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Yoo Gunseuk

University of Kentucky

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Housing Satisfaction in South Korea

Student: Gunseuk, YOO

Advisor: J.S. Dr. Butler

Martin School of Public Policy & Administration

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I. Executive Summary

Since April 2013, the Korean government has implemented a series of plans to stabilize the housing market, which has suffered from falling housing prices and surging rent after the 2008 financial crisis. This study estimates the effectiveness of the government's plans by analyzing the housing satisfaction of 2012 and 2014 Korea Housing Survey (KHS). The data used in this study are collected from the KHS carried out by the Ministry of Land, Infrastructure and Transport (MOLIT)

This study uses 2012 and 2014 KHS to show that some variables and subcategories of household and housing attributes have positive or negative correlation with housing satisfaction. The analysis of 2012 and 2014 KHS indicates a few tendencies about how the government's plans affect housing market. First, the government's plans are likely to lower the dissatisfaction of the households living in 'Jeonse' and 'monthly rent' housing; but the positive impact is considered to be insufficient to completely stabilize the rental housing market. Second, the government's plans are likely to more positively affect the households living in 'metropolitan' and 'other region' than in 'capital area.' Third, the supply extension plan of public rental housing is likely to be effective because residents living in public rental housing tend to be satisfied with their housing. Finally, despite the introduction of the Housing Voucher Program, recipient households are dissatisfied with their housing. Therefore, the housing authority will need to have consistent interest in their housing satisfaction.

II. Introduction

After the 2008 financial crisis, the South Korean housing market has made a lot of people nervous, due to falling housing prices and surging rent. This situation has kept the government authorities busy with making plans to stabilize it. In May 2016, the government announced a housing assistance plan for middle and lower classes. This is the eighth housing assistance plan constructed since April 2013. Under the assumption that households' anxieties about dwelling is expressed in poor housing satisfaction, this study will explore correlations between housing satisfaction and specific attributes of households and their housing. This can be helpful for the South Korean government as it develops housing plans.

As in other countries, in South Korea, housing has multifaceted characteristics. People consider housing a home, an investment target, an element of tax system, an object of design, a community asset, etc (Weidemann and Anderson, 1985). According to Adams (1984), housing is “an interactive process with meanings tied to status, social position, wealth, power, aspirations, and personal identity”. For this reason, residential satisfaction could be regarded as an important criterion of individuals' quality of life. This way of thinking has made residential satisfaction a main research topic studied by sociologists, psychologists, planners, and geographers (Lu, 1999).

Many studies have been conducted on residential satisfaction in South Korea, especially around the year 2008, when the housing supply ratio exceeded 100%¹. The recently growing interest in housing satisfaction reflects changes in the way Koreans view their houses and the heightened interest in the quality of life. That is, Koreans began to view a house as a ‘dwelling’ place, rather than as a ‘subject of ownership or speculation’, which has been their main viewpoint on housing during the last few decades of experiencing extremely rapid economic

¹ Source: Ministry of Land, Infrastructure and Transport (MOLIT) (http://www.index.go.kr/potal/main/EachDtlPageDetail.do?idx_cd=1227)

growth. Many Korean studies have analyzed the correlation between housing satisfaction and specific groups with certain characteristics, such as public apartment dwellers (Kim and Oh, 2003; Kim, Yoo and Shin, 2010), suburban new town residents (Jang, 2012), elderly residents (Jang & Lee, 2014; Moon, 2014), urban residents (Sim, 2012), single-person household (Kwon and Park, 2014), and foreigners (An, Jang and Shin, 2006). These studies have analyzed correlations between housing satisfaction and a number of variables indicating housing and neighborhood characteristics, as well as individuals' demographic attributes.

However, most South Korean studies have focused on correlation between specific socio-demographic groups and housing satisfaction. Therefore, differences in samples, the definition of variables, analysis models, and data types keep us from comparing empirical results directly. In order to make up for the difficulties and limitations of previous studies, this study will use national data from Korea Housing Survey (KHS). KHS provides a substantial amount of information about housing, as well as individuals' attributes. Therefore, the information in KHS allows us to analyze comprehensive residential satisfaction with national samples, unlike previous studies.

III. Literature Review

A) Theories of residential satisfaction

Households judge the degree of satisfaction with their residential environment based on the difference between their current and desired states. The less the difference between current and desired states, the more households are satisfied with their residential environment, and vice versa. As Lu states, residential satisfaction is an important component of their quality of life, and

also determines the way they respond to their residential environment. An understanding of which factors of their residential environment households are satisfying or dissatisfying can be important for planning successful housing policies (Lu, 1999).

In many studies, residential satisfaction is illustrated with two different factors: one is a “trigger factor” affecting residential mobility, the other an important criterion in descriptions of the quality of life (Amerigo and Aragonés, 1997). Many scholars, including Rossi (1955), hold the opinion illustrating residential satisfaction as the first factor. The changes in households’ housing needs and desires, called “lack of fit”, put them out of accordance with their residential environment. The change in ‘life cycle stage’ of households is one of good reasons causing the “lack of fit”. This “lack of fit” causes complaint and dissatisfaction with their residential environment. To address these problems, households would consider migration (Rossi, 1955). Furthermore, Morris and Winter (1975) introduced the concept of “normative housing deficit”. Families have two criteria to judge their housing: one is “cultural norms”, and the other is “family norms”. “Cultural norms” are influenced by societal standards or rules for life conditions, and “family norms” are defined as criteria created by families themselves. This “normative housing deficit” can cause three behavioral responses: “residential mobility,” “residential adaptation,” and “family adaptation” (Morris and Winter, 1975). In the same vein, Wolpert (1966) argues that households’ evaluation of their current residential environment precedes their migration. This evaluation is influenced by individual households’ characteristics, and migration is regarded as a way of improving the level of residential satisfaction (Wolpert, 1966).

Marans and Rodgers (1974) argue that satisfaction with residential environments is connected to “expressed satisfaction” with life by and large. When we understand the relationship between indicators of life quality and subjective indicators of the quality of

residential environments (e.g., perceptions, assessments, and satisfaction), the relationship provides reliable guidance for policy decisions. Marans and Rodgers (1974) state that it is valuable for policy makers to monitor changes in people's responses to their environments over time. Also, Cutter (1982) improves the residential satisfaction model based on attitudinal theories of reasoned action and emphasizes the importance of attitudes toward the community in predicting satisfaction. In addition, Galster and Hesser (1981) present two sets of objective factors influencing residential satisfaction: "contextual" and "compositional". "Contextual" factors are the physical and ecological characteristics of housing and surrounding neighborhood, and "compositional" factors refer to the characteristics of individual households (e.g. social class, life cycle). If the current situation does not meet households' needs and aspirations, there are two alternatives available. One is to reconcile the discrepancy by reducing or modifying their needs and aspirations, or by modifying their evaluation of the current situation. The other is to reduce their dissatisfaction by remodeling, migration, or altering needs through entering another life cycle stage over time (Galster and Hesser, 1981).

B) Previous Korean studies

As was stated above, most previous studies on residential satisfaction in South Korea analyze correlations between specific socio-demographic groups and residential satisfaction. Studies analyzing KHS data are rarely founded. The reason for this is that KHS is not yet systematized and standardized because it is in its immature stages, and its data were not disclosed until 2013 (Jin and Kim, 2012). However, a few articles analyzing data collected from KHS can be found. Kim (2016) analyzes the correlation between households' characteristics and neighborhood satisfaction with data collected from 2014 KHS, especially focusing on high-

income bracket. He concludes that the more income households have, the higher neighborhood satisfaction they can get (Kim, 2016).

In addition, Han (2014) also uses data drawn from 2012 KHS. He conducts the variance analysis to understand the relation between demographic characteristics and housing satisfaction. He sets up a structure equation model using confirmatory factor analysis to figure out the correlation between housing satisfaction and neighborhood satisfaction (Han, 2014).

IV. Methodology

A) Data and the measures

The data used in this study are collected from the KHS, carried out by Ministry of Land, Infrastructure and Transport(MOLIT). The KHS is conducted every other year, with more than 20,000 participating households. The KHS began in 2006 with intent to collect information on households, housing units, and residential environments in order to establish housing policies. This survey provides detailed information on socio-demographic characteristics of households and attributes of housing and neighborhood, as well as residential satisfaction. This study will first analyze data of 2012 and 2014 KHS, and then will estimate changes between 2012 and 2014 KHS to grasp the effect of the government' plans to stabilize housing market.

The KHS is a cross-sectional survey every other year, not a panel survey. That is, surveyed households cannot be linked between each KHS. Therefore, to estimate the effects of the government plans between 2012 and 2014 KHS, all households are included in one model with a dummy variable for 2014 KHS, which is interacted with policy targets: 'housing tenure type' and 'house type.'

Table 1. Outline of KHS

Survey Year	Sample Size	Housing Satisfaction	Survey Period
2006	30,201	- Unsurveyed	Aug 28. 2006 ~ Nov 06. 2006
2008	30,156	- Comprehensive question - Additive list (5 questions)	Sept 16. 2008 ~ Dec 05. 2008
2010	33,000	- Comprehensive question	Aug 23. 2010 ~ Sept 03. 2010
2012	33,000	- Comprehensive question	Jun 28. 2012 ~ Aug 31. 2012
2014	20,205	- Comprehensive question - Additive list (8 questions)	Jul 07. 2014 ~ Sept 28. 2014

2014 KHS employs ordinal scale to measure housing satisfaction from a respondent. For example, the question about housing satisfaction is ‘how much satisfied are you with the house you live?’ The four-point Likert scale offers the following answers, i.e. 1 is very dissatisfied, 2 dissatisfied, 3 satisfied, 4 very satisfied. However, housing satisfaction of 2008 and 2014 was surveyed with additive lists about housing attributes that are considered important in influencing satisfaction. These additive lists was changed in size and contents or some KHS was conducted without additive lists. These changes may originate from the perspective that an expressed satisfaction can be defined as the product of a respondent's integrated perception to many characteristics of residential environment (Galster, 1987). For this reason, this study will use only the comprehensive answer to the question of housing satisfaction.

B) Analysis model

The dependent variable is a Likert scale of satisfaction with four values. Although various models can be used, the easiest model to interpret is linear regression, which predicts mean value on a scale of 1.0 to 4.0 (higher being better). This is equivalent to the computation of

a Grade Point Average for a student. As with grades, few values of 1 ("D") are reported, 3.0% in 2012 and 1.4% in 2014. About 73% are 2 ("B") in both years. There is a statistically significant increase from 2012 to 2014 in the average from 2.855 to 2.915, a rounded increase of 0.059 (s.e. 0.005, $p < 0.0001$). Also, satisfaction scores of 4 ("A") increase from 7.9% to 9.8%.

The model controls for household and housing attributes in both years and a dummy variable for 2014 KHS, which interacted with housing tenure type and house type, because the policies in Appendix I targeted different tenure type and house type.

C) Independent variables

This study uses those independent variables of 2012 and 2014 KHS that are considered to affect housing satisfaction based on previous studies of South Korea and other countries. These variables are classified into two sections depending on each variable's attributes: household attributes and housing attributes. Table 2 (see p.12) shows the summary of these variables.

Household attributes include variables representing individual household characteristics: age, sex, education, household type, number of household members, recipient of livelihood program, duration of residence, housing tenure type, household income, household property, and percentage of housing expenditure among household income. Unlike other studies, this study takes into account respondents' 'age' and 'sex' differences. When looked at closely, the cases in which a respondent is not a householder account for 45.52% (9,198) of 20,205 samples. Considering the subjectivity of satisfaction, 'age' and 'sex' variables need to be used with the respondents' values, instead of the householders'. 'Household type' can be classified into five

subcategories and is expected to be useful for understanding whether forms of household have an effect on residential satisfaction or not. ‘Recipient’ of this study are people who receive supplementary living allowances from the government, and fall within the lowest income bracket in South Korea. The increase in residential costs is expected to specifically affect the residential satisfaction of low-income bracket. ‘Tenure type’ is divided into four subcategories: owner, Jeonse, monthly rent, and other tenure type. ‘Jeonse’ is a unique rental housing system in South Korea². A distinction needs to be made between ‘Jeonse’ and ‘monthly rent housing’ because ‘Jeonse’ housing is a historically significant housing tenure, and 19.6 percent of households are ‘Jeonse’ housing according to 2014 KHS. ‘Percentage of cost’ means the share of housing expenditure among household income.

Variables of ‘housing attributes’ represent geographic location and physical state of housing as follows: urbanization, per capita living space, house type, public housing. ‘Urbanization’ variable can be classified into three subcategories depending on the degree of urbanization: ‘capital area’, ‘metropolitan’ and ‘other region’. ‘Capital Area’ includes the capital of South Korea (Seoul city), Incheon Metropolitan city, and Gyeonggi-province; as of November 2015, 49.5% of South Korea’s population (25,270 thousand people) live in the ‘capital area’. ‘Metropolitan area’ refers to five large cities, the population of each is usually more than one million: Busan, Ulsan, Daegu, Daejeon, and Gwangju. ‘Other region’ means less urbanized region than ‘capital area’ and ‘metropolitan city’. ‘Per capita living space’ is created by the

² Under ‘Jeonse’ system, a tenant pays an amount of money to a homeowner. This money is called ‘key money.’ The ‘key money’ is about 50 to 80 percent of housing value. Once a Jeonse contract is made, the tenant can live in the house exclusively for two years without additional payment. The homeowner can make money through investment or interest return with key money. When the contract is expired after two years, the tenant will get back the key money intact from the homeowner. Jeonse system has been officially preserved for the last 100 years since 1910 in the form of ‘Housing Finance’ and of ‘Housing Stability’ institutions for the working class. During the time when established institutions lacked resources, “Jeonse system was not only a vital financial mean for the working class, but also a mean of providing rental housing” (Choi, 2014).

calculation of ‘total living space’ divided by ‘number of members’. This measure is considered to represent the relative shortage or abundance of living spaces. ‘House type’ is classified into six subcategories: general single house, multi-household house³, apartment⁴, row house⁵, multiplex house⁶, other house type. ‘Public housing’ defines whether the housing occupied by a respondent is publicly owned or not. If we compare the satisfaction level of public housing to the level of other rental housing, we might be able to judge the results of public housing policy in South Korea.

Table 2. Summary of 2012 and 2014 KHS independent variables

▶ Household attributes		Observations
Age	Age of respondents	53,205
Sex (male)	Sex of respondents. 1 male; 0 female	53,205(21,304)
Education	Level of education of householders. 1. less than high school; 2. high school ; 3. more than high school	53,205
Household type	1. single-person household (reference); 2. single-parent household; 3. married couples without children; 4. married couples with children; 5. other type	53,205
Number of members	Number of household members	53,205
Recipient	1. recipient of livelihood program; 0. non-recipient	1,958
Duration of residence	In years	53,205
Housing tenure type	1. owner (reference); 2. jeonse; 3. monthly rent; 4. other tenure type	53,205
Household income	Annual income (unit: Korea million won)	53,201

³ Multi-household house: Several household can live in this house, which is equipped with rooms, kitchen, entrance, and toilet in each compartment. However, each compartment cannot be possessed or bought and sold separately.

⁴ Apartment: A number of household can live in this building, which is more than five-story collective house. Each house can be possessed or bought and sold separately.

⁵ Row house: This house has a similar structure with apartment, but is a four-story or fewer collective house.

⁶ Multiplex house: Several household can live in this house, which is equipped with rooms, kitchen, entrance, and toilet in each compartment. However, each compartment can be possessed or bought and sold separately.

Property	Household property (unit: Korea million won,)	52,620
Percentage of cost	The share of housing expenditure among household monthly income	52,925
▶ Housing attributes		
Urbanization	1. Capital area(reference); 2. Metropolitan; 3. other region	53,205
Per capita living space	Calculation: Total living space divided by number of household members (unit: square meter)	53,204
House type	1. general single house; 2. multi-household house; 3. apartment; 4. row house; 5. multiplex house(reference); 6. other house type	53,205
Public housing	1. publicly owned; 0. otherwise	8,857

V. Findings

A) Relationship between independent variables and housing satisfaction

Table 3(see p.14) summarizes the results of the housing satisfaction analysis. The results show that many variables have statistically significant effects on housing satisfaction.

Specifically, men are more likely to be satisfied with their housing than women. The higher the level of education, the more satisfied they are with their dwelling. All subcategories of 'household type' variable have significant values. Among them, 'married couples without children' show the highest housing satisfaction. This result may be connected to the phenomenon of decreasing birthrate in South Korea⁷. On the contrary, 'single-parent household' has the lowest satisfaction. Since 'single-parent household' is one of housing policy target group, policy makers need to have consistent interest and concern for changes in their housing satisfaction.

⁷ According to United Nations Population Fund (UNFPA), as of 2015, the birthrate in South Korea is 1.24. South Korea's birthrate is ranked 184th in the world.

Table 3. Housing satisfaction regressed on households and housing characteristics

Variables and subcategories		Housing satisfaction		Interactions ¹		
		Coefficient	Std. Err.	Coefficient	Std. Err.	
Household Attributes	Age	0.0006*	0.0002	0.0006*	0.0002	
	Sex	0.0183**	0.0052	0.0211**	0.0051	
	Education	0.0429**	0.0043	0.0329**	0.0043	
	Household type relative to single-person household					
	Single-parent household	0.0485**	0.0130	0.0455**	0.0129	
	Married couples w/o children	0.0979**	0.0099	0.0938**	0.0099	
	Married couples with children	0.0898**	0.0120	0.0834**	0.0120	
	Other type	0.0585**	0.0154	0.0614**	0.0153	
	Number of members	0.0073**	0.0021	0.0027	0.0021	
	Recipient	-0.0943**	0.0164	0.0985**	0.0163	
	Duration of residence	-0.0042**	0.0003	0.0034**	0.0003	
	Jeonse	-0.1270**	0.0073	0.1231**	0.0090	
	Monthly rent	-0.1455**	0.0092	0.1455**	0.0107	
	Household income	0.0180**	0.0018	0.0165**	0.0017	
	Property	0.0137	0.0140	0.0128	0.0130	
	Percentage of cost	-0.0136	0.0232	0.0261	0.0225	
Housing Attributes	Urbanization relative to capital area					
	Metropolitan	0.0473**	0.0064	0.0428**	0.0064	
	Other region	0.0832**	0.0062	0.0855**	0.0062	
	Per capita living space					
	Apartment	-0.0106	0.0061	0.0078	0.0065	
	Public housing	0.1612**	0.0126	0.1209**	0.0127	
Dummy	2014 KHS	0.0704**	0.0059			
Interactions with 2014 KHS, changes in average housing satisfaction						
Owner				0.0845**	0.0226	
Jeonse				0.0972**	0.0242	
Monthly rent				0.1157**	0.0241	
Other tenure type				0.0488	0.0299	
General single house				-0.1338**	0.0237	
Multi-household house				-0.0565	0.0240	
Apartment				0.0740**	0.0222	
Row house				-0.1372**	0.0277	
Multiples house				-0.0729**	0.0247	
Constant		2.5322**	0.0234	2.5603**	0.0234	

Note: 1. Interactions with housing tenure type and house type

**- Significant at P=0.01, *- P=0.05

'Number of members' variable shows that the more members households have, the higher the housing satisfaction. This result contrasts with the result of 'married couples without children'. It can be partly connected to the increase in people who live with their parents because of the rise of living cost and the upsurge of working couples. 'Recipient' of livelihood program is negatively associated with housing satisfaction. Also, households living in 'Jeonse' and 'monthly rent' housing are dissatisfied with their dwelling. Even though 'recipient' households and residents of 'Jeonse' and 'monthly rent' housing have been major targets of the government's housing assistance plans, they show negative housing satisfaction. This result may suggest that these households are under stress from the unstable housing market. Therefore, if we can find out the tendency change of their satisfaction, the change might have meaningful implications with respect to the government's plans. 'Household income' variable has a positive correlation with housing satisfaction. Presumably, this may be because wealthier people have a relatively broader selection of housing than poor people.

Compared to households in 'capital area', households in 'metropolitan' and 'other region' are likely to be satisfied with their housing. This tendency shows that housing satisfaction is inversely related to the degree of urbanization. 'Per capita living space' shows that residents that live in larger space tend to be more satisfied with their housing. Since spacious houses and houses urban areas tend to come with high living costs, this variable is considered to be partly related to 'household income' variable and 'urbanization' variable. Residents living in 'public rental housing' are satisfied with their dwelling. This result is in line with findings of previous research (Kim and Oh, 2003; Kim, Yoo and Shin, 2010). Meanwhile, any subcategories of 'house type' show statistically significant values. The government's plans did not focus on a particular

'house type', but this shows the unexpected results in comparison with the tendency of apartment-type preference.

B) Policy implications

As shown in Appendix I, MOLIT implemented five housing assistance plans from April 2013 to February 2014. Since 2014 KHS was conducted between July 2014 and September 2014, these five plans are considered to influence the residential satisfaction of 2014 KHS. Therefore, the shifts in housing satisfaction between 2012 and 2014 KHS is likely to show how residential satisfaction changes before and after the government's plans. These changes are considered to hint policy significance. Also, correlation itself of a variable with housing satisfaction can have policy implication.

First, positive impacts of the government's plans can be found in 'Jeonse' and 'monthly rent.' In the interactions with 2014 KHS of Table 3, all subcategories of 'housing tenure type' (i.e. owner, Jeonse, and monthly rent) show that housing satisfaction has increased after the government's plans. As shown in Appendix I, since the government's various policies focused on every housing tenure type, their satisfaction is considered to increase. Specifically, tenants living in 'Jeonse' and 'monthly rent' housing are dissatisfied with their housing, but changes in average housing satisfaction shows that their satisfaction has been improved, as much as 0.0972 in 'Jeonse' and 0.1157 in 'monthly rent.' Tenants living in 'Jeonse' and 'monthly rent' housing were important targets of housing assistance plans. The government implemented multidirectional plans for tenants, such as an interest rate cut of security deposit loan, a credit limit extension, an extension of income tax deduction rate against monthly rent, and a improvement of legal

protection system for tenants. These changes tell us that tenants are still dissatisfied with their living, but the extent of their dissatisfaction has diminished. In other words, these changes lead to the conclusion that the government's plans were not sufficient to stabilize the rental housing market. However, they positively affected the housing satisfaction of residents living in 'Jeonse' and 'monthly rent' housing.

Second, the government's plans are likely to have a more positive effect on the households living in 'metropolitan' and 'other region' than the households living in 'capital area.' More in-depth analysis is likely to be necessary to grasp exact reasons, but one reason could be that the government's plans are slow or less effective in the heavily populated 'capital area'. Table 4 shows the rate of change in housing price and 'Jeonse' price between July 2012 and July 2014. The reasons for these changes can be various, but the government's policies are considered one of major reasons. During this period, the housing price of 'metropolitan' and 'other region' increased, while the price of 'capital area' fell. Also, the 'Jeonse' price in 'capital' area shows a larger increase than the 'Jeonse' price in 'metropolitan' and 'other region'. Given this situation, the difference in housing satisfaction by region is likely to reflect the current housing market situation.

Table 4. The rate of change in housing price and 'Jeonse' price between July 2012 and July 2014

	Rate of change	
	Housing price	Jeonse price
Whole country	+ 0.03%	+ 7.83%
Capital area	- 2.91%	+ 10.29%
Metropolitan	+ 3.34%	+ 6.61%
Other region	+ 2.5%	+ 4.89%

Source: Korea Appraisal Board (www.kab.co.kr)

Next, the supply extension plan of public rental housing is likely to be effective because residents of public rentals tend to be satisfied with their living. The government's first and fourth plan included public rental housing provision. The housing authority⁸ announced the plan of public rental housing provision, 140,000 units per year. In the sixth plan, the government announced that 80,00 rental housing units will be built through REITs (Real Estate Investment Trusts) within four years. This method was designed to attract private capital into supplying rental houses due to the financial problem of the public sector. Considering that residents tend to be satisfied with public housing, these plans are expected to be helpful in stabilizing rental housing market.

Finally, we need to take a look at the 'recipient' variable. 'Recipient' variable represents people who receive benefits from the government by the National Basic Living Security Act. For this reason, 'recipient' households are always the target group of most housing assistance plans. Specifically, Housing Voucher Program, which was introduced in the government's first plan, takes 'recipient' households as a target class. Nevertheless, 'recipient' households are still dissatisfied with their living. Unfortunately, this study could not show how their satisfaction was affected by the government's plans. The housing authority will need to have consistent interest in their housing satisfaction, as Marans and Rodgers (1974) mention .

VI. Conclusion and Limitations

⁸ Ministry of Land, Infrastructure and Transport (MOLIT)

This study uses 2012 and 2014 KHS to show that some variables and subcategories of household and housing attributes have positive or negative correlation with housing satisfaction. The analysis of 2012 and 2014 KHS indicates a few tendencies about how the government's plans affect housing market. First, the government's plans are likely to lower the dissatisfaction of the households living in 'Jeonse' and 'monthly rent' housing; but the positive impact is considered to be insufficient to completely stabilize the rental housing market. Second, the government's plans are likely to more positively affect the households living in 'metropolitan' and 'other region' than in 'capital area.' Third, the supply extension plan of public rental housing is likely to be effective because residents living in public rental housing tend to be satisfied with their housing. Finally, despite the introduction of the Housing Voucher Program, recipient households are dissatisfied with their housing. Therefore, the housing authority will need to have consistent interest in their housing satisfaction.

This study also has some limitations. First, there are some variables which need to be classified into smaller subcategories (e.g. region subcategories in 'urbanization' variable), but this study minimized the level of subcategories to facilitate analysis. Second, some variables (e.g. 'recipient' households) need more in-depth analysis, but this study leaves those analyses to other studies. Finally, since the Housing Survey is a sample survey useful for analyzing many categories, there are likely to be some statistical errors in analyzing any particular category.

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Appendix I: Various policies to stabilize housing market

Announcement of policy	Contents	Policy Targets		
		House owner	Tenants of Jeonse housing	Tenants of Monthly rent housing
April 1. 2013. (1st)	<ol style="list-style-type: none"> 1. Housing market normalization <ul style="list-style-type: none"> ▪ Controlling housing supply (reduction) ▪ Improvement of tax and financial system for housing demand creation 2. House and rent poor support <ul style="list-style-type: none"> ▪ House poor: financial system improvement ▪ Rent poor: interest rate cut and credit limit extension 3. Housing welfare <ul style="list-style-type: none"> ▪ Supply extension of public rental housing : 130,000 units per year ▪ Housing Voucher Program introduction for low-income households 	○		
July 24. 2013. (2nd)	<ol style="list-style-type: none"> 1. To adjust public housing site development in capital area: to reduce public housing for instalment sale 2. Controlling housing supply of private sector: to switch unsold housing in private sector to public rental housing 	○		○(Apartment)
August 28. 2013. (3rd)	<ol style="list-style-type: none"> 1. To divert demand for Jeonse housing to demand for housing purchase <ul style="list-style-type: none"> ▪ Acquisition tax cut ▪ Residential mortgage system improvement ▪ Housing purchase support system introduction 2. Supply extension of rental housing <ul style="list-style-type: none"> ▪ Public rental housing extension ▪ Private rental housing extension 		○	○

	<ul style="list-style-type: none"> ▪ To stitch unsold housing in private sector to rental housing ▪ To improve private rental housing system <p>3. Relieve burden of monthly rent for low- and middle-income bracket</p> <ul style="list-style-type: none"> ▪ To extend income tax deduction rate against monthly rent ▪ Pilot project for Housing Voucher Program introduction ▪ To improve legal protection system for tenants 				○
September 22. 2013.	1. Share equity mortgage introduction: to share ownership with National Housing Fund for house poor	○			
December 3. 2013. (4th)	<p>1. Security deposit loan for Jeonse housing: Interest rate cut, Simplify loan procedures</p> <p>2. To extend residential mortgage and share equity mortgage</p> <p>3. Supply extension of public rental housing: 140,000 units per year</p> <p>4. To purchase houses from house poor</p>	○	○		○
February 26. 2014. (5th)	1. Plans to advance rental housing market: Tax imposition on housing rental income		○		○
September 1. 2014. (6th)	<p>1. To rationalize housing market restriction</p> <ul style="list-style-type: none"> ▪ Housing reconstruction ▪ Housing sale regulations ▪ Suspension of public housing land development business <p>2. Resident stability for low- and middle-income bracket</p> <ul style="list-style-type: none"> ▪ Rental housing supply through REITs (real estate investment trusts) : 80,000 units ▪ Interest rate cut 	○		○	○
October 30. 2014. (7th)	<p>1. Plans to relieve housing cost burden for low- and middle-income bracket</p> <ul style="list-style-type: none"> ▪ To introduce various ways for public rental housing supply: multiplex housing, as well as apartment ▪ To deregulate rental housing system to promote housing rental business operator 				○(multiplex housing) ○ ○

	<ul style="list-style-type: none"> ▪ To introduce monthly rent loan 			
May 31. 2016. (8th)	<p>1. Plans to enhance housing assistance for low- and middle-income bracket</p> <ul style="list-style-type: none"> ▪ Supply extension of public rental housing: 125,000 units in 2016 ▪ To expand private participation in public rental housing ▪ To strengthen financial support for Jeonse and rental household, and first housing buyer ▪ To improve rental housing market: various system modification, housing rental business operator 		<p>○</p> <p>○</p>	<p>○(multiplex housing, Apartment)</p> <p>○</p> <p>○</p> <p>○</p>