

Housing and happiness*

Subjective well-being and residential environment in Korea

주택과 행복

- 한국에서 주택환경과 주관적 행복감에 관한 연구 -

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Abstract

Interest in the use of subjective well-being (SWB) in designing policy has been increasing in recent years. This article builds on Clapham's elaboration of the potential channels through which housing can contribute to SWB in order to test the impact of three housing characteristics (tenure, size, and type) on Korean households. Using an extensive panel data set drawn from the Korean Labor and Income Panel Study (KLIPS), this article employs OLS and fixed effects regressions to unveil the relationship between housing arrangements and life satisfaction in Korea. As for the type of housing, our findings indicate that Koreans are happiest when living in apartment complexes. Happiness with house size is found to peak at 135-164m² and to increase most when moving to apartments larger than 40m². In addition, living in one's own house is associated with the highest happiness gains, followed by jeon-se and wol-se contracts. Though perhaps unsurprising, these findings provide solid empirical evidence to support intuition and suggest that—within the limitations of spatial and financial resources—housing policy can increase life satisfaction by supplying larger apartments and fostering homeownership. When the ideals suggested by these findings are compared to the existing distribution of housing, the paper concludes that it is appropriate for policy to continue targeting the current size standard.

키 워 드 ■ 주택정책, 평생만족, 주택소유, 보유

Keywords ■ Housing policy, life satisfaction, homeownership, tenure

I. Introduction

The so-called science of happiness over the last decade (e.g., Clark & Oswald 1994, Dolan et al. 2008, Layard 2006, Wilkinson 2005) has

built upon the paradox first noted by Easterlin (1974) that as countries got wealthier their citizens did not get happier. This observation inherently undermines the utility of standard measures of progress like income, assets, and

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property values in designing and implementing policy. As a result, some policy makers, including urban planners, have begun to explore the possibility of using subjective well-being (SWB) measures to determine the impact and direction of policies. Notable efforts include the so-called Sarkozy Report (Stiglitz et al. 2009), Gross National Happiness in Bhutan, and Jeffrey Sachs's "World Happiness Report". Consistent across such efforts is the recognition that quality of housing is important for a number of social outcomes, including educational attainment and health outcomes.

However, in the housing literature, the only extant effort to directly conceptualize the mechanisms through which housing contributes to SWB is that of David Clapham (2010), and thus this paper starts from his suggestion. Clapham introduces four aspects of housing that the wider literature relates to happiness and well-being. These four components are: personal control, identity and self-esteem, social support, and inequality and housing policy. First, personal control in housing refers to one's effective choice of housing solutions, including the capacity to freely alter one's housing. Thus, in most housing systems, the comparatively greater freedom allowed by homeownership conveys more personal control than renting. Second, identity and self-esteem are bound up with housing in that certain housing choices lead to greater social respect, thus contributing to happiness. Third, as a space in which familial and social relationships actually take place, housing can increase

well-being by fostering social support. Finally, to the extent that one's housing enables one to experience valued lifestyles, housing policies that foster social inclusion can boost overall well-being.

Clapham's paper is effective in identifying the channels through which a focus on well-being could shape the development of housing policy, but does so primarily in the context of those lacking adequate housing. This paper seeks to build on his pioneering effort by determining those aspects of housing that contribute to well-being in Korea and can thus provide guidance in developing housing policy in Korea. The next section reviews the literature on housing and happiness and identifies expected outcomes. Section III describes the data and specific variables evaluated, as well as the methodology employed to analyze the data. Section IV delineates the empirical findings, and the final section attempts to draw conclusions for Korean housing policy in contradistinction to Western housing policy.

II. Literature Review

The four categories identified by Clapham overlap and interact in complex ways as the physical object that is a residence serves as a focal point for disparate functions and meanings (Bourdieu 1984, Clapham 2005, Cooper Marcus 2006, Karsten 2007, Stone 1993). For instance, the location of a housing unit might contribute both to identity and self-esteem as

well as social inclusion. Thus, while it may be difficult to identify direct causal relationships between housing characteristics and the channel through which they do or do not contribute to SWB, it is possible to identify causal relationships between housing characteristics and SWB as well as the possible channels through which that relationship emerges. To this end, this section illustrates how three variables available in the data set used (tenure, size, and type) may positively impact SWB. That is, we try to identify how these concrete variables might affect SWB through Clapham's framework.

1. Tenure

In general, studies show that homeowners are more satisfied with their housing situation than tenants (e.g., Diaz-Serrano 2009, Elsinga & Hoekstra 2005). Tenure can be expected to influence SWB primarily through personal control.

Homeownership is widely associated with higher levels of personal control (Stone 1993). Under existing law, the property rights associated with homeownership typically allow more freedom to alter, use, alienate, destroy, exclude, and exchange than those rights associated with renters (Kreuckeberg 1995, Stone 1993). This control is reflected in the greater likelihood that homeowners will invest in maintaining and improving their homes, will be involved in local affairs, and will have

higher environmental consciousness (Dietz & Haurin 2003).

Due to the large transaction costs associated with selling and buying homes, homeowners tend to be less mobile than renters (Dietz & Haurin 2003). This increased stability is associated with a number of positive impacts on SWB. Dietz and Haurin (2003), for example, cite a number of studies that associate homeownership with improved physical and mental health. Studies also suggest that housing stability beneficially impacts children, particularly in educational attainment (Aaronson 2000, Cattaneo et al. 2009).

2. Size

Increased floor area is also generally associated with increased SWB measures. Studies date back at least to Mitchell (1971), who found that the amount of space available to residents of high-density housing in Hong Kong was positively related to satisfaction. In a review of the literature, Bratt (2002) drew on overcrowding studies to suggest that reduced space diminishes well-being. More recently, Galiani et al. (2015) found similar impacts in Latin America.

The quantity of housing floor area could express itself through each of the four categories. Larger living spaces could offer more privacy for each individual and thus a stronger sense of personal control. The amount of space could also contribute to one's

self-esteem, as larger homes often reflect social status. By supplying sufficient space for social activities, larger housing units could also make it easier to foster the social relationships that provide generalized social support and facilitate participation in valued lifestyles.

3. Housing type

The third variable this paper focuses on is housing type, which can also be expressed through any of the four channels. For example, living in an independent house may convey a greater sense of personal control over one's property than living in an apartment complex, since in the former case one has more rights to alter the exterior.

A housing type can also shape one's sense of identity and self-esteem, as housing is an essential component of many individuals' ontological identity (Saunders 1990). Cooper Marcus (2006), for example, has claimed that houses serve as a "mirror of the self" for many individuals who seek to symbolically manifest their personal characteristics in the way they decorate their homes. Others make similar claims. Karsten (2007), for example, claims that urban middle class families' actively choose housing to reflect the identities they want to project.

To a lesser extent, one's type of housing may facilitate social support by increasing the proximity of family and friends, either by providing living space for them or offering

spatial proximity through density.

Finally, to the extent that a housing type is associated with a valued lifestyle, like suburbs in the US, it can also contribute to social inclusion, which is the logic underlying housing vouchers for low-income households in the US.

However, due to evolving cultural preference, the type of housing that represents a valued lifestyle is not clear. For many years, high-rise housing was perceived as dangerous and undesirable in Western countries, where it is often associated with low-income social housing (Coleman 1985, Spicker 1987, Newman 1972). Only in recent years has high-rise living become more attractive (e.g., Baxter & Lees 2009). But while suburbia has endured as the presumed norm in the West (Richards 1990), preferences differ in the East in general and in Korea in particular, where rapid urbanization drove high-rise construction (Lee & Hong 1991). Though Koreans were not initially receptive to apartment living (Lee 1971), this has changed dramatically and apartments have come to represent the aspirations of middle-class Asians, including Koreans (Doling 1999, Park & Ferrari 2011). Thus, this paper hypothesizes that living in apartments will be correlated with higher SWB.

4. Applicability of SWB measures to policy making

The inclusion of SWB measures into public policy-making is increasingly being called for

these days (IADB 2008, Stiglitz et al. 2009, European Commission 2009, OECD 2015). Being established measures in psychology and sociology, SWB measures have become increasingly prevalent in empirical economics over the past two decades. The measures have provided additional insights into the well-being effects of unemployment, absolute and relative income, health shocks, and changes in marital status. Many studies have further confirmed the validity of SWB measures and their use in statistical models when suitable techniques are applied (Sandvik et al. 1993, Diener 1994, Lepper 1998, Beegle et al. 2012, Clark & Georgellis 2013). SWB has also been identified as a useful goal criterion from a utilitarian standpoint (Layard 2006, Veenhoven 2004).

There are, however, some studies that dismiss the use of SWB as a measure of government policy, primarily from conservative think tanks like the Cato Institute. The critiques adhere primarily to questioning the empirical value of SWB. Wilkinson (2007), for instance, argues that SWB represents a cultural moving target rather than a simple empirical phenomenon. Johns and Ormerod (2007) similarly argue that happiness measures are an insensitive measure of welfare over time because people adapt to their conditions, resulting in such measures containing little information. However, two counterarguments are available. First, in the context of the fixed effects regressions here, such personal adaptability is controlled for and effects are determined through substantive changes in

people's lives. Second, even if SWB represents a moving target, this can function like a relative poverty measure that continually orients government policy to substantive improvements in quality of life (Iceland 2006).

The other objection is that government targeting of SWB measures restricts freedom of choice. Frey (2011), for instance, argues social planners will manipulate SWB indicators, making it impossible to maximize policy on such an indicator. Johns and Ormerod (2007) extend this argument to claim that using such target measures to set policy restricts free choice. However, adopting any measure, including GDP, restricts some choices in favor of others (Harvey 2003, Sen 1999). As trends in the measurement of well-being are moving away from one-dimensional monetary measures and towards multidimensional indicators, overall satisfaction with one's life serves as an aggregate measure of a multidimensional evaluation of an individual's well-being. Therefore, SWB measures represent useful complements to traditional measures to inform policy makers.

III. Methodology

1. Data and variables

Annual data for our analysis comes from the Korean Labor and Income Panel Study (KLIPS) for the years 2000 to 2012. KLIPS is a nationally representative longitudinal study of urban Korean households, modeled after the US

Table 1. Distribution of Life Satisfaction

Response	# of obs	Percentage
1 (very dissatisfied)	887	0.65
2 (dissatisfied)	11,226	8.27
3 (neither satisfied nor dissatisfied)	75,820	55.86
4 (satisfied)	47,068	34.68
5 (very satisfied)	728	0.54
Total	135,729	100
Mean	3.262	
S.D.	0.639	

Note 1. KLIPS 2000-2012.

National Longitudinal Surveys (NLS) and Panel Study of Income Dynamics (PSID). It is conducted annually by the Korea Labor Institute, a government-sponsored research institute. The study started in 1998 with 5,000 households and 13,783 individuals aged 15 years or older. KLIPS collects a wide range of information on individuals and the households in which they reside. In addition, it offers broad information on various SWB indicators. The data quality KLIPS provides satisfies the highest international standards. The panel maintains 76.5% of the original sample throughout all waves, which is comparable to the PSID (78%); the German Socio-economic Panel (GSOEP, 79%); and the British Household Panel Survey (BHPS, 77%). Kang (2010) shows that potential bias produced by attrition is negligible in KLIPS data.

For this study we use the years 2000 to 2012. We exclude 1998 and 1999 since household asset information has only been comprehensively collected since 2000. This

yields a total number of 20,400 individuals and 135,729 person-year observations with complete information on the variables needed for the following analysis.

In KLIPS's individual questionnaire, the question on overall life satisfaction is preceded by a set of detailed questions on satisfaction with different aspects of life: household income, leisure life, housing environment, family relations, relations with relatives, and social relations. The exact wording of the overall life satisfaction question is then: "*Overall, how satisfied or dissatisfied are you with your life?*" Individuals are asked to respond according to a scale ranging from 1 ("very satisfied") to 5 ("very dissatisfied"). For the sake of easier interpretation, we recoded the scale so that higher numbers correspond to higher levels of satisfaction.

Table 1 presents the distribution of life satisfaction responses across the sample. In fact, it is rather a 3-point scale than a 5-point scale given that the frequencies with which

Table 2. Average life satisfaction by type of housing

Type of residence	Ownership/Tenancy			
	Own	Jeon-se	Wol-se	Other
Detached, single-family house	<i>3.24</i>	<i>3.05</i>	<i>2.85</i>	<i>3.05</i>
	(0.62)	(0.62)	(0.64)	(0.70)
	[26268]	[7747]	[4870]	[2144]
Apartment complex	<i>3.44</i>	<i>3.40</i>	<i>3.08</i>	<i>3.23</i>
	(0.59)	(0.62)	(0.65)	(0.69)
	[42399]	[12469]	[4011]	[2014]
Tenements	<i>3.18</i>	<i>3.20</i>	<i>3.06</i>	<i>3.24</i>
	(0.61)	(0.62)	(0.65)	(0.64)
	[8833]	[3220]	[835]	[475]
Multifamily building	<i>3.20</i>	<i>3.13</i>	<i>2.92</i>	<i>3.08</i>
	(0.62)	(0.64)	(0.65)	(0.72)
	[4408]	[6475]	[3395]	[440]
Other	<i>3.36</i>	<i>3.18</i>	<i>3.05</i>	<i>3.17</i>
	(0.63)	(0.63)	(0.65)	(0.73)
	[2140]	[1417]	[1292]	[877]

Note 1. KLIPS 2000-2012.

Note 2. Estimation sample (N=135,729).

Note 3. Life satisfaction means in italics, standard deviations in parentheses, and number of observations per cell in brackets.

Koreans tick the boundary categories '1' and '5' are minuscule. Out of ten Koreans, approximately one reports to be dissatisfied, three to be satisfied, and six to be neither satisfied nor dissatisfied with their lives. Mean satisfaction is 3.26 and the standard deviation is 0.639.

Drawing from KLIPS's rich household questionnaire, three key housing-related variables are employed in our analysis. First, the tenure status of the household is recorded. Households are grouped into the following four categories: own house; rent (deposit only, 'jeon-se'); rent (monthly, 'wol-se'); and other contract. Note that 'ban-jeon-se' (wol-se with

large deposits) is counted as wol-se but constitutes only a small fraction of households during this time period. Second, the type of residence groups households into one of the following five categories: apartment complex; detached, single-family house; tenements (>660m² and >4 floors); multifamily buildings (<660m² and <5 floors); and other. Third, the size of usable living space in square meters. These have been divided into categories that reflect common sizing in Korea.

Table 2 shows average life satisfaction by type of housing. Individuals living in apartment complexes report the highest levels of satisfaction. In addition, ownership and jeon-se

seem to be related to higher life satisfaction. Least happy are people living in detached, single-family houses on a *wol-se* basis. While the matrix in Table 2 already sheds light on the relationship between housing and happiness in Korea, housing differences might just be a proxy for wealth differences of households. Thus, in the following it will be crucial to control for the net asset position of the household to see whether housing is related to happiness beyond the wealth channel, which is generally overlooked in related studies.

2. Methodology

We use a standard empirical strategy to isolate the determinants of life satisfaction. This approach can be considered a mixture of stated and revealed preferences. Contrary to many previous housing studies that employ hedonic pricing models to determine the relative valuation of features of housing from the price paid, the strategy employed here seeks to identify the average contribution of a given housing characteristic on individual life satisfaction, controlling for an array of standard factors affecting individual well-being, such as income, wealth, and marital status. This stated or self-reported level of life satisfaction functions in lieu of prices in the regressions to reveal those characteristics of housing that lead to SWB.

Having multiple waves per individual at our disposal, we can exploit the dynamic nature of

the KLIPS panel data set in order to estimate the relationship between housing and life satisfaction. Subjective well-being measures are known to have a strong time-persistent component. These individual fixed effects can be largely attributed to time-invariant differences in personality traits (Lykken & Tellegen, 1996), but also measurement error in the behavior of reporting household wealth. Since not controlling for these differences can lead to biased results, it is essential to use fixed effects estimators when working with SWB measures. Linear fixed effects (FE) estimators are commonly used in the SWB literature and yield consistent results (Ferrer-i-Carbonell & Frijters 2004, Rudolf 2014). In order to see the importance of panel estimates, we will compare them to least squares estimates after pooling all waves.

Life satisfaction of individual i in year t is denoted v_{it} , and we use the following basic empirical model to describe how it is determined:

$$S_{it} = O_{it}\alpha + R'_{it}\beta + A'_{it}\gamma + X'_{it}\delta + v_t + u_{it} \quad (1)$$

$$\begin{matrix} i = 1, \dots, N \\ t = 1, \dots, T \end{matrix}$$

O_{it} is a vector of ownership/ tenancy-related dummies, R_{it} a vector controlling for type of residence, and A_{it} a vector of size dummies. For comparison, this vector is replaced by continuous variables for size in regressions 2, 4, and 6. $\ln(sqm)$ and $\ln(sqm)^2$ are employed to ensure that the resulting

Table 3. Housing and life satisfaction - OLS estimates

Dependent Variable: Life satisfaction						
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Type of residence</i>						
Apartment complex	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
Single-family house	-0.115*** (0.00398)	-0.106*** (0.00402)	-0.0964*** (0.00411)	-0.101*** (0.00402)	-0.0924*** (0.00411)	-0.0984*** (0.00401)
Tenement	-0.0917*** (0.00561)	-0.0754*** (0.00560)	-0.0652*** (0.00565)	-0.0821*** (0.00560)	-0.0725*** (0.00566)	-0.0789*** (0.00561)
Multifamily building	-0.125*** (0.00565)	-0.0869*** (0.00570)	-0.0751*** (0.00574)	-0.0726*** (0.00574)	-0.0631*** (0.00578)	-0.0703*** (0.00572)
Other	-0.0786*** (0.00831)	-0.0637*** (0.00843)	-0.0535*** (0.00837)	-0.0479*** (0.00847)	-0.0389*** (0.00843)	-0.0441*** (0.00839)
<i>Size</i>						
Ln sqm		0.312*** (0.0308)		0.255*** (0.0305)		
Ln sqm squared		-0.0161*** (0.00345)		-0.0119*** (0.00341)		
Ln sqm per capita						0.378*** (0.0221)
Ln sqm per capita squared						-0.0334*** (0.00319)
Sqm 1-39			<i>Reference</i>		<i>Reference</i>	
Sqm 40-59			0.0943*** (0.00726)		0.0745*** (0.00728)	
Sqm 60-84			0.176*** (0.00722)		0.144*** (0.00732)	
Sqm 85-134			0.264*** (0.00758)		0.225*** (0.00775)	
Sqm 135-164			0.345*** (0.0105)		0.304*** (0.0106)	
Sqm 165+			0.317*** (0.00964)		0.274*** (0.00981)	
<i>Ownership/ Tenancy</i>						
Own house				<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
Jeon-se				-0.0317*** (0.00428)	-0.0306*** (0.00428)	-0.0314*** (0.00428)
Wol-se				-0.141*** (0.00635)	-0.140*** (0.00635)	-0.139*** (0.00632)
Other contract				-0.00257 (0.00898)	-0.00689 (0.00895)	-0.00606 (0.00894)

(cont'd)

(Table 3 cont'd)

<i>Household's net asset position (deciles)</i>						
1st decile	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
2nd decile	-0.0438*** (0.00732)	-0.0190*** (0.00725)	-0.0149** (0.00726)	-0.0139* (0.00721)	-0.00971 (0.00722)	-0.0120* (0.00720)
3rd decile	-0.120*** (0.00751)	-0.0674*** (0.00747)	-0.0639*** (0.00747)	-0.0526*** (0.00753)	-0.0492*** (0.00753)	-0.0527*** (0.00751)
4th decile	-0.124*** (0.00770)	-0.0574*** (0.00775)	-0.0513*** (0.00775)	-0.0347*** (0.00786)	-0.0298*** (0.00785)	-0.0371*** (0.00782)
5th decile	-0.0340*** (0.00738)	0.00718 (0.00739)	0.0184** (0.00743)	0.00828 (0.00745)	0.0184** (0.00749)	0.00810 (0.00743)
6th decile	0.0202*** (0.00715)	0.0432*** (0.00713)	0.0505*** (0.00715)	0.0355*** (0.00714)	0.0426*** (0.00716)	0.0363*** (0.00711)
7th decile	0.0893*** (0.00712)	0.0944*** (0.00707)	0.0973*** (0.00709)	0.0841*** (0.00705)	0.0875*** (0.00707)	0.0847*** (0.00704)
8th decile	0.144*** (0.00702)	0.135*** (0.00695)	0.134*** (0.00696)	0.123*** (0.00694)	0.123*** (0.00694)	0.123*** (0.00693)
9th decile	0.198*** (0.00702)	0.170*** (0.00697)	0.169*** (0.00698)	0.159*** (0.00696)	0.158*** (0.00696)	0.158*** (0.00695)
10th decile	0.286*** (0.00720)	0.221*** (0.00731)	0.227*** (0.00732)	0.211*** (0.00730)	0.216*** (0.00731)	0.212*** (0.00725)
<i>Individual and household characteristics</i>						
Ln hh income per capita	0.126*** (0.00204)	0.117*** (0.00202)	0.117*** (0.00202)	0.117*** (0.00202)	0.116*** (0.00202)	0.117*** (0.00201)
Ln individual labor earnings	0.0179*** (0.000715)	0.0188*** (0.000711)	0.0188*** (0.000711)	0.0188*** (0.000709)	0.0189*** (0.000709)	0.0184*** (0.000708)
Household size	-0.0152*** (0.00177)	-0.0315*** (0.00180)	-0.0313*** (0.00179)	-0.0329*** (0.00180)	-0.0326*** (0.00180)	0.0173*** (0.00203)
Number of children in hh	0.0174*** (0.00258)	0.0218*** (0.00256)	0.0210*** (0.00256)	0.0229*** (0.00255)	0.0220*** (0.00255)	0.0213*** (0.00255)
Constant	2.612*** (0.0152)	1.660*** (0.0700)	2.518*** (0.0159)	1.857*** (0.0696)	2.575*** (0.0161)	1.718*** (0.0423)
Observations	135,729	135,729	135,729	135,729	135,729	135,729
Individuals	20,400	20,400	20,400	20,400	20,400	20,400
Adj. R2	0.193	0.206	0.206	0.209	0.210	0.210

Note 1. OLS estimation.

Note 2. Further controls not displayed here include year dummies, provincial dummies, and 5-year age cohort dummies.

Note 3. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

coefficients are large enough to be meaningful. controls such as variables related to age, Other individual or household characteristics are marital status, number of children, individual grouped in vector X_{it} , which includes standard earnings, household income and wealth,

Table 4. Housing and life satisfaction – Fixed effects estimates

Dependent Variable: Life satisfaction						
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Type of residence</i>						
Apartment complex	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
Single-family house	-0.0834*** (0.00694)	-0.0735*** (0.00698)	-0.0692*** (0.00704)	-0.0669*** (0.00701)	-0.0631*** (0.00707)	-0.0655*** (0.00700)
Tenement	-0.0522*** (0.00794)	-0.0427*** (0.00795)	-0.0398*** (0.00798)	-0.0416*** (0.00795)	-0.0392*** (0.00798)	-0.0409*** (0.00795)
Multifamily building	-0.0723*** (0.00757)	-0.0542*** (0.00764)	-0.0502*** (0.00770)	-0.0465*** (0.00769)	-0.0433*** (0.00774)	-0.0456*** (0.00768)
Other	-0.0786*** (0.0103)	-0.0635*** (0.0104)	-0.0616*** (0.0104)	-0.0526*** (0.0105)	-0.0510*** (0.0105)	-0.0516*** (0.0104)
<i>Size</i>						
Ln sqm		0.181*** (0.0315)		0.163*** (0.0316)		
Ln sqm squared		-0.0110*** (0.00362)		-0.0101*** (0.00362)		
Ln sqm per capita						0.233*** (0.0227)
Ln sqm per capita squared						-0.0233*** (0.00336)
Sqm 1-39			<i>Reference</i>		<i>Reference</i>	
Sqm 40-59			0.0739*** (0.00790)		0.0674*** (0.00793)	
Sqm 60-84			0.0971*** (0.00833)		0.0852*** (0.00841)	
Sqm 85-134			0.144*** (0.00899)		0.127*** (0.00913)	
Sqm 135-164			0.191*** (0.0136)		0.173*** (0.0137)	
Sqm 165+			0.162*** (0.0123)		0.143*** (0.0124)	
<i>Ownership/ Tenancy</i>						
Own house				<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
Jeon-se				-0.0394*** (0.00581)	-0.0389*** (0.00582)	-0.0390*** (0.00580)
Wol-se				-0.0832*** (0.00833)	-0.0827*** (0.00834)	-0.0829*** (0.00831)
Other contract				-0.0454*** (0.0103)	-0.0483*** (0.0103)	-0.0465*** (0.0103)

(cont'd)

(Table 4 cont'd)

<i>Household's net asset position (deciles)</i>						
1st decile	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>	<i>Reference</i>
2nd decile	0.00802 (0.00752)	0.0125* (0.00752)	0.0126* (0.00752)	0.0161** (0.00753)	0.0162** (0.00753)	0.0163** (0.00752)
3rd decile	-0.0128 (0.00790)	-0.00267 (0.00791)	-0.00224 (0.00791)	0.00650 (0.00798)	0.00700 (0.00798)	0.00644 (0.00797)
4th decile	-0.00373 (0.00828)	0.00963 (0.00831)	0.0108 (0.00831)	0.0224*** (0.00840)	0.0234*** (0.00841)	0.0216*** (0.00840)
5th decile	0.0248*** (0.00815)	0.0331*** (0.00816)	0.0347*** (0.00818)	0.0408*** (0.00826)	0.0419*** (0.00827)	0.0404*** (0.00825)
6th decile	0.0234*** (0.00805)	0.0284*** (0.00805)	0.0296*** (0.00806)	0.0323*** (0.00810)	0.0332*** (0.00812)	0.0325*** (0.00810)
7th decile	0.0490*** (0.00803)	0.0500*** (0.00802)	0.0511*** (0.00803)	0.0519*** (0.00805)	0.0528*** (0.00805)	0.0521*** (0.00804)
8th decile	0.0699*** (0.00809)	0.0689*** (0.00808)	0.0692*** (0.00808)	0.0686*** (0.00809)	0.0688*** (0.00809)	0.0689*** (0.00808)
9th decile	0.0731*** (0.00829)	0.0689*** (0.00829)	0.0692*** (0.00829)	0.0672*** (0.00829)	0.0673*** (0.00829)	0.0673*** (0.00829)
10th decile	0.0963*** (0.00923)	0.0858*** (0.00925)	0.0870*** (0.00925)	0.0820*** (0.00926)	0.0829*** (0.00926)	0.0826*** (0.00925)
<i>Individual and household characteristics</i>						
Ln hh income per capita	0.0556*** (0.00205)	0.0545*** (0.00205)	0.0546*** (0.00205)	0.0542*** (0.00205)	0.0544*** (0.00205)	0.0543*** (0.00205)
Ln individual labor earnings	0.0202*** (0.00107)	0.0206*** (0.00107)	0.0206*** (0.00107)	0.0207*** (0.00107)	0.0207*** (0.00107)	0.0205*** (0.00107)
Household size	-0.0236*** (0.00282)	-0.0315*** (0.00285)	-0.0314*** (0.00285)	-0.0347*** (0.00288)	-0.0346*** (0.00287)	-0.00914*** (0.00315)
Number of children in hh	0.00447 (0.00343)	0.00544 (0.00343)	0.00524 (0.00343)	0.00615* (0.00343)	0.00598* (0.00343)	0.00615* (0.00343)
Constant	2.752*** (0.0300)	2.214*** (0.0746)	2.679*** (0.0305)	2.294*** (0.0751)	2.712*** (0.0307)	2.222*** (0.0506)
Observations	135,729	135,729	135,729	135,729	135,729	135,729
Individuals	20,400	20,400	20,400	20,400	20,400	20,400

Note 1. Fixed effects estimation.

Note 2. Further controls not displayed here include year dummies, provincial dummies, and 5-year age cohort dummies.

Note 3. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

province of residence. (For a detailed description of all variables used in this study, see Table A1 in the appendix.) Finally, v_t represents time effects. Whether we can estimate equation (1) with least squares depends on the assumptions we make about the error term. Certainly, ordinary least squares

(OLS) estimation requires an i.i.d. error term u_{it} .

There is, however, good reason to believe that the error term of SWB models is non-random, rather that u_{it} consists of an unobserved individual fixed effect, μ_i , and a random component, ϵ_{it} .

$$u_{it} = \mu_i + \epsilon_{it} \quad (2)$$

Intuitively, μ_i corresponds to individual personality traits that vary across people and are largely persistent over time. Since personality traits are obviously related to many forms of behavior, they are usually correlated with the observed characteristics that enter the model in equation (1) on the right side. For example, it has been found that happier people are more likely to get married and also be more successful on the job. Therefore, unbiased estimation of SWB models requires a fixed effects estimator to take care of individual fixed effects.

IV. Empirical results

The model outlined in the last section was estimated using both OLS and FE techniques. In the following we will discuss the housing-related determinants of life satisfaction by topic: type of residence, size of residence, and ownership/tenancy. We will directly compare OLS results in Table 3 with FE results in Table 4.

1. Type of residence

Both OLS and FE results suggests that the type of residence matters for happiness. *Ceteris paribus*, living in an apartment complex is related to a significantly higher level of life satisfaction as compared to all other types of residence. Following our preferred specification in column 5 of Table 4, moving from a detached, single-family house into an apartment increases life satisfaction by 0.0631 or 10 percent of a standard deviation in life satisfaction. Note that all results control for household income and total household net assets. Thus, the preference of apartments is not due to asset effects, but might instead be related to self-esteem, inclusion, or social support, which might be more favorable in the case of apartments.

It is interesting to note that the happiness gap between different types of housing reduced from OLS to FE estimates. This usually indicates that unobserved heterogeneity plays a role. This heterogeneity might be due to measurement error in the variable total household assets, i.e., richer household tend to underreport their true level of wealth.

Among the other variables included in the model, happiness is further positively related to higher household wealth and incomes and to a higher individual contribution to household income through one's labor earnings.

2. Size of residence

Size effects are added to the models in

columns 2 to 6. In column 2 and 4, residence size is measured in terms of $\ln(sq\text{m})$ with a squared term $\ln(sq\text{m})^2$. The inclusion of size effects does slightly lower the absolute magnitude of the coefficients for type of residence. However, it does not change their highly significant effects. The coefficient for $\ln(sq\text{m})$ is about twice as high in OLS models compared to FE models. Again, this might indicate tendencies of richer households to underreport total household wealth. The positive $\ln(sq\text{m})$ and negative $\ln(sq\text{m})^2$ coefficients in column 4 of Table 4 indicate that SWB is positive with diminishing returns and a peak value, implying a threshold effect after which increasing size reduces SWB gains. Similar results are observed in column 6 for the effect of $\ln(sq\text{m per capita})$. Instead of using $\ln(sq\text{m})$, columns 3 and 5 use a set of size dummies to account for nonlinear effects and to mitigate potential bias caused by outliers. Again, we find that size matters: doubling size from 60–85m² to 135–164m² leads to increased life satisfaction by 0.0878 or approximately 14 percent of a standard deviation in life satisfaction. It is important to note that the greatest increase in SWB occurs in the move to residences from those smaller than 40m² and that satisfaction peaks in apartments between 135m² and 164m², again indicating a threshold effect. Other forms of housing, like self-constructed housing and SROs are associated with decreases in SWB.

The results for household size and number of children reinforce these findings. Since the

regressions control for household size, the weak positive results for number of children captures the satisfaction of having children in general and abstracts from the space they consume. Children's impact on space is incorporated in the household size variable. And indeed, throughout the regression models increases in household size are associated with lower levels of satisfaction. However, the sharp drop in the size of this coefficient in model 6, which measures the effect of space per person, suggest that the coefficients in other models reflect household crowding.

3. Ownership/Tenancy¹

Finally, the effect of ownership/tenancy is included in the models presented in columns 4 through 6. Living in one's own house enhances life satisfaction the most, even if total household wealth and household size are controlled for. (Note that all housing-related assets and liabilities are included in the household's net asset position.) Jeon-se follows in second place, and wol-se in third. Note that after the inclusion of ownership/tenancy controls, both type of residence and size effects have slightly dropped, indicating for example that ownership is positively correlated with size of housing. Moving from monthly rent (wol-se) to ownership increases life satisfaction by an average of 0.0827 units, or 13 percent of a standard deviation in life satisfaction.

V. Conclusion

In many ways, none of the following findings will surprise those familiar with the Korean housing market. However, they do provide strong empirical evidence that intuitive and anecdotal beliefs about housing and happiness in Korea are correct and meaningful.

This study has identified three targets for Korean housing policy, *if that policy is to target subjective well-being*. The first is homeownership. Controlling for household assets, it is evident that Korean households are happier if they own their home. This is followed by jeon-se and wol-se, which represent progressively weaker forms of property rights. That stronger property rights are associated with higher levels of happiness suggests that personal control is an important component of well-being. Thus, housing policies that foster homeownership will increase well-being.

Second, the study found that larger living quarters contribute to well-being, but only up to a point. After controlling for this effect, the results indicate a progressive increase in happiness up to the 135-164m² range, after which the impact diminishes. It is important to note that though 135-164m² represents more space than the existing average in Korea, there does appear to be an identifiable maximum necessary for cultivating well-being. Thus, housing policy need not strive to encourage the construction of ever larger housing units.

Indeed, it may instead set this range as a long term ideal target for future redevelopment. However, two factors demand more modest short term goals and reinforce the current standard of 85m². First, as the largest increases in SWB occur when one moves to any unit larger than 40m², the findings here suggest that the largest immediate gains in happiness could be realized through the production of smaller units. Second, as roughly 40 percent of housing units are smaller than the current standard and reflect the range in which the largest gains in SWB are achieved, the current standard remains reasonable.

Finally, there is a clear preference for apartment housing units. Even households that moved from detached, single-family houses were happier. It should be noted that the data has no measure of housing quality, so if single-family houses are of lower quality in general, which is plausible in some urban settings, this may account for some or all of the lack of satisfaction with this housing type. Thus, in addition to a focus on apartment construction, housing policy may also need to consider housing quality improvements.

This analysis requires an important caveat: these recommendations hold only if one abstracts from consideration of available resources. Though the analysis may have identified several ways in which happiness can be increased, it does not indicate how to maximize the investment of limited resources in the context of changing demographic trends. This is obvious in the case of constructing

large apartments, which require spatial and financial resources that may not be available. Instead, limited resources may perhaps be best invested in improving housing quality or building a greater number of small and medium size residences. Following Bentham's dictate, this study can only indicate what how certain forms of housing can make individuals happy, but not how to create the greatest happiness for the greatest number.

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Appendix

Table A1: Description of Variables

Variable	Characteristic
<i>Individual characteristics</i>	
Life satisfaction	Overall life satisfaction; ordinal scale from "1" (very dissatisfied) to "5" (very satisfied)
Age	Age in years (in models 5-year age cohort dummies used)
Marital status	Dummy variables for "never married", "married", "separated", "divorced", "widowed".
<i>Household characteristics</i>	
No of child in hh	Number of children of respective couple aged 0 to 30, economically dependent and living in the household
Ln hh income per capita	Ln real monthly household income (in KRW10,000 of 2005) divided by household size; provincial CPIs used.
Household's net asset position (decile dummies)	Total household assets minus total household liabilities. Models use decile dummies. Deciles are calculated by year.
Provincial dummies	Dummies of residence for all current 16 provinces except for the island of Jeju (not sampled)
Year dummies	Dummies for year of interview (1998 to 2012)
<i>Type of residence</i>	
Apartment complex	Dummy="1" if household lives in apartment complex; "0" otherwise.
Detached, single family house	Dummy="1" if household lives in detached, single-family house; "0" otherwise.
Tenement house	Dummy="1" if household lives in tenement house (including 'villa' type); "0" otherwise. (>660m ² and >4 floors)
Multifamily building	Dummy="1" if household lives in multiplex house; "0" otherwise. (<660m ² and <5 floors)
Other	Dummy="1" if household lives in other type of residence; "0" otherwise.
<i>Size of residence</i>	
Ln sqm	Size of residence measured in Ln square meters.
Ln sqm per capita	"Ln sqm" divided by household size.
<i>Ownership/Tenancy</i>	
Own house	Dummy="1" if household lives in own house; "0" otherwise.
Jeon-se	Dummy="1" if household lives on monthly rent contract (월세); "0" otherwise. This category does also include the newer phenomenon of Ban-Jeon-se (반전세), the combination of traditional Jeon-se and Wol-se elements.
Wol-se	Dummy="1" if household lives on monthly rent contract (월세); "0" otherwise.