# "Housing Endowment" Aging under Willingness to Participate in Research

## -- Taking Haidian District of Beijing City As An Example

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*Abstract*—**Population aging will become the norm of human society, the challenges it brings have more incongruous contradiction that stems from the aging of the population age structure between the existing socio-economic system generated, which makes public policy adjustment become have to. The experience in the Housing Endowment of sound pressure of growing pension and pension system abroad has great reference. It is combined with the specific situation of the Housing Endowment practice groups in the survey area. The sample data is collected on the basis of the model to explore the practice of limiting constraints introduced in our country. Through the analysis of the impact of the use of mlogit model, it will make the residents to participate mechanism of factors, and then analyzes the current mode of the Housing Endowment and practice made perfect preliminary optimization measures and countermeasures.**

*Keywords- Reverse Mortgage; Mlogit Model; Willingness to Participate*

## I. INTRODUCTION

China is the world's most populous country in the elderly, and it entered the "it is getting old before it getting rich" phase, so that children and other support for the elderly further increase the pressure. China's elderly population base has rapid growth and it is increasingly showing aging, which is an empty nest trend. Social Security pension funding gap presented expansion trend, making China increasingly highlight the pension issue. To the end of 2013, China's 60 years of age or older population is over 200 million. The growing pressure on pension and public pension system are constantly becoming increasing in financial pressures, how to further optimize our pension model and a rich pension payment system has become increasingly concerned about the academic topic.

As early as 2006, representatives in the two sessions have proposed "to the Housing Endowment" mode, which can ease the enormous pressure of social pension, so that the "property rich, cash poor" older age groups to the pension. To some extent, it alleviates the country Pension pressure problems faced by the State Council in 2013 "Several Opinions on Accelerating the Development of pension services" that should gradually relax restrictions to encourage and support the pension insurance fund investment services. It is to carry out to reverse mortgage housing for the elderly pension insurance pilot, which makes the Housing Endowment mode heat up again. "To the Housing Endowment" policy originated in the Netherlands, but its most developed in the United States and Singapore.

Many domestic researches indicates that to the Housing Endowment policy by the traditional concept of the elderly, the insurance market is not perfect and the impact of the huge difference is in the extent of regional development and other factors, it is difficult in our wide range of practice and promotion. Accordingly, this article is through interviews and a questionnaire survey samples on a regional basis, which is to explore the implementation of this system in our practice of limiting constraints. It is combined with empirical analysis of specific data, it is to explore the impact of the internal mechanism of the residents' willingness to participate, and thus for our country Housing Endowment model to develop and practice a preliminary optimization measures proposed.

## II. THE DESIGN VARIABLES AND DATA SOURCES

This paper is mainly from field research data and it has the access to basic data in the form of in-depth research through individual interviews and questionnaires. Questionnaire is divided into three parts: The first part of Q1-Q7 investigators basic personal information including gender, age, educational level, marital status, living conditions, health and child cases; the second part of Q8-Q14 for investigators. The basic property status included is whether owned housing property, housing area, the estimated value of the house, whether it has the right to dispose of housing, annual income, financial assets and income to meet the cost of the status conditions; Q15-Q20 is the third part of the traditional pension model and the new Housing Endowment Attitude Survey view mode. Among them, the article by Haidian District Wanquanzhuang community, friendship and community, Shuangyushu community, Grand Manor community, residents of five communities in North Daoxiangyuan research community is to obtain 213 valid questionnaires, which basically reflects the paper is to study issue.

Based on the actual questionnaire survey data, drawing Chou, KL et al. (2006), Stuber, J. Et al. Index Design (2004) and other literature, the paper set variables and define detailed in Table 5.

According to the respondents "to the Housing Endowment" mode as the wishes of this article is to explain

variable scores are divided into four modes: willing to accept = 4, if the right policies are willing to accept = 3, indifferent = 2, unwilling accept = 1, etc.. The explanatory variables are mainly housing area, housing powers, health, marital status, basic living expenses, annual income and age indicators, control variable is divided into pension model, living conditions, comments on the pension model , number of children, gender, education, and financial assets and other conditions.

Table 1 variable definitions and descriptions

| The main variables | Variable settings | Variable | Variable Meaning | Symbols forecast |
|---|---|---|---|---|
| Explained variable | Pension | Willingness to participate | Willing to accept = 4 | |
| | | | If the policy is properly prepared to accept = 3 | |
| | | | Indifferent attitude = 2 | |
| | | | Unwilling to accept = 1 | |
| Explained variable | House | Housing area | Personal ownership of the housing area | Negative |
| | Dominant | Housing Disposition | Yes = 1 No = 1 | Positive |
| | Health | State of health | Good = 4; average = 3; 2 = poor; disease = 1 | Positive |
| | Marriage | Marital status | Married = 4; divorce = 3; widowed = 2; Single = 1 | |
| | Strain | Basic living expenses | From income constraints = 1; bound = 0 | Positive |
| | Income | Annual income | Annual retirement income or annual income (million) | Negative |
| | Age | Age | Full year | |
| Control variables | Mode | Pension model | Nursing home = 4; Alone = 3; and children living = 2; other = 1 | |
| | living | Living conditions | Alone = 1; other = 0 | |
| | Opinion | Comments on the pension model | Satisfaction = 1; else = 0 | |
| | Child | Number of children | The number of children in the family | |
| | Gender | Sex | M = 1; F = 0 | |
| | Education | Level of education | Undergraduate and above = 4; specialist = 3; high school = 2; junior high school and below = 1 | |
| | Assets | Financial assets | There = 1; no = 0 | |

### III. BUILD MODELS AND EMPIRICAL ANALYSIS

For this paper, the factors are affecting willingness to participate in the analysis; the main analysis is using two models. On the one hand, it is to the wishes of the residents were involved in a multi-value selection model (Multinomial logit) regression, which in the case of categorical grouping return on the wishes of the participating. Differences were analyzed factors. In addition, after taking into account the characteristics of individual financial and other control variables influencing factors on the overall willingness of residents to participate in the regression analysis, and further found that the impact "to the Housing Endowment," the willingness to participate in the internal impact mechanism.

1, Based on Multinomial logit regression analysis

According to a sample of residents' willingness to participate, according to Batchelder, WH et al. Set (1999), Parks, RW (1980) and other models, this paper Multinomial logit regression analysis, this paper is mainly based on sample analysis, the individual's willingness to participate faces select multiple values, and non-continuous, so this choice to take a multi-value regression model.

Assuming individual may choose y = 1,2, ......., J, where J is a positive integer, i.e., a total of J species mutually exclusive selection, using random utility method, assuming the i-th individual selection behavior brought about the j-th random utility is:

$$U_{ij} = x_i^{/} \beta_j + \varepsilon_{ij} \quad (i = 1,....,n; j = 1,....,J)$$

Multi-value selection model is set to:

$$P(y_i = j|x) = \frac{\exp\left(x_i^{'} \beta_j\right)}{1 + \sum_{k=2}^{j} \exp\left(x_i^{'} \beta_k\right)} (j = 2,...,J)$$

Where, n is the sample size, J classification number for residents to participate in the will, as a group of variables that affect the residents' willingness to participate.

When estimating the model, it needs to be a willingness to participate in the class as a reference group, the estimated coefficients of the argument is positive, meaning relative to the reference group, the willingness is to participate in the variable for the relative probability of a positive influence; independent variable coefficient is negative, which means the opposite situation. Willingness is to participate in the division of four identical earlier. The third type of willingness is to participate in this article as a reference group. The arguments used for the housing area (house), housing disposition (dominant), basic living expenses (strain), health status (health), age (age) as well as with spouses dummy variables (marriage) (no spouse as the reference group).

(1) The Overall Sample Mlogit Regression Analysis

Grouping regression results can be seen from Mlogit, factors that are affecting willingness of residents to participate in the "Housing Endowment", by the "right policies are willing to accept". The willingness is to participate in group (3) compared to the residents "do not accept the" willingness to participate Residents Group (1). The housing area (house) and the residents' willingness is to participate to a significant negative correlation between subject to the same cost of living constraint (strain. And there was a significant negative correlation with the "unwilling to accept" a willingness to participate that the cost of living is not bound by the elderly, the willingness is to participate in the practice of the lower policy.

In the analysis of residents 'indifferent' willingness to participate in group (2), it is compared with the control group (3), housing disposition (dominant) variable significant negative effect on the willingness of the formation. It is indicating that homeownership disposition of the elderly, on the implementation of the policy basically showing a

negative attitude to participate; in addition, the subject of living expenses (strain) bound elderly, the appreciation of the value of housing has become increasingly valued, for "to the Housing Endowment" Participation negative attitude (Yan Chuanning etc. , 2011).

When it is compared to residents' willingness to accept the "willingness to participate in group analysis (4) in the control group (3), age (age) factors affecting willingness to participate on the negative, also, by the state of health (health) effects. Willingness is willing to participate in the health status of the elderly; poor policy participation will greatly reduce. And marital status (marriage), the married state will greatly enhance the elderly residents' willingness to participate, indicating in his wife's accompanied by the elderly tend to further explore the sources of income of the family, to enhance the quality of life. As for housing disposition (dominant) factors, it is with disposition of the elderly, for "to the Housing Endowment" policyholders cautious, reducing policy engagement.

Table 2 Mlogit regression results in overall sample (in the third category is the reference group)

| Variable | （1） | （2） | （4） |
|---|---|---|---|
| house | -0.944* | 0.144 | -0.410 |
| | (0.557) | (0.494) | (0.513) |
| dominant | -0.0662 | -0.596* | -0.475 |
| | (0.378) | (0.331) | (0.330) |
| health | -0.537*** | -0.265 | -0.618*** |
| | (0.202) | (0.189) | (0.184) |
| marriage | 0.828*** | 0.343 | 0.404* |
| | (0.295) | (0.219) | (0.222) |
| strain | 1.218** | 0.878** | -0.0112 |
| | (0.485) | (0.405) | (0.360) |
| age | 0.0234 | 0.0144 | -0.0254* |
| | (0.0147) | (0.0138) | (0.0140) |
| constant | -0.143 | -2.311 | 0.841 |
| | (3.110) | (2.668) | (2.768) |
| observation | 213 | 213 | 213 |

Notes: (1) refers to the willingness to participate in a reluctance to accept, on behalf of the indifferent attitude of two, four generations are willing to accept; reference group is 3, means that if the right policies are willing to accept the group's willingness to participate. (2) * indicates a significant 10% level; ** indicates significant at the 5% level; *** indicates significant at the 1% level.

(2) Gender-based classification under mlogit sample return

For Mlogit male sample return under grouping, with the reference group (3) compared to the housing area (house) and the residents' willingness to participate were negatively correlated, it is indicating that the larger the area of housing elderly male residents of the "Housing Endowment" policy. The practice of participation is low, with more emphasis on the appreciation of the value of the investment value of the house. The house disposition (dominant) factors are associated with willingness to participate in three categories which were also negatively correlated, indicating that the decision has the right to dispose of the male housing elderly

residents of the policy participate cautious and wait and see attitude. And marital status (marriage), the married state will greatly enhance the residents' willingness to participate in elderly men; similarly constrained by the cost of living (strain) of the male population, low willingness to participate in policy practice.

The regression results contrast with Mlogit grouped under male sample, the sample of women is under the policy willingness to participate regression, housing area (house). The residents' willingness to participate is basically a negative correlation between the lower right "to the Housing Endowment," the practice of participation policy more attention to the appreciation of the value of the investment value of the house. But with men of different samples of the regression results in marital status (marriage), the married state policy will significantly improve residents' willingness to participate in elderly women. At the same age (age) factors on willingness to participate, the impact is positive, indicating that the older the female elderly will increase participation policy, which to some extent explains the

female elderly residents concerned about the later years of income in cash. Moreover, it is constrained by the cost of living (strain) of the female residents, lower willingness to participate in policy practice.

Table 3 Empirical Analysis of gender differences in below (in the third category is the reference group)

| Variable | Male sample | | | Male sample | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 4 | 1 | 2 | 4 |
| house | -1.393* | -0.817 | -0.514 | -0.676 | 1.137 | -0.184 |
| | (0.757) | (0.686) | (0.671) | (0.894) | (0.810) | (0.853) |
| dominant | -0.404 | -0.511 | -0.593 | 0.283 | -0.623 | -0.415 |
| | (0.550) | (0.489) | (0.468) | (0.572) | (0.498) | (0.505) |
| health | -0.633** | -0.0555 | -0.389 | -0.306 | -0.378 | -0.786*** |
| | (0.295) | (0.278) | (0.269) | (0.295) | (0.285) | (0.268) |
| marriage | 0.567 | -0.101 | 0.0980 | 1.137** | 1.015** | 0.820** |
| | (0.401) | (0.286) | (0.289) | (0.449) | (0.424) | (0.398) |
| strain | 1.691** | 0.822 | 0.201 | 1.005 | 1.031 | -0.221 |
| | (0.729) | (0.536) | (0.489) | (0.709) | (0.672) | (0.570) |
| age | -0.00587 | 0.00438 | -0.0235 | 0.0559** | 0.0305 | -0.0301 |
| | (0.0210) | (0.0189) | (0.0190) | (0.0244) | (0.0230) | (0.0236) |
| constant | 4.538 | 3.339 | 1.739 | -4.985 | -9.740** | -1.256 |
| | (4.341) | (3.727) | (3.731) | (4.823) | (4.322) | (4.510) |
| observations | 118 | 118 | 118 | 95 | 95 | 95 |

Note: Same as above

## IV. PRELIMINARY POLICY RECOMMENDATIONS

Through the above analysis, the implementation of the "Housing Endowment" is not only necessary, but also has a certain practical environmental conditions in the survey were also accepted by many groups. However, the constraints can be found in Chinese traditional concept of the residents' willingness to participate played a significant negative impact. This paper proposes the following preliminary optimization suggestions and policy:

(1) Through project diversification, it is to eliminate barriers to the traditional concept

In view of the elderly because of different ideas, different needs of the objective conditions have differences; therefore, it is to propose a variety "to the Housing Endowment" and approach is a necessary condition for the elderly to choose the successful implementation of the project. Housing should be made on whether and when the change of ownership change, after the signing of where the elderly live in larger issues, such as differences in the way a variety of solutions to meet the different needs of the elderly, across the barriers of traditional concepts brought to the project.

(2) Strengthen government regulation, and enhance the implementation of institutional credibility, improve relevant policies and regulations

"To the Housing Endowment" is a new pension model, its implementation itself has a greater risk, not to mention "to the Housing Endowment" involving large sums of money circulation, the relevant policies and regulations constraints, social security, and many other issues need careful consideration. For the government to clearly define the reverse mortgage borrowers who have no negative equity guarantee, joint insurance companies, housing fund, real estate professional consulting companies and other institutions, the establishment of housing rights of the secured asset preservation for future housing.

(3) In order to build the leading financial institutions, social welfare agencies and other organizations to support the policy practice system

## V. CONCLUSIONS

Financial institutions as a professional appraisal organizations led "to the Housing Endowment" project, which is enabling scientific assessment of home values to push "to the Housing Endowment" career development. Social welfare agencies are to provide strong support. "To the Housing Endowment" The implementation of the project demands for social welfare agencies to provide strong support, which requires increased funding social welfare institutions in the hardware and software facilities, the construction of different levels are to meet the needs of the elderly pension environment.

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