Heterogeneity in Asian American Homeownership:

The Impact of Household Endowments and Immigrant Status

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Abstract

Recently, research has begun to investigate the reasons for differences in homeownership rates between Asian and whites. This paper extends this research by examining the heterogeneity that exists across Asian groups in the United States. We find that there are important differences across geographic area, across time, and across groups in the importance of various factors on homeownership propensities. After controlling for household mobility and other socioeconomic characteristics, we find most Asian groups have homeownership rates similar to whites, but Chinese households have homeownership rates 20 percentage points higher than their household characteristics would predict. Part of this may be due to differences in support unmeasured in the data, but future research is needed to better understand the source of this differential.

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Introduction

In recent years, substantial academic research and policy debate regarding the importance of and access to homeownership has be undertaken. This is appropriate given residential real estate's significance within a portfolio of household assets and importance in the national economy. In addition, it has been suggested that, relative to renting, homeownership generates neighborhood benefits related to property upkeep, public safety, school quality, and the like (see, for example, (Green and White, 1997; Rohe, Van Zandt, and McCarthy, 2000).

While housing continues to be an important part of the national economy, the country is currently undergoing tremendous demographic changes. In particular, preliminary results from the 2000 Census in the United States suggest that Latino populations have increased by 58% and that Asian American populations have increased by about 76% over the past decade, which tops all the race-ethnic groups[1]. These changing demographics have the potential to create an adverse impact on homeownership rates, because ethnic minorities have homeownership rates that are much below that of white, non-Hispanic households (e.g., (Coulson, 1999; Gyourko and Linneman, 1996; Painter, Gabriel, and Myers, 2001; Skaburskis, 1996; Wachter and Megbolugbe, 1992)).

While there has been much work dedicated to understanding the sources of the homeownership gap between African-American and white households, only recently have researchers begun to look at the factors that influence the homeownership propensities of Latino and Asian households (Alba and Logan, 1992; Coulson, 1999;

[1] References to Latino refer to persons of Hispanic origin, who may be of any race. A person is counted as Latino or Asian if he/she chose Hispanic or Asian, respectively, as the race option in the Census 2000.

Gyourko, et al., 1996; Painter, et al., 2001; Wachter, et al., 1992).[2] Research has shown that lower homeownership rates among Latinos can be explained fully by differences in economic endowments (income and education) and by immigrant status (Coulson, 1999; Krivo, 1995; Painter, et al., 2001).

Research is less conclusive about the reasons for the differences in ownership rates between Asians and whites. Coulson (1999) notes that although Asians often have incomes higher than whites, Asian have lower homeownership rates than whites because of their status as an immigrant and their propensity to locate in high cost areas. In a study of a single metropolitan area, Painter, Gabriel, and Myers (2001) find that Asians have higher homeownership rates than whites, and that status as an immigrant does not lead to lower homeownership rates. The key difference between the studies is that the latter explicitly controlled for household mobility, and it was found that the higher mobility, not simply status as an immigrant, of recent arrivals led to lower homeownership.

In spite of the recent research on Latinos and Asians, only Krivo (1995) and Coulson (1999) tested to see whether there existed any heterogeneity among different Latino groups, like Mexican, Puerto Rican, or Cuban. There results suggested the presence of important heterogeneity even though the groups came from similar socioeconomic backgrounds. It is likely that there would exist even greater diversity in Asian Americans. While native-born Asian Americans are mostly Chinese and Japanese by ancestry, new Asian immigrants are much more diverse. Coming from very different socioeconomic and political backgrounds, no single Asian immigrant group comprises more than one-third of the Asian American population since 1980 (Zhou and Gatewood, 2000, p.16). New Asian immigrants have contributed to the large increase in Asian

[2] References to white, African American, and Asian refer to the non-Hispanic portion of this population.

American populations in recent years. In addition, since Asian immigrants have a largely diverse history with different motives and experiences of immigration to the United States, their economic status and adaptation processes are considerably different, as is their choice of residential location (Farley, 1996, p.175; Takaki, 1998; White, Biddlecom, and Guo, 1993). In addition, the relocation and migration process also indicate distinctive patterns across groups (Airriess and Clawson, 2000; Portes and Rumbaut, 1996).

In a recent paper, Coulson and Kang (2001) examined the factors that cause differences in homeownership rates between Asian Americans and the US population as a whole. They examine a single source of heterogeneity; namely, differences in economic endowments and immigrant status. While the study provides some initial insights regarding the role of these factors in homeownership attainment, the model specification and data severely limit the extent to which one is able to understand the many different potential types of heterogeneity that may exist among Asian Americans. The Current Population Survey (CPS), as well as the American Housing Survey (AHS), suffers from the problem of insufficient sample size. In addition, these datasets do neither have specific information on migration histories, nor provide detailed race categories among Asian Americans.[3]

[3] In both the Census PUMS data and the CPS data, determination of race is through self-identification. However, different from the Census PUMS data, the CPS data does not provide detailed race categories among Asians. In other words, one cannot readily identify Korean, Chinese, and Japanese from the CPS data. The CPS data does have information on a person's country of birth, and of the individual's parent's country of birth (U.S. Census Bureau and Department of Labor Statistics, 2000), but third generation Asian families are not able to be distinguished separately from each other. This is particularly important for Japanese households in places like San Francisco since over 70% of all the Japanese living in San Francisco were born in the US. Using place of birth will also misidentify members of certain Asian ethnic group who are minority in their host country. For example, over one third of all the Vietnam-born population in Los Angeles PMSA is Chinese by race instead of Vietnamese. These two issues may cloud the interpretation of the types of heterogeneity among Asian groups revealed by the Coulson and Kang (2001) study. Their study uses the CPS data.

In this research, we will examine multiple sources of heterogeneity among Asian Americans. In addition to examining the importance of differences in the endowments of Asian groups (Chinese, Japanese, Filipino, Korean, Asian Indian, and other Asian groups), we will examine heterogeneity in the effects of these endowments by stratifying model estimates by group.[4] Finally, we examine differences across metropolitan areas (Los Angeles, San Francisco, and New York) to see if the there are distinct patterns across place as well as across groups.[5] We are able to perform these series of analyses by using the PUMS (Public Use Microdata Samples) data from the Census Bureau. This enables sufficient sample size to perform the relevant estimation. This analysis will apply the methodology developed in Painter (2000), and previously applied to the study of homeownership rate differentials among race and ethnic groups in Los Angeles (Painter, et al., 2001). The methodology accounts for the likelihood that someone may move in estimation of models of homeownership choice. The full procedure is described in more detail below.

Results of this study reveal that all three types of heterogeneity exist among Asian populations in the United States. With respect to group characteristics, Chinese and Asian Indians have the highest ownership rates, Filipinos and Asian Indians have the highest incomes, Japanese are most likely to be native born (in Los Angeles and San

[4] Other Asians include Vietnamese, Laotians, and other Asian groups with small numbers in the United States.

[5] This approach is different from Coulson and Kang (2001) that use the full US sample in order to generate sufficient sample size. They find that that Asian-Americans have a lower aggregate homeownership than the national average. Unfortunately, this comparison mismatches the geography of the analysis, since Asian American population disproportionately lives in a few major metropolitan areas. Because the housing market is unique in those major metropolitan areas, it is more reasonable to analyze Asian American population in those major metropolitan areas where all sample households face similar market conditions. The selection of geography in this paper follows the approach of many other previous studies (See for example, (Rosenbaum, 1996; Myers and Lee, 1998; Myers and Park, 1999; Painter, Gabriel, and Myers, 2001).

Francisco) and the category of other Asians has the lowest incomes and ownership rates of all groups. After controlling for household characteristics and market conditions, Chinese have much higher homeownership rates than whites, Other Asians have lower homeownership rates than whites, and all other groups have similar homeownership rates to whites. Across metropolitan areas, the big outlier is the low homeownership rates and high rates of immigrant status of Japanese in New York. The remainder of the results are fairly robust across places.

Data

This analysis uses data from the 5% Public Use Microdata Sample (PUMS) file of the 1990 decennial census. We select three consolidated metropolitan statistical areas (CMSA) as study regions—Los Angeles—Riverside-Orange County CMSA (LA), San Francisco-Oakland-San Jose CMSA (SF), and New York-Northern New Jersey-Long Island CMSA (NY). Almost half of all Asian Americans live in these three metropolitan areas. These areas are characterized by high housing prices relative to the rest of the United States, and therefore contribute to the lower homeownership of Asians nationwide when compared to white, non-Hispanic households (Coulson and Kang, 2001). As mentioned previously, these data are sufficiently numerous to identify separate marginal effects for each of the six Asian groups studied here - Chinese, Filipino, Japanese, Korean, Asian Indian, and other Asian.[6]

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[6] The data file provides detailed information about both the housing unit and the individuals who reside in it. The sample file size is much larger than comparable data available from the American Housing Survey (AHS) or the Current Population Survey (CPS) for the study areas. Since the Asians have low ratio in total population of each CMSA, the large size can provide enough observations to do detailed analysis for each Asian ethnic group. In addition, the PUMS data contain information on migration histories and immigrant status that is not attainable from the AHS.

The sample in each CSMA includes all households that either own or rent their primary residence, excluding persons who reside in group quarters. The samples are also limited to those household heads that are aged between 18 and 64. Since our analysis concentrates on the heterogeneity among different Asian ethnic groups, the samples include only white and Asian households. White, non-Hispanic households are included to provide a useful benchmark. Table 1 shows the homeownership rate for whites and each Asian ethnic group by location in 1990. The table shows the homeownership rates for both movers and for all households since both samples are used in the estimation of the mobility and homeownership choice equations. As expected, homeownership rates are lower for movers, but the difference is more dramatic for whites than for any of the Asian groups.

Asian households, as a whole, have similar homeownership rates as do whites in LA and SF, but much lower rates in NY. Within Asian groups, the Chinese have a higher homeownership rate than do whites in LA and SF but slightly lower than in NY. The Filipino, Japanese and Asian Indian groups have similar homeownership rates in LA and SF, but the Japanese group has much lower rate in NY. The Korean and other Asian groups have the lowest homeownership attainment in all three metros.

The independent variables used in the tenure choice model include demographic factors (race-ethnicity, age group, marital status, number of persons in the household, number of workers in the household, migration origin and history), economic factors (income, education level of the householder), and variables to capture local housing

market conditions (housing price and rent).[7] The use of this set of variables enables the researcher to capture factors that influence tenure choice based on the user cost of homeownership and factors related to preferences of households correlated with demographic characteristics such as the life cycle (e.g., (Skaburskis, 1996)). Instead of simply including household income, we use measures of permanent and transitory measures of household income are used in the tenure choice model to represent the nominal household affordability. Using the method of Goodman and Kawai (1982), permanent income is the predicted value of a regression of household income on a set of demographic and human capital characteristics.[8] Transitory income is calculated as the residual of observed household income and predicted income. Even though permanent income, in part, captures wealth, wealth cannot be measured directly in the data. Following Gyourko and Linneman (1996), our analysis uses the educational attainment of the household head as a proxy to indicate the future earning potential as well as the wealth of the household. Presumably, households with higher levels of education are more capable of paying the costs involved with homeownership. We also include a measure of earnings based on wealth that included dividend and interest income in later robustness checks.

Appendix I reports the mean values of all independent variables used in the study by metropolitan area for the full sample. Rather than discuss all of the differences in detail, we focus on some of the larger differences concerning income and immigrant status in Figures 1 and 2. Figure 1 presents the difference of permanent income by Asian

[7] This paper uses PUMA as the geographical unit of local housing market. The information regarding the housing price and rent is based on this unit. Housing price is measured as the 25th percentile home price and rent as the median rent in one PUMA. The use of these proxies follows Gyourko and Linneman (1996).
[8] Results of these household income regression are available upon request.

groups and across metros. As expected, all movers within groups have slightly lower mean permanent incomes than in the sample including non-movers. The Filipino and Asian Indian groups have the highest permanent incomes in all metros, the Chinese and Japanese groups are next, and the Korean and other Asian groups have the lowest incomes, except in NY CMSA.

The analysis also emphasizes immigrant status and immigrant length of stay as well as migration origin (entered as a series of categorical variables indicating whether the household moved from within the same CMSA, moved from the same state, moved from elsewhere in the U.S., or moved from outside the U.S.). The detailed information on immigration history and migration origin in PUMS is important for our analysis to examine the heterogeneity in Asian ethnic groups, given the fact that most of Asian Americans are immigrants and different groups have diversified immigration path, as indicated in Figure 2. Figure 2 also demonstrates a higher ratio of new immigrants, defined as immigration within 5 years, in the movers sample than in the full sample. Another notable observation is that the Japanese group has relatively high ratio of domestic born households in LA and SF CMSA but a large number Japanese new immigrants in NY CMSA.

Empirical Model

The multivariate analysis employs a probit specification of the tenure choice that focuses on recent movers. As argued by Pitkin and Myers (1994) and Ihlanfeldt (1981), the homeownership attainment of non-moving households may largely reflect the lagged effects of past choices. Thus, using these households will lead to a misinterpretation of the impact of age and other factors in cross-sectional data. Further, previous research has

documented that there are strong casual linkages between residential mobility and tenure choices (for example, see (Clark, Deurloo, and Dieleman, 1994; Clark, Deurloo, and Dieleman, 1997; Dieleman, William, and Marinus, 2000)). The control for mobility is particularly relevant for immigrant groups given the fact that immigrants are systematically different in their likelihood to move than their native-born counterparts (Farley, 1996; Long, 1988), and residential mobility is a direct indicator of life course shifts (Moore and Clark, 1990).

In this paper, the decision to own is estimated in a sample of recent movers. As Painter (2000) demonstrates, the general mover-only model may have sample selection bias because renters are over-represented in the sample and because we cannot observe a household's tenure choice if they do not move. A tenure choice model with the correction of sample selection bias is introduced in that paper (Painter, 2000). Painter, Gabriel, and Myers (2001) apply the sample selection correction method to the LA PMSA data and find that the estimated impact of the age and immigrant effects changes substantially after adjusting the mobility.

Controlling mobility is particularly important for the current analysis due to the high ratio of movers and immigrants in Asian groups, as reflected in Appendix I. Because Kan's (Kan, 2000) methodology for adjusting for mobility is not applicable in cross-sectional data, we correct for sample selection bias by employing the method suggested by Painter (2000). The tenure choice model correcting for selection bias is adapted from (Van de Ven and Van Pragg, 1981), in which both the selection equation and the tenure choice equation have binary dependant variable.[9]

[9] The original two-step selection model is often estimated by obtaining Mill's ratio from a first stage probit, and then entering it into the second stage equation. As noted by Van de Van and Van Pragg (1981),

As with the standard formulation, assume that there exists a latent variable OWN^* that measures the propensity to own among mover households. The latent variable is regressed on a vector of demographic, economic and other factors affecting the housing tenure decision, as represented in the following equation.

$$OWN^*_i = X_i \beta + \varepsilon_{1i}$$

But in the data, we only observe the binary income,

$OWN_i = 1$, if $OWN^*_i > 0$ and
$OWNi = 0$, if $OWN^*_i <= 0$,

Where X_i is a vector of socioeconomic characteristics, β is its associated coefficient vector, and i represents each household in the sample.

However, we only observe OWN_i for observation if $MOVE_i = 1$, where $MOVE^*_i$ is taken from the following relationship,

$MOVE^*_i = Z_i \gamma + \varepsilon_{2i}$, where
$MOVE_i = 1$, if $MOVE^*_i > 0$ and
$MOVEi = 0$, if $MOVE^*_i <= 0$,

Where Z_i is a vector of socioeconomic characteristics, γ is its associated coefficient vector, and i represents each household. We make the assumption that ε_{1i} and ε_{2i} are jointly normally distributed with correlation coefficient ρ. This allows maximum likelihood estimation of the log likelihood function

$$L = \sum_{i \in S}^{own_i=1} \ln[\Phi_2(X_i\beta, Z_i\gamma, \rho)] + \sum_{i \in S}^{own_i=0} \ln[\Phi_2(-X_i\beta, Z_i\gamma, \rho)] + \sum_{i \notin S} \ln[1 - \Phi_1(Z_i\gamma)]$$

where S is the sample of observations for which OWN_i is observed, Φ_1 is the standard cumulative normal and Φ_2 is the cumulative bivariate normal distribution function.

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if the dependant variable in the second stage equation is binary, the error term does not have a normally distributed error term; and therefore the two-stage approach yields only approximate results.

Unlike the standard Heckman selection model, the bivariate probit model with sample selection is weakly identified without the use of identifying assumptions in the selection equation (Greene, 1997). Likelihood ratio tests confirm that they are not necessary.

Results

Given the substantial heterogeneity in homeownership attainment and socioeconomic characteristics across Asian groups, we now test the extent to which the difference in homeownership rate remains after adjusting for household characteristics. We are also interested in the extent to which the impacts of those characteristics are similar across ethnic groups and areas. To simplify table presentation, here we present the detailed results for Los Angeles CMSA and summarize the estimates for other regions.

First, we estimate the sample with the whites and Asians only to provide a benchmark from which the impact of being a member of a particular Asian group can be judged after controlling other household characteristics and housing market factors. The reference household is chosen to be white, married, aged 25-34, with a high school diploma, and a non-immigrant who has moved from within Los Angeles CMSA. Regression coefficients and their standard errors from the sample selection model are reported on the left side of Table 2. Overall, the coefficients have the expected signs. Higher ages, being married, higher education, higher permanent and transitory incomes, lower house prices, and higher rents all lead to higher homeownership rates. In these models which adjust for selection bias, immigration status does not have a significant effect on homeownership, suggesting that high rates of mobility and not immigrant status leads to lower homeownership (see also Painter, 2000). In addition, the correlation

coefficient between the tenure choice equation and the mobility equation is significant suggesting the importance of controlling for mobility explicitly in the estimation.[10]

After controlling for other variables, there are significant differences in homeownership attainment between white and some Asian groups. The Chinese, in particular, have significantly higher homeownership propensity than the white, while the Other Asians group has lower somewhat lower. The results for Filipino, Japanese, Korean and Asian Indian groups suggest that these groups have similar homeownership propensities, as do whites. The second panel of Table 2 shows the comparison within Asian groups. The reference household is changed to Chinese with same households characteristics as the white household in the above white-Asian sample. While the results on immigrant status are the same, age is less important, income and housing market characteristics are slightly more important, and a college education is not a predictor of higher homeownership. As with the prior panel, the results show that, when controlling economic and demographic characteristics, all other Asian groups indicate lower homeownership propensities than the Chinese, indicated by significant negative coefficients for those ethnic groups.

The results from the San Francisco CMSA largely mimic the Los Angeles CMSA results (see Appendix II). Chinese have higher homeownership propensities than all other groups. Japanese and other Asian have lower homeownership propensities than do Filipino, Korean, and Indian, but these differences were not significant. The only other small difference is that the oldest group (55-64) has significantly lower probability of homeownership than the other age groups. Overall, all Asian groups have

[10] Results from the sample selection equation are available upon request.

homeownership rates at least as high as whites after adjusting for household and housing market characteristics.

There are larger differences in the New York CMSA (see Appendix III). Most significantly, Japanese households have the smallest homeownership propensity even after controlling for all observables. While Chinese households still have the highest adjusted homeownership rates, the gap between them and Filipino and Indian households is less. As with San Francisco, results indicate that there are lower homeownership probabilities in the oldest age group. In contrast to Los Angeles and San Francisco, immigrant status predict higher homeownership rates, and higher house prices does not dampen homeownership. The later finding could be due to the rapid increase in house prices during the late 1980s, and a rush for household to get into the housing market for investment purposes.

The obvious changes in coefficients of some factors from the white-Asian sample to Asian only sample imply that the implied assumption in Table 2 that those factors have same impacts in both the whites and the Asians is not correct. Therefore it is likely that heterogeneity may exist across Asian groups in the estimated effects. Although many of the demographic characteristics are not significantly different from each other, we can strongly reject the null hypothesis of similar coefficient vectors across groups (p-value < .0001).

The results for the each model stratified by group confirm this in Table 3. When comparing the coefficient estimates across group, we find that the income, local housing market and migration origin factors are stable across different Asian groups. The importance of age varies some across groups. For most groups, age is not a factor in

predicting homeownership. For Japanese households in Los Angeles, ages above 35 are related to lower homeownership rates, but these results are not replicated in San Francisco and New York. Marital status is not significant for predicting tenure choice for Chinese and Filipino households, but non-married male heads have significantly lower probability of homeownership than the married households in Japanese, Asian Indian, Korean and other Asian households. Most of education variables have no significant impacts on tenure choice across the groups, except in Chinese and other Asians group where the households without high school diploma have significant lower possibility than their counterparts in the same group. We further note that in many of the groups the correlation coefficient are insignificant, which suggests that simply using a sample of movers without correction for sample selection is appropriate for those groups.

Finally, results indicate that immigrant status impact the different groups differentially. Chinese immigrants have a considerably higher propensity to own homes than the corresponding domestic born when controlling other factors. The other Asian group has a large negative impact of immigrant status, but all of other groups are not impacted by immigrant status.

The general pattern of homeownership attainment stratified by Asian group is more similar between the San Francisco CMSA and the Los Angeles CMSA than between New York and Los Angles (see Appendices IV & V). As in Los Angeles, Chinese immigrants in San Francisco have higher homeownership rates than do native-born Chinese. Overall, most variables have consistent effects across groups. Exceptions are greater sensitivity of Japanese households to higher education, less sensitivity of Japanese households to permanent income, and greater sensitivity of other Asians to

income. In New York, the group with the largest differences from the other Asian groups is the Japanese. For Japanese households, income has no significant impact on homeownership. In fact, most of the variables have very little explanatory power. The probable explanation for this is the high number of temporary immigrants that exist in the Japanese population in New York (Ines, Paine, and Nishi, 2000; White, et al., 1993), who came largely as short term students or business people and will not chose homeownership regardless of the household's characteristics. Across the other Asian groups in New York, the largest difference concerns the importance of immigrant status. Chinese immigrants consistently have higher homeownership rates than do native-born Chinese, but Filipinos and Other Asian have lower homeownership rates as an immigrant. The remainder of the coefficient estimates are fairly consistent across groups.

Unobserved Heterogeneity

After controlling for all socioeconomic and housing market characteristics, the remaining unobserved heterogeneity can be represented by looking at the marginal change in probabilities cause by being a member of each Asian group when compared to white households. They are presented for each metropolitan area in Figure 3. For Los Angeles, Chinese have unexplained homeownership rates that are 20 percentage points higher than whites. The remainder of the groups have rates that are within 4 percentage points of whites. Similarly, Chinese have unexplained homeownership rates that are 23 percentage points higher than whites in San Francisco. Again, all other groups have similar homeownership rates as whites after controlling for differences in household characteristics. In New York, Chinese have rates that are 18 percentage points higher than whites, and Japanese have rates that are 18 percentage points lower than whites.

Filipinos and Asian Indians have rates that are slightly higher than whites, and Koreans and other Asians have rates that are slightly lower than whites. As we discussed previously, the reason for the lower rates of Japanese in New York is likely the presence of many temporary immigrants.

As noted in Figure 3, the biggest outlier in all metropolitan areas is the Chinese. While a more thorough investigation is left for future research, a number of hypotheses were explored to discover the reason for the unexplained Chinese propensity to own. The first is related to the fact that there are two distinct types of Chinese immigrants - highly educated or very poorly educated (Zhou, 1992, p.76). Socioeconomic bimodality is also well documented among Chinese immigrants who are clustered at both ends of the education ladder (Chang, 1988). We hypothesized that among the highly educated, there might be a smaller difference between Chinese and other Asians due to the fact that all groups would likely possess the same access to financial markets and would have less credit constraints. On the other hand, it might be the case that due to a cultural affinity (Zhou, 1992) the lower educated Chinese may seek to own while lowering the consumption of other goods and relying on extensive family support (Lee and Roseman, 1999). In contrast to the stated hypothesis, we found that Chinese of all education levels possessed the same affinity to own homes at levels above the other Asian groups.[11]

Second, we tested different segments of the Chinese population to see if native-born Chinese and immigrants had similarly high homeownership rates after controlling for household characteristics. We found that recent immigrants did have a slightly larger unexplained homeownership gap over other Asian groups, but that overall all Chinese households had higher homeownership rates than other groups. We tested for differences

in a number of other demographic factors, and none of them explained high Chinese homeownership propensities.

Finally, we tested whether the place of birth for Chinese immigrants could provide a greater understanding for which groups may have the highest adjusted homeownership rates. We divided the Chinese sample into four groups: those born in Taiwan, Hong Kong, Mainland China, and other parts of Southeast Asia. They are divided in this manner because they have very different experiences prior to immigration. (Rumbaut, 2000) notes that Taiwanese and those from Hong Kong have much higher initial wealth, those from Mainland China are likely to have prepared many years for immigration, and those from places like Vietnam, Laos, and Cambodia often immigrated without preparation as a refugee.

We found that in every case, Chinese households have higher homeownership propensities than do whites or other Asian groups. Taiwanese households had the highest unexplained homeownership rates, and other Chinese households had the lowest, but the rates still remained significantly higher than other Asian groups. This suggests that there may be some cultural affinity that elevates Chinese homeownership rates. This finding is consistent with previous research on homeownership attainment in Toronto, Canada where Chinese tend to have higher propensities for homeownership than other race-ethnic groups (Skaburskis, 1996). Zhou (1992) suggests that Chinese immigrants feel less secure if they do not own their homes. In addition, she finds that there exists significant peer pressure among Chinese groups to own homes. Chen (1992) also suggests that homeownership is deeply rooted in Chinese culture and Chinese immigrants tend to make more effort to purchase their own home than other people. Despite these explanations,

[11] Results are available upon request.

future research is clearly needed to better understand why Chinese homeownership rates are so much higher than their household characteristics would predict.

Robustness Checks

As hinted in the previous section, one possible source of omitted variable bias concerns the lack of specific wealth variables in the analysis. If different groups have differential unobserved wealth, then since our data do not fully identify wealth, we may be able to more fully explain the remaining unobserved heterogeneity. In addition to using permanent income and including education level in the tenure choice analysis as partial controls for wealth, we are also able to use dividend and interest income to proxy for wealth. While the Chinese households do have larger amounts of dividend and interest income than other households, especially for those born in Taiwan, including dividend and interest income as an additional control did little to reduce the unexplained propensity of Chinese households to own. It may be the case that these immigrant households have wealth or resources connected to their home country, but it does not appear that wealth is the full explanation.[12]

We also investigated heterogeneity among Asian using the 1980 PUMS data in each of the three metropolitan areas to learn whether there had been any significant changes among groups over time as many new immigrants arrived over the decades of the 1980s. While most of the coefficient estimates are stable across time, the most notable exception is that Chinese households had a smaller unexplained propensity to own in 1980. In New York, Filipinos and other Asians actually had the same propensity

[12] Charles and Hurst (forthcoming) find that after controls of permanent income, a household's own wealth does not help explain unexplained gaps between groups. On the other hand, they find that parental wealth does help explain differences, presumably because of the help they can give in coming up with the

to own as do Chinese after controlling for household and housing market characteristics. In Los Angeles and San Francisco, Chinese still have a higher homeownership propensity, but the gap between other Asian groups and the Chinese is reduced. The other notable differences concern age and immigrant status. Across all metropolitan areas, households above 45 in age had lower homeownership than households aged 25-44 after controlling for other factors. This finding is counter-intuitive, but may reflect the fact that older immigrant households may have had a harder time adapting to living in the United States. Lastly, we find that being a recent immigrant significantly lowers homeownership attainment in New York, but not in the other metro areas. It appears that the influx of Chinese immigrants over the 1980s may have counteracted that effect by 1990.

Finally, we utilized the simulation methodology described by Wachter and Megbolugbe (1992) and Painter, Gabriel, and Myers (2001) to see if the different coefficient vectors by group may account for further unobserved heterogeneity. With this methodology, one uses the coefficient vectors of one group in combination with the characteristics of another to find out the size of the estimated gap in homeownership. While this approach does help explain the under-prediction of homeownership among other Asians when compared to whites, it does not further explain the over-prediction of homeownership among Chinese households.

Concluding Remarks

As one might expect given the tremendous diversity of backgrounds that Asian Americans possess, there is much heterogeneity with regard to homeownership

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downpayment. In our case, we would like to include resources available from parents and other relatives, but such data do not exist.

attainment. Even though on average, Asian Americans have lower homeownership than do white households across the entire United States (Coulson, 1999), most of this difference can be explained by the higher mobility of Asian households and their concentration in major metropolitan areas with higher housing prices. The remaining difference is largely due to lower incomes among Koreans and Other Asian groups. In contrast to Coulson and Kang (2001) who have also investigated Asian homeownership heterogeneity, we find that immigrant status does not lead to lower homeownership rates. The difference is due to the control for mobility in our methodological framework.

While there are subtle differences in the estimated effects of household characteristics across groups and places, the largest sources of heterogeneity that are not explained simply by economic endowments are the consistently high homeownership rates of Chinese across places, and the low homeownership of the Japanese in New York. The low homeownership of the Japanese in New York is likely explained by the large numbers of temporary immigrant that plan on returning to Japan after a short time (Ines, et al., 2000). On the other hand, the high unexplained homeownership rates of the Chinese remains an interesting topic for future research. It is unclear, however, whether it is because of their extremely high desire for homeownership or they have experienced a different path to homeownership than other minority groups. The implications of this research for housing policy are straightforward. If the policy concern is only deficits between non-minority and minority households, then results here suggest that general policies that focus on education and training that ultimately lead to income growth will be sufficient for helping Asian households achieve homeownership rates at or above those of white households. On the other hand, some of the recent immigrants from Asia have

been at the lower end of the economic ladder, and it is possible that access to homeownership may be able to be improved for these groups. A recent paper (Listoken and Listokin, 2001) suggested specialized policies for increasing homeownership rates among these groups. Given the results of this study, such policies may succeed in pushing the aggregate homeownership rates of Asians above those of whites. This outcome, while probably not a primary concern of housing policy, has important implications for many metropolitan areas that are attracting large numbers of Asian immigrants.

Table 1. Homeownership Rates by Race and Region in 1990

Percentage	All Households			Sample of Movers Only		
	LA CMSA	SF CMSA	NY CMSA	LA CMSA	SF CMSA	NY CMSA
White	61.4	59.9	67.3	47.6	44.0	53.1
Asian (all)	57.3	60.7	49.3	49.6	51.7	43.3
Chinese	68.2	69.0	55.4	64.1	62.7	53.6
Filipino	59.3	61.7	51.7	51.1	50.7	41.5
Japanese	62.3	57.7	25.4	47.4	40.2	18.8
Korean	47.9	48.0	38.4	42.4	41.1	33.0
Asian Indian	60.0	59.0	53.9	50.5	50.2	47.5
Other Asian	41.6	37.5	36.9	38.0	35.3	29.7
No. of Households	124,205	59,705	146,306	71,764	33,190	59,074

Note: The number of households represents all White and Asian households in each sample. The homeownership rate in one ethnic group is the ratio of homeowners to the total households within that group.

Table 2. Estimation Results for White-Asian Sample and Asian Only Sample in LA CMSA

	White and Asian Sample		Asian Only Sample	
Variable	Coeff.	Std. Error	Coeff.	Std. Error
Intercept	3.626**	0.174	3.042**	0.607
Age 18-24	-0.408**	0.027	-0.222**	0.084
Omitted: Age 25-34				
Age 35-44	0.075**	0.016	0.100*	0.041
Age 45-54	0.096**	0.023	-0.053	0.052
Age 55-64	0.209**	0.029	-0.005	0.066
Not Married, Male Head Of Household	-0.454**	0.017	-0.212**	0.053
Not Married, Female Head	-0.311**	0.022	-0.027	0.068
Omitted: Married				
No High School Diploma	-0.198**	0.021	-0.364**	0.056
Omitted: High School Dip. W/ College				
College Degree Of Better	0.038*	0.018	-0.071	0.054
Number Of People In Household	0.002	0.005	0.010	0.011
Number Of Workers In Household	-0.260**	0.012	-0.174**	0.035
Permanent Income (1000s)	0.024**	0.001	0.028**	0.002
Transitory Income (1000s)	0.012**	0.000	0.014**	0.001
The 25th Percentile Housing Price (Log)	-1.030**	0.019	-1.263**	0.059
Puma Median Rent(Log)	1.236**	0.039	1.811**	0.102
Ethnicity-Chinese	0.586**	0.033	-	-
Ethnicity-Filipino	0.062	0.036	-0.665**	0.046
Ethnicity-Japanese	-0.070	0.040	-0.668**	0.056
Ethnicity-Korean	0.003	0.040	-0.678**	0.067
Ethnicity-Asian Indian	0.010	0.060	-0.662**	0.049
Ethnicity-Other Asian	-0.170**	0.041	-0.840**	0.052
Moved From Within Same State(s)	-0.117**	0.015	-0.289**	0.054
Moved From Within U.S	-0.682**	0.016	-0.673**	0.053
Moved From A Foreign Country	-0.601**	0.037	-0.605**	0.065
Omitted: Moved From Within CMSA				
Immigrant	0.071	0.045	0.078	0.090
Came To U.S 5-10 Years Ago	0.106*	0.044	0.100	0.067
Came To U.S 10-15 Years Ago	0.338**	0.048	0.283**	0.074
Came To U.S 15-20 Years Ago	0.198**	0.057	0.286**	0.086
Came To U.S 20-30 Years Ago	0.187**	0.056	0.316**	0.098
Came To U.S More Than 30 Years Ago	0.114	0.063	0.149	0.149
Omitted: Came To U.S. In The Past 5 Yrs.				
Correlation Coefficient (rho)	0.203**	0.023	0.180**	0.032
Log Likelihood	-108,266		-12,760	
Number of Observations	72,066		9,877	

*: significant at 5% confidence level **: significant at 1% confidence level

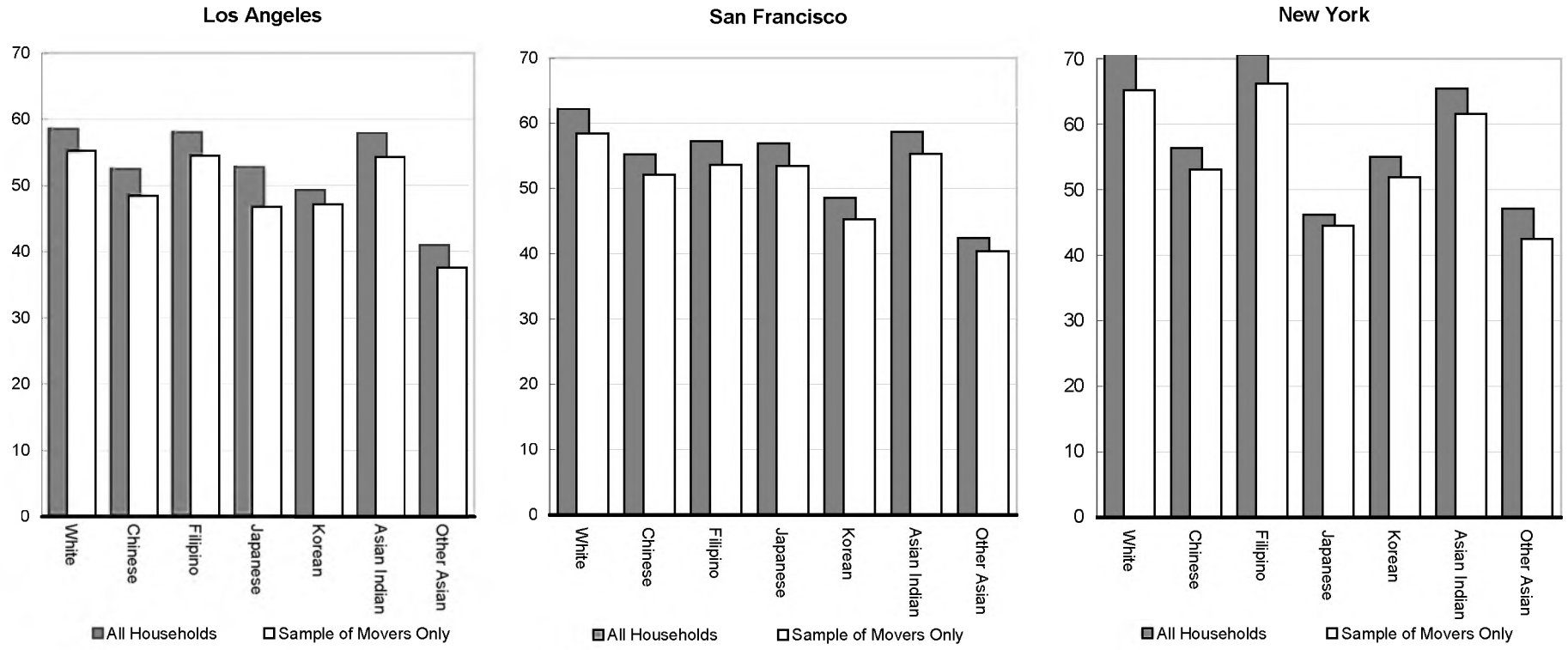
Table 3. Estimation Results by Asian Group in LA CMSA

	Chinese Group		Filipino Group		Japanese Group		Korean Group		Asian Indian Group		Other Asian Group	
Variable	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Intercept	-0.81	1.396	9.033**	1.665	-0.117	1.256	-2.632	1.617	-1.749	2.495	2.662	1.89
Age 18-24	-0.129	0.163	0.24	0.175	-0.610**	0.241	-0.544	0.297	-0.428	0.394	-0.294	0.223
Omitted: Age 25-34												
Age 35-44	0.032	0.11	0.330**	0.099	-0.271**	0.098	-0.093	0.1	0.096	0.192	-0.042	0.106
Age 45-54	0.057	0.189	0.044	0.144	-0.414**	0.142	-0.222	0.117	0.221	0.243	-0.399**	0.136
Age 55-64	-0.128	0.231	0.025	0.173	-0.766**	0.17	0.195	0.14	-0.111	0.39	-0.348	0.185
Not Married, Male Head Of Household	-0.074	0.115	-0.024	0.116	-0.441**	0.124	-0.315*	0.157	-0.516*	0.233	-0.214	0.138
Not Married, Female Head	0.056	0.149	0.049	0.143	-0.092	0.169	-0.054	0.176	0.107	0.364	0.035	0.182
Omitted: Married												
No High School Diploma	-0.524**	0.119	-0.002	0.153	0.102	0.198	0.269	0.141	0.107	0.364	-0.284*	0.123
Omitted: High School Dip. W/ College												
College Degree Of Better	-0.075	0.122	-0.18	0.121	-0.002	0.127	-0.177	0.122	-0.319	0.289	0.021	0.14
Number Of Persons In Household	0.01	0.026	0.059*	0.025	-0.03	0.036	0.177**	0.03	0.067	0.047	-0.062**	0.022
Number Of Workers In Household	-0.236**	0.077	-0.452**	0.078	-0.281**	0.093	-0.294**	0.082	-0.066	0.162	-0.139	0.088
Permanent Income (1000s)	0.032**	0.005	0.043**	0.005	0.020**	0.006	0.028**	0.006	0.028*	0.011	0.036**	0.007
Transitory Income (1000s)	0.015**	0.001	0.026**	0.002	0.006**	0.001	0.010**	0.001	0.013**	0.002	0.019**	0.002
The 25th Percentile Housing Price (Log)	-1.366**	0.137	-1.633**	0.135	-0.427**	0.132	-1.126**	0.128	-1.152**	0.24	-1.277**	0.194
Puma Median Rent(Log)	2.527**	0.272	1.380**	0.273	0.736**	0.25	2.254**	0.23	2.199**	0.486	1.837**	0.299
Moved From Within Same State(s)	-0.238*	0.117	-0.2	0.109	-0.298**	0.112	-0.318*	0.153	-0.506*	0.208	-0.1	0.14
Moved From Within U.S	-0.516**	0.106	-0.664**	0.124	-0.598**	0.133	-0.503**	0.129	-0.947**	0.189	-0.914**	0.144
Moved From A Foreign Country	-0.409**	0.153	-0.525**	0.118	-1.034**	0.202	-0.767**	0.151	-0.480*	0.245	-0.626**	0.226
Omitted: Moved From Within CMSA												
Immigrant	0.664*	0.303	0.272	0.203	0.014	0.235	0.387	0.304	-0.214	0.458	-0.433	0.434
Came To U.S 5-10 Years Ago	0.017	0.186	0.239	0.139	-0.229	0.229	-0.071	0.152	0.565	0.294	0.06	0.21
Came To U.S 10-15 Years Ago	-0.025	0.238	0.134	0.175	0.129	0.252	0.201	0.17	0.802*	0.378	0.382	0.242
Came To U.S 15-20 Years Ago	0.16	0.282	0.098	0.202	0.046	0.261	0.152	0.192	1.300**	0.446	0.398	0.301
Came To U.S 20-30 Years Ago	-0.164	0.328	0.312	0.256	0.643*	0.267	0.014	0.245	0.47	0.482	-	-
Came To U.S More Than 30 Years Ago	-0.291	0.46	-0.294	0.296	0.348	0.313	-0.003	0.43	0.579	0.661	-	-
Omitted: Came To U.S. In The Past 5												
Correlation Coefficient (rho)	0.004	0.333	0.075	0.27	0.862**	0.056	0.29	0.07	0.008	0.531	0.331	0.32
Log Likelihood	-2,651		-3,007		-1,961		-2,006		-739		-1,777	
Number Of Observations	2,185		2,184		1,343		1,824		647		1,663	

*: significant at 5% confidence level **: significant at 1% confidence level

Note: The estimations for other Asian group do not include mig5 and mig6 because there are two few households in these two categories. We drop the two variables and 31 observations in these immigration categories.

Figure 1. Permanent Household Income of Each Group in All Households and Movers-only Sample by Region*



Note: The vertical axis shows the mean value of permanent income in 1000s.

Figure 2. Share of Population by Immigrant Status in Full Sample and Movers-only Sample by Race and Region

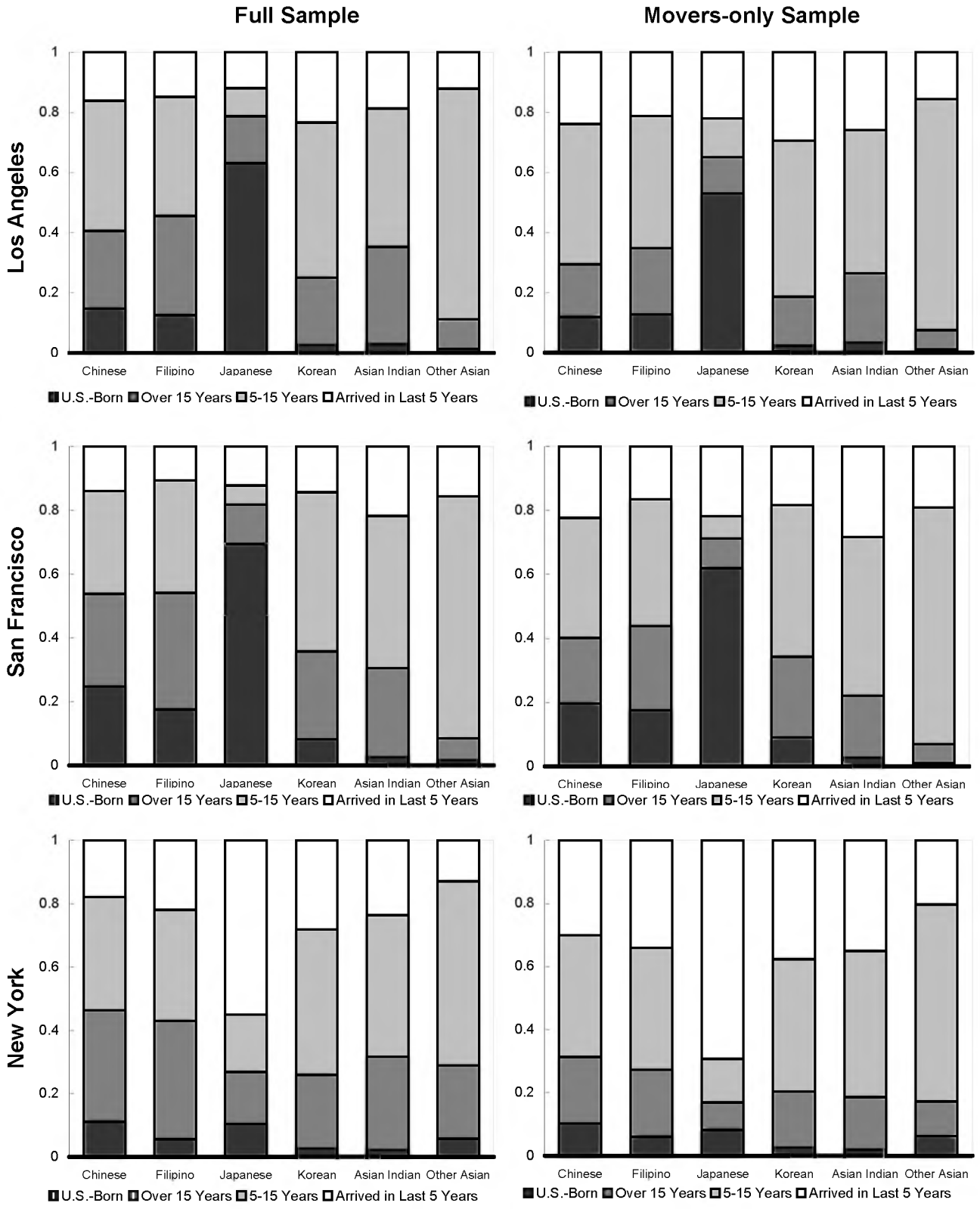
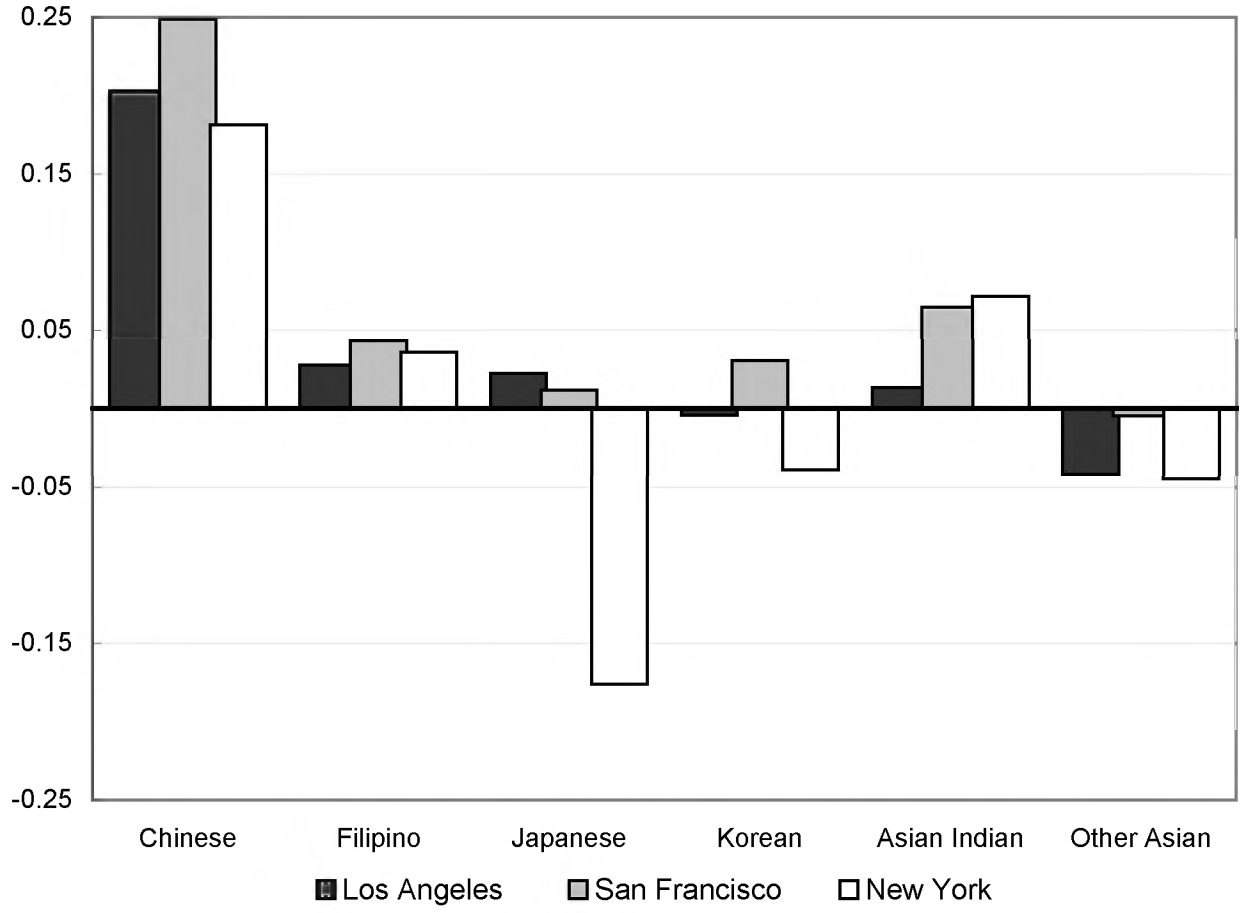


Figure 3. Marginal Differences in Probability of Homeownership for Each Asian Ethnic Group by Region*



Note: The reference group is the probability of homeownership among whites. The estimation is based on movers-only sample. The dp/dx value for each ethnic variable is computed from the estimation of White-Asian sample in three areas by controlling other

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Appendix I: Variable Summary Statistics in Asian Full and Movers-Only Sample by Region

	LA Full Sample		SF Full Sample		NY Full Sample		LA Movers Sample		SF Movers Sample		NY Movers Sample	
Variable	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.	Mean	Std Dev.
Ownership Rate	0.573	0.495	0.607	0.488	0.493	0.500	0.496	0.500	0.517	0.500	0.433	0.496
Age 18-24	0.038	0.191	0.045	0.207	0.029	0.168	0.053	0.223	0.064	0.244	0.041	0.199
Age 25-34	0.254	0.435	0.273	0.446	0.257	0.437	0.326	0.469	0.365	0.482	0.352	0.478
Age 35-44	0.338	0.473	0.337	0.473	0.347	0.476	0.358	0.479	0.340	0.474	0.361	0.480
Age 45-54	0.233	0.423	0.200	0.400	0.250	0.433	0.184	0.387	0.148	0.355	0.180	0.384
Age 55-64	0.137	0.344	0.145	0.352	0.116	0.321	0.080	0.271	0.082	0.275	0.066	0.248
Not Married, Male Head Of Household	0.136	0.342	0.146	0.353	0.102	0.303	0.152	0.359	0.172	0.377	0.118	0.323
Not Married, Female Head	0.161	0.368	0.173	0.378	0.129	0.335	0.165	0.372	0.172	0.378	0.125	0.331
No High School Diploma	0.125	0.331	0.143	0.350	0.165	0.371	0.134	0.341	0.141	0.348	0.137	0.344
High School Dip. W/ College	0.317	0.465	0.310	0.463	0.239	0.427	0.302	0.459	0.295	0.456	0.233	0.423
College Degree or Better	0.558	0.497	0.547	0.498	0.596	0.491	0.564	0.496	0.565	0.496	0.630	0.483
Number Of People In Household	3.593	1.822	3.568	1.910	3.722	1.879	3.558	1.837	3.533	1.960	3.605	1.849
Number Of Workers In Household	1.896	1.108	1.994	1.178	2.038	1.181	1.812	1.090	1.927	1.161	1.945	1.149
Permanent Income (1000s)	51.914	25.584	54.340	23.345	59.222	30.852	47.829	25.200	50.811	23.230	55.621	29.390
Transitory Income (1000s)	-0.057	36.586	0.000	30.885	0.000	43.495	-0.069	36.158	-0.209	29.631	0.634	42.959
The 25th Percentile Housing Price	12.087	0.336	12.264	0.322	11.800	0.583	12.091	0.342	12.250	0.323	11.847	0.479
Puma Median Rent (log)	6.475	0.197	6.591	0.198	6.367	0.236	6.483	0.196	6.588	0.202	6.381	0.224
Ethnicity-Chinese	0.221	0.415	0.417	0.493	0.376	0.484	0.221	0.415	0.399	0.490	0.340	0.474
Ethnicity-Filipino	0.234	0.423	0.114	0.318	0.131	0.338	0.221	0.415	0.098	0.298	0.127	0.333
Ethnicity-Japanese	0.172	0.377	0.052	0.222	0.075	0.264	0.136	0.343	0.059	0.236	0.096	0.294
Ethnicity-Korean	0.061	0.240	0.067	0.250	0.245	0.430	0.066	0.247	0.078	0.268	0.249	0.433
Ethnicity-Asian Indian	0.161	0.367	0.239	0.427	0.144	0.351	0.185	0.388	0.230	0.421	0.165	0.371
Ethnicity-Other Asian	0.152	0.359	0.111	0.314	0.029	0.168	0.172	0.377	0.136	0.342	0.023	0.151
Moved From Within Same State(s)	0.055	0.229	0.178	0.383	0.012	0.110	0.085	0.280	0.286	0.452	0.020	0.140
Moved From Within U.S	0.061	0.239	0.553	0.497	0.425	0.494	0.094	0.291	0.282	0.450	0.058	0.233
Moved From A Foreign Country	0.136	0.343	0.120	0.325	0.202	0.402	0.210	0.408	0.193	0.395	0.331	0.471
Immigrant	0.822	0.383	0.768	0.422	0.933	0.251	0.865	0.342	0.811	0.391	0.940	0.238
Came To U.S. In The Past 5 Yrs.	0.159	0.365	0.138	0.344	0.240	0.427	0.228	0.420	0.208	0.406	0.366	0.482
Came To U.S 5-10 Years Ago	0.244	0.429	0.204	0.403	0.234	0.424	0.291	0.454	0.252	0.434	0.260	0.439
Came To U.S 10-15 Years Ago	0.188	0.390	0.164	0.370	0.152	0.359	0.186	0.390	0.163	0.369	0.133	0.340
Came To U.S 15-20 Years Ago	0.108	0.310	0.105	0.307	0.152	0.360	0.088	0.283	0.092	0.289	0.104	0.306
Came To U.S 20-30 Years Ago	0.096	0.294	0.109	0.312	0.126	0.332	0.059	0.235	0.075	0.264	0.067	0.249
Came To U.S More Than 30 Years	0.028	0.164	0.049	0.216	0.028	0.165	0.013	0.115	0.022	0.146	0.010	0.099
Number of Observations	15,242		9,877		9,872		6,147		9,050		5,518	

Appendix II. Estimation Results for White-Asian Sample and Asian Only Sample in SF CMSA

	White and Asian Sample		Asian Only Sample	
Variable	Coeff.	Std. Error	Coeff.	Std. Error
Intercept	0.502	0.347	0.659	0.768
Age 18-24	-0.410**	0.043	-0.398**	0.099
Omitted: Age 25-34				
Age 35-44	0.133**	0.028	-0.012	0.052
Age 45-54	0.107*	0.047	-0.137	0.072
Age 55-64	0.194*	0.062	-0.281*	0.085
Not Married, Male Head Of Household	-0.412**	0.028	-0.349**	0.065
Not Married, Female Head	-0.237**	0.034	-0.188*	0.080
Omitted: Married				
No High School Diploma	-0.211**	0.036	-0.100	0.064
Omitted: High School Dip. W/ College				
College Degree Of Better	0.056**	0.027	0.155*	0.064
Number Of People In Household	0.006	0.007	-0.010	0.013
Number Of Workers In Household	-0.246**	0.019	-0.072	0.039
Permanent Income (1000s)	0.027**	0.001	0.020**	0.003
Transitory Income (1000s)	0.013**	0.000	0.013**	0.001
The 25th Percentile Housing Price (Log)	-0.757**	0.033	-1.073**	0.080
Puma Median Rent(Log)	1.190**	0.057	1.814**	0.129
Ethnicity-Chinese	0.827**	0.039	-	-
Ethnicity-Filipino	0.145*	0.045	-0.707**	0.053
Ethnicity-Japanese	0.040	0.060	-0.740**	0.071
Ethnicity-Korean	0.103*	0.081	-0.611**	0.074
Ethnicity-Asian Indian	0.217*	0.072	-0.606**	0.083
Ethnicity-Other Asian	-0.016	0.061	-0.775**	0.069
Moved From Within Same State(s)	-0.199**	0.021	-0.096	0.050
Moved From Within U.S	-0.448**	0.021	-0.193**	0.050
Moved From A Foreign Country	-0.629**	0.054	-0.395**	0.085
Omitted: Moved From Within CMSA				
Immigrant	-0.047	0.069	0.046	0.109
Came To U.S 5-10 Years Ago	0.183*	0.065	0.122	0.084
Came To U.S 10-15 Years Ago	0.343**	0.072	0.204*	0.098
Came To U.S 15-20 Years Ago	0.322**	0.083	0.191	0.111
Came To U.S 20-30 Years Ago	0.268*	0.082	0.092	0.120
Came To U.S More Than 30 Years Ago	0.278*	0.097	0.013	0.165
Omitted: Came To U.S. In The Past 5 Yrs.				
Correlation Coefficient (rho)	0.217**	0.055	0.623**	0.070
Log Likelihood	-50,657		-8,174	
Number of Observations	59,705		9,872	

*: significant at 5% confidence level **: significant at 1% confidence level

Appendix III. Estimation Results for White-Asian Sample and Asian Only Sample in NY CMSA

	White and Asian Sample		Asian Only Sample	
Variable	Coeff.	Std. Error	Coeff.	Std. Error
Intercept	-4.287	0.221	-10.490	0.634
Age 18-24	-0.432**	0.031	-0.083	0.116
Omitted: Age 25-34				
Age 35-44	-0.003	0.028	0.052	0.050
Age 45-54	-0.137*	0.045	-0.160*	0.068
Age 55-64	-0.206**	0.056	-0.425**	0.088
Not Married, Male Head Of Household	-0.621**	0.019	-0.121	0.067
Not Married, Female Head	-0.539**	0.022	0.034	0.080
Omitted: Married				
No High School Diploma	-0.163**	0.023	-0.079	0.068
Omitted: High School Dip. W/ College				
College Degree Of Better	-0.067*	0.027	-0.206*	0.085
Number Of People In Household	0.004	0.005	0.036*	0.016
Number Of Workers In Household	-0.337**	0.018	-0.317**	0.055
Permanent Income (1000s)	0.018**	0.001	0.022**	0.003
Transitory Income (1000s)	0.006**	0.000	0.006**	0.001
The 25th Percentile Housing Price (Log)	-0.388**	0.021	0.200**	0.054
Puma Median Rent(Log)	1.322**	0.037	1.119**	0.116
Ethnicity-Chinese	0.583*	0.038	-	-
Ethnicity-Filipino	0.116*	0.058	-0.582**	0.064
Ethnicity-Japanese	-0.626**	0.075	-1.204**	0.092
Ethnicity-Korean	-0.129	0.055	-0.395**	0.049
Ethnicity-Asian Indian	0.231*	0.044	-0.694**	0.065
Ethnicity-Other Asian	-0.148	0.132	-0.802**	0.122
Moved From Within Same State(s)	-0.276**	0.021	-0.273*	0.123
Moved From Within U.S	-0.699**	0.020	-0.552**	0.066
Moved From A Foreign Country	-0.653**	0.039	-0.460**	0.065
Omitted: Moved From Within CMSA				
Immigrant	-0.208**	0.052	0.423**	0.109
Came To U.S 5-10 Years Ago	0.127*	0.050	0.097	0.069
Came To U.S 10-15 Years Ago	0.465**	0.058	0.202*	0.087
Came To U.S 15-20 Years Ago	0.508**	0.063	0.164	0.103
Came To U.S 20-30 Years Ago	0.473**	0.064	-0.065	0.117
Came To U.S More Than 30 Years Ago	0.398**	0.070	-0.213	0.200
Omitted: Came To U.S. In The Past 5 Yrs.				
Correlation Coefficient (rho)	0.418**	0.045	0.770**	0.061
Log Likelihood	-109,451		-7,247	
Number of Observations	146,306		9,050	

*: significant at 5% confidence level **: significant at 1% confidence level

Appendix IV. Estimation Results by Asian Group in SF CMSA

	Chinese Group		Filipino Group		Japanese Group		Korean Group		Asian Indian Group		Other Asian Group	
Variable	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Intercept	-3.190**	1.105	5.441**	1.716	-3.303	2.819	4.650	3.693	4.875	3.507	-1.822	2.860
Age 18-24	-0.308*	0.150	-0.798**	0.253	-0.416	0.333	0.050	0.383	-0.208	0.404	-0.175	0.318
Omitted: Age 25-34												
Age 35-44	-0.082	0.081	-0.101	0.115	0.129	0.178	-0.360	0.230	0.130	0.188	0.221	0.167
Age 45-54	-0.145	0.114	-0.100	0.169	-0.083	0.264	-0.284	0.258	-0.243	0.322	-0.266	0.219
Age 55-64	-0.355**	0.119	-0.332	0.180	0.018	0.388	-0.278	0.393	0.317	0.412	-0.367	0.338
Not Married, Male Head Of Household	-0.368**	0.104	-0.370*	0.144	-0.504*	0.216	-0.295	0.303	-0.607*	0.266	-0.194	0.191
Not Married, Female Head	-0.263*	0.129	-0.184	0.157	-0.741**	0.285	0.388	0.351	0.410	0.431	0.047	0.266
Omitted: Married												
No High School Diploma	-0.218	0.094	0.299	0.154	0.234	0.319	0.336	0.336	-0.110	0.344	-0.256	0.168
Omitted: High School Dip. W/ College												
College Degree Of Better	0.099	0.105	0.188	0.123	0.434*	0.219	-0.009	0.273	0.084	0.325	0.036	0.210
Number Of Persons In Household	-0.001	0.022	0.017	0.026	-0.088	0.063	0.182*	0.080	0.112	0.065	-0.070*	0.030
Number Of Workers In Household	-0.056	0.063	-0.288**	0.085	0.000	0.154	-0.251	0.184	-0.200	0.173	-0.195	0.126
Permanent Income (1000s)	0.017**	0.004	0.028**	0.006	0.008	0.009	0.025*	0.012	0.031*	0.012	0.041**	0.009
Transitory Income (1000s)	0.015**	0.002	0.018**	0.002	0.009**	0.002	0.015**	0.004	0.016**	0.003	0.022**	0.003
The 25th Percentile Housing Price (Log)	-1.040**	0.109	-1.275**	0.200	-0.382	0.247	-1.544**	0.430	-1.477**	0.358	-0.935**	0.333
Median Rent(Log)	2.327**	0.189	1.347**	0.305	1.138**	0.392	1.941**	0.646	1.782**	0.555	1.712**	0.502
Moved From Within Same State(s)	-0.245**	0.086	-0.146	0.099	-0.084	0.141	0.152	0.204	-0.179	0.229	-0.273	0.193
Moved From Within U.S	-0.225**	0.074	-0.019	0.097	-0.384*	0.156	-0.076	0.228	-0.487*	0.237	-0.798**	0.231
Moved From A Foreign Country	-0.215	0.135	-0.322*	0.161	-1.572**	0.353	-0.540	0.378	-0.647*	0.329	-0.748*	0.360
Omitted: Moved From Within CMSA												
Immigrant	0.338*	0.169	0.201	0.224	-0.258	0.376	-0.147	0.472	-0.127	0.565	0.200	0.625
Omitted: Came To U.S. In The Past 5 Yrs.												
Came To U.S 5-10 Years Ago	0.145	0.133	-0.018	0.171	-0.343	0.390	-0.017	0.400	0.103	0.286	0.532	0.300
Came To U.S 10-15 Years Ago	-0.074	0.155	0.185	0.219	-0.165	0.462	-0.185	0.428	0.385	0.351	0.722*	0.336
Came To U.S 15-20 Years Ago	-0.042	0.180	-0.007	0.232	0.727	0.519	0.149	0.442	0.271	0.415	0.463	0.392
Came To U.S 20-30 Years Ago	-0.056	0.183	-0.183	0.259	0.631	0.420	0.240	0.526	0.478	0.495	0.519	0.719
Came To U.S More Than 30 Years Ago	-0.250	0.242	0.120	0.383	0.110	0.469	0.339	0.768	-0.240	0.710	-	-
Correlation Coefficient (rho)	0.778**	0.069	0.455	0.247	0.734**	0.148	0.692*	0.335	0.366	0.390	0.314	0.347
Log Likelihood	-3,240		-2,076		-833		-416		-500		-832	
Number Of Observations	2,450		1,415		604		365		480		831	

*: significant at 5% confidence level **: significant at 1% confidence level

Note: The estimations for other Asian group do not include mig6 because there are too few households in this category.

Appendix V. Estimation Results by Asian Group in NY CMSA

	Chinese Group		Filipino Group1		Japanese Group2		Korean Group		Asian Indian Group		Other Asian Group3	
Variable	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Intercept	-11.642**	1.036	-7.765**	1.992	-7.340**	2.52	-14.782**	2.304	-7.126**	1.503	-18.557**	6.619
Age 18-24	-0.315	0.194	-0.480	0.320	0.434	0.462	-0.510	0.349	0.529*	0.215	-1.932*	0.806
Omitted: Age 25-34												
Age 35-44	0.062	0.093	0.229**	0.148	0.574**	0.223	0.008	0.130	0.128	0.093	0.016	0.357
Age 45-54	-0.199	0.128	0.011**	0.194	0.193	0.322	-0.096	0.158	-0.113	0.127	0.721	0.505
Age 55-64	-0.366*	0.149	-0.16	0.263	0.054	0.464	-0.344	0.204	-0.555**	0.186	-0.21	0.65
Not Married, Male Head Of Household	-0.133	0.107	-0.135	0.234	-0.526	0.349	0.296	0.195	-0.238	0.135	-1.054*	0.475
Not Married, Female Head	0.028	0.133	0.102	0.214	-0.352	0.422	0.294	0.217	-0.203	0.208	-0.406	0.572
Omitted: Married												
No High School Diploma	0.038	0.103	-1.250	0.456	-1.119*	0.536	-0.337	0.205	0.117	0.130	-1.072*	0.487
Omitted: High School Dip. W/ College												
College Degree Of Better	0.018	0.155	-0.846	0.276	0.035	0.420	-0.251	0.200	-0.289	0.164	-0.063	0.596
Number Of Persons In Household	0.053	0.027	0.055	0.048	-0.009	0.079	0.067	0.042	0.028	0.031	0.053	0.099
Number Of Workers In Household	-0.320**	0.096	-0.622**	0.181	0.318	0.288	-0.249	0.139	-0.386**	0.106	0.129	0.382
Permanent Income (1000s)	0.024**	0.005	0.035**	0.010	0.007	0.015	0.019**	0.008	0.025**	0.006	0.008	0.022
Transitory Income (1000s)	0.011**	0.002	0.006**	0.002	0.004**	0.001	0.006**	0.001	0.005**	0.001	0.018**	0.007
The 25th Percentile Housing Price (Log)	0.318**	0.072	-0.264	0.208	0.184	0.258	0.212	0.226	-0.222	0.153	0.742	0.642
Median Rent(Log)	1.028**	0.200	1.578**	0.363	0.497	0.488	1.534**	0.341	1.330**	0.230	1.492	0.813
Moved From Within Same State(s)	-0.398	0.219	0.262	0.582	0.878	0.505	-1.109**	0.399	-0.302	0.198	-	-
Moved From Within U.S	-0.633**	0.124	-0.997**	0.228	-0.642*	0.296	-0.299*	0.144	-0.570**	0.118	-	-
Moved From A Foreign Country	-0.468**	0.116	-0.592**	0.204	-0.790*	0.280	-0.095	0.184	-0.420**	0.114	-1.570*	0.666
Omitted: Moved From Within CMSA												
Immigrant	0.758**	0.184	0.167	0.330	0.199	0.425	0.570	0.460	0.261	0.277	-	-
Omitted: Came To U.S. In The Past 5 Yrs.												
Came To U.S 5-10 Years Ago	-0.042	0.133	0.254	0.213	0.051	0.359	0.505**	0.191	0.177	0.119	-0.597	0.553
Came To U.S 10-15 Years Ago	-0.017	0.179	0.254	0.250	0.794*	0.355	0.648**	0.205	0.344*	0.157	-0.475	0.514
Came To U.S 15-20 Years Ago	-0.164	0.202	0.700**	0.264	0.903*	0.373	0.909**	0.232	-0.042	0.175	0.686	0.627
Came To U.S 20-30 Years Ago	-0.324	0.228	0.829**	0.298	-0.063	0.557	0.757**	0.291	-0.208	0.200	-0.460	1.024
Came To U.S More Than 30 Years Ago	-0.506	0.336	-0.086	0.599	0.879	0.576	0.411	0.580	0.322	0.532	-	-
Correlation Coefficient (rho)	0.701**	0.159	-	-	-	-	0.924**	0.063	0.852**	0.079	-	-
Log Likelihood	-2,683		-326		-187		-1,011		-1,817		-45	
Number Of Observations	1,878		701		528		908		1,375		118	

*: significant at 5% confidence level **: significant at 1% confidence level

Note: The results for groups denoted by 1, 2, 3 are obtained from probit model of movers-only sample because the Heckman Selection model does not converge for these groups. Since there are too few observations in some categories in Other Asian group, related variables are dropped from the probit model.