

Title	A measurement of the Japanese lifetime employment system
Sub Title	
Author	オカザキ, ケイコ(Okazaki, Keiko)
Publisher	Society of Business and Commerce, Keio University
Publication year	1996
Jtitle	Keio business review Vol.33, (1996.) ,p.105- 115
JaLC DOI	
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Notes	Festschrift for Prof. Yoko Sano
Genre	Journal Article
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AA00260481-19960001-00704508

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A Measurement of the Japanese Lifetime Employment System

By

Keiko Okazaki

Abstract

The purpose of this paper is to develop an appropriate indicator to see whether the lifetime employment system has been undermined during this current economic slump.

Five-year retention rates are calculated for male workers aged above 45 who are employed in the manufacturing industry from 1974-79 span to 1988-93 span. Although they show some fluctuations according to business cycle, they show no clear time trend. Therefore, it can be concluded that there is no evidence that the Japanese lifetime employment has been undermined at least until 1993. Contrary to a widely spread view, the retention rate of employees from ages 50-54 to ages 55-59 has been generally increasing in both large and medium firms.

Key Words

lifetime employment system, Japanese employment system, seniority wage system, mandatory retirement age, employment extension system, rehiring system, five-year retention rate

Introduction

The lifetime employment system has long been believed to be one of the three pillars (along with the seniority wage system and enterprise unionism) which support the Japanese employment system. However, after the burst of the bubble economy came a serious recession, and the lifetime employment system is now believed to be a kind of endangered species. Amid this longest and most serious recession since WW II, firms facing declining demand desperately wanted to shed redundant labor. Particularly, middle-aged and older management have become the target as surplus because they are regarded as receiving more wages than their productivity¹ warrants, according to the seniority wage system.

Although most firms have a mandatory retirement age (77% of firms set it at the age of 60; Ministry of Labour [MOL], 1994), this does not necessarily imply that they

¹Whether wage is larger than productivity before the age of retirement has been one of the focal points of research on the Japanese seniority wage system. Okazaki (1993) showed empirically that wage is larger than productivity for older employees.

always terminate the employment of their workers at that age. Many firms have other rules which enable them to apply the mandatory retirement age more flexibly. One is the employment extension system or the rehiring system which is intended to postpone the actual retirement age of employees. About one-third of firms have the employment extension system, and one-half of firms have the rehiring system as of 1994 (MOL, 1994). The other is the early retirement system. This encourages employees to retire early by adding extra severance payment for those who quit early. Sometimes it is said that employees are not only encouraged but almost forced to retire before the mandatory retirement age under this system.

Since management has almost full discretionary power in the application of these systems to each employee, it is likely that they are inclined to postpone the actual retirement age when they feel a labor shortage during economic booms, and to cut back on middle-aged and older employees during recessions.

Although the lifetime employment system has become one of the most serious concerns of ordinary Japanese employees, reliable and objective information about such trends is scarce. Many anecdotes about the tragedy of abruptly terminated careers are abundant in magazines and newspapers, but no appropriate measurement of the lifetime employment system has been tried.

The purpose of this chapter is to present a more accurate measurement of the lifetime employment system to show not only its time trend (whether it actually has been weakening) but also how prevalent it is (some argue that only male college graduates working in large Japanese firms are enjoying the privileges of the lifetime employment system), and how robust it is (some possibility remains that Japanese firms had commonly been firing middle-aged and older employees before the current recession).

Measurement of the Lifetime Employment System

Two kinds of empirical research have been carried out to see how the lifetime employment system is actually working. One is a case study done by Koike (1983). According to a survey by Koike (1991), even in large firms which have unions, employers reduce the number of workers when they suffer losses in two consecutive years. He insists from the above evidence that the lifetime employment system, in its literal meaning, does not exist in Japan.

The second and most common method is to use the average length of service within the company as a proxy for the lifetime employment system. Since the average length of company service has become longer, the lifetime employment system has been considered strengthened. Although this method is simple and thus popular, it is misleading in the following sense. The average length of service within the same company is affected not only by how many employees are discharged before the mandatory retirement age but also by how many new people are hired.

For example, consider the case of a declining industry. A firm in a declining industry reduces or stops hiring in order to downsize its labor force. This directly increases the average length of service within the current workforce. Even if this firm discharges some middle-aged and older workers, it is likely that the effect of recruiting no new people might outweigh the effect of cutting the middle-aged and older employees, and as a result, the average length of company service becomes longer.

This implies that the average length of company service is not a good proxy for the lifetime employment system. In general, the average employment share of the manufacturing industry has been shrinking, and this tends to make the average length of service longer according to the above logic even if the lifetime employment system might have been weakening.

In order to amend the above deficiency and capture the true tendency of the lifetime employment system, I developed the following method. The basic idea is to measure the proportion of male employees who stayed in the same firm around the mandatory retirement age for more than five consecutive years. This five-year retention rate can be calculated using data from the Wage Census published annually by the Ministry of Labour. The Wage Census provides data grouped by industry, firm size, and employee age, gender and education level.

The procedure of measurement can be shown by the following example. Suppose one cell which contains the number of employees who are between the ages of 45 and 49 in 1988 is chosen. Five years later, in 1993, those who belonged to this age group become between the ages of 50 and 54. Some of them would have left the company, and the others would have stayed in the same company. The number of employees who stayed in the same company is shown in a cell in the Wage Census of 1993.² By dividing the number of employees who belong to the age group of 50-54 in 1993 by the number of employees who belong to the age group of 45 to 49 in 1988, we can find the percentage of employees who continued to work for the same company.

So far, the possibility of people coming into and going out of this age group has been neglected. To get a better measurement, this possibility should be taken into account as follows.

Let $L_{i,j,a,t}$ be the number of employees of a certain cell characterized by industry i , firm size j , age between a and $a+4$ in year t . Suppose this age group has the average length of service within the current firm, $S_{i,j,a,t}$. Five years later, in $t+5$, this age group will include those between $a+5$ and $a+9$. The number of employees who continue to belong to the same group, $L_{i,j,a+5,t+5}$ and its average length of service $S_{i,j,a+5,t+5}$ are available from the Wage Census of the year $t+5$. Let the number of new entrants to this group between t and $t+5$ be $I_{i,j,a,t}$ and the number of those who went out of this group be $O_{i,j,a,t}$. Assuming that new entry occurred according to a uniform distribution, then the average length of service of the new entrants at the time of $t+5$ is 2.5. Let's assume also that those who went out of this group had the same average length of service as those who stayed in the group.

Under these assumptions, the following two equations hold.

$$L_{i,j,a+5,t+5} = L_{i,j,a,t} + I_{i,j,a,t} - O_{i,j,a,t} \quad (1)$$

$$\{(L_{i,j,a,t} - O_{i,j,a,t})(S_{i,j,a,t} + 5) + 2.5 I_{i,j,a,t}\} / L_{i,j,a+5,t+5} = S_{i,j,a+5,t+5} \quad (2)$$

Since these two equations include two unknowns ($I_{i,j,a,t}$ and $O_{i,j,a,t}$) and four knowns ($L_{i,j,a,t}$, $L_{i,j,a+5,t+5}$, $S_{i,j,a,t}$ and $S_{i,j,a+5,t+5}$), the system is solved without ambiguity. By substituting (1) into (2), $I_{i,j,a,t}$ and $O_{i,j,a,t}$ can be expressed only with known variables.

²Actually there is a possibility that some people left a company and entered a new company which happens to be grouped into the same cell as before. In this case these people continue to be counted in the same cell but their length of service is at the time they leave the companies.

Using the $I_{i,j,a,t}$ given by (3),

$$I_{i,j,a,t} = L_{i,j,a+5,t+5} (S_{i,j,a,t+5} - S_{i,j,a+5,t+5}) / (S_{i,j,a,t} + 2.5) \quad (3)$$

the retention rate of employees during five years, $R_{i,j,a,t}$ can be defined as

$$R_{i,j,a,t} = (L_{i,j,a+5,t+5} - I_{i,j,a,t}) / L_{i,j,a,t} \quad (4)$$

This retention rate is calculated for thirteen industries³ in the manufacturing sector, three firm sizes, age groups 45 to 49, 50 to 54, 55 to 59, and years 1974 to 1993. The calculated retention rates are shown in Tables 3, 4 and 5. Only the weighted averages across industries (using the number of employees as the weighting factor) are shown to represent the manufacturing sector.

Empirical Findings

As noted in the introduction, a significant gap seems to exist between the official mandatory retirement age and the actual age at which employees are forced to retire. To shed light on this gap, it is necessary to know, in the first place, at what age firms officially set their mandatory retirement age.

About 90% of all Japanese firms specify a mandatory retirement age. Those not specifying a mandatory retirement age are mostly small firms. The ratio of firms which specify the retirement age is about 99.5% for large firms (employment = 1000 or more), 97.9% for medium-sized firms (employment between 100 and 999), and 87.1% for small firms (employment between 30 and 99) as of 1994 (MOL, 1994).

As Table 1 shows, the age of 60 has become increasingly prevalent as the mandatory retirement age. In 1985, 27.1% of firms had the retirement age at or below 55, but in 1994 that proportion decreased to 8.1%. Instead, the proportion of firms who set their retirement age at 60 has increased from 51% in 1985 to 77.1% in 1994. This proportion differs according to firm size. As is shown in Table 2, in 1994 more than 95% of large and medium-sized manufacturing firms set their mandatory retirement

Table 1. Distribution of the Mandatory Retirement Age, from 1985 to 1994 (All Industries Included)

year	mandatory retirement age			
	at or below 55	between 56 and 59	at 60	over 60
1985	27.1%	17.3%	51.0%	4.4%
1990	19.8	16.1	60.1	3.8
1992	11.7	11.7	71.4	5.1
1994	8.1	7.7	77.1	7.0

Source: Survey on Employment Management (Ministry of Labour)

³The industries included are textile, pulp and paper, publishing and printing, chemical products, rubber products, ceramic, stone and clay products, iron and steel, non-ferrous metals, fabricated metals, general machinery, electrical machinery, transportation equipment and precision machinery.

Table 2. Distribution of the Mandatory Retirement Age in 1994 by Firm Size (Manufacturing Industries)

firm size [number of employees]	mandatory retirement age				
	at or below 55	between 56 and 59	at 60	over 60	
large	over 5000	0%	0%	100%	0%
	1000–4999	1.6	1.8	95.7	0.9
medium	300–999	1.5	3.3	93.8	1.5
	100–299	4.0	4.9	88.9	2.3
small	30–99	8.1	9.4	76.2	6.4

Source: *Survey on Employment Management*
(Ministry of Labour)

age above or equal to 60, but that proportion is only 82.6% for small firms.

Although this implies that small firms tend to force retirement earlier than larger firms, this is contrary to the results in the following tables. Table 3 shows the five-year retention rate which indicates the probability that employees who are above 55 years of age will remain employed in the same company until they become over 60 years of age. It is evident from Table 3 that the retention rate is higher in smaller firms, for every education level.

This retention rate shows fluctuation but no clear time trend. Some facts are evident from Table 3. First, in large firms the retention rate of high school graduates is consistently lower than that of college graduates. But there is no such consistent relationship in medium and small firms. Second, the retention rate of middle school graduates is consistently lower than high school graduates or college graduates in both

Table 3. Five-Year Retention Rate of Male Employees in Manufacturing Industries: From the Age of 55–59 to 60+

(a) Large firms (1000 or more employees)

period	final education level	
	high school	college
1974-79	2.8%	10.1%
1975-80	4.1	7.9
1976-81	4.5	7.9
1977-82	3.2	8.5
1978-83	4.6	14.7
1979-84	3.0	11.0
1980-85	4.6	12.1
1981-86	5.1	10.4
1982-87	2.5	10.0
1983-88	3.3	7.2
1984-89	3.0	6.1
1985-90	3.7	6.1
1986-91	3.7	10.0
1987-92	4.3	10.2
1988-93	4.8	8.4
average	3.8	9.4

Table 3. (continued)
 (b) Medium-sized firm (between 100 and 999 employees)

period	final education level		
	middle school	high school	college
1974-79	13.9%	17.6%	23.0%
1975-80	18.5	21.8	35.5
1976-81	16.7	20.5	22.8
1977-82	17.7	19.5	23.8
1978-83	13.0	16.3	22.7
1979-84	13.8	21.5	32.2
1980-85	12.0	18.3	15.4
1981-86	11.1	18.4	24.3
1982-87	8.7	13.4	22.9
1983-88	13.3	14.1	16.3
1984-89	10.5	15.5	13.4
1985-90	10.6	14.8	20.6
1986-91	12.6	18.9	17.6
1987-92	16.1	17.7	22.0
1988-93	12.8	22.4	18.9
average	13.4	18.0	22.1

(c) Small firms (between 10 and 99 employees)

period	final education level		
	middle school	high school	college
1974-79	30.4%	41.1%	38.6%
1975-80	30.4	42.0	27.2
1976-81	34.0	37.8	38.5
1977-82	34.8	41.4	36.3
1978-83	32.2	36.3	31.0
1979-84	28.7	31.4	29.7
1980-85	27.4	38.0	32.2
1981-86	26.0	33.0	34.2
1982-87	24.8	31.9	36.9
1983-88	25.9	31.0	30.9
1984-89	26.8	35.1	36.9
1985-90	31.7	37.2	42.4
1986-91	34.2	40.0	43.3
1987-92	36.0	43.8	36.9
1988-93	33.9	41.9	46.6
average	30.5	37.5	36.1

medium and small firms.

Although most firms set their official mandatory retirement age at 60, it is likely that many medium and small firms extend employment beyond that. To see whether the official rule about the mandatory retirement age of 60 is observed by employers or not, it is necessary to see whether most employees remain on the job until the age of 60.

The five-year retention rate which indicates the probability that employees between the ages of 50 and 54 remain employed in the same company until they become between the ages of 55 and 59 is shown in Table 4. The retention rate seems to be increasing in large firms. In medium-sized firms, the retention rate of middle school

graduates and high school graduates tends to have a positive time trend. In small firms no time trend is obvious.

The retention rate of high school graduates is, in most cases, higher than for other education levels in every firm size. As a general rule, middle school graduates have the next highest retention rate, and the retention rate of college graduates is the lowest.

As firm size becomes smaller, the retention rate tends to be larger for every education level. This finding contradicts the fact noted above that the mandatory retirement age tends to be higher for larger firms.

Table 4. Five-Year Retention Rate of Male Employees in Manufacturing Industries: From the Age of 50-54 to 55-59

(a) Large firms (1000 or more employees)

period	final education level	
	high school	college
1974-79	26.5%	23.1%
1975-80	26.9	19.9
1976-81	31.0	25.6
1977-82	34.4	33.1
1978-83	39.6	35.5
1979-84	50.9	36.5
1980-85	48.1	40.8
1981-86	52.7	48.9
1982-87	54.2	40.4
1983-88	56.2	42.3
1984-89	59.1	47.8
1985-90	58.0	49.8
1986-91	65.8	49.7
1987-92	61.1	46.8
1988-93	61.9	51.2
average	48.4	39.4

(b) Medium-sized firm (between 100 and 999 employees)

period	final education level		
	middle school	high school	college
1974-79	48.2%	49.5%	45.5%
1975-80	56.0	51.0	44.8
1976-81	57.6	51.7	43.9
1977-82	57.1	52.6	44.3
1978-83	55.6	65.5	65.5
1979-84	58.1	62.4	64.8
1980-85	54.2	56.9	51.3
1981-86	55.8	62.8	45.1
1982-87	55.1	63.6	43.9
1983-88	55.4	62.0	48.1
1984-89	60.7	71.3	54.6
1985-90	61.2	71.9	58.1
1986-91	68.3	75.1	60.3
1987-92	66.3	76.2	57.3
1988-93	66.1	70.9	54.4
average	58.4	62.9	52.1

Table 4. (continued)
(c) Small firms (between 10 and 99 employees)

period	final education level		
	middle school	high school	college
1974-79	69.7%	68.6%	64.9%
1975-80	63.1	56.7	57.4
1976-81	62.3	63.7	47.4
1977-82	60.3	70.8	50.0
1978-83	62.8	69.6	53.7
1979-84	63.9	64.3	53.6
1980-85	62.4	66.9	54.0
1981-86	61.5	75.7	51.5
1982-87	69.1	75.3	60.7
1983-88	63.1	69.5	67.4
1984-89	63.9	68.6	65.8
1985-90	66.1	73.2	56.6
1986-91	69.2	75.4	63.0
1987-92	66.9	81.8	71.0
1988-93	67.1	74.5	51.1
average	64.8	70.3	57.9

Table 5 shows the five-year retention rate which indicates the probability for employees between ages 45 and 49 to become 50 to 54 while working in the same firm. Since large firms begin to encourage employees to retire around the age of 45, the retention rate should be checked from around the age of 45. Table 5 shows no obvious time trend. For every firm size, the retention rate is smallest for college graduates and highest for high school graduates. For this age group, the retention rate is higher in large firms than in small firms. This is contrary to the findings in Table 3 which show

Table 5. Five-Year Retention Rate of Male Employees in Manufacturing Industries: From the Age of 45-49 to 50-54

(a) Large firms (1000 or more employees)

period	final education level	
	high school	college
1974-79	68.8%	65.1%
1975-80	79.6	72.7
1976-81	75.4	69.6
1977-82	78.1	74.9
1978-83	81.3	79.3
1979-84	90.8	82.7
1980-85	90.5	81.3
1981-86	91.7	82.8
1982-87	87.1	79.0
1983-88	88.6	80.4
1984-89	84.9	80.7
1985-90	85.8	80.7
1986-91	90.7	77.2
1987-92	84.8	78.5
1988-93	83.3	83.9
average	84.1	77.9

Table 5. (continued)
(b) Medium-sized firm (between 100 and 999 employees)

period	final education level		
	middle school	high school	college
1974-79	84.2%	79.7%	68.1%
1975-80	93.0	89.7	75.8
1976-81	87.6	78.4	79.0
1977-82	86.1	78.9	76.2
1978-83	88.2	86.1	84.2
1979-84	85.2	83.1	84.1
1980-85	77.9	82.0	67.8
1981-86	80.0	81.3	64.8
1982-87	78.3	86.9	73.8
1983-88	82.0	87.1	76.4
1984-89	80.7	84.4	76.8
1985-90	86.1	92.2	77.2
1986-91	79.8	88.5	74.6
1987-92	73.6	79.8	66.8
1988-93	77.3	83.2	68.9
average	82.7	84.1	74.3

(c) Small firms (between 10 and 99 employees)

period	final education level		
	middle school	high school	college
1974-79	75.7%	76.3%	62.8%
1975-80	68.5	71.7	72.4
1976-81	73.5	69.3	70.1
1977-82	72.7	72.6	66.4
1978-83	77.6	76.2	53.4
1979-84	72.3	74.5	49.2
1980-85	72.1	79.2	63.1
1981-86	78.5	80.7	73.5
1982-87	80.4	77.4	71.4
1983-88	78.5	79.8	72.4
1984-89	75.3	82.4	71.2
1985-90	75.3	80.3	60.5
1986-91	77.1	80.8	70.3
1987-92	73.9	81.4	70.8
1988-93	74.9	78.9	69.7
average	75.1	77.4	66.5

the retention rate of employees who are above 60 years of age.

From these three tables we can find answers to the questions posed in the introduction. First, it is obvious that the overall retention rate has not been decreasing during 1974 to 1993. Therefore, it can be concluded that there is no evidence that the Japanese lifetime employment system has been undermined during this time. Contrary to a common belief, the retention rate of employees from ages 50-54 to ages 55-59 has generally been increasing in both large and medium firms.

Probably one cause of this tendency is the law which makes setting the mandatory retirement age below 60 illegal, which will go into effect in 1998. It is likely that the retention rate has decreased after 1993 because of the severe slump in the economy, but

the data are not available now to examine it.

Second, some significant differences seem to exist according to firm size. The probability of remaining employed above the age of 55 (including above the age of 60) is highest in small firms and lowest in large firms for every education level. (See Tables 3 and 4.) This is inconsistent with the common view that only college graduates of large firms are covered by the lifetime employment system.

Only the retention rate of employees entering the age bracket of 50 to 54 while in the same company is highest in large firms. This implies that the retention rate drops most sharply in large firms when employees become above the age of 55.

Third, the retention rate seems to fluctuate considerably according to the business cycle. To see how the retention rate reacts to business cycles, further research using regression analysis is necessary.

Data Problems

Since the data are not provided in the ideal form, they should be reconstructed to fit the purpose of the study as much as possible. The most serious problem comes from the fact that the available data are grouped by industry and by firm size and not by the individual firm as desired. Since each cell contains the employees who belong to many different firms, the change of number of employees consists of two parts. One is the change of number of employees hired by each firm, and the other is the change caused by the change of the number of firms which belong to the particular industry of particular firm size. The latter factor should be excluded from the total number of change of employees to measure the lifetime employment system correctly. Since the exact number of employees who went out of or came into each cell with their employers being the same is not obtainable, it must be estimated as follows.

The number of firms in a particular industry and of a particular size is available from the Manufacturing Census (Ministry of International Trade and Industry). So the change of the number of firms is obtainable. However, the number of employees hired by those firms is not given in the data, so it must be estimated.

Only firms which employ 1000 or more people are categorized as large firms. Firms which move into and out of this group should be the marginal ones in this group. This implies that the number of employees hired by such a marginal firm is just above 1000. By rough approximation, I assume that the average number of employees of the firms moving out of and into the large firm group is 1000.

In case of medium-sized and small firms the above logic is not applicable. The average number of employees of the firms moving out of and into this group is assumed to be same as that of the firms which stayed in the same group.

Using the same notation as above, the procedure of adjustment to the change of number of firms can be explained as follows. Suppose that the number of firms which belong to industry i and are of size j changes from $N_{i,j,t}$ in year t to $N_{i,j,t+5}$ in year $t+5$. Let $E_{i,j,t}$ be the average number of total employees of $N_{i,j,t}$ firms in year t . According to the assumption made about the number of average employees, $L_{i,j,a,t}$ should be replaced by the adjusted $AL_{i,j,a,t}$, which is obtained as follows.

In large firms, the change in the total number of employees caused by firms moving out of and into industry i and of size j is $1000 \times (N_{i,j,t+5} - N_{i,j,t})$. Thus,

$$AL_{i,j,a,t} = L_{i,j,a,t} \times \{N_{i,j,t} \times E_{i,j,t} + 1000 \times (N_{i,j,t+5} - N_{i,j,t})\} / (N_{i,j,t} \times E_{i,j,t}) \quad (5)$$

In medium-sized and small firms, replacing the above $1000 \times (N_{i,j,t+5} - N_{i,j,t})$ by $E_{i,j,t} \times (N_{i,j,t+5} - N_{i,j,t})$ and doing the same calculation leads to the adjusted $L_{i,j,a,t}$. That is,

$$AL_{i,j,a,t} = L_{i,j,a,t} \times N_{i,j,t+5} / N_{i,j,t} \quad (6)$$

Actually the retention rates presented in Tables 3, 4, and 5 are calculated using $AL_{i,j,a,t}$ instead of $L_{i,j,a,t}$ in (4).

Conclusion

By measuring five-year retention rates from the 1974-79 span to the 1988-93 span for male manufacturing employees aged above 45, this paper tried to explore empirically whether the lifetime employment system has been deteriorating during this current recession.

Contrary to a common belief, the retention rates showed no obvious downward trend. Particularly, the retention rates for employees from 50-54 to 55-59 has increased in both large and medium firms during this sample period. This might have happened because firms tried to prepare for the law which will make setting the mandatory retirement age below 60 illegal from April 1998. However, to examine this causality more precisely, further research is required.

To conclude whether the Japanese lifetime employment system has been deteriorating, the change in the retention rates for all age groups should be considered. This paper showed only that retention rates for those who are above 45 did not decrease, but the possibility remains that the retention rates of other age groups decreased, thereby canceling out the effect of increasing retention rates of those who are aged above 45. Testing this possibility should be a topic for future research.

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