declines, making it difficult for stakeholders to interpret (Amin, Krishnan, and Yang 2014; Chen, He, Ma, and Stice 2016; Abad, Sanchez-Bállesta, and Yagüe 2017). From this perspective, we can also consider an opposing view: the increased uncertainty of accounting information disclosed by GC firms negatively affects fundraising and thus reduces investment efficiency. For instance, Chen et al. (2016) demonstrate that the disclosure of GC information raises doubts about accounting information quality, leading to a decrease in the number of financial covenants that utilize accounting figures in debt contracts. GC information disclosure signals the possibility of financial failure and serves as a warning to creditors regarding the liquidation value of assets (Carson et al. 2013). Therefore, stakeholders must collect and process information while paying careful attention to the bankruptcy risks associated with firms subject to GC information.

The extent to which GC information disclosure reflects private information from management and auditors affects how investors and creditors value a firm. Prior research presents evidence that GC information disclosure leads to negative reactions from investors (i.e., negative abnormal stock returns) (Menon and Williams 2010; Kausar, Taffler, and Tan 2017; Wang 2022).[12]

[11] As an example of audit-related information, the disclosure of material weaknesses in internal control has been shown to increase information asymmetry prior to disclosure due to low accounting information quality, but this reverses after disclosure, leading to improved investment efficiency (Cheng, Dhaliwal, and Zhang 2013). While Cheng et al. (2013) posit an improvement in accounting information quality driven by enhancements in the internal control system after disclosure, a similar effect is not anticipated from GC information disclosure.

[12] Bochkay, Chychyla, Sankaraguruswamy, and Willenborg (2018) provide evidence that voluntary management disclosure of GC information reduces IPO prices and subsequent post-IPO stock returns. Conversely, Myers, Shipman, Swanquist, and

Thus, GC information disclosure increases the uncertainty about a firm's future and raises its cost of capital (Geiger and Raghunandan 2001). Amin et al. (2014) argue that investors view GC information disclosure as a negative signal and become reluctant to invest in or lend to such firms. Their analysis provides evidence that the cost of capital increases for GC firms compared with financially distressed firms without GC information. Furthermore, focusing on debt contracts, studies show that firms receiving an audit report with a modified audit opinion experience higher interest rate spreads in the following year, with spreads particularly expanding for firms with GC-MAOs (Chen et al. 2016). This result holds even when the sample is limited to financially distressed firms. GC information disclosure also provides new insights, including private information from management and auditors, regarding debt securities ratings. Bond ratings are downgraded after a GC opinion is issued (Feldman and Read 2013). These studies imply that when financially distressed firms disclose GC information, they incur an additional impact, specifically, an increase in the cost of capital.[13]

To summarize the findings from prior research, the disclosure of conditions or events that raise significant doubt about the GC assumption signals a decline in accounting information quality, stemming from exposure to bankruptcy risk and the increased uncertainty of firms and accounting information. Consequently, a decline in quality increases financing costs and negatively impacts future fundraising. Therefore, the management of GC firms is expected to select investment proposals strictly because of their opaque financing prospects. This suggests that GC firms underinvest compared with financially distressed firms without GC information.

Hypothesis 1: Disclosure of GC information leads to underinvestment and decreases investment efficiency.

Hypothesis 1 predicts that investment becomes inefficient due to a decrease in accounting information quality following the disclosure of GC information. However, when stakeholders maintain close relationships with a firm, they can use private information as a substitute for accounting information (Ball, Kothari, and Robin 2000; Ball and Shivakumar 2005; Biddle and Hilary 2006; Beatty, Liao, and Weber 2010). As creditors, banks can access private information from borrowers. Coupled with their superior information-processing ability, they can effectively monitor firm management. For example, firms with low-quality accounting information and high information asymmetry often opt for bank loans, which helps reduce adverse selection costs (Bharath, Sunder, and Sunder 2008). Japan is characterized by a bank-centered financial system in which banks and firms actively exchange private information (Biddle and Hilary 2006).

Banks provide funds to firms from a long-term perspective, and often hold shares in the firms they lend to.

Whited (2018) contend that market reactions to GC information disclosure are attributable to other information disclosures, such as earnings announcements.

[13] In Japan, firms disclosing going concern (GC) information often face substantial borrowing constraints from financial institutions, including denial of new loans or demands for joint guarantees by parent companies (Machida 2009).

When borrowing firms face financial difficulties, banks may become more actively involved in monitoring, for example, by appointing bank-affiliated executives as officers (Jacobson and Aaker 1993; Sheard 1994; Douthett and Jung 2001; Hoshi and Kashyap 2001). Recent evidence suggests that, for bond-issuing firms with a main bank, the importance of accounting information quality in debt contracts diminishes as default risk increases. Simultaneously, banks strengthen their monitoring through private information, leading bondholders to delegate monitoring to them (Futaesaku, Kitagawa, and Shuto 2023). Banks possess superior capabilities for collecting and processing information compared with other lenders. They can readily renegotiate debt contracts and provide loans tailored to their clients' information risks (Bharath et al. 2008).

Close and long-term relationships between firms and banks, often formed through cross-shareholding and stable shareholding, are distinctive features of Japanese corporate governance (e.g., Aoki and Patrick 1994; Hoshi and Kashyap 2001; Aoki, Jackson, and Miyajima 2007). Main banks play a central role in lending and serve as the core of these shareholding networks. Such relationships enable the routine exchange of private information and facilitate risk-adjusted financing even under GC information disclosure. Thus, bank shareholdings serve as a useful proxy for the closeness of bank–firm ties. These ties also help firms secure funding by alleviating information asymmetry and reducing liquidity constraints (Flath 1993; Weinstein and Yafeh 1998). Cross-shareholding is a crucial mechanism by which banks maintain their lending relationships (Ono, Suzuki, and Uesugi 2024).

Accordingly, we hypothesize that, even for firms with GC information, a close relationship with banks mitigates the decline in investment efficiency. This mitigating effect arises from the exchange of private information and the availability of long-term financing.

Hypothesis 2: Close relationships with banks mitigate the decrease in investment efficiency caused by GC information.

3. Research Design and Sample Selection Procedure

3.1. Empirical Models

To test Hypothesis 1, we employ Richardson's (2006) investment model, as in prior studies (e.g., Guariglia and Yang 2016; Chin, Chiu, Haight, and Yu 2024):[14]

$$Investment_{it+1} = \beta_0 + \beta_1 V/P_{it} + \beta_2 Leverage_{it} + \beta_3 Cash_{it} + \beta_4 Age_{it} + \beta_5 Size_{it} + \beta_6 StockReturns_{it} + \beta_7 Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (1)$$

The dependent variable *Investment* refers to one of the four measures: *Total_Inv*, *New_Inv*, *Capex*, and *Capex_RD*. *New_Inv* is used in Richardson's (2006) investment model. Both *Total_Inv* and *New_Inv* incorporate the sale of fixed assets, but they differ in whether depreciation is considered: *New_Inv* accounts

[14] Richardson's (2006) investment model is widely utilized for detecting abnormal investment (Gao and Yu 2020).

for depreciation, whereas *Total_Inv* does not. In contrast, *Capex* and *Capex_RD* do not incorporate the sale of fixed assets. See Appendix A for the detailed definitions of the variables. The control variables are consistent with those in Richardson (2006). In addition to year fixed effects, we include firm fixed effects to control for unobserved firm-specific heterogeneity that remains constant over time.

Based on Equation (1), we add dummy variables for the year of GC1 or GC2 information disclosure (*GC12_Y1*) and the preceding year (*GC12_Pre*).[15]

$$Investment_{it+1} = \beta_0 + \beta_1 GC12\_Pre_{it} + \beta_2 GC12\_Y1_{it} + \beta_3 V/P_{it} + \beta_4 Leverage_{it} + \beta_5 Cash_{it} + \beta_6 Age_{it} + \beta_7 Size_{it} + \beta_8 StockReturns_{it} + \beta_9 Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (2)$$

GC12_Pre and *GC12_Y1* denote the year prior to and the first year of GC information disclosure (either GC1 or GC2), respectively. The "first year" refers to the fiscal year to which the GC information disclosure applies. For comparison, we include not only the year of GC information disclosure but also the prior year. Hypothesis 1 focuses on the effect of the initial GC information disclosure on investment in the subsequent year. Accordingly, Hypothesis 1 predicts that investment falls below normal levels after GC information disclosure, leading to underinvestment in the following year; therefore, we predict β_2 to be negative. We do not predict the sign of β_1. Our analysis focuses on financially distressed firms, which is consistent with prior research (Reynolds and Francis 2001; DeFond, Raghunandan, and Subramanyam 2002; Amin et al. 2014; Chen et al. 2016). Next, we decompose the variables *GC12_Pre* and *GC12_Y1* into *GC1* and *GC2*.

$$Investment_{it+1} = \beta_0 + \beta_1 GC1\_Pre_{it} + \beta_2 GC1\_Y1_{it} + \beta_3 GC2\_Pre_{it} + \beta_4 GC2\_Y1_{it} + \beta_5 V/P_{it} + \beta_6 Leverage_{it} + \beta_7 Cash_{it} + \beta_8 Age_{it} + \beta_9 Size_{it} + \beta_{10} StockReturns_{it} + \beta_{11} Investment_{it} + \Sigma \beta_m Year + \Sigma \beta_n Firm + \varepsilon_{t+1} \quad (3)$$

Additional analysis is conducted using separate corresponding models that individually examine the information disclosure of GC1 and GC2.[16]

Various post-disclosure patterns are possible, including the resolution of GC status, transition from GC1 to GC2 (or vice versa), or continued disclosure within the same category. To ensure a clear comparison and maintain a sufficient sample size, we include only GC firms for which data are available in both the year of initial disclosure and the immediately preceding year.[17]

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[15] An alternative two-stage approach calculates abnormal investment using residuals from industry-year regressions without fixed effects (e.g., Chin et al. 2024). Due to bias in second-stage regressions using residuals (Chen, Hribar, and Melessa 2018), the test variables are directly included in the investment model with firm fixed effects, as shown in Equation (1).

[16] Specifically, this entails either excluding the *GC2_Pre* and *GC2_Y1* variables from Equation (3), or excluding *GC1_Pre* and *GC1_Y1*.

[17] The additional analysis in Appendix B comprehensively accounts for these diverse patterns.

To examine Hypothesis 2, we focus on bank shareholdings as a proxy for the strength of the bank–firm relationship. Specifically, we focus on cross-shareholdings, in which mutual shareholdings facilitate the exchange of private information. We construct a dummy variable (*Bank*) that equals one if the firm has a cross-shareholding relationship with a bank, as a proxy for this relationship. By incorporating the interaction terms between the bank shareholding and GC information disclosure variables into Equations (2) and (3), we obtain Equations (4) and (5). For the coefficient estimates of each interaction term, we predict a positive sign, indicating that they mitigate the negative sign of β_2 predicted in Hypothesis 1.

$$Investment_{it+1} = \beta_0 + \beta_1\, GC12\_Pre_{it} + \beta_2\, GC12\_Y1_{it} + \beta_3\, GC12\_Pre_{it} \times Bank_{it} + \beta_4\, GC12\_Y1_{it} \times Bank_{it} + \beta_5\, Bank_{it} + \beta_6\, V/P_{it} + \beta_7\, Leverage_{it} + \beta_8\, Cash_{it} + \beta_9\, Age_{it} + \beta_{10}\, Size_{it} + \beta_{11}\, StockReturns_{it} + \beta_{12}\, Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (4)$$

$$Investment_{it+1} = \beta_0 + \beta_1\, GC1\_Pre_{it} + \beta_2\, GC1\_Y1_{it} + \beta_3\, GC2\_Pre_{it} + \beta_4\, GC2\_Y1_{it} + \beta_5\, GC1\_Pre_{it} \times Bank_{it} + \beta_6\, GC1\_Y1_{it} \times Bank_{it} + \beta_7\, GC2\_Pre_{it} \times Bank_{it} + \beta_8\, GC2\_Y1_{it} \times Bank_{it} + \beta_9\, Bank_{it} + \beta_{10}\, V/P_{it} + \beta_{11}\, Leverage_{it} + \beta_{12}\, Cash_{it} + \beta_{13}\, Age_{it} + \beta_{14}\, Size_{it} + \beta_{15}\, StockReturns_{it} + \beta_{16}\, Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (5)$$

3.2. Sample Selection Procedure and Data

The sample consists of firms with fiscal year-ends between March 31, 2009, and March 30, 2021, that are listed on the Japanese stock exchange, excluding firms listed on the TOKYO PRO Market. The sample is limited to firm-years with a 12-month fiscal period and excludes firms in the financial industry, specifically banking, securities, and insurance, based on the Nikkei Medium Industry Classification (*Nikkei Gyoshu Chu-bunrui*). We also exclude firm-years that changed their fiscal year-end during the sample period. To identify financially distressed firms, we require that either net income or cash flows from operating activities be negative. Finally, we include only observations for which the variables necessary for the analysis are available or can be calculated.

This sample period was selected because GC1 information disclosure began for fiscal years ending on or after March 31, 2009. We exclude firms from the years preceding the implementation of the standard. Firms that disclosed GC information in the fiscal periods ending March 31, 2009, and March 30, 2010, are also excluded because their status in the previous fiscal period cannot be determined.

This period is used solely to collect data for the year preceding the disclosure of GC information and to establish a control group. Additionally, the dependent variable, $Investment_{t+1}$, is based on data from the fiscal year following the fiscal year to which the GC information applies. Therefore, we restrict the sample to firm-years for which GC information is disclosed up to fiscal years ending no later than March 30, 2020. To capture financially distressed firms, consistent with prior research, we restrict the sample to firm-years with either negative net income or negative cash flow from operating activities (e.g., Reynolds and Francis 2001).

For firms that disclose GC2 information, we extract GC2 samples from *NEEDS-FinancialQUEST* by selecting "Notes on GC assumption (noted or not)." As GC1 information disclosure is not available in commercial databases, we manually identify firm-years based on the methodology of Asano and Imanishi (2017). Specifically, we use the "Full-text Search" function of the "*eol*," with a search period from March 31, 2010, to March 30, 2020. We search the table of contents of annual reports for the sections "Business Risks" and "Analysis of Financial Condition, Operating Results, and Cash Flows," using the keywords "going concern" or "continue its operations for the foreseeable future." From the results, we then select entries that match the GC1 descriptions. For further details, refer to Asano and Imanishi (2017).[18] Among the firm-years classified as GC1 or GC2 according to these criteria, we include only those for which data are available for both the initial year of GC information disclosure and the year immediately preceding it. We identify 219 GC1 and 31 GC2 firm-years, resulting in 438 and 62 firm-year observations, respectively, over a two-year period. Additionally, we identify 6,822 firm-years without GC information disclosure that meet the criteria for financial distress.

We obtain other financial and shareholding data from "*NEEDS-FinancialQUEST*" (Nikkei Media Marketing), stock price data from "*NPM Portfolio Master*" (Financial Data Solutions), and annual report data from "*eol*" (I-N. INFORMATION SYSTEMS).

4. Empirical Results

Panel A of Table 1 presents the descriptive statistics. Among financially distressed firms, 3.21% disclose GC1 information, and 0.45% disclose GC2 information. This table reports investment-related variables for both the current and one-period-ahead periods, with the latter serving as the dependent variable. Panel B shows the changes in investment levels of firms that disclose GC information. The results show that investments decrease following the disclosure of GC information, particularly for GC2 firms. Table 2 presents the correlation matrices of the variables used in the regressions. Although the investment variables are highly correlated, they are not included simultaneously in the regression model. Other independent variables included simultaneously do not exhibit strong correlations.

[Insert Tables 1 and 2]

Panel A of Table 3 presents the results for Hypothesis 1. The second row of Table 3 lists the dependent investment variables. In all regressions based on Equation (2), which includes a dummy for GC1 or GC2 information disclosure, the coefficient of *GC12_Y1* is significantly negative, indicating underinvestment after GC information disclosure, thereby supporting Hypothesis 1. These findings suggest that newly introduced GC information disclosure impacts investment.

[18] The keywords originally used in Japanese have been translated into English. Researchers wishing to obtain the original Japanese search terms are encouraged to contact the author.

For *New_Inv*, the coefficient on *GC12_Pre* is also marginally significant. *New_Inv* reflects investments that exceed the depreciation of previously invested assets. Given that the dependent variable is investment in the year following GC information disclosure, the results suggest that firms did not replace depreciated assets sufficiently, even in the year of disclosure. However, a significant decline in investment is observed in the subsequent year (t+1) relative to the year prior to GC information disclosure ($\beta_2 - \beta_1 = -0.0112$, $p = 0.01$), thereby supporting Hypothesis 1.

[Insert Table 3]

Among the control variables, the coefficients of *V/P* and *Leverage* are consistently negative and significant. The coefficients of *Cash* are generally positive, although not always significant. The coefficients of *Age* are significantly negative for *Capex*, which is consistent with Richardson (2006), as is the lagged investment variable. In contrast to Richardson (2006), The coefficients of *Size* are significantly negative, and *StockReturns* are insignificant. These differences may reflect the financial distress experienced by sample firms.

Panel B reports the results of dividing *GC12_Y1* (*GC12_Pre*) into *GC1_Y1* and *GC2_Y1* (*GC1_Pre* and *GC2_Pre*). The coefficient of *GC1_Y1* is significantly negative for all investment variables, supporting Hypothesis 1. This finding highlights the impact of new GC1 information disclosures on firm investments. Additionally, while only *GC1_Y1* is significantly negative for *Capex* and *Capex_RD*, the coefficients of both *GC1_Y1* and *GC1_Pre* are significantly negative for *Total_Inv* and *New_Inv*. Similar to Panel A, when *Total_Inv* and *New_Inv* are the dependent variables, the difference between the coefficients on *GC1_Y1* and *GC1_Pre* ($\beta_2 - \beta_1$) is significantly negative (untabulated). Overall, the results indicate that GC1 information disclosure leads to a decline in investment, resulting in greater underinvestment. The significance of *GC1_Pre* in *Total_Inv* and *New_Inv* may reflect asset sales in the previous period, whereas *Capex* and *Capex_RD*, which emphasize new investments, show smaller declines. This suggests that firms might have sold previously acquired assets (past investments) to raise funds in anticipation of deteriorating cash flows. The coefficient of *GC2_Y1* is smaller than that of *GC1_Y1*; however, the difference is not statistically significant. The coefficient of *GC2_Y1* is significantly negative for *Total_Inv*, *New_Inv*, and *Capex*, but not for *Capex_RD*, suggesting that R&D expenditures may have been maintained.

Next, we examine the results of Hypothesis 2. In Panel A of Table 4, the coefficient of *GC12_Y1* is negative, whereas the coefficient of the interaction term *GC12_Y1* × *Bank* is significantly positive across all investment variables, supporting Hypothesis 2. This finding suggests that strong bank ties through cross-shareholdings mitigate the investment decline following GC information disclosure (underinvestment is mitigated). Panel B splits *GC12_Y1* (*GC12_Pre*) into *GC1_Y1* and *GC2_Y1* (*GC1_Pre* and *GC2_Pre*). The coefficient of *GC1_Y1* is significantly negative for all variables, and the coefficient of *GC1_Y1* × *Bank* is

significantly positive for all investment variables, similar to Panel A. The coefficient of *GC2_Y1* is significantly negative for *Total_Inv*, *New_Inv*, and *Capex*. The coefficient of *GC2_Y1* × *Bank* is significantly positive for *Total_Inv* and *New_Inv*, but not significant for *Capex* and *Capex_RD*. However, when *Capex*, for which the coefficient of *GC2_Y1* is significant, is the dependent variable, adding the coefficient of *GC2_Y1* × *Bank* (β_8) to the coefficient of *GC2_Y1* (β_3) renders it insignificant ($\beta_3 + \beta_8 = 0.0063$; p-value = 0.177), offsetting the significantly negative effect of *GC2_Y1* (β_3) and indicating that bank ties help mitigate underinvestment.

[Insert Table 4]

In summary, investment tends to decline after GC information disclosure, particularly for GC1, resulting in underinvestment. This effect is mitigated by firms with strong bank ties, supporting Hypotheses 1 and 2.

5. Robustness Checks and Additional Analysis

5.1. Robustness Checks

Building on prior research, we limit our analysis to financially distressed firms, focusing on differences between those that disclose GC information and those that do not, and control for time-invariant firm-specific heterogeneity using firm fixed effects. Nevertheless, firms that disclose GC information may systematically differ in unobserved characteristics correlated with subsequent investment, leading to potential self-selection bias (e.g., such firms may inherently be more likely to reduce investment).

To alleviate this concern, we conduct robustness checks on the results from the previous section using entropy balancing (Hainmueller 2012; Hainmueller and Xu 2013). Additionally, we employed PSM (Rosenbaum and Rubin 1983).

Entropy balancing is a reweighting technique that adjusts covariate distributions (including means, variances, and skewness) to achieve balance between the treated and control groups. This method enabled us to use the same sample as in the baseline analysis while adjusting for covariate imbalance.[19] For PSM, we calculated propensity scores using the control variables from the previous section as independent variables, estimated a probit model using maximum likelihood estimation, and matched observations within the same year and industry. For matching, we performed one-to-one nearest-neighbor matching without replacement within a common support. The caliper used for matching was set to 1%.

Panel A of Table 5 shows the results of re-estimating Equation (2) using entropy balancing, whereas Panel B presents the results using PSM. Under entropy balancing, the coefficients of *GC12_Y1* remain negative and statistically significant, consistent with the results in Panel A of Table 4. All coefficients of *GC12_Pre*

[19] All firms disclosing GC information are balanced with those not disclosing it, even when distinguishing GC1 and GC2 as separate variables, as in Equation (3).

are no longer statistically significant. Under PSM, the coefficient of *GC12_Y1* is significantly negative only when *Capex* is used as the dependent variable.

[Insert Table 5]

Next, we examine specifications in which GC1 and GC2 are included separately. Panel C reports the results of entropy balancing. For GC1, the estimates closely mirror those in Panel B of Table 4, with all coefficients of *GC1_Pre* remaining insignificant. The results for GC2 are consistent. Panel D presents the PSM results. For both GC1 and GC2, the coefficient becomes significantly negative when *Capex* is the dependent variable. These findings support the robustness of the results presented in Table 4.

To assess the robustness of Hypothesis 2, Panel E of Table 5 reports the results using *GC12_Pre* and *GC12_Y1* under entropy balancing. The coefficient of *GC12_Y1* × *Bank* is positive and significant for *Capex*, supporting this hypothesis. For other investment variables, although the interaction term *GC12_Y1* × *Bank* (β_8) is not significant, the significant coefficient on *GC12_Y1* (β_3) becomes insignificant when combined with β_8, ($\beta_3 + \beta_8$). This finding suggests that the negative effect of GC information disclosure on investment is offset, indicating a mitigation of underinvestment (untabulated). Under PSM, as shown in Panel F, the coefficient of *GC12_Y1* × *Bank* is significantly positive for *Capex_RD*, but remains insignificant for other variables.

Panel G reports the results of the regressions that separately include GC1 and GC2 information disclosure. The coefficient of *GC1_Y1* × *Bank* is significantly positive for *Capex*. In addition, the coefficient of *GC2_Y1* × *Bank* is significantly positive for *Total_Inv* and *New_Inv*. The results are not otherwise significant. However, similar to the results of the GC12 variables, the significantly negative coefficients of *GC1_Y1* and *GC2_Y1* are mitigated by the positive values of *GC1_Y1* × *Bank* and *GC2_Y1* × *Bank*. Although the overall evidence is weaker than that of the main analysis, the results partially support Hypothesis 2.

In summary, while some results for Hypothesis 2 remain significant under entropy balancing and PSM, the findings are less robust than those for Hypothesis 1, particularly for PSM. Several factors may explain the weak results for GC2. First, the small sample size of the GC2 group may have caused the results to be driven by outliers. Second, PSM's sensitivity to the research design and reduced external validity due to smaller sample sizes may also have contributed (Krishnan and Tanyi 2024).

Furthermore, even when firms disclosing either GC1 or GC2 are analyzed separately as GC information-disclosing firms, the results support the main findings (untabulated).[20]

[20] Specifically, this entails either excluding the *GC2_Pre* and *GC2_Y1* variables from Equation (3), or excluding *GC1_Pre* and *GC1_Y1*.

The final year of the sample period coincides with the significant economic shock caused by the COVID-19 pandemic. As the sample is limited to financially distressed firms, the investment impact is not confined to those disclosing GC information. However, to address the potential influence on the results, we re-estimated the models excluding the final year. Even after excluding the final year, the results in Tables 3 and 4 remain largely robust (untabulated).

5.2. Additional Analysis

Three additional analyses were also performed. First, we examined the relationship between auditor size and investment efficiency. Prior research shows that Big 4 audit firms provide higher-quality audits, leading to improved accounting information quality (DeAngelo 1981; Becker, DeFond, Jiambalvo, and Subramanyam 1998; Francis, Maydew, and Sparks 1999). High-quality accounting information mitigates information asymmetry and reduces capital costs (Francis, LaFond, Olsson, and Schipper 2004, 2005). More directly, auditing by Big 4 audit firms is associated with a lower cost of capital (Khurana and Raman 2004). Shroff (2020) demonstrates that firms whose auditors received deficiency-free inspection reports from the PCAOB's international inspection program experienced increased external financing and investments. Furthermore, Bae et al. (2017) demonstrate that even after controlling for earnings quality, client firms audited by Big 4 auditors or industry-specialist audit firms exhibit more efficient investments, likely due to access to more useful information.

When audits are conducted by Big 4 firms, it is presumed that audit engagements are maintained even for financially distressed clients, based on access to private information about bankruptcy risk.[21] Given the high information asymmetry of GC-disclosing firms, audits by Big 4 auditors could facilitate their fundraising efforts. Conversely, Geiger and Rama (2006) find that Big 4 auditors exhibit fewer Type I and Type II errors in identifying bankruptcies after GC information disclosure, suggesting that their disclosures are more accurate. In this case, the disclosure of GC information by Big 4 audit firms' clients might make fundraising more difficult.

To test the moderating effect of Big 4 audit firms on the relationship between GC information and investment efficiency, we replace the *Bank* variable in Equations (2) and (3) with a dummy variable (*Big4*), which equals 1 if the auditor is a Big 4 firm and 0 otherwise.[22]

$$Investment_{it+1} = \beta_0 + \beta_1\, GC12\_Pre_{it} + \beta_2\, GC12\_Y1_{it} + \beta_3\, GC12\_Pre_{it} \times Big4_{it} + \beta_4\, GC12\_Y1_{it} \times Big4_{it} + \beta_5\, Big4_{it} + \beta_6\, V/P_{it} + \beta_7\, Leverage_{it} + \beta_8\, Cash_{it} + \beta_9\, Age_{it} + \beta_{10}\, Size_{it} + \beta_{11}\, StockReturns_{it} + \beta_{12}\, Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (6)$$

[21] Auditors primarily obtain private information related to going concern risk from audit evidence gathered during the audit process.

[22] Big 4 audit firms are defined as EY ShinNihon LLC, Deloitte Touche Tohmatsu LLC, KPMG Azsa LLC, and PwC Arata LLC.

$$Investment_{it+1} = \beta_0 + \beta_1\ GC1\_Pre_{it} + \beta_2\ GC1\_Y1_{it} + \beta_3\ GC2\_Pre_{it} + \beta_4\ GC2\_Y1_{it} + \beta_5\ GC1\_Pre_{it} \times Big4_{it} + \beta_6\ GC1\_Y1_{it} \times Big4_{it} + \beta_7\ GC2\_Pre_{it} \times Big4_{it} + \beta_8\ GC2\_Y1_{it} \times Big4_{it} + \beta_9\ Big4_{it} + \beta_{10}\ V/P_{it} + \beta_{11}\ Leverage_{it} + \beta_{12}\ Cash_{it} + \beta_{13}\ Age_{it} + \beta_{14}\ Size_{it} + \beta_{15}\ StockReturns_{it} + \beta_{16}\ Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (7)$$

Table 6 presents the estimation results of Equations (6) and (7). In Panel A of Equation (6), the coefficient of *GC12_Y1* × *Big4* is not significant. However, in Panel B of Equation (7), when using *Total_Inv* and *New_Inv* as dependent investment variables, the coefficient of *GC1_Y1* × *Big4* is not significant. The coefficient of *GC2_Y1* × *Big4* is significantly positive, indicating that GC2-disclosing firms audited by Big 4 auditors are more likely to maintain their investment levels. Furthermore, even for *Capex* and *Capex_RD*, the coefficients remain positive but not significant. Moreover, the combined effect ($\beta_4 + \beta_8$) is statistically insignificant, indicating that the presence of Big 4 audits mitigates the negative impact of *GC2_Y1* on investment. Although not shown in the table, entropy balancing yields a significantly positive *GC2_Y1* × *Big4* coefficient when *New_Inv* is used, and PSM produces significantly positive coefficients when *Total_Inv*, *New_Inv*, and *Capex*. These results suggest that Big 4 auditors play a key role in maintaining investment in GC2 firms.

[Insert Table 6]

As a second additional test, we re-estimate Table 4 by replacing the *Bank* variable with a dummy variable indicating bank shareholdings to capture strong bank ties. The interaction terms (*GC12_Y1* × *Bank*, *GC1_Y1* × *Bank*, and *GC2_Y1* × *Bank*) are mostly insignificant or, if significant, non-robust (untabulated). Compared with Table 5, this suggests that cross-shareholdings may be a more influential factor in investment.

Third, following Chy and Hope (2021), we investigate whether GC information disclosure leads to a decline in R&D. We find no evidence of a decline in R&D , suggesting that firms maintain R&D at levels similar to those of other financially distressed firms even after GC information disclosure (untabulated).

6. Summary

This study examines how the introduction of two types of GC information disclosure under the 2009 audit standard revision in Japan affects firms' investment behavior. The two disclosure types are (1) GC1, which is disclosed only in the MD&A section of the annual report, and (2) GC2, which is disclosed in the MD&A section, in the footnotes to the financial statements, and as an emphasis of matter in the audit report.

GC information disclosure increases uncertainty about business continuity and accounting information, potentially hindering fundraising and investment. The analysis of financially distressed firms reveals that investment declines in the subsequent period following the disclosure of GC information, a result that remains robust across several checks. In particular, our findings suggest that the newly introduced GC1

information disclosure has a negative impact on investments. Although the decline in investment is greater for GC2 than for GC1, the difference is statistically insignificant, likely because stakeholders do not clearly distinguish between the two levels of GC information disclosure.

This paper provides evidence that, when GC information is disclosed, it brings about changes in investment behavior even for firms without the presence of "material uncertainty regarding the GC assumption." Moreover, for firms with close ties to banks through shareholdings, such relationships tend to mitigate the negative impact on investment, likely because private information exchange improves fundraising prospects compared with firms without such ties. A similar mitigating effect is observed for the clients of Big 4 audit firms.

One limitation of this study is the small number of GC2 cases, which results in a limited sample size. The limited statistical significance of some robustness checks may be attributed to small sample sizes. Additionally, we did not examine the content of management's plans, which are critical for determining GC1. These plans may be closely linked to investment behavior and should be examined in more detail. Finally, our analysis is limited to annual reports. If GC information were disclosed in quarterly reports, investment decisions may have been affected earlier, which was not captured in this study.

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Appendix A. Variable Definitions

Investment variables	
Investment	Four investment variables: *Total_Inv*, *New_Inv*, *Capex*, and *Capex_RD*
Total_Inv	(Purchase of fixed assets + Purchase of stocks of subsidiaries and affiliates + Research and development expenses – Proceeds from sales of fixed assets) / Total assets at the beginning of the period.
New_Inv	(Purchase of fixed assets + Purchase of stocks of subsidiaries and affiliates + Research and development expenses – Proceeds from sales of fixed assets – Depreciation expenses) / Total assets at the beginning of the period.
Capex	Purchase of fixed assets / Total assets at the beginning of the period.
Capex_RD	(Purchase of fixed assets + Research and development expenses) / Total assets at the beginning of the period.
Test variables	
GC12_Pre	1 if neither GC1 nor GC2 is disclosed in the current year but GC1 or GC2 is disclosed in the following year, and 0 otherwise.
GC12_Y1	1 in the first year of GC1 or GC2 information disclosure, and 0 otherwise.
GC1_Pre	1 if neither GC1 nor GC2 is disclosed in the current year but GC1 is disclosed in the following year, and 0 otherwise.
GC1_Y1	1 in the first year of GC1 information disclosure, and 0 otherwise.
GC2_Pre	1 if neither GC1 nor GC2 is disclosed in the current year but GC2 is disclosed in the following year, and 0 otherwise.
GC2_Y1	1 in the first year of GC2 information disclosure, and 0 otherwise.
Bank	1 if a cross-shareholding relationship exists with a bank, and 0 otherwise.
Control variables	
V/P	Net asset book value / Market capitalization (Irawan and Okimoto, 2021).
Leverage	(Short-term + long-term debt) / The sum of liabilities and net asset book value.
Cash	(Total cash + cash equivalents) / Total assets at the beginning of the period.
Age	Natural logarithm of firm age.
Size	Natural logarithm of total assets at the beginning of the period.
StockReturns	Stock return calculated by dividing the market capitalization at the end of the period by the market capitalization of the previous year.
Year	Year fixed effect.
Firm	Firm fixed effect.
Additional Variables	
Big4	1 if a Big 4 audit firm conducts the audit, and 0 otherwise.

Appendix B. Analysis Using All Disclosing Firms

As an additional analysis, we examine GC information disclosure transitions by incorporating variables that capture changes and continuities in disclosure status. Specifically, in Equations (B1) and (B2), we include variables representing the years in which GC information disclosure changed and the years in which it continued. Please refer to Table B1 for definitions of the variables. The variables of interest are *GC12_from_NGC* (i.e., firm-years with a new GC1 or GC2 information disclosure, corresponding to *GC12_Y1*) in Equation (B1), and *GC1_from_NGC* (new GC1 information disclosure firm-year, corresponding to *GC1_Y1*) and *GC2_from_NGC* (new GC2 disclosure firm-years, corresponding to *GC2_Y1*) in Equation (B2), all of which are expected to have negative coefficient signs. A negative coefficient indicates underinvestment in the year following new GC1 or GC2 information disclosure relative to the baseline condition of financial distress without GC information disclosure. We estimate Equations (B3) and (B4), which correspond to Equations (B1) and (B2), to test Hypothesis 2. The regression equations are as follows:

[Insert Table B1]

$$Investment_{it+1} = \beta_0 + \beta_1\, NGC12\_from\_GC12_{it} + \beta_2\, GC12\_from\_NGC_{it} + \beta_3\, GC12\_from\_GC12_{it} + \beta_4\, V/P_{it} + \beta_5\, Leverage_{it} + \beta_6\, Cash_{it} + \beta_7\, Age_{it} + \beta_8\, Size_{it} + \beta_9\, StockReturns_{it} + \beta_{10}\, Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (B1)$$

$$Investment_{it+1} = \beta_0 + \beta_1\, NGC1\_from\_GC1_{it} + \beta_2\, NGC1\_from\_GC2_{it} + \beta_3\, GC1\_from\_NGC_{it} + \beta_4\, GC1\_from\_GC1_{it} + \beta_5\, GC1\_from\_GC2_{it} + \beta_6\, GC2\_from\_NGC_{it} + \beta_7\, GC2\_from\_GC1_{it} + \beta_8\, GC2\_from\_GC2_{it} + \beta_9\, V/P_{it} + \beta_{10}\, Leverage_{it} + \beta_{11}\, Cash_{it} + \beta_{12}\, Age_{it} + \beta_{13}\, Size_{it} + \beta_{14}\, StockReturns_{it} + \beta_{15}\, Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (B2)$$

$$Investment_{it+1} = \beta_0 + \beta_1\, NGC12\_from\_GC12_{it} + \beta_2\, GC12\_from\_NGC_{it} + \beta_3\, GC12\_from\_GC12_{it} + \beta_4\, NGC12\_from\_GC12_{it} \times Bank_{it} + \beta_5\, GC12\_from\_NGC_{it} \times Bank_{it} + \beta_6\, GC12\_from\_GC12_{it} \times Bank_{it} + \beta_7\, Bank_{it} + \beta_8\, V/P_{it} + \beta_9\, Leverage_{it} + \beta_{10}\, Cash_{it} + \beta_{11}\, Age_{it} + \beta_{12}\, Size_{it} + \beta_{13}\, StockReturns_{it} + \beta_{14}\, Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (B3)$$

$$Investment_{it+1} = \beta_0 + \beta_1\, NGC1\_from\_GC1_{it} + \beta_2\, NGC1\_from\_GC2_{it} + \beta_3\, GC1\_from\_NGC_{it} + \beta_4\, GC1\_from\_GC1_{it} + \beta_5\, GC1\_from\_GC2_{it} + \beta_6\, GC2\_from\_NGC_{it} + \beta_7\, GC2\_from\_GC1_{it} + \beta_8\, GC2\_from\_GC2_{it} + \beta_9\, NGC1\_from\_GC1_{it} \times Bank_{it} + \beta_{10}\, NGC1\_from\_GC2_{it} \times Bank_{it} + \beta_{11}\, GC1\_from\_NGC_{it} \times Bank_{it} + \beta_{12}\, GC1\_from\_GC1_{it} \times Bank_{it} + \beta_{13}\, GC1\_from\_GC2_{it} \times Bank_{it} + \beta_{14}\, GC2\_from\_NGC_{it} \times Bank_{it} + \beta_{15}\, GC2\_from\_GC1_{it} \times Bank_{it} + \beta_{16}\, GC2\_from\_GC2_{it} \times Bank_{it} + \beta_{17}\, Bank_{it} + \beta_{18}\, V/P_{it} + \beta_{19}\, Leverage_{it} + \beta_{20}\, Cash_{it} + \beta_{21}\, Age_{it} + \beta_{22}\, Size_{it} + \beta_{23}\, StockReturns_{it} + \beta_{24}\, Investment_{it} + \Sigma\beta_m Year + \Sigma\beta_n Firm + \varepsilon_{t+1} \quad (B4)$$

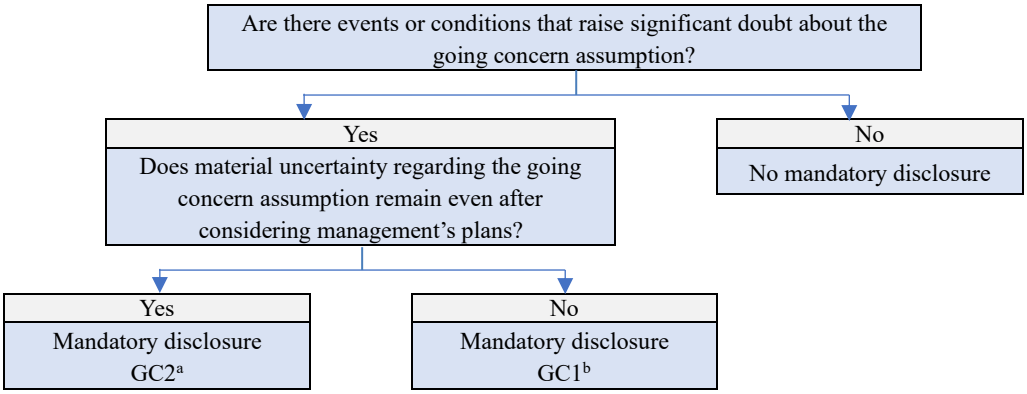
Table B2 reports the results for Equations (B1) and (B2). Panel A shows the descriptive statistics for the GC-related variables. Panel C presents the estimated results from Equation (B1). The coefficient of *GC12_from_NGC* is significantly negative across all investment variables, indicating that underinvestment occurs immediately after either GC1 or GC2 disclosure. These findings support Hypothesis 1 and are consistent with the main analysis. For the second and subsequent periods following GC information disclosure (*GC12_from_GC12*), the coefficients are negative and significant for all investment variables, suggesting that investment remains lower and underinvestment persists compared with financially distressed firm-years without GC information disclosure. However, no significant difference is observed between the first and subsequent periods following GC information disclosure (*GC12_from_GC12* vs. *GC12_from_NGC*) (untabulated). This suggests that the level of investment observed in the first year after GC information disclosure persisted in subsequent periods. The coefficient of *NGC_from_GC12* is also significantly negative, indicating that the decline in investment persists for one period after GC information disclosure. Panel C presents the estimation results for Equation (B2). The results are similar to those of Equation (B1): immediately following GC1 (GC2) disclosure, the coefficients on *GC1_from_NGC* (*GC2_from_NGC*) are negative and significant, supporting Hypothesis 1.

[Insert Table B2]

To test Hypothesis 2, we examine the interaction terms with the bank variables in Equations (B3) and (B4). In Panel D, the interaction term *GC12_from_NGC* × *Bank* is significantly positive across all investment variables, supporting Hypothesis 2. When GC1 and GC2 are included as separate variables in Panel E, the coefficients of *GC1_from_NGC* and *GC1_from_NGC* × *Bank* are largely as predicted and significant. Conversely, immediately after GC2 information disclosure, the coefficient of *GC2_from_NGC* × *Bank* is not significant. However, when *Total_Inv* is used as the dependent investment variable, adding the coefficient on *GC12_from_NGC* × *Bank* (β_{14} = 0.0240) to the significantly negative coefficient on *GC12_from_NGC* (β_6 = -0.0345) renders the difference from zero insignificant (p-value = 0.528), suggesting that a close relationship with banks (*GC12_from_NGC* × *Bank*) had some effect on investment. This tendency was also observed for *New_Inv*.

We confirmed the robustness of these results using entropy balancing and PSM (data not shown). Regarding the results of Equation (B3) and the GC1 results of Equation (B4), Hypotheses 1 and 2 are largely supported even when using entropy balancing and PSM. For GC2, the coefficient of *GC2_from_NGC* is negative and significant only for *Capex* and *Capex_RD* when using entropy balancing, and only for the investment variable *Capex* when using PSM. Although the estimated coefficients of *Capex* and *Capex_RD* are consistent with the main analysis, they are not significant for *Total_Inv* or *New_Inv*. Furthermore, the coefficient of *GC2_from_NGC* × *Bank* is not significant, indicating that the robustness of the results in Panel A supporting Hypothesis 2 can only be partially confirmed. This may be due to the small sample size of GC2, which could have been influenced by extreme values.

Figure 1. Management and Audit Reporting Framework under Japan's Two-stage GC Information Disclosure System



Note: a: Disclosed in the MD&A section and financial statement footnotes of the annual report, and also highlighted through an emphasis-of-matter paragraph in the audit report. b: Disclosed in the MD&A section of the annual report. This figure is based on Figure 2 in Krishnan et al. (2024).

Table 1. Descriptive Statistics and Investment Levels of GC Information Disclosure Firms in the Following Period

Panel A. Descriptive Statistics

	Mean	Median	S.D.	N
Total_Inv (1 period ahead)	0.0421	0.0259	0.0592	6,822
New_Inv (1 period ahead)	0.0148	0.0025	0.0558	6,822
Capex (1 period ahead)	0.0310	0.0191	0.0364	6,822
Capex_RD (1 period ahead)	0.0469	0.0293	0.0545	6,822
GC12_Pre	0.0366	0	0.1879	6,822
GC12_Y1	0.0366	0	0.1879	6,822
GC1_Pre	0.0321	0	0.1763	6,822
GC1_Y1	0.0321	0	0.1763	6,822
GC2_Pre	0.0045	0	0.0673	6,822
GC2_Y1	0.0045	0	0.0673	6,822
V/P	1.5088	1.3068	1.0347	6,822
Leverage	0.5269	0.5476	0.2177	6,822
Cash	0.2097	0.1615	0.1666	6,822
Age	2.7386	2.9042	0.8268	6,822
Size	9.9159	9.7997	1.5776	6,822
StockReturns	0.0225	-0.0543	0.4550	6,822
Total_Inv	0.0481	0.0300	0.0640	6,822
New_Inv	0.0205	0.0054	0.0598	6,822
Capex	0.0354	0.0216	0.0419	6,822
Capex_RD	0.0513	0.0330	0.0577	6,822
Bank	0.4894	0	0.4999	6,822

Panel B. Investment Levels for GC Information Disclosure Firms

		$Total\_Inv_{t+1}$	New_Inv_{t+1}	$Capex_{t+1}$	$Capex\_RD_{t+1}$
$GC12\_PRE_t = 1$	Mean	0.0505	0.0169	0.0362	0.0596
N = 250	Median	0.0304	-0.0017	0.0245	0.0359
$GC12\_Y1_t = 1$	Mean	0.0369	0.0053	0.0289	0.0502
N = 250	Median	0.0186	-0.0064	0.0174	0.0253
Total	Mean	0.0437	0.0111	0.0325	0.0549
N = 500	Median	0.0238	-0.0033	0.0207	0.0312

Panel C. Investment Levels for GC1 Information Disclosure Firms

		$Total\_Inv_{t+1}$	New_Inv_{t+1}	$Capex_{t+1}$	$Capex\_RD_{t+1}$
$GC1\_PRE_t = 1$	Mean	0.0503	0.0160	0.0363	0.0601
N = 219	Median	0.0317	-0.0021	0.0255	0.0366
$GC1\_Y1_t = 1$	Mean	0.0406	0.0078	0.0306	0.0525
N = 219	Median	0.0215	-0.0049	0.0191	0.0289
Total	Mean	0.0455	0.0119	0.0335	0.0563
N = 438	Median	0.0258	-0.0033	0.0218	0.0332

Panel D. Investment Levels for GC2 Information Disclosure Firms

		$Total\_Inv_{t+1}$	New_Inv_{t+1}	$Capex_{t+1}$	$Capex\_RD_{t+1}$
$GC2\_PRE_t = 1$	Mean	0.0548	0.0254	0.0351	0.0576
N = 31	Median	0.0184	0.0029	0.0199	0.0231
$GC2\_Y1_t = 1$	Mean	0.0134	-0.0132	0.0173	0.0360
N = 31	Median	0.0044	-0.0134	0.0132	0.0159
Total	Mean	0.0341	0.0061	0.0262	0.0468
N = 62	Median	0.0119	-0.0061	0.0149	0.0199

See Appendix A for the definitions of the variables—next period investment levels according to GC classification and year.

Table 2. Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) *Total_Inv* $_{t+1}$	1										
(2) *New_Inv*$_{t+1}$	0.9236***	1									
(3) *Capex*$_{t+1}$	0.6227***	0.4675***	1								
(4) *Capex_RD*$_{t+1}$	0.8917***	0.7904***	0.7324***	1							
(5) *GC12_Pre*	0.0277*	0.0073	0.0279*	0.0455***	1						
(6) *GC12_Y1*	-0.0170	-0.0333**	-0.0110	0.0121	-0.0380**	1					
(7) *GC1_Pre*	0.0246*	0.0035	0.0268*	0.0437***	0.9337***	-0.0355**	1				
(8) *GC1_Y1*	-0.0058	-0.0229	-0.0020	0.0182	-0.0355**	0.9337***	-0.0332**	1			
(9) *GC2_Pre*	0.0127	0.0113	0.0076	0.0125	0.3464***	-0.0132	-0.0123	-0.0123	1		
(10) *GC2_Y1*	-0.0324**	-0.0328**	-0.0255*	-0.0138	-0.0132	0.3464***	-0.0123	-0.0123	-0.0046	1	
(11) *V/P*	-0.2071***	-0.2021***	-0.1678***	-0.2172***	-0.0206	-0.0706***	-0.0199	-0.0620***	-0.0055	-0.0350**	1
(12) *Leverage*	-0.1730***	-0.2138***	0.0246*	-0.1496***	0.0060	0.0634***	0.0051	0.0520***	0.0032	0.0408***	-0.1479***
(13) *Cash*	0.2577***	0.3369***	-0.0077	0.2453***	0.0389**	0.0311*	0.0402***	0.0376**	0.0031	-0.0118	-0.2162***
(14) *InAge*	-0.1758***	-0.1845***	-0.1053***	-0.1735***	-0.0538***	-0.0275*	-0.0523***	-0.0276*	-0.0132	-0.0046	0.2044***
(15) *Size*	-0.0490***	-0.0855***	-0.0109	-0.0639***	-0.1038***	-0.1190***	-0.0943***	-0.1069***	-0.0427***	-0.0524***	0.1657***
(16) *StockReturns*	0.0451***	0.0841***	0.0217	0.0431***	-0.0219	-0.0082	-0.0257*	-0.0041	0.0061	-0.0120	-0.2686***
(17) *Total_Inv*	0.6051***	0.4852***	0.3523***	0.6210***	0.0552***	0.0096	0.0529***	0.0072	0.0157	0.0079	-0.2006***
(18) *New_Inv*	0.5367***	0.5445***	0.2146***	0.5382***	0.0438***	-0.0091	0.0404***	-0.0124	0.0166	0.0072	-0.1998***
(19) *Capex*	0.3218***	0.1281***	0.5330***	0.3707***	0.0486***	0.0060	0.0421***	0.0060	0.0253*	0.0011	-0.1388***
(20) *Capex_RD*	0.6315***	0.4924***	0.4132***	0.6852***	0.0611***	0.0287*	0.0556***	0.0278*	0.0249*	0.0073	-0.2008***
(21) *Bank*	-0.1237***	-0.1456***	-0.0979***	-0.1403***	-0.0599***	-0.0599***	-0.0502***	-0.0519***	-0.0356**	-0.0313**	0.3332***

	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(12) *Leverage*	1									
(13) *Cash*	-0.4906***	1								
(14) *InAge*	0.0704***	-0.3534***	1							
(15) *Size*	0.2708***	-0.4305***	0.4264***	1						
(16) *StockReturns*	-0.0089	0.0691***	-0.0388**	-0.0849***	1					
(17) $Total\_Inv_t$	-0.1035***	0.1706***	-0.1953***	-0.0429***	-0.0163	1				
(18) New_Inv_t	-0.1426***	0.2421***	-0.2115***	-0.0821***	0.0092	0.9329***	1			
(19) $Capex_t$	0.0726***	-0.0806***	-0.1308***	0.0071	-0.0673***	0.6536***	0.5086***	1		
(20) $Capex\_RD_t$	-0.0933***	0.1718***	-0.1929***	-0.0447***	-0.0151	0.8907***	0.7940***	0.7674***	1	
(21) *Bank*	0.0513***	-0.2885***	0.4503***	0.3030***	-0.0634***	-0.1325***	-0.1579***	-0.1021***	-0.1449***	1

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, for a two-tailed test. See Appendix A for the definitions of the variables. N = 6,822.

Table 3. Investment Behavior under GC Information Disclosure (Hypothesis 1)

Panel A. Estimation of Equation (2) (Combined GC1 and GC2)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC12_Pre	-0.0068	-0.0080*	-0.0040	-0.0038
	(0.004)	(0.004)	(0.003)	(0.004)
GC12_Y1	-0.0190***	-0.0192***	-0.0099**	-0.0123**
	(0.006)	(0.005)	(0.004)	(0.005)
V/P	-0.0054***	-0.0052***	-0.0042***	-0.0045***
	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	-0.0418***	-0.0332***	-0.0286***	-0.0323***
	(0.010)	(0.010)	(0.007)	(0.009)
Cash	0.0331*	0.0547***	0.0125	0.0117
	(0.016)	(0.016)	(0.011)	(0.015)
Age	-0.0051	-0.0034	-0.0087**	-0.0057
	(0.004)	(0.004)	(0.003)	(0.004)
Size	-0.0129***	-0.0122**	-0.0064**	-0.0130***
	(0.004)	(0.004)	(0.002)	(0.003)
StockReturns	0.0008	0.0008	0.0014	0.0010
	(0.001)	(0.001)	(0.001)	(0.001)
Total_Inv	0.0836***			
	(0.020)			
New_Inv		0.0719***		
		(0.019)		
Capex			0.0940***	
			(0.022)	
Capex_RD				0.1179***
				(0.025)
Intercept	0.2036***	0.1585***	0.1346***	0.2076***
	(0.039)	(0.040)	(0.024)	(0.030)
Firm fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Year fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.552	0.499	0.426	0.624
N	6,822	6,822	6,822	6,822

Panel B. Estimation of Equation (3) (GC1 and GC2 Separately)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC1_Pre	-0.0085*	-0.0096**	-0.0046	-0.0049
	(0.004)	(0.004)	(0.003)	(0.004)
GC1_Y1	-0.0172**	-0.0176**	-0.0092*	-0.0118*
	(0.006)	(0.006)	(0.004)	(0.006)
GC2_Pre	0.0050	0.0038	0.0005	0.0047
	(0.013)	(0.013)	(0.008)	(0.011)
GC2_Y1	-0.0329**	-0.0316**	-0.0153*	-0.0154
	(0.012)	(0.012)	(0.007)	(0.009)
V/P	-0.0055***	-0.0053***	-0.0042***	-0.0045***
	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	-0.0409***	-0.0324**	-0.0283***	-0.0318***
	(0.010)	(0.011)	(0.007)	(0.009)
Cash	0.0326*	0.0542***	0.0123	0.0114
	(0.016)	(0.016)	(0.011)	(0.015)
Age	-0.0051	-0.0034	-0.0087**	-0.0057
	(0.005)	(0.004)	(0.003)	(0.004)
Size	-0.0131***	-0.0124**	-0.0065**	-0.0132***
	(0.004)	(0.004)	(0.002)	(0.003)
StockReturns	0.0007	0.0006	0.0014	0.0010
	(0.001)	(0.001)	(0.001)	(0.001)
Total_Inv	0.0838***			
	(0.020)			
New_Inv		0.0722***		
		(0.020)		
Capex			0.0936***	
			(0.022)	
Capex_RD				0.1175***
				(0.025)
Intercept	0.2056***	0.1604***	0.1354***	0.2086***
	(0.039)	(0.040)	(0.024)	(0.030)
Firm fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Year fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.553	0.500	0.426	0.624
N	6,822	6,822	6,822	6,822

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, for a two-tailed t-test. Standard errors clustered by firm and year (Petersen 2009) are shown in parentheses. See Appendix A for the definitions of the variables.

Table 4. The Impact of Bank Relationships on Investment Behavior under GC Information Disclosure (Hypothesis 2)

Panel A. Estimation of Equation (4) (Combined GC1 and GC2)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC12_Pre	-0.0099*	-0.0111**	-0.0056	-0.0050
	(0.005)	(0.005)	(0.004)	(0.006)
GC12_Y1	-0.0257***	-0.0257***	-0.0138***	-0.0169**
	(0.006)	(0.006)	(0.004)	(0.006)
GC12_Pre × Bank	0.0085	0.0088	0.0043	0.0034
	(0.006)	(0.005)	(0.005)	(0.006)
GC12_Y1 × Bank	0.0192***	0.0187***	0.0111**	0.0132**
	(0.006)	(0.005)	(0.004)	(0.005)
Bank	0.0023	0.0025	-0.0000	-0.0001
	(0.003)	(0.003)	(0.002)	(0.002)
V/P	-0.0055***	-0.0052***	-0.0042***	-0.0045***
	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	-0.0418***	-0.0332***	-0.0286***	-0.0322***
	(0.010)	(0.010)	(0.006)	(0.009)
Cash	0.0333*	0.0549***	0.0125	0.0117
	(0.016)	(0.016)	(0.011)	(0.015)
Age	-0.0046	-0.0029	-0.0084**	-0.0053
	(0.004)	(0.004)	(0.003)	(0.004)
Size	-0.0130***	-0.0123**	-0.0065**	-0.0131***
	(0.004)	(0.004)	(0.002)	(0.003)
StockReturns	0.0008	0.0008	0.0014	0.0010
	(0.001)	(0.001)	(0.001)	(0.001)
Total_Inv	0.0822***			
	(0.020)			
New_Inv		0.0705***		
		(0.019)		
Capex			0.0927***	
			(0.022)	
Capex_RD				0.1169***
				(0.025)
Intercept	0.2026***	0.1574***	0.1345***	0.2076***
	(0.039)	(0.040)	(0.024)	(0.030)
Firm fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Year fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.553	0.500	0.426	0.624
N	6,822	6,822	6,822	6,822

Panel B. Estimation of Equation (5) (By GC1 and GC2 Separately)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC1_Pre	-0.0119*	-0.0135**	-0.0057	-0.0057
	(0.006)	(0.005)	(0.004)	(0.006)
GC1_Y1	-0.0227***	-0.0232***	-0.0131**	-0.0164**
	(0.007)	(0.007)	(0.005)	(0.007)
GC2_Pre	0.0007	0.0026	-0.0055	-0.0009
	(0.017)	(0.017)	(0.011)	(0.014)
GC2_Y1	-0.0469***	-0.0429**	-0.0198*	-0.0206
	(0.014)	(0.015)	(0.010)	(0.012)
GC1_Pre × Bank	0.0093	0.0108*	0.0029	0.0022
	(0.006)	(0.006)	(0.005)	(0.006)
GC1_Y1 × Bank	0.0156**	0.0158**	0.0108**	0.0128*
	(0.007)	(0.006)	(0.005)	(0.006)
GC2_Pre × Bank	0.0115	0.0000	0.0221	0.0202
	(0.021)	(0.020)	(0.013)	(0.016)
GC2_Y1 × Bank	0.0469**	0.0387**	0.0135	0.0159
	(0.015)	(0.015)	(0.011)	(0.013)
Bank	0.0023	0.0025	-0.0000	-0.0001
	(0.003)	(0.003)	(0.002)	(0.002)
V/P	-0.0056***	-0.0053***	-0.0043***	-0.0046***
	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	-0.0410***	-0.0323**	-0.0285***	-0.0320***
	(0.010)	(0.011)	(0.006)	(0.009)
Cash	0.0327*	0.0544***	0.0123	0.0114
	(0.016)	(0.016)	(0.011)	(0.015)
Age	-0.0045	-0.0029	-0.0083**	-0.0051
	(0.005)	(0.004)	(0.003)	(0.004)
Size	-0.0133***	-0.0126**	-0.0066**	-0.0133***
	(0.004)	(0.004)	(0.002)	(0.003)
StockReturns	0.0007	0.0006	0.0014	0.0009
	(0.001)	(0.001)	(0.001)	(0.001)
Total_Inv	0.0827***			
	(0.021)			
New_Inv		0.0710***		
		(0.020)		
Capex			0.0926***	
			(0.022)	
Capex_RD				0.1167***
				(0.025)
Intercept	0.2053***	0.1597***	0.1354***	0.2088***
	(0.038)	(0.040)	(0.023)	(0.029)
Firm fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Year fixed effects	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.553	0.500	0.426	0.624
N	6,822	6,822	6,822	6,822

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, for a two-tailed t-test. Standard errors clustered by firm and year (Petersen 2009) are shown in parentheses. See Appendix A for the definitions of the variables.

Table 5. Robustness Checks: Investment Behavior under GC Information Disclosure

Panel A. Estimation of Equation (2) (Combined GC1 and GC2: Entropy Balancing)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC12_Pre	-0.0011	-0.0022	-0.0027	-0.0008
	(0.006)	(0.006)	(0.003)	(0.005)
GC12_Y1	-0.0167**	-0.0173**	-0.0102**	-0.0109*
	(0.006)	(0.007)	(0.004)	(0.006)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F.E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.646	0.623	0.434	0.696
N	6,822	6,822	6,822	6,822

Panel B. Estimation of Equation (2) (Combined GC1 and GC2: PSM)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC12_Pre	0.0031	0.0053	-0.0021	0.0070
	(0.012)	(0.013)	(0.005)	(0.009)
GC12_Y1	-0.0213	-0.0126	-0.0131**	-0.0063
	(0.012)	(0.012)	(0.005)	(0.009)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F.E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.633	0.614	0.533	0.723
N	690	696	694	698

Panel C. Estimation of Equation (3) (By GC1 and GC2 Separately: Entropy Balancing)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC1_Pre	-0.0028	-0.0038	-0.0035	-0.0021
	(0.006)	(0.006)	(0.003)	(0.005)
GC1_Y1	-0.0153**	-0.0160**	-0.0098**	-0.0110*
	(0.006)	(0.007)	(0.004)	(0.006)
GC2_Pre	0.0121	0.0109	0.0036	0.0102
	(0.013)	(0.012)	(0.008)	(0.010)
GC2_Y1	-0.0292**	-0.0282**	-0.0134*	-0.0113
	(0.013)	(0.011)	(0.006)	(0.007)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F.E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.649	0.626	0.435	0.696
N	6,822	6,822	6,822	6,822

Panel D. Estimation of Equation (3) (GC1 and GC2 Separately: PSM)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC1_Pre	0.0042	0.0059	0.0003	0.0072
	(0.013)	(0.014)	(0.005)	(0.010)
GC1_Y1	-0.0164	-0.0079	-0.0097*	-0.0057

	(0.013)	(0.012)	(0.005)	(0.009)
GC2_Pre	-0.0012	0.0069	-0.0157	0.0044
	(0.025)	(0.031)	(0.010)	(0.016)
GC2_Y1	-0.0613	-0.0487	-0.0363***	-0.0129
	(0.036)	(0.032)	(0.010)	(0.016)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F.E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.639	0.623	0.533	0.721
N	690	696	694	698

Panel E. Estimation of Equation (4) (Combined GC1 and GC2: Entropy Balancing)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC12_Pre	-0.0008	-0.0022	-0.0030	-0.0006
	(0.006)	(0.006)	(0.004)	(0.006)
GC12_Y1	-0.0196***	-0.0205**	-0.0123**	-0.0135**
	(0.006)	(0.007)	(0.004)	(0.006)
GC12_Pre × Bank	0.0001	0.0016	0.0018	0.0004
	(0.008)	(0.007)	(0.004)	(0.006)
GC12_Y1 ×Bank	0.0092	0.0108	0.0072*	0.0085
	(0.008)	(0.008)	(0.004)	(0.006)
Bank	-0.0028	-0.0007	-0.0024	-0.0012
	(0.006)	(0.006)	(0.005)	(0.005)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F.E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.647	0.624	0.435	0.696
N	6,822	6,822	6,822	6,822

Panel F Estimation of Equation (4) (Combined GC1 and GC2: PSM)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC12_Pre	0.0092	0.0058	-0.0051	-0.0003
	(0.016)	(0.019)	(0.008)	(0.014)
GC12_Y1	-0.0194	-0.0158	-0.0170**	-0.0160
	(0.017)	(0.018)	(0.007)	(0.012)
GC12_Pre × Bank	-0.0148	-0.0006	0.0117	0.0168
	(0.019)	(0.020)	(0.013)	(0.014)
GC12_Y1 × Bank	-0.0053	0.0107	0.0133	0.0249*
	(0.021)	(0.020)	(0.014)	(0.012)
Bank	0.0264	0.0102	0.0120	-0.0078
	(0.018)	(0.016)	(0.017)	(0.012)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F.E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.630	0.611	0.532	0.722
N	690	696	694	698

Panel G Estimation of Equation (5) (Combined GC1 and GC2: Entropy Balancing)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC1_Pre	-0.0028	-0.0042	-0.0036	-0.0018
	(0.007)	(0.007)	(0.004)	(0.006)
GC1_Y1	-0.0171**	-0.0182**	-0.0121**	-0.0137*
	(0.006)	(0.007)	(0.004)	(0.006)
GC2_Pre	0.0121	0.0114	0.0007	0.0082
	(0.014)	(0.012)	(0.009)	(0.012)
GC2_Y1	-0.0397**	-0.0390**	-0.0148	-0.0132
	(0.015)	(0.013)	(0.009)	(0.010)
GC1_Pre × Bank	0.0007	0.0025	0.0012	0.0002
	(0.008)	(0.007)	(0.004)	(0.006)
GC1_Y1 × Bank	0.0054	0.0071	0.0076*	0.0089
	(0.007)	(0.007)	(0.004)	(0.005)
GC2_Pre × Bank	0.0013	-0.0004	0.0122	0.0092
	(0.017)	(0.015)	(0.009)	(0.011)
GC2_Y1 × Bank	0.0400*	0.0409*	0.0048	0.0072
	(0.021)	(0.019)	(0.012)	(0.015)
Bank	-0.0023	-0.0003	-0.0020	-0.0009
	(0.006)	(0.006)	(0.005)	(0.005)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F.E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.650	0.627	0.436	0.697
N	6,822	6,822	6,822	6,822

Panel H Estimation of Equation (5) (GC1 and GC2 Separately: PSM)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC1_Pre	0.0087	0.0059	-0.0029	-0.0005
	(0.016)	(0.021)	(0.008)	(0.014)
GC1_Y1	-0.0143	-0.0097	-0.0143*	-0.0161
	(0.016)	(0.019)	(0.007)	(0.013)
GC2_Pre	0.0122	0.0203	-0.0181	-0.0021
	(0.028)	(0.036)	(0.013)	(0.019)
GC2_Y1	-0.0717	-0.0626	-0.0357**	-0.0172
	(0.045)	(0.037)	(0.011)	(0.019)
GC1_Pre × Bank	-0.0121	-0.0003	0.0139	0.0173
	(0.019)	(0.022)	(0.014)	(0.014)
GC1_Y1 × Bank	-0.0079	0.0049	0.0176	0.0267**
	(0.020)	(0.021)	(0.015)	(0.012)
GC2_Pre × Bank	-0.0337	-0.0254	0.0043	0.0112
	(0.024)	(0.026)	(0.013)	(0.023)
GC2_Y1 × Bank	0.0316	0.0472	-0.0060	0.0031
	(0.045)	(0.027)	(0.019)	(0.018)
Bank	0.0277	0.0146	0.0155	-0.0061
	(0.018)	(0.016)	(0.016)	(0.013)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*

Firm and Year F.E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.638	0.624	0.530	0.718
N	690	696	694	698

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, for a two-tailed t-test. Standard errors clustered by firm and year (Petersen 2009) are shown in parentheses. See Appendix A for the definitions of the variables.

Table 6. Impact of Big N Audit Firms on Investment Behavior under GC Information Disclosure

Panel A. Estimation of Equation (6) (Combined GC1 and GC2)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC12_Pre	-0.0082	-0.0101	-0.0019	-0.0022
	(0.006)	(0.006)	(0.003)	(0.004)
GC12_Y1	-0.0203***	-0.0212***	-0.0121**	-0.0153**
	(0.006)	(0.006)	(0.005)	(0.007)
GC12_Pre ×Big4	0.0024	0.0035	-0.0037	-0.0028
	(0.008)	(0.008)	(0.004)	(0.005)
GC12_Y1 ×Big4	0.0022	0.0034	0.0038	0.0053
	(0.008)	(0.008)	(0.005)	(0.007)
Big4	0.0034	0.0034	0.0030	0.0041
	(0.005)	(0.005)	(0.003)	(0.004)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F. E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.552	0.499	0.426	0.624
N	6,822	6,822	6,822	6,822

Panel B. Estimation of Equation (7) (GC1 and GC2 Separately)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
GC1_Pre	-0.0074	-0.0095	0.0001	0.0004
	(0.007)	(0.007)	(0.003)	(0.004)
GC1_Y1	-0.0137*	-0.0146**	-0.0099*	-0.0126
	(0.006)	(0.006)	(0.005)	(0.007)
GC2_Pre	-0.0200	-0.0198	-0.0174	-0.0219
	(0.026)	(0.026)	(0.014)	(0.016)
GC2_Y1	-0.0590***	-0.0591***	-0.0263*	-0.0324*
	(0.015)	(0.015)	(0.013)	(0.017)
GC1_Pre × Big4	-0.0019	-0.0003	-0.0081**	-0.0089
	(0.009)	(0.009)	(0.004)	(0.005)
GC1_Y1 × Big4	-0.0062	-0.0053	0.0010	0.0012
	(0.007)	(0.007)	(0.005)	(0.006)
GC2_Pre × Big4	0.0409	0.0379	0.0308*	0.0456*
	(0.033)	(0.032)	(0.017)	(0.021)
GC2_Y1 × Big4	0.0545**	0.0582**	0.0214	0.0331
	(0.022)	(0.020)	(0.015)	(0.020)
Big4	0.0030	0.0030	0.0028	0.0037
	(0.004)	(0.005)	(0.003)	(0.004)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F. E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.553	0.500	0.427	0.625
N	6,822	6,822	6,822	6,822

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, for a two-tailed t-test. Standard errors clustered by firm and year (Petersen 2009) are shown in parentheses. See Appendix A for the definitions of the variables.

Table B1. Variable Definitions for Appendix B.

NGC_from_GC12	1 if neither GC1 nor GC2 is disclosed in the current year but GC1 or GC2 is disclosed in the previous year, and 0 otherwise.
GC12_from_GC12	1 if GC1 or GC2 is disclosed in the current year and the previous year, and 0 otherwise.
GC12_from_NGC	1 if GC1 or GC2 is disclosed in the current year but neither GC1 nor GC2 is disclosed in the previous year, and 0 otherwise.
NGC_from_GC1	1 if neither GC1 nor GC2 is disclosed in the current year but GC1 is disclosed in the previous year, and 0 otherwise.
NGC_from_GC2	1 if neither GC1 nor GC2 is disclosed in the current year but GC2 is disclosed in the previous year, and 0 otherwise.
GC1_from_NGC	1 if GC1 is disclosed in the current year but neither GC1 nor GC2 is disclosed in the previous year, and 0 otherwise.
GC1_from_GC1	1 if GC1 is disclosed in the current and the previous year, and 0 otherwise.
GC1_from_GC2	1 if GC1 is disclosed in the current year and GC2 is disclosed in the previous year, and 0 otherwise.
GC2_from_NGC	1 if GC2 is disclosed in the current year but neither GC1 nor GC2 is disclosed in the previous year, and 0 otherwise.
GC2_from_GC1	1 if GC2 is disclosed in the current year and GC1 is disclosed in the previous year, and 0 otherwise.
GC2_from_GC2	1 if GC2 is disclosed in the current and the previous year, and 0 otherwise.

Table B2. Additional Tests in Appendix B: Analysis Using All Disclosing Firms

Panel A. Descriptive Statistics

	Mean	Median	S.D.	N
NGC_from_GC1	0.0133	0	0.1146	6,460
NGC_from_GC2	0.0040	0	0.0633	6,460
GC1_from_NGC	0.0432	0	0.2033	6,460
GC1_from_GC1	0.0559	0	0.2297	6,460
GC1_from_GC2	0.0065	0	0.0804	6,460
GC2_from_NGC	0.0063	0	0.0794	6,460
GC2_from_GC1	0.0076	0	0.0868	6,460
GC2_from_GC2	0.0392	0	0.1940	6,460
NGC_from_GC12	0.0173	0	0.1305	6,460
GC12_from_NGC	0.0495	0	0.2170	6,460
GC12_from_GC12	0.1091	0	0.3118	6,460

Panel B. Estimation of Equation (B1) (Combined GC1 and GC2)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
NGC_from_GC12	-0.0210***	-0.0182**	-0.0101***	-0.0170***
	(0.006)	(0.007)	(0.003)	(0.004)
GC12_from_GC12	-0.0219***	-0.0222***	-0.0105***	-0.0145***
	(0.004)	(0.004)	(0.003)	(0.004)
GC12_from_NGC	-0.0218***	-0.0190***	-0.0112***	-0.0168***
	(0.005)	(0.005)	(0.002)	(0.003)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F. E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.513	0.472	0.411	0.615
N	6,460	6,460	6,460	6,460

Panel C. Estimation of Equation (B2) (GC1 and GC2 Separately)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
NGC_from_GC1	-0.0246***	-0.0225**	-0.0087*	-0.0169**
	(0.008)	(0.008)	(0.004)	(0.006)
NGC_from_GC2	-0.0078	-0.0018	-0.0152*	-0.0178**
	(0.015)	(0.015)	(0.008)	(0.006)
GC1_from_NGC	-0.0212***	-0.0217***	-0.0095***	-0.0137**
	(0.004)	(0.003)	(0.003)	(0.004)
GC1_from_GC1	-0.0221***	-0.0203***	-0.0111***	-0.0163***
	(0.006)	(0.006)	(0.003)	(0.003)
GC1_from_GC2	-0.0172	-0.0067	-0.0203***	-0.0354***
	(0.011)	(0.009)	(0.004)	(0.010)
GC2_from_NGC	-0.0281*	-0.0264*	-0.0163**	-0.0179*
	(0.013)	(0.013)	(0.006)	(0.008)

GC2_from_GC1	-0.0293***	-0.0237**	-0.0147***	-0.0178*
	(0.008)	(0.010)	(0.005)	(0.009)
GC2_from_GC2	-0.0202**	-0.0177*	-0.0081*	-0.0119**
	(0.009)	(0.009)	(0.004)	(0.005)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F. E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.513	0.472	0.411	0.616
N	6,460	6,460	6,460	6,460

Panel D. Estimation of Equation (B3) (Combined GC1 and GC2)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
NGC_from_GC12	-0.0263**	-0.0232**	-0.0117**	-0.0209***
	(0.009)	(0.010)	(0.005)	(0.007)
GC12_from_GC12	-0.0281***	-0.0285***	-0.0152***	-0.0199***
	(0.005)	(0.004)	(0.003)	(0.005)
GC12_from_NGC	-0.0249***	-0.0219***	-0.0139***	-0.0202***
	(0.006)	(0.006)	(0.003)	(0.003)
NGC_from_GC12 × Bank	0.0191	0.0180	0.0054	0.0144
	(0.014)	(0.014)	(0.007)	(0.010)
GC12_from_GC12 × Bank	0.0111	0.0103	0.0103***	0.0126***
	(0.006)	(0.007)	(0.003)	(0.004)
GC12_from_NGC × Bank	0.0183***	0.0187***	0.0138***	0.0159***
	(0.006)	(0.006)	(0.003)	(0.004)
Bank	-0.0011	-0.0016	0.0010	0.0005
	(0.003)	(0.003)	(0.002)	(0.002)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F. E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.514	0.472	0.412	0.616
N	6,460	6,460	6,460	6,460

Panel E. Estimation of Equation (B4) (Combined GC1 and GC2)

	[1]	[2]	[3]	[4]
	Total_Inv	*New_Inv*	*Capex*	*Capex_RD*
NGC_from_GC1	-0.0330**	-0.0302**	-0.0114	-0.0232**
	(0.011)	(0.011)	(0.007)	(0.009)
NGC_from_GC2	-0.0033	0.0017	-0.0121	-0.0134
	(0.022)	(0.022)	(0.009)	(0.008)
GC1_from_NGC	-0.0271***	-0.0279***	-0.0145***	-0.0194***
	(0.005)	(0.004)	(0.003)	(0.005)
GC1_from_GC1	-0.0262***	-0.0247***	-0.0144***	-0.0205***
	(0.007)	(0.007)	(0.003)	(0.004)
GC1_from_GC2	-0.0235	-0.0110	-0.0226***	-0.0412***
	(0.014)	(0.012)	(0.005)	(0.012)
GC2_from_NGC	-0.0345*	-0.0327*	-0.0173*	-0.0190
	(0.016)	(0.016)	(0.008)	(0.012)
GC2_from_GC1	-0.0274**	-0.0211	-0.0185***	-0.0212*

	(0.011)	(0.014)	(0.006)	(0.011)
GC2_from_GC2	-0.0219*	-0.0192*	-0.0081*	-0.0115*
	(0.010)	(0.010)	(0.004)	(0.006)
NGC_from_GC1 × Bank	0.0308**	0.0282*	0.0108	0.0243**
	(0.014)	(0.014)	(0.007)	(0.010)
NGC_from_GC2 × Bank	-0.0251	-0.0213	-0.0145	-0.0213
	(0.036)	(0.033)	(0.016)	(0.022)
GC1_from_NGC × Bank	0.0173**	0.0181***	0.0149***	0.0171***
	(0.006)	(0.005)	(0.003)	(0.005)
GC1_from_GC1 × Bank	0.0147	0.0157*	0.0130***	0.0162***
	(0.008)	(0.009)	(0.003)	(0.004)
GC1_from_GC2 × Bank	0.0324	0.0213	0.0120	0.0311
	(0.020)	(0.020)	(0.013)	(0.018)
GC2_from_NGC × Bank	0.0240	0.0231	0.0025	0.0031
	(0.022)	(0.021)	(0.011)	(0.016)
GC2_from_GC1 × Bank	-0.0198	-0.0237	0.0177	0.0137
	(0.027)	(0.029)	(0.013)	(0.015)
GC2_from_GC2 × Bank	0.0026	0.0018	-0.0039	-0.0083
	(0.014)	(0.015)	(0.006)	(0.007)
Bank	-0.0011	-0.0016	0.0011	0.0004
	(0.003)	(0.003)	(0.002)	(0.002)
Intercept and Control Var.	*Yes*	*Yes*	*Yes*	*Yes*
Firm and Year F. E.	*Yes*	*Yes*	*Yes*	*Yes*
Adj-R2	0.514	0.472	0.412	0.617
N	6,460	6,460	6,460	6,460

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, for a two-tailed t-test. Standard errors clustered by firm and year (Petersen 2009) are shown in parentheses. See Appendix A for the definitions of the variables.