

The Elderly People's Housing Tenure Decisions and Economic Status after Moving in Taiwan

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Abstract

As the elderly age, they may encounter the following problems: declining health, losing a spouse, the uncertainty of fortune accumulation after retiring, and unexpected expenses for emergency. In a rapidly aging society with a sharp decline in birthrates, it is an important issue how to increase the elderly's financial sources so as to maintain their fundamental ability to consume, meet their daily requirement and age in dignity. The home ownership rates stands at over 85% in Taiwan. However, some elderly are house rich but cash poor. Housing wealth can serve as a potential source of living expenses for the elderly. This study attempts to investigate the relationship between elderly's mobility, housing tenure decisions and their economic status. Based on the literature review and relevant established hypothesis, this study analyzed the data of "Survey of Health and Living Status of the Middle Aged and Elderly in Taiwan" with the Multinomial Logit Model. The results in this study reveal that the rate of home ownership decreases while the elderly age, which verifies the life-cycle hypothesis. The results also indicate that if the elderly people decided on renting after moving, they would have more expenses, which confirms the hypothesis of converting housing wealth into living expenses. Moreover, the elderly with children with employment tended to choose not to move. The elderly people did not need to change their housing tenure for their children. The study reveals the significant correlation between the elderly people's economic status and their housing tenure decisions after moving. The results in this study suggest that the elderly convert their housing wealth for living expenses to improve their life quality

Keywords: the elderly, mobility, housing tenure decision, economic status

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1. Introduction

Secured property and sufficient living expenses are two important factors for the elderly to live with dignity and quality as they age. With enough living expenses after retiring, the elderly do not need to depend on their children or the government subsidy while leading a life with certain quality. Being an aging society, Taiwan is facing the problems of aging population like other developed countries. According to the standard set by World Health Organization (WHO), an aging country means that the elderly account for 7 percent of the country's total population. Taiwan has become an aging country since September, 1993 when the aging population stood at 1.48 million, accounting for 7 percent of Taiwan's total population. After that, there has been a growing number of elderly people: two-million elderly people in 2002, and 2.62 million people aged over 65 in 2013, accounting for 11.24 percent of Taiwan's total population. The elderly population will keep increasing. According to the forecast by the Council of Economic Planning and Development, the elderly people will be accounting for 39.4% of Taiwan's total population in 2060. While aging, the elderly may encounter the problems such as declining health, losing their spouse, the uncertainty of fortune accumulation after retiring, and unexpected expenses for emergency (Skinner, 1996). Therefore, how to ensure elderly people's property in an aging society is an issue worth of great attention.

Because of the tendency of fewer children and an increased ratio of elderly dependency, there are more loads on young working population in terms of supporting the elderly people. According to the statistics issued by the Minister of Interior of Taiwan, the total fertility rate (TFR) in 2012 in Taiwan is 1.24 children per childbearing woman, which is less than those in the developed countries (1.5 children) and developing countries (3.1 children). Moreover, old-age dependency ratio in Taiwan has increased from 9% in 1995 to 15% in 2012. This will burden working age population to support the more and more elderly people.

According to the report on elderly people by Minister of the Interior (2009), the primary economic sources for the people aged over 65 is children's support (42%), followed by government subsidy (17.12%). The elderly people have the average of NT\$13,401 monthly for their living expenses. Most of the elderly reported that they had just sufficient for living expenses to live by. Following the conception of filial piety, Taiwanese have had the tradition to support their parents and provide them with living expenses. This tradition is a mechanic of reciprocal interest of finance between generations, which also has lessened the burden of the public welfare of the government. Although the elderly people can liquidate their housing wealth for current consumption, most of them will not do so unless they do not have sufficient living expenses. Most of the elderly would like to accumulate their wealth as they age (Megboluge et al., 1997). This study intends to investigate the preferences of the Taiwanese elderly's housing tenure decisions. The results can provide suggestions for the market potentials of reverse mortgage.

The elderly people's housing tenure decision and economical status after moving are closely interrelated. If the elderly are richer, owning real estate and savings or other financial sources, and they need not to support their children financially, they may even exchange for a bigger housing after they age (Venti & Wise, 1990). Conversely, for those who do not have sufficient financial sources, they will sell their current housing for a smaller one. In doing so, they can live on the profits from selling and buying of the housing. While the

elderly are accustomed to the environment and have connection when living in a place for a long time, the transactions of moving is high for them. Therefore, most of the elderly are less willing to move. This study attempts to explore whether the elderly people's housing tenure decision is related with their income, wealth and living expenses. Furthermore, we also investigate whether their housing wealth is a potential financial source after retirement.

According to the mid-term and long-term estimation of population, the Council of Economic Planning and Development of the Executive Yuan of Taiwan pointed out that birth rate will be less than death rate within the future ten years from now, leading to a tendency toward negative population growth. Furthermore, an average of seven people of the working population between 15 and 64 years old are currently supporting one person aged over 65. However, in 2026, approximately four young working adults support an elderly person. In such a rapidly aging society, how to secure the elderly's finance is an issue worth of attention. This study focuses on the elderly's housing tenure decision. Besides their original economic sources, pension and annuity, it is worth investing how the elderly make good use of their housing wealth to increase their living expenses or their family support to improve their life quality.

Based on the data of "Survey of Health and Living Status of the Middle Aged and Elderly in Taiwan – 6 Wave of Survey," conducted by Bureau of Health Promotion, Department of Health, Executive Yuan in 2007, we focused on the elderly people who moved in the past four years and analyzed their factors on their housing tenure decisions. There are four purposes for conducting this research. First, we would like to investigate whether home ownership rate decreases with age. Second, we plan to analyze the relationship between children's employment status and elderly people's housing tenure decisions after moving to verify the hypothesis of the parent's altruism to their children. Third, we explore the revealed preferences of the elderly people's housing tenure decisions after moving. We intends to find out how the elderly people of different backgrounds choose to live in their own housing, in the housing owned by their children, in the rental housing and in other kind of housing. Lastly, we would like to examine the relationship between the elderly people's housing tenure decisions after moving and their economic status. We would like to realize whether the elderly people's economic status improved if they chose to live with their children or live in the rental housing when they converted their housing wealth into living expenses. The results of the study expect to provide valuable suggestions and implications to the policy making of reverse mortgage and relevant markets.

2. Literature Review

While there are a lot of studies in elderly's economic security and pension policy, little research in reverse mortgage in Taiwan has been conducted. Rare has attempted to investigate the relationship between the elderly people's economic security and their housing tenure decisions. According to the recent study about the elderly people's economic security in Taiwan, a lot of the Taiwanese elderly do not have sufficient pension after retiring. Examining elderly economic security status, Wang and Zhan (1996) indicated that the pension system in Taiwan lacks the maintenances of both basic life quality and stable income. The

current living subsidies and allowance for the senior citizens of low-and-middle income can be viewed as the social relief. The provision of the citizens' annuity program is designed to be the least government interference. Wang (2002) indicated that the retirement-income system is not complete in Taiwan that most of the elderly are not economically secured except the military personnel, civil servants and teachers in public schools. Most of the elderly need to plan their own financial sources after retirement or they may not be financially secured because of the incomprehensive pension system of the government. Given the factors such as the government budget deficit, longer life expectancy and less financial support from children and relatives, it is a pressing issue to plot financial sources after retirement. According to the statistics, the cohort of single elderly aged over 65 is large among all the single people. Compared with the other elderly with families, the single elderly have no children to support them financially and thus fall in an economically weak position after retiring. More attention is required for those single elderly ending up poor (Ho, 2005).

Besides the subsidy and pension provided by the government, it is important for the elderly to have their own financial provision such as voluntary saving insurance to increase their income and secure their economic status after retirement. The extended family structure of generations living together in the Chinese society also supports the life of the elderly people. Ko and Lin (2005) investigated the model of multipillar system proposed by the World Bank, including public pension, public insurance, voluntary saving insurance system, and inter-generational family support for elderly. Traditional Chinese families observing the spirit of filial piety provide the elderly with financial support, residence and care. This lifestyle also agrees with the ideas of most elderly to live with their children for the rest of their life. However, in a rapidly aging society with longer life span and a sharp decline in birthrates, it is not easy to realize the system of inter-generational family support for the elderly.

With the government's passive subsidy policy, the system of economic security for the elderly in Taiwan is not comprehensive (Shi, 2005). The Taiwanese elderly face the critical issues of financial provision after retirement. The main economic sources for most of the elderly are twofold: their children's financial support and their own savings. From the qualitative metamorphosis of the change of family function and the quantitative metamorphosis of the change of family support resources, the second generation family is no longer a guarantee of providing financial support for the elderly people. Taiwanese elderly know little and prepare poor financial resources for the retirement age. In Lu's study (1997), the wealth accumulated in the adulthood influenced their behavior of financial provision after retirement. Those who need the financial provision after retirement the most are usually the ones who prepare the least. To investigate the factors influencing the retirement plan of the middle and old aged people, Wen (2006) used the panel data of a long-term of Taiwan health care insurance and life problems for elderly between 53 and 64 and analyzed in the binary logit model. She found that the elderly people with home ownership were more likely to plan for their retirement life. However, how the elderly converted the real estate into living expenses after retirement was not investigated in her study.

In the study of mobility and housing tenure transition of the elderly people, Merrill (1984) found that the elderly with higher housing equity (less housing mortgage) were less likely to convert their home ownership into rental housing or other types of housing tenure after moving. Reschovsky (1990) indicated that the

higher the value of the housing was before moving, the more likely the elderly people would keep owning housing after moving. In addition, households with higher income were less likely to convert their home ownership into rental housing (Megbolugbe et al., 1995; Merrill, 1984 ; Reschovsky, 1990). The demographics of the elderly influence the elderly's housing tenure. A lot of research indicates that poor health is important in explaining institutionalization such as moving into nursing homes or other dependent living arrangement. However, health factor has little effect on housing tenure (Ellwood & Kane, 1989; Kotlikoff & Morris, 1989; Merrill , 1984; Venti & Wise, 1989). On the other hand, the mobility of the elderly is closely related with retirement and losing a spouse (Feinsten & McFadden, 1989; Reschovsky, 1990; Venti & Wise, 1987). The elderly with children or someone to depend on are less likely to move and convert their home ownership into rental housing.

The studies about converting housing wealth to finance current consumption in America boomed during 1987 and 1990. While there were no products like reverse mortgage at that time, these studies mainly investigated the relationship between selling housing or housing tenure transition and consumption. Venti and Wise (1987) indicated that not all the elderly people would like to use their housing equity to finance current consumption. They might move to a smaller housing unit using the profits gained from selling their housing as their living expenses. Their study explored the relationship among the mobility and housing wealth of the elderly. They also compared the changes in housing value, housing equity, and user cost over time for the movers with those for the non-movers (stayers). The study found that the elderly with low income comparatively had lower housing equity. While they had less housing wealth, they were less likely to convert it to cash. However, those with higher income and more housing mortgage comparatively were more likely to move. Part of the reason might be that they would like to convert their housing equity to increase consumption. Drawing upon two survey data sources to empirically examine the elderly people's housing wealth decision and mortgage policy in Spain, Costa-Front (2010) found that Spanish elderly people viewed housing assets as a key self-insurance device. The study revealed that the elderly people's selling of housing equity was closely related with health care, personal need and satisfaction of housing. However, the elderly people's decision on reverse mortgage was correlated with their income and education background but not correlated with housing equity.

Sheiner and Weil (1992) found that the elderly reduced homeownership as they aged. Their study revealed that elderly people regarded housing wealth as part of their assets. The elderly people owning more housing equity was motivated by a bequest motif or future consumption. They found that the elderly people near death would reduce homeownership for more amount of consumption and that the value of houses sold by elderly people tended not to remain in their portfolios after the house was sold. According to Megbolugbe et al. (1997), the elderly people would trade down to transfer their current housing for a smaller one only if their children with better economic status. They were likely to liquidate their housing wealth for more consumption. The most common model that has been employed to analyze relevant household retirement consumption patterns as they age is the life-cycle model, which has been verified and examined (Venti & Wise, 1990b ;Merrill et al., 1993; Skinner, 1993). The standard life-cycle model assumes that the elderly people would maximize the value of their assets in their limited life time. The elderly people's

wealth and consumption decrease with ages. Whether their pension is sufficient enough to support their daily consumption influences their decision of liquidating their housing wealth, as the life-cycle theory has suggested (Venti & Wise, 1990b ;Merill et al., 1993; Skinner, 1993).

Feinstein (1996) indicated that declining health would influence the elderly people's decision of living arrangement. The elderly might leave their own residence for better nursing home care. However, they may encounter the difficulty of health care and mobility. Some elderly may have spent most of the reverse mortgage when their health deteriorates. With the limited housing equity, even the profit from selling the housing might not be sufficient enough for them to get nursing home care. This current study suggests that the elderly people's evaluation of their health influences their housing tenure decision. We therefore explored the relationship between the elderly people's health condition and their housing tenure decision after moving.

Chen and Lin's (2012) study found most of the Chinese families still observe the traditional spirit of filial piety and mutual interest between generations. The elderly and the children depend on each other with the children's financial support of their parents, which is a positive effect of generations living together. The mutual interest between generations includes housing and income. Because of the high housing price in urban areas in Taiwan, parents bequeath housing to children to lessen their burden (Kuan, 1994). On the other hand, some married children live with their parents, a phenomenon of co-residence of generations (Chen & Chang, 2004). Hua (2001) indicated that a lot of Taiwanese traditions had been under the influence of Chinese immigrants from Fujian. The traditional Fujianese parents would leave their property to their children after retirement, especially real estate to their sons. Thus, parents would like to live with the eldest son or other sons alternately. In return, the sons would support their parents after they retire. The traditional extended family whose family members share the same property has had great impact on parents' bequest and children's support in the Chinese society. It is also one of the factors of co-residence of generations. In the study of the potential of reverse mortgage in India, Desai(2010) found that 71% of the Indian elderly would like to leave inheritance to their sons.

Following the above studies, the elderly people's housing tenure decisions are complicated among which the economic status, bequest and some other psychological reasons such as altruism are interrelated. The elderly people may employ housing wealth to make relevant decisions based on their housing equity, income, and sufficient living expenses. Beyond that, the elderly while aging would also consider other factors of altruism such as health and their children's employment status. Moreover, the conception of filial piety and bequest in the traditional Chinese society also influence the elderly people's housing tenure decisions after moving. The present study aims to explore the relationship between the elderly's housing tenure decisions and their economic status.

3. The Data and Description Statistics

3.1 The Data

The empirical study employed the data of “Survey of Health and Living Status of the Middle Aged and Elderly in Taiwan -the 6th wave of survey” conducted by the Bureau of Health Promotion, Department of Health of Taiwan, in 2005. To understand the middle-aged and elderly in Taiwan, this study included the survey of family structures, living arrangements, social support, leisure activity, occupation, socioeconomic status, life attitudes, and retirement, hygiene habits, and awareness and utilization of elder welfare provided by the government. It also compares the differences of health and social status among subgroups of people aged 54 and above from different backgrounds in Taiwan. Based on the survey results, the purpose of the TLISA study was to evaluate the future needs of medical care and living support of elders served as references for policy intervention. Data was collected with face-to-face interview questionnaires. The total subjects of the “Survey of Health and Living Status of the Middle Aged and Elderly in Taiwan -the 6th Wave of Survey” in 2007 were 4,534.

This survey includes the following items: (1) background information, marital status and living conditions, (2) household structure, relative and social contacts, (3) health status, health care utilization and health behavior, (4) social support and exchange, (5) working status, retirement planning, (6) leisure activities and social participation, (7) emotions, (8) economic status and so on. This survey revealed the information of the elderly people’s moving behaviors over the past four years, current housing tenure, and current and past living arrangements, which are valuable data for investigating the elderly’s mobility, and decisions on housing tenure and living arrangement. Additionally, the number of children and their employment status are also factors influencing the elderly’s motivations of altruism. The elderly’s self-evaluation of health, difficulty level of active daily life, and records of hospitalization, long-term stay of nursing homes and in-home nursing are references of the elderly’s health status and medical care expenditure. The changes of the elderly’s employment status, records of pensions, income sources, payment of insurances, amount of other assets, and the capacity of utilizing these assets are references for investigating the relationship between the elderly’s decisions on housing tenure and their economic status. The survey provides sufficient data for analyzing the issues proposed in this study.

The main purpose of this study is to investigate the Taiwanese elderly’s mobility, housing tenure decision and economic status. Following the definition of elderly in the “Senior Citizens’ Welfare Act” of Taiwan, the subjects in this study were the elderly aged over 65. The study attempts to verify the life-cycle hypothesis, bequest hypothesis and mental accounting hypothesis through the analysis of the elderly people’s mobility, housing tenure decisions, and living arrangement,. The total subjects in the survey were 4,534 aged over 65. Excluding those staying in the retirement home, the target subjects in this study were 2,588, among which 317 were movers during 2003 to 2007.

3.2 Descriptive Statistics of the Sample

Table 1 to Table 5 show the descriptive statistics of the demographics of the elderly aged over 65 years old.

Table 1 Descriptive Analysis of the Elderly Demographics

Variable		Number of Observations	Percent (%)
Age	65-69	643	24.85
	70-74	497	19.19
	75-79	575	22.21
	80-84	549	21.21
	Over 85	324	12.54
Gender	Male	1,313	50.73
	Female	1,275	49.27
Marital Status	Living with a spouse or a companion	1692	65.38
	Without a spouse or a companion, or divorced	895	34.58
	Other	1	0.04
Number of household members	Living alone	280	10.82
	2	673	26.00
	3-6	1,260	48.69
	More than 7	375	14.49

The subjects in this study were 2,588 elderly aged over 65 with the average age of 76. Males and females account for about 50% respectively. There were 65.38% of the subjects living with a spouse or a companion. The subjects living alone account for 10.28%. Most of the households had 3 to 6 members. The statistics reveals that most of the elderly had families to accompany.

Table 2 Descriptive Statistics of the Economic Status of the Elderly

Variable		Number of Observations	Percent (%)
Are you satisfied with the current economic status?	Satisfied	945	36.52
	Fair	896	34.62
	Dissatisfied	524	20.24
	Other	223	8.62
What do you think about your current financial situations now compared to years ago?	Better	113	4.37
	Much the same	1,468	56.72
	Worse	781	30.18

	Other	226	8.73
Do you and your spouse pay for the major living expense of the household?	Yes	894	34.54
	No	1,428	55.18
	Other	266	10.28
Is there anyone who does not live in your household but who pays all or part of your expense?	No	1,848	71.41
	Yes	737	28.47
	Other	3	0.12
Do you and spouse have difficulty paying monthly living expense?	No	1,677	64.81
	Yes	688	26.58
	Other	223	8.61
Do you think that the assets you and spouse own are enough to support you for retired life?	Enough to support myself (ourselves)	654	25.27
	Need to rely on child(ren)	1,603	61.94
	Other	331	12.79

Table 2 illustrates that 36.52% of the elderly were satisfied with their current economic status and 64.81% reported that they had no difficulty paying monthly living expenses. However, 61.94% of the elderly thought they and their spouse would depend on their children after retiring. Most of the elderly people would like to be supported by their children for the rest of their life while only 25.27% believed they could support themselves without relying on children.

Table 3 Descriptive Statistics of the Living Situation

Variable		Number of Observations	Percent (%)
Is your current residence primary?	Primary residence	2,444	94.44
	Alternately staying with children	77	2.98
	Living here but often visit others	42	1.62
	Visiting relatives here but do not live here often	18	0.70
	Others	7	0.26
What is the housing tenure of your primary residence?	Self-owned occupancy	860	33.23
	The respondent's spouse-owned occupancy	446	17.23

	The respondent's children -owned occupancy	909	35.15
	Tenancy	117	4.52
	Provided by the government or employers	45	1.74
	Passed down from the family and owned by the family together	64	2.46
	Other	147	5.67
How did you own your current residence (for whose housing tenure belongs to the respondent)?	Purchasing	754	57.73
	Built by the respondent	462	35.38
	Inherited	64	4.90
	Given by the parents or relatives	25	1.91
	Other	1	0.08
How big is your current residence? (One ping is about 3.3 m ²)	Less than 19 ping	170	6.56
	20-35 ping	917	35.43
	36-59 ping	665	25.70
	60-99 ping	516	19.94
	Over 100 ping	179	6.92
	Other or not applicable	141	5.45
How do you like your current residence?	Like it.	1,806	69.78
	Average.	492	19.01
	Dislike it.	86	3.32
	Other	204	7.89
Do you think your current residence safe and guaranteed?	Yes	377	14.57
	No	1,958	75.66
	Other	253	9.86
Are you satisfied with your current residence?	Not satisfied	286	11.05
	Satisfied	2,058	79.52
	Other	244	9.43

As illustrated in Table 3, 94.44% of the elderly aged over 65 lived in the primary residence. 50.46% of the respondents or their spouses lived in self-owned housing, and 35.16% lived in housing owned by their children. 57.73% of the respondents purchased the residence, while 35.38% built the residence on their own. Most of the residence was 20-35 ping, followed by 36-59 ping and 60-99 ping. Regarding the respondents' satisfaction of their residence, 79.52% of the elderly were satisfied; 75.66% thought they lived in a safe and guaranteed environment. From the statistics, most of the Taiwanese elderly were accustomed to

their living environment they had long lived, and were satisfied with current housing conditions. This reveals that Taiwanese elderly are more likely to stay in their own housing after retiring.

Table 4 Descriptive Statistics of the Numbers of the Children and Living Arrangements

Variable		Number of Observations	Percent (%)
Number of children living together	Not living with children	1,004	38.79
	1 child	1,244	48.07
	2 children	251	9.70
	Over 3 children	89	3.44
What is your favorite living arrangement?	Living with the spouse only	837	32.34
	Living with married son.	1,110	42.89
	Living with married daughter.	49	1.89
	Living with married children.	195	7.53
	Living near married children.	74	2.86
	Living in the senior citizens' home	31	1.2
	alternately living with various sons	20	0.76
Others	272	10.51	

As illustrated in Table 4, 38.79% of the elderly aged over 65 lived by themselves or with their spouse; 48.07% of the subjects lived with 1 child. It is not common to live with sons alternately. The most favorite living arrangement was living with married son, which accounts for 42.89%, followed by living alone or with a spouse (32.34%). It is not a favorable choice to live with married daughters, living near married children, living in the senior citizens' home homes or living with children alternately. The statistics reveal that the extended family is still considered as best living arrangement for the elderly people in the Chinese society.

Table 5 The Descriptive Statistics of the Elderly Mobility over the Past Four Years

Variable		Number of Observations	Percent (%)
Residence location before moving	Next door or in the same building	20	6.31
	In the same neighborhood	61	19.25
	In the nearby area	144	45.42
	Off Islands	86	27.13
	China	2	0.63
	Other countries	4	1.26
	Housing tenure after mobility	Self-owned occupancy	43
The respondent's spouse-owned occupancy		18	5.68
The respondent's children-owned occupancy		161	50.79
Tenancy		54	17.04
Provided by the government or employers		4	1.26
Passed down from the family and owned by the family together		5	1.58
Other		32	10.09

The subjects in this study were 317 elderly moving over the past four years, among whom 45.42% moved from nearby areas and 19.25% moved from the neighboring areas. This indicates that most of the elderly still lived in the area where they were familiar with after moving. There are 27.13% of the elderly moving from off islands. It may result in their health problems and age. The medical system and sources in Taiwan is better than those on the off islands.

In regard to the elderly's housing tenure after moving, 50.79% of the elderly moved to the housing owned by their children while 19.24% reported that they or their spouse owned the housing, and 17.03% rented the housing. This statistics reveal that most of the elderly aged over 65 lived in the housing in the name of their children or depended on their children or rented the housing. Only about 20% of the elderly purchased the housing in their own name or in their spouse's name.

4. Research Hypotheses and Empirical Research Method

4.1 Research Hypotheses:

Hypothesis 1: The motif for the elderly to own housing wealth decreases with ages. The home ownership rate decreases with ages.

According to life-cycle hypotheses, the elderly people convert the housing wealth gaining in the youth into living expenses to meet their daily requirement after retirement. Sheiner and Weil (1992) found that the elderly reduced homeownership as they aged. Their study found that the elderly people near death would reduce homeownership for more amount of consumption.

Hypothesis 2: The elderly people who have sufficient living expenses are more likely to rent housing.

Venti and Wise (1987) indicated that the elderly with lower income tended to have lower housing equity and were less likely to liquid their housing wealth. Therefore, they were less likely to move. On the other hand, the elderly with low income but with assets would like to use reverse mortgage for consumption. The study aimed to explore the situation of reverse mortgage employing by the elderly people in Taiwan. In other words, the study would like to realize whether the elderly’s economic status improve and have more sufficient living expenses if the elderly people choose to rent after moving. Therefore, the second hypothesis in this study is: the elderly people who have sufficient living expenses are more likely to rent a housing unit.

Hypothesis 3: The elderly people whose children are employed are less likely to change housing tenure.

Megbolugbe et al. (1997) indicated when children were not well-off, the elderly people based on the altruistic motif would trade up so as to maintain higher value of their housing wealth for their children. On the other hand, when their children are better-off, they would trade down, liquidating their housing wealth for consumption at appropriate time. This study attempted to analyze the relationship between the children’s employment status and the housing tenure decision of the elderly. Therefore, the third hypothesis in this study is: the elderly people whose children are employed are less likely to change housing tenure.

4.2 Empirical Methodology

The study aims to compare the housing tenure decisions of the elderly aged over 65 who moved and who did not move. We set five exclusive and exhaustive alternatives for the elderly people’s housing tenure decision after moving, which are moving to self-owned housing, moving to children’s housing, moving to rental housing, moving to other tenure types and not moving. The elderly people living in the retirement homes were excluded in this study so as to precisely reflect the housing tenure decisions of the elderly people. Giving that these five exclusive and exhaustive alternatives for the elderly people’s housing tenure decision after moving are non-sequential, this study employed Multi-nominal Logit Model to analyze it.

The probability of choosing one of alternatives of the housing tenure follows:

$$p_{ij}(j = m) = \frac{\exp Z_{im}}{\sum_{j=1}^5 \exp Z_{ij}} \dots\dots\dots (1)$$

If we set “Not moving” (5) for the reference group, the coefficient β_{5r} and γ_{5s} are set to 0. And we compare it with other four alternatives, which are moving to self-owned housing, moving to children’s housing, moving to rental housing, moving to other tenure types. Four formulas for the probability of the five alternatives of the housing tenure decision are as follows.

$$\log \frac{p_{i1}}{p_{i5}} = \sum_{r=1}^R (\beta_{1r} - \beta_{5r}) X_{ir} + \sum_{s=1}^S (\gamma_{1s} - \gamma_{5s}) W_{js} = \sum_{r=1}^R \beta_{1r} X_{ir} + \sum_{s=1}^S \gamma_{1s} W_{js} \quad \dots \quad (2)$$

$$\log \frac{p_{i2}}{p_{i5}} = \sum_{r=1}^R (\beta_{2r} - \beta_{5r}) X_{ir} + \sum_{s=1}^S (\gamma_{2s} - \gamma_{5s}) W_{js} = \sum_{r=1}^R \beta_{2r} X_{ir} + \sum_{s=1}^S \gamma_{2s} W_{js} \quad \dots \quad (3)$$

$$\log \frac{p_{i3}}{p_{i5}} = \sum_{r=1}^R (\beta_{3r} - \beta_{5r}) X_{ir} + \sum_{s=1}^S (\gamma_{3s} - \gamma_{5s}) W_{js} = \sum_{r=1}^R \beta_{3r} X_{ir} + \sum_{s=1}^S \gamma_{3s} W_{js} \quad \dots \quad (4)$$

$$\log \frac{p_{i4}}{p_{i5}} = \sum_{r=1}^R (\beta_{4r} - \beta_{5r}) X_{ir} + \sum_{s=1}^S (\gamma_{4s} - \gamma_{5s}) W_{js} = \sum_{r=1}^R \beta_{4r} X_{ir} + \sum_{s=1}^S \gamma_{4s} W_{js} \quad \dots \quad (5)$$

Where, $\frac{p_{i1}}{p_{i5}}$ is the probability ratio for the housing tenure of moving to self-owned housing (compared with not moving); $\frac{p_{i2}}{p_{i5}}$ is the probability ratio for the housing tenure of moving to children’s housing (compared with not moving); $\frac{p_{i3}}{p_{i5}}$ is the probability ratio for the housing tenure of moving to rental housing (compared with not moving); $\frac{p_{i4}}{p_{i5}}$ is the probability ratio for the housing tenure of moving to other tenure types (compared with not moving). β 、 γ is the the coefficient estimates for the explanatory variables. X_r are the demographic variables of individual elderly including their age, spouse status, health condition, economic status and living expenses. W is the variable regarding their children’s employment status. With the maximum likelihood method, this study employed Catmod of SAS to estimate the model fit and the significance of coefficients in Multi-nominal Logit Model.

4.3 Explanatory Variables

Based on the literature and research hypotheses, this study categorized the factors influencing the elderly’s housing tenure decisions including age, spouse status, living areas, health condition, economic status, living expenses, children’s employment status, pension and satisfaction with the current housing. These factors were selected as the variables of the elderly’s housing tenure decisions in the Multi-nominal Logit Model. These variables are illustrated as follows.

4.3.1 Age

Because of the declining economic ability, the elderly face some potential problems when aging. Most elderly people have been unwillingly to move because of the high costs of moving to a new accommodation. Reschovsky (1990) reported that in the USA households with heads under age 65 were 3.5 times more likely to move than older households because the cost of moving might be higher than the profit of housing wealth conversion. According to his study, a lot of elderly homeowners were in disequilibrium, overconsuming housing. Venti and Wise (1990) also mentioned that the cost of moving was high for the elderly. Most of them were more likely to move after retiring or losing their spouse. Sheiner and Weil (1992) found that the elderly reduced homeownership as they aged. Their study revealed that elderly people regarded housing wealth as part of their assets. The elderly people's maintenance of housing equity was motivated by a bequest motif or future consumption. They found that the elderly people near death would reduce homeownership for more amount of consumption and that the value of houses sold by elderly people tended not to remain in their portfolios after the house was sold. This study assign age as continuous variable in the model and expected that the older the elderly were, the less likely they were to move.

4.3.2 Spouse status

Losing a spouse or becoming single is also one factor of tenure decision for elderly mobility (Feinsten & McFadden, 1989 ; Reschovsky, 1990 ; Venti & Wise, 1987). If the elderly have children or a spouse to depend on, they are less likely to move or convert home ownership into renting (Feinsten & McFadden, 1989; Venti & Wise, 1989). When the spouse passes away, the elderly lose financial and spiritual support, which leads them to change their housing tenure and choose to live with other family members for mutual support (Huang, 2002). The current study assumed that elderly aged over 65 with a spouse were less likely to move and were more likely to live with their spouse in their original residence.

4.3.3 Living area

Regarding the living areas, Chen et al. (1997) pointed that the elderly in the countryside were more likely to live with married children because of the customs. While comparing the lifestyles between the countryside and urban areas, more people in the countryside tended to observe the traditional family value than those living in the urban areas. This may explain the phenomenon that more elderly people in the countryside lived with their married children than the elderly in the urban areas did. However, Lin (2007) also indicated that the more urbanized an area was, the more likely that elderly people lived with children. The reason for this trend owned to the fact of housing shortage and high living expenses in a highly urbanized area. As time changes, the current study intended to explore if the elderly aged over 65 in the urban areas in Taiwan were more likely to live with their children after moving.

4.3.4 Health Condition

According to Venti and Wise (1989), the deteriorating health was one factor for the elderly to move to the retirement homes or living with other family members; however, the elderly's health condition was not a significant factor for their housing tenure decision. Worobey et al. (1990) pointed out that the elderly

people changed their housing only when their health declined seriously. Feinstein (1996) indicated that it was beneficial for the elders of poor health to reconsider their living arrangement and to leave their current housing for better medical care. However, some elderly may have spent most of the reverse mortgage when their health deteriorates without much housing equity left. The profit of selling the house may even not be sufficient enough for them to move into a nursing home care. This current study suggests that the elderly people's evaluation of their health influence their housing tenure decision. Therefore, we attempted to explore the relationship between the elderly people's health condition and their housing tenure decision after moving.

4.3.5 Better economic status

Investigating the relationship between housing wealth and housing decisions in old age, Costa-Font (2012) empirically examine the elderly people's housing wealth decision and mortgage policy in Spain. He found that the Spanish elderly people viewed housing assets as a key self-insurance device. The study revealed that the elderly people's selling decisions of their housing were closely related with health care, personal need and satisfaction of housing. The paper's findings suggested that homeowners' willingness-to-sell in old age was determined by socio-environmental housing characteristics and the individual's health and personal needs. Conversely, the study found that the uptake of reverse mortgage was largely dependent on income or education, but not on the value of household's housing assets.

4.3.6 Sufficient living expenses

According to Venti and Wise (1987), many of the elderly with little current income also had little housing equity. Thus, little could be gained by converting it to an annuity. However, the elderly with high income and lower housing equity (more mortgages) were more likely to move. It was probably because they would like to convert the housing wealth to finance current consumption. The elderly people with high income and lower housing equity were the cohort who was the most likely to move because of the increase of housing wealth after moving. The elderly people with low income would like to convert housing equity to increase consumption. The current study employs the elderly people's consumption as a proxy of their actual income on housing tenure decision.

4.3.7 Children with employment

According Skinner (1993), mental account model could explain the elderly people's motif of bequest and maintenance of housing equity until the possible emergency in the future. Therefore, the increase in the housing value had little impact on the elderly people's decision to convert housing equity to increase consumption. Megbolugbe et al. (1997) indicated when the elderly's children were well-off, they would trade down because there was no need of altruism. The elderly's decision to converting their housing equity for consumption was related to their children's economic status. The reason that the elderly accumulated assets instead of converting it for consumption may be affected by bequest motif (Bernheim, 1991) and altruism (Barro, 1974 ; Megbolugbe et al., 1997). The current study aims to investigate whether the elderly would maintain the current housing so as to bequeath the housing to their children or to maintain the housing

as their assets for consumption after retirement when their children are unemployed.

4.3.8 Retirement payment, pension and annuity

The life-cycle model assumes that the elderly people would maximize the value of their assets in their limited life time. The elderly people's wealth and consumption decrease with ages. Whether their pension is sufficient enough to support their daily consumption influences their decision of liquidating their housing wealth (Venti & Wise, 1990). Analyzing from the viewpoint of asset management, Case & Schnare (1994) found that the increasing medical care expenses, the requirement of home care, housing maintenance and other unexpected expenditure were potential risks for the elderly. The elderly people could support themselves more sufficiently if they converted their housing wealth for daily consumption. The current study suggests that Taiwanese elderly people are less likely to rent a housing unit after moving when they own stable retirement payment, pension, annuity and other financial sources.

Table 6 Descriptions of the explanatory variables for the model

<i>Explanatory Variables</i>	<i>definition</i>
Age	Continuous Variable
Having a spouse	1 : Having a spouse 0 : Having no spouse
Living in the urban areas	1 : Living in the urban area 0 : Living in the non-urban area
Good health condition	1 : Fair or good health condition 0 : Poor health condition
Improved economic status	1 : Improved economic status 0 : Much the same or worse economic status
Sufficient living expenses	1 : Sufficient living expenses 0 : Insufficient living expenses
Children with employment	1 : Children with employment 0 : Children without employment
Having retirement payment, pension, and annuity	1 : Having retirement payment, pension, and annuity 0 : Having no retirement payment, pension, and annuity

5. Empirical Results

Employing the data of "Survey of Health and Living Status of the Middle Aged and Elderly in Taiwan – the 6th Wave of Survey" conducted by the Bureau of Health Promotion, Department of Health of Taiwan, in 2007, this study explores if the elderly's housing tenure is correlated with their spouse status, living area,

economic status, health condition and the children’s employment status to verify the proposed hypothesis in this study about the housing tenure decisions of the elderly aged over 65.

According to life-cycle hypotheses, the elderly people convert the housing equity gaining in the youth into living expenses for their daily requirement after retirement. Sheiner and Weil (1992) found that the elderly reduced homeownership as they aged. As illustrated from the statistic results of the elderly’s age and housing tenure in Table 7, the elderly reduced home ownership as they aged. The results verify the first hypothesis that the motif for the elderly to own housing wealth decrease with ages. The home ownership rate decreases.

Table 7 The cross table of the elderly’s age and housing tenure

Age		65~69	70~74	75~79	80~84	Over 85	Total
Housing Tenure							
Self-owned occupancy or the spouse-owned occupancy	n	412	285	291	243	75	1306
	Percent (%)	15.92	11.01	11.24	9.39	2.90	50.46
	Row Percent (%)	31.55	21.82	22.28	18.61	5.74	
	Column Percent (%)	64.07	57.34	50.61	44.26	23.15	
children-owned occupancy	n	145	154	206	221	183	909
	Percent (%)	5.60	5.95	7.96	8.54	7.07	35.13
	Row Percent (%)	15.95	16.94	22.66	24.31	20.13	
	Column Percent (%)	22.55	30.99	35.83	40.26	56.48	
Tenancy	n	34	10	27	27	19	117
	Percent (%)	1.31	0.39	1.04	1.04	0.73	4.52
	Row Percent (%)	29.06	8.55	23.08	23.08	16.24	
	Column Percent (%)	5.29	2.01	4.70	4.92	5.86	
Other	n	52	48	51	58	47	256
	Percent (%)	2.01	1.85	1.97	2.24	1.82	9.89
	Row Percent (%)	20.31	18.75	19.92	22.66	18.36	
	Column Percent (%)	8.09	9.66	8.87	10.56	14.51	
Total	n	643	497	575	549	324	2588
	Percent (%)	24.85	19.20	22.22	21.21	12.52	100

Chi-square $p < .0001$

In the cohort of the elderly aged 65 to aged 85, the rate of the housing tenure belonging to the children increases as the age increases. However, the research data did not reveal the detailed information of the housing tenure the residence that the elderly lived in. It was not clear whether the elderly lived with their children because it was the housing bequeathed to the children, or it was the housing their children provided to the elderly.

The study employs the Multi-nominal logit Model to estimate the alternatives of the elderly's housing tenure decisions model after they move. With the maximum likelihood method, this study employed the differences of the likelihood ratio statistics ($\Delta \chi^2 (k(m-1))$) to test the significance of each variable. Among them, $\Delta \chi^2$ is $-2\log(L2) - [-2\log(L1)]$. $L2$ is the maximum - likelihood function for all the coefficients that is 0 in the null hypothesis. $L1$ is the maximum - likelihood function for all the coefficients are not zero in the alternative hypothesis. Likelihood ratio index is to test the model fit the data. The likelihood ratio index ρ^2 is between 0 and 1. The closer the likelihood ratio is to 1, the better the model fit the data. Table 8 is the statistical results of housing tenure decision model. The results of the likelihood ratio statistics of the alternatives rejected the null hypothesis. In other words, the explanatory variables of the model have significant effects on the dependent variables.

Table 8 Statistical results of mult-inomial Logit model of housing tenure alternatives

explanatory variable	Self-owned occupancy after moving opposed to non-movers		Children-owned occupancy after moving opposed to non-movers	
	Coefficient	Odds ratio	Coefficient	Odds ratio
intercept	-3.377 **	—	-7.962 ***	—
Age	-0.011	ns	0.068 ***	1.070
Having a spouse	-0.419 **	0.658	0.032	ns
Living in the urban areas	0.001	ns	-0.211 **	0.810
Fair or good health	0.062	ns	0.101	ns
Improved economic condition	0.451	ns	-0.466 ***	0.628
Sufficient living expenses	-0.114	ns	-0.050	ns
Children with employment	0.235	ns	-0.429 ***	0.651
Having retirement payment, pension, annuity	0.312 **	1.366	0.257 **	1.293
explanatory variable	Renting housing after moving opposed to non-movers		Others housing tenure types after moving opposed to non-movers	
	Coefficient	Odds ratio	Coefficient	Odds ratio
intercept	-4.218 ***	—	-6.523 ***	—
Age	0.012	ns	0.034	ns

Having a spouse	-0.052	ns	-0.019	ns
Living in the urban areas	-0.642 ***	0.526	-0.027	ns
Fair or good health	0.158	ns	-0.049	ns
Improved economic condition	-0.477	ns	0.224	ns
Sufficient living expenses	0.609 ***	1.839	0.099	ns
Children with employment	0.242	ns	0.742 ***	2.100
Having retirement payment, pension, annuity	0.236	ns	0.249	ns
Likelihood ratio : 1419.13				
Observation : 2,588				

***: $p < 0.01$; **: $p < 0.05$; *: $p < 0.1$

The odds ratio¹ will be computed to measure the specific effect of an explanatory variable on housing tenure decision under other things being equal. The results indicate that if the elderly have improved economic status, the rate for the housing tenure belonging to their children after mobility decreases by 34.9%, which suggests that the elderly cannot depend on their children completely. If the elderly have sufficient living expenses, the odds for the elderly choosing tenant occupancy after mobility increases by 83.9%. The results revealed that the elderly's economic status did not improve after they moved to the housing owned by their children. On the other hand, the elderly moving to the rental housing had sufficient living expenses. The data verify our second hypothesis that the conversion of the housing equity can help the elderly with sufficient living expenses. It helps the elderly improve their economic status when decreasing the housing consumption.

If the elderly's children were employed, the probability of choosing residence belonging to their children after moving decreases by 34.4%. It is obvious that if the children are employed, the elderly are much more likely to choose not to move instead of moving to the housing owned by their children. The elderly neither need to move for their children nor to transfer the housing tenure to their children. The result supports the third hypothesis. However, the result also indicates that children's employment status does not have significant impacts on the elderly's decision to own the housing. One of the reasons might be contributed to the fact that the rate of home ownership of the elderly is high in Taiwan. The current study lacks enough evidence to testify whether the elderly bequeath the housing to their children if the children are

¹ The odds ratio is the marginal effect of explanatory changes one unit induce the probability changes, which is estimated by calculating the exponential coefficient β .

unemployed, which is a common phenomenon in some other countries.

Regarding the other attributes of the elderly, the rate of the elderly with a spouse moving into their own housing decreases by 34.2% compared with the non-movers. This suggests that the elderly with the support of a spouse are more likely to choose not moving. Compared with the non-movers, the odds for the elderly moving to children-owned housing increased by 7% with the ages. The elderly are more likely to move to live with their children instead of living in the housing of their own as they age. The probability for the elderly in the urban areas to move to live in the housing belonging to their children decreases by 19% compared with the non-movers. The probability of the elderly moving to live in the rental housing decreases by 47.4% compared with the non-movers. The rent in the urban areas is higher and not all the children own the housing in the urban areas; therefore, the elderly are less likely to move. If the elderly have retirement pay, pensions or annuity, the probability of moving to the housing of their own or the housing owned by their children increases by 36.6% and 29.3% respectively compared with the non-movers. The elderly with the stable income sources are more likely to move.

The current study categorizes five exclusive and exhaustive alternatives of the elderly' housing tenure decisions after moving, which are self-ownership, children's ownership, renting, other tenure types, and not-moving. These alternatives are exclusive and exhaustive; even IIA will also not affect the probability of their choices. Furthermore, the current study also employs STATA to testify the hypothesis of IIA (Hausman and McFadden, 1984; Borooah, 2001). The results reject the IIA assumption.

6. Conclusions and Suggestions

Taiwan is facing the aging of its society. It is an important issue how to increase the elderly people's financial sources so as to maintain their fundamental ability to consume, meet their daily requirement and live with dignity. The rate of home ownership stands at over 85% in Taiwan. However, some elderly are house rich but cash poor. Housing wealth can be served as a potential source of living expenses for the elderly. This current study explores the relationships between the elderly's housing tenure decisions after moving and their economic status.

Based on the data of "Survey of Health and Living Status of the Middle Aged and Elderly in Taiwan – the 6th Wave of Survey", this empirical study employs the descriptive statistics, cross table analysis and Multi-nomial Logit Choice Models to analyze the elderly's mobility, housing tenure decisions and their economic status. The results of descriptive analysis reveal that most of the elderly aged over 65 were in a good health condition, felt happy about their family life, lived in dignity at home and felt satisfied with their living environment. Their overall economic status was good. Most of the elderly aged over 65 in the sample were retired while a lot of them did not have either severance pay or retirement pay. Their main financial sources came from pension, annuity or insurance; the living expenses provided by their children or relatives were their secondary financial sources. Most of the elderly's main asset was their housing. The rate of home ownership among the elderly was high. Most of the elderly did not have other real estate,

personal property, jewelry or other assets. The elderly aged over 65 mainly had a primary residence with fewer chances of moving. Most of the elderly lived with at least 1 child or with a spouse. Few elderly live alone. Their favorite arrangement was to live with their married son. It is still the mainstream value in the Chinese society for generations to live together.

The cross table analysis demonstrates that the rate of home ownership among the elderly decreased as they aged. The results verify our first hypothesis. However, while the rate of the housing tenure belonging to children increased, the data did not reveal whether the housing that the elderly lived was bequeathed by the elderly or purchased by their children. The survey data provides insufficient evidence to testify the hypothesis of altruism or the hypothesis of reciprocal financial interest between generations. More data are necessary for further investigations.

From the results of Multinomial Logit Choice Model, if the elderly moved to the rental housing, they would have sufficient living expenses after moving. This indicates that the converted housing wealth provided the elderly with sufficient living expenses. If the elderly reduced their housing expenditure, it helped them improve their consumption of non-housing goods. The results support our second hypothesis. Moreover, if the elderly's children were employed, the elderly were less likely to move to the housing owned by their children. The elderly did not need to transfer their housing tenure for their children. The results verify our third hypothesis. From the data employed in this study, most of the elderly did not have pension, severance pay or retirement pay. Most of the elderly had housing as their main assets and most of them did not have other real estate, personal property, jewelry or other assets. Therefore, economically, the elderly had to transfer their housing wealth for sufficient living expenses. This strategy can have great benefits on their economic independence and financial security. If their children were employed, the elderly preferred not to move and their housing tenure decision would be independent from considering their children. The results do not conflict with the mental account model and bequest motif.

In sum, the empirical analyses of the study reveal the significant relationship between the elderly's mobility, housing tenure decision and economic status. The analyses provide implications for the government to establish appropriate policies. The government's policy may serve as guidelines for the elderly to make good use of their housing wealth as their potential economic sources after retiring to improve their life quality. The reverse mortgage in Taiwan is budding. In Taiwan, only the single people, people without heirs, and elderly aged over 65 with housing are allowed to apply for reverse mortgage and loan their housing to the bank or financial institutions. The policy start in some selected cities. The analyses in this study suggest that converting the housing wealth provides the elderly with more living expenses which can promise them a more secured economic status and a life with dignity. The results in this study can serve as a valuable reference for the promotion of reverse mortgage in the potential housing market.

Reference

- Barro, R. J. 1974. Are Government Bonds Net Wealth?, *Journal of Political Economy* 82: 1095-1120.
- Bernheim, B. D. 1991. How Strong Are Bequest Motives? Evidence Based on Estimates of the Demand for Life Insurance and Annuities. *Journal of Political Economy*, 99(5): 899-927.
- Case, B. and A. B. Schnare 1994. Preliminary Evaluation of the HECM Reverse Mortgage Program. *Journal of the American Real Estate and Economics Association*, 22(2): 301-46.
- Chen, Shu-Mei, & Chang, Chin-Oh (2004). Mobility Decision of Extended Families in Taipei. *Journal of Social Sciences and Philosophy*, 16(2), 325-349.
- Chen Shu-Mei, & Lin Pei-Syuan (2010). the influence of financial support and physical care between the two generations of parents and children on living arrangements and life satisfaction. *Journal of Housing Studies*, 19(1), 29-58.
- Costa-Font, J., J. Giland and O. Mascarilla 2010. "Housing Wealth and Housing Decisions in Old Age: Sale and Reversion." *Housing Studies*, 25 (3): 375-395.
- Desai, V. 2010. "Potential for Mortgage Loan in India: A Survey Among the Senior Citizens of Vadodara, Gujarat." *The IUP Journal of Bank Management*, 9(1/ 2): 83-101.
- Ellwood, D. T. and T. J. Kane 1989. "The American Way of Aging, An Event History Analysis." *National Bureau of Economic Research*, Cambridge: MA, NBER Working Paper No. 2892.
- Feinstein, J. and D. McFadden 1989. The Dynamics of Housing Demand by the Elderly, Wealth, Case Flow, and Demographic Effects. In *The Economics of Aging*, ed. David A. Wise, Chicago, University of Chicago Press, 55-91.
- Feinstein, J. 1996. Elderly Health, Housing, and Mobility. Chapter 9 in *Advances in the Economics of Aging*, Ed. D. Wise, NBER Project Report, University of Chicago Press.
- Ho, Hua-Chin (2005). Evaluation of information management and policy: the example of elderly research. *Community Development Quarterly*, 111, 198-201.
- Hua, Chang-I (2001). Intergenerational Transfer of Housing Assets in Taiwan. *Final report of the project funded by National Science Council, Taipei, Taiwan*.
- Hurd, M. D. 1992. Wealth Depletion and Life Cycle Consumption by the Elderly. In *Topics in the Economics of Aging*, ed. David A. Wise, Chicago: University of Chicago Press, 135-60.
- Hurd, M. D. 1987. Savings of Elderly and Desired Bequests. *American Economic Review*, 77: 298-312.
- Kang, H. B. 2010. The Cost and Benefit of Reverse Mortgages. *Journal of Finance & Accountancy*, 4: 1-7.
- Ko, Mu-Shing, & Lin, Jian-Cheng (2005). On the World Bank multi-level old age economy support model. *Life Insurance Quarterly*, 137, 61-69.
- Kotlikoff, L. J. and J. M. Morris 1989. How Much Care Do the Aged Receive from Their Children? A Bimodal Picture of Assistance. In *The Economics of Aging*, ed. David A. Wise, Chicago, University of Chicago Press, 151-75.
- Li, Mei-Ling & Wang, Hong-ping (1998). Chances of the elderly's income and influencing factors in Taiwan. *Journal of Social Sciences and Philosophy*, 10(2), 267-288.
- Lu, Pau-Ching (1997). Initial investigation of the preparation of retirement in Taiwan. *Journal of Social Work*, 4, 27-53.

- Megbolugbe, I. F., J. Sa-Aadu and J. D. Shilling 1997. Oh, Yes, the Elderly will Reduce Housing Equity under the Right Circumstances. *Journal of Housing Research*, 8: 53-74.
- Megbolugbe, I. F., J. Sa-Aadu and J. D. Shilling 1995. Who Never Trades Down? An Empirical Analysis of Elderly Housing Behavior. Working paper, University of Iowa and University of Wisconsin.
- Merrill, S. R. 1984. Home Equity and the Elderly. In *Retirement and Economic Behavior*, ed. Henry J. Aaron and Gary Burtless, Washington, DC: Brookings Institution, 197-238.
- Merill, S. R., M. Finkel and N. Kutty 1993. The Market for a Reverse Mortgage Program for Elderly Homeowners. Paper read at Fannie Mae Research Roundtable Series, Washington, DC, October 30.
- Reschovsky, J. D. 1990. Residential Immobility of the Elderly: An Empirical Investigation. *AREUEA Journal*, 18: 162-83.
- Rasmussen, D., I. Megbolugbe and B. Morgan 1995. Using the 1990 Public Use Micro data Sample to Estimate Potential Demand for Reverse Mortgage Products. *Journal of Housing Research*, 6(1): 1-23.
- Rasmussen, D. W., I. F. Megbolugbe and B. A. Morgan 1997. The Reverse Mortgage and as Asset Management Tool. *Housing Policy Debate*, 8(1): 173-194.
- Shi, Yang. (2005). The investigation of economic security system of old age. *Community Development Quarterly*, 110, 260-273.
- Shiner, L. and D. Weil 1992. The Housing Wealth of the Aged. NBER Working Paper 4115, Cambridge, Mass, National Bureau of Economic Research.
- Skinner, J. 1996. Is Housing Wealth a Sideshow?, chapter 8 in *Advances in the Economics of Aging*, Ed. D. Wise, NBER Project Report, University of Chicago Press.
- Skinner, J. 1993. Is Housing Wealth a Sideshow?. National Bureau of Economic Research, Working Paper No. 4552.
- Stahl, K. 1989. Housing Patterns and Mobility of the Aged: The United States and West Germany. In *The Economics of Aging*, ed. David A. Wise, Chicago, University of Chicago Press, 93-115.
- Su, Li Chiung, & Huang, Ya-Ling (2005). The Reinforcement of Senior Welfare Policy: To Promote the Policy of Aging in Place. *Community Development Journal*, 110, 5-13.
- Tseng Li-Yi, Chang Chin-Oh, & Chen, Shu-Mei (2006). An analysis on the living arrangement choices of the elderly: a discussion on intergenerational relationships. *Journal of Housing Studies*, 15(2), 45-64.
- Venti, S. F. and D. A. Wise 1987. Aging, Moving, and Housing Wealth. National Bureau of Economic Research, Inc, NBER Working Papers: 2324.
- Venti, S. F. and D. A. Wise 1989. Aging, Moving, and Housing Wealth. In the *Economics of Aging*, ed. David A. Wise, Chicago: The University of Chicago Press, 9-48.
- Venti, S. F. and D. A. Wise 1990. But They Don't Want to Reduce Housing Equity. In *Issues in the Economics of Aging*, Ed. D. Wise, Chicago: The University of Chicago Press, 13-32.
- Venti, S. F. and D. A. Wise 1991. Aging and the income value of housing wealth. *Journal of Public Economics*, 44(3): 371-397.
- Wang, Zheng & Zhan, Yi-zhang (1996). Investigation of the system of annuity and standard of payment in Taiwan. *Taiwan Bank Quarterly*, 47(2), 1-33.
- Yi, Zhang-Zhan, (1997). Economic Security and Protection of the Elderly-A Risk Approach. *Social Policy &*

Social Work, 2, 3-38.