DO THE JAPANESE ELDERLY REDUCE THEIR TOTAL WEALTH?

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ABSTRACT

Using previously unanalyzed Japanese household data, this paper shows that the Japanese elderly's age-wealth profile is flat; the elderly are not dissaving. Part of the reason for the lack of dissaving appears to be the bequest motive, if it can be assumed that the intensity of the bequest motive is stronger if one has more surviving children.

The conclusion that the Japanese elderly are not dissaving is based on estimates of the age-wealth profile from a sample of the independent elderly-- those elderly who choose not to live with their children or other younger relatives. I perform a test of sample-selectivity bias and show that the age-wealth relation estimated from only the sample of the independent elderly is an unbiased estimate for all of the elderly.

In performing this test of sample-selectivity bias, I find that self-employment and rural residential status increases the probability of the elderly's forming an intergenerational household. There is, however, no evidence of intensified competition among a larger number of children to adopt the parents, contradicting the hypothesis of Bernheim, Shleiffer, and Summers (1985).

1. Introduction

The main purpose of this paper is to estimate the shape of the average Japanese elderly's age-wealth profile. Specifically, my paper examines whether the Japanese elderly are on average reducing their total wealth or keeping their total wealth intact, where total wealth is defined as the sum of financial wealth and wealth in real estate. The paper represents a possible improvement over earlier research in the following two ways. First, my estimates are conducted on previously unanalyzed household level cross-section data containing information on the elderly Japanese couple, including the couple's wealth holdings, social security benefits, earnings, and other demographic features. Earlier research have used either tabulated data (Kanamori, 1961) or household level data without specific information on the elderly couple (Ando, 1985). Since many of the Japanese elderly live with younger families, such data usually cannot distinguish between wealth belonging to the younger family and wealth belonging to only the elderly couple.[1] Second, jointly with the elderly's age-wealth relation, I estimate by full-information maximum likelihood, the Japanese elderly's

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[1]According to the 1980 Population Census of Japan, 56.7 percent of those over 65 lived with a younger household. Of the elderly living in intergenerational households, 93.7 percent were living with their married children. That is, in Japan, 53.1 percent (56.7*93.1) of the entire population of the over 65 live with their grown, married children. This is compared to 14 percent of the over 65 living with their children in the United States as of 1980.

decision to join a younger family, to form an intergenerational household. The FIML procedure enables the estimates of the age-wealth equation to be corrected for sample-selectivity, and also allows the testing of certain hypotheses concerning the Japanese elderly's choice of living arrangement.

Why is it important to assess the shape of the Japanese elderly's age-wealth profile? By the early part of the next century, 21.3 percent of the Japanese population will be over the age of 65. Among Western industrialized countries, Japan will have the highest proportion of the aged. If the elderly on average reduce their wealth, then as the population ages, aggregate household saving should greatly fall. However, if the Japanese elderly are on average holding their wealth intact, then the rapid population aging should not by itself decrease the aggregate household saving rate by much.[2]

The principal finding of this paper is that the average Japanese elderly's age-wealth profile is flat; the elderly are not dissaving. Part of the reason for the lack of dissaving appears to be the bequest motive, if it can be

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[2]The above argument is still "static" because bequests the elderly will ultimately leave will affect the saving of the currently young. The currently young may save less today in anticipation of the inheritance that they will receive later in life. Intuitively, this fall in the saving of the young may seem to offset the increase in saving of the old. However, if the young are smoothing out their consumption, the rise in current consumption in anticipation of the future windfall should not be substantial.

assumed that the intensity of the bequest motive is stronger if one has more surviving children.

This paper proceeds as follows.

Section 2 develops the model, and specifies the elderly's age-wealth and living arrangement choice equations that are to be jointly estimated in Section 4. Section 2 also proposes a test to explore the nature of the bequest motive for the Japanese elderly.

Section 3 briefly describes the data that serve as the basis for my estimations. Finally, Section 4 depicts and analyzes the results.

2. Specification of Equations

2.1 Specification of the Japanese elderly's age-wealth equation

Following Mirer (1979), King and Dicks-Mireaux(1982), Menchik and David (1985), Ando (1985), Hubbard (1986), and Hurd (1987), I estimate a linearized version of the elderly's age-wealth profile. To test whether the elderly reduce their total wealth, it is sufficient to see whether total wealth declines as the elderly household head moves into progressively higher age brackets, other factors suitably held constant. The equation to be estimated is the following:

$$W(t)/LTW = a_1 + b_1 AGE1 + c_1 AGE2 + d_1 SSW(t)/LTW + e_1 LCITY + f_1 MCITY + g_1 SELF + u_1 \quad (1)$$

where

W(t): total tangible wealth of the elderly couple when the head is aged t, the sum of financial assets and real estate assets.

SSW(t): social security wealth of the elderly couple, the present value of social security benefits discounted to the present age of the head.

LTW: lifetime wealth, the present value of the couple's inheritance, after-tax earnings, and social security benefits discounted to age 20 of the head.

AGE1: dummy variable that takes on a value of one if the head is aged 65-69 and otherwise zero.

AGE2: dummy variable that takes on a value of one if the head is aged 70-74 and otherwise zero.

LCITY,MCITY: dummy variables that take on values of one if the elderly couple lives in a large or medium-sized city.

SELF: a dummy variable that is one if the head is self-employed.

a_1, b_1, c_1, d_1, e_1, f_1, g_1 are parameters to be estimated, u_1 is a normally distributed random variable with mean 0 and variance sigma-squared. The excluded category for the age dummy variables is when the head is aged 60-64. The excluded category for the city-size dummies is when the elderly couple lives in a rural area. If social security wealth is perfectly substitutable for total wealth, then d_1 should equal negative one (Feldstein, 1974). It is assumed that the disturbance term, u_1 arises out of omitted variables and approximation error uncorrelated with the regressors.[1]

The estimation of Eq. (1) should be interpreted as performing an analysis of covariance with three (age)

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[1]The specification of Eq. (1) may seem ad hoc, since it is not precisely derived from lifetime utility maximization. If the objective of the research is to estimate the parameters of the underlying lifetime utility function and budget constraint. then the specification of Eq. (1) is unsatisfactory. The coefficient estimates of Eq. (1) will be some highly non-linear combination of the preference parameters, life-expectancies, and the after-tax real interest rate, and recovery of these structural parameters will be difficult. However, if the objective of the research is to simply observe if the elderly are dissaving, then it is not necessary to estimate the underlying parameters. Assuming that the after-tax real interest rate, life expectancies, and underlying preference parameters are time-stationary, the coefficient estimates of Eq. (1) will be consistent in the future. The age-wealth profile estimated for today's elderly can be applied to the elderly of tomorrow.

categories without interactions.[2] The null hypothesis is that as the age cohort of the head increases, there is no dissaving from total wealth. That is,

$$H(0): b_1 = c_1 = 0,$$

and the alternative hypothesis is that dissaving occurs,

$$H(1): \ b_1 \text{ less than } 0 \text{ or } c_1 \text{ less than } 0.$$

The specification of Eq. (1) helps solve the "cohort bias" arising from using cross-section age-wealth profiles to approximate longitudinal age-wealth profiles. To test for the hypothesis of no old age dissaving, we need to observe longitudinal changes in a person's wealth. Saving is W(t)-W(t-1) where both W(t) and W(t-1) refer to the wealth holdings of the same individual. Observing people of different ages in a cross-section is not the same as following an individual over time. On average, because of technical progress and capital accumulation, the older members of a cross-section will have worked during periods of lower real wages. Hence, everything else including education being equal, the older persons can be expected to hold less

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[2] Hurd (1987) performs a similar ANOCOVA by testing how flow financial saving varies among different age groups, and finds evidence that the elderly dissave from financial wealth. He does not report results for what the elderly do to their total wealth, which includes real estate holdings.

wealth. For cross-section profiles to approximate longitudinal profiles, some adjustment for interpersonal differences in lifetime wealth is needed. Equation (1) performs this adjustment by dividing the elderly couple's W(t) and SSW(t) by the couple's lifetime wealth. The footnote below explains why this adjustment is appropriate when both annual consumption and bequests are proportional to lifetime wealth.[3]

The city-size dummies, LCITY, MCITY are included to capture cost of living differences among the regions. In regions where the cost of living is high, the elderly would need to hold more wealth to finance their old age consumption.

The dummy SELF is added to distinguish the self-

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[3]If an additively-separable Constant Elasticity of Substitution lifetime utility function is maximized subject to the lifetime wealth constraint, the optimal levels of annual consumption and bequests will be proportional to lifetime wealth. Since optimal total wealth at each age including the present value of future earnings and social security receipts is a linear combination of desired future consumption and bequests, optimal total wealth holdings will also be proportional to lifetime wealth, where the constant of proportionality is some complicated function of age. For the elderly, the present value of future earnings is of secondary importance. Therefore, the <u>ratio</u> of total wealth to lifetime wealth is equal to the sum of the constant of proportionality and the ratio of social security wealth to lifetime wealth. Holding the ratio of social security wealth to lifetime wealth constant, the total wealth/lifetime wealth ratio changes only when the constant of proportionality changes; the constant of proportionality changes when the household head ages. Hence, the current wealth/lifetime wealth profile depends only on age.

employed elderly from the elderly who are employed or retired. The retired elderly are assumed to have been workers before they faced retirement. As explained in Section 3, LTW is approximated using tabulated data called the Basic Survey on the Wage Structure, (Chingin Kozo Kihon Chosa). The survey covers only worker households, and the LTW calculated for workers is simply imputed to the self-employed. If the LTW of the elderly self-employed is systematically underapproximated by this imputation procedure, then it is necessary to distinguish the self-employed elderly from the other elderly, at least by an intercept shift in the measured level of the life-cycle W(t)/LTW ratio.

2.2 Specification of the elderly's living arrangement equation

In Section 4, Eq. (1) is estimated first for the entire sample of couples over 60. In Japan, there are two types of elderly households; the intergenerational and the independent. For the elderly who choose to form an intergenerational household, the age-wealth profile observed in the data may not reflect their "true" saving behavior. When Japanese parents join a younger family, the parents bring with them, their assets. According to Japanese social convention, once the parents join, they will bequeath almost their entire net assets to the child or to another younger generation member who takes care of them.[4]

When the parents live with the younger household, they will often impose substantial costs on the younger family, costs such as increased food spending, expenses for gas, electricity, medicine, and nursing care. These imposed costs should be counted as part of the parents' consumption, decreasing the parents' wealth holdings. If these imposed costs are not added to the consumption of the elderly living in intergenerational households, the resulting "net wealth measurement bias" will mean that there is less of a chance that the null hypothesis of no dissaving will be rejected. Restricting the sample to the independent elderly, however, will lead to sample selection bias, if the independent elderly are not a random sample of the entire elderly population. The coefficients of the wealth equation estimated from only the sample of the independent elderly may then not be applicable to the entire population of the elderly.

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[4]In the 1979 Prime Minister's Office's Opinion Survey on Inheritance, 78.3 percent of the elderly said that they will leave all of their bequest to the child who took care of them. Only 12.1 percent said that their bequest should be eqully divided among their children. By Japanese Civil Law, the elderly cannot give their entire net bequest to any one child. Half of the estate must be equally divided among the heirs. However, the intergenerational elderly still has control over who receives the bulk of the bequest. Suppose the aged individual has three children. He can legally give any one child up to 67 percent of the entire estate (.50 + .333*.50). In practice, most young families who look after the aged receive a higher fraction of the inheritance, since there is rarely litigation over the division of the estate.

The standard procedure to correct for this form of selection bias would be to posit a self-selection equation and estimate the self-selection equation and Eq. (1) jointly by maximum likelihood (Heckman, 1979, Maddala, 1983). The result will give us unbiased estimates of the coefficients and of their standard errors.

The self-selection equation is given below:

$$V(ind) - V(dep) = a_2 + b_2LTW + c_2PDVO + d_2SSK + e_2SELF + f_2LCITY + g_2MCITY + h_2OCHIL + k_2MCHIL - u_2 \quad (2)$$

NINTER= 1 if and only if V(ind) - V(dep) greater than zero.

where a_2, b_2, c_2, d_2, e_2, f_2, g_2, h_2, and k_2 are parameters to be estimated. For theoretical tractability, it is assumed that all parents join the younger household when the head reaches the age of 60 , if they are ever to join.[5] Thus, V(ind) and V(dep) are latent variables describing the rest-

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[5]Since I only have cross-section data, the proper interpretation of the age-wealth profile becomes difficult if parents can join at different ages. For example, the wealth level of a 65 year old who plans to join next year is different from last year's wealth level of today's independent 66 year old. Previous empirical studies of the U.S. elderly suggest that age does not affect the probability of forming an intergenerational household once the head is past 60 (Swartz, Danzinger, and Smolensky, 1984, Ando and Kennickell, 1986). Also, exploratory probits on my working sample of the elderly have led to insignificant coefficients on "Age" when it is included as an explanatory variable.

of-life indirect utilities at age 60 of living independently and living in an intergenerational household. NINTER is a dummy indicator variable that becomes one if V(ind) is greater than V(dep), and u_2, the error term, includes the unobservables. That is, NINTER becomes one only if the elderly couple is independent.[6]

The difference in indirect utilities between living alone and living in an intergenerational household is assumed to depend on the following explanatory variables: lifetime wealth of the couple (LTW), post-mandantory retirement (post-age 60) after-tax earnings (PDVO), the present discounted value of social security benefits from when the head is aged 60 to when his spouse dies (SSK), dummy variables representing the size of the city in which the elderly couple resides (LCITY, MCITY), and dummy variables that take on values of one if the elderly head is self-

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[6]NINTER becomes one only if the elderly decide to form an intergenerational household and also if at least one younger family opts to live with the parents. The outcome of NINTER= 1 is a result of two separate decisons, one by the elderly and another by the younger families. Ideally, the Japanese elderly's living arrangement choice should be modelled as two separate structural equations, incorporating the decisions of the elderly and of the younger families. Unfortunately in my data, little information on the characteristics of the children and other younger relatives is available to separately identify the two equations. Given the absence of identifying restrictions, Eq. (2) should be interpreted as a reduced form for the Japanese elderly's living arrangement. In the ensuing discussion in the text, it is implicit that Eq. (1) is a reduced form, since exogenous variables like LCITY and MCITY are assumed to affect the choices of both the elderly and the younger families.

employed (SELF), if the elderly couple has exactly one child (OCHIL), and if the elderly couple has more than one child (MCHIL). The rationale for the inclusion of these variables is given below.

Swartz, Danzinger, and Smolensky (1984) suggest that unconstrained by income, the elderly will prefer to be independent. The state of "living in an intergenerational family" is an inferior good. A rise in earnings, social security benefits, and wealth would imply that the elderly are more likely to realize their goal of maintaining independent households. In my model, the elderly make the decision to join at age 60. The elderly couple's economic position when the head is aged 60 is summarized by the sum of their total tangible wealth, the present value of their future earnings, and the present value of their social security receipts, i.e. A(60)+PDVO+SSK. For the elderly currently over 60, total tangible wealth when they were actually aged 60 is unobservable. It is plausible to assume, however, that holding PDVO and SSK constant, a change in W(60) will be proportional to a change in LTW.[7] LTW is therefore included as an instrument for W(60). If living

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[7]It was argued in an earlier footnote that if both desired consumption and bequests are proportional to lifetime wealth, then optimal total wealth holdings will also be proportional to lifetime wealth, where the constant of proportionality is a complicated function of age. For people of the same age, the constant of proportionality will be identical.

alone is preferred to joining, then a rise in PDVO, SSK, or LTW should raise the probability of maintaining an independent household, and the coefficients of these variables in Eq. (2) should be positive.

The locational variables, LCITY and MCITY are included because they may affect how the younger family treates the parents once the parents decide to live with the younger family. We would expect that in isolated rural areas where traditional social mores persist, the parents will be offered a better deal upon joining. In Japanese rural areas, there are often heavy pressures imposed on the younger family to take care of the parents.[8]

The dummy variable SELF is included since the self-employed may have additional reasons for living with the younger generation. The coefficient on SELF should be negative, since it is not unusual for children or nieces and nephews who live with the self-employed elderly to assist in the operation of the family farm or the family business without remuneration. Such assistance, of great value to the self-employed elderly, is usually not available to those who are company employees or who are retired.

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[8]Fukutake (1981, pp.34-43), Vogel (1967) among others claim that a strong ie ethos still prevails in rural areas where the son, whether the oldest or not, inherits the home and the family name. When the family has only daughters, then one of the daughters will marry and make her husband adopt her last name. The objective is to keep the family name from disappearing. Fukutake says that in urban areas, the ie tradition started to crumble even before the Second World War.

It is possible that even in the absence of surviving children, the elderly may live with a member of the younger generation. The elderly, however, may be more reluctant to live with nieces and nephews than with their own children. If OCHIL decreases the probability that the elderly will be independent, then the Japanese aged are more likely to form an intergenerational household with their children than with other younger relatives.

Also, Bernheim, Shleiffer, and Summers (1985) have argued that parents have more leverage over a given child if the parents have more than one child. If the parents have only one child, then the only child can almost be certain that no matter how poorly he treats his parents, he will be able to receive his parents' bequest. His parents have only one credible beneficiary, the only child. However, if the parents have several children, the children will compete with each other for the favor of the parents in order to receive the bulk of the estate. An implication of the above hypothesis is that MCHIL should have a stronger negative impact than OCHIL on the elderly's choice of independence.

In my estimation, NINTER= 0 only if the parents are living with a married child or with another younger family. To include those living with unmarried children may create a problem because unmarried children are usually still dependents. In my working sample of the 335 elderly, 115 live with married children and 97 live with unmarried children. The elderly are counted as living with a younger household only if the head of the younger household is reported as being the head of the entire intergenerational family.

The unobservable variables may include subjective elderly couple-specific variables such as the psychological compatibility between the elderly couple and the younger families. Since some of the unobservables in Eq. (1) and Eq. (2) are likely to be the same, u_1 and u_2 are possibly correlated. Unless corrected, this correlation will lead to biased coefficient estimates of Eq. (1) if the equation is estimated on only the sub-sample of the independent elderly. By estimating Eq. (1) jointly with Eq. (2) by maximum likelihood methods, we can obtain consistent and efficient estimates of the coefficients and of the coefficient standard errors.[9] It is assumed that u_1 and u_2 are bivariately normally distributed. The algorithm used to obtain the maximum of the likelihood function is that of the Davidson-

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[9]The likelihood function to be maximized is given below. For notational convenience, let NI= NINTER, X and B be the exogenous variables and parameters of Eq. (1) and Z and D be the exogenous variables and parameters of Eq. (2). u_1 and u_2 are the error terms. NI(j) = 1 if the jth household is independent. The likelihood function is given by:

$$L= \prod_{j=1}^{335} \{f(u_1)\int_{-\infty}^{Z'D} f(u_1|u_2)du_2\}^{NI(j)} *\{1-F(Z'D)\}^{1-NI(j)}$$

where $f(u_1)$ is the unconditional normal density function for u_1, $f(u_1|u_2)$ is the conditional normal density of u_1 given u_2, and $F(Z'D)$ is the unit normal distribution evaluated at $Z'D$. Because only the sign of NI(j) is observed, the standard deviation of u_2 is normalized to equal unity.

Fletcher-Powell.

2.3 Specification for a test of the bequest motive

The shape of the age-wealth profile may not be informative about the strength of the bequest motive. As noted by Davies (1981), Hubbard (1986), and Hurd (1987), the elderly may not reduce their wealth if they fear unexpected emergencies or living an unexpectedly long life. The precautionary motive for saving against medical emergencies seems to be prevalent among the Japanese aged. A 1983 Bank of Japan household survey reported that 82 percent of people over the age of 60 reply that they save as a precaution against high future medical expenses.

It is reasonable to assume that the intensity of bequests is some positive function of the number of children, NCHIL.[10] An increase in the number of children should increase wealth held at each age, other things equal. Of course, children are not costless. Childrearing imposes a resource cost on parents which may be substantial, including expenses such as education. While these resource costs of children will tend to lower parent wealth holdings, the bequest effect will tend to raise wealth.

To explore the nature of the bequest motive, the number

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[10] It is a common practice in the empirical public finance literature to use the number of children as an instrument for the intensity of the bequest motive. See Blinder, Gordon, and Wise (1983), Tomes (1981), Hurd(1986).

of children who are still alive, NCHIL, is added to Eq. (1) in several estimations. If the bequest effect dominates the resource cost effect, then we would expect the coefficient on NCHIL to be positive and statistically significant for the independent elderly. As mentioned, for the intergenerational elderly, the bulk of the bequest will go to the younger family who takes care of the elderly couple. For the intergenerational elderly, total bequests should not be a monotonically increasing function of the number of children. If NCHIL increases wealth holdings for the independent elderly population, then the bequest motive exists.[11]

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[11]The above test of a bequest motive is valid only if the number of children, fertility, can be treated as exogenous. To test for exogeneity, I use the procedure recommended by Hausman (1978) on the sample of the independent elderly. Specifically, I first run ordinary least squares on Eq. (1) plus NCHIL. Next my estimates are based on a two-stage least squares procedure where the first stage is a regression of the variable hypothesized to be endogenous, NCHIL, on the instruments. The instruments are the exogenous regressors of Eq. (1), and another variable thought to influence completed fertility, the education level of the wife. Under the null hypothesis of exogeneity of NCHIL, ordinary least squares is consistent and efficient. Two-stage least squares is consistent for both the null and the alternative hypotheses, where NCHIL is endogenous and adequately identified by the wife's education. Using OLS and 2SLS parameter and variance-covariance matrix estimates, I calculate the Hausman F statistic which is asymptotically distributed Chi-squared with four degrees of freedom. The value of the Chi-squared statistic is only .543 so the null hypothesis cannot be rejected at the ten percent level. Consequently in my estimation of Eq. (1), the number of children is treated as an exogenous regressor.

3. Description of the Data and Construction of the Variables

3.1 Description of the Data

The household survey is called the Survey on the Living Behavior of the Aged (Rojin Ishiki Chosa, LBC data for short) and was conducted in October 1983 by Tokyo University's Sociology Department on behalf of the Japanese Ministry of Posts and Telecommunications. To my knowledge, this survey has never been previously used in analyzing Japanese household saving.

Since my objective is to study the wealth accumulation behavior of the elderly, the sample is restricted to those over the age of 60.[1] Of the 737 people aged between 60-74,

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[1]There are two reasons for not starting my working sample at, say age 55. First in Japan, there is a system of mandantory retirement from the primary job, usually between the ages of 55 and 60. At the time of retirement, a large lump-sum payment is made to the retiree, and in 1983, these payments were 1.75 times the average Japanese household pre-tax income. The problem is that for the 55-60 age group, some people will have received the lump-sum payments, others will not have. For a person who has still not retired, reported total wealth will be a downward biased measure of the person's true net worth.

Second, some people under 60 may have large outstanding liabilities such as outstanding housing loans. These large liabilities are a result of the very high cost of housing in Japan. It is customary that these loans are paid off in full with the lump-sum retirement pension. The LBC data unfortunately do not provide information on outstanding liabilities. The total wealth reported in the survey is assumed to approximately measure net wealth, and this approximation should be improved by restricting the sample to persons over 60.

The non-reporting of liabilities, however, should not seriously bias reported total wealth for those over 60. The 1984 National Survey of Family Income and Expenditure

507 reported both their financial and real wealth holdings. I assume that non-reporting is randomly distributed in the population.

The 507 observations are further sub-divided by deleting 37 corporate executives, 115 widows, 18 couples with the wife older than the husband or with the husband more than 11 years older than the wife, and 2 households in which the head earns over 15 million yen and is "retired" or self-employed.[2] With the above criteria to define the working

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(Zenkoku Shihi Jitai Chosa) classifies liabilites by age and income groups. The survey shows a 63 percent decline in outstanding liabilities from the 50-59 age group to the 60-69 age group. For all income brackets in the 60-69 age group, liabilities are less than 10 percent of gross financial wealth. Liabilities must therefore be a much smaller fraction of total wealth, which includes equity in housing. The ratio of liabilities to gross financial wealth also remains fairly constant across age groups; it tends to remain stable across the 60-64, 65-69, and 70 and over groups. Because of the small magnitudes of outstanding liabilities for the Japanese elderly, I treat the non-reporting of liabilities as an error in measurement of the dependent variable, total tangible wealth. The ratio of the error, non-reported liabilities, to lifetime wealth is assumed to be independently and normally distributed across elderly couples. The non-reporting error can therefore be subsumed in the general error term, u_1 in Eq. (1).

[2]Corporate executives are deleted because they are more likely to own private side-businesses, the value of which is not adequately captured in the wealth variable of the LBC survey. Widows are deleted, because we cannot know the deceased husband's birthdate or other characteristics needed to calculate lifetime wealth and index the husband's birth cohort.

Since an underlying assumption of Eq. (1) is that the difference in age between the wife and the husband is similar for all couples in the cross-section, including couples with the husband much older than the wife or with the wife older than the husband will violate the assumption. Finally, high income retired or self-employed households probably own sample, I am left with 335 couples with the head aged between 60 and 74.

Next I will describe how the variables used in the estimation are constructed. The reader interested in only the econometric results can skip to Section 4.

3.2 Construction of the Variables

SSW(t), LTW, PDVO and SSK are simulated variables or variables not observed in the LBC, but constructed from the LBC and other sources. For consistency with the values reported in the 1983 LBC survey, all simulated variables are in real 1983 yen. The Consumer Price Index was used to deflate the nominal magnitudes. In the construction of some of the simulated variables, annual real income flows had to be discounted or capitalized at a real rate of return. Following Hayashi (1986) and Ando (1985), I use a constant real rate of interest of four percent.

It is assumed that the husband starts work at age 20 and faces mandantory retirement from the primary job at age 60 or age M, although he may continue to work in another job after age 60.[3] Also, the elderly couple is assumed to "exist" until the last remaining spouse, usually the wife, dies. Hence, the upper value of all the summations is age T, the age the husband would have been had he lived until the time of death of his wife. For example, if the husband is 5 years older than the wife, and the wife is expected to die at age 78, T would be 83, though he might have expected to live only to age 76.

3.2.1 Present value of social security benefits, SSW(t)

The expression for social security wealth is given by,

$$SSW(t)=\sum_{i=t}^{T} ss(i)/(1+r)^{i-t}$$

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substantial income generating business assets in addition to what is declared in the LBC survey.

[3] In Japan, there is widespread practice of forced retirement from the primary job. The practice usually applies to all non-executives in a company. Traditionally the age of mandantory retirement has been 55, but now the age has moved closer to 60.

where ss(i) is the sum of social benefits for the husband and for the wife. The summation starts from M, which is the age of mandantory retirement in Japan.

A distinctive feature of my calculation of social security wealth for people over 65 is that actual observations of social security receipts are used. Previous work, Kotlikoff (1979), King and Dicks-Mireaux (1982), and Ando (1985) calculate social security wealth indirectly assuming actuarial fairness. Noguchi (1983) and Takayama (1981) argue that for current Japanese beneficiaries, the assumption of actuarial fairness is invalid, since the present value of benefits exceeds the present value of contributions.

Two major schemes comprise the Japanese social security system, the Employees' Pension (Kosei Nenkin) and the Citizen's Annuity Program (Kokumin Nenkin).[4] Men can belong to either the Employees' Pension or to the Citizens' Annuity Program, but I assume that all housewives belong to the Citizen's Annuity Program.

For men and women over 65, the survey reports annual social security benefits. The present discounted value of social security benefits of an individual is simply the discounted sum of yearly benefits from his age at the time of the survey until his expected age of death.[5] Future yearly benefits are assumed to remain at the 1983 level in real value.

Citizen's annuity benefits are not received prior to age 65. For recipients of the Employees' Pension who are under 65, an earnings test applies. For example, if a person earns between 45 and 92 thousand yen a month, monthly benefits are reduced by 20 percent. If he earns over 150 thousand yen, monthly benefits are completely cut. To impute annual Employees' Pension benefits to people under 65, it is assumed that people who are working at age t less than 65 will continue to work at the same level of earnings until age 65. Therefore, a person's Employees' Pension benefits remain at the partial level until he reaches 65 at which time his benefits jump to the full level. The full level is determined by dividing the partially received amount by 1-k

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[4]There is another scheme that covers only employees of public institutions. The role of the Kyosai Nenkin is relatively minor, since people enrolled in the program are few compared to the enrollees in the two major schemes.

[5]The expected ages of death for the wife and the husband are taken from the 1980 Japanese Acturarial Life Tables.

where k is the fraction by which benefits are reduced for pre-age 65 people.

For people under 65 and earning more than 150 thousand yen a month, social security benefits are completely eliminated. Social security wealth consists of only benefits to be received after reaching the age of 65. What these people will receive upon reaching the age of 65 is unobserved. Benefits from the Employees' Pension depend on a term in the statutory benefits formula called the "average monthly regular earnings" (hyojun hoshu getsugaku). Average monthly earnings during a person's career are highly related to the person's education. Annual benefits to be received past the age of 65 are imputed in the following way. As a group for men currently aged 65, 66, and 67, and receiving the full amount of Employees' Pension benefits, average yearly pension benefits by education level are calculated from the LBC data. These yearly benefits are what a person under 65 and earning over 150 thousand yen today can expect to receive upon reaching 65. For example, a person with a high school education will form an expectation of future pension benefits by observing the pension receipts of current 65, 66, and 67 year olds similar to himself. The calculated average Employees' Pension benefits of 65, 66, and 67 year olds are then simply imputed to those under 65 in identical education groups, under the assumption that the real level of 1983 benefits will be maintained in the future.

For housewives and men enrolled in the Citizen's Annuity program, benefits to be received when they reach the age of 65 are approximated in the same way as that for men under 65 enrolled in the Employees' Pension program. The magnitude of Citizens' Annuity benefits is determined not by the lifetime average level of earnings, but by the number of quarters a person has contributed into the system. Education is not an instrument for the average lifetime wage, but for the number of periods a person has contributed. A housewife with more education, for example, may be more conscientious about making payments on her Citizens' Annuity plan.

3.2.2 Lifetime Wealth, LTW

The expression for lifetime wealth is given by,

$$LTW = I + \underbrace{\sum_{i=20}^{M} y(i)/(1+r)^{i-20}}_{LTE} + \underbrace{\sum_{i=M}^{T} y(i)/(1+r)^{i-20}}_{PDVO*} + \underbrace{\sum_{i=M}^{T} ss(i)/(1+r)^{i-20}}_{SSK*}$$

For the Japanese elderly, it is assumed that inheritances, I, are equal to zero. This is reasonable, given that people who are elderly in 1983 probably received their inheritances before World War II and the rapid postwar inflation between 1956 and 1959.

There are two parts to the present discounted value of income: after- tax earnings before the age of mandantory retirement and after-tax income after forced retirement. The latter is the sum of PDVO* and SSK*.[6] Because it is assumed that people face mandantory retirement at age 60, PDVO* and SSK* can be estimated from my LBC working sample.[7] LTE must be approximated from other sources.

Using published tabulated data, LTE is approximated by running repeated cross-section regressions from 1929 to 1982. The data, called the Basic Survey on the Wage Structure, is published by the Ministry of Labor.[8] Earnings are assumed to be determined by the employees' age and education level. The squared form of age is also included to account for the quadratic nature of the age-earnings profile.

The actual estimations of the functions are based on five-year intervals in age, i.e. 22, 27, 32, 37, etc. From the estimated earnings function, I can obtain predicted earnings in a given year for every age and education class from 1929 to 1982. Since these predicted earnings are available for each year, it is feasible to continuously estimate predicted earnings for a particular birth cohort of

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[6]PDVO* and SSK* here are asterisked to distinguish them from PDVO and SSK appearing in equation 2 of Section 2. PDVO and SSK are discounted to age 60 of the head, while PDVO* and SSK* are discounted to age 20 of the head. That is, PDVO= $(1+r)^{40}$ PDVO* and SSK= $(1+r)^{40}$ SSK*.

[7]Both LTE and PDVO* are calculated for only the husband. This is necessitated in part because it is impossible to estimate the longitudinal labor force participation behavior for each wife in my sample.

[8]The Wage Survey is very incomplete before 1953. Annual wages for each age and education category before 1953 had to be imputed by the following method. Nakayama (1977) has painstakingly calculated nominal wages in the pre-war and immediate postwar periods (his Table I, Column L). However, he does not allocate earnings by different age and education groups. Allocation into different age groups is done using Kitayama (1979). The allocation of wages in a given age group by education class is done using the 1954 Wage Survey, the earliest year an allocation by education class was performed.

a given educational class as it ages from 20 to 59. For example, a 74 year-old college graduate in 1983 was 59 in 1968, 45 in 1954, 20 in 1929. Predicted earnings for this individual when he was aged 45 can be approximated by substituting "45" for age and "1" for the college dummy in the earnings function of 1954. Predicted earnings when aged 46 can be approximated from the earnings function of 1955 and so on. These simulations are performed for everyone aged between 60 and 74 in 1983 and for each educational category.

To arrive at the after-tax figure, the annual average social security contributions and income taxes paid by each earnings category are deducted from the earnings predicted by the above procedure. Average social security contributions and income taxes categorized by the level of earnings are available from various annual editions of the Family Income and Expenditure Survey, published by the Prime Minister's Office.

Table A-1 in the Appendix to this paper reports in detail the gross and net of tax LTEs for each birth cohort and education class.

To complete the calculation of LTW, PDVO* and SSK* must be approximated. To calculate PDVO*, a forecast of the expected retirement path for Japanese males over 60 is needed. Using the LBC, a simple cross-section probit of the head's employment status is run on the following variables: head's age, the residential location dummies, the social security scheme the head is enrolled-in, self-employment status, and the head's educational level. Table A-2 in the Appendix reports the estimation results. The predicted values of retirement are obtained by varying the head's age from 60 to 70 while holding his other, permanent characteristics constant.[9]

From the LBC, I can calculate average after-tax earnings for each education category and age between 60 and 70. If y(h,i) is the average after-tax labor income of an i year-old of education category h in 1983, then the PDVO* of a male aged t in 1983 is given by:

$$PDVO^* = \sum_{i=M}^{70} p_i y(h,i)/(1+r)^t$$

where p_i is the probability of work at age i. As in Ando (1985), the formula above assumes that the annual real rate

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[9]It is assumed that the head completely retires at age 70. Very few people in my sample work after age 70, and it is difficult to obtain accurate average earnings figures for this group.

of growth of earnings for the elderly is constant for all age and education groups, and is equal to the real interest rate.[10]

To calculate SSK*, the discounted value of benefits between the ages of 60 and t is needed.[11] For husbands and wives currently over 65, it is assumed that a constant level of real benefits equal to the current level was received from 65 to the current age. For husbands enrolled in the Employees' Pension Plan, the approximation of pre-age 65 benefits is complicated. First, for men who are 64, 63, and 62 in 1983, average yearly pension benefits are classified by education levels using the LBC. These benefits are then imputed to those over 65 in education classes identical to those under 65.

For husbands currently below age 65, it is assumed that the present level of real benefits was received throughout the age interval t-60. If the current level of benefits is zero, the husband is assumed to have not received any past benefits.

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[10]For a person of age t in 1983, earnings when aged i are given by $y(h,i)(1+g)^{i-t}$, where g is the real growth rate of earnings. Discounting the expression by $(1+r)^{i}$, summing from M to 70, and setting r=g, gives the expression in the text.

[11]Annual social security receipts between the ages of t and T were approximated earlier in 3.2.1.

4. Results

Table 1 summarizes and defines the variables that are used in my estimation. The cohort means of some of the variables are classified by age and education in Table 2. Table 2 shows that average total wealth rises as the age group of the household head increases. Can we conclude from the Table that the Japanese elderly are not dissaving? Such a conclusion is still premature, since there is the bias caused by the large number of the elderly living with the younger generation. However, estimates of the selectivity-corrected Eq. 1 show that even when this "net wealth measurement bias" is controlled, there is still no evidence that the Japanese elderly dissave from their total wealth.

Table 3 reports the least-squares estimates of Eq. (1) and Eq. (1) with NCHIL added as an additional exogenous variable. The equations are estimated on the complete sample of the elderly, including the elderly living in intergenerational households. Both equations were first estimated by ordinary least squares. Because of the high values of the Breusch and Pagan (1979) Chi-squared statistic, the estimates presented in Table 1 are corrected for arbitrary heteroskedasticity by a method proposed by White (1980).

From the first column, we can see that as the age group

Table 1

Definition of Variables and Sample Statistics

Variable	Definition	Mean	S.D.
W(t)/LTW:	Total Tangible wealth divided by Lifetime Weath.	.855	1.14
LTW:	Lifetime Wealth of the couple.	4551	905
AGE1:	Age of the head is between 65-69.	.355	.479
AGE2:	Age of the head is between 70-74. (Baseline is head is aged between 60-64.)	.152	.360
SSW(t)/LTW:	Present value of future social security benefits divided by lifetime wealth.	.464	.238
PDVO :	Present value of future earnings from the time the head is aged M (age 60) to age T.	1169	669
SSK :	Present value of future social security benefits from the time the head is aged M (age 60) to age T.	4539	2667
NINTER :	Proportion of sample not living in an intergenerational household.	.657	.475
SELF :	Household head is self-employed.	.301	.459
NCHIL :	Number of Living Children.	2.603	1.524
LARGE CITY :	Couple lives in a city of over 100,000 people.	.585	.493
MEDIUM CITY :	Couple lives in a city of between 10,000 and 100,000 people. (Baseline is couple lives in a rural area.)	.182	.386
MORE THAN: ONE CHILD?	Proportion of sample with more than one child.	.818	.386
OCHIL :	Proportion of sample with exactly one child. (Baseline is no children.)	.105	.306

Table 2

Cohort Means of Selected Variables
(in tens of thousands of 1983 yen)

		Age Group		
		60-64	65-69	70-74
NUMBER OF OBSERVATIONS	Total	165	119	51
	Below High	78	65	29
	High School	59	32	17
	College	28	22	5
TOTAL WEALTH	Average	3641	3904	4242
	Below High	3525	3549	5352
	High School	3103	3473	2858
	College	5096	5577	2504
FINANCIAL WEALTH	Average	934	924	1100
	Below High	750	664	910
	High School	946	848	712
	College	1329	1545	604
REAL ESTATE WEALTH	Average	2722	3027	3427
	Below High	2776	2885	4441
	High School	2156	2625	2147
	College	3768	4032	1900
LIFETIME WEALTH	Average	4901	4341	3904
	Below High	4365	3891	3527
	High School	4954	4465	4290
	College	6283	5490	4778
PRESENT VALUE OF SOCIAL SEC. BEN. FROM AGE t TO AGE T	Average	2466	2083	1801
	Below High	2236	1847	1463
	High	2688	2258	2341
	College	2641	2526	1924
PRESENT VALUE OF SOCIAL SEC. BEN. FROM AGE 60 TO AGE T	Average	4899	4199	4164
	Below High	4453	3706	3559
	High School	5355	4695	5250
	College	5180	4937	3977
PRESENT VALUE OF EARNINGS FROM AGE 60 TO AGE T	Average	1273	1143	889
	Below High	1185	1057	839
	High School	1132	1209	947
	College	1816	1301	967

Table 3

Dependent Variable: Total Wealth/Lifetime Wealth

	(1)	(2)
CONSTANT	.581	.214
	(2.94)	(1.17)
HEAD,65-69	.164	.148
	(1.47)	(1.31)
HEAD,70-74	.438	.369
	(1.49)	(1.43)
SOCIAL SEC. WEALTH/ LIFETIME WEALTH	.0117	.0447
	(.05)	(.22)
LARGE CITY	.0319	.0882
	(.18)	(.58)
MEDIUM CITY	-.0419	.0132
	(-.22)	(-.07)
SELF EMPLOYED	.440	.386
	(2.88)	(2.44)
NUMBER OF LIVING CHILDREN	--------	.132
		(1.97)
R-squared:	.044	.074
Breusch-Pagan:	180.27	329.48
Sample:	335	335

Asymptotic t-statistics in parentheses.
Standard-errors are corrected for heteroskedasticity.

rises, W(t)/LTW shows no tendency to decline. The Japanese elderly do not seem to be dissaving. Also, a greater number of children raises wealth holdings as a share of lifetime wealth, suggesting the presence of a bequest motive. These conclusions are still tentative, however, since Eq. (1) is mis-specified when it is applied to the entire sample of the elderly. The elderly who live with a younger family do not have to reduce their assets in order to finance their old-age consumption. "Net wealth measurement bias" is present, since the younger family will support the elderly in return for receiving the bequest.

To provide for the correct specification, Eq. (1) is estimated on only the sample of the independent elderly. Since the independent elderly finance their own consumption from their own wealth, the independent elderly's observed wealth level is their true wealth level. However, because the sample of only the independent elderly is a self-selected sample, bias in the coefficient estimates may result unless this self-selection is accounted for in my estimation.

Table 4 depicts the results from the joint maximum-likelihood estimation of Eq. (1) with Eq. (2), the self-selection equation. The first column shows the estimates of the self-selection equation.[1] An increase in earnings after

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[1]It is well-known that with heteroskedastic errors, the coefficient estimates in a censoring model as that above will be inconsistent. Arabmazar and Schmidt (1981) and Nelson

Table 4

Maximum Likelihood Estimates of the Elderly's Choice of Independence and Their Age-Wealth Profile if Independent

	Elderly Couple Remains Independent (1)	Age-Wealth Ratio Profile for Independent Couples Selec. Corr. (2)	Hetero. Corr. (3)
CONSTANT	-.242 (-.40)	.261 (.51)	.561 (1.68)
HEAD, 65-69	-----	.0565 (.19)	.0822 (.95)
HEAD, 70-74	-----	.506 (1.36)	.561 (1.17)
PRESENT VALUE OF EARNINGS AFTER 60 (1,000)	.516 (2.19)	-----	-----
PRESENT VALUE OF SOCIAL SEC. AFTER 60 (10,000)	-.182 (-.40)		
SOCIAL SECURITY WEALTH/ LIFETIME WEALTH	-----	-.00617 (-.011)	-.0320 (-.107)
LIFETIME WEALTH (1,000)	.170 (1.20)	-----	-----
LARGE CITY	.567 (2.90)	.107 (.24)	-.0206 (-.070)
MEDIUM CITY	.297 (1.24)	-.210 (-.38)	-.254 (-.84)
SELF EMPLOYED	-.978 (-2.89)	.422 (2.56)	.489 (2.23)
ONE CHILD	-1.024 (-2.52)	-----	-----
MORE THAN ONE CHILD	-.728 (-2.05)	-----	-----
RHO	.418 (.79)		-----
Log-Likelihood:	-514.9		
R-squared:			.07

Table 4(cont.)

Breusch-Pagan:		471.23
Sample:	220/335	220

Asymptotic t-statistics in parentheses.

age 60 raises the probability of independence. Both lifetime wealth and social security wealth after age 60 are insignificant, casting some doubt on the notion that living alone is a superior good for the aged in Japan. Kurz (1985) has argued that the decline in the number of three generation families in the United States since the Second World War was caused by the growth of the social security system. An increase in social security benefits meant that the elderly no longer had to rely on their children for support. Since living with children is assumed to be less desirable than living alone, more elderly people could afford to make the preferred choice. My evidence for Japan does not support Kurz's hypothesis. The further development of the social security system should not by itself cause the breakup of the Japanese three generation family.

Table 4 shows that in large cities, the elderly are more likely to be independent. The tradition of taking care of parents may be weaker in urban areas. The high negative significance of the OCHIL variable suggests that the elderly are more likely to form an intergenerational household with children than with other younger relatives. In addition, the estimates do not support the presence of bargaining between

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(1981) through Monte Carlo techniques show that if the censoring is not severe (less than half the observations at the limit), the biases arising from heteroskedasticity are rather mild. Inferences must be made with caution, however, since the standard errors will still be biased.

the parents and children. The coefficient on OCHIL has a larger negative value than the coefficient on MCHIL.[2] Given that the parents have at least one child, further increases in the number of children do not raise the probability of joining a younger family.

The second column of Table 4 depicts the selectivity-corrected estimates of the age-wealth relation. The coefficients on both age dummies are positive, but insignificant. A Wald test of the hypothesis that $b_1 = c_1$ has a Chi-squared value of 1.18, significant at only the 27 percent level, implying that among the different age classes, there are no significant differences in the total wealth levels. Also, in contradiction to the work of Kotlikoff (1979) and Hubbard (1986) who find substantial displacement of private wealth by social security wealth in U.S. cross-section data, the results in Table 4 suggest that social security does not displace private tangible wealth in Japan; the coefficient on social security wealth is insignificant. The last row between the first and the second columns gives RHO, the estimate of the correlation coefficient between the error terms in the selection equation and the age-wealth relation. The estimate of RHO is insignificant. We cannot reject the hypothesis that there

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[2] A likelihood ratio test, however, cannot show that the coefficient on OCHIL is significantly more negative than the coefficient on MCHIL.

will be no selection bias when Eq. (1) is estimated on only the sample of the independent elderly. The least-squares estimates of Eq. 1 on only the sample of the independent elderly are therefore consistent estimates of the population parameters of the age-wealth relation.

The third column of Table 4 reports the results for least-squares without the need for selection correction. Heteroskedasticity, however, is present as shown by the Breusch-Pagan statistic of 496.63, and White's (1980) constant covariance estimator is used. The pattern of the coefficient estimates in the third column is close to that in the second column. There is again no evidence of dissaving with advanced age.

How do the estimates of the age-wealth relation for the Japanese elderly compare with the estimates for the U.S. elderly? Most studies using cross-section data of the U.S. elderly have also found no evidence of dissaving (Mirer, 1979, Menchik and David, 1983). The elderly in the U.S. seem to hold constant or even accumulate wealth as they age. The shape of the age-wealth profile of the U.S. elderly is probably similar to the shape of the age-wealth profile estimated here for the Japanese elderly.

As mentioned in Section 2, the lack of dissaving by the elderly does not by itself prove the existence of the bequest motive. The elderly may be holding their wealth intact as a precaution against unanticipated medical expenses or living an unexpectedly long life. To test for the bequest motive, Eq. (1) is re-estimated on the sample of the independent elderly with NCHIL added as an additional regressor, and the results are depicted in Table 5. The estimates in the second column of Table 5 are selectivity-corrected. Since the Breusch-Pagan Chi-squared statistic again rejects the null hypothesis of homoskedasticity, heteroskedasticity-corrected least squares estimates are reported in the third column. We can see from the Table that the coefficient on NCHIL is highly significant. An increase in the number of children increases the total wealth-lifetime wealth ratio by .166. Multiplying the average lifetime wealth level of 4551 by .166 gives 755. An increase of one child raises average wealth holdings of the independent elderly by 7.55 million yen.

The effect of children on wealth holdings seems to differ between the United States and Japan. Blinder, Gordon, and Wise (1983) find that a greater number of children increases wealth holdings by only a small amount. The mean increase in wealth due to the bequest motive is calculated to be 1.25 times the annual consumption of the average household.[3] Hurd (1987) using U.S. longitudinal data also

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[3]The mean increase in wealth holdings is calculated by (dWEALTH/dNCHIL)*(average NCHIL) where average NCHIL is the average number of children in the sample.

Table 5

Maximum Likelihood Estimates of the Elderly's Choice of Independence and the Effect of the Number of Children if Independent

	Elderly Couple Remains Independent	Effect of Number of Children If Independent	
		Selec. Corr.	Hetero. Corr.
	(1)	(2)	(3)
CONSTANT	-.242 (-.40)	.112 (.16)	.126 (.55)
HEAD, 65-69	-----	.0627 (.23)	.0640 (.70)
HEAD,70-74	-----	.479 (1.38)	.481 (1.16)
PRESENT VALUE OF EARNINGS AFTER 60 (1,000)	.511 (2.16)	-----	-----
PRESENT VALUE OF SOCIAL SEC. AFTER 60 (10,000)	-.117 (-.26)		
SOCIAL SECURITY WEALTH/ LIFETIME WEALTH	-----	-.0351 (-.066)	-.0365 (-.13)
LIFETIME WEALTH (1,000)	.166 (1.17)	-----	-----
LARGE CITY	.567 (2.97)	.0656 (.15)	.0591 (.25)
MEDIUM CITY	.298 (1.29)	-.206 (-.39)	-.208 (-.80)
SELF EMPLOYED	-.979 (-2.89)	.459 (1.62)	.462 (2.15)
NUMBER OF LIVING CHILDREN	-----	.166 (2.81)	.166 (2.57)
ONE CHILD	-1.024 (-2.49)	-----	-----
MORE THAN ONE CHILD	-.728 (-2.05)	-----	-----
RHO		-.0242 (-.03)	-----

Table 5(cont.)

Log-Likelihood:	-511.32	
R-squared:		.118
Breusch-Pagan:		685.12
Sample Size:	220/335	220

Asymptotic t-statistics in parentheses.

5. Conclusion

The main conclusion of this paper is that the Japanese elderly are keeping their wealth intact. The elderly are not reducing their total wealth. Why are the elderly not dissaving? Section 4 finds that the bequest motive is important. The bequest motive increases the average Japanese elderly's wealth holdings by approximately 6 times the annual consumption of the average household.

The result that the Japanese elderly are not dissaving is based on estimates of the age-wealth relation on a sample of the independent elderly, those who choose not to live with their children or other younger relatives. Tests of sample selectivity bias could not reject the null hypothesis that the age-wealth relationship estimated for the independent elderly represent the parameters for this relationship across the entire elderly population. Therefore, the age-wealth relation estimated on only the sample of the independent elderly is an unbiased estimate for the entire population of the elderly.

shows that the presence of children does not increase the elderly's wealth holdings. For the Japanese elderly, the mean increase in wealth holdings is 6 years of annual household consumption.[4] The bequest motive seems to be more important for the Japanese elderly. While the lack of dissaving for the U.S. elderly may be largely attributable to other motives, such as the precautionary motive, the lack of dissaving for the Japanese elderly is at least partly attributable to the desire to leave bequests.

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[4]The 6 years is calculated by multiplying the 7.55 million yen predicted from Eq. (1) by the average number of children, 2.6, and then dividing by the average annual 1983 household consumption level.

APPENDIX TABLES

Table A-1

Gross and Net of Tax Pre-Mandantory Retirement Lifetime Wealths
By Age and Education
(in tens of thousands of 1983 yen)

Age	Education	Below High	High School	College
60	Gross	3661	4178	5709
	Net	3364	3793	5012
61	Gross	3547	4038	5518
	Net	3264	3680	4858
62	Gross	3456	3928	5346
	Net	3137	3594	4731
63	Gross	3398	3849	5204
	Net	3193	3526	4489
64	Gross	3317	3756	5059
	Net	3078	3454	4385
65	Gross	3235	3659	4295
	Net	3006	3369	4385
66	Gross	3163	3589	4766
	Net	2945	3311	4261
67	Gross	3083	3493	4624
	Net	2878	3231	4146
68	Gross	3013	3410	4499
	Net	2819	3164	4048
69	Gross	2930	3314	(no one in category)
	Net	2745	3084	
70	Gross	2888	3272	4319
	Net	2716	3059	3921
71	Gross	2783	3139	4115
	Net	2620	2941	3744
72	Gross	2714	2984	3997
	Net	2511	2879	3656
73	Gross	2650	2984	(no one in category)
	Net	2511	2818	

Table A-2

Probit Estimates of the Probability of
Employment After Age 60 of the Household Head

CONSTANT	9.096 (5.01)
AGE OF HEAD	-.1424 (-5.19)
MEDIUM CITY	-.2196 (-.76)
LARGE CITY	-.166 (-.75)
ENROLLED IN EMPLOYEES PENSION?	-.106 (-.36)
ENROLLED IN NATIONAL PENSION?	-.397 (-1.61)
SELF EMPLOYED	5.86 (.21)
HIGH SCHOOL	.272 (1.37)
COLLEGE EDUCATION	.631 (2.37)

X-squared(7) = 196.46
Asymptotic t-statistics in parentheses.
335 observations.

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