Review of Population and Social Policy, No. 8, 1999, 27–48

The Public Pension and the Labor Supply of Older Women in Japan

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Abstract This paper, while describing the revised Japanese public pension scheme for housewives and showing the actual receipt of public pensions by women according to occupational group, empirically estimates the effect of the public pension on labor supply and home production activities of older women. Data are drawn from two sets of national sample of females aged 55–69 surveyed in 1983 and 1992, when a decline in extended families, an increase in older couples, and a rise in the general pension level was observed. As the pension receipt increased, a large retirement effect and an increase in housekeeping activities was estimated for females with formal paid work experience, while a slight rise in leisure activities was estimated for housewives.

1. Introduction

Little is known about the effect of the public pension scheme on the life of older females, whereas more empirical research is conducted on its effect on males. There are some exceptions, such as the work of Mikami (1983) and Shimono and Tachibanaki (1984), though their data were obtained before a major reform in the public pension plan. The aim of this paper is (1) to trace the change under way in the family life and public pension of older Japanese females and (2) to empirically estimate the effect of the pension on the work and home production activities of this age group. The paper uses two national data sets, "Survey of the Labor Supply of the Elderly," conducted by the Ministry of Labour in 1983 and in 1992; the surveyed population was between the ages of 55 and 69. The years surveyed are of interest because of the implementation of public pension reforms and because of the high speed with which the lifestyle of the Japanese elderly was transformed. Between the two survey years, the pension reform of 1985 influenced both housewives and employees. The family picture rapidly changed for older people in these years, with extended families increasingly

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This is the English version of a paper on a project of the Japan Institute of Labour, written by Nobuko Nagase and Noriyuki Takayama and published in *Public Pension Reform and Its Effect on Retirement and Labor Supply Behavior: Analysis Based on a Survey of the Labor Supply of the Elderly: Report I.* I wish to thank the Institute; Noriyuki Takayama, chairman of the project; Yoshihiro Kaneko; and other project members. I also am grateful to Kazumitsu Nawata for his useful comments.

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replaced by nuclear families. At the same time, family work and self-employment opportunities decreased.

Section 2 traces the change in the lives of older women, in terms of family, work opportunities, and average pension benefits. It also explains the Japanese public pension scheme and how it has been reformed. Section 3 empirically estimates the effect of the pension on the work choices of females. It explains the underlying model and the choice of variables, the estimation result by age group, by household size, and the result by occupational group.

The work choice of older women should be influenced by their past work history as well as the pension benefit, but the pension benefit is also influenced by their past work history. Such correlation is particularly strong for women, whose work history is usually more diverse than men's. Section 4, therefore, utilizes the past work history data to focus on the market work and home production choices of women. Included are estimates of labor participation behavior of women with and without prior work experience and of the choices among housework, work in the job market, and leisure pursuits using a multinomial logit model.

2. Background

2.1. Changes in the Family and Work Life of Older Women, 1983–1992

Table 1 demonstrates the quiet but drastic change taking place in the family life of older females. In the 1983 survey, more than 40% of respondents in the highest age group of the sample (65–69) indicated that they depended mainly on their children's income. In just nine years, in the 1992 survey, that proportion declined to 24%, and a comparable 40% indicated that they depended on their husband's income. The immense shift was partly a result of socio-cultural changes, but it was also pushed by the general increase in male pension receipts.[1] In these years adult children's contribution to their elders' monetary needs, it might be said, transformed from a direct transfer within the family to a national transfer through the public pension scheme. The increase in self-dependence resulted in a higher percentage of older people living as couples. The lower part of Table 1 shows that in 1983 nearly 50% of females aged 65 to 69 were living in a household containing 4 or more members. The ratio declined to 40% in 1992 as two-member households increased.

[1] Increase in monetary independence of older couples was not the result of increased labour participation. The participation rate of older men in Japan had been on the decline throughout the 1970's and 1980's, though it showed a small reversal in the late 1980s. Nevertheless, the male participation level was no higher in 1992 than in 1983.

Table 1 Income status and household size of older women

	Age Group					
	55–59		60–64		65–69	
	1983	1992	1983	1992	1983	1992
Main Income Earner						
Self	22.4%	21.1%	19.7%	20.4%	18.9%	22.6%
Husband	58.3	65.9	44.0	58.8	31.0	42.8
Children	13.0	6.3	27.8	12.9	41.5	24.2
Household Size						
1 member	8.7	6.3	10.8	9.2	13.8	13.6
2 members	31.7	32.9	33.4	38.7	25.8	34.3
3 members	22.0	28.3	14.1	20.1	11.5	12.7
4 or more members	37.6	32.5	41.8	32.1	48.9	39.5

Note: Those who replied "Others" are excluded from the main income earner category, so the numbers do not add up to 100%.

Older citizens might also be said to be more self-dependent in terms of health. For example, the female portion of those aged 60–64 who considered themselves to be "in good health" increased from 57% in 1983 to 64% in 1992. Improvement in health condition was seen in every age group.

The labor participation rate of females showed little change over time; those in the 55–59 age group increased slightly from 53% to 56%, while leveling off for the 60–64 and 65–69 age groups at around 40% and 30% respectively. But during the nine years the type of work changed. Family workers, the self-employed, and other informal workers were on the decline while paid employees increased. The latter rose by about 10 percentage points in the 55–59 age group and 5 percentage points in the 60–69 age group.

2.2. The General Public Pension Scheme and Major Reform Concerning Women

Two pillars of the Japanese public pension scheme are those for paid employees and those for the rest of the population. For the former, the contribution and benefits are earnings based, whereas for the latter there is a flat tax and flat benefit structure. Among the earnings-related pensions are *Kosei* pensions for employees of private firms and *Kyosai* pensions for employees primarily in the public sector. The flat tax type is called the *Kokumin* (the People's) or the *Basic* pension. I will use these terms throughout this paper, though the names and the underlying concepts were changed somewhat after the 1985 reform. The *Kokumin* pension covers informal sector workers and housewives. The average pension of paid employees is more than twice as high as it is for the *Kokumin* pension group.

The most important pension reform of 1985 for females might be that relating to housewives. Before 1985, nonworking wives of paid employees were not subject to mandatory coverage, since *Kosei* and *Kyosai* pension values entitled to breadwinners were designed to support both the breadwinners and their wives. The Pension Reform Act of 1985 required that all citizens aged 20 to 59, including housewives, be compulsory members, but that nonworking wives be exempted from the social security tax if their husbands were earnings-related public pension plan members. The idea of the reform was to gradually transfer a certain proportion of the pension rights of the breadwinners to their wives, while keeping the pension benefits *and* contribution for a household the same. Such reform is reflected in the surveyed sample. For the 1992 sample, the wives of paid employees who were 65–66 years of age at the time of the survey, obtained pension rights through this reform even if they had never been voluntary participants in the public pension plan, though the entitled pension amount was yet low.

Another change under way during the survey years was the equalization of the pension eligibility age between the sexes. Formerly, *Kosei* provided old-age pensions for females 55 years and older but for males 60 years and older.[2] The eligibility age of females was gradually headed to the male level during the period of the two surveys. Therefore, the age qualification for *Kosei* rose from 55 in the 1983 sample, to 57 in the 1992 sample.

2.3. Types of Pensions and Group Characteristics

Table 2 shows the composition of pension types for females aged 65 to 69.[3] More than 50% of females received only *Kokumin*, the flat tax public pension for the self-employed and housewives. Almost 33% percent received some *Kosei*, the pension for paid employees at private firms, up from under 24% in 1983 as a result of the increased number of women with paid work experience. The group receiving no public pension decreased from 16.7% to 11.6%, partly reflecting the 1985 Reform. Though the data are not shown in the table, the number of recipients of public pensions in their late fifties also declined, reflecting the reform in age qualification.

When Table 2 was compared to the counterpart for males (table not shown), the percentage of earnings-related female pension recipients—e.g., *Kosei*—is much

[2] This was partly a reflection of the difference among many firms in the mandatory retirement age for men and women. However, such labor practice became illegal when the Supreme Court ruled that they were violating the equality-of-sex provision of the Constitution.

[3] The age group 65–69 was selected since the standard qualification age for *Kokumin* is 65.

Table 2 Monthly public pension receipts of women aged (65–69), by pension group

Pension Group	1992		1983	
	Composition	Average Receipts (10,000 yen)	Composition	Average Receipts (10,000 yen)
Kokumin only	51.3%	3.73	55.3%	2.42
Kosei only	21.7	9.13	13.3	5.96
Kyosai only	3.8	17.11	3.7	10.79
Kokumin and *Kosei*	9.0	8.76	8.6	5.85
Kokumin and *Kyosai*	2.0	12.22	1.8	9.73
Kosei and *Kyosai*	1.6	15.17	1.2	12.06
Kokumin, Kyosai, Kosei	0.6	13.53	0.4	13.31
Receiving no public pension	11.6	—	16.7	—

Note: *Kosei* and *Kyosai* are earnings-related pensions, the former the pension for employees of private firms and the latter primarily for public servants. *Kokumin* is a flat tax pension for the remaining population. The age group 65–69 was surveyed, as age 65 is the standard eligibility age for *Kokumin*.

lower than that of males[4]. The average pension value of this group was also about half the value of their male counterparts'. More women than men received a pension from more than one pension group, due to their intermittent work experience. The *Kokumin* receivers constituted a higher percentage of females because housewives were included in the category, and the average benefit was rather low. Among the various public pension recipients, the "*Kyosai* (public sector) only" group received the highest average pension—170,000 yen per month—about twice as high as "*Kosei* (private sector) only" group. The difference arises partly because of the smaller male-female wage gap in the public sector and partly because of the longer average tenure of females in the public sector.[5]

2.4. Main Activities of Older Women by Household Size

As shown in Table 3, the main activities of older women are strongly related to household size. About 65% of females aged 55–59 living alone reported that their main activity was paid work outside the home, whereas the percentage was much lower for those who lived with family. The "mainly working" portion of

[4] The minimum qualification for *Kosei* retirement pensions was a 20-year membership—15 years under certain conditions—for the sample.

[5] Examples of *Kyosai* group members are teachers and nurses employed by the public sector.

Table 3 Main activities of older women by household size (1992 sample)

Main Activity	Household Size								
	1 Member			2 Members			3 or More Members		
	Age Group			Age Group			Age Group		
	55–59	60–64	65–69	55–59	60–64	65–69	55–59	60–64	65–69
Employee	65.1%	42.1%	25.7%	38.7%	23.2%	15.9%	41.1%	26.8%	20.0%
Homemaker	20.6	35.9	52.0	54.2	68.1	73.2	52.2	61.5	60.7
Volunteer	1.6	4.1	3.4	1.0	1.5	1.5	0.9	1.3	1.2
Hobbies (alone)	3.9	7.4	5.5	1.7	2.1	2.7	1.4	2.2	4.9
Hobbies (group)	2.0	2.5	4.3	1.4	1.1	1.2	0.7	1.5	1.4
Other	6.8	8.1	9.2	3.0	4.1	5.4	4.0	6.7	12.1

Note: The Ministry of Labour survey asked whether the respondent worked on a regular basis and, if so, whether in primary or secondary activities. Those who said they did not work at all or did so as a secondary activity were asked to indicate whether their main activity was doing household chores, volunteer work in the community, hobbies alone or in a group, or other.

the population declined with age in each household size, whereas the “mainly homemaking” portion increased. In two-member households, many females remained the dominant housekeeper even in their late sixties, whereas for three-or-more-member households, a part of the decline in “mainly working” was filled by active and passive leisure activities. Such differences may reflect family composition: whether one is living in an extended family with married children or in a nuclear family with children not yet married, or whether one is living with a spouse or is widowed. Unfortunately, due to data composition the information can only be inferred from the household size.

The difference in the value of public pensions was also notable by household size. Female singles indicated a higher percentage of *Kosei* receipts: in 1992: 29% in the 55–59 age group received *Kosei*, whereas only 9% did so in two-member households. More single women seemed to have formal work with mandatory retirement and retirement pensions, though the receipts could also be the surviving wife’s benefit if her husband was deceased. More women received *Kokumin* in larger households, not only because more women were full-time housewives in these households but also because a family-business workers (also often the *Kokumin* recipient) lived in a larger household. Sixty-nine percent of females in three-or-more-member households in the 65–69 age group received *Kokumin* compared to 47% in a single household in the comparable age group.

3. The Female Labor Supply and the Effect of the Public Pension Scheme

3.1. The Labor Supply Model and Explanatory Variables

The estimation procedure outlined here follows the usual framework of a standard labor supply model. One maximizes utility derived from goods and leisure consumption. In doing so, one compares one's reservation wage and the market wage when deciding whether to retire or to participate in labor. Age and health are important factors affecting reservation wage of older people, along with pension benefits and other family income. Family size also influences the household's demand for home production. In fact, women in their fifties and sixties generally face dynamic changes in the family: retirement (themselves and their spouses), marriage of children, nursing of parents, and the decision to live with or away from their children. Because such information is unknown, I have tried to control such factors by household size.

The reduced form labor supply model is expressed as

LP = F (wage, age, health, pension receipts, other family income; household size)
LP = 1 if labor participant
LP = 0 if nonlabor participant

The model is applied to the total female population by age group to account for difference in life stage, and then by the household size to obtain a general picture (shown in section 3.2).

This procedure, however, is not adequate in capturing the true effect of public pension scheme on the retirement decision, because the pension scheme and the average benefit as well as the occupation are different between *Kyosai*, *Kosei* and *Kokumin* groups as explained. As the third estimation, therefore, separate estimates for *Kosei* and *Kyosai* pension-entitled groups and *Kokumin* pension-entitled groups were made (see section 3.3).

As a fourth trial (see section 4.1) the model was applied only to those who retrospectively replied that they were paid employees at age 55. This was to confirm whether the strong retirement effect obtained for *Kosei* and *Kyosai* groups in the previous section was a real one, not a seeming result obtained by the low participation rate of housewives who get the benefit through the surviving wives' benefit and not by one's own work experience. The work history and pension entitlement is also detailed in this section.

Lastly, considering the fact that a large portion of women do not participate in

the workforce but are working as homemakers, I conducted a multiple logit analysis of choice among home production, workforce participation and leisure pursuits to see the effect of public pension values on the choice of activities including home production activities (see section 4.3).

Regarding the explanatory variables, Shimono and Tachibanaki (1984) found that elasticity of the female labor supply differs greatly depending on the classification of the main wage earner. However, since the main wage earner may be the result rather than the cause of the labor supply, I will use this classification only when the "other family income" variable was unavailable. The actual wage data—income divided by estimated monthly work hours—were used as a wage rate variable for workers; for nonworkers, the prefecture part-time wage rate of small firms was used, the latter the most probable work opportunity for new entrants to the labor market. The explanatory variables are itemized in Table 4. The estimation was conducted for 1992 samples and, in some cases, for the

Table 4 Explanatory variables for the 1983 and 1992 surveys

Pension value	The total amount received from *Kokumin*, *Kosei*, *Kyosai*, and smaller private pensions. (The private pension amount is quite small and is included unless otherwise specified.) 1983 pension value price adjusted for the case of the pooled data.
Entitlement to public pensions	For 1983 sample only:
Kosei	A dummy variable
Kyosai	A dummy variable
Kokumin	A dummy variable
Age	Age when the survey was conducted
Other family income	For 1992 sample only: Income of the household minus the female's income
Main income earner	
Self	A dummy variable
Husband	A dummy variable
Children	A dummy variable The base is "others"
Health condition	
Health 1	Good (a dummy variable)
Health 2	Not good (a dummy variable) The base is "Bad or Ill"
Wage rate	For workers, monthly wages were divided by average monthly work hours estimated from daily work hours and weekly workdays on a usual basis. For nonworkers, the prefecture average of part-time wage rates of small enterprises (10–99 workers) was assigned using the Ministry of Labour's *Chingin Census.*

pooled data of 1983 and 1992. For some estimates, the relevant variable was available only for 1983 and therefore only 1983 data were used.

3.2. Labor Supply Estimation Results by Age Group and Household Size

Table 5 presents the results of probit analysis of the labor supply by age groups 55–59, 60–64, and 65–69. The numbers in the table show the change in the probability of labor participation for the marginal change in each independent variable evaluated at the means of the independent variable. For dummy variables, the results demonstrate the discrete change in probability when the dummy variables change from 0 to 1. The data in parenthesis are the t-value.

Good health increased labor participation by nearly 40% compared to bad health. Aging reduced participation by nearly 4% in the younger group and by 1% in the older groups. An increase in the income or pension value of other family members also significantly reduced labor participation. For example, a 10,000 yen increase in pension decreased the labor participation rate of the 55–59 age group by 2.1% but 0.5% for the 65–69 age group. The explanatory power of the model declined in the higher age group. This result is qualitatively similar to that of Shimono and Tachibanaki (1984). In their estimation as well as in mine, the marginal effect of *pension value*, *other family income*, and *health condition* is higher for the younger female age group, whereas the effect of such variables in their study shows that for males the effect is greater for the higher age group. They conclude that such differences can be explained by the fact that men tend to be core income earners whereas women are additional or secondary income earners. My results confirm that the basic structure and factors affecting female labor participation have not changed over the decade despite the

Table 5 Empirical result of the labor supply of older women, by age group (1992 sample)

	Age Group			
	All	55–59	60–64	65–69
Pension value	–0.0140 (12.51)	–0.02050 (7.938)	–0.01450 (8.659)	–0.00530 (3.079)
Age	–0.0171 (13.19)	–0.03710 (6.092)	–0.01400 (2.410)	–0.01370 (2.256)
Health 1	0.4081 (24.11)	0.43330 (13.05)	0.36160 (13.24)	0.35480 (12.79)
Health 2	0.2503 (12.72)	0.25270 (7.129)	0.22340 (6.754)	0.21050 (6.321)
Wage rate	0.0000 (0.770)	0.00014 (7.258)	0.00010 (6.302)	0.00008 (5.459)
Other family income	–0.0053 (21.73)	–0.00701 (16.65)	–0.00589 (13.96)	–0.00371 (8.279)
Constant	2.0711 (8.844)	4.87130 (4.907)	1.55140 (1.621)	1.53260 (1.295)
Sample size	11,220	3,851	3,842	2,952
Psuedo adj r2	0.1059	0.1226	0.0868	0.0884

extensive shift in the family picture. The stronger negative influence of aging in the 55–59 age group, which was not evident in Shimono and Tachibanaki's estimation, may be the result of the change in eligibility age of the public pension for female employees.

Table 6 shows a different estimation result by household size. The explanatory power of the model improved for one-member and two-member households. For older women in one-member households, *pension value*, *health*, *other family income*, *age*, and *wage rate* explain 24% of the variation in labor participation choice. Because the demand for housekeeping is small in the smaller household, the bilateral choice model of work and nonwork seems to illustrate the actual choice better than in the case of larger households. The discouraging effect of pension on labor participation is largest for single-member households. A 10,000

Table 6 Empirical result of the labor supply of older women, by household size

(1) 1992 Data

	Household Size		
	1 Member	2 Members	3 or More Members
Pension value	–0.0288 (9.438)	–0.0122 (6.628)	–0.0138 (8.148)
Age	–0.0184 (4.026)	–0.0212 (9.550)	–0.0147 (8.489)
Health 1	0.6416 (10.89)	0.3773 (13.93)	0.3924 (16.51)
Health 2	0.4500 (7.496)	0.2283 (7.089)	0.2258 (8.251)
Wage rate	0.0002 (4.791)	0.0001 (6.381)	–0.0001 (6.709)
Other family income	–0.0139 (4.694)	–0.0087 (16.41)	–0.0052 (14.65)
Constant	1.6736 (2.244)	2.7031 (7.328)	1.7729 (6.343)
Sample size	1,027	4,026	6,126
Pseudo adj r2	0.2366	0.1245	0.0961

(2) Pooled Data for 1983 and 1992

	Household Size		
	1 Member	2 Members	3 or More Members
1992 dummy	0.02650 (0.99)	0.04910 (4.01)	0.07230 (7.79)
Pension value	–0.04650 (16.2)	–0.03030 (16.5)	–0.02820 (18.6)
Age	–0.01820 (5.65)	–0.01620 (10.1)	–0.01390 (11.5)
Health 1	0.59460 (14.7)	0.34250 (17.4)	0.37150 (24.0)
Health 2	0.40790 (9.34)	0.23380 (10.1)	0.25730 (14.0)
Wage rate	0.00028 (6.69)	0.00011 (7.47)	0.00007 (7.01)
Main income earner			
Self	0.58420 (18.4)	0.50510 (19.0)	0.43280 (18.8)
Husband	0.04460 (0.57)	–0.08050 (3.33)	–0.10540 (5.28)
Children	0.00490 (0.07)	–0.04200 (1.33)	–0.12670 (6.21)
Constant	0.44920 (0.87)	1.36440 (5.04)	1.16890 (5.80)
Sample size	2,474	8,177	13,862
Pseudo adj r2	0.4180	0.2262	0.1912

yen increase in one's own pension decreased the labor supply of one-member households by 2.9%, whereas the proportion was 1.2% for two-member households. When calculated at the mean, one percentage change in pension decreased participation by 18.7% for one-member households, 3.7% for two-member households, and 3.9% for three-or-more-member households. Such a large decline is estimated for single-member households because the average pension level as well as the estimated coefficient is large. A 100 yen increase in wages, on the other hand, would increase the participation of single households by 2% and two-member households by 1%, but it would reduce the participation of three-or-more-member households. Although I imputed a part-time wage for nonworkers in the estimate, the wage of family workers is known to be lower than that of the average part-time paid employees (Nagase [1997]), and the negative coefficient may reflect the fact that more women engaged in family business in larger families. The positive effect of good health on labor participation was also higher for single-member households.

The lower part of Table 6 shows the estimation result of pooled data for 1983 and 1992. Because the *other family income* variable was unavailable for the 1983 sample, *main income earner* dummies were used. The estimated discouragement effect of pensions was higher when *main income earner* dummies instead of the *other family income* variable were used, but no structural change of coefficient was evident for pension values over the two years. The dummy for 1992, however, was positive and significant.[6] Labor participation rose by 5% in two-member households and 7% in three-or-more-member households in the economic boom of the early 1990's, not explicable by the change in other independent variables in 1992.

3.3. Labor Participation and the Effect of the Various Pension Groups: *Kosei* and *Kyosai* (Earnings-related), *Kokumin* (Flat Benefit Pension)

Whereas section 3.1 shows the overall picture of the labor supply decision of the female elderly in Japan, this section describes the differences among pension groups to eliminate the seeming effects that may be produced by differences in the average pension level and differences in work history. The reason is as follows. The average *Kokumin* pension is much lower than *Kosei* and *Kyosai* pensions (Table 2). The entitlement to a different pension also reflects past work history, which strongly influences the labor participation decision as well. *Kokumin*, for example, consists of divergent groups of individuals: the self-

[6] The 1992 dummy was not significant for one-member households, though the actual participation rate increased. The increase is mostly explained by the increase in the *main income earner-self* dummy.

employed, family workers, full-time housewives, and paid employees who work only part-time. The self-employed and family workers are known for late retirement. On the other hand, *Kokumin* also includes housewives who may have little work experience and low participation in the labor force regardless of the pension benefit. The *Kokumin* group, therefore, is a mixture of individuals with high and low labor attachment and a low average pension amount. On the other hand, *Kyosai* and *Kosei* cover workers with longer formal paid work experience and entitlement to a higher pension value. Evaluating these different groups with different work characteristics together may not reveal the true effect of pension benefits on their labor supply decisions.

First, pension entitlement based on type of pension was used as an independent variable of the labor participation decision. Seike (1989) recommended "entitlement," not the "actual receipt," on the ground that this variable escaped the problem of negative institutional correlation between labor participation and receipt of the *Kosei* pension[7]. Though such negative correlation is considered to be less serious for women—because their earnings level on average are lower, and moreover, many women take part-time jobs, most of which are not covered by the institutional rule—I made the estimation using the recommended variable for 1983 but not for 1992, as the variable was unavailable for the 1992 sample.

The results in Table 7 show that entitlement to earnings-based public pensions strongly discourages female participation in the workforce. *Kosei* and *Kyosai* entitlement reduced labor participation by 22–29% for the 55–59 age group, 9–26% for the 60–64 age group, and 4–13% for the 65–69 age group compared to individuals who received no pension. On the other hand, those who are entitled to the *Kokumin* pension—that is, the self-employed and a portion of housewives—interestingly have a higher labor participation rate compared to the no-pension group, perhaps because the no-pension group consists mainly of housewives while the former has more informal workers.

Since a large difference was observed among groups, I again made a separate labor supply estimation by pension group using the pension value, and not the entitlement as an explanatory variable (see Table 8). The estimated result, however, was fairly similar to those estimated altogether among the total population when the same variable (main income earner as the family income variable, e.g., as in Table 6) was used. The magnitude of the effect of a 10,000 yen increase in pension receipts is again largest for the 55–59 age group, lowering female labor participation by 4–5% for women with paid workforce experience.

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[7] Since earnings-related pension benefits are conditional on earnings level subject to an earnings test up to age 65, if a person is still employed and his or her wages are high, the pension benefit is reduced or halted. If actual pension receipt were used, Seike observed, the negative correlation between pension value and labor supply would be overestimated.

Table 7 Empirical results of the labor supply of older women, by entitlement to pension plans (1983 sample)

	Age Group		
	55–59	60–64	65–69
Kosei dummy	–0.216000 (8.04)	–0.085000 (4.30)	–0.0399000 (2.16)
Kyosai dummy	–0.292500 (7.37)	–0.255700 (8.77)	–0.1337000 (4.97)
Kokumin dummy	—	0.068200 (3.95)	0.0827000 (4.97)
Age	–0.018900 (3.32)	–0.021400 (3.76)	–0.0095000 (1.88)
Health 1	0.452800 (16.4)	0.389100 (15.3)	0.3141000 (13.6)
Health 2	0.317700 (10.5)	0.313100 (10.3)	0.2147000 (7.90)
Wage rate	0.000121 (5.61)	0.000078 (4.30)	0.0000695 (4.07)
Main income earner			
Self	0.523700 (16.8)	0.551800 (15.9)	0.3752000 (10.7)
Husband	–0.059600 (1.86)	0.039200 (1.25)	–0.0114000 (0.40)
Children	–0.083000 (1.66)	0.013800 (0.42)	–0.0447100 (1.61)
Constant	1.364100 (1.66)	1.883000 (1.93)	0.2795000 (0.23)
Sample size	5,260	4,392	3,613
Pseudo adj r2	0.2339	0.2039	0.1877

The discouraging effect of public pension entitlement on labor supply, especially for paid employment groups, is greater than that estimated for men in previous studies. However, this may be an overestimation, since some *Kosei* recipients could be receiving a surviving wife benefit and may have never participated in the workforce. In fact, women's experience in the labor market is not uniform. Some have worked most of their lives, some have never worked, and some have entered and left it frequently. Comparing the labor behavior of persons with different work histories can be misleading. Therefore, the next section focuses on those who indicated that they were paid employees at age 55.

4. The Retirement Behavior of Women with and without Paid Work Experience: Their Home Production Activities and Market Work

4.1. Analysis of Paid Employees

The survey questionnaire asked whether respondents had been paid employees at age 55, and the answer seems to work as a good proxy for females with more paid work experience and with little or no work experience. As shown in Table 9, about 30–40% of the women in the 1983 sample were paid employees at age 55, then the dominant mandatory retirement age in Japan. In fact, the labor participation rate of the group with paid work experience was 63%, whereas that

of the rest was 14% in the 55–59 age group, as indicated in the second and third columns of Table 9. Interestingly, however, of those who were paid employees at age 55, only 16% had a *Kosei* entitlement (public pension for paid employees) at ages 55–59. Coverage increases with age, and in the age group 65–69, the *Kosei*-entitled population increased to 43% of women with work experience at age 55. On the other hand, of those who were not paid employees at age 55, 71% were *Kokumin* entitled at ages 65–69. Also, of those with work experience but lacking a *Kosei* entitlement, 69% acquired a *Kokumin* entitlement at ages 65–69. Thirty percent of paid employees had both *Kosei* and *Kokumin* entitlements.

Table 8 Empirical results of the labor supply of older women, by type of pension plan (1983 sample)

(1) *Kosei* and *Kyosai* (paid employees)

	Age Group		
	55–59	60–64	65–69
Pension value	–0.046800 (9.95)	–0.041000 (9.78)	–0.025400 (6.39)
Age	0.006200 (0.38)	–0.014300 (1.30)	–0.023700 (2.22)
Health 1	0.472700 (5.50)	0.309600 (5.60)	0.308500 (6.43)
Health 2	0.347800 (3.42)	0.241300 (3.63)	0.214600 (3.54)
Wage rate	0.000328 (3.92)	0.000151 (7.11)	0.000307 (5.41)
Main income earner			
Self	0.414000 (5.98)	0.434800 (7.14)	0.180800 (3.42)
Husband	–0.024200 (0.33)	0.066700 (1.05)	–0.041600 (0.74)
Children	–0.182300 (2.19)	–0.010700 (0.17)	–0.117900 (2.34)
Constant	2.279400 (0.89)	1.283000 (0.67)	3.584100 (1.54)
Sample size	689	1,100	986
Pseudo adj r2	0.3426	0.2210	0.2050

(2) *Kokumin* Group

	Age Group	
	60–64	65–69
Pension value	–0.032000 (2.96)	–0.022700 (13.3)
Age	–0.033700 (3.30)	–0.006400 (4.52)
Health 1	0.412100 (9.94)	0.397200 (8.20)
Health 2	0.316900 (6.63)	0.220300 (4.76)
Wage rate	–0.000589 (2.14)	–0.000013 (8.26)
Main income earner		
Self	0.605400 (9.54)	0.599800 (5.93)
Husband	0.025200 (0.46)	–0.042800 (1.57)
Children	–0.064900 (1.18)	–0.007600 (2.32)
Constant	4.564600 (2.65)	1.225000 (1.93)
Sample size	1,500	2,540
Pseudo adj r2	0.2164	0.2135

Table 9 Work history and pension entitlement (1983 sample)

Age Group	% of Paid Employees at Age 55	Present Participation Rate		*Kosei* Entitlement		*Kosei*-Entitled Population
		Paid Employee at Age 55	Others at Age 55	Paid Employee at Age 55	Others at Age 55	
55–59	37.5%	62.6%	14.2%	16.1%	5.8%	9.6%
60–64	36.1	59.1	23.5	36.9	10.9	20.3
65–69	30.4	49.1	24.2	43.3	12.6	21.9

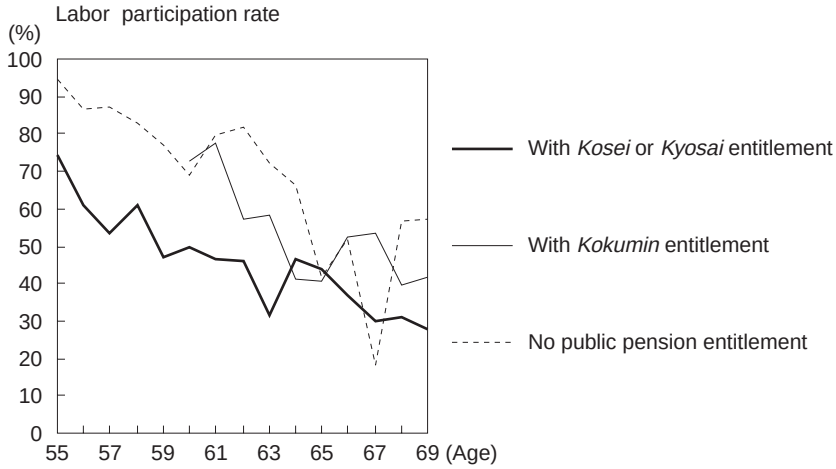
Age Group	*Kokumin* Entitlement				*Kokumin*-Entitled Population
	Others at Age 55	Paid Employee at Age 55			
			Kosei Entitlement	No *Kosei* Entitlement	
60–64	44.3%	28.1%	6.8%	26.3%	38.2%
65–69	71.0	57.5	31.8	68.9	66.9

This rather complicated picture shows that the *Kosei* entitled population was about half of the women who had paid work at age 55. Because private firms need not offer a *Kosei* pension benefit to part-time employees and workers employed on temporary basis, the remaining half did not have a *Kosei* entitlement, though they did some market work at firms. Seventy percent of them voluntarily participated in the flat tax *Kokumin* pension. On the other hand, about 10% of those who were not paid employees at age 55 nevertheless had a *Kosei* entitlement—perhaps the surviving wife's benefit. The average value of *Kokumin* pension receipts was around 20,000 yen for both nonworking females and working females, which was less than half of the full flat benefit.[8] They were much lower than *Kosei* receipts.

Figure 1 shows the relationship between labor participation and public pension entitlement of females who worked as paid employees at age 55. The labor participation rate is about 20% lower for the *Kosei* and *Kyosai* entitled groups than for the no-pension group. From age 60, the *Kokumin* benefit is available. Again, the labor participation rate is somewhat lower for the *Kokumin* entitled group than for those who have no pension.

When probit analysis of the labor participation choice was conducted for the limited sample (1983) of women with paid employment experience, as shown in

[8] The full benefit of the *Kokumin* pension is reduced when the years of enrollment are shorter than what they could have been, or when the individual starts early receipt of the benefit before the standard age of 65.



Note: *Kokumin* entitlement starts at age 60. The volatile labor participation rate of those with no public pension entitlement is due to the fact that the sample size decreased to 30 respondents after age 65.

Figure 1 Pension entitlement and the labor participation rate for women who were paid employees at age 55 (1983 sample)

Table 10, the discouragement effect of *Kosei* and *Kyosai* entitlement demonstrated an even higher magnitude—about 30%. The magnitude was twice the estimate for men (Seike [1989]).[9]

Though *Kokumin* provides full benefits from age 65, early benefits can begin at age 60, though at a penalty—the lifetime decline in the benefit can be as high as 42%. For the 1983 sample, the entitlement (including right to the early benefit) can be specified, whereas for the 1992 sample, only the actual receipt (but not the right) was obtained. Therefore, the meaning of "entitlement" differs for the two samples. The estimated results show that *Kokumin* dummy for ages 60–64 is insignificant for 1983 but significantly negative for 1992. The difference can be interpreted as the actual receipt but not the entitlement relates to retirement.

4.2. Analysis of Housewives and Informal Sector Participants

Now let us turn to the work behavior of nonpaid employees who are mostly housewives and some informal sector participants. In 1983 50% of nonpaid employees aged 60–64 and 70% of those aged 65–69 had a *Kokumin* entitlement.

[9] Seike estimated that the *Kosei* entitlement reduces the labor participation of men in the age group 60–64 by 15%.

Table 10 Empirical results of the labor supply of older women, by work history: Paid employees at age 55

	Age Group					
	55–59		60–64		65–69	
	1983	1992	1983	1992	1983	1992
Age	–0.02496 (4.288)	–0.018260 (4.088)	–0.02969 (2.980)	–0.020340 (2.068)	–0.01360 (1.170)	–0.028113 (2.269)
Health 1	0.33546 (8.346)	0.171190 (4.320)	0.45703 (8.897)	0.286499 (5.214)	0.41023 (8.261)	0.399772 (7.313)
Health 2	0.15752 (6.984)	0.054210 (2.206)	0.32116 (6.421)	0.164246 (3.045)	0.32414 (5.578)	0.193113 (3.076)
Wage rate	0.00011 (4.303)	0.000040 (2.645)	0.00014 (3.769)	0.000088 (3.021)	0.00019 (3.837)	0.000117 (3.531)
Kosei dummy	–0.30518 (11.39)	–0.269090 (9.174)	–0.28125 (9.131)	–0.363830 (12.21)	–0.16928 (4.696)	–0.132071 (3.325)
Kyosai dummy	–0.33339 (7.148)	–0.435800 (7.960)	–0.52539 (10.67)	–0.581300 (12.18)	–0.29082 (5.443)	–0.244898 (4.252)
Kokumin dummy			0.01270 (0.379)	–0.164900 (3.245)	0.04261 (1.162)	0.134895 (3.380)
Main income earner						
Self	0.21704 (7.233)	0.153616 (6.917)	0.48555 (9.906)	0.318204 (6.405)	0.30561 (5.119)	0.333747 (5.362)
Husband	0.02705 (0.912)	0.027122 (1.218)	0.18398 (3.554)	0.077299 (1.497)	0.02567 (0.411)	0.082219 (1.261)
Children	–0.08777 (2.135)	–0.065860 (1.682)	0.03067 (0.547)	0.028295 (0.450)	–0.13841 (2.355)	0.015788 (0.217)
Constant	6.17782 (3.823)	7.181990 (4.048)	3.44204 (2.149)	3.060404 (1.857)	0.94475 (0.464)	3.259780 (1.550)
Labor participation rate	0.8036	0.8678	0.5778	0.6119	0.40127	0.4430129
Sample size	1,970	1,914	1,587	1,546	1,099	1,009
Pseudo adj r2	0.2618	0.2323	0.2438	0.2105	0.1982	0.1592

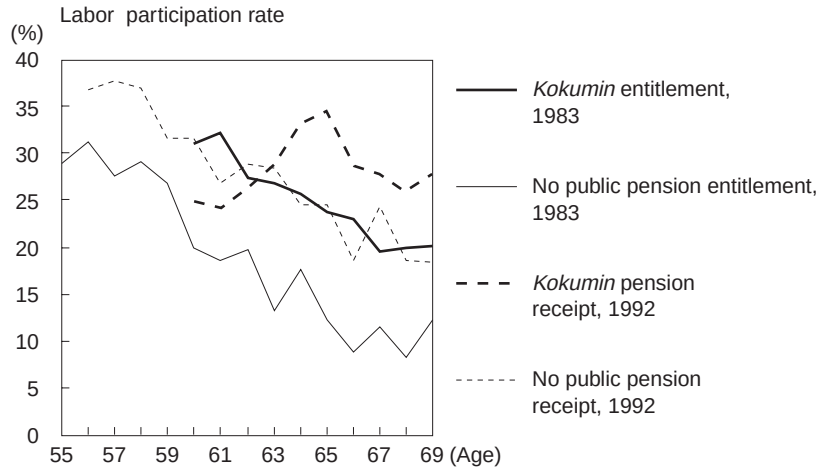


Figure 2 Pension entitlement and the labor participation rate for women who were paid employees at age 55

As depicted in Figure 2, the labor participation rate was higher for *Kokumin*-entitled groups than for "no public pension" groups. The latter must have contained more housewives and the former more self-employed and family workers. In Figure 2, I also added pension receipt and work behavior using 1992 data to compare the result with that of the 1983 sample. The average participation level for 1992 was higher than for 1983. Moreover, for *Kokumin* groups, the age-labor participation profile of the 1992 sample was inversely U-shaped, whereas the 1983 sample showed a monotonic decline. The difference is interesting. According to Figure 2, those receiving the *Kokumin* benefit before the standard age of 65 at the risk of a large reduction in total pension amount were those who retired early, compared with those who had the entitlement but waited until age 65. The causality direction between retirement and early pension receipt, however, needs more scrutiny.

4.3. Choices between Home Production, Leisure and Workforce Activities

For many women, housekeeping and nursing are important activities outside the workplace. Many case studies show that the older female spouse acts as the main force in the nursing of her aged husband. The bilateral choice model of work and leisure will not illustrate the actual choice of such female activities. Following the Granou (1977) model of choice between work, home production, and leisure, I conducted multilogit analyses of the market work, home production and leisure activity choices of older women. I divided leisure activities into active leisure

activities and passive leisure activities, since "resting"—which may well occur when one is in poor health—may be a distinctly different activity choice for the aged than engaging in hobbies or volunteer work. Wage rate, pension value, condition of health, age, household size, income of other family members, and nonlabor income were the explanatory variables. The results are shown in Table 11.

Section 2 of Table 11 shows the results for housewives and informal sector workers. An increase in the *pension value* reduced the labor supply and increased active leisure activities. The effect of pensions resembled that of *other family income*, but the estimated coefficient was larger. Good health increased

Table 11 Older women's choice of work, home production, and active and passive leisure activities

(1) Paid employees at age 55

	Mainly Paid Employment	Mainly Active Leisure Activities	Mainly Passive Leisure Activities
Wage rate	–0.00004 (0.890)	0.00019 (2.575)	0.00001 (0.099)
Pension value	–0.12177 (14.40)	0.00915 (0.429)	–0.02754 (1.879)
Health 1	1.75029 (9.477)	1.36004 (1.850)	–1.07535 (5.191)
Health 2	0.85083 (4.384)	0.47667 (0.603)	–1.02514 (4.477)
Age	–0.12202 (11.51)	0.00030 (0.008)	0.02262 (1.032)
Other income	–0.02405 (9.863)	–0.01778 (1.642)	–0.01080 (2.047)
Other family income	–0.02190 (2.361)	–0.05185 (0.783)	–0.00184 (0.151)
1 member household	0.43864 (2.982)	1.18712 (2.443)	0.00903 (0.031)
2 member household	–0.29958 (3.354)	0.03800 (0.099)	–0.68240 (3.406)
Constant	7.50778 (11.00)	–4.62947 (1.765)	–2.06919 (1.464)
Sample size	3,956		
Pseudo adj r2	0.16120		

(2) Not paid employees at age 55

	Mainly Paid Employment	Mainly Active Leisure Activities	Mainly Passive Leisure Activities
Wage rate	0.00008 (2.165)	0.00019 (2.528)	0.00001 (0.156)
Pension value	–0.04447 (4.347)	0.05450 (2.845)	0.01667 (1.339)
Health 1	1.69212 (10.74)	1.31412 (2.809)	–1.67553 (13.84)
Health 2	0.73941 (4.325)	0.65549 (1.296)	–1.46201 (10.84)
Age	–0.01592 (1.734)	0.02343 (0.880)	0.06408 (4.772)
Other income	–0.02847 (13.28)	0.01139 (1.989)	–0.00970 (3.202)
Other family income	–0.00030 (0.037)	0.02030 (1.910)	–0.01227 (0.781)
1 member household	0.16687 (1.136)	1.46390 (3.642)	–0.04148 (0.196)
2 member household	–0.68242 (8.324)	0.20606 (0.853)	–0.86567 (6.723)
Constant	–0.65296 (1.101)	–7.32122 (4.148)	–4.67767 (5.423)
Sample size	6,245		
Pseudo adj r2	0.09570		

Note: The base category is mainly homemaking. Active leisure activities include hobbies (pursued alone or in a group) and volunteer work. Passive leisure activities include all others.

Table 12 Simulation of main activities chosen when housewives' pension level is increased

Main Activities	Not Paid Employees at Age 55			Paid Employees at Age 55	
		Transfer to Housewives			
		40,000 yen	70,000 yen		
Home Production	73.9%	73.9%	73.6%	41.0%	46.5%
Paid Work	17.4	16.6	15.4	53.1	47.1
Active Leisure	1.6	1.8	2.3	1.3	1.6
Passive Leisure	7.0	7.7	8.7	4.6	4.8

Note: Predictions were made using the coefficient and variables in Table 11. The simulated result was the average predicted outcome of the population obtained by transferring other household income to the woman's pension, while keeping the household income and other variables the same.

work and active leisure activities, whereas aging increased passive leisure activities. Active leisure activities rose in single-member households, whereas home production activities rose in two-member households.

Section 1 of Table 11 shows the results for women with paid work experience. An increase in *pension value* discouraged the labor supply by a larger degree and increased homemaking activities, whereas an increase in *other family income* strongly increased homemaking activities—not leisure activities—for this group. Aging strongly encouraged retirement. An increase in the wage rate increased active leisure activities.

The results show that the choice between paid employment, home production, and leisure activities was substantially different between the two groups.

Table 12 depicts the simulated impact of transferring *other family income* to the wife's pension value, in order to estimate the eventual outcome of the 1985 Reform. I made two simulations: the transfer of 40,000 yen and the transfer of 70,000 yen, the latter a little over the present full benefit of *Kokumin*. For housewives, the eventual outcome is small—but they will marginally increase leisure activities and reduce market work. The 40,000 yen transfer is also simulated for paid workers on the assumption that the woman remained a housewife for two-thirds of her mandatory pension enrollment years. Because paid employment is more reactive to pensions, the simulated effect is larger. The mainly employed portion was simulated to be reduced by 6% with an increase in the mainly homemaking portion.

5. Conclusion

This study has traced the activity choices of older Japanese women using the 1983 and 1992 sample of females aged 55–69. The family picture of the older

population rapidly changed during the nine-year period: two-member households increased, extended families decreased, and households' average pension receipt increased. The basic factors affecting the female labor choice, however, did not change; many women worked as supplementary labor and not as the core labor of the household. The labor participation rate of females in the 55–59 age group rose in 1992 more than what is explicable by the change in the real wage rate, health, and pension levels.

The estimation shows that the females' work choice greatly differed according to household size. The explanatory power of the usual labor choice model improved in one-member households, compared with larger households where more demand exists for home production activities. In labor supply estimations of paid employee pension groups and *Kokumin* (basic) pension group, entitlement to the earnings-related pension strongly encouraged retirement. The effect was even more significant when the sample was limited to those who had paid work experience at age 55, then the dominant mandatory retirement age: the entitlement reduced labor supply by about 30%, which was much higher than rates given in previous empirical studies of males. In light of these estimates, the institutional change raising the eligibility age of pensions, now in place, and another reduction planned in the *Kosei* pension level from the year 2006 can be interpreted as encouraging a female labor supply.

Not inadequate labor opportunities, as in the case of men, but homemaking opportunities may be the cause of the strong retirement effect evident for paid female employees. The average income of other household members was much lower in the case of women who replied that they had paid work at age 55: 279,000 yen, compared with 371,000 yen for women with no paid work experience in the age group 55–59. The *Social Life Basic Survey* and other Japanese time studies show that working wives carry most of the housekeeping burden, which reduces their leisure time, whereas the male share of housekeeping work in the double-income family generally did not increase. Such household keeping burden may strongly encourage the retirement of females once the pension entitlement is obtained. Another possibility is that women target their work years to obtain the pension entitlement. The *Social Security Agency Annual Report* points out that two peaks in *Kosei* enrollment years are evident: 15 and 20, both of which are the minimum requirement years (Social Security Agency [1997], 34). The percentage is much higher for women, as the enrollment years under 20 consist of 55% of females vis-à-vis 13% of males who acquire an old-age *Kosei* pension.

For women without workforce experience, the entitlement or pension value has a smaller effect on their labor supply decision. However, the transfer of husbands' entitled income to their own pension—the 1985 Reform—was estimated to have a

marginal effect in increasing their leisure activities.

Although this study has focused on the pension receipt and labor supply of older females, the pension scheme also has a large influence on the labor supply of middle-aged women. One-third of married women now work as part-time employees, and the proportion is increasing. Because they are exempted from the social security tax as dependent wives when their annual income is less then 1,300,000 yen, many of them adjust their working time to control their yearly income within this boundary. In this way the labor supply of two-thirds of these part-time workers who do not participate in the *Kosei* pension plan is strongly influenced by the pension rules (Abe and Ohtake [1997]). The public pension scheme for part-time workers and dependent wives thus has a strong influence on the labor supply of females and perhaps even on family formation. With the increasing divergence of family life, such as the rise in single women, couples without children, and working married women, more empirical study of the effects of the pension scheme on females is required.

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