Cultural Norms and Tenure Choice:

Investigating the High Homeownership Rate in Taiwan

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ABSTRACT

From a cross-country comparison, Taiwan has one of the highest homeownership rates among developed countries. This is not economically intuitive since Taiwan's residents are not known for their wealth and income. We develop a theoretical model that includes the cultural norms as one of the factors that determine tenure choice, and use it to examine empirically with Taiwanese housing survey data. We define a cultural norm for Taiwan's homeowners as "an individual has a responsibility to own his/her house within life cycle," a practice that is often seen within ethnic Chinese. The empirical evidence shows that Taiwan's residents are heavily influenced by the aforementioned "cultural norms" or "neighborhood externalities" over their tenure choices.

Also shown in empirical results is that family heads with relatively low education backgrounds are more affected by cultural norms in their tenure choices, after controlling for other economic and demographic variables. We also find that norm effects become smaller when real estate prices become higher. Furthermore, we find that younger family heads are more attached to this cultural-norm effect, and have a higher homeownership rate than that predicted by the theory of life-cycle consumption. This exceptional high homeownership among youths, along with the generally existing norm effects to others, may partially explain Taiwan's high homeownership rate.

Keywords: Cultural Norms, Tenure Choice, Homeownership.

JEL Classification: C51，R21

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I. Introduction

Most real estate economics literature agrees that those economic characteristics found to be highly related to tenure choice are individuals' wealth, the level and composition of income, the level and volatility of housing prices, government subsidy and taxation factors, and the availability and the price of mortgage (e.g., Henderson and Ioannides, 1983). Other non-economic factors such as education levels, attitudes toward risk, and preferences over urban or rural areas are also considered to be possible factors that affect homeownership. So far, there has been only rare discussion regarding social capitals or externalities, such as ethnic backgrounds or cultural norms, in housing tenure choice.

Recently researchers have begun to look at the heterogeneity of homeownership rates among ethnic groups. Krivo (1995) finds that the role of immigrant status may be one of the key factors in explaining the relatively low homeownership for Hispanic households in the U.S. In another research, Coulson (1999) provides an observation that Asian-Americans have a lower homeownership rates than whites do because of their immigrant status and their tendency of choosing residences in the high living cost areas. Painter, Yang and Yu (2001), however, find an opposite result; showing that Asian immigrants, especially the Chinese, have an overall higher homeownership rate than do other ethnic origins[1]. Following that previous research, Painter, Yang and Yu (2003, 2004) further confirm that Chinese households are more likely to own homes than whites and other Asians are, after controlling for economic and demographic factors. They suspect that the peer Chinese cultural

[1] The key difference between Painter et al. (2001) and Coulson (1999) is that the former considers the household mobility, and the latter does not.

influence in homeownership may partially contribute to this higher homeownership rate.

In a more recent study, Yu (2006) finds that Taiwanese immigrants have the highest homeownership attainment among all ethnic Chinese subgroups in the U.S. These Taiwanese immigrants, who have contributed to the surge in homeownership rates during the 1980s, are found to be young, highly educated, and those of new immigrant households with incomes lower than the median level. Yu's (2006) findings may represent an aggregate effect of a large influx of well-off new Taiwanese families, young immigrants with abundant family supports, and cultural affinity for homeownership.

There are two competing, not necessary mutually exclusive, economic rationales available to describe immigrants' heterogeneous tenure behavior in their new settled homeland; one is the "assimilation" theory, and the other is the "norm effects." The traditional assimilation theory proposes that the process of assimilation, which usually involves with learning, sharing and adapting to alternate, different cultures, values and lifestyles (Gordon, 1964), lead immigrants to a reduction in ethnic differences, and eventually to a conformity to the mainstream cultural standard (Alba and Nee, 1997). Therefore, if assimilation applies, the heterogeneity of homeownership attainment among ethnic groups should be a temporary phenomenon. Using the "English proficiency" as a proxy of assimilation, however, Yu (2006) finds that "assimilation" does not play a significant role in Taiwanese Americans homeownership attainment.

Some researchers suggest that the traditional assimilation theory may not always hold; so they develop the notion of "segmented assimilation" (Zhou 1997; Rumbaut 2000). The segmented assimilation denotes that some immigrants experience their distinctive adaptation processes and may develop a behavioral pattern of perpetual ethnic differences to native-born counterparts. Borjas (2002) also shows that the homeownership gap between native and immigrant households has widened substantially over the past decades.

On the other hand, we can also explain this heterogeneous immigrant's tenure behavior as caused by the social externality, or the so-called "norm effect."[2] The norm effect denotes a phenomenon the average behavior in certain group influences the behavior of the individuals that comprise the group.[3] When the reference group is set to be the total population in a society, the "norm effects" is agreeable with the "assimilation theory." An agent from a specific ethnic subgroup would conduct similar behavior that prevails over the whole population. When the reference group is set, rather, to be an ethnic subgroup, the "norm effects" indicate that an individual conducts a behavior that is consistent with the common value only for that ethnic subgroup; and this is similar to the concept of "segmented assimilation."

From U.S. empirical studies thus far, we find most evidences showing that the ethnic Chinese households have the highest homeownership attainment among all ethnic groups; and Taiwanese is the highest among all ethnic Chinese subgroups in recent years. It gives us a legitimate motive to analyze and observe empirically what the home-owning behavior is for the compatriotic Taiwanese households that reside in Taiwan. We like to determine whether the high homeownership rate solely belongs to immigrant Taiwanese societies, or belongs to the Taiwanese cultural heritage.

Taiwan has a very high homeownership rate among all developed countries.[4] According to the *Housing Survey* in Taiwan, the homeownership rate rises from 65.4% in

[2] The social externality may also be referred to "social norms", "peer influences", "neighborhood effects", "conformity", "imitation", "contagion", "epidemics", "bandwagons", "herd behavior", "social interactions", or "interdependent preferences" in somewhat different contexts. See Manski (1993).

[3] Duflo and Saez (2002) suggest two reasons why peers play a role in an individual's decision making. First, people may lack the necessary information in making a decision. The information obtained from peers may be an important reference for someone's decision making. Secondly, decision may be influenced by social norms, and people learn about the proper behavior, by observing people in the same reference group.

[4] Among ethnic Chinese societies, Singapore has the highest homeownership rate. According to the survey data from Singapore Census of Population, Singaporean homeownership rate is around 93% in 2002. The homeownership rate in U.S. is about 65% from 1965 to 2003, and about 40% and 60% in German and Japan in 1993 (See Börsch-Supan, Heiss and Seko 2001). Spain has the highest homeownership attainment among all European countries, about 82.9% in 2003, and yet it is still below the homeownership rate in Taiwan.

1976 to 86.11% in 2004. Taiwan's homeownership rate has shown a steadily increasing trend, allowing some small fluctuations due to business cycles over this period (See Figure 1). Hsueh and Chen (1999) provide two possible explanations, but without support of evidence, toward Taiwan's high homeownership: the first is the Chinese culture norm, and the second is the long standing subsidy policies employed by Taiwan's government for the first-time home buyers (e.g. preferential mortgage interest rates and tax deduction on mortgage interest).

Ninety-eight percent of Taiwanese residents are traced as ethnic Chinese, the rest 2% are aboriginal Taiwanese. Among that 98% of ethnic Chinese, about 15% moved in from China around 1949 during the communist war. The remaining 83% are immigrants before 1949, tracing back about 400 years, from Chinese southern coastal provinces (mostly Fu-chien and Kuan-tong). Most Taiwanese residents thus inherit traditional Chinese cultural norms. One of the important Chinese cultural norms is "five scholars pass the examination", which means that an adult man is measured up to reach his prime when he finally owns a house, a wife, a son, a car, and abundant wealth. In addition, it is also a Chinese way to show that they have planted their roots on the earth through attaining a homeownership. It is almost a culturally mandatory responsibility for family heads in Taiwan to possess their own houses within a life cycle, regardless of their initial wealth.

From a life-cycle-consumption or a portfolio standpoint, most economists agree with that an individual is more likely to own a house as he/she grows older and accumulates greater wealth. We find a very distinctive difference, however, from the evidence of Taiwan (see Table 1) that 80% of family heads with age 30 and below possess their own houses over 1986 to 1993.[5] This high homeownership rate among youths is even greater than that for some older age groups. In addition, opposite to what most people believe, those family heads in the lowest education or income levels do not have the lowest homeownership

[5] Yu (2006) also finds similar high homeownership rate among ethnic Taiwanese in U.S. study.

attainment. Therefore, economic and demographic characteristics alone may not be sufficient in explaining Taiwanese homeowners' behavior, locally or overseas. In this study we make an attempt to propose that the Chinese cultural norms may be a very important factor to help explaining Taiwan's high ownership rate.

So far there are still very few theoretical or empirical tenure choice models that have factored in the influences of cultural norms. If an individual is compelled by the moral burden of cultural norms towards owning a home, then his tenure choice will be less related to his/her economic characteristics. Painter et al. (2003) find that ethnic Chinese households' homeownership rate in the U.S. is 20% higher than that predicted by their economic characteristics. They conclude that this may be resulted from factors that are unmeasured in the economic data. From evidence in Taiwan and from other Chinese societies, we think the Chinese "cultural norm effects" may be one of the key factors that contribute to Taiwan's high homeownership. This norm effect may go beyond borders and times, and have a long standing effect on ethnic Chinese tenure choice worldwide.

Schelling (1969) is one of the first economists who employ the "neighborhood effects" or the "peer effects" in describing economic agents' behavior. The so-called "neighborhood effects" or "peer effects" is attained by individuals via social interactions with other agents. Sociologists think that social customs is a social capital with externality. Once a behavior pattern becomes a commonly agreeable norm, the impact of it would surpass most economic forces. Haurin, Dietz, and Weinberg (2003) find that the neighborhood's social network is stronger when homeownership rate is higher, because a homeowner generally lives in the same dwelling longer than a renter, and this greater stability helps to build and strengthen the neighborhood's social network.

Akerlof (1980) develops a model of cultural norms and use it to describe how community influences lead some people to pursue a behavior that is individually costly or

suboptimal. If there is a code of behavior as to how individuals should behave, then those who decide to ignore such norms will endanger their reputations and hence obtain disutilities. An individual's process of achieving optimization thus produces a peer-group externality that would affect others' behavior.

Following Akerlof (1980), we propose that cultural norms may affect Taiwan's individuals when conducting their tenure choice. We develop and employ an empirical tenure decsision model that includes a proxy of cultural norm, along with a collection of other economic and demographic variables. We make an attempt to use this model in providing insights and explanations regarding Taiwan's high homeownership rate. We also observe whether this cultural-norm variable interacts with other economic variables over an individual's tenure choice.

The empirical data examined in this research are from *Housing Survey* and *Survey of Family Income and Expenditure* for Taiwanese households for years of 1986 and 1993. There are two reasons that we choose the surveys from these two years. The first is that these two surveys are the most recent housing surveys that are available to us. The second is that Taiwan experienced a period of skyrocketing increase in real estate prices from 1988 to 1989. Housing price index has doubled its level from 1986 to 1993 in some areas of Taiwan. We want to observe whether an individual behaves differently before and after the real estate price has increased. To address it differently, we want to see whether the real estate price hikes would affect an individual's attitudes toward the cultural norms.

Our empirical evidences show that Taiwanese residents are heavily influenced by the traditional Chinese "cultural norms" or "neighborhood externality" in their tenure choice decisions. Those people who have relatively low education backgrounds are more affected by the norm effects, after controlling economic and demographical variables. We also find that norm effects are somewhat lessened when real estate prices become higher, reflecting

individuals' worry over the budget constraints. Young family heads are found to be more attached to this "cultural-norm effect," and have a relatively higher homeownership rate than that predicted by the theory of life-cycle consumption. This reflects another Chinese cultural custom that parents are more prone to make generous transfer payments to their young adult children for owning their house and set up family. This, along with norm effects among general people, may partially explain the high homeownership rate of Taiwanese residents.

The rest of this paper will be arranged as follows. We develop the theoretical model used in our empirical study in section 2. The details of data and variables employed in our empirical study are explained in section 3. Section 4 is the presentation of our empirical results. Finally we provide our concluding remarks in section 5.

II. Theoretical Model

In this section we develop a tenure choice model, which includes a norm variable along with a collection of economic, preference, and demographic variables; later to be used in our empirical study. In this model, we define the cultural norm as "an individual has a culturally mandatory responsibility to own his house within his life cycle." This cultural norm tenure model can be regarded as an extension to the traditional housing consumption and demand model. Follow Akerlof's (1980) social customs setting in utility function, we modify the consumption-demand model as follows. We denote x and h_C as the composite consumption and the housing consumption demand, W as the wealth level, for an individual, and $\bar{\mu}$ as the homeownership rate in one's reference group, respectively. In our model, d^R and d^C are two dummy variables for describing whether an individual follows the cultural norm, where $d^R = 0$ denotes that one follows the cultural norm (i.e. chooses to buy a house), and $d^R = 1$ denotes that one does not to follow this norm (i.e.

choose to rent a house). Furthermore, $d^C = 1$ implies that one believes a cultural norm does exist in a society, and $d^C = 0$ otherwise. The disutility resulted from defying the norm appears only when $d^R d^C = 1$ (i.e., $d^R = 1$ and $d^C = 1$ are both satisfied). Let δ be someone's disutility attributed to not following the norm, and we set $\delta = \lambda \cdot \bar{\mu}$, where $\lambda > 0$. The magnitude of λ reflects the pressure generated by the reference group; that is, the "norm effect." We can thus express the two-period utility function as a function of $(x, h_C, W, \bar{\mu}, d^R d^C)$:

$$\begin{aligned} U(x, h_C, W, \bar{\mu}, d^R d^C) &= \tilde{U}(x, h_C, W) - \delta \cdot d^R d^C \\ &= \tilde{U}(x, h_C, W) - (\lambda \bar{\mu}) \cdot d^R d^C. \end{aligned} \tag{1}$$

For simplicity, we assume that all people believe that the norm does exist in the society, i.e. $d^C = 1$ is satisfied, thus equation (1) can be rewritten as:

$$U(x, h_C, W, \bar{\mu}, d^R) = \tilde{U}(x, h_C, W) - (\lambda \bar{\mu}) \cdot d^R. \tag{1'}$$

We define the housing utilization unit costs for owner-occupiers and renters as T and τ, respectively; where $\tau < T$. We also denote P as the housing transaction price, θ as the expected return rate of housings, y_1 and y_2 as the current and future incomes, S as the savings, r and R as the interest rate and the rental price, respectively. An individual would face different budget constraints when owning or renting a house, and hence obtain different satisfactions. An individual's budget constraint for "owning a house" should be

$$\begin{aligned} y_1 &= x + Ph_C + S, \\ W &= y_2 + (1+r)S + (1+\theta)Ph_C - Th_C; \end{aligned} \tag{2}$$

and his/her budget constraint for "renting a house" should be:

$$y_1 = x + Rh_C + S,$$
$$W = y_2 + (1+r)S - \tau h_C. \tag{3}$$

To maximize one's lifetime utility, the indirect utility function of buying a house (i.e. $d^R = 0$) V^O should be a function of $(y_1, y_2, P, r, \theta, T)$, and that of renting a house (i.e. $d^R = 1$) V^R should be a function of $(y_1, y_2, R, r, \tau, \bar{\mu})$. Hence, our cultural-norm model shows that, one chooses to be an owner-occupier if $V^O \geq V^R$; otherwise, one chooses to be a tenant if $V^O < V^R$. If the cultural norm of owning house prevails within a society, an increase in homeownership rate in the peer group $\bar{\mu}$ would make a renter feel more psychological pressure (i.e. increase one's disutility), and thus increase his/her likelihood of $V^O \geq V^R$. In other words, when λ becomes larger, the peer effect (i.e. the cultural-norm effect) is higher and hence increase one's incentive of owning a house.

III. Data and Variable Definitions

The data used in this research are retrieved from the *Housing Survey* and *Survey of Family Income and Expenditure* (hereafter, SFIE), both conducted by the Directorate General of Budget, Accounting and Statistics (DGBAS) of Executive Yuan in Taiwan, R.O.C. The *Housing Survey* provides the information of housing characteristics for a family, such as the floor size, the geographical location, and the transaction and rental prices for the dwelling unit. The *Survey of Family Income and Expenditure* provides the details of the income sources, expenditures and socio-demographic characteristics for a family. The data of SFIE is collected every year, while the data *Housing Survey* are only available from 1979 to 1989, and then 1993. As reasons stated earlier, we select the 1989 and the 1993 files from both surveys.

Since the objective of our research is to examine how an individual conducts his/her

housing tenure choice, thus we want to limit our samples to those who acquire their property through purchasing and renting (i.e. the individual's tenure status is "owned by self" and "rent"). We exclude individuals who acquire their housing via means of "assignments and others."[6] After the exclusions, there are 11,339 and 12,246 observations, respectively, from the 1989 and the 1993 files of *Housing Survey*. Furthermore, we have 16,434 samples from both 1989 and 1993 files of SFIE, to be used to estimate the household permanent income.

At first, we use the data from *Housing Survey* to estimate the housing hedonic prices. According to the hedonic theory (e.g. Rosen, 1974; Ellickson, 1981), we assume that the equilibrium housing price and rent can be derived from the housing attributes that affect the housing prices. We define the housing characteristics that are related to the hedonic prices as follows, the construction materials used in housing unit (MATERIAL1-MATERIAL3), the type of housing unit (HTYPE1-HTYPE3), the usage of housing unit (HUSE), the number of bed rooms and living rooms (ROOM1 and ROOM2), the floor size (HSIZE), the age of housing unit (HAGE), and the facilities including piped water (WATER), kitchen (KITCHEN), bathroom (BATHROOM) and restroom (RESTROOM).

On the other hand, we estimate the permanent income, which considered to be more related to the housing consumption, from data provided by the SFIE. To be comparable with the *Housing Survey*, we define some demographic characteristics such as the family size (FMSZ), sex (MALE), age (AGE), martial status (MARRY), education level (EDU1-EDU5), being employer or employee (EMPLOYER), and the sector of job (PUBLIC) for a family head. More detailed definitions for variables used in this research are presented in the Appendix to this research. We also show the descriptive statistics concerning our selected variables are listed in Tables 1 and 2.

[6] Government employees sometimes are assigned free housing or provided great discounts in living these assigned housing.

IV. Econometric Model and Estimated Results

Step 1: The Estimations of Hedonic Prices and Permanent Income

(1) The Estimations of Hedonic Prices and Rents

Hedonic housing prices are defined as the implicit prices, which can be derived from the housing attributes that affect the prices, that are revealed to decision makers from the observed prices of differentiated products and the specific amounts of characteristics associated with them. We use data retrieved from the *Housing Survey* and estimate the hedonic housing transaction and rental prices for owner-occupiers and renters, respectively.

Denote Z as the matrix of housing characteristics, ε_1 and ε_2 as the error terms that follow zero-mean normal distributions, we set the hedonic functions for log-linear forms of transaction and rental prices as follows:

$$\text{HPRICE}_i = \log(P_i) = Z_i\phi_1 + \varepsilon_{1i}, \tag{4}$$

$$\text{HRENT}_i = \log(R_i) = Z_i\phi_2 + \varepsilon_{2i}. \tag{5}$$

The estimated hedonic prices results are presented in Table 3, we find the transaction prices in Taichung City (TAICHUNG) was the highest in Taiwan areas in 1989 (before the real estate price increase), and Taipei City (TAIPEI) was highest in 1993 (which real estate price reaches its peak). Taipei City has the highest hedonic rent in both 1986 and 1993. In addition, we find some housing characteristics, such as the type of a house (HTYPE1-HTYPE3), the usage of a house (HUSE), the number of bed rooms (ROOM1), and the housing facilities (BATHROOM and RESTROOM), have similar impacts on hedonic prices during this period. For owner-occupiers, the reinforced concrete (MATERIAL1) is always the most favorable construction material; while renters have no significant preferences for construction materials. Generally, the age of a house (HAGE) is negatively correlated with

housing transaction prices; however, it has little impact on rental prices. Finally, the tall apartment buildings (HTYPE1) have the highest prices in Taiwan, and the price of a purely residential house (HUSE = 1) is lower than that on a mixed business and residential house during the research period.

(2) The Estimation of Permanent Income

It is widely believed that the permanent income is the appropriate income measure used for estimating the housing demand. (See Hansen, Formby and Smith, 1996) In addition, household income may be highly correlated with housing demands, cannot be regarded as an exogenous variable in determining tenure choice. To avoid this endogeneity problem, we thus use the permanent income, or the imputed income, as the explanatory variable in regressions. Following Goodman (1988), Hoyt and Rosenthal (1990), Rosenthal, Duca and Gabriel (1991) and others, we estimate a permanent income proxy by regressing the log of household labor income (LINC) on some carefully selected socio-economic variables V_i.[7] The permanent income equation can be described as:

$$\text{LINC}_i = \log(y_i) = V_i\phi_3 + \varepsilon_{3i}. \tag{6}$$

Using data retrieved from SFIE, the estimation results of permanent income are shown in Table 4. Basically, the estimated results in 1986 and 1993 have a very similar pattern, both the size of family (FMSZ) and the age of family head (AGE) have a concavely positive relation with the permanent income, which agree with most previous literature. Being an Male (MALE＝1) and employed in public sector (PUBLIC＝1) both have positive impacts on permanent income. Permanent income is also found as an increasing function of the family head's education level. Finally, there are regional differences in permanent income for households located in different areas of Taiwan; people in Taipei City have the highest

[7] Heckman and Polachek (1974) specify that a log-linear estimation provides a better "fit" than does a linear-linear one.

income in all areas of Taiwan.

Step 2: The Estimation of Tenure Choice Model

We follow the "peer effect" setting from Evans, Oates and Schwab (1992) and the "neighborhood effect" from Haurin et al. (2003), and define the cultural-norm variable NORM_i as the ith household faces in its tenure choice. Due to non-availability of macro-level variables for each community, we specify the cultural norm as an exogenous variable, rather than an endogenous one.[8] The cultural-norm variable (NORM_i) is defined as the average homeownership rate for all sampled families which have the same area codes,[9] reflecting the neighborhood effect that a family head encounters from this norm.[10]

We compute $\widehat{\text{LHPRENT}}$, which is regarded as the relative cost of owning to renting, as the log of the ratio of housing price to the monthly rent, which in turn is calculated from the estimations of hedonic prices in the previous stage.[11] We put the imputed income $\widehat{\text{LINC}}$ and $\widehat{\text{LHPRENT}}$ into a probit model, and our cultural-norm model can be written as:

$$I_i^* \equiv V_i^O - V_i^R = X_i\Theta + \theta_1 \cdot \text{NORM}_i - \varepsilon_i, \tag{7}$$

$$I_i = \begin{cases} 1 & \text{if } I_i^* \geq 0; \\ 0 & \text{if } I_i^* < 0, \end{cases} \tag{8}$$

$$\Pr(I_i = 1) = \Pr(\varepsilon_i \leq X_i\Theta + \theta_1 \cdot \text{NORM}_i) = \Phi(X_i\Theta + \theta_1 \cdot \text{NORM}_i), \tag{9}$$

[8] If we have collected the macro-level variables within each community, then we can apply a simultaneous equation estimation approach to estimate as Evans et al. (1992).

[9] *Housing Survey* is sampled by the two-stage stratified sampling method. We regard these samples with the same "area code" and "stratification" as a reference group. To sum up, there are 508 and 502 reference groups in 1986 and 1993, respectively; and then we can calculate the average homeownership rates in each group, which is the cultural-norm variable that we define.

[10] We understand there may be better ways to define social or cultural norms, such as religious affiliations, social affiliations; and so on. However the data (non)availability prevents us from using those. Community average homeownership rate is by far the best proxy that we can find, with data availability.

[11] We obtain $\widehat{\text{HPRICE}}_i$ and $\widehat{\text{HRENT}}_i$ for household i from hedonic prices estimations. Then

$$\widehat{\text{LHPRENT}}_i = \log\left(\frac{P_i}{R_i}\right) = \log\left(\frac{\exp(\widehat{\text{HPRICE}}_i)}{\exp(\widehat{\text{HRENT}}_i)}\right) = \widehat{\text{HPRICE}}_i - \widehat{\text{HRENT}}_i .$$

where ε_i is error term that follows a normal distribution, $\Phi(\cdot)$ is the c.d.f. of ε_i; and X_i includes LINC, LHPRENT and other demographic variables. In these regressions, we observe whether the cultural norm has an impact on one's tenure choice according to the signs and the magnitudes of θ_1. The results of probit estimations are presented in Table 5.

From Table 5, we find the coefficient for the cultural-norm effect (NORM) has a significantly positive effect on an individual's likelihood of owning a house. That is, Taiwanese residents are heavily influenced by "cultural norms" on their tenure choices. Under the cultural-norm effect, residents who choose to rent a house in a high homeownership rate community will suffer more disutilities. This norm effect leads them to increase the likelihood of buying a house within that community. However, we find that the marginal effect of the norm effect on homeownership decreases from 1986 (0.6447) to 1993 (0.4923) in the last panel of Table 6.[12] This shows that the cultural-norm effect is somewhat lessened when the real estate price becomes higher. It is more costly to follow the norm when the real estate price becomes too high, thus norm effect subsides.

The permanent income is generally regarded as one of the most important factors that affect one's homeownership. Surprisingly, we find that LINC has not shown a significant effect on an individual's tenure choice both in 1986 and 1993. This implies that economic condition is not considered by an individual as a key factor in deciding whether to own a house in Taiwan. People are more overwhelmed by the norm effects on their tenure choices, which are thus less related to their economic resources.

In general, a larger LHPRENT reflects a higher expected housing price inflation. The expected capital gains induced by the inflation are capitalized into higher house values; but at the same time, inflation reduces equilibrium rental rates.[13] Most empirical evidences

[12] The marginal effect of cultural norm on tenure choice is $\partial\Phi(\cdot)/\partial\text{Norm} = \theta_1 \cdot \phi'(\cdot)$ which is computed at the average of all regressors.

[13] See Ioannides and Rosenthal (1994).

support that the relative cost of owning to renting has a negative effect on homeownership rate (e.g. Ioannides and Rosenthal, 1994; Haurin, Hendershott and Wachter, 1997; Hsueh and Chen, 1999[14]), except for very few studies (e.g. Lin and Chen, 2003) that obtain a positive effect. In our cultural-norm regressions, however, we find LHPRENT has a positive effect on the homeownership rates in 1986 and 1993. That is, when the relative cost of owning a house is higher, an individual tends to increase the possibility of owning a house; and this positive effect becomes even stronger in 1993 regression, when real estate prices become higher.

When the price of a property becomes higher, an individual should reduce his demand for this property, if this property satisfies the law of demand. Our finding can only be reasonably explained in two ways. First, under the cultural-norm proposition, one has to possess a property within his life cycle; he would increase the likelihood of owning a house when the housing transaction price increases, expecting that price may go even higher and cost him more to own a property later on. Secondly, another possible explanation may be the housing investment (or speculation) demand for an individual. When the housing transaction price increases, one would increase property holding, expecting to gain a return when the property price trend is up.

Demographically, the results of Table 5 are mostly agreeing with the evidence from previous research. Those family heads who work for public sectors (as their incomes are considered more stable); who are older (later in their life cycles); and who have more family members, tend to own their houses. Moreover, there is a regional difference on household tenure choice in Taiwan. In 1986 and 1993, households in Taipei County (TPECOUNTY) have the higher propensities to own a house, more than the rest of Taiwan. Our results in

[14] Our results are different from that of Hsueh and Chen (1999), but not necessarily inconsistent. Hsueh and Chen (1999) employ factors such as the property price level and volatility in their regressions, while ours includes the norm effect.

Table 5 also show that family heads' education level partially shows a positive relation with their likelihoods of owning a house. Although there is no significant difference among all education groups in 1986 regression; however in 1993, family heads with higher education levels (EDU1-EDU3) have a significantly higher possibility of owning a house; while family heads with junior high school (EDU4) have not shown distinctive homeownership rate from that of below elementary education (EDU5).

Step 3: Analysis of Norm Effects by Different Subgroups

In this section, we further examine whether the cultural-norm factor is interacting with other demographic factors. Previous studies show that there may be heterogeneous peer effects among different demographic subgroups. For example, Clark (2003) finds that the unemployed individual's well-being is strongly positively correlated with his reference group's unemployment (at the regional, partner, or household level); and it is far stronger for men. On the other hand, Choko and Harris (1990) propose that, if we view the homeownership as a cultural norm, then homeownership rate would vary from place to place, to the extent which people share this norm. So we try to observe whether the norm effects behave differently among demographical or geographical subgroups, such as education levels, geographical locations, ages and cohorts, and finally gender.

We make some regression arrangements and redo the empirical study from last stage to allow us observe whether the norm effects interact with other factors. When we conduct the norm effect probit regressions in this stage, take education (the same with the geographical locations, ages and cohorts, and gender) for example, we would first divide the sample into several subgroups according to family heads' education levels, from high to low, EDU1 to EDU5, and redo the previous estimations *with education dummies omitted*. For simplicity, we only present here the marginal effect of cultural norms on the homeownership with

respect to education levels, locations, ages and cohorts, and gender in Table 6, respectively.

(1) Education Levels

It is generally thought that people with different levels of education may have different sources of information they refer to in making a decision. Therefore, we propose the influences of cultural norms on homeownership may be different among people with different education levels. An individual with a higher education should have a greater confidence to abide by economically rational behavior, and so to fight off the economically irrational cultural norms. So it is a legitimate motivation for us to further investigate whether the education levels interact systematically with the norm effects.

The estimated marginal effects of cultural norms on homeownership with respect to education level are listed in Table 6A. We find the marginal norm effect is the highest for the group with family heads of junior high school (EDU4), and in general we see a smaller norm effect for an individual with higher education. (i.e. from 1993 panel of Table 6A) Another notable finding is that, no matter what the education level is, the marginal effects of norms on homeownership subside after the real estate price hike in 1993. This shows the cultural norm has less bearing with tenure choice once the real estate price becomes too high.

In addition, we find that family heads with highest education (EDU1) tend to have the least bearing with norms during the real estate price hikes, which the marginal effect is hugely reduced from 0.5286 in 1986 to 0.2382 in 1993. People with higher education are more conscious toward the economic reality, thus have greater courage to fight off the economically irrational cultural norms or neighborhood externalities.

(2) Geographical Locations

We also want to look at whether the norm effects clustered geographically according to the family heads' property locations. Family heads in different regions may face cultural

norms of different strengths, due to the locally prevailing neighborhood externality. Some people may think that the households in rural areas may be more emotionally attached to cultural norms, while households in urban areas may be not. On the other hand, some might think population density, which is considered to be reversely related to the strength of peer effects, of rural areas are relatively low; and that of urban might be higher. Nevertheless we would observe whether the norm effect has a rural/urban factor and/or regional heterogeneity on household tenure choice in Taiwan.

We divide the sample into subgroups according to household locations. In Table 6B, after controlling other variables, we find that the norm effect is the highest for residents in TAICHUNG, one of the metropolitan areas in Taiwan; while the norm effect is lowest for the residents in other areas of Taiwan (OTHERAREA), which represents mostly rural areas in Taiwan, both in 1986 and 1993. Some might suspect that whether the income levels have caused the regionally differing norm effects. Though the income level is lowest for other areas of Taiwan (OTHERAREA), as we refer to Table 4, residents in TAIPEI, however, have the highest permanent income level. So there might be the regionally different norm effects in Taiwan, along geographical and rural/urban divides.

Finally we consistently find that the norm effects become weaker in most areas of Taiwan, except for KAOHSIUNG, from 1986 to 1993, after real estate prices become higher. This also shows that cultural norm has less bearing, even along geographical divide, with household tenure choice once the real estate price becomes too high. In addition, we find that the reduction in norm effects is most dramatic for the family heads in TAIPEI, the most prominent metropolitan city in Taiwan. This may be due to that of housing price has the highest growth in TAIPEI; and thus it incurs the highest cost for family heads to abide by the cultural norms. So people tend to be more economically reasonable, and are able to fight off economically sub-optimal cultural norm when the real estate prices increase.

(3) Ages and Cohorts

We also examine whether the age or cohort factors[15] may lead family heads to be influenced differently by the cultural norms. Generally, we expect there are generational gaps existing in the ways of doing things for family heads in different ages. Presumably we might think that younger people may be less attached to the cultural norms and be more open-minded to different means of doing things. We find a quite surprising result instead.

We divide the sample into subgroups of different ages and cohorts, respectively, and redo the probit estimations. The results are shown in Tables 6C and 6D, respectively. In Table 6C, we find that family heads whose ages are between 30 and 39 have the highest norm effect toward owning a home, both in 1986 or 1993. This is somewhat controversial with our belief that, via a lifecycle point of view, younger people may be lacking financial resources in making such a commitment to ownership of homes. But on the other hand, younger people may be more likely to be affected by the cultural norms due to the fact that young people may feel insecure in acting alone; the same peer effect we can easily find in youth with their firm attachment to pop culture. As of financial resources, ethnic Chinese families are generous in giving a gift or a bequest to their children, especially when the giving is used for setting up roots and form their own families. This gives them the financial resources needed if they so decide to adhere with "cultural norm."

Looking at the norm effects by cohorts from Table 6D, we find that the birth year is not a key factor in affecting norm effects, since the highest norm effect is for those cohorts with 1952+ in 1986 regression, while the highest one is the cohorts with 1942-1951 in 1993 regression. Therefore, we conclude that the differing cultural norms on homeownership may be caused by the age of a family head, not caused by the birth year. Of importance, the

[15] We conduct regressions independently with respect to age and cohort. For example, an age 35 individual in 1986 regression was born 1951, but an age 35 individual was born 1958 in 1993 regression. So we redo the regressions basing on family heads' birth years (cohort).

young family heads are deeply influenced by the cultural norms than older people are.

D. Gender

We also find an interesting result along the gender divide in terms of norm effects. In Table 6E, we find that the gender of a family head has a significantly different impact on the cultural-norm effect on tenure choice. The female family head usually are more attached to the cultural-norm effect on their homeownership decisions than do male counterparts, in both 1986 and 1993 regressions. It implies that a female head feel more peer pressure when conducting her tenure decision.

5. Concluding Remarks

We find cross-sectional differences in homeownership rates along the country (or ethnic) line throughout the world, and there is no single straight economic model that we can explain these differences. For example, countries that have high homeownership rates are Singapore and Taiwan in Asia, Spain in Europe; and these countries are not considered to be the richest countries. On the contrary, the richest countries, such as U.S., Japan, and Germany, do not have high homeownership rates. Also from U.S. empirical studies thus far, we find most evidences showing that the ethnic Chinese households have the highest homeownership attainment among all ethnic groups; and Taiwanese is the highest one among all Chinese subgroups. We know there is no economical extremity that we can refer to in explaining this high homeownership rate for ethnic Chinese. This gives us a legitimate motivation in using non-economic factors, such as the “cultural norm effect,” in addition to the traditional (economic) homeownership model, to help explaining this high homeownership rate.

We develop a theoretical model that includes the cultural norms as one of the factors

affecting individuals when conducting tenure choice, and use it to examine empirically with Taiwanese housing survey data. We define the cultural norm as "an individual has a mandatory responsibility to own his house within his life cycle," and use "the community average homeownership rate" as the empirical proxy for the norm effect.

The empirical results show that Taiwanese residents are heavily influenced by "cultural norms" in conducting their tenure choices. Family heads with relatively low education backgrounds are more affected by the cultural norms in their tenure choices, after controlling other economic and demographic variables. We also find that norm effects are somewhat lessened when real estate prices become higher. People become more sensible to their budget constraints when real estate price become too high, thus the norm effects subside. Using this cultural-norm model, we can explain why people tend to own a home when the real estate price becomes higher, which violates the law of demand. Under the cultural norm proposition, when people have to possess a property within their life cycle, they would increase the likelihood of owning a house when property price increases, fearing that price may go even higher.

Furthermore, we find that younger family heads' are more attached to this "cultural norm effect," and have a higher homeownership rate than that predicted by the theory of life-cycle consumption. A part of explanation is that ethnic Chinese families are generous in giving a gift or a bequest to their children, especially when the giving is used for setting up roots and form their own families. This gives them the financial resources needed if they so decide to adhere with "cultural norm." This exceptionally high homeownership rate among youths, along with general existing norm effects, may partially explain the high homeownership rate of Taiwanese residents.

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APPENDIX

Variables Definitions

Location

TAIPEI	1 if Taipei City, 0 otherwise.
KAOHSIUNG	1 if Kaohsiung City, 0 otherwise.
TAICHUNG	1 if Taichung City, 0 otherwise.
TPECOUNTY	1 if Taipei County, 0 otherwise.
OTHERAREA	(reference group) if other areas of Taiwan.

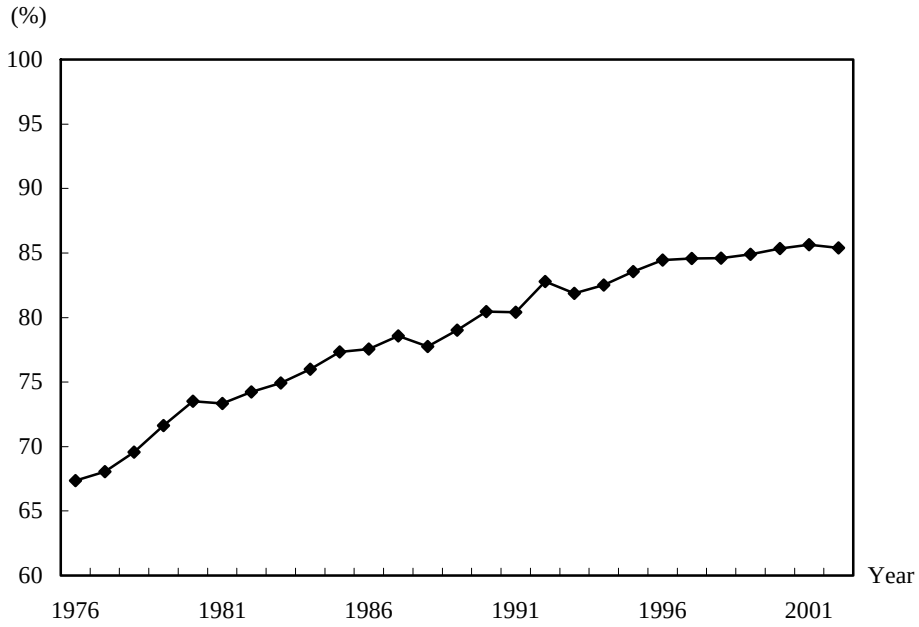
Housing Characteristics

MATERIAL1	1 if dwelling unit is made of reinforced concrete, 0 otherwise.
MATERIAL2	1 if dwelling unit is made of brick and reinforced concrete, 0 otherwise.
MATERIAL3	1 if dwelling unit is made of brick, 0 otherwise.
HTYPE1	1 if house type is an apartment up to 5 stories or a tall building, 0 otherwise.
HTYPE2	1 if house type is an apartment, 0 otherwise.
HTYPE3	1 if house type is a detached house (Chinese, Western or Japanese style), 0 otherwise.
HFUND	1 if dwelling unit is used for residence only, 0 otherwise.
ROOM1	number of bed rooms.
ROOM2	number of living rooms.
HAGE	age of dwelling unit in years.
HSIZE	area of dwelling, measured by pin (about 36 square feet).
WATER	1 if piped water, 0 otherwise.
KITCHEN	1 if kitchen is private, 0 otherwise.
BATHROOM	1 if bathroom is private, 0 otherwise.
RESTROOM	1 if restroom is private, 0 otherwise.
HPRICE	log of transaction price of housing unit per pin (in 1 NT dollar).
HRENT	log of current monthly rent payment per pin (in 1 NT dollar).

Demographic Characteristics

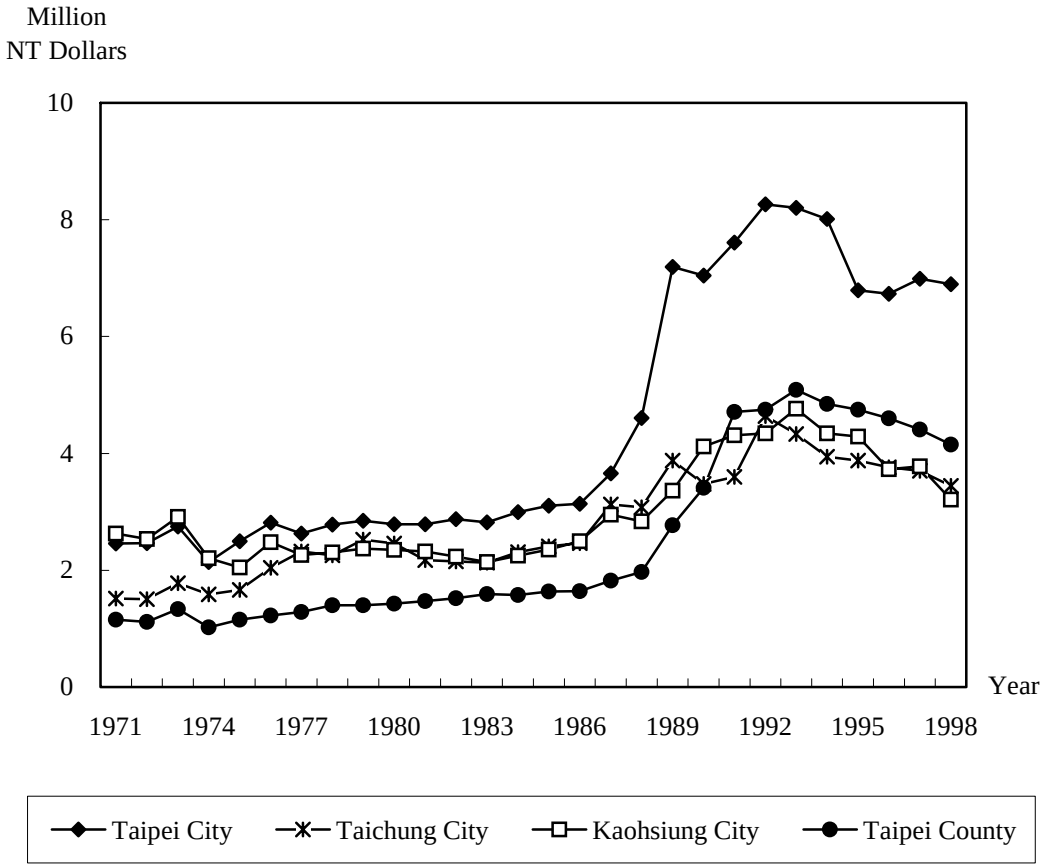
FMSZ	family size.
MALE	1 if the family head is male, 0 otherwise.
AGE	age of the family head.
MARRY	1 if the family head's martial status is married.
EDU1	1 if university and above, 0 otherwise.
EDU2	1 if college, 0 otherwise.
EDU3	1 if senior high school, 0 otherwise.
EDU4	1 if junior high school, 0 otherwise.
EDU5	(reference group) if elementary school and below.
EMPLOYER	1 if the family head is an employer, 0 otherwise.
PUBLIC	1 if the family head works in public sectors, 0 otherwise.
LINC	log of household income.

Figure 1. Trends for Homeownership Rates: 1976-2002



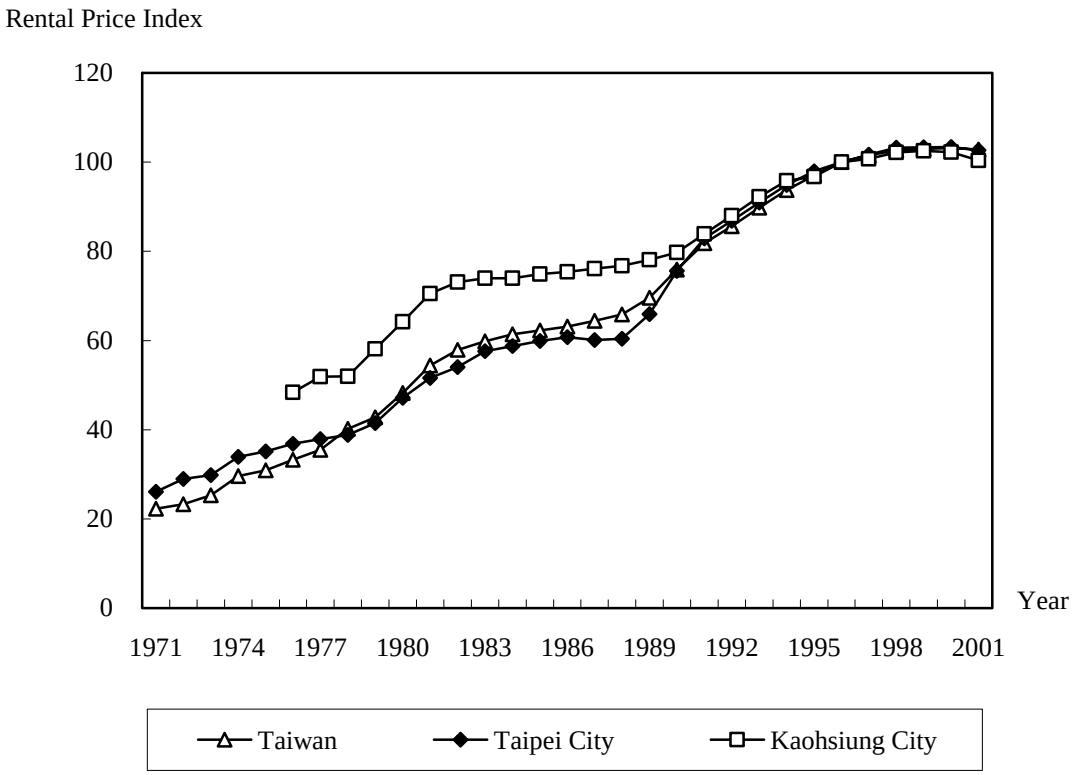
Source. — *Survey of Family Income and Expenditure*, DGBAS, Executive Yuan, Taiwan, R.O.C..

Figure 2. Trends for Housing Transaction Prices of Four Main Cities in Taiwan



Source. — Taiwan Real Estate Research Center.

Figure 3. Trends for Rental Price Index for Taipei, Kaohsiung and Taiwan (Base Year = 1996)



Source.— *Price Statistics Monthly in Taiwan Area* (2002), DGBAS. *Price Statistics Monthly in Taipei City, R.O.C.* (2002). *Price Statistics Monthly in Kaohsiung City, R.O.C.* (2002).

Table 1. Homeownership by Age, Education and Income in Taiwan: 1986 and 1993

By Ages					
Year	30^{-}	30-39	40-49	50-59	60^{+}
1986	0.8047	0.8062	0.8829	0.9238	0.9135
1993	0.8658	0.8559	0.8806	0.9424	0.9335
By Education Levels					
Year	EDU1	EDU2	EDU3	EDU4	EDU5
1986	0.8951	0.8806	0.8353	0.8304	0.8592
1993	0.9310	0.9115	0.8747	0.8541	0.8941
By Income Levels					
Year	Lowest	Second-lowest	Middle	Second-highest	Highest
1986	0.8122	0.8015	0.8394	0.8887	0.9276
1993	0.8659	0.8347	0.8765	0.9133	0.9470

Source. — *Survey of Family Income and Expenditure*, DGBAS, Executive Yuan, Taiwan, R.O.C..

Table 2. Descriptive Statistics (1986)

VARIABLES	RENT		OWN		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
HPRICE	—	—	735,641	716,263	—	—
HRENT	3645.4	2204.4	—	—	—	—
MATERIAL1	0.2287	0.4201	0.2004	0.4003	0.2052	0.4039
MATERIAL2	0.3942	0.4888	0.5663	0.4956	0.5370	0.4987
MATERIAL3	0.2675	0.4427	0.1912	0.3932	0.2042	0.4031
HTYPE1	0.0466	0.2107	0.0355	0.1851	0.0374	0.1897
HTYPE2	0.2752	0.4467	0.2226	0.4160	0.2316	0.4219
HTYPE3	0.1102	0.3132	0.2077	0.4057	0.1911	0.3932
HUSE	0.7206	0.4488	0.8417	0.3650	0.8211	0.3833
ROOM1	2.5096	1.5120	3.1555	1.3682	3.0454	1.4147
ROOM2	1.1531	0.8635	1.4438	1.0148	1.3942	0.9966
HAGE	18.678	11.876	11.202	6.4655	12.476	8.1616
HSIZE	24.125	14.114	32.690	17.864	31.230	17.579
WATER	0.9555	0.2062	0.9943	0.0756	0.9877	0.1104
KITCHEN	0.9317	0.2523	0.9816	0.1344	0.9731	0.1618
BATHROOM	0.9193	0.2724	0.9804	0.1385	0.9700	0.1706
RESTROOM	0.9007	0.2992	0.8023	0.3983	0.8190	0.3850
FMSZ	4.1040	1.9051	5.0270	2.5250	4.8697	2.4551
MALE	0.8474	0.3597	0.8866	0.3171	0.8799	0.3251
AGE	39.483	12.043	43.818	12.394	43.079	12.442
MARRY	0.7579	0.4285	0.8284	0.3770	0.8164	0.3872
EDU1	0.0631	0.2432	0.0751	0.2635	0.0730	0.2602
EDU2	0.0512	0.2205	0.0701	0.2553	0.0668	0.2498
EDU3	0.2095	0.4071	0.1823	0.3861	0.1870	0.3899
EDU4	0.1749	0.3799	0.1430	0.3501	0.1484	0.3555
EDU5	0.5013	0.5001	0.5296	0.4992	0.5247	0.4994
EMPLOY	0.8883	0.3151	0.9028	0.2962	0.9003	0.2996
SELFEMP	0.3968	0.4894	0.3703	0.4829	0.3748	0.4841
PUBLIC	0.0916	0.2885	0.1522	0.3593	0.1419	0.3490
TAIPEI	0.2225	0.4160	0.1268	0.3328	0.1431	0.3502
KAOHSIUNG	0.1231	0.3287	0.0760	0.2650	0.0840	0.2775
TAICHUNG	0.0735	0.2610	0.0325	0.1774	0.0395	0.1948
TPECOUNTY	0.1474	0.3546	0.1475	0.3546	0.1475	0.3546
OTHERAREA	0.4335	0.4957	0.6172	0.4861	0.5859	0.4926
Sample Size	1,933		9,406		11,339	

Source. — *Housing Survey*, 1986, DGBAS, Executive Yuan, Taiwan, R.O.C..

Table 2. (Continued) Descriptive Statistics (1993)

VARIABLES	RENT		OWN		TOTAL	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
HPRICE	—	—	1,776,168	1,888,910	—	—
HRENT	7915.5	7083.8	—	—	—	—
MATERIAL1	0.2315	0.4219	0.2364	0.4249	0.2358	0.4245
MATERIAL2	0.5223	0.4996	0.6334	0.4819	0.6180	0.4859
MATERIAL3	0.1892	0.3918	0.1160	0.3202	0.1262	0.3320
HTYPE1	0.0582	0.2341	0.0594	0.2363	0.0592	0.2360
HTYPE2	0.3290	0.4700	0.2258	0.4181	0.2402	0.4272
HTYPE3	0.1063	0.3084	0.1530	0.3600	0.1465	0.3536
HUSE	0.7321	0.4430	0.8703	0.3360	0.8511	0.3561
ROOM1	2.5664	1.0367	3.2871	1.1000	3.1869	1.1195
ROOM2	1.2062	0.5511	1.4653	0.6014	1.4293	0.6014
HAGE	19.739	10.629	12.514	6.3307	13.518	7.5131
HSIZE	26.684	13.160	38.470	20.847	36.832	20.369
WATER	0.9636	0.1874	0.9886	0.1061	0.9851	0.1210
KITCHEN	0.9771	0.1497	0.9936	0.0801	0.9913	0.0931
BATHROOM	0.9718	0.1656	0.9925	0.0862	0.9896	0.1013
RESTROOM	0.9360	0.2449	0.8559	0.3512	0.8671	0.3395
FMSZ	3.6340	1.7194	4.3999	2.0449	4.2935	2.0202
MALE	0.7932	0.4051	0.8401	0.3665	0.8336	0.3725
AGE	41.539	12.313	44.505	12.716	44.093	12.702
MARRY	0.7280	0.4451	0.8106	0.3918	0.7991	0.4007
EDU1	0.0529	0.2239	0.0839	0.2773	0.0796	0.2707
EDU2	0.0740	0.2619	0.0934	0.2910	0.0907	0.2872
EDU3	0.2468	0.4313	0.2435	0.4292	0.2439	0.4295
EDU4	0.2180	0.4130	0.1715	0.3769	0.1779	0.3825
EDU5	0.4083	0.4917	0.4077	0.4914	0.4078	0.4914
EMPLOY	0.8737	0.3323	0.8795	0.3256	0.8787	0.3265
SELFEMP	0.3396	0.4737	0.3328	0.4712	0.3337	0.4716
PUBLIC	0.0623	0.2417	0.1367	0.3435	0.1263	0.3322
TAIPEI	0.2121	0.4090	0.1292	0.3354	0.1407	0.3477
KAOHSIUNG	0.1075	0.3099	0.0637	0.2443	0.0698	0.2549
TAICHUNG	0.0511	0.2203	0.0285	0.1665	0.0317	0.1752
TPECOUNTY	0.1669	0.3730	0.1201	0.3251	0.1266	0.3325
OTHERAREA	0.4624	0.4987	0.6585	0.4742	0.6312	0.4825
Sample Size	1,702		10,544		12,246	

Source. — *Housing Survey, 1*993, DGBAS, Executive Yuan, Taiwan, R.O.C..

Table 3. Estimations for Housing Prices and Rents

VARIABLES	1986		1993	
	HPRICE	HRENT	HPRICE	HRENT
CONSTANT	9.4128**	4.6453**	10.257**	5.7680**
	(89.18)	(41.06)	(94.43)	(40.09)
MATERIAL1	0.4284**	-0.0202	0.5533**	0.1403
	(9.496)	(-0.256)	(9.049)	(1.666)
MATERIAL2	0.3907**	0.0595	0.4033**	0.1777*
	(10.13)	(0.962)	(6.887)	(2.428)
MATERIAL3	0.0221	0.1081	0.2344**	0.1228
	(0.577)	(1.956)	(3.887)	(1.697)
HTYPE1	0.5777**	0.4500**	0.4138**	0.4650**
	(12.29)	(5.112)	(11.49)	(5.928)
HTYPE2	0.2247**	0.1466**	0.1484**	0.1259**
	(8.499)	(2.831)	(6.831)	(3.002)
HTYPE3	-0.3128**	-0.4017**	-0.2136**	-0.3421**
	(-15.47)	(-7.679)	(-10.49)	(-6.072)
HUSE	-0.2426**	-0.3449**	-0.3078**	-0.4313**
	(-12.32)	(-10.17)	(-15.16)	(-12.52)
ROOM1	-0.0277**	-0.1316**	-0.0180**	-0.1766**
	(-4.749)	(-9.489)	(-2.645)	(-11.29)
ROOM2	0.0049	0.0071	0.0131	-0.1352**
	(0.636)	(0.293)	(1.090)	(-4.571)
HAGE	-0.0398**	0.0004	-0.0459**	-0.0048**
	(-33.17)	(0.225)	(-41.34)	(-2.824)
WATER	-0.0219	-0.0525	0.0601	0.0083
	(-0.213)	(-0.607)	(0.836)	(0.091)
KITCHEN	0.3825**	0.1515	-0.1500	-0.1706
	(5.584)	(1.715)	(-1.092)	(-1.080)
BATHROOM	0.1733**	0.1580	0.4826**	0.2060
	(2.711)	(1.900)	(3.860)	(1.463)
RESTROOM	0.1858**	0.3281**	0.1574**	0.2797**
	(9.802)	(6.290)	(7.801)	(4.433)
TAIPEI	0.2693**	0.5683**	0.5036**	0.7722**
	(9.232)	(11.69)	(18.17)	(15.92)
KAOHSIUNG	0.0352	0.1642**	0.0450	0.0776
	(1.245)	(3.347)	(1.532)	(1.474)
TAICHUNG	0.4059**	0.4784**	0.4277**	0.3637**
	(9.885)	(7.847)	(10.39)	(5.213)
TPECOUNTY	-0.0611*	0.3624**	0.1522**	0.4797**
	(-2.418)	(6.899)	(6.142)	(10.01)
Adjusted R^2	0.38	0.33	0.32	0.44
Log-likelihood	-9675.9	-1895.4	-11042.9	-1564.7
Sample Size	9,406	1,933	10,544	1,702

Note. — Numbers in the parentheses are t-ratios. ** and * are the significant levels of 1% and 5%, respectively.

Table 4. Estimations for Permanent Income

VARIABLES	1986	1993
CONSTANT	10.716** (259.2)	11.339** (251.9)
FMSZ	0.2085** (37.09)	0.1968** (28.60)
FMSZ2	-0.0079** (-16.43)	-0.0079** (-12.34)
MALE	0.0846** (7.235)	0.1095** (9.493)
MARRY	-0.0115 (-1.433)	0.1059** (9.352)
AGE	0.0387** (20.24)	0.0506** (27.21)
AGE2	-0.0004** (-19.34)	-0.0006** (-30.25)
EDU1	0.6525** (47.35)	0.5924** (41.15)
EDU2	0.4888** (35.11)	0.4272** (31.40)
EDU3	0.3072** (31.94)	0.2353** (22.87)
EDU4	0.1679** (16.64)	0.0967** (8.766)
EMPLOYER	0.0735** (9.379)	0.0303** (3.633)
PUBLIC	0.1023** (10.08)	0.1771** (16.16)
TAIPEI	0.2708** (26.87)	0.2442** (22.93)
KAOHSIUNG	0.1696** (12.85)	0.1131** (8.214)
TAICHUNG	0.1651** (9.292)	0.1236** (7.044)
TPECOUNTY	0.1655** (16.95)	0.0774** (6.999)
Adjusted R^2	0.4343	0.4952
Log-likelihood	-9374.4	-10110.6
Sample Size	16,434	16,434

Note. — Numbers in the parentheses are t-ratios. ** and * are the significant levels of 1% and 5%, respectively.

Table 5. Probit Estimations for Cultural-Norm Model

VARIABLES	1986	1993
CONSTANT	-8.3499** (-4.126)	-9.5936** (-5.185)
NORM	3.4911** (26.82)	3.3982** (23.89)
LINC	0.0869 (0.500)	0.0422 (0.290)
LHPRENT	0.7949** (25.13)	1.1722** (29.57)
FMSZ	0.1244** (4.925)	0.1083** (4.741)
MALE	-0.0572 (-1.085)	-0.0368 (-0.766)
AGE	0.0259** (17.04)	0.0197** (11.78)
MARRY	-0.1928** (-3.889)	-0.0758 (-1.358)
EDU1	0.1570 (1.228)	0.4398** (3.994)
EDU2	0.3284** (3.061)	0.3363** (3.846)
EDU3	0.1404* (2.120)	0.2067** (3.789)
EDU4	0.0017 (0.031)	0.0497 (1.003)
PUBLIC	0.2013** (3.761)	0.2647** (3.886)
TAIPEI	0.0193 (0.290)	0.1024 (1.663)
KAOHSIUNG	0.0070 (0.108)	-0.0426 (-0.652)
TAICHUNG	0.0253 (0.301)	-0.2079* (-2.312)
TPECOUNTY	0.1093* (2.005)	0.2709** (5.304)
Log-likelihood	-3768.9	-3515.4
Sample Size	11,339	12,246
Correct Prediction	85.92%	88.65%

Note. — Numbers in the parentheses are t-ratios. ** and * are the significant levels of 1% and 5%, respectively.

Table 6. Norm Effects by Ages, Cohorts, Educations and Locations

Subgroups	1986			1993		
A. Educations:	marginal effect	t-ratio	sample size	marginal effect	t-ratio	sample size
EDU1	0.5286	5.245	828	0.2382	4.085	975
EDU2	0.4451	5.340	758	0.3903	6.191	1,111
EDU3	0.6657	10.32	2,120	0.4714	10.90	2,987
EDU4	0.7154	10.06	1,683	0.5764	8.917	2,179
EDU5	0.6213	19.38	5,950	0.5465	15.03	4,994
B. Locations:	marginal effect	t-ratio	sample size	marginal effect	t-ratio	sample size
TAIPEI	0.8862	9.593	1,623	0.5980	6.981	1,723
KAOHSIUNG	0.6828	6.742	953	0.7336	8.083	855
TAICHUNG	0.9040	5.321	448	0.7151	4.635	388
TPECOUNTY	0.8068	9.727	1,672	0.6304	6.892	1,550
OTHERAREA	0.4479	18.69	6,643	0.3853	16.58	7,730
C. Ages:	marginal effect	t-ratio	sample size	marginal effect	t-ratio	sample size
30-	0.9918	11.07	1,600	0.6680	7.263	1,211
30-39	0.9971	16.94	3,406	0.6872	14.19	3,935
40-49	0.5063	11.78	2,795	0.4586	11.18	3,317
50-59	0.3196	9.032	2,340	0.2367	6.560	2,107
60+	0.4438	7.261	1,198	0.3963	8.102	1,676
D. Cohorts:	marginal effect	t-ratio	sample size	marginal effect	t-ratio	sample size
1941-	0.3720	14.05	4,893	0.3064	12.16	5,062
1942-1951	0.7232	14.17	3,118	0.6575	14.79	4,210
1952+	1.0827	16.94	3,328	0.6475	11.30	2,974
E. Gender:	marginal effect	t-ratio	sample size	marginal effect	t-ratio	sample size
Male	0.5961	23.47	9,977	0.4543	19.43	10,208
Female	1.0302	11.36	1,362	0.6728	10.79	2,038
F. All Samples:	marginal effect	t-ratio	sample size	marginal effect	t-ratio	sample size
Total	0.6447	26.10	11,339	0.4923	22.23	12,246

Note. — The marginal effects of norms on tenure choice are $\partial\Phi(\cdot)/\partial\text{Norm} = \theta_1 \cdot \phi'(\cdot)$ and computed at the means of all regressors within each subgroup.