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An Empirical Study of Child Care Leave in Japan: Marriage, Childbirth, and Job Retention

By

Yoshio Higuchi

Abstract

In response to a declining birthrate, fears of a labor shortage and the growing desire of women with children to work, Japan passed the Child Care Leave Law in 1991. This paper examines the influence of this child care leave program on the employment, marriage, and childbirth patterns of women in Japan.

While the work tenure of Japanese women is not short compared to that of their counterparts in other countries, Japanese firms emphasize its shortness relative to the work tenure of Japanese men. In doing so, they impede the human resource development of women. Firms focus upon the shorter work tenure of women because they value highly the long-term employment system and firm-specific skills. The interruption of employment by marriage, childbearing or child care is therefore seen as a disadvantage accompanying female workers.

The empirical results of this study show, however, that child care leave not only supports uninterrupted employment, but also helps to alleviate the difficulties associated with work, marriage, and childbearing. Because the Child Care Leave Law makes continuous employment possible, employees benefit from greater choice, and human resource development is made easier for the employer.

Key Words

the Child Care Leave Law, legislation and its effect on the labor market, the long-term employment system, firm specific skills, female employment, job retention, marriage, childbearing

Introduction

This paper is an empirical study of the influence of child care leave program on women's employment, marriage, and childbirth. It also discusses how the costs of such a program should be distributed.

In Japan, in response to the sharply declining birthrate, fears of a labor shortage and the desire of women with children to work, the Child Care Leave Law was passed in 1991 and took effect in 1992. The law seeks to make it easier to have both a career and a family. Both mothers and fathers may request up to one year of leave to raise a child until its first birthday. In addition, the firm should allow shorter work weeks and other relevant measures to assist employees with children below school age. The law at first excluded firms with fewer than 30 employees, but as of April 1995, all companies complied with the child care law.

What will be the effect of such a program on women's employment? According to a survey of firms, the largest obstacle to a woman's advancement in a company is that women cannot be relied upon to remain with a company for a long time. With respect to women in 'general employment' (*Sogo Shoku*), over 80% of the firms stated this as the largest reason (Japan Productivity Center, 1990). Even if the firm makes an effort to train women employees, the women often quit before their training can be put to use for the company's benefit. On the other hand, companies do not invest in their female employees, effectively killing their incentive to work and leaving them with no other option but to quit.

In the past, both men and women's ways of thinking were uniform. Most people subscribed to the image of men as long-term employees and women as short-term or temporary employees. Recently, however, more and more people are forming new opinions. If firms continue to make decisions based upon the common values of the past, the discord between employers and employees will widen.

Clearly, firms and their female employees have fallen into a vicious cycle of high quit rates and personnel training. Firms complain that they cannot successfully develop the human resources of female employees because most of them quit the firms within short periods. On the other hand, female employees complain that they cannot help quitting the firms because the firms do not try to offer enough chances for job training to female employees. If a child care leave program could bring an end to this vicious cycle, the benefits to the firm would be as great as those to the women.

However, the implementation of child care leave, and its effect on the labor market will not necessarily be welcomed with open arms. Rather, the introduction of such legislation into the labor market, contrary to its objective, could actually place women at a disadvantage.

The law entitles both male and female employees to the right to child care leave and shorter working hours. But, in fact, almost all leave takers are women. The introduction of this program may raise personnel costs due to securing substitute workers and placing the burden of social welfare payments on the firm. The cost to the firm of employing the people who are most likely to take leave would go up and the legislation of child care leave may actually prejudice companies against hiring women.

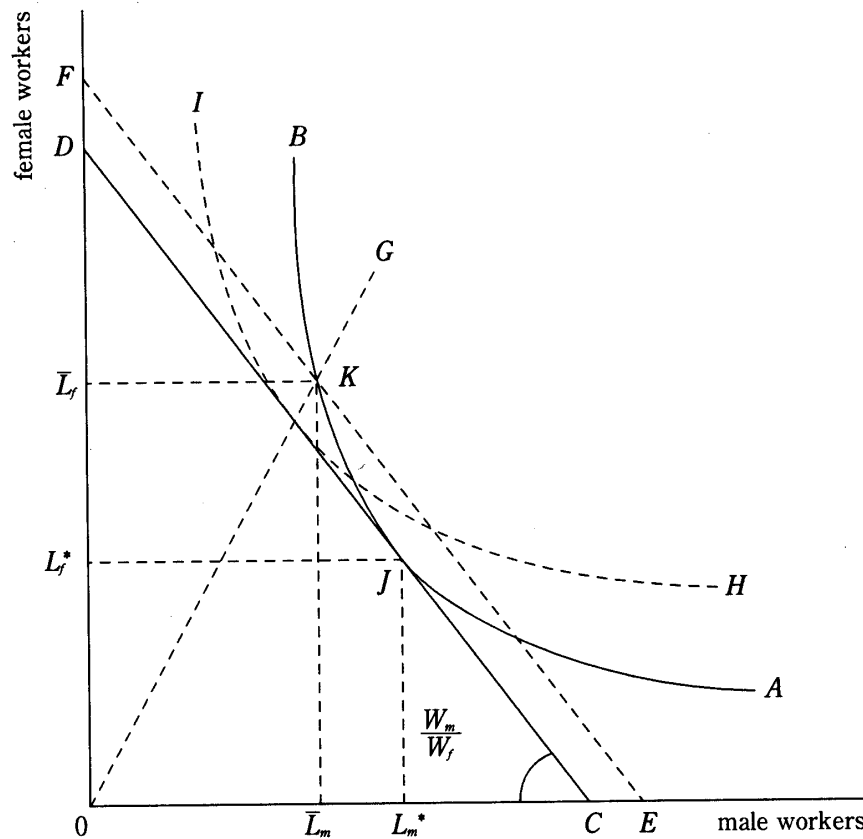
The main problem child care leave legislation presents is whether the administration should come between labor and management or let both sides freely decide. Let us examine this problem from the point of view of supporting continuous employment and child rearing and look at how the firms and workers directly affected should share the costs and benefits of such a program.

Legislation and its Effect on the Labor Market

Economic theory states that the introduction of a policy into the free market may well upset resource allocation. Let us use the example of affirmative action. The actual content of affirmative action programs varies from country to country. For this example, we will define it as a policy to increase the employment of women and minorities by setting employment quotas for individual firms.

Figure 1 shows such a program graphically. Here, male and female employees, L_m and L_f respectively, are the labor inputs necessary to produce a fixed output, Q_0 , (the equal product curve limited to production technology). The combination of male and

Figure 1. The Effect of the Employment Quota System on Production Cost



female labor inputs to produce Q_0 fall along line AB. Male and female wages are W_m and W_f and the equal cost curve slope is set by W_m/W_f . The closer to O the firm is on the equal cost curve, the lower the cost of production. Therefore, faced with equal production curve AB, the firm will use a combination of labor inputs as close to the origin as possible and choose the equal cost curve labeled CD and employ male labor inputs L_m^* and female labor inputs L_f^* .

However, if a law is passed to increase female employment and the male/female labor ratio changes to OG, then in order to produce output Q_0 , the firm will choose point K and must employ male and female labor inputs of \bar{L}_m and \bar{L}_f . In this case, the production cost is shown by equal cost curve EF. This curve is above and to the right of the equal cost curve chosen when the firm freely determines labor inputs (line CD). The difference between EF and CD is the cost to the firm.

If free trade is limited, and each country has a closed product market, then the firms that must comply with this law will have higher costs and lower company profits, or they will be forced to raise the price of their product. But under free market, firms must compete with firms that are not required to employ a certain percentage of women, so firms under this law would be less competitive at least, in short periods even under the floating exchange system. This would result in a reduction in the volume of demand or the firm would be forced to cut back production. This in turn would mean a reduction in male employment as well as female employment, and depending on the circumstances may even fall below pre-legislation levels of L_f^* .

Griffin (1992) used data on companies listed on the New York Stock Exchange to compare those that must comply with affirmative action and those that do not. He concluded that firms affected by the law were constricted by lower substitutability of labor input factors and therefore had higher production costs. There are many other arguments along the same line. But if this is the case, a contradiction arises between the pursuit of economic rationality and legislation. In order to smoothly implement new legislation, both cooperation by the firms and some kind of social accommodation are necessary. Moreover, in a world with free trade, employment policies to expand employment of a certain group should not be limited to individual countries, but require complete cooperation.

The above example puts production technology as already given. The argument is based upon the premise that regardless of whether the law is passed, the equal product curve remains unchanged. However, production technology is largely dominated by social needs and values. For example, if social values began to place importance on female employment, much effort would be made to improve personnel management and production technology to make it possible. In fact, the aging of society in Japan has led firms to do extensive research in personnel policies and new technology that would create a more favorable work environment for older employees. Many firms have made substantial investments and organizational changes to achieve this. Production technology as shown by the equal product curve is not fixed; rather, it can adjust to changes in the business environment.

Returning to the problem of the male/female employment ratio, the point of tangency for the equal product curve and the equal cost curve closest to OG is now along HI (see Figure 1). If the firm is left to maximize profits, the technology will not be fully developed and the government must introduce policies to promote its development. Leonard (1984) used U.S. EEOC (Equal Employment Opportunity Commission) data by industry and state to do a comparative study of employment before and after legislation. He found that even with the increase in the number of female and minority employees, workers' marginal productivity did not fall, nor did production costs rise.

In Japan, the Child Care Leave Law has only been in effect a short time so it is not possible to determine if the program raises the cost of female labor or has a negative effect on hiring. However, there are data on the implementation of child care leave in 30 industries in the 1985 *Survey on the Status of Women's Protection*. The male/female ratio of newly hired regular employees by industry is in the *Survey on Employment Trends* (1986). These surveys show that industries that have a high ratio of child care leave programs are not reducing or limiting the hiring of women. Rather, there is a statistically significant positive correlation at the 1% level between the ratio of child care leave implementation and the ratio of women in hiring. (The correlation coefficient is 0.4776, with a t-value of 2.8765.)

We do not observe that a child care leave program causes relative costs which help increase or hinder female employment. Rather, firms that voluntarily introduce child care leave are more likely to encourage the utilization of women employees. We need further research to conclude what the effect of legislation on female employment is.

Female Employment in Japan

Firms emphasize that women's job tenures are short and this makes it difficult to

utilize female labor resources. But is this impression based upon comparisons with women in other countries or with Japanese men?

The 1993 OECD *Employment Outlook* provides the answer. The average tenure of men and women in 13 countries is 9.8 years for men and 7.1 years for women. The averages for Japan are 12.5 years for men and 7.3 years for women, both above the OECD average. Thus, in an international comparison, Japanese women's work tenures are not short.

The difference between male and female work tenures, however, is conspicuously large compared to other countries. Among the 13 countries, Japanese men have the longest work tenures, followed by the former West Germany with 12.1 years, France with 10.6 years, Spain with 10.6 years, and the U.S. with 7.5 years. The Japanese labor market is characterized by long-term employment and firm tenure is considerably longer than that of Anglo-Saxon countries such as the U.S., but it is not remarkable compared to that of W. Germany, France, or Spain. Japanese women hold sixth place after France with 9.1 years, Spain with 8.2 years, and W. Germany with 8.0 years, and ahead of the U.S. with 5.9 years. The difference between male/female work tenures averaged 2.7 years for all 13 countries, 1.5 years in France, 1.6 years in the U.S., 2.4 years in Spain, and 4.1 years in W. Germany. That difference is far greater in Japan at 5.2 years. While Japanese women have long work tenures at the international level, Japanese men work far more years—thereby creating the wide gap in work tenures.

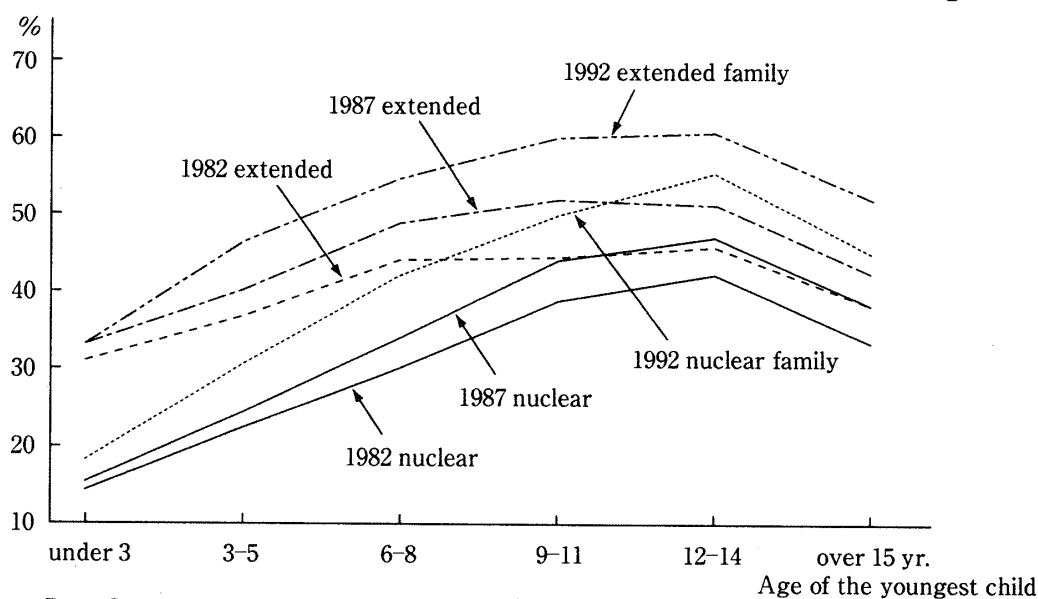
The above argument on work tenures by firm was based upon average continuous years worked. In fact, one cannot discern differences in firm tenures by looking at the differences in average continuous years worked. The average continuous years worked is an average value of the people presently employed and does not include people who quit their jobs and are no longer working. If a large number of people quit once and never reappear in the labor market, then the average continuous years worked limited to the people remaining will inevitably become longer. This point is quickly understood if one recalls that the average continuous years worked are long in the declining industries that presently have a freeze on hiring. In order to truly compare work tenures, one must compare the ratio of people remaining in the firm 5 and 10 years after beginning employment. Presently, there is no data like this that can be used in international comparisons, so the average of continuous years worked was used.

With this point in mind, let us examine recent trends in women's employment. Table 1 shows the percentage of married and single women who are working and the percent who are employees.¹ The difference between these two statistics is that self-employed people and family workers enter into the number of women working.

Looking at this table, with the exception of women in their teens and their twenties, the percentage of women working and female employee rates are rising in almost every age group. Another noteworthy point is that employment rates of married women in their late 20s and older have greatly increased.

The question then is whether the number of women with small children entering the work force has increased or are the greater percentages composed of women who wait until their children are bigger and then seek employment. Figure 2 shows how the employee rate changes in accordance with the youngest child's age in nuclear families and extended families.

¹1992 data on employment rates for single women are unavailable, so they are not included in the table.

Figure 2. Changes in the Employee Rate of Married Women by Age of the Youngest Child

There is a large difference in female employee rates between nuclear and extended families when the child is still young. In other words, the presence of a grandmother to care for the child very much influences the mother's decision to work outside the home. As the child grows up, the employee rate suddenly jumps, even in nuclear families, to the extent that the gap in employee rates between women in nuclear and extended families narrows to 5-10%.

Next, looking at changes over time, regardless of the age of the child or the type of family, the employee rate is increasing across the board. However, this increase is especially great when the child reaches school age. Employee rates for women with children under 3 years old are rising, but the increases are relatively small in comparison to the others. In other words, the difference in employee rates among women with small children and women with older children continues to widen. Thus, the proportion of women who are interrupting their careers solely to raise children has grown.

The increase in employee rates (seen in Table 1) among single women combined with a sharp increase in employment among women with older children indicates that more and more women are temporarily leaving the work force to have children and re-enter the work force later on.

This is confirmed in Table 2. This table shows the pattern of continuous years worked according to marital status and including women presently not working. Among single women, aged 30-34, compared to those with few continuous years worked, those in the 5-9 years and 10+ year divisions are growing in number. In contrast, the number of married women who have recently re-entered the work force and has increased remarkably. However, the number of women with long continuous work histories has not necessarily increased. Continuous years worked among single and married women combined have lengthened. But this is more a result of firm tenures among single women and the longer continuous years worked due to a growing trend to marry late. It does not lend evidence that long-term continuous employment is increasing among married women with small children.

Table 1. Changes in Female Employment(Labor Force Participation) Rates by Marital Status in Japan

(%)

| | Employment rate | | | | | |
|-------|---|------|------|---------------|------|------|
| | Single women | | | Married women | | |
| | 1982 | 1987 | 1992 | 1982 | 1987 | 1992 |
| 15-19 | 18.1 | 16.7 | 17.3 | 27.3 | 27.6 | 20.0 |
| 20-24 | 78.0 | 77.5 | 78.4 | 37.1 | 36.8 | 36.2 |
| 25-29 | 82.5 | 85.0 | 87.9 | 37.8 | 37.6 | 40.3 |
| 30-34 | 77.5 | 78.9 | 84.1 | 45.7 | 44.7 | 46.7 |
| 35-39 | 78.6 | 75.6 | 79.0 | 57.7 | 57.9 | 60.6 |
| 40-44 | 74.4 | 74.1 | 74.7 | 66.0 | 66.6 | 69.7 |
| 45-49 | 75.2 | 75.3 | 77.8 | 64.9 | 66.8 | 71.3 |
| 50-54 | 72.5 | 72.4 | 72.7 | 58.2 | 60.5 | 66.9 |
| | Employee rate (excluding self-employed & family business workers) | | | | | |
| | Single women | | | Married women | | |
| | 1982 | 1987 | 1992 | 1982 | 1987 | 1992 |
| 15-19 | 17.5 | 16.2 | — | 21.2 | 24.1 | 16.0 |
| 20-24 | 75.2 | 75.4 | — | 30.2 | 31.7 | 32.9 |
| 25-29 | 77.0 | 80.9 | — | 27.6 | 29.7 | 34.4 |
| 30-34 | 67.0 | 71.5 | — | 28.3 | 31.2 | 36.2 |
| 35-39 | 65.1 | 64.7 | — | 35.9 | 40.1 | 46.4 |
| 40-44 | 58.1 | 60.0 | — | 41.9 | 46.7 | 53.3 |
| 45-49 | 56.4 | 58.6 | — | 39.1 | 44.9 | 53.1 |
| 50-54 | 56.4 | 56.4 | — | 31.3 | 37.0 | 46.5 |

*Data Source: Employment Status Survey (1982, 87, 92)***Table 2. Changes in Composition of the Female Workforce by Job Tenure as a Proportion of the Total Female Population**

(%)

| | 25-29 years old | | | 30-34 years old | | |
|--------------------|----------------------|------|------|-----------------|------|------|
| | 1982 | 1987 | 1992 | 1982 | 1987 | 1992 |
| Job tenure | Single women | | | | | |
| Shorter than 1 yr. | 11.4 | 12.1 | 12.2 | 10.5 | 11.1 | 10.3 |
| 1-2 | 13.9 | 12.9 | 15.5 | 11.3 | 12.5 | 12.8 |
| 3-4 | 17.9 | 17.8 | 20.1 | 12.4 | 11.1 | 11.9 |
| 5-9 | 33.4 | 37.3 | 35.2 | 19.3 | 21.6 | 22.7 |
| 10 yrs. or longer | 5.2 | 4.1 | 4.5 | 24.2 | 25.2 | 26.0 |
| | Married women | | | | | |
| Shorter than 1 yr. | 7.1 | 7.9 | 10.0 | 7.9 | 7.7 | 9.1 |
| 1-2 | 6.3 | 6.0 | 8.1 | 7.9 | 7.2 | 8.5 |
| 3-4 | 6.8 | 7.0 | 7.0 | 6.8 | 6.3 | 7.1 |
| 5-9 | 13.8 | 13.9 | 12.6 | 11.2 | 10.8 | 10.5 |
| 10 yrs. or longer | 3.8 | 2.7 | 2.7 | 11.9 | 12.5 | 11.5 |

Data Source: Employment Status Survey (1982, 87, 92)

The Long-Term Employment System and Female Employment

Many argue that long-term continuous employment presents many difficulties to women and therefore the system now in place which requires long-term employment should be reformed. In a labor market with greater mobility, firms would not be bothered by women's lower job retention rate and women would no longer be handicapped in the work force. Also, those who decide to re-enter the work force after having children would have access to better mid-level jobs and would no longer face the problems associated with career interruptions. This opinion seems reasonable, but does it make every program that supports continuous employment a hindrance?

There are two kinds of knowledge and skill that companies seek. One kind is not specific to the company but is a skill or knowledge that can be transferred to any company. These are known as general skills. Another kind of skill is one which is learned through work experience at a certain company and cannot be applied to another firm. For example, in order for the personnel department to place the right people in the right position, they must know the specialties of all the employees in the firm. This kind of knowledge may be gained only by being in the particular company and is called a firm-specific skill.

In the case of general skills, the employee bears all the cost of acquiring new skills and knowledge and receives a higher wage at every level of increased ability. If the employee takes all responsibility and copes on his or her own, long-term employment is not necessary. However, this does not work where firm-specific skills are concerned. The firm cannot use the skills an employee gained elsewhere, so acquiring experience and skills through on-the-job training is the only feasible method. The employee is loath to change firms and waste the firm-specific skills he/she has acquired.

Where firm-specific skills are necessary, firms and employees make a joint investment in human resource development and both desire a long-term employment relationship. Figure 3 shows this relationship. The value of the worker's marginal productivity rises with experience and human resource development. On the other hand, the labor cost to the firm is the salary paid while the employee is young plus the direct costs of training and the indirect wage and time costs of being taught by more

Figure 3. Age Profile of Marginal Productivity and Wage

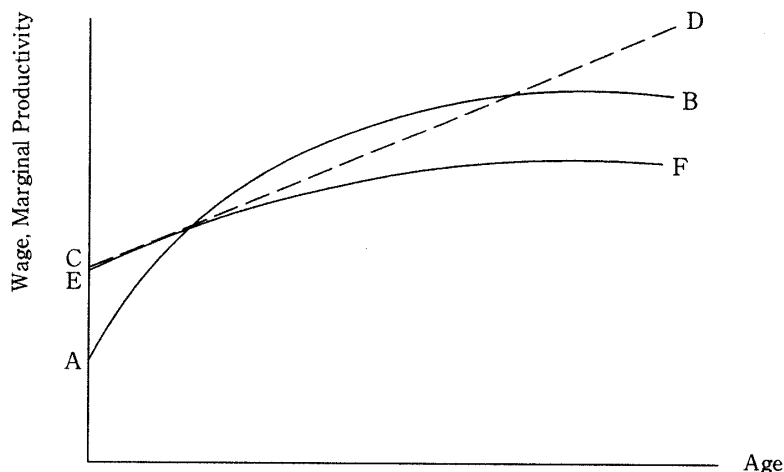
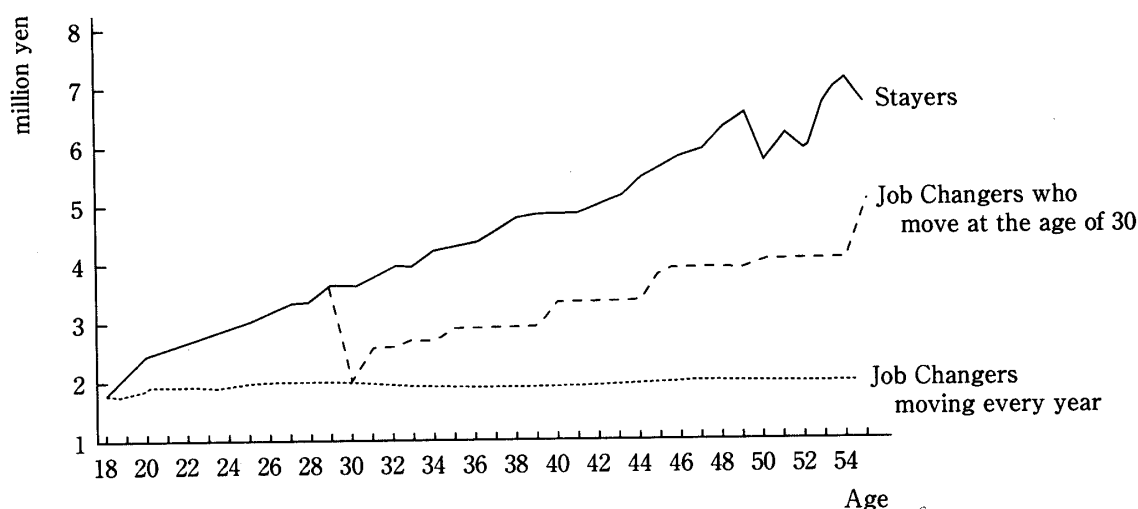


Figure 4. Annual Earnings of Stayers and Job Changers
(Female Regular Employees, High School Graduates)



Data Source : *Basic Survey on Wage Structure*, 1992

experienced employees. This actual value of marginal productivity is drawn as curve AB and is below the wage CD. The firm bears the cost of the joint investment while workers are less experienced at this stage, but recovers its investment when the actual marginal productivity of the trained employee exceeds his or her wage.

In this case, the company does not know how long individual workers will remain with the firm and therefore relies upon past tenures of people belonging to the same group. If the company bears the cost of investment with the expectation of collecting on it later and the employee leaves, the entire investment is lost. Thus firms take measures to lengthen the tenures of their employees. One way is to pay a wage above the market wage. Firm-specific skills cannot be transferred to other companies, so an employee who changes firms can only earn the lower wage shown as EF. By paying the higher wage CD, the company raises tenure. The difference between CD and EF is the profit the employee gets through the joint investment.

Using the *Basic Survey on Wage Structure*, Figure 4 depicts the annual salaries of workers who continue to work in the same firm, of workers who changed firms when they were 30 years old, and of workers who changed jobs every year (female high school graduates). Compared to the women who never changed firms, women who switched jobs suffered a large drop in wages. These differences obviously point to the high cost of a job change to workers and corresponds to the difference between CD and EF in Figure 3.²

²This is a comparison of the wages of people who continue with the same firm and those who change jobs and the difference between the two is seen as the cost of changing jobs. However, there are differences between how job changers and job continuers think and differences in how they are valued within the firm and this may be reflected in the wage differential. This indicates that in order to precisely grasp the cost of changing firms, one must follow an individual through the job change and observe how wages change. Higuchi (1991) examines this in detail in chapter 8. Figure 3 shows how older workers are paid a wage above their net value marginal productivity. This raises the incentive to work because of the disincentive to lose the job and prevents slacking even when the employee is not under close supervision. However, as the number of older employees increases, the firm will begin to reduce the number of older workers (Lazear, 1979).

If the skill is not a firm-specific skill, but rather a general skill that can be applied anywhere, there is no drop in wages. In fact, jobs that require certain qualifications such as nursing have a very small decrease in wages. In other words, the worker pays all costs on his/her own and reaps the rewards of his/her individual investment. (This observation can be explained also by the Work-Life Incentive Schemes Hypothesis which emphasizes the role of providing work incentives in the determination of the wage tenure slope (Lazear, 1996)). In the future, these kinds of occupations may increase, but in actuality, to what extent will the core jobs in a firm be done by people with only general skills?

In order to accomplish a job, general skills are necessary but firm specific skills are just as necessary. The two skills are not always substitutable. Rather in most jobs, these two kinds of skills have a complementary relationship. Nonetheless, if the joint investment by the firm and the employee stops, it hinders the firm's activities and the employee suffers a drop in wages down to EF. In particular, employees that perform core roles must have a certain amount of experience within the firm.

Does this mean women may never become part of the core personnel in a company? As long as present Japanese employment practices continue, women undoubtedly will be largely handicapped. However, there must be some countermeasures that would alleviate these problems.

As mentioned above, Japanese policies to increase tenure have made it a focal point in determining wages. The method whereby higher wages are paid later on through the *nenko* (seniority) wage system and the retirement pay system are the result of tenure promotion.

The object of these measures was mainly male workers. Women's wages are also largely influenced by the length of their tenure. However, if a woman has a baby, her decision to continue working is largely affected by the length of working hours and whether or not these hours are flexible. Neither of these issues have been considered in Japan. Only workers that do not require such consideration have received the training necessary for promotion.

The child care leave system is one means to ensure flexible work hours. The length of working hours and the number of paid holidays has been shown to have a large impact on women's work tenure (Higuchi, 1994). Rather than face a choice between not having children and focusing solely on one's career or quitting a job and devoting all one's energy to child rearing, child care leave makes a third option possible. Implementing a child care leave system allows women to spend some time focusing on their child without dropping out of the workforce.

To what extent will child care leave make it possible for women to continue working? Also, with regard to secondary effects, how will child care leave influence marriage and childbirth?

The Effect of Child Care Leave

As child care leave allows employees to both pursue an uninterrupted career and devote time to their families, some people will enter a firm with the intention of taking advantage of this program while others will already have decided to choose only one or the other. Those that want to do both will seek firms where a good child care leave program is in place. Thus, the applicant pool will differ between firms that provide

such leave and firms that do not.

This difference can be seen by analyzing the 1987 *Employment Status Survey* which provides data on women between 25-29 years old who have worked full-time at least once in a company. This survey was taken before the Child Care Leave Law was passed and both firms with leave and without are included. This provides a comparison of the effect of leave programs on marriage, childbirth and continuous years worked.

Effect on Marriage

The results of a probit analysis on the effect on marriage is shown in Table 3. The dependent variable is 1 if the woman was married at the time of the survey and the

Table 3. The Estimated Results of Probit Analysis on Marital Status
(Married=1, Single=0)

| | All | High school grad. | Junior college grad. | University grad. |
|---|----------------------|----------------------|----------------------|----------------------|
| Sample size | 24,138 | 13,658 | 6,976 | 2,531 |
| Percentage of married women | 67.1% | 72.2% | 61.3% | 50.9% |
| Constant | -24.2236 -6.368 | -19.6785 -3.826 | -25.8291 -3.702 | -47.0933 -4.117 |
| Age | 1.5967 5.642 | 1.2820 3.350 | 1.6378 3.154 | 3.1526 3.719 |
| Age ² | -0.2471E-1 -4.704 | -0.1950E-1 -2.745 | -0.2459E-1 -2.551 | -0.5204E-1 -3.320 |
| Dummy for large city | -0.1748 -7.686 | -0.2574 -7.980 | -0.8696E-1 -2.198 | -0.5672E-1 -0.926 |
| Dummy for small firm | 0.9709E-2 0.345 | 0.4618E-1 1.254 | -0.7701E-1 -1.471 | 0.1291 1.247 |
| " medium-sized firm | 0.6498E-2 0.027 | 0.3734E-1 1.173 | -0.8011E-1 -1.795 | 0.5603E-1 0.636 |
| " large firm | -0.6168E-1 -2.490 | -0.2185E-1 -0.630 | -0.1320 -3.117 | -0.1398E-1 -0.167 |
| Starting wage (Intersect in wage equation) | 0.9016 4.936 | 1.1980 5.083 | 0.2040 0.591 | 0.2593 0.394 |
| Wage slope | -6.3176 -3.296 | -7.6785 -3.048 | -3.8861 -1.089 | -9.1942 -1.325 |
| Percentage of firms in the industry with child care leave program | -0.2331 4.455 | 0.1794 1.584 | 0.2072 2.506 | 0.2578 2.321 |
| Dummy for high school | -0.1393 -2.922 | | | |
| " junior college | -0.4342 -8.799 | | | |
| " university | -0.7574 -13.757 | | | |
| Log likelihood | -14003. | -7632.6 | -4253.0 | -1565.7 |

Note: The figures in upper row are estimated coefficients and those in lower row are t-statistics.

The same in Table 5 and 7.

value of 0 was assigned to single women. Widows were left out of the sample. The independent variables were age, age squared, a dummy variable for education beginning with middle school graduates, and a dummy variable for those living in a major city.

Additionally, the following variables for firm attributes were included: the average wage level, the tenure-wage slope, the availability of child care leave programs, and firm size. The *Employment Status Survey* does not provide information about company pay systems or the existence of child care leave program so other materials provided information on industry wage levels, the slope of work tenure profiles,³ and the proportion of firms in the industry that have implemented child care leave programs.⁴ Dummy variables were also assigned to designate firm size. (The four divisions are firms with 29 or fewer employees, 30-99 employees, 100-999 employees, and those with 1000 or more employees.)

Table 4 takes the results estimated in Table 3 and shows the simulation results of the proportion of married women. In this table, Case 1 represents a 28 year old woman living in a large city and receiving the average college graduate wage in a firm with over 1000 employees and in an industry with no child care leave program. Case 2 through Case 12 depict the same scenario except for the variable noted in the row.

Looking at the difference in marriage rates by age and education, the rate expectedly rises with age and decreases with education, is higher among junior college graduates than college graduates and higher still among high school graduates. By geographic area this proportion of married women is higher outside the large cities.

The proportion of married women by company characteristic is notable. By size, firms with fewer than 1000 employees show no significant differences. But in firms with over 1000 employees, there is a tendency to marry later. The percentage of married 28 year old women in firms with 1000 employees or more is lower than that in firms of 100-999 employees by 2.7%. Table 3 shows that the tendency to marry is higher in firms with higher starting wage. On one hand, in companies with a steeper wage profile, (i.e. firms where the wage benefits of long-term employment are greater), there is a tendency to postpone marriage. The difference may be due to a situation where women who want to work only a short time and marry early will seek firms that have the highest salaries, and women who plan on working long term in a firm will choose a job where the wage rate will greatly increase with work tenure.

On the other hand, there is the effect of child care leave programs on marriage rates. In the total sample and by education level the estimated values are statistically significant. It may be said that child care leave programs mitigate the negative effect

³Using the 1987 *Basic Survey on Wage Structure*, the coefficient b_j of the industry dummy IND_j and the coefficient c_j of the equation of the industry dummy IND_j and the job tenure year T are respectively, the starting wage rate level, and the wage rate slope were added to the independent variables. The wage rate equation: $\log w = a_0 + a_1S + a_2S^2 + a_3A + a_4A^2 + a_5F1 + a_6F2 + a_7T + \sum b_j IND_j + \sum c_j IND_j T$ (w is the hourly wage rate, S is years of education, A is age, $F1$ is the dummy for firms with 100-999 employees, $F2$ is the dummy for firms with over 1000 employees, T is years of job tenure, and IND_j is the industry dummy variable).

⁴The 1985 *Survey of the Actual Circumstances of Women's Protection* provides data on the proportion of firms with child care leave programs in the following industries: 1. Processed food, 2. Textiles, 3. Lumber and wood products, 4. Chemical and allied products, 5. Petroleum and coal products, 6. Rubber products, 7. Ceramic, stone and clay products, 8. Steel and non-ferrous products, 9. Metal products, 10. General machinery, 11. Electrical machinery, 12. Transportation machinery, 13. Precision instruments and machinery, 14. Other manufactured goods, 15. Wholesale trade, 16. Retail trade, 17. Finance and insurance, 18. Real estate, 19. Transport services, 20. Communication services, 21. Electricity, gas, heat supply and water, 22. Medical services, 23. Educational services, 24. Other services.

Table 4. Simulation Results on Percentage of Married Women Using the Estimated Results Shown in Table 3
(Predicted Percentage of Married Women in All Sample)

| Case No. | All | High school | Junior college | University |
|--|--------|-------------|----------------|------------|
| 1 Base case | 53.62 | 72.11 | 69.28 | 59.71 |
| 2 Age 25 yr. | -31.64 | -28.44 | -38.42 | -42.29 |
| 3 29 yr. | 7.41 | 5.43 | 7.75 | 7.01 |
| 4 Education High school | 22.46 | | | |
| 5 Junior college | 12.44 | | | |
| 6 Firm size Small | 2.82 | 2.24 | 1.90 | 5.42 |
| 7 Medium-sized | 2.70 | 1.95 | 1.80 | 2.68 |
| 8 Non-large city | 6.86 | 7.94 | 2.99 | 2.18 |
| 9 Percentage of firms providing child care leave program 10% | 0.93 | 0.60 | 0.72 | 0.99 |
| 10 20% | 1.85 | 1.19 | 1.44 | 1.98 |
| 11 30% | 2.77 | 1.78 | 2.15 | 2.96 |
| 12 50% | 4.60 | 2.93 | 3.54 | 4.90 |

Notes: The figures show the percentage gaps in comparison with Base case 1. The same in Table 6 and 8. The Base case assumes a female university graduate at the age of 28 living in a large city and offered an average wage by a large firm in an industry with no child care leave program.

of employment on marriage rates. This is clearly seen among the different educational levels, especially among women with a higher education. In industries where 50% of the firms have child care leave programs, the marital rate of 28 year old college graduates is higher than in industries without such programs by 4.9%.

Effect on Childbirth

Table 5 lists the influences on childbirth. This analysis is based upon two kinds of data sets. The first set includes unmarried women in the sample, as did the analysis of the effect on marriage. The second set is limited to married women and examines whether there is a difference in birth rates after marriage.⁵

The first column of Table 5 shows the estimates for the entire sample. In industries where a higher proportion of firms have child care leave programs women are more likely to have children. But whether this is because there are more married women in these firms or because a leave program alleviates some of the career problems that accompany having a child cannot be ascertained by this analysis.

Thus, columns 2 through 5 pertain to married women only and the influences on birth rates. Exempting junior college graduates, the ratio of child care leave programs in place has a positive coefficient, so in industries where child care leave is widespread there are more women employees with children. However, these results are not

⁵The sample is of women between the ages of 25-29. Because they are still young, women who do not have children at the time of the survey do not necessarily remain childless. The survey looks only at whether the woman has a child or not and provides no information on the number of children. The analytical results of women in the 30-34 year age group have a low statistical significance, but follow a similar trend as the case described.

Table 5. The Estimated Results of Probit Analysis on the Birth of Children
(Child Present = 1, No Child = 0)

| | All | Married | High school grad. Married | Junior college grad. Married | University grad. Married |
|---|----------------------|----------------------|------------------------------|---------------------------------|-----------------------------|
| Sample size | 24,138 | 16,190 | 9,867 | 4,279 | 1,288 |
| Percentage of women with child/-ren | 51.3% | 76.5% | 80.9% | 70.5% | 58.3% |
| Constant | -23.5607 -6.351 | -11.4425 -2.314 | -15.3554 -2.366 | -15.7856 -1.688 | -32.3485 -1.817 |
| Age | 1.4938 5.425 | 0.7253 1.979 | 1.0436 2.167 | 0.9573 1.383 | 2.0566 1.571 |
| Age ² | -0.2236E-1 -4.387 | -0.9649E-2 -1.424 | -0.1623E-1 -1.821 | -0.1290E-1 -1.009 | -0.3117E-1 -1.298 |
| Dummy for large city | -0.2251 -9.916 | -0.1553 -5.043 | -0.1381 -3.176 | -0.1786 -3.339 | -0.1412 -1.591 |
| Husband's income | | 0.8625E-4 3.305 | 0.9802E-4 2.929 | 0.5972E-4 1.180 | 0.1597E-4 1.778 |
| Dummy for nuclear family | | -0.1691 -5.893 | -0.1289 -3.507 | -0.2119 -3.783 | -0.2774 -2.709 |
| Dummy for small firm | 0.8207E-2 0.303 | -0.3108E-2 -0.087 | 0.1483E-1 0.323 | 0.3859E-1 0.559 | -0.1566 -1.068 |
| " medium-sized firm | 0.1651E-1 0.704 | 0.2049E-1 0.657 | 0.9131E-1 2.250 | 0.5170E-1 -0.890 | -0.3605 -2.815 |
| " large firm | -0.5153E-1 -2.135 | -0.2128E-1 -0.665 | -0.2337E-1 -0.532 | -0.2837E-1 -0.512 | -0.2144 -1.769 |
| Starting wage | 0.7951 4.531 | 0.3072 1.329 | 0.5142 1.757 | 0.4842E-1 0.106 | -0.3763E-2 -0.004 |
| Wage slope | -4.8896 -2.644 | -1.4862 -0.609 | -6.0770 -1.936 | 7.1579 1.521 | -7.4825 -0.749 |
| Percentage of firms in the industry with child care leave program | 0.2188 4.205 | 0.1084 1.584 | 0.8953E-1 0.622 | -0.4142E-1 -0.395 | 0.2446 1.544 |
| Dummy for high school | -0.1471 -3.344 | -0.1086 -1.878 | | | |
| " junior college | -0.5367 -11.688 | -0.4616 -7.649 | | | |
| " university | -0.9791 -18.464 | -0.8579 -12.287 | | | |
| Log likelihood | -14995.0 | -8264.3 | -4668.6 | -2429.5 | -782.79 |

statistically significant at the 1% level. The second column also examines differences among the husband's income and the type of household. In households where the husband's income is high, and in households where the parents live-in, the woman is more likely to have children. Simulation estimates based on columns 2-5 are confirmed in Table 6.

**Table 6. Simulation Results on Percentage of Women with Child(ren)
Using the Estimated Results Shown in Table 5
(Predicted Percentage of Married Women)**

| Case No. | All Married | High school Married | Junior college Married | University Married |
|---------------------------|-------------|---------------------|------------------------|--------------------|
| 1 Base case | 55.07 | 80.34 | 71.32 | 54.96 |
| 2 Age 25 yr. | -24.72 | -18.41 | -31.50 | -41.16 |
| 3 29 yr. | 6.83 | 3.12 | 7.05 | 10.75 |
| 4 Education High school | 25.90 | | | |
| 5 Junior college | 14.91 | | | |
| 6 Firm size Small | 0.72 | 1.04 | 2.24 | 2.28 |
| 7 Medium-sized | 1.65 | 3.02 | -0.80 | -5.82 |
| 8 Non-large city | 6.06 | 3.60 | 5.76 | 5.52 |
| 9 Husband's 3 million yen | -0.68 | -0.55 | -0.41 | -0.13 |
| 10 income 7 million yen | 0.68 | 0.54 | 0.41 | 0.13 |
| 11 10 million yen | 1.70 | 1.33 | 1.01 | 0.32 |
| 12 Extended family | 6.59 | 3.37 | 6.75 | 10.66 |
| 13 Percentage of 10% | 0.43 | 0.25 | - | 0.97 |
| 14 firms providing 20% | 0.86 | 0.49 | - | 1.93 |
| 15 child care 30% | 1.28 | 0.74 | - | 2.89 |
| 16 leave program 50% | 2.14 | 1.22 | - | 4.79 |

Note: Base case assumes female university graduates at the age of 28 living in large cities, in nuclear families, husband's annual income at 5 million yen, offered an average wage, by a large firm in an industry without child care leave program.

Effect on Job Retention

Last, let us examine continuous years worked in industries with varying proportions of child care leave. In actuality, the usage of leave programs varies, and the extent to which firms make use of their female employees may influence the ratio of continuous years worked. Also, firms with child care leave program may be attracting women who wish to pursue careers without interruption.

In this equation, the dependent variable is 1 if the woman has continuously worked at one firm and 0 if the woman has ever quit a firm (regardless of whether she is presently working or not). Table 7 presents the results of the probit analysis. This analysis also utilized two data sets. The first column gives the analytical results of a sample that includes unmarried women by location. Women living outside the big cities have longer job tenures and more educated women have lower job separation rates.⁶ The characteristics of firms where there are more female employees who have never changed firms are: large-sized firms, and firms with higher wage levels and steeper wage profiles.

There are two possible interpretations about the observation that women are more likely to stay in firms in industries with higher proportions of child care leave

⁶Based on survival analysis results among people with the same job tenure, more educated women tend to have higher retention rates (Higuchi, 1994).

Table 7. The Estimated Results of Probit Analysis on Job Retention
(Stayer=1, Mover=0)

| | All | Married women with child | High school Married women with child | Junior college Married women with child | University Married women with child |
|---|----------------------|-----------------------------|--|---|---|
| Sample size | 24,138 | 12,381 | 7,979 | 3,016 | 751 |
| Percentage of stayers | 33.6% | 18.1% | 15.0% | 21.8% | 38.1% |
| Constant | 5.7445 1.452 | -0.8788 -0.137 | -4.8064 -0.598 | 10.3720 0.780 | -4.2701 -0.137 |
| Age | -0.3995 -1.359 | 0.6007E-2 0.013 | 0.2990 0.504 | -0.8577 -0.877 | 0.3559 0.157 |
| Age ² | 0.6624E-2 1.216 | -0.2062E-3 -0.024 | -0.5601E-2 -0.512 | 0.1572E-1 0.875 | -0.8454E-2 -0.205 |
| Dummy for large City | -0.2662 -10.716 | -0.3239 -6.793 | -0.3201 -4.826 | -0.3484 -4.042 | -0.1462 -1.047 |
| Husband's income | | -0.1363E-3 -4.785 | -0.1089E-3 -3.053 | -0.1305E-3 -2.241 | -0.2797E-3 -2.278 |
| Dummy for nuclear family | | -0.5696 -17.234 | -0.5543 -13.372 | -0.5691 -8.426 | -0.6704 -4.846 |
| Dummy for small firm | 0.4515E-1 1.518 | 0.4928E-1 1.072 | 0.3753E-1 0.659 | -0.1584E-2 -0.016 | 0.6668E-1 0.311 |
| " medium-sized firm | 0.2111 8.302 | 0.1683 4.266 | 0.9971E-1 2.034 | 0.2705 3.332 | -0.9474E-1 -0.457 |
| " large firm | 0.4902 19.058 | 0.5184 13.072 | 0.2533 4.741 | 0.8979 12.630 | 0.8324 4.855 |
| Starting wage | 0.6102 3.269 | -0.1068 -0.372 | 1.0385 3.085 | -2.8679 -4.213 | -1.1997 -0.828 |
| Wage slope | 14.2306 7.180 | 11.2849 3.695 | -3.3642 -0.918 | 52.7869 7.251 | 36.0705 2.205 |
| Percentage of firms in the industry with child care leave program | 0.1080E-1 19.742 | 0.1188E-1 13.999 | 0.1250E-1 7.772 | 0.6781E-2 5.110 | 0.1149E-1 5.039 |
| Dummy for high school | -0.8804E-1 -1.823 | -0.1232 -1.885 | | | |
| " junior college | 0.9929E-2 0.197 | 0.2549E-2 0.036 | | | |
| " university | 0.1800 3.186 | 0.2602 2.981 | | | |
| Married | -0.7624 -28.736 | | | | |
| Existence of child(ren) | -0.2427 -7.816 | | | | |
| Existence of child younger than 1 yr. | -0.1910 -6.886 | -0.2097 -7.222 | -0.1954 -5.342 | -0.2213 -3.785 | -0.1970 -1.615 |
| Log likelihood | -12648. | -5129.9 | -3141.6 | -1305.1 | -346.88 |

programs. One is that these programs facilitate women with small children in keeping their jobs without interrupting their career formation. Another interpretation is that firms with child care programs attract women in the job search process who desire to continue their jobs for long periods regardless of whether they have children. It is not clear in our analysis which effect is more influential on the estimated results. We need to wait for the availability of panel data in order to clarify this point.

With respect to the effect of child care leave, the proportion of longer-tenured women is clearly greater in industries that have implemented leave programs. This difference is much greater than that of the effect on marriage and birth rates.

The effect of child care leave on continuous employment is confirmed in columns 2-5 where the sample is limited to married women with children. In this survey, women who were on child care leave at the time may have been treated as non-labor force (regardless of whether they returned to their job after leave or not). Bearing this point in mind, women with a child younger than 12 months are assigned a dummy variable. Table 8 shows the simulation results of these estimates. This simulation reveals that the effect of leave programs is especially strong among university-educated employees. The other variables reveal that the higher the husband's income, the less likely a woman works continuously at one firm. In contrast, a greater number of women who live with a parent or parents work continuously in one firm.

Table 8. Simulation Results on Percentage of Stayers Using the Estimated Results Shown in Table 7
(Predicted Percentage of Women Who Have Never Changed Jobs)

| Case No. | All Married | High school Married | Junior college Married | University Married |
|---|-------------|---------------------|------------------------|--------------------|
| 1 Base case | 16.36 | 6.24 | 15.34 | 20.97 |
| 2 Age 25 yr. | 0.37 | -0.08 | 1.80 | 8.81 |
| 3 29 yr. | -0.14 | -0.24 | 0.93 | - 3.44 |
| 4 Education High school | -7.72 | | | |
| 5 Junior college | -5.56 | | | |
| 6 Firm size Small | -8.99 | -2.24 | -12.61 | -15.19 |
| 7 Medium-sized | -7.18 | -1.67 | -10.39 | -16.83 |
| 8 Non-large city | 9.23 | 4.98 | 9.69 | 4.45 |
| 9 Husband's income 3 million yen | 0.68 | 0.27 | 0.63 | 1.65 |
| 10 7 million yen | -0.66 | -0.26 | -0.61 | - 1.57 |
| 11 10 million yen | -1.63 | -0.64 | -1.49 | - 3.80 |
| 12 Extended family | 17.72 | 10.10 | 17.19 | 23.58 |
| 13 Child younger than 1 year | -4.65 | -2.06 | -4.65 | - 5.21 |
| 14 Percentage of firms providing child care leave program 10% | 3.10 | 1.69 | 1.66 | 3.46 |
| 15 20% | 6.54 | 3.70 | 3.43 | 7.20 |
| 16 30% | 10.30 | 6.06 | 5.31 | 11.21 |
| 17 50% | 18.63 | 11.90 | 9.40 | 19.82 |

Note: Base case assumes female university graduates at the age of 28 living in large cities, in nuclear families, husband's annual income at 5 million yen, offered average wage, by a large firm in an industry with no child care leave program.

Concluding Remarks

The study of economics promotes free competition, the attainment of which should achieve a distribution of resources where nothing is wasted. However, free competition does not mean that every individual may freely pursue any activity unchecked. Naturally, certain policies must be adopted to assist those people who are handicapped in the labor market. It is not the handicaps that are due to individual responsibility, but rather those that are born from biological necessity or social systems that require policy measures. A child care leave program is one such measure that makes the free market function more efficiently.

The previous analysis has shown that not only does child care leave support uninterrupted employment, but also helps to alleviate the difficulties associated with work, marriage, and childrearing. By making continuous employment possible, employees benefit from greater choice, and human resource development is made easier for the employer. The costs corresponding to this personal benefit should be born by both the individual and the firm. Because of child care leave, firms will be able to attract high quality personnel and thus should be responsible for that part of the cost.

Nevertheless, up to now the costs of mitigating the hindrances associated with marriage and child rearing have been personal and unrelated to company matters. Thus, from the individual firm's point of view, it is not appropriate to demand that the firm be responsible for these problems. To the extent that a decline in the birthrate means a smaller labor force in the future, firms benefit from measures or policies that counter such problems and should pay for them. However, the fact that the firm makes it possible for their employees to have larger families does not ensure a future labor force. In other words, there is no guarantee that a given firm will directly benefit from a population increase. Even if it were possible to demand that firms act out of social responsibility, it cannot be said that firms should bear the expenses in exchange for the social benefits of child care leave. Rather, if the society decides that it is necessary to prevent a further drop in the birth rate, then society as a whole should be responsible for the cost of what it considers to be a social good.

Up until now, how to treat income security during child care leave has been entrusted to labor-management agreements. According to the 1993 *Women's Employment Survey*, 30% of firms with child care leave provided some kind of payment from the company or a mutual aid society. However, in most cases this only covers the employee's social welfare payments. As of April 1, 1995, an amendment to the employment welfare law began to provide for a basic wage benefit during leave. (A worker who takes leave to raise a child under 12 months old receives 25% of her/his monthly wages paid from employment insurance—20% paid during leave and the remaining 5% paid after the employee returns to work). In addition, leave takers are no longer responsible for national health insurance payments during leave and payments into the retirement fund are presently under consideration.

The costs to society of the above reimbursement programs correspond to the perceived social benefits of reversing the decline in the birth rate. If too much of the burden is placed upon individual firms, it will undoubtedly place the people most likely to take leave (women) at a great disadvantage.

The legislation of child care leave does not stop at the formal provision. In order to ensure that such a program will widen people's choices and be fixed in society, one must distinguish between private and public benefits, and the respective costs that both must bear. This paper has shown the need for a more in-depth analysis of which costs should be paid by whom.

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