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**The Effects of Unions on Working Conditions
in Japanese SMEs**

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Abstract

This study analyzes the effects of unions on normal working hours per week, the average number of days of paid leave and its use, wage increase, and overtime working hours. I show that unions lower weekly normal working hours, increase the average days of paid leave, and facilitate wage increases. However, a positive correlation exists between unions and individuals who work overtime for more than 60 hours per month. It means that although unions are useful in improving working conditions, such as normal working hours and wage increases, they are not effective in the reduction of overtime workings.

Keyword: Union, SMEs, Working conditions, Overtime working

JEL classification code: J51, J53, J31, M54

1. Introduction

In the past, unions were the center of industrial relations in Japan as well as in Western countries. However, employment relations¹ became informal in light of globalization and service industrialization. Over the years, employment relations have shifted from being commonly collective industrial relations where unions are able to negotiate with managers, to having an informal human resource management where the employees may directly negotiate with the managers without mediation. Hence, unions have lost their power. Figure 1 shows the trend of the unionization rate in Japan. The unionization rate was 25% in 1990 and has decreased since then, except in 2009 and 2010. It had reached 17% in 2016. Koike (1988) insisted that unions are significant, since they encourage communication between managers and employees. Morikawa (2010) examined the effects of unions on labor productivity by using firm data that described firms that had more than 50 employees. He insisted that although several studies from the U.S. had shown that unions have a negative effect on firm profitability, these results cannot exactly be applied nor concluded the same way in Japan. He also discussed how unionization rate decreases due to the increase in the rate of service industries. This, however, may not be the sole factor for the decrease in unionization rate. Other elements that are factored in may also lead to a decrease in unionization rate.

In this study, I reexamine the significance of unions by analyzing the effect of unions on normal working hours, wages, paid leave, and overtime working hours. Freeman and Medoff (1984) conducted a seminal research that set the ground work for other studies and developments that followed, which, in turn, leaves little room for further analysis on the subject.

Nonetheless, there are two reasons why analyses in this field are still significant.

First, most studies on industrial relations mainly focused on large firms, and rarely on the role of unions in SMEs. This is because the unionization rate is usually low in SMEs. Forth et al. (2006) showed that only 3% of all SME workplaces have existing unions, compared with 31% of workplaces in large firms in the UK. It resembles the situation in Japan. There is a significant difference in the unionization rate between SMEs and large firms (see Table 1). Thus, a large sample size is necessary to analyze unions in SMEs for precise estimations. Moreover, researchers might think that since employee relations in large firms may affect the ones in SMEs, the analyses of the employee relations in large firms are enough to understand the comprehensive employee relations in the country. However, the rate of employees in firms where the total number of employees is more than 1,000 accounts for only 23.8% of the workforce, as indicated in Table 1. Analyzing only large firms will not provide a comprehensive understanding of Japanese industrial relations. Therefore, I focus on the area that previous studies have not investigated, that is, analyzing SMEs that employ a majority of Japanese workers.

The second important reason to analyze this subject is due to the lack of previous studies that consider the effects of the unions on two labor conditions separately: unions could either easily negotiate with managers or not. Examining that unions are useful to decrease working hours and increase average wage, I will show that they are not effective in decreasing overtime hours and workload, which need a more efficient and a fair distribution system among employees in order to adjust the interests among employees. Hence, unions have been replaced

in both direct and informal negotiations that take place between managers and employees, thus losing their function as intermediaries. This is one of the reasons for the decrease in unionization rate.

2. Previous Studies

Previous studies typically focus on the effect of unions on employment conditions, which was one of the central issues in industrial relations. For example, Brunello (1992), Tsuru and Rebitzer (1995), Tachibanaki and Noda (2000), and Morikawa (2010) estimated the effects of the unions on wages, and productivities by using firm based data. Hara and Kawaguchi (2008) conducted a research by using an individual based data.

Concerning with the effect of unions on working hours, there were only a few studies, as Trejo (1993) pointed out. Trejo (1993) presented that unions lowered 17% of overtime working hours, using individual data in US. However, the coefficients of unions become insignificant, controlling premium of overtime working. In contrast with Trejo (1993), Bell and Hart (1998) researched using an individual data in UK and presented that union did not have a significant effect to decrease overtime working hours. Furthermore, Kalwij and Gregory (2005) used an individual data in UK and examined that while unions increase in males' overtime working hours, they did not have a significant effect in females'. However, the magnitude of the coefficient are very small.

In contrast with studies focusing on large firms or individuals, there are only a few studies that have focused on SMEs not only in union analysis but also in the overall field of industrial

relations. According to Wilkinson (1999), previous studies on industrial relations in SMEs are polarized into two groups: the “small is beautiful” and the “bleak house” perspectives. In the former, the Bolton Committee Report (1971) insisted that small firms facilitate close and harmonious working relationships, while Rainnie (1985) criticized the former by arguing that small firms are dictatorially run, with employees suffering from poor working conditions.

Several previous studies presented that unions are less frequently formed in SMEs than in large firms^{2,3} (Bouquin et al., 2007; Forth et al., 2006; Holten and Crouch., 2014; Van Gyes, 2006; Wilkinson, 1999). One of the factors that unions are less formed is because managers are averse to unions, with it being known to be detrimental to the management. Forth et al. (2006) presented that managers in SMEs preferred direct communication between managers and employees, and they had a negative impression toward unions. Marlow (2003) indicated that 93% of managers favored open door policies; they had a policy of “informal discussion and resolution of workplace problems.” Ram et al. (2001) insisted that managers in SMEs may attempt to eliminate the unions’ voice, considering that unions undermine and disrupt the familial atmosphere. Moreover, Van Gyes (2006) compared the country-level differences in employee representations such as unions and work councils in European countries. He also showed that the strong adversarial attitude against unions is common among managers in SMEs. In addition, although working conditions tend to be worse in SMEs, job satisfaction is most of the time higher, reducing the tendency for employees to organize unions. Wilkinson (1999) showed that the aversion of managers in SMEs toward unions discourage unions to be organized.⁴

Recently, studies that focus on the effects of unions have been accumulated, considering the change in trend from the collective voice that empowers unions, to the direct voice that courses through between managers and employees. Bryson (2004) examined the proposition that union voice was more effective to encourage fair treatment than direct voice, although he could not obtain a significant result. Bryson et al. (2013) analyzed the effects of the direct non-union voice versus the collective union voice on the work outcomes such as turnover rate, labor productivities, and financial performances. Their results indicated that the coexistence of the direct non-union voice and the collective union voice, which was labeled as the “dual-system,” was better than non-union only regimes. Pohler and Luchak (2014) examined whether high-involvement work practices (HIWPs) are a substitute for unions, and they reported that job satisfaction is maximized under the combination of unions and HIWPs; they even added that the latter complemented with unions.

Previous studies have revealed the following: Few studies focused on the effect of unions on labor conditions in SMEs, since unions are formed less in SMEs than in large firms in Western countries as well as in Japan. One of the reasons why unions are less formed in SMEs is the aversion of managers toward unions. Furthermore, recent works in this field showed that managers prefer direct communication with employees rather than the negotiation with a union. Some studies also examined whether non-union voices such as HIWPs can substitute for unions.

I examine the effects of unions on employment conditions in Japanese SMEs. I also divide the employment conditions into whether uniform improvements are possible or not, showing how flexible unions can deal with the problems, which are necessary to improve business

operations while considering the workers' best interests to efficiently allocate workload.

3. Industrial relations in Japan

The previous section discussed that managers in Western SMEs are adversarial to unions because they cause interruptions in their management, so they prefer an informal and more direct communication between managers and employees. However, caution should be exercised in applying this approach in the context of Japanese industrial relations because the firms themselves organize Japanese unions. This means that unions are not treated as outsiders to the firms. Aoki et al. (1997) presented that in the absence of corporate control through the active market, managers can maintain a long lasting harmonious relationship with employees, which enhances labor productivity. Moreover, in Japan, many department heads, board members, and even some presidents, have not only been union members in the past but have also played important and active roles in these organizations (Jacoby, 2005). Thus, even though unions are not favored in Western countries owing to its nature to interrupt management, it may not be directly applied to Japan.

Behind the harmonious labor-management relationship in Japan, previous studies have been conducted to examine the hypothesis that unions facilitate the communications between managers and employees and are able to reallocate labor force efficiently, which contributes to enhancing labor productivity. Koike (1988) and Kato and Morishima (2002) discussed that unions are significant in facilitating the communication between managers and employees. Morikawa (2010) showed that the presence of unions has significant positive effects on

productivity and wage.

However, as these researchers conducted studies using mainly large firms, it was difficult to apply their conclusions to SMEs directly. In Japan, since the employment conditions and customs in SMEs are sometimes influenced by large firms, we may understand the comprehensive industrial relations in Japan by focusing on large firms. However, the unionization rate is decreasing and prominently low in Japanese SMEs. This trend is generally explained by external causes such as an increase in the number of part-time job workers due to service industrialization, and very few studies attribute to problems inherent in unions. Only external causes cannot sufficiently explain the reasons for the decrease in the unionization rate. Thus, by focusing on Japanese SMEs, I will examine the significance of unions by clarifying what kinds of employment conditions unions can improve.

4. Data

Here, I explain the data, definitions of variables, and descriptive statistics. I use the data from “The Survey on Labor Situation of SMEs”⁵ conducted by National Federation of Small Business Associations (Chuo-Kai) in 2013 and 2016. These surveys aim at firms that have less than 300 employees (less than 100 employees in wholesale and service industries, less than 50 employees in retail). In 2013, the number of targeted firms was 40,606, out of which the number of respondents was 19,091 (the ratio of valid responses: 47.0%). In 2016, the number of targeted firms was 40,846, while the number of respondents was 18,873 (the ratio of valid responses: 46.2%). Since the ratio of valid responses is nearly 50%, the data are trustworthy.

As aforementioned, since unions are less organized in SMEs, a sufficient sample size is necessary to analyze unions in SMEs.

Next, I explain the model used for estimating the effects of unions on employment conditions as follows:

$$y_i = \beta_0 + \beta_1 \text{union}_i + \beta_2 X_i + \beta_3 \text{industry dummy} + \beta_4 \text{district dummy} + u_i$$

(1)

where y_i represents the outcome variables; for outcome variables, I use normal working hours, the average days of paid leave and its use per employee, wage rise, monthly overtime working hours per employee, and the rate of employees who work overtime for more than 45 and 60 hours per month.⁶ X_i is a vector of explanatory variables, which consist of the number of regular employees (female and male), state of management, plans to extend business, problems in management, and plans to hire new employees. In addition, I use regional and industrial dummies, as well as clustered robust standard errors, considering the correlation among industries.

Table 2 shows the descriptive statistics. The values of union firms are significantly higher than those of non-union firms in terms of normal working hours, paid leave, and wage rise dummy. The values of union firms are also higher than those of non-union firms in terms of monthly overtime working hours and the rate of employees who work overtime for more than 45 and 60 hours per month. These are the results of only t-test, not considering that the overtime

working hours may be longer in large firms, and the inverse causality that unions might be organized in firms where employees often have to work overtime. In the following analyses, I show estimates considering these possibilities.

5. Results

5.1. Effects of unions on normal working hours, paid leave, and wage increase

Here, I estimate the effects of unions on employment conditions. Table 3 shows the effect of the existence of unions on weekly normal working hours. The coefficients of unions are significantly negative, indicating that unions lower weekly normal working hours by 0.33 working hours per week. It is robust to estimations, as columns [1]–[3] show. Table 4 shows the results of paid leave. Columns [1]–[3] show the results of the given days of paid leave, while [4]–[6] show the results of the used days of paid leave. The coefficients of unions are positively significant in all columns. Unions lower 0.80–0.86 days in the given paid leave, while 0.68–0.73 days in the use of paid leave. Furthermore, Table 5 shows the effects of unions on wage. The coefficients of unions are positively significant in all columns. This indicates that unions increase the possibility of a rise in employee wages by 13%–15%.

In short, unions lower weekly normal working hours, increasing the given and the used days of paid leave and wage. As these results are consistent with that of Freeman and Medoff (1984), the effects of unions in the case of Japanese SMEs is confirmed.

5.2. Effects of unions on overtime working hours

Next, I examine the effects of unions on overtime working hours. Since 20% of all the firms have zero overtime working hours, I used Tobit model to deal with censored problems; columns [1] and [2] of Table 6 show the results. The coefficient of σ is significant, which implies that the Tobit estimation is appropriate. Although not significant, the coefficients of unions are positive, indicating that unions encourage employees to work overtime, which contrasts with the result Trejo (1993) showed.

The above result signals the problem of endogeneity due to inverse causality, which implies that those firms who allow employees to work overtime longer tend to have unions. To deal with this endogeneity problem, I used an instrumental variable (IV) method using the 2013 data. The IVs were obtained via a questionnaire involving how older workers are hired and a questionnaire on the voter ratio of proportional representation by regions either in the 2009 house of representative elections and in the 2010 house of councilor elections. The questionnaire indicating how the elderly are hired had the choices of the elderly being directly introduced from a business partner, a parent firm, or through a public employment service. Binary variables are constructed for each result.⁷ The reason for using these variables as instruments is because those who are hired this way may have already had a knowledge of unions where they worked before, and so they too facilitate the formation of unions. However, there is no direct relationship between the way they are hired and the overtime working hours. The reason for using the ratio of voters for pro-labor parties such as Democratic Party, Social Democratic Party, and Communist Party is that the higher voting rates would lead to more representatives. The existence of representatives in the areas facilitates the formation of unions.

Furthermore, the regions where electorates vote for these parties may have an inclination toward unions.

Columns [3]–[5] of Table 6 show the results of the IV estimation. Column [3] is the result of using all nine instruments. The Hansen’s J statistic for over identification is not significant, accepting the null hypothesis that all of the instruments are exogenous. The coefficients of unions became negative after dealing with the endogeneity, and this is supported by previous studies. However, the Kleibergen-Paap Wald F statistic is less than 10, suggesting that it might have the problem of weak instruments, which requires caution to interpret the results. To deal with weak instruments, I choose instruments for F values to be higher, considering the problem of over identification. Column [4] is the result with regional voting rates as instruments. Although the F value became higher, the coefficient of unions decreased and became significant only at the 10% level. Column [5] is the result of using the regional voting rates of Social Democratic Party and Communist Party as instruments. Although the F value became 9.67 (i.e., close to 10), the coefficient is not significant.

These results show that if I consider an inverse causality that longer overtime working may facilitate the formation of unions, the positive relationship between unions and overtime working disappears. However, I could not show that unions may decrease overtime workings.

5.3. Effects of unions in improving overtime working

As aforementioned, there is a positive correlation between unions and overtime working hours. Considering the endogeneity, I cannot show a robust result that unions lower overtime

working hours. However, even if unions cannot decrease overtime hours on average, they might be effective in decreasing extreme overtime workload.

Therefore, I use dependent variables as how often firms have employees who work overtime more than 45 and 60 hours per month. The answer choices are “1. Almost every month, 2. About once every three months, 3. Rarely, 4. Not at all.” A higher value implies lower overtime working hours. Columns [1] and [2] of Table 7 show the results. The coefficients of unions are negative, but not significant for both equations. In other words, unions in firms are correlated with those firms which have employees whose overtime working hours are more than 45 and 60 hours (p values: 0.11 and 0.12). It implies that unions do not improve extreme overtime working hours. Furthermore, I estimate by using binary variables whether firms have employees who work overtime for 45 and 60 hours almost every month. Columns [3] and [4] show the results; column [4] shows that unions are positively correlated with firms that have employees working more than 60 hours overtime. Thus, unions might be correlated with extreme overtime workers whose overtime exceed more than 60 hours almost every month.

These results may also have the endogeneity problem in that employees who work excessive overtime might facilitate unions. To deal with this problem, I examine the effects of unions on firms’ initiative to reduce overtime working via a questionnaire using the 2013 data. For the estimation, I use the following question: “Is your firm tackling to reduce overtime work?” The responses are “1. We are tackling positively, 2. We are tackling to some extent, 3. We are not tackling, 4. No overtime work.” I exclude “4. No overtime work” from estimations and use an ordered probit model. The results are shown in columns [5], [6], and [7]. The

coefficients of unions are not significant, although negative. Thus, I conclude that unions are not effective to reduce overtime working.

6. Discussion

The results from the previous sections show that, on the one hand, unions lower normal working hours, increase the given days of paid leave and its use, and facilitate wage rise. On the other hand, unions are positively correlated with overtime working hours, even after adding control variables, although their coefficients are not significant. In other words, I could not show that unions lower overtime working hours, even after using IV method to control for the endogeneity problem. Moreover, unions are positively correlated with those who work 60 hours overtime, and are not effective to reduce of overtime working hours in firms. Thus, the effects of unions are quite different on normal working hours, paid leave, wage increase, and overtime working hours.

I present three reasons for the above results. First, since employees can share the same interests in improving normal working hours, paid leave, and wage increase, they can cooperate with each other to demand from managers. However, this cannot be applied to overtime work. Since SMEs in Japan take on many jobs as subcontractors from large firms, they cannot adjust their burden by themselves, being impeded by the amount of their workload. It is necessary to adjust the interests among employees to reduce some of employees' overtime working hours. Although unions are effective to demand from managers to improve their working conditions uniformly, they are not effective to manage the interests among employees. As Ram et al.

(2001) point out, since SMEs are more flexible to change working hours by personal reasons than large firms are, they can resolve the problem of working hours without unions. Previous studies also suggest that due to the decrease in unions' influence, employment relations have changed from industrial relations to human resource management. Unions also cannot sufficiently respond to personal interests among employees in Japanese SMEs.

Second, in Japan, unions mainly aim to protect stable employment and may not sufficiently focus on reducing overtime working. Labor costs consist of the product of hourly wage, numbers of employees, and working hours. The adjustment of labor costs needs to change in any of these three factors. In Japan, managers adjust working hours to protect employment, and unions also implicitly admire this adjustment. Furthermore, job descriptions are not rigid and managers' discretionary power to assign employees in jobs and the places where employees work is admired widely in Japan. However, it is difficult for managers to fire employees because of losing their tasks. Unions also implicitly admire the flexible job descriptions and longer overtime working hours to ensure a stable employment.

Third, according to Article 36 of Labor Standards Act, an employer can enter into a written agreement either with a labor union organized by a majority of workers at the workplace or with a person representing a majority of workers. It means that if there is a union comprising a majority of workers, managers can easily enter into an agreement with the union, which may facilitate overtime working.

7. Conclusion

In summary, unions are effective to decrease normal working hours, increase the given days of paid leave and its use, and increase wage. These results are more or less consistent with previous studies that mainly analyzed large firms. However, I could not confirm that unions improve overtime working hours. Some estimations show that unions are positively correlated with longer overtime working hours.

The contributions of this study are as follows. First, few previous studies analyzed the effects of unions on working hours in SMEs, while many studies analyzed the effects of unions on wages and productivities in large firms or using an individual data. This article indicates that unions do not have a significant effect to decrease overtime working hours in Japanese SMEs.

Second, the reason for lower unionization rate is considered to be the increasing share of employees who work in service industries and part-time workers who do not tend to participate in unions. However, besides this reason, I examined that behind the changing employment relations from collective industrial relations to informal human resource management, unions cannot respond to adjust the interests among employees, which may be the inherent reason why unionization is decreasing. This study also shows that unions facilitate wage increase. Since it is difficult for firms to increase wage without improving productivity, I will not deny the importance of unions' communication between managers and employees (see Koike, 1988; Kato and Morishima, 2002; and Morikawa 2010).

Third, as the Japanese government is currently promoting “work-life balance” and is trying to make reforms to reduce overtime working, this has become an important issue in

Japan. Thus, the results that unions in SMEs cannot sufficiently deal with this problem have a policy implication to reduce overtime working.

This paper has also limitations as follows. First, it is useful to analyze in terms of large firms to confirm whether these results can be applied in large firms. One of the reasons why unions are not effective in reducing overtime working is that SMEs cannot reallocate their jobs, as their jobs are fixed and different from large firms. Second, it is useful to focus on differences in firm ownership structure such as family and non-family firms. Third, although I use the IV method to deal with the endogeneity caused by inverse causality, it may not be adequate. These are some of the challenges for future research.

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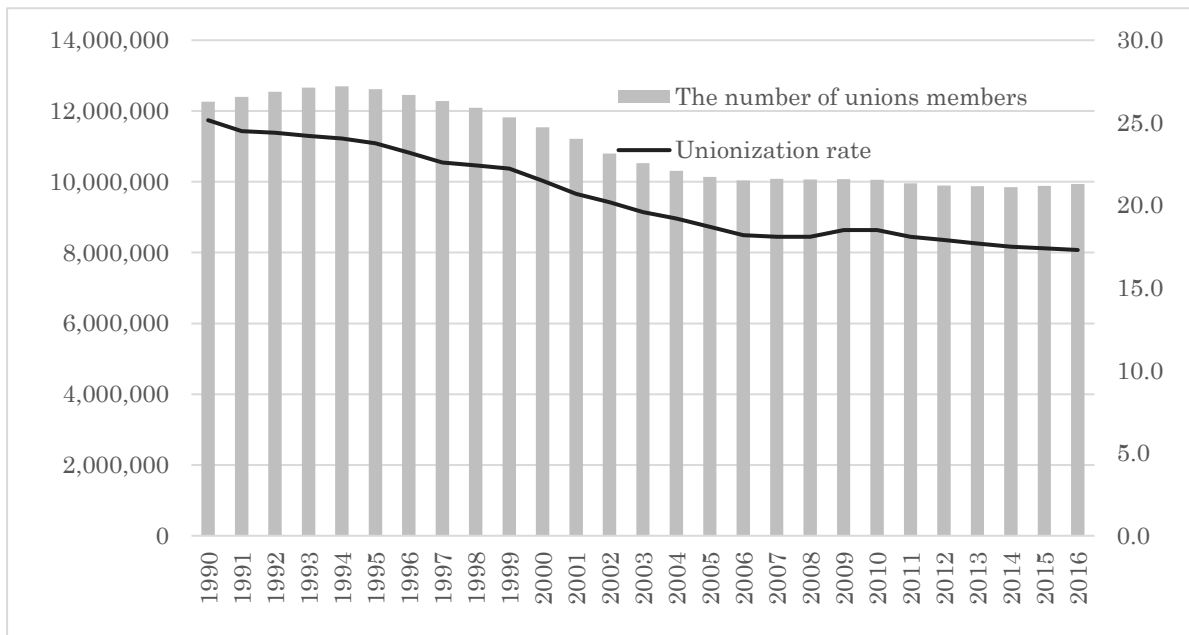
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Figure 1 The trend of the unionization rate in Japan



Source: Ministry of Health, Labor and Welfare, "Overview of labor union basic survey 2016"

Table 1 Unionization ratio by firm size

Firm size	The numbers of union members			The number of the employed	The estimated unionization rate
	year-to-year difference	composition			
	1,000 per	1,000 per	%	10,000 per	%
Sum	8,491	87	100	5,234	16.2
More than 1,000 employees	5,517	64	65	1,244	44.3
300 ~ 999	1,160	3	13.7	1,456	12.2
100 ~ 299	610	-6	7.2		
30 ~ 99	196	-5	2.3		
Less than 29 employees	28	-1	0.3	2,456	0.9
Others	981	32	11.6

Source: Ministry of Health, Labour and Welfare, "Overview of labor union basic survey 2016"

Table 2 Descriptive Statistics

Variable	2013				2016			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Normal working hours	39.062	1.497	39.524	1.441	39.188	1.458	39.466	1.484
Paid leave	17.151	4.224	15.554	5.064	16.922	4.341	15.490	5.226
The use of paid leave	7.906	4.371	7.208	4.521	8.068	4.265	7.262	4.502
Wage rise dummy	0.617	0.486	0.383	0.486	0.676	0.468	0.480	0.500
Monthly overtime working hours	16.345	15.259	11.644	13.061	15.473	13.321	12.133	13.779
Rate of more than 45 overtime working hours	2.692	1.187	3.203	1.004				
Rate of more than 60 overtime working hours	3.178	1.079	3.611	0.762				
The Plan for the overtime reduction	1.992	0.781	2.282	0.924				
Regular employee (Male)	61.757	55.144	23.192	29.929	58.657	55.087	22.556	29.942
Regular employee (Feale)	16.732	22.962	9.867	17.918	16.549	22.601	9.743	18.135
Ratio of regular employees	0.792	0.191	0.798	0.228	0.783	0.199	0.795	0.228
State of managements	2.217	0.645	2.199	0.661	2.145	0.657	2.161	0.650
Plans to extend business	0.344	0.475	0.284	0.451	0.343	0.475	0.311	0.463
Problems scant of labor quantities	0.106	0.308	0.120	0.325	0.284	0.451	0.272	0.445
Problems scant of labor qualities	0.325	0.468	0.339	0.474	0.518	0.500	0.470	0.499
Problems excess of labor quantities	0.145	0.352	0.131	0.338	0.154	0.361	0.162	0.368
Problems harsh competition	0.409	0.492	0.418	0.493	0.364	0.482	0.349	0.477
Plans to hire new employees	0.320	0.467	0.200	0.400	0.405	0.491	0.254	0.436
Sample Size	1164		12662		1092		13613	

Table 3 The determinants of normal working hours

	[1]	[2]	[3]
Union dummy	-0.33 [0.051]**	-0.327 [0.063]**	-0.327 [0.065]**
Regular employees Male	-0.001 [0.001]	-0.001 [0.001]	-0.001 [0.001]
Regular employees Female	0.001 [0.001]	-0.001 [0.001]	0.000 [0.001]
Regular employee ration	0.27 [0.054]**	0.29 [0.053]**	0.307 [0.054]**
State of management	-0.023 [0.018]	-0.026 [0.017]	-0.034 [0.017]+
Plans to extend on business	-0.015 [0.021]	-0.056 [0.022]*	-0.06 [0.021]*
Problems scant of labor quantities	0.072 [0.024]**	0.143 [0.033]**	0.156 [0.031]**
Problems scant of labor qualities	0.014 [0.022]	0.03 [0.021]	0.033 [0.020]
Problems excess of labor quantities	0.052 [0.037]	0.079 [0.039]+	0.081 [0.038]*
Problems harsh competition	-0.009 [0.025]	0.033 [0.033]	0.042 [0.035]
Plans to hire new employee	-0.041 [0.038]	-0.052 [0.045]	-0.063 [0.044]
Region dummy	yes	yes	no
Industry dummy	yes	no	no
Observations	28531	28531	28531
R-squared	0.03	0.02	0.01

Note: +p<0.10; *p<0.05; **p<0.01

Cluster robust standard error in parentheses.

Table 4 The determinants of paid leave

	[1]	[2]	[3]	[4]	[5]	[6]
	given	given	given	use	use	use
Union dummy	0.796 [0.161]**	0.842 [0.150]**	0.858 [0.151]**	0.707 [0.157]**	0.730 [0.161]**	0.681 [0.163]**
Regular employees Male	0.011 [0.002]**	0.015 [0.002]**	0.015 [0.002]**	0.000 [0.002]	0.003 [0.003]	0.003 [0.003]
Regular employees Female	0.003 [0.004]	0.000 [0.003]	0.000 [0.003]	-0.003 [0.003]	-0.006 [0.003]+	-0.007 [0.003]+
Regular employee ration	1.957 [0.197]**	2.120 [0.222]**	2.141 [0.215]**	0.355 [0.122]**	0.500 [0.143]**	0.363 [0.139]*
State of management	0.060 [0.030]+	0.076 [0.036]+	0.087 [0.036]*	0.107 [0.050]*	0.109 [0.051]*	0.125 [0.052]*
Plans to extend on business	-0.063 [0.082]	-0.044 [0.114]	-0.043 [0.109]	-0.251 [0.075]**	-0.266 [0.079]**	-0.253 [0.080]**
Problems scant of labor quantities	-0.244 [0.066]**	-0.379 [0.061]**	-0.393 [0.061]**	-0.188 [0.060]**	-0.240 [0.099]*	-0.269 [0.104]*
Problems scant of labor qualities	-0.208 [0.076]*	-0.255 [0.094]*	-0.260 [0.095]*	-0.300 [0.074]**	-0.298 [0.083]**	-0.306 [0.083]**
Problems excess of labor quantities	-0.443 [0.085]**	-0.557 [0.103]**	-0.561 [0.103]**	0.177 [0.106]	0.113 [0.113]	0.130 [0.118]
Problems harsh competition	0.159 [0.062]*	0.073 [0.107]	0.057 [0.105]	-0.133 [0.088]	-0.272 [0.112]*	-0.279 [0.116]*
Normal working hours	-0.203 [0.028]**	-0.227 [0.031]**	-0.240 [0.031]**	-0.112 [0.023]**	-0.123 [0.026]**	-0.130 [0.025]**
Plans to hire new employee	0.281 [0.165]	0.227 [0.152]	0.247 [0.153]	-0.280 [0.089]**	-0.210 [0.113]+	-0.228 [0.118]+
Region dummy	yes	yes	no	yes	yes	no
Industry dummy	yes	no	no	yes	no	no
Observations	28531	28531	28531	28531	28531	28531
R-squared	0.05	0.04	0.03	0.03	0.02	0.01

Note: +p<0.10; *p<0.05; **p<0.01

Cluster robust standard error in parentheses.

Table 5 The determinants of wage rise

	[1]	[2]	[3]
	wage	wage	wage
Union dummy	0.147 [0.019]**	0.131 [0.018]**	0.134 [0.016]**
Regular employees Male	0.002 [0.000]**	0.002 [0.001]**	0.002 [0.001]**
Regular employees Female	0 [0.000]+	0.001 [0.001]	0.001 [0.001]
Regular employee ration	0.119 [0.025]**	0.114 [0.028]**	0.115 [0.027]**
State of management	-0.076 [0.006]**	-0.073 [0.006]**	-0.071 [0.006]**
Plans to extend on business	0.066 [0.009]**	0.078 [0.009]**	0.079 [0.009]**
Problems scant of labor quantities	0.013 [0.012]	-0.017 [0.021]	-0.02 [0.021]
Problems scant of labor qualities	0.053 [0.008]**	0.05 [0.010]**	0.049 [0.010]**
Problems excess of labor quantities	0.043 [0.010]**	0.028 [0.011]*	0.026 [0.012]*
Problems harsh competition	0.023 [0.008]**	0.008 [0.011]	0.006 [0.012]
Normal working hours	-0.005 [0.004]	-0.009 [0.004]*	-0.01 [0.004]*
Plans to hire new employee	0.151 [0.013]**	0.164 [0.024]**	0.166 [0.023]**
Region dummy	yes	yes	no
Industry dummy	yes	no	no
Observations	28531	28531	28531
Log likelihood	-17906.45	-18168.88	-18249.73

Note: +p<0.10; *p<0.05; **p<0.01

Cluster robust standard error in parentheses.

Table 6 The determinants of overtime working hours

	[1]	[2]	[3]	[4]	[5]
	Tobit	Tobit	IV	IV	IV
Union dummy	0.191 [0.538]	0.131 [0.548]	-14.199 [6.312]*	-12.286 [6.672]+	-9.382 [7.368]
Regular employees Male	0.075 [0.005]**	0.075 [0.005]**	0.103 [0.017]**	0.098 [0.018]**	0.09 [0.019]**
Regular employees Female	-0.005 [0.017]	-0.006 [0.017]	-0.045 [0.009]**	-0.043 [0.009]**	-0.041 [0.009]**
Regular employee ration	1.317 [1.372]	1.158 [1.352]	-1.027 [0.565]+	-0.967 [0.564]+	-0.877 [0.569]
State of management	-1.516 [0.246]**	-1.508 [0.250]**	-0.839 [0.173]**	-0.845 [0.171]**	-0.855 [0.169]**
Plans to extend on business	1.708 [0.243]**	1.721 [0.242]**	1.011 [0.252]**	1.009 [0.249]**	1.005 [0.245]**
Problems scant of labor quantities	2.9 [0.575]**	2.88 [0.565]**	1.912 [0.413]**	1.943 [0.413]**	1.988 [0.411]**
Problems scant of labor qualities	2.12 [0.313]**	2.118 [0.314]**	1.413 [0.254]**	1.435 [0.252]**	1.47 [0.251]**
Problems excess of labor quantities	2.072 [0.424]**	2.09 [0.430]**	1.956 [0.351]**	1.961 [0.348]**	1.968 [0.343]**
Problems harsh competition	0.868 [0.383]*	0.873 [0.377]*	0.352 [0.233]	0.357 [0.231]	0.365 [0.227]
Plans to hire new employee	3.014 [0.391]**	2.999 [0.380]**	2.074 [0.310]**	2.082 [0.306]**	2.095 [0.302]**
Normal working hours	0.889 [0.162]**	0.894 [0.161]**	0.417 [0.115]**	0.443 [0.119]**	0.482 [0.128]**
Region dummy	yes	no	no	no	no
Industry dummy	yes	yes	yes	yes	yes
σ	14.742 0.737	14.749 0.737	- -	- -	- -
Wald	-	-	6.513	8.309	9.673
Hansen J test	-	-	9.903	5.12	3.418
Observations	28531	28531	13826	13826	13826

Note: +p<0.10; *p<0.05; **p<0.01

Cluster robust standard error in parentheses.

Table 7 The determinants of rate of overtime workers and improvement thereof

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
	45hours	60hours	45dummy	60dummy	improve	improve	improve
Union dummy	-0.093 [0.060]	-0.096 [0.061]	0.022 [0.015]	0.017 [0.007]*	-0.02 [0.034]	-0.032 [0.039]	-0.033 [0.043]
Regular employees Male	-0.01 [0.001]**	-0.01 [0.001]**	0.001 [0.000]**	0.000 [0.000]**	-0.003 [0.000]**	-0.003 [0.000]**	-0.003 [0.000]**
Regular employees Female	-0.002 [0.001]+	-0.001 [0.001]	0.000 [0.000]	0.000 [0.000]	-0.003 [0.001]**	-0.004 [0.001]**	-0.006 [0.001]**
Regular employee ration	0.067 [0.077]	-0.022 [0.095]	-0.011 [0.013]	0.008 [0.007]	0.084 [0.070]	0.145 [0.080]+	
State of management	0.073 [0.021]**	0.09 [0.015]**	-0.007 [0.003]*	-0.002 [0.002]	0.031 [0.020]	0.016 [0.021]	
Plans to extend on business	-0.086 [0.030]**	-0.089 [0.031]**	0.001 [0.005]	0.005 [0.002]*	-0.2 [0.023]**	-0.236 [0.023]**	
Problems scant of labor quantities	-0.061 [0.029]*	-0.074 [0.040]+	0.002 [0.006]	0.004 [0.004]	0.039 [0.040]	0.075 [0.039]+	
Problems scant of labor qualities	-0.203 [0.024]**	-0.202 [0.027]**	0.036 [0.006]**	0.011 [0.002]**	-0.034 [0.022]	-0.027 [0.023]	
Problems excess of labor quantities	-0.164 [0.034]**	-0.174 [0.036]**	0.014 [0.008]+	0.017 [0.004]**	-0.135 [0.031]**	-0.138 [0.033]**	
Problems harsh competition	-0.021 [0.027]	-0.032 [0.026]	-0.004 [0.007]	-0.004 [0.003]	-0.072 [0.026]**	-0.053 [0.026]*	
Plans to hire new employee	-0.213 [0.033]**	-0.195 [0.038]**	0.036 [0.008]**	0.013 [0.004]**	-0.166 [0.026]**	-0.15 [0.027]**	
Normal working hours	-0.084 [0.011]**	-0.055 [0.011]**	0.013 [0.003]**	0.004 [0.002]*	0.027 [0.009]**	0.029 [0.007]**	
Region dummy	yes	yes	yes	yes	yes	no	no
Industry dummy	yes	yes	yes	yes	yes	no	no
Observations	13826	13826	13826	13826	12146	12146	12146

Note: +p<0.10; *p<0.05; **p<0.01

Cluster robust standard error in parentheses.

Notes

¹ Employment relation is defined as a comprehensive concept covering the relationship between managers and employees. It includes the collective industrial relations and informal human resource management.

² Moule (1998) insisted that informal communication is common in SMEs.

³ Bouquin et al. (2007) analyzed employee representation of SMEs in European countries and argued that although the difference in unionization rate by firm size is small in Sweden, unions are less formed in SMEs in most of European countries.

⁴ Kirton and Read (2007) insisted that the preference of managers for flexibilities over formal policy militates against equality policies for females and minorities.

⁵ Based on the “Economic Census” in 2013, samples were allocated for each prefecture according to the number of private business establishments with less than 300 employees (excluding agriculture, forestry, and fishery). The extraction is performed using different extraction ratios by different employee size. The survey is conducted in all prefectures in Japan, except Fukushima, Tochigi, Shizuoka, Fukui, and Oita.

⁶ However, the survey on the rate of employees who work overtime for more than 45 or 60 hours was conducted only in 2013.

⁷ The base for dummy variables are “continuing to hire the incumbent elderly employees, others, and the elderly not hired.”