Mandatory Retirement of Baby Boomers and Human Resource Strategies of Business Firms

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I. Introduction

The purpose of this paper is to analyze from an economics viewpoint how changes in the age structure of the labor force, especially the mandatory retirement of the so-called *Dankai No Sedai*, or the Japanese baby boomers,[1] starting in 2007, affect business firms' human resource strategies and personnel management.

Looking at the age structure of the Japanese labor force, we find that there are two large groups, namely the baby boomers and their children. Further, the Japanese labor force as a whole is aging gradually, while the number of young workers is decreasing due to the falling birthrate. The change in the labor supply structure starting in 2007, when the large group of the baby boomers began reaching the turning point in the employment system, namely the mandatory retirement age of 60, may have a considerable impact on the labor market and firms' human resource strategies.

The mandatory retirement of the baby boomers is associated not only with negative aspects, such as the issue of transfer of skills to the next generations and an increase in the payment of retirement lump-sum benefits, but also with positive aspects, such as labor cost reduction, solution of the problem of shortage in the availability of posts, and rejuvenation of the labor force, which all result from the retirement of older workers requiring a high labor cost.[2] Naturally, firms are considered to be developing strategies for securing factors of production for optimizing the components of their factors of production in a given condition. As regards the labor force, it is considered that there is the optimum generational structure. The reality, however, is that the generational structure is not always optimum because of changes in the labor supply structure and economic fluctuations. The retirement of the baby boomers

[1] The generation born during three years from 1947 through 1949.
[2] From the vantage point of macroeconomics, retirement of a large number of older people from declining industries will promote change in the labor-force structure.

should prompt firms to work towards developing human resource strategies for the optimum generational structure. The human resource strategies that firms are trying to implement as the baby boomers begin to retire at the mandatory retirement age are extremely important when we consider the future status of the labor market and policy issues.

In this paper, we will, in the next section, survey earlier studies in respect of the various factors that affect the optimum generational structure of firms and conduct a brief analysis. In Section III, we will discuss the characteristics of the baby boomers and the effects that their mandatory retirement have on firms. In Section IV, we will analyze the relationship between wage structure and generational structure of firms. In Section V, we will analyze, based on a questionnaire survey, the human resource strategies that firms are planning to adopt in the face of aging and the declining birthrate. In the last section, we will summarize the results.

II. Firms' Optimum Generational Structure

It is believed that firms consider the most efficient generational structure, taking the characteristics of each generation and organizational efficiency into account. There is the possibility, however, for firms to fail to realize the optimum generational structure because of demographic factors and economic fluctuations. For example, during the bubble economy, firms activated their production activities to meet increased demand, and employed many new graduates. On the other hand, during the long economic recession after the burst of the bubble economy, the recruitment of regular employees was severely curbed for labor cost reduction. As a result, young workers were put into a position where they had to perform the jobs normally given to new recruits, increasing the ratio of those who work long hours in spite of the economic recession (Genda 2005). Nonetheless, it is evident from firms' plans for recruitment of new graduates that firms are always thinking about how they could optimize the age structure of their employees. About a half of the firms that increased the number of new high-school graduates in their recruitment plans from the previous year's said they did so for the "optimization of personnel structure in terms of age, etc."[3] The mandatory retirement of the

[3] Ministry of Health, Labour and Welfare, Survey on Labour Economy Trend (May

baby boomers will provide opportunities for firms to correct the irregular generational structure created by the decrease in the number of young workers that resulted from the curb on recruitment and by the increase in the number of older workers that resulted from the aging of the baby boomers.

In the following subsections, we will discuss some of the factors closely related to the optimum generational structure of firms:

1. Generational Effect

If we examine the age structure of the labor force in terms of the generations, we find that each generation has the unique know-how, skills and expertise that reflect the economic conditions, technology, and skills development prevailing at and after the time they entered their firms. The characteristics unique to each generation in the labor market are sometimes called the generational effect.[4] In particular, the quality and quantity of human capital accumulated in a certain generation is considered to be dependent upon the industrial and occupational structure, the state of technology, and economic conditions prevailing at a time that generation, in its youth, undergo skills development. In fact, if we examine the changes in the occupational structure of each generation (cohort), we see that each generation has unique occupational structure. Over the long term, there is no significant change in the occupational structure of each generation. Together with changes that aging brings to workers' abilities, the generational effect must be closely related to firms' optimum generational structure.

2. Population Size

Generally, if there is an increase, with other conditions remaining the same, in the quantity of the production factor that cannot be completely replaced with another production factor, the productivity of the former factor, namely the value of marginal products, gradually decreases. In other words, if there is no change in capital or other production factors, the productivity of a generation with a large population size declines because of the congestion phenomenon. As for the congestion phenomenon resulting from the large population size of a certain generation, studies were made in the U.S. and Europe on the baby

2005).

[4] In the sense that generational effect refers to unique generational characteristics, a generation's population size may also be included in the generational effect.

boomers in relation to the unemployment of young workers (Welch 1979; Korenman and Neumark 2000, etc.). Researches conducted in Japan have also demonstrated the existence of the congestion phenomena, mainly among the baby boomers. For example, Inoki and Otake (1997) showed, using the individual data of the Basic Survey on Wage Structure, that a generation's population size has a significantly negative effect on the generation's wages. Similar researches were conducted by Genda (1997) and Okamura (2000). All of these researches confirm the existence of the congestion phenomena. Moreover, the congestion phenomena have been observed in business firms. For example, a decrease in the wages of the baby boomers resulted from the fact that their promotion was delayed because of shortage of posts when they became old enough to become managers. This can also be regarded as a decrease in productivity resulting from the large population size.

3. Displacement Effect

In the production activities of firms, each generation is in a substitutional or complementary relation to other generations as a production factor. In other words, the employment and wage of a generation is affected by other generations. Genda (2004) and Mitani (2001, 2005) examined whether there was any possibility that continuing the employment of older employees when the labor demand declined due to the long economic recession after the bubble burst had a negative impact on the employment of young workers through the control of new worker recruitment, and obtained results that were consistent with the fact that there was actually such an effect. This effect is called the "displacement effect."[5] If older workers and young workers are in such a relation, the retirement of a large number of baby boomers in and after 2007 will create a contrary effect and have a positive impact on the employment of young workers. Such a substitutional or complementary relationship among generations is closely related to firms' optimum generational structure.

4. Quasi-fixed Labor Cost

The labor cost not related to the length of working time, for example, that incurred from the recruitment of workers and internal training (including some

[5] A concise summary of research on the generational effect and displacement effect can be found in Ota (2003).

of the firm-specific training for developing skills that are often useful only within that firm), is called quasi-fixed labor cost (Oi 1962). The larger the quasi-fixed labor cost of a firm, the greater the demand for young workers in that firm. This is mainly because these firms require a substantial period of employment in order to make up for the quasi-fixed labor cost invested at the initial time of employment and partly because it is more efficient to invest in the internal training of employees when they are still young and malleable. Firm-specific training is an investment jointly made by workers and their firm. This leads to long-term employment because both sides try to obtain the return that meets the investment. Firms having a large amount of such quasi-fixed labor cost are believed to be large companies and companies in which employees' length of service is long and wage profile inclination is sharp. In other words, it can be considered that large firms and firms with a sharp inclination of wage profile tend to recruit mostly young people. In fact, an empirical analysis has shown that young people as a percentage of all recruits are higher at these firms (Ota 2003). It can be considered that quasi-fixed labor cost (or the degree of preference on internal training) has an effect on firms' optimum generational structure and human resource strategies.

5. Motivation Cost

Motivation cost also plays an important role as regards firms' employment and wage. If the skills or performance of workers could not necessarily be grasped accurately, it would be difficult for firms to determine their treatment in response to their skills and performance. If workers felt that it made no difference whether they worked hard or not, their productivity would decrease. The cost incurred because accurate information on workers' skills and performance is not relayed to their firm is called the motivation cost.[6] Firms are making efforts to improve their wage systems and promotion programs in order to motivate their employees. For example, the decision of promotion based on the relative appraisal through a tournament promotion program will efficiently provide employees with work incentives. These programs, however,

[6] The motivation cost is one of the transaction costs. Other kinds of motivation cost include the cost resulting from less than optimum in investment in firm-specific training, when there is no trust between labor and management and there is a possibility that the firm will cut wages after the workers acquired the skills that are useful only in their firm through the training (Milgrom and Roberts 1992).

are closely related to the generational structure of firms.

It is considered that firms are taking into account various factors indicated above as they think about what would be the optimum generational structure and implement their human resource strategies. We will discuss the quasi-fixed labor cost and motivation cost again in the section on the internal wage structure.

Next, let us examine the characteristics of the baby boomers and the effects of their mandatory retirement.

III. Characteristics of the Baby Boomers and the Effects of Their Mandatory Retirement

1. Characteristics of the Baby Boomers

How do the baby boomers differ from other generations in the labor market? Here, we will discuss this by referring to Higuchi et al. (2004), which identified the characteristics of the baby boomers through cohort analysis. The cohort analysis is a method of breaking down age-specific indicators (such as labor participation ratio and employment rate) into the era effect, age effect and generational effect. We can see the characteristics of the baby boomers (generational effect) by using this method.

The results show the following:

(i) The labor participation ratio of the baby boomers is not much different from that of other generations. There is a large number of baby-boom workers simply because of the large population of the baby boomers.

(ii) By industry, the industries with a relatively high ratio of baby boomers are construction, manufacture of raw materials, transportation and communications, and wholesale and retail. Especially in the manufacturing and the transportation and communications industries, the effect of the baby boomers' retirement is great because the number of employees who are 60 or over is very small.

(iii) By occupation, the ratio of the baby boomers engaged in professional or technical occupations is smaller than that of younger generations. On the other hand, in the transportation and communications industries and among skilled engineers, mining, manufacturing and construction workers, field workers, and salespersons, the generational effect lowers in the generations coming after the baby boomers, and the ratio of the baby boomers is

relatively high in these occupations. In these occupations, the effect of the baby boomers is considered to be large.

(iv) By size of business firms, the ratio of large companies decreases among the baby boomers and the subsequent generations. Since the number of baby boomers is large, the competition for finding employment was more intense than for previous generations. However, as far as university graduates are concerned, such a decrease in the ratio of large companies cannot be observed.

(v) The retention rate of baby boomers is low in large companies, compared with other generations. The retention rate is particularly low among baby boomers who are university graduates. Relatively more baby boomers in large firms seem to have been transferred to subsidiaries or to have left firms in their mid-careers.

In light of these characteristics of the baby boomers, let us see how firms think about the effects of the retirement of the baby boomers.

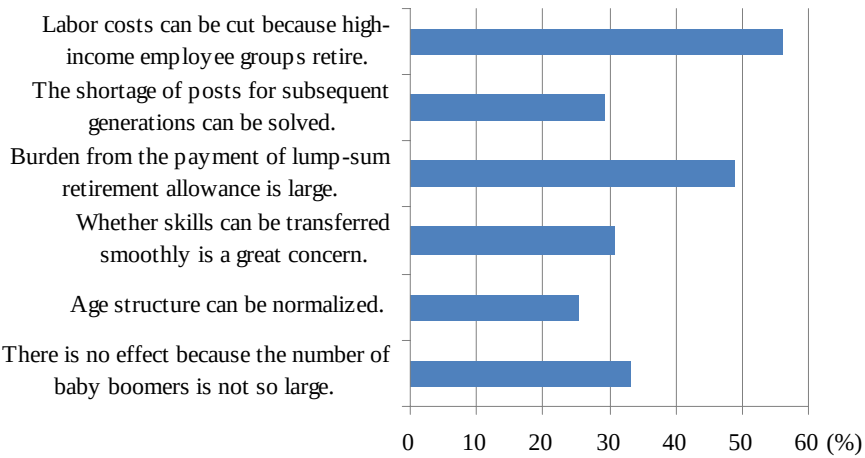
2. Effects of the Retirement of Baby Boomers

This section will examine the effects the mandatory retirement of the baby boomers, in and after 2007, will have on firms. The data used in this section are from the Survey on Human Resource Strategies and Work Awareness in the Population Decreasing Society (Businesses) conducted by The Japan Institute for Labour Policy and Training (hereafter referred to as the "Population Decreasing Society Survey").[7]

What effect do firms think the mandatory retirement of the baby boomers will have on the firms? A relatively small number of firms mentioned the "skills transfer issue," which is often referred to in connection with the mandatory retirement of the baby boomers. Instead, a large number of firms said, "labor cost reduction" and "increased payment of retirement allowance." A little less than 30% of the firms replied, "a solution to the problem of shortage of posts," while one-fourth of firms said, "normalization of the age structure." Further, approximately one-third said, "There is no effect because the number of baby boomers is not so large" (Figure 1). Thus, we can see that

[7] The survey was conducted between December 8, 2004 and January 12, 2005. It covered 10,000 companies with 100 employees or more in Japan. Questionnaires were distributed to these companies through postal mail, to which 1,237 companies responded (valid response ratio: 12.4%).

Figure 1. Effect of mandatory retirement of baby boomers
(Proportion of firms: "applicable" + "partly applicable," M.A.)



Source: The Japan Institute for Labour Policy and Training, *The Survey on Human Resource Strategies and Work Awareness in the Population Decreasing Society*.

the firms are aware that the effect of the mandatory retirement of the baby boomers is not only negative as in the skills transfer issue and increased payment of retirement allowance, but also positive as in labor cost reduction, solution of the problem of post shortage, and normalization of the age structure.

The various effects of the mandatory retirement of the baby boomers are considered to be related to the age structure of firms' employees, the industries that firms belong to, firms' organization, their human resources management systems, and especially their wage systems. Therefore, let us, through a probit analysis, see what factors determine the effects of mandatory retirement of the baby boomers. The explained variables are dummy variables where 1 is the case of the respondent replying "applicable" or "partly applicable," and 0 is all other cases. The explanatory variables are average age, average service years, ratio of employees who are 55 or over to all regular employees, ordinary profit growth rate, ratio of non-regular employees to all employees, ratio of regular female employees to all regular employees, and ratio of university graduates to all regular employees, company size dummy, and industry dummy. The results are as shown in Table1. The results show that the firms replying that the

Table 1. Probit analysis of effect of mandatory retirement of baby boomers

Explanatory variable	Explained variable="applicable" or "partly applicable" =1 and 0thers =0 (dummy variables)											
	Labor cost reduction		Solution to the problem of post shortage		Increased retirement allowance burden		Skill transfer issue		Normalization of age structure		No effect	
	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value
Average age	0.0224	1.44	-0.0123	-0.71	0.0243	1.55	-0.0193	-1.19	0.0061	0.35	-0.0239	-1.51
Average tenure	0.0472	4.12 **	0.0597	4.84 **	0.0393	3.41 **	0.0321	2.63 **	0.0465	3.79 **	-0.0186	-1.54
Ratio of employees who are 55 or over	-0.5994	-1.11	0.1748	0.29	-0.3526	-0.66	1.0807	1.98 **	-0.4686	-0.75	-0.5901	-1.07
Ordinary profit growth rate	-0.0915	-1.43	-0.0801	-1.19	-0.1292	-2.00 **	0.0953	1.46	-0.1903	-2.69 **	0.0345	0.54
Non-regular employees ratio	-0.2352	-0.82	0.0632	0.20	-0.1466	-0.51	-0.0111	-0.04	0.4083	1.30	-0.3301	-1.15
Female ratio among regular employees	-0.2045	-0.48	-0.3902	-0.80	0.3314	0.76	0.3392	0.76	0.7045	1.47	-0.0975	-0.22
University graduate ratio	-0.0021	-0.07	0.0180	0.56	0.0053	0.17	-0.0549	-1.68 *	-0.0034	-0.10	0.0361	1.19
(Standard: Company size [less than 300 employees])												
Company size (300 to 999 employees)	0.1259	0.90	0.1833	1.21	-0.0311	-0.22	0.0524	0.35	0.1236	0.80	-0.0002	0.00
Company size (1000 employees or more)	0.3625	1.82 *	0.4339	2.19 **	0.3454	1.75 *	0.2832	1.42	0.0527	0.26	-0.1128	-0.57
Industry dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Constant	-1.1727	-1.84 *	-0.904566	-1.3	-1.336045	-2.1 **	-0.08233	-0.12	-1.699462	-2.39 **	0.7885366	1.24
Sample size	465		463		459		454		465		463	
LR $chi^2(23)$	59.3		55.47		62.8		55.88		45.57		40.97	
Prob > chi^2	0.000		0.000		0.000		0.000		0.003		0.008	
Quasi-R^2	0.094		0.100		0.099		0.099		0.087		0.067	
Log likelihood	-285.9		-250.8		-286.7		-254.9		-238.4		-285.0	

Note: * and ** indicate statistical significance at the 10% level and 5% level, respectively.

mandatory retirement of the baby boomers has such effects as "labor cost reduction," "solution to the problem of post shortage," "increased payment of retirement allowance" and "normalization of age structure" are, in many cases, not the firms with a high average age or high ratio of employees who are 55 or over, but the firms with long average service years. Large firms have greater tendency to answer "labor cost reduction," "solution to the problem of post shortage," and "increased payment of retirement allowance." This suggests that at firms having the wage structure where wages increase according to the number of service years, the aging of the baby boomers increases the labor cost of such firms and is a heavy burden on the firms. In other words, it indicates that a firm's wage structure is closely related to the firm's optimum generational structure. As for "skills transfer issue," the average service years as well as the ratio of employees who are 55 or over have a positive and significant effect. The effect of the ratio of university graduates is negative and significant, which is consistent with the fact that this issue is relatively more serious in firms in which the work-site and technical divisions make up a large proportion. As for "increased payment of retirement allowance" and "normalization of age structure," the effect of the rate of increase of the ordinary profit is negative and significant, which indicates that at firms with good business performance, these issues are relatively insignificant.

Considering the above, we can see that company size, industry, business performance as well as firms' wage structure are major factors bringing about differences among firms as regards the effects of retirement of the baby boomers. Therefore, the following section will look at the relation between firms' personnel structure and wage structure.

IV. Generational Structure and Wage Structure of Firms

Since the end of the 1980s, the inclination of wage profile has become gentle. In recent years, firms have actively introduced the performance-based pay system. How are these trends related to changes in firms' generational structure, especially to the aging of employees?

The effect of the quasi-fixed labor cost, motivation cost and population size, mentioned in Section II, is the key to understanding the relationship between wage structure and generational structure within firms.

As mentioned earlier, it is economically rational for the firms with a large

quasi-fixed labor cost to recruit young workers. At the firms with a large quasi-fixed cost, including costs for recruitment and internal training, since workers' productivity gradually increases through training, the inclination of wage profile becomes sharp. Therefore, it is considered that the firms with a sharp wage profile inclination have greater demand for young workers. During the long economic recession after the bubble burst, the expenditures for internal training were cut (Ministry of Health, Labour and Welfare 2005). However, with the full recovery of the economy, more firms are beginning to give emphasis to competency development. This may become a factor for increasing labor demand for young people.

As regards the motivation cost, since it is not possible generally to accurately grasp the performance and capability of workers in large firms and in high-level professional and technical jobs and decision-making jobs, it may be difficult to ensure that those workers are making sufficient efforts. Because of this, firms have wage and personnel systems as a mechanism for motivating workers. For example, firms may introduce the deferred pay system where employees, while young, will receive a smaller amount of salary relative to their contribution to their company and when they become middle-aged and older, they will receive a larger amount of salary than that commensurate with their contribution to their company. At the same time, they would be dismissed if they are found to be making a substandard effort. Under such circumstances, workers will not lower the level of their effort, resulting in raising the company's productivity as a whole and increasing the company's profits and workers' wages. As such, this wage system becomes a favorable employment contract for both sides. Of course, in order for this kind of wage system to function, it has to be assured by a model wage table, etc. that employees will receive a higher amount of salary than that of their contribution to their company when they become middle-aged and older.[8]

Further, how does population size come into play? As mentioned earlier, if we suppose that a certain generation cannot completely be replaced with other generations, the generation with a large population size would have low productivity and low wages. Therefore, the wages of a generation with a large

[8] In addition to the theory of human capital and the hypothesis of deferred pay, there are many other hypotheses, including the information pool model, that explain the economic rationality of the seniority-based wage system. Refer to Ohashi (1990) as an example.

population size like the baby boom generation may be low.

Considering the above, how should we interpret the gentle inclination of wage profile since the end of the 1980s?

Firstly, there is the possibility that demand-side factors, such as the long recession and technical innovation, lowered the wages of middle-aged and older workers to a relatively great extent. The deterioration in corporate earnings resulting from the long economic recession after the burst of the bubble led to a decrease in the wages of workers. Moreover, the middle-aged and older workers, who had accumulated relatively more firm-specific skills, had no choice but to accept a larger wage cut than that of other age groups, because the cost for transferring these middle-aged and older workers to other companies was high. There is also the possibility that the technical innovation promoted mainly by ICT and economic globalization lowered the relative value (productivity) of the skills and knowledge that the middle-aged and older workers had.

The second factor is the effect of the population size of this generation. This is to do with a hypothesis stating that as the baby boomers, with a large population size, became middle-aged and older in great numbers, productivity declined due to congestion, and their wages were cut more than in other age groups (hypothesis of congestion). As mentioned in Section II, results consistent with this hypothesis have been found in some researches. This hypothesis also suggests that the wages of young workers may increase relatively if the birthrate further declines.

The third factor is the substantive extension of the mandatory retirement age.[9] If we assume the deferred pay system, the substantive extension of the mandatory retirement age would make the period in which the wages are higher than the actual contribution longer, which would inevitably make the inclination of the wage profile more gentle.[10]

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[9] Even if the mandatory retirement age is nominally set, if many workers retire before the mandatory retirement age, it would mean that they were effectively not employed until the mandatory retirement age. During the 1990s, at least around the financial recession of 1997, it can be said that there was substantive extension of the mandatory retirement age, as there was a real increase in the number of workers who reached the mandatory retirement age and some firms actually extended the mandatory retirement age.

[10] Mitani (2003) obtained results in an empirical analysis that were consistent with this hypothesis.

There is also another hypothesis that holds that the seniority-based wage system will collapse because the aging and the declining birthrate will make it difficult to transfer incomes within firms. According to this theory, it is assumed that, in the deferred pay system mentioned above, incomes are transferred within a company from the young workers, whose wages are lower than their productivity, to the middle-aged and older workers, whose wages are higher than their productivity, as if in a pay-as-you-go pension scheme. Therefore, the seniority-based wage system functions only when there is a population pyramid where there are many young workers and only a small number of middle-aged and older workers. If this population pyramid is turned upside down with the aging of workers, the seniority-based wage system will collapse.[11]

However, the deferred pay system works when a firm promises to pay workers higher wages than their productivity in the future so that the total amount of the wages paid throughout a lifetime will be commensurate with their lifetime contribution and when workers believe in the promise. This means that the deferred pay system is essentially neutral as regards a firm's age structure. If so, as long as there is the motivation cost, the deferred pay system and the mandatory retirement system should continue in existence as economically reasonable systems even after the retirement of the baby boomers.

In addition, there is another hypothesis that says that the introduction of the so-called performance-based pay system has caused the gentle inclination of the wage profile. However, the wage system is the way of determining wages and not necessarily the same as how the wages increase. It would be more appropriate to think that the revision of a wage system is not a cause of the gentle incline, but a means to changing a wage profile. In fact, there is a deviation between the initial time when the performance-based pay system was actively introduced (mid-1990s) and the time when the inclination of the wage profile started to become gentle (end of the 1980s); and in some firms, the inclination of wage profile conversely became greater after the introduction of the performance-based pay system (Nakajima, Matsushige and Umezaki 2004). These examples indicate that there are weaknesses in the hypothesis that holds that the performance-based pay system is the cause of the gentle incline.

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[11] Chuma (1994) called it the "pyramiding hypothesis."

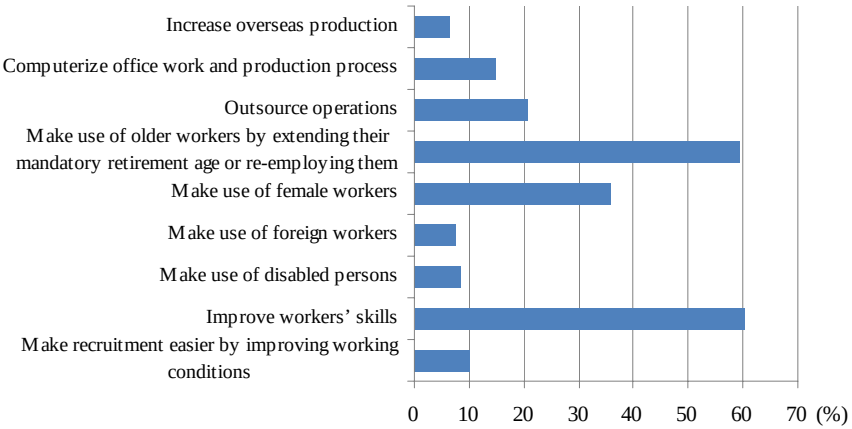
A typical example of recent revision of wage system is that each of the wage classification of non-managerial workers is widened (into a broadband) and their competency appraisal is reflected on the monthly pay. In the upper wage classifications, a new pay schedule is introduced so that wages may decrease depending on the worker's performance. In the lower wage classifications, there may be differences in pay raise depending on the worker's performance but wages never decrease. Moreover, short-term performance is more strongly reflected on bonuses, and the transparency and acceptability of performance ratings is increased by clarifying appraisal standards and increasing opportunities for interviews with superiors. It is considered that these moves are efforts made by firms in exploring new human resource strategies and wage systems at a time when the birthrate is declining and aging is progressing.[12]

V. Human Resource Strategies

If we look at the future human resource strategies of firms in light of the aging and declining birthrate, we find that many firms emphasize the employment of older workers and female workers as well as development of employees' competency (Figure 2). This is probably because, amid intensified competition, firms are, in anticipation of a decrease in the population, looking for workers with high productivity so that firms can produce high value-added products with less manpower. Let us investigate the characteristics of the firms adopting such human resource strategies with an emphasis on employment of older workers, employment of female workers, and competency development using a probit analysis. The explained variables are dummy variables where 1 is the firms replying that they will adopt these human resource strategies in the next three years and 0 is all other firms. The explanatory variables are firms' attributes, such as the effect of retirement of the baby boomers, average age, average service years, and the ratio of employees who are 55 or over to all regular employees. Table 2 shows the results of the analysis. According to this figure, the various effects of retirement of the baby boomers as mentioned above are not much related to the human resource strategies of the employment

[12] Regarding historical developments in the Japanese wage systems and recent trends, refer to Ohashi and Nakamura (2003).

Figure 2. Human resource strategies to be adopted in the next three years considering low birthrate and aging (Proportion of firms, M.A.)



Source: The Japan Institute for Labour Policy and Training, *The Survey on Human Resource Strategies and Work Awareness in the Population Decreasing Society*.

of older and female workers and competency development. The firms considering the strategy of employing older workers are the firms having a high ratio of employees who are 55 or over, large firms, and firms with a high ordinary profit growth rate. The firms with many young employees that do not have any effect from baby boomers and firms with a high ratio of female employees to all regular employees do not think much about employment of older workers. Further, the firms positive about employing female workers are the firms with a high ratio of non-regular employees, firms with a high ratio of female employees to all regular employees, and large firms. Meanwhile, the firms considering the strategy of improving employees' competency are notably the firms having a high ratio of university graduates.

In the following subsections, let us more specifically examine what human resource strategies firms are planning on adopting in relation to older workers, female workers, and young workers.

1. Older Workers

Amid the progress of the declining birthrate and aging, there is an increase in the number of the firms that adopt the human resource strategies of extending the mandatory retirement age and of expanding continued

Table 2. Probit analysis of human resource strategies to be adopted in the next three years considering low birthrate and aging

	Explained variable					
	Make use of older workers		Make use of female workers		Improve workers' skills	
	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value
Labor cost reduction	0.0037	0.02	0.0428	0.28	0.0249	0.17
Solution to the problem of post shortage	-0.0816	-0.55	0.0284	0.19	0.0020	0.01
Increased retirement allowance	0.1820	1.29	-0.0082	-0.06	0.1089	0.77
Skill transfer issue	0.0237	0.16	0.2429	1.7 *	0.1214	0.85
Normalization of age structure	-0.0433	-0.28	0.0986	0.64	0.0105	0.07
No effect	-0.3200	-2.36 **	0.1401	1.01	-0.0309	-0.22
Ordinary profit growth rate	0.1096	1.69 *	0.0654	0.98	-0.0577	-0.88
Ratio of employees who are 55 or over	1.0320	2.28 **	-0.7252	-1.69 *	-0.5722	-1.37
Ratio of non-regular employees	0.3118	1.09	0.5827	2.08 **	0.1376	0.49
Female ratio among regular employees	-0.8929	-2.15 **	0.7888	1.91 *	0.2965	0.71
Ratio of university graduates	-0.0264	-0.89	-0.0286	-0.94	0.0623	2.03 **
(Standard: Company size [less than 300 employees])						
Company size (300 to 999 employees)	0.1203	0.87	0.1325	0.95	0.0049	0.04
Company size (1000 employees or more)	0.4312	2.19 **	0.4888	2.59 **	-0.1103	-0.58
Industry dummies	Yes		Yes		Yes	
Constant	0.3018	1.10	-0.9929	-3.46 **	0.2770	1.00
Sample size	484		482		482	
LR $chi^2(23)$	52.38		50.56		48.27	
Prob > chi^2	0.002		0.003		0.005	
Quasi-R^2	0.082		0.080		0.077	
Log likelihood	-292.7		-291.1		-291.1	

Note: * and ** indicate statistical significance at the 10% level and 5% level, respectively.

employment of older workers. Behind this, there is probably the effect of the step-by-step extension of the pensionable age and the amendment of the Act concerning Stabilization of Employment of Older Persons (effective as of 2006) following the extension of the pensionable age. Table 3 focuses on the firms that are either planning to revise or consider revising their mandatory retirement systems and continued employment systems in the next three years. The firms are divided into the firms replying that they will employ older workers and the firms replying that they will not, and the percentages of firms for each type of revision of the mandatory retirement system and continued employment system are indicated. The results show that the percentages are generally higher in the management, clerical and professional divisions than in the technical and work-site divisions, which suggests the difficulty in expanding the older worker employment system in the technical and work-site

Table 3. Proportion of firms extending mandatory retirement age or adopting continued employment in three years by whether to make use of older worker and department (Among the firms that are either planning to revise or consider revising mandatory retirement age and continued employment systems) (%)

	Management, office work and technical departments		Production and operating departments	
	Firms making use of older workers	Others	Firms making use of older workers	Others
Extend the mandatory retirement age	9.1	4.2	7.6	3.2
Raise the upper age limit of continued employment	9.8	3.4	8.7	3.0
Continue to employ all employees who wish to work, in principle	8.7	4.6	8.3	4.0
Continue to employ all employees who meet standards established by the company	20.2	9.8	18.5	8.4
Continue to employ only employees deemed necessary by the company	16.8	18.4	14.4	16.0

Source: The Japan Institute for Labour Policy and Training, *The Survey on Human Resource Strategies and Work Awareness in the Population Decreasing Society*.

Note: Firms making use of older workers refers to the firms that replied, "we will make use of older workers by extending their mandatory retirement age or re-employing them," in the human resource strategies in the next three years considering low birthrate and aging.

divisions. With the exception of "Continue to employ only employees deemed necessary by the company," the percentages of the firms revising their systems are higher among the firms that will employ older workers compared with the other firms in all items. More specifically, there are 4 to 6% differences as for "Extend the mandatory retirement age," "Raise the upper age limit of continued employment," and "Continue to employ all employees who wish to work, in principle." This indicates that there is a tendency among the firms that will employ older workers to make these revisions to the systems. However, the revision item with the biggest difference and with the largest percentage in absolute figure is "Continue to employ all employees who meet standards established by the company," which is a policy of expanding continued employment by first screening employees based on a certain standard and then

continuing to employ all employees who pass the screening.

According to the Population Decreasing Society Survey, many firms reply, as regards their response to the skill transfer issue created by the mandatory retirement of the baby boomers, that "they will employ veteran skilled workers by extending their mandatory retirement age or through continued employment." However, the data show that the continued employment in this case is not applicable to all employees wishing to continue working but is applicable, in many cases, only to some of the indispensable veteran skilled workers. Actually, according to the Population Decreasing Society Survey, of the firms replying that there is the skill transfer issue created by the mandatory retirement of the baby boomers and that they will employ veteran skilled workers by extension of the mandatory retirement age, continued employment, etc., 11.8% say they will continue to employ all employees who wish to remain in employment or plan to introduce such a system in the next three years. This percentage is smaller compared with the percentage of the firms that said that they will not adopt such measures for employing all employees who wish to continue in employment (15.2%).

Thus, many firms are planning to adopt human resource strategies for promoting the employment of older workers in the future, but only a small number are planning to extend the mandatory retirement age or continue to employ all who wish to continue in employment. This indicates the cautious attitude of firms in expanding employment of older workers. One of the reasons for this may be that there are large differences in personal health conditions and skills among individual workers in their early 60s as well as differences in different occupations and industries in changes brought about by age in the workers' skills and motivation to work and in the motivation cost.[13]

2. Female Workers

Considering the decrease in the labor force, an increasing number of firms will probably try to employ competent, motivated female workers. As we have already seen, the firms that are presently enthusiastic about employing female workers are the firms that already have a high ratio of female workers to all

[13] Mitani (2005) analyzed the relation among aging-associated skill changes, wage profile, and older worker employment and found that less change in skills brought about by aging does not always lead to the expansion of older worker employment and that there were large differences in different occupations.

Table 4. Probit analysis of policies for employing female workers

	Increase in the ratios of female employees in managers and regular employees		Assign main jobs to female employees who return to workplace after child or family care	
	Coefficient	z-value	Coefficient	z-value
Development of regular employees' skills	0.2854	2.08 **	0.0444	0.28
Ordinary profit growth rate	0.1285	1.82 *	0.1563	1.82 *
Ratio of employees who are 55 or over	0.0512	0.12	0.5615	1.11
Non-regular employee ratio	0.4141	1.41	0.0075	0.02
Female ratio among regular employees	1.4235	3.33 **	0.8367	1.69 *
University graduate ratio	-0.0198	-0.62	0.0168	0.47
(Standard: Company size [less than 200 employees])				
Company size (200 to 999 employees)	0.2400	1.64	0.3170	1.76 *
Company size (1000 employees or more)	0.4965	2.50 **	0.8769	4.06 **
Industry dummies	Yes		Yes	
Constant	-1.5286	-5.25 **	-1.6976	-5.30 **
Sample size	484		478	
LR $chi^2(22)$	62.51		43.23	
Prob > chi^2	0.000		0.002	
Pseudo R^2	0.110		0.110	
Log likelihood	-253.3		-175.7	

Note: * and ** indicate statistical significance at the 10% level and 5% level, respectively.

regular employees and a high ratio of non-regular employees. The effect of the retirement of the baby boomers has not much significant effect on female worker employment.

Here, we will conduct a probit analysis on the firms planning to actively employ female workers, namely the firms replying that there are "efforts to increase the percentage of female workers among managers and regular employees" or there are "systems to allow female workers to return to core jobs after completing their child care or family care." Table 4 shows the results of the analysis. The results show that the firms replying that there are "efforts to increase the percentage of female workers among managers and regular employees" are, in most cases, the firms emphasizing competency development and willingly paying for the cost of such development, the better performing firms with an increasing ordinary profit, the firms having a high ratio of female workers to all regular employees, and large firms. Further, the firms that have "systems to allow female workers to return to core jobs after completing their child care or family care" are, in most cases, the better performing firms with

Table 5. Probit analysis of policies for employing part-time workers

	Assign part-time workers to jobs with responsibility, professional jobs or non-routine jobs			
	Coefficient	z-value	Coefficient	z-value
10% or less wage disparity between regular and non-regular employees	-0.1130335	-0.77	-0.5195	-1.96 **
Development of non-regular employee skills	0.2260703	1.95 *	0.1269	1.00
Development of non-regular employee skills and 10% or less wage disparity			0.6069	1.89 *
Non-regular employee ratio	1.054561	2.71 **	1.0520	2.70 **
Female ratio among regular employees	1.005621	2.67 **	0.9990	2.64 **
University graduate ratio	-0.0651816	-2.29 **	-0.0632	-2.22 **
Increase in regular employee ratio in the past 3 years	0.1128119	1.95 *	0.1251	2.15 **
Increase in non-regular employee ratio in the past 3 years	-0.0129773	-0.26	-0.0120	-0.24
Ordinary profit growth rate	-0.045161	-0.75	-0.0489	-0.81
(Standard: Company size [less than 200 employees])				
Company size (200 to 999 employees)	0.0514285	0.4	0.0498	0.39
Company size (1000 employees or more)	0.1408605	0.84	0.1477	0.88
Industry dummies	Yes		Yes	
Constant	-0.3913561	-1.42	-0.2940	-1.05
Sample size	570		570	
LR chi^2 (22)	75.28		78.95	
Prob > chi^2	0.000		0.000	
Pseudo R^2	0.098		0.102	
Log likelihood	-347.9		-346.1	

Note: * and ** indicate statistical significance at the 10% level and 5% level, respectively.

an increasing ordinary profit, the firms having a high ratio of female workers to all regular employees, and large firms. In this case, the effect of whether the firms are positive about developing regular employees' competency is not statistically significant.

Next, let us see which firms are planning to actively employ part-time workers as the mainstream work force. As explained variables, the dummy variable of 1 is the case of "assigning part-time workers in the future to jobs with responsibility, professional jobs or non-routine jobs," and dummy variable of 0 is all other cases. With these variables, we estimate a probit model. As a result, the firms planning to actively employ part-time workers as the mainstream work force are the firms that are positive about developing non-regular employees' competency, firms with a high ratio of non-regular

employees, firms with a high ratio of female workers, and firms with a low ratio of university graduates (Table 5). The wage disparity of 10% or less between regular and non-regular employees employed in the same job is not statistically significant. However, the coefficient of the cross term of the dummy variable indicating whether to emphasize non-regular employees' competency development and the dummy variable indicating 10% or less wage disparity is positive and significant. This suggests that the firms that are both positive about developing non-regular employees' competency and giving them equal treatment[14] have a strong tendency towards employing part-time workers as the mainstream work force.

As mentioned above, in many cases, the firms trying to increase the percentage of female workers among managers and regular employees are positive about competency development, while the firms planning to employ part-time workers as the mainstream work force are in many cases both positive about competency development and concerned about realizing equal treatment.

3. Young Workers

The "reverse displacement effect" of the economic recovery and mandatory retirement of the baby boomers is considered to have a positive impact on the employment of young workers. It is also a boost that there is an increase in the number of firms emphasizing competency development. In fact, the ratio of job offers to job seekers for recent school graduates has been increasing in all levels of school graduates since March 2005, indicating that demand for new graduates, which was controlled in the past, has certainly been expanding. Mid-career recruitment has also been increasing. It is expected that the economic recovery will accelerate moves by those workers, especially young workers, who were reluctantly engaged in their present jobs during the long economic recession to seek to transfer to other companies offering better conditions. On the other hand, since firms are giving greater emphasis to competency development, it is expected that they would be more severe in the selection of these workers for recruitment.

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[14] The small wage disparity between regular and non-regular employees does not necessarily mean equal treatment, but it is considered that at least the firms having a small wage disparity between regular and non-regular employees are more likely to be concerned about realizing equal treatment.

Table 6. Coefficient of correlation between the age limit (if any), which is applicable to the recruitment of *freeters*, and positive attitude for skill development and long-term employment practice

	Age limit	Positive for skill development	Long-term employment practice
Age limit	1		
Positive for skill development	-0.0953 *	1	
Long-term employment practice	-0.1404 *	0.0305	1

Source: The Japan Institute for Labour Policy and Training, *The Survey on Human Resource Strategies and Work Awareness in the Population Decreasing Society*.
Note: * indicates statistical significance at the 5% level.

Table 7. Coefficient of correlation between the educational attainment, which is applicable when selecting *freeters* as candidates for recruitment, and positive attitude for skill development and long-term employment practice

	Minimum educational attainment applicable to *freeters* recruitment	Positive for skill development	Long-term employment practice
Minimum educational attainment applicable to *freeters* recruitment	1		
Positive for skill development	0.0314 *	1	
Long-term employment practice	0.0493 *	0.0451 *	1

Source: The Japan Institute for Labour Policy and Training, *The Survey on Human Resource Strategies and Work Awareness in the Population Decreasing Society*.
Note: [1] * indicates statistical significance at the 5% level.
[2.] Regarding the minimum educational attainment for recrutment, integral numbers of 1 to 4 are applied to non-reference to educational attainment, high school or above, college or above, and university or above, respectively.

Are the young people who became part-timers (*freeters*) during the long economic recession able to be recruited as regular employees amid the recovery trend of young people's employment and be engaged in the job that provides them opportunities to develop their skills? According to the Population Decreasing Society Survey, only 1.3% of the firms reply, regarding the recruitment of *freeters* and NEETs, that they "will actively recruit and train them as regular employees." The percentage of the firms that will "recruit them as regular employees without discrimination" is 23.4 %, while the percentage of the firms that will "recruit them not as regular employees but as non-regular employees" is 23.3%, almost the same percentage. The largest number of the firms (41.8%), however, reply that they will "not recruit them either as regular or non-regular employees" (The Japan Institute for Labour Policy and Training 2005). This tendency is strong among the firms emphasizing regular employees' competency development and actively engaged in such development. Moreover, the firms that are more positive for skill development are more likely to set an upper limit on the age of *freeters*, etc. who can be recruited, and that age tends to be low (Table 6). Further, these firms set higher standards on educational attainment in selecting candidates among the *freeters* for recruitment (Table 7). In other words, with regard to recruitment of *freeters*, etc., the firms that are capable of providing them with careers rich in opportunities for competency development tend to be rigorous in their selection.

VI. Summary

In this paper, we have surveyed earlier studies and analyzed, on the basis of a questionnaire survey, what effect the change in the age structure of the labor force, especially the mandatory retirement of the baby boomers in and after 2007, has on firms' generational structure and human resource strategies.

As a result, we have revealed the following:

Firstly, as for the effect of the mandatory retirement of the baby boomers, a relatively small number of firms point out the "skills transfer issue," while many firms mention "labor cost reduction" and "increased payment of retirement allowance."

Secondly, if we look at the wage structure of firms, the quasi-fixed labor cost, motivation cost, and the size of a generation's population are considered

to have an effect on the wage structure. Especially, it is considered that at firms with high motivation cost, the need to motivate workers through systems like the deferred pay system will remain unchanged even after the change in the generational structure caused by the retirement of the baby boomers.

Thirdly, if we look at firms' future human resource strategies, many firms are considering employment of older workers, employment of female workers, and improvement in workers' competency. On the other hand, these human resource strategies are virtually uninfluenced by the effects of the mandatory retirement of the baby boomers.

Fourthly, a relatively large number of firms that plan to employ older workers reply that they will promote extension of the mandatory retirement age and continued employment. On the other hand, some firms say they will continue to employ only employees who meet the firms' standards, showing a rather cautious attitude toward employment of older workers. Even at the firms that have the "skills transfer issue," they are planning to address the issue by expanding on the continued employment of older workers that is limited to veteran skilled workers.

Fifthly, the firms planning on actively employing female workers have high ratios of female workers and non-regular employees, indicating that many female workers are already working in these firms. Many of the firms planning on increasing the ratio of female workers among managers and regular employees or to employ part-time workers as the mainstream work force tend to be positive about developing employees' competency and about realizing equal treatment.

Sixthly, the "reverse displacement effect" created by the economic recovery and the mandatory retirement of the baby boomers and the increase in the number of firms emphasizing competency development will probably have a positive effect on the employment of young people. However, as for recruitment of *freeters*, the firms able to provide them careers offering many opportunities for their competency development are likely to make the evaluation standards more severe when selecting such young people for recruitment.

From the above, it can be said that although the mandatory retirement of the baby boomers create various problems for firms, it appears on the whole that their retirement will not have such a great impact on firm's future human resource strategies. Instead, firms are, in anticipation of aging and the

declining birthrate in the long term and regardless of the effect of the mandatory retirement of the baby boomers, placing an emphasis on employment of older workers and female workers and competency development. It is necessary to develop policies in light of the characteristics of each demographic group. Especially for the young generation many of whom are *freeters* and NEETs due to the effect of the long economic recession, policy support is needed so that many opportunities for competency development can be offered to them in their careers. Such a necessity has become greater than before as a result of the accelerated progress of globalization and technical innovation.

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