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The Effects of Work-life Balance Policies on Corporate Performance and the Promotion of Female Employee

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Abstract: Based on a survey conducted on Japanese pharmaceutical companies, this paper analyzes the processes and the influence of work-life balance policies on the promotion of women employees and corporate performances as a result of women's activities. Structural equation modeling is used to clarify complex causality between the promotion of women employees and personnel policies. The results of our analysis indicate that even if the complex relations between the variables are considered, productive improvements from work-life balance policies are not observed. Although work-life balance policies do not have a direct effect on the promotion or wages of women, they have an indirect effect on women's promotion and wage increases over the length of their tenure.

Key words: structural equation modeling; work-life balance policy; career advancement of women; corporate performance

JEL codes: J17, J24, J31

1. Introduction

Japan is often said to be a less advanced country among developed countries in providing equal opportunities to female workers. The Global Gender Gap Index (GGGI) indicates that Japan ranked 111th among 144 countries in 2016. The measure, formulated by the World Economic Forum (WEF), shows the inequality between male and female workers in Japanese society.

The government and private companies have attempted to develop women-friendly working conditions through efforts such as the formulation of the Equal Employment Opportunity Law, the promotion of positive action, the prevention of sexual harassment, and the implementation of work-life balance (WLB) policies. Figure 1 illustrates that the percentages of female managerial personnel, such as subsection chief, section chief, and division chief, have been gradually increasing, and the percentages more than doubled for all these positions from the year 2000 to 2016. At the same time, Figure 2 shows that the monthly salary gap between male and female full-time workers has narrowed.

However, this does not mean that the correlations between support systems, the growing percentage of female managerial personnel, or the growth in female salaries are clarified in Japanese society. Thus, the explanations of the primary reasons for the noticeably low percentage of Japanese female managerial personnel

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compared to other countries are not sufficient. One reason for this is a lack of substantial accumulation of demonstrative analytical data to evaluate related hypotheses. To overcome this problem, this study uses structural equation modeling (SEM) for the main analysis to examine the causality of these variables from matched data from company and employee information.

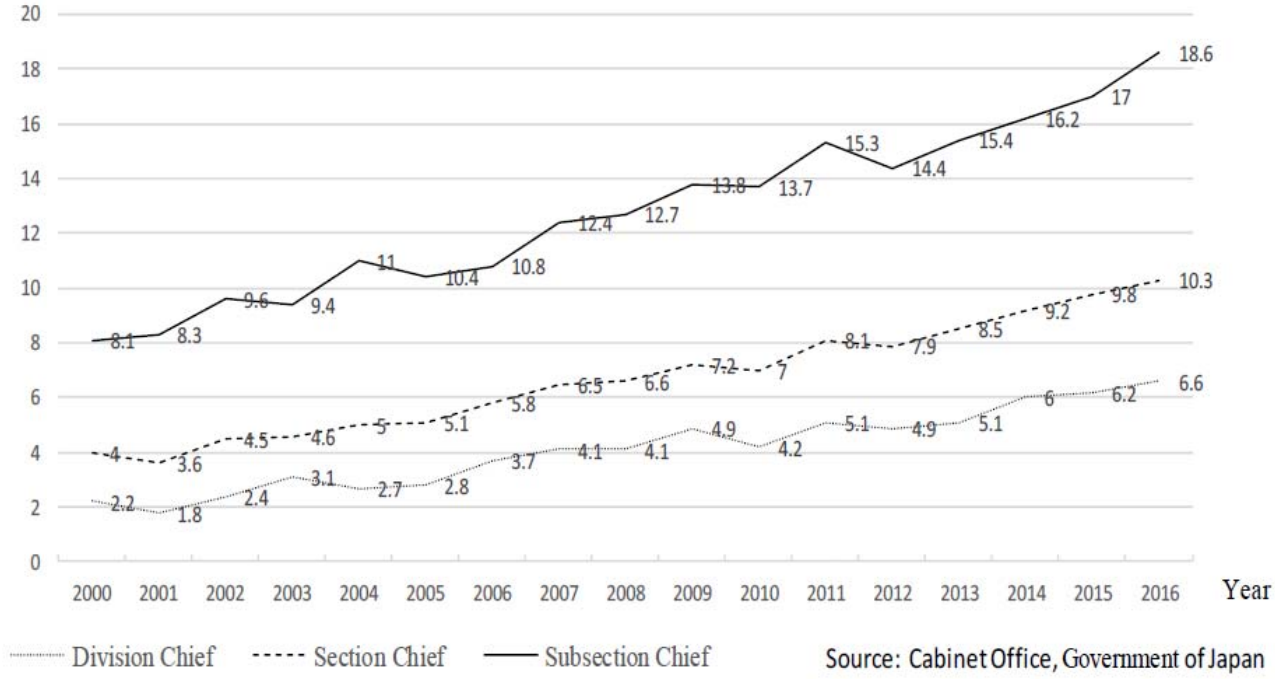

Figure 1 Changes in the Percentage of Female Personnel in a Managerial Position (Total of Private Enterprise)

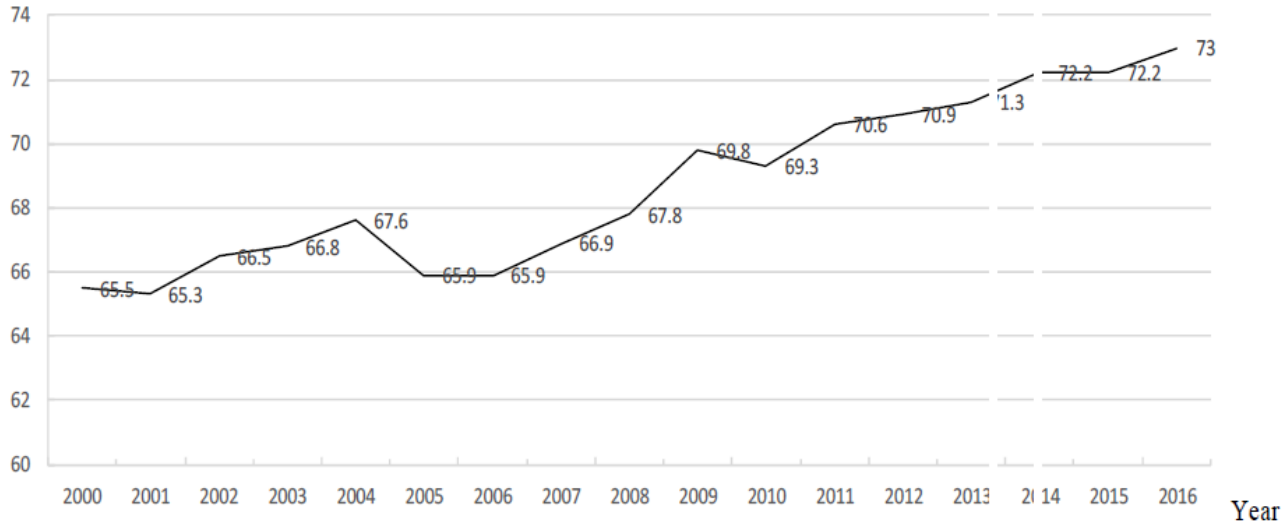

Figure 2 Changes in the Percentage of the Monthly Salary of Female Employee to Male (Total Full Time Worker)

(Source: Cabinet Office, Government of Japan)

This paper is structured as follows: The second section reviews preceding studies and explains how this paper contributes to future research on the conditions of female workers. The third section discusses how personnel policies have affected the percentage of female managerial personnel and, ultimately, the business

performance of companies. The fourth section examines analytical data and presents the results. The fifth section concludes the paper.

2. Preceding Studies

One of the research subjects concerning female employment in the Japanese labor market is wage differentials between male and female workers. Tomita (1988) notes that there are smaller gender gaps in wage profile gradients in industries where gender discrimination is less likely with regard to recruitment and personnel relocation in the same company. Higuchi (1991) notes that there are smaller gender gaps of employment year' wage profiles in industries where equal treatment or the utilization of the female workforce is more likely to be conducted in job training. Additionally, Mitani (1995) shows that gender gaps in wage profiles are smaller in companies that conduct more gender-equal employment management.

Recent studies in Japan pay attention to the positive utilization of the female workforce and WLB policies. Frequently noted is that many Japanese female workers interrupt their careers to get married and care for their children in their late twenties (Ōsawa, 1993). The early retirement of these female workers causes the undesirable suspension of their careers. These workers break away from employment before the costs of substantial job training and resources are recouped. This is considered one of the major factors preventing the aggressive use of the female workforce by companies. Therefore, to promote female employment, it is essential to create an environment where childbirth and child care do not obstruct the continuation of women's careers. Recent researchers have begun to recognize the necessity of balancing work with private life.

One of the policies that could be important in making a difference with respect to this issue is the child care leave system. There have already been a considerable number of studies on the effect of this initiative. Shigeno and Okusa (1998) demonstrate that the child-rearing leave system facilitates continuous female employment. Morita and Kaneko (1998) note that the system is effective for boosting continuous female employment.

In addition to the child care leave system, attention has been recently paid to diverse and flexible personnel management that facilitates a balance in work and life. One such innovative approach is WLB policies. Sakazume (2002) shows that WLB policies are effective in boosting worker morale, improving working conditions, and reducing the percentage of women leaving the work force in Japan.

Recent studies have paid keen attention to the effect of WLB policies on corporate performance. Many companies have tended to consider that the utilization of female workers, but WLB policies would place a heavier financial burden on their business and be insufficient to warrant active implementation. However, comparative studies among countries have been promoted in recent years and demonstrate that there are no negative correlations between female employment and economic performance. For example, Perry-Smith and Blum (2000) postulate that WLB policies have a positive impact on organizations as a mechanism for competitive advantage. Additionally, Shepard, Clifton, and Kruse (1996) note that companies with a flexible employment structure, such as flextime, can increase their productivity by 10% compared to companies without such systems, which suggests that more flexible employment systems lead to productivity improvement.

Because work-life initiatives encompass a variety of practices that aid workers in balancing the demands of work and personal life (Lobel & Kossek, 1996); family-friendly policies are thought to be included in work-life balance policies (Beauregard & Henry, 2009). Organizations can enhance their ability to recruit and retain a top-quality workforce if they provide employees with flexibility and resources to help them combine work and

family more easily (Greenhaus & Parasuraman, 1999; Lobel, 1999). Providing work schedule flexibility reduces the level of work-family conflict (Hammer, Allen, & Grigsby, 1997) and enhances satisfaction with family life (Parasuraman et al., 1996).

This has caused some people to argue that the active use of female employees and WLB policy initiatives will have a positive impact on corporate performance in our country as well as in other countries (Higuchi, Asami, Hirakawa, Ōzeki, & Mori, 2006). Amid these trends, some studies such as Takeishi (2006) and Wakisaka (2006) conduct surveys on the correlations between the two factors from the corporate perspective. On the other hand, Yamamoto and Matsuura (2012) note that the correlation between WLB and firm productivity were explained by firm heterogeneity in Japan.

Although there are many studies on female employment, as mentioned above, many tasks still require consideration. Our biggest challenge is how to specify the causality between personnel management and corporate performance. For example, it is conceivable that a company could gain remarkable achievements by introducing WLB policies. At the same time, however, there is a conceivable scenario in which a company can afford to introduce WLB policies because other factors have contributed to high performance. It is necessary to closely examine the causality between WLB policies and corporate performance to correctly interpret the situation. Moreover, several steps are required before intra-corporate measures can have substantial effects on easing gender gaps in wages and promotions. However, only a small amount of analytical data exists on this subject.

Many of the preceding studies are based on survey data on individuals or companies. The survey data on individuals include the possibility that individual employees may not have accurate information on personnel policies. Information on personnel systems must be collected from companies for information accuracy. In the meantime, it is more appropriate to collect information on the attributes of workers directly from individual employees, and it is particularly desirable to obtain information on wages and promotions and psychological aspects, including work motivations. Therefore, an analysis through the matching of these two patterns is more valid. With a focus on this critical point, this study has the substantial advantage of being based on the matched data for both companies and individual workers.

3. Main Analytical Method

This study uses the structural equation modeling (SEM) method for the main data analysis, which is a form of statistical methodology to examine the causality of social and natural phenomena. Figure 2 illustrates the path illustrations of covariance structure analyses on the relationship between WLB policies and female employment.

This method handles latent variables that cannot be directly measured and stems from confirmatory factor analysis espoused by Joreskog and Lawley (1968) and Joreskog (1969). Subsequently, the significance of analyzing covariance structures was recognized, and this recognition developed into the examination of the causality among constituent factors by integrating path analysis and confirmatory factor analysis. Then, Joreskog (1978) devised the linear structure relations (LISREL) model. This method was originally used in educational and psychological realms and has also been utilized in business administration and economics. There could be complicated relationships among variables, for example, between career development through female job rotation and specific vocational training measures for women and the percentages of female employment and sales per employee associated with WLB policies. There may be correlations between female promotion and morale and sales per employee. The validity of these correlations should be statistically examined. Applied studies on the

SEM method include the effect of predictive emotional reactions on actions (Richard, van der Pligt, & de Vries, 1996), the effect of evaluation criteria for public policies on individual behaviors (Maurer, Park, & Judd, 1996), and an individual's psychological tendency to show sympathy or delight for others' misfortune (Brigham, Kelso, & Jackson, 1997), decisive factors on consumers' garbage disposal (Taylor & Todd, 1997), changes in awareness among university students with part-time jobs as private tutors (Fresko, 1997), and physical exercise for health maintenance (Fuchs, 1996).

This method is necessary because of the complicated causality between WLB policies and other variables. Many of the preceding studies focus on the isolated effects of WLB policies on the motivation and morale of female workers, their productivity, promotions, and employment years. However, the causality between those factors is not always set in one specific direction. Multiple directions can be considered, and inverse direction could be supported.

For example, the effective implementation of WLB policies in a working environment facilitates female employment and the percentage of female workers is likely to rise. Conversely, if many female employees continue to work without a mid-career interruption, WLB policies might fully utilize the female workforce and create better working conditions for women.

In addition, it is conceivable that there could be multiple relationships between WLB policies, business productivity, and corporate performance. Companies can secure a pool of more capable female workers by introducing WLB policies, and female workers' in high-level positions can contribute to increasing corporate performance. However, if an enterprise in a tight management condition perceives WLB actions as a heavy burden, that enterprise would not launch such policies. Alternatively, some companies that perform well can afford to introduce WLB policies. There could be conceivable interconnectedness between sales per employee and WLB policies or the percentage of female employment and WLB policies. Thus, the relationships among variables could be considerably complicated, as illustrated in Figure 3. The figure is based on observed variables, not latent variables. The arrow marks checked in both directions between the variables indicate correlation and covariation, and the relationships are insufficiently clear to identify causality. The analysis of the model is conducted using a chi-squared test, the most common statistical method. The hypothesis that the path coefficient is 0 is based on Wald statistics. Moreover, the path coefficient from erroneous variables is set as 1 for distinguish ability. For the assessment of the whole covariance structure analysis model, indexes, such as the goodness of fit index (GFI), Akaike's information criteria (AIC), and route mean square error of approximation (RMSEA) are often used. In this study, the validity of the model is secured by a chi-squared test.

4. Data and Results

This section examines the relationship between personnel management of women and other variables based on the arguments in the previous section. Particularly, this section investigates whether WLB policies can lead to better corporate performance and lead to better female promotion.

This paper refers to the matched data based on the Fact-finding Survey on Employment Management focusing on companies listed in the Report on the Employment Promotion Measures for the Pharmaceutical Industry and the Survey on The Employees' Awareness conducted for employees working in the companies.

These surveys were conducted in 1995. The survey on employment management focused on 230 member companies of the Pharmaceutical Manufacturers' Association of Tokyo and 270 member companies of the Osaka

Pharmaceutical Manufacturers Association. Survey forms were distributed to the enterprises by post, and the completed forms were collected by the same method. Valid responses were collected from 310 companies, and the percentage of collection was 62%. The survey forms on employees' awareness were internally distributed to 5,000 full-time employees of 120 companies primarily engaged in pharmaceutical operations among the 310 organizations that gave valid responses to the survey on employment management. The completed forms were collected in the same way. Responses were obtained from 3,462 workers of 102 companies, and the percentage of collection was 69.2%.

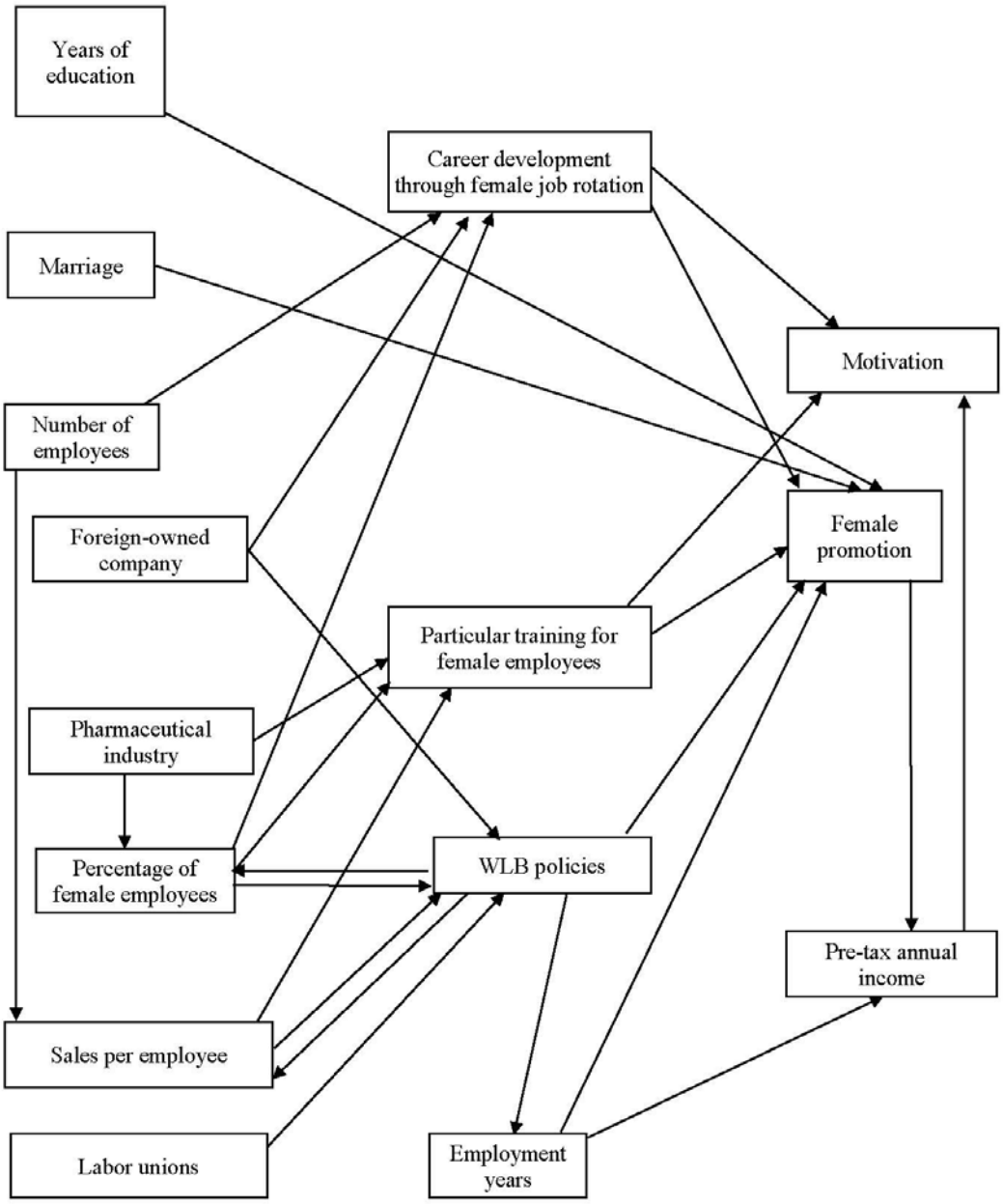

Figure 3 Structural Equation Modeling of WLB Policies

Our analyses calculated the percentage of extraction for each company from the number and sample number of female employees and re-extracted allowing redundant data to restore the population. However, the sample size

excluded the cases in which only a few samples of employees for one company were extracted. The sample size also excluded small and medium-sized enterprises with particularly small numbers of employees and the case where the percentage of population restoration exceeded 100% due to a noticeable number of employees despite an adequate level of samples.

Table 1 shows basic statistics focusing on the characteristics of analytical variables. Note that corporate attributes represented statistical data based on original samples, but employees' attributes showed statistics after the population restoration had been conducted.

Table 1 Summary of Statistics (Mean)

	Variables	Means (the rate of 1 in the case of dummy variables)	Standard deviation (except dummy variables)
Corporate attributes	Number of employees	1,046,266	2,178,651
	Foreign-owned companies	0.152	
	Pharmaceutical companies	0.612	
	Labor unions	0.458	
	Percentage of female employees	0.31	0.154
	Sales per employee (males included) unit:	4252.121	8089.223
	Extent of WLB condition	1.077	0.687
	Female career development through job	0.077	
	Particular training for female employees	0.119	
Female employees' attributes	Number of years of education	14.228	0.014
	Marriage	0.294	
	Employment years	5.771	0.146
	Pre-tax annual income	407.545	149.424
	Managerial position	1.101	0.358
	Motivation level (four categories)	2.264	0.014

The average number of employees is 1,046,266, which suggests that the data included relatively large companies. The 15.2% percentage of foreign-owned company characterizes this industry. The pharmaceutical preparation and manufacturing industry represents 61.3% of the sample size. Companies with labor unions represented 45.8%, which implies that almost half of the companies have labor unions. The percentage of female employment including part-time employees is 31%. Sales per employee (including male workers) are high at 42,521,210 yen.

The category of WLB considers to what extent companies have the following four WLB systems: a nursing care leave system, a child care leave system, a children's day care facility at the workplace, and a home caregiver dispatching system. We assign one standard numerical point for each item provided. The table shows the total items with a maximum of four. The average is 1.08, which suggests that companies implement just one of the four systems on average. Furthermore, only 7.7% of the companies introduce the career development system through female job rotation and 11.9% have specific job training methods for women. These results imply that few companies implement substantial measures for the active utilization of female employees.

The values for the female workers are based on an employee awareness survey of full-time employees. The

average number of years for employee education is 14.23; the percentage of married women is 29.4%, and the average duration of service is 5.77 years. For managerial position indexes, ordinary workers are set as 1, project manager and subsection chief are set as 2, and section chief is set as 3. The findings from the samples show that no women are in a position higher than section chief. The average number is 1.10, which suggests that most of the samples are ordinary workers. The average annual income is 4,075,450 yen. With respect to the "job motivation" category, we set "not motivated at all" as 1, "not motivated so much" as 2, "moderately motivated" as 3, and "highly motivated" as 4. The average is 2.26, which is indicative of low motivation.

Moreover, the data used for this study allow for job type identification, which facilitates the observation of the percentage of female promotion to managerial positions by job type as shown in Table 2. The average percentage of female promotion to managerial positions is 1.21%. This is remarkably low compared to the male percentage of 24.84%. There are considerable differences according to job type; a relatively high percentage of female promotion to managerial positions is noted in research and development (R&D) and indirect sectors. However, a comparison of the female percentage in the indirect sector with that of men in managerial positions suggests that female promotion in the indirect area remains inactive. In the meantime, the female promotion percentage in medical representative (MR) or sales operations is exceedingly low. The characteristics of this category, such as the burden of an outside job and long working hours, make it particularly difficult for female workers to contribute.

Table 2 The Percentage of Managerial Personnel by Gender and Job Type (%)

	The percentage of male managerial personnel	The percentage of female managerial personnel
R & D	28.60	2.49
MR	27.92	0.85
Production and distribution	11.86	0.30
Indirect sector	43.86	2.11
Total (%)	24.84	1.21

Note 1: R&D refers to research and development. MR refers to medical representative.

We consider female promotion factors exclusively from the perspective of personnel management, similar to many preceding studies, before conducting SEM modeling analysis. We focus on the R&D and indirect sectors in which adequate samples can be secured, and the percentages of female promotion to managerial positions are higher. The analyses use the three job categories of female employees, establish "ordinary workers" as a standard criterion, and apply the ordered probit model.

Table 3 shows the estimation results for female promotion in the R&D sector. As expected, age is a factor and has a positive effect on female promotion. Marriage scores is a negative effect, approximately, at the 10% level of significance. For personnel measures, the award system for tenure and the annual salary system are effective for female promotion. In foreign-owned companies, female employees are likely to be promoted. In addition, the percentage of female workers in a managerial position is low for head offices in Tokyo and Osaka. Labor unions is a negative factor, but it is not statistically significant.

Table 4 presents the results in the indirect sector. The number of years of education is a significant factor. Unexpectedly, however, graduation from a pharmaceutical department is a negative factor in the indirect sector of pharmaceutical companies. This suggests that specialized pharmaceutical knowledge is less important for promotion in the indirect sector. Age is positively significant as is the case for the R&D sector, but marriage has a

positive effect in contrast to the R&D sector. For personnel management, feedback on employee performance evaluation is a negative factor. Management by objective is a positive factor, and feedback on performance evaluation is a negative factor. However, both items are statistically insignificant. With respect to WLB policies, the nursing care leave system is a negative factor, whereas the child care leave system, the short-hour service, and the fixed workday system are positively significant at the minus 10% level. Training programs for female workers are a positive factor for promotion. Thus, WLB policies and particular training for female employee effectively work only for the indirect female employees.

Table 3 Decisive Factors for Female Promotion in the R&D Sectors

	Marginal Effect	Standard Error
Age	0.312	0.085***
Married = 1, others = 0	-0.879	0.445*
Award system for long service (yes = 1, no = 0)	2.278	0.524 ***
Annual salary system (yes = 1, no = 0)	1.084	0.520*
Reemployment system (yes = 1, no = 0)	1.017	0.723
Fixed workplace system (yes = 1, no = 0)	0.887	0.567
Head office in Tokyo	-2.467	0.640***
Head office in Osaka	-1.184	0.360**
Foreign-owned companies	3.778	0.923***
Labor unions (yes = 1, no = 0)	-0.355	0.245
Sample size	159	
Wald X^2 (10)	56.020	
$P > X^2$ (10)	0.000	
Pseudo R^2	0.696	

Note: 1) Analytical method is the Ordered Probit Model. 2) ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 4 Decisive Factors for Female Promotion in the Indirect Sectors

	Marginal Effect	Standard Error
Number of years of education	0.302	0.140 *
Graduation from the pharmaceutical department	-0.883	0.385 **
Age	1.001	0.050 *
Married = 1, others = 0	0.181	0.052 ***
Management by objective (yes = 1, no = 0)	0.609	0.320
Promotion test system (yes = 1, no = 0)	-0.469	0.310
Feedback on performance evaluation (yes = 1, no = 0)	-1.088	0.355 ***
Nursery care leave system (yes = 1, no = 0)	-0.735	0.205 ***
Child-care leave system (yes = 1, no = 0)	1.277	0.600 *
Short-time service and fixed workday system (yes = 1, no = 0)	0.583	0.254 *
Fixed workplace system (yes = 1, no = 0)	-0.343	0.246
Particular training for female employees (yes = 1, no = 0)	1.399	0.215 ***
Career development through job rotation (yes = 1, no = 0)	0.504	0.380
Sample size	358	
Wald X^2 (13)	70.42	
$P > X^2$ (13)	0.000	
Pseudo R^2	0.439	

Note: 1) Analytical method is the Ordered Probit Model. 2) ***, **, and * indicate significance at the 1%, 5% and 10% levels, respectively.

As noted in Tables 3 and 4, there are no consistent causalities observed between personnel measures and female promotion patterns. In addition, WLB policies are not significant factors for the R&D sector. At the same time, the nursing care leave system is a negative factor while the child care leave system is a positive factor for the indirect sector. Moreover, marriage shows contrary effects on the two sectors, and consistent explanatory variables are observed only for age.

Table 5 displays the examination results of the structural equation model for further investigation. The path coefficient from the WLB policies to the percentage of female workers shows a negative effect. This result indicates that if companies perceive enormous costs in implementing WLB policies, they are likely to employ fewer women to avoid the financial burden. Conversely, the path coefficient from the percentage of female employees to WLB policies is a positive value. That is, these companies introduce WLB polices to meet the needs of many female workers.

Table 5 Results of Structural Equation Modeling

N = 21586[1)]

Exogenous Variables		Endogenous Variables	Coef	P-Value
Number of years of education	--->	Managerial position	0.061	***
Married dummy	--->	Managerial position	-0.101	0.054
Number of employees	--->	Sales per employee	0.915	***
Number of employees	--->	Particular training for female employees	0.001	***
Foreign-owned companies	--->	rotation	-0.089	0.108
Foreign-owned companies	--->	WLB policies	-0.549	***
Foreign-owned companies	--->	Managerial position	0.012	0.061
Pharmaceutical manufacturer	--->	Percentage of female employees	-0.189	0.014
Pharmaceutical manufacturer	--->	Managerial position	-0.189	***
Percentage of female employees	--->	Particular training for female employees	0.706	***
Percentage of female employees	--->	WLB policies	2.527	***
Percentage of female employees	--->	Managerial position	0.452	***
Sales per employee	--->	Particular training for female employees	0.001	***
Sales per employee	--->	WLB policies	0.001	***
Labor unions Female career	--->	WLB policies	0.875	***
rotation	--->	Managerial position	-0.046	0.315
Particular training for female employees	--->	Motivation	0.159	0.277
Particular training for female employees	--->	Managerial position	-0.034	0.740
WLB policies	--->	Percentage of female employees	-0.046	***
WLB policies	--->	Sales per employee	-2282.351	***
WLB policies	--->	Employment years	1.693	0.015
WLB policies	--->	Managerial position	-0.032	***
Employment years	--->	Managerial position	0.025	***
Employment years	--->	Pretax annual income (unit: 10,000 yen)	9.812	***
Promotion to subsection chief and higher	--->	Motivation	0.020	0.140
Promotion to subsection chief and higher	--->	Pre-tax annual income (unit: 10,000 yen)	128.640	***
Pre-tax annual income (unit: 10,000 yen)	--->	Motivation	0.001	***

Note: 1) N = 21586: The results of redundant sampling to secure the consistency of the percentage of extraction for each company. 2) Coef shows. ***P-value is less than 0.01. 3) GFI = 0.923 AGFI = 0.902X^2 = 86. The validity of modeling is secured by the three tests.

On the other hand, WLB policies have a considerable negative direct impact on sales per employee. Employees who use the child rearing leave and nursery care programs retain their positions as employees during the leave period. Although they virtually give no service to the company during leave, the total number of corporate employees does not change. In another case, the number of workers often increases due to the employment of supplementary staff, but they may not have an effect on improving corporate performance.

In contrast, sales per employee have a positive impact on WLB policies. This suggests that enterprises that achieve high performance can afford to allocate business resources to WLB policies. WLB policies do not have a direct effect on female promotion, and a significantly negative coefficient is observed. However, the policies have an effect and increase female working years, which indirectly benefits female workers. This is because longer tenure years leads to promotion, and promotion causes wage raises. Some analyses on the positive effect of WLB policies on wage raises and promotions reflect these indirect effects.

For the effects of other female-related measures, "career development through female job rotation" has a negative effect on "rising through the ranks to higher posts" but is not statistically significant. In addition, the effect of "job training systems for female employees" on "motivation" is positive but not significant and is not effective in promoting female workers to higher positions.

5. Conclusion

This study examined the matched data based on the Fact-finding Survey on Employment Management and the Survey on The Employees' Awareness focusing on companies listed in the Report on the Employment Promotion Measures for the Pharmaceutical Industry to analyze the effect of intra-corporate policies on female employment. These data enabled us to collect information on corporate measures from companies and information on the distinctive attributes and behaviors of individual workers from employees.

We first examined the relationships among variables affecting female promotion in R&D and indirect sectors by ordered probit model before conducting SEM model analyses. However, we could not discover any consistent causality for the effect of personnel measures, including WLB policies, on female promotion patterns. WLB policies and particular training for female employees effectively work only for the indirect female employees.

Next, the SEM estimation results treating the complicated relationships among variables indicate that there were no noticeable results, implying that WLB policies are effective for boosting productivity. In addition, we demonstrated that WLB policies do not have direct impacts on female promotion and payment levels, but they are effective in increasing female employment years. Longer tenure is likely to facilitate female promotion and increase their wages.

These examination results are based on the pharmaceutical industry and data obtained in the early phase of increased demand for competitive performance evaluation systems and WLB policies. For future research, it is essential to analyze updated data and assess policy effects with a focus on a wider range of areas in a recent situation where WLB policies are more widespread.

Acknowledgments

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