



Labour unions and corporate pension policy

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Keywords:

IFRS

Labour unions

Pension accounting

Pension funding ratio.

JEL Classification:

M41.

Received: 16 March 2023

Revised: 20 April 2023

Accepted: 23 May 2023

Published: 8 June 2023

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Abstract

The purpose of this study is to investigate the effect of labour unions on corporate pension policies. Using firm-level labour union data, it examines whether organized labour mitigates the understatement of pension liabilities on the statement of financial position. Next, we examine whether union presence affects external corporate pension funding. We find that firms with labour unions tend to report smaller actuarial gains (or larger actuarial losses) associated with the remeasurement of pension liabilities, suggesting that labour unions play a monitoring role in the reporting of corporate pension liabilities and/or that firms try to enhance their bargaining power with the labour union by exaggerating their financial burden of corporate pension liabilities. We do not find that the pension funding level (the ratio of the fair value of plan assets to pension liabilities) is higher for firms with labour unions. Overall, our results indicate that labour unions constrain management incentives to understate pension liabilities, but they have limited influence on corporate pension funding decisions.

Funding: This research is supported by Kangnam University Research Grants (Grant number: 2020).

Competing Interests: The authors declare that they have no competing interests.

1. Introduction

Korean firms are required to implement a corporate pension plan, which can include Defined-Benefit (DB), Defined-Contribution (DC), and Individual Retirement Pension (IRP) plans, as of the 2015 revision to the Employee Retirement Benefit Security Act (ERBSA) Enforcement Decree. According to the Financial Supervisory Service (FSS), 89% of Korean firms have adopted a DB pension scheme at the end of 2017. In a DB plan, firms take all actuarial risks (i.e., actual benefit payments could be greater than what was expected) and investment risks (i.e., actual returns on plan assets may be lower than the expected returns). Many Korean firms with DB plans have difficulties in meeting external pension funding requirements and estimating pension obligations under International Financial Reporting Standards (IFRS), and managing pension assets efficiently. In this situation, as an important corporate stakeholder, employees have been paying attention to corporate pension policies. However, there hasn't been much research on how unionisation affects company pension decisions. To fill this void in the literature, this study aims to shed light on the effect of labour unions on the financial reporting and external funding of corporate pensions.

Labour unions are formed to represent employees in collective bargaining with employers. Prior literature suggests that labour unions use their bargaining power and extract rents (Hirsch, 1992; Jensen & Meckling, 1976). Thus, managers of unionized firms have incentives to withhold financial information to preserve informational advantage against unions (DeAngelo & DeAngelo, 1991; Mora & Sabater, 2008). Firms with organized labour tend to make corporate decisions to restrain labour union's rent-seeking activities (Connolly, Hirsch, & Hirschey, 1986; Klasa, Maxwell, & Ortiz-Molina, 2009). For example, firms hold less cash and invest less in research and development (R&D) to have bargaining advantages over organized labour.

On the other hand, labour unions are deemed to perform a monitoring role of corporate decisions (Chen, Kacperczyk, & Ortiz-Molina, 2012; Choi & Bae, 2011). Labour unions actively demand access to firms' financial information and take actions to constrain managerial discretions and to mitigate shareholders' wealth expropriation. We examine whether the presence or strength of labour unions has an impact on (i) the

accounting estimates of pension obligations and (ii) external pension financing decisions based on these two distinct perspectives on labour unions.

Prior research reports that firms manage pension liabilities to achieve a variety of financial reporting objectives. For example, firms understate pension liabilities to raise the reported pension funding ratio or to present a better-looking financial condition (Asthana, 1999; Godwin, 1999; Gopalakrishnan & Sugrue, 1995). However, research on the effect of labour unions on corporate pension has been scant.

The literature on labour unions has extensively examined whether managers devalue financial performance in the presence of unions. Baldwin (1983) and Grout (1984) view unions as economic rent seekers because unions utilize strike threats to extract quasi-rents from firms. Firms facing a strong labour union have incentives that shelter firm resources to gain a bargaining advantage. For example, firms with stronger labour unions tend to hold less cash (Klasa et al., 2009), increase financial leverage (Bronars & Deere, 1991), and disclose positive news less frequently.

Corporate pensions are deferred remuneration that businesses give to workers when their employment is over. Employees are the most important stakeholder with respect to corporate pensions and make a collective voice in the management of pension funds. According to corporate pension accounting, businesses at the end of each reporting period recognise the present value of anticipated future benefit payments to employees as pension obligations. Since the estimation of pension obligations involves managerial choices of actuarial assumptions, prior studies suggest that firms manage pension obligations via these assumptions to achieve their financial or tax objectives (Asthana, 1999; Bergstresser, Desai, & Rauh, 2006; Godwin, Goldberg, & Duchac, 1996; Godwin, 1999; Gopalakrishnan & Sugrue, 1995).

To the extent that labour unions play a monitoring role in the reporting of pension liabilities, unionized firms will be under scrutiny to present pension liabilities fairly on the statement of financial position. Furthermore, when firms face renegotiation with labour unions, their incentives to understate pension liabilities would be mitigated or their incentives to overstate will be pronounced. According to the press, when pension programmes seem to burden businesses, employees are generally less resistant to benefit reductions. (Francis & Schultz, 2003). Thus, the presence of labour unions will reduce management incentives to understate pension liabilities. We predict that firms with labour unions are less likely to understate pension liabilities than those without labour unions.

Next, we examine the effect of labour unions on corporate pension funding levels. Firms are required to contribute to external institutions in order to protect employee retirement benefits from creditors in the case of bankruptcy. Plan assets are managed independent of the sponsoring firm and are restricted to financing future pension payments to employees. Labour unions demand firms to increase external pension funding. We predict that labour unions will ask for fully funded pensions or a reduction of the degree of the underfunding.

We use a sample of 2,891 firm-years over the period from 2011 to 2016 for the empirical analysis. We use firm-level labour union data at the end of 2008. Since firms had to register information on labour unions to the Korea Exchange up until 2008, we can use firm-level data, which have a lower measurement error than industry-level data utilised in other studies. As a proxy for the understatement of pension liabilities, we use the number of actuarial gains and losses associated with the remeasurement of pension obligations. Actuarial gains and losses arise due to changes in actuarial assumptions of defined benefit obligations (DBO). Firms can introduce a bias into actuarial assumptions to understate or inflate pension liabilities to the degree that they have some discretion in determining actuarial assumptions.

We find that unionized firms report smaller actuarial gains (or larger actuarial losses), suggesting that labour unions play a monitoring role in the understatement of pension liabilities and/or that firms exaggerate their burden of pension obligations. But we do not find that the external pension funding level is higher for unionized firms than non-unionized firms. That is, labour unions constrain management incentives to understate pension liabilities but do not enhance the funding status.

Contributions of the paper are as follows. First, unlike prior studies that looked at how unions affected general financial reporting quality, like accounting conservatism or discretionary accruals (Choi & Bae, 2011), we focus on a specific accounting estimate in which labour unions and employees are the most interested. This allows us to better assess managerial discretions related to labour unions.

Second, we contribute to the studies on the determinants of pension assumptions by showing that labour unions influence management choice of pension assumptions. The existence of labour unions, one of the most significant stakeholders in corporate pensions, has not been taken into account in research that now focus on the motivations to manage reported pension obligations.

The remainder of the paper proceeds as follows. Section 2 reviews relevant literature and develops hypotheses. Section 3 explains sample selection procedures and the methodology that is used to test our hypotheses. Section 4 presents empirical results. Section 5 presents the conclusions with a summary.

2. Literature Review and Hypothesis Development

2.1. Labour Unions and Pension Liability Measurement

Prior studies document that firms manage pension liabilities via actuarial assumptions to achieve their financial or tax objectives (Asthana, 1999; Bergstresser et al., 2006; Godwin et al., 1996; Godwin, 1999;

Gopalakrishnan & Sugrue, 1995). Firms tend to understate pension liabilities to increase the reported pension funding ratio or to present a better financial conditions (Asthana, 1999; Godwin, 1999; Gopalakrishnan & Sugrue, 1995). The most significant shareholder in corporate pensions, labour unions, have a small but significant impact on the financial reporting of pension liabilities.

Prior literature on the effect of labour unions on overall financial reporting provides inconclusive results. One stream of literature documents that labour unions extract excessive rents by using their bargaining position (Hirsch, 1992; Jensen & Meckling, 1976). Firms manage earnings to withhold financial information from labour unions (Liberty & Zimmerman, 1986; Mora & Sabater, 2008). DeAngelo and DeAngelo (1991) show that firms are likely to report lower earnings during union negotiations. Mora and Sabater (2008).

Recently, a stream of literature on labour unions proposes that labour unions perform a role in monitoring a firm's financial reporting (Chen et al., 2012; Choi & Bae, 2011). Labour unions actively take actions against firms to pursue a higher degree of accounting conservatism. They also serve a governance role of limiting both income increasing and decreasing earnings management (Choi & Bae, 2011).

Pension obligations are liabilities on the statement of financial position that firms pay employees after the completion of employment. According to the rent-seeking view, firms facing a renegotiation with labour unions have incentives to overstate or understate their pension liabilities to make their plans appeared as burdensome as possible. When pension plans are deemed burdensome to the firm, employees tend to show less resistance to their benefit cuts (Francis & Schultz, 2003).

Unionised firms will face pressure to show pension liabilities properly on the statement of financial condition if labour unions aggressively scrutinise corporate reporting of pension liabilities. International Financial Reporting Standards (IFRS) requires firms to disclose significant actuarial assumptions of corporate pensions such as the discount rate (DR) and salary growth rate (SGR). From publicly available financial data, unions may quickly determine the assumptions that are used to estimate pension liabilities and utilise their collective voice to set objective actuarial assumptions.

Taken together, we hypothesize that firms with labour unions are less likely to understate (or equivalently more likely to overstate) pension liabilities than those without labour unions.

Hypothesis 1: The presence (or strength) of labour union is negatively related with the degree of understatement of pension liabilities on the statement of financial position.

2.2. Labour Unions and Pension Funds

The Pension Benefit Guaranty Corporation (PBGC) in the United States offers participants guaranteed "basic" pay-outs in the event that their employer-sponsored defined-benefit plans go bankrupt. Korea does not have such a safety net for private-sector defined-benefit pension plans. Instead, Korean firms are guided to make cash contributions to external financial institutions to secure employee retirement benefits from creditors in the event of bankruptcy. Some firms, however, have not contributed sufficiently to external pension funds. Thus, employees are quite interested in whether the sponsoring firms have enough resources to pay when they retire. Therefore, labour unions demand their firms to increase their external pension funding to protect their retirement claims.

On the other hands, unionized firms have incentives to contribute less to external pension funds and maintain a low funding status to reduce rent-seeking activities of labour unions. Connolly et al. (1986) suggest that firms in highly unionized industries invest less in R&D to limit the rent-seeking activities of labour unions. Klasa et al. (2009) show that firms in more unionized industries strategically have less cash holdings for bargaining advantages over labour unions and secure corporate income from their demands. In this context, we can expect that unionized firms strategically maintain a low funding ratio (the ratio of the fair value of plan assets to pension obligations). It is an empirical question whether labour unions enhance the pension funding ratio or not. We assert that the firm's incentives to lower external pension contributions are outweighed by the labour unions' demand for a greater funding level.

Hypothesis 2: The presence (or strength) of labour union is positively related with the pension funding levels.

3. Research Design

3.1. Data and Sample Selection

Our sample includes 2,891 firm-year observations in the post IFRS period (from 2011 to 2016). Before the adoption of IFRS in 2011, Korean firms used the *termination method*. Because pension obligations are calculated under the presumption that all employees will be leaving their jobs as of the reporting date, firms using the termination method are not allowed to publish pension liabilities at their discretion. Moreover, in the pre-IFRS period, pension related disclosures were limited: firms disclose neither the pension funding ratio nor components of net defined benefit liabilities.

Since listed companies had to publish information on unions in their annual business reports up to 2008, we started collecting firm-level labour union data at the end of 2008. Even though labour union data is stale during our examination period, we judge that the benefits of firm-level union data outweigh the measurement error of stale labour union data. We winsorize all continuous variables at the top and bottom 1% levels to reduce the impact of outliers.

3.2. Regression Models

3.2.1. The Effect of Labour Union on the Understatement of Pension Liabilities (H1)

We examine the effect of labour unions on the understatement of corporate pension liabilities by estimating the following regression model.

$$\begin{aligned}
 RMS_DBO_{it} = & \alpha_0 + \alpha_{1*}UNION_i + \alpha_{2*}JOINT_i + \alpha_{3*}KCTU_{it} + \alpha_{4*}FUND_{it-1} \\
 & + \alpha_{5*}ROA_{it} + \alpha_{6*}CFO_{it} + \alpha_{7*}SGW_{it} + \alpha_{8*}LEV_{it} + \alpha_{9*}LOSS_{it} \\
 & + \alpha_{10*}SIZE_{it} + \alpha_{11*}BIG4_{it} + \alpha_{12*}YEAR_{it} + \alpha_{13*}INDUSTYD_{it} + \\
 & \varepsilon \quad (1)
 \end{aligned}$$

The main variable of interest is actuarial gains and losses associated with remeasurement of pension obligations deflated by beginning DBO (*RMS_DBO*). It captures the overall effect of changes in all actuarial assumptions from the preceding year on DBO. If *RMS_DBO* is positive (negative), it means that more obligation-decreasing (increasing) assumptions were used. *UNION* is an indicator variable for firms with labour unions. *JOINT* is an indicator variable for the strength of labour unions measure that equals 1 for firms whose labour union is affiliated with the Korean Confederation of Trade Unions (KCTU) or Federation of Korean Trade Unions (FKTU). Additionally, we utilise an indicator variable that equals 1 for businesses whose labour union is linked with the KCTU (*KCTU*) in order to gauge the strength of labour unions. In Korea, *KCTU* is regarded as more confrontational and aggressive in industrial relations than *FKTU*.

We predict that firms are less likely to understate their pension liabilities by recognizing smaller actuarial gains (or larger actuarial losses) when they have labour unions (H1). Thus, we expect a negative coefficient on *UNION*: $\alpha_i < 0$.

We include several control variables in the regression model. We account for the impact of a firm's characteristics on the actuarial assumptions selected in earlier studies, including return on assets (ROA), cash flows from operations (CFO), sales growth (SGW), financial leverage (LEV), a measure of loss-making firm indicators (LOSS), and firm size as determined by the natural logarithm of total assets (SIZE). Prior studies show that profitability, operating cash flow, and financial leverage of a firms influence actuarial assumption choices (Asthana, 1999). We also employ an indicator variable for "Big 4" auditors (Big4) to control for audit quality since auditors are responsible for monitoring pension reporting. (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; DeAngelo, 1981). We further include fixed effect dummies for year and industry. Detailed variable definitions are in Appendix.

3.2.2. The Effect of the Labour Union on Pension Funding Policies (H2)

We examine the effect of labour unions on the pension funding level using the following regression. We utilise the ratio of the fair value of plan assets to defined-benefit pension obligations (*FUND_R*) as the dependent variable to measure how much cash contributions businesses make to external plan assets for employee retirement benefits.

$$\begin{aligned}
 FUND_R_t = & \alpha_0 + \alpha_{1*}UNION_i + \alpha_{2*}JOINT_i + \alpha_{3*}KCTU_{it} + \alpha_{4*}lgFUND_{it} \\
 & + \alpha_{5*}ROA_{it} + \alpha_{6*}CFO_{it} + \alpha_{7*}SGW_{it} + \alpha_{8*}LEV_{it} + \alpha_{9*}LOSS_{it} \\
 & + \alpha_{10*}SIZE_{it} + \alpha_{11*}BIG4_{it} + \alpha_{12*}YEAR_{it} + \alpha_{13*}INDUSTYD_{it} + \\
 & \varepsilon \quad (2)
 \end{aligned}$$

We predict that unionized firms exhibit a higher funding ratio than non-unionized firms (H2). Thus, we expect a positive coefficient on *UNION*: $\alpha_i > 0$.

4. Results

4.1. Descriptive Statistics

Panel A of Table 1 presents the descriptive statistics for the sample of 2,891 firm-year observations. The mean value of labour union dummy (*UNION*) is 0.47: that is, slightly less than half of the firms in the sample have a labour union. The mean value of labour union affiliation dummy (*JOINT*) and *KCTU* are 0.44 and 0.18, respectively and approximately 93% of labour unions in the sample is affiliated with *KCTU* or *FKTU* and 40% of them belong to *KCTU*. The mean actuarial gains or losses associated with DBO (*RMS_DBO*) is negative 0.013: firms in the sample report, on average, actuarial losses that result in an increase of DBO. Actuarial losses are mainly due to a decreasing trend of the pension discount rate during the examination period.¹ *Ceteris paribus*, a decrease in the discount rate leads to a higher estimate of pension obligations, resulting thereby in actuarial losses. The mean pension funding ratio (*FUND_R*) is 53.7%. That is, corporate pensions are under-funded in Korea. The mean and median ROAs are -0.01 and 0.02, respectively. The mean sales growth rate (*SGW*) is 3%. Over the sample period, 32% of the firms report losses (*LOSS*) and 49% of the firms hire a Big4 auditor.

Panel B of Table 1 reports mean of main variables for firms with and without labour unions. Regarding the remeasurement of DBO (*RMS_DBO*), unionized firms report larger actuarial losses than firms without unions (-0.143 vs. -0.113). Firms with labour unions have a higher funding ratio (56%) than those without unions

¹The pension discount rate is determined by reference to prevailing high-quality corporate bond yields.

(52%). Panel C presents Pearson correlation coefficients for the variables used in the regressions. *UNION* that correlates negatively to *RMS_DBO* and positively to *FUND_R*.

Table 1. Descriptive statistics.

Panel A: Descriptive statistics							
Variables	Mean	Std. dev	Min.	1 st quartile	Median	3 rd quartile	Max.
UNION	0.47	0.50	0	0	0	1	1
JOINT	0.44	0.50	0	0	0	1	1
KCTU	0.18	0.39	0	0	0	0	1
RMS_DBO	-0.12	0.36	-3.62	-0.26	-0.08	0.04	2.78
FUND_R	0.54	0.30	0.00	0.30	0.61	0.79	0.99
ROA	-0.01	0.12	-0.41	-0.02	0.02	0.05	0.18
CFO	0.04	0.08	-0.18	-0.00	0.04	0.09	0.23
SGW	0.03	0.31	-3.83	-0.05	0.02	0.11	7.60
SIZE	11.75	1.51	9.13	10.78	11.50	12.48	16.59
CASH	0.07	0.06	0.00	0.03	0.05	0.09	0.33
LEV	0.47	0.20	0.09	0.32	0.49	0.62	0.90
LOSS	0.32	0.46	0	0	0	1	1
BIG4	0.49	0.50	0	0	0	1	1

Panel B: Means of variables by firms with labour union vs. without labour union

Variables	Firms with labour union	Firms without labour union	Tests of difference in means	
	(n=1.945)	(n=1.683)	T-statistic	
RMS_DBO	-0.143	-0.113	0.03	**
FUND_R	0.56	0.52	0.04	***

Panel C: Pearson correlations of key variables.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
RMS_DBO												
(1)												
FUND_R	-0.02											
(2)	0.41											
UNION	-0.03	0.07										
(3)	0.11	0.00										
JOINT	-0.04	0.07	0.94									
(4)	0.03	0.00	0.00									
KCTU	0.00	0.04	0.51	0.54								
(5)	0.93	0.04	0.00	0.00								
ROA	-0.13	0.23	0.06	0.05	0.05							
(6)	0.00	0.00	0.00	0.01	0.00							
CFO	-0.11	0.17	0.03	0.02	-0.01	0.65						
(7)	0.00	0.00	0.17	0.31	0.48	0.00						
SGW	-0.11	0.02	-0.03	-0.02	-0.01	0.09	-0.01					
(8)	0.00	0.42	0.18	0.22	0.61	0.00	0.66					
SIZE	0.00	0.26	0.38	0.37	0.25	0.46	0.34	-0.01				
(9)	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.73				
CASH	-0.04	0.10	-0.16	-0.16	-0.06	0.21	0.27	0.01	0.03			
(10)	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.53	0.09			
LEV	0.02	-0.20	0.10	0.10	0.02	-0.05	-0.02	-0.02	-0.01	-0.26		
(11)	0.37	0.00	0.00	0.00	0.37	0.01	0.37	0.22	0.74	0.00		
LOSS	0.10	-0.23	-0.06	-0.06	-0.06	-0.69	-0.47	-0.08	-0.34	-0.17	0.19	
(12)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
BIG4	-0.01	0.07	0.25	0.26	0.17	0.15	0.11	0.00	0.46	-0.03	-0.01	-0.10
(13)	0.79	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.16	0.64	0.00

Note: ** and *** denote statistical significance at the 10% and 5% levels, respectively.

4.2. Regression Results

4.2.1. The Effect of the Labor Union on the Understatement of Pension Liabilities

Table 2 reports the regression results of actuarial gains and losses associated with the remeasurement of DBO (*RMS_DBO*) on labour unions after controlling for firm and pension characteristics. In column (1), we present estimation results for the effect of the existence of labour unions (*UNION*). To avoid understating the amount of DBO, unionised companies are more likely to establish obligation-increasing pension assumptions (recognising smaller actuarial profits or bigger actuarial losses). In column (2), we further add a dummy for the strength of labour unions (*JOINT*). The coefficient estimates on *JOINT* significantly negative at the 5% level (t-statistic of -2.02), suggesting that the significant effect of *UNION* in column (1) is mainly due to stronger unionized labour. In column (3), we further add a dummy for *KCTU* (*KCTU*). The coefficient on *KCTU* is insignificant, suggesting that there is no significant difference in the understatement of pension liabilities between *KCTU* and *FKTU*.

To summarize, the results in Table 2 indicate that labour unions play a monitoring role in the financial reporting of pension obligations by restricting management discretion over the choice of actuarial assumptions.

Table 2. The effect of labor unions on estimations of DBO.

Variables	Column (1)		Column (2)		Column (3)	
	Coefficients	T-value	Coefficients	T-value	Coefficients	T-value
Intercept	-0.24 ***	-3.58	-0.25 ***	-3.66	-0.24 ***	-3.64
UNION	-0.04 **	-2.47	0.04	0.96	0.04	0.96
JOINT			-0.08 **	-2.02	-0.09 **	-2.16
KCTU					0.02	0.88
LgFund_R	-0.09 ***	-3.61	-0.09 ***	-3.61	-0.09 ***	-3.6
ROA	-0.43 ***	-3.93	-0.43 ***	-3.99	-0.43 ***	-3.99
CFO	-0.34 **	-3.19	-0.34 ***	-3.21	-0.33 ***	-3.13
SGW	-0.14 **	-6.68	-0.14 ***	-6.68	-0.14 ***	-6.68
LEV	-0.06 *	-1.68	-0.06 *	-1.66	-0.06	-1.6
LOSS	0.00	0.1	0.00	0.04	0.00	0.06
SIZE	0.02 ***	3.8	0.02 ***	3.87	0.02 ***	3.82
BIG4	0.00	-0.12	0.00	-0.03	0.00	-0.05
INDUSTRY	Control		Control		Control	
YEAR	Control		Control		Control	
Obs. numbers	2,891		2,891		2,891	
Adj. R-square	10.69%		11.21%		10.79%	
F-value	28.98		27.1		25.21	

Note: The signs of *, **, and *** represent the significance of 10%, 5%, and 1%, respectively. The dependent variable is the actuarial gains and losses associated with the remeasurement of pension obligations deflated by beginning defined benefit obligations (RMS_DBO). Detailed variable definitions are in Appendix 1.

4.2.2. The Effect of the Labor Union on the Pension Funding Ratio

Panel A of Table 3 presents average pension funding ratios for firms with and without labour unions at the end of the fiscal year. For both groups of firms, the funding ratio has gradually increased over the sample period of 2011-2016. It might be partly attributable to the minimum pension funding guideline that the Korean government introduced in June 2011. Korean government instituted this guideline to reduce prevalent pension deficits.

Table 3. The effect of labor unions on the pension funding ratio.

Panel A: Average funding ratio between firms with and without labor unions						
Classification	2011	2012	2013	2014	2015	2016
Unionized firms (N=1.945)	55%	54%	58%	56%	57%	58%
Non-unionized firms (N= 1.683)	47%	50%	52%	53%	52%	55%
Tests of difference in means (T-statistic)	8%***	4%***	5%***	3%***	5%***	3%***
Panel B: Regression results						
Variables	Column (1)		Column (2)		Column (3)	
	Coefficients	T-value	Coefficients	T-value	Coefficients	T-value
Intercept	4.04 ***	3.22	4.03 ***	3.21	4.00 ***	3.18
UNION	-0.05	-0.44	0.04	0.15	0.04	0.15
JOINT			-0.10	-0.34	-0.02	-0.07
KCTU					-0.21	-1.39
SIZE	0.36 ***	8.29	0.36 ***	8.29	0.36 ***	8.35
ROA	1.35 *	1.94	1.34 *	1.93	1.33 *	1.91
CFO	0.21	0.26	0.21	0.25	0.15	0.18
CASH	2.31 ***	2.75	2.32 ***	2.76	2.35 ***	2.8
LEV	-2.79 ***	-10.6	-2.78 ***	-10.59	-2.80 ***	-10.64
LOSS	-0.41 ***	-2.77	-0.41 ***	-2.77	-0.42 ***	-2.8
BIG4	-0.18	-1.64	-0.18	-1.63	-0.17	-1.58
INDUSTRY	Control		Control		Control	
YEAR	Control		Control		Control	
Obs. numbers	3,628		3,628		3,628	
Adj. R-square	15.22%		15.2%		15.22%	
F-value	14.74		14.42		14.17	

Note: The signs of * and *** represent the significance of 10% and 1%, respectively. The dependent variable is the ratio of the fair value of plan assets to defined-benefit pension obligations at the beginning of the fiscal year (FUND_R). Detailed variable definitions are in Appendix 1.

The government initially set the funding ratio at 60% and prompted firms to meet the ratio by 2013. Over the examination period, the average funding ratio has increased for both groups of firms. The average funding ratio increased from 55% to 58% for firms with labour unions, and from 47% to 55% for firms without labour unions. The average funding ratio is higher for unionized firms than non-unionized firms, but the difference has decreased to 3% at the end of 2016.

Panel B of Table 3 reports the regression results of the pension funding ratio (*FUND_R*) on labour unions. In column (1), the existence of labour unions (*UNION*) is not significantly related to *FUND_R*. In columns (2) and (3), when we further include *JOINT* and *KCTU*, the results are similar to those in column (1). That is, presence and strength of labour unions have no significant effect on the pension funding levels. Unlike the financial reporting of pension liabilities in Table 2, it appears that labour unions have limited influence on pension funding. Since pension funding decisions are part of a firm’s core financing and investment decisions, unionized firms might strategically maintain a lower funding ratio to reduce rent-seeking activities of labour unions (Connolly et al., 1986; Klasa et al., 2009).

4.3. Additional Tests

4.3.1. The Impact of Leverage on the Relation Between Labour Union and Funding Ratio

In this section, we attempt to identify how labour unions affect the pension funding ratio in highly leveraged firms. When a company's pension obligations are not completely funded, future pension payments must be made in part from the company's own cash flows when they become due. If firms go bankrupt, employee retirement benefits would not be secured from creditors. We hypothesise that labour unions have more incentives to increase the pension funding percentage for highly leveraged enterprises in order to safeguard their retirement claims. Unlike the U.S. where the Pension Benefit Guaranty Corporation covers the unfunded benefits, Korea does not have such an institution. Labour unions might pay more attention to the pension funding ratio for financially distress firms. On the other hands, highly levered firms have incentives to maintain pension funding low since they do not have financial resources for pension funds contributions.

The sample is divided into quartiles according to financial leverage. We add a dummy for firms with high financial leverage (*LEV_H*) and its interaction with *UNION* to Equation 2. *LEV_H* equals 1 for firms in the top quartile of financial leverage.

Table 4 reports the regression results of the effect of financial leverage. As in Table 3, in column (1), the coefficients on *UNION* are negative, but insignificant. However, in column (2), the coefficient on *LEV_H*UNION* is significantly negative (-5.19). These results indicate that highly leveraged firms have more incentives to hold less pension funds for bargaining advantages over labour unions (Klasa et al., 2009).

4.3.2. The Effect of the Labour Union on the Magnitude of Contributions to Plan Assets

We further examine whether unionized firms contribute less to pension assets according to a rent-seeking argument of labour union. Panel A of Table 5 presents means of *CONTRIBUTE* by firms with and without labour unions. Firms with labour unions have a lower pension funding ratio than those without unions (1.2 vs. 1.53). In panel B, the regression results show that the coefficient on *UNION* is significantly negative (-1.84), suggesting that the presence of labour union is negatively related to the magnitude of contributions to pension funds.

Table 4. The effect of leverage on the relation between labor unions and funding ratio.

Variables	Column (1)		Column (2)	
	Coefficients	T-value	Coefficients	T-value
Intercept	3.91 ***	3.11	3.59 ***	2.85
UNION	-0.07	-0.59	0.72 ***	2.85
UNION X LEV_Q			-0.32 ***	-5.19
LEV_Q	-0.46 ***	-9.72	-0.30 ***	-3.49
SIZE	0.36 ***	8.31	0.36 ***	8.34
ROA	1.07	1.54	1.06	1.53
CFO	-0.10	-0.12	-0.10	-0.12
CASH	2.49 ***	2.95	2.64 ***	3.13
LOSS	-0.49 ***	-3.29	-0.48 ***	-3.24
BIG4	-0.17	-1.57	-0.17	-1.54
Industry	Control		Control	
Year	Control		Control	
Obs. numbers	3,628		3,628	
Adj. R-square	14.79%		15.07%	
F-value	14.29		14.29	

Note: The signs of *** represent the significance of 10% respectively. The dependent variable is the ratio of the fair value of plan assets to defined-benefit pension obligations at the beginning of the fiscal year (*FUND_R*). *LEV_Q* is the quartile portfolio of firms based on the financial leverage at the beginning of the year. Detailed variable definitions are in Appendix 1.

Table 5. The effect of labor unions on the level of contributions to plan asset.

Panel A. Means of variables by firms with labour union vs. without labour union						
Variables	Firms with labour union	Firms without labour union	Tests of difference in means			
	(n=206)	(n=33)	t-statistic			
Contribute	1.53	1.20	0.33	**		
Panel B: Regression results						
Variables	Column (1)		Column (2)		Column (3)	
	Coefficients	T-value	Coefficients	T-value	Coefficients	T-value
Intercept	0.86	1.58	0.84	1.53	0.85	1.53
UNION	-0.24 *	-1.84	-0.29	-1.01	-0.29	-1
JOINT			0.05	0.17	0.04	0.14
KCTU					0.02	0.14
LgFund_R	-0.18	-0.77	-0.17	-0.75	-0.17	-0.75
ROA	0.29	0.26	0.33	0.28	0.31	0.27
CFO	1.19	1.46	1.18	1.42	1.19	1.42
SGW	0.17	0.49	0.17	0.5	0.17	0.48
LEV	-0.55 *	-1.81	-0.54 *	-1.76	-0.54 *	-1.76
LOSS	-0.18	-1.03	-0.18	-1.02	-0.18	-1.02
SIZE	0.06 *	1.74	0.07 *	1.74	0.06 *	1.73
BIG4	-0.13	-0.72	-0.13	-0.71	-0.13	-0.71
Industry	Control		Control		Control	
Year	Control		Control		Control	
Obs. numbers	239		239		239	
Adj. R-square	11.61%		11.23%		10.84%	
F-Value	3.81		3.48		3.2	

Note: The signs of * and ** represent the significance of 5%, and 1%, respectively.

The dependent variable is the amount of contributions to plan assets divided by pension service costs (CONTRIBUTE). Detailed variable definitions are in Appendix 1.

5. Conclusions

Existing research on corporate pensions indicates that companies may understate pension liabilities to meet their financial reporting and tax goals. Firms may understate their pension liabilities to portray a better financial conditions. In this paper, we examine the effect of labour unions on corporate pensions. We find that firms with labour unions are less likely to understate pension liabilities on the statement of financial position, consistent with the view that firms exaggerate the burden of their defined benefit pension plans to enhance their bargaining power with unions. However, there is no association between labour unions and pension funding levels, suggesting that firms with labour unions do not contribute more to external pension funds. We also discover that in highly strained conditions, unionised businesses tend to retain a lower funding ratio and make fewer contributions to external pension plans. Overall, our results indicate that labour unions play a monitoring role in a discretion on reported pension obligations in financial reporting, whereas their roles are limited on corporate pension funding decisions.

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Appendix 1. Variable definitions.

Variable	Definition
Dependent variables	
RMS_DBO	Actuarial gains and losses associated with the remeasurement of pension obligations deflated by beginning defined benefit obligations.
FUND_R	The ratio of the fair value of plan assets to defined benefit pension obligations.
Independent variables	
UNION	An indicator variable for firms with labour union.
JOINT	An indicator variable for firms whose labour union is affiliated with the Korean confederation of trade unions or federation of Korean trade unions.
KCTU	An indicator variable for firms whose labour union is affiliated with the Korean confederation of trade unions.
ROA	Net income divided by beginning total assets.
CFO	Cash flow from operations deflated by beginning total assets.
LEV	Liabilities deflated by beginning total assets
LOSS	Indicator variable for firms reporting losses
SIZE	The natural logarithm of total assets at the beginning of the fiscal year.
SGW	The change in sales year t relative to year t-1. SIZE is the natural logarithm of the beginning total assets.
CASH	Cash and short-term financial assets deflated by the beginning total assets.
BIG4	An indicator variable for firms hiring BIG4 accounting firms.