Factor Decomposition of the Gender–Job Satisfaction Paradox: Evidence from Japan

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Previous studies found that although women have disadvantages in terms of wage and working conditions in labor markets, they derive more satisfaction from work than men do. This is called the "gender–job satisfaction paradox." In this paper, we use a data set composed of company personnel data and employee survey data to examine whether such a paradox exists in Japan. Also, we use the Oaxaca–Ransom decomposition technique to reveal the main factors contributing to this paradox. We found a gender–job satisfaction paradox in treatment job satisfaction.

INTRODUCTION

In this paper, we examine the gender differences in job satisfaction by using a data set that combines personnel data from an anonymous company and data from a survey of the company's employees. In addition, we examine whether the "gender–job satisfaction paradox" exists in Japan and reveal the main factors contributing to this paradox. Job satisfaction has received significant attention from economists in recent years. Many previous studies focused on specific factors such as wage, race, education, country, union membership, training and firm size[1]. Gender difference, especially, is an important factor in job satisfaction. Sloane and Williams (2000) compared job satisfaction between men and women and showed that the factors affecting job satisfaction differ for men and women even when they have the same work environment. In addition, with respect to gender differences in job satisfaction, previous studies found that although women have disadvantages in terms of wage and working conditions in labor markets, they derive more satisfaction from their work than do men. This is called the gender–job satisfaction paradox, which is observed in Western countries such as the United States, the United Kingdom and others. Previous studies identified several factors that lead to the gender–job satisfaction paradox including gender differences in preferences and work–life balance policies.

Gender difference in job satisfaction is an important research area in the recent literature in job satisfaction and women's labor supply. In Japan, the supply of female labor supply has been increasing in recent years; however, compared to the United States and the United Kingdom, the work environment for women in Japan has not improved enough. If women indeed have significant disadvantages in terms of wage and working conditions than do men in labor markets, then the mere observation of higher job satisfaction in women than in men does not necessarily indicate the existence of the gender–job satisfaction paradox. Thus, for this reason, it is still unclear whether the paradox exists in Japan. In this

paper, we therefore examine whether the relationship between job satisfaction and its factors is structurally different for men and women in Japan and whether the gender–job satisfaction paradox exists in Japan. There is currently no detailed study that uses the Oaxaca–Ransom decomposition technique to examine the gender difference in job satisfaction in Japan. The results obtained from our study may therefore be useful for policies on personnel and women's labor supply.

This paper is organized as follows. Section 2 provides a survey of the related literature. Section 3 provides the information from the anonymous company that cooperated in this study and a detailed description of the data. Section 4 provides the empirical results, while Section 5 provides the Oaxaca–Ransom decomposition results. Section 6 presents the conclusion of this study.

LITERATURE REVIEW

There have been many studies on the gender–job satisfaction paradox in other countries. For instance, Sousa-Poza and Sousa-Poza (2000) used cross-country data from Western countries, Israel and Japan to examine gender differences in job satisfaction. They have found that the gender–job satisfaction paradox exists in the United States, the United Kingdom and Switzerland, but not in Japan. Kaiser (2007) used data from 14 European Union countries and found that the paradox exists in these countries. In addition to these researches, some previous studies examined the factors affecting the gender–job satisfaction paradox. Clark (1997) used data from the British Household Panel Survey and found that women have lower job expectations, which leads to the gender–job satisfaction paradox. In addition, Clark (1997) pointed out that increasing the women's labor supply would remove this paradox. Sousa-Poza and Sousa-Poza (2003) used pooled data for 10 years for the United Kingdom and showed that the gender–job satisfaction paradox decreased every year owing to the decreasing level of women's job satisfaction. Bender et al. (2005) found that women in workplaces occupied by women express higher job satisfaction because such workplaces provide more job flexibility. Sloan and Williams (2000) suggested that women are more likely to choose jobs that provide high satisfaction than do men, which leads to the gender–job satisfaction paradox. In addition, they found that the metrology of choosing jobs is different for men and women, but that both men and women choose jobs that maximize their utility. In addition, they were unable to examine the gender differences in job satisfaction. In this study, we use factor analysis and make a continuous index of job satisfaction, enabling us to use ordinary least squares (OLS) estimation and the Oaxaca–Ransom decomposition technique. By using the Oaxaca–Ransom decomposition technique, we can examine the mechanism that leads to the gender–job satisfaction paradox. We also decompose job satisfaction into explained components and unexplained components using the Oaxaca–Ransom decomposition technique, enabling us to find the gender–job satisfaction paradox that has not been observed in the previous studies in Japan.

DATA

Personnel Data and Employee Survey Data

We use a unique data set composed of employee survey data and personnel data provided by the anonymous company that cooperated in this study. We call this anonymous company "Firm Z." Firm Z is a long-established consumer products manufacturing firm with about 300 employees, and is a representative firm of the area. In recent years, Firm Z saw a rapid increase in sales, and gained national reputation as a brand. Because of this growth, the number of Firm Z employees has been increasing in recent years; in particular, it has recruited young workers in their 20s and now they comprises 40% of the total employees. The employee survey used in this study was conducted in 2008. The survey was administered to all employees of Firm Z; it consists of items on issues such as job satisfaction, promotion and payment, their awareness of how the workplace is run, and the role of the workplace in job satisfaction. In addition, the survey asked 134 items related to productivity, especially with regard to the employees' direct departments. The survey's collection rate is 100%; this high collection rate enabled the accumulation of abundant information related to the workplace. Therefore, by using this survey, we can

analyze the factors that affect the gender–job satisfaction paradox in more detail than in other studies. In addition, this survey was synced with the employees' ID codes, thus enabling us to combine their personnel data and their answers.

Clark (1997) and Sousa-Poza and Sousa-Poza (2007) pointed out a problem in having a sample selection of women. According to these researchers, since women are more likely to leave their jobs than men are, only women with higher job satisfaction remain in the workplace. However, the turnover rate at Firm Z is very low; thus, this sample selection problem may not be a significant issue in this study.

Overall Job Satisfaction and Treatment Job Satisfaction

We categorize job satisfaction into overall job satisfaction and treatment job satisfaction. Overall job satisfaction is a comprehensive measure of job satisfaction. The survey contains nine statements about overall job satisfaction to which the employees answered "Absolutely no," "No," "Neither," "Yes," or "Absolutely yes." On the other hand, treatment job satisfaction is job satisfaction associated with job responsibilities, wage, and job position. The survey contains seven items about treatment job satisfaction to which the employees answered "Very dissatisfied," "Dissatisfied," "Neither," "Satisfied," or "Very satisfied." Table 1 shows each of the statements and items, the average answers by gender, and the results of the independent t-test for men and women.

With respect to overall job satisfaction, the men expressed higher job satisfaction than did the women except for the statement "If I work hard in this company, my effort will be rewarded." In particular, the men expressed higher job satisfaction in the following three statements: "My job responsibilities are of use to customers and the society," "I feel that my job responsibilities are interesting," and "Compared to the previous year, my job-related abilities have progressed." For these three statements, we found a significant mean difference in overall job satisfaction between men and women. In contrast, for the items on treatment job satisfaction, the women expressed higher job satisfaction than did the men except for the item "opportunity for training." For four items, namely, "appropriate amount of job responsibilities," "work hours," "wage," and "job grade," we found a significant mean difference between men and women. Therefore, the results show that on average, men express higher overall job satisfaction for worthwhile and fruitful work than do women, but women express higher treatment job satisfaction than do men. These results suggest that factors such as work fulfillment should be separated from factors regarding wage and working conditions when comparing job satisfaction between men and women. In addition, they indicate that overall job satisfaction and treatment job satisfaction stem from the different preferences of men and women.

TABLE 1
SURVEY ITEMS AND AVERAGE ANSWERS TO EACH ITEM

	Women	Men	Mean difference
Overall job satisfaction			
I feel more wanted in this company.	3.344	3.467	-0.123
I would recommend this company to my friends and relatives.	2.857	2.878	-0.0207
My job responsibilities are of use to customers and the society.	3.516	3.773	-0.257**
I feel that my job responsibilities are interesting.	2.984	3.358	-0.374**
I realize my own growth through my job responsibilities.	3.516	3.681	-0.165
I take pleasure in going to work.	2.969	2.996	-0.0269
If I work hard in this company, my effort will be rewarded.	2.594	2.530	0.0633
Compared to the previous year, my job-related abilities have progressed.	3.328	3.596	-0.268**
I am satisfied working for this company.	3.234	3.448	-0.213
Treatment job satisfaction			
Description of job responsibilities	3.397	3.346	0.0503
Appropriate amount of job responsibilities	3.313	3.00437	0.308**
Opportunity for training	2.902	2.903	-0.00145
Work hours	3.641	3.215	0.426**
Wage	3.094	2.515	0.578***
Job position	3.210	2.987	0.223
Job grade	3.081	2.812	0.268*

Significance levels: * denotes 10%; **, 5%; ***, 1%

Dependent and Independent Variables

In this paper, we extract the factors that significantly affect overall job satisfaction and treatment job satisfaction from the employees' answers to the nine overall job satisfaction statements and seven treatment job satisfaction items. We use these extracted factors for each index of job satisfaction. Specifically, we assume that both overall job satisfaction and treatment job satisfaction consist of several basic concept linear sums; we then extract the basic concept or common factor by using factor analysis. The specific observed variables are the nine statements for overall job satisfaction and the seven items for treatment job satisfaction. The factor loading is the value obtained by the promax method. We use a scree plot to determine the criteria for the number of factors. Figure 1 shows the scree plot for each type of job satisfaction; the plot shows that on the number of factors, the line gradually starts decreases between two and three. The vertical axis corresponds to the Eigen value and the horizontal axis corresponds to the number of factors. Therefore, we use factor numbers two and three, respectively. Table 2 shows the results of the factor analysis; the results show that for both overall job satisfaction and treatment job satisfaction, the variance contribution ratio decreases to factor one from factor two; thus, in this paper, we use factor one as an dependent variable.

Table 2 also shows that with respect to factor one of overall job satisfaction, the statements "I would recommend this company to my friends and relatives" (statement 2), "If I work hard in this company, my effort will be rewarded" (statement 7), and "I am satisfied working for this company" (statement 9) have high loading factors. These items express the employees' overall satisfaction with the company. In addition, with respect to treatment job satisfaction, the items "job position" (item 6) and "job grade" (item 7) have high loading factors, and we extracted these factors as related to the degree of promotion. Since these factors are continuous variables, we can use the Oaxaca–Ransom decomposition method.

FIGURE 1A
OVERALL JOB SATISFACTION

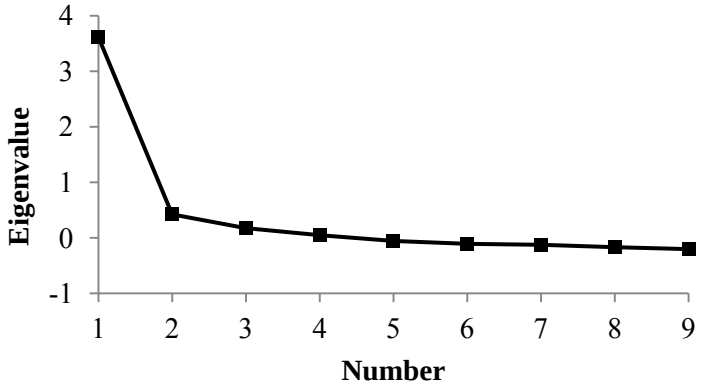

FIGURE 1B
TREATMENT JOB SATISFACTION

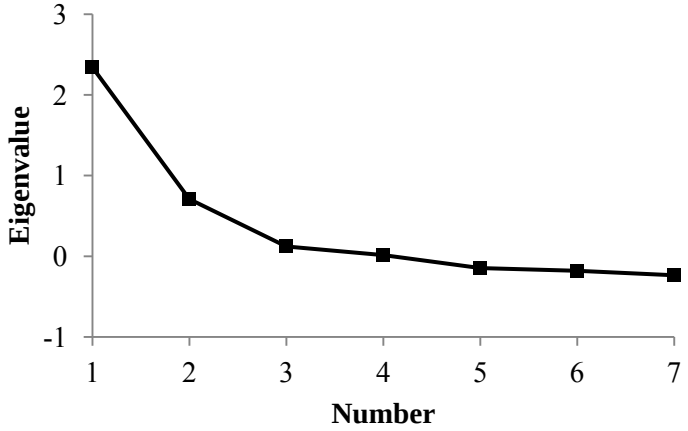

TABLE 2
RESULTS OF FACTOR ANALYSIS

Number	Item	F1	F2	F3
Overall job satisfaction				
1	I feel more wanted in this company.	0.140	0.518	
2	I would recommend this company to my friends and relatives.	0.676	0.0366	
3	My job responsibilities are of use to customers and the society.	0.00810	0.552	
4	I feel that my job responsibilities are interesting.	0.364	0.527	
5	I realize my own growth through my job responsibilities.	0.201	0.540	
6	I take pleasure in going to work.	0.500	0.294	
7	If I work hard in this company, my effort will be rewarded.	0.640	-0.0270	
8	Compared to the previous year, my job-related abilities have progressed.	-0.0198	0.551	
9	I am satisfied working for this company.	0.644	0.195	
Characteristic root		3.616	0.423	
Variance contribution		1.00360	0.118	
Treatment job				
1	Description of job responsibilities	0.0913	-0.0249	0.632
2	Appropriate amount of job responsibilities	-0.00100	0.0445	0.620
3	Opportunity for training	0.346	0.140	0.00330
4	Work hours	-0.175	0.419	0.195
5	Wage	0.393	0.402	-0.0106
6	Job position	0.827	-0.0156	0.0736
7	Job grade	0.852	-0.0231	-0.0279
Characteristic root		2.342	0.709	0.121
Variance contribution		0.892	0.270	0.046

F1 indicates factor1.F2 indicates factor2 .Factor3 indicates factor3.

In this paper, we use the dependent variable obtained by factor analysis and the independent variable for the objective variables such as employee wage and overtime hours. In addition, we use the subjective variable derived from the employee survey items related to working condition and job responsibility equality. Specifically, we use the log wage and log relative wage. We use the relative wage made by same gender, age, and education. The other objective variables we used as independent variables are the education dummy variables and overtime hours. We also use the employees' health condition obtained from the results of the employee survey as independent variables. In addition to these independent variables, we use the results of the employee survey items related to job satisfaction as independent variables. In overall job satisfaction, the responses to the working condition and workplace relationship items are used as independent variables. More precisely, we use the individual factor variables such as "Are you strongly aware of your achievement in workplace?" (recognition of achievement) and "How many hours in a year do you devote to off-the-job training to improve your skill?" (off-the-job training), and workplace relation variables such as "Do employees in your workplace communicate with each other?" (communication in the workplace), "Does your supervisor usually observe how you work and your ability, and provide you with appropriate and timely advice?" (supervisor advice), and "Do you know someone working close to you who was forced by the supervisor to do more than what is necessary in job responsibilities?" (supervisor harassment).

In treatment job satisfaction, we use the results of the employee survey on "Are you satisfied with your job responsibilities?" (satisfaction with job responsibilities), "Does your workplace allocate job responsibilities fairly according to each person's ability?" (fairness of job responsibility allocation), and "How many hours in a year do you devote to off-the-job training to improve your skill? (off-the-job training)" as independent variables. With respect to off-the-job training, we eliminate the samples whose mean value for both men and women is more than triple the standard deviation.

Descriptive Statistics

Tables 3 and 4 show the descriptive statistics of overall job satisfaction and treatment job satisfaction, respectively. In treatment job satisfaction, the women expressed higher job satisfaction than did the men, a result that is statistically significant at the 10% level (Table4). In contrast, the men expressed high job satisfaction than did the women with respect to overall job satisfaction, but this result is not statistically significant. With respect to wage, the mean of the men's wage is higher than that of the women's wage, a difference that is statistically significant at the 1% level for both overall job satisfaction and treatment job satisfaction. In addition, the mean value of the men's off-the-job training and overtime hours are higher than those for the women, differences that are statistically significant for both overall job satisfaction and treatment job satisfaction. For the subjective variables, namely health condition, recognition of achievement, supervisor harassment and fairness of job responsibility allocation, we observed a statistically significant mean difference between men and women. On average, the men expressed more health anxiety than did the women. In addition, on average, the men were more aware of their achievements than were the women, and felt more harassment from their supervisors than did the women.

TABLE 3
DESCRIPTIVE STATISTICS OF OVERALL JOB SATISFACTION

	Total	Men	Women	Difference of mean
Dependent variable				
Overall job satisfaction	-0.027	0.007	-0.156	-0.1632
	(0.878)	(0.874)	(0.890)	(0.1299)
Independent variables				
Objective data				
Wage	12.485	12.526	12.336	-0.190***
	(0.291)	(0.301)	(0.189)	(0.0416)
Relative wage	-0.009	-0.012	0.004	0.0161
	(0.132)	(0.142)	(0.084)	(0.0196)
Educational status				
Junior high school and high school	0.526	0.523	0.534	0.0111
	(0.500)	(0.501)	(0.503)	(0.0742)
Junior college	0.040	0.028	0.086	0.0582**
	(0.197)	(0.165)	(0.283)	(0.0291)
University	0.331	0.355	0.241	-0.1138
	(0.471)	(0.480)	(0.432)	(0.0696)
Graduate school	0.103	0.093	0.138	0.0445
	(0.304)	(0.292)	(0.348)	(0.0451)
Off-the-job training	1.634	1.745	1.224	-0.521**
	(1.575)	(1.601)	(1.412)	(0.2314)
Overtime	0.939	1.088	0.388	-0.700***
	(1.159)	(1.196)	(0.808)	(0.1666)

Standard deviation in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%

TABLE 3
DESCRIPTIVE STATISTICS OF OVERALL JOB SATISFACTION (CONTINUED)

	Total	Men	Women	Difference of mean
Questionnaire data				
Supervisor advice				
Answer 1	0.143	0.140	0.155	0.0150
	(0.351)	(0.348)	(0.365)	(0.0521)
Answer 2	0.404	0.407	0.397	-0.0100
	(0.492)	(0.492)	(0.493)	(0.0729)
Answer 3	0.099	0.107	0.069	-0.0385
	(0.300)	(0.310)	(0.256)	(0.0444)
Answer 4	0.279	0.266	0.328	0.0612
	(0.450)	(0.443)	(0.473)	(0.0666)
Answer 5	0.074	0.079	0.052	-0.0277
	(0.261)	(0.271)	(0.223)	(0.0387)
Communication in the workplace				
Answer 1	0.088	0.089	0.086	-0.0026
	(0.284)	(0.285)	(0.283)	(0.0421)
Answer 2	0.338	0.322	0.397	0.0741
	(0.474)	(0.469)	(0.493)	(0.0702)
Answer 3	0.088	0.093	0.069	-0.0245
	(0.284)	(0.292)	(0.256)	(0.0421)
Answer 4	0.368	0.369	0.362	-0.0071
	(0.483)	(0.484)	(0.485)	(0.0716)
Answer 5	0.118	0.126	0.086	-0.0400
	(0.323)	(0.333)	(0.283)	(0.0478)

Standard deviation in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%
Answer1 indicates "Absolutely no". Answer2 indicates "No". Answer3 indicates "Neither". Answer4 indicates "Yes". Answer5 indicates "Absolutely yes".

TABLE 3
DESCRIPTIVE STATISTICS OF OVERALL JOB SATISFACTION (CONTINUED)

	Total	Men	Women	Difference of mean
Health condition				
Answer 1	0.125	0.117	0.155	0.0383
	(0.331)	(0.322)	(0.365)	(0.0491)
Answer 2	0.272	0.248	0.362	0.114*
	(0.446)	(0.433)	(0.485)	(0.0658)
Answer 3	0.063	0.061	0.069	0.0082
	(0.243)	(0.239)	(0.256)	(0.0360)
Answer 4	0.338	0.336	0.345	0.0084
	(0.474)	(0.474)	(0.479)	(0.0703)
Answer 5	0.202	0.238	0.069	-0.169***
	(0.402)	(0.427)	(0.256)	(0.0588)
Supervisor harassment				
Answer 1	0.129	0.107	0.207	0.0994**
	(0.335)	(0.310)	(0.409)	(0.0494)
Answer 2	0.324	0.299	0.414	0.115*
	(0.469)	(0.459)	(0.497)	(0.0692)
Answer 3	0.096	0.107	0.052	-0.0558
	(0.295)	(0.310)	(0.223)	(0.0436)
Answer 4	0.320	0.332	0.276	-0.0559
	(0.467)	(0.472)	(0.451)	(0.0692)
Answer 5	0.132	0.154	0.052	-0.102**

Standard deviation in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%
Answer1 indicates “Absolutely no”. Answer2 indicates “No”. Answer3 indicates “Neither”. Answer4 indicates ”Yes” . Answer5 indicates “Absolutely yes”.

TABLE 3
DESCRIPTIVE STATISTICS OF OVERALL JOB SATISFACTION (CONTINUED)

	Total	Men	Women	Difference of mean
Recognition of achievement				
Answer 1 & 2	0.188	0.168	0.259	0.0904
	(0.391)	(0.375)	(0.442)	(0.0577)
Answer 3	0.107	0.098	0.138	0.0398
	(0.309)	(0.298)	(0.348)	(0.0458)
Answer 4	0.540	0.537	0.552	0.0143
	(0.499)	(0.500)	(0.502)	(0.0740)
Answer 5	0.165	0.196	0.052	-0.145***
	(0.372)	(0.398)	(0.223)	(0.0545)
Observations	272	214	58	

Standard deviation in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%
Answer1 indicates "Absolutely no". Answer2 indicates "No". Answer3 indicates "Neither". Answer4 indicates "Yes" . Answer5 indicates "Absolutely yes".

TABLE 4
DESCRIPTIVE STATISTICS OF TREATMENT JOB SATISFACTION

	Total	Men	Women	Difference of mean
Dependent variable				
Treatment job satisfaction	-0.033	-0.089	0.171	0.260*
	(0.894)	(0.918)	(0.772)	(0.1339)
Independent variables				
Objective data				
Wage	12.480	12.520	12.334	-0.186***
	(0.288)	(0.298)	(0.187)	(0.0419)
Relative wage	-0.010	-0.013	0.002	0.01489
	(0.132)	(0.142)	(0.084)	(0.0199)
Educational status				
Junior high school and high school	0.525	0.527	0.518	-0.00871
	(0.500)	(0.501)	(0.504)	(0.0755)
Junior college	0.042	0.029	0.089	0.0603**
	(0.201)	(0.168)	(0.288)	(0.0300)
University	0.327	0.348	0.250	-0.09783
	(0.470)	(0.477)	(0.437)	(0.0707)
Graduate school	0.106	0.097	0.143	0.04624
	(0.309)	(0.296)	(0.353)	(0.0465)
Off-the-job training	1.623	1.727	1.239	-0.488**
	(1.576)	(1.601)	(1.427)	(0.2359)
Overtime	0.962	1.113	0.402	-0.711***
	(1.164)	(1.199)	(0.819)	(0.1701)

Standard deviation in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%

TABLE 4
DESCRIPTIVE STATISTICS OF TREATMENT JOB SATISFACTION (CONTINUED)

	Total	Men	Women	Difference of mean
Questionnaire data				
Fairness of responsibility allocation				
Answer 1	0.103	0.101	0.107	0.00569
	(0.304)	(0.303)	(0.312)	(0.0459)
Answer 2	0.395	0.411	0.339	-0.07134
	(0.490)	(0.493)	(0.478)	(0.0738)
Answer 3	0.141	0.116	0.232	0.116**
	(0.348)	(0.321)	(0.426)	(0.0521)
Answer 4	0.308	0.314	0.286	-0.02830
	(0.463)	(0.465)	(0.456)	(0.0698)
Answer 5	0.053	0.058	0.036	-0.02226
	(0.225)	(0.234)	(0.187)	(0.0339)
Satisfaction with job responsibilities				
Answer 1	0.046	0.043	0.054	0.01009
	(0.209)	(0.204)	(0.227)	(0.0315)
Answer 2	0.186	0.179	0.214	0.03554
	(0.390)	(0.384)	(0.414)	(0.0588)
Answer 3	0.163	0.169	0.143	-0.02622
	(0.371)	(0.376)	(0.353)	(0.0559)
Answer 4	0.479	0.469	0.518	0.04926
	(0.501)	(0.500)	(0.504)	(0.0755)
Answer 5	0.125	0.140	0.071	-0.06867
	(0.332)	(0.348)	(0.260)	(0.0499)
Observations	263	207	56	

Standard deviation in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%
Answer1 indicates "Absolutely no". Answer2 indicates "No". Answer3 indicates "Neither". Answer4 indicates "Yes" . Answer5 indicates "Absolutely yes".

RESULTS

Results of Overall Job Satisfaction

Table 5 shows the results for overall job satisfaction. The results show that although the men expressed higher overall job satisfaction than did the women, no statistically significant mean difference was found between men and women (Table3). In addition, the female dummy variable is not statistically significant. These results imply that there is no gender–job satisfaction paradox with regard to overall job satisfaction. The effects of the other independent variables on overall job satisfaction are as follows. Based on the results from the entire sample, having significant anxiety owing to one's health condition negatively affects job satisfaction, a statistically significant result at the 1% level. This finding parallels

those of previous studies that show bad health negatively affects job satisfaction. The results also show that the relationship with one's supervisor is also important for overall job satisfaction. Supervisor advice significantly and positively affects overall job satisfaction, while supervisor harassment significantly and negatively affects overall job satisfaction. Having a sense of one's achievement (recognition of achievement) and good communication in the workplace (communication in the workplace) significantly and positively affect overall job satisfaction.

While wage positively affects overall job satisfaction for both men and women, the results also show other differences between men and women. For instance, for men, bad health negatively affects overall job satisfaction, while good communication in the workplace positively affects overall job satisfaction. In addition, having a sense of achievement is higher for men for overall job satisfaction. The relationship with one's supervisor is another important factor for overall job satisfaction for men. Specifically, receiving advice from one's supervisor positively affects overall job satisfaction, while harassment from one's supervisor negative affects overall job satisfaction.

TABLE 5
ESTIMATION RESULTS FOR OVERALL JOB SATISFACTION

Independent variables	Total	Men	Women
Women	-0.0415		
	(0.126)		
Wage	0.584***	0.539**	1.463**
	(0.190)	(0.209)	(0.688)
Relative wage	-0.155	-0.0193	-1.974
	(0.442)	(0.512)	(1.366)
Overtime	-0.0127	0.00173	-0.0875
	(0.0448)	(0.0487)	(0.162)

Standard errors in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%

TABLE 5
ESTIMATION RESULTS FOR OVERALL JOB SATISFACTION (CONTINUED)

Independent variables	Total	Men	Women
Education status[2]			
Junior college	-0.320	-0.0309	-0.720
	(0.243)	(0.308)	(0.538)
University	-0.0797	-0.223*	0.702**
	(0.108)	(0.120)	(0.288)
Graduate School	-0.471***	-0.554**	0.0444
	(0.176)	(0.216)	(0.326)
Health condition			
Answer 2	0.00766	0.0816	-0.156
	(0.147)	(0.177)	(0.299)
Answer 3	-0.286	-0.344	-0.0156
	(0.217)	(0.257)	(0.519)
Answer 4	-0.166	-0.0139	-0.235
	(0.153)	(0.180)	(0.270)
Answer 5	-0.461***	-0.378*	-0.387
	(0.174)	(0.198)	(0.454)
Recognition of achievement			
Answer 3	-0.0635	0.223	-0.681**
	(0.187)	(0.203)	(0.325)
Answer 4	0.237*	0.326**	0.230
	(0.127)	(0.151)	(0.253)
Answer 5	0.616***	0.702***	0.247
	(0.163)	(0.175)	(0.572)
Off-the-job training	0.0577	0.0624	-0.0809
	(0.0351)	(0.0383)	(0.0740)

Standard errors in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%
The reference group of the recognition of achievement is "Absolutely no" and "No." The reference group of the other dummy variables is "Absolutely no." Answer 1 indicates "Absolutely no"; Answer 2 indicates "No"; Answer 3 indicates "Neither"; Answer 4 indicates "Yes"; and Answer 5 indicates "Absolutely yes." Age is controlled.

TABLE 5
ESTIMATION RESULTS FOR OVERALL JOB SATISFACTION (CONTINUED)

Independent variables	Total	Men	Women
Communication in the workplace			
Answer 2	0.182	0.218	0.462
	(0.201)	(0.223)	(0.699)
Answer 3	0.395*	0.462*	0.367
	(0.231)	(0.246)	(0.827)
Answer 4	0.392*	0.482**	0.628
	(0.200)	(0.221)	(0.667)
Answer 5	0.612**	0.634**	1.126
	(0.240)	(0.257)	(0.740)
Supervisor advice			
Answer 2	0.320*	0.220	0.583
	(0.165)	(0.181)	(0.558)
Answer 3	0.499**	0.436*	0.294
	(0.226)	(0.254)	(0.640)
Answer 4	0.574***	0.447**	0.715
	(0.188)	(0.212)	(0.543)
Answer 5	0.657***	0.595**	0.468
	(0.249)	(0.258)	(0.808)
Supervisor harassment			
Answer 2	-0.174	-0.267	-0.135
	(0.144)	(0.178)	(0.290)
Answer 3	-0.237	-0.407*	1.219
	(0.213)	(0.232)	(0.737)
Answer 4	-0.342**	-0.423**	-0.475
	(0.154)	(0.184)	(0.361)
Answer 5	-0.710***	-0.771***	-0.941
	(0.190)	(0.218)	(0.578)
Constant	-7.782***	-7.254***	-18.92**
Observations	272	214	58
R-squared	0.399	0.419	0.666

Standard errors in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%.The reference group of the dummy variables is "Absolutely no." Answer 1 indicates "Absolutely no"; Answer 2 indicates "No"; Answer 3 indicates "Neither"; Answer 4 indicates "Yes"; and Answer 5 indicates "Absolutely yes." Age is controlled.

Results of Treatment Job Satisfaction

The results for treatment job satisfaction are shown in Table 6. For treatment job satisfaction, the women expressed higher treatment job satisfaction than did the men and the mean difference between the men and the women is statistically significant at the 10% level (Table4). In addition, the female dummy variable is statistically significant at the 5% level. These results indicate that even if we control for the other independent variables, women still express higher treatment job satisfaction than do men. Therefore, there is a gender–job satisfaction paradox in treatment job satisfaction.

The effect of the other independent variables on treatment job satisfaction is as follows. First, we consider the results for the entire sample. Wages, satisfaction with job responsibilities, and fairness of job responsibility allocation significantly and positively affect treatment job satisfaction. In contrast, overtime hours significantly and negatively affect treatment job satisfaction. There are also gender differences in treatment job satisfaction. While wage significantly and positively affects treatment job satisfaction only for men, relative wage significantly and positively affects treatment job satisfaction only for women. This suggests that men place emphasis on the absolute wage, while women place emphasis on the relative wage. Finally, although satisfaction with job responsibilities and fairness of job responsibility allocation positively affect treatment job satisfaction for both men and women, these effects are stronger for women than for men.

TABLE 6
ESTIMATION RESULTS FOR TREATMENT JOB SATISFACTION

Independent variables	Full	Men	Women
Women	0.295**		
	(0.124)		
Wage	0.466**	0.551**	-0.231
	(0.235)	(0.267)	(0.469)
Relative wage	0.653	0.659	1.734*
	(0.460)	(0.505)	(0.881)
Overtime	-0.0841*	-0.0690	-0.219
	(0.0489)	(0.0548)	(0.136)
Off-the-job training	-0.000200	0.0149	-0.143
	(0.0377)	(0.0421)	(0.0888)

Standard errors in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%

TABLE 6
ESTIMATION RESULTS FOR TREATMENT JOB SATISFACTION (CONTINUED)

Independent variables	Full	Male	Female
Educational status[2]			
Junior college	0.0472	0.189	0.117
	(0.227)	(0.339)	(0.310)
University	0.262**	0.246*	0.364
	(0.119)	(0.136)	(0.240)
Graduate School	0.217	0.137	0.965***
	(0.149)	(0.181)	(0.271)
Satisfaction with job responsibilities			
Answer 2	0.332	0.336	0.557
	(0.218)	(0.276)	(0.339)
Answer 3	0.307	0.362	0.120
	(0.215)	(0.281)	(0.287)
Answer 4	0.497**	0.452*	1.029***
	(0.211)	(0.268)	(0.299)
Answer 5	0.698***	0.740**	0.811*
	(0.259)	(0.309)	(0.415)
Fairness of responsibility allocation			
Answer 2	0.468***	0.435**	0.228
	(0.168)	(0.195)	(0.338)
Answer 3	0.762***	0.779***	0.818**
	(0.191)	(0.223)	(0.365)
Answer 4	0.796***	0.668***	1.188***
	(0.182)	(0.209)	(0.331)
Answer 5	0.845***	0.723**	0.939**
	(0.303)	(0.353)	(0.389)
Constant	-6.960**	-7.989**	1.674
	(2.952)	(3.347)	(5.718)
Observations	263	207	56
R-squared	0.280	0.256	0.640

Standard errors in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%
The reference group of the dummy variables is "Absolutely no." Answer 1 indicates "Absolutely no"; Answer 2 indicates "No"; Answer 3 indicates "Neither"; Answer 4 indicates "Yes"; and Answer 5 indicates "Absolutely yes." Age is controlled.

FACTOR DECOMPOSITION ANALYSIS

Oaxaca–Ransom Decomposition

We use the results of the OLS estimation and decompose them into explained and unexplained differences using the Oaxaca–Ransom decomposition technique. Explained difference is the mean

difference in each independent variable between men and women; this difference exists even if the coefficient is the same for men and women. Unexplained difference is the coefficient difference of each independent variable; this difference exists even if the mean is the same for men and women. The decomposition equation is as follows:

$$\bar{y}_F - \bar{y}_M = \beta^*(\bar{x}_F - \bar{x}_M) + (\beta^* - \beta_M)\bar{x}_M + (\beta_F - \beta^*)\bar{x}_F$$

The first term indicates the explained difference, while the second and third terms indicate the unexplained difference. $\bar{y}$ is the mean value of the overall job satisfaction or treatment job satisfaction. $\bar{x}$ is the mean value of the independent variables, while β^* is the coefficient that assumes there is no gender difference. Although there are several methods to determine the criteria parameterβ^*, we use the β^*, which is the OLS estimator of the entire sample, which has been used in many previous studies. By using the Oaxaca–Ransom decomposition technique, we can examine the mechanism that leads to the gender–job satisfaction paradox found in this study.

Decomposition of Overall Job Satisfaction

Table7 shows the decomposition results for overall job satisfaction. The difference in overall job satisfaction between men and women is composed mainly of the explained component. In addition, both the explained component and the unexplained component are not statistically significant. The results also show the detailed decomposition for overall job satisfaction. Wage is statistically significant in both the negative explained component and the positive unexplained component. In addition, wage is mainly composed of the positive unexplained component. These results suggest that an increase in wage contributes to the gender–job satisfaction paradox. In addition, having a sense of one's achievement is mainly composed of the positive unexplained component, and contributes to the paradox. The explained component of health condition is positive and statistically significant, which shows that on average, men have more health anxieties than do women.

TABLE 7
DECOMPOSITION RESULTS FOR OVERALL JOB SATISFACTION

	Explained	Unexplained
Total	-0.122	-0.0415
	(0.101)	(0.117)
Wage	-0.111***	11.40*
	(0.0390)	(6.675)
Relative wage	-0.00249	-0.00524
	(0.00715)	(0.0206)
Overtime	0.00890	-0.0448
	(0.0298)	(0.0597)
Educational status	-0.0305	0.0674
	(0.0296)	(0.112)
Health condition	0.0752**	-0.117
	(0.0302)	(0.0719)
Recognition of achievement	-0.0882***	0.163*
	(0.0332)	(0.0859)
Communication in the workplace	-0.0234	0.0278
	(0.0255)	(0.0768)
Supervisor advice	-0.00547	0.141
	(0.0313)	(0.0876)
Supervisor harassment	0.0852**	-0.182
	(0.0353)	(0.118)
Off-the-job training	-0.0301	-0.178**
	(0.0213)	(0.0877)
Constant		-11.31*
		(6.659)
Observations	272	272

Standard errors in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%

Decomposition of Treatment Job Satisfaction

Table 8 shows the decomposition results for treatment job satisfaction. The explained component is negative, while the unexplained component is positive and statistically significant at the 1% level. The gender difference in treatment job satisfaction is mainly composed of the positive unexplained component. This result shows that the unexplained component contributes to the gender–job satisfaction paradox. The primary factor for the paradox is the constant term. Satisfaction with job responsibilities is another important factor for this paradox, a statistically significant result at the 10% level. Although relative wage also contributes to the gender–job satisfaction paradox, this result is not statistically significant.

TABLE 8
DECOMPOSITION RESULTS FOR TREATMENT JOB SATISFACTION

	Explained	Unexplained
Total	-0.0814	0.643***
	(0.178)	(0.205)
Wage	-0.0885	-14.72
	(0.0716)	(10.25)
Relative wage	0.0203	0.00432
	(0.0232)	(0.0342)
Overtime	0.105*	-0.110
	(0.0580)	(0.0850)
Educational status	-0.0416	-0.0900
	(0.0378)	(0.172)
Satisfaction with job responsibilities	-0.0735	0.295*
	(0.0809)	(0.158)
Fairness of responsibility allocation	0.00994	-0.0802
	(0.0882)	(0.167)
Off-the-job training	-0.0129	-0.329
	(0.0300)	(0.200)
Constant		15.68
		(10.22)
Observations	263	263

Standard errors in parentheses. Significance levels: * denotes 10%; **, 5%; ***, 1%

CONCLUSION

In this paper, we examined whether the gender–job satisfaction paradox exists in Japan by using a combined data set composed of company personnel data and employee survey data. In addition, we use the Oaxaca–Ransom technique to reveal the main factors contributing to this paradox.

We categorized job satisfaction into overall job satisfaction and treatment job satisfaction. For overall job satisfaction, we found that there is no gender–job satisfaction paradox. On the other hand, for treatment job satisfaction, there is a paradox. Meanwhile, the results from the Oaxaca–Ransom decomposition analysis revealed that with respect to treatment job satisfaction, the unexplained component leads to the gender–job satisfaction paradox. Moreover, the main factor contributing to this paradox is the constant term and the satisfaction with job responsibilities.

Although this study yielded useful insights on gender differences, there are still questions regarding this issue that remain. First, because our survey did not include items about work–life balance, we were unable to examine the effect of the work–life balance policy on job satisfaction. According to Bender et al. (2005), the work–life balance variable should be considered in examining job satisfaction. Second, because our results were based on data from only one firm, the results may not necessarily be generalizable to all of Japan. Research on gender difference in job satisfaction should therefore be also conducted using a macro–level framework.

ENDNOTES

2. Hamermesh (1977), Freeman (1978) and Clark and Oswald (1996) analyzed the linkage between wage and job satisfaction. Kim et al. (1996) and Clark (1997) took into account the effect of race, education level, gender, and country of residence. Miller (1990) and Bender and Sloane (1998) focused on the impact of participation in a union. Idson (1990) analyzed the impact of the size of a firm. Jones et al. (2009) analyzed the relationship between training and job satisfaction.
3. The reference group of education is junior high school and high school.

REFERENCES

Bender, K.A., Donohue, S.M. & Heywood, J.S. (2005). Job satisfaction and gender Segregation. *Oxford Economic Papers*, 57, 479–96.

Bender, K.A. & Sloane, P.J. (1998). Job Satisfaction, Trade Unions, and Exit-Voice Revisited. *Industrial and Labor Relations Review*, 51, 222–241.

Clark, A.E. (1997). Job Satisfaction and Gender: Why Are Women So Happy at Work? *Labour Economics*, 4,341–372.

Clark, A.E. & Oswald, A.J. (1996). Satisfaction and Comparison Income. J*ournal of Public Economics*, 61,359–381.

Freeman, R.B. (1978) Job satisfaction as an Economic Variable. *American Economic Review*, 68,135–141.

Hamermesh, D.S. (1977). Economic aspects of job satisfaction. O. Ashenfelter & W. Oates (eds.), *Essays in Labor Market Analysis*, New York: Wiley, Inc.

Idson, T.L. (1990). Establishment Size, Job Satisfaction and the Structure of Work. *Applied Economics*, 22, 1007–1018.

Jones M.K., Jones R.J., Latreille P.L. & Sloane P.J. (2009). Training, Job Satisfaction, and Workplace Performance in Britain: Evidence from WERS 2004. *Labour: Review of Labour Economics and Industrial Relations*, 23,139–175.

Kaiser, L.C. (2007). Gender-job Satisfaction Differences across Europe: An Indicator for Labour Market Modernization. *International Journal of Manpower*, 28, 75–94.

Kim S.W., Price J.L., Mueller C.W. & Watson T.W. (1996). The Determinants of Career Intent among Physicians at a U.S. Air Force Hospital. *Human Relations*, 49, 947–976.

Miller, P. (1990). Trade Unions and Job Satisfaction. *Australian Economic Papers*, 29,226–248.

Oaxaca, R.L. & Ransom, M.R. (1994). On Discrimination and the Decomposition of Wage Differentials. *Journal of Econometrics*, 61, 5–21.

Sloane, P.J. & Williams, H. (2000). Job Satisfaction, Comparison Earnings and Gender. *Labour: Review of Labour Economics and Industrial Relations*, 14,473–502.

Sousa-Poza, A. & Sousa-Poza, A.A. (2000). Taking Another Look at the Gender/Job Satisfaction Paradox. *Kyklos*, 53,135–52.

Sousa-Poza, A. & Sousa-Poza, A.A. (2003). Gender Differences in Job Satisfaction in Great Britain, 1991–2000: Permanent or Transitory? *Applied Economics Letters*, 10,691–694.

Sousa-Poza A. & Sousa-Poza A.A. (2007). The Effect of Job Satisfaction on Labor Turnover by Gender: An Analysis for Switzerland. *Journal of Socio-Economics*, 36,895–913.

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