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Does Recognition versus Disclosure of Pension Liabilities Affect Credit Ratings?

Evidence from Japan

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Abstract

Whether credit market participants process disclosure and recognition of pension information differently has not been fully explored. To fill this gap, this study investigates whether the change in a pension accounting standard related to the recognition rule influences firms' credit risk in Japan. Statement No. 26, *Accounting Standard for Retirement Benefits*, stipulates that firms recognize previously disclosed pension information on the balance sheet. Employing the implementation of Statement No. 26, I explore how differences between disclosed and recognized pension liabilities affect credit ratings. I find that off-balance sheet pension liabilities are associated with credit ratings prior to Statement No. 26. I also find similar relations between disclosure versus recognition of pension liabilities and credit ratings. Particularly, when pension information is highly reliable, off-balance sheet pension liabilities provide risk-relevant information, and the risk relevance of disclosed and recognized pension liabilities is statistically similar. My overall results reveal that, to the extent that accounting information is reliable, credit rating agencies fully incorporate off-balance sheet pension information into credit ratings, suggesting that mandating pension recognition does not affect firms' credit ratings.

Keywords: Recognition versus Disclosure, Pension Accounting, Credit Ratings, Reliability of Accounting Information

JEL Classification: M41, M48

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1. Introduction

Considerable previous research examines whether equity market participants process disclosed financial information differently from recognized amounts and generally finds that disclosed and recognized items have different associations with stock prices (stock returns) and equity risk (e.g., Ahmed et al., 2006; Davis-Friday et al., 1999; Dhaliwal et al., 2011; Michels, 2017; Müller et al., 2015). For example, employing subsequent events due to natural disasters, Michels (2017) revealed that initial market responses are stronger for firms that recognize losses in financial statements than for firms that disclose them in the notes, indicating that differences between disclosure and recognition have substantial impacts on equity investors' decision-making.

Some prior literature has also investigated how the differences in disclosed and recognized items impact credit market participants' perceptions of firms' risk (e.g., Bratten et al., 2013; Kusano, 2019; Sengupta and Wang, 2011). Particularly, using defined benefit (DB) pension plans, only a few studies have explored the impacts of disclosed versus recognized pension liabilities on firms' credit risk, providing mixed evidence on recognition versus disclosure of pension information (Basu and Naughton, 2020; Beaudoin et al., 2011). Basu and Naughton (2020) report that the differences between recognition and disclosure influence credit ratings. In contrast, Beaudoin et al. (2011) found no statistically significant difference between disclosed and recognized pension liabilities in terms of credit ratings. Both studies provide useful evidence on the credit risk relevance of recognized versus disclosed pension liabilities, but whether credit market participants process disclosure and recognition of pension information differently has not been fully explored.

In this research, I investigate whether financial statement users process disclosed pension liabilities in the notes similarly to recognized previously disclosed pension liabilities in financial statements when assessing firms' credit risk. Specifically, using the change in a Japanese pension accounting rule from disclosure to recognition, I explore how the differences between recognized and disclosed pension liabilities affect credit ratings.

In the U.S., when users of financial statements adjust firms' leverage by employing

pension footnote information, they must consider an additional minimum liability recognized in financial statements; however, even sophisticated market participants—credit rating agencies—fail to adjust the minimum pension liability (Basu and Naughton, 2020). This suggests that when examining recognition versus disclosure of pension liabilities using U.S. firms, a joint test must be conducted about whether financial statement users can process disclosed and recognized items differently and whether they can properly adjust an additional minimum liability in using off-balance sheet pension information. Furthermore, pension plans are classified as DB and defined contribution (DC) pension plans; many U.S. firms sponsor the latter pension plans, while only a quarter sponsor the former pension plans (Anantharaman and Chuk, 2018; Goto and Yanase, 2016). Thus, when exploring recognition versus disclosure of pension information, sample selection bias problem might be a concern.

Analyzing the Japanese context can overcome these limitations and extend this line of research. At present, Japanese firms are likely to transfer DB pension plans into DC pension plans, but many firms still sponsor DB pension plans.¹ Although DB pension plans of most Japanese firms were underfunded, their funding status was not reported on the balance sheet until Statement No. 26, *Accounting Standard for Retirement Benefits*, became effective (Accounting Standards Board of Japan [ASBJ], 2012). Some changes in pension liabilities and assets—actuarial gains and losses and prior service costs—were not immediately recognized in financial statements but were disclosed in the notes. This accounting treatment was akin to that of the U.S. Generally Accepted Accounting Principles (GAAP); however, unlike the U.S. GAAP, the Japanese GAAP did not require firms to recognize an additional minimum liability on the balance sheet. Statement No. 26 prescribes that Japanese firms recognize previously off-balance sheet items and thus

¹ In March 2013, 90.7% of the Japanese firms that issued consolidated financial statements based on Japanese accounting standards employed DB pension plans. Most DB pension plans were underfunded. In addition, their pension funding ratio—plan assets divided by retirement benefit obligations—was low. In fact, 96.8% of DB pension plans were underfunded in March 2013, and the mean (median) of pension funding ratio was 59.6% (60.7%).

report their DB pension funding status on the balance sheet. Accordingly, analyzing the Japanese institutional context allows for a better exploration of the impacts of recognized versus disclosed pension liabilities on firms' credit risk.

To address this question, I first investigate whether off-balance sheet pension liabilities can provide risk-relevant information before Statement No. 26. Since DB pension plans have substantial impacts on firms' financial risk, financial statement users can incorporate disclosed as well as recognized pension liabilities into their decision-making. However, recent research demonstrates that even sophisticated market participants, such as credit rating agencies, fail to incorporate pension information disclosed in the notes (Basu and Naughton, 2020; Beaudoin et al., 2011; Sengupta and Wang, 2011; Wang and Zhang, 2014). Thus, I examine whether credit rating agencies incorporate disclosed pension liabilities into their credit risk assessment prior to Statement No. 26. I find that they consider off- as well as on-balance sheet pension liabilities when deciding credit ratings.

Second, I explore whether credit rating agencies treat disclosed and recognized pension liabilities similarly in assessing firms' credit risk. Previous studies have investigated the effects of recognized versus disclosed pension liabilities on credit ratings and provided mixed evidence (Basu and Naughton, 2020; Beaudoin et al., 2011). Little is known about how disclosed versus recognized pension liabilities influence the credit risk assessment of firms. Using a pre- versus post-Statement No. 26 setting, I analyze how the differences between disclosed and recognized pension liabilities influence the determination of credit ratings. My analysis reveals that they process disclosed and recognized pension liabilities similarly in assessing credit risk.

Lastly, I investigate how the reliability of accounting information impacts the credit risk relevance of pension liabilities. Even though credit rating agencies are sophisticated users of financial reporting information, they might face difficulties in incorporating disclosed pension liabilities into credit ratings if pension information is less reliable. In addition, the implementation of Statement No. 26 might not increase the risk relevance of

pension liabilities due to managerial opportunism. To address the changes in pension accounting rules from disclosure to recognition, firms could opportunistically alter their actuarial assumptions and manage their reported accounting numbers (Fried and Davis-Friday, 2013; Jones, 2013). This results in an increase in business risk of auditors, and thus, they address this increased risk by expending greater effort on recognized pension amounts than on disclosed pension information (Kusano and Sakuma, 2020). Accordingly, when pension information is less reliable, recognized previously off-balance sheet pension liabilities cannot reflect information about the credit risk of firms after the adoption of Statement No. 26. I find that only when pension information is highly reliable, credit rating agencies can incorporate off-balance pension items into credit ratings.

This article makes two substantial contributions to the accounting research on recognition versus disclosure. My first contribution is to explore how recognition versus disclosure influences credit risk assessment. Many previous studies have focused on equity market participants and examined whether they process disclosed and recognized items differently in their decision-making (e.g., Aboody, 1996; Davis-Friday et al., 1999; Israeli, 2015; Kusano, 2020; Michels, 2017; Yu, 2013). However, the analysis of whether credit market participants treat disclosed financial information differently from recognized amounts is limited (e.g., Bratten et al., 2013; Kusano, 2019). In particular, few studies investigate the effects of recognized versus disclosed pension liabilities on firms' credit risk (Basu and Naughton, 2020; Beaudoin et al., 2011). Accordingly, my study complements this line of research by providing evidence on how credit rating agencies process disclosed and recognized pension information similarly in issuing credit ratings.

Second, this article extends and complements previous research on recognized versus disclosed pension liabilities by focusing on the Japanese institutional context. In the U.S., capital market participants need to adjust an additional minimum liability when using pension footnote information (Basu and Naughton, 2020). Investigating recognized versus disclosed pension liabilities in the U.S. context makes it more difficult to isolate the effects of the differences between recognized and disclosed pension information from the

disregard of the minimum pension liability. Furthermore, since only one quarter of U.S. public firms sponsor DB pension plans (Anantharaman and Chuk, 2018; Goto and Yanase, 2016), sample selection bias problem might be a concern. By focusing on the unique Japanese context, this study can provide clearer evidence on how mandating pension recognition rule impacts credit rating agencies' perceptions of firms' risk.

My study also has implications for standard setting. Accounting standard setters assume that disclosure in the notes is not a substitute for recognition in financial statements to provide useful information for market participants' decision-making (e.g., Financial Accounting Standards Board [FASB], 1984, par. 9; SFAS 87, par. 116; SFAS 158, par. B109). In fact, even sophisticated users of financial statements fail to fully understand pension footnote information due to the technical complexity of U.S. pension accounting treatments (Basu and Naughton, 2020; Beaudoin et al., 2011; Picconi, 2006; Sengupta and Wang, 2011; Wang and Zhang, 2014). By analyzing the Japanese context, in which firms need not adjust an additional minimum liability, this research reveals that credit rating agencies process disclosed and recognized items similarly. My study suggests that even if financial information is reported in the notes, sophisticated market participants can adequately incorporate off-balance sheet information into their decision-making, as long as the accounting information is highly reliable.

The remainder of this paper proceeds as follows. In Section 2, I summarize pension accounting rules in Japan and the U.S., review existing literature, and develop my hypotheses. In Section 3, I describe the research design regarding whether and how credit rating agencies process disclosed and recognized pension liabilities similarly in assessing the credit risk of firms. I summarize the samples and present the descriptive statistics for the variables in Section 4. In Section 5, I present my main findings, sensitivity analyses, and additional test. Finally, I offer the conclusions and discuss the limitations of my research in Section 6.

2. Background and Hypotheses

2.1. Pension Accounting Rules in Japan and the U.S.

In Japan, *Statement on Establishing Accounting Standard for Retirement Benefits* was issued to comprehensively prescribe the pension accounting rules in June 1998 (Business Accounting Council [BAC], 1998). This BAC Statement resembled the U.S. Statement of Financial Accounting Standards (SFAS) No. 87 (SFAS 87), *Employers' Accounting for Pensions* (FASB, 1985). Both standards did not require firms to immediately recognize certain changes in pension liabilities and assets in financial statements, such as actuarial gains and losses and prior service costs. They stipulated that firms disclose these items in the notes and gradually recognize the items as pension expenses in the following years.² Because of the delayed recognition of these items, the pension funding status of firms—the difference between retirement benefit obligations and plan assets—was not reported on the balance sheet.

However, there were some differences between the BAC Statement and SFAS 87. One important difference was the recognition of an additional minimum liability based on accumulated benefit obligations (ABO). To mitigate the omission of liabilities on the balance sheet due to the delayed recognition, SFAS 87 required firms to recognize minimum pension liabilities if ABO exceeded plan assets. Specifically, firms with underfunded ABO had to recognize additional minimum liabilities when one of the following criteria was met: (1) prepaid pension costs were recognized, (2) accrued pension costs were less than underfunded ABO, or (3) no accrued or prepaid pension costs had been recognized (SFAS 87, par. 36). Unlike SFAS 87, the BAC Statement did not require Japanese firms to recognize an additional minimum liability on the balance sheet.

Because of the delayed recognition, the pension accounting rules were technically complex and hindered users of financial statements from fully understanding the pension

² In addition to actuarial gains and losses and prior service costs, net transition liabilities were also disclosed in the notes to financial statements. The BAC Statement allowed Japanese firms to recognize net transition liabilities as expenses using a straight-line method over 15 years.

funding status of firms. In particular, under SFAS 87, capital market participants have to consider an additional minimum liability associated with ABO when adjusting firms' leverage by employing pension information disclosed in the notes (Basu and Naughton, 2020). To abolish the delayed recognition of certain pension items, the FASB issued SFAS No. 158 (SFAS 158), *Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans—an amendment of FASB Statements No. 87, 88, 106, and 132(R)*, in September 2006 (FASB, 2006). Likewise, in May 2012, the ASBJ issued Statement No. 26 to repeal the delayed recognition of pension liabilities.³ Under Statement No. 26 and SFAS 158, the pension funding status of firms is reported on the balance sheet; thus, both existing pension accounting standards are very similar.

Firms with DB pension plans must immediately recognize the differences between retirement benefit obligations and plan assets as pension liabilities (pension assets) on the balance sheet. Simultaneously, they also report the previously disclosed pension liabilities as one of the components of accumulated other comprehensive income. Through the adjustment of the accumulated other comprehensive income, firms recognize previously off-balance sheet pension liabilities—actuarial gains and losses and prior service costs—aggregately with previously on-balance sheet pension liabilities.

Overall, under the BAC Statement, Japanese firms reported actuarial gains and losses and prior service costs in the notes to financial statements; however, unlike U.S. firms, Japanese firms did not recognize an additional minimum liability on the balance sheet. After the implementation of Statement No. 26, Japanese firms recognize previously disclosed pension liabilities and report their pension funding status on the balance sheet. Thus, Japanese pension accounting rules provide a conducive environment to explore how the differences between disclosure and recognition of pension liabilities affect users of financial statements in making their decisions.

³ Japanese firms have to prepare both consolidated and unconsolidated (parent-only) financial statements. The ASBJ repealed the delayed recognition of certain pension items for consolidated financial statements, but not for unconsolidated financial statements, since the immediate recognition of these items in financial statements influences distributable net income under Japanese company law.

2.2. Literature Review

Many previous studies have investigated whether equity market participants fully understand and consider disclosed pension liabilities in assessing firms' stock prices (stock returns) and equity risk (Cocco, 2014; Glaum, 2009). The literature reports that off-balance sheet pension information is value-relevant (e.g., Barth, 1991; Dhaliwal, 1986; Gopalakrishnan, 1994; Landsman, 1986). However, recent research has provided evidence that financial statement users fail to fully incorporate disclosed pension information into their decision-making (e.g., Franzoni and Marín, 2006; Goto and Yanase, 2016; Landsman and Ohlson, 1990; Nakajima and Sasaki, 2010). In fact, even sophisticated equity market participants, such as analysts, find it difficult to understand pension footnote information (Picconi, 2006). These results suggest that users of financial statements might process financial information disclosed in the notes differently from recognized amounts in financial statements.

Previous studies have also explored how disclosed versus recognized items influence the decision-making of equity market participants (e.g., Aboody, 1996; Davis-Friday et al., 1999, 2004; Dhaliwal et al., 2011; Israeli, 2015; Kusano, 2020; Michels, 2017; Müller et al., 2015). Specifically, research has investigated whether disclosed and recognized pension liabilities provide different value-relevant information (Beaudoin et al., 2011; Yu, 2013). For instance, Yu (2013) demonstrated that the sophistication of financial statement users influences their different treatments between recognized and disclosed pension liabilities. For firms with less sophisticated market participants, disclosed and recognized pension liabilities convey different value-relevant information, but for firms with more sophisticated market participants, there is no statistically different association between disclosed versus recognized pension liabilities and stock prices.

Currently, debt also represents a key source of financing for firms (Graham and Harvey, 2001). Earlier experimental and survey research has investigated whether credit market participants fully understand financial information disclosed in the notes and

whether they process disclosed and recognized items differently (e.g., Harper et al., 1987, 1991; Sami and Schwartz, 1992). Archival studies have also explored the effects of the presentation format of financial information on the credit risk assessment of firms (e.g., Bratten et al., 2013; Kusano, 2019; Sengupta and Wang, 2011).

Previous research reports that off-balance sheet pension liabilities provide risk-relevant information to credit market participants, including credit rating agencies and bond investors (e.g., Cardinale, 2007; Hann et al., 2007; Kraft, 2015; Maher, 1987; Martin and Henderson, 1983). For instance, Maher (1987) suggested that credit rating agencies adequately incorporate pension liabilities disclosed in the notes when determining credit ratings. However, recent studies have revealed that even credit rating agencies—sophisticated financial statement users—cannot fully understand disclosed pension information in assessing credit risk (Basu and Naughton, 2020; Beaudoin et al., 2011; Sengupta and Wang, 2011; Wang and Zhang, 2014). For example, Wang and Zhang (2014) reported that even after controlling for credit ratings, bonds issued by firms with large underfunded DB pension plans have higher default probabilities and lower recovery rates, which suggests that credit rating agencies fail to incorporate off-balance sheet pension information into firms' credit ratings.

Although previous literature implies that credit rating agencies treat disclosed and recognized pension liabilities differently in assessing the credit risk of firms, whether they treat disclosure and recognition differently remains uncertain. In fact, previous research provides mixed evidence on whether disclosed and recognized pension liabilities have statistically similar associations with credit ratings (Basu and Naughton, 2020; Beaudoin et al., 2011). Basu and Naughton (2020) demonstrate that credit rating agencies cannot appropriately adjust an additional minimum liability when amending firms' leverage prior to SFAS 158. After the adoption of SFAS 158, recognizing previously disclosed pension liabilities decreases leverage and upgrades credit ratings, suggesting that recognition versus disclosure significantly influences credit ratings. In contrast, Beaudoin et al. (2011) reported that disclosed pension liabilities fail to convey risk-relevant information in the

pre-SFAS 158 period. They also employed a pre- versus post-SFAS 158 setting and reported that there is no statistically different relation between disclosed versus recognized pension liabilities and credit ratings. Their results suggest that recognizing pension liabilities does not increase the credit risk relevance of pension liabilities.

These previous studies provide valuable evidence on the associations between recognized versus disclosed pension liabilities and credit ratings. However, these studies have several critical research issues. As demonstrated by Basu and Naughton (2020), credit rating agencies fail to consider an additional minimum liability when using off-balance sheet pension information. To examine recognition versus disclosure of pension liabilities using the pre- versus post-SFAS 158 setting, a joint hypothesis must be tested to determine whether differences in the presentation format of pension information influence the decision-making of financial statement users and whether these users can adequately adjust an additional minimum liability. In addition, only one quarter of U.S. public firms sponsor DB pension plans (Anantharaman and Chuk, 2018; Goto and Yanase, 2016). The sample selection bias problem related to DB pension plans can be of concern when analyzing recognized versus disclosed pension liabilities in the U.S. Furthermore, Beaudoin et al. (2011) used only one year before and after SFAS 158 adoption, respectively, to examine recognition versus disclosure of pension liabilities; thus, they fail to consider the possibility of a learning process through which credit rating agencies alter their risk assessment over the period subsequent to SFAS 158.

Analyzing the Japanese context can overcome these research problems. Unlike SFAS 87, the BAC Statement did not require Japanese firms to recognize an additional minimum liability associated with ABO. Accordingly, by focusing on the presentation format of pension information, I can more thoroughly examine the credit risk relevance of disclosed versus recognized pension liabilities. Furthermore, since many Japanese firms still employ DB pension plans, I can mitigate concerns about sample selection bias problem. I can also analyze the impacts of recognized versus disclosed pension information on credit ratings over the medium term because Statement No. 26 is effective for fiscal

years ending in or after March 2014. Thus, analyzing the Japanese institutional context has several distinct advantages in terms of how recognized versus disclosed pension liabilities impact the credit risk assessment of firms, which can extend this line of research.

2.3. Hypothesis Development

Firms with DB pension plans have obligations to pay certain amounts of retirement benefits to their employees in the future. DB pension plans can have substantial impacts on firms' business risk, including financial risk. Regardless of the presentation format of pension information, financial statement users incorporate pension liabilities disclosed in the notes, as well as recognized pension liabilities in financial statements, into their decision-making (Cocco, 2014; Glaum, 2009). In fact, previous studies have revealed that financial statement users employ on- and off-balance sheet pension information in their perceptions of firms' value and risks (e.g., Barth, 1991; Barth et al., 1992; Dhaliwal, 1986; Drake et al., 2019; Kraft, 2015; Landsman, 1986).

However, recent research has demonstrated that capital market participants fail to fully understand pension disclosures in the notes (e.g., Franzoni and Marín, 2006; Goto and Yanase, 2016; Landsman and Ohlson, 1990; Nakajima and Sasaki, 2010; Picconi, 2006). Particularly, even sophisticated financial statement users—credit rating agencies—find it difficult to incorporate off-balance sheet pension information into credit ratings (Basu and Naughton, 2020; Beaudoin et al., 2011; Sengupta and Wang, 2011; Wang and Zhang, 2014). For example, Sengupta and Wang (2011) reported that unlike on-balance sheet pension liabilities, off-balance sheet pension liabilities are not related to credit ratings in the pre-SFAS 158 period. Furthermore, Basu and Naughton (2020) have revealed that when amending firms' leverage, credit rating agencies fail to adequately adjust off-balance sheet pension information due to an additional minimum pension liability before the adoption of SFAS 158.

Unlike the U.S. GAAP (i.e., SFAS 87), the Japanese pension accounting rule—the BAC Statement—did not require Japanese firms to report an additional minimum

liability in their financial statements. In the Japanese context, I predict that sophisticated capital market participants employ pension footnote information and adequately adjust firms' leverage to assess their risk. Consequently, using credit rating agencies as representatives of sophisticated financial statement users, I investigate whether they fully understand and consider disclosed pension information in evaluating the credit risk of firms. This leads to the following hypothesis:

Hypothesis 1: Off-balance sheet pension liabilities prior to Statement No. 26 are associated with credit ratings.

Even though disclosed pension liabilities provide useful information about the credit risk of firms, we do not know how disclosure versus recognition of pension information influences credit risk assessment. In fact, previous research has provided mixed evidence on the associations between disclosure versus recognition of pension liabilities and credit ratings (Basu and Naughton, 2020; Beaudoin et al., 2011).

For instance, Basu and Naughton (2020) have reported that the presentation format of pension information between recognition and disclosure significantly influences credit risk assessment. In contrast, Beaudoin et al. (2011) stated that credit rating agencies treat disclosure and recognition of pension liabilities similarly when determining credit ratings. Hence, little is known about whether financial statement users employ disclosed and recognized pension liabilities differently in their perceptions of firms' credit risk.

The BAC Statement and SFAS 87 had similar pension accounting rules, but there were some differences between them. In particular, the Japanese GAAP did not require firms to recognize an additional minimum liability that credit rating agencies could not treat appropriately in the U.S. In Japan, mandating pension recognition will not influence credit risk assessment when credit rating agencies incorporate off-balance sheet pension information into credit ratings. Employing the implementation of Statement No. 26, I investigate whether they treat disclosed pension items similarly to recognized previously off-balance sheet pension items in assessing the credit risk of firms. Accordingly, I

construct the following hypothesis:

Hypothesis 2: Disclosed and recognized pension liabilities are similarly associated with credit ratings.

The reliability of accounting information might influence the determination of credit ratings. The usefulness of accounting information is a joint effect of relevance and reliability. Thus, users of financial statements might put less weight on financial reporting information when it is less reliable. For instance, Ayres (2016) demonstrated that level three fair value disclosures, which are the highest level of information risk and the most difficult to verify, negatively influence credit ratings.

Previous studies have demonstrated that firms opportunistically manage reported accounting numbers by employing actuarial assumptions (Cocco, 2014; Glaum, 2009), which leads to a decrease in the reliability of accounting information. If footnote information is less reliable, even sophisticated financial statement users, including credit rating agencies, might find it difficult to understand and employ disclosed financial information when making their decisions. For example, Kusano (2018) suggested that credit rating agencies fail to incorporate into credit ratings operating lease information disclosed in the notes when it is less reliable. Thus, prior to Statement No. 26, only when pension information was highly reliable, credit rating agencies would fully understand and consider pension disclosures in evaluating the credit risk of firms.

It is uncertain whether different treatments between disclosure and recognition can influence the reliability of accounting information. Changes in recognition rules, specifically recognizing fair values in financial statements, can lower the reliability of accounting information because firms can employ their discretion in measuring fair value (Holthausen and Watts, 2001). In fact, when pension accounting standards change from disclosure to recognition, firms are more likely to conduct balance sheet management using pension assumptions (Fried and Davis-Friday, 2013; Jones, 2013). In contrast, mandating the recognition of financial information can heighten the reliability of

accounting information since firm managers and auditors scrutinize recognized amounts more relative to footnote information (e.g., Schipper, 2007). Particularly, Kusano and Sakuma (2020) find that auditors expend greater effort for recognized previously off-balance sheet pension liabilities than for disclosed pension liabilities in response to higher auditors' business risk.

Statement No. 26 abolishes the delayed recognition and requires Japanese firms to report their pension funding status on the balance sheet. Since most Japanese firms have underfunded pension plans, recognizing previously off-balance sheet pension liabilities would influence Japanese firms. Specifically, Statement No. 26 would substantially and negatively influence firms with a large pension plan deficit. They have greater incentives to manage reported accounting numbers to avoid the negative impacts (Li and Klumpes, 2013). However, the management of accounting numbers heightens auditors' business risk, and auditors can thus address their increased business risk by adding their effort for recognized amounts relative to disclosed financial information (Kusano and Sakuma, 2020). Accordingly, even when firms have a large pension plan deficit, the adoption of Statement No. 26 might not affect the reliability of accounting information. Collectively, irrespective of firms' pension funding status, credit rating agencies might process disclosed and recognized pension liabilities similarly in their perceptions of credit risk.

By employing the pension funding status of firms to measure accounting information reliability, I construct the following hypotheses to investigate how the reliability of accounting information influences the credit risk relevance of pension information:

Hypothesis 3a: When pension information is highly reliable, off-balance sheet pension liabilities prior to Statement No. 26 are associated with credit ratings.

Hypothesis 3b: The reliability of accounting information does not influence the relations between disclosed versus recognized pension liabilities and credit ratings.

3. Research Model

I investigate whether and how differences between disclosed and recognized pension

information influences credit ratings. Using the pre- versus post-Statement No. 26 setting, I estimate the following regression model to test my hypotheses:

$$\begin{aligned}
 Rating_{it+1} = & \alpha_0 + \alpha_1 ONPL_{it} + \alpha_2 OFFPL_{it} + \alpha_3 Overfund_{it} + \alpha_4 Debt_{it} \\
 & + \alpha_5 Size_{it} + \alpha_6 ROA_{it} + \alpha_7 Std_Ret_{it} + \alpha_8 MTB_{it} \\
 & + \sum Industry\ Dummy + \sum Year\ Dummy + \epsilon
 \end{aligned} \tag{1}$$

where *Rating* is an issuer credit rating that Rating and Investment Information Inc. (R&I) initially issues or amends for fiscal year t+1. Based on previous literature (e.g., Kusano, 2019), the credit ratings are assigned to numerical rankings from 1 (AAA) to 21 (D): AAA is the highest category and D is the lowest category. *ONPL* and *OFFPL*, which are the primary independent variables in this research, are on- and off-balance sheet pension liabilities divided by the book value of equity at the end of fiscal year t, respectively.⁴ The Appendix presents the detailed variable definitions employed in this study. By dividing the sample into pre- and post-Statement No. 26 periods, model (1) is estimated using ordinary least squares (OLS) regression with robust standard errors clustered by firm.^{5, 6}

Hypothesis 1 predicts that disclosed pension liabilities provide risk-relevant information to credit rating agencies before Statement No. 26. Since firms that have more off-balance sheet pension liabilities are predicted to have higher credit risk, a larger *OFFPL* results in a higher *Rating*. Thus, I predict that the *OFFPL* coefficient will be positive prior to Statement No. 26. In addition, like off-balance sheet pension liabilities, firms that have more on-balance sheet pension liabilities are predicted to have greater

⁴ After Statement No. 26 is effective, previously on- and off-balance sheet pension liabilities are recognized aggregately by adjusting accumulated other comprehensive income after the adjustment for tax effects. To make *OFFPL* consistent between before and after Statement No. 26 adoption, this research employs *OFFPL* before the adjustment for tax effects. Replacing them with *OFFPL* after the adjustment for tax effects does not alter my inferences (unreported table).

⁵ I partition my sample into before and after Statement No. 26 adoption to test my hypotheses because I am concerned about multicollinearity when employing interaction terms in the regression model that includes both periods simultaneously. In fact, I investigate the effects of recognized versus disclosed pension liabilities on credit ratings using the interaction terms, and the variance inflation factor (VIF) values on some interaction terms are greater than 10. Using the interaction terms does not change my main results (unreported table).

⁶ Since *Rating* is a categorical variable, employing ordered logit or probit might be appropriate for estimating my regression model. Therefore, I also use ordered logit regression to test my hypotheses. Unreported results do not alter my inferences estimated using OLS regression.

credit risk. Accordingly, the *ONPL* coefficient is also predicted to be positive.

Hypothesis 2 examines whether credit rating agencies treat disclosed and recognized pension liabilities similarly in determining credit ratings. Even though pension information is disclosed in the notes, credit rating agencies can fully understand and consider pension disclosures in assessing the credit risk of firms; thus, mandating recognition rule will not influence their risk assessment. I estimate regression model (1) in the periods prior and subsequent to Statement No. 26 simultaneously and use the Wald test of equality between the *OFFPL* coefficients in both periods. I predict that there is no statistically significant difference between the *OFFPL* coefficients before and after Statement No. 26 adoption.

Hypothesis 3 investigates how reliable accounting information affects the risk relevance of pension information. Firms opportunistically manage reported accounting numbers by employing actuarial assumptions (Cocco, 2014; Glaum, 2009). Specifically, firms with a large pension plan deficit are more likely to manage accounting numbers (Li and Klumpes, 2013). However, auditors respond to their higher business risk by scrutinizing recognized pension liabilities more closely than disclosed pension liabilities (Kusano and Sakuma, 2020). I use firms' pension plan deficits as a measure of the reliability of accounting information and examine how these deficits influence the risk relevance of pension liabilities.⁷ I predict that only when firms have a small pension plan deficit, the *OFFPL* coefficient will be positive prior to Statement No. 26. I also predict that regardless of firms' pension plan deficits, the *OFFPL* coefficients before and after Statement No. 26 adoption are statistically similar.

I include control variables to test my hypotheses. First, to control for firms' pension funding status, I include an overfunded pension plan dummy (*Overfund*) as a control

⁷ Following previous research (e.g., Francis and Reiter, 1987; Kusano and Sakuma, 2020; Rauh, 2006), I assume that firms have a large pension plan deficit if the ratio of pension plan deficit—plan assets minus retirement benefit obligations divided by retirement benefit obligations—is below the median of the sample by year; otherwise firms have a small pension plan deficit. I also estimate the ratio of pension plan deficit using all firms with a fiscal year end in March and divide my sample based on the median of this ratio by year. The results do not change my main inferences (unreported table).

variable. Previous research has indicated that credit rating agencies process overfunded and underfunded pension plans differently when determining credit ratings (e.g., Carroll and Niehaus, 1998; Maher, 1987). I predict that the *Overfund* coefficient will be negative. Previous research has also indicated that leverage, firm size, profitability, business risk, and growth opportunity are correlated with credit ratings (e.g., Ashbaugh-Skaife et al., 2006; Bhojraj and Sengupta, 2003; Jiang, 2008; Kraft, 2015; Kusano, 2019). Accordingly, I use leverage (*Debt*), firm size (*Size*), profitability (*ROA*), business risk (*Std_Ret*), and growth opportunity (*MTB*) as control variables.⁸ When firms have higher leverage and business risk, they are predicted to have higher credit risk and lower credit ratings. The *Debt* and *Std_Ret* coefficients will be positive. In contrast, when firms are larger, more profitable, and growing, they are less likely to be financially constrained and are thus likely to have lower credit risk. The *Size*, *ROA*, and *MTB* coefficients will be negative. I also include into regression model (1) industry and year fixed effects to control for industry characteristics and changes in macroeconomic conditions.

4. Sample and Descriptive Statistics

To test my hypotheses, I obtain data on issuer credit ratings from the R&I database. I also collect data regarding financial statements and stock prices from the *Nikkei NEEDS Financial QUEST* database. Statement No. 26 is applied for fiscal years ending on or after March 31, 2014. I use six years of financial statement data both before Statement No. 26 adoption (2008–2013) and after Statement No. 26 adoption (2014–2019) to examine the effects of recognized versus disclosed pension liabilities on credit ratings. I match financial statement and stock price data for fiscal year t with credit rating data for fiscal year $t+1$.⁹

My initial sample consists of 3,685 firm-year observations, which includes Japanese listed firms that prepare consolidated financial statements using Japanese GAAP and for

⁸ I also use the standard deviation of ROA in the past 5 years as a measure of business risk. Unreported results are consistent with my main findings.

⁹ If a firm's issuer credit ratings are issued or amended several times during the fiscal year, my analyses employ the first issued or amended credit rating.

which R&I issues or amends the issuer credit ratings from April 2008 to March 2020. The sample does not comprise financial firms (i.e., banks, securities firms, and insurance) nor firms with a fiscal-year end other than March 31.¹⁰ I exclude one observation that changes the accounting period during the fiscal year. I also exclude 85 firm-year observations that do not sponsor DB pension plans.¹¹ In addition, I delete 26 firm-year observations with missing values to test my hypotheses. The necessary data are available for a sample of 3,573 firm-year observations.¹² To mitigate the impacts of outliers, I trim continuous independent variables by year at the top and bottom 1%. I obtain my final sample of 3,060 firm-year observations, which consists of 1,623 and 1,437 firm-year observations before and after Statement No. 26 adoption, respectively.

Table 1 reports descriptive statistics for the variables to estimate regression model (1). Panel A of Table 1 presents them for all firms of this research. This table reveals that the mean and median of *Rating* are 6.5271 and 7.0000, which corresponds to from A to A-. Panel B of Table 1 presents descriptive statistics for the variables by splitting between before and after Statement No. 26 adoption. This table reveals that the mean and median differences in *Rating* are insignificant, which suggests that the implementation of Statement No. 26 does not impact the credit risk assessment by credit rating agencies. Besides, the mean (median) differences in *ONPL* and *OFFPL*, -0.0275 (-0.0190) and -0.0339 (-0.0216), are negative and statistically different at the 1% level, which indicates that the amounts of pension liabilities are smaller in the period subsequent to Statement No. 26. Furthermore, this table reveals that 1.4% (13.9%) of firms are overfunded before (after) the adoption of Statement No. 26 and that the mean difference in *Overfund* is statistically significant. The result suggests that mandating pension recognition leads to alter firms' pension funding status.

¹⁰ Because most Japanese public firms end their fiscal year on March 31, I test my hypotheses using Japanese firms with a fiscal-year end of March 31.

¹¹ I also include firms without DB pension plans and retest Hypotheses 1 and 2. The results (untabulated) do not change the inferences from my main analyses.

¹² My sample of firms does not have negative total assets nor a negative book value of equity.

Table 2 reports the correlation matrix for the variables to estimate the regression model. Spearman (Pearson) correlations are shown above (below) the diagonal. In both correlation analyses, *ONPL* and *OFFPL* have significantly positive associations with *Rating*. The results suggest that on- and off-balance sheet pension liabilities provide risk-relevant information to credit rating agencies. Both correlation analyses also demonstrate that other control variables except for *Overfund* are predictably related to *Rating*. Correlations between my independent variables are not too high, indicating that multicollinearity is not a concern.¹³

5. Results

5.1. Main Results

First, I test Hypotheses 1 and 2 by investigating whether a credit rating agency fully understands and considers pension disclosures in the notes and whether it processes disclosed and recognized pension liabilities similarly in assessing the credit risk of firms. Table 3 reports the results of the estimation.

Using a sample of all firms with DB pension plans, I analyze whether off-balance sheet pension liabilities convey risk-relevant information prior to Statement No. 26. Column (1) presents that, as expected, the *ONPL* coefficient is positively statistically significant. In addition, consistent with my prediction, the *OFFPL* coefficient, 3.5323, is statistically significant at the 1% level. These results indicate that on- and off-balance sheet pension liabilities have positive associations with credit ratings, which suggests that credit rating agencies incorporate disclosed as well as recognized pension liabilities into credit risk assessment. Accordingly, the evidence supports Hypothesis 1.

Statement No. 26 abolished the delayed recognition and required Japanese firms to report their pension funding status on the balance sheet. To test Hypothesis 2, I investigate how recognition versus disclosure of pension liabilities influences credit risk assessment.

¹³ When dividing the sample period between before and after Statement No. 26 adoption, the VIF values are below 10; thus, multicollinearity is not a concern in my main tests.

By simultaneously estimating regression model (1) in the periods prior and subsequent to Statement No. 26, I analyze whether the *OFFPL* coefficient in the period prior to Statement No. 26 is not substantially different from the *OFFPL* coefficient in the period subsequent to Statement No. 26. In column (2), the Wald test reveals no statistically significant difference between the *OFFPL* coefficients in both periods, suggesting that credit ratings agencies employ disclosed and recognized pension liabilities similarly in issuing credit ratings. The evidence is therefore consistent with Hypothesis 2.

As shown in Panel B of Table 1, firms with overfunded pension plans increase after Statement No. 26 is effective. Since the relations between overfunded pension plans and credit ratings are weaker than the relations between underfunded pension plans and credit ratings (Carroll and Niehaus, 1998; Maher, 1987), it might be difficult to find the associations between pension liabilities and credit ratings after the implementation of Statement No. 26. To mitigate the impacts of overfunded pension plans, I also retest Hypotheses 1 and 2 using only firms with underfunded DB pension plans. Column (3) presents that the *OFFPL* coefficient is statistically significant at the 1% level before the adoption of Statement No. 26, but Column (4) presents that the *OFFPL* coefficient is not statistically significant after the adoption of Statement No. 26. As shown in Column (4), the Wald test reveals that the *OFFPL* coefficients before and after Statement No. 26 adoption are statistically similar. These results also support Hypotheses 1 and 2, but the associations between pension liabilities and credit ratings are still insignificant after Statement No. 26 is effective.

Next, by employing pension funding status as a measure of the reliability of accounting information, I investigate how the reliability of accounting information affects the credit relevance of pension liabilities to test Hypothesis 3. Table 4 reports the results for my inferences.¹⁴ Whereas Columns (1) and (2) show the results when firms have a small pension plan deficit, Columns (3) and (4) show the results when firms have a large

¹⁴ For brevity, I report the results for a sample of all firms. I also test Hypothesis 3 using only firms with underfunded DB pension plans. Unreported results are similar to my main findings.

pension plan deficit.

Column (1) presents that, consistent with my prediction, the *OFFPL* coefficient is positively statistically significant at the 1% level, which indicates that off-balance sheet pension liabilities are related to credit ratings before Statement No. 26. In Column (2), the *ONPL* and *OFFPL* coefficients are positive and statistically significant at the 5% level after the implementation of Statement No. 26. When firms have a small pension plan deficit, recognized previously off-balance sheet pension liabilities are positively associated with credit ratings in the post-Statement No. 26 period. Contrariwise, Columns (3) and (4) report that the *OFFPL* coefficients are insignificant. Unlike firms with a small pension plan deficit, for firms with a large pension plan deficit, off-balance sheet pension liabilities are not associated with credit ratings prior to Statement No. 26. The results suggest that credit rating agencies find it difficult to understand and use off-balance sheet pension items when pension disclosures are less reliable. The overall results suggest that reliable accounting information is an important factor to the risk relevance of off-balance sheet pension information. This evidence supports Hypothesis 3a.

In addition, I investigate whether the reliability of accounting information influences the relations between disclosed versus recognized pension liabilities and credit ratings. In Column (2), the Wald test reveals that the *OFFPL* coefficients before and after Statement No. 26 adoption do not substantially differ. This finding suggests that for firms with a small pension plan deficit, credit rating agencies assess the credit risk of firms by fully understanding off-balance sheet pension information and treating disclosed and recognized pension liabilities similarly. When firms have a large pension plan deficit, the Wald test also reveals that there is no statistically significant difference between the *OFFPL* coefficients before and after Statement No. 26 adoption, as shown in Column (4). This result suggests that mandating recognition rule does not increase the risk relevance of pension information, and thus, credit rating agencies treat disclosed and recognized pension liabilities similarly even when firms have a large pension plan deficit. Collectively, my evidence is consistent with Hypothesis 3b.

5.2. Discussion of the Results

By employing the pre- versus post-Statement No. 26 setting, I investigate how recognized versus disclosed pension liabilities influence credit rating agencies in determining credit ratings. My findings suggest that off-balance sheet pension liabilities provide risk-relevant information to credit rating agencies prior to Statement No. 26. In addition, credit rating agencies treat disclosed pension liabilities similarly to recognized previously disclosed pension liabilities in assessing the credit risk of firms. However, only for firms with a small pension plan deficit, off-balance sheet pension items are risk relevant. Regardless of firms' pension plan deficits, the risk relevance of disclosed versus recognized pension liabilities is statistically similar. These results suggest that reliable accounting information is a crucial factor for credit rating agencies to reflect pension information in the credit risk assessment of firms.

My results are substantially different from the results reported by Basu and Naughton (2020) and Beaudoin et al. (2011). First, Beaudoin et al. (2011) reported that credit rating agencies process disclosed and recognized pension liabilities similarly but fail to consider off-balance sheet pension items in determining credit ratings. Their results are similar to my results only for firms with a large pension plan deficit. However, when firms have a small pension plan deficit, my research demonstrates that credit rating agencies fully incorporate pension footnote information into credit risk assessment. Unlike Beaudoin et al. (2011), my study reveals that reliable accounting information is mandatory for providing risk-relevant information to credit rating agencies. Further, Basu and Naughton (2020) demonstrate that recognition versus disclosure of pension liabilities has substantial impacts on credit rating agencies. However, my study finds no statistically significant difference between recognized versus disclosed pension liabilities and credit ratings, which suggests that the change in pension accounting standards from disclosure to recognition does not influence credit rating agencies.

Thus, my study produces different results compared to previous research, primarily

due to the difference in pension accounting rules when the delayed recognition was required. In the U.S., recognizing an additional minimum liability on the balance sheet was compulsory if ABO exceeded plan assets. Credit rating agencies found it difficult to consider the minimum pension liability when determining credit ratings (Basu and Naughton, 2020). In contrast, in Japan, credit rating agencies can adequately incorporate disclosed pension liabilities into credit ratings because they need not adjust an additional minimum liability when using off-balance sheet pension information. Accordingly, the presentation format of pension information does not influence credit rating agencies in Japan. My results reveal that, to the extent that accounting information is highly reliable, sophisticated market participants fully understand off-balance sheet pension information and process disclosed pension liabilities similarly to recognized previously disclosed pension liabilities.

5.3. Sensitivity Analyses

Thus far, my findings reveal that recognized and disclosed pension liabilities convey similar risk-relevant information. However, the risk relevance of pension liabilities varies with the reliability of the accounting information. In this subsection, I conduct several sensitivity analyses to determine whether my inferences are robust.

My first analysis is to investigate the sensitivity of credit rating classification. Following previous literature (e.g., Ashbaugh-Skaife et al., 2006), I reassign the credit ratings to numerical rankings from 1 (AAA) to 7 (CCC or lower rating category) and retest Hypotheses 1–3. Unreported results indicate that credit rating agencies consider pension footnote information prior to Statement No. 26. In addition, irrespective of firms' pension plan deficits, they treat disclosed and recognized pension liabilities similarly in their assessment of credit risk of firms. These results are qualitatively similar to my main findings.

My second sensitivity analysis is to reinvestigate Hypotheses 1–2 by extending my sample period prior to Statement No. 26. The BAC prescribed the comprehensive pension

accounting rules in June 1998, and full-fledged data on pension liabilities are available since March 2001. Thus, I start my sample period in 2001 to examine the risk relevance of pension liabilities. Table 5 shows the results of my analyses.

Column (1) reports the results for the full period (2001–2013) before Statement No. 26. The *OFFPL* coefficient, 1.6181, is statistically significant, indicating that disclosed pension liabilities provide risk-relevant information to credit rating agencies. In addition, I examine disclosure versus recognition of pension liabilities using the pre- versus post-Statement No. 26 setting. The Wald test reveals no statistically significant difference between the *OFFPL* coefficients before and after Statement No. 26 adoption. Thus, disclosed and recognized pension liabilities convey similar risk-relevant information. These findings are consistent with my main results.

There were several minor revisions of accounting rules for retirement benefits during the pre-Statement No. 26 period.¹⁵ To investigate the sensitivity of pension accounting rule changes during this period, I also divide the pre-Statement No. 26 period into three periods (i.e., 2001–2005, 2006–2009, and 2010–2013), as shown in Columns (2)–(4). My analyses suggest that on- and off-balance sheet pension liabilities convey risk-relevant information. In addition, the Wald tests suggest that credit rating agencies treat disclosed pension liabilities similarly to recognized previously disclosed pension liabilities. These results are also consistent with my main findings.

Finally, to retest Hypothesis 3, I investigate how the discount rates of retirement benefit obligations influence the associations between recognized versus disclosed pension

¹⁵ When the BAC Statement was initially adopted, Japanese firms could not recognize pension assets on the balance sheet when pension assets were occurred due to the delayed recognition. In March 2005, the ASBJ issued Statement No. 3, *Partial Amendments to Accounting Standard for Retirement Benefits* (ASBJ, 2005). Japanese firms could recognize pension assets on the balance sheet for fiscal years ending in or after March 2006. In addition, in July 2008, the ASBJ issued Statement No. 19, *Partial Amendments to Accounting Standard for Retirement Benefits (Part 3)* (ASBJ, 2008). Until Statement No. 19 was adopted, Japanese firms could choose the discount rate based on the five-year average of the interest rates of high-grade bonds. After the implementation of Statement No. 19, they must employ the discount rate based on the interest rates of high-grade bonds on the balance sheet date. Statement No. 19 was applied for fiscal years ending in or after March 2010. The pension accounting rules were slightly changed in the period prior to Statement No. 26.

liabilities and credit ratings. Previous research has reported that firms manage reported accounting numbers using pension assumptions (Cocco, 2014; Glaum, 2009). In fact, firms opportunistically choose discount rates when estimating retirement benefit obligations (e.g., Fahad et al., 2020; Obinata, 2000). In particular, when disclosure requirements for actuarial assumptions are changed, firms manage reported accounting numbers by shifting the use of discretion from an increase in disclosure requirements to no change in disclosure requirements (Naughton, 2019). In Japan, Statement No. 26 increases disclosure requirements for the expected rate assumption but does not change disclosure requirements for discount rate assumptions (Kusano and Sakuma, 2020). Thus, I partition my sample into firms by year with lower and higher discount rates to examine how reliable accounting information has impacts on the risk relevance of pension liabilities.¹⁶ Table 6 presents the results of the analyses.

Columns (1) and (2) report the results when firms choose lower discount rates. Both columns show that the *OFFPL* coefficients are positively statistically significant in the periods prior and subsequent to Statement No. 26. In addition, the Wald test shows that the *OFFPL* coefficients in both periods are statistically similar. These results suggest that when firms choose lower discount rates, credit rating agencies understand off-balance sheet pension items and process disclosed and recognized pension liabilities similarly in assessing the credit risk of firms. Columns (3) and (4) report the results when firms choose higher discount rates. Unlike firms with lower discount rates, off-balance sheet pension items are not risk-relevant before and after Statement No. 26 adoption. The Wald test indicates that the risk relevance of disclosed and recognized pension liabilities is statistically similar. The overall results suggest that credit rating agencies can incorporate pension footnote information into credit ratings only when pension disclosures are highly

¹⁶ I divide the sample into lower and higher discount rates based on tertile of discount rates at the end of fiscal year t . My study assumes that firms have higher discount rates if they are in the highest tertile of discount rates by year, and lower discount rates otherwise. Following Obinata (2000), I also estimate the mean of the difference between the discount rate and the market interest rate (Japan 10-Year Government Bond) for each firm before and after Statement No. 26 adoption and partition the sample into two groups based on its tertile. Unreported results are qualitatively similar to my main findings.

reliable. This evidence is also consistent with my main findings. Collectively, the results are unchanged after several sensitivity analyses, which indicates that my inferences are robust.

5.4. Additional Test

Previous research has also employed bond spreads as a measure of the credit risk of firms when examining the effects of recognition versus disclosure on credit market participants (e.g., Bratten et al., 2013; Kusano, 2019). For instance, Kusano (2019) investigated whether users of financial statements process disclosed and recognized finance leases differently in their assessment of firms' credit risk in the Japanese debt market. Whereas bond investors process disclosed and recognized finance leases differently, credit rating agencies treat both finance leases similarly, which suggests that the sophistication of market participants influences their differential treatments between disclosure and recognition. By using bond spreads as a proxy for the credit risk of firms, I explore whether and how bond investors process disclosure and recognition of pension liabilities differently. I employ regression model (2) to test the effects of disclosed versus recognized pension liabilities on bond spreads.

$$\begin{aligned}
 Spread_{it+1} = & \beta_0 + \beta_1 ONPL_{it} + \beta_2 OFFPL_{it} + \beta_3 Overfund_{it} + \beta_4 Debt_{it} + \beta_5 Size_{it} \\
 & + \beta_6 ROA_{it} + \beta_7 Std_Ret_{it} + \beta_8 MTB_{it} + \beta_9 B_Size_{it+1} + \beta_{10} Mature_{it+1} \\
 & + \sum Industry\ Dummy + \sum Year\ Dummy + \varepsilon
 \end{aligned} \tag{2}$$

where Spread is bond spreads on the first straight bond issues for fiscal year t+1.¹⁷ The control variables are the same as in regression model (1) except for *B_Size* and *Mature*. Following the previous literature (e.g., Jiang, 2008; Kitagawa and Shuto, 2019; Kusano, 2019; Sengupta, 1998), I include the control variables regarding bond characteristics when

¹⁷ Following Kusano (2019), I calculate bond spreads as the differences between interest rates on corporate bonds and on government bonds with the same maturity date of issue. To estimate bond spreads, I obtain corporate bond data from I-N Information Systems database and the interest rates on government bonds from the Ministry of Finance, Japan. When I cannot exactly match the maturity period of a corporate bond with that of government bonds, I employ the government bond with the closest maturity.

estimating regression model (2). *B_Size* is the natural log of the offering amount of the bond issue in fiscal year $t+1$, and *Mature* is the natural log of the bond redemption period of the bond issue in fiscal year $t+1$.¹⁸ Table 7 presents the results of the analyses.

Columns (1) and (2) report the results for all firms with DB pension plans. In Column (1), unlike the *ONPL* coefficient, the *OFFPL* coefficient is not statistically significant, which indicates that off-balance sheet pension liabilities do not provide risk-relevant information to bond investors in the period prior to Statement No. 26. However, Column (2) reports that both *ONPL* and *OFFPL* coefficients are positively statistically significant in the period subsequent to Statement No. 26. Moreover, the Wald test finds that the *OFFPL* coefficients in both periods do not statistically differ. My findings suggest that when assessing firms' credit risk, bond investors consider recognized previously off-balance sheet pension liabilities after the adoption of Statement No. 26, but process disclosed and recognized pension liabilities similarly.

I also explore how managerial incentives affect the risk relevance of pension liabilities by employing firms' pension plan deficits. Columns (3) and (4) present the results for firms that have a small pension plan deficit. Column (3) shows that the *OFFPL* coefficient is insignificant, but Column (4) shows that, consistent with my prediction, its coefficient is positively statistically significant. Furthermore, the Wald test reveals a statistically significant difference between the *OFFPL* coefficients before and after Statement No. 26 adoption, as shown in Column (4). These results indicate that when pension information is highly reliable, changing the pension accounting rule from disclosure to recognition has substantial impacts on bond investors' perceptions of the credit risk of firms, which suggests that mandating pension recognition rule improves the risk relevance of pension

¹⁸ Previous research has also included bond management companies to control for bond characteristics (e.g., Kusano, 2019; Shuto and Kitagawa, 2011). At present, Japanese firms are less likely to use bond management company when issuing new bonds. When including bond management company as a control variable and examining recognition versus disclosure of pension liabilities, the VIF values are greater than 10 in the post-Statement No. 26 period. Thus, I do not include this variable to analyze how recognized versus disclosed pension liabilities influence credit ratings. Including the variable does not change my results (unreported table).

information.

Columns (5) and (6) present the results for firms that have a large pension plan deficit. Both columns report that on- and off-balance sheet pension liabilities fail to provide risk-relevant information to bond investors. In column (6), the Wald test finds that bond investors process disclosed and recognized similarly in their perceptions of the credit risk of firms. These results indicate that when firms have a large pension plan deficit, the mandate of pension recognition rule does not improve the credit risk relevance of pension liabilities. My results suggest that bond investors might find it difficult to incorporate pension information into their decision-making when pension disclosures are less reliable.

6. Concluding Remarks

In this study, I analyzed whether and how sophisticated financial statement users—credit rating agencies—employ pension information to assess firms' credit risk. Specifically, using the implementation of Statement No. 26, I examined how disclosed and recognized pension liabilities differ in their associations with credit ratings. My study provides valuable evidence on how mandating pension recognition on the balance sheet has impacts on credit rating agencies in their perceptions the credit risk of firms.

I first investigated whether credit rating agencies consider off-balance sheet pension information in issuing credit ratings and found that disclosed pension liabilities provide risk-relevant information prior to Statement No. 26. Employing the pre- versus post-Statement No. 26 setting, I investigated whether disclosed and recognized pension liabilities provide similar risk-relevant information. I revealed that credit rating agencies employ disclosed and recognized pension liabilities similarly in their assessment of firms' credit risk. I also explored how reliable accounting information affects the risk relevance of pension liabilities and demonstrated that only when pension disclosures are highly reliable, off-balance sheet pension liabilities can convey risk-relevant information before Statement No. 26. In addition, I also demonstrated that regardless of accounting information reliability, disclosed and recognized pension liabilities have similar relations

with credit ratings.

Overall, my results suggest that credit rating agencies can fully incorporate off-balance sheet pension information into credit ratings only when pension information is highly reliable. My findings indicate that the change in the pension accounting rule from disclosure to recognition does not influence the risk assessment by credit rating agencies. Despite the deeper insights into disclosure versus recognition of pension liabilities, my study has several limitations. For example, my study fails to provide ample evidence on how the reliability of pension information influences capital market participants in their decision-making. Specifically, my research does not clearly explore the effects of the reliability of accounting information on recognized versus disclosed pension liabilities when the sophistication of financial statement users is heterogeneous. This analysis will advance our understanding of how financial statement users incorporate disclosed as well as recognized amounts into their decision-making.

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Appendix: Variable Definitions

Variable	Definition
Rating	Issuer credit ratings that R&I initially issues or amends for fiscal year $t+1$. The variable is an ordered variable ranging from 1 (AAA) to 21 (D).
ONPL	On-balance sheet pension liabilities divided by the book value of equity at the end of fiscal year t . This variable is recognized pension liabilities on balance sheet before the adoption of Statement No. 26. After the adoption of Statement No. 26, this variable is recognized pension liabilities but excludes both actuarial gains and losses and prior service costs.
OFFPL	Off-balance sheet pension liabilities divided by the book value of equity at the end of fiscal year t . This variable is disclosed pension liabilities in the notes in the pre-Statement No. 26 period. In the post-Statement No. 26 period, this variable is recognized previously disclosed pension liabilities—actuarial gains and losses and prior service costs—before the adjustments for tax effects.
Overfund	An indicator variable that takes the value of 1 if a firm's DB pension plan is overfunded at the end of fiscal year t , and 0 otherwise.
Debt	Debt divided by the book value of equity at the end of fiscal year t .
Size	The natural log of sales for fiscal year t .
ROA	Business income—operating income and financial income—divided by total assets at the end of fiscal year t .
Std_Ret	The standard deviation of monthly stock returns during fiscal year t .
MTB	Market value of equity divided by the book value of equity at the end of fiscal year t .

Notes: This appendix contains the details of the variable definitions.

Table 1 Descriptive Statistics

Panel A: Full Sample

	N	Mean	SD	Min	p25	Median	p75	Max
Rating	3,060	6.5271	1.8512	1.0000	6.0000	7.0000	8.0000	13.0000
ONPL	3,060	0.0655	0.0706	-0.0795	0.0155	0.0496	0.0980	0.4695
OFFPL	3,060	0.0281	0.0472	-0.1079	0.0010	0.0140	0.0414	0.5172
Overfund	3,060	0.0725	0.2594	0.0000	0.0000	0.0000	0.0000	1.0000
Debt	3,060	0.9748	1.2615	0.0001	0.2288	0.5505	1.2272	10.8291
Size	3,060	12.8322	1.1337	9.7963	12.0589	12.7995	13.6509	15.6733
ROA	3,060	0.0522	0.0325	-0.0777	0.0298	0.0475	0.0721	0.1703
Std_Ret	3,060	0.0865	0.0357	0.0206	0.0610	0.0796	0.1032	0.2929
MTB	3,060	1.2200	0.5900	0.2487	0.8028	1.0843	1.4938	4.6624

Panel B: Before versus After Statement No. 26 Adoption

	Pre-Statement No. 26 (N=1,623)			Post-Statement No. 26 (N=1,437)			Mean Difference	Median Difference
	Mean	SD	Median	Mean	SD	Median		
Rating	6.5194	2.0365	7.0000	6.5358	1.6172	7.0000	0.0164	0.0000
ONPL	0.0785	0.0767	0.0591	0.0509	0.0598	0.0401	-0.0275***	-0.0190***
OFFPL	0.0440	0.0562	0.0270	0.0102	0.0236	0.0054	-0.0339***	-0.0216***
Overfund	0.0136	0.1157	0.0000	0.1392	0.3463	0.0000	0.1256***	0.0000
Debt	1.0152	1.2516	0.6114	0.9292	1.2714	0.4804	-0.0860*	-0.1310***
Size	12.7670	1.1501	12.7155	12.9058	1.1107	12.8708	0.1387***	0.1553***
ROA	0.0476	0.0341	0.0423	0.0574	0.0297	0.0535	0.0098***	0.0112***
Std_Ret	0.0956	0.0406	0.0886	0.0762	0.0257	0.0730	-0.0193***	-0.0156***
MTB	1.0933	0.5006	0.9828	1.3631	0.6480	1.1977	0.2698***	0.2149***

Notes: This table presents descriptive statistics for the variables used in the main analyses of Tables 3 and 4. Panel A provides descriptive statistics for the variables for a sample of all firms, while Panel B provides them by dividing between before and after Statement No. 26 adoption. All continuous independent variables are trimmed by year at the top and bottom 1%. The Appendix contains the variable definitions. ***, **, and * denote significance of mean (median) difference at the 1%, 5%, and 10% levels, respectively.

Table 2 Correlation Matrix

	Rating	ONPL	OFFPL	Overfund	Debt	Size	ROA	Std_Ret	MTB
Rating	1.0000	0.0534 (0.0031)	0.1203 (0.0000)	0.0118 (0.5155)	0.1629 (0.0000)	-0.4970 (0.0000)	-0.1705 (0.0000)	0.2088 (0.0000)	-0.2928 (0.0000)
ONPL	0.0626 (0.0005)	1.0000	0.2406 (0.0000)	-0.4068 (0.0000)	0.2213 (0.0000)	0.1623 (0.0000)	-0.1706 (0.0000)	0.0076 (0.6757)	-0.0044 (0.8077)
OFFPL	0.1695 (0.0000)	0.2993 (0.0000)	1.0000	-0.2654 (0.0000)	0.0435 (0.0161)	0.0447 (0.0133)	-0.0686 (0.0001)	0.2169 (0.0000)	-0.1307 (0.0000)
Overfund	0.0068 (0.7072)	-0.3225 (0.0000)	-0.2017 (0.0000)	1.0000	-0.0284 (0.1157)	0.0039 (0.8295)	0.0348 (0.0539)	-0.0725 (0.0001)	0.0632 (0.0005)
Debt	0.0724 (0.0001)	0.1162 (0.0000)	0.0365 (0.0434)	0.0019 (0.9160)	1.0000	0.2160 (0.0000)	-0.5161 (0.0000)	0.0488 (0.0070)	-0.0552 (0.0022)
Size	-0.4955 (0.0000)	0.1756 (0.0000)	0.0322 (0.0748)	-0.0018 (0.9205)	0.1055 (0.0000)	1.0000	-0.0363 (0.0445)	-0.0715 (0.0001)	0.2089 (0.0000)
ROA	-0.1796 (0.0000)	-0.1796 (0.0000)	-0.1543 (0.0000)	0.0440 (0.0150)	-0.4263 (0.0000)	-0.0272 (0.1328)	1.0000	-0.1121 (0.0000)	0.4692 (0.0000)
Std_Ret	0.2323 (0.0000)	0.0603 (0.0008)	0.2850 (0.0000)	-0.0747 (0.0000)	0.0616 (0.0007)	-0.0725 (0.0001)	-0.1588 (0.0000)	1.0000	-0.1591 (0.0000)
MTB	-0.2472 (0.0000)	-0.0102 (0.5713)	-0.1246 (0.0000)	0.0922 (0.0000)	-0.0311 (0.0857)	0.1565 (0.0000)	0.4400 (0.0000)	-0.1634 (0.0000)	1.0000

Notes: This table presents the correlation matrix for the variables used in the main analyses. The lower (upper) diagonal shows Pearson (Spearman) correlation coefficients. The Appendix contains the variable definitions. I report p -values for correlation coefficients in parentheses.

Table 3 Relations between Disclosed versus Recognized Pension Liabilities and Credit Ratings

	Expected Sign	(1)	(2)	(3)	(4)
		All DB Pension Plans		Underfunded Pension Plans	
		Pre-Statement	Post-Statement	Pre-Statement	Post-Statement
		No. 26	No. 26	No. 26	No. 26
		Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Constant		19.0449*** (24.4486)	17.2581*** (20.1322)	19.1105*** (24.5510)	17.0075*** (18.1125)
ONPL	+	3.1783*** (2.6342)	2.4568* (1.8237)	3.1342*** (2.6009)	2.4610* (1.8050)
OFFPL	+	3.5323*** (2.9844)	3.3549 (1.5441)	3.5083*** (2.9639)	3.6094 (1.5563)
Overfund	-	0.0980 (0.2521)	0.3367** (1.9732)		
Debt	+	0.5901*** (4.1197)	0.5035*** (4.5658)	0.6182*** (4.2593)	0.5581*** (4.6043)
Size	-	-1.0062*** (-16.7457)	-0.8610*** (-12.9314)	-1.0121*** (-16.8737)	-0.8130*** (-11.0218)
ROA	-	-4.1424* (-1.7822)	-6.5718** (-2.5549)	-4.0237* (-1.7150)	-6.5111** (-2.2132)
Std_Ret	+	7.6043*** (4.6761)	7.1393*** (4.0463)	7.4863*** (4.4952)	6.2410*** (3.2709)
MTB	-	-0.4991*** (-2.9219)	-0.2861*** (-2.6751)	-0.4973*** (-2.8877)	-0.3758*** (-3.1529)
Industry Dummy		Yes	Yes	Yes	Yes
Year Dummy		Yes	Yes	Yes	Yes
N		1,623	1,437	1,601	1,237
Adj. R ²		0.6451	0.5797	0.6487	0.5713
Wald Test			0.0067 [0.9348]		0.0020 [0.9647]

Notes: This table presents the relations between disclosed versus recognized pension liabilities and credit ratings. The Appendix contains the variable definitions. *t* statistics, which are based on robust standard errors clustered by firm, are shown in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The Wald test, which analyzes the equality between the *OFFPL* coefficients before and after Statement No. 26 adoption, provides chi-square values. *p*-values are shown in square brackets.

Table 4 Effects of Pension Plan Deficit on the Relations between Disclosed versus Recognized Pension Liabilities and Credit Ratings

	Expected Sign	(1)	(2)	(3)	(4)
		Small Pension Plan Deficit		Large Pension Plan Deficit	
		Pre-Statement	Post-Statement	Pre-Statement	Post-Statement
		No. 26	No. 26	No. 26	No. 26
		Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Constant		18.9981*** (18.4137)	16.7402*** (16.0785)	19.2005*** (19.1797)	18.1016*** (14.1913)
ONPL	+	2.0203 (1.1507)	5.7125** (2.4429)	2.7766* (1.6721)	2.1526 (1.1012)
OFFPL	+	5.0717*** (3.1856)	6.7714** (2.2651)	2.1305 (1.3502)	1.2395 (0.4351)
Overfund	-	0.1676 (0.5099)	0.4426** (2.5138)		
Debt	+	0.4668*** (3.0258)	0.3232*** (2.6416)	0.6648*** (3.5530)	0.6158*** (3.5677)
Size	-	-1.0145*** (-12.9169)	-0.8276*** (-10.8380)	-0.9836*** (-12.5257)	-0.9162*** (-9.0396)
ROA	-	-6.6664*** (-2.6611)	-10.6893*** (-3.1333)	-4.7504 (-1.4725)	-3.1738 (-0.8007)
Std_Ret	+	11.2328*** (6.4530)	6.7808*** (3.0892)	2.7620 (1.1312)	6.1348** (2.2111)
MTB	-	-0.5601*** (-2.9981)	-0.1880 (-1.6044)	-0.4166 (-1.6235)	-0.2558 (-1.4613)
Industry Dummy		Yes	Yes	Yes	Yes
Year Dummy		Yes	Yes	Yes	Yes
N		813	720	810	717
Adj. R ²		0.6911	0.6423	0.6023	0.5904
Wald Test			0.2966 [0.5860]		0.1079 [0.7426]

Notes: This table presents the effects of pension plan deficit on the relations between disclosed versus recognized pension liabilities and credit ratings. The Appendix contains the variable definitions. *t* statistics, which are based on robust standard errors clustered by firm, are shown in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The Wald test, which analyzes the equality between the *OFFPL* coefficients before and after Statement No. 26 adoption, provides chi-square values. *p*-values are shown in square brackets.

Table 5 Relations between Disclosed versus Recognized Pension Liabilities and Credit Ratings Using Longer Sample Period

	Expected Sign	(1)	(2)	(3)	(4)
		2001–2013	2001–2005	2006–2009	2010–2013
		Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Constant		19.2053*** (25.3887)	20.5640*** (22.0911)	19.5117*** (21.0204)	18.0708*** (21.4973)
ONPL	+	1.8064*** (2.6632)	1.4684** (2.5776)	3.1525*** (2.8588)	3.0467** (2.4359)
OFFPL	+	1.6181*** (2.8664)	1.7553*** (3.5836)	3.4975*** (3.4385)	3.2278* (1.9633)
Overfund	–	0.1210 (0.5167)	-0.5950*** (-3.0812)	0.3405 (1.4386)	0.0027 (0.0047)
Debt	+	0.4316*** (7.0383)	0.4311*** (8.3781)	0.3638*** (2.7515)	0.6710*** (4.9101)
Size	–	-1.0672*** (-17.5476)	-1.1790*** (-15.8560)	-1.0320*** (-14.1683)	-0.9732*** (-15.2046)
ROA	–	-8.8399*** (-4.5072)	-9.3501*** (-4.2343)	-10.8399*** (-3.8468)	-1.1684 (-0.3901)
Std_Ret	+	9.4778*** (7.5747)	10.3301*** (5.9628)	6.8242*** (4.3337)	11.1715*** (5.0750)
MTB	–	-0.2477** (-2.5786)	-0.2529*** (-2.6429)	-0.0922 (-0.6189)	-0.5321*** (-2.9082)
Industry Dummy		Yes	Yes	Yes	Yes
Year Dummy		Yes	Yes	Yes	Yes
N		3,420	1,282	1,060	1,078
Adj. R ²		0.6420	0.6653	0.6283	0.6412
Wald Test		0.6416 [0.4231]	0.5450 [0.4604]	0.0040 [0.9498]	0.0030 [0.9562]

Notes: This table presents the relations between disclosed versus recognized pension liabilities and credit ratings using longer sample period prior to Statement No. 26. The results for the post-Statement No. 26 period are reported in Column (2) of Table 3. The Appendix contains the variable definitions. *t* statistics, which are based on robust standard errors clustered by firm, are shown in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The Wald test, which analyzes the equality between the *OFFPL* coefficients before and after Statement No. 26 adoption, provides chi-square values. *p*-values are shown in square brackets.

Table 6 Effects of the Discount Rates on the Relations between Disclosed versus Recognized Pension Liabilities and Credit Ratings

	Expected Sign	(1)	(2)	(3)	(4)
		Low Discount Rates		High Discount Rates	
		Pre-Statement	Post-Statement	Pre-Statement	Post-Statement
		No. 26	No. 26	No. 26	No. 26
		Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Constant		19.6503*** (20.4964)	18.4998*** (20.2337)	18.4148*** (15.4763)	16.7332*** (13.2643)
ONPL	+	2.2568** (2.5344)	1.1214 (0.7743)	2.7391 (1.6019)	4.9421*** (2.8876)
OFFPL	+	4.2600*** (3.0064)	4.6161* (1.7583)	2.6974 (1.4658)	-0.4776 (-0.1518)
Overfund	-	0.1734 (0.4438)	0.2805 (1.4388)	0.3191 (0.6281)	0.1219 (0.4746)
Debt	+	0.5497*** (3.7814)	0.5974*** (4.2577)	0.9884*** (7.0514)	0.3558** (2.0764)
Size	-	-1.0493*** (-14.3598)	-0.9773*** (-13.8637)	-0.9662*** (-10.7247)	-0.7806*** (-7.6818)
ROA	-	-2.9365 (-1.2364)	-6.0213** (-2.0064)	-5.3450* (-1.6559)	-6.7602 (-1.5883)
Std_Ret	+	7.9423*** (5.0130)	7.9686*** (4.5806)	4.4568* (1.8335)	5.8484 (1.6116)
MTB	-	-0.5347*** (-3.3958)	-0.2425** (-1.9950)	-0.4878 (-1.6110)	-0.3575** (-2.1372)
Industry Dummy		Yes	Yes	Yes	Yes
Year Dummy		Yes	Yes	Yes	Yes
N		1,035	944	561	461
Adj. R ²		0.7078	0.6454	0.6531	0.4986
Wald Test			0.0182 [0.8927]		0.9946 [0.3186]

Notes: This table presents the effects of the discount rate on the relations between disclosed versus recognized pension liabilities and credit ratings. The Appendix contains the variable definitions. *t* statistics, which are based on robust standard errors clustered by firm, are shown in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The Wald test, which analyzes the equality between the *OFFPL* coefficients before and after Statement No. 26 adoption, provides chi-square values. *p*-values are shown in square brackets.

Table 7 Effects of Disclosed versus Recognized Pension Liabilities on Bond Spreads

	Expected Sign	(1)	(2)	(3)	(4)	(5)	(6)
		All DB Pension Plans		Small Pension Plan Deficit		Large Pension Plan Deficit	
		Pre-Statement	Post-Statement	Pre-Statement	Post-Statement	Pre-Statement	Post-Statement
		No. 26	No. 26	No. 26	No. 26	No. 26	No. 26
		Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Constant		0.0143*** (6.1861)	0.0100*** (7.5041)	0.0119*** (3.8407)	0.0114*** (7.1222)	0.0131*** (3.8232)	0.0068*** (3.8194)
ONPL	+	0.0034* (1.7675)	0.0031** (2.1966)	0.0086 (1.3928)	0.0097*** (3.2395)	0.0004 (0.1761)	0.0013 (0.8165)
OFFPL	+	0.0025 (1.1192)	0.0056* (1.7411)	-0.0010 (-0.2355)	0.0092** (2.3048)	0.0041 (1.6452)	0.0016 (0.3361)
Overfund	-	-0.0010*** (-3.0730)	0.0002 (0.9853)	-0.0007 (-1.4457)	0.0005** (2.2254)		
Debt	+	0.0005*** (2.7033)	0.0002** (2.5244)	0.0001 (0.4379)	-0.0000 (-0.0437)	0.0009*** (5.5749)	0.0006*** (5.2845)
Size	-	-0.0007*** (-4.5974)	-0.0005*** (-6.7693)	-0.0006** (-2.0289)	-0.0006*** (-5.9101)	-0.0007*** (-3.8288)	-0.0005*** (-4.3358)
ROA	-	0.0021 (0.4285)	-0.0086** (-2.4802)	0.0111* (1.7521)	-0.0056 (-1.1480)	-0.0062 (-0.8787)	-0.0023 (-0.5006)
Std_Ret	+	0.0148*** (4.0823)	0.0020 (0.8857)	0.0210*** (3.9560)	-0.0025 (-0.9176)	0.0031 (0.4580)	-0.0035 (-0.8662)
MTB	-	-0.0006** (-2.3624)	0.0001 (0.5488)	-0.0001 (-0.2382)	-0.0000 (-0.2779)	-0.0011*** (-3.3031)	-0.0004* (-1.7822)

B_Size	-	-0.0002 (-0.8169)	-0.0001 (-0.9479)	-0.0003 (-0.7867)	-0.0002 (-1.1313)	0.0001 (0.3393)	0.0002 (1.2263)
Mature	+	-0.0008*** (-2.7530)	0.0008*** (5.0331)	-0.0003 (-0.9982)	0.0010*** (4.9289)	-0.0011** (-2.2322)	0.0005** (2.4473)
Industry Dummy		Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy		Yes	Yes	Yes	Yes	Yes	Yes
N		497	519	251	261	246	258
Adj. R ²		0.3688	0.4581	0.3178	0.5586	0.4639	0.5864
Wald Test			0.7277 [0.3936]		4.1064 [0.0427]		0.2894 [0.5906]

Notes: This table presents the effects of disclosed versus recognized pension liabilities on bond spreads. *B_size* is the natural log of the offering amount of the bond issue in fiscal year t+1. *Mature* is the natural log of the bond redemption period of the bond issue in fiscal year t+1. The Appendix contains the other control variable definitions. *t*statistics, which are based on robust standard errors clustered by firm, are shown in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The Wald test, which analyzes the equality between the *OFFPL* coefficients before and after Statement No. 26 adoption, provides chi-square values. *p*-values are shown in square brackets.