

Crowding Out of Intrinsic Motivation by Wage: The Case of Long-term Care Workers in Japan

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Abstract

This paper examines whether crowding out of intrinsic motivation by monetary compensation occurs in long-term care services in Japan. Empirical results show that crowding out appears only in non-profit organizations, but not in other organizations such as profit maximizing companies and public organizations. To examine causal effects in more detail, we perform instrumental variable probit estimation, using job ranks and qualifications as instrumental variables. The results are consistent with normal probit estimation. We find that in non-profit organizations, it is necessary to ensure that external motivation does not crowd out employees' intrinsic motivation, or that the relationships between principals and agents do not crowd out employees' intrinsic motivation.

1. Introduction

As an important incentive for individuals, intrinsic motivation has received a lot of attention from economists. In general, intrinsic motivation is defined as spontaneous volition of individuals for some action or things. For instance, children playing unmindful of compensation are generally regarded as intrinsically motivated. Heckman & Mosso (2014) pointed out that children's intrinsic motivation is an important component in generating their future human capital. Minkeler (2004) highlighted that intrinsic motivation enhances adult employees' job satisfaction and their willingness to continue working.

On the other hand, in the Japanese long-term care services, the lack of human resources is a serious problem. As medical technology develops, Japan has become one of the most aged nations in the world. In 2016, the rate of population aging in Japan is 26.7%, and it is estimated to grow further in the future¹. Therefore, the long-term care service is an important industry in current Japan and the demand for it is expected to increase.

The problem of the lack of employees in the long-term care services, however, remains

¹ To deal with this rate of aging, the care insurance system in Japan was revised in 2000.

as serious as ever. According to the Care Work Foundation (2015), the turnover of long-term care service workers in Japan is 16.5%.² To address this turnover, the reward for nursing care for the elderly was increased by law in 2009 and 2013. However, there is no consensus about whether a wage raise decreases the turnover of long-term care workers. Hanaoka (2009, 2011) found that the effects of a wage raise on employee turnover in the long-term care service companies vary according to occupation type, and that in some occupations, a wage raise has no effect. On the other hand, Owa (2010) pointed out that stimulating spontaneous conation of long-term care service workers effectively curbs turnover.³ Stimulating intrinsic motivation in long-term care workers could hence prove useful in reducing their turnover.

Under some conditions, external motivation, such as monetary compensation, may undermine intrinsic motivation and lower the effort exerted by the individual. Previous studies describe this phenomenon as the “crowding out of intrinsic motivation.”

In this paper, we first examine whether wage crowds out the intrinsic motivation of long-term care workers. Next, we explore why wage has a crowding out effect. In particular, we elucidate how workplace governance affects the crowding out of employees’ intrinsic motivation.

The remainder of this paper is structured as follows. Section 2 reviews previous studies and hypotheses. The data and methods are described in Section 3, and Section 4 presents the results. Section 5 concludes.

2. Literature Overview and Hypotheses

2-1 Crowding Out of Intrinsic Motivation by Extrinsic Motivation

The best-known analysis of the crowding out of intrinsic motivation in economics is Frey (1997). According to Frey (1997), extrinsic motivation, such as money, may sometimes undermine workers’ intrinsic motivation. As a result, an individual will exert less effort in completing a task. This phenomenon is called “crowding out of intrinsic motivation.”

Let us consider

² According to the Ministry of Health, Labour and Welfare (MHLW; 2015) of Japan, the average ratio of turnover in all industries in Japan is 11.3%.

³ For a study on European care services, see Gregg, et al. (2011).

$$U(x, w) = B(x, w) - C(x, w)$$

where $U(x, w)$ is the utility function of an agent, x is the result of completing the task, and w is the wage of the agent. $B(x, w)$ is the benefit function of the agent; it is a concave function of x and w . $C(x, w)$ is the cost function; it is a convex function of x and w . The crowding out of intrinsic motivation is then explained by the following model:

$$\frac{dx^*}{dw} = \frac{B_{xw} - C_{xw}}{C_{xx} - B_{xx}}$$

where x^* is the optimal solution to the task that maximizes the agent's utility, C_{xw} indicates the price effect, and B_{xw} indicates the marginal benefit. Crowding out of intrinsic motivation occurs when the sign of $\frac{dx^*}{dw}$ is negative; $\frac{dx^*}{dw}$ depends on the sign of B_{xw} . If the sign of B_{xw} is positive, the marginal benefit is larger than the price effect, and extrinsic motivation does not crowd out intrinsic motivation. On the other hand, if the sign of B_{xw} is negative, the price effect is larger than the marginal benefit, and the crowding out of intrinsic motivation occurs. Therefore, monetary compensation might crowd out the intrinsic motivation of employees under certain conditions.

2-2 Organizations, Employees, and Intrinsic Motivation

Psychology researchers found that when the right to self-determination is restricted, intrinsic motivation is crowded out by extrinsic motivation (Gagné and Deci: 2005). Moreover, in economics, it is recognized that crowding out of intrinsic motivation depends on the relationship between principals and agents (Bénabou and Tirole: 2003). Therefore, whether extrinsic motivation crowds out intrinsic motivation is considered to be determined by the relationships between employers and employees or by governance stemming from the organizational structure in the workplace.

A distinctive feature of the market for long-term care services is its variety of organizational forms, comprising maximizing companies as well as non-profit organizations (NPOs) and public organizations. In the long-term care service industry in particular, there are more NPOs than in other industries. The reason is that in care services, NPOs have comparative advantages over profit maximizing companies. Consumers will trust NPOs more than profit maximizing companies because of the NPOs' purpose and their restrictions on profit distribution. Accordingly, there is less

information asymmetry between consumers and NPOs than between consumers and for-profit companies (Hansmann: 1980).

In addition, a feature of NPOs as a workplace is that their employees tend to donate their labor more often than people working for profit maximizing companies. This is called “labor donation hypothesis” (Weisbrod: 1988). According to Besley & Ghatak (2005) and Serra, et al. (2011), this tendency stems from the characteristics of workers.⁴ Employees’ intrinsic motivation and pro-social motivation are hence expected to become more salient in NPOs than in profit maximizing companies. As a result, crowding out of intrinsic motivation is also more noticeable in NPOs. Further, Alonso and Lewis (2001) found that workers in public organizations also tend to be more pro-social than workers in for-profit companies. Therefore, workers in public organizations are expected to behave similarly to workers in NPOs.

Our hypotheses about the crowding out of intrinsic motivation in the two organizational forms are follows.

Hypothesis 1: In NPOs, the intrinsic motivation of employees is crowded out by higher wage.

Hypothesis 2: In public organizations, the intrinsic motivation of employees is crowded out by higher wage.

3. Data and Method

3-1 Data and Model

We used data on individual workers from the Fact-Finding Survey on Long-term Care Work, 2010, which covers the research carried out in 2010. This research is conducted every year by the Care Work Foundation, entrusted with the task by the MHLW of Japan. The resulting data comprise two kinds of data: data on individual workers and data on companies. Targeted companies are chosen at random from among all care service companies.⁵ The chosen companies then select up to three employees as

⁴ On the other hand, according to Francois (200) and Francois and Vlassopoulos (2008) this stems from the restriction of profit distribution. The restriction of profit distribution decreases the incentives of workers to freeride the labor that is donated by other workers.

⁵ Data about all care service companies in Japan are included in the database WAMNET, which is maintained by the Care Work Foundation.

respondents who are required to answer the administered questionnaire. The respondents are required to return the filled-out questionnaires directly to the Care Work Foundation by postal mail, not through their companies.

The Care Work Foundation database provides us with the most detailed data about long-term care service workers. In 2010, 17,030 companies and 51,090 employees were chosen to participate in the survey; 7,345 companies and 19,535 employees delivered valid responses. Figure 1 displays the distribution of job satisfaction among all the respondents. Job satisfaction was evaluated based on respondents' answers to the question: "How satisfied are you with your job?" The answer options were: "1. Dissatisfied," "2. A little dissatisfied," "3. Normal," "4. Moderately satisfied," and "5. Satisfied." The most frequently selected option was option number 3, followed by options number 4, 5, 2, and 1, respectively.

In this paper, we aim to focus on intrinsically motivated employees. We thus confined our analysis to those employees who answered "Because I love the elderly" to the question "Why did you choose your current job?" We label these employees "intrinsically motivated employees." Table 1 shows the answer options the question "Why did you choose your current job?", how many times each option was selected, and the proportion in which each answer was selected. The number of respondents who answered "Because I love the elderly" was 5,584 out of 19,535. Figure 2 presents the distribution of job satisfaction among the intrinsically motivated employees only. The results for two of the answer options are the same as in Table 1: the least selected option is option number 1, and option number 2 ranks fourth. However, the most selected option is option number 4, followed by options number 3 and 5, respectively, where the ratio of those who selected option number 5 exceeds 20%. These results show that the intrinsically motivated workers are more satisfied with their job than other workers, and compared to other workers, their answers are more heterogeneous.

Another aim of this study is to analyze the differences between organizations. We thus divided the respondents into three subsamples according to the type of organization they work for. The first subsample is for-profit companies. The respondents are those workers who selected the option "For-profit Company" when asked about the type of company they work for. The second subsample is NPOs; in this case the respondents selected one of the following options: "Social Welfare Corporation," "Medical Corporation," "NPOs", "Foundation or Corporation", or "Cooperative." The third subsample is public organizations, where the respondents selected the option "Local Government" or "Social Welfare Council." Table 2 presents the three subsamples. In Table 3, we consider only intrinsically motivated employees. Figures 3, 4, and 5 present

the distribution of job satisfaction among employees working for for-profit companies, NPOs, and public organizations, respectively. The shape of the distributions in these figures resembles the shape of the distribution shown in Figure 2. However, option number 5 (“Satisfied”) is selected more frequently by employees of for-profit companies than by employees of NPOs and public organizations. The intrinsically motivated employees of for-profit companies appear to be more satisfied than employees in the other two types of organizations.

We estimate the following probit model:

$$Job\ satisfaction_i = \beta_1 \ln(Wage)_i + \beta_K \sum_{i=1}^K X + u_i \dots (1)$$

where i indexes employees. The left-hand side of the equation is the dependent variable, employee i 's job satisfaction. This variable also indicates whether employee i remains intrinsically motivated. We define $Job\ satisfaction_i$ (whether employee i remains intrinsically motivated) based on employees' responses as described above:

$$Job\ satisfaction_i = \begin{cases} 1 & \text{if } y_i^\wedge > 2 \\ 0 & \text{if } y_i^\wedge \leq 2 \end{cases}$$

where y_i^\wedge is the job satisfaction option that employee i selected. If employee i selected option 3 (“Normal”), we regard the employee as remaining intrinsically motivated. If the employee selected option 2 (“A little dissatisfied”), we regard the employee unable to maintain intrinsic motivation⁶. Table 4 shows the discrete variable and binominal variable of the job satisfaction of each organization.

The main goal of this paper is to examine the statistical significance and the size and sign of the coefficient estimate (reflecting correlation) on the variable $\ln(Wage)_i$, that is, the first term on the right-hand side of Eq. (1) – the log-transformed wage of employee i . The second term in Eq. (1) is the vector of control variables, and the third item u_i is the error term.

The statistical significance, size, and sign of the coefficient estimate on $\ln(Wage)_i$ indicate whether the hypotheses are supported or not. If the sign of β_1 is negative and

⁶ We consider y_i^\wedge a proxy variable of job satisfaction for employee i , where y_i^* is the corresponding latent variable. Therefore, we assume that

$$y_i^\wedge = \begin{cases} 3, 4, 5 & \text{if } y_i^* > 0 \\ 1, 2 & \text{if } y_i^* \leq 0 \end{cases}$$

the coefficient is statistically significant correlates with $Job\ satisfaction_i$ in the subsample NPOs, Hypothesis 1 is supported. If the coefficient β_1 is negative and statistically significant (indicating statistically significant correlation with $Job\ satisfaction_i$) in the subsample public organizations, Hypothesis 2 is supported

Table 5 describes the control variables. The age dummy variables begin with “Under 25” and increase by increments of 5 to “Over 70.”⁷ We include 7 occupation dummies and an irregular employment dummy which discerns whether employee i works on a part-time basis (Clark and Oswald: 1994). As further explanatory variables, we add working hours as they may affect employees’ mental health (Kuroda and Yamamoto: 2014), a gender dummy, and a region dummy which is set in Central East. We control for firm size with dummies indicating three levels based on the number of employees.⁸ In all estimations, we use White robust normal standard errors.

3-2 Instrumental Variable Probit Regression

One problem affecting the estimation of satisfaction is the reverse causality between wage and individuals’ job satisfaction. To address this issue, we employ the instrumental variable (IV) probit regression. Ishikawa (1992) pointed out that the tenure years and education years of workers significantly correlate with their wage but not with their satisfaction. Therefore, tenure and length of education years may be used as variables to instrument the wage variable.

In addition, there are several important previous studies concerning employees of Japanese companies and long-term care services that inform our choice of instrumental variables. According to Tsuru et al. (2003), since 2000, wage was more affected by employment ranks of employees in Japanese companies than by tenure years. Zhou (2009) found that job qualifications are a more suitable measure of human capital of long-term care workers in Japan than education years. Taking the above into account, we use employment ranks at the organization and job qualifications as instrumental variables for workers’ wage.

To analyze the effect of employment ranks in organizations and job qualifications on workers’ wage, we estimate the following model:

⁷ According to Blanchflower and Oswald (2008), when considering the age of individuals, job satisfaction is U-shaped curve.

⁸ According to Benz and Frey (2008), the larger the number of employees in an organization, the lower the employees’ satisfaction.

$$\begin{aligned}
\ln(\text{Wage})_i = & \alpha_i + \gamma_1 \text{Middle Manager Dummy}_i + \gamma_2 \text{Ordinary Dummy}_i + \\
& \gamma_3 \text{Care Worker Qualification Dummy}_i + \\
& \gamma_4 \text{Care Manager Qualification Dummy}_i + \gamma_5 \text{Middle Manager} * \\
& \text{Care Worker Qualification}_i + \gamma_6 \text{Middle Manager} * \\
& \text{Care Manager Qualification}_i + \gamma_7 \text{Ordinary} * \\
& \text{Care Worker Qualification}_i + \gamma_8 \text{Ordinary} * \\
& \text{Care Manager Qualification}_i + \gamma_L \sum_{i=1}^L X + \varepsilon_i \dots (2)
\end{aligned}$$

The dependent variable on the left-hand side of Eq. (2) is the logarithm of wage of employee i . α_i is the constant term and ε_i is the error term. X is the vector of control variables and corresponds to that in Eq. (1). *Middle Manager Dummy* $_i$ indicates whether employee i is a middle manager. *Ordinary Dummy* $_i$ indicates whether employee i works at a standard caretaker position. *Care Worker Qualification Dummy* $_i$ indicates whether employee i is an officially qualified care worker. In the context of Japanese long-term care services, this qualification is esteemed as one of the most valuable job qualifications and qualified care workers are favored for positions in the industry.⁹ *Care Manager Qualification Dummy* $_i$ indicates whether employee i is a qualified care manager. This qualification is also valued in the Japanese care industry. The sixth, seventh, eighth, and ninth term are interaction terms between each two dummy variables. Table 6 describes these variables and presents selected summary statistics by subsample.

4. Results

Table 7 presents the results of probit regression considering intrinsically motivated employees in the whole sample. The coefficient on the logarithm of wage is negative and statistically significant at the 5% level; the marginal effect is -0.0258. This means that a 1% increase in wage reduces the probability that an employee experiences job satisfaction by 2.58%. However, after including the control variables, the coefficient is no longer significant. The correlation between intrinsic motivation and wage is not robust, indicating that the crowding out of intrinsic motivation is not taking place in the whole sample. On the other hand, the significance of coefficients on the control variables

⁹ In this dataset, “Care Manager” is the qualification most desired by employees. The second most desired qualification is “Care Worker.” These qualifications are regarded as the optimal ones among care-related qualifications.

occupation dummies and age dummies is especially high. The coefficients on age dummies are positive, which contradicts results from previous studies. The effects of subjective welfare on intrinsically motivated employees seem to differ from those on other employees.

The results of the estimation by subsamples are presented in Table 8. In Column 1 (for-profit companies), the log of wage is not statistically significant. This indicates that the intrinsic motivation of intrinsically motivated employees in for-profit companies is not crowded out by wage. In Column 2 (NPOs), on the other hand, the marginal effect is negative, -0.0393, and the log of wage is statistically significant at 10%, with control variables included in the regression. This means that a 1% increase in wage reduces the probability that an employee experiences job satisfaction by 3.93%; the estimated results is robust. Therefore, in NPOs, the intrinsic motivation of intrinsically motivated employees seems to be crowded out by wage. The results lend support to Hypothesis 1. In contrast, the estimation results in Column 3 (public organizations) show a negative and statistically significant marginal effect. After including the control variables, the log of wage is not statistically significant. We find no support for Hypothesis 2.

The results of the first-step estimation in the IV probit regression are shown in Table 9. The statistical significance and the sign of the coefficients on instrumental variables differ between subsamples. In Column 1 (the whole sample), the ordinary employee dummy, the care worker qualification dummy, and the care manager qualification dummy are statistically significant, whereas the other instrumental variables are not statistically significant. Furthermore, the signs of the coefficients on the ordinary employee dummy and on the interaction terms between the job rank dummies and the qualification dummies are all negative, except for the coefficients on the ordinary dummy and the care worker qualification dummy, which are positive. In Column 2 (for-profit companies), the statistical significance of the instrumental variables is similar to the results in Column 1. In Column 3 (NPOs), the results correspond to the results in Column 1 and 2, except for the value of the coefficient on the ordinary employee dummy, which is higher than in Columns 1 and 2. In addition, the care worker qualification dummy is not statistically significant. We find that in private organizations, middle managers and top managers receive a higher compensation than ordinary employees, and there are wage premiums based on job qualifications. This tendency is stronger in for-profit companies than in NPOs. On the other hand, in Column 4 (public organizations), the middle manager dummy is statistically significant, and the interaction terms between the middle management and care worker dummies as well as between the ordinary dummy and the care worker dummy are statistically

significant at the 1% and 5% level, respectively. Our results suggest that job rank and job qualifications are not independent, and the effects among middle managers are more heterogeneous compared with top managers and ordinary employees. Therefore, the tendency for employees to be positioned and governed based on their ability is stronger in public organizations than in private organizations.

Finally, Table 10 contains the results of the second-step estimation in our IV probit regressions. Most results differ from the results of the normal probit regressions shown in Table 8. The coefficient on the log of wage in Column 3 (NPOs) has the same sign as in Table 8. In addition, it is statistically significant at 1%. We have to note that the instrumental variables might be correlated with other explanatory variables. Taking this into consideration, our instrumental variables are plausible. Thus, we could consider that wage reduces the probability of the job satisfaction of employees increasing. Therefore, the intrinsic motivation of employees is considered to be crowded out by wage in NPOs.

5. Conclusions

This study examines whether the intrinsic motivation of employees in the long-term care services in Japan is crowded out by wage. Our estimation results suggest that crowding out of intrinsic motivation occurs only in NPOs. In other types of organizations, such as for-profit companies and public organizations, the intrinsic motivation of employees is not crowded out by wage.

The results indicate that the effects of wage differ between types of organizations. Thus, the forms of compensation should differ between types of organizations as well. In for-profit companies and public organizations, we do not observe crowding out of intrinsic motivation. This suggests that to motivate employees in for-profit companies to exert more effort, employees should be compensated based on their performance.

The relationships between employees and consumers are important in long-term care services. Assessment by consumers should thus be emphasized as a determinant of wage. In public organizations, where caretakers' salaries are fixed, a general increase in salaries might be an effective motivating factor. However, the incentives of employees as public agents are more complex than the incentives of employees in private organizations (Dixit: 2000). Therefore, monitoring by principals such as top control agencies should be done more carefully.

In NPOs, types of extrinsic motivation that do not undermine intrinsic motivation should be considered. For instance, awards might increase employees' intrinsic

motivation by stimulating their self-esteem without crowding out their intrinsic motivation.

Alternatively, in order to prevent crowding out of intrinsic motivation, the relationships between managers and ordinary employees should be revised. Whether extrinsic motivation crowds out intrinsic motivation depends on the relationship between principals and agents. The information asymmetry between principals and agents causes agents not to trust their principals' assessment. Consequently, crowding out of intrinsic motivation occurs. Employees of NPOs generally seem to trust each other more than employees of other organizations. However, compared with other types of organizations, trust among employees of NPO is considered more heterogeneous. Further, as employees of NPOs' are sensitive to the relationships among themselves, little information asymmetry in NPOs may result in crowding out of employees' intrinsic motivation. The issue of generating social capital at workplaces in NPOs should be addressed to a greater extent, especially between middle managers and top managers where it is needed more than between top managers and ordinary employees. For instance, Hotta (2010) found that opportunities for employees to talk to each other reduces employees' mental stress.

In this paper, we considered employees intrinsically motivated if they answered "Because I love the elderly" to the question on why they chose to work in long-term care services. However, it is possible to consider employees intrinsically motivated based on other answers (for instance, "Because I want to participate in, or contribute to society").¹⁰ To address this issue, more detailed analyses allowing for a deeper understanding of intrinsic motivation in employees and individuals are needed. Further, in the context of long-term care services, the relationships between employees and consumers are critical factors in shaping these organizations. The importance of relationships between employees and consumers warrants a more detailed examination, which we leave for future research.

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¹⁰ Perry and Wise (1990) call it "Public Service Motivation."

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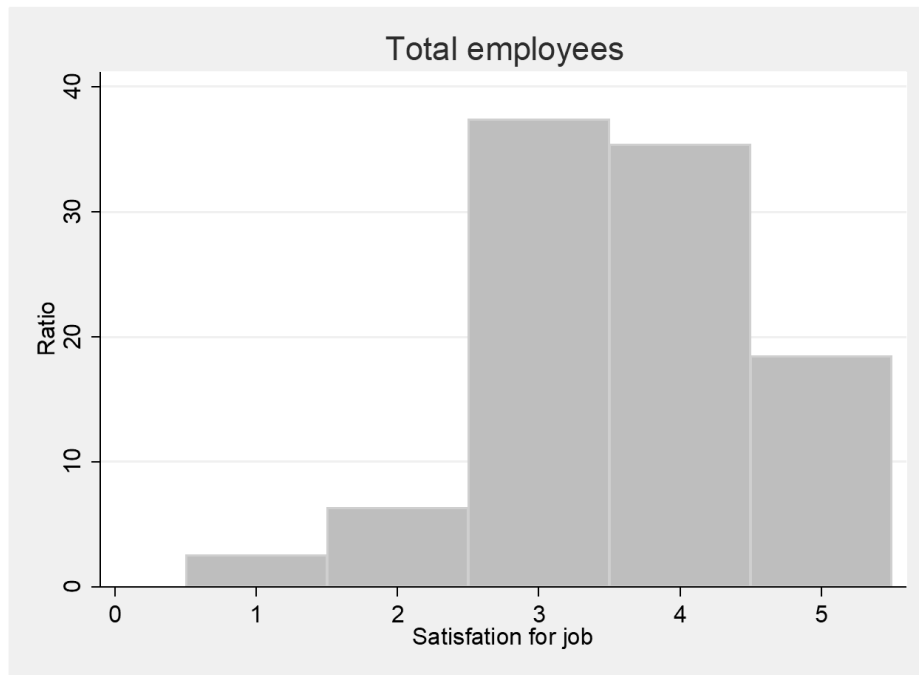
Appendix

We assume that the error term follows the standard normal distribution. The density function $F(x_i' \beta)$ and the cumulative distribution function $L(\beta)$ thus take the form.

$$F(x_i' \beta) = \int_{-\infty}^{\infty} \frac{1}{\sqrt{2\pi}} e^{-\frac{\sigma^2}{2}} d\sigma, \text{ and}$$

$$L(\beta) = \sum_{i=1}^N [y_i \ln\{F(x_i' \beta)\} + (1 - y_i) \ln\{1 - F(x_i' \beta)\}].$$

Figure 1. Distribution of Job Satisfaction : Total employees



Notes: Question item is "How satisfied are you with your job?". Answer items are as 1 means "Dissatisfied", 2 means "A Little dissatisfied", 3 means "Normal", 4 means "Moderately satisfied", 5 means "Satisfied". Observations is 19535.

Table 1. Question item and answer items for employment

Question item : "Why did you select your present job?"		
Ansewer items : Because ...		
	Number	Answer Ratio
"I love the elderly"	5584	28.58

Other items		
"I feel worth doing this job."	10890	55.75
"This job will be needed at the future."	7183	36.77
"I want to contribute to social."	6656	34.07
"I want to participate to social."	3397	17.39
"I experienced family care."	3383	17.32
"My skill will be useful at this job."	6901	35.33
"I want knowledge and skill of this job."	4679	23.95
"I want money."	714	3.65
"I can work as I wish."	2816	14.42
"There are no job else I want to work."	2209	11.31
Other reasons	822	4.21
"I have no reason to work."	514	2.63
Observations	19535	

Notes: The subjects can use multiple answer items. Therefore, sum of answer ratio is not the value 100.

Figure 2. Distribution of Job Satisfaction : Intrinsically motivated employees (Whole sample)



Notes: Question item is "How satisfied are you with your job?". Answer items are as 1 means "Dissatisfied", 2 means "A Little dissatisfied", 3 means "Normal", 4 means "Moderately satisfied", 5 means "Satisfied". The sample consists of employees who answered "(Because) I love old the elderly" to the question "Why did you select your present job" as Table 1.

Table 2. Organization forms of workplace

Sub samples	Answer items	Number
Profit Company	Profit Company	9074
	Observations	9074
Non Profit Organizations	Social Welfare Corporation	2835
	Medical Corporation	2557
	Non-Profit Organization (NPO)	1014
	Foundations, Corporations	943
	Cooperative	498
	Observations	7847
	Public Organizations	226
Public Organizations	Social Welfare Council	1471
	Observations	1697
	Others and Not answerd, Unknowns	917
Observations		19535

Notes: Answer items are deffined by based on corporate law of Japan. In Japan, "Social Welfare Corporation" is deffined as private organization which object is increasing of social welfare. On the other hand, "Social Welfare Council" is public organizations objects of which is same Social Welfare Corporations. "Public Organization" is including all organizations which is governed by public administrations like local administrations, central administrations.

Table 3. Number and intrinsically motivated employees by sub samples

Answer item : (Because) I love the elderly.	Number	Answerd Ratio
Profit Companies	2862	28.68
Non-Profit Organizations	2304	29.36
Public Organizations	397	23.39
Observations	5563	

Notes: We excluded employees who answered "Others and Not answerd, Unknowns ". Therefore, observations is less than total observations on Table 1.

Figure 3. Distribution of Job Satisfaction : Intrinsically motivated employees (Profit Companies)



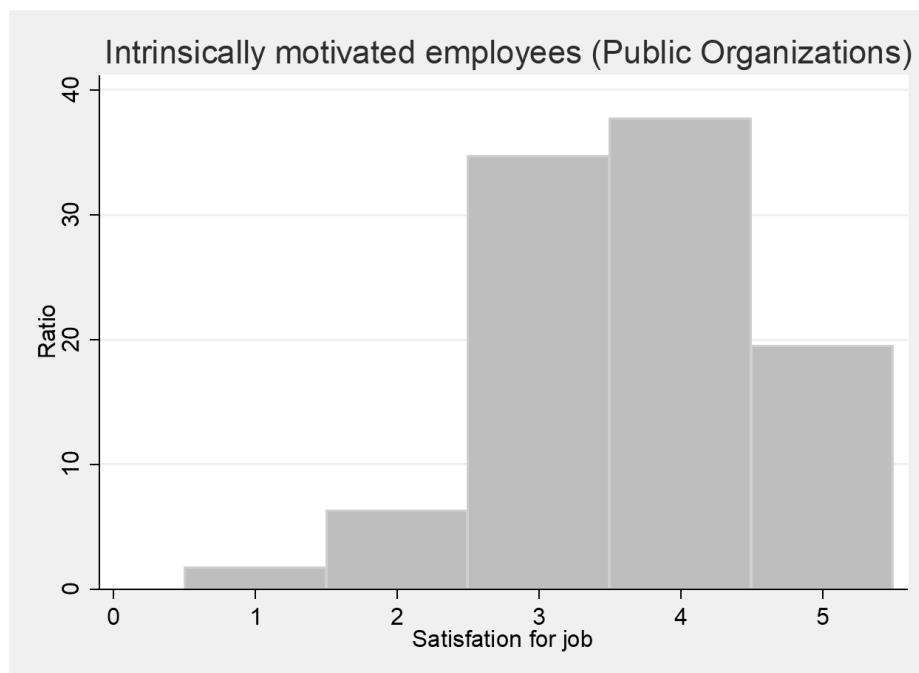
Notes: Question item is "How satisfied are you with your job?". Answer items are as 1 means "Dissatisfied", 2 means "A Little dissatisfied", 3 means "Normal", 4 means "Moderately satisfied", 5 means "Satisfied". The sample consists of employees who answered "(Because) I love the elderly" to the question "Why did you select your present job?", and equivalent to sub samples by organization forms of workplace as Table 3.

Figure4. Distribution of Job Satisfaction : Intrinsically Motivated employees (Non-Profit Organizations)



Notes: Question item is "How satisfied are you with your job?". Answer items are as 1 means "Dissatisfied", 2 means "A Little dissatisfied", 3 means "Normal", 4 means "Moderately satisfied", 5 means "Satisfied". The sample consists of employees who answered "(Because) I love old the elderly" to the question "Why did you select your present job", and equivalent to sub samples by organization forms of workplace as Table 3.

Figure 5. Distribution of Job Satisfaction : Intrinsically motivated employees (Public Organizations)



Notes: Question item is "How satisfied are you with your job?". Answer items are as 1 means "Dissatisfied", 2 means "A Little dissatisfied", 3 means "Normal", 4 means "Moderately satisfied", 5 means "Satisfied". The sample consists of employees who answered "(Because) I love the elderly" to the question "Why did you select your present job", and equivalent to samples by organization forms of workplace as Table 3.

Table 4. Statics of Job Satisfaction of Intrinsically motivated Employees

	Job Satisfaction			
	<u>Discrete Variable</u>		<u>Binomical Variable</u>	
	Mean	Standard Diviation	Mean	Standard Deviation
All	3.75	0.95	0.19	0.39
Sub Samples				
Profit Companies	3.84	0.93	0.20	0.40
Non-Profit Organizations	3.67	0.96	0.18	0.38
Public Organizations	3.67	0.92	0.18	0.38

Notes: Discrete choice is based on answer results which is described on Figure 2 to Figure 5. Binominal choice takes 1 value if satisfaction of employees for job takes over 2 (A Little dissatisfied) at discrete choice.

Table 5. Definition of variables and basic statics

	Definition	Mean	Standard Deviation
Logarithm of wage	Logarithm of employees' wage	12.06	0.51
Logarithm of working hours	Logarithm of employees' working hours per 1week	3.57	0.43
Female dummy	Takes the value 1 if employees is female, and otherwise is 0.	0.80	0.40
Non-Regular dummy	Takes the value 1 if employee is working as non-regular, and otherwise is 0.	0.30	0.46
Region dummy (Kanto)	Takes the value 1 if employee lives at Kanto region, and otherwise is 0.	0.23	0.42
Occupation dummies	Takes the value 1 if employees work as these occupations, and otherwise is 0.		
Helper		0.20	0.40
In-home care worker		0.12	0.32
Nursing staff		0.10	0.30
Other care worker		0.58	0.49
Life consultant		0.11	0.31
Care manager		0.10	0.31
Others		0.04	0.20

Table 5. Continued

Age dummies	Takes the value 1 if employees belong to these age class, and otherwise is 0.		
Under 24		0.08	0.27
25-29		0.13	0.34
30-34		0.15	0.36
35-39		0.13	0.34
40-44		0.12	0.32
45-49		0.10	0.30
50-54		0.10	0.31
55-59		0.08	0.28
60-64		0.06	0.24
65-69		0.02	0.13
Over 70		0.02	0.14
Firm size dummies	Takes the value 1 if firm has these employees, and otherwise is 0.		
Under 99		0.29	0.46
100-299		0.14	0.34
300-499		0.04	0.18
Over 500		0.08	0.27

Notes: In occupation dummies, subjects can use multiple answer items. Therefore, sum of mean of occupation dummies is not 1 value.

Table 6. Definition of instrumental variables and basic statics

	Definition	Sub samples	Mean	Standard Diviation
Middle management dummy	Takes 1 value if employees are middle management position, and otherwise is 0.		0.23	0.43
		Profit Companies	0.22	0.41
		Non-Profit Orgamnizations	0.26	0.44
		Public Organizations	0.18	0.39
Ordinaly dummy	Takes 1 value if employees are ordinaly position, and otherwise is 0.		0.59	0.49
		Profit Companies	0.56	0.50
		Non-Profit Orgamnizations	0.60	0.49
		Public Organizations	0.69	0.46
Care worker qualification dummy	Takes 1 value if employees have care worker qualification, and otherwise is 0.		0.50	0.50
		Profit Companies	0.44	0.50
		Non-Profit Orgamnizations	0.58	0.49
		Public Organizations	0.54	0.50
Care manager qualification dummy	Takes 1 value if employees have care manager qualification, and otherwise is 0.		0.16	0.37
		Profit Companies	0.14	0.35
		Non-Profit Orgamnizations	0.19	0.39
		Public Organizations	0.17	0.38

Table7. Results of Probit Regression : Determinants of Job Satisfaction (Whole sample)

	Dependent variable : Job Satisfaction			
	(1) All Employees			
	Marg. Eff.	Std. Err.	Marg. Eff.	Std. Err.
Logarithm of wage	-0.0258 **	[0.04]	-0.0028	[0.06]
Working hours	—		-0.0479 ***	[0.06]
Woman dummy	—		-0.0152	[0.06]
Non-Regular dummy	—		0.0160	[0.06]
Region dummy (Kanto)	—		0.0296 **	[0.05]
Occupation dummies				
Helper	—		0.0009	[0.07]
In-home care worker	—		0.0509 ***	[0.07]
Nursing staff	—		0.0106	[0.08]
Other care worker	—		-0.0386 **	[0.06]
Life consultant	—		0.0526 ***	[0.07]
Care manager	—		0.0828 ***	[0.08]
Others	—		0.0756 ***	[0.10]
Age dummies				
Under 24	—		Reference	
25-29	—		0.0059	[0.12]
30-34	—		0.0308	[0.11]
35-39	—		0.0368	[0.11]
40-44	—		0.0443	[0.11]
45-49	—		0.1093 ***	[0.11]
50-54	—		0.1203 ***	[0.11]
55-59	—		0.1356 ***	[0.11]
60-64	—		0.1635 ***	[0.12]
65-69	—		0.2894 ***	[0.12]
Over 70	—		0.1417 ***	[0.17]
Firm size dummies				
Under 99	—		Reference	
100-299	—		-0.0334 **	[0.07]
300-499	—		-0.0498	[0.13]
Over 500	—		0.0208	[0.07]
Wald chi Square	5.48		264.90	
Pseudo R Square	0.0013		0.0599	
Observations	4992		4700	

Notes : The sample consists of employees who answered "(Because) I love old the elderly" to the question "Why did you select your present job" as Table 1. Control variables are described on Table 5. Dependent variable is binominal variable whether employee is satisfied for his job or not described on Table 4. Numbers in parentheses are robust standard errors. *** and ** suggest statistical significance at the 1 % and 5% levels.

Table8. Results of Probit Regression : Determinants of Job Satisfaction (Sub samples)

	Dependent Variables : Job Satisfaction					
	(1) Profit Companies		(2) Non Profit Organizations		(3) Public Organizations	
	Mrgin. Eff.	Std. Err.	Mrgin. Eff.	Std. Err.	Mrgin. Eff.	Std. Err.
Logarithm of wage	0.0270	[0.08]	-0.0393 *	[0.10]	0.0058	[0.24]
Control variables	All		All		All	
Wald chi Squire	114.46		170.21		23.80	
Psedo R Squire	0.0505		0.0959		0.0647	
Observations	2293		2052		337	

Notes : The sample consists of employees who answerd "(Because) I love the elderly" to the question "Why did you select your present job", and equivalent to sub samples by organization forms of workplace as Table 3. Dependent variable is binomical variable whether employees is satisfied for his job or not described on Table 4. Numbers in parentheses are robust standart errors. * suggests statistical signficance at the 10 % levels, respectively. Control variables are equivalent to Table 7. However, estimation of control variables are not reported.

Table9. Results of IV Probit Regression : First Step Estimation (Determinants of Logarithm of wage)

	Dependent variable : Logarithm of wage							
	(1) Whole sample		(2) Profit Companies		(3) Non-Profit Organizations		(4) Public Organizations	
	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.
Middle management dummy	0.0275	[0.03]	0.0130	[0.04]	0.0030	[0.04]	0.4480 ***	[0.10]
Ordinaly dummy	-0.0891 ***	[0.03]	-0.0675 *	[0.03]	-0.1310 ***	[0.03]	0.0498	[0.09]
Care worker qualification dummy	0.0751 **	[0.03]	0.0782 *	[0.04]	0.0228	[0.04]	0.3923 ***	[0.10]
Care manager qualification dummy	0.1297 ***	[0.03]	0.1669 ***	[0.05]	0.0904 *	[0.05]	0.2535	[0.11]
Middle*Care worker	-0.0235	[0.04]	-0.0375	[0.05]	0.0334	[0.05]	-0.4955 ***	[0.13]
Middle*Care manager	-0.0448	[0.04]	-0.0902	[0.08]	-0.0388	[0.06]	-0.0996	[0.19]
Ordinaly*Care worker	0.0087	[0.03]	-0.0381	[0.05]	0.0758	[0.05]	-0.2583 **	[0.12]
Ordinaly*Care Manager	-0.0544	[0.04]	-0.0833	[0.06]	-0.0224	[0.06]	-0.2157	[0.10]
Control variables	All		All		All		All	
Wald Test of Exogeneity : Chi squire	2.53	[p=0.11]	0.53	[p=0.47]	1.82	[p=0.18]	0.00	[p=0.99]
F test : Chi squire	158.56	[p=0.00]	62.43	[p=0.00]	92.44	[p=0.00]	57.20	[p=0.00]
Observations	4700		2293		2052		337	

Notes : The sample consists of employees who answerd "(Because) I love the elderly" to the question "Why did you select your present job", and equivalent to sub samples by organization forms of workplace as Table 3. Dependent variable is logarithm of wage of employees. Numbers in parentheses are robust standart errors. *** and **, * suggest statistical significance at the 1 % and 5%, 10 % levels, respectively. Control variables are equivalent to Table 7 and Table 8. However, estimation of control variables are not reported.

Table 10. Results of IV Probit Regression : Second Step Estimation (Determinants of Job Satisfaction)

	Dependent variable : Job Satisfaction							
	(1) Whole sample		(2) Profit Companies		(3) Non-Profit Organizations		(4) Public Organizations	
	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.
Logarithm of wage	-0.6236 *	[0.38]	-0.3867	[0.66]	-0.9686 *	[0.56]	0.0106	[0.84]
Control variables	All		All		All		All	
Wald chi Squire	284.63		115.03		190.72		24.65	
Log pseudolikelihood	-4019.68		-2089.82		-1609.82		-198.75	
Observations	4700		2293		2052		337	

Notes : The sample consists of employees who answered "(Because) I love the elderly" to the question "Why did you select your present job", equivalent to samples by organization forms of workplace as Table 3. Dependent variable is binominal variable whether employees is satisfied for his job or not described on Table 4. Numbers in parentheses are robust standart errors. * suggests statistical significance at the 10 % level, respectively. Control variables are equivalent to Table 7 and Table 8 and Table 9. However, estimation of control variables are not reported.