

# Empirical Evidence on Households' Life Insurance Holding Behavior in Japan: Is it Excess or Deficient?

by

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## Abstract

This study analyzed the awareness of households with regard to life insurance payment and examined what determined such awareness. We confirm that a significant number of households are paying an insurance fee that is higher than what they are willing to pay or regard as appropriate. Further, we found that there is a higher possibility that households with higher incomes, more financial assets, and elderly household heads regard their expenditure levels to be somewhat excess.

It is possible that they cancel their policies or, more interestingly, purchase stocks and bonds, the ownership ratio of which is still very low in Japan. Such a behavior could have non-negligible effects on the security as well the insurance markets.

Key Words: Life insurance, The awareness of households

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## 1. Introduction

In Japan, the amount of expenditure incurred in relation to life insurance policy is relatively high—this amount is second only to that required for purchasing a house. According to the latest survey by the Japan Post Research Institute<sup>1</sup>, the share of life insurance<sup>2</sup> in a household's financial assets is approximately 20 percent, which is second largest in magnitude in a household's financial portfolio<sup>3</sup>. In addition, the survey reports that over 80 percent of the households invest in life insurance. These facts indicate that investment in life insurance policies is an important factor to consider the asset allocation of households during their entire lives. This paper aims to determine the type of households that have realized an excess or a deficient for life insurance policy. Considering this could help us in forecasting whether or not the number of households who invest their assets in risky assets in the future is increasing; this is because households who are aware of the necessity regarding the shift in their life insurance policy could be potential investors for other assets. In this study, we use rich micro data that are appropriate for investigating the households' behavior taking into account the heterogeneity of the households. We use data sets for the years 2003 and 2005 when significant changes occurred in the environment for life insurance policy. For example, the removal of an embargo on selling insurance or a brokerage operation for bank securities has enabled households to have an easy access to unfamiliar financial assets. Next, some households have witnessed their life insurance companies go bankrupt. This might encourage households to assess life insurance companies more severely.

The remainder of this paper is organized as follows. The next section provides an overview of our data set. Section 3 explores what determines whether households consider their life insurance payments to be excess or not. The final section summarizes our findings.

## 2. Description of the data

This study takes advantage of unique household-level data from “A Survey on the Utilization of Financial Institutions” (*Kurashi to Kinyuu Kikan Riyo ni Kansuru Chousa*) compiled biannually by the Japan Post Research Institute<sup>4</sup>. This survey is cross-sectional, and the questionnaires contain detailed information on the household's assets portfolio as well as

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<sup>1</sup> “Survey on the Financial Asset Choice of Household (2004)” conducted by the Japan Post Research Institute. For detailed information, see the Japan Post Research Institute's homepage.

URL: [http://www.japanpost.jp/research/kinyu/shisan\\_index.html](http://www.japanpost.jp/research/kinyu/shisan_index.html)

<sup>2</sup> We focus on life insurance policy, which is a saving-based program. Thus, insurance, which offers no refund payment, is not included here.

<sup>3</sup> The largest fraction is approximately 60 percent that is invested in safe assets such as demand deposits, fixed-deposits, and postal savings.

<sup>4</sup> See the Japan Post Research Institute's homepage for the details of the survey.

URL: [http://www.japanpost.jp/research/kinyu/kikan\\_index.html](http://www.japanpost.jp/research/kinyu/kikan_index.html)

household demographics.

This study utilizes this survey conducted in 2003 and 2005, which contains detailed data on the life insurance policies possessed by households. The sample size for 2003 is 4182 households (the response rate is 69.7 percent) and for 2005, is 4009 households (the response rate is 46.0 percent). After removing the samples for which the necessary data is unavailable, the sample size is reduced to 2920 and 3587 in 2003 and 2005, respectively.

Table 2 reports the summary statistics of the main variables. First, we look at the household demographics. The average age of the household head is approximately 56 years, and the average annual household income is approximately 5.5 million yen<sup>5</sup>. The total financial assets amount to approximately 10 million yen, and the average amount of liabilities is approximately 5 million yen. The share of households with detached houses is approximately 70%. Further, the average number of household members is approximately three and one-third of the households have children.

The statistics related to the life insurance policy are listed below. The share of households that newly purchase an insurance policy in the reference year is approximately 20% and approximately 70% of them compare several insurance companies when they consider a new or additional purchase of life insurance.

### **3. Estimation strategy and empirical results**

We use the following questions in the survey:

A. What is the amount of monthly insurance fee that you pay?

B. What according to you is the appropriate amount of fee for your household?

Figure 1 shows households' life insurance policy payment for one month. The average value is 35 thousand yen<sup>6</sup>. On the basis of questions A and B, we can extract households that are aware that they are paying insurance fees over their appropriate level. Table 1 is a cross-tabulation table that simultaneously indicates the number of households with respect to questions A and B. The sum of the figures in the gray area of Table 1 represents the number of households that assume that their payment exceeds the appropriate level. The share of such households is 29.4%.

In this section, we explore what determines the awareness of households with regard to life insurance payment, particularly the households, which recognize the current expenditure for life insurance as excess, as mentioned above. Focusing on the determinants for households' awareness regarding their payment level being excess has an important implication. If households perceive their expenditure level for life insurance to be inappropriate, they will invest their money in different assets. Therefore, perceiving their demographics can help in

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<sup>5</sup> In this case, annual income implies pretax income.

<sup>6</sup> Households that do not have life insurance policies are excluded from the calculation of this average value.

forecasting a future change in the portfolio choice by such households.

We employ a probit model to explore the determinants of household awareness. The specification is as follows:

$$\begin{aligned}
 E[Y | X] &= 0[1 - F(\beta' X)] + 1[F(\beta' X)] \\
 &= F(\beta' X) \\
 &= F(\beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i})
 \end{aligned} \tag{1}$$

where  $i$  denotes the  $i$ th household.

$Y_i = 1$  if households feel that they are paying more than required  
 $= 0$  otherwise;

$X_1$ : characteristics of households such as age of the household head, number of household members, and whether or not households have children;

$X_2$ : the amount of assets that the households possess such as financial assets, real assets (whether or not the house is owned by the household), and liabilities;

$X_3$ : variables that substitute the financial literacy of households such as the extent of comparisons conducted before purchasing a life insurance policy (households comparing more than one insurance company = 1).

In addition, the parameters in equation (1) do not represent marginal effects; we report the marginal effect derived as below.

$$\begin{aligned}
 \frac{\partial E[Y | X]}{\partial X} &= \left\{ \frac{dF(\beta' X)}{d(\beta' X)} \right\} \beta \\
 &= f(\beta' X) \beta \quad ^7
 \end{aligned}$$

Table 3 reports the estimation results based on the specification mentioned above. We find that the marginal effects on income and the sum of the financial assets are positive and significant. In addition, the marginal effects on the age of the household's head are positive and significant. These results suggest that households with a higher level of income, greater financial assets, and elderly household heads have higher probability of perceiving the amount of their payment for life insurance as being excess.

Further, we investigate whether households assume excess expenditure after comparing the life insurance companies when they purchase new life insurance policies<sup>8</sup>. The dummy for comparing several insurance companies is significantly positive. This implies that the higher the number of households who compare life insurance companies before purchasing life insurance policies, the excess they realize their cumulative expenditure level for life

<sup>7</sup>  $f(\cdot)$  is a standard normal density function in a probit model.

<sup>8</sup> New purchases include additional purchases of life insurance policies during each survey year.

insurance.

#### **4. Conclusion**

Taking advantage of a comprehensive set of household-level data, this study analyzed the awareness of households with regard to life insurance payment and examined what determined such awareness. We found that in the case of a significant number of households, the insurance fee is higher than what they are willing to pay or regard as appropriate. We found that in the case of households that have higher incomes, greater financial assets, and elderly household heads, there is a higher probability that they regard their expenditure level to be somewhat excess.

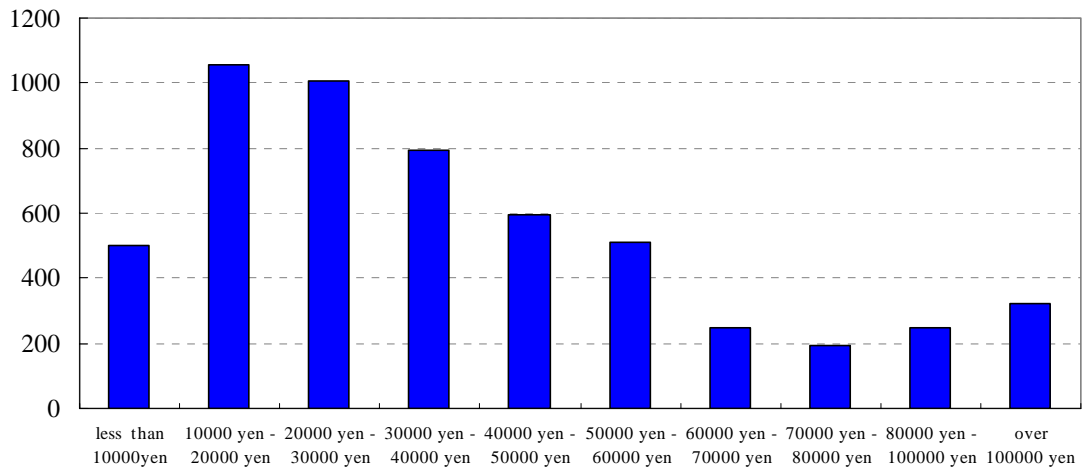
It is possible for them to cancel their policies or, more interestingly, purchase stocks and bonds, the ownership ratio of which is still very low in Japan. Such a behavior could have non-negligible effects on the security as well the insurance markets.

#### **Reference**

The Japan Post Research Institute Homepage <http://www.japanpost.jp>

Maddala, G. S. (1983) *Limited-Dependent and Qualitative Variables in Econometrics* (Cambridge: Cambridge University Press)

Number of  
Households



**Figure 1: Households' life insurance policy payment for one month**

**Table1: The Number of Households with Respect to Questions A and B**

A \ B	Income Brackets													having no life insurance	sum		
	0 yen	less than 10000yen	10000 yen - 20000 yen	20000 yen - 30000 yen	30000 yen - 40000 yen	40000 yen - 50000 yen	50000 yen - 60000 yen	60000 yen - 70000 yen	70000 yen - 80000 yen	80000 yen - 100000 yen	over 100000 yen						
0 yen *	4																4
less than 10000yen	10	341	144	58	24	11	12	6	4	7	2	390	1009				
10000 yen - 20000 yen	1	124	723	213	109	44	33	14	13	11	13	120	1418				
20000 yen - 30000 yen	1	27	155	591	185	102	65	26	13	19	10	41	1235				
30000 yen - 40000 yen		1	20	94	360	98	65	26	20	20	16	28	748				
40000 yen - 50000 yen	1	4	10	40	94	285	115	55	27	33	40	15	719				
50000 yen - 60000 yen			2	6	12	41	186	33	24	33	37	8	382				
60000 yen - 70000 yen				1	3	8	17	71	14	17	18	1	150				
70000 yen - 80000 yen		1		1	5	4	13	11	61	13	17	2	128				
80000 yen - 100000 yen			2	1	1	1	4	4	15	87	58	3	175				
over 100000 yen		1	1	1	1	2	3	1	3	7	109	2	131				
having no life insurance																	408
sum	17	499	1057	1006	793	596	513	247	194	247	320	1018	6507				

Note: 1. Figures in cross-tabulation table indicate numbers of households.

2. \* Some households report that they don't pay insurance fee even if they have life insurance policy.

**Table 2: Descriptive Statistics**

	Mean	Std. Dev.	Minimum	Maximum
dummy for excess payments with regard to life insurance	0.295	0.456	0	1
dummy for year 2005	0.55	0.50	0	1
number of household members	2.95	1.57	1	20
dummy for having children	0.33	0.47	0	1
age of household head	52.52	14.35	20	88
Annual income (ten thousand yen)	562.18	446.23	100	5000
Sum of financial assets (ten thousand yen)	1038.97	1606.10	0	10000
dummy for detached house owner	0.68	0.46	0	1
Sum of liabilities (ten thousand yen)	490.26	1012.02	0	5000
dummy for inhabitant area				
Tokyo and government-decreed city	0.24	0.43	0	1
more than 150000 city	0.32	0.47	0	1
more than 50000 city	0.21	0.41	0	1
less than 50000 city	0.05	0.23	0	1
towns and villages	0.17	0.38	0	1
dummy for newly taking out an insurance policy this year	0.18	0.39	0	1
dummy for comparing several insurance companies	0.69	0.46	0	1

Number of Observations = 6507

\* Statistics regarding dummy for comparing several insurance companies is calculated among households which purchase life insurance policy in 2003 or 2005.



**Table 3: The Determinants of the Awareness of Households regarding Life Insurance Payment**

Independent variables	Marginal Effect	Std. Err.
dummy for year2005	-0.2585	0.0119 **
number of household members	0.0257	0.0050 **
dummy for having children	0.0152	0.0171
age of household head	0.0246	0.0032 **
age <sup>2</sup> of household head	-0.0002	0.0000 **
log (income )	0.0249	0.0100 *
log (sum of financial assets)	0.0139	0.0041 **
dummy for detached house owner	0.0686	0.0154 **
log ( sum of liabilities)	0.0019	0.0021
dummy for inhabitant area		
more than 150000 city	0.0057	0.0157
more than 50000 city	0.0233	0.0177
less than 50000 city	0.0063	0.0285
towns and villages	0.0564	0.0195 **
dummy for newly taking out an insurance policy this year	0.0230	0.0275
dummy for comparing several insurance companies	0.0642	0.0329 *
Number of observations = 6507		
McFadden's pseudo R <sup>2</sup> = 0.1212		

Note: 1. \*\* and \* indicate that the null hypothesis that marginal effect is equal to zero is rejected at 1percent and 5 percent level respectively..

2. Tokyo and government-decreed cities are the base case for inhabitant area dummy.