

The Cost Sharing of Child and Family Care Leave

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Abstract Child care leave and family care leave are necessary for employees to cope with both work and family. This article examines the cost distribution of the child care leave and family care leave systems. It finds that exemption from social insurance premiums and benefits paid through employment insurance reduce the opportunity cost of child care leave. But there are various problems related to the payment of benefits. In the case of child care leave, the cost to the corporation is relatively high, whereas in the case of family care leave the burden of cost falls mainly on the employee. On the other hand, the cost to society is minor. Therefore, to reduce the burden on the corporation created by the payment of insurance premiums and to secure a balance among industries, it will be necessary to establish some form of benefits or tax concessions for private corporations and to have society take on more of the burden associated with child care and family care. Because an employee's salary is usually reduced when he or she changes jobs, the effects of preventing retirement through the leave system is significant. In addition, there are advantages to increasing the number of workers who remain on the payroll with respect to tax and social insurance revenue.

1. Introduction

Aging and the declining birthrate will have significant implications for policymakers in the future. In the next 25 years, one crucial impact will be the declining proportion of the Japanese population engaged in the workforce, hindering economic growth. Measures to increase the number of aged and female workers are expected to be implemented, but their effectiveness will depend on the progress of the social system.

In Japan, care of children and the elderly has traditionally been the responsibility of the family. Therefore workers, especially women, have been forced to choose between continuing to work or quitting their jobs to care for their children and elders.

Today, child care and elderly care are important issues in the formulation of public policy. The supply of available child care and elderly care services outside the home is inadequate, and we have to rely on the family to provide them. In 1995, for example, over 230,000 Japanese female workers quit their jobs to care

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for their children, and another 90,000 left the workforce to care for elderly family members (Statistics Bureau, Management and Coordination Agency, 1997).

To effectively utilize our human resources, we must build a social system that will enable individuals to maintain their working life concurrently with their commitment to the family. Toward that goal, child care leave and family care leave, which enable workers to devote themselves to child care and elderly care for a certain period, are effective policies. In 1992 the child care leave law went into effect, and in April 1999, the “Law concerning the Welfare of Workers Who Take Care of Children or Other Family Members Including Child Care and Family Care Leave” was implemented.

Due to the aging population, however, social security costs are increasing, and how those costs should be shared by workers, private corporations, and the government is a serious issue. Most of the previous research on child care leave and family care leave has been concerned with law and the stability of workers. In contrast, this study focuses on (1) the cost of the leave system; (2) the merits and demerits of the leave system for workers and corporations; and (3) the distribution of the system’s cost among workers and corporations.

2. Effects of the Care Leave System

2.1. Effects on Job Openings

Generally, care leave is disadvantageous to corporate management because it reduces the number of working days of employees, which in turn reduces productivity. Nevertheless, the number of corporations that offer child care leave and family care leave has been on the rise.

Until now, most female workers quit their jobs to have or care for children; consequently, corporations have been practicing rational administration—that is, they provide lower wages and less on-the-job training to women than to men. However, with the increasing number of women entering the workforce, as well as their ability to work longer, the loss of qualified workers due to child care and elderly care has created a major problem for corporate management. Moreover, the situation has produced the double burden of having to replace workers who have left and to bear the expense of training the new employees. To prevent a decline in human capital (skill), corporations have come to opt for the implementation of care leave to maintain productive workers and to curtail the costs incurred when they retire.¹

One reason for the introduction of family care leave involves the increasing number of persons who quit their job to care for the family, as reflected by the

aging society. Although it is mainly young women who leave the company to care for their infants, those who resign to care for frail elders are usually individuals of either sex in their mid-forties or fifties. These middle-age workers often hold administrative posts, and, consequently, the cost of their retirement is much higher than the cost of replacing younger workers who leave to care for children. For this reason, it becomes necessary for corporate management to offer family care leave.

There are, however, problems with the care leave system. According to the Ministry of Labour (1990), most companies had difficulty securing and managing replacement workers. When an employee takes leave, either a colleague must perform his or her job or the company must hire a replacement. If the number of workers who take leave increases and the company fails to employ a sufficient number of replacement workers, the dissatisfaction of regular workers will rise due to their heavier workload. By the same token, it becomes increasingly difficult for these workers to take family leave themselves. Furthermore, when an employee does return to the workplace when the leave is over, dealing with both the employee and the replacement worker becomes a problem. For these reasons, most companies are reluctant to hire replacement workers.²

2.2. Effects on Job Status

In Japan, there has been a strong tendency from the past for people to think that a woman should quit her job for child care or to have a child and then reenter the job market later in life.³ Yet, it is very difficult for a woman over 30 years old to obtain the job she desires. According to a study by Shinotsuka (1995) that

¹ Wakisaka (1990) lists some measures that would allow female workers to keep their jobs during marriage and maternity and thereby to continue developing their skills: (1) a reemployment system, (2) the child care leave system, and (3) day nurseries, especially for infants less than three years old. He emphasizes the importance of the child care leave system and nursery care for infants. According to the Ministry of Labour (1987), corporations indicated that implementing the child care leave system "has been effective in securing a specialized workforce such as professionals and skilled workers" (49.1%), "has improved the securing of female workers" (48.0%), and "has improved the will of female workers to work and has thereby improved the working atmosphere" (37.6%).

² According to the Ministry of Labour (1993), among corporations enforcing the child care leave system, 24.8% noted that "replacement workers were hired for all members taking leave," 5.2% said that "replacement workers were hired for some of those on leave," and 70.1% indicated that "no replacement workers were hired."

³ Tomita (1994) points out the various reasons for retirement, whether for marriage or for maternity. More specifically, compared to a worker who voluntarily retired for marriage, a worker who retired for maternity left her job because of the difficulty in dealing with both work and family, as well as the lack of day nursery services. Therefore, if the working environment were compatible with child care, they would likely continue working.

examined help-wanted ads, companies most frequently desired “youth,” followed by “experience.” This suggests that opportunities diminish as a woman reaches the age of 35, and that she becomes increasingly disadvantaged the longer she remains out of the workforce. Even if she can find employment, her career will be shorter than that of a man, meaning that she will receive a lower wage and pension than a male counterpart. Therefore, an employee who takes leave but remains employed is actually treated better than a formerly retired worker who has returned to the workforce. Although taking child care leave reduces her chances for promotion and a raise in salary, its negative effect will be comparably less than the drop in salary she would face as a result of having previously resigned from her job. She also will be in a better position in the company.

The timing and cost of child care can be estimated, whereas they are uncertain and cannot be predicted accurately in the case of elderly care. Moreover, the burden of elderly care is much greater than that of child care because often one person is potentially responsible for four elderly parents (parents of both husband and wife) (Okamoto, et al, 1996, 35–37). According to the National Institute of Employment and Vocational Research (1989), many employees with elderly family members are forced to change their employment status from full-time to part-time, then, from part-time to unemployed. Indeed, more than half of those who changed their workplace or employment status selected “retirement,” thereby indicating the gravity of the problem.

Ironically, it is more difficult to regain employment for those who quit work to provide elderly care than to give child care. Thus, it is also advantageous for workers with elderly family members to have the option of family care leave so they can keep their jobs.

2.3. Effects on Workforce Stability and the Efficient Use of Human Resources

Do child care leave and family care leave increase the stability of the workforce? Here, through previous studies, we examine how the child care leave system has influenced the retention of female employees.

The relationship between child care leave and the retention of female employees is demonstrated in the works of Tomita (1993), Higuchi (1994), Kojima (1995), and Kaneko (1996). Tomita’s analysis reveals that the percentage of women who worked after giving birth was higher in companies that offered flextime and shorter working hours. Higuchi, using “Employment Status Data, 1987,” shows that child care leave caused the birthrate and work suspension rate to rise. He also found that employees of large corporations tended to marry later and had lower birthrates. Kaneko examines the effects of the decline in opportunity costs and the suspension rate. He indicates that the wide use of child

care leave would increase the average number of working years, and providing income security during leave (such as the exemption from social insurance premiums and the child care leave benefit) would extend the number of working years of female employees.

On the other hand, Wakisaka (1993) notes that female workers who held the same jobs as men were likely to continue working, and few of them wished to quit for marriage or bearing children. According to a study conducted by the Japan Institute of Labour (1992), women who hoped to develop their careers generally took child care leave; most respondents indicated their intention of continuing to work even after having children.

Based on past research, then, it can be said that the child care leave system has been quite effective in retaining female workers.

2.4. Effects on Career Development

Deterioration of skills is often thought to be one of the downfalls of the care leave system. This problem cannot be ignored because it not only causes productivity to fall but also creates the necessity for career development training after the employee's return. The period from the mid-twenties to the mid-thirties is important for workers' career development. The effects of retirement from the workforce for child care are enormous, especially when an industry is experiencing rapid technical progress. Nevertheless, available data are inadequate to analyze the effects of child care leave on career development.

In an empirical study of care leave, Mincer and Ofek (1982) investigated its effects on human capital. They analyzed the impact of the interruption to a worker's career using data on the wages of married female workers, as well as how periods of interruption reduced the pool of female workers. Although this study did not focus on the leave system per se, it did reveal that (1) the wage one would receive on reentering the labor market was lower than that before leave (but the gap was small, as the period of interruption was made as short as possible), and (2) the loss from the decline in wages caused by the interruption (due to child care) was smaller than that for other reasons, such as layoffs and sickness. Mincer and Ofek argue that the reason for the decrease in wages was the decline in the employee's ability or job skills. However, these workers regained the required skills faster than regular workers could develop them, and although the returning workers could not attain the absolute wage level of continuing workers, their incomes rose at the same rate as their returning counterparts. Even if a worker's skills declined as a result of taking care leave, society would encourage the implementation of the child care leave system as long as the worker could regain the required

skills after returning to her job⁴.

Judging from these findings, the keys to maintaining a competitive position in the labor market for workers who take a temporary leave of absence are the shortness of the leave period and job retraining. As for reducing working hours, there is merit in minimizing a reduction in wages, but it is also necessary to provide day nurseries and care services for frail elderly people to delegate domestic services. The efficacy of job training depends on the positioning of female workers in the office. Many women who have received on-the-job training leave the company to marry, give birth, and care for children. Consequently, corporate management provides less training for female workers than for male workers. Because many women work in small- or mid-size companies that cannot afford to make a substantial investment in human capital, they find it difficult to receive enough training to offset the loss of taking leave. In fact, the Ministry of Labour (1993) points out, only 37.7% of companies took any steps to develop and maintain the skills of their workers, and of this percentage, 85.1% offered only information, not practical training.

2.5. The Efficacy and Income Support of the Leave System

Even when the option is available, some employees do not take advantage of the leave system. According to the Association of Women and Children (1991), there were several reasons for not taking child care leave even when it was available. Among the respondents in the association's study, 65.2% "have someone who takes care of the children," and for 43.9% "it would be financially difficult to take leave." They "do not want to trouble [their] colleague" and "can rely on some facility such as day nursing to take care of children" (24.9%), and they "did not intend to utilize it from the beginning" (43.2%). Significantly, 38.7% of all respondents who did not take child care leave answered that they "did want to take it if it was available."

Many previous studies have indicated that for women to work full-time, it was almost mandatory for them to live with their parents and have their parents take care of their children. But this kind of support is no longer prevalent; moreover, even if a woman could continue working while her parents (living together) cared for her children, she would eventually be forced to quit or change jobs

⁴ Regarding the decline in human capital in Japan, Wakisaka (1990) conducted interviews in a major fiber factory. He compared the differences between the wages of users and nonusers of child care leave whose job content and duration of service were almost the same, but stated that no conclusions could be drawn from these data. Moreover, according to the personnel affairs section, although child care led to a slight drop in the attendance rate, diminished performance on the job was not evident after only a year's absence.

when her parents got older (Maeda, 1995).

On the other hand, not taking leave because of financial reasons would mean that income support or financial assistance were required during the leave. The next section looks closely at the issue of income support in relation to the leave system.

3. Economic Support Systems during Care Leave

Under the present child care and family care leave laws, employers are not required to pay their employees during the leave period. These laws are in accordance with the work regulations established through labor-management negotiations. Therefore, most corporations do not pay wages based on the principle of “no work, no pay.” As for financial assistance given through the social security system, child care leave benefits have been provided since April 1995 with the enactment of the “Amendment to the Employment Insurance Law, etc.” in June 1994. An insured person who takes leave to care for a child under one year old is paid an amount equivalent to 25% of his or her wages before the leave. In addition, employees’ insurance premiums for health care insurance and pension insurance are exempted during the leave period.⁵ Although no such benefits were planned for family care leave, they were scheduled to be introduced in April 1999.⁶

When the child care leave law was implemented in April 1992, wages were not paid and the payment of social insurance premiums was required. Discussion of financial support during the leave period was left for a future Diet session. In September 1993 the Conference of Women and Boys produced a report, “Economic Support during the Period of Child Care Leave,” arguing that, from the standpoint of continuing to work and career development, economic support was desirable. As for its funding, the report stated, “It is not enough to enforce

⁵ Since April 1996, the social insurance premium of workers is exempted at their request if they take child care leave under the “Law concerning the Welfare of Workers Who Take Care of children Including Child Care Leave.” Surprisingly, this law has no restrictions even when their salary is fully paid by the employer making the system unfair to workers who do not take leave for financial reasons and who must pay the premium. The regulation concerning the burden of insurance premiums for workers on leave requires that their proportion of working hours is at least three-fourths that of regular workers. Yet, there are no conditional premium payments such as is the case with the national pension and national health insurance. Therefore, if the person maintains his employee status, his insurance premium is exempted. This regulation should be revised to require that workers pay the premium if their salary is over 1.3 million yen, as demanded by the national pension system.

⁶ The argument about economic support was suspended in 1995. But from April 1999, family care benefits would be available. The rate of payment is about 25% of wages before leave, and it is paid for three months in a lump sum on return to the job.

companies to provide economic support by law; it would be more adequate to deal with it under the jurisdiction of the Ministry of Labour, and to be placed into the framework of employment insurance” (Matsubara, 1996, 58). This was the first time that a plan to finance support through employment insurance had been suggested. Next, a report submitted by the Central Employment Security Council (1993) proposed two continued employment benefits: the child care leave benefit and the continuous employment benefit for senior workers. The proposal passed the Diet, and from 1 April 1995, financial assistance during child care leave amounting to 25% of the employee’s wages (before leave) was established. The continuous employment benefit for senior workers, also amounting to 25% of wages, was implemented simultaneously.

3.1. The Child Care Leave Benefit System

The child care leave benefit seems out of place in employment insurance because it is paid even though the worker is still employed. Nonetheless, the decline in skills as a result of child care leave is regarded as “an exceptional case which gives rise to the difficulty in continuing to work” and is considered to be an employment “mishap.” Also, the “benefit (continuous employment benefit) to stabilize workers’ employment” (Yamaguchi and Ministry of Labour, 1996) was established to avoid a more serious burden: “unemployment.”

The child care leave benefit is paid to workers who take leave to care for an infant under one year old. It consists of a basic benefit and a reengagement benefit. The former provides an amount equivalent to 20% of the employee’s wages before leave, and the latter provides an amount equivalent to 5% after six months upon his or her return to work. In this way, the benefit is paid separately to prevent abuse of the system, such as quitting after receiving the benefits.⁷

3.2. The Benefit Level

The child care leave benefit provides an amount equivalent to 25% of a worker’s wages before the leave. The 25% level was established to roughly equal the amount of the average unemployment benefit a woman would receive in the case of unemployment before childbirth (Yamaguchi, and Ministry of Labour, 1996, 206). Moreover, to promote the use of child care leave to avoid the alternative of retirement, the amount of the child care leave benefit is slightly

⁷ According to the Ministry of Labour (1993), among all the workers who planned to return to work after taking leave during the period between 1 April 1992 and 31 March 1993, 84.7% actually returned. The reinstatement rate was 84.6% for female workers and 100% for male workers.

higher than that of the unemployment benefit.⁸

In fact, the child care leave benefit has restrictions that hinder the enhancement of the leave system and decrease the incentive to return to work earlier. These restrictions relate to the wage rate workers are entitled to while on leave and to the number of hours they may work.

In the case of payment of wages during child care leave, the following restrictions apply: (1) if the sum of the wages is less than 60% of the wages prior to the leave, then, in principle, 20% of the wages prior to the leave is paid as a basic benefit of child care leave; (2) if the sum of the wages is over 60% but less than 80%, then the basic leave benefit is paid until the sum of the benefit and the wages paid while on leave reaches 80% of the wages before leave; (3) if the sum of the wages paid during the leave exceeds the wages prior to the leave, the basic benefit is not paid. The reengagement benefits of child care leave, on the other hand, are paid in one lump sum six months after the employee returns to work. This relationship is illustrated in Figure 1. In this figure, the percentage of the wage payment during leave is positioned along the *x*-axis, and the sum of wages from the employer and the child care leave basic benefit and reengagement benefit per wage prior to the leave is positioned along the *y*-axis. As long as the amount of the wage payment remains under 60%, the sum of the wage and the child care leave basic benefit is equal to the sum of the wage and the child care leave benefit. But when the wage payment is over 60%, the curve becomes flat, as if the benefit were taxed at a 100% marginal rate. Furthermore, if the payment exceeds 80%, the child care leave benefit is not paid. If one considers net income, the problem becomes even more complicated.

Figure 2 illustrates the net income of Figure 1. Like Figure 1, the net income increases with the percentage of the wage payment until it reaches the 60%

⁸ Based on the case of a general female worker whose average wage is about 220,000 yen, we compared the amount of the unemployment benefit in the case of retirement and the amount of the child care leave basic benefit and child care leave reengagement benefit. The former (unemployment insurance for 90 days) is 528,000 yen (basic benefits per day [220,000 yen]/30 days × benefit payment rate [80%] = 528,000 yen) and the latter (use of child care leave after maternity leave for 10 months, with salary unpaid) is 55,000 yen (wage per day before taking leave [220,000 yen/30 days] × benefits payment rates [25%] × 10 months); thus, the child care benefit is higher by 22,000 yen than the unemployment benefit. The wage rate before taking leave, which serves as the basis for calculating the value of benefits, is derived by multiplying the “wage per day at the start of the leave” (considered the first day of the leave) by 30. More specifically, if wages are not paid during the leave, then the sum of wages for 6 months prior to the leave (excluding bonus) is multiplied by 180, which is then multiplied by 30 to derive the wage rate before leave. Moreover, the maximum limit of the amount calculated as the amount of the benefit is equal to the maximum limit of wages per day of a worker between 30 and 45 years old, or 96,960 yen (1 August 1996).

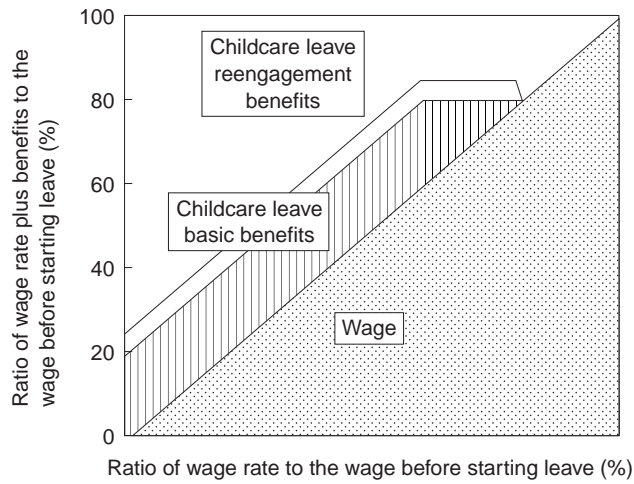
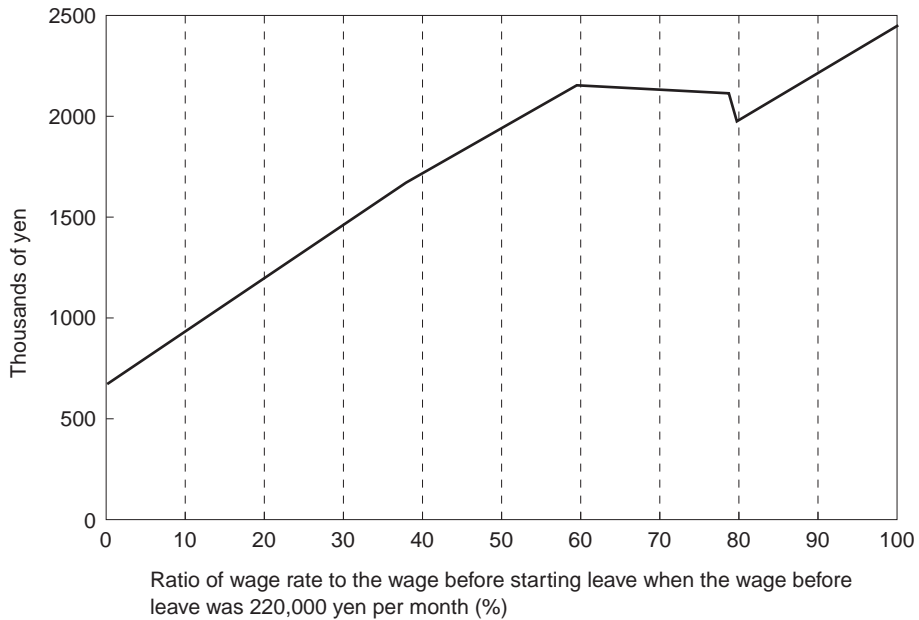


Figure 1 The income support system during childcare leave



Note: The burdens of the income tax and residence tax are considered. We assume that the child deduction is applied of the husband's wages and so does not account for its effects in this study.

Figure 2 The relationship between the employee's wage rate and her disposable income

payment level. Yet after reaching the 60% level, the net income gradually declines. This is because, as opposed to wages that include tax and social insurance contributions plus the child care leave benefit which is fixed, wages are taxed and the child care leave benefit is not. Therefore, as the proportion of wages within the value of wages plus benefits increases, the tax burden increases, thereby decreasing net income. When the wage payment level reaches 80%, the child care leave reengagement benefit is cut, and therefore net income decreases sharply. The present child care leave benefit system thus acts as a disincentive for both the employer and the employee to raise the wage payment to over 60%.

Another major restriction of this system concerns labor hours. To qualify for benefits, one cannot work more than 10 days a month (1 unit). Thus, if a worker who is on child care leave is working part-time, he or she may not be able to receive the benefit at all.

The child care leave benefit is necessary to ensure the continuation of employment and to compensate for the opportunity cost of child care leave. Yet some changes should be made. First, payment limits associated with the benefit (for the wage rate paid during leave) should be reexamined. Specifically, the benefit should rise gradually when the proportion of paid wages is between 60% and 80%. And second, to keep the system fair for both people who are on full-time leave and those who are not, the wages for those working part-time must be raised to an amount that is higher than the child care leave benefit. For instance, raising the number of labor hours from ten days per month to 15 days should be considered.

4. Sharing the Cost of the Leave System

4.1. Basic Data

We analyze child and family care leave along the basic lines of the child and family care leave law. To put it simply, child care leave is permitted until the child turns one year old, whereas family care leave is for three months. Wages are not paid during leave, but a woman who is working as a non-self-employed worker and bears a child is paid a maternity and child care lump sum allowance (300,000 yen) through the Health Insurance System as well as a maternity allowance (60% of standard remuneration) while on maternity leave. When she takes child care leave, the leave benefit is paid through employment insurance while insurance premiums (Employees' Pension Insurance premiums and Health Insurance premiums) are exempted monthly.

4.1.1. Setting Up the Life Course

Micro data on wages and details of work content are required to measure the cost distribution of the leave system, whether or not leave is taken. At present, however, we are unable to get data on the life course of people who utilize the leave system. Consequently, we assume some life courses and calculate the cost to the worker, the corporation, and society, regardless of whether leave is taken.

Here, we assume that a woman takes both types of leave only once—child care leave at age 27 and family care leave at age 48.⁹ Regarding her life course, we hypothesize four different cases: (1) she does not use the leave system; (2) she uses the leave system for the legal period; (3) she retires and later finds another full-time job—after six years in the case of child care and one year in the case of family care; (4) she retires and later finds a part-time job for the same period, as in (3). Furthermore, each case has been classified according to educational background (lower secondary school, upper secondary school, college or university) and size of company (1,000 employees and over, 100–999 employees, 10–99 employees). The estimates presented here thus include 12 cases for both of the leave systems.

4.1.2. Setting Up the Wage Profile

The wage applied to each of the life course settings is taken from “scheduled monthly contractual earnings” and “annual special earnings” in the Ministry of Labour’s “Basic Survey on Wage Structure in 1996.” To exclude the effects of changing occupations, we assume the leave taker to be a standard worker without prior experience in changing occupations; in the case where she returns to the workforce after retirement, we apply the wage rate of a general worker whose duration of service is equal to 0 years.

For the most part, wage increases as the corporation size, the level of educational attainment, and the duration of service increase. Thus, we estimate the worker’s scheduled monthly contractual earnings and annual special earnings according to the size of the company and the worker’s education and length of service. This can be expressed as:

$$\begin{aligned} & \log Wi \text{ (scheduled monthly contractual earnings of female general worker)} \\ & = a_0 \text{ (fixed number)} + a_1 K \text{ (size of enterprise)} + a_2 G \text{ (educational attainment)} \\ & \quad + a_3 Y \text{ (length of service)} + a_4 Y^2 \text{ ([length of service]}^2\text{)} \\ & \log Wh \text{ (scheduled monthly contractual earnings of female standard worker)} \end{aligned}$$

⁹ To estimate the effects of child care leave, we assume that a female worker takes leave at age 27—the average age at first birth, according to the Ministry of Health and Welfare’s “Vital Statistics of Japan in 1995.” In the case of family care leave, we assumed that a female worker takes leave at age 48, the average age for doing so according to the Ministry of Labour (1993).

$$= a_0 \text{ (fixed number)} + a_1K \text{ (size of enterprise)} + a_2G \text{ (educational attainment)} \\ + a_3Y \text{ (length of service)} + a_4Y^2 \text{ ([length of service]^2)}$$

where W = the average monthly salary of the “Basic Survey on Wage Structure.” For the explanatory variable, we use the size of the company and the worker’s educational attainment.

This estimation result appears in Table 1. We then calculate the wage profile for General Worker and Standard Worker as well as their annual special earnings based on the logarithm of the wage function sought for this estimation.

4.2. Method of Estimating the Cost of Leave

4.2.1. Cost to the Individual

The cost to the individual (utilizer of the leave system) is divided into two types: the cost incurred during the leave and the cost to the lifetime income. In the former case, we compare the leave-taking employee’s wages, benefits, insurance premiums, and taxes with those of a worker who does not utilize the leave system. In the latter case, we compare the lifetime net income, contributions, and taxes of the system users and nonusers and part-time workers and full-time workers.

4.2.2. Cost to the Corporation

In estimating the cost to the corporation for a worker taking leave, we consider the nonpayment of wages, the amount of social insurance premiums paid, the cost of voluntary employee’s benefits,¹⁰ and the decrease in productivity. If a worker takes leave, the productivity of the corporation will decline, but so far little research has been conducted on the extent of its effects. Hence, we calculate the decline of productivity by estimating the labor share of the added value of the corporation using the Ministry of Finance’s “Monthly Report of Budget and Finance” (August 1996) and the reciprocal number of that result multiplied by the worker’s wage before the leave.¹¹

4.2.3. Cost to Society

We define the cost to society for child care leave as the payment of social insurance premiums, child care leave benefits and maternity benefits, and the reduction of workers’ tax revenues. For family care leave, there is no economic assistance, and we calculate only the workers’ reduced taxes.

¹⁰ Some employee’s benefits are needed during the leave period. We assumed the cost as labor cost per regular worker for one month, excluding expenditures for meals, within voluntary employee’s benefits. Also, we calculated the weighted average among large corporations with 1,000–4,999 workers and over 5,000 workers, medium-size companies with 300–900 workers, and small companies with 30–99 workers.

Table 1 Effects of corporation size and worker's education and length of service (age) on wage profile

	General Worker		Standard Worker	
	Scheduled Monthly Contractual Earnings	Annual Special Earnings	Scheduled Monthly Contractual Earnings	Annual Special Earnings
Intercept	4.343134	2.9838598	4.196483	3.229142
Dummy variable for large corporation	0.1582 (9.162329)	0.612643 (13.70574)	0.17459 (8.481674)	0.561151 (11.12241)
Dummy variable for medium corporation	0.040752 (2.366826)	0.304833 (6.827242)	0.096261 (4.687571)	0.344532 (6.843382)
Dummy variable for high school	0.116898 (6.208476)	0.332977 (6.799893)	0.149743 (6.680856)	0.262029 (4.752856)
Dummy variable for junior college	0.273482 (13.27465)	0.65478 (12.30681)	0.266331 (10.91979)	0.474458 (7.919051)
Dummy variable for university	0.417301 (19.86164)	0.743518 (13.60922)	—	—
Age (length of service)	0.033244 (7.793185)	0.138129 (12.37286)	0.036963 (7.609337)	0.136651 (11.44372)
(Age [length of service]) ²	-0.00028 (-5.10308)	-0.00149 (-10.4197)	-0.00021 (-3.26354)	-0.00133 (-8.43346)
Number of samples	951		286	
R ²	0.528503		0.822135	

Note: In the case of General Worker, the parameter of age is represented as the parameter of length of service (years). The upper number represents the parameter and the lower represents the t-value.

5. Results and Analysis

5.1. The Cost of Child Care Leave

Table 2 summarizes the distribution of the cost of child care leave and maternity leave to the worker, the corporation, and the society. Numerical values are based on the number of employees who do not utilize the system, with positive figures representing cases that lead to increased income and negative figures representing cases that lead to decreased income.

The total cost to the worker, the corporation, and society ranges widely—from 3.4 million to 9 million yen. It tends to be higher as the educational level rises and the corporation becomes larger. The ratio of the cost to the employee, the corporation, and society is 26:56:18, but as the size of the corporation increases, the ratio of the cost to the employee and society decreases, and the ratio of the cost to the corporation increases.

5.1.1. Cost to the Employee

Workers have a serious problem if they receive no wages during maternity leave or child care leave. The top figures represent lost wages (including taxes and contributions) that are not paid during the leave period. As educational attainment and corporation size increase, the amount of lost wages increases, which means that opportunity costs rise together with wages. However, opportunity costs decrease only slightly because, in actuality, there is no tax burden if no wages are paid; moreover, social insurance premiums are exempted and child care leave and maternity leave benefits are paid as economic support.¹² In the case of college/vocational school graduates, the maximum amount

¹¹ Labor relative share is an index to show a ratio of result (value added) of distribution to workers. According to the index, there are macro- and microinstructions, with varied meanings. A typical labor share index of macroinstruction is the employer income distribution rate to represent the ratio of employer income as comprised in the national income. In this study, we used the labor share of microcosm, which represents a ratio of result (value added) distribution to workers, namely personnel expenses as comprised in value added of a corporation. Although the MITI “Industry Census” and the Ministry of Finance “Monthly Report of Budget and Finances” publish the labor share, we used the latter report since the former represents only the manufacturing industry. Yet, in this report, labor share is based only on capital, not on corporation size, age, or sex. Because the scale of corporations did not coincide with capital, we used average figures. Here, we originally wanted to use data on the productivity of workers based on age and corporation size, but no statistics existed. The correlation between wage and productivity is controlled so much by achievement or the distinction of sex/age constitution, but we used a reciprocal number for labor share to estimate workers’ productivity.

¹² Although they are not part of the economic support of the child care leave system, maternity leave benefits are provided through the health care insurance system.

Table 2 The cost of child care leave and maternity leave (1,000 yen)

Education	Graduated Junior High School			Graduated High School			Graduated Junior College or Special School		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Employee									
Total	-1205.2	-1418.9	-1599.9	-1431.5	-1697.2	-1923	-1646.4	-1964.1	-2230.4
Lost wages	-2168.5	-2499.7	-2784.2	-2568.7	-2973	-3320.6	-2939.6	-3415.6	-3823.7
Exemption from contribution	166.3	183.8	199.1	193.5	213.8	231.7	217.7	240.7	260.9
Decrease in tax burden	124.4	156.2	184.1	162.3	201.7	235.5	197.3	243.9	287
Child care leave basic benefits	301.6	332.2	359.2	350.4	385.8	417.2	393.8	433.6	468.8
Child care leave reengagement benefits	75.4	83.1	89.8	87.6	96.5	104.3	98.5	108.4	117.2
Maternity benefits	295.6	325.6	352	343.4	378.1	408.9	385.9	424.9	459.4
Corporation									
Total	-2340.9	-3192.7	-4399.2	-2723.7	-3642.3	-4908.4	-3077.5	-4062.5	-5384.6
Unpaid wages	2168.5	2499.7	2784.2	2568.7	2973	3320.6	2939.6	3415.6	3823.7
Contribution	-166.3	-183.8	-199.1	-193.5	-213.8	-231.7	-217.7	-240.7	-260.9
Voluntary employee's benefits	-247.7	-786.8	-1726.1	-247.7	-786.8	-1726.1	-247.7	-786.8	-1726.1
Decrease in productivity	-4095.4	-4721.8	-5258.2	-4851.2	-5614.7	-6271.2	-5551.7	-6450.6	-7221.3
Society									
Total	-872.8	-995.3	-1076.5	-1032.1	-1160.1	-1272.5	-1175.1	-1321.4	-1452.6
Decrease in social insurance contribution	-75.8	-98.3	-91.4	-88.4	-98	-106.6	-99.6	-110.6	-120.3
Decrease in tax revenue	-124.4	-156.2	-184.1	-162.3	-201.7	-235.5	-197.3	-243.9	-287
Child care leave basic benefits	-301.6	-332.2	-359.2	-350.4	-385.8	-417.2	-393.8	-433.6	-468.8
Child care leave reengagement benefits	-75.4	-83.1	-89.8	-87.6	-96.5	-104.3	-98.5	-108.4	-117.2
Maternity benefits	-295.6	-325.6	-352	-343.4	-378.1	-408.9	-385.9	-424.9	-459.4

allowed for tax/social insurance premium reductions and various benefits is 1.59 million yen. In this way, opportunity costs increase the higher the educational level, but as a result of various benefits and the exemption system, the range of the wage decrease is narrower.

5.1.2. Cost to the Corporation

The cost of the leave system to the corporation, as represented by a numerical value is negative except for unpaid wages. What is especially noticeable is that the drop in productivity is extremely high. This is because the proportion of the labor share is only 52.95%; in addition, we assume that the fall in productivity (due to a worker taking leave) would not be made up by other workers or replacement workers. Put differently, by relying on other workers or by hiring replacement workers, the drop in productivity can be offset by half the cost of the decrease in productivity. Here, we examine a case where the employer hires a replacement worker whose ability is the same as the worker on leave and who is paid the same wage rate to compensate for the decline in productivity. If the replacement worker is a graduate of a junior college or vocational school and works in a big corporation offering a high wage rate, the cost to the corporation would decrease to 2.25 million yen even while paying additional wages and social insurance premiums (for the replacement worker) because the fall in productivity would be offset completely.

The other cost to consider is the high voluntary employee's welfare benefit cost. The amount of the cost varies according to corporation size, with housing comprising most of the expense. Compared to this, the amount of the social insurance premium does not vary as much according to corporation size, and its portion of the corporation's total cost increases as the size of the corporation becomes smaller. Because this situation represents cost per worker, corporations employing many young women who are likely to utilize the child care leave system sustain a higher cost for child care leave than other corporations. As a result, as Higuchi (1994) points out, corporations may employ more men than women, an outcome that contravenes the original purpose of the system. We believe that half or even all of the social insurance premiums that corporations pay for workers on leave should be exempted from taxes or be distributed among industries through tax concessions.

5.1.3. Cost to Society

Compared with the cost to the worker or the corporation, the cost of the leave system to society is relatively small—indeed, it does not amount to even 20% of the total cost of the three parties. For the young female user of child care leave, the cost of the various exemptions is not high. Day nurseries need to be

established to support child care. Furthermore, it is unreasonable to impose the greatest burden of child care leave on only the worker and the corporation. In the future, society must assume a greater share of the cost.

5.1.4. Effects of Taking/Not Taking Leave on Net Lifetime Income and on Employment upon Reentering the Workforce

Table 3 compares employees' net lifetime income (wages and pension), tax burden, social insurance premium burden according to educational background, and the size of the corporation in four different simulated cases: Case A, not taking child care leave; Case B, taking child care leave; Case C, retiring to care for a child and returning to the workforce as a full-time employee when the child enters elementary school; and Case D, retiring to care for a child and returning to the workforce as a part-time employee.

5.1.4.1. Differences between Taking and Not Taking Child Care Leave

In comparing Case A (not using child care leave) and Case B (using child care leave), we see a major difference in net lifetime income, ranging from approximately 8 million to 9.5 million yen. A major portion of this difference comes from wages, which amount to 8.36 million to 10 million yen. If the employee takes leave, he or she will not receive any wages for a year (the leave period). Moreover, a raise in wages will be postponed for the duration of the leave. Thus, although working for about 30 years after taking the leave, the employee will lag behind his or her coworkers in promotions. Furthermore, the period of the leave is not counted in the employee's length of service; this affects not only the retirement allowance but also the pension—from about 280,000 to 500,000 yen. Child care leave benefits and maternity leave benefits are far from making up the loss. Although the impact of taking leave on pay raises and promotions cannot be determined with any accuracy, the disadvantages are incalculably important for those who receive a high salary or are aiming at promotion. In fairness to those who do not utilize the leave system, there is a need to reform how we deal with a worker's duration of service, such as counting at least half of the leave period in his or her work record.

5.1.4.2. Effects of Child Care Leave on Retirement Prevention

Because the net lifetime income of those who take child care leave is lower than that of workers who do not, what are the advantages of not taking child care leave? To answer this question, we compare the lifetime income in Cases B, C, and D.

The difference between the net lifetime income of an employee taking leave (Case B) and that of an individual returning to work on a full-time basis after his or her previous retirement (Case C) is about 26 million to 58.7 million yen. Also,

Table 3 Comparison of lifetime income in taking leave in retiring for child care (10,000 yen)

Education	Graduated Junior High School			Graduated High School			Graduated Junior College or Special School		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Case A (Child care leave not taken)									
Net lifetime income	15629.9	17775.1	19464.3	17826.4	20289.7	22344.5	19715.3	22481.6	24760.8
Wage income	12715.6	14714.8	16293.7	14664.2	6966.6	18878.7	16321.3	18903.3	21018.9
Pension receipts	2914.3	3060.3	3170.7	3162.1	3323.1	3485.8	3394	3578.3	3741.9
Tax burden	926.4	1202	1439.1	1210	1567.9	1935.3	1487.5	1990.6	2514.6
The burden of contribution	990.5	1110.1	1195.6	1131	1251	1356.9	1237.7	1369.7	1486.2
Case B (Child care leave taken)									
Net lifetime income	14833	16800.4	18763.7	17169.4	19508.1	21507.3	18996.6	21640.1	23814
Wage income	11879.9	13697.6	15547.2	13964.2	16137.8	17990.4	15555.6	18009.9	20017.1
Pension receipts	2885.9	3028.7	3136.4	3127.1	3284.2	3423.9	3353.2	3533.5	3692.4
Child care leave basic benefits	30.2	33.2	35.9	35	38.6	41.7	39.4	43.4	46.9
Child care leave reengagement benefits	7.5	8.3	9	8.8	9.6	10.4	9.8	10.8	11.7
Maternity benefits	29.6	32.6	35.2	34.3	37.8	40.9	38.6	42.5	45.9
Tax burden	859.3	1119.3	1345.4	1134.3	1465.5	1762.2	1391.3	1841.9	2313
The burden of contribution	958.7	1067.5	1149.3	1086.1	1200.9	1302.6	1187.5	1313.9	1424.8
Case C (Retirement, then return to full-time work)									
Net lifetime income	12226.3	12899.3	13651.4	13472.7	14278.4	15384.4	15172.8	16117.4	17427.1
Wage income	9387.6	10021.6	10686.9	10494.1	11258.7	12268.8	12036.5	12940.4	14144.4
Pension receipts	2802.4	2837.6	2921.5	2936.5	2973.4	3085.4	3089	3124.9	3226.5
Unemployment benefits	36.2	39.9	43.1	42	46.3	50.1	47.3	52	56.3
Tax burden	640.8	717.2	1045.4	798.5	907.1	1050.7	1039.7	1190.1	1415.1
The burden of contribution	769.9	794.3	848.2	833.5	859.1	917.4	929.1	955	1020
Case D (Retirement, then return to part-time work)									
Net lifetime income	6984.4	7275.6	7727.8	7184.1	7471	7718.8	6791.6	7077.5	7325.8
Wage income	4903.5	5164.4	5589.8	4822.7	5079.3	5300.4	4731.2	4989	5212.4
Pension receipts	2044.7	2071.3	2094.9	2319.4	2345.3	2368.4	2013.2	2036.5	2057.2
Unemployment benefits	36.2	39.9	43.1	42	46.3	50.1	47.3	52	56.3
Tax burden	486.2	513.8	537.9	501.8	531.1	556.4	500.7	530.9	555.2
The burden of contribution	287.6	304.2	318.9	284.1	300.4	314.9	268.4	283.2	296.2

those who do not use the leave system (Case A) earn three to five times more than those who do (Cases B, C, and D).

It is evident that the difference in salary is the greatest. The period of unemployment is no more than seven years, and although the difference in income during the period of unemployment is not large, the decline in wages after the return to work and in the retirement allowance causes the incomes to differ considerably. Even the amount of pension received will demonstrate this wage gap. The worker's cost of retirement rises with educational background and corporation size, because she or he can expect a higher salary with a longer period of service. Junior college or vocational school graduates who retire from their full-time jobs in major companies to provide child care (as opposed to those who opt for child care or maternity leave and then continue working) will experience a 25% drop in salary on reentering the workforce. This reflects the major loss incurred by changing occupations.

The loss through retirement is greater in Case D, where the employee returns to the workforce on a part-time basis. His or her net lifetime income will fall by one-half to one-third that of a continuing worker taking leave. Comparing this to the salary of a junior college or vocational school graduate who has the widest wage gap, we see that her salary falls by 15 million yen, or about 75%. In Japan, if the person returns to a part-time job, her wages will decline significantly, and generally she will not receive a retirement allowance. The disadvantages of retirement and changing occupation therefore become clear.

At first glance, the opportunity cost of taking leave for workers with a high salary, as well as those who desire promotion, would seem to be considerable. But from the viewpoint of retirement costs, there is a major advantage in doing so.

Here, we examine the retirement cost from another perspective. When we consider that female workers pay taxes and social insurance premiums, the amount of those taxes and premiums for workers who have retired in the past is generally lower than that of continuing workers. The retirement of a female worker for family reasons would mean losing that person's tax payments and insurance premiums, so the retirement cost also becomes a serious issue for society. Economic support of child care leave and the establishment of day nurseries would seem to boost the social cost, but if the number of workers who retire for family reasons decreases through these measures, advantages such as increased tax and social insurance revenues can also be expected.

5.2. The Cost of Family Care Leave

Table 4 indicates the cost—to the employee, the corporation, and society—of family care leave taken over a three-month period, according to educational level

and corporation size. The cost of family care leave is relatively lower than that of child care leave (see Table 2), reflecting the short period of family care leave. But in distributing costs among the employee, the corporation, and society, we obtain the ratio of 57:33:10, with the burden on the employee proving to be the heaviest. Contrary to the cost of child care leave, the cost to the employee who takes family care leave increases as the size of the corporation decreases.

5.2.1. Cost to the Employee

Because there is no economic support such as exempted social insurance premiums provided through the employment system for family care leave, the burden of family care leave is relatively more severe than that of child care leave. Furthermore, as social insurance premiums are paid at a fixed percentage of one's salary, workers with lower salaries must bear more of the burden. As a result, the cost is higher for workers in smaller corporations.

On the other hand, if workers retire to care for their families, they receive unemployment benefits equal to 60% of their previous wage through employment insurance for three months—ranging from 570,000 to 890,000 yen. While taking leave for three months, in spite of unpaid salary, they must pay not only care expenses for their family members but also their own insurance premiums. Over the short term then, it is much more likely that workers will retire than take leave to provide family care.

5.2.2. Cost to the Corporation

The decline in productivity is the biggest cost to the corporation. But the cost is not less than that of child care leave, because the period of family care leave is comparatively shorter. As for the burden of paying social insurance premiums, it is greater for smaller companies. Thus, it is necessary to reduce corporations' share of the premiums.

5.2.3. Cost to Society

The cost of family care leave to society consists only of the decrease in tax revenue, which comprises no more than 7%–18% of the total cost. The percentage would be higher if, as for child care leave, economic support such as the exemption from social insurance premiums and the payment of benefits were required.

5.2.4. Effects of Taking/Not Taking Leave on Net Lifetime Income and on Employment upon Reentering the Workforce

Table 5 represents the lifetime income of individuals in four different simulated cases: Case A, not taking family care leave; Case B, taking family care leave for three months; Case C, retiring to care for family and being reemployed as a full-

Table 4 The cost of family care leave for 3 months (1,000 yen)

Education	Graduated Junior High School			Graduated High School			Graduated Junior College or Special School			
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	
Employee										
Total	-863.5	-989.2	-952.8	-975.7	-1138.5	-1270.2	-1115.7	-1194.8	-1298.5	
Lost wages	-934	-1093.3	-1229.4	-1113.7	-1310.1	-1478	-1282.1	-1515.3	-1714.4	
Exemption from contribution	-29.7	-32.7	-35.3	-34.4	-37.9	-41	-38.7	-42.6	-46.1	
Decrease in tax burden	100.2	143	311.9	172.4	209.5	248.8	205.1	363.1	461.9	
Corporation										
Total	-528.7	-621.8	-852.3	-575.3	-653.9	-872.9	-608.4	-670.4	-876.1	
Unpaid wages	934	1093.3	1229.4	1113.7	1310.1	1478	1282.1	1515.3	1714.4	
Contribution	-29.7	-32.7	-35.3	-34.4	-37.9	-41	-38.7	-42.6	-46.1	
Voluntary employee's benefits	-61.9	-172.6	-413.5	-61.9	-172.6	-413.5	-61.9	-172.6	-413.5	
Decrease in productivity	-1371.1	-1509.9	-1632.9	-1592.6	-1753.5	-1896.3	-1789.8	-1970.5	-2130.9	
Society										
Total	-100.2	-143	-311.9	-172.4	-209.5	-248.8	-205.1	-363.1	-461.9	
Decrease in social insurance contribution revenue	-100.2	-143	-311.9	-172.4	-209.5	-248.8	-205.1	-363.1	-461.9	

Table 5 Comparison of lifetime income in taking leave and retiring for family care (10,000 yen)

Education	Graduated Junior High School			Graduated High School			Graduated Junior College or Special School		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Case A (Family care leave not taken)									
Net lifetime income	15630	17775.1	19464.3	17826.4	20289.7	22344.5	19715.3	22481.6	24760.8
Wage income	12715.6	14714.8	16293.7	14664.2	16966.6	18878.7	16321.3	18903.3	21018.9
Pension receipts	2914.3	3060.3	3170.7	3162.1	3323.1	3465.8	3394	3578.3	3741.9
Tax burden	926.4	1202	1439.1	1210	1567.9	1935.3	1487.5	1990.6	2514.6
The burden of contribution	990.5	1110.1	1195.6	1131	1251	1356.9	1237.7	1369.7	1486.2
Case B (Family care leave taken)									
Net lifetime income	15517	16388.5	19279.5	17696.2	20140.8	22228	19568.2	22324	24589.5
Wage income	12604.6	13330.3	16084.4	14635.5	16820.4	18765.1	16177	18748.8	20851
Pension receipts	2912	3058.2	3195.1	3159.7	3320.5	3463	3391.2	3575.2	3738.6
Tax burden	914.2	1194.2	1404	1191.2	1542.5	1856.3	1463	1947.3	2459.4
The burden of contribution	995.9	1111.3	1193.7	1129.2	1248.9	1354.6	1235.6	1367.3	1483.6
Case C (Retirement, then return to full-time work)									
Net lifetime income	12889.1	14335.1	15506.1	14753.4	16395	17952.4	16374.5	18252.2	19996
Wage income	10112.4	11453.6	12535.6	11814.6	13348.9	14792.8	13190.6	14943.9	16554.7
Pension receipt	2719.6	2818.7	2903.1	2872.5	2973.2	3080.6	3109.5	3226.3	3352.7
Unemployment benefit	57.1	62.9	68	66.3	73	79	74.5	82.1	88.7
Tax burden	684.4	846.6	1041.3	862.8	1074	1276.3	1058	1327.6	1624.2
The burden of contribution	832.5	910.4	971.1	937.2	1003	1082.7	1017.5	1099.6	1187.1
Case D (Retirement, then return to part-time work)									
Net lifetime income	11850.9	13216.3	14235.2	13083.9	14589	15870.9	14074.8	15770	17181.2
Wage income	9172.9	10434.2	11380.8	10255.3	11653.6	12840.8	11086.3	12658.5	13960.4
Pension receipts	2620.9	2719.2	2768.5	2762.3	2862.4	2951.2	2914	3029.5	3132
Unemployment benefits	57.1	62.9	68	66.3	73	79	74.5	82.1	88.7
Tax burden	686.4	839.1	961.1	758.4	1022.1	1202.1	966.5	1213.8	1469.2
The burden of contribution	743.6	818.9	865.7	838.7	898.2	962.5	865.6	944.2	1013.6

time worker after one year; and Case D, retiring to care for family and being reemployed as a part-time worker after one year.

5.2.4.1. Differences between Taking and Not Taking Family Care Leave

The net lifetime incomes of employees in Case A (not taking leave) and Case B (taking leave) differ by at least 1.1 million to 1.7 million yen. Since the period of leave is only three months, the wage gap caused by the postponement of promotion and the decrease in the duration of service is not as large. Even the amount of pension is affected by 20,000 yen.

5.2.4.2. Effects of Family Care Leave on Retirement Prevention

Here, we compare the lifetime income of an employee who takes leave and continues to work to avoid retirement (Case B) with that of an employee who retires to provide family care and returns to work later on (Case C). Although the difference in the working period does not exceed seven months, the difference in net lifetime income amounts to approximately 3 million yen. If the person is a regular worker, he receives a comparatively high salary by his late forties; yet if he changes his job, he will face a considerable cut in salary, thereby having a wider wage gap than a younger worker.

Finding a new job as a full-time worker is more difficult for people in their fifties. For an individual who returns to the workforce on a part-time basis (Case D), the difference between his net lifetime income and that of the continuous worker (who takes leave) is 40 million yen. The family care leave system thus offers poor incentives to prevent retirement in the short-run, but if we consider long-term factors such as lifetime income, the advantage of preventing retirement is significant. Hence, there remain some issues that need to be dealt with, such as the provision of economic support to employees while they are on leave and the establishment of care services so workers will not be forced to take leave to care for elderly family members.

6. Conclusion

The exemption from social insurance premiums and benefits paid through employment insurance reduces the opportunity cost of child care. However, various problems associated with the payment of wages and the ratio of benefits need to be resolved.

Considering the cost sharing of the leave system, the cost to the corporation is relatively high in the case of child care leave, and the cost to the employee is relatively high in the case of family care leave. On the other hand, the cost to society in both cases is minor. To reduce the burden on the corporation of social

insurance premiums, and to secure a balance between industries, it is necessary to establish some form of benefits and tax concessions for the corporations and to have society assume more of the burden of child care and family care.

When an individual changes jobs, the salary is treated disadvantageously. So, the leave system has a significant effect on retirement prevention. In addition, there are advantages to increasing the number of continuing workers with respect to tax and social insurance revenues. Child care leave and family care leave enable women to cope with both working life and family life. Needless to say, cooperation from the family and the establishment of social services are also important.

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