

# Corporate-Sponsored Pensions and Employee Choice of Annuities in Japan

## Abstract

This paper studies individual annuity choice in Japanese DB corporate pension plans with the utility-based measure of annuity value. Using the data set which contains information on individual employee backgrounds, we find a significant impact of annuity value, risk-sharing within families, and precautionary savings on individual choice of annuity. Also, the result indicates that individual preferences for annuity would be enhanced by improving worker knowledge of pension benefits and their financial literacy. We find no evidence that house purchase and educational expenditure for children, which are generally thought to be primary reasons for choosing a lump-sum in Japan, has a negative impact on annuity choice. From our findings, individual annuity decisions are rational although there is much to be done to improve individual preferences for annuity to supplement their post-retirement income.

Keywords: Annuity puzzle, defined benefit pensions, social security

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## Introduction

Low fertility rates, extended longevity and an aging population are growing concerns for modern Japanese society as it sustains a pay-as-you-go public pension system. A demographic imbalance of working and retired populations endangers the stability of a publicly administered retirement plan due to rapidly depleting reserves. As a result, post-retirement income sources that supplement public pension benefits are strongly needed.

Corporate pension plans cover about one half of the entire full-time working population in Japan, sometimes providing lifetime annuity, making it an important supplementary income source. While many US and European companies have shifted from the defined benefit (DB) scheme to defined contribution (DC) pensions, the majority of Japanese employers maintain DB pensions as their primary corporate sponsored pension plans. As a result, private DB pensions continue to play an important role in securing post-retirement income sources for many Japanese workers.

However, the actual benefits of corporate pensions differ greatly depending on whether a retiree takes pension allowances in the form of a lump-sum or annuity. According to a survey conducted by the Pension Fund Association, the ratio of retiring Japanese workers who chose to take all of their benefits as a lump-sum, which they could otherwise have taken as an annuity, rose from 43 percent in 2000 to 59 percent in

2006.

What drives Japanese employees to prefer a lump-sum payout to a more beneficial annuity? Since Yaari (1965) pointed out that lifetime annuities offer a valuable means to minimize the risk of outliving one's retirement wealth, economists have paid great attentions to factors that might cause the disparity between the economic theory and unpopularity of annuity products in the real world. Despite rich contributions that deal with the "annuity puzzle" in an individual annuity market, there exists little literature that have empirically studied annuitization choice in corporate sponsored pension plans. Furthermore, almost no studies have been conducted on the annuity puzzle which is similarly found in Japan, due mainly to lack of appropriate data.

Testing rationality of employee choice of payout options in corporate pension plans and a clear understanding of factors affecting the choice is crucial to further strengthen the role of corporate pension systems for the Japanese workforce. In order to address these issues, we set hypotheses, conduct data analysis, and draw some policy implications. The paper is organized as follows: Section 2 provides a brief overview of the causes of the "annuity puzzle" and of related empirical literature. Section 3 discusses implementation of lifecycle measure of annuity value. Section 4 describes the data, sample selection, and assumptions for the analysis. Hypotheses and analysis results are presented in Section 5, and Section 6 provides the conclusion.

## Literature Review

Literature on individual choice of annuity originates with Yaari's (1965) study,

which argues individuals without bequest motives always choose to annuitize all of their wealth if the annuity market is actuarially fair. Despite this clear finding, the phenomenon of individual annuity markets being small in most countries is called the “annuity puzzle” and has attracted great attention among economists.

The annuity puzzle is explained by an actuarially unfair annuity market due to adverse selection and load factors (Mitchell et al., 1999; Finkelstein and Poterba, 1999), bequest motives (Bernheim, 1991; Inkman et al., 2007), precautionary savings for out-of-pocket medical expenditures (Turra and Mitchell, 2004), the role of risk sharing within families (Kotlikoff and Spivak, 1981; Brown and Poterba, 2000), and the existence of pre-annuitized wealth in the form of public pension and corporate sponsored pensions (Bernheim, 1991; Dushi and Webb, 2004).

Among existing literature on the annuity puzzle, to the best of our knowledge, there are only three studies that deal with individual choice of annuity in corporate pension plans. The first is Hurd et al. (1998), who analyzed employee choice of pension cash-outs in the U.S. using Health and Retirement Study (HRS) data. They found that workers with low income tend to cash-out pension capital at the time of job change and retirement although cash-out behavior was seen less often than expected. The second is by Brown (2001), who introduced a risk dependent measure of annuity value in analyzing intended annuitization of DC pension capital in HRS data. The third, Buetler and Teppa (2007), was the first to analyze real annuitization behaviors using administrative data of Swiss occupational pension plans provided by plan sponsors. All these studies revealed employee preferences for a lump-sum payout is persistent

although the latter two contributions found annuity choice is also influenced by utility based annuity value.

As for Japan, almost no analysis on the “annuity puzzle” is found due to lack of comprehensive data sets similar to HRS. The only comparable study in Japan is Kaneko (1999), who analyzed the middle-aged employee savings behavior of lump-sum payment using simple demographic characteristics such as age, education and income level. Kaneko finds that employees under 50 have a higher probability of saving a lump-sum payout, concluding that these workers have saving motives for future home purchase and educational expenditures for their children.

The data set we use in this study contains information on individual intentions of annuitizing their DB pension capital, individual characteristics and socio-economic backgrounds. This paper contributes to the existing literature in that it tests rationality of annuity choice in corporate pension plans, focusing on the influence of liquidity constraints, precautionary-savings, and risk sharing within families on annuitization, which was made possible by rich information on individual backgrounds.

## Lifecycle Model and Annuity Equivalent Wealth

To analyze the demand for annuity in corporate pension plans, we use a measure of annuity value called annuity equivalent wealth (AEW), developed by Brown and Poterba (2000) and Brown (2001). By estimating the influence of AEW on individual annuity choice, we test the rationality of their choice.

An individual who has wealth at retirement ( $W_0$ ), public pension ( $S_t$ ), corporate

pension( $A_t$ ) decides consumption ( $C_t$ ) for each period under non-negativity constraint on wealth. The individual's wealth evolves as follows.

$$W_{t+1} = (W_t - C_t + S_t + A_t)(1 + r)$$

In our analysis, because of lack of information on wealth at retirement ( $W_0$ ), we assumed individuals have no wealth other than corporate pension capital, an assumption also used by Buetler and Teppa (2007). As a result, wealth at retirement ( $W_0$ ) equals zero if an individual chooses annuity, otherwise equals the amount of lump-sum payment.

Under the above constraint, individuals decide consumption in each period to maximize value function  $V_t(W_t)$  which is the discounted value of utility from consumption.

$$V_t(W_t) = \max \sum_{t=0}^{T-age} \frac{P_t u(C_t)}{(1 + \rho)^t}$$

$u(C_t)$  denotes utility from consumption,  $P_t$  denotes surviving probability until period  $t$ ,  $\rho$  denotes individual discount rate.

The maximum ages for consumption are assumed to be 112 for males, and 116 for females based on the 19<sup>th</sup> mortality table released from Ministry of Health, Labour and Welfare in Japan in 2000. Surviving probability in each period ( $P_t$ ) is also based on the same mortality table.

The value function above satisfies the following recursive Bellman equation.

$$V_t(W_t) = \max u(C_t) + \frac{P_{t+1}}{1+\rho} V_{t+1}(W_{t+1})$$

If individuals have options of annuity or lump-sum for their corporate pension capital, utility ( $V^*$ ) gained when their wealth ( $W^*$ ) is fully annuitized is larger than the utility ( $V$ ) gained when they choose to take full lump-sum. As a result, with additional wealth  $\Delta W$  which the individual has to receive to reach the same utility  $V^*$ , annuity equivalent wealth is expressed as follows.

$$AEW = \frac{W^* + \Delta W}{W^*}$$

In calculating AEW, we assumed the CRRA (constant relative risk aversion utility function, interest rates ( $r$ ) and individual discount rates ( $\rho$ ) for each period to be 3 percent, and coefficient of relative risk aversion to be 0.2.

As for public pension ( $S_t$ ), we estimated each individual's two-pillar benefits in the Japanese pay-as-you-go public pension scheme. In Japan, the first pillar offers a fixed amount benefit, and the benefit from second pillar is proportional to annual income in the working years. In the estimation, due to lack of information on individual history of annual income, we used average income history by gender and by educational attainment from national wage statistics, "Chingin Kōzō Kihon Tōkei Chōsa" released from Ministry of Health, Labour and Welfare in 2002. We estimated the second pillar benefit based on the income history and conversion factor which is different by the individual's birth year. We assumed the individual's participation period for the pension scheme to be the maximum 480 months.

According to Brown (2001), mortality risk, risk aversion, fraction of total wealth that is pre-annuitized, and marital status are the primary factors which determine AEW. In our analysis, we used different mortality tables by genders, which make AEW determined by different mortality risk faced by genders. Fraction of pre-annuitized wealth would also determine AEW. On the other hand, due to lack of information on individual risk aversion, we assumed the coefficient of relative risk aversion to be the same for all individuals. Also, because we focused on individual utility and neglected interaction between couples, marital status would not be a source of variation of AEW. The different main factor from Brown (2001) we assumed is availability of lifetime annuity in corporate pension plans. Unlike the US and many European countries where lifetime annuity is offered in most DB pension plans, many Japanese plan sponsors offer terminal annuity. Although terminal annuity offers benefit to individuals in the form of preferable conversion rate compared to market interest rate, the term of annuity would be a certain source of variation of AEW. Ultimately, AEW we calculate would be determined by gender, fraction of pre-annuitized wealth, and availability of lifetime annuity.

## Data

The data source used for this study is the *Survey on Employer Sponsored Fringe Benefits 2002*,<sup>1</sup> which was conducted by the Japan Institute of Life Insurance. The original data collection targeted full-time workers employed in small to medium-sized

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<sup>1</sup> Author's translation of *Kigyō no fukuri kōsei seido ni kan suru chōsa 2002*.



private firms. The data set contains individual characteristics of 1,802 full-time employees, both male and female, with extensive information on their pension eligibility status, available corporate retirement plan types as well as chosen plans. The final sample used in this study consists of 864 employees with valid responses to all the necessary variables. Summary statistics for the variables used in the analysis are presented in table 1 for the extracted sample.

In estimating amount of annuity which individuals receive after retirement, we converted anticipated amount of lump-sum payment into annuity using discount rate of 5.5%, which is most commonly used by Japanese small to medium-sized corporate pension plans. Among 864 samples, 184 individuals were able to explain the details of their annuity option, including whether they were offered lifetime annuity or terminal annuity, and the term of the annuity if offered terminal annuity. For individuals who answered they were offered both lifetime annuity and terminal annuity, we assumed that the amount of lump-sum payment was divided equally to provide these annuities. On the other hand, for 680 individuals without knowledge of the annuity, we assumed they were offered 10-year terminal annuity. We considered 10-year annuity to be the most common annuity option offered by small to medium-sized private firms, depending on national statistics of retirement benefit "Shūro Jōken Sōgō Chōsa", released from Ministry of Health, Labor and Welfare in 2002. The amount of annuity was calculated based on the information above for all individuals.

## Hypotheses

For the first step, this study examines the impact of AEW on individual choices of a lump-sum payout or annuity in employer-sponsored corporate pension. The AEW measures the utility gain in dollar terms by determining how much additional wealth would need to be given to an individual without annuities to make him as well off as if he had annuities. If an employee choice of annuity or a lump-sum is determined rationally, AEW has a positive impact on annuity choice.

We then examine the validity of other factors, which was found to have impact on employee choice of annuity in previous studies. The findings permit us to identify some factors impeding individual choice of annuity plans. Specifically, the following five hypotheses are set and tested.

Hypothesis 1: Employees who have received information on their corporate retirement benefits from employers are more likely to choose annuity.

A rational decision cannot be made by an employee without appropriate information on pension annuity and the entailing merits. Mitchell (1988) points out the possibility that the lack of information impedes individuals from making appropriate decisions on annuity choices. Few individuals included in the data set used in this study were able to explain the details of their corporate pension plans. Accordingly, the variable on whether employees received information from employers on their private retirement programs is used as a proxy for the level of corporate pension knowledge.

Individuals who proactively make their own long term decisions on asset accumulation tend to make their decisions based on their predicted financial needs as they expect in their future plans. Therefore, these individuals may be more inclined to manage their own assets using a lump-sum capital.

Hypothesis 2: Individuals who lay out their specific future plans are more likely to cash out their pension capital.

Weaker demand for pension annuity could result from risk-sharing behaviors among household members, particularly in a household of double earners with full-time income jobs (Kotlikoff and Spivak, 1981, Brown and Poterba, 2000). A typical double-earner household in Japan is characterized by full-time employed husband and part-time employed wife. It is expected however that the annuity choice based on risk-sharing optimization could be achieved only for the couples with full-time jobs for both spouses. Thus, our third hypothesis is:

Hypothesis 3: An employee with a spouse with a full-time job is more likely to choose a lump-sum payout and less likely to choose annuity.

Kaneko (1999) finds that a lump-sum retirement cash-out in Japan is primarily used for the payment of mortgage loan and financing education for children. In practice, some provisions which determines the individual corporate pension plans in detail permit the form of a lump-sum cash-out only for the usages of mortgage loans and financing children's education in Japan. As a consequence, the liquidity constraints are considered to have an impact on annuity choice of corporate pension

plans. Employees with mortgage loans and more dependent children are more likely to choose a lump-sum payout than those with no mortgage and a fewer children. The number of children is also related to bequest motives. Thus, a married employee with children is more likely than others to choose a lump-sum payout due to the bequest motive.

Moreover, Turra and Mitchell (2004) point out the importance of medical expenses in the post-retirement period. Longevity in Japan, in comparison with any other developed countries, raises a serious concern for an expected increase in medical expenses. As a result, it is expected that the coverage by private medical insurance plans alleviate the needs of precautionary savings for future medical expenses. Therefore, employees with a medical insurance coverage are more likely to choose annuity rather than a lump-sum, relative to those with no medical insurance.

Hypothesis 4: Liquidity constraints, due to mortgage loan and financing for children's education, impose a negative impact on annuity choice, and precautionary savings for future medical expenses have a positive impact on the choice of annuity.

A typical Japanese company provides an S-shaped compensation path, with employee's salary and retirement payout increasing rapidly after a certain period of service length. In particular, the eligibility to receive a corporate pension benefit in the form of annuity is given to employees with a certain years of service to the company. Therefore, an employee with longer tenure is likely to have an annuity option. As a consequence, long tenure is expected to have a positive impact on the choice of annuity.

In contrast, individuals with higher turnover, particularly those who voluntarily quit from previous employers, are expected to choose a lump-sum payout.

Hypothesis 5: Employees with longer tenure are more likely to choose annuity than those with short tenure. Employees with a higher inclination to change jobs are less likely to choose annuity.

The following section examines the above hypotheses based on multivariate estimation results.

## Estimation Results

An empirical investigation of annuity choice involves the standard bivariate probit estimation. The dependent variable is set to equal 1 if an employee expects to receive partial or full pension benefit in the form of annuity, and 0 if one chooses a lump-sum. Table 2 shows the estimation result with AEW, age, marital status, education dummies, and occupation dummies as explanatory variables. The first column shows that the AEW has a positive impact on annuity choice, which is consistent with the theory and previous findings. The second column indicates that the positive effect of AEW on annuity choice is robust even after controlling employees' age, marital status, college graduation status and occupation types. Older workers are more likely to choose a lump-sum, and married manager are more likely to choose annuity compared to unmarried clerical workers.

The third and fourth columns in table 2 show the robustly positive and significant effect of AEW on annuity choice, regardless of the inclusion of the demographic (age,

marital, college and occupation) controls. The knowledge of employees' corporate retirement benefits shows a positive and marginally significant effect without the demographic variables, but the significance disappears when the covariates are included. Moreover, it is important to note that the variable is a proxy for individual knowledge on retirement plans, based on whether the related information was provided by employers. Therefore, the proxy variable may not be capturing the true effect of pension knowledge on annuity choice. Nonetheless, the result indicates that dissemination of information may have a positive impact on individual annuity choice through enhancement of related knowledge. The result only weakly supports our first hypothesis.

The last column in table 2 shows that employees who have more or less clear vision of their future plans are more likely to choose a lump-sum pension payout rather than choosing annuity. The result shows a marginal significance, but our finding supports the second hypothesis that individuals with a clear and longer horizon tend to self-manage own assets rather than expecting to receive a periodically paid out annuity. The result supports our second hypothesis.

In order to examine the impact of risk-sharing among household members on individual annuity choice, a binary variable for existence of a "spouse with a full-time job" is included in the estimation. The existence of a spouse with a full-time job, with the full coverage of retirement pension, is expected to have a negative impact on individual choice of annuity. As predicted, the first column in table 3 shows a significant and negative effect, suggesting that married individuals consider their

spouse's post-retirement income sources. Therefore, the result supports our third hypothesis on the risk-sharing in a double-income household.

The second and third columns in table 3 examine the impact of liquidity constraints, due to mortgage loan and children's educational expenses, on individual choice of annuity. The result in the second column shows an intuitively opposite coefficient, indicating that employees with mortgage loans are more likely than those without mortgage loans to choose an annuity. This may be due to financial knowledge obtained by individuals who managed to finance the purchase of houses. Purchasing a house entails profound investigation and information collection as to the possible future income streams. This process may help individuals gain significant knowledge on the values of annuity and a lump-sum payoff from their pension plans, helping them realize the advantage of withdrawal in the form of annuity. Also, for individuals with a longer horizon, the relationship between mortgage loans and annuity choice is negative. After controlling for the effect of mortgage loans and the interaction between mortgage loans and future plans, having a longer horizon itself has no significant effect on individual annuity choice. The third column in table 3 shows the effect of children living in a household on respondent's annuity choice, as a proxy for another source of liquidity constraints. The result indicates a positive but insignificant effect on the choice of annuity. Consequently, our findings suggest that the liquidity constraints from mortgage loans and children's educational expenses have little impact on individual choice of corporate pension annuity in Japan.

The fourth specification in table 3 examines the effect of precautionary savings for

future medical expenses on employees' choice of pension annuity. A variable showing whether an employee purchased a voluntary medical plan is used as a proxy for the existence of precautionary savings for future medical expenses. The result shows a positive and significant effect of precautionary savings on annuity choice, supporting our hypothesis. Because these medical plans partially cover employees' medical expenses in the future, the covered individuals' demand for lump-sum cash will be reduced, increasing the demand for annuity instead.

Finally, the impacts of long tenure and job change on annuity choice are examined. Table 4 shows that employee's tenure has positive and significant effect on annuity choice. Moreover, employees with a higher inclination to change jobs are more likely to choose a lump-sum payout rather than choosing annuity. These findings are consistent with our argument and hypothesis.

## Conclusions

This paper analyzes the role of corporate pensions and tested the rationality of employee choice of payout options in the Japanese corporate pension plans. Using the data set which contains information on individual backgrounds, we find strong impact of annuity value, risk-sharing within families, and precautionary savings on individual choice of annuity. Also, estimation results indicate that preference for annuity would be enhanced by improving worker knowledge of the benefit and their financial literacy. We find no evidence that home purchase and educational expenditure for children, which are generally thought to be primary reason for choosing lump-sum in Japan, has



negative impact on annuity choice. From our findings, individual annuity decisions are rational, although there is much to be done to improve individual preference for annuity to supplement their post-retirement income.

In order for corporate pension plans to further supplement the public pension benefits in a rapidly aging Japanese society, it is imperative that employee knowledge of pension systems and financial commodities be significantly improved; introduction and expansion of voluntary medical insurance plans would also enhance employee choice of annuity. Our findings also reveal that employees' tenure has a positive impact on annuity choice, while employees with high job turnover tend to choose a lump-sum payment. If the observed patterns of individual pension payouts is the result of the sorting effect (Ippolito, 1997), employers may implement a pension scheme, e.g., DB or DC pension, which optimizes the pension costs and employee turnover.

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Table 1. Summary statistics

n = 864	Mean	S.D.	Min.	Max.
AEW	1.05	.02	1.03	1.18
Annuity choice (Yes = 1)	.47	.50	0	1
Public pension (x 10,000 yen)	211.41	24.13	153	290
Lump-sum (x 10,000 yen)	949.53	754.38	5	5,000
Corporate pension (x 10,000 yen)	78.61	62.49	0	414
Life annuity (Yes = 1)	.10	.30	0	1
% Pre-annuitized	.76	.14	.29	1.00
Male (Yes = 1)	.72	.45	0	1
Age	40.58	10.34	19	70
Married (Yes = 1)	.64	.48	0	1
Spouse with full-time job (Yes = 1)	.34	.47	0	1
Number of children	.99	1.06	0	4
College degree and over (Yes = 1)	.60	.49	0	1
Mortgage loan (Yes = 1)	.36	.48	0	1
Medical insurance coverage (Yes = 1)	.27	.45	0	1
Pension knowledge (Yes = 1)	.25	.43	0	1
Job change (Yes = 1)	.41	.49	0	1
Current financial asset (x 10,000 yen)	685.37	1,227.4	0	13,000
Future plan (Yes = 1)	.50	.50	0	1

Source: *Survey on Employer Sponsored Fringe Benefits 2002*, The Japan Institute of Life Insurance.

Table 2. Impact of pension knowledge on annuitization

n = 864	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5	Spec. 6
AEW	19.22 *** (7.56)	21.08 *** (7.09)	19.11 *** (7.64)	20.77 *** (7.03)	19.02 *** (7.63)	20.70 *** (7.02)
Age		-.009 *** (-4.18)	-.006 *** (-3.30)	-.009 *** (-4.27)	-.006 *** (-3.07)	-.009 *** (-4.09)
Pension knowledge (Yes = 1)			.078 * (1.86)	.065 (1.52)	.082 * (1.94)	.070 (1.62)
Future plan (Yes = 1)					-.043 (-1.18)	-.061 (-1.64)
College degree and over (Yes = 1)		.043 (1.11)		.040 (1.02)		.045 (1.15)
Married (Yes = 1)		.077 * (1.85)		.076 * (1.84)		.083 * (1.99)
Occupation dummies (omitted = Clerical):						
Manager		.143 *** (2.88)		.138 *** (2.78)		.141 *** (2.82)
Sales		.024 (.40)		.017 (.29)		.016 (.27)
Engineer		-.044 (-.54)		-.049 (-.61)		-.051 (-.63)
Specialist		-.006 (-.080)		-.005 (-.06)		-.001 (-.01)
Other		.193 (1.20)		.184 (1.14)		.181 (1.12)
Log likelihood	-533.20	-518.86	-526.47	-517.70	-525.77	-516.36
Pseudo R <sup>2</sup>	.108	.132	.119	.134	.120	.136

Reported coefficients are the marginal effect of the probit. Numbers in parentheses are t-ratios.

\*\*\* significant at the .01 level; \*\* significant at the .05 level; \* significant at the .10 level.

Table 3. Impact of liquidity constraints, precautionary savings and intra-family risk-sharing on annuitization

n = 864	Spec. 1	Spec. 2	Spec. 3	Spec. 4
AEW	23.00 *** (6.23)	23.35 *** (6.25)	23.35 *** (6.25)	23.47 *** (6.16)
Age	-.009 *** (-4.02)	-.009 *** (-4.24)	-.009 *** (-4.24)	-.010 *** (-4.49)
Pension knowledge (Yes = 1)	.066 (1.53)	.066 (1.54)	.067 (1.55)	.065 (1.49)
Future plan (Yes = 1)	-.061 (-1.64)	-.018 (-0.38)	-.018 (-0.38)	-.022 (-0.47)
Spouse with full-time job (Yes = 1)	-.080 * (-1.74)	-.078 * (-1.69)	-.078 * (-1.67)	-.083 * (-1.75)
Mortgage loan (Yes = 1)		.149 ** (2.50)	.148 ** (2.46)	.146 ** (2.40)
Future plan × Mortgage loan		-.131 * (-1.68)	-.131 * (-1.67)	-.133 * (-1.69)
Number of children at home			.0001 (0.06)	.004 (.16)
Medical insurance (Yes = 1)				.129 *** (3.06)
Married (Yes = 1)	.075 * (1.77)	.045 (1.02)	.044 (.91)	.036 (.74)
Education dummies	Yes	Yes	Yes	Yes
Occupation dummies	Yes	Yes	Yes	Yes
Log likelihood	-514.80	-511.64	-511.64	-506.94
Pseudo R <sup>2</sup>	.139	.144	.144	.152

Reported coefficients are the marginal effect of the probit. Numbers in parentheses are t-ratios.

\*\*\* significant at the .01 level; \*\* significant at the .05 level; \* significant at the .10 level.

Table 4. Impact of tenure and job turnover on annuitization

n = 864	Spec. 1	Spec. 2
AEW	23.54 *** (6.06)	22.60 *** (5.99)
Age	-.010 *** (-4.42)	-.011 *** (-4.15)
Pension knowledge (Yes = 1)	.060 (1.38)	.045 (1.01)
Future plan (Yes = 1)	-.032 (-.67)	-.062 (-1.60)
Spouse with full-time job (Yes = 1)	-.100 ** (-2.09)	-.066 (-1.37)
Mortgage loan (Yes = 1)	.153 ** (2.55)	.145 ** (2.39)
Future plan×Mortgage loan	-.136 * (-1.72)	-.138 * (-1.74)
Medical insurance (Yes = 1)	.128 *** (3.04)	.119 *** (2.78)
Current financial asset (x 10,000)	.000 ** (2.25)	.000 * (1.82)
Number of children	-.018 (-.75)	-.015 (-.61)
Tenure		.003 * (1.85)
Job change (Yes = 1)		-.140 *** (-3.51)
Married (Yes = 1)	-.100 ** (-2.09)	.052 (1.03)
Education dummies	Yes	Yes
Occupation dummies	Yes	Yes
Log likelihood	-504.01	-494.40
Pseudo R <sup>2</sup>	.157	.173

Reported coefficients are the marginal effect of the probit. Numbers in parentheses are t-ratios.

\*\*\* significant at the .01 level; \*\* significant at the .05 level; \* significant at the .10 level.