EMPIRICAL ANALYSIS ON THE SECOND GENERATION'S PERCEPTION OF PARENTS' APPLICATION FOR REVERSE MORTGAGE IN KOREA

By

InHyouk Koo

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
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Master of Business Administration

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ABSTRACT

EMPIRICAL ANALYSIS ON THE SECOND GENERATION'S PERCEPTION OF PARENTS' APPLICATION FOR REVERSE MORTGAGE IN KOREA

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Although reverse mortgage can play a pivotal role in guaranteeing stable life after the elderly's retirement, it has not been popular in Korea. The purposes of the current study are: (1) to examine trends in the custom of primogeniture and the second generation's perception about their inheritance, (2) to demonstrate the reason why the second generation aged between 25 and 35 hesitate to agree with parents' access to reverse mortgage and (3) to identify four group (demographic and geographic, residential condition-related, perception on real-estate investment and perception on reverse mortgage) characteristics which were significantly related to willingness of approving parents' subscription to reverse mortgage. In a random sample of 270 respondents aged between 25 and 35, 165 respondents replied negatively (62.1%) and 99 answered positively (37.9%) about parents' application for reverse mortgage. Furthermore, throughout logistic regression analysis, we found that residential areas such as metropolitan and Gangbuk are positively associated with the perception to support parents' reverse mortgage. We

also found, in contrast, the second generation's desire for inheritance, residential areas such as Gangnam, and the educational level of parents are negatively related to the second generation's perception to consent parents' reverse mortgage. Changes in the custom of primogeniture and strong desire of the second generation about their inheritance prevent us from vitalizing reverse mortgage in Korea.

Dedicated to My Family

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Ⅰ. INTRODUCTION

Owing to the combination of sustained low birthrate and extended life expectancy, Korea's population is aging rapidly. The percentage of male and female aged 65 years old or above increased to 7.6% and 11.4% of the total population in 2006 respectively from 3.8% and 6.4% of the total population in 1990. The rapid growth of the aging population will be a serious challenge to policy makers in respect of social and economic issues for the elderly in Korea.

Aging population leads to various social changes in Korea. Working population has to take care of more seniors and invest on facilities. Services related to the elderly will be needed more. Medical insurance and pension system are projected to face crisis in the foreseeable future. In addition, the young adult are less willing to support their parents and the elderly want to live comfortably and freely. Reverse mortgage is one of the solutions to overcome the problem of aging population and social changes.

First of all, reverse mortgage will offer financial independence to the elderly. Over 46% of the elderly in Korea do not consider leaving properties to their children. 84.4% of the elderly in Korea will not rely on their children to get financial support after retirement (SeonJong Yoo, 2005). It means that concept of the traditional inheritance continues to be changed. Reverse mortgage will also make the product induction ratio around 1.98. It will give a positive impact on Korean economy (Yoo and Gu, 2005).

However, analysis on the feature of reverse mortgage user in Korea has been very scarce. Structural problems of reverse mortgage– high interest rate, insufficient tax incentive, complex risk hedging and poor counselling– will be researched practically (e.g., Jong–Moo, Hong, 2006).

Other researches related to home equity or refinancing mortgage for the study on reverse mortgage are as follows: interrelationship between age model and life expectancy model (e.g., Chen and Jensen, 1985) and analysis on the home equity credit lines (e.g., Salandro and Harrision, 1997). Logistic analysis on the feature of home equity borrowing is related to age, education and income (e.g., Lee, 2005).

Although precedent researches have evidenced necessity of reverse mortgage and its economic benefit, they have several supplementary points. Especially, most researches about application for reverse mortgage focus on the perception of the elderly (e.g., Yoo, 2005). A number of previous studies also have been conducted to analyze the characteristics of the elderly who are more likely to apply for reverse mortgage. It was found that the probability of participating in reverse mortgage is positively related to the level of equity but negatively associated with current income as a percentage of equity (Weinrobe, 1987). The elderly who are older, single and childless are more likely to apply for reverse mortgage (Venti and Wise, 1990 & AARP, 1990).

Although studies on the perception of the elderly is very significant, especially in Korea, most researchers have overlooked changes in the custom of primogeniture and perception of the second generation about their inheritance. Furthermore, previous researches have mainly emphasized the positive aspect of reverse mortgage.

Consequently, researchers need to investigate why it is hard for reverse mortgage to be popular in the Korean financial market even though reverse mortgage system provides various benefits for a stable retirement life. As an example, the Korean elderly have been likely to pass their properties to descendants or the next generation. On the contrary, most Koreans in their twenties or thirties prefer to inherit their parents' properties. Therefore, it is necessary to study the second generation's perception about reverse mortgage and their inheritance.

The purpose of this study is to examine the second generation's perception of parents' application for reverse mortgage and it will focus on one of the causes why reverse mortgage has not been viable in Korea. Based on representative random samples of the second generation aged between 25 and 35, we analyzed the reason why they are unconvinced about parents' application for reverse mortgage. Moreover, we also analyzed what characteristics are related to public welfare policy and socio-economy of those who will be potential supporters of reverse mortgage in Korea

In the remaining three sections of this paper, for the first time, we explore the structure of reverse mortgage. Then, we examine why the second generation vacillate to apply for reverse mortgage of their parents. Based on the literature review, the research hypothesis is developed. Finally, we investigate which main causes negatively or positively affect the second generation's the willingness to support their parents' choice of reverse mortgage. Chapter 3 describes data set and research methodology which is used to test the hypotheses. Chapter 4 presents the data analyses and findings empirically.

Ⅱ. REVIEW OF RELATED LITERATURE

2.1. Overview of Demographics in Korea

2.1.1. Circumstances of Aging In Korea

As a result of the dramatic decline in the birthrate and rapid development in medicine, the demographics of Korea has been the growing proportion of the elderly in the population. In 2006, the percentage of males and females aged 65 years old or above in Korea approached respectively 7.6% and 11.4% of the total population. The Korean population already entered the level of aging society and is expected to enter the level of aged society in 2018.

FIGURE 1 Population Increase rate

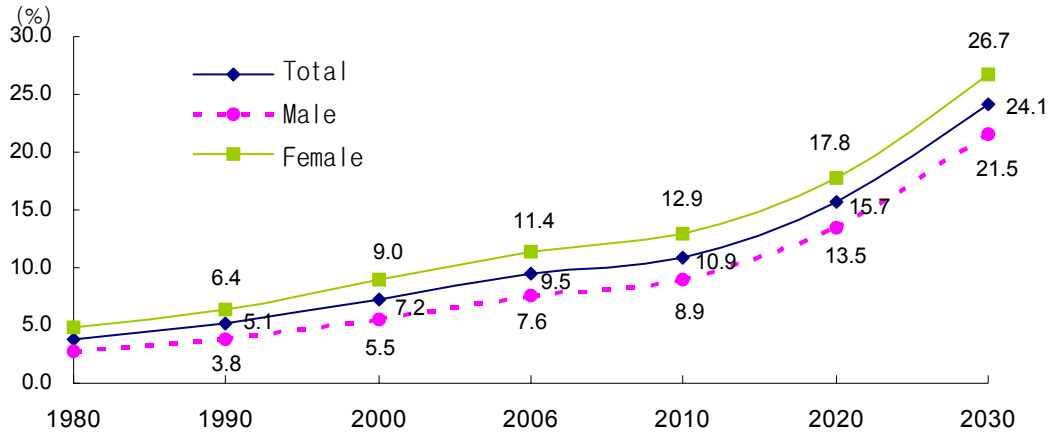


Figure 1 shows the population increase rate of males and females aged 65 years old or above compared to the total population and Table 1 presents the prospective population and increasing rate in Korea.

TABLE 1 Prospective Population in Korea

Year	Total Population	Births	Increase Rate	Growth Rate
	Per 1,000	Per 1,000	Per 1,000	%
2005	48,461	532	5.6	0.54
2010	49,594	503	4.1	0.41
2015	50,352	445	2.1	0.22
2020	50,650	424	0.7	0.06
2025	50,649	420	−0.5	−0.05
2030	50,296	388	−2.2	−0.21
2040	48,204	326	−6.2	−0.60
2050	44,337	280	−10.2	−1.01

☞ Source: National Statistical Office, Korean Statistical Information System (2005)

An aging society is defined as that with the ratio of people aged 65 and above occupies 7~14%, aged society as 14~20%, and super-aged society as over 20%. It took 24 years to become an aged society from aging society, and will take about 30 years to become a super aged society in the case of other developed nations such as Japan and France. In contrast, as can be illustrated in Table 2, the United States entered aging society in 1940. It is expected to become an aged society in 2015 and super aged society in 2036. The elderly's population of Japan accounted for 7% in 1970, 14% in 1994 and 20% in 2006 respectively.

TABLE 2 International Comparison with Aging Speed of Population

Nation	Arrival Year			Necessary Year		Distribution Ratio above 65 in 2002 (%)
	7%	14%	20%	7%→14%	14%→20%	
France	1864	1979	2019	115	40	16.3
Norway	1885	1977	2021	92	44	14.9
Sweden	1887	1972	2011	85	39	17.2
Australia	1939	2012	2030	73	18	12.7
USA	1942	2014	2030	72	16	12.3
Canada	1945	2010	2024	65	14	12.7
Italia	1927	1988	2008	61	20	18.6
United Kingdom	1929	1976	2020	47	44	15.9
Germany	1932	1972	2010	40	38	17.3
Japan	1970	1994	2006	24	12	18.4
Korea	2000	2019	2026	19	7	7.9

☞ Source: UN, "The Sex and Age Distribution of World Population" (2004), "OECD Health Data" (2004)

The elderly population is also defined as the number of persons who are 65 years of age or older. In Korea, people aged 65 and above accounted for 7.2% of the total population in 2000. It was 9.1% in 2005 up from 8.7% in 2004. Korea is expected to become an aged society with the rate of 14% in 2018. In addition to population trend, Korea will enter super aged society in 2026 with 20%. Aging speed of the Korean population is faster than any other country in the world.

Alternatively, the pace of aging in Korea is faster in rural area than in urban area. Rural area already entered aging society with 9.0% in 1990 and entered aged society with 14.7% in 2000 caused by the movement of the second generation to cities. In this regard, Korea has to prepare for rapid progress of the aged society.

2.1.2. Comprehension of Dependency Ratio

To check the stage of aging society, we have to compute aged dependency ratio, child dependency ratio and aged-child ratio: we can use them to analyze the dependency ratio of the population in Korea.

TABLE 3 Dependency Ratio in Korea

Year	Dependency Ratio (Total)	Dependency Ratio (Child)	Dependency Ratio (Aged)	Aged-Child Ratio (%)
1990	44.3	36.9	7.4	11
2000	39.5	29.4	8.3	34
2010	37.3	22.3	14.9	67
2020	39.4	17.6	21.8	124
2030	54.7	17.4	37.3	215
2040	72.6	17.4	55.2	317
2050	86.1	16.7	69.4	416

☞ Source: National Statistical Office, Korean Statistical Information System, The Bank of Korea, Economic Statistics Yearbook (2005)

Note: 1) Total Dependency Ratio: Aged Dependency Ratio + Child Dependency Ratio

Aged Dependency Ratio: (above 65 Population/15~64 Population)*100

Child Dependency Ratio: (0~14 Population/15~64 Population)*100

Aged-Child Ratio: (above 65 Population/0~14 Population)*100

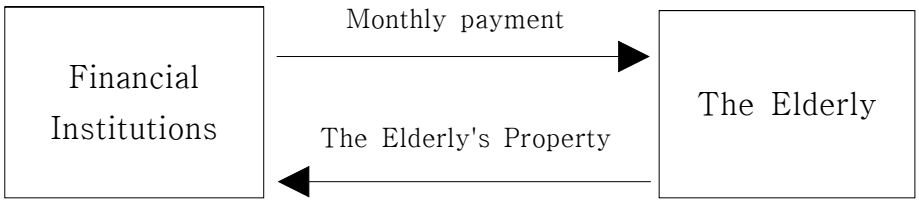
As can be seen in Table 3, decreasing child dependency ratio and increasing aged dependency ratio are very significant because aged dependency ratio is the signal of aged population in the future. With the fastest growing aging society and the lowest birth rate, Korean second generation and middle-aged people have more burden for supporting the senior citizens. The fact that the aged dependency ratio will increase can be interpreted as the productive population will decrease. It is predictable that these implications will be one of Korea's economic burdens in the future. As a matter of fact, due to decreasing birth rate, the child dependency ratio will decrease continuously.

As an example, in 1990, the elderly supporting rate was 7.4. This rate increased to 10.1 in 2000 and it is expected to jump to 37.3 in 2030. This figure means that one hundred second generation and the middle-aged people in 1990 had to support seven seniors, but one hundred working people in 2030 will have to assist almost thirty seven seniors. Consequently, the economic and social wellbeing of the elderly after retirement is a very significant issue for society in general and for policy-makers in particular.

2.2. Concept and Related Research of Reverse Mortgage

Reverse mortgage is a type of loan against property owned by debtor. When the borrower dies or perpetually leaves his or her house, reverse mortgage becomes repayable.

FIGURE 2 Structure of Reverse Mortgage



Reverse mortgage has been suggested as a feasible solution to improve or maintain the economic status of the elderly who are " house-rich but cash-poor" (Chou et al., 2004; Leviton, 2001).

Reverse mortgage is a means for the elderly homeowners to access their home equity while continuing to live in their homes. A reverse mortgage borrower is able to receive cash in many ways; 1) A lump sum payment, 2) A term plan-monthly payment for a fixed period, 3) A tenure plan-monthly payment over the remaining life time of the borrower for as long as the home is used as a principal residence. 4) A credit line payment-up to a maximum amount that can be paid at various times and 5) A combination of the several options.

In the United States, reverse mortgages or home equity conversion plans were introduced two decades ago. Some researchers illustrated that over six million elderly homeowners have high levels of home equity and could increase their monthly incomes by obtaining reverse mortgages. Though the reverse mortgage payment was small for most households, they found that it could create additional income for about 1.5 million of the elderly above poverty level (Mayer and Simons, 1994). Others estimated that most of the elderly, relying on their

income, age, and the level of home equity, have considerably smaller benefit from reverse mortgage. They also analyzed the number of elderly households that would receive a 20% to 25% increase in income by lowering their housing equity (Merrill, Finkel, and Kutty, 1994)

Especially, Case and Schnare (1994) evaluated Home Equity Conversion Mortgage (HECM) program's borrower characteristics; 1) younger borrowers are more likely to choose tenure payment, 2) single men are less likely than women or couples to select the line of credit option, 3) borrowers who live in rural areas are more likely to choose the line of credit option than borrowers in urban or suburban, 4) there is a weak relationship between reverse mortgage and income and 5) borrowers who possessed higher-valued houses are not much more likely to choose the line of credit option.

The lenders in the reverse mortgage may face a lot of risks; 1) cross-over risk related to the loan exceeding the value of the property, 2) tenure risk when the borrower lives longer than expected, 3) home-value risk when the value of property depreciates faster than expected, 4) maintenance risk when the borrower does not properly maintain the property as expected and 5) risk related to the fluctuation of the interest rate (Boehm and Ehrhardt, 1994).

On the contrary, the borrowers also are taking the risk of uncertainty in life span and health (Case and Schnare, Chinloy and Megbolugbe, Miceli and Sirmans, 1994). They analyzed a couple of motives for applying reverse mortgage; 1) life-cycle motive, for catching wealth as the elderly age and 2) asset management motive, for diversifying properties that the elderly have.

Besides, Rasmussen, Megbolugbe, and Morgan (1996) argued that the demand for reverse mortgage from the perspective of the life-cycle model restricts the market to elderly households who wish to increase current consumption expenditure. They researched the significance of investment motives for applying reverse mortgage as an asset. Expenditure, for instance, long-term care insurance, mid-career human capital investments, and children's college costs might be better financed. Applying for a line of credit or lump sum option is required to enlarge flexibility of reverse mortgage.

They illustrated that three market segments for reverse mortgages are discussed: elderly persons living alone, other elderly households, and non-elderly households (1997). Potential uses comprise turning housing equity into personal human capital investment accounts, enabling offspring to provide care for their disabled parents, funding elderly households' long-term care insurance, and sustaining consumption.[1)]

Kee-Lee Chou, Nelson W.S. Chow, and Iris Chi (2006) found that childlessness and possession of stocks, bonds or funds are positively related to the willingness to consider applying for the reverse mortgage. Additionally, financial asset is not positively associated with willingness to consider applying for reverse mortgage. They insisted that reverse mortgage should be another feasible option to secure the retirement income for the next cohort of the elderly in Hong Kong.[2)]

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1) David W. Rasmussen, Lsaac F. Megbolugbe, Barbara A. Morgen, 1997, "The Reverse Mortgage as an Asset: Management Tool", Housing Policy Debate, vol. 8(1), 173

2) Kee-Lee Chou Nelson W.S. Chow, Iris chi, 2006, "Willingness to Consider Applying for Reverse Mortgage in Hong Kong Chinese middle-aged homeowners", Habitat International vol. 30, 717~718

Several studies on the perception of the elderly for applying reverse mortgage are very significant. Most of the elderly in Korea do not feel secure about their remaining life in terms of monthly income. At the same time, they do hesitate to inherit their properties and do not want to be supported by their grown offspring (Seon-Jong Yoo, Bon-Young Gu, 2005). Moreover, the feature of reverse mortgage users showing willingness to apply for reverse mortgage is related to ownership of a car, life partner, low family number, higher security house appraisal price, low lending finance organ number, monthly payment, lower payment period (Yoo, 2006).

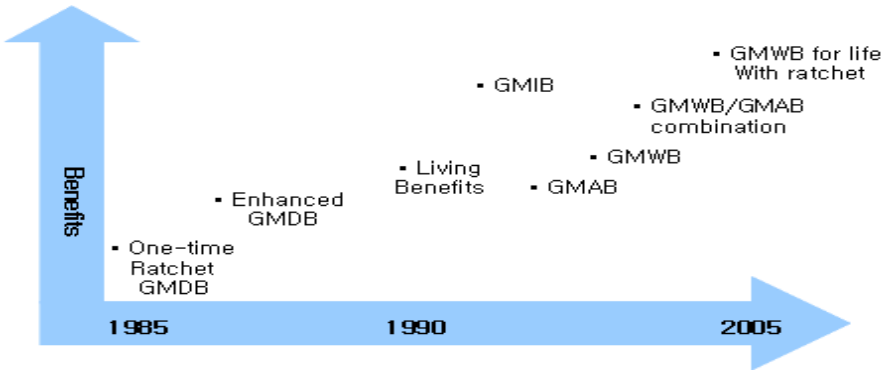
Whereas these studies on the perception of the elderly are very important, researchers have overlooked changes in the custom of primogeniture and the second generation's perception about their inheritance in Korea. This study is aimed at analysing the perception of the second generation about reverse mortgage which can be distinguished from the preference of the elderly's which has been broadly researched . We consider why reverse mortgage in Korea will be hardly viable and find that middle-aged offspring and their parents perceive their properties differently from each other.

2.3. Necessity of Reverse Mortgage in Korea

Although the number of policies and financial products for the elderly have been framed in Korea, wider support is required to furnish practical benefit. In the United States, various financial products which fit into the elderly's situation were formulated such as GMDB(Guaranteed Minimum Death Benefit), GLBs(Guaranteed Minimum Maturity Benefit), GMAB(Guaranteed Minimum Accumulate Benefit),

GMWB(Guaranteed Minimum Withdrawal Benefit) and GMIB(Guaranteed Minimum Income Benefit).

FIGURE 3 Progress of the Elderly's Financial Products in the United States



☞ Source: AXA, (AXA Global Varialbe Annuity), 2006.5

With the revised welfare policy for the elderly, the Korean government has started to provide about thirty Silver Towns since 2000. The Korean government also encouraged private companies to participate in the housing service market for the elderly. However, the elderly with low income have a limited use of the facilities due to the high rental fee and monthly payment.

There are several supports for the elderly with low income, but the welfare budget for them is too low. Social security budget increased to 13,586 billion won in 2005 from 4,207 billion won in 1997. Social security budget in Korea accounts for 10.1%, which is based on 2005, of the general accounts under the governmental budget. However, compared with other OECD countries, the budget for the social security is relatively low considering the size of the Korean economy.

TABLE 4 Change of Government Budget and Social Security Budget (Unit: Billion won, %)

Year	Government's Budget (A)	GDP (B)	Social Security Budget (C)			C/A (%)	C/B (%)
				Public Assistance	Welfare Service		
1997	67,579	453,276	4,207	927	1,014	6.2	0.93
1998	75,583	444,365	4,576	1,121	1,662	6.1	1.03
1999	83,685	482,744	6,105	1,945	1,889	7.3	1.26
2000	88,736	521,959	8,074	2,410	2,566	9.1	1.55
2001	99,180	551,558	10,746	3,270	3,763	10.8	1.96
2002	109,630	596,381	10,677	3,403	3,860	9.7	1.79
2003	118.132	638,647	11,572	3,522	4,365	9.8	1.81
2004	120,139	678,115	12,830	3,913	4,652	10.7	1.89
2005	135,216	842,095	13,586	4,615	3,763	10.1	1.61

☞ Source: Social Welfare Indices at Ministry of Health and Welfare (1997~2005)

Social security budget consists of social insurance, patriot veterans, labor welfare, other social welfare, vocational training, job stability, health welfare administration. Among OECD countries, Korean social welfare expenditure was at a relatively low level as 8.7% of GDP in 2001 against 11.8%(Mexico), 15.2%(US), 22.4%(UK), 28.5%(France), 28.8%(German), 29.5%(Sweden).[3)]

According to statistical data of the Ministry of Health and Welfare, silver town which is regarded as one of the alternative measures shoulders much financial burden of the elderly. 77% of the people aged over 60 still want to live in their own houses rather than to live in silver town and other facilities.[4)] That is why the new financial product, reverse mortgage is actively introduced in Korea. Furthermore, because budget for the elderly is too low in the government budget, though it is expected to increase, the elderly will try to solve their old age problems for themselves. This is the reason that reverse mortgage is needed in Korea.

3) OECD, Social Expenditure Data 2004. 8

4) "Introduction of Plan for The Elderly's Health and Welfare" Ministry of Health and Welfare (2007)

Among the elderly aged over 60, the rate of retirement pension acceptance was 9.3% in 2000 up from 0.9% in 1995, but 9 out of 10 seniors cannot relish the benefits of the system and they depend on their children or relatives for half of their living expenses. However, their housing possession rate is 77.6%, hovering Korean average housing possession rate of 54%. By using this properly, the government should find measures to provide them with a comfortable life after retirement.[5)]

2.3.1. Effect of Reverse Mortgage in Korea

As structural changes and private and public pension systems make a slow progress, the elderly in Korea are accelerating concerns about aging society. In this regard, reverse mortgage loan can play a pivotal role in guaranteeing stable life after retirement.

To begin with, reverse mortgage will help recover domestic consumption by relieving concerns about life after retirement. As the elderly will be able to spend much money with increased disposable income, the ripple effect of reverse mortgage throughout the whole industry will be enormous in Korean economy. Recently, for example, various statistical researches show people in their 40s and 50s prefer saving to spending. They need to save money more than people in their 20s and 30s because they are expect to spend much money on buying homes and educating their children. This change of propensity to save will affect recovery of domestic consumption.

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5) Hong, Jong-Moo 2006, "A Study on Activation of the Reverse Mortgages for Well-being Life of the Silver Generation", Dongguk University 36~39

According to the National Statistical Office, people in their 40s and 50s who are expected to spend more on buying homes and educating children save more than people in their 20s and 30s. These circumstances are the opposite of the conventional wisdom. Since 2000, the rate of savings of people in their 40s and 50s has increased dramatically, showing 3 to 8% increase while the rate of savings of people in their 20s and 30s has not fluctuated since 1980. The rate of savings of people aged over 55, who are regarded to spend more based on their accumulated assets, reached 27.7% in 2000, compared with 19.6% in 1980.

Decrease in retirement age, rapid progress toward a nuclear family, and lack of social welfare policy cause people to worry about their life after retirement. It makes people save more to prepare for it. In the first half of 2000, the growth rate of disposable income of the people aged over 55 was 2.7% while the growth rate of consumption was 0.8%. If reverse mortgage contributed to their stabilized life after retirement through income increase, it could mitigate the consumption reduction problem in Korea. Moreover, it could be conducive to revitalizing Korean macro-economy.

Additionally, monthly cash payment caused by reverse mortgage will directly have an impact on the whole industry. Yoo, Sun Jong (2002) previously conducted a research on how the reverse mortgage had affected the Japanese economy by analyzing the Japanese industrial data. His research showed that reverse mortgage helped to generate 2.27 times of production inducement throughout the industry as a whole.[6)]

6) Yoo, Sun Jong 1998, "A Study on Reverse Mortgage System of Japan", Korea Planners Association Vol. 33(4) 105~122

By using industrial data in 2000, while analyzing the effect of reverse mortgage in Korea, the potential market scale is expected to be around 10~16 trillion won and production inducement effect is expected to be around 18~29 trillion won. Furthermore, reverse mortgage helps to create at least 130,000 new available employment around the whole industry. It is predictable that reverse mortgage in Korea will contribute to economic growth and employment acceleration.

Reverse mortgage can solve welfare problems of the elderly who have a relatively small amount of financial asset. Real estate price will also be potentially stable in the market. Consequently, the elderly with a monthly payment of reverse mortgage spent assets for themselves. The government welfare budget for them will be relatively reduced and the remainder will be invested in other productive areas. In short, development of reverse mortgage market not only improves information transparency of the housing market but also helps to bring stability in the real estate market.[7)]

2.3.2. Macro-analysis on Necessity of Reverse Mortgage

2.3.2.1 Increasing Average Life Span & Low Birth Rate

The causes of fast aging in Korea are prolonged life expectancy thanks to the medical development and lower birth rate. The pace of aging can be explained by changes in index of aging due to lower birth rate and prolonged life expectancy. As can be seen in Table 6, the list shows that birth rate dropped to 1.5 in 2000 from

7) Lee, Seok Hoo 2005, "Necessity of Reverse Mortgage with the Macroeconomic Aspect", Korea Institute of Finance Vol. 14(46) 60~62

2.8 in 1980 and life expectancy increased.

TABLE 5 Population Projections (Unit: per 1,000 population, %)

Year	Total Population	Births	Crude Birth Rate	Deaths	Crude Death Rate	Natural Increase Rates	Growth Rate of Population
2007	48,456	449	9.3	260	5.4	3.9	0.33
2010	48,875	434	8.9	284	5.8	3.1	0.26
2015	49,326	398	8.1	332	6.7	1.4	0.10
2020	49,326	377	7.6	375	7.6	0.0	−0.02
2025	49,108	375	7.6	419	8.5	−0.9	−0.12
2030	48,635	348	7.1	465	9.6	−2.5	−0.25
2040	46,343	262	5.7	573	12.4	−6.7	−0.67
2050	46,343	226	5.3	679	16.0	−10.7	−1.07

☞ Source: Korea National Statistical Office, "Population Projections" (2006. 11)

TABLE 6 Population Projections – Average Birth Rate (Unit: person, age)

	1980	1990	2000	2010	2020
Average Birth Rate	2.8	1.6	1.5	1.2	1.2
Average Life Span (Male)	62.3	67.7	72.1	76.2	78.2
Average Life Span (Female)	70.5	75.9	79.5	82.6	84.4

☞ Source: Korea National Statistical Office, "Population Projections" (2005)

2.3.2.2 Residential Status of the Elderly in Korea

When looking into relevant housing projections concerning cohabitation with their children, cohabitation of over three generation rate dropped to 7.3% in 2005 from 14.9% in 1985 and 8.4% in 2000 respectively (Table 7). It will drop to 4.7% in 2020. Besides, couple households whose age are 65 or above will dramatically increase to 39.3% in 2010.

TABLE 7 Future Housing Projections (Unit: 10 thousand, %, Year)

	1985		2000		2005		2010		2015		2020	
	House	Rate	House	Rate	House	Rate	House	Rate	House	Rate	House	Rate
Nuclear Family	658	68.3	998	68.3	1,087	68.8	1,160	68.8	1,206	68.7	1,238	68.2
Over 3 Generation	142	14.9	122	8.4	115	7.3	107	6.4	96.4	5.5	85.2	4.7
One Person Household	102	6.9	227	15.5	267	17.0	311	18.4	349	19.9	389	21.5
Non-Blood Family	16	1.7	16.3	1.1	16.0	1.0	15.0	0.9	14.3	0.8	13.6	0.7
Others			96.9	6.6	93.3	5.9	92.2	5.5	90.5	5.2	89.8	4.9
Over 65 (Couple)			58.6	32.5	80.5	36.8	102	39.3	122	40.9	147	43.1
Average Age			54.8		56.6		58.3		59.8		61.0	

☞ Source: Korea National Statistical Office, "Future Housing Projections" (2002. 7. 24)

This rapid changing society means the trend which supports the elderly has been changed. At the same time, prolonged life expectancy alters life style in Korea. Because parents who live with their unmarried children happen to live alone after their marriage, they have to prepare for their life after retirement. Obligation of supporting parents has been weakened due to the growing urbanization and increasing nuclear family.

As can be seen in Table 8, the rate of home ownership of the elderly is 76.3%. It is higher than the average home ownership rate of 54.4%. This rate in rural area is relatively higher than urban area. While households with the only single senior are 66.7%, households with the elderly couple show 85.4%.

77.3% of the elderly live in a general house while the rate for non elderly people is 50.0%. 74.6% of the elderly couples live in a general house and 17.2% live in an apartment. Household with only one senior living in a house is 80.2% and an apartment is 13.2%.

TABLE 8 Type of Housing Possession and Residence of the Elderly's (Unit: %)

	Single Elderly	Couple Elderly	Elderly with Family
Own Housing	66.7	85.4	76.3
Lease of a House on a Deposit	13.6	8.0	10.7
Monthly Payment with Guaranty	7.1	2.9	4.9
Monthly Payment without Guaranty	3.3	0.7	2.0
For Free	6.7	2.4	4.5
Detached House	80.2	74.6	77.3
Apartment	13.2	17.2	15.3
Row House	2.5	3.5	3.0
Multiplex House	1.0	1.4	1.2
Inner Business Office	2.4	0.3	0.5

☞ Source: National Statistical Office, Korean Statistical Information System
Total Research Housing and Population (2000)

It can be interpreted that more seniors are living in rural areas than urban areas. Also, owning a house does not mean they are financially independent, because their houses cannot act as a financial asset or available money.

According to the Social Statistical Research Paper conducted in 2005 by National Statistical Office, only half of people aged 65 or above wanted to live in their children's house, 85% of people aged 65 or above wanted to have their own house, and 13.5% of people aged 65 or above wanted to live in nursing home or other facilities.

Therefore, most of the elderly prefer to have their own house which can help themselves. If lots of the elderly received monthly payment through applying for reverse mortgage, they could share the benefit of financial stabilization and perpetual residence. This research indicates high expectancy of utilizing reverse mortgage in Korea.

2.3.2.3 Change in Duty of Supporting Parents

With this demographical transition including social and economic changes, children's perception of supporting parents and parents' consideration of living with them after retirement has been changing. When comparing children's attitude toward supporting their parents with the elderly's perception of life after retirement, it shows that over half of the elderly will rather pursue financial independence than rely on their sons and daughters.

In 2006, Social Statistical Research Analysis on Family, Labour and Public Health by National Statistical Office shows, among people aged 65 or above, 31.3% expect to live with their sons and daughters. On the other hand, 80.4% of people aged between 15 and 29 do not expect any support from future generations. This research shows that the younger they are, the less they expect from their offspring. Additionally, compared with analysis on the view of supporting parents in 2002, the rate of only family and solution for themselves dropped, however, the rate of society, government and family slightly increased (Table 9).

TABLE 9 View of Supporting parents (Unit: %)

	Total	parents	Family	Total	Eldest Son	Son	Daughter	All offspring	Supportable offspring	Family Gov. Society	Gov. Others
2002	100	9.6	70.7	100	21.4	19.7	1.4	27.6	30.0	18.2	1.5
2006	100	7.8	63.4	100	19.5	8.1	0.9	49.2	22.2	26.4	2.4
Male	100	7.1	65.6	100	21.4	9.5	0.4	47.2	21.4	25.2	2.1
Female	100	8.4	61.3	100	17.5	6.7	1.3	51.3	23.1	27.6	2.7
Single Household	100	11.3	64.5	100	26.0	9.5	1.0	41.9	21.7	20.9	3.3
1 Generation	100	11.4	65.3	100	25.7	8.9	0.8	42.8	21.8	20.7	2.6
2 Generation	100	6.7	62.6	100	16.4	7.6	0.9	52.5	22.6	28.5	2.2
Over 3 Generation	100	6.7	64.4	100	24.7	9.1	0.6	44.5	21.0	26.5	2.7

☞ Source: National Statistical Office, Korean Statistical Information System (2006)
http://kosis.nso.go.kr/cgi-bin/sws_999.cgi

When it comes to economic support, sons and daughters have the most responsibility in the financial support of the elderly's. On the contrary, financial support for the elderly already stands at a high level. Among people aged 65 or above, 71.3% (family, offsprings 67.3% + government support 4.0%) receive a living allowance from others and the most indispensable supporters are their children. In short, considering insufficient public income security system in Korea, sons and daughters who can support their parents financially are imperative.

Even though the necessity of financial support increased, most of the elderly in Korea are not satisfied with the available money and their consumption. They spent all on their children's education and purchasing houses during their middle aged period when there were not an appropriate public income security system. Most of them are unprepared for life after retirement and future retirees have a desire for the establishment of public income security system. Therefore, it seems that we have to come up with measures to guarantee stable life by taking reverse mortgage on the elderly's houses.[8)]

2.3.3. Micro-analysis on Necessity of Reverse Mortgage

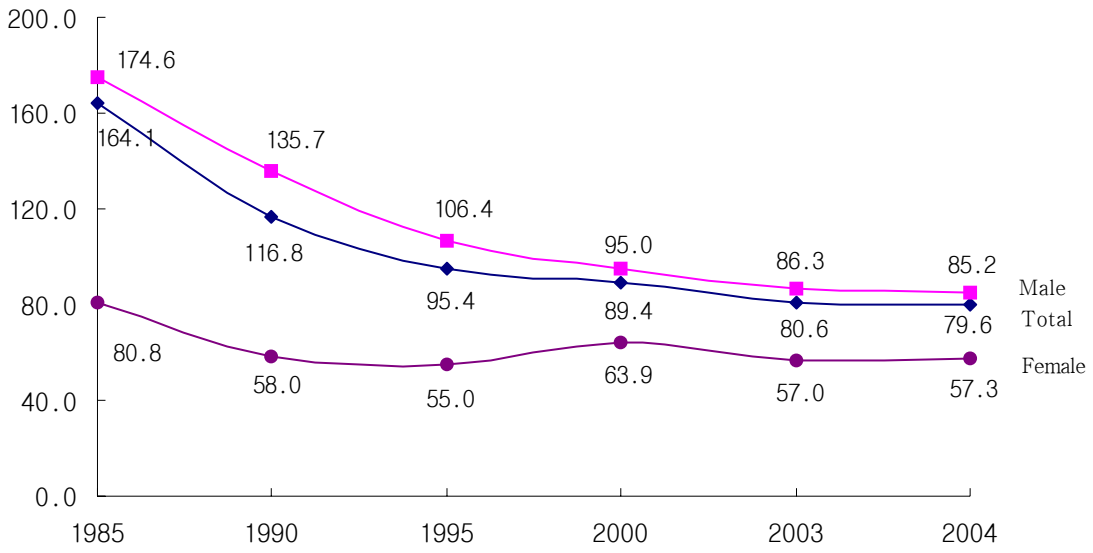
2.3.3.1 Income Source and Level of the Elderly

To determine the necessary income of the elderly, we have to analyze the source and amount of income. When looking into the source of income by age, the older they become, the smaller income they have. According to the Research of the Elderly's Life and Welfare Desire conducted in 2004 by Korea Institute for

8) Kim, Jin 2005, "An Application of Reverse Mortgage for the Stability of the Elderly's", JeonJu National University Graduate School, 60~62

Health and Social Affairs, earned income rate of aged 65 to 69 is 38.9% and aged 75 or above is 12.6%. It shows that earned average income of the elderly declines dramatically as they get older. Supposed that average income of general workers was 100, average income rate of the elderly aged 60 or above was 79.6 in 2004 and it has also decreased since 1985.

FIGURE 4 Average Income of the Elderly Aged 60 or above



☞ Source: National Statistical Office, Korean Statistical Information System (2006)

Moreover, the relative income level of the elderly is also very low. According to Research of Households Consumption conducted in 2000 by National Statistical Office, the average income of workers (over two in household) is 30.036 million won, compared with 20.525 million won of 60 to 64 and 10.754 million won of 65 or above. The income level of the elderly tends to drop sharply as people get older.

Income of the elderly is lower than the average income of total households. Especially, both the rate of the single elderly households and households with the

elderly couples are living below the poverty line: 56.3% and 35.2% respectively.[9] As for the income level of the elderly, 78.7% earn under the 500,000 won monthly and 16.9% earn 500,000 to 1 million won monthly. Among household of the elderly couples, 31.1% earn under the 500,000 won and 34.7% earn 500,000 to 1 million won. The single elderly household aged 65 or above earning 1 million won and less are 95.6%. This amount is far insufficient compared with an average annual salary, 17.54 million won.

On the other hand, personal transfer income rate of the elderly has a tendency to decline as their age increases. Personal transfer income rate accounts for 75.6% in people aged 65 to 69 and it is 82.5% in people aged 75 or above. As they get older, their earned income decreases and personal transfer income increases, because they have difficulty in generating money.

Asset income of the elderly reaches its peak at around 60s, because of their retirement allowance and cumulative money on deposit. However, it declines as they spend more than they earn when they get older. On the contrary, public transfer income shows a different pattern because the elderly aged 75 or above can benefit from the national pension system. Especially, personal transfer income increases dramatically as the elderly become 65 or above. If personal transfer income decreased or faded away, most of the elderly could face huge problems dealing with their living expenses.

In conclusion, low income level of the elderly in aging society will accelerate necessity of financial support for the elderly. To ease the financial burden on them, with holding houses of the elderly's, we have to deliberate on reverse mortgage policy.

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9) Park, Sin-Young, 2004. 1, "Research of Renovation in Welfare Housing System for the Elderly", Korea National Housing Corporation 14

2.3.3.2 Consumption Propensity of the Elderly

National Statistical Office analyzed Balance of the Elderly's Household Payment in 2005. It was composed of consumption of the elderly couple– both are aged 65 or above and have no financial supporters– and was compared with that of other household. When it comes to the average total consumption, the average of the whole households was 23.95 million won, compared with 11.32 million won of the people aged 65 or above. In this research, however, annual salary of the elderly couple was 11.59 million won and shows a little difference from previous data (Park, Sin-Young, 2004). If it is converted to monthly average, it is estimated at about 1.50 million won.

TABLE 10 Balance of the Elderly's Household Budget (Unit: %, Person, Thousand Won)

	Total Household	Elderly's Household	Non-Elderly's Household
Household Distribution	100.0	4.3	95.7
Average Number of Household	3.4	2.1	3.4
Income (A)	2,919.8	1,159.8	2,998.8
Ordinary Income	2,956.3	1,003.1	2,834.9
Earned Income	1,813.4	118.5	1,889.4
Business Income	653.6	97.4	678.5
Property Income	64.2	153.8	60.2
Transfer Income	225.1	633.4	206.8
Non-Ordinary Income	163.5	156.7	163.9
Household Expenditure	2,395.1	1,132.5	2,451.7
Expenditure on Consumption (B)	2,035.3	1,022.4	2,080.6
Groceries	539.3	314.2	549.4
(Groceries in outside)	246.9	51.4	255.7
Housing Expense	69.5	56.2	70.1
Lighting and Fuel	102.6	74.6	103.8
Household Goods	85.0	35.7	87.2
Clothing	106.7	35.5	109.9
Health and Medicine	102.4	128.9	101.3
Education	229.7	25.2	238.9
Entertainment	98.3	43.9	100.7
Transportation	356.2	101.1	367.6
(Telecommunication)	130.5	38.4	134.7
Others	345.7	207.1	351.9
(Miscellaneous)	258.1	170.2	262.0

Expenditure on Non-Consumption (C)	359.8	110.1	371.0
Disposable Income (A-C)	2,560.0	1,049.7	2,627.8
Amount of Surplus	524.7	27.3	547.1
Percent of Surplus	20.5	2.6	20.8
Average Propensity of Consumption B/(A-C)	79.5	97.4	79.2

☞ Source: National Statistical Office, Korean Statistical Information System
Total Research Housing and Population (2005)

As seen in Table 10, the consumption of the elderly drops in almost all of the categories except in instance of health and medicine. This is because as they get older, the frequency of visiting health care centers increases due to their medical conditions. Groceries, clothing and shoes, entertainment categories show decline while expense for lighting and fuel has almost no difference. Transportation and communication cost drops to almost one thirds of the non-elderly's household.

While comparing income and consumption, among the factor of the expenditure on consumption, pleasant living condition of the elderly requires annually at least 10 million won for their comfortable life after retirement. They own a house which is nibbling their financial ability, but don't have any living expenses, meaning reverse mortgage that can supplement their living expense should be activated.

Ⅲ. DATA DESCRIPTIONS AND SURVEY RESULTS

3.1. Sample and Source of Data

The data for the current study has been obtained from middle-aged respondents between 25 and 35 years who have lived in Seoul, metropolitan and other places. The survey asked respondents four cases questionnaire; demographic and geographic feature, residential condition-related question, perception on real-estate and investment, and perception and opinion on reverse mortgage. As for the study, the number of respondents was 290 (N=290). Among these 290 respondents, twelve respondents answered obscurely, five respondents declined to answer the value of their financial information, and three respondents refused to answer their accurate education background. We dropped all samples which have ambiguous values. Finally, our data analysis were accomplished on a total 270 of the second generation respondents aged from 25 to 35.

3.2. Definition of Variables

In the questionnaire, reverse mortgage was expressed for respondents' reasonable answer as follows: "Unlike normal financial loans, reverse mortgage gives pension of the elderly based on their houses. The Korean government announced the plan to stimulate the loan in February 2006 and will take an action starting from 2007. Single seniors or couples aged 65 or above use their houses as collateral and receive living allowance as a form of pension under the guarantee of Korea Housing Finance Corporation."

Definition of reverse mortgage was also interpreted: "Reverse mortgage is a loan against property owned by the debtor and the loan becomes repayable when the borrower dies or leaves their residence permanently. The borrower may receive cash in a number of ways including a lump-sum payment, term plan (monthly payment for a fixed period of time), tenure plan (monthly payment for the remaining lifetime of the borrower), a credit-line payment (up to a maximum amount that can be paid at various times) or a combination of these several options" (Kee-Lee Chou, W.S. Chow, Iris Chi, 2006).

For the first time, the dependent variable in this study is whether the respondents will support their parents' choice of reverse mortgage. As has been previously mentioned, reverse mortgage system may be an attractive policy for providing the "house-rich but cash-poor" (Chou et al., 2004: Leviton, 2001). However, reverse mortgage has not been viable in Korea because many Korean elderly consider traditional obligations to leave properties to their descendants.

Some previous studies have been conducted to research perception of the elderly's about subscribing reverse mortgage. Most of the elderly in Korea see their remaining life as insecure with their present monthly income. They have strong agony whether they hand over properties to their children and are financially supported by their grown offspring (Seon-Jong Yoo, Bon-Young Gu, 2005).

3.2.1. Demographic and Geographic Variables

We made a binary dependent variable (probably could assent or definitely support their parents' choice of reverse mortgage:1, definitely not or probably not, may delay and looking into government policy:2).

Then, the respondent was asked about demographic and geographic factors such as gender, age, primogeniture, number of children, occupation, monthly income, academic background, and residential area. Demographic variables included gender (male:1, female:2), age (in years), primogeniture (in order of siblings), children (number), occupation (civil servant:1, office worker:2, self-employed:3, student:4, others:5), average monthly income including one's spouse (none:1, below 3 million won:2, below 4 million won:3, below 5 million won:4, above 5 million won:5), academic background (middle school:1, high school:2, university:3, graduate school:4). Furthermore, geographic variables comprise residential areas in Korea (Gangnam:1, Gangbuk:2, metropolitan area:3, others:4).

3.2.2. Residential Condition-related Variables

The respondents were asked about whether they owned their house or not (owned:1, not owned:2). Other questions inquired about the type of house which respondents are living in (house:1, apartment:2, multi-houses:3, one room flat:4, dormitory:5, others:6), conditions of living (live alone:1, live with parents:2, live with siblings:3, live with relatives:4, others:5), and parents's living conditions, which were on the same point scale as the kind of house which respondents are living in. We asked about ownership (own:1, lease:2, monthly rent:3, lease plus monthly rent:4, others:5), and monthly average income of parents (below 2 million won:1, below 3 million won:2, below 4 million won:3, below 5 million won:4, below 6 million won:5, above 6 million won:6). Respondents were asked to estimate value of parents's properties on 11-point scale (none:1, below 200 million won:2, over 200 million won~ less than 300 million won:3, over 300 million won~ less

than 400 million won:4, over 400 million won~ less than 500 million won:4, and lastly over 1,100 million won:11). Lastly, education background, residential area of parents, and parents's occupation were asked on the same as demographic and geographic questions.

3.2.3. Perception on Real-Estate and Investment

Questions about perception on real-estate and investment were composed of subscription to pension, comprehension of inheritance and donation, anticipation of the real-estate price in the future and willingness to inherit one's parents's properties. The respondents were asked whether they subscribed to pension savings and insurance or not (yes:1, no:2). Comprehension of inheritance and donation was rated on a five-point scale (know well:1, normal:2, not enough:3, do not know:4, does not care:5). In addition, if the respondents answered (2) to (4), they would have to choose necessity of the education about inheritance and donation (really necessary:1, necessary:2, a little bit necessary:3, does not care:4). The opinion on the real estate price in the future was estimated (dramatic increase:1, smooth increase:2, stay flat:3, turn to decrease:4, continuous decrease:5) and willingness to inherit parents' properties was assessed (yes:1, if possible:2, neutral:3, not inherit:4).

3.2.4. Perception and Opinion on Reverse Mortgage

Variables related to subjective perception and opinion on reverse mortgage; familiarity with reverse mortgage (yes:1, no:2), opinion to reverse mortgage policy (necessary:1, difficult to implement:2, should not implement:3, does not

care:4, others:5), advantage of reverse mortgage (it allows parents to live in their own house:1, it supports living expenses after retirement as the government policy:2, it relieves the burden of the offspring to support their parents:3, others:4), and disadvantage of reverse mortgage (difficulty to inherit houses from parents:1, risk of financial institutions bankruptcy and inconsistent policy:2, difficulty of movement:3, others:4).

The respondents should assess whether their or parents's properties give financial stability in the future through a couple of questions " Do you think owning a house is helpful for your parents' life after retirement?" on a two-point scale (yes:1, no:2) and "Do you think house ownership is helpful for your financial stability in the future?" on a two-point scale (yes:1, no:2). Furthermore, preference of reverse mortgage was measured by asking respondents if your parents tries to subscribe the reverse mortgage, what you will do on a five-point scale (actively support reverse mortgage:1, consent on parents' opinion:2, suggest reverse mortgage by looking into government policy:3, ask for delaying reverse mortgage:4, others:5). Especially, additional question will be supplied to the respondents who selected (3) to (5); if you were reluctant to encourage reverse mortgage, what could be the reason? (distrust and disbelief toward the government real estate policy:1, difficulty in inheriting parents's properties:2, confidence in the rise of real estate price:3, lack of tax credit:4, others:5).

3.3. Methods of Data Analyse

In two-way contingency tables, the null hypothesis of statistical independence of two responses has the form for all *i* and *j*. The marginal probabilities then specify the joint probabilities To test H_0, we identify $\mu_{ij} = n\pi_{ij} = n\pi_{i+}\pi_{+j}$ as the expected frequency. Here, μ_{ij} is the expected value of n_{ij} assuming independence. Usually, $\{\pi_{i+}\}$ and $\{\pi_{+j}\}$ are unknown as is this expected value.[10)]

$$(H_0): \pi_{ij} = \pi_{i+}\pi_{+j},\ i = 1,\cdots,I \quad ,\ j = 1,2$$

$$(H_1): \pi_{ij} \neq \pi_{i+}\pi_{+j},\ i = 1,\cdots,I \quad ,\ j = 1,2$$

3.3.1. Dummy Variables

Each case in this study contains many categorical variables as in Table 11. These categorical variables have been recorded as dummy variables which have either 0 or 1. Various categorical variables are needed for which the measurement scales consist of a set of categories. These are two primary types of measurement scales for categorical variables: ordinal variable and nominal variable. Ordinal variable is categorical variable having ordered scales such as age, number of children, pension or insurance, comprehension of reverse mortgage, etc. Nominal variable is categorical variable having unordered scale such as gender,

10) Alan Agresti, 2003. "An Introduction to Categorical Data Analysis", A Wiley-Interscience Publication, 30

primogeniture, residential condition, type of house, etc.

As for nominal variables, the order of listing the categories is irrelevant, and the statistical analysis should not depend on that ordering. Methods designed for nominal variables give the same results regardless what order the categories are listed. Methods designed for ordinal variables utilize the category ordering. Whether the categories are from low to high or from high to low is usually irrelevant, but results of ordinal analyses for ordinal variables cannot be used with nominal variables (Alan Agresti). Table 11 display the description of the variables included in the data analyses.

TABLE 11 Dummy Variable

Question	No.	Variable Name	Type
Demographic and Geographic Question	A1	Gender	Nominal
	A2-1	Age	Ordinary
	A2-2	Primogeniture	Nominal
	A3	Number of Children	Ordinary
	A4	Occupation	Nominal
	A5	Monthly Income Level	Ordinary
	A6	Educational Level	Ordinary
	A7	Residential Area	Nominal
Residential Condition-related Question	B1	House Ownership	Nominal
	B2	Type of House	Nominal
	B3	Residential Condition	Nominal
	B4	Type of parents' House	Nominal
	B5	House Ownership of parents	Nominal
	B6	Monthly Income of parents	Ordinary
	B7	Educational Level of parents	Ordinary
	B8	Residential Area of parents	Nominal
	B9	Price of House	Ordinary
	B10	parents' Occupation	Nominal
Perception on Real-Estate and Investment	C1	Pension or Insurance (Oneself)	Nominal
	C2	Comprehension of Inheritance	Ordinary
	C2-1	Desire for Understanding the Concept of Inheritance	Ordinary
	C3	Pension or Insurance (parents)	Nominal
	C4	Outlook for real estate price	Ordinary
	C5	Wish for Inheritance	Ordinary

Perception and Opinion on Reverse Mortgage	D1	Comprehension of Reverse Mortgage	Nominal
	D2	Subjective View of Reverse Mortgage	Nominal
	D3	Advantage of Reverse Mortgage	Nominal
	D4	Disadvantage of Reverse Mortgage	Nominal
	D5	Financial Contribution of House Ownership toward parents' Old Age	Nominal
	D6	Impact of parents' House Ownership on Their Financial Stability	Nominal
	D7	Financial Supports to parents	Nominal

Ⅳ. ANALYSES AND FINDINGS

Through χ^2 −test, we examined the bivariate association of these four group of variables; demographic and geographic variable, residential condition−related variable, perception on real estate and investment variable, and perception and opinion on reverse mortgage variable.

In the questionnaire, we make number D−8 as the variable with respect to the second generation's willingness to agree with parents applying for reverse mortgage. We bivariated two types of respondent: an approver who selected "actively support reverse mortgage" or "consent on parents' opinion" and an opposer who chose "suggest reverse mortgage by looking into government policy" or "ask for delaying reverse mortgage".

4.1. Descriptive Statistics

First, we examine the geographical and demographic distintion. Table 12 shows that, among these 270 respondents, the number of male and female respondent are 169 (62.6%) and 101 (37.4%). Age of respondents are distributed from 25 to 35 years old. Question, A-2 is whether respondents are the eldest or not; primogeniture means qualification of the eldest offspring or property inheritance system by the eldest son. In this paper, question of A-2, primogeniture refers to the former meaning, that is the eldest offspring. Accumulated percentage of the eldest is 52.6%.

As for the number of children, 21 respondents had only one child, 16 respondents had two children, and 1 had three children. Among these 270 respondents aged from 25 to 35, the number of respondents who have children is only 38. Office worker is composed of over the half percentage among all respondents. As for average monthly income including respondent's spouse, 63.6% is below 3~4 million won. Furthermore, 182 (67.4%) respondents graduated from university or will be graduated. We also asked where respondents are living. The estimated proportion of Gangnam (35.2%), Gangbuk (28.5%), metropolitan (24%), and others (12.3%) indicates that the random sample were chosen appropriately.

TABLE 12 Descriptive Statistics ; Geographic and Demographic Features

Demographic and Geographic Question		Frequency (Person)	Percentage (%)	Accumulated Frequency (Person)	Accumulated Percentage (%)
Gender (A1)	Male	169	62.59	169	62.59
	Female	101	37.41	270	100
Age	20~25	43	15.92	43	15.92
	25~30	149	55.18	192	71.10
	20~35	78	28.87	270	100

Primogeniture	The Eldest	142	52.59	142	52.59
	Not the Eldest	128	47.41	270	100
Number of Children	0	232	85.93	232	85.93
	1	21	7.78	253	93.7
	2	16	5.93	269	99.63
	3	1	0.37	270	100
Number of Boy	0	242	89.63	242	89.63
	1	25	9.26	267	98.89
	2	3	1.11	270	100
Number of Daughter	0	254	94.07	254	94.07
	1	9	3.33	263	97.41
	2	7	2.59	270	100
Occupation	Civil Servant	6	2.22	6	2.22
	White-Collar Worker	187	69.26	193	71.48
	Self-Employed	1	0.37	194	71.85
	Student	24	8.89	218	80.74
	Others	52	19.16	270	95.93
Monthly Income Level (Unit: ₩1,000)	None	5	1.85	5	1.85
	Below ₩2,000	32	11.85	37	13.7
	Below ₩3,000	114	42.22	151	55.93
	Below ₩4,000	58	21.48	209	77.41
	Above ₩5,000	61	22.59	270	100
Educational Level (Graduate from)	Middle School	0	0	0	0
	High School	18	6.67	18	6.67
	University	182	67.41	200	74.07
	Graduate School	70	25.93	270	100
Residential Area	Gangnam	95	35.19	96	35.56
	Gangbuk	77	28.52	173	64.07
	Metropolitan	65	24.07	238	88.15
	Others	33	12.22	270	100

We are also interested in residential condition-related variables which show how respondents and their parents are living. To begin with, 212 respondents (78.5%) did not own houses. This figure means that high real-estate price prevents the second generation aged between 25 and 35 years old from buying their own house. About half of respondents are living in apartments and with their parents. Moreover, apartment makes up 64.4% of parents's house type and most of parents own their house (85.9%). While considering residential situation of respondents, the rate of parents's house ownership is sufficient to broaden reverse mortgage policy in Korea.

The Korean government announced the system to stimulate reverse mortgage in February 2006 and will take an effect starting from August 2007. Nevertheless, six hundred million won, the standard price of a house, is the maximum. Distribution of house price in this case indicates six hundred million or above accounts for 58.5%. Namely, about half of single seniors or couples aged 65 or above will use their houses as collateral and receive living allowance as a form of pension under the guarantee of Korea Housing Finance Corporation. As can be seen in Table 13, we also examined education level of parents, their residential area, and their occupation to analyze relationship between residential condition and probability of application for reverse mortgage.

TABLE 13 Descriptive Statistics ; Residential Condition-related Variable

Residential Condition-related Question		Frequency (Person)	Percentage (%)	Accumulated Frequency (Person)	Accumulated Percentage (%)
House Ownership	Yes	58	21.48	58	21.48
	No	212	78.52	270	100
Type of House	General House	27	10	28	10.37
	Apartment	157	58.15	185	68.52
	Multi-Houses	51	18.89	236	87.41
	One Room Flat	11	4.07	247	91.48
	Dormitory	9	3.33	256	94.81
	Others	15	5.56	270	100
Residential Condition	Live alone	82	30.37	82	30.37
	Live with parents	149	55.19	231	85.56
	Live with Siblings	24	8.89	255	94.44
	Others	15	5.56	270	100
Type of parents's House	General House	63	23.33	63	23.33
	Apartment	174	64.44	237	87.78
	Multi-Houses	19	7.04	256	94.81
	One Room Flat	1	0.37	257	95.19
	Others	13	4.81	270	100
House Ownership of parents	Own a House	232	85.93	232	85.93
	Lease (1)	20	7.41	252	93.33
	Monthly Rent (2)	1	0.37	253	93.7
	(1) + (2)	1	0.37	254	94.07
	Others	16	6.93	270	100
Monthly Income of parents (Unit: ₩1,000)	Below ₩2,000	40	14.81	40	14.81
	Below ₩3,000	41	15.19	81	30
	Below ₩4,000	52	19.26	133	49.26

	Below ₩5,000	55	20.37	188	69.63
	Below ₩6,000	34	12.59	222	82.22
	Above ₩6,000	48	17.78	270	100
Educational Level of parents (Graduate from)	Middle School	26	9.63	26	9.63
	High School	80	29.63	106	39.26
	University	139	51.48	245	90.74
	Graduate School	25	9.26	270	100
Residential Area of parents	Gangnam	67	24.81	67	24.81
	Gangbuk	50	18.52	117	43.33
	Metropolitan	53	19.63	170	62.96
	Others	100	37.04	270	100
Price of House (Unit: ₩10,000)	None	14	5.19	14	5.19
	Below ₩20,000	45	16.67	59	21.85
	₩20,000~₩30,000	36	13.33	95	35.19
	₩30,000~₩40,000	37	13.7	132	48.89
	₩40,000~₩50,000	24	8.89	156	57.78
	₩50,000~₩60,000	16	5.93	172	63.7
	₩60,000~₩70,000	10	3.7	182	67.41
	₩70,000~₩80,000	13	4.81	195	72.22
	₩80,000~₩90,000	8	2.96	203	75.19
	₩ 90,000~₩100,000	13	4.81	216	80
	Above ₩100,000	54	20	270	100
parents's Occupation	Civil Servant	28	10.37	28	10.37
	White-Collar Worker	76	28.15	104	38.52
	Self-employed	83	30.74	187	69.26
	Professionals	13	4.81	200	74.07
	Irregular worker	1	0.37	201	74.44
	Retired	41	15.19	242	89.63
	Others	28	10.37	270	100

Based on this estimation and the findings of perception on real-estate and investment, the second generation's comprehension of inheritance is insufficient. Despite this fact, 217 respondents (80.9%) have a desire to understand the concept of inheritance. Number of pension and number of parents's pension or insurance are replied as stated in Table 14.

Additionally, most of the second generation aged between 25 and 35 project that real-estate price will increase or stay flat. 96 respondents (60.7%) indicated that they wish to inherit parents' properties. Estimation of prospects for real-estate price and wish for inheritance of parents's properties would be one of the reasons why the second generation do not consent to parents's choice

regarding reverse mortgage. Hence, this result could be paradoxically consistent with the findings of previous studies that one possible barrier to apply for reverse mortgage is the desire to leave a bequest to grown children (Case and Schnare, 1994).

TABLE 14 Descriptive Statistics ; Perception on Real-Estate and Investment

Perception on Real-Estate and Investment		Frequency (Person)	Percentage (%)	Accumulated Frequency (Person)	Accumulated Percentage (%)
Pension or Insurance (Oneself)	Yes	83	30.74	83	30.74
	No	187	69.26	270	100
Number of Pension (Oneself)	0	185	68.52	185	68.52
	1	64	23.7	249	92.22
	2	17	6.3	266	98.52
	3	2	0.74	268	99.26
	4	1	0.37	269	99.63
	5	1	0.37	270	100
Comprehension of Inheritance	Know well	15	5.58	15	5.58
	Normal	64	23.79	79	29.37
	Not enough	125	46.47	204	75.84
	Do not know	60	22.3	264	98.14
	Do not care	6	1.86	270	100
Desire for Understanding the Concept of Inheritance	Really necessary	98	36.57	98	36.57
	Necessary	119	44.4	217	80.97
	A little bit necessary	27	9.7	254	89.67
	Do not care	26	9.34	270	100
Pension or Insurance (parents)	Yes	58	21.48	58	21.48
	No	38	14.07	96	35.56
	National Pension	53	19.63	149	55.19
	Do not know	121	44.81	270	100
Number of parents's Pension or Insurance	0	207	76.67	207	76.67
	1	30	11.11	237	87.78
	2	23	8.52	260	96.3
	3	8	2.96	268	99.26
	4	2	0.74	270	100
Outlook for Real-Estate Price	Dramatic Increase	62	22.96	62	22.96
	Smooth Increase	94	34.81	156	57.78
	Stay Flat	75	27.78	231	85.56
	Turn to Decrease	27	10	258	95.56
	Continuous Decrease	12	4.44	270	100
Wish for Inheritance	Yes	68	25.19	68	25.19
	If possible	96	35.56	164	60.74
	Neutral	75	27.78	239	88.52
	Not Inherit	31	11.45	270	100

Approximately a quarter of respondents comprehended reverse mortgage as can be seen in Table 15. In addition, regarding the subjective view of reverse mortgage, 126 of respondents answered that reverse mortgage is a necessary system in Korea. Among these 270 respondents, 40.4% replied that reverse mortgage could support living expense after the elderly's retirement as the government policy, 36.7% checked that reverse mortgage can relieve the burden of the offspring to support their parents and 17.7% answered reverse mortgage still allows parents to live in their own house.

In contrast, 48.5% of respondents were concerned about risk of financial institutions' bankruptcy and inconsistent government policy, 35.2% checked difficulty to inherit properties from their parents, and 13.3% replied difficulty of movement, as the main cause of disadvantage or hindrance of reverse mortgage.

162 respondents (62.1.%) checked a negative answer and 99 respondents (37.9%) expressed a positive opinion with respect to the willingness to apply for parents' reverse mortgage. Also, as has been illustrated, pros and cons; financial contribution of house ownership, impact of ownership on stability and financial support to respondent's parents were weighed. Overall, descriptive statistics of perception and opinion on reverse mortgage shows approximately half of the second generation distrust the government's real-estate policy. As a result of desire for inheritance, 31.7% of respondents denied positive influence on reverse mortgage.

TABLE 15 Descriptive Statistics ; Perception and Opinion on Reverse Mortgage

Perception and Opinion on Reverse Mortgage		Frequency (Person)	Percentage (%)	Accumulated Frequency (Person)	Accumulated Percentage (%)
Comprehension of Reverse Mortgage	1	197	72.96	197	72.96
	2	73	27.04	270	100
Subjective View of Reverse Mortgage	Necessary	126	47.01	126	47.01
	Hard to Implement	84	31.34	210	78.36
	Should not	7	2.61	217	80.97
	Do not care	49	18.28	266	99.25
	Others	2	0.75	268	100
Advantage of Reverse Mortgage	1	48	17.78	48	17.78
	2	109	40.37	157	58.15
	3	99	36.67	256	94.81
	4	14	5.19	270	100
Disadvantage of Reverse Mortgage	1	95	35.19	95	35.19
	2	131	48.52	226	83.7
	3	36	13.33	262	97.04
	4	8	2.96	270	100
Financial Contribution of House Ownership	Yes	230	85.19	230	85.19
	No	40	14.81	270	100
Impact of Ownership on Stability	Yes	209	77.41	209	77.41
	No	61	22.59	270	100
Financial Support to one's parents	Yes	38	13.76	38	12.64
	No	232	86.25	270	100
Amount of Support to one's parents Financially	₩100,000	1	4	1	4
	₩200,000	1	4	2	8
	₩300,000	6	24	8	32
	₩500,000	5	20	13	52
	₩600,000	1	4	14	56
	₩800,000	2	8	16	64
	₩1,000,000	7	28	23	92
	₩1,500,000	1	4	24	96
	₩2,000,000	1	4	25	100
Willingness to Consider Applying for parents's Reverse Mortgage	Active Support	22	8.21	22	8.21
	Moderately Consent	77	28.73	99	36.94
	Look into Policy	87	32.46	186	69.4
	Delaying	75	27.99	261	97.39
	Others	7	2.61	268	100
Reluctant Reason of Applying for Reverse Mortgage	Distrust of Policy	93	55.69	93	55.69
	Desire for Inheritance	53	31.74	146	87.43
	Rise of Real-Estate Price	18	10.78	164	98.2
	Lack of Tax Credit	2	1.2	166	99.4
	Others	1	0.6	167	100

4.2. Data Analysis; Multicollinearity

Multicollinearity means high correlation between two or more independent variables. We examined the correlation between independent variables to be used in the logistic model through Lambda (with a range of 0.0 to 1.0). Lambda, also known as *Goodman-Kruskal lambda*, is a PRE (Proportionate Reduction in Error) measure, which means that its value reflects the percentage reduction in errors in predicting the dependent given knowledge of the independent[11] (G. David Garson).

This technique is classified by calculating the probability of each variable belonging to each case. This probability is a function of a linear combination of the explanatory variables. Thus, the criterion for the inclusion or deletion of a variable is Lambda. A variable enters in the model if its significance is under 0.05. (Javier De Andres, Uriel, 1995).

Valid variables used in logistic regression are as follows:

Primogeniture (A2-2), Residential area (A7)

House ownership (B1), Residential condition (B3), Monthly income of parents (B6)

Educational level of parents (B7), Residential area of parents (B8),

Price of house (B9)

Wish for Inheritance (C5)

11) This probability is defined as the chance that an observation is in a category other than the most common (modal) one. That is, with no knowledge of the independent, a blind forecaster would guess that each observation of the dependent would have the value of its modal category. Thus the marginal of the modal category is the number of correct guesses one would expect by chance. This forms the denominator of the equation for lambda. The numerator reflects the number of correct guesses knowing the independent variable (http://www2.chass.ncsu.edu/garson/pa765/assocnominal.htm)

We found that Residential area (A7) is strongly associated with Price of house (B9). We also found Residential condition (B3) is highly correlated with Residential area of parents (B8). We dropped three variables, namely residential condition, price of house, and residential area of parents, to address the multicollinearity problem among independent variables used in this logistic model.

TABLE 16 Lambda: Multicollinearity

	A2_2	A7	B1	B3	B6	B7	B8	B9	C5
A2_2	**1.000**	0.033	0.012	0.032	0.064	0.042	0.047	0.055	0.072
A7	0.033	**1.000**	0.108	0.051	0.044	0.036	0.462	0.174	0.029
B1	0.012	0.108	**1.000**	0.090	0.101	0.061	0.056	0.088	0.042
B3	0.032	0.051	0.090	**1.000**	0.095	0.083	0.140	0.122	0.068
B6	0.064	0.044	0.101	0.095	**1.000**	0.095	0.049	0.181	0.077
B7	0.042	0.036	0.061	0.083	0.095	**1.000**	0.026	0.135	0.039
B8	0.047	0.462	0.056	0.140	0.049	0.026	**1.000**	0.248	0.026
B9	0.055	0.174	0.088	0.122	0.181	0.135	0.248	**1.000**	0.082
C5	0.072	0.029	0.042	0.068	0.077	0.039	0.026	0.082	**1.000**

Chi-squared test of independence using test χ^2 treats both classifications as nominal. When the row and/or the columns are ordinal, for test statistics that utilize the ordinality, M^2 is usually more appropriate test. Table 17 shows the χ^2 -test and M^2 -test results between the second generation's perception to approve parents' application for reverse mortgage, and nominal and ordinary variables, respectively. As can be seen in Table 17, residential area, house ownership, residential condition, type of parents' house, educational level of parents, price of house and parents' occupation are significantly associated with the second generation's willingness to support parents' application for reverse mortgage.

Recall that there were moderate correlations used in the regression model, between χ^2 , M^2 , and P−value factors of independent variables were obtained in the regression models reported in current study. Especially, P−value was about below 0.03, which was lower than the common cutoff threshold, 0.05 (Alan Agresti). Hence, the multicollinearity among independent variables is considered and we select four variables except for D group variables, which is closely correlated with the second generation's perception to support parents' application for reverse mortgage (Y).

TABLE 17 Variables Used in the Logistic Regression

Question	No.	Variables	Type	DF	χ^2 M^2	P−Value
Demographic and Geographic Question	A1	Gender	Nominal	1	0.1106	0.7394
	A2−1	Age	Ordinary	1	0.1102	0.7399
	A2−2	Primogeniture	Nominal	1	5.1629	0.0231
	A3	Number of Children	Ordinary	1	0.6578	0.4173
	A4	Occupation	Nominal	5	6.2001	0.2872
	A5	Monthly Income Level	Ordinary	1	0.2185	0.6402
	A6	Educational Level	Ordinary	1	0.8169	0.3661
	A7	Residential Area	Nominal	3	14.9026	0.0019
Residential Condition−related Question	B1	House Ownership	Nominal	3	14.9026	0.0019
	B2	Type of House	Nominal	1	3.3747	0.0662
	B3	Residential Condition	Nominal	6	16.9135	0.0096
	B4	Type of parents' House	Nominal	3	11.8697	0.0078
	B5	House Ownership of parents	Nominal	4	2.5134	0.6422
	B6	Monthly Income of parents	Ordinary	5	5.7902	0.3272
	B7	Educational Level of parents	Ordinary	1	6.9118	0.0086
	B8	Residential Area of parents	Nominal	1	6.0974	0.0135
	B9	Price of House	Ordinary	4	13.9815	0.0074
	B10	parents' Occupation	Nominal	1	16.9122	0.0000
Perception on Real−Estate and Investment	C1	Pension or Insurance (Oneself)	Nominal	6	4.8031	0.5693
	C2	Comprehension of Inheritance	Ordinary	1	0.2077	0.6485
	C2−1	Desire for Understanding the Concept of Inheritance	Ordinary	1	0.6076	0.4357
	C3	Pension or Insurance (parents)	Nominal	1	2.9852	0.0840
	C4	Outlook for real estate price	Ordinary	1	0.2263	0.6343
	C5	Wish for Inheritance	Ordinary	1	0.2624	0.6085

Perception and Opinion on Reverse Mortgage	D1	Comprehension of Reverse Mortgage	Nominal	1	7.4846	0.0062
	D2	Subjective View of Reverse Mortgage	Nominal	1	1.7788	0.1823
	D3	Advantage of Reverse Mortgage	Nominal	4	42.0023	0.0000
	D4	Disadvantage of Reverse Mortgage	Nominal	3	18.3778	0.0004
	D5	Financial Contribution of House Ownership toward parents' Old Age	Nominal	3	7.6095	0.0548
	D6	Impact of parents' House Ownership on Their Financial Stability	Nominal	1	18.2601	0.0000
	D7	Financial Supports to parents	Nominal	1	4.0860	0.0432

4.3. Regression Analysis and Discussion

4.3.1. Regression Analysis

As can be seen in Table 18, the overall goodness of fit is very good. Moreover, the classification accuracy of this study is trustworthy compared with other empirical studies on reverse mortgage. As an example, selected variables among all independent variables have reliable P-value in regression model. At the same time, results are good for criteria of the AIC and SC, which adjust the log likelihood function for the number of observations and the number of regressor in this model. Compared with intercept only, intercept and covariance of the criterion were decreased. Furthermore, valid variables used in this regression model, residential area (A7), educational level of parents (B7), wish for inheritance (C5), were moderately valid as can be seen in analysis of effect.

TABLE 18 Goodness of Fit: Model Fit Statistic and BETA=0

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariance
AIC	364.595	334.838
SC	364.595	352.699
-2 Log L	364.595	324.838

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	39.7573	5	<0.001
Score	37.1952	5	<0.001
Wald	32.4012	5	<0.001

Type III Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
A7	3	12.4250	0.0061
B7	1	12.5814	0.0004
C5	1	4.4766	0.0344

As illustrated in Table 19, the parameter estimates of logistic regression can be interpreted easily in terms of odds ratios. Odds ratio shows the strength of association between a predictor and the response of interest with range from 0 to infinity. For instance, probability, which the second generation oppose parents' application for reverse mortgage is decreased as 0.706 as educational level of parent increases one unit. On the contrary, probability, which the second generation approve that is increased as 1.249 as the second generation's wish for their inheritance increases one unit

TABLE 19 Odds Ratio Estimates

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
A7 1 vs 4	0.281	0.119	0.666
A7 2 vs 4	0.764	0.329	1.771
A7 3 vs 4	0.690	0.287	1.662
B7	0.706	0.582	0.856
C5	1.249	1.017	1.535

Estimations of the current study indicate that there are a few variables which are significantly associated with the second generation's perception of parents' application for the reverse mortgage. This study suggests that the second

generation who live in metropolitan and Gangbuk area are more likely to approve parents' application for reverse mortgage. These people consider future value of the house to be low, compared with people living in Gangnam area.

Furthermore, because it is getting harder for the second generation to financially support their parents, they would rather recommend reverse mortgage to their parents. Briefly, residential area of comparatively low real-estate value and concern about sustenance allowance for parents become catalysts for the second generation's support of parents' application for reverse mortgage.

In contrast, as can be seen in Table 20, the second generation's desire for inheritance, residential area, Gangnam, and educational level of parents are negatively related with the second generation's perception to consent to parents' reverse mortgage. Though reverse mortgage will be available, the elderly home owners who are on a high educational level and live in Gangnam probably would not apply for reverse mortgage. Because the second generation believe that not only the price of parents' house is comparatively high but also the major source of parents' monthly income is sufficient, they will not need to recommend reverse mortgage to parents.

TABLE 20 Logistic Regression: Analysis of Maximum Likelihood Estimates

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
A7	1	1	-0.7912	0.2264	12.2099	0.0005
A7	2	1	0.2075	0.2158	0.9247	0.3362
A7	3	1	0.1065	0.2338	0.2074	0.6488
B7		1	-0.3483	0.0982	12.5814	0.0004
C5		1	-0.2225	0.1051	4.4766	0.0344

Likewise, previous studies show that adults who have more financial assets are less likely to consider applying for the reverse mortgage when they retire or become old. These people are well prepared for their retirement because they have more financial reward for their retirement income. Therefore, they do not need the reverse mortgage scheme (Kee-Lee Chou, W.S. Chow, Iris Chi, 2006). Probably, the second generation and their parents who have comparatively high valued real-estate or plenty of financial assets would not need reverse mortgage at all.

The second generation's desire for inheritance is also similar to results of the previous research; one possible barrier to apply for reverse mortgage is the desire to leave a bequest to adult children (Case & Schnare, 1994; Nelson, 1980). In this study, however, another barrier to parents' application for reverse mortgage is the second generation's desire for inheritance even though the Korean elderly have been less likely to pass their properties to their offsprings. As a result, having children and children's desire for the inheritance prove a barrier to vitalize reverse mortgage policy in Korea.

4.3.2. Discussion

Although reverse mortgage can play a pivotal role in guaranteeing stable life after the elderly's retirement, it has not been popular in Korea. The purposes of the current study are: (1) to examine trends in the customs of primogeniture and the second generation's perception of their inheritance, (2) to demonstrate the reason why the second generation aged between 25 and 35 hesitate to agree with parents' access to reverse mortgage and (3) to identify four group

(demographic and geographic, residential condition-related, perception on real-estate investment and perception on reverse mortgage) characteristics which were significantly related to second generation's willingness to approve parents' application for reverse mortgage.

Concretely, the number of homeowners in Korea who are aged 60 or above is almost 470,000. Considering potential applicants who want to apply for reverse mortgage, it is estimated that the potential reverse mortgage households will be around 100,000~470,000. Collateral value of house except apartment is relatively low, if we assumed the limit as 100% for apartment and 50% for the rest of residence types, covered houses would be estimated 320,000 (aged 60 or above) and 220,000 (aged 65 or above). Suppose that we confined the subject to apartment and general houses, the figure would be 400,000 (aged 60 or above) and 200,000 (aged 65 or above).

When confining the subject to the apartments in Seoul, Kyunggi and six metropolitan areas, the market scale is projected to 15.3 trillion won with the elderly aged 60 or above, and to 6.4 trillion won with the elderly aged 65 or above (Lee, 2006). In short, reverse mortgage will be feasible financial products to preserve or improve the financial status of the elderly in Korea .

This study also has tried to determine why the second generation aged between 25 and 35 hesitate about parents' application for reverse mortgage. This study in theoretical perspectives will furnish empirical supports or new additional views about why reverse mortgage has not been viable in Korea, through analyzing the perception of the second generation. Unlike previous researches, this study documents that the second generation's willingness to consider inheritance is the

one of the barriers for vitalizing reverse mortgage in Korea.

Especially, this study will also facilitate further research on market demand of reverse mortgage. This result is a different approach to several previous studies in which one predictable problem to apply for reverse mortgage is the desire to leave a bequest to their offspring. If government supplied additional benefits to approximately half of the second generation who opposed reverse mortgage policy, it would create more demand for reverse mortgage. Briefly, second generation will play a pivotal role to alleviate chronic financial strain of the elderly.

Statistical results on the second generation's perception to support reverse mortgage of parents in Korea showed more peculiar circumstances than any other countries. This results indicate that lots of sons and daughters in Korea have a diverse opinion from that of the real demander, their parents, who are concerned about life after retirement.

Ⅴ. CONCLUSION

This study has examined the perception of the second generation of parents' application for reverse mortgage in Korea from several statistical analyses. We demonstrated that residential areas such as metropolitan and Gangbuk are positively associated with the perception to support parents' reverse mortgage. We also found, in contrast, the second generation's desire for inheritance, residential area such as Gangnam and educational level of parents are negatively related to the second generation's perception to consent parent's reverse mortgage. Changes in

the custom of primogeniture and strong desire of the second generation regarding their inheritance hinder from vitalizing reverse mortgage.

In this chapter, policy implications are discussed and limitations of the current study are presented.

5.1. Policy Implications

Reverse mortgage is an unexceptional attraction to the elderly who is "cash-poor and house-rich" because it meets the specialized financial needs of elderly homeowners. Thus, the elderly receives monthly payment from reverse mortgage to supplement their other sources of income and it satisfies the desire of the elderly to live in the same place.

First, to maintain stability of reverse mortgage, a public security system which guarantees to compensate the losses and risks of reverse mortgage should be established. There are two type of reverse mortgages in the Korean financial market. One is guaranteed by government and the other is sold at private financial institutions. If loaned money exceeded estimated housing price, due to the fall of housing prices and increased life expectancy, most loanees of the private financial institutions would lose their source of monthly income. Therefore, government should establish a public security system which guarantees the loss of the financial institutions to activate reverse mortgage. In case of bankruptcy of the credit banks, establishing a public security system which gives monthly payment instead of the credit banks is essential more than anything.

Secondly, activating reverse mortgage requires various types of tax free and expense support to reduce interest rate of the loan. If these measures help relieve the burden of the retirees, providing the most satisfactory financial support will be possible. With the majority of the second generation expecting the rise of real estate price in the future, in order to promote reverse mortgage, tax reduction or incentive will be necessary.

Finally, the government must play an active role to improve general perception about advantage of reverse mortgage. For example, there can be promotion, marketing and basic instruction through the internet web-site and the media and publishing information materials. After the launch of Korea Housing Finance Corporation in March 2004, though reverse mortgage has been officially operated, general public has a little knowledge about it. Several banks such as Shinhan and Nonghyup launched reverse mortgage, but it is not popular in Korea.

As has been previously mentioned, however, reverse mortgage in Korea will have an enormous impact on society and economy. We have to establish measures to operate and vitalize reverse mortgage through research on second generation's perception of parents' application for reverse mortgage and change of primogeniture in Korea.

5.2. Limitations and Suggestions for Future Study

Though this study furnishes meaningful practical insights to vitalize reverse mortgage in Korea, it has also some limitations.

First, reverse mortgage is generally unheard by the public including the second generation aged between 25 and 35 in Korea. Thus, it may be even the

first time that respondents heard about reverse mortgage at the time of data collection even though additional explanations were written in questionnaire. It is difficult for all respondents to express their opinions on parents' application for reverse mortgage because of lack of detailed knowledge of reverse mortgage. Therefore, when interpreting this results of this study, it should be done cautiously.

Secondly, since this study was based on empirical data, which does not contain every possible factor affecting the second generation's perception, it could not provide sound explanations. As an example, it is hard to demonstrate which variables, among price of house, monthly income of parents, residential area, and educational level of parents, are more likely to affect the second generation's perception of applying for reverse mortgage of parents. Therefore, variables that significantly affect the promotion of reverse mortgage can be found through time series analysis, and the result should be linked to marketing strategy of financial institutions.

Appendix1. Verification between Y and each x variables

Variable		Dependent Variable 0	1	Total	Chi-square (p-value)	Mantel-Haenszel Chi-square (p-value)
A2_2	0	21(70%)	9(30%)	30	6.3465 (0.0959)	5.1629 (0.0231)
	1	92(66.67%)	46(33.33%)	138		
	2	50(54.95%)	41(45.05%)	91		
	3	1(25%)	3(75%)	4		
	4	0(.%)	0(.%)	0		
A7	1	72(77.42%)	21(22.58%)	93	14.9026 (0.0019)	11.0873 (0.0009)
	2	42(54.55%)	35(45.45%)	77		
	3	35(57.38%)	26(42.62%)	61		
	4	15(46.88%)	17(53.13%)	32		
B2	0	1(100%)	0(0%)	1	16.9135 (0.0096)	0.7291 (0.3932)
	1	22(81.48%)	5(18.52%)	27		
	2	96(63.58%)	55(36.42%)	151		
	3	21(41.18%)	30(58.82%)	51		
	4	8(80%)	2(20%)	10		
	5	7(77.78%)	2(22.22%)	9		
	6	9(64.29%)	5(35.71%)	14		
B3	1	54(69.23%)	24(30.77%)	78	11.8697 (0.0078)	9.9777 (0.0016)
	2	96(64.86%)	52(35.14%)	148		
	3	10(41.67%)	14(58.33%)	24		
	5	4(30.77%)	9(69.23%)	13		
B6	1	19(50%)	19(50%)	38	9.1724 (0.1024)	6.9118 (0.0086)
	2	24(58.54%)	17(41.46%)	41		
	3	28(54.9%)	23(45.1%)	51		
	4	38(69.09%)	17(30.91%)	55		
	5	21(61.76%)	13(38.24%)	34		
	6	34(77.27%)	10(22.73%)	44		
B7	1	8(34.78%)	15(65.22%)	23	9.3195 (0.0253)	6.0974 (0.0135)
	2	50(63.29%)	29(36.71%)	79		
	3	88(64.23%)	49(35.77%)	137		
	4	18(75%)	6(25%)	24		
B8	1	52(78.79%)	14(21.21%)	66	13.9815 (0.0074)	13.2899 (0.0003)
	2	33(66%)	17(34%)	50		
	3	30(56.6%)	23(43.4%)	53		
	4	49(52.69%)	44(47.31%)	93		
	8	0(0%)	1(100%)	1		
B9	1	9(69.23%)	4(30.77%)	13	37.8303 (<.0001)	16.9122 (<.0001)
	2	22(50%)	22(50%)	44		

	3	18(50%)	18(50%)	36		
	4	24(70.59%)	10(29.41%)	34		
	5	7(30.43%)	16(69.57%)	23		
	6	7(43.75%)	9(56.25%)	16		
	7	7(70%)	3(30%)	10		
	8	7(53.85%)	6(46.15%)	13		
	9	5(62.5%)	3(37.5%)	8		
	10	11(84.62%)	2(15.38%)	13		
	11	47(88.68%)	6(11.32%)	53		
C5	1	44(64.71%)	24(35.29%)	68	14.3468 (0.0025)	7.4846 (0.0062)
	2	70(74.47%)	24(25.53%)	94		
	3	39(52.7%)	35(47.3%)	74		
	4	11(40.74%)	16(59.26%)	27		
D2	1	55(42.97%)	73(57.03%)	128	42.0023 (<.0001)	20.6342 (<.0001)
	2	69(82.14%)	15(17.86%)	84		
	3	7(100%)	0(0%)	7		
	4	32(74.42%)	11(25.58%)	43		
	5	1(100%)	0(0%)	1		
D3	1	21(43.75%)	27(56.25%)	48	18.3778 (0.0004)	15.6168 (<.0001)
	2	61(56.48%)	47(43.52%)	108		
	3	76(77.55%)	22(22.45%)	98		
	4	6(66.67%)	3(33.33%)	9		
D5	1	127(56.95%)	96(43.05%)	223	18.2601 (<.0001)	16.7771 (<.0001)
	2	37(92.5%)	3(7.5%)	40		
D6	1	135(65.53%)	71(34.47%)	206	4.086 (0.0432)	3.4854 (0.0619)
	2	29(50.88%)	28(49.12%)	57		

Appendix 2. Verification between B1 and B3_A

Variable		B3_A			Total	Chi-square (p-value)	Mantel-Haenszel Chi-square (p-value)
		1	2	3			
B1	1	31 (53.45)	20 (34.48)	7 (12.07)	58	18.9793 (<.0001)	11.2776 (0.0008)
	2	51 (24.06)	129 (60.85)	32 (15.09)	212		
	Total	82 (30.37)	149 (55.19)	39 (14.44)	270		

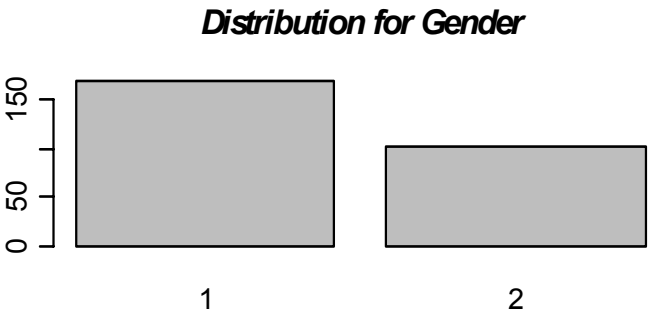
Appendix 3. Verification between B7 and B9_A

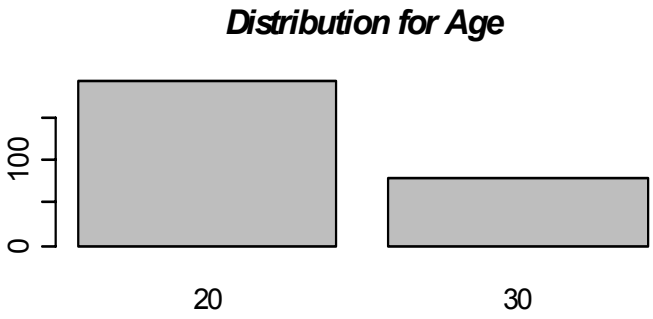
Variable		B9_A			Total	Chi-square (p-value)	Mantel-Haenszel Chi-square (p-value)
		1	2	3			
B7	1	22 (84.62)	4(15.38)	0(0.00)	26	44.0558 (<.0001)	39.3155 (<.0001)
	2	51 (63.75)	23 (28.75)	6(7.50)	80		
	3	52 (37.41)	51 (36.69)	36 (25.90)	139		
	4	7 (28.00)	6 (24.00)	12 (48.00)	25		
	Total	132 (48.89)	84 (31.11)	54 (20.00)	270		

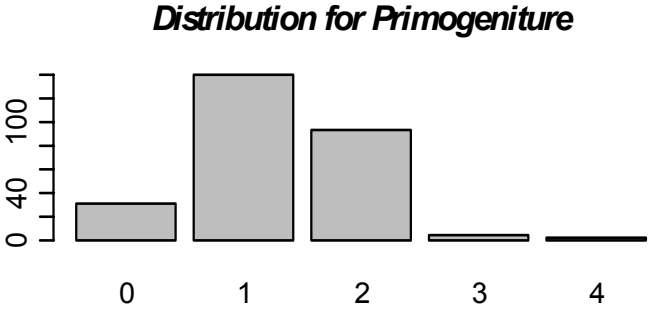
Appendix 4. Total Lambda

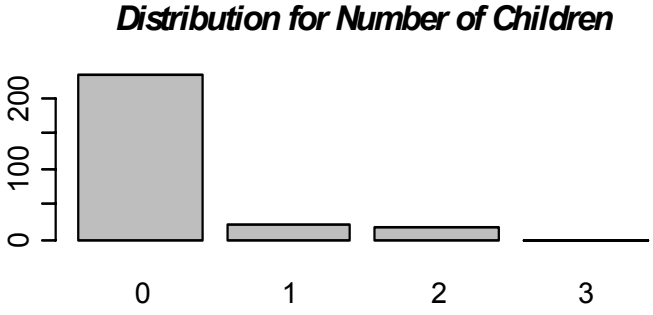
$$\lambda = \frac{\Sigma_i \max_j n_{ij} + \Sigma_j \max_i n_{ij} - \max_j n_{.j} - \max_i n_{i.}}{2n - \max_i n_{i.} - \max_j n_{.j}}$$

	A2_2	A7	B2	B3	B6	B7	B8	B9	C5	D2	D3	D5	D6
A2_2	1.0000	0.0000	0.0985	0.8073	0.0003	0.0017	0.0337	0.0349	0.0007	0.0027	0.9497	0.0011	0.9222
A7	0.0985	1.0000	0.0000	0.0000	0.0000	0.0906	0.0066	0.0000	0.0000	0.2843	0.0633	0.0001	0.4304
B2	0.8073	0.0000	1.0000	0.0000	0.0000	0.0000	0.0002	0.0014	0.0000	0.1628	0.0001	0.4445	0.0710
B3	0.0003	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1730	0.0036	0.5452
B6	0.0017	0.0906	0.0000	0.0000	1.0000	0.0000	0.0000	0.0125	0.0000	0.0001	0.0001	0.0005	0.0425
B7	0.0337	0.0066	0.0002	0.0000	0.0000	1.0000	0.0000	0.0003	0.0000	0.0000	0.0721	0.0001	0.1709
B8	0.0349	0.0000	0.0014	0.0000	0.0125	0.0003	1.0000	0.0000	0.0000	0.0881	0.5423	0.0022	0.5341
B9	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0012	0.0332	0.1271	0.0023
C5	0.0027	0.2843	0.1628	0.0000	0.0001	0.0000	0.0881	0.0012	1.0000	0.0000	0.3239	0.0508	0.2276
D2	0.9497	0.0633	0.0001	0.1730	0.0001	0.0721	0.5423	0.0332	0.3239	1.0000	0.0000	0.0000	0.0122
D3	0.0011	0.0001	0.4445	0.0036	0.0005	0.0001	0.0022	0.1271	0.0508	0.0000	1.0000	0.0000	0.3618
D5	0.9222	0.4304	0.0710	0.5452	0.0425	0.1709	0.5341	0.0023	0.2276	0.0122	0.3618	1.0000	0.0000
D6	0.8859	0.4378	0.1474	0.0099	0.0056	0.3985	0.0987	0.0052	0.0000	0.0000	0.1236	0.1045	1.0000

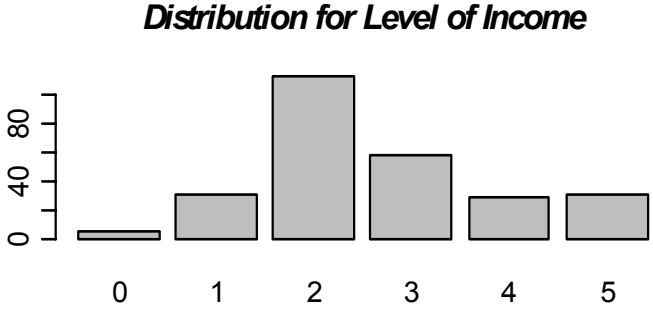

Distribution for Gender
0
50
150
1
2

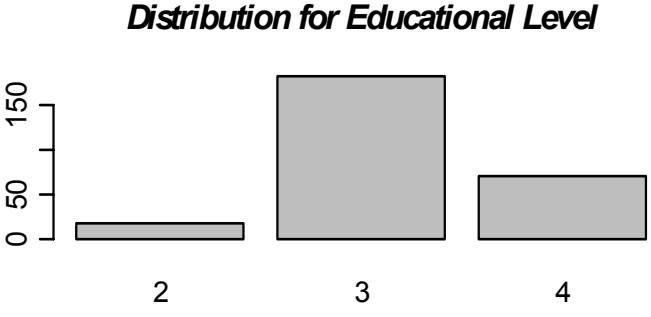

Distribution for Age
0
100
20
30

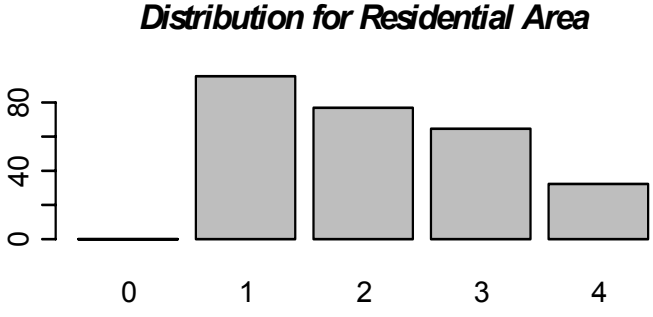

Distribution for Primogeniture
0
40
100
0
1
2
3
4

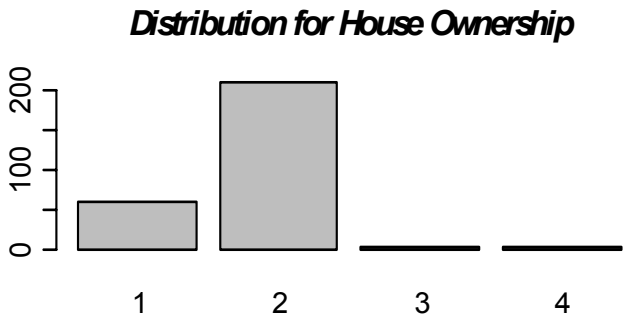

Distribution for Number of Children
0
100
200
0
1
2
3

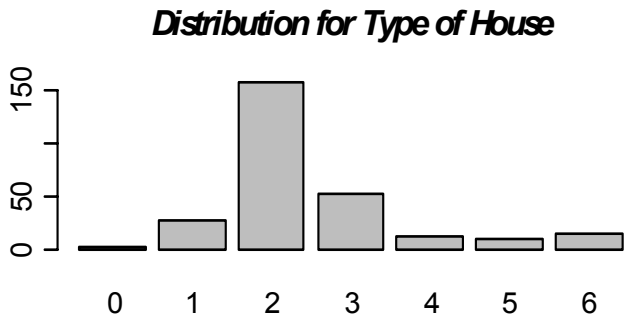

Distribution for Occupation
0
100
1
2
3
4
5
6

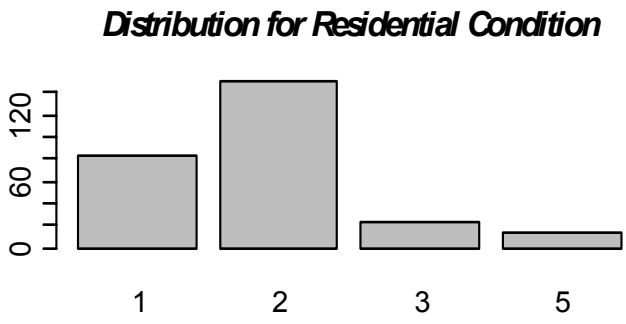

Distribution for Level of Income
0
40
80
0
1
2
3
4
5

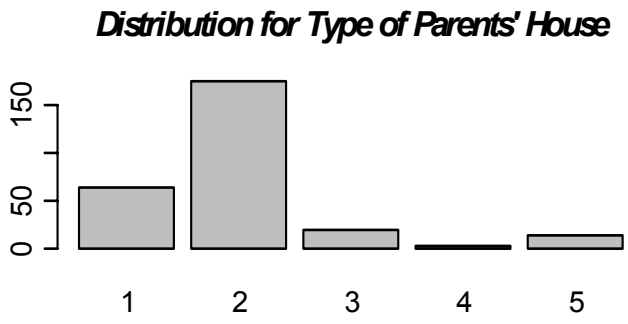

Distribution for Educational Level
0
50
150
2
3
4

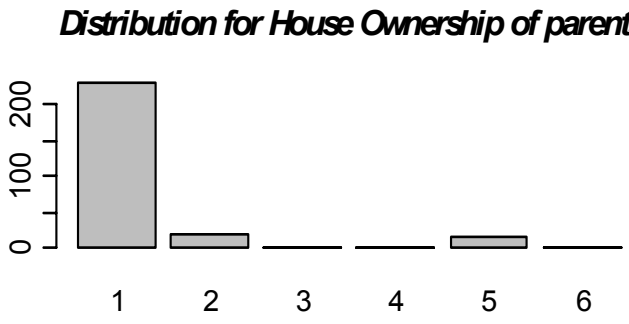

Distribution for Residential Area
0
40
80
0
1
2
3
4

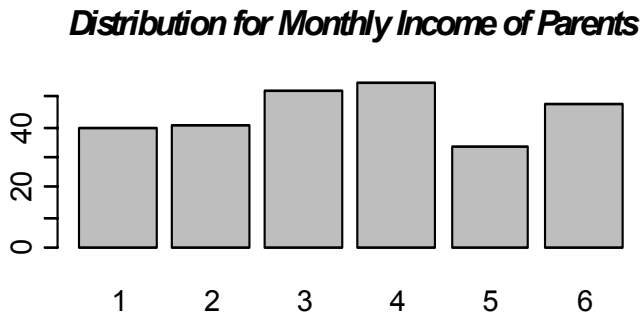

Distribution for House Ownership
0
100
200
1
2
3
4

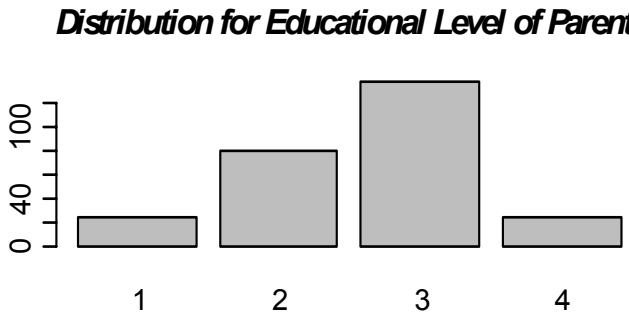

Distribution for Type of House
0
50
150
0
1
2
3
4
5
6

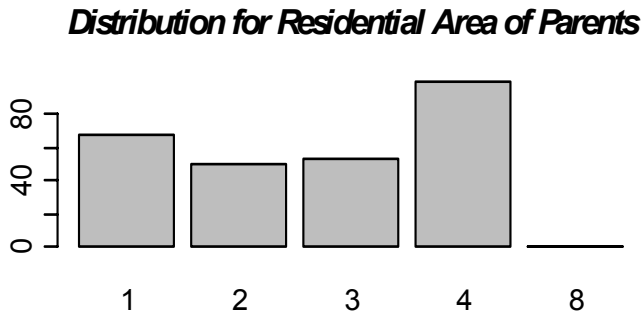

Distribution for Residential Condition
0
60
120
1
2
3
5


Distribution for Type of Parents' House
0
50
150
1
2
3
4
5

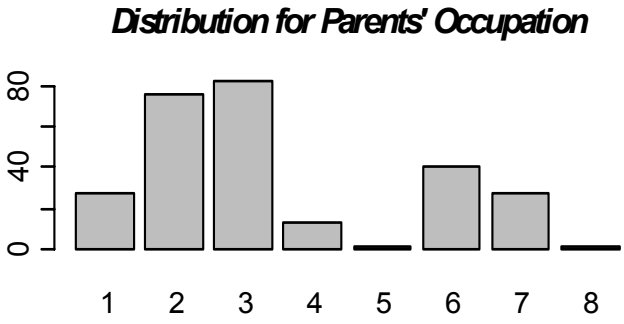

Distribution for House Ownership of parents
0
100
200
1
2
3
4
5
6

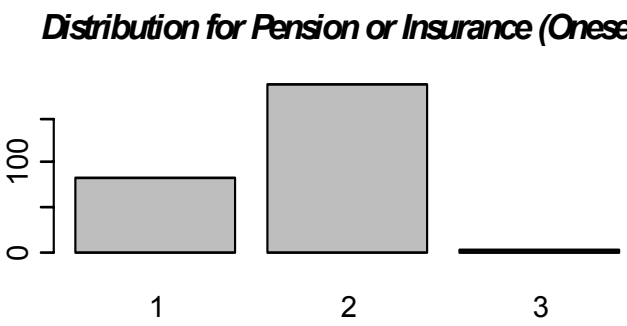

Distribution for Monthly Income of Parents
0
20
40
1
2
3
4
5
6

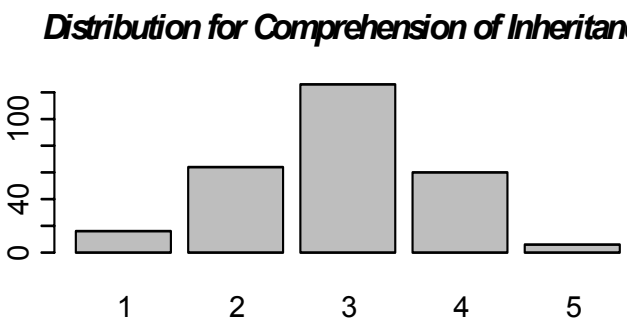

Distribution for Educational Level of Parents
0
40
100
1
2
3
4


Distribution for Residential Area of Parents
0
40
80
1
2
3
4
8

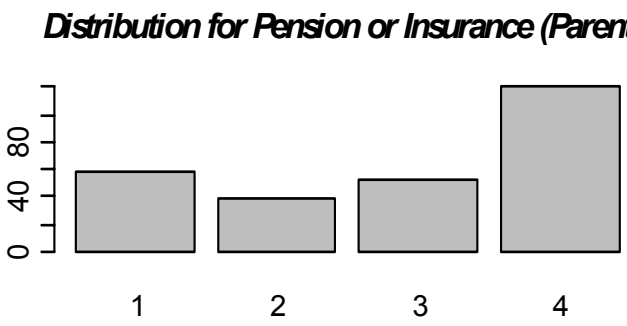

Distribution for Price of House
0
20
40
1
2
3
4
5
6
7
8
9
10
11

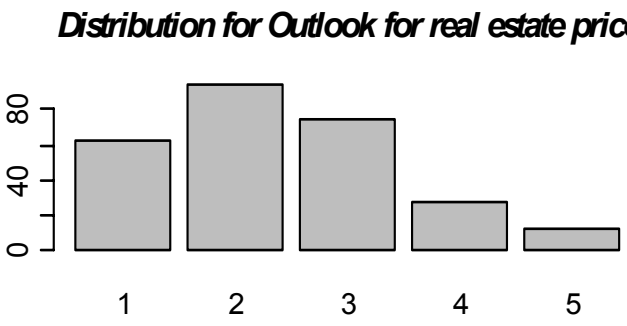

Distribution for Parents' Occupation
0
40
80
1
2
3
4
5
6
7
8


Distribution for Pension or Insurance (Oneself)
0
100
1
2
3


Distribution for Comprehension of Inheritance
0
40
100
1
2
3
4
5


Distribution for Desire for Comprehension of Inheritan
0
40
80
0
1
2
3
4


Distribution for Pension or Insurance (Parents)
0
40
80
1
2
3
4


Distribution for Outlook for real estate price
0
40
80
1
2
3
4
5


Distribution for Wish for Inheritance
0
40
80
1
2
3
4

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Research on the Perception of Reverse Mortgage (The Questionnaire 2007)

This booklet is in five parts:

(1) Geographical and demographical features
(2) Conditions on residency
(3) Perception on real-estate and investment
(4) Perception and opinion on reverse mortgage loan

▸ INTRODUCTION

South Korea is experiencing the fastest rate of aging population. After 20 years later, the country will enter super aged society where people aged 65 and over account for 20% of the population. Therefore, reserve mortgage is discussed as a noble way to secure the unstable lives after retirement.

Unlike normal financial loans, reverse mortgage gives pension of the elderly based on their houses. Korean government announced the plan to stimulate the loan on February in 2006 and will take an action starting from 2007. Single senior or couple aged 65 and over use their houses as collateral and receive living expense as a form of pension under the guarantee of Korea Housing Finance Corporation.

Moreover, reverse mortgage is a loan against property owned by the debtor and the loan becomes repayable when the borrower dies or leaves their residence permanently. The borrower may receive cash in a number of ways including a lump-sum payment, term plan (monthly payment for a fixed period of time), tenure plan (monthly payment for the remaining lifetime of the borrower), a credit-line payment (up to a maximum amount that can be paid at various times) or a combination of these several options.

This survey will be used for the establishment of reverse mortgage loan and for the academic purpose. Your frank opinion will be highly appreciated and your response will be dealt with anonymity. I really thank for your cooperation.

(1) Questionnaire; Geographical and Demographical Features

1. What is your gender?
(1) male (2) female

2. Please write down your age and number of siblings

3. If you have a child, please write down the number of children and their gender.

4. What is your occupation?
(1) civil servant
(2) white-collar worker
(3) self-employed
(4) student
(5) others.

5. What is your average monthly income including your spouse?
(1) none
(2) below 3 million won
(3) below 4 million won
(4) below 5 million won
(5) over 5 million won

6. What is your academic background?
(1) graduate from middle school
(2) graduate from high school
(3) graduate from university or will be
(4) more than graduate school

7. What area are you living?
(1) Gangnam (2) Gangbuk (3) Metropolitan area (4) Others

(2) Questionnaire; Conditions on Residency

1. Do you own a house? (Yes: No:)

2. What kinds of houses are you living now?
(1) house
(2) apartment
(3) multi-houses
(4) one room flat
(5) dormitory
(6) others

3. Conditions of living
(1) live alone
(2) live with parent
(3) live with siblings
(4) live with relatives
(5) others

4. Living conditions of parent
(1) house
(2) apartment
(3) multi-houses
(4) one room flat
(5) dormitory
(6) others

5. Questions on house ownership and rent of your parent
(1) own a house (2) lease (3) monthly rent (4) lease + monthly rent (5) others

6. How much of your parent monthly average income?
(1) below 2 million won
(2) below 3 million won
(3) below 4 million won
(4) below 5 million won
(5) below 6 million won
(6) over 6 million won

7. What is your parent's last education background?
(1) graduate from middle school
(2) graduate from high school
(3) graduate from university or will be
(4) more than graduate school

8. What area does your parent live?
(1) Gangnam (2) Gangbuk (3) Metropolitan area (4) Others

9. How much the price of your parent's house?
(1) none
(2) below 200 million won
(3) over 200 million won ~ less than 300 million won
(4) over 300 million won ~ less than 400 million won
(5) over 400 million won ~ less than 500 million won
(6) over 500 million won ~ less than 600 million won
(7) over 600 million won ~ less than 700 million won
(8) over 700 million won ~ less than 800 million won
(9) over 800 million won ~ less than 900 million won
(10) over 900 million won ~ less than 1,000 million won
(11) over 1,000 million won

10. What is your parent's occupation?
(1) civil servant (2) white-collar worker (3) self-employed (4) professionals
(5) irregular workers (6) retired (7) others

(3) Questionnaire; Perception on Real-Estate and Investment

1. Do you have pension savings or pension insurance? (Except National Pension)
(1) yes (2) no

2. How well you understand succession and donation?
(1) know well
(2) normal
(3) not enough
(4) do not know
(5) do not care

2-1. Please answer if you choose (2) to (4) on number 2.
Do you think we need an education about succession and donation?
(1) really necessary (2) necessary (3) a little bit necessary (4) do not care

3. Do your parent have any financial product regarding pension?
(1) yes
(2) none
(3) national pension
(4) do not know

4. What is your opinion about the price of real estate in the future (5 years)?
(1) dramatic increase
(2) smooth increase
(3) stay flat
(4) turn to decrease
(5) continuous decrease

5. Are you willing to inherit your parent's house?
(1) yes (2) if possible (3) neutral (4) not inherit

(4) Questionnaire; Perception on Reverse Mortgage Loan

1. Have you ever heard about reverse mortgage loan before?
(1) yes (2) no

2. What do you think of the reverse mortgage policy?
(1) necessary
(2) difficult to implement
(3) should not implement
(4) do not care
(5) others

3. What can be the advantages of reverse mortgage loan?
(1) it allows parents to live their own house
(2) support living expenses after retirement as the government policy
(3) relieve the burden of the children to support their parents
(4) others

4. What can be the disadvantages of the reverse mortgage loan?
(1) difficult to inherit houses from parents
(2) risk of financial institutions bankruptcy and inconsistent policy
(3) difficulty of movement
(4) others

5. Do you think owning a house is helpful for your parents' lives after retirement?
(1) yes (2) no

6. Do you think owning a house is helpful for your financial stability in the future?
(1) yes (2) no

7. Do you support your parent financially?
(1) yes (2) no

8. If your parent tries to take out the reverse mortgage loan, what will you do?

(1) actively support it

(2) consent on parent's opinion

(3) suggest it by looking into government policy

(4) ask for delaying it

(5) others

8-1. If you choose (3) (5), please answer this question.

If you are reluctant to encourage it, what can be the reason?

(1) distrust and disbelief toward the government real estate policy

(2) difficulty in inheriting parent's houses

(3) confidence in the rise of real estate price

(4)lack of tax credit(break)

(5) others

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Thank you for your reply. If you have any question, please contact me via e-mail or telephone.