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Research Article

Risks and Rewards in Wealth Building:

Asian American Homeownership and Foreclosure Pre and Post Housing Boom in East San Gabriel Valley, California

R. Varisa Patraporn, Linda Diem Tran, and Paul M. Ong

Abstract

While much research exists on African Americans and Latinos after the housing crisis in 2007, much less is known about the Asian American experience particularly as it relates to foreclosure and housing burden. This study takes a quantitative case study approach examining Asian Americans in one region of Los Angeles County. Utilizing data from the Census, Home Mortgage Foreclosure Data, and DataQuick, we provide a more comprehensive picture of the Asian American housing experience before, during and after the housing boom in 2005. Findings show that Asian Americans' decline in homeownership could not be explained by foreclosure. In fact, Asian Americans may have avoided foreclosure in this region using higher down payments, avoiding subprime loans, and loans with variable interest. A potential cost of these actions is higher housing burden, which is closely related to default and foreclosure. Thus, policymakers and community leaders should continue to monitor Asian American homeownership as the impact of the housing collapse may be delayed for Asian Americans compared to other racial groups.

Introduction

The housing market and overall wealth changed tremendously from 2000 to 2010. By the year 2000, a housing boom was on its way with the highest rates of homeownership recorded in decades, increasing home values, and a significant number of home purchases (Firestine and Ong, 2009; Gabriel and Rosenthal, 2011; Shulman, 2012). Homeowner-

ship rates peaked in 2006 at a historic high of 69 percent and fell to 66 percent by 2011 (Gabriel and Rosenthal, 2015; Shulman, 2012). Average home prices dropped by a third during the same time period and home sales declined to 4.1 million units in 2008 from a high of 7.1 million units in 2005 (Shulman, 2012). The housing market decline continued through 2012 and has led to an overall loss of nearly $7 trillion in wealth (Shulman, 2012). Changes in home value explain much of the decline.[1]

The change in assets and home equity also contributed to a widening of the racial wealth gap. Decreased home equity among racial minorities is particularly detrimental because they hold most of their wealth in their homes (Krivo and Kauffman, 2004). As Kochhar, Fry, and Taylor (2011) point out, between 2005 and 2009 the median value of assets and home equity declined significantly less for whites compared to racial minorities; home equity declined 18 percent for whites, 23 percent for African Americans, 32 percent for Asian Americans, and 51 percent for Latinos.[2] Latino and Asian American severe home equity decline can be partly explained by their geographic concentration in states with the greatest home price declines from 2005 to 2009. For instance, in Arizona, California, Florida, Michigan, and Nevada median home prices decreased by more than 30 percent.[3] This decline is coupled with significant rates of "underwater" mortgages (Schwartz 2010).[4] Thus, it is clear that the impact of the housing market collapse varies by both place and race.

For Asian Americans the housing boom positively impacted wealth resulting in Asian Americans' wealth exceeding that of non-Hispanic whites by 2005. Patraporn, Ong, and Houston (2009), concluded that Asian Americans closed the gap due to their geographic concentration in areas where home prices appreciated most rapidly. However, it appears that this gain came at the cost of taking on greater financial burden, as 40 percent of Asian Americans with a mortgage paid 35 percent or more of their income on monthly housing costs (Firestine and Ong, 2009).[5]

Because gains in wealth came predominantly from housing, Patraporn et al. (2009) suggest further monitoring of Asian American wealth to examine whether such a reduction in the wealth gap has leveled off given the continued decline in housing prices. Indeed, by 2009 Asian Americans had lost their position at the top of the wealth ladder, holding less home equity, which indicates that the closing of the wealth gap in 2005 was only temporary (Kochhar et al., 2011).

While a notable amount of research now examines the impact of the housing market boom and collapse on blacks and Latinos, less exists about the impact on Asian Americans (Burd-Sharps and Rasch, 2015;

Pfeiffer and Molina Tumpson, 2013; Rugh, 2015). Given their overall higher socioeconomic status, researchers and policy makers may overlook the need to examine this population more closely. However, a more refined analysis may uncover racial/ethnic disparities that we may not have seen previously at higher levels of geography. Moreover, in areas in which Asian Americans fare better, we can also learn about factors that might improve housing and overall wealth outcomes for Asian Americans in other areas and/or for other racial groups.

Due to the importance of place and local markets for home values and prices, it is fitting that we pursue a case study approach. Thus, this article focuses on understanding the impact of the housing boom and collapse on Asian Americans in one part of Los Angeles County, the East San Gabriel Valley (ESGV) between 1999 and 2012. For purposes of this study the ESGV includes La Habra Heights, Covina, Walnut, Diamond Bar, West Covina, Rowland Heights, and the City of Industry (see Figure 1). This region has been hit hard by the housing market collapse with large declines in home value, coupled with higher homeownership rates than in the county and a significant number of Asian American residents (DataQuick, 1999–2007; DataQuick, 2007–12; U.S. Census Bureau, 2000a; U.S. Census Bureau, 2006–10b).[6] For all these reasons, ESGV provides a unique opportunity to examine racial differences in homeownership and foreclosure.

To better understand the nature and magnitude of the housing boom and collapse on Asian Americans in the ESGV, we ask the following questions: How did homeownership rates change during the boom and collapse? Did housing burden increase following the collapse? Are there differences in default and foreclosure rates by race/ethnicity? If so, can this be explained by the rate of subprime lending? What kinds of differences, if any, were there in home purchase price and values by race/ethnicity that may also explain housing burden or foreclosures?

To answer these questions, this study uses data from multiple sources and time periods to describe homeownership and foreclosure. We provide descriptive statistics and estimate one model for home purchase price using the Census American Community Survey data, Census Decennial data, DataQuick, and Home Mortgage Disclosure Act (HMDA) data. Currently, there is not one data set that can provide all the information necessary to analyze homeownership and foreclosure by race/ethnicity. As a result, we use and join these data sets when possible, imputing race using a Census surname database to provide a more comprehensive picture of the homeownership experience in ESGV.

While our research provides a more in-depth understanding of the impacts of the housing market boom and collapse on Asian Americans, we also intend to provide a method and model to examine housing market impacts on Asian Americans and other racial/ethnic groups within and outside of California. Ultimately, the study points to how we might improve Asian Americans' ability to build and hold onto their housing assets to ensure long-term economic security.

The remainder of this article has four major parts. For the first part, we provide a detailed discussion about the methods and data. In the second part we then provide a description of the area of focus: ESGV in the context of Los Angeles County. In the third part, we report the results from our data analysis along five major measures: 1) homeownership factors; 2) homeownership and home values; 3) home purchases and purchase price; 4) housing burden; and 5) defaults and foreclosures. To conclude the article, we discuss study limitations, future research, and policy implications and recommendations.

Methods and Data

We relied on several data sources that provided information about housing purchases, loans, foreclosures, and defaults by race/ethnicity. We used data from four sources and merged data where possible. These sources include the U.S. Census Bureau, DataQuick, and the Federal Financial Institutions Examination Council's (FFIEC's) HMDA. The following is an overview of all the various data sources and the specific data sets utilized. Using information from multiple data sources broadened our understanding of home purchases and the factors that contributed to loan defaults and foreclosures in ESGV.

The Decennial Census and the American Community Survey (ACS) are rich national data sources with population and housing information provided by race/ethnicity. The ACS collects socioeconomic information through a long-form questionnaire and provides current data about all communities annually. For our analysis, we used the Census Public Use Microdata Areas (PUMAs) 05800, 06107, and 06108 to construct ESGV data sets for the years 2000 (Decennial Census) and 2006–10 (ACS). This allowed us to estimate homeownership and housing burden levels across racial/ethnic groups before and during the housing boom.

To examine notice of defaults and foreclosures, we utilize DataQuick data. DataQuick provides comprehensive property characteristics for the top one thousand Metropolitan Statistical Areas nationwide. We used three data sets from this source: home sales (1999–2007),

notice of defaults (NODs) (2006–12), and foreclosures (2007–12). These data sets allow users to observe price trends at the neighborhood level and provide detailed information about purchased properties such as square feet, number of bedrooms, and so forth. Census tracts that fell within the Census PUMAs were used to purchase DataQuick data for each study area. All home sales were limited to single-family homes purchased by individuals (not institutions). A total of 46,696 sales records were identified between January 1999 and December 2007.

Because DataQuick does not identify race of individuals, we imputed race using a surname list issued by the U.S. Census Bureau. The surname list developed by Word et al. (2000) contains more than 150,000 common surnames. Word et al. (2000) developed this list by exploring the demographic characteristics such as gender, race, and ethnicity associated with more than six million names selected from 2000 U.S. Census data surnames. Each surname had probabilities that indicated whether a person with that name was likely black/African American, non-Hispanic white/Caucasian, Asian or Pacific Islander (API), Hispanic or Latino, American Indian or Alaska Native, or multiracial (U.S. Census, 2014).

Using the surnames of buyers in DataQuick sales records, we matched the two data sets, and more than 90 percent (n = 42,238) of sales records were successfully matched with the surname list. We assigned the race/ethnicity of unmatched buyers as unknown. All buyers with at least a 66 percent probability of being of a certain race/ethnicity or multiracial were assigned as that race/ethnicity. If a buyer's surname did not meet the 66 percent threshold for any racial/ethnic category, we also assigned them as unknown. Given the small number of identified black buyers in the sales records data set, we included these individuals in the "Black, Other Race, or Unknown" category.

The final source of data is managed by the FFIEC. The HMDA was enacted by Congress in 1975 and was designed by the Federal Reserve Board. Regulations affiliated with HMDA require lending institutions to report public loan information. This public loan data is used to determine whether financial institutions are serving the housing needs of their communities, whether public officials distribute public-sector investments to areas where it is needed, and in identifying possible discriminatory lending patterns (FFIEC, 2007). For purposes of this article, we used Loan Application Registers reports from 2004 to 2007. A total of 13,785 originated loans were identified in this data set.

Purchase Price Model

Home values rose steeply during the housing boom. In order to better understand the factors that contributed to the price a buyer paid for their home during this period, we use multivariate linear regression. We analyze the effect of a number of variables including home and property characteristics, neighborhood, purchase year, and race on purchase price.

Home characteristics include the number of bedrooms, number of bathrooms, square feet, lot size, and year built. In addition to number of bathrooms and bedrooms, we also include a bathroom and bedroom squared variable to account for the diminishing returns to purchase price with respect to the number of bathrooms and bedrooms. We use census tract to account for neighborhood effects that can influence the attractiveness of a home.[7] Purchase year captures the potential effect of the housing boom trend by year.

Finally, we included the imputed race/ethnicity of the buyer to detect any potential excesses or savings above and beyond the expected home value. For example, a significant positive coefficient for the Asian American variable would imply that Asian American buyers on average paid more than non-Hispanic whites for a similar home in the same neighborhood controlling for all other factors. The analyses were stratified for single-family residences (n = 34,363).

Cohort Analyses

Because the focus of this article is to explore the impacts of the housing boom and collapse, we select a group of buyers to examine. To quantify the rates of loan defaults and foreclosures in ESGV, we identified a cohort of homeowners who purchased homes from 1999 to 2007. These homeowners were the last to purchase their homes during this period. The cohort included 33,376 homeowners.[8] DataQuick NOD and foreclosure records for homes in ESGV tracts were reviewed. We selected the first cases of default and foreclosure for each property in our data set and identified 10,670 unique NODs from July 5, 2006 to August 7, 2012 and 4,614 foreclosures from January 5, 2007 to August 20, 2012. NODs were merged with sales records data for homeowners in the cohort using a unique property ID, owner last name, and owner first name; 5,099 records matched. Foreclosures were then merged to this data set by Assessor's Parcel Number (APN); 3,539 records matched. Note that owner names were not available in the foreclosure data set, and unlike property ID, APN was available for all records. The final

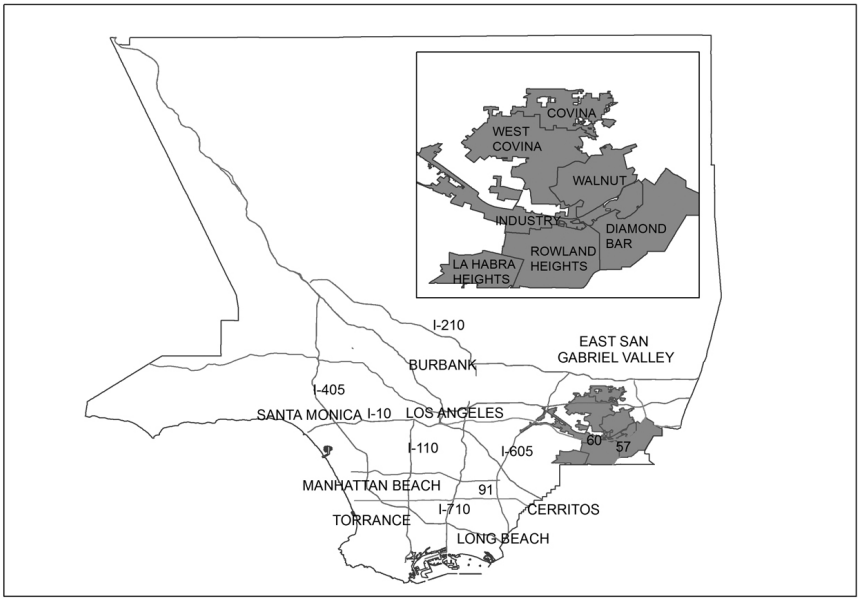
merged data set included sales records from 33,376 homeowners who were the last to purchase their homes from 1999 to 2007 and any NODs and/or foreclosures attached to that owner from 2006 to 2012.

East San Gabriel Valley

We focus our analysis on one area in Los Angeles County due to the importance of local markets in the context of understanding housing. Comprised of three Census PUMAs, ESGV for purposes of this study represents the following cities: West Covina, Rowland Heights, Diamond Bar, Walnut, and parts of the City of Industry, La Habra Heights, and Covina.[9]

ESGV is a fairly affluent community situated in the central east part of Los Angeles County and home to approximately 335,000 people. It is bordered by the Interstate 605 on the west and State Route 57 on the east. Compared to Los Angeles County, this region has higher income, a larger immigrant population, and greater racial/ethnic diversity.[10] Close to 42 percent are Latino, 20 percent are non-Hispanic white, and 34 percent are Asian American. The majority of the approximately 113,000 Asian American residents are Chinese (49 percent) followed by notable Filipino (21 percent) and Korean (10 percent) populations.

Figure 1: The East San Gabriel Valley in the Context of Los Angeles County



Source: Decennial Census 2010, Created by R. Varisa Patraporn

In addition to racial/ethnic diversity, the region also is multilingual with a notable foreign-born population. Nearly two-thirds (62 percent) are born in the United States and of those born outside the United States, most (52 percent) immigrated more than twenty years ago. Based on such figures one would expect that English would be spoken in most households. This can be demonstrated by the 38 percent of households speaking English only. However, close to a third also speak English and Spanish and another third speak English and an API language, demonstrating the diversity in languages spoken.[11]

There were two major reasons for focusing on this region. First, the racial diversity within this region allowed for a comparison across racial groups. The existence of substantial, non-Hispanic white, Latino, and Asian American populations allows for comparison of at least two distinct racial/ethnic populations. More importantly, there was a significant Asian American population to study, as they are the main population of interest for this research.

Second, this area has a large number of homeowners and although it has a lower rate of foreclosure compared to Los Angeles County, there are adequate numbers of foreclosures in order to better understand homeowner decisions and status. The higher than average homeownership rate provided an adequate sample size for foreclosure analyses; 72 percent of homes in ESGV were owner occupied compared to 47 percent of all homes in Los Angeles County. Compared to Los Angeles County, homes in ESGV are more likely to be single-family homes (77 percent) and newer (built in 1980 or after). Roughly one out of forty-three ESGV homes with a mortgage foreclosed in 2010 compared to the one out of thirty-six Los Angeles County homes.[12] Therefore, the ESGV housing submarket was less impacted by foreclosures relative to the Los Angeles County market, nonetheless impacted.

Homeownership Factors: Income and Household Size

We will now begin to discuss our findings starting with variables that impact homeownership. Household income and household size determines a household's ability to purchase and afford a home. For most homeowners, household income determines whether they generate enough savings for a down payment and whether they can maintain home payments overtime. Household income also influences the type of loan and interest rate a person may qualify for and receive. Because of its importance, we examined median household income before and after the housing boom in Table 1.

Table 1. Median Household Income (2010 dollars) and Homeownership Rates by Race/Ethnicity in ESGV

	Total	API	NH White	Latino	Other Race
Median Household Income					
Pre Housing Boom (2000)	$72,179	$77,434	$73,445	$67,873	$64,239
During Housing Boom (2007)	$80,191	$88,103	$83,826	$72,867	$69,499
Post Housing Boom (2010)	$65,496	$72,549	$61,465	$64,317	$63,480
Homeownership Rate					
Pre Housing Boom (2000)	72.1%	75.0%	79.0%	64.5%	60.0%
During Housing Boom (2007)	73.3%	76.0%	84.0%	65.8%	51.0%
Post Housing Boom (2010)	70.4%	71.0%	79.0%	66.1%	60.0%

Sources: Census 2000 PUMS & American Community Survey 2006-2010 PUMS.

Note: NH White is non-Hispanic White. We use the term Latino to describe individuals who are defined as Hispanic by the Census.

For the most part, median household income decreased for all racial groups from 2000 to 2010. Non-Hispanic whites had the greatest drop in median household income (Table 1). Next, Asian American households saw the second-largest decrease in median household income by nearly $8,000. Latino and other race households experienced smaller decreases in median household incomes, although their median household incomes in 2000 were already lower compared to Asian American and non-Hispanic white households.

Although Asian American households reported greater median household incomes compared to non-Hispanic white households, it should be noted that Asian American households in ESGV are larger on average. Asian American households had an average of 3.3 persons, while non-Hispanic white households had an average of 2.6 persons. Latino households were largest compared to all other racial/ethnic groups with 3.8 persons per household. Asian American (7 percent) and Latino (12 percent) households in ESGV were also more likely to have the presence of subfamilies (married couples with or without children or one parent and at least one child) living in a household as well as more workers per family compared to non-Hispanic whites. Presumably, larger households with more workers and potential contributors to household income would positively impact homeownership. However, this must be taken into consideration based on per capita income. In other words, there may be more persons in a household, but not necessarily contributing members. In fact, a larger household size may disadvantage some households by increasing the burden of homeown-

ership as there are additional competing costs with each additional household member.

The median per capita income by race/ethnicity from 2006 to 2010 showed that non-Hispanic whites have the highest level median per capita income exceeding the median for Asian American, Latino, and other race persons.[13] On this measure, non-Hispanic whites exceed Asian Americans per capita income by close to $8,000. Non-Hispanic white per capita income is $32,647 compared to $25,661, respectively, for Asian Americans persons eighteen and older living in owned units. Latino median per capita income is below non-Hispanic whites and Asian Americans, although the gap between Asian American median per capita income and Latino per capita income is just slightly more than $1,000. For those that are other race in the region, median per capita income is higher than Asian American at $30,229, but lower than non-Hispanic whites.

In sum, while Asian American households experienced a drop in median household income in the pre– and post–housing boom period, they did not experience the greatest drop in median household income compared to non-Hispanic whites. However, their decline of close to $16,000 in median household income coupled with larger average household sizes and lower median per capita incomes compared to non-Hispanic whites in the region is notable. Based on these factors, we would expect to see larger drops in homeownership for Asian American households compared to non-Hispanic whites. Indeed, Asian Americans experienced a larger drop in homeownership compared to non-Hispanic whites and all other groups in ESGV over a ten-year period (Table 1).[14]

Homeownership and Home Values

In this section, we discuss homeownership rates and values before, during, and after the housing boom (Table 1). As expected the overall homeownership rate increased slightly from 2000 to 2007, but then declined from 2007 to 2010. In 2007, an estimated 73.3 percent of ESGV households owned single-family homes compared to 70.4 percent in 2010. Despite this overall decline in homeownership from 2007 to 2010 in the ESGV, homeownership rates are higher than the average for Los Angeles County, which remained in the 40 percent range during the same time period.[15]

When we took a closer look at homeownership rates by race/ethnicity we observe different changes in homeownership rate overtime by race/ethnicity. All racial groups maintained or increased their homeownership rates from 2000 to 2010 with the exception of Asian Americans.

Moreover, when we examine just the period following the housing boom, we find that non-Hispanic white and Asian American households both experienced declines in homeownership rates; the difference was 5 percentage points for non-Hispanic whites and 5 percentage points for Asian Americans, respectively. In comparison, Latino homeownership rates increased slightly by 0.3 percent from 2007 to 2010.

Despite the changes in homeownership from 2000 to 2010 overall, Asian Americans and non-Hispanic whites had higher homeownership rates than Latino and other race households. For instance, in 2000 non-Hispanic white homeowners were highest at 79 percent, followed by Asian Americans at 75 percent, then Latinos at 64.5 percent, and other race individuals at 60 percent. This ranking in terms of homeownership rate persisted from 2007 to 2010.

Home value trends from 2000 to 2010 follow homeownership rates as expected with a rise in the 2000s until 2005, when homeownership rates fell, and then a drop in value from 2007 to 2010, when homeownership rates rose again. While the start of the housing bubble has been much debated, the housing price index reached a historical high around 2001 and skyrocketed in the next four years (Levitin and Wachter, 2012; Shiller, 2005).[16]

In Los Angeles County, median self-reported home values increased 143 percent from $255,032 in 2000 to $620,962 in 2006.[17] The median home value in ESVG in 2000 was slightly lower compared to the Los Angeles County estimate ($237,430) but increased at a higher rate at 185 percent to $675,869 in 2006. Median self-reported home values in this sub region continued to exceed Los Angeles County values through 2010. Median home value in Los Angeles County was $429,500 in 2010. Median home value in ESGV at the time was slightly higher at $450,000, which may be due to its newer and larger single-family housing stock.

Estimated home values by year illustrate distinct trends between Latino, non-Hispanic white, and Asian American homeowners. Although self-reported median values were similar across these groups in 2006 and 2007, the trajectories diverged after the peak of the housing boom in 2008. The median home value for Latino/Hispanic homeowners dropped substantially from $675,869 in 2006 to $456,000 in 2008. The median home value for non-Hispanic white homeowners dropped to a similar level a year later. Although median home values for Asian American homeowners dipped slightly after 2007, median self-reported home values for Asian Americans remained above $600,000 through 2010, nearly $200,000 above median values for Latinos/Hispanics and non-Hispanic whites.

Home Purchases and Purchase Prices

In this section we examine the number and types of homes purchased and purchase prices before and after the housing boom by race/ethnicity. Between 1999 and 2003, home purchases rose annually, and Asian Americans led in the number purchased per year (average of 2,000/year) followed by Latinos (average of 1,700/year) (See Appendix Figure A.1). After 2003, the number of home purchases by Asian Americans, non-Hispanic whites, and others declined, while the number of purchases by Hispanics/Latinos continued to increase exceeding Asian American purchases through 2005. By 2007, the number of homes purchased (n = 2,658) was less than half the number of homes purchased in 2003 (n = 6,541), and the number of purchases by Asian Americans and Latinos converged at around one thousand. The lagged decline in purchases by Hispanics/Latinos, relative to other groups, was notable. Home purchase trends contribute to our understanding of the decline in Asian American homeownership and the incline in Latino homeownership in the region.

Contributing to decline in purchases is purchase prices. Prior to the housing boom (1999–2004), the median purchase price of a home in ESGV was about $320,000 (see Table 2). During the housing boom (2005–7), the median price went up to $554,000. Asian American buyers paid significantly higher prices for their home relative to other racial/ethnic groups in both periods.[18] This makes sense because ESGV homes purchased by Asian Americans also tended to be larger and newer compared to other groups (Table 2). Finally, the vast majority of homes purchased by Asian Americans were in Diamond Bar, Rowland Heights, and Walnut, where home prices are higher contributing to observed price differences.

In order to test whether the higher price paid by Asian Americans was significantly different from other racial groups in the area even after controlling for home characteristics and location, we estimated a multivariate linear regression model and controlled for variables as suggested in prior research such as Cohen and Coughlin (2008) (see Table 3). Larger homes with bigger lots, more square feet, bedrooms, and bathrooms were all significantly associated with higher expected purchase price. The year a home was built also had a positive effect on purchase price. This finding was highly statistically significant. We also tested the impact of purchase year including dummy variables for the year 2000 through 2007. Each year progressively resulted in a higher purchase price compared to purchasing in 1999. All of these coefficients were found to be highly statistically significant. Results regarding census tracts were mixed showing

that indeed prices vary by neighborhood with the majority of findings being statistically significant.[19] Coefficients for race/ethnicity suggest that Latino and Asian American buyers paid more for similar single-family homes in the same census tracts than non-Hispanic white buyers. This finding was statistically significant at the $p < .01$ and $p < .05$ levels, respectively. The higher purchase prices paid by Asian Americans and Latinos may contribute to housing burden given the simultaneous decline in household incomes during this time as well.

Table 2. Median Home Characteristics and Purchase Price by Race/Ethnicity, ESGV 1999-2007 (n=46,696)

	All Purchases	Asian	NH White	Latino	Other Race
Median Purchase Price (2010 dollars) (n=44,441)					
Pre-Housing Boom	$318,920	$371,280	$297,118	$285,360	$319,440
Housing Boom	$543,240	$588,000	$540,000	$525,000	$553,770
Characteristics of Purchased Homes					
Number of Baths	2	3	2	2	2
Number of Beds	3	4	3	3	3
Square Feet	1,529	1,753	1,503	1,400	1,545
Year Built	1973	1979	1971	1958	1975
Locations of Purchased Homes					
Covina	16.3%	3.3%	26.3%	24.7%	15.5%
Diamond Bar	20.3%	27.9%	24.7%	9.1%	23.1%
Hacienda Heights	2.0%	4.2%	0.9%	0.7%	1.5%
La Habra Heights	1.2%	0.6%	3.0%	0.8%	1.6%
La Puente	7.1%	2.9%	2.2%	14.8%	4.6%
Pomona	0.7%	0.6%	1.6%	0.4%	0.8%
Rowland Heights	12.1%	22.4%	5.1%	6.0%	10.5%
San Dimas	0.4%	0.1%	1.2%	0.2%	0.5%
Walnut	12.8%	21.5%	9.1%	5.8%	12.8%
West Covina	26.6%	15.7%	25.1%	37.1%	28.5%
Other City	0.0%	0.0%	0.0%	0.0%	0.0%
Missing	0.5%	0.7%	0.6%	0.2%	0.5%

Source: DataQuick Sales Extract 1999-2007

Notes: Other includes Black, unknown and other race individuals. NH=non-Hispanic.

Table 3. Regression Results for Purchase Price of ESGV homes, Final Model (N=34,363)

Independent Variables	β	SE	
Building Characteristics			
Baths	3043.730	2968.775	
Bath squared	303.108	435.482	
Bedrooms	36050.140	5614.024	***
Bedroom squared	-6892.146	717.903	***
Square feet	159.760	1.687	***
Lot Size	0.007	0.002	***
Year built	713.146	87.765	***
Purchase year			
2000	15334.500	2762.850	***
2001	39704.210	2739.841	***
2002	86406.230	2695.764	***
2003	146381.000	2669.791	***
2004	250662.100	2791.443	***
2005	342561.700	SE 2845.595	***
2006	383988.200	3140.918	***
2007	332076.300	3538.083	***
Race			
Latino	7261.900	2221.803	***
Black	-16017.000	14616.350	
Asian/Pacific Islander	5693.476	2368.900	**
Other	2855.717	2489.494	
Constant	-1444304.000	171031.500	***
Adjusted R squared	0.760		

Note: * p < .10. ** p < .05. *** p < .01.
Tracts were also in the model but not reported in the table. Tracts serve as an indicator of neighborhood effects and/or changes that affected price were found to be statistically significant in several instances. A discussion of those tracts are discussed in the article's Homeownership Factors section.

Housing Burden

In this section we discuss findings about housing burden, as an important indicator of default and foreclosures. The types of purchases made and the price paid for purchases provide some indication of housing affordability. Another factor is the proportion of housing income paid to monthly housing costs. Thirty percent has been recognized as

the threshold for housing affordability. Housing burdens higher than 30 percent signal a high housing burden for the household, and households paying more than 50 percent of their monthly income to housing costs are considered extremely burdened.

Asian American households were more likely than non-Hispanic white households to have extremely high housing burden before and following the housing boom. Roughly one of five (22 percent) Asian American households in ESGV paid more than half of their monthly income toward mortgage payments and other housing costs in 2000. In comparison, 19 percent of Latinos and 15 percent of non-Hispanic whites spent greater than 50 percent of their monthly income on housing. Similarly, from 2006 to 2010, 17 percent of Latinos and 11 percent of non-Hispanic whites paid more than 50 percent of their income to housing compared to 22 percent of Asian Americans.

Compared to other racial/ethnic groups, households headed by non-Hispanic white residents were most likely to pay an affordable portion of their income toward housing and were least likely to have a high or extremely high housing burden. For instance, from 2006 to 2010 nearly three-fourths of non-Hispanic white households paid 30 percent or less of their income toward housing compared to 53 percent and 56 percent of Latino and Asian American households, respectively.

Greater housing burden for Asian Americans is likely due to higher loans that buyers took out to pay for larger homes and higher prices in certain neighborhoods (see Table 4). Prior to the housing boom, median loan amounts for Asian American buyers were $278,000, which was higher than the median for all purchases during that time period ($269,000). During the housing boom, median loan amounts increased approximately 80 percent overall and 61 percent for Asian American buyers. They show higher housing burden even though average loan amounts were slightly lower compared to other racial groups during the boom period.

Asian Americans may have borrowed less because they placed higher down payments relative to other groups, during both periods. Before the boom and during the boom, Asian American median down payment amounts were higher than all racial groups along with the percent that had down payments (Table 4). Finally, our examination of approved and originated loans indicated that the rates of homes purchased with variable interest loans increased for all groups during the housing boom; however, these rates were lower among Asian American buyers compared to other racial/ethnic groups during the boom. Asian

Americans were less likely to be saddled with subprime loans (11.7 percent) between 2004 and 2007 compared to Latino buyers (30.8 percent).[20]

Table 4. Loan Characteristics by Race/Ethnicity and Purchase Period, ESGV 1999-2007

	All Purchases	API	NH White	Latino	Other Race
Median Loan Amount (2010 dollars) (n=41,434)					
Pre-Housing Boom	$268,763	$278,414	$262,000	$260,760	$275,186
Housing Boom	$478,725	$448,000	$470,400	$486,770	$495,600
Percent Placed Down Payment (n=41,619)					
Pre-Housing Boom	87.3%	96.7%	84.9%	79.6%	86.1%
Housing Boom	66.7%	87.5%	66.4%	52.8%	64.2%
Median Down Payment (2010 dollars) (n=34,147)					
Pre-Housing Boom	$49,125	$80,500	$38,100	$20,528	$43,050
Housing Boom	$103,464	$131,760	$94,500	$79,296	$96,900
Percent with First Loans with Variable Interest Rates (n=43,564)					
Pre-Housing Boom	31.0%	29.8%	27.8%	32.5%	33.6%
Housing Boom	64.6%	48.7%	61.6%	76.1%	65.5%
Originated Loans that were Subprime* (2004-2007) (n=13,785)					
Percent Subprime Loans	21.7%	11.7%	15.4%	30.8%	28.0%

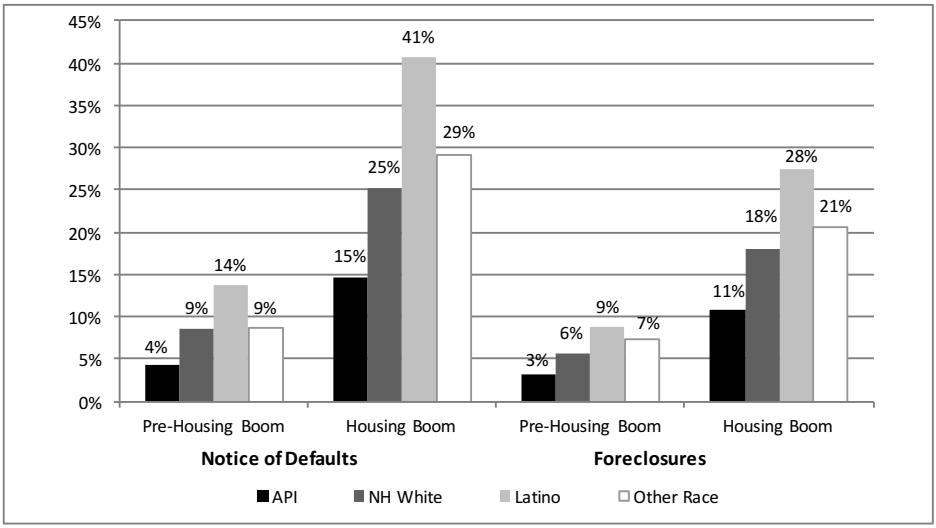
Sources: HMDA LAR 2004-2007 and DataQuick Sales Extract 1999-2007

Notes: Other includes Black, unknown and other race individuals. NH=non-Hispanic.

Loan Defaults and Foreclosures

Less subprime loans, more favorable loans, and higher down payments during the boom may have helped Asian Americans in terms of loan defaults and foreclosure rates.[21] Indeed, we find from the cohort analysis that Asian American homeowners (who purchased from 1999 through 2007) had significantly lower loan default rates relative to other groups.

Figure 2. Percent of Owners who Received Notices of Defaults and Foreclosed by Race/Ethnicity and Purchase Period, ESGV 1999-2012 (n=33,376)



Sources: DataQuick Sales Extract 1999-2007, DataQuick Notice of Default Extract 2006-2012, and DataQuick Foreclosure Extract 2007-2012)

Figure 2 shows that Asian Americans who purchased their homes prior to the housing boom, only 4.2 percent defaulted on their loans in between 2006 and 2012. This rate nearly tripled for Asian Americans who bought their homes from 2005 to 2007, as it did for other groups. The risk of defaulting was much higher for individuals overall who purchased their home during the housing boom, which aligns with larger loans and more variable interest and subprime loans observed during this period. In fact, the median number of years it takes an owner who purchased during the boom to default was three years compared to seven years if the owner purchased prior to the boom. Our analyses showed that among those who purchased during the boom, 45 percent who defaulted did so within the first three years. The proportion for Asian American owners was 35 percent, which suggested that a loan default for this group was delayed compared to other racial groups.

Foreclosures followed a similar trend with greater risk of foreclosure among those who purchased during the housing boom. All racial groups experienced an increase in the rate of default and foreclosure dramatically from before the housing boom to during with rates at least tripling for all

groups. Latino owners experience the greatest levels of foreclosure, and Asian American buyers experience the lowest levels (see Figure 2).

Conclusion

In sum, Asian Americans experienced a notable decline in homeownership and increase in housing burden following the collapse of the housing market. They did not experience a correspondingly high default or foreclosure rate compared to other racial groups in ESGV or the county overall. We also found that Asian Americans fared better following the collapse in terms of home values, despite the risk of taking on larger mortgages and paying higher prices for a home of similar quality compared to non-Hispanic whites.

There are several possible explanations for the various phenomena we observe. First, declines in homeownership may have been due to Asian Americans selling their homes before going into default or foreclosure. There is limited data from our findings that suggest other reliable explanations. However, future studies should explore such questions using a qualitative approach that will allow for a more an in-depth understanding of homeowner decision making. Similarly future work should ask what explains the lower foreclosure rates among Asian Americans in ESGV. For instance, racial differences in nonhousing debt may explain different rates of subprime loans as nonhousing debt can influence both loan approvals and interest rates. Another area for future study that could influence the racial differentials that we see is an analysis of loan applications and denials. Although beyond the scope of our analysis, such differences could influence interest rates and, consequently, defaults and foreclosures.

Our findings also suggest that there are some protective factors and/or behaviors that Asian Americans engage in that allow them to keep their homes at least until 2012. These factors and behaviors include the higher proportion that offered a down payment (97 percent and 88 percent, respectively, pre and post housing boom) and the lower proportion of subprime loans and first loans with variable interest rates. The lower rates of subprime loans and loans with variable interest may be related to the opportunity structure for Asian Americans in the ESGV. Prior research has documented the notable number of Asian ethnic banks and foreign investments that provide greater access to capital and at more affordable rates (Hum, 2010; Li et al., 2002; Zonta, 2004). Another explanation for future research is whether Asian American default and foreclosure is simply delayed compared to other groups.

Despite such protective factors, housing burden rates are alarming and likely point to either further drops in homeownerships for Asian Americans and/or default and foreclosure (Firestine and Ong, 2009). Higher housing burden experienced by Asian Americans can be explained in part due to the lower household income with larger mortgages and higher purchasing prices. So why are Asian Americans paying more and buying larger homes? Larger household sizes may contribute to the desire for larger homes, but why pay more for homes of similar quality in terms of square feet, bedrooms, and so forth? A likely explanation is a stronger Asian American preference to live in ESGV compared to non-Hispanic whites. Asian Americans are simply are willing to pay more to live and own a home in ESGV whether it is because of the notable Asian American population, ethnic amenities, and/or desirable schools (Burge, 2013; Chang and Amam, 2010; Charles, 2003; Satow, 2015).[22] Both paying more for their home as well as taking on larger loans is indicative of "risky" behaviors as it relates to housing markets.

Such behaviors and related attitudes may be specific to Asian Americans as some of the prior literature suggests. For instance, Asian Americans may experience what economist Robert Shiller (2005) calls "irrational exuberance," confidence in the housing market at a higher level and/or higher rate compared to other racial groups. It could also be that Asian Americans have a propensity for more risky behavior overall as documented in the gambling literature (Zane and Huh-Kim, 1998). Finally, Asian Americans may also be keeping a home despite the burden to avoid "losing face," and experiencing a feeling of shame in the community (Park, 2006). This final point relates back to our suggestion that future research cover a time beyond 2012 to test whether or not default and foreclosure is delayed for Asian Americans.

Identifying and understanding such cultural attitudes and behaviors is difficult using quantitative data and instead is best explored through more qualitative approaches such as interviews with Asian American homeowners (Maxwell, 2009). Using interviews and/or focus groups would provide more insight into Asian American homeowner attitudes and decision making, which is not easily captured by survey data.

Moreover, future research should also consider Asian American ethnicity when possible when examining homeownership experiences. The limited data available that was analyzed showed great variation in housing burden among Asian American ethnic groups. Extreme housing burden was especially high for Korean homeowners with 41 percent

paying more than half of their monthly income toward housing compared to 22 percent of Chinese and 16 percent of Filipino owners.

The rate of burden also varied by ethnicity and year. Among Asian Americans in 2000, Chinese, Indian, and Koreans had a higher rate of most burdened compared to Japanese, Filipino, and Vietnamese homeowners.[23] In 2006, some Asian American ethnic groups showed a tremendous burden. For instance, 41 percent of Koreans and 44 percent of Cambodians were in the highly burdened category spending more than 50 percent of their income on housing. By 2009 those highly burdened groups now included Asian Indians (48 percent) and Thais (39 percent), and an alarming 100 percent of Cambodians were now highly burdened. By 2010, it appears that rates stabilize except for Koreans and Filipinos.[24] Given the ethnic differences in examining housing burden we recognize the need to examine housing experiences by ethnicity. However, much of our analysis did not include ethnicity due to lack of available data by Asian American ethnicity.

Indeed, exploring ethnic differences in Asian American homeownership would be a valuable contribution to our understanding about the complexity of this social process. And while we find that this is another limitation of our study for future research, we hope that the method we used to analyze the data can be applied in future research that would have greater geographic, temporal, and racial/ethnic coverage.

We also recognize the limits of applying our findings beyond this region, for which we were limited based on data resources and costs. Establishing a cohort of owners and merging data sets served its purpose but had a number of limitations. For example, our cohort ended in purchases made in 2007 and did not extend through the same time period for NODs and foreclosures. We adapted to this limitation by identifying the latest sales in the cohort and first default and foreclosure records for each parcel, but mismatches in our merging is probable. This is especially a concern for foreclosures because the name of the owner was not available. Finally, this case study cannot be generalized to the housing experiences of Asian Americans in other regions and should not be so. The experiences of Asian Americans in other areas will likely vary based on home price sensitivity in those areas, lending practices, types of community-based organizations serving the population, and the incomes and income stability of residents.

Despite these limitations, our methods and findings are useful for describing and quantifying homeownership experiences in the region especially for Asian Americans, a population for which we know less

about home foreclosures. One of the most salient issues identified in in our study is the high rate of housing burden experienced by Asian Americans and its likely causes: larger mortgages and higher purchase prices. While these causes may be tied to cultural attitudes and behaviors that policy makers and practitioners cannot dictate, there are certainly policies and programs that can be put in place or promoted to encourage greater long-term asset building for Asian Americans and other racial groups.

Policy makers and practitioners should continue to educate and promote an understanding about the importance of down payments as a way to reduce housing costs later down the line. Higher rates of down payments seemed to protect Asian Americans in the ESGV. Thus, policy makers should reconsider programs that do not require a down payment and instead invest more in Individual Development Accounts that can improve down payment amounts or develop new programs to help people defray the cost of owning a home and, ultimately, reduce housing burden.

Similarly, more financial education and literacy around home financing overall, including what it means to secure fixed versus variable interest rate loans, is needed. Certainly, the level of subprime loans and loans with variable interest rates among Latinos in ESGV contributed to their higher rates of default and foreclosure in the area. Thus, until regulations and protections against subprime lenders can be secured, policy makers should also continue to support alternative lending institutions such as credit unions, community banks, and community development financial institutions that promote capacity building, financial literacy, and asset building.

It is also important for alternative lending institutions to outreach and educate Asian Americans along with other racial groups especially in areas where the ethnic banks may be less available or due to Asian American cultural behaviors. Such attitudes may make them less identifiable and/or proactive in addressing housing challenges. Given the high housing burden found, further monitoring of Asian American default and foreclosure is needed to examine a possible delayed effect. Identifying and addressing such attitudes and behaviors early on in the home-buying process through individual counseling and as part of overall financial literacy is critical to ensure that Asian Americans continue to build and grow their assets in the long term.

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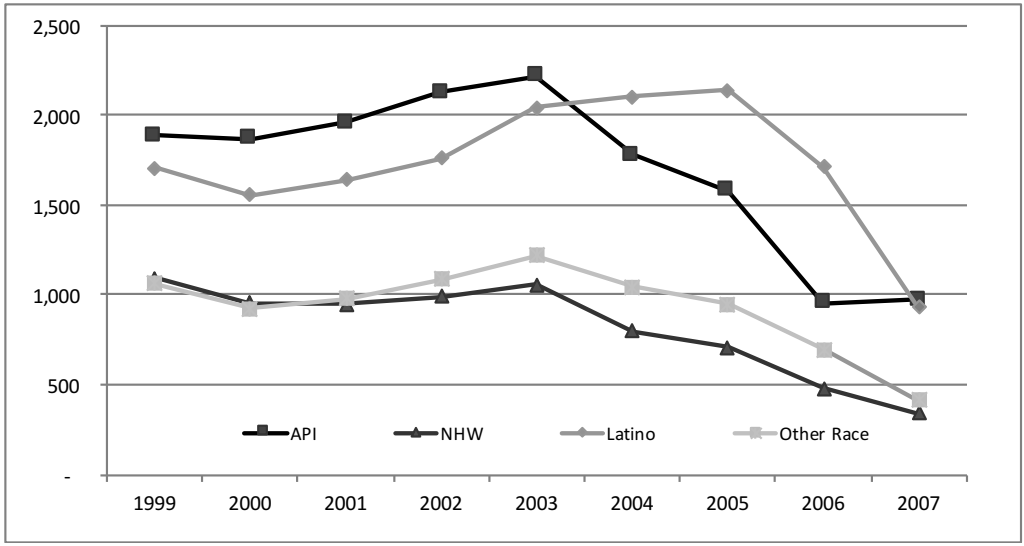
Appendix

Figure A.1. Total Purchases by Race/Ethnicity and Year, ESGV 1999-2007 (n=46,696



Source: DataQuick Sales Extract 1999-2007

Note: Other race includes Blacks and Others. NH=non-Hispanic.

Notes

1. According to Kochhar et al. (2011) individual median net worth in assets other than home equity fell by only $3,522 from 2005 to 2009, implying that assets in home equity were the primary reason for the decline in wealth.
2. Median value of assets declined by 16 percent for whites, 54 percent for Asian Americans, 66 percent for Latinos, and 53 percent for African Americans.
3. These same states have only one-fifth of the nation's white or black households residing in them compared to two-thirds of the nation's Latinos and Asian Americans.
4. Forty percent to 60 percent of homeowners in California, Florida, and Nevada had "underwater" mortgages.

5. The Census uses 30 percent of one's monthly income going to housing costs as the minimum threshold for housing burden.
6. Homeownership rates in Los Angeles County ranged from 48 percent in 2000 to 46 percent in 2013 with a peak of 49 percent in 2005, 2006, and 2007, respectively. In comparison, ESGV homeownership rates ranged from 72.1 percent in 2000 to 70.4 percent in 2010. Home values in Los Angeles County dropped from $536,264 in 2005 to $429,500 in 2010. ESGV appears to experience a greater drop in home values that peaked in 2006 at $675, 869 to a median home value of $450,000 in 2010.
7. See Anacker (2015) for discussion on the use of the census tract as an appropriate proxy for local markets.
8. This number is different from the sample in the purchase price model because homes in the purchase price model may have been purchased more than once.
9. Cheng (2013) defines the West San Gabriel Valley as the cities of Alhambra, Monterey Park, San Gabriel, and Rosemead. While these cities do not necessarily share a border with the cities we identify as the ESGV they are very closely aligned to the west with both areas sharing a common characteristic of being racially and ethnically diverse with a high percent of Asian Americans.
10. In 2010, the median household income in Los Angeles County was 54,878. ESGV median household income for 2010 was greater at $65,496 (U.S. Census, 2006-10b).
11 Twenty-eight percent of households speak Spanish in addition to English. Among APIs, 29 percent speak an API language as well as English (U.S. Census, 2006-10b).
12. These estimates were calculated based on foreclosure data by DataQuick News and estimates of housing units with a mortgage from the ACS (DataQuik News, 2010).
13. Other race individuals include blacks, Native Hawaiian and Pacific Islanders, Native Americans, and Alaska natives.
14. Asian American homeownership went from 75 percent to 71 percent compared to non-Hispanic white homeownership, which maintained at 79 percent.
15. Homeownership rates in Los Angeles County ranged from 48 percent in 2000 to 46 percent in 2013 with a peak of 49 percent in 2005, 2006, and 2007, respectively (U.S. Census 2000a; U.S. Census 2005-10a).
16. Cited causes of the housing bubble include low interest rates coupled with risky mortgage products, mispriced mortgage finance, and "irrational exuberance" to invest in real estate (Holt, 2009; Levitin and Wachter, 2012; Shiller, 2005).
17. Because self-reported housing values from the Census are coded as a categorical variable with a range of housing values reported by

individuals, we tabulated the midpoint for each range and adjusted for 2010 dollars to calculate median housing values in ESGV (U.S. Census, 2000b; U.S. Census, 2005-10b).

18. Median purchase price for Asian American buyers was $588,000 between 2005 and 2005, compared to $540,000 for non-Hispanic white buyers and $525,000 for Hispanic/Latino buyers.
19. The coefficients for the following tracts were found to be statistically significant at the $p < .01$ level: 4033.04, 4033.05, 4033.20, 4033.21, 4033.23, 4034.03, 4030.04, 4034.05, 4034.06, 4034.07, 4034.08, 4035.00, 4036.00, 4037.21, 4053.00, 4054.00, 4055.00, 4056.00, 4057.00, 4058.00, , 4060.00, 4062.00, 4063.00, 4066.02, 4067.00, 4068.00, 4069.00, 4074.00, 4079.00, 4080.01, 4080.02, 4081.01, 4081.02, 4081.32, 4081.33, 4081.34, 4081.35, 4082.11, 4082.12, 4086.26, 4086.28, 4087.03, 4087.06, 4087.21, 5001.00. Statistically significant at the $p < .05$ level: 4033.24, 4059.00, 4065.00, 4066.01. Statistically significant at the $p < .10$ level: 4064.02, 4087.04, 4087.05.
20. The racial difference in subprime borrowing for home buying may be accounted for by unobserved systematic differences in other debt, which make them less qualified for better interest rates. Racial differences can also be due to systematic variation in discriminatory practices and access to ethnic banking.
21. Asian Americans may have borrowed less because they placed higher down payments relative to other groups, during both periods.
22. Chang and Amam (2010) discuss the importance of schools in residential choice especially among Chinese immigrants' families. The preference and desire is to strong that in some cases, "families . . . will often rent or buy much smaller homes than they can afford and shuttle several related family members through a single house in order to stay within the school district" (p. 35).
23. Japanese had only 11 percent of households in the most burdened category, lower than non-Hispanic whites. In comparison, Chinese, Indian, and Korean rates were 28 percent, 28 percent, and 29 percent, respectively.
24. Forty-two percent of Korean households in 2010 spent more than 50 percent on housing and close to 25 percent of Filipinos spending more than 50 percent of their income on housing.

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