



FINANCIAL AND RESIDENTIAL DECISION FOR RETIREMENT IN THAILAND

BY

MR. THANAKHOM SRISARINGKARN

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF MASTER OF ECONOMICS  
(INTERNATIONAL PROGRAM)  
FACULTY OF ECONOMICS  
THAMMASAT UNIVERSITY  
ACADEMIC YEAR 2019

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ENTITLED

FINANCIAL AND RESIDENTIAL DECISION FOR RETIREMENT IN THAILAND

was approved as partial fulfillment of the requirements for  
the degree of Master Degree of Economics(International Program)

on June 25, 2019

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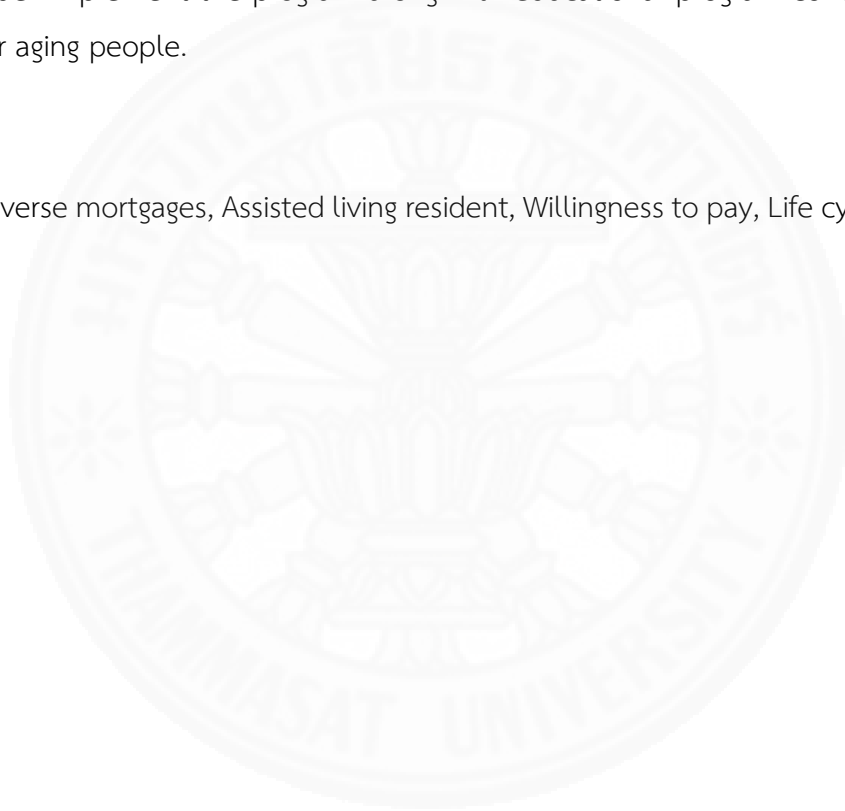
Thesis Title	Financial and Residential decision for retirement in Thailand
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Degree	Master of Economics (International Program)
Major Field/Faculty/University	Economics Faculty of Economics Thammasat University
Thesis Advisor	Assoc. Prof. Dr. Tatre Jantarakolica
Academic Years	2019

## ABSTRACT

For the past decade, Thailand has been approaching and entering aging society. Decision on financial and residential alternatives for retirement have then become concerning issues for aging people in Thailand. Reverse mortgages program has also been introduced as a financial alternative for retirement group. Additionally, several assisted living residents, including both public and private residents, have also been offered as residential alternatives for retirement. This study intends to (i) determine factors affecting decision to join reverse mortgages program and (ii) quantify willingness to pay for additional features and services in assisted living residents for retirement, including nursing care, types of residents, and life-time residential guarantee. Life cycle hypothesis and utility maximization concepts are applied as conceptual framework of the study. Stratified random sampling of 511 respondents of different age and occupational groups are observed using self-reported experimental survey questionnaire. Variables are constructed using factor analysis and dummy variables technique. Estimated results of ordered probit model reveal significant effects of expected future expense and reverse mortgages literacy of the respondent on intention to join reverse mortgage program. These findings confirm that financial decision for retirement follow life-cycle

hypothesis and utility maximization concept. The estimated results of random-effects logit model of the observed double bound experimental survey data show significant impacts of types of retirement residents and nursing care on the retirement residential decision while life-time residential guarantee has insignificant impact. This implies that respondents concern only on types of the retirement residents; private, public, or foundation, and nursing care. Additionally, this study finds significant impacts of financial literacy on retirement decision. Therefore, in order to promote reverse mortgage as retirement financial choice, government should consider implement the program along with educational program concerning reverse mortgages for aging people.

**Keywords** Reverse mortgages, Assisted living resident, Willingness to pay, Life cycle hypothesis



## ACKNOWLEDGEMENTS

First, I would like to thank my advisor, Associate Professor Dr. Tatre Jantarakolica, for the support and encouragement. Dr. Tatre is kind, active, and committed to making my thesis complete. I would like to thank my thesis committee Dr. Thanomsak Suwannoi and Assistant Professor Dr. Wasin Siwasarit for their useful recommendation. My thesis will not be successful if not for these people. Thus, I sincerely thank these individuals from the bottom of my heart.

Second, I thank my family members for their care and motivation. My family is my great inspiration when I feel tired and hopeless. I love them unconditionally.

Third, I would like to thank all staff members and faculty, graduate program, and all respondents that always supported me and my thesis progress.

Fourth, I would like to thank all my graduate friends for their help and support in academic subjects and useful recommendations.

Finally, I am glad to have received the faculty scholarship. I want to express my gratitude to the Faculty of Economics, Thammasat University for their encouragement and kindness. This financial support helped in making my thesis successful. Hence, I want to use my academic knowledge and research skills to contribute to the advancement of our country.

Mr. Thanakhom Srisaringkarn

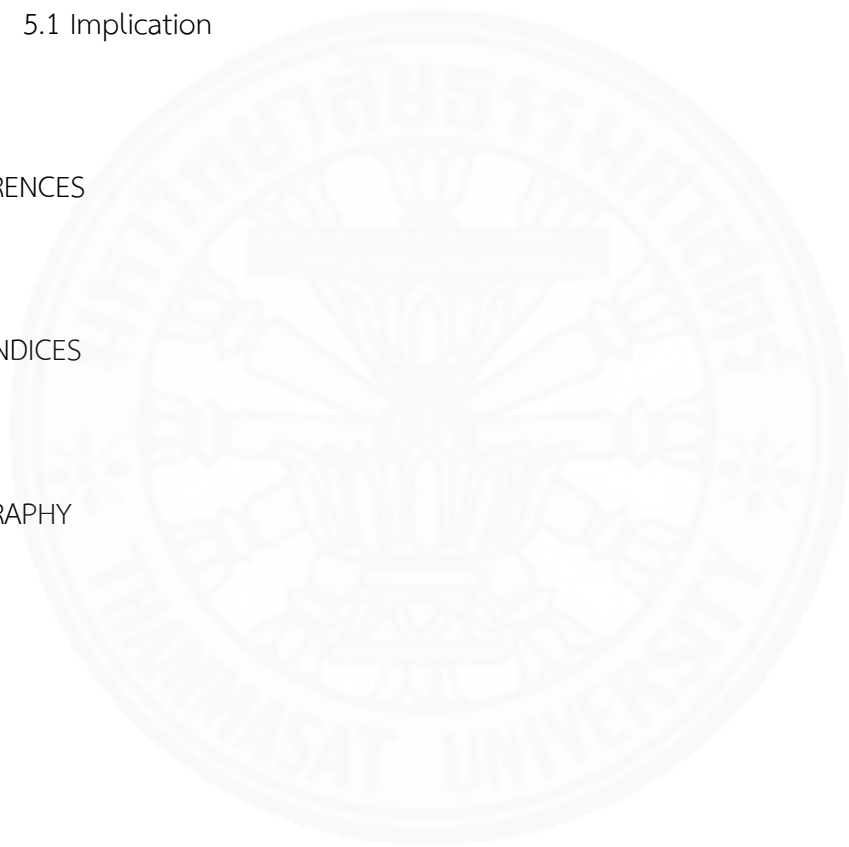
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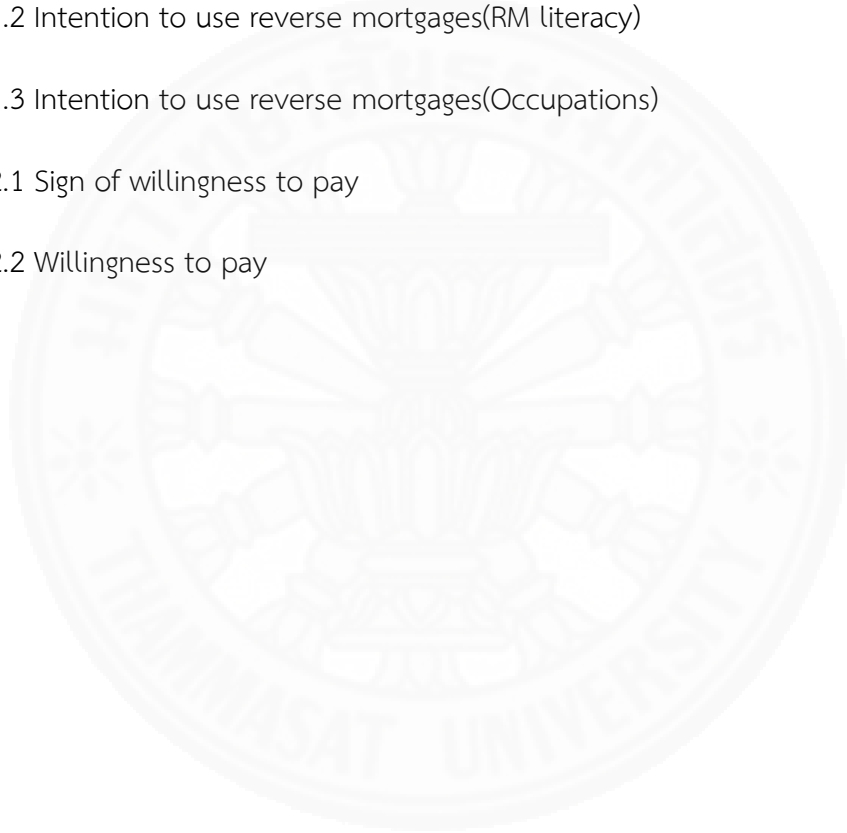


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## CHAPTER 1

### INTRODUCTION

#### 1.1 Statement of problem

Aging society is a current problem worldwide, whether in developed (e.g., United States, Italy, Germany, and Japan) or developing (e.g., Thailand) countries. The United Nations World Population Aging reported that if the proportion of persons above 60 years old of a country is more than 10% of its total population, then such a country is approaching the aging society. In addition, those with more than 20% are completely approaching the aging society (Nations, 2019).

Thailand now has 20% of people above 60 years old. This situation is due to economic development, advancement in science, progress in medical knowledge, and policy for controlling pregnancy, which resulted in a low fertility rate and decreased mortality rate. Accordingly, people enjoy a prolonged lifespan. These determinants have an effect in the rapid increase of aging people. When Thailand was approaching the aging society, the workforce decreased, the saving and investment diminished, and GNP declined; accordingly, the government must support the welfare of the aging people, hence reducing the government revenue and escalating expenditure on their support (Karaket, 2013).

The EIC report indicated that the ratio of marriages decreases from 313,546 couples in 2007 to 297,501 couples in 2018 with the increasing ratio of single/divorced persons. The ratio of divorce increases from 101,620 couples in 2007 to 121,617 couples in 2018. Hence, Thai people tend to be single, which brings us to the following questions: how these groups of people live when they retire? Do these groups of people have sufficient income or residence for living if they do not have any descendants that can look after them?

This study aims to solve the problem of retired and expected to retire people in the future in terms of having sufficient income and residence to live. Hence, I propose two choices for this group of people. The first choice is the reverse mortgage (RM) program and the second is assisted living residence.

## 1.2 What is RMs?

A conventional forward mortgage loan is used to finance customers for purchasing their houses, whereas a RM loan has different purposes. RM is a nonrecourse loan from a public bank institution, collateralized by the borrower's house. A RM loan may not be paid as long as the borrower lives in the house. The mortgage interest is added to the debt. The house is sold when the borrower moves to another residence or dies. Accordingly, the bank can recover the loan and interest rate. Lenders may be required to sell their houses to avoid unexpected situation. For instance, the value of interest and loan exceeded that of the house. The United States has no negative-equity guarantee for moving the risk from a borrower to a lender, but this concept is yet to be applied in Thailand (Davidoff, Gerhard, & Post, 2017).

If the lenders would like to protect themselves from the changes in the value of the loan, which may be higher than that of the house, then they have to buy insurance from the government or private insurance company to decrease the risk. In some countries, the borrowers must consult the RM counseling organization to understand the product advantages and disadvantages and avoid any unprecedented event in the future.

The RM in Thailand is also a loan from the public bank institution, and the borrowers may use their houses as collateral. However, the RM in the USA and Thailand has certain differences. For example, the borrowers in the RM program have to pay an interest rate when a loan reaches maturity or when the value of the loan exceeds that of the house. In RM, the borrowers will only pay monthly (no lump sum

or credit line); thus, the money paid by the bank is stable regardless of the interest changes because of its specification in the contract. The RM contract will mature in 25 years after the contract has taken effect. The monthly payment rates vary depending on the location and the type of residence. For example, the monthly payment rate of the houses located in the city municipality, sub-district municipality, Bangkok, or Pattaya is 70%. Meanwhile, the monthly payment rate for a condominium that is located outside the area that I previously mentioned is 60% (GSB, 2018). The table in Appendix A illustrates the details of RM in each country.

### **1.3 What is the assisted living residence?**

An assisted living residence is a house/condominium/apartment for elders that have sufficient money to pay for access to this program. The members have the right to live in a house/condominium/apartment, and some institutions allow their spouse or brother/sister to live with them until they pass away. The other advantages include 24-h nursing care, physical therapy, and speech therapy. However, the members must pay for daily expenditure, extra expenditure for health care service, transportation cost, and miscellaneous spending. Specifically, the members must have sufficient money to live in assisted living residences (KAGAN, 2018).

Although the RM program is an interesting choice, it has either advantages or disadvantages. For instance, the program requires you to manage your lump sum, salary, or credit line to avail sufficient health and nursing care. The RM program in Thailand is different from those in other countries because it has no negative equity guarantee and has limited loan age. The alternative choice is an assisted living residence. This option is interesting because this program has different advantages and disadvantages than the RM program, such as 24-h nursing care service. However, the assisted living residence does not provide salary, lump sum, or credit line.

In this study, I try to investigate the possibility of success of the RM program in the case of elders in Bangkok Metropolis, Thailand, and find the factors that affect the decision to join such a program. Thailand just launched the RM program in 2018. To my knowledge, this study can help assess the possibility of success for the RM program.

#### **1.4. Research questions**

1. What are the factors affecting the decision to join the RM program?
2. How do potential retirement people prioritize their living requirements after retirement?

#### **1.5. Objectives of this study**

1. To investigate the factors that affect the intention to join the RM program;
2. To quantify the willingness to pay for nursing care after retirement and that of the types of residents; and
3. To quantify willingness to pay for the lifetime residential guarantee of the retired people.

#### **1.6. Scope of the study**

The subjects of this study are the people aging between 25 and 60 years old that may be interested in the RM program. I keep the primary data by using a self-

reported experimental survey questionnaire and collecting relevant information in Bangkok and other regions.





## CHAPTER 2

### LITERATURE REVIEW AND THEORETICAL FRAMEWORK

#### 2.1 Life cycle of saving and reverse mortgages(RM)

The life cycle hypothesis is an economic theory that keeps the spending and saving habits of people over a lifetime. This hypothesis proposes that individuals plan their spending over lifetimes, taking into account their future income. Accordingly, these individuals take a loan when they are young, assuming that future income will enable them to pay the debt. Then, they save during their middle age to maintain their level of consumption when they retire. Accordingly, wealth accumulation is low during the youth and old age and high during the middle age (Modigliani & Brumberg, 1954). Wilcox (1989) found that the anticipated increase in social security benefits causes substantial increases in the consumption expenditure and expected consumption expenditure at the time when the increase is paid, specifically for durables. This notion indicates that the group of people who work for the public manifests less concern about their retirement because they might receive sufficient social security benefits or some sources of income from their descendants.

First, Figure 2.1 depicts that private workers receive more income and have a steeper line than public ones during the working period. However, the income of public workers exhibits a slower decrease than that of private ones when they retire.

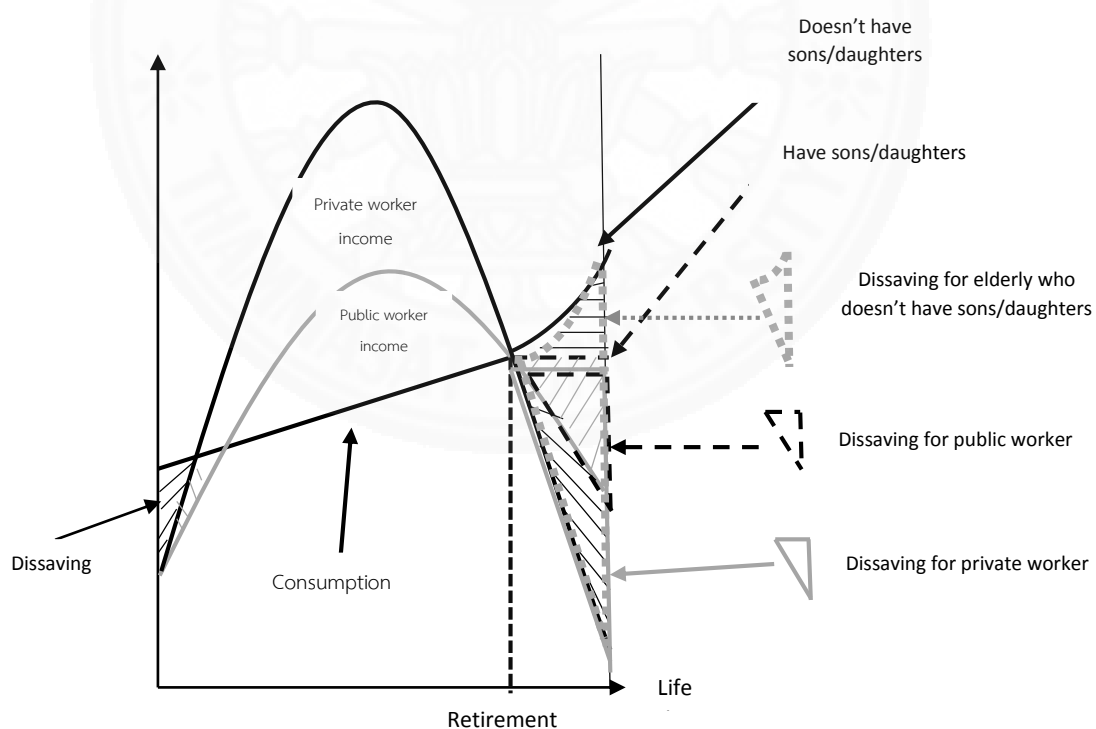
Second, the proportion of dissaving of private workers (big triangle) is more abundant than that of public ones (small triangle) after retirement because the latter have welfare and pension scheme when they retire from a job. On the contrary, private workers do not have a pension scheme; thus, their proportion of dissaving is large.

Third, the consumption expenditure of retirees who have sons/daughters is low because it will be covered in the compensation expenditure of their

descendants. This concept is common in Asian culture wherein the descendants have to take care of their parents when they get old; thus, all the health or miscellaneous expenditure will be covered by their descendants. By contrast, the consumption expenditure of retirees who do not have sons/daughters is increased by the health and miscellaneous expenditure because they do not have descendants to compensate for it; thus, their dissaving is the biggest triangle. In the case of public and private workers who do not have any sons/daughters, the latter seem to have less consumption expenditure than the former after retirement because of the pension schemes provided by the government that compensate some of their consumption expenditures (health or miscellaneous expenditure). Thus, public workers are less concerned about their retirement than private ones.

Figure 2.1

Life cycle of saving of private worker and public worker



Source: Author's concept

Chinloy & Megbolugbe (1994), Delgadillo, Stokes, & Lown (2014) Karamcheva (2013) and Rasmussen, Megbolugbe, & Morgan (1997) also found that RM can compensate the expected future income and consumption expenditure of the elderly for the nursing home care and other medical expense or use the RM to build a garage and pay off their existing mortgage with the remaining fund in a line of credit for an emergency. Most borrowers prefer line credit and lump sum. The authors also found that the groups of people who want to use the RM program are aging. Dillingh, Prast, Rossi, & Brancati (2013), Kutty (1998) and Nakajima & Telyukova (2017) found that RM can help low-income and low-wealth households, single households, and poor-health household and elderly struggling with poverty. Specifically, the RM can compensate for the expected future income and consumption expenditure. The authors also found that the household with sons/daughters and precautionary motives dampen the RM loan demand. If borrowers have older age, then they gain several benefits from the RM. Weinrobe (1987) found no relationship between the different occupations and the decision to join RMs.

In conclusion, most people who use RM also have familiar conditions, such as wealthy house assets but low cash, insufficient savings, maintained consumption smoothing, desired certain financial status, and health problems.

The life cycle hypothesis proposed that the factors determining retirement savings are as follows: expected future income, expected consumption expenditure, age, with or without sons/daughters, and occupations (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997)

$X_1$  = life cycle hypothesis: expected future income, expected consumption expenditure, age, with or without sons/daughters, and occupations.

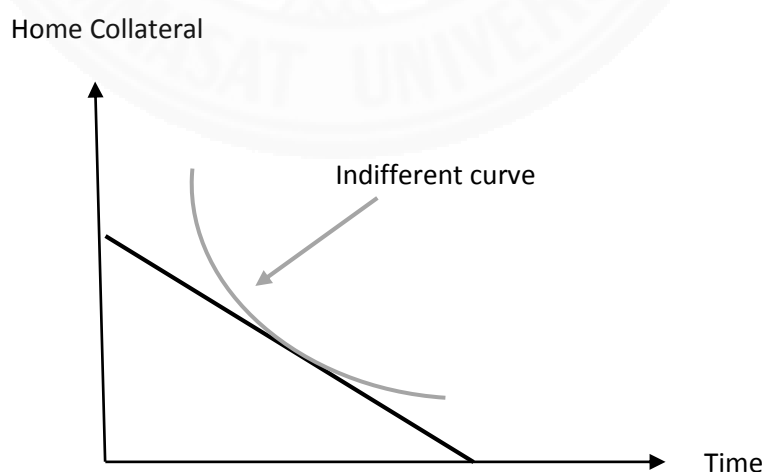
## 2.2 Utility Maximization and RM

Utility maximization is the optimally developed formal theory of rationality and originates from the core of neoclassical economics. This concept assumes a utility function that measures an individual's preference for achieving owing to their action. The rational individual chooses the movement, from among those given, which maximizes their utility; if the individuals' goals are consumption and leisure, then they will combine these goals that offer the maximum utility for them (Simon, 1978).

Figure 2.2 shows that the individual who uses RM relies on home collateral and time (Chinloy & Megbolugbe, 1994). If these two factors increase, then the individual preference is going to increase as well because the individual has abundant wealth and time to enjoy the RM when home collateral and time increase. The data from the characteristics of the house, homeowner, and economy to a representative of home collateral must be accurate to measure home collateral.

Figure 2.2

Indifferent curve of individual who use reverse



Source: Author's concept

### 2.2.1 Characteristics of home

Some studies found that the characteristics of home affect the intention to use the RM program or benefit of gaining from it. Weinrobe (1987) found that house price and size have effects on the decision to join RM. Hanewald, Post, & Sherris (2016) and Kutty (1999) also found that house type variables, such as house price and geographical location, are significant potential gains from the RM. The authors explained that individuals who have a high proportion of their wealth invested in home equity will receive numerous benefits from having access to equity release products. The borrowers whose houses are located in a high-quality area will also receive substantial benefits. Blevins, Shi, Haurin, & Moulton (2017) found that house price has a negative effect on valuation remaining in the RM program.

Benefit from the RM means that people will use RM because they perceive the benefit.

### 2.2.2 Characteristics of individual home owner

This determinant is a crucial component to analyze the intention to use a RM or the benefit of gaining from it. Weinrobe (1987) found that marital status, and health (regular medical expense) have positive effects on the intention to use RMs. Davidoff & Welke (2004) found a negative effect on the latter variable. Meanwhile, expected home occupancy (how long do you wish to remain in this home?) has a negative effect. By contrast, Kutty (1999) found that marital status has a negative effect, but it has a positive influence on singles, females, and divorcees. Blevins et al. (2017) and Davidoff & Welke (2004) found that gender also has negative effects on the intention to use the RM.

### 2.2.3 Characteristics of economy

This determinant also plays an essential role in analyzing the intention to use the RM or the benefit of gaining from it. Weinrobe (1987) found that an increase in income has a negative effect on the intention to use the RM. Kutty (1999) found that saving or investment has a positive effect; however, receiving welfare or public assistance has a negative effect. By contrast, Huang, Chen, & Deng (2013) found that receiving welfare or public support has a positive effect because the RM market can reduce the social pension insurance burden of working residents and help improve the working and elderly resident's consumption. Specifically, such a factor can help improve consumption smoothing and benefit the borrowers.

As previously mentioned, the variables are related to utility maximization and RM. The critical variables for measuring home collateral consist of features of the home, homeowner, and the economy. These variables can be utilized to optimize the utility of individuals that use the RM. The characteristics of individuals, such as elderly, females, singles, no bequest motive, and good house location, who received benefits from the RM are almost the same.

I obtained the following variables from this part: characteristics of the home (size and price of the house), homeowner (male, female, single, divorced, married, expected home occupancy "how long do you wish to remain in this home?", and health [regular medical expense]), and economy (debt, income, saving, or investment) (Blevins et al., 2017; Davidoff & Welke, 2004; Hanewald et al., 2016; Huang et al., 2013; Kutty, 1999; Weinrobe, 1987)

$X_2$  = utility maximization: characteristics of home, homeowner, and economy.

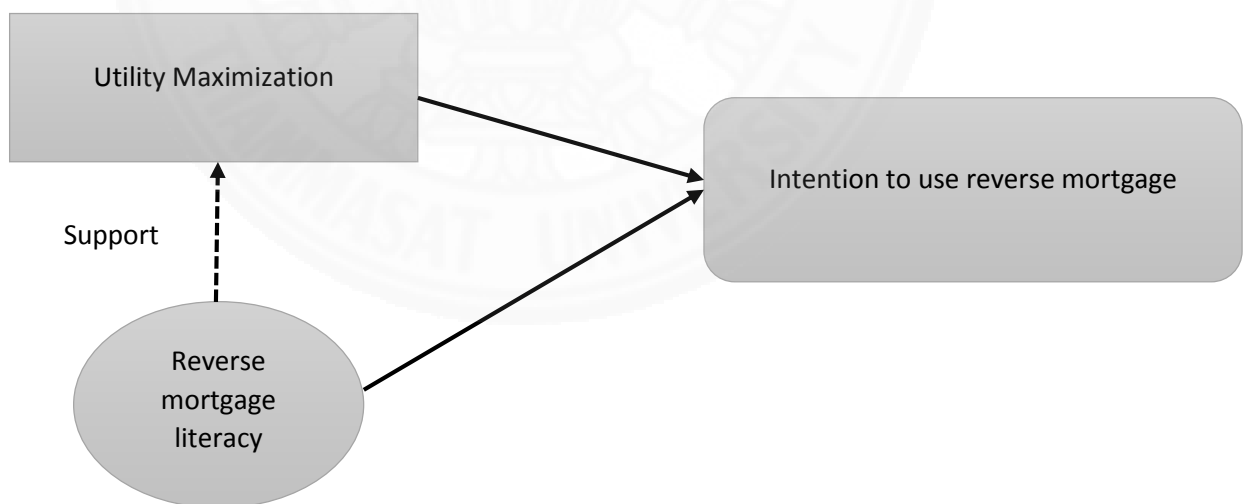
### 2.3 RMs literacy and RM

RM literacy is a crucial factor and has a positive relationship with the intention to use the RM. Consequently, low RM literacy leads to low demand for the intention to use the RM (Campbell, 2016; Davidoff, 2015). Meanwhile, the RM literacy can increase utility maximization because when the respondents have RM knowledge, they can maximize utility. Thus, the respondents know the benefits of information and can adapt to their optimal choice on the basis of their resources. RM literacy and utility maximization are related to each other.

The logical explanation of Figure 2.3 is as follows: when respondents have RM literacy, they can decide based on their resources by optimizing utility. Finally, high RM knowledge can increase the intention to use the RM (Lucas, 2015).

Figure 2.3

#### Role of reverse mortgages literacy



Source: Author's concept

Duca & Kumar (2014) and Fornero, Rossi, & Brancati (2016) found the same direction on RM literacy, RM, and mortgage equity. The high RM literacy relates to low

interest in RMs because numerous literate households are prepared for retirement. Similar to mortgage equity, the RM illiteracy and lack of knowledge partly supported mortgage equity withdrawals, thereby increasing household borrowing between the US mortgage boom of the late 1990s and mid-2000s. Reed (2009) found that the elderly misunderstood that RM may lead to potential negative implications for demand. Van Rooij, Lusardi, & Alessie (2011) found the same result in the stock market, which is the alternative market for investing and making a profit. The result showed that RM literacy affects financial decision-making. Individuals with low literacy are less likely to invest in the stock market.

Shan (2011) matched the other findings of RM literacy and demographic data with the ZIP code level demographic data and country home price growth and investigated whether the ZIP code characteristics correlated with the original RM. Moulton, Haurin, Shi, & Ericksen (2015) compared the demographic characteristics of households in the HRS with household attending a RM counseling session and those that availed of a RM after attending counseling. The result showed that household income, home equity, race, and prior credit performance are associated with the probability of relating to the RM. The great demand for the RM is among the elderly who have high home equity but a low-income flow and high payments for conventional mortgage debt.

Almost all papers found positive and negative relationships between high RM literacy and intention to use the RM. With regard to the positive relationship, people who have high RM literacy might have an alternative to invest in other assets that can make a profit for them. The people who have RM literacy can manage their assets, which supports them in deciding on their optimal utility, such as using the RM. In terms of the negative relationship, people who have high RM literacy might choose other products that have more worth than RMs.

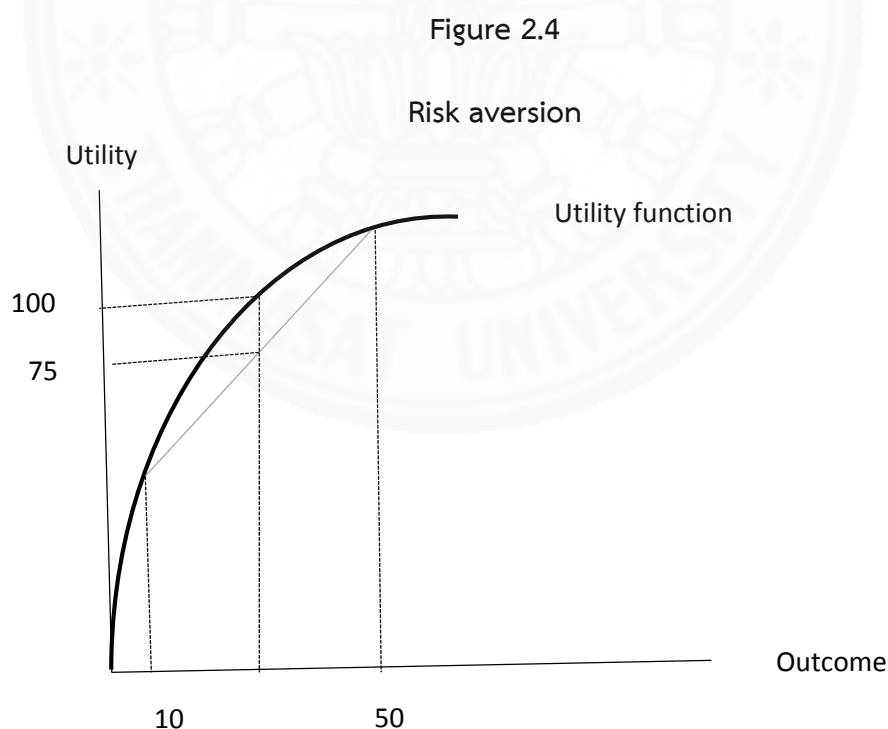
$X_3$  = RMs: seven questions for measuring RM literacy.



## 2.4 Risk aversion and reverse mortgages(RM)

Risk-averse individuals have low risk endurance or high risk aversion. These groups of investors are afraid of volatility. Hence, these individuals are willing to accept a little risk in their portfolio. Retirees who have invested in building their portfolio are unwilling to allow any type of risk to their principal. Conservative investors aim for a guaranteed and highly liquid mechanism. This theory starts from Bernoulli, who he is a mathematician; Bernoulli wrote about risk aversion in 1738 that was then translated into English in (RISK & BERNOULLI, 1954).

Figure 2.4 shows that the borrowers who are risk-averse tend to less likely use RM. The RM is risky because if the borrowers pass away before the loan reaches maturity, then the borrower will be a disadvantage. Many studies reported that risk aversion has a negative effect on the intention to use the RM (Davidoff et al., 2017).



Source: RISK & BERNOULLI (1954)

In the part of RM, risk aversion has a negative relationship with the intention to use RM; risk-averse borrowers are afraid to pass away before the loan matures; the authors found that the elderly are relatively high risk-averse, and home equity is their important component of precautionary saving; specifically, this group of elderly has less intention to use RM (Davidoff et al., 2017; Michelangeli, 2008). The negative and significant coefficient for risk aversion for financial literacy is potentially in line with the theoretical prediction of (Eeckhoudt & Godfroid, 2000). Specifically, the value of inquiring information can fall with risk aversion if a decision-maker had expected a high likelihood of not taking action.

By contrast, Chatterjee (2016) and Davidoff (2010) found that homeowners who are risk-averse and those in the two highest quartiles of net worth were likely to have RM loans. Long-term insurance care and the RM are highly complementary and grow with risk aversion and value of the home.

Some studies found a positive relationship with risk aversion and RM, whereas others found a negative relationship. The positive correlation between risk aversion and RM might be the reason that borrowers perceive the RM as a safe product and can create financial liquidity for them. However, the negative relationship between risk aversion and RM might be the reason that borrowers perceive the RM as a risky product, and they can lose welfare if they pass away before the loan matures. These aspects depend on the reasons for each borrower.

The factors determining risk aversion consist of risk aversion (Chatterjee, 2016; Davidoff, 2010; Davidoff et al., 2017; Eeckhoudt & Godfroid, 2000; Michelangeli, 2008).

$X_4$  = risk aversion: risk-averse

## 2.5 Assisted living residence and RMs

The assisted living residence is an alternative choice for the elderly because they provide primary care, promote health, look after the elderly when they are ill, and have independence with the retirement society. However, the elderly have to pay fee-charging to an institution, unlike the RM program that will pay monthly through salary until the loan expires. To my knowledge, the assisted living residence is as attractive as the RM program, and they vary in terms of advantages and disadvantages. Both programs also have the same target group, that is, the elderly people.

Franks (1996), Hawes, Phillips, Rose, Holan, & Sherman (2003) and Wink & Holcomb (2002) found that the characteristics of elders who admit to assisted living residents have an age range between 60 and 100 years old. Almost all elders can take care of themselves, need nursing care and lower solitude than those who admit to the nursing home, and maintain a high level of autonomy and independence. In the case of the United States, Leon et al. (2000) found that residing in an assisted living residence may be a better alternative for the elderly with Alzheimer's disease and other memory deficits than living in the nursing homes.

Silver, Grabowski, Gozalo, Dosa, & Thomas (2018) and Wink & Holcomb (2002) found the following advantages of the increase of assisted living residence: health maintenance and promotion, management of acute and chronic disease, increased physical activity, and improved nutrition of elders. The other advantages in the case of the United States include the increase in the assisted living residence capacity and reduction in the proportion of nursing home days that were paid privately by residents. The spillover effects, including the process of care and residents' outcomes, on the other sectors of long-term care must be assessed as the demand for assisted living residence continues to grow.

Leviton (2002), Nakajima & Telyukova (2017) and Zedlewski, Cushing-Daniels, & Lewis (2008) found that assisted living residence dampen the demand for the RM because some elders are attached to their houses, and they do not want to

move out. Meanwhile, some elders consider the RM program as a last resort because they need a close nursing service when they retire. Hence, the assisted living residence and nursing home are the optimal choices for these elders.

$X_5$  = Place attachment

## 2.6 Willingness to pay for the health care/nursing care

Health care is the main factor for the elderly in making decisions and planning for the future. If the elderly have good health, then their willingness to pay might be low. On the contrary, if the elderly have poor health, then their willingness to pay might be high.

Hence, I want to measure the willingness to pay for health care to assess the possibility of choosing the RM or the assisted living residence and the extent that the elderly are willing to pay for health care.

Aizuddin, Sulong, & Aljunid (2012) studied the willingness to pay for health care. They found that age, education, income, dependency ratio/household size, perception, healthcare service quality, locality rural/urban, and ability to pay are factors that affect the willingness to pay for health care. Asgary, Willis, Taghvaei, & Rafeian (2004) studied the willingness to pay for health insurance, which is a safe choice to avoid being bankrupt due to health care expenditure. The result indicated that the above-mentioned factors affect the decision making for willingness to pay. Nevertheless, the factors that contributed to the willingness to pay for health insurance are level of education and quality of health center in the village because if individuals have a high level of education, then they can efficiently understand their health and health insurance program.

King Jr, Tsevat, Lave, & Roberts (2005) studied the willingness to pay for a quality-adjusted life-year (QALY). They found that almost all elders are willing to pay for QALY. The prospect of death is high for older individuals, and they are less willing

to trade their remaining life span. Hyun, Kang, & Lee (2016), Werblow, Felder, & Zweifel, (2007) and Zweifel, Felder, & Werblow (2004) investigated the health care expenditure in developed countries and found that only the increase in age has not affected the health care expenditure per GDP. However, the time and the fear of death have positive effects on increasing health care expenditure.

I conclude that the factors affecting the willingness to pay for health care/nursing care include age, education, income, dependency ratio/household size, perception, healthcare service quality, locality rural/urban, and ability to pay. The elderly who have a high level of education can intensively understand their health and health insurance programs. Moreover, the elderly exhibit the willingness to pay for health care/nursing care. The prospect of death is high for older individuals, and they are less willing to trade their remaining life span. By contrast, individuals who need intensive healthcare/nursing care exhibit a willingness to pay for it. Finally, only the increase in age has not affected health care expenditure per GDP. However, the time and the fear of death have positive effects on increasing health care expenditure.

## **2.7 Requirement of living standard**

The living standard is essential for assessing the quality of life for macro-indicators, such as GDP per capita, fertility rate, mortality rate, and nutrition. The required materials for living standards are housing, health care, income, and facilities. In this study, I will refer to the required materials for living standards to answer objectives 2 and 3, that is, whether nursing care/health care and residential affect the decision of an individual.

Chai (1992) and Haughton, Haughton, & Phong (2001) studied the requirement of living standards in Asia. The result indicated that the increase of health care and decrease in housing price can improve the satisfaction of an individual's living

standard for the other factors, such as the increasing durable good and staple food. Income can also improve the satisfaction of an individual's living standard.

The study about requirement living standards in Europe by Birčiaková, Stávková, & Straka (2015); Rao & Baer (2012) and Siedlecka (2015) also found the same result. The improvement of housing conditions and health care can enhance the individual's living standard.

I conclude that the needs of an individual to improve their living standards include housing conditions, healthcare, income, and staple food. Hence, if individuals have several needs to enhance their living standards, then they also have a high willingness to pay for improving their living standards.

$F_1$  = nursing care

$F_2$  = lifetime residential guarantee

The factors of the equation for the decision to join the RMs (objective 1) are as follows:

$$Y_i = f(X_1, X_2, X_3, X_4, X_5), \forall i = 1, \dots, 7,$$

$$Y_i = j \leftrightarrow \mu_{j-1} < y_i^* \leq \mu_j, \text{ where } j = 1, \dots, 7,$$

where  $Y_{1i}$  is the intention to join the RMs;  $X_1$  is the life cycle of savings; expected future income, expected consumption expenditure, age, having or not having sons/daughters, and occupations;  $X_2$  is the utility maximization; characteristics of house, homeowner, and the economy;  $X_3$  is the RMs literacy;  $X_4$  is the risk aversion; and  $X_5$  is the place attachment.

The factors of the equation for the willingness to pay for the nursing care/healthcare and residential (objectives 2 and 3) are as follows:

$$P(Y_{2is} = 1) = (F_1, F_2, Bid Price),$$

where  $Y_{2is}$  is the willingness to pay;  $i$  is individuals and  $S$  is the scenario;  $F_1$  is the nursing care/healthcare;  $F_2$  is the lifetime residential guarantee; and *Bid Price* is preferred price to pay for nursing care and lifetime residential guarantee.



## CHAPTER 3

### METHODOLOGY

#### 3.1 Source of data

This study keeps data from the self-reported experimental survey questionnaire by separating them into the following three parts: objective characteristics of respondents, questionnaire for measuring RM literacy, and place attachment questionnaire.

The target groups that I focus on can be divided into three major sectors, namely, the private sector, public sector, and state enterprise—separated by two periods of age, that is, 25–39 and 40–60 years old. I keep two periods of age to investigate the psychology for decision making to place attachment. At present, a different generation may receive a foreign culture from social media. Hence, this factor might affect the psychology for the decision making of respondents.

I choose salarymen/women as a sample group to control the sample group characteristics, such as level of income, education, spending, and saving. Brady & Friedman (1947) and Hefferan (1982) found that the level of income has a positive correlation with saving. Consequently, I control the groups that have the same properties. For example, stable income and common welfare or public assistance are hardly found in farmers, self-employed individuals, and the informal sector. Then, I compared the result of the intention to join the RM among three subgroups.



Table 3.1

## Sample data

	<b>25-39 years</b> (GEN Y)	<b>40-60 years</b> (GEN X and Baby boomer)	<b>Total</b>
<b>Government employee</b>	77 (50%)	77 (50%)	<b>154</b> <b>(100%)</b>
<b>State enterprise employee</b>	81 (44.02%)	103 (55.98%)	<b>184</b> <b>(100%)</b>
<b>Private employee</b>	94 (54.34%)	79 (45.66%)	<b>173</b> <b>(100%)</b>
<b>Total</b>	<b>252</b> <b>(49.32%)</b>	<b>259</b> <b>(50.68%)</b>	<b>511</b> <b>(100%)</b>

Source: Author's Calculation

Table 3.2

## Factor analysis of Degree of risk averse and Place attachment

<b>Item</b>	<b>Factor Loading</b>	<b>%Total Variance</b>	<b>Cronbach Alpha</b>
<b>Degree of Risk Aversion</b>		<b>0.5727</b>	<b>0.9153</b>
10%	0.5475		
20%	0.6529		
30%	0.7074		
40%	0.7687		
50%	0.8291		
60%	0.8462		
70%	0.8422		
80%	0.8231		
90%	0.7943		
100%	0.6990		
<b>Place Attachment</b>		<b>0.7891</b>	<b>0.9601</b>
<u>Home</u>			
1.be myself at home	0.8656		
2.really miss home	0.9102		
3.feel happiest when I am home	0.9339		
4.Home is the best place	0.9221		
5.Home is my favorite place	0.8866		
6.Home reflects the type of person	0.9320		
7.home is a reflection of me	0.8018		
8.home are better places to be	0.8457		

Source: Author's Calculation

Table 3.2 shows that the degree of risk aversion and place attachment have Cronbach's alpha of more than 0.7, thereby indicating that all choices can be used to analyze. The degree of risk aversion at 10%, 20%, and 100% has factor loadings of less than 0.7 because few respondents are risk-loving for the degree of risk aversion at 10% and 20%. In the degree of risk aversion at 100%, few respondents stay in bed; hence, the degrees of risk aversion at 10%, 20%, and 100% have factor loadings of less than 0.7. All items of place attachment have factor loadings of more than 0.7, thereby indicating no problem.

## **3.2 Questionnaires**

### **3.2.1 The objective characteristics**

In this part, I create the questionnaire by separating it into three parts. Part one, the main question, is life cycle hypothetical questions, including the expected income, expected expenditure, age, and having or having no sons/daughters. Part two is maximization utility questions, including the characteristics of the homeowner, economy, and house, RM literacy, and risk aversion. Part three is the willingness to pay for health/nursing care and the lifetime residential guarantee. In reference to the literature review, I then combine the interesting question for generating my questionnaire(Appendix B).

### **3.2.2 Reverse mortgage literacy questionnaire(from Government Savings Bank and Government Housing Bank)**

This set of questions was obtained from (Davidoff et al., 2017), but I already adjust them for Thailand's case because the RM program in different banks or countries has diverse criteria. Although the main concept is the same, the details vary. In this set of questionnaires, I refer to GSB and GH BANK because they provide full information for the researcher (Appendix C).

### 3.2.3 Home attachment questionnaire

I adjust this set of questions following (Stedman, 2006). This set of questions regards the psychology of individual home attachment, which includes eight items. I measure the home attachment because the different generations have diverse aspects of their place or home. The baby boomers and Gen X in Thailand may prefer to attach to their home. By contrast, Generation Y (Gen Y, millennial) may less prefer house attachment because the social media and the internet of things can help people easily absorb foreign culture. Hence, this set of questions can help us investigate whether these individuals have a different opinion or not about house attachment (Appendix D).

### 3.3 Data Analysis

I use ordered logit/probit to predict the result of the intention to join the RMs and objective characteristics. Then, I use factor analysis to find the weight of the RM literacy index. I also use a random effect logit to determine the willingness to pay.

#### 3.3.1 Ordered logit/probit model

A widely used approach for estimating models of this type is an ordered response model, which almost always employs the probit link function. This model is often referred to as the “ordered probit” model similar to many models for the qualitative dependent variable (Jackman, 2000).

$$\begin{aligned}
 y_i^* &= x_i\beta + \varepsilon_i, E(\varepsilon_i) = 0 \\
 y_i &= 1 \text{ if } -\infty < y_i^* \leq \tau_1, \\
 y_i &= j \text{ if } \sum_{k=1}^{j-1} \tau_k < y_i^* \leq \sum_{k=1}^j \tau_k, j = 2, \dots, m-1 \\
 y_i &= m \text{ if } \sum_{k=1}^{m-1} \tau_k < y_i^* \leq \infty
 \end{aligned}$$

Where  $\tau_j = \text{Threshold value}, j = 1, 2, \dots, m$

### 3.3.2 Random effect Logit/Probit model

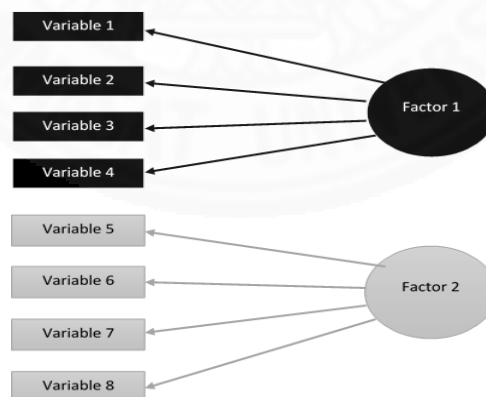
These models are useful for analyzing panel data with a binary dependent variable, and the independent variables are typically randomly assigned. This circumstance frequently occurs in data from economic experiments. The marginal effects are not simply regression coefficients because these models are nonlinear; thus, the effects are reported alongside the standard regression output (Bland & Cook, 2019).

### 3.3.3 Factors analysis

This technique reduces the large number into a few typical numbers by the number that we obtained, which is called the factor loading index. This technique extracts the maximum common variance from all variables and places them into a typical score. Hence, we can use this score for further analysis.

Figure 3.1

#### Factor analysis



Source: Osborne, Costello & Kellow (2008)

## CHAPTER 4

### RESULT

Table 4.1.1 shows that almost all the variables in the life cycle hypothesis (LCH) theory are significant, meaning that they follow LCH. For instance, the first (all) and second (25–39 years old) columns have high expected expenses ( $E[\text{Expense}]$ ), and sons/daughters are significant. If a respondent aged 25–39 years old has high expected expense ( $E[\text{Expense}]$ ), then the probability of intention to use RMs also increases. On the contrary, if a respondent aged 25–39 years old has sons/daughters, then the probability of intention to use RMs decreases. In the third column (40–60 years old), if the respondent aged 40–60 years old has high expected income ( $E[\text{Income}]$ ), then the probability of intention to use RMs decreases. By contrast, if the respondent aged 40–60 years old has high expected expense ( $E[\text{Expense}]$ ), then the probability of intention to use RMs increases (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997).

Table 4.1.1 shows that some variables in maximization utility theory are significant, meaning that they follow such theory. For instance, the second column (25–39 years old) exhibits several degrees of risk-averse, high house price, high income, medical expense, and a government employee; thus, the probability of intention to use RMs decreases (Blevins et al., 2017; Hanewald et al., 2016; Weinrobe, 1987). On the contrary, if the respondent aged 25–39 years old has debt, then the probability of intention to use RMs increases (Delgadillo et al., 2014; Rasmussen et al., 1997). The third column (40–60 years old) shows high place attachment and preference to stay home; thus, the probability of intention to use RMs decreases (Franks, 1996; Hawes et al., 2003; Leon et al., 2000; Leviton, 2002; Nakajima & Telyukova, 2017; Silver et al., 2018; Weinrobe, 1987; Wink & Holcomb, 2002; Zedlewski et al., 2008). By contrast, if a respondent aged 40–60 years old is a state employee and has high RM literacy, then the probability of intention to use RMs increases (Davidoff et al., 2017)

Table 4.1.1

## Intention to use reverse mortgages(age group)

Intention to use	All	25-39 years	40-60 years
<u>LCH</u>			
40-60	-0.0557		
E(Income)	-0.2263	-0.0692	-1.3580 ***
E(Expense)	0.5425 ***	0.6670 ***	0.5406 *
Sons/daughters	-0.4376 ***	-0.5149 ***	-0.2839
<u>Max Utility</u>			
Degree of risk	-0.3627 **	-0.3426 *	-0.4119
RM literacy	0.4210 *	0.2701	0.6133 *
Place attachment	-0.0427	0.2374	-0.6536 **
House price	-0.6521 *	-0.9614 *	-0.2920
Stay home	-0.2589 **	-0.1607	-0.4445 **
Government employee	-0.1764	-0.5745 **	0.1442
State enterprise employee	0.2960 **	0.2633	0.6759 **
Income	-0.1704	-0.5072 **	0.3959
Saving	-0.0065	0.0191	-0.3310
Medical expense	-0.1328	-0.2997 *	0.0479
Debt	0.3694 **	0.3644 **	0.3950
Insurance	-0.0802	0.0121	-0.1903
Gender	-0.0304	0.0961	-0.3286 *
Status	0.1073	0.1762	0.1224
Education	-0.0070	-0.2832	0.2207
cut1	-0.5837 *	-0.8513 *	0.0721
cut2	0.2685	-0.0246	1.0603 *
cut3	0.8121 **	0.5580	1.5879 **
cut4	1.4453 ***	1.2809 ***	2.1058 ***
cut5	2.1139 ***	1.9392 ***	2.8440 ***
cut6	2.4167 ***	2.3081 ***	3.0038 ***
N	394	237	157
Loglikelihood	-597.719	-369.24814	-214.17179
chi2	80.552028 ***	72.973757 ***	55.136404 ***
r2_p	0.06067495	0.06668005	0.08762001

Note : \* = 90%, \*\* = 95%, \*\*\* = 99%

Source: Author's Calculation

Table 4.1.2 shows that's respondents are separated by the level of RM literacy. In the first column (All), some variables in LCH theory are significant. Specifically, some variables follow LCH. For instance, if the respondents have sons/daughters, then the probability of intention to use RMs decreases (Weinrobe, 1987). On the contrary, if a respondent has a high expected expense ( $E[\text{Expense}]$ ), then the probability of intention to use RMs increases (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997). Some variables in maximization utility theory are significant, meaning that they follow such theory. For instance, if the respondents have a high degree of risk-averse, high house price, and prefer to stay home, then the probability of intention to use RMs decreases (Michelangeli, 2008; Blevins et al., 2017; Hanewald et al., 2016; Weinrobe, 1987). On the contrary, if the respondents are state enterprise employees and have high RM literacy and debt, then the probability of intention to use RMs increases (Weinrobe, 1987; Delgadillo et al., 2014; Rasmussen et al., 1997; Davidoff et al., 2017).

In the second column (high RM literacy), almost all variables in LCH theory are significant, meaning that they follow LCH. For instance, if the respondents who have high RM literacy have sons/daughters, then the probability of intention to use RMs decreases (Weinrobe, 1987). On the contrary, if the respondents who have high RM literacy have a high expected expense ( $E[\text{Expense}]$ ), then the probability of intention to use RMs increases (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997). Some variables in maximization utility theory are significant, meaning that they follow such theory. For instance, if the respondents who have high RM literacy have a high degree of risk-averse, high house price, and preferred to stay home, then the probability of intention to use RMs decreases (Michelangeli, 2008; Blevins et al., 2017; Hanewald et al., 2016; Weinrobe, 1987). On the contrary, if the respondents who have high RM literacy are state enterprise employees and have high debt, then the probability of intention to use RMs increases (Delgadillo et al., 2014; Rasmussen et al., 1997; Weinrobe, 1987).

In the third column (medium RM literacy), some variables in LCH theory are significant, meaning that they follow LCH. For instance, if the respondents who have medium RM literacy have a high expected expense ( $E[\text{Expense}]$ ), then the probability of intention to use RMs increases (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997). Some variables in maximization utility theory are significant, meaning that they follow such theory. For instance, if the respondents who have medium RM literacy are government employees, then the probability of intention to use RMs decreases (Weinrobe, 1987). On the contrary, if the respondents who have medium RM literacy have high debt, then the probability of intention to use RMs increases (Delgadillo et al., 2014; Rasmussen et al., 1997; Weinrobe, 1987)

In the last column (low RM literacy), some variables in LCH theory are significant, meaning that they follow LCH. For instance, if the respondents who have low RM literacy have high expected income ( $E[\text{Income}]$ ), then the probability of intention to use RMs decreases (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997; Weinrobe, 1987). Some variables in maximization utility theory are significant, meaning that that they follow such theory. For instance, if the respondents who have low RM literacy have high house price, high debt, and high education, then the probability of intention to use RMs increases (Blevins et al., 2017; Delgadillo et al., 2014; Hanewald et al., 2016; Rasmussen et al., 1997; Weinrobe, 1987).



Table 4.1.2

## Intention to use reverse mortgages(RM literacy)

Intention to use	All	High RM	Medium	Low RM
<u>LCH</u>				
40-60	-0.0557	-0.0630	-0.2259	-0.5412
E(Income)	-0.2263	-0.2717	-0.1724	-7.0219 ***
E(Expense)	0.5425 ***	0.5207 **	0.6941 *	0.6850
Sons/daughters	-0.4376 ***	-0.7040 ***	-0.0385	0.0186
<u>Max Utility</u>				
Degree of risk	-0.3627 **	-0.4852 **	-0.0751	-0.8414 *
RM literacy	0.4210 *			
Place attachment	-0.0427	-0.1286	0.0578	-0.3153
House price	-0.6521 *	-0.9989 *	-1.0255	1.9508 ***
Stay home	-0.2589 **	-0.2776 *	-0.3153	0.6352
Government employee	-0.1764	0.0720	-0.5749 *	-0.9852
State enterprise employee	0.2960 **	0.3222 *	0.1883	-0.2447
Income	-0.1704	0.0077	-0.3427	-0.2660
Saving	-0.0065	-0.0817		0.9587
Debt	0.3694 **	0.3136 *	0.5731 *	1.5019 ***
Medical expense	-0.1328	-0.1802	-0.0640	-0.7448
Gender	-0.0304	-0.0811	0.0654	0.4230
Status	0.1073	-0.0349	0.4641	0.7427
Education	-0.0070	-0.8430	-0.4931	1.8745 ***
Insurance	-0.0802	0.0569	-0.1605	-0.6588
cut1	-0.5837 *	-0.9999 ***	-0.7107	0.1166
cut2	0.2685	-0.2630	0.5090	1.3448
cut3	0.8121 **	0.2593	1.0777 *	3.0118 **
cut4	1.4453 ***	0.9470 ***	1.6323 ***	3.6903 ***
cut5	2.1139 ***	1.5897 ***		
cut6	2.4167 ***	1.9633 ***		
N	394	248	107	39
Loglikelihood	-597.719	-392.25249	-137.48991	-35.990851
chi2	80.552028 ***	53.656866 ***	41.097304 ***	552.26241 ***
r2_p	0.06067495	0.06541239	0.09006358	0.25849563

Note : \* = 90%, \*\* = 95%, \*\*\* = 99%

Source: Author's Calculation

Finally, cuts 5 and 6 in Table 4.1.2 show that respondents who have low and medium RM literacy do not have the difference of intention to use RMs. The RM literacy might affect the decision to join RMs.

Table 4.1.3 shows that the respondents are separated by occupations. In the first column (all), nearly all variables in LCH theory are significant, meaning that such variables follow LCH. For instance, if the respondents have sons/daughters, then the probability of intention to use RMs decreases (Weinrobe, 1987). On the contrary, if the respondent has a high expected expense ( $E[\text{Expense}]$ ), then the probability of intention to use RMs increases (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997). Some variables in maximization utility theory are significant, meaning that they follow such theory. For instance, if the respondents have a high degree of risk-averse, high house price, and preferred to stay home, then the probability of intention to use RMs decreases (Michelangeli, 2008; Blevins et al., 2017; Hanewald et al., 2016; Weinrobe, 1987). On the contrary, if the respondents are state enterprise employees and have high RM literacy and debt, then the probability of intention to use RMs increases (Weinrobe, 1987, Delgadillo et al., 2014; Rasmussen et al., 1997; Davidoff et al., 2017).

In the second column (government), almost all variables in LCH theory are significant, meaning that they follow LCH. For instance, if the respondents who are government employees have high expected income, then the probability of intention to use RMs decreases. On the contrary, if the respondents who are government employees have high expected expense ( $E[\text{Expense}]$ ), then the probability of intention to use RMs increases (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997). Some variables in maximization utility theory are significant, meaning that they follow such theory. For instance, if respondents who are government employees have insurance and a high degree of risk-averse, then the probability of intention to use RMs decreases (Michelangeli, 2008; Weinrobe, 1987).

Table 4.1.3

## Intention to use reverse mortgages(Occupations)

Intention to use	All	Government	State enterprise	Private
<u>LCH</u>				
40-60	-0.0557	-0.3194	-0.1778	-0.1070
E(Income)	-0.2263	-0.8295 *	0.3260	-0.3694
E(Expense)	0.5425 ***	1.1567 **	0.5964	0.7135 ***
Sons/daughters	-0.4376 ***	0.1020	-0.8632 **	-0.7932 ***
<u>Max Utility</u>				
Degree of Risk	-0.3627 **	-0.8239 ***	-0.3159	0.0208
RM literacy	0.4210 *	0.7786 **	0.1984	0.0383
Place attachment	-0.0427	0.1094	-0.0939	-0.1845
House price	-0.6521 *	-0.0732	-1.1627 *	-0.5301
Stay home	-0.2589 **	-0.2791	-0.3667	-0.1868
Government employee	-0.1764			
State enterprise	0.2960 **			
Income	-0.1704	0.1117	-0.2230	-0.4790
Saving	-0.0065	-0.6384	0.4324	0.0624
Medical expense	-0.1328	0.2196	-0.6388 **	-0.1438
Debt	0.3694 **	0.5341 **	0.1298	0.5310
Insurance	-0.0802	-0.4797 **	0.0087	0.2343
Gender	-0.0304	0.0365	-0.0523	0.0429
Status	0.1073	0.3335	-0.4261	0.0893
Education	-0.0070	0.5769 *	1.2989 ***	-0.3029
cut1	-0.5837 *	0.1030	-1.9512 ***	-0.9254
cut2	0.2685	1.1116 ***	-1.0982 *	-0.0818
cut3	0.8121 **	1.6565 ***	-0.4571	0.4713
cut4	1.4453 ***	2.1303 ***	0.3598	1.1639
cut5	2.1139 ***	3.0486 ***	1.2218 *	1.6340 **
cut6	2.4167 ***	3.3377 ***	1.6767 **	1.8995 **
N	394	152	96	146
Loglikelihood	-597.719	-202.00308	-145.75411	-226.21443
chi2	80.552028 ***	38.958984 ***		36.966903 ***
r2_p	0.0606749	0.08557549	0.09871637	0.0686792

Note : \* = 90%, \*\* = 95%, \*\*\* = 99%

Source: Author's Calculation

In the third column (state enterprise), some variables in LCH theory are significant, meaning that they follow LCH. For instance, if the respondents who are state enterprise employees have sons/daughters, then the probability of intention to

use RMs decreases (Weinrobe, 1987). Some variables in maximization utility theory are significant, meaning that they follow such theory. For instance, if the respondents who are state enterprise employees have medical expense and high house price, then the probabilities of intention to use RMs decrease (Blevins et al., 2017; Davidoff & Welke, 2004; Hanewald et al., 2016; Weinrobe, 1987). On the contrary, if respondents who are state enterprise employees have high education, then the probability of intention to use RMs increases.

In the last column (private), nearly all variables in LCH theory are significant, meaning that they follow LCH. For instance, if the respondents who are private employees have sons/daughters, then the probability of intention to use RMs decreases (Weinrobe, 1987). On the contrary, if the respondents who are private employees have high expected expense (E[Expense]), then the probability of intention to use RMs increases (Chinloy & Megbolugbe, 1994; Delgadillo et al., 2014; Dillingh et al., 2013; Kutty, 1998; Nakajima & Telyukova, 2017; Rasmussen et al., 1997). Some variables in maximization theory are insignificant, but their signs follow a logical explanation.

Table 4.2.1 demonstrates that the results following for price are significant for the government and total employees, which have age between 25–39 and 40–60 years old. Nevertheless, the price under private and state enterprise employees is significant only for those who have age 25–39 years old. The government-assisted living residence compared with foundation-assisted living residence is significant for all groups of employee and age and the private-assisted living residence compared with foundation-assisted living residence is significant for the state enterprise and total employees who have age between 25–39 and 40–60 years old. However, such a variable is significant only for private employees that belong to the 25–39-year-old age group. On the contrary, the assisted living residence that has nursing care compared with no nursing care is significant for private and total employees aging between 25–39 and 40–60 years old. Nevertheless, the government and state enterprise employees are significant only for the 25–39 years old age group. Place attachment is significant in private and total employees who are 40–60 years old and government employees

who are 25–39 years old. The last significant variable is RM literacy. This variable is significant in private, state enterprise, and total employees who are 25–39 years old. However, government employees are significant in the age groups 25–39 and 40–60 years old. The insignificant variables are assisted living residence with lifetime residential guarantee compared with no lifetime residential guarantee and risk.

Table 4.2.1

## Sign of willingness to pay

Variable	Government		Private		State enterprise		Total	
	25-39	40-60	25-39	40-60	25-39	40-60	25-39	40-60
Price	-0.00012***	-0.00020***	-0.00009***	-0.00007	-0.00009***	-0.0001	-0.0009***	-0.00012***
Government compared with Foundation	1.29***	0.92***	1.61***	1.37***	2.43***	2.59***	1.80***	1.22***
Private compared with Foundation	0.71	0.10	1.28***	0.92	1.74***	2.52***	1.30***	0.65**
Nursing care compared with No nursing care	0.53**	0.41	0.71***	0.84***	0.62***	0.60	0.62***	0.54***
Life-time Residential guarantee compared with No life-time residential guarantee	0.11	0.12	0.14	-0.22	-0.014	0.14	0.08	-0.0042
Risk	-0.24	-0.27	0.18	-0.36	-0.084	0.82	0.01	-0.17
Place Attachment	0.60**	-0.45	-0.24	-1.14***	0.096	-0.69	0.19	-0.62***
Reverse mortgage literacy	2.30**	2.41**	3.61***	-0.52	2.52***	-3.68	2.90***	0.85
Cons	-3.50***	-3.22***	-4.90***	-2.93***	-3.91***	0.36	-4.17***	-2.99***
N	77	75	85	61	75	21	237	157

Note : \* = 90%, \*\* = 95%, \*\*\* = 99%

Source: Author's Calculation

Table 4.2.2 shows that the total employees have the willingness to pay for a joint assisted living residence of the government compared with that of the foundation with approximately 18,265.60 and 9,654.40 baht for the age groups 25–39 and 40–60 years old, respectively. The willingness to pay for an assisted living residence of the private compared with that of the foundation is approximately 12,901.24 baht for the total employees who are 25–39 years old and 5,127.03 baht for those who are 40–60 years old. The willingness to pay for assisted living residence with nursing care compared with no nursing care is approximately 6,266.62 baht for total employees who are 25–39 years old and 4,262.10 baht for those who are 40–60 years old. Finally, the result shows that if I want the total employees to avail of the assisted living residence, I have to give money of approximately 4,891.54 and 4,631.83 baht to the total employees who are 25–39 and 40–60 years old, respectively. This notion means that these employees are not interested to join the assisted living residence. The assisted living residence with lifetime residential guarantee compared with no lifetime residential guarantee is insignificant.

The occupations are divided into three groups, namely, government, private, and state enterprise employees. First, in the assisted living residence of the government compared with that of the foundation, the group that has the highest willingness to pay is state enterprise employees. This group pays approximately 28,126.77 and 22,760.68 baht for ages 25–39 and 40–60 years old, respectively. The next one is private employees, who pay approximately 16,283.04 baht for age 25–39 years old, but age 40–60 years old is insignificant. The group that has the lowest willingness to pay is government employees. This group pays approximately 10,550.8 and 4,559 baht for ages 25–39 and 40–60 years old.

Second, in the assisted living residence of the private compared with that of the foundation, the group that has the highest willingness to pay is state enterprise. This group pays approximately 20,176.74 and 22,148.14 baht for ages 25–39 and 40–60 years old, respectively. The next one is private employees, who pay approximately 12,937.05 and 14,068.04 baht for ages 25–39 and 40–60 years old, respectively. The group that has the lowest willingness to pay is government employees. This group

pays approximately 5,816.11 baht for age 25–39 years old. The government employees who are 40–60 years old are regarded as an insignificant group.

Third, the type of residents is significant for the assisted living residence of the government compared with that of the foundation and of the private compared with that of the foundation.

Fourth, in the assisted living residence with nursing care compared with no nursing care, the private employees have the highest willingness to pay. This group pays approximately 7,177.98 and 12,857.51 baht for ages 25–39 and 40–60 years old, respectively. The next group with the highest willingness to pay is state enterprise employees. This group pays approximately 7,227.79 and 5,284.53 baht for ages 25–39 and 40–60 years old, respectively. Government employees exhibit the lowest willingness to pay. This group pays approximately 4,336.77 and 2,021.79 baht for ages 25–39 and 40–60 years old, respectively.

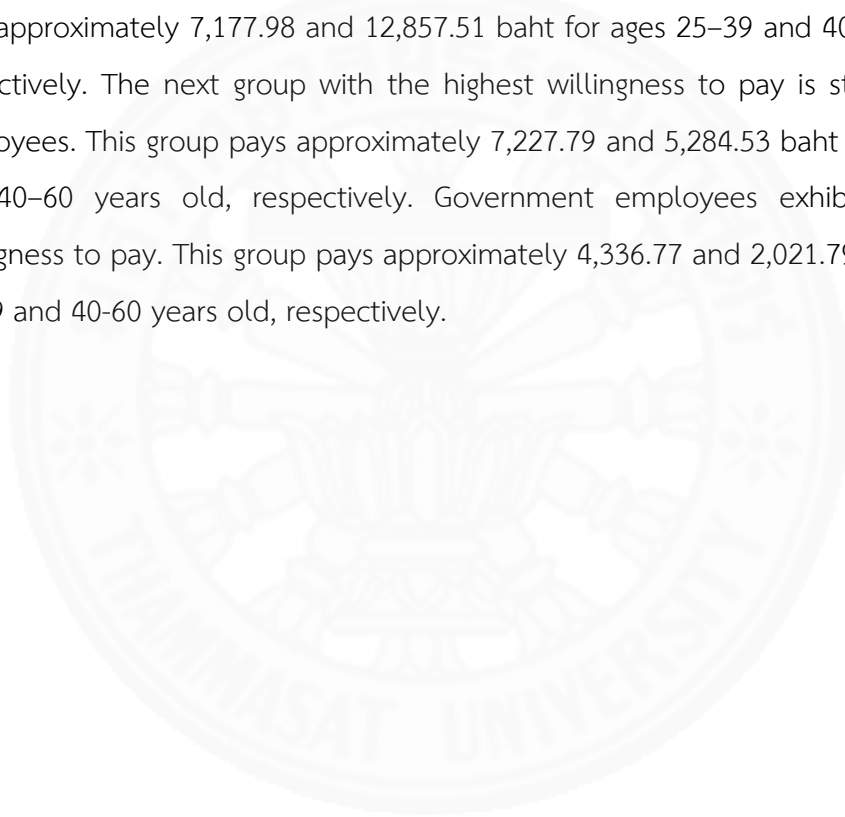


Table 4.2.2

## Willingness to pay

Age	Total		Government		Private		State enterprise	
	25-39	40-60	25-39	40-60	25-39	40-60	25-39	40-60
<b>Project</b>								
Government compared with Foundation	18,265.60***	9,654.04***	10,550.8***	4,559.00***	16,283.04***	21,103.91	28,126.77***	22,760.68**
Private compared with Foundation	12,901.24***	5,127.03***	5,816.11***	511.80	12,937.05***	14,068.04**	20,176.74***	22,148.14***
Nursing care compared with No nursing care	6,266.62***	4,262.10***	4,336.77***	2,021.79**	7,177.98***	12,857.51*	7,227.79***	5,284.53*
Life-time Residential guarantee compared with No life-time residential guarantee	763.55	-33.37	939.46	584.15	1,438.80	-3,406.78	-161.64	1,189.83
Cons	-42,325***	-23,675***	-28,625***	-15,886***	-49,554***	-45,019	-45,228***	3,124
N	237	157	77	75	85	61	75	21

Note : \* = 90%, \*\* = 95%, \*\*\* = 99%

Source: Author's Calculation

I conclude that government employees who are between 25–39 and 40–60 years old and private employees who are 25–39 years do not want to join the assisted living residence because their constant variable (Cons) is negative. Specifically, these individuals are not interested to join the assisted living residence. On the contrary, state enterprise employees who are 25–39 years want to join the assisted living residence because when I total the value of all significant variables minus constant the variable (Cons), their value is positive. This notion indicates that such individuals want to join the assisted living residence. The results for the private and state enterprise employees who are 40–60 years have no conclusion because the constant variables (Cons) are insignificant.

Finally, the assisted living residence with lifetime residential guarantee compared with that without is insignificant for all groups of occupation.



## CHAPTER 5

### CONCLUSION

My result is based on a self-reported experimental survey questionnaire of 511 respondents. I use order logit regression and random effect logit regression to estimate the coefficient and answer the study objectives.

The first objective is to separate the individuals into three groups, namely, age, RM literacy, and occupations. The first category is the age group. The 25–39 and 40–60 years old have significant variables that follow the theories, such as LCH and maximization utility. All significant variables can be elaborated by a logical explanation. For instance, if you have a high expected expense, then you have an intention to use RMs because you need the money to compensate for your expense. If you are likely to be attached to your home, then the intention to use RMs decrease because you do not want to sell your home to the bank. The second category is RM literacy. The high, medium, and low RM literacy have significant variables that have signs following the aforementioned theories. Specifically, all significant variables can be elaborated by a logical explanation. For instance, if you have high RM literacy, but you also have sons/daughters, then you might not want to use RMs because you know the missing mechanism of RMs, and you might want to keep your home for your sons/daughters. If you have high RM literacy and a high degree of risk aversion, then you might not want to use RMs because they are risky. The signs of coefficients are the same in all three groups. The third category is occupations. Government, state enterprise, and private employees have significant variables that follow the aforementioned theories. Specifically, all significant variables can be elaborated by a logical explanation. Government employees have more significant variables than other groups. For instance, if government employees have insurance, then the probability of using RMs decreases because insurance can compensate the income when you admit to a hospital that can reduce catastrophic health cost, which leads to bankruptcy. The result shows that the other groups do not have the intention to use the RMs. If I

separate the groups by age, RM literacy, and occupations, then I can find the significant variables that affect the intention to join RMs. These variables also follow LCH and maximization utility theory that I refer to in literature review. Thus, the variable signs have logical explanations and fit the theory.

In the second and third objectives, nursing care is significant and has a positive probability with the willingness to pay; however, the price has a negative probability with the willingness to pay (Birčiaková et al., 2015; Chai, 1992; Haughton et al., 2001; Rao & Baer, 2012; Siedlecka, 2015). On the contrary, the lifetime residential guarantee is insignificant.

State enterprise employees who are 25–39 years old have the highest willingness to pay for the assisted living residence of the government compared with that of the foundation. These employees pay approximately 28,126.77 baht because they receive a high salary and education (Aizuddin et al., 2012). On the contrary, government employees who are 25–39 years old have the lowest willingness to pay for the assisted living residence of government compared with that of the foundation. These employees pay approximately 10,550 baht because they have good welfare and pension scheme, hence leading to less willingness to pay for the assisted living residence of the government compared with that of the foundation. The next is state enterprise employees aged 40–60 years old have the highest willingness to pay for the assisted living residence of the government compared with that of the foundation. These employees pay approximately 22,760.68 baht because they have high salary and high education. On the other hand, government employees who are 40–60 years old have the lowest willingness to pay for the assisted living residence of government compared with that of the foundation. These employees pay approximately 4,559 baht because they have good welfare and pension scheme, hence leading to less willingness to pay for the assisted living residence of the government compared with that of the foundation.

State employees who are 25–39 years old have the highest willingness to pay for the assisted living residence of the private compared with that of the

foundation. These employees pay approximately 20,176 baht because they receive a high salary and education (Aizuddin et al., 2012). On the contrary, government employees who are 25–39 years old have the lowest willingness to pay for the assisted living residence of the private compared with that of the foundation. These employees pay approximately 5,816.11 baht because the assisted living residence of private is very expensive. So, these employees do not have a high salary. This situation leads to less willingness to pay for the assisted living residence of the private compared with that of the foundation. The next is state enterprise employees aged 40–60 years old have the highest willingness to pay for the assisted living residence of the private compared with that of the foundation. These employees pay approximately 22,148.14 baht because they receive a high salary and high education. On the other hand, private employees who are 40–60 years old have the lowest willingness to pay for the assisted living residence of the private compared with that of the foundation. These employees pay approximately 14,068.04 baht because the assisted living residence of private is very expensive. So, these employees do not receive a good welfare and stability of financial, hence leading to less willingness to pay for the assisted living residence of the private compared with that of the foundation.

The comparison result between the assisted living residences of the government and private indicated that almost all employees have more willingness to pay for the assisted living residence of the government than that of the private because of the possible bias of the respondents that cannot separate the features of the assisted living residence of the government. This situation leads to a bias in choosing the assisted living residence project because the assisted living residence of the government has an influential band.

The type of residents is significant for the assisted living residences of the government compared with that of the foundation and private compared with that of the foundation.

The next variable is the assisted living residence with and without nursing care. State enterprise employees who are 25–39 years old have the highest willingness

to pay for nursing care. These employees pay approximately 7,227.79 baht because these employees receive high education and almost have single status. So, they might be interested in the assisted living residence. The second group with the lowest willingness to pay for nursing care is government employees who are 25–39 years old. This group pays approximately 4,336.77 baht because these employees have lower income than other groups and have a good pension scheme. So, they might be interested in the assisted living residence. The next with a high willingness to pay is private employees who are 40–60 years old, paying approximately 12,857.51 baht. Finally, the group with the lowest willingness to pay for nursing care is government employees who are 40–60 years old, paying approximately 2,021.79 baht. The private and state enterprise employees do not have a pension scheme and good welfare compared with the government employees. Thus, such employees must pay a large amount of money for nursing care costs to compensate for their inferior welfare.

The variable controls show that most employees do not want to join the assisted living residences and pay for nursing care. Hence, we should look after our elders the best way that we can.

The assisted living residence with lifetime residential guarantee is insignificant compared with that without. A bias of respondents may be observed because the residential guarantee feature cannot be separated as I use Sawangkanivet as a role model. This model has a better lifetime residential guarantee than other types of assisted living residence, thereby leading to a bias in choosing the lifetime residential guarantee and misunderstanding of the concept.

## 5.1 Implication

The RM program and the assisted living residence seem to be unsuccessful in the case of Thailand because of our Thai culture, for instance, sons/daughters have to look after their elders in the family, and some missing mechanisms of RMs, such as no stipend cover along with the life. All groups of the

employees who are 40–60 years old are not interested to use RMs given the negative sign of the coefficient. Therefore, almost all respondents do not want to join the assisted living residences. The optimal way that we can carry out this program is to promote RM as a retirement financial choice. The government should consider implementing the program along with educational programs concerning RMs for aging people.



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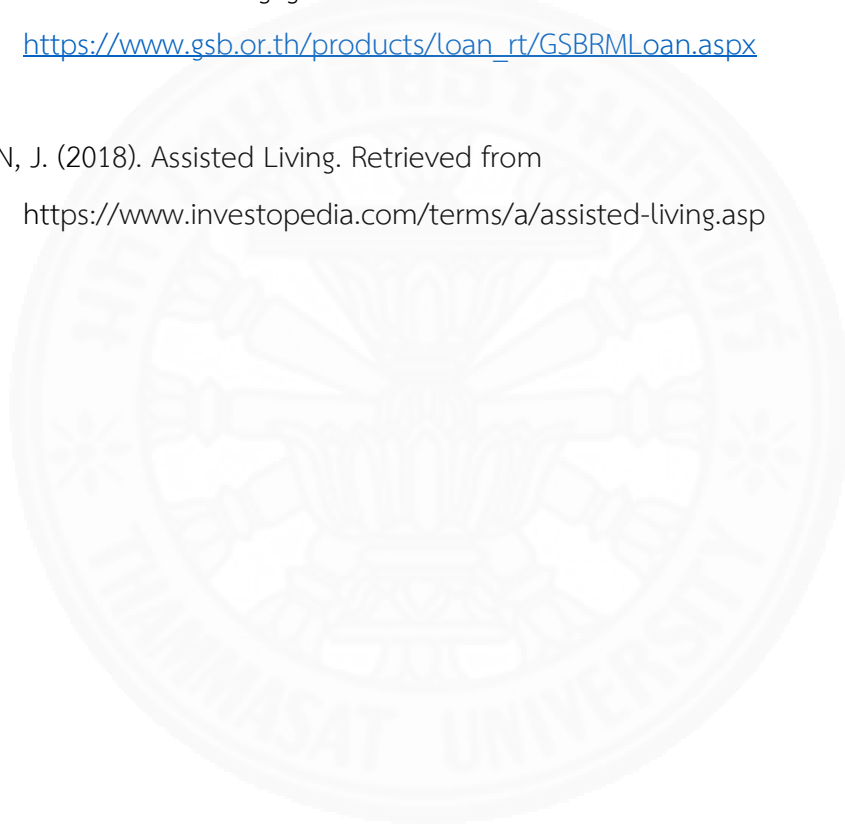
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APPENDICES

## APPENDIX A

TABLE OF REVERSE MORTGAGES

Reverse mortgage	US	UK (Lifetime Mortgage)	UK (Home Reversion Plan)	Australia	Japan	Korea	Hong Kong	Singapore	India	Thailand
<b>Launched year</b>	1989 by US Housing Department (HUD)			2005	1981 by Musashio City	2007 by housing pension	2011 by Hongkong Mortgage Corporation (HKMC)	2009 by The lease buyback scheme (LBS)	2007-2008 with Union budget, RMLeA(reverse mortgage loan-enabled annuity )(2013) provide by Star Union Dai-chi Life Insurance Co. Ltd., in association with Union Bank of India and Central Bank P.S. RMLeA is special in tax exemption	2018
<b>Insurance</b>	FHA(Federal Housing Administration ) insurance against cross over risk	Private insurance company	Private insurance company	Law by SEQUAL, Mortgage insurance available(For high value property)	Life insurance company	Support by Government	lenders covered by HKMC mortgage insurance	Private insurance company		Bank reserve fund

Source: Author's conclusion

Reverse mortgage	US	UK (Lifetime Mortgage)	UK (Home Reversion Plan)	Australia	Japan	Korea	Hong Kong	Singapore	India	Thailand
<b>Interest rate</b>	Fixed or Variable	Fixed or Variable at the ceiling rate	No interest charge	Fixed or variable, 1-2% above standard mortgage rate	Some products require monthly interest repayment	Interest rate of fixed deposit 3 months + 1.1% or interest rate of fixed deposit 6 months + 0.85%	HK prime rate minus 2.5%		Interest rate can be fixed or floating at borrower's option (about 10%-12%)	Interest rate can be fixed or floating at borrower's option
<b>Minimum age</b>	62	55	60	50% of borrowers aged 70-79	50+	60	55+	63+	58+	60-80
<b>Factor for decision</b>	older, single, and childless are more likely to take the product	your age, health and the value of your home				Borrower's income is not a factor		the age of the homeowner, the valuation of the property, the loan period and the interest rate fluctuations		the age of the homeowner, the valuation of the property, the loan period and the interest rate fluctuations

Source: Author's conclusion

Reverse mortgage	US	UK (Lifetime Mortgage)	UK (Home Reversion Plan)	Australia	Japan	Korea	Hong Kong	Singapore	India	Thailand
<b>Maximum Loan amount</b>	set by law (rises annually)	Limit	the borrower knows in advance exactly what percentage of the home value will be taken by the lender.	15%(age 60), 45%(age 90)	About 70% of land's appraised value	No more than 900 million KRW	70%-80% of property value	70% of property value	Maximum loan is 90% of the property value (depending on borrower's age)	Government Saving bank(GSB)( 60%-70% value of property , Government Housing Bank(no more than 10 million baht)
<b>Payment Solution</b>	Lump sum, monthly payments (for fixed term or life), or line of credit (flexible drawdown)	Lump sum or regular payments	Can repay early but will be based on % of property value	Can be used for any purpose, including supplemental income for retirement, medical care, nursing and aged care services. Some borrowers use the funds to provide financial assistance to children and other family members. Frequent uses also include travel and lifestyle activities.	Only fixed-term payments, not for lifetime. The popular payment must be paid every month or line of credit	Payments can be for life (tenure payments) or fixed term from 10-30 years or line of credit	The borrower has the option of monthly payments for a fixed term (10, 15, 20 years) or for life. There is also a lump sum option for specific purposes.	30 year lease(for government) ,20-25 year lease (for private bank but private bank had ceasing the product by mid 2009) ,Monthly payment	Borrower can opt for monthly, quarterly, annual or lump sum payment, Payment term is fixed at 10-15 years, so no lifetime income	Lump sum, monthly payments

Source: Author's conclusion



Reverse mortgage	US	UK (Lifetime Mortgage)	UK (Home Reversion Plan)	Australia	Japan	Korea	Hong Kong	Singapore	India	Thailand
<b>Non-Recourse Regarded as expensive</b>	Guarantee origination fee, insurance premium 2% (+ 0.5% of loan balance), monthly servicing fee, legal costs etc	Advisor / broker fees Legal costs Property valuation Arrangement fees Completion fees		Guarantee	not always clear Premium cost and insurance cost	Guarantee	counselling fees, handling fees, and legal and other fees, as with a conventional mortgage.	Guarantee	Guarantee	Guarantee Counselling fees, handling fees, and legal and other fees, as with a conventional mortgage.

Source: Author's conclusion

Reverse mortgage	US	UK (Lifetime Mortgage)	UK (Home Reversion Plan)	Australia	Japan	Korea	Hong Kong	Singapore	India	Thailand
<b>Target Group</b>	low-income elderly	lend more to people with shorter life expectancy	this product is probably more suited to borrowers who are not concerned about inheritance.	Elderly	Elderly	more subsidy to lower income elderly and farmers who are 'farmland rich, cash poor'	Elderly	Low-income elderly	Elderly	Elderly
<b>Mandatory Counselling</b>	Necessary	Necessary	Necessary	Necessary	Necessary	Necessary (no Fee)	Necessary	Necessary	Not necessary	Necessary
<b>No-Negative equity</b>	Guarantee	Guarantee	No guarantee	Guarantee	guarantee	Guarantee	Guarantee		Guarantee	No guarantee

Source: Author's conclusion

## APPENDIX B

## TABLE OF VARIABLES

Variable	Definition	Label
<b>Life cycle of saving</b>		<b>X1x</b>
<b>1.RM known</b>	Value = 1 if respondent already heard about reverse mortgage; 0 = otherwise.	X11
<b>2.Complex</b>	“Reverse mortgages are complex products?” 1= totally disagree; 5= totally agree.	X12
<b>3.Expected future income</b>	“Do you think what formation of your expected future income will increase?” 1 = very slow, 6 = very fast.	X13
<b>4.Expected consumption expenditure</b>	“How much do you have expenditure per month?” 1 = less than 10,000 baht; 2 = 10,001-30,000 baht; 3 = 30,001-50,000 baht; 4 = 50,001-70,000 baht; 5 = 70,001-90,000 baht; 6 = more than 90,001 baht	X14
<b>5.Age</b>	Age of respondent in year as of 2020 25-39 , 40-60	X15
<b>6.Does have or does not have sons/daughter</b>	1 = respondent has sons/daughters; 0 = no	X16
<b>Characteristics of homeowner</b>		<b>X21x</b>
<b>7.Gender</b>	0 = female; 1 = male	X211
<b>8.Marital status</b>	1 = respondent being married; 0 = otherwise 1 = respondent being single; 0 = otherwise	X212

Source: Author’s questionnaire

Variable	Definition	Label
<b>9.Higher education</b>	1 = respondent reporting highest education being “associate or bachelor degree” or “graduate degree”; 0 = respondent reporting highest education being “less than high school degree”, “high school degree, or “some college”	X213
<b>10.Expected home occupancy</b>	“How many year which you expect to live in your current home?”(if less than a year, enter 1)	X214
<b>11.Occupation</b>	A binary variable for principal lifetime occupation codes as 1 for government employee, 2 for state enterprise employee and 3 for private employee	X215
<b>12.Health</b>	“How many time you admit to hospital in one year?” 1(very poor)=7 times/year or more than, 5(very excellence)=0 time/year	X216
<b>Characteristics of economy</b>		<b>X22x</b>
<b>13.Health(regular medical expenditure)</b>	“Do you have regular medicine cost?” 1 = yes, 0 = no	X221
<b>14.Debt</b>	“Do you have any debt?” 1 = yes; 0 = no	X222
<b>15.Income</b>	Dummy variable: “How much income that you get in each month?” “below 15,000 baht”, “15,000-30,000baht”, “30,001-50,000baht”, “50,001-80,000baht”, “80,001-100,000baht” and “above 100,001baht”	X223

Source: Author’s questionnaire

Variable	Definition	Label
<b>16.Sufficient saving</b>	“How much are your proportionate of saving to income in each month” 1(very low) = no saving; 2(low) = below 1,500 ; 3=1,501-3,000; 4 = 3,001-6,000; 5 = 6,001-12,000; 6 = 12,001-24,000 ;7= 24,001-48,000 ;8(very high) = above 48,000.	X224
<b>17.Long term insurance care</b>	“Do you have long term insurance care with private insurance company?” 1 = yes; 0 = no	X225
<b>Characteristics of house</b>		<b>X23x</b>
<b>18.Size of house</b>	1 = single house; 0 = otherwise 1 = town house; 0 = otherwise 1 = condominium; 0 = otherwise 1 = twin house ; 0 = otherwise	X231
<b>19.Price of house</b>	“Current home value” 1= less than 1,500,000 baht; 2 =1,500,001-3,000,000 baht; 3 =3,000,0001-6,000,000baht; 4=6,000,001-9,000,001baht; 5 =9,000,001-12,000,000baht; 6 =above 12,000,001 baht	X232
<b>20.Number of house</b>	“How many houses that you have?” 1 = only one house; 0 = 2 houses or more than	X233
<b>Reverse mortgage literacy &amp; Financial literacy</b>		<b>X3x</b>
<b>21.Reverse mortgage literacy</b>	Reverse mortgage literacy consist of 7 items(Rmk1-7) by converting the question to factor loading	X31

Source: Author's questionnaire

Variable	Definition	Label
Risk aversion		X4x
22.Risk averse	<p>“Suppose you play a game, Lottery-Choice Decision, which have 2 option, option A and option B, and each option have 5 choice. Each option has a different return, please choose choices that like your risk style”</p> <p>Option A</p> <ol style="list-style-type: none"> <li>1. 10% you get 200 baht, 90% you get 160 baht.</li> <li>2. 20% you get 200 baht, 80% you get 160 baht.</li> <li>3. 30% you get 200 baht, 70% you get 160 baht.</li> <li>4. 40% you get 200 baht, 60% you get 160 baht.</li> <li>5. 50% you get 200 baht, 50% you get 160 baht.</li> <li>6. 60% you get 200 baht, 40% you get 160 baht.</li> <li>7. 70% you get 200 baht, 30% you get 160 baht.</li> <li>8. 80% you get 200 baht, 20% you get 160 baht.</li> <li>9. 90% you get 200 baht, 10% you get 160 baht.</li> <li>10. 100% you get 200 baht, 0% you get 160 baht.</li> </ol> <p>Option B</p> <ol style="list-style-type: none"> <li>1. 10% you get 385 baht, 90% you get 10 baht.</li> <li>2. 20% you get 385 baht, 80% you get 10 baht.</li> <li>3. 30% you get 385 baht, 70% you get 10 baht.</li> </ol>	X41

Source: Author's questionnaire

Variable	Definition	Label
	4. 40% you get 385 baht, 60% you get 10 baht. 5. 50% you get 385 baht, 50% you get 10 baht. 6. 60% you get 385 baht, 40% you get 10 baht. 7. 70% you get 385 baht, 30% you get 10 baht. 8. 80% you get 385 baht, 20% you get 10 baht. 9. 90% you get 385 baht, 10% you get 10 baht. 10. 100% you get 385 baht, 0% you get 10 baht.	
<b>Place attachment</b>		<b>X5x</b>
<b>23. Place attachment</b>	Place attachment questionnaire consist of 9 questions : strongly disagree = 1, strongly agree = 5	X51-X58
<b>Main questions</b>		
<b>24. The decision to join the reverse mortgage</b>	“ Typically, how likely is it that you will be taking out a reverse mortgage” 1 = 0% ; 2 = 1%-25% ; 3 = 26%-49% ; 4 = 50% ; 5 = 51%-75% ; 6 = 76%-99% and 7 = 100%	Y <sub>1i</sub>
<b>Willingness to pay nursing care/healthcare and residential guarantee</b>		<b>X6x</b>
<b>25. Willingness to pay</b>	“750 baht/month for renting normally home/condominium in foundation project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?” Yes(skip to 27) = 1, No(skip to 26) = 0	X611, Y <sub>2i</sub>

Source: Author's questionnaire

Variable	Definition	Label
26.Willingness to pay	"1,500 baht/month for renting normally home/condominium in foundation project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?" Yes(skip to 28) = 1, No(skip to 28) = 0	X612,Y <sub>2i</sub>
27.Willingness to pay	"3,000 baht/month for renting normally home/condominium in foundation project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?" Yes(skip to 28) = 1, No(skip to 28) = 0	X613,Y <sub>2i</sub>
28.Willingness to pay	"1,750 baht/month for renting normally home/condominium in government project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?" Yes(skip to 30) = 1, No(skip to 29) = 0	X614,Y <sub>2i</sub>
29.Willingness to pay	"3,500 baht/month for renting normally home/condominium in government project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?" Yes(skip to 31) = 1, No(skip to 31) = 0	X615,Y <sub>2i</sub>
30.Willingness to pay	"7,000 baht/month for renting normally home/condominium in government project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?" Yes(skip to 31) = 1, No(skip to 31) = 0	X616,Y <sub>2i</sub>

Source: Author's questionnaire



Variable	Definition	Label
<b>31.Willingness to pay</b>	“1,500 baht/month for renting normally home/condominium in private project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?” Yes(skip to 33) = 1, No(skip to 32) = 0	X617,Y <sub>2i</sub>
<b>32.Willingness to pay</b>	“3,000 baht/month for renting normally home/condominium in private project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?” Yes(skip to 34) = 1, No(skip to 34) = 0	X618,Y <sub>2i</sub>
<b>33.Willingness to pay</b>	“6,000 baht/month for renting normally home/condominium in private project exclude nursing care/healthcare cost and residential guarantee cost, Do you want to join this program?” Yes(skip to 34) = 1, No(skip to 34) = 0	X619,Y <sub>2i</sub>
<b>34.Willingness to pay</b>	“1,050 baht/month for assisted living residence in foundation project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 700 baht ; nursing care 300 baht)” Yes(skip to 36) = 1, No(skip to 35) = 0	X620,F1,Y <sub>2i</sub>
<b>35.Willingness to pay</b>	“2,100 baht/month for assisted living residence in foundation project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 1,500 baht ; nursing care 600 baht)” Yes(skip to 37) = 1, No(skip to 37) = 0	X621,F1,Y <sub>2i</sub>
<b>36.Willingness to pay</b>	“4,200 baht/month for assisted living residence in foundation project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 3,000 baht ; nursing care 1,200 baht)” Yes(skip to 37) = 1, No(skip to 37) = 0	X622,F1,Y <sub>2i</sub>

Source: Author’s questionnaire

Variable	Definition	Label
<b>37.Willingness to pay</b>	“2,050 baht/month for assisted living residence in government project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 1,750 baht ; nursing care 300 baht)” Yes(skip to 39) = 1, No(skip to 38) = 0	X623,F1,Y <sub>2i</sub>
<b>38.Willingness to pay</b>	“4,100 baht/month for assisted living residence in government project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 3,500 baht ; nursing care 600 baht)” Yes(skip to 40) = 1, No(skip to 40) = 0	X624,F1,Y <sub>2i</sub>
<b>39.Willingness to pay</b>	“8,200 baht/month for assisted living residence in government project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 7,000 baht ; nursing care 1,200 baht)” Yes(skip to 40) = 1, No(skip to 40) = 0	X625,F1,Y <sub>2i</sub>
<b>40.Willingness to pay</b>	“7,500 baht/month for assisted living residence in private project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 1,500 baht ; nursing care 6,000 baht)” Yes(skip to 42) = 1, No(skip to 41) = 0	X626,F1,Y <sub>2i</sub>
<b>41.Willingness to pay</b>	“15,000 baht/month for assisted living residence in private project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 3,000 baht ; nursing care 12,000 baht)” Yes(skip to 43) = 1, No(skip to 43) = 0	X627,F1,Y <sub>2i</sub>

Source: Author’s questionnaire

Variable	Definition	Label
42. Willingness to pay	"30,000 baht/month for assisted living residence in private project include nursing care/health care cost exclude residential guarantee cost, Do you want to join this program?(house price 6,000 baht ; nursing care 24,000 baht)" Yes(skip to 43) = 1, No(skip to 43) = 0	X628,F1,Y <sub>2i</sub>
43. Willingness to pay	"750 baht/month for assisted living residence in foundation project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price& residential guarantee 750 baht)" Yes(skip to 45) = 1, No(skip to 44) = 0	X629,F2,Y <sub>2i</sub>
44. Willingness to pay	"1,500 baht/month for assisted living residence in foundation project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price& residential guarantee 1,500 baht)" Yes(skip to 46) = 1, No(skip to 46) = 0	X630,F2,Y <sub>2i</sub>
45. Willingness to pay	"3,000 baht/month for assisted living residence in foundation project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price& residential guarantee 3,000 baht)" Yes(skip to 46) = 1, No(skip to 46) = 0	X631,F2,Y <sub>2i</sub>
46. Willingness to pay	"3,000 baht/month for assisted living residence in government project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price 1,750 baht ; residential guarantee 1,250 baht)" Yes(skip to 48) = 1, No(skip to 47) = 0	X632,F2,Y <sub>2i</sub>
47. Willingness to pay	"6,000 baht/month for assisted living residence in government project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price 3,500 baht ; residential guarantee 2,500 baht)" Yes(skip to 49) = 1, No(skip to 49) = 0	X633,F2,Y <sub>2i</sub>

Source: Author's questionnaire

Variable	Definition	Label
<b>48. Willingness to pay</b>	“12,000 baht/month for assisted living residence in government project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price 7,000 baht ; residential guarantee 5,000 baht)” Yes(skip to 49) = 1, No(skip to 49) = 0	X634,F2,Y <sub>2i</sub>
<b>49. Willingness to pay</b>	“4,000 baht/month for assisted living residence in private project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price 1,500 baht ; residential guarantee 2,500 baht)” Yes(skip to 51) = 1, No(skip to 50) = 0	X635,F2,Y <sub>2i</sub>
<b>50. Willingness to pay</b>	“8,000 baht/month for assisted living residence in private project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price 3,000 baht ; residential guarantee 5,000 baht)” Yes(skip to 52) = 1, No(skip to 52) = 0	X636,F2,Y <sub>2i</sub>
<b>51. Willingness to pay</b>	“16,000 baht/month for assisted living residence in private project include residential guarantee cost exclude nursing care cost, Do you want to join this program?(house price 6,000 baht ; residential guarantee 10,000 baht)” Yes(skip to 52) = 1, No(skip to 52) = 0	X637,F2,Y <sub>2i</sub>
<b>52. Willingness to pay</b>	“1,050 baht/month for assisted living residence in foundation project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price& residential guarantee 750 baht; nursing care/healthcare cost 300 baht)” Yes(skip to 54) = 1, No(skip to 53) = 0	X638,F1,F2,Y <sub>2i</sub>

Source: Author's questionnaire

Variable	Definition	Label
53. Willingness to pay	"2,100 baht/month for assisted living residence in foundation project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price& residential guarantee 1,500 baht; nursing care/healthcare cost 600 baht)" Yes(skip to 55) = 1, No(skip to 55) = 0	X639,F1,F2,Y <sub>2i</sub>
54. Willingness to pay	"4,200 baht/month for assisted living residence in foundation project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price& residential guarantee 3,000 baht; nursing care/healthcare cost 1,200baht)" Yes(skip to 55) = 1, No(skip to 55) = 0	X640,F1,F2,Y <sub>2i</sub>
55. Willingness to pay	"3,300 baht/month for assisted living residence in government project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price 1,750 baht ; residential guarantee 1,250 baht; nursing care/healthcare cost 300 baht )" Yes(skip to 57) = 1, No(skip to 56) = 0	X641,F1,F2,Y <sub>2i</sub>
56. Willingness to pay	"6,600 baht/month for assisted living residence in government project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price 3,500 baht ; residential guarantee 2,500 baht; nursing care/healthcare cost 600 baht )" Yes(skip to 58) = 1, No(skip to 58) = 0	X642,F1,F2,Y <sub>2i</sub>
57. Willingness to pay	"13,200 baht/month for assisted living residence in government project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price 7,000 baht ; residential guarantee 5,000 baht; nursing care/healthcare cost 1,200 baht )" Yes(skip to 58) = 1, No(skip to 58) = 0	X643,F1,F2,Y <sub>2i</sub>

Source: Author's questionnaire

Variable	Definition	Label
<b>58. Willingness to pay</b>	“10,000 baht/month for assisted living residence in private project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price 1,500 baht ; residential guarantee 2,500 baht; nursing care/healthcare cost 6,000 baht )” Yes(skip to 60) = 1, No(skip to 59) = 0	X644,F1,F2,Y <sub>2i</sub>
<b>59. Willingness to pay</b>	“20,000 baht/month for assisted living residence in private project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price 3,000 baht ; residential guarantee 5,000 baht; nursing care/healthcare cost 12,000 baht )” Yes(end questionnaire) = 1, No(end questionnaire) = 0	X645,F1,F2,Y <sub>2i</sub>
<b>60. Willingness to pay</b>	“40,000 baht/month for assisted living residence in private project include residential guarantee cost and nursing care cost, Do you want to join this program?(house price 6,000 baht ; residential guarantee 10,000 baht; nursing care/healthcare cost 24,000 baht )” Yes(end questionnaire) = 1, No(end questionnaire) = 0	X646,F1,F2,Y <sub>2i</sub>

Source: Author’s questionnaire

## APPENDIX C

TABLE OF REVERSE MORTGAGES LITERACY QUESTIONNAIRE

Variable	Survey Question	Correct Answer/Coding score
Rmk1	The reverse mortgage is selling a home to the bank?	Yes = 1 score No = 0 score
Rmk2	The reverse mortgage home is the home that is free from debt?	Yes = 1 score No = 0 score
Rmk3	When you join the reverse mortgage program, you will get the salary from this program.	Yes = 1 score No = 0 score
Rmk4	How the minimum and maximum age that can join the reverse mortgage program?	More than or equal 50 but less than 80 = 0 score More than or equal 60 but less than 80 = 1 score
Rmk5	The maximum reverse mortgage loan is 10 million baht?	Yes = 1 score No = 0 score
Rmk6	When you join the reverse mortgage program, you can still stay in your home until death or loan expire in 25 years.	Yes = 1 score No = 0 score
Rmk7	The home in the reverse mortgage program is sold to others by homeowner relative who has the right to buy first after homeowner death or loan expire in 25 years.	Yes = 1 score No = 0 score

Source: Author's questionnaire

## APPENDIX D

TABLE PLACE ATTACHMENT QUESTIONNAIRES

Variable	Survey Question	Answer/Coding
<b>Place attachment 1</b>	I feel that I can really be myself at home	<input type="checkbox"/> strongly disagree:1 <input type="checkbox"/> disagree:2 <input type="checkbox"/> fair:3 <input type="checkbox"/> agree:4 <input type="checkbox"/> strongly agree:5
<b>Place attachment 2</b>	I really miss home when I am away too long	<input type="checkbox"/> strongly disagree:1 <input type="checkbox"/> disagree:2 <input type="checkbox"/> fair:3 <input type="checkbox"/> agree:4 <input type="checkbox"/> strongly agree:5
<b>Place attachment 3</b>	I feel happiest when I am home	<input type="checkbox"/> strongly disagree:1 <input type="checkbox"/> disagree:2 <input type="checkbox"/> fair:3 <input type="checkbox"/> agree:4 <input type="checkbox"/> strongly agree:5
<b>Place attachment 4</b>	Home is the best place to do the things I enjoy	<input type="checkbox"/> strongly disagree:1 <input type="checkbox"/> disagree:2 <input type="checkbox"/> fair:3 <input type="checkbox"/> agree:4 <input type="checkbox"/> strongly agree:5
<b>Place attachment 5</b>	Home is my favorite place to be	<input type="checkbox"/> strongly disagree:1 <input type="checkbox"/> disagree:2 <input type="checkbox"/> fair:3 <input type="checkbox"/> agree:4 <input type="checkbox"/> strongly agree:5
<b>Place attachment 6</b>	Home reflects the type of person I am	<input type="checkbox"/> strongly disagree:1 <input type="checkbox"/> disagree:2 <input type="checkbox"/> fair:3 <input type="checkbox"/> agree:4 <input type="checkbox"/> strongly agree:5

Source: Author's questionnaire

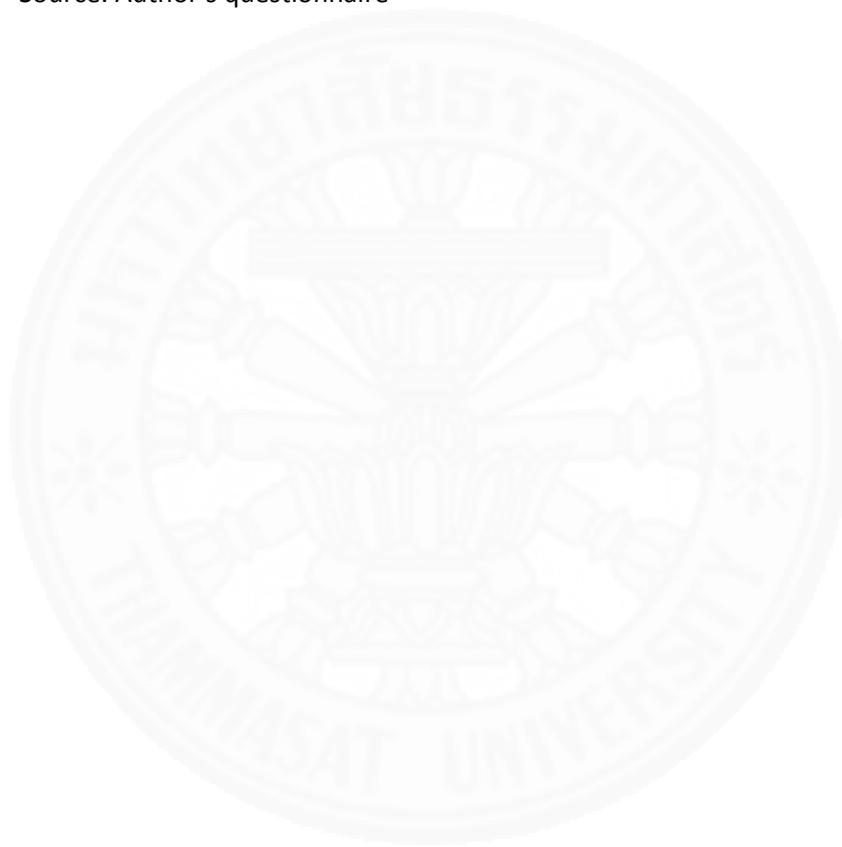


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<b>Place attachment 7</b>	Everything about home is a reflection of me	<input type="checkbox"/> strongly disagree:1 <input type="checkbox"/> disagree:2 <input type="checkbox"/> fair:3 <input type="checkbox"/> agree:4 <input type="checkbox"/> strongly agree:5
<b>Place attachment 8</b>	As far as I am concerned, home are better places to be	<input type="checkbox"/> strongly disagree:1 <input type="checkbox"/> disagree:2 <input type="checkbox"/> fair:3 <input type="checkbox"/> agree:4 <input type="checkbox"/> strongly agree:5

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Source: Author's questionnaire



## APPENDIX E

TABLE REVERSE MORTGAGES LITERACY

Variable	Survey Question	Correct Answer	Percent	
			Correct	Wrong
Rmk1	The reverse mortgage is selling a home to the bank?	Yes	69.28%	30.72%
Rmk2	The reverse mortgage home is the home that is free from debt?	Yes	86.89%	13.11%
Rmk3	When you join the reverse mortgage program, you will get the salary from this program.	Yes	82.19%	17.81%
Rmk4	How the minimum and maximum age that can join the reverse mortgage program?	More than or equal 60 but less than 80	75.15%	24.85%
Rmk5	The maximum reverse mortgage loan is 10 million baht?	Yes	72.21%	27.79%
Rmk6	When you join the reverse mortgage program, you can still stay in your home until death or loan expire in 25 years.	Yes	82.19%	17.81%

Source: Author's calculation

Variable	Survey questionnaire	Correct Answer	Percent	
			Correct	Wrong
Rmk7	The home in the reverse mortgage program is sold to others by homeowner relative who has the right to buy first after homeowner death or loan expire in 25 years.	Yes	83.76%	16.24%

Source: Author's calculation



## APPENDIX F

TABLE PLACE ATTACHMENT

Variable	Survey Question	Continuous Respondents				
		Mean	Median	Std	Min	Max
Place attachment 1	I feel that I can really be myself at home	4.36	5	0.80	1	5
Place attachment 2	I really miss home when I am away too long	4.40	5	0.80	1	5
Place attachment 3	I feel happiest when I am at home	4.34	5	0.86	1	5
Place attachment 4	Home is the best place to do the things I enjoy	4.28	4	0.89	1	5
Place attachment 5	Home is my favorite place to be	4.10	4	0.93	1	5
Place attachment 6	Home reflects the type of person I am	4.31	5	0.87	1	5
Place attachment 7	Everything about home is a reflection of me	4.05	4	0.95	1	5
Place attachment 8	As far as I am concerned, home are better places to be	3.97	4	0.97	1	5

Source: Author's calculation

## APPENDIX G

## SAMPLE STATISTICS

Variable	Government Employee				Private employee				State Enterprise employee				
	25-39 years		40-60 years		25-39 years		40-60 years		25-39 years		40-60 years		
	N	%	N	%	N	%	N	%	N	%	N	%	
<b>E(Income)</b>	1. Not increase	1	1.30%	12	15.58%	3	3.19%	4	5.06%	2	2.47%	17	16.50%
	2. Very Slow	7	9.09%	7	9.09%	13	13.83%	19	24.05%	2	2.47%	12	11.65%
	3. Slow	23	29.87%	20	25.98%	23	24.47%	19	24.05%	10	12.35%	20	19.42%
	4. Medium	38	49.35%	35	45.46%	47	50%	36	45.57%	49	60.49%	47	45.63%
	5. Fast	8	10.39%	3	3.89%	8	8.51%	1	1.27%	18	22.22%	7	6.80%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
<b>E(Expense)</b>	1. Less than 10,000 baht	13	16.89%	8	10.39%	1	1.06%	0	-	2	2.47%	3	2.91%
	2. 10,001-30,000 baht	60	77.93%	43	55.84%	45	47.87%	20	27.03%	45	55.56%	20	19.42%
	3. 30,001-50,000 baht	3	3.89%	23	29.87%	35	37.23%	37	50%	27	33.33%	31	30.10%
	4. 50,001-more than 90,0001 baht	1	1.29%	3	3.90%	13	13.84%	22	27.84%	7	8.64%	49	47.57%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>

Source: Author's calculation

Variable	Government Employee				Private employee				State Enterprise employee				
	25-39 years		40-60 years		25-39 years		40-60 years		25-39 years		40-60 years		
	N	%	N	%	N	%	N	%	N	%	N	%	
Sons/Daughters	1.Yes	28	36.36%	60	77.92%	33	35.11%	48	60.76%	18	22.22%	65	63.11%
	2.No	49	63.64%	17	22.08%	61	64.89%	31	39.24%	63	77.78%	38	36.89%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
House price	1. 1,500,001-3,000,000 baht	55	71.42%	48	62.34%	44	46.81%	33	41.77%	34	41.98%	13	12.62%
	2. 3,000,001-6,000,000 baht	17	22.08%	23	29.87%	43	45.74%	35	44.30%	27	33.33%	42	40.78%
	3. 6,000,001-more than 12,000,001 baht	5	6.50%	6	7.79%	7	7.45%	11	13.93%	20	24.69%	48	46.60%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
Stay Home	1. No stay	9	11.68%	7	9.09%	2	2.13%	3	3.80%	1	1.23%	4	3.88%
	2. 1-5 years	11	14.28%	3	3.90%	14	14.89%	4	5.06%	4	4.94%	5	4.85%
	3. 6-10 years	10	12.99%	6	7.79%	16	17.02%	11	13.92%	9	11.11%	4	3.88%
	4. 11-15 years	4	5.20%	9	11.69%	12	12.77%	7	8.86%	6	7.41%	8	7.77%
	5. 16-20 years	7	9.09%	12	15.58%	16	17.02%	15	18.99%	13	16.05%	11	10.68%
	6. 21-25 years	36	46.76%	40	51.95%	34	36.17%	39	49.37%	48	59.26%	71	68.93%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>

Source: Author's calculation

Variable	Government Employee				Private employee				State Enterprise employee				
	25-39 years		40-60 years		25-39 years		40-60 years		25-39 years		40-60 years		
	N	%	N	%	N	%	N	%	N	%	N	%	
<b>Income</b>	1. less than 15,000 baht / month	4	5.19%	2	2.60%	0	-	0	-	0	-	3	2.91%
	2. 15,000-30,000 baht/month	66	85.72%	19	24.68%	10	10.64%	1	1.27%	13	16.05%	3	2.91%
	3. 30,001-50,000 baht/month	6	7.80%	44	57.14%	47	50%	23	29.11%	44	54.32%	4	3.88%
	4. 50,001-more than 100,000 baht/month	1	1.29%	12	15.58%	37	39.36%	55	69.62%	24	29.63%	93	90.29%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
<b>Saving</b>	1. No saving	12	15.58%	11	14.29%	17	18.09%	8	10.13%	3	3.70%	9	8.74%
	2. Less than 1,500 baht/month	23	29.87%	11	14.29%	3	3.19%	6	7.59%	9	11.11%	4	3.88%
	3. 1,501-3,000 baht/month	19	24.68%	20	25.97%	14	14.89%	16	20.25%	17	20.99%	4	3.88%
	4. 3,001-6,000 baht/month	13	16.89%	15	19.48%	26	27.66%	11	13.92%	14	17.28%	4	3.88%
	5. 6,001-12,000 baht/month	7	9.10%	8	10.39%	20	21.28%	18	22.78%	17	20.99%	14	13.59%
	6. 12,001-more than 48,000 baht/month	3	3.89%	12	15.58%	14	14.89%	20	25.33%	21	25.93%	68	66.03%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
<b>Medical Expense</b>	1. Yes	12	15.58%	28	36.36%	21	22.34%	45	56.96%	33	40.74%	39	37.86%
	2. No	65	84.42%	49	63.64%	73	77.66%	34	43.04%	48	59.26%	64	62.14%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>

Source: Author's calculation

Variable		Government Employee				Private employee				State Enterprise employee			
		25-39 years		40-60 years		25-39 years		40-60 years		25-39 years		40-60 years	
		N	%	N	%	N	%	N	%	N	%	N	%
Debt	1. Yes	57	74.02%	51	66.23%	82	87.23%	72	91.14%	55	67.90%	59	57.28%
	2. No	20	25.98%	26	33.77%	12	12.77%	7	8.86%	26	32.10%	44	42.72%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
Insurance	1. Yes	41	53.24%	56	72.73%	62	65.96%	70	88.61%	67	82.72%	86	83.50%
	2. No	36	46.76%	21	27.27%	32	34.04%	9	11.39%	14	17.28%	17	16.50%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
Gender	1. Male	20	25.97%	17	22.08%	40	42.55%	30	37.97%	34	41.98%	47	45.63%
	2. Female	57	74.03%	60	77.92%	54	57.45%	49	62.03%	47	58.02%	56	54.37%
	<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
Status	1. Married	25	32.46%	45	58.44%	38	40.43%	51	64.56%	24	29.63%	57	55.34%
	2. Divorce	0	-	7	9.09%	2	2.13%	2	2.53%	0	-	5	4.85%

Source: Author's calculation



Variable	Government Employee				Private employee				State Enterprise employee			
	25-39 years		40-60 years		25-39 years		40-60 years		25-39 years		40-60 years	
	N	%	N	%	N	%	N	%	N	%	N	%
3. Single	52	67.54%	25	32.47%	54	57.45%	26	32.91%	57	70.37%	41	39.81%
<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
<b>Education</b>												
1. Lower than Bachelor's Degree	3	3.89%	5	6.49%	4	4.26%	8	10.13%	1	1.23%	0	-
2. Bachelor's Degree or equal	38	49.35%	26	33.77%	71	75.53%	54	68.35%	10	12.35%	22	21.36%
3. Higher than Bachelor's Degree	36	46.76%	46	59.74%	19	20.21%	17	21.52%	70	86.42%	81	78.64%
<b>Total</b>	<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>

Source: Author's calculation

Variable		Government Employee				Private employee				State Enterprise employee			
		25-39 years		40-60 years		25-39 years		40-60 years		25-39 years		40-60 years	
		N	%	N	%	N	%	N	%	N	%	N	%
Intention to use reverse mortgages	1. 0%	23	29.87%	41	53.25%	24	25.53%	21	26.58%	16	19.75%	26	25.24%
	2. 1%-25%	29	37.67%	20	25.97%	21	22.34%	23	29.11%	16	19.75%	30	29.13%
	3. 26%-49%	12	15.59%	4	5.19%	17	18.09%	14	17.72%	18	22.22%	16	15.53%
	4. 50%	8	10.39%	5	6.49%	15	15.96%	12	15.19%	19	23.46%	15	14.56%
	5. 51%-75%	4	5.19%	6	7.79%	10	10.64%	6	7.59%	8	9.88%	9	8.74%
	6. 76%-99%	0	-	0	-	3	3.19%	2	2.53%	3	3.70%	6	5.83%
	7. 100%	1	1.29%	1	1.30%	4	4.26%	1	1.27%	1	1.23%	1	0.97%
<b>Total</b>		<b>77</b>	<b>100%</b>	<b>77</b>	<b>100%</b>	<b>94</b>	<b>100%</b>	<b>79</b>	<b>100%</b>	<b>81</b>	<b>100%</b>	<b>103</b>	<b>100%</b>
Total N		511											

Source: Author's calculation

**BIOGRAPHY**

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