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# THE DECISION TO OWN

*The Impact of Race, Ethnicity, and Immigrant Status*

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## EXECUTIVE SUMMARY: THE INSTITUTE PERSPECTIVE

Public attention has centered on differences in mortgage application rejection rates for different racial and ethnic minorities. Equally unsettling are the different rates at which these groups tend to become homeowners. Indeed, substantial differences in racial, ethnic, and immigrant homeownership rates fuel the perception that housing market discrimination unfairly denies homeownership to qualified households.

This paper shows that, in total, Latinos and Asians could attain homeownership at the same rate as whites if education, immigrant status, and income were equalized. These findings strongly suggest that public policy can make significant gains in homeownership by emphasizing the educational needs of immigrants, and racial and ethnic minorities.

This should not be a surprise. Driven by public policy and competitive pressures, market innovation has stretched the reach of the private mortgage market over the past decade. Innovation cannot, however, change the basic equation of affordability. Income still dictates how much a household can afford, and education still drives income.

Other interesting findings include the fact that increases in minority income produce greater changes in homeownership rates, indicating the relative intensity of the desire to own among minorities. Also, differences in the rate of homeownership become negligible between natives and immigrants after ten years of residency. This suggests rapid financial integration into the U.S. economy for immigrants.

A troubling finding of the paper is a persistent gap, after controlling for income, education, and immigrant status, in the homeownership rate between whites and African-Americans. This discrepancy may be due to the framework of the study, which focuses exclusively on households that move within Los Angeles County. The authors speculate on potential explanations for this gap. Patterns of black migration to nearby suburbs outside of Los Angeles County, not captured by this study, may explain this difference.



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## ABSTRACT

This paper applies U.S. Census microdata from 1980 and 1990 to assess the determinants of homeownership among recent movers in the Los Angeles metropolitan area. The homeownership rate in Los Angeles is well below the national average, reflecting both high relative prices and ethnic diversity. Further, the trend toward ethnic diversity in Los Angeles and other parts of the nation may serve to dampen future gains in homeownership attainment. Research findings suggest that endowment differences (income, education, and immigrant status) largely explain the homeownership gap between Latinos and whites. Similarly, Asians are as likely to choose homeownership as are whites, and status as an immigrant did not portend lower homeownership rates among Asians. However, findings of the research indicate that the endowment-adjusted homeownership choice differential between whites and blacks remains sizable; further, that gap more than doubled between 1980 and 1990, to a full 11 percentage points.

## I. INTRODUCTION

Recent years have witnessed substantial academic research and policy debate regarding access to homeownership, particularly among racial and ethnic minorities (see, for example, Wachter and Megbolugbe [1992], Gyourko and Linneman [1996], and Coulson [1999]). While the aggregate homeownership rate moved up during the past decades, homeownership rates remain significantly lower for blacks and Latinos. Further, the gap in homeownership attainment across minority and white households widened markedly during that period.<sup>1</sup> While homeownership constitutes the primary investment vehicle of U.S. households, it may also generate neighborhood benefits such as property upkeep, public safety, and school quality (see, for example, Green and White [1997]). The private returns and public externalities ascribed to homeownership underscore the importance of research to improve understanding of housing tenure choice among racial and ethnic minorities. Such insights would enable better forecasts of homeownership attainment as well as more incisive formulation of homeownership policy.

The lower homeownership rates among minorities may be attributed to their lower incomes and wealth, and younger age, among other factors (for example, Wachter and Megbolugbe 1992, and Coulson 1999). In the wake of ongoing and large-scale international migration to U.S. cities, the effect of immigrant status on housing tenure outcomes has become a focus of policy attention (Pitkin et al. 1997, Myers et al. 1996, and Coulson 1999). More generally, a well-qualified assessment of the effects of demographic factors on homeownership choice has become increasingly relevant, given the growing racial and ethnic diversity of American society.

The housing literature provides substantial evidence of persistent racial and ethnic differentials in homeownership probability. In an effort to reduce the unexplained residual associated with race, Wachter and Megbolugbe (1992) crafted an ‘endowments’ model of homeownership estimated with data from the American Housing Survey. Results of their analysis indicate that a large majority of the racial-ethnic disparity in homeownership owes to differences in household and market endowments; however, unexplained residual differences in homeownership attainment across race-ethnicity groups also were substantial, perhaps owing to the omission of other factors correlated to race. In that regard, the American Housing Survey database used in the Wachter and Megbolugbe study does not contain information on migration status or place of birth. If immigrants have substantially different housing demand than do native-born residents, and if immigrant status is correlated with race, then the race residual is biased by that omitted factor.

In a recent effort to address that deficiency, Coulson (1999) systematically analyzed the importance of income, market prices, demographics, and immigration status in explaining homeownership differentials among blacks, whites, Hispanics, and Asians. That study found that immigrants had substantially lower rates of homeownership, and accounting for that factor helped to explain the lower homeownership of Hispanics in particular. While the Coulson study provided new insights regarding the role of immigrant status in homeownership attainment, it did not adjust for domestic migrant status.

For several reasons, newcomers to a region may have lower homeownership rates than do long-term residents. Newcomers are by definition mobile and are more often drawn from the ranks of renters. After arrival in the destination region, it may take prospective buyers some time to familiarize themselves with the housing market sufficiently to invest in a given neighborhood. Also, in the case of regions where house values have escalated to high levels, newcomers are at a greater disadvantage than are longtime residents who may have enjoyed substantial appreciation of equity invested in previous homes. For these reasons, it is appropriate as well to account for domestic migrant status in an analysis of housing tenure choice (Boehm, Herzog, and Schlottmann 1991).

This research seeks to assess the variability over time and across race-ethnicity and immigrant groups in the economic and demographic determinants of homeownership choice. We focus on a single very large metropolitan area, the Los Angeles–Long Beach PMSA, which consists of Los Angeles County. In 1990, this area held 8.9 million residents and was dramatically diverse in both its residential composition and its array of neighborhood living environments. The homeowner-

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ship rate in California and especially in Los Angeles County was far below the national average (57.5 percent and 50.4 percent, respectively, versus 68.0 percent for the nation).<sup>2</sup> In part this is due to the high housing prices in California, and the consequent lack of housing affordability. However, the low homeownership rate may also be attributed to the population mix. Non-Hispanic white residents on average have much higher homeownership rates than do black or Hispanic residents, and the declining share of whites in the population has served to depress the overall rate of homeownership. This phenomenon is observed in Table 1 for Los Angeles County for 1980 and 1990. The percentage of non-Hispanic whites among all households has fallen by 7 percentage points, and the percentage of Asians has doubled. In addition, there has been a small decrease in the number of black households and a small increase in the relative percentage of Latinos.

An assessment of the effects of immigration and changing population mix on homeownership is of broad relevance. While these factors are more prominent in Los Angeles than in most metropolitan areas, a rapid change is sweeping many U.S. metropolitan areas. Analysis of trends in Los Angeles in 1980 and 1990 likely provides some preview of changes elsewhere between 2000 and 2010.<sup>3</sup> Further, one would need to be able to discern whether newcomers to a region have similar homeownership propensities as the natives. This will allow for better estimation of future housing demand as the population mix changes.

This research evaluates the effects of educational and financial endowments on homeownership. It focuses both on the variation in endowment effects across race-ethnicity and immigrant groups and on the magnitude of reduction in the homeownership gap driven by endowment differentials. The analysis further assesses the importance of the geographic origins of movers (local movers, domestic migrants, or international migrants) on the likelihood of home purchase.

**Table 1 • Percentage of Households by Racial Category**

<b>Race-Ethnicity</b>	<b>All Households</b>		<b>Sample of Movers Only</b>	
	<b>1980</b>	<b>1990</b>	<b>1980</b>	<b>1990</b>
White	65.63%	59.15%	64.88%	58.25%
Black	14.20%	11.90%	12.89%	11.08%
Latino	13.92%	17.20%	14.55%	16.97%
Asian	6.25%	11.75%	7.68%	13.70%
All Households	100.00%	100.00%	100.00%	100.00%
Number of Households	51352	96548	29450	52656

The sample of recent movers is a sample of households that have changed residence within the previous five years, 1975-80 and 1985-90.

Whereas many prior studies of homeownership determinants among racial-ethnic groups evaluate cumulative attainment of homeownership (tenure status) among a sample of existing households (Wachter and Megbolugbe 1992, Gyourko and Linneman 1996, and Coulson 1999), the present study uses a sample of recent movers to assess the determinants of tenure choice.<sup>4</sup> The cumulative approach has been justified by the view that homeownership is a long-term decision based as much upon anticipated future needs as on present needs (Wachter and Megbolugbe,

1992; Edin and Englund, 1991). However, among households who are age 45 or older, cumulative attainment of homeownership may largely reflect the lagged effects of past choices. Tenure decisions of recent movers more closely reflect equilibrium conditions and avoid that lagged effect (Ihlanfeldt 1981; Boehm, Herzog, and Schlottmann 1991).<sup>5</sup>

A key drawback to analyzing the tenure choices of recent movers involves possible sample selection bias. Renters and others predisposed to not settling into long-term owner-occupancy are overrepresented in a sample of recent movers. For that reason, estimates of the determinants of tenure choice could be biased. Although Census data do not report the tenure of households prior to their move, we can estimate a model of their likelihood of entering the mover sample. To address possible sample selection bias, this study uses a Heckman-style correction (1979) described by Painter (2000). As such, the tenure choice analysis is distinguished both by its reliance on a sample of recent movers and by a correction for sample selection bias.

Several additional aspects distinguish the present analysis. Unlike the Coulson (1999) and Gyourko and Linneman (1996) papers, but resembling Wachter and Megbolugbe (1992), we have stratified our sample by race and ethnicity, thus enabling a test of stability of homeownership determinants across the different subgroups. That procedure enables an assessment, for example, of the differential effect of immigrant status among Asians versus Latinos, or whether the income effect may be more influential for blacks than whites. Without stratification, or the use of a relatively cumbersome series of interaction effects, these differential effects cannot be tested.

Unlike most studies, which use a national sample of observations, the present study focuses on a single metropolitan area. Like the Coulson (1999) and Gyourko and Linneman (1996) studies, we do not distinguish intra-metropolitan variations in house prices or rents; instead, we assume that households moving within the metropolitan area face the same rent and price frontier. To assess the appropriateness of that assumption, however, we include measures of intra-county house prices and rents.

Results of this analysis indicate the ability of household endowments in explaining the tenure choice differentials among whites and minorities. In that regard, the homeownership choice gap between whites and Latinos was fully explained by differences in endowment, notably including inter-group variations in income, education, and immigrant status. However, contrary to Coulson's (1999) findings, Asians appeared as likely to choose homeownership as whites, and status as an Asian immigrant did not reduce homeownership. In contrast, while the unexplained portion of the homeownership choice differential between whites and blacks was relatively small in 1980, it more than doubled to a full 11 percentage points by 1990. While systematic differences across whites and blacks in access to housing and housing finance markets undoubtedly were of consequence, the precise causal mechanism remains a topic for future research. As evidenced below, results of the analysis are largely robust to the inclusion of house price, rent, and other neighborhood terms.

The plan of the paper is as follows. The following section describes the Public Use Microdata Sample (PUMS) set and the sample definition. In section III, the empirical model is presented, as are results of model estimation. Section IV reports on model simulation while section V assesses the robustness of the empirical results. Finally, section VI discusses conclusions of the research and implications for homeownership policy.

## III. DATA

Data used in this analysis are drawn from the PUMS file of the 1980 and 1990 decennial Censuses. The file comprises a 5 percent sample of all individuals living in Los Angeles County, which constitutes the Los Angeles–Long Beach primary metropolitan statistical area. The data provides detailed information about both the housing unit and the individuals who reside in that unit. The sample sizes are much smaller for 1980 than 1990 because detailed information about migration status was not coded by the Census Bureau for one-half of the 5 percent sample. Nevertheless, the sample is more than five times larger than comparable data available from the American Housing Survey (AHS) for the study area. In addition, these Census data contain information on migration histories and immigration status that is not obtainable from the AHS.

As discussed above, the sample for the tenure choice analysis is restricted to households that had moved into their current residence within five years of the Census. The full sample of households is used for the selection equation that determines the probability that a household chose to move in the previous five years. This full sample includes all households that either own or rent their primary residence, excluding persons who reside in group quarters. We further restrict our analysis to four racial-ethnic categories: white, non-Hispanic; black, non-Hispanic; Hispanic, non-Asian; and Asian. Finally, the sample is limited to only those household heads that are aged 18 to 64, because the elderly may have significantly different tenure choice behavior. The complete list of variables selected for analysis and their definitions are given in Appendix A.

The independent variables of the tenure choice equation include demographic factors (race-ethnicity, age, marital status, number of people in the household, number of workers in the household, migrant origin, and history), as well as economic (salary income, dividend and other income, education level of the householder) and other factors that affect housing tenure choice. As is established in the literature, we would expect younger households to have a lower probability of homeownership. We would also expect married couples with greater numbers of children to be more likely to own. As in most other studies, wealth effects cannot be measured directly with the data at hand. As such, we must rely on proxies. As a measure of current wealth, we employ the interest and dividend component of current income. Following Gyourko and Linneman (1996), educational attainment of the household head similarly is employed to indicate the earnings potential as well as

the wealth of the family. Presumably, households with higher levels of human capital and nonsalary income are more capable of meeting down payment requirements.

The analysis further adjusts for immigrant status and history (interacted with ethnicity and by years in the United States since immigration) as well as migrant origin (entered as a series of categorical variables indicating whether the household moved from within Los Angeles County, moved from elsewhere in the United States, or moved from outside the United States). Controlling for immigration timing and ethnicity, newcomers to a region may have lower homeownership probabilities than do longer-term residents. Newcomers by definition are mobile and are more often drawn from the ranks of renters. Migrants may also undertake extensive search prior to investment in housing. Also, relative to local homeowners who may have benefited from substantial house price appreciation, migrants may be characterized by more binding homeownership affordability constraints.

Finally, to test the robustness of our model estimates to the assumption of county-level housing markets, we include measures of intra-county house prices and rents. Areas with relatively high house values or low rents may be expected to depress the transition to homeownership. In addition, for this neighborhood-level analysis, we alternatively include measures of neighborhood social composition, so as to assess the robustness of the estimated price and endowment effects.

Appendix B presents the means of the independent variables used in the study; their values are displayed for the whole sample and race-ethnicity groupings. In general, sampled white and Asian households are characterized by much higher levels of wage and salary income, dividend income, and educational attainment, relative to their black and Latino counterparts. The 1980 income values have been converted into 1990 dollars by the CPI to make the two years comparable. For instance, approximately three-quarters of black and Latino households had not obtained a college degree in 1990, well in excess of levels recorded for other groups. Similarly, wage and salary income averaged about \$30,000 for black and Latino households in 1990, far below the \$47,000 recorded for white households. Further, unmarried females made up about 47 percent of black household heads in 1990, relative to levels ranging from 17 to 27 percent among other racial and ethnic groups. Finally, a full one-fourth of Asian households had arrived in the United States during the latter half of the 1980s; the proportion of new immigrants among the Asian population was far greater than those recorded for the other racial and ethnic groups. As is evidenced from the variable summary statistics, the earnings, human capital, and household structure characteristics of black—and to a lesser degree, Latino—households suggest far lower ownership choice probabilities.

### III. ANALYSIS OF TENURE CHOICE

#### Univariate Comparisons

As is widely appreciated, homeownership rates in Los Angeles County vary significantly by race-ethnicity status. As evidenced in Table 2, some 54 percent of white households in L.A. County were homeowners in 1980; while that proportion was substantially below the national average, it well exceeded the dampened rates for blacks and Latinos in the county, which ranged from 38 to 40 percent. Although homeownership rates among white households in Los Angeles County moved up to about 57 percent over the course of the decade, those of blacks declined perceptibly, to about 37 percent. Asian households scored significant gains over the course of the 1980s, enough to reach homeownership levels close to those of white households.

As mentioned previously, our study focuses on the homeownership choice decisions of recent movers. Residential length of stay among homeowners well exceeds that of renters; accordingly, homeownership rates overall are relatively dampened among the recent mover sample. As shown in Table 2, only about one-third of black and Latino movers chose homeownership tenure status in 1980; close to one-half of white and Asian movers achieved homeownership during that period. Table 2 further indicates a substantial decline over the course of the 1980s in homeownership rates among all race-ethnic groups. By decade's end, for instance, fewer than one-fifth of black movers in Los Angeles County owned homes; among the Latino population that ratio approximated one-fourth.

**Table 2 • Homeownership Rates of Households by Racial Category**

Race-Ethnicity	All Households		Sample of Movers Only	
	1980	1990	1980	1990
White	53.80%	57.22%	36.66%	41.84%
Black	38.40%	36.78%	21.55%	19.62%
Latino	40.50%	40.07%	28.42%	26.36%
Asian	49.97%	55.70%	41.98%	45.88%
All Households	49.52%	51.66%	33.93%	37.31%
Number of Households	51352	96548	29450	52656

The sample of recent movers is a sample of households that have changed residence within the prior five years, 1975-1980 and 1985-1990.

As is evidenced in Table 3, race-ethnicity variations in tenure choice owe in part to systematic differences across those groups in housing affordability. As shown in the table, racial and ethnic variations in median household income were substantial over the 1980–1990 period; among all movers, black and Latino incomes rose only to about \$28,000 in 1990, far below the \$45,000 recorded for white mover median income in 1990. The significant racial and ethnic income differentials persist even after adjusting for tenure status of the mover population. The relatively low incomes of the black and Latino populations are due to the lower incomes of renters who move. Among the black and Latino household samples, renters accounted for about four-fifths and three-fourths of movers in 1990, respectively. Yet even among black and Latino owners who moved in 1990, median household incomes were only about three-fourths of those of whites.

**Table 3 • Price/Income Ratios**

Race-Ethnicity	1980		1990	
	Median Income Household	Price/Income Ratio	Median Income Household	Price/Income Ratio
<b>Movers</b>				
White	\$21,480	5.113	\$45,000	4.714
Black	\$12,405	8.854	\$26,096	8.129
Latino	\$14,765	7.439	\$28,000	7.576
Asian	\$20,455	5.370	\$38,265	5.544
All Households	\$18,005	6.100	\$38,600	5.496
Number of Households	29450		52656	
<b>Owners</b>				
White	\$29,760	3.691	\$63,505	3.340
Black	\$23,115	4.752	\$49,300	4.303
Latino	\$22,580	4.864	\$47,390	4.476
Asian	\$29,593	3.712	\$54,000	3.928
All Households	\$28,005	3.922	\$59,000	3.595
Number of Households	35226		19644	
<b>Renters</b>				
White	\$15,030	7.308	\$34,000	6.239
Black	\$10,510	10.451	\$22,034	9.627
Latino	\$12,010	9.146	\$23,000	9.223
Asian	\$13,510	8.130	\$25,796	8.223
All Households	\$13,820	7.948	\$29,000	7.315
Number of Households	19459		33012	
Annual Median Existing Single-Family Home Sales Price for Los Angeles taken from <a href="http://www.car.org/economics/archives/dataannual1.html">http://www.car.org/economics/archives/dataannual1.html</a> 1980 Value \$109,837; 1990 Value \$212,130				

As shown in the bottom panel of Table 3, those race-ethnicity differentials in median household income imply sharply different house price/household income ratios. Assuming, as discussed above, that movers in Los Angeles County face the identical house price frontier, our data indicate that median existing home sale prices in the county were about five times that of the median household income of the white and Asian populations in 1980; in marked contrast, that same house was equivalent to about eight times the household income of black or Latino households. While the incomes of white mover households more than kept pace with the rise in house prices during the 1980s, so as to improve housing affordability by 1990, little improvement was registered among black movers, resulting in a perceptible widening of affordability disparities. As stated above, much of that racial-ethnic disparity in housing affordability owed to the significantly higher proportions of renters among the black and Latino mover populations. Controlling for tenure status of movers and focusing on homeowners who moved during the decade, the Census data indicate an appreciable improvement in housing affordability by 1990; by that date, house price/income ratios declined to 3.3 among white movers and 4.3 among black movers. While systematic race and ethnic differences in housing affordability clearly affected the observed racial differentials in tenure choice, other economic and demographic factors similarly played an important role. It is to that analysis that we now turn.

## Econometric Model

The multivariate analysis employs a probit specification of the tenure choice among recent movers. As discussed previously, the tenure choice decisions of recent movers are more likely to reflect equilibrium conditions, relative to analyses of homeownership rates for the population as a whole. As is commonplace in the literature, we assume there exists a latent variable  $OWN^*$  that measures the propensity to own among mover households in the sample. The observable tenure choice indicator is regressed on a vector of demographic, economic, and other factors affecting the housing tenure decision.

In the model of movers, we do not observe a household's choice of tenure if it does not move. Therefore, standard estimation of tenure choice among movers is biased.<sup>6</sup> Following Painter (2000), we correct for sample selection bias by employing a variant of Heckman's (1979) two-step selection model. The model of tenure choice among movers that corrects 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 dependent variables.<sup>7</sup> (Boyes, Hoffman, and Low [1989] present a similar econometric model applied to the problem of simultaneously estimating default and the application process for credit cards when default is observed only for the sample of applicants for which credit is approved.)

As with the standard formulation, we assume that there is an underlying relationship,

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

such that we observe only the binary outcome,

$$OWN_i = 1, \text{ if } OWN^*_i > 0 \text{ and}$$

$$OWN_i = 0, \text{ if } OWN^*_i \leq 0,$$

Where  $X_i$  is a vector of socioeconomic characteristics,  $\beta$  is its associated coefficient vector, and  $i$  represents each household.

However, we only observe  $OWN_i$  for observation  $i$  if  $MOVE_i = 1$ , where

$MOVE^*_i$  is taken from the underlying relationship,

$$MOVE^*_i = Z_i \gamma + \varepsilon_{2i}, \text{ where}$$

$$MOVE_i = 1, \text{ if } MOVE^*_i > 0 \text{ and}$$

$$MOVE_i = 0, \text{ if } MOVE^*_i \leq 0,$$

Where  $Z_i$  is a vector of socioeconomic characteristics,  $\gamma$  is its associated coefficient vector, and  $i$  represents each household. Finally, we make the assumption that  $\epsilon_{1i}$ , and  $\epsilon_{2i}$  are jointly normally distributed with correlation coefficient  $\Delta$ . This allows maximum likelihood estimation of the log likelihood function

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

where  $S$  is the set of observations for which  $OWN_i$  is observed,  $M_1$  is the standard cumulative normal and  $M_2$  is the cumulative bivariate normal distribution function. Unlike the standard Heckman selection model, the bivariate probit 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.

### Multivariate Results

Marginal changes in probabilities ( $Dp/Dx$ ) and their standard errors from the 1980 and 1990 probit models of housing tenure choice among recent movers are displayed in Table 4 for the unified sample; estimation results for each of the race-ethnicity stratifications are contained in Appendices C through F.<sup>8</sup> The findings from the unified sample reveal the importance of various economic and demographic effects in the determination of home purchase. Among demographic variables, results for 1980 indicate a positive and highly significant relationship between age of household head and probability of home purchase. Relative to the omitted category aged 25 to 34, homeownership probability in 1980 and 1990 is significantly dampened among younger movers (more than 10 percentage points), but moves up markedly in the older age categories (between 4 and 5 percentage points). As anticipated, homeownership probabilities are significantly boosted among married households; also, the magnitude of the marital status effect declines significantly between 1980 and 1990. Also as expected, the number of persons in the household serves to significantly boost homeownership probability; while that effect remains statistically significant in 1990, the magnitude of the estimated coefficient declines by about two-thirds to only 1 percentage point, likely reflecting the rise in single-person owner-occupiers over the course of recent decades. Of additional interest, the number of household workers has a relatively modest (3 percentage points), but significant, reduction of the probability of home purchase; and that effect is close to constant over the course of the 1980s. This implies that rather than helping to increase the probability of homeownership, net of other factors, if additional workers are required to earn the same level of income, a household is less likely to own.

Among household human capital and economic characteristics, attainment of a college degree (relative to graduation from high school) serves to significantly boost homeownership probability by 5 percentage points in 1980 and 4 percentage points in 1990. Further, the estimated magnitude of the education effect is quite robust over the course of the 1980–1990 period. As expected, the homeownership probabilities of those not graduating from high school are significantly dampened, relative to those with higher levels of educational attainment.

As is evident in the housing literature, proxies for the relative costs of owning to renting and household income are fundamental to economic models of housing tenure choice. Because within-county

**Table 4 • Determinants of Tenure Choice among Movers Probit Model with Sample Selection**

Variable	1980		1990		T-test for 1980-1990
	Dp/Dx	Std. Error	Dp/Dx	Std. Error	
AGE 18 – 24	-0.118	0.009	-0.103	0.008	-1.268
AGE 35 – 44	0.049	0.009	0.033	0.005	1.478
AGE 45 – 54	0.045	0.014	0.047	0.009	-0.161
AGE 55 – 64	0.040	0.018	0.046	0.011	-0.269
NOT MARRIED, Male Head of Household	-0.181	0.008	-0.142	0.005	-4.133
NOT MARRIED, Female Head of Household	-0.182	0.007	-0.139	0.005	-4.982
NO HIGH SCHOOL DIPLOMA	-0.070	0.007	-0.057	0.006	-1.506
COLLEGE DEGREE OR BETTER	0.050	0.006	0.041	0.004	1.290
NUMBER OF PEOPLE IN HOUSEHOLD	0.027	0.002	0.009	0.001	7.397
NUMBER OF WORKERS IN HOUSEHOLD	-0.032	0.003	-0.028	0.002	-0.887
WAGE&SALARY	0.006	0.000	0.005	0.000	3.739
WAGE&SALARY SQUARED	-2.1E-05	1.8E-06	-1.3E-05	6.7E-07	-4.087
DIVIDEND AND INTEREST INCOME	0.004	0.001	0.005	0.000	-1.594
OTHER INCOME	0.004	0.000	0.003	0.000	1.971
ETHNICITY- BLACK	-0.062	0.008	-0.110	0.006	5.026
ETHNICITY- LATINO	-0.024	0.010	-0.037	0.007	1.071
ETHNICITY- ASIAN	0.018	0.018	0.034	0.013	-0.740
MOVED FROM WITHIN CALIFORNIA	-0.053	0.009	-0.079	0.006	2.522
MOVED FROM WITHIN U.S.	-0.134	0.007	-0.172	0.005	4.449
MOVED FROM A FOREIGN COUNTRY	-0.104	0.014	-0.136	0.011	1.861
IMMIGRANT	-0.045	0.018	-0.041	0.013	-0.141
IMMIGRANT*LATINO	-0.122	0.026	-0.119	0.021	-0.098
IMMIGRANT*ASIAN	-0.020	0.273	0.027	0.017	-0.173
CAME TO U.S. 5 – 10 YEARS AGO	0.075	0.018	0.033	0.012	1.909
CAME TO U.S. 10 – 15 YEARS AGO	0.136	0.020	0.101	0.014	1.431
CAME TO U.S. 15 – 20 YEARS AGO	0.124	0.023	0.122	0.016	0.073
CAME TO U.S. 20 – 30 YEARS AGO	0.097	0.023	0.133	0.016	-1.293
CAME TO U.S. MORE THAN 30 YEARS AGO	0.082	0.031	0.095	0.019	-0.363
Correlation Coefficient ( $\Delta$ )	0.186	0.067	0.343	0.047	-1.918
Log Likelihood Function		-41321		-81237	
Number of Households		29450		52656	
Mean of Dependent Variable		0.339		0.373	

Dp/Dx represent marginal estimates. The omitted categories are as follows: Age, 25-34; Marital status, married; Education, high school diploma, but no college degree; Race-ethnicity, white; Moved from, moved from within LA Co.; Immigrant, born in the U.S.; Came to U.S., within the past five years.

movers are assumed to face identical house price and residential rent surfaces, those controls are omitted from the model specification reported on in Table 4.<sup>9</sup> Given evidence (below) of the robustness of coefficient estimates to that assumption, controls for household income serve as a proxy for

**Table 5 • Income Determinant of Tenure Choice among Mover Probit Model  
with Sample Selection Comparison among Racial-Ethnic Groups**

Variable	White		Black		Latino		Asian	
	Dp/Dx	Std. Error	Dp/Dx	Std. Error	Dp/Dx	Std. Error	Dp/Dx	Std. Error
<b>1980</b>								
WAGE&SALARY	0.006	0.000	0.007	0.001	0.008	0.001	0.005	0.001
WAGE&SALARY SQUARED	-2.0E-05	2.2E-06	-2.3E-05	7.7E-06	-3.3E-05	5.3E-06	-1.8E-05	6.3E-06
DIVIDEND AND INTEREST INCOME	0.004	0.001	0.016	0.006	0.018	0.004	0.011	0.003
OTHER INCOME	0.004	0.000	0.003	0.001	0.004	0.001	0.004	0.001
Correlation Coefficient ( $\Delta$ )	0.005	0.080	0.261	0.369	0.039	0.540	0.893	0.230
Log Likelihood Function	-26991		-5687		-5916		-2408	
Number of Households	19106		3795		4286		2263	
Mean of Dependent Variable	0.367		0.216		0.284		0.420	
<b>1990</b>								
WAGE&SALARY	0.005	0.000	0.004	0.000	0.008	0.000	0.005	0.000
WAGE&SALARY SQUARED	-1.31E-05	7.02E-07	-9.10E-06	2.45E-06	-2.73E-05	2.75E-06	-1.150E-05	2.604E-06
DIVIDEND AND INTEREST INCOME	0.005	0.001	0.010	0.003	0.005	0.002	0.011	0.002
OTHER INCOME	0.003	0.000	0.002	0.000	0.004	0.001	0.004	0.000
Correlation Coefficient ( $\Delta$ )	0.199	0.075	0.453	0.199	0.131	0.252	0.662	0.073
Log Likelihood Function	-48245		-9138		-13561		-9770	
Number of Households	30672		5834		8937		7213	
Mean of Dependent Variable	0.418		0.196		0.264		0.459	

SOURCE: Appendices C through F. Dp/Dx represent marginal estimates.

**Table 6 • Education Determinant of Tenure Choice among Mover Probit Model  
with Sample Selection Comparison among Racial-Ethnic Groups**

Variable	White		Black		Latino		Asian	
	Dp/Dx	Std. Error	Dp/Dx	Std. Error	Dp/Dx	Std. Error	Dp/Dx	Std. Error
<b>1980</b>								
NO HIGH SCHOOL DIPLOMA	-0.080	0.009	-0.035	0.017	-0.092	0.014	-0.011	0.028
COLLEGE DEGREE OR BETTER	0.049	0.007	0.061	0.023	0.023	0.029	0.062	0.018
Correlation Coefficient ( $\Delta$ )	0.005	0.080	0.261	0.369	0.039	0.540	0.893	0.230
Log Likelihood Function	-26991		-5687		-5916		-2408	
Number of Households	19106		3795		4286		2263	
Mean of Dependent Variable	0.367		0.216		0.284		0.420	
<b>1990</b>								
NO HIGH SCHOOL DIPLOMA	-0.058	0.009	-0.015	0.010	-0.049	0.010	-0.066	0.016
COLLEGE DEGREE OR BETTER	0.039	0.005	0.039	0.009	0.034	0.012	0.063	0.011
Correlation Coefficient ( $\Delta$ )	0.199	0.075	0.453	0.199	0.131	0.252	0.662	0.073
Log Likelihood Function	-48245		-9138		-13561		-9770	
Number of Households	30672		5834		8937		7213	
Mean of Dependent Variable	0.418		0.196		0.264		0.459	

SOURCE: Appendices C through F. Omitted category - High School Diploma, but no College. Dp/Dx represent marginal estimates.

the effects of nominal housing affordability on household tenure choice. In that regard, the wage and salary variable serves as a proxy for capacity to carry nominal mortgage costs, whereas the presence of dividend and other income represents in part the availability of liquid assets for the housing down payment. As is evident in Table 4, higher levels of wage and salary income, dividend income, and other income all serve to significantly boost homeownership probability. An increase of \$10,000 will increase the probability of homeownership by approximately 6 percentage points. Also, the estimated magnitudes of those effects are relatively robust over the course of the 1980–1990 period.

Availability of equity for the housing down payment is further proxied by an indication of mover origin region. House prices accelerated sharply in Los Angeles County over the latter half of the 1980s to levels well above those recorded in most other parts of the state and nation. During that boom period, nominal housing affordability constraints became binding for many movers to the county.<sup>10</sup> As is evident from Table 4, homeownership tenure choice is significantly dampened among movers from outside Los Angeles County, relative to movers from within the county. The reduction in homeownership probability is most pronounced in the case of those who move to Los Angeles County from out of state; as expected, in the wake of the relative run-up in Los Angeles house prices, the likelihood of owning among movers to the county drops significantly between 1980 and 1990. In results not shown, we interacted the out-of-state move variable with whether the state that someone came from had a higher cost of living than California, we found that those from lower-cost states had lower probabilities of owning a home if they moved to California.

The analysis further controls for the effects of immigrant status on homeownership likelihood. As is evident from the table, immigrant status is interacted with household race-ethnicity and with date of arrival in the United States. The analysis indicates that status as an Asian immigrant results in a slightly elevated probability of homeownership (not significant), whereas that probability is significantly reduced by 12 percentage points in the case of Latino immigrants. As expected, estimation results suggest the diminished homeownership probabilities of recent migrants (those who arrived during the prior five years) relative to immigrants who arrived in the United States in the more distant past. Findings for 1980 indicate a positive relationship between length of time in the United States and probability of homeownership choice, with the maximum probability among those who had entered 10–15 years ago. A similar relationship exists for 1990, with this same cohort exhibiting the highest homeownership rates (see Myers, Megbolugbe, and Lee [1998] for a fuller discussion of cohort estimation of homeownership patterns).

Finally, having controlled for the various economic and demographic effects discussed above, regression findings for the unified sample indicate a sizable and significant effect of household race-ethnicity in the determination of tenure choice; further, the race effects increased very substantially among black households over the course of the 1980–1990 period. Among Latinos and Asians, the coefficients on race-ethnic status were relatively stable over the period. In the analyses reported on below, we test the null hypothesis of homogeneity of the tenure choice coefficient vector across the race-ethnicity groupings. Results of that analysis provide credence for full race-ethnicity stratification of the tenure choice models.

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**Table 7 • Immigration Determinants of Tenure Choice among Movers Probit Model with Sample Selection Comparison among Latinos and Asians**

Variable	Latino		Asian	
	Dp/Dx	Std. Error	Dp/Dx	Std. Error
<b>1980</b>				
IMMIGRANT	-0.137	0.056	0.014	0.038
CAME TO U.S. 5 – 10 YEARS AGO	0.118	0.048	0.085	0.033
CAME TO U.S. 10 – 15 YEARS AGO	0.218	0.052	0.099	0.040
CAME TO U.S. 15 – 20 YEARS AGO	0.181	0.067	0.140	0.059
CAME TO U.S. 20 – 30 YEARS AGO	0.169	0.089	0.048	0.051
CAME TO U.S. MORE THAN 30 YEARS AGO	0.175	0.093	-0.071	0.088
Correlation Coefficient ( $\Delta$ )	0.039	0.540	0.893	0.230
Log Likelihood Function		-5916		-2408
Number of Households		4286		2263
Mean of Dependent Variable		0.284		0.420
<b>1990</b>				
IMMIGRANT	-0.128	0.025	0.047	0.027
CAME TO U.S. 5 – 10 YEARS AGO	0.047	0.027	0.018	0.020
CAME TO U.S. 10 – 15 YEARS AGO	0.155	0.032	0.063	0.025
CAME TO U.S. 15 – 20 YEARS AGO	0.245	0.037	0.029	0.027
CAME TO U.S. 20 – 30 YEARS AGO	0.280	0.039	0.014	0.032
CAME TO U.S. MORE THAN 30 YEARS AGO	0.227	0.045	-0.051	0.045
Correlation Coefficient ( $\Delta$ )	0.131	0.252	0.662	0.073
Log Likelihood Function		-13561		-9770
Number of Households		8937		7213
Mean of Dependent Variable		0.264		0.459
SOURCE: Appendices E and F. Omitted variable – Came to the U.S. in the past 5 years. Dp/Dx represent marginal estimates.				

Tables 5 through 7 present selected coefficient estimates from the race-ethnicity stratifications of the tenure choice model. (The full models are reported in Appendix B.) As is evident in Table 5, the estimated income effects differ significantly across the race-ethnicity stratifications. The homeownership effects of increases in wage and salary income, dividend income, and other income among Latino and black movers substantially exceed those of other race and ethnic groups in 1980. The elevated Latino income effects remained evident in 1990. The impact of dividend and interest income was more important for all nonwhite groups when compared with white households. This implies that smaller changes in income will translate into larger changes in homeownership rates for nonwhites.

Concerning educational attainment (Table 6), receipt of a college degree serves to substantially elevate the homeownership choice probabilities of black and Asian movers relative to their white counterparts. While educational attainment effects narrow some over the course of the decade, they are still largely evident in 1990. Among Latino movers, receipt of a college degree had little influence on homeownership choice in 1980; by decade's end, however, the estimated effect was equivalent to that of white households.

Finally, Table 7 provides evidence of sizable and significant differences in homeownership probability among Asian and Latino immigrants. Relative to immigrants who had arrived in the United States during the prior five years, homeownership probabilities in both 1980 and 1990 increased non-monotonically with duration of residence in the United States among Latino immigrants. For the 1980 sample, homeownership probabilities among Latino immigrants were greatest among those who had arrived 10–15 years earlier, and for the 1990 sample, they were greatest among those who had arrived 20–30 years earlier. Compared with native-born Latinos, these immigrants had higher probabilities of homeownership (approximately 5 and 15 percentage points in 1980 and 1990, respectively).<sup>11</sup> Immigrant status is much less important for Asians than Latinos. In fact, the only class of immigrants with lower homeownership probabilities than natives are in the category of those who arrived more than 30 years ago. The implication then is that as a group, Asian immigrants are no less likely to own than are Asian natives.

#### IV. MODEL SIMULATION

Table 2 provided evidence of sizable differentials in black-white and Latino-white homeownership rates; further, those gaps widened significantly over the 1980–1990 period. To determine the extent to which these gaps reflect variations in endowments (income, education, and other characteristics), we employ a decomposition technique commonly used in studies of labor market discrimination (Oaxaca and Ransom 1994); it has also been applied to measuring racial gaps in educational attainment (Levine and Painter 1999), intrametropolitan household location (Gabriel and Rosenthal 1989), and homeownership status (Wachter and Megbolugbe 1992). This method attributes the endowments of whites to the each of the households of the other ethnic groups. For example, for the sample of black households, we use the coefficients from the black household sample (e.g., Appendix D) and attribute the average white endowment to those households. To the extent that the measured gap in homeownership rates is due to gaps in the endowment of minority households, the simulated gap should close.

Table 8 shows the results of this method for attributing the income, the education, and all characteristics of white households to the black households in the sample. For black movers in 1980, the homeownership gap with whites was substantial at 15 percentage points. As shown in the table, this gap narrows by 1 percentage point when the education level of white movers are attributed to blacks, and by 5 percentage points when the income of whites movers is substituted to that of blacks. Attributing all of the income, educational, and socioeconomic characteristics of white movers to blacks reduces the predicted gap in homeownership rates to 3 percentage points. While this remaining unexplained portion of the white-black differential in housing tenure choice was quite small in 1980, it increased almost fourfold, to 11 percentage points, in 1990. In fact, the raw percentage point gap that was explained by differences in characteristics between whites and blacks actually grew by 1 percentage point between 1980 and 1990.

The story is markedly different for Latino households. The actual white-Latino homeownership choice differential in 1980 was 8 percentage points, about half of the white-black differential. Eliminating the Latino income deficit closes the gap by 6 percentage points, whereas removing the Latino educational deficit closes the gap by 4 percentage points. In sum, household education and income differentials would account for all of the gap in homeownership between Latinos and whites. In 1990, the raw gap increased by 8 percentage points, similar to the increase in the gap between black and whites. However, attributing all endowments of whites to Latino mover households reduces the tenure choice differential between white and Latino movers to only 3 percentage points.

Coulson (1999) argues that immigrant status is an important determinant of the relatively low homeownership of Latinos and Asians. However, as shown in Table 1, homeownership rates of Asians are close to those of whites; further, Table 8 demonstrates that the housing tenure choice rates of Asian immigrant movers who have been in the United States for five to ten years and are endowed identically to whites are higher than those of the whites. On the other hand, being an immigrant does predict a large deficit in homeownership choice for Latinos. In 1980 and 1990, the gap in homeownership rates of whites and Latino immigrants was 12 and 30 percentage points, respectively. In both years, attributing the educational and income endowments of white movers to those of Latino immigrant movers closes that gap by about 12 percentage points.

In sum, this exercise suggests that for Latinos, the dampened rate of homeownership choice can be attributed to length of stay in the United States and to relatively lower levels of income (from all sources), education, and in 1990, to immigrant status. From a policy perspective, this suggests that more training and human capital investment among Latino households would substantially raise homeownership rates. In marked contrast, the endowment-adjusted homeownership deficit between blacks and whites increased almost fourfold to a full 11 percentage points over the 1980–1990 period.

The interpretation of the sizable endowment-adjusted homeownership choice differential between blacks and whites remains an open question. The residual black-white gap could be due to systematic differences in access to housing and housing finance markets and/or to other difficult-to-measure and omitted factors that are correlated with household race. While Yinger (1986) and others have provided evidence of discrimination in housing markets, there is little reason to believe that such behaviors worsened between 1980 and 1990. Further, as Levine and Painter (1999) show, attributing the black-white gap in educational attainment to discrimination is not always appropriate, in that an endowment simulation (as above) predicts substantially higher rates of educational attainment for blacks than for whites, in the case where blacks have the average characteristics of whites. This finding can result in an interpretation of reverse discrimination, which is equally precarious. Therefore, it is important that future research identify other race-related correlates that help to explain the residual black-white tenure choice differential.

**Table 8 • Actual and Predicted Racial Differentials in Homeownership Rates**

<b>Race-Ethnicity</b>	<b>1980 Percentage Point Differential from White Rate</b>	<b>1990 Percentage Point Differential from White Rate</b>
<b>White Ownership Rate</b>	37	42
<b>Black Predicted Ownership Rates</b>		
Actual Black/White Gap	15	22
Predicted Gap with Dividend Income of Whites	13	20
Predicted Gap with Total Income of Whites	8	16
Predicted Gap with Education levels of Whites	14	22
Predicted Gap with Income and education level of Whites	6	15
Predicted Gap with All levels like Whites	3	11
<b>Latino Predicted Ownership Rates</b>		
Actual Latino/White Gap	8	16
Predicted Gap with Dividend Income of Whites	6	15
Predicted Gap with Total Income of Whites	2	9
Predicted Gap with Education levels of Whites	4	13
Predicted Gap with Income and education level of Whites	-3	5
Predicted Gap with All levels like Whites	1	3
<b>Latino-Immigrant in US for 5 - 10 years</b>		
Actual Latino/White Gap	12	30
Predicted Gap with Dividend Income of Whites	10	29
Predicted Gap with Total Income of Whites	4	23
Predicted Gap with Education levels of Whites	10	28
Predicted Gap with Income and education level of Whites	0	20
Predicted Gap with All levels like Whites	7	19
<b>Asian-Immigrant in US for 5 - 10 years</b>		
Actual Asian/White Gap	-19	-3
Predicted Gap with Dividend Income of Whites	-20	-4
Predicted Gap with Total Income of Whites	-20	-7
Predicted Gap with Education Levels of Whites	-18	-3
Predicted Gap with Income and Education Level of Whites	-18	-7
Predicted Gap with All Levels like Whites	-13	-5

Note: Coefficients for the simulations are taken from the demographic group indicated

## V. ROBUSTNESS CHECKS

Our model specification excludes intrametropolitan house price and rent terms, based on the assumption that Los Angeles County constitutes a single market for housing. This specification is consistent with recent additions to the tenure choice literature (see, for example, Wachter and Megbolugbe [1992], Gyourko and Linneman [1996], and Coulson [1999]), which used metropolitan-level variation house prices and rents to identify those effects. At the same time, it is prudent to assess the robustness of our estimation results to the exclusion of terms reflecting intrametropolitan variation in house prices and rents.<sup>12</sup>

We undertake such analyses using the 1990 sample. Los Angeles County is divided into fifty-eight regions called Public Use Micro-sample Areas (PUMAs).<sup>13</sup> We obtain proxies for each area's housing affordability conditions by including a measure for the price of entry-level homes (the 25th percentile home price across the PUMA) and for the rent (the median rent across the PUMA).<sup>14</sup> Model (2) of Table 9 presents estimates of a tenure choice equation in which only the price and rent terms are added to the basic model specification. As is evident in the table, the estimated price and rent coefficients have the expected signs with higher house prices and lower rents serving to significantly lower homeownership choice. Note also that our wealth proxies—dividend income and possessing a college degree—both become more important determinants of homeownership.

On the other hand, this finding is reversed in specification (3), which includes controls for neighborhood composition. We include controls for neighborhood composition due to partial control for the fact that prices may not appreciate uniformly across areas. To the extent that these factors are correlated with the neighborhood racial composition, poverty status, and educational profile, the inclusion of these variables will serve as a proxy for expected asset appreciation in each neighborhood. Once these variables are included, the price effects are substantially reduced in magnitude and are no longer statistically significant. Further, the wealth coefficients coincide with those estimated in the basic model specification (which excludes intra-metropolitan price and neighborhood effects). In this specification (model 3), the proportion neighborhood that is black, Latino, and the neighborhood poverty level all serve to significantly dampen the probability of choosing homeownership.

These findings indicate the robustness of basic model results to the exclusion of controls for intra-metropolitan house price and rent variation. In so doing, results of model 3 lend credibility to the assumption that Los Angeles County constitutes a single price regime. Also, results of model 3 indicate the importance of the neighborhood composition to housing tenure choice.

Our final robustness check concerns the sensitivity of parameter estimates to the use of permanent income instead of current income. As noted by Ihlanfeldt (1981), the use of permanent income may be most appropriate when using a sample of recent movers. Using the method of Goodman and Kawai (1982), we substituted permanent income for the income variables in the tenure choice equation.<sup>15</sup> The main difference is the reduction in importance of the education variables. They were probably serving before as proxies of permanent income. The remainder of the results were robust to the use of permanent income. Because we wanted to highlight the differences between the effect of wage income and dividend or interest income, we chose to present the results in this format.

## VI. CONCLUSION

This analysis applied census microdata from the Los Angeles PMSA to assess the effects of changing population mix on homeownership patterns. Like previous research (Wachter and Megbolugbe 1992, Gyourko and Linneman 1996, and Coulson 1999), we highlight the importance of race and immigrant status to tenure choice. We demonstrate not only that differences in endowments explain most of the homeownership gap between whites and minorities, but also that minorities are more sensitive to changes in income than are whites. Nevertheless, our findings differ from prior studies along several important dimensions.

First, we find that Asians are as likely to choose homeownership as are whites. This is in contrast to Coulson (1999), who estimated lower homeownership probabilities for Asians. Also, by 1990, status as an immigrant did not portend lower homeownership rates among Asians. Second, results of our analysis indicate that the homeownership choice differential between whites and Latinos can be fully explained by the differences in endowments. In particular, elevating the income, education, and immigration status of Latinos to that of whites serves to close the gap in homeownership.

In contrast, we find that the unexplained portion of the homeownership choice differential between blacks and whites moved up by almost fourfold between 1980 and 1990 to a full 11 percentage points.<sup>16</sup> While a portion of the gap may be due to discrimination (Wachter and Megbolugbe 1992, Yinger 1986), it is not likely that discrimination has become that much more pervasive over the period. Therefore, it is important that future research identify other race-related correlates that help to explain the endowment-adjusted black-white tenure choice differential.

Finally, results from 1980 and 1990 indicated that while most of income and demographic effects were relatively stable across the decade, a few demographic factors changed in their importance. We find that not being married is less of a deterrent to homeownership in 1990 and that having additional people in the household was a less important predictor of homeownership in 1990. Additionally, out-of-county migrant origin had a more negative effect on homeownership attainment by 1990, perhaps owing to the relatively low levels of housing affordability in Los Angeles County.

The results of this analysis also indicate the importance of future research pertaining to the role of neighborhood socioeconomic and demographic characteristics in the determination of tenure choice. Most studies, including this one, assume that a PMSA constitutes a single price vector and that the price, due to capitalization of locational attributes and amenities, tells us what we need to know about the area. However, owing perhaps to disequilibrium effects and incomplete price capitalization, socioeconomic and demographic characteristics of neighborhoods may exert some residual effect on tenure choice. In those cases, it is important to include both the house price and neighborhood composition terms to accurately predict homeownership patterns.

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**Table 9 • The Importance of Price and Neighborhood Effects - Model Estimate**

Variable	(1)		(2)		(3)	
	No Price Effects, No Neighborhood Effects		Price Effects, No Neighborhood Effects		Price Effects, Neighborhood Effects	
	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
INTERCPT	-0.883	0.027	0.272	0.290	-0.004	0.516
AGE 18 – 24	-0.431	0.032	-0.438	0.033	-0.544	0.031
AGE 35 – 44	0.121	0.022	0.154	0.023	0.176	0.015
AGE 45 – 54	0.170	0.036	0.224	0.037	0.236	0.018
AGE 55 – 64	0.164	0.048	0.231	0.050	0.223	0.023
NOT MARRIED, Male Head of Household	-0.508	0.019	-0.480	0.020	-0.428	0.017
NOT MARRIED, Female Head of Household	-0.495	0.019	-0.452	0.019	-0.468	0.017
NO HIGH SCHOOL DIPLOMA	-0.222	0.021	-0.217	0.022	-0.261	0.021
COLLEGE DEGREE OR BETTER	0.146	0.014	0.216	0.015	0.159	0.014
NUMBER OF PEOPLE IN HOUSEHOLD	0.033	0.005	0.012	0.005	0.017	0.005
NUMBER OF WORKERS IN HOUSEHOLD	-0.107	0.009	-0.113	0.009	0.026	0.009
WAGE&SALARY	0.019	0.000	0.020	0.000	0.005	0.000
WAGE&SALARY SQUARED	-4.79E-05	1.76E-06	-4.45E-05	1.81E-06	1.51E-05	1.38E-06
DIVIDEND AND INTEREST INCOME	0.020	0.001	0.025	0.001	0.017	0.001
OTHER INCOME	0.012	0.000	0.014	0.000	0.007	0.000
ETHNICITY- BLACK	-0.430	0.022	-0.488	0.024	-0.362	0.025
ETHNICITY- ASIAN	-0.135	0.026	-0.179	0.027	-0.129	0.026
ETHNICITY- LATINO	0.119	0.046	0.099	0.048	0.134	0.045
MOVED FROM WITHIN CALIFORNIA	-0.290	0.022	-0.335	0.023	-0.240	0.022
MOVED FROM WITHIN U.S.	-0.694	0.022	-0.676	0.022	-0.574	0.020
MOVED FROM A FOREIGN COUNTRY	-0.526	0.041	-0.506	0.042	-0.617	0.040
IMMIGRANT	-0.160	0.051	-0.082	0.053	-0.048	0.044
IMMIGRANT*ASIAN	0.084	0.053	0.017	0.055	0.098	0.052
IMMIGRANT*LATINO	-0.225	0.039	-0.208	0.041	-0.190	0.039
CAME TO U.S. 5 – 10 YEARS AGO	0.120	0.046	0.125	0.048	-0.012	0.043
CAME TO U.S. 10 – 15 YEARS AGO	0.353	0.051	0.371	0.052	0.241	0.045
CAME TO U.S. 15 – 20 YEARS AGO	0.424	0.057	0.428	0.058	0.313	0.050
CAME TO U.S. 20 – 30 YEARS AGO	0.460	0.058	0.446	0.060	0.335	0.050
CAME TO U.S. MORE THAN 30 YEARS AGO	0.335	0.068	0.300	0.070	0.261	0.060
BOTTOM QUARTILE OF THE LOG HOUSING PRICE IN PUMA			-1.033	0.024	-0.014	0.036
MEDIAN OF THE LOG RENT IN PUMA			1.759	0.051	0.006	0.071
% OF POPULATION OF PUMA WITH HIGH SCHOOL DIPLOMA OR BETTER					-0.194	0.178
% OF POPULATION OF PUMA BELOW POVERTY LINE					-0.552	0.113
IMMIGRANT % OF POPULATION OF PUMA					-0.033	0.084
BLACK % OF POPULATION OF PUMA					-0.649	0.109
ASIAN % OF POPULATION OF PUMA					-0.112	0.141
LATINO % OF POPULATION OF PUMA					-1.055	0.208
CORRELATION COEFFICIENT ( $\Delta$ )	0.343	0.047	0.264	0.051	0.259	0.051
LOG LIKELIHOOD FUNCTION			-81237		-80042	
						-83022

Note: Models have been corrected for sample selection bias. Year is 1990, N=52656. The omitted categories are as follows: Age, 25-34; Marital status, married; Education, high school diploma, but no college degree; Race-ethnicity, white; Moved from, moved from within LA Co.; Immigrant, born in the U.S., Came to U.S., within the past five years

There are two additional implications of this analysis. First, the influx of immigrants into an area serves to only temporarily depress homeownership if those immigrants are taking the place of natives. After ten years in the United States, the difference between natives and immigrants is negligible. Second, investment in human capital will help close the homeownership gap, at least in case of Latino households, but that much more remains to be done for black households. These results suggest that new products and finance instruments to reach out to underserved communities may still be needed to enhance their homeownership opportunities.

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## NOTES

- 1 For example, while the homeownership rate for white households rose from 54 percent to 57.2 percent, that of black households fell from 38.1 percent to 36.8 percent. For details of other groups and examples for Los Angeles, see Table 2.
- 2 These data are taken from the 1990 Census, which is used in this analysis. CPS (1998) data show remarkably identical homeownership rates.
- 3 Sufficient data for detailed analysis of the actual 1990s experience will not become available until after release of full results from the 2000 Census in 2002.

- 4 Unlike most recent studies, this study focuses on a sample of households that have changed residence within the prior five years, 1975-80 and 1985-90.
- 5 Cohort analysis may be employed as an alternative to cumulative attainment in static, cross-sectional samples (Myers, Megbolugbe, and Lee 1998). A focus on mover households achieves dynamic analysis of cross-sectional samples by a means different than the cohort method.
- 6 As Painter (2000) illustrates, the bias is concentrated in the age and immigrant variables as both are strong predictors for whether someone will choose to move.
- 7 The two-step selection model is appropriate when one wants to predict the probability of homeownership in the absence of selection. On the other hand, one can use a two-part model in which the Mill's ratio is obtained from a first-stage probit, and the Mill's ratio is entered into the second-stage equation. This approach is better for predicting an actual response. As noted by Van de Ven and Van Praag (1981), the second-stage equation does not have a normally distributed error term, and therefore the two-stage approach yields only approximate results. The difference between the two approaches in this case is confined to reducing the coefficients on the age coefficients, but the remainder of the coefficients of the model is unchanged.
- 8 The coefficients and standard errors for the probit model estimates are converted into marginal changes in the probability of the homeownership evaluated at the mean of the independent variables.
- 9 Below we report on the appropriateness of that assumption through a series of robustness checks of the model that notably include house price and rent controls. As discussed in a later section, the estimated coefficient vector reported in Table 4 is largely robust to the exclusion of within-county house price and rent controls.
- 10 According to the California Association of Realtors, only about 14 percent of households in Los Angeles County could afford the median-priced home in 1989, which sold for about \$200,000. In contrast, the National Association of Realtors estimates that approximately 50 percent of U.S. households could afford the median-priced home during that year, which sold for about \$100,000.
- 11 These numbers were derived by simulations not shown, as one cannot simply add the two marginal changes in probabilities implied by the  $Dp/Dx$ 's on immigrant status and length since first arrival.
- 12 We further seek to evaluate here any residual effects of neighborhood socioeconomic and demographic composition on tenure choice, having controlled for the relative cost of owning-to-renting.
- 13 They are not intended to comprise neighborhoods, but are meant to divide the population into fairly equal segments.
- 14 The use of these proxies follows Gyourko and Linneman (1996). We are not able to do the same in the 1980 sample because Los Angeles County is divided into only three subareas. To the extent that our main results are robust to the inclusion of the price/rent terms for 1990, we can assume that they are likely to be similarly robust for 1980.
- 15 In this method, permanent income is the predicted value of a regression of income on a set of demographic and human capital characteristics. Results are available upon request.
- 16 This result is primarily due to an increase in the actual housing choice gap between blacks and whites, which grew by 7 percentage points over the decade. The other reason for the increase in the unexplained portion of the gap is that endowments could explain only 50 percent of the gap in 1990 as opposed to 71 percent of the gap in 1980.

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## APPENDIX A

Throughout, the unit of observation is the head of the household. Those aged less than 18 years, or greater than 65 years, have been excluded. Also excluded are certain racial categories, mainly American Indians. This is done to ensure that the four racial/ ethnic groups (black, Asian, Latino and white) constitute the entire sample used in the analysis. In all the regressions, only those people who lived in Los Angeles county at the time of the census, and in a different house, which may or may not have been in Los Angeles county, five years before the census was taken.

**Table A.1 • Variable Definitions**

<b>Variable</b>	<b>Description</b>
AGE 18-24	People aged 18 through 24 inclusive.
OMITTED CATEGORY: AGE 25-34	People aged 25 through 34 inclusive
AGE 35-44	People aged 35 through 44 inclusive.
AGE 45-54	People aged 45 through 54 inclusive.
AGE 55-64	People aged 55 through 64 inclusive.
NOT MARRIED MALE HEAD OF HOUSEHOLD	Head of household is male, and is not married (i.e.; he is divorced, separated, never married or widowed).
NOT MARRIED FEMALE HEAD OF HOUSEHOLD	Head of household is female, and is not married (i.e.; she is divorced, separated, never married or widowed).
OMITTED CATEGORY: MARRIED	Head of household is married, and is not separated.
NO HIGH SCHOOL DIPLOMA	High school not completed, or not yet.
OMITTED CATEGORY: HS DIP/NO COL DEGREE	High school completed, but not four years of post-high school education.
COLLEGE DEGREE OR BETTER	Minimum of four years of post-high school education is completed.
NUMBER OF PEOPLE IN HOUSEHOLD	This number includes people of all ages, including those aged less than 18 years and 65 or older.
NUMBER OF WORKERS IN HOUSEHOLD	A worker is defined as somebody who worked in the year before the census was conducted.
WAGE&SALARY	Wage and salary income aggregated across all members of the household.
WAGE&SALSQ	Wage and salary income squared aggregated across all members of the household.
DIV INCOME	Dividend, interest and rental income aggregated across all members of the household.
OTHINCOME	All other types of income aggregated across all members of the household. That is non-farm self-employment income, farm income, social security income, public assistance income, retirement income (only in 1990- this category does not exist in 1980) and other income.
ETHNICITY- BLACK	Black, non-Hispanic.
ETHNICITY- ASIAN	Asian, which may be Hispanic.
ETHNICITY- LATINO	Hispanic, non-Asian.
OMITTED CATEGORY: WHITE	White, non-Hispanic.

Variable	Description
MOVED FROM WITHIN CALIFORNIA	People who lived in California five years ago, but not in Los Angeles county. i.e.; this would include someone who moved from San Francisco to Pasadena, but not someone who moved from Santa Monica to Pasadena.
MOVED FROM WITHIN U.S	People who lived in the United States five years ago, but not in California. i.e.; this would include someone who moved from Oklahoma to Los Angeles, but not from San Francisco to Los Angeles.
MOVED FROM A FOREIGN COUNTRY	People who lived outside the United States five years ago.
OMITTED CATEGORY: MOVED FROM LA CO.	People who lived in Los Angeles county five years ago.
IMMIGRANT	Someone who is not a citizen of the U.S, or is a citizen, but only by naturalization. A non-immigrant is thus someone who was born in the US, Puerto Rico, Guam and outlying areas or who was born abroad of American parents.
IMMIGRANT*ASIAN	This takes the value of 1 if a person is both Asian and an immigrant, as defined above, and zero otherwise.
IMMIGRANT*LATINO	This takes the value of 1 if a person is both Latino and an immigrant, as defined above, and zero otherwise.
OMITTED CATEGORY: CAME TO U.S IN THE PAST 5 YEARS	An immigrant, as defined above, who arrived within 5 years of the taking of the census.
CAME TO U.S 5-10 YEARS AGO	An immigrant, as defined above, who arrived between 5 and 10 years before the taking of the census.
CAME TO U.S 10-15 YEARS AGO	An immigrant, as defined above, who arrived between 10 and 15 years of the taking of the census.
CAME TO U.S 15-20 YEARS AGO	An immigrant, as defined above, who arrived within 15 and 20 years of the taking of the census.
CAME TO U.S 20-30 YEARS AGO	An immigrant, as defined above, who arrived within 20 and 30 years of the taking of the census.
CAME TO U.S MORE THAN 30 YEARS AGO	An immigrant, as defined above, who arrived more than 30 years before the taking of the census.

**APPENDIX B**

**Table B.1 • Variable Summary Statistics**

Variable	1980		1990	
	Mean	Std Dev.	Mean	Std Dev.
OWNERSHIP RATE	0.339	0.473	0.373	0.484
AGE 18 – 24	0.149	0.356	0.083	0.275
AGE 25 – 34	0.407	0.491	0.390	0.488
AGE 35 – 44	0.219	0.413	0.295	0.456
AGE 45 – 54	0.132	0.339	0.148	0.356
AGE 55 – 64	0.094	0.291	0.084	0.277
NOT MARRIED Male Head of Household	0.257	0.437	0.243	0.429
NOT MARRIED Female Head of Household	0.272	0.445	0.265	0.441
LESS THAN A HIGH SCHOOL DEGREE	0.188	0.391	0.167	0.373
HIGH SCHOOL DIP. BUT NO COLLEGE DEGREE	0.542	0.498	0.406	0.491
COLLEGE DEGREE OR BETTER	0.270	0.444	0.427	0.495
NUMBER OF PEOPLE IN HOUSEHOLD	2.633	1.605	2.876	1.744
NUMBER OF WORKERS IN HOUSEHOLD	1.502	0.827	1.656	0.932
WAGE&SALARY (1000s)	32.259	27.260	41.147	39.597
WAGE&SALSQ (1000000s)	1783.678	3195.411	3261.010	8192.342
DIV INCOME (1000s)	1.251	6.856	1.607	7.171
OTHINCOME (1000s)	4.747	14.570	5.991	17.939
ETHNICITY- WHITE	0.649	0.477	0.582	0.493
ETHNICITY- BLACK	0.129	0.335	0.111	0.314
ETHNICITY- LATINO	0.146	0.353	0.170	0.375
ETHNICITY- ASIAN	0.077	0.266	0.137	0.344
MOVED FROM WITHIN CALIFORNIA	0.080	0.271	0.067	0.250
MOVED FROM WITH U.S.	0.152	0.359	0.126	0.332
MOVED FROM A FOREIGN COUNTRY	0.083	0.276	0.078	0.268
IMMIGRANT	0.223	0.416	0.319	0.466
LATINO IMMIGRANT	0.090	0.286	0.106	0.307
ASIAN IMMIGRANT	0.060	0.238	0.119	0.324
CAME TO U.S. WITHIN 5 YEARS	0.080	0.271	0.081	0.273
CAME TO U.S. 5 – 10 YEARS AGO		0.223	0.084	0.278
CAME TO U.S. 10 – 15 YEARS AGO		0.184	0.063	0.243
CAME TO U.S. 15 – 20 YEARS AGO		0.147	0.036	0.186
CAME TO U.S. 20 – 30 YEARS AGO		0.152	0.037	0.190
CAME TO U.S. MORE THAN 30 YEARS AGO	0.009	0.097	0.018	0.132
NUMBER OF HOUSEHOLDS	29450		52656	

**Table B.2 • Variable Summary Statistics – Racial Category – White**

Variable	1980		1990	
	Mean	Std Dev.	Mean	Std Dev.
OWNERSHIP RATE	0.367	0.482	0.418	0.493
AGE 18 – 24	0.147	0.354	0.077	0.267
AGE 25 – 34	0.397	0.489	0.392	0.488
AGE 35 – 44	0.212	0.409	0.292	0.455
AGE 45 – 54	0.135	0.342	0.151	0.358
AGE 55 – 64	0.108	0.311	0.088	0.283
NOT MARRIED Male Head of Household	0.285	0.451	0.276	0.447
NOT MARRIED Female Head of Household	0.271	0.445	0.258	0.438
LESS THAN A HIGH SCHOOL DEGREE	0.117	0.322	0.080	0.272
HIGH SCHOOL DIP. BUT NO COLLEGE DEGREE	0.569	0.495	0.423	0.494
COLLEGE DEGREE OR BETTER	0.314	0.464	0.496	0.500
NUMBER OF PEOPLE IN HOUSEHOLD	2.319	1.339	2.437	1.348
NUMBER OF WORKERS IN HOUSEHOLD	1.498	0.766	1.612	0.776
WAGE&SALARY (1000s)	35.221	28.805	47.277	43.734
WAGE&SALSQ (1000000s)	2070.247	3531.213	4147.708	9639.005
DIV INCOME (1000s)	1.639	7.941	2.207	8.427
OTHINCOME (1000s)	5.261	16.020	6.921	19.972
MOVED FROM WITHIN CALIFORNIA	0.099	0.299	0.082	0.274
MOVED FROM WITH U.S	0.175	0.380	0.159	0.365
MOVED FROM A FOREIGN COUNTRY	0.045	0.206	0.046	0.209
IMMIGRANT	0.103	0.303	0.141	0.348
CAME TO U.S. WITHIN 5 YEARS	0.034	0.180	0.039	0.194
CAME TO U.S. 5 – 10 YEARS AGO		0.105	0.025	0.156
CAME TO U.S. 10 – 15 YEARS AGO		0.110	0.025	0.158
CAME TO U.S. 15 – 20 YEARS AGO		0.118	0.011	0.105
CAME TO U.S. 20 – 30 YEARS AGO		0.147	0.022	0.147
CAME TO U.S. MORE THAN 30 YEARS AGO	0.009	0.097	0.018	0.133
NUMBER OF HOUSEHOLDS		19106		30672

**Table B.3 • Variable Summary Statistics – Racial Category – Black**

Variable	1980		1990	
	Mean	Std Dev.	Mean	Std Dev.
OWNERSHIP RATE	0.216	0.411	0.196	0.397
AGE 18 – 24	0.170	0.375	0.093	0.290
AGE 25 – 34	0.423	0.494	0.391	0.488
AGE 35 – 44	0.215	0.411	0.293	0.455
AGE 45 – 54	0.123	0.328	0.141	0.348
AGE 55 – 64	0.070	0.254	0.083	0.276
NOT MARRIED Male Head of Household	0.263	0.440	0.223	0.416
NOT MARRIED Female Head of Household	0.416	0.493	0.469	0.499
LESS THAN A HIGH SCHOOL DEGREE	0.213	0.409	0.177	0.381
HIGH SCHOOL DIP. BUT NO COLLEGE DEGREE	0.653	0.476	0.539	0.499
COLLEGE DEGREE OR BETTER	0.134	0.340	0.285	0.451
NUMBER OF PEOPLE IN HOUSEHOLD	2.716	1.675	2.833	1.641
NUMBER OF WORKERS IN HOUSEHOLD	1.276	0.840	1.359	0.894
WAGE&SALARY (1000s)	23.209	21.808	28.811	28.858
WAGE&SALSQ (1000000s)	1014.128	1911.160	1662.757	4545.474
DIV INCOME (1000s)	0.255	2.477	0.322	2.730
OTHINCOME (1000s)	3.526	8.539	4.111	11.441
MOVED FROM WITHIN CALIFORNIA	0.036	0.186	0.034	0.181
MOVED FROM WITH U.S	0.179	0.384	0.119	0.324
MOVED FROM A FOREIGN COUNTRY	0.020	0.141	0.016	0.125
IMMIGRANT	0.043	0.202	0.071	0.256
CAME TO U.S. WITHIN 5 YEARS	0.013	0.113	0.013	0.115
CAME TO U.S. 5 – 10 YEARS AGO		0.101	0.018	0.132
CAME TO U.S. 10 – 15 YEARS AGO		0.087	0.014	0.116
CAME TO U.S. 15 – 20 YEARS AGO		0.071	0.010	0.098
CAME TO U.S. 20 – 30 YEARS AGO		0.058	0.013	0.113
CAME TO U.S. MORE THAN 30 YEARS AGO	0.003	0.058	0.003	0.057
NUMBER OF HOUSEHOLDS	3795		5834	

**Table B.4 • Variable Summary Statistics – Racial Category – Latino**

Variable	1980		1990	
	Mean	Std Dev.	Mean	Std Dev.
OWNERSHIP RATE	0.284	0.451	0.264	0.441
AGE 18 – 24	0.172	0.378	0.118	0.323
AGE 25 – 34	0.430	0.495	0.426	0.495
AGE 35 – 44	0.217	0.412	0.265	0.441
AGE 45 – 54	0.120	0.325	0.125	0.331
AGE 55 – 64	0.061	0.239	0.066	0.249
NOT MARRIED Male Head of Household	0.169	0.375	0.215	0.411
NOT MARRIED Female Head of Household	0.199	0.400	0.228	0.419
LESS THAN A HIGH SCHOOL DEGREE	0.524	0.499	0.483	0.500
HIGH SCHOOL DIP. BUT NO COLLEGE DEGREE	0.394	0.489	0.344	0.475
COLLEGE DEGREE OR BETTER	0.082	0.275	0.173	0.378
NUMBER OF PEOPLE IN HOUSEHOLD	3.624	1.940	3.944	2.282
NUMBER OF WORKERS IN HOUSEHOLD	1.638	0.940	1.904	1.209
WAGE&SALARY (1000s)	26.482	21.140	30.588	26.857
WAGE&SALSQ (1000000s)	1148.092	2252.722	1656.844	3763.831
DIV INCOME (1000s)	0.345	3.142	0.574	4.349
OTHINCOME (1000s)	3.249	10.298	3.541	11.751
MOVED FROM WITHIN CALIFORNIA	0.048	0.213	0.044	0.206
MOVED FROM WITH U.S	0.056	0.229	0.046	0.210
MOVED FROM A FOREIGN COUNTRY	0.151	0.358	0.107	0.309
IMMIGRANT	0.619	0.486	0.637	0.481
CAME TO U.S. WITHIN 5 YEARS	0.173	0.378	0.131	0.337
CAME TO U.S. 5 – 10 YEARS AGO		0.395	0.158	0.364
CAME TO U.S. 10 – 15 YEARS AGO		0.333	0.134	0.341
CAME TO U.S. 15 – 20 YEARS AGO		0.252	0.095	0.293
CAME TO U.S. 20 – 30 YEARS AGO		0.200	0.091	0.287
CAME TO U.S. MORE THAN 30 YEARS AGO	0.016	0.124	0.029	0.167
NUMBER OF HOUSEHOLDS	4286		8937	

**Table B.5 • Variable Summary Statistics – Racial Category – Asian**

Variable	1980		1990	
	Mean	Std Dev.	Mean	Std Dev.
OWNERSHIP RATE	0.420	0.494	0.459	0.498
AGE 18 – 24	0.088	0.283	0.054	0.227
AGE 25 – 34	0.417	0.493	0.335	0.472
AGE 35 – 44	0.282	0.450	0.350	0.477
AGE 45 – 54	0.143	0.350	0.173	0.378
AGE 55 – 64	0.070	0.255	0.088	0.283
NOT MARRIED MALE HEAD OF HOUSEHOLD	0.181	0.385	0.153	0.360
NOT MARRIED FEMALE HEAD OF HOUSEHOLD	0.173	0.378	0.174	0.379
LESS THAN A HIGH SCHOOL DEGREE	0.110	0.312	0.133	0.340
HIGH SCHOOL DIP. BUT NO COLLEGE DEGREE	0.403	0.491	0.302	0.459
COLLEGE DEGREE OR BETTER	0.487	0.500	0.565	0.496
NUMBER OF PEOPLE IN HOUSEHOLD	3.266	1.855	3.456	1.808
NUMBER OF WORKERS IN HOUSEHOLD	1.654	0.977	1.775	1.074
WAGE&SALARY (1000s)	33.363	27.309	38.143	36.277
WAGE&SALSQ (1000000s)	1858.525	3068.679	2770.765	7195.462
DIV INCOME (1000s)	1.366	6.773	1.375	6.307
OTHINCOME (1000s)	5.299	16.232	6.596	19.026
MOVED FROM WITHIN CALIFORNIA	0.047	0.211	0.061	0.239
MOVED FROM WITH U.S	0.096	0.295	0.092	0.290
MOVED FROM A FOREIGN COUNTRY	0.384	0.486	0.228	0.419
IMMIGRANT	0.786	0.410	0.880	0.325
CAME TO U.S. WITHIN 5 YEARS	0.407	0.491	0.252	0.434
CAME TO U.S. 5 – 10 YEARS AGO		0.402	0.299	0.458
CAME TO U.S. 10 – 15 YEARS AGO		0.299	0.172	0.378
CAME TO U.S. 15 – 20 YEARS AGO		0.174	0.088	0.284
CAME TO U.S. 20 – 30 YEARS AGO		0.191	0.055	0.228
CAME TO U.S. MORE THAN 30 YEARS AGO	0.008	0.091	0.013	0.115
NUMBER OF HOUSEHOLDS	2263		7213	

APPENDIX C

Table C.1 • Determinants of Tenure Choice Among Movers Probit Model with Sample Selection – White Households

Variable	1980		1990		T-test for Differences 1980-1990
	Dp/Dx	Std. Error	Dp/Dx	Std. Error	
AGE 18 – 24	-0.135	0.011	-0.125	0.012	-0.645
AGE 35 – 44	0.071	0.012	0.049	0.008	1.552
AGE 45 – 54	0.085	0.018	0.089	0.013	-0.197
AGE 55 – 64	0.085	0.024	0.087	0.017	-0.058
NOT MARRIED, Male Head of Household	-0.212	0.010	-0.185	0.007	-2.170
NOT MARRIED, Female Head of Household	-0.216	0.009	-0.170	0.007	-3.975
NO HIGH SCHOOL DIPLOMA	-0.080	0.009	-0.058	0.009	-1.652
COLLEGE DEGREE OR BETTER	0.049	0.007	0.039	0.005	1.141
NUMBER OF PEOPLE IN HOUSEHOLD	0.033	0.003	0.016	0.002	4.341
NUMBER OF WORKERS IN HOUSEHOLD	-0.049	0.005	-0.050	0.004	0.172
WAGE&SALARY	0.006	0.000	0.005	0.000	2.716
WAGE&SALARY SQUARED	-2.0E-05	2.2E-06	-1.3E-05	7.0E-07	-2.836
DIVIDEND AND INTEREST INCOME	0.004	0.001	0.005	0.001	-2.228
OTHER INCOME	0.004	0.000	0.003	0.000	1.654
MOVED FROM WITHIN CALIFORNIA	-0.061	0.010	-0.096	0.008	2.754
MOVED FROM WITHIN U.S	-0.154	0.008	-0.205	0.007	4.677
MOVED FROM A FOREIGN COUNTRY	-0.134	0.023	-0.192	0.020	1.916
IMMIGRANT	-0.014	0.029	-0.045	0.023	0.842
CAME TO U.S. 5 – 10 YEARS AGO	0.036	0.039	0.070	0.027	-0.722
CAME TO U.S. 10 – 15 YEARS AGO	0.036	0.038	0.116	0.028	-1.689
CAME TO U.S. 15 – 20 YEARS AGO	0.056	0.037	0.094	0.032	-0.767
CAME TO U.S. 20 – 30 YEARS AGO	0.060	0.035	0.094	0.029	-0.748
CAME TO U.S. MORE THAN 30 YEARS AGO	0.049	0.044	0.097	0.030	-0.903
Correlation Coefficient ( $\Delta$ )	0.005	0.080	0.199	0.075	-1.769
Log Likelihood Function	-26991		-48245		
Number of Households	19106		30672		
Mean of Dependent Variable	0.367		0.418		

Dp/Dx represent marginal estimates. The omitted categories are as follows: Age, 25–34; Marital status, married; Education, high school diploma, but no college degree; Race-ethnicity, white; Moved from, moved from within LA Co.; Immigrant, born in the U.S.; Came to U.S., within the past five years.

APPENDIX D

Table D.1 • Determinants of Tenure Choice Among Movers Probit Model with Sample Selection – Black Households

Variable	1980		1990		T-test for Differences 1980-1990
	Dp/Dx	Std. Error	Dp/Dx	Std. Error	
AGE 18 – 24	-0.115	0.025	-0.054	0.016	-2.081
AGE 35 – 44	0.095	0.037	0.032	0.013	1.584
AGE 45 – 54	0.148	0.061	0.039	0.024	1.670
AGE 55 – 64	0.221	0.083	0.059	0.033	1.810
NOT MARRIED, Male Head of Household	-0.156	0.021	-0.072	0.014	-3.263
NOT MARRIED, Female Head of Household	-0.141	0.018	-0.084	0.011	-2.720
NO HIGH SCHOOL DIPLOMA	-0.035	0.017	-0.015	0.010	-1.039
COLLEGE DEGREE OR BETTER	0.061	0.023	0.039	0.009	0.894
NUMBER OF PEOPLE IN HOUSEHOLD	0.022	0.005	-0.004	0.003	4.811
NUMBER OF WORKERS IN HOUSEHOLD	-0.007	0.010	-0.008	0.006	0.083
WAGE&SALARY	0.007	0.001	0.004	0.000	2.798
WAGE&SALARY SQUARED	-2.3E-05	7.7E-06	-9.1E-06	2.5E-06	-1.737
DIVIDEND AND INTEREST INCOME	0.016	0.006	0.010	0.003	0.764
OTHER INCOME	0.003	0.001	0.002	0.000	1.080
MOVED FROM WITHIN CALIFORNIA	-0.074	0.031	-0.037	0.018	-1.030
MOVED FROM WITHIN U.S	-0.116	0.020	-0.086	0.012	-1.293
MOVED FROM A FOREIGN COUNTRY	-0.072	0.053	-0.087	0.032	0.250
OMITTED: MOVED FROM WITHIN LA CO.					
IMMIGRANT	0.012	0.078	0.103	0.054	-0.965
CAME TO U.S. 5 – 10 YEARS AGO	-0.106	0.091	-0.085	0.036	-0.220
CAME TO U.S. 10 – 15 YEARS AGO	-0.056	0.093	-0.048	0.044	-0.079
CAME TO U.S. 15 – 20 YEARS AGO	0.006	0.098	-0.031	0.051	0.330
CAME TO U.S. 20 – 30 YEARS AGO	0.075	0.129	-0.047	0.043	0.898
CAME TO U.S. MORE THAN 30 YEARS AGO	-0.062	0.107	-0.046	0.058	-0.132
Correlation Coefficient ( $\Delta$ )	0.261	0.369	0.453	0.199	-0.458
Log Likelihood Function		-5687		-9138	
Number of Households		3795		5834	
Mean of Dependent Variable		0.216		0.196	

Dp/Dx represent marginal estimates. The omitted categories are as follows: Age, 25–34; Marital status, married; Education, high school diploma, but no college degree; Race-ethnicity, white; Moved from, moved from within LA Co.; Immigrant, born in the U.S.; Came to U.S., within the past five years.

## APPENDIX E

**Table E.1 • Determinants of Tenure Choice Among Movers Probit Model with Sample Selection – Latino Households**

Variable	1980		1990		T-test for Differences 1980-1990
	Dp/Dx	Std. Error	Dp/Dx	Std. Error	
AGE 18 – 24	-0.106	0.026	-0.098	0.016	-0.278
AGE 35 – 44	0.051	0.042	0.036	0.016	0.332
AGE 45 – 54	0.061	0.077	0.063	0.028	-0.035
AGE 55 – 64	0.058	0.101	0.101	0.042	-0.391
NOT MARRIED, Male Head of Household	-0.163	0.021	-0.103	0.013	-2.420
NOT MARRIED, Female Head of Household	-0.142	0.018	-0.126	0.012	-0.721
NO HIGH SCHOOL DIPLOMA	-0.092	0.014	-0.049	0.010	-2.457
COLLEGE DEGREE OR BETTER	0.023	0.029	0.034	0.012	-0.345
NUMBER OF PEOPLE IN HOUSEHOLD	0.031	0.005	0.013	0.002	3.124
NUMBER OF WORKERS IN HOUSEHOLD	-0.037	0.009	-0.038	0.005	0.083
WAGE&SALARY	0.008	0.001	0.008	0.000	0.328
WAGE&SALARY SQUARED	-3.3E-05	5.3E-06	-2.7E-05	2.7E-06	-0.971
DIVIDEND AND INTEREST INCOME	0.018	0.004	0.005	0.002	2.725
OTHER INCOME	0.004	0.001	0.004	0.001	0.238
MOVED FROM WITHIN CALIFORNIA	-0.024	0.028	-0.035	0.017	0.357
MOVED FROM WITHIN U.S	-0.082	0.027	-0.120	0.019	1.167
MOVED FROM A FOREIGN COUNTRY	-0.088	0.026	-0.072	0.020	-0.511
IMMIGRANT	-0.137	0.056	-0.128	0.025	-0.149
CAME TO U.S. 5 – 10 YEARS AGO	0.118	0.048	0.047	0.027	1.319
CAME TO U.S. 10 – 15 YEARS AGO	0.218	0.052	0.155	0.032	1.024
CAME TO U.S. 15 – 20 YEARS AGO	0.181	0.067	0.245	0.037	-0.832
CAME TO U.S. 20 – 30 YEARS AGO	0.169	0.089	0.280	0.039	-1.151
CAME TO U.S. MORE THAN 30 YEARS AGO	0.175	0.093	0.227	0.045	-0.503
Correlation Coefficient ( $\Delta$ )	0.039	0.540	0.131	0.252	-0.154
Log Likelihood Function		-5916		-13561	
Number of Households		4286		8937	
Mean of Dependent Variable		0.284		0.264	

Dp/Dx represent marginal estimates. The omitted categories are as follows: Age, 25–34; Marital status, married; Education, high school diploma, but no college degree; Race-ethnicity, white; Moved from, moved from within LA Co.; Immigrant, born in the U.S.; Came to U.S., within the past five years.

APPENDIX F

Table F.1 • Determinants of Tenure Choice Among Movers Probit Model with Sample Selection – Asian Households

Variable	1980		1990		T-test for Differences 1980-1990
	Dp/Dx	Std. Error	Dp/Dx	Std. Error	
AGE 18 – 24	-0.066	0.040	-0.057	0.027	-0.199
AGE 35 – 44	0.019	0.022	0.005	0.013	0.573
AGE 45 – 54	-0.081	0.027	-0.046	0.018	-1.065
AGE 55 – 64	-0.107	0.035	-0.075	0.023	-0.762
NOT MARRIED, Male Head of Household	-0.155	0.027	-0.099	0.015	-1.824
NOT MARRIED, Female Head of Household	-0.132	0.028	-0.097	0.014	-1.126
NO HIGH SCHOOL DIPLOMA	-0.011	0.028	-0.066	0.016	1.665
COLLEGE DEGREE OR BETTER	0.062	0.018	0.063	0.011	-0.034
NUMBER OF PEOPLE IN HOUSEHOLD	0.025	0.006	0.008	0.003	2.707
NUMBER OF WORKERS IN HOUSEHOLD	0.017	0.012	0.005	0.006	0.967
WAGE&SALARY	0.005	0.001	0.005	0.000	0.682
WAGE&SALARY SQUARED	-1.8E-05	6.3E-06	-1.2E-05	2.6E-06	-0.999
DIVIDEND AND INTEREST INCOME	0.011	0.003	0.011	0.002	0.079
OTHER INCOME	0.004	0.001	0.004	0.000	0.380
MOVED FROM WITHIN CALIFORNIA	-0.013	0.040	-0.095	0.019	1.841
MOVED FROM WITHIN U.S	-0.068	0.027	-0.167	0.017	3.127
MOVED FROM A FOREIGN COUNTRY	-0.092	0.029	-0.139	0.020	1.327
IMMIGRANT	0.014	0.038	0.047	0.027	-0.728
CAME TO U.S. 5 – 10 YEARS AGO	0.085	0.033	0.018	0.020	1.723
CAME TO U.S. 10 – 15 YEARS AGO	0.099	0.040	0.063	0.025	0.763
CAME TO U.S. 15 – 20 YEARS AGO	0.140	0.059	0.029	0.027	1.695
CAME TO U.S. 20 – 30 YEARS AGO	0.048	0.051	0.014	0.032	0.571
CAME TO U.S. MORE THAN 30 YEARS AGO	-0.071	0.088	-0.051	0.045	-0.210
Correlation Coefficient ( $\Delta$ )	0.893	0.230	0.662	0.073	0.957
Log Likelihood Function		-2408		-9770	
Number of Households		2263		7213	
Mean of Dependent Variable		0.420		0.459	

Dp/Dx represent marginal estimates. The omitted categories are as follows: Age, 25–34; Marital status, married; Education, high school diploma, but no college degree; Race-ethnicity, white; Moved from, moved from within LA Co.; Immigrant, born in the U.S.; Came to U.S., within the past five years..