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Did Local Lenders Forecast the Bust? Evidence from the Real Estate Market

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This paper shows that mortgage lenders with a physical branch near the property being financed have better information about home-price fundamentals than nonlocal lenders. During the real estate run-up from 2002-06, home price growth negatively correlates with the share of loans made by local lenders, namely lenders with a branch in the respective county. Moreover, home prices fell less from 2006-09 in areas where more of the loans were made by local lenders. California foreclosure rates during the crisis are negatively correlated with local lending during the run-up. A 1 standard deviation increase in local loans is associated with 5 fewer foreclosures for every 1,000 houses. When local lenders retain loans for their portfolio rather than securitizing, the results for both home price growth and foreclosures are even stronger.

Keywords: Local share, House price growth.

JEL Code: G21.

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1 Introduction

The recent mortgage default crisis follows an unprecedented period of home price appreciation. In this paper, I study the relationship between home price growth over the last decade and the share of loans made and held by lenders with a physical presence in the local market. I test whether local lenders are more likely than non-local lenders to exit markets when prices diverge from fundamentals. By examining lenders' behavior during the crisis, I am able to test if local lenders forecast the bust in housing prices and what role they play in the subsequent foreclosure crisis. My hypothesis is that local lenders understand when prices are out of line with fundamentals because they operate in the local economy. I find that during the run-up, local market share decreases most in areas that experience the worst price declines during the bust.

Historically the market share of local lenders is steadily decreasing over time. However, I find evidence that local lending is making a comeback. I define a loan to be *Local* if the lender that makes the loan has a branch in the county where the property is located. Figure 1 shows that from 1998-2006, the market share of local lenders decreases. Yet, during the crisis from 2008-09, the average *Local Share* increases to levels even higher than in 1998. If there is a return to localized lending it is important to understand what role local lenders play in an economy. [1]

The theoretical literature about financial institutions suggests that banks should be large, diversified and financed mainly with debt in order to minimize risk and address asymmetric information issues.[2] Thus, local lenders must be providing a specific service

[1] I also test the scenario in which I define loans made by non-depository originators that are associated with banks, such as CitiMortgage and Citibank, as local and the results are robust to the original definition of local.

[2] Leland and Pyle (1977), Townsend (1979) and Diamond (1984).

to warrant their existence. Previous literature documents how local lenders invest more in personal relationships and are able to take advantage of soft information. Both the size of the institution and the distance from borrowers have been suggested in prior literature as important factors in the institutions' willingness to loan to riskier borrowers and the bank's ability to retain borrowers' business. [3]

The size of the bank plays a large role because of the difficulty to transmit soft information across multiple layers of a decision making process. Stein (2002) argues that small, decentralized banks have a comparative advantage in the case of small business lending because small banks can utilize soft information, i.e. information that cannot be directly verified by anyone other than the agent that produces it. Loan officers at small banks have the incentive to invest in information gathering because they have the power to allocate capital unlike loan officers that operate within large banks. Working for smaller banks not only gives the loan officers access to soft information but also enables them to put the information to good use.

Petersen and Rajan (2002) argue that distance no longer deters financing because technological advances such as computers and communication equipment improve bank employees' productivity. Instead of loan officers using soft information, there is more hard information available about the borrower from a variety of sources. Plus, the response time is quicker, so even if the borrower defaults on a payment the lender can intervene quickly. However, Degryse and Ongena (2005) find that loan rates decrease with the distance between the lender and the borrower to offset transportation costs. So, while distance may no longer be a factor in getting a loan, it still can affect the price of the loan. Also, my

[3] Agarwal and Hauswald (2010); Coval and Moskowitz (2011); DeYoung, Goldberg and White (1998); Ergungor (2010); Jayaratne and Strahan (1996); Kroszner and Rajan (1994); Morse (2012); Lerner (1995)

findings suggest that lenders with soft information about housing prices exited areas with the worst price declines, so in the case of housing prices, soft information led to a better understanding of the market than hard information.

Berger et. al. (2005) finds that large banks are less willing to lend to informationally difficult borrowers and lend at a greater distance. The authors also show that relationships last longer and are more exclusive between borrowers and small banks. They suggest this result makes sense because soft information produced over time is non-transferable. My measure allows both small and large banks to be classified as local as long as they have a branch in the county where they are making loans. I think this is important distinction because essentially I am quantifying *local lending*, not just local lenders. Borrowers can form bonds with branch employees regardless of the size of the bank.

Recent studies show that credit supply plays a major role in the housing crisis.[4] Over time, mortgage lending practices loosen and the average borrower's leverage increases, which subsequently leads to more borrowers defaulting on their loans.[5] Some areas experience an increase in mortgage originations even while relative income growth decreases. If credit supply contributed to the housing crisis it is important to determine how certain lenders behaved during the run-up to the crisis. Lenders differ in their ability and willingness to invest in information gathering about the default risk of their borrowers. [6] Different lending strategies lead to a divergence among lenders in regards to how informed they are about their loan portfolio.

[4]Calhoun, LaCour-Little, Yu (2009); Favara and Imbs (2009); Gerardi, Shapiro and Willen (2007); Keys, Mukhejee, Seru, Vig (2010); Loutskina and Strahan (2009); Mayer and Pence (2009); Mian and Sufi (2009)

[5]Agarwal and Wang (2009); Loutskina (2010); Loutskina and Strahan (2010); Mian, Sufi and Trebbi (2011); Rajan, Seru and Vig (2010)

[6]Rice and Strahan (2012); Stiglitz and Weiss (1981)

Thus far, the literature has focused on soft information as it pertains to the borrowers. I test whether local lenders are also informed about markets, specifically, the housing market. The housing mortgage default crisis provides a particularly dramatic setting to study the knowledge of local lenders. First, I find that during the run-up from 2002-06, home price growth negatively correlates with the change in the share of loans made by local lenders. A 1 standard deviation increase in housing prices explains roughly 15% of the decrease in the market share of local lenders. Next, I analyze the relationship between the share of local loans pre-crisis and the housing price decline from 2006-09. The change in the *Local Share* from 2002-06 is positively correlated with the growth in home prices during the mortgage default crisis. Local lending declines most in areas with the worst housing price bust.

I then separate the local loans into loans that are sold by the lenders and loans the lender retains on its balance sheet to determine if local lenders are actively leaving the market. If the housing market is overheating, then fewer local loans will be held. It is in fact the case that the relationship is stronger; A 1 standard deviation increase in housing prices explains roughly 17% of the decrease in the share of local loans held. Prices also decline most where the share held by local lenders falls fastest. A 1 standard deviation increase in the share of local loans during the run-up is associated with a 1% increase in home price growth during the bust even controlling for the price run-up during the boom. On average, housing prices fall 15% from 2006-09. This suggests that local lenders understand when prices exceed the value of the home, and exit the market to safeguard their portfolios against future mortgage defaults. The change in the *Local Share* has a positive correlation of .75 with the change in the share of local loans held. This means

that not only do local lenders originate less, but they also hold less of the loans in their portfolio. I argue that local lenders are actively exiting overheated markets.

I further examine the behavior of local lenders in different markets using the Saiz measurement of housing supply elasticity. Glaeser, Gyourko and Saiz (2008) explain that prices in areas with an extremely elastic housing supply (i.e. unlimited ability to build and expand the housing stock such as Wichita, KS.) will not deviate from fundamentals. In fact, home price growth in high elasticity markets during the pre-crisis years remains relatively flat, growing at the rate of inflation. Home price growth is more strongly negatively correlated with *Local Share* in areas with low housing elasticity, such as Miami, FL. In areas with high elasticity, home price growth and *Local Share* are no longer correlated. The absence of a relationship between home price growth and *Local Share* in high elasticity areas provides further support for the hypothesis that local lenders are aware of the housing market conditions in their areas. During the run-up to the housing crisis, local lenders realize the housing prices are not in line with fundamentals, and stop making loans.

I use California foreclosure data available at the ZIP code level to quantify the relationship between the *Local Share* and foreclosures during the mortgage default crisis. I use the California subsample because the data is accessible from 2002. Foreclosure rates are higher in markets where the local share fell most during the boom. A 1 standard deviation increase in local loans from 2002-06 is associated with 5 fewer foreclosures for every one thousand houses from 2006-09. The results are even stronger for the local loans that are held; a 1 standard deviation change relates to 7 less foreclosures per one thousand households. To the extent that foreclosures are costly for the local economy, fewer foreclosures

may be beneficial.[7]

Finally, I introduce size into the analysis and define Small and Large lenders three different ways to study that dimension as well. I find that on average both small and large lenders behave similarly, no matter how I define the cut-off and while I cannot reject that they are behaving exactly the same way, it is clear that being local matters in addition to size. Small lenders avoid potentially over-heating markets and are able to forecast that prices will decrease in the future, and all but the largest lenders decrease their market share with home price appreciation during the Boom. I explore the relationship further for the largest lenders and find that while the Local Share of lenders with more than ten billion in assets in 2002 is not correlated with home price appreciation during the run-up, it is the case that the loans they originate and hold are negatively correlated while the loans which they distribute are positively correlated. This potentially explains why lenders with the ability to distribute loans may remain in a market while those that cannot distribute their loans to the same degree decrease their overall number of mortgage originations.

My results suggest that lenders with branches in the counties where they made their loans take time to understand more completely the borrower's probability of default as well as the true value of the home. Investing in information is beneficial for the lender because they lend to qualified borrowers and for the borrowers because they gain access to credit. The relationship between local lending, house price behavior and foreclosure rates suggests that local lenders could play an important role in avoiding another housing crisis. The rest of the paper is as follows: section 2 describes the data and summary statistics, section 3 describes the empirical methods, section 4 details the results and section 5 concludes.

[7]Campbell, Giglio, and Pathak (2009) find that foreclosure at a distance of 0.05 miles lowers the price of a house by about 1%.

2 Data and Summary Statistics

I test the relationship between mortgage loans, housing prices and foreclosure rates. In order to test these relationships I need data on loan originations, the location of the lender, loan retention rates, housing prices and foreclosure rates. I use branch locations to define if a lender is local and regress the share of local loans originated on housing prices during real estate run-up and crisis. I also test if localized lending is related to foreclosures rates during the crisis.

I construct my sample using the Zillow Home Value Index and the Home Mortgage Disclosure Act (HMDA) data to calculate home price growth and mortgage characteristics at the ZIP code level. Following Mian and Sufi (2009) I am able to replicate their finding of a negative correlation between mortgage originations and income growth within county. I extend their sample to include ZIP codes available from Zillow that are not covered by the Fiserv's Case Schiller Weiss Housing Price indices. My unit of analysis is at the ZIP code level and I calculate the share of local loans from 1998-2009.

2.1 HMDA Data

My sample includes mortgage loan origination data, made available annually pursuant to the Home Mortgage Disclosure Act of 1975 (HMDA) and includes whether a lender later sells the loan, and borrower characteristics. I focus my study on home purchases and exclude refinances and home improvement loans. My sample starts in 1998 and runs through the housing crisis to 2009. The data include the details of each application for mortgage credit; the type, purpose, lien status, and characteristics of the home mortgages that lenders originate or purchase during the calendar year; the census-tract designation of

the properties related to these loans; personal demographic and other information about the borrowers; and information about loan sales.[8]

HMDA data use the 1990 census tract definitions before 2003 and the 2000 census tract definitions starting in 2003. Both 1990 and 2000 geocoding databases are available from the Missouri Census Data Center. Census tracts do not map perfectly into ZIP codes, so I calculate weighted averages for the corresponding ZIP code weighted by the number of housing units in each census tract that lie within a given ZIP code.

Each year I match the HMDA data with the Summary of Deposits data by lender. The Summary of Deposits (SOD) contains deposit data for branches and offices of all FDIC-insured institutions as of June 30 of each year. Along with the institution's certification number, branch addresses are included to provide an accurate mapping of the geographical presence of each institution.

Again, I consider a loan *Local* if the lender that makes the loan has a branch in the county where the property is located. I sum the number of local loans and scale that by the total number of loans originated to create an *Local Share* for each ZIP code. Figure 1 shows the average *Local Share* over time measured across ZIP codes. From 1998-2002 the average levels stay around 30%; during the run-up to the housing crisis the levels dip to as low as 21%. Eventually the average *Local Share* increases to 34%, which is higher than even the 1998 levels. Overall loan origination levels fall from 2006-09, yet the share made by local lenders increases.

Table 1 details the annualized change in HMDA variables. I calculate the median of the log of income of the borrower, median income-to-loan ratios, and securitization rates.

[8] http://www.federalreserve.gov/pubs/bulletin/2010/pdf/2009_HMDA_final.pdf

HMDA data specifies if the lender sells the loan after origination. For both local and non-local loans, I sum the number of loans originated and held, and scale by the total number of loans originated, respectively. I do this to test if housing prices appreciation decreases further the share of local loans that the lender holds.

2.2 Zillow Data

Median home price data are available from the Zillow Home Value Index. Zillow.com provides monthly housing price data at the ZIP code level back to 1996.[9] By downloading the Zillow database from Zillow.com, my sample includes pricing data for: all homes, studios, condominiums, one-bed, two-bed, three-bed, four-bed and many-bed homes. Over time, the sample increases to include more ZIP codes. In 1999, there are roughly ten thousand ZIP codes covered by Zillow; by 2009, the amount covered increases to over twenty-five thousand. My sample includes all ZIP codes that can be identified and mapped into their corresponding counties using the Missouri Census Data Center geocodes.

Table 2 details the annualized growth rates over time for each housing type. On average, home prices increased 12% a year from 2002-06, and decreased 5% a year from 2006-09. The correlation between different housing types is high, averaging around .8. Studios are the least correlated housing type and single family homes correlate the most with the other housing types. I run my analysis using the median price index for all homes.

[9]Mian and Sufi (2009) find that in their sample, the Zillow index has a .91 correlation coefficient with the Fiserv's Case Shiller Weiss index.

2.3 Foreclosure Data

Foreclosure data are available for the state of California through the RAND California Business and Economic statistics. The data consist of the number of foreclosures in a ZIP code during the calendar year. My sample includes data from 2002 through 2009.[10] There are 1,155 ZIP codes in my sample for California during the housing boom which also have housing price data from Zillow. Table 3 shows foreclosure rates over time. Throughout the housing boom, the foreclosure rate stays steady around 1 foreclosure for every one thousand housing units. During the housing crisis, mean rates reach as high as 22 foreclosures for every one thousand households.

2.4 Housing Supply Elasticity and Microeconomic Data

I use the Saiz housing supply elasticity measure based on satellite imagery of steep terrain and bodies of water to identify the amount of developable land in metropolitan areas (Saiz, 2010). An example of an area with a large amount of developable land, and thus a high elasticity value, is Wichita, KS. On the other end of the elasticity spectrum is Miami, FL. The housing supply elasticity measure is only available for the largest MSA's, so my sample size decreases in 2002 from 8,643 ZIP codes to 3,928 ZIP codes when I include the elasticity measurement. I calculated the median elasticity and break my sample into "High" and "Low" elasticity, depending on whether the value is above or below the median. I run my analysis on these two sub-samples to illustrate the differences in areas where housing prices should not react to demand because the land is available to increase the housing

[10] Data are available from 1992-2002, however RAND California statistics recommend users exercise caution when comparing data across these two databases because they originate from different data sources and methods.

supply.

Housing prices are strongly tied to economic factors. To proxy for health and prospects of the local economy, I use median income, unemployment and poverty growth rates measured at the county level in the year t. Growth rates are measured over the same time horizon as the housing price growth rates. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rates are from the Bureau of Labor local area unemployment statistics.

3 Empirical Methods

I run cross-sectional regressions over two periods: Boom years from 2002-06 in which housing prices were generally rising, and Bust years from 2006-09 over which time housing prices, on average, fell. My analysis focuses on the changes over the course of these two periods of time. The level of analysis is at the ZIP code. In my first regression, I find the correlation of the *Local Share* change with housing price growth in a contemporaneous model:

$$\begin{aligned} \text{Local Share Change}_{i,Boom} &= \beta \text{ Home Price Growth}_{i,Boom} \\ &+\text{Borrower Controls}_{i,Boom} + \text{Economic Controls}_{i,Boom} + \phi_k + \alpha + \varepsilon_i \end{aligned} \tag{1a}$$

in which ϕ_k is a State-level fixed effect. The *Local Share Change* is the difference between the *Local Share* in 2006 and 2002. *Home Price Growth (Boom)* is the difference between home prices in 2006 and 2002, scaled by the home price in 2002.[11] Borrower controls

[11] Zillow Home Value Index is available monthly, so I measure all home prices as of June of the respective year.

include median borrower income and loan to income ratios for both local and non-local loans. Economic controls include median income for the county as well as the poverty and unemployment rates also measured at the county level.

I then regress the housing price growth rate during the housing bust from 2006-09 on the *Local Share* change during the Boom period from 2002-06. The *Local Share* change is lagged in order to understand the difference in behavior of housing prices during the Boom and the Bust according to the *Local Share* behavior during the Boom. The model now becomes:

$$\begin{aligned} \text{Home Price Growth}_{i,Bust} &= \beta \text{ Local Share Change}_{i,Boom} \\ &+\text{Borrower Controls}_{i,Boom} + \text{Economic Controls}_{i,Bust} + \phi_k + \alpha + \varepsilon_i \end{aligned} \tag{1b}$$

notice that the Economic controls are measured concurrently with the housing price growth. Borrower controls are measured over the same period as the *Local Share* change because they are controlling for the quality of the borrowers during the Boom.

I test to see if there is a correlation between the *Local Share* change and housing price growth prior to the housing expansion of 2002. As a counterfactual, I regress the Home Price Growth during the Boom period on the *Local Share* change from 1999-2002:

$$\begin{aligned} \text{Home Price Growth}_{i,Boom} &= \beta \text{ Local Share Change}_{i,Prior} \\ &+\text{Borrower Controls}_{i,Prior} + \text{Economic Controls}_{i,Boom} + \phi_k + \alpha + \varepsilon_i \end{aligned} \tag{1c}$$

It is important to understand the behavior of the *Local Share* during periods of time when housing prices accurately reflect fundamentals in order establish a baseline for comparison during the Boom and Bust periods.

I rerun equation (1a), (1b) and (1c) using the subsample of ZIP codes that are included

in the Saiz measure of housing supply elasticity. Throughout the last decade, house price growth remained low in highly elastic areas, such as Wichita, KS, and Fort Wayne, IN; whereas house price growth increased steadily during the Boom period and collapsed during the Bust period in the low elasticity markets. I test the relationship between the *Local Share* change and house price growth again because the change in the *Local Share* in the High elasticity areas should no longer be very strong since housing demand in those areas should not drive prices away from fundamentals since housing supply is readily available. The change in the *Local Share* in the Low elasticity areas may be even more pronounced, however, since the relative scarcity of developable land can cause housing prices to rise, perhaps even in excess of a general equilibrium.

3.1 Originate to Hold verse Originate to Distribute

After I establish the relationship between the *Local Share* and housing prices, I then divide both local loans and non-local loans into originated and held verse originated and distributed. The *Local Loans Held Share* is the sum of held local loans scaled by the total local loans; and vice versa for non-local loans. This creates two groups that I will use to compare whether local lenders react more to housing prices than non-local lenders. I test if the share of local loans that are subsequently held affects the relationship with housing prices to determine if the relationship is stronger. The model now includes the local and non-local held share, and still includes the same borrower and economic controls as equation (1a):

$$\begin{aligned}\text{Home Price Growth}_{i,Boom} = \beta\ \text{Local, Non-Local Loans Held Change}_{i,Boom} + \\ +\text{Borrower Controls}_{i,Boom} + \text{Economic Controls}_{i,Boom} + \phi_k + \alpha + \varepsilon_i\end{aligned} \tag{2a}$$

Local Loans Held Change (Boom) is the difference between the *Local Loans Held Share* in 2006 and 2002. By testing the relationship of the local loans that are held, I am able to say something about what may be causing the *Local Share* to fall.

I continue by testing if the housing prices during the Bust respond more strongly to the change in the Local and Held Share during the Boom.

$$\text{Home Price Growth}_{i,Bust} = \beta \text{ Local Share, Local, Non-Local Loans Held Change}_{i,Boom} + \\ + \text{Borrower Controls}_{i,Boom} + \text{Economic Controls}_{i,Bust} + \phi_k + \alpha + \varepsilon_i \tag{2b}$$

Local lenders would only be interested in the borrower's ability to repay loans that are held, and housing price depreciation increases the borrower's probability of default. As in the case with the change in the *Local Share*, I rerun equation (2a) and (2b) on the subsample of ZIP codes that are covered by the Saiz housing supply elasticity measure to again tease out the correlation between the portion of the Local loans that are held and housing prices.

3.2 California Foreclosure Rates

To test the effects on defaults directly, I use the foreclosure rates for the state of California made available by the RAND California Statistics. I scale the total number of foreclosures in a ZIP code by the total number of housing units according to the 2000 Census. I regress the change of the foreclosure rates during the Boom on the change in the *Local Share* also during that time. The model includes borrower and economic controls and is as follows:

$$\text{Foreclosure Rate Change}_{i,Boom} = \beta \text{ Local Share Change}_{i,Boom} \\ + \text{Borrower Controls}_{i,Boom} + \text{Economic Controls}_{i,Boom} + \phi_j + \alpha + \varepsilon_i \tag{3a}$$

in which ϕ_j is county level fixed effects. *Foreclosure Rate Change (Boom)* is the difference between the total foreclosures in 2006 and the total foreclosure in 2002, scaled by the total housing units in 2000. Once the precedent is set for the connection between the *Local Share* and the foreclosure rates, I regress the change in the foreclosure rate during the Bust on the change in the *Local Share* during the Boom.

$$\begin{aligned}\text{Foreclosure Rate Change}_{i,Bust} = \beta\ \text{Local Share Change}_{i,Boom} \\ +\text{Borrower Controls}_{i,Boom} + \text{Economic Controls}_{i,Bust} + \phi_j + \alpha + \varepsilon_i\end{aligned} \tag{3b}$$

This allows me to determine if an increase in the *Local Share* led to few foreclosures during the housing crisis from 2006-09. As with the previous tests on housing prices, I continue to break apart the *Local Share* into held and distributed to test if the Local loans that are held have a stronger effect on foreclosures. The model follows equation (2a) but now the Foreclosure Rate Change is now the dependent variable.

$$\begin{aligned}\text{Foreclosure Rate Change}_{i,Boom} = \beta\ \text{Local, Non-Local Loans Held Change}_{i,Boom} + \\ \text{Borrower Controls}_{i,Boom} + \text{Economic Controls}_{i,Boom} + \phi_j + \alpha + \varepsilon_i\end{aligned} \tag{3c}$$

I expect that the relationship between the Local and Held share is stronger in regards to the foreclosure rate change since lenders would prefer that borrowers repay instead of having to foreclose on the property. I test the correlation between foreclosures during the Bust and the Local and Held share change during the Boom:

$$\begin{aligned}\text{Foreclosure Rate Change}_{i,Bust} = \beta\ \text{Local Share, Local, Non-Local Loans Held Change}_{i,Boom} + \\ \text{Borrower Controls}_{i,Boom} + \text{Economic Controls}_{i,Bust} + \phi_j + \alpha + \varepsilon_i\end{aligned} \tag{3d}$$

Whereas the Local and Held share change negatively correlates with the foreclosure rate,

the non-local and held share does not correlate at all, suggesting that the local lenders behave differently to avoid defaults in the future. Foreclosures are the outcome variable of the housing crisis and I test what effects the change in the *Local Share* and Local and Held Share have on foreclosure rates to address the effects on the economy.

4 Results

Table 4 details the results of equation (1a) in which I regress home price growth during the Boom on the change in *Local Share* over the same period. *Local Share* change and house price growth are negatively correlated from 2002-06. I standardize the variables and the standardized coefficients reports a 1 standard deviation increase in house price growth translates to a .07 decrease standard deviation in the *Local Share* change. The standard deviation of the change in the Local share over the Boom period is .13. Which means that a 1 standard deviation increase in housing price growth over the Boom period coincided with decrease of the *Local Share* by 1%. In 2002 the average *Local Share* for all ZIP codes was 28% and in 2006 it fell to 21%. So a 1% decrease explains 15% of the decrease in average markets.

If local lenders were exiting overheated housing markets these results will be even stronger in the low housing supply elasticity markets such as Miami, FL and Los Angeles, CA. I rerun equation (1a) on the subsample of ZIP codes with High and Low Elasticity. Housing price growth and the change in the *Local Share* are no longer correlated in High elasticity areas during 2002-06. Low elasticity markets are still negatively correlated and now a 1 standard deviation increase in home price growth translates to a .1 standard deviation decrease in the *Local Share* change. The results are stronger for the Low elasticity

markets and support the possibility that local lenders are choosing not to make loans as prices increase.

In Table 5 the sign of the coefficient changes when I regress house price growth during the Bust on the change in the *Local Share* during the Boom. Table 5 reports the change in *Local Share* is positively correlated with the growth in house prices during 2006-09, even after controlling for the house price growth during the Boom. Over that period, housing prices on average fall. Yet, if the *Local Share* in a ZIP code increases from 2002-06, then the housing prices in that ZIP code increases during the housing crisis. A 1 standard deviation increase in the *Local Share* change increases Home Price growth by .06 standard deviation. In the Low elasticity areas, it is a .05 standard deviation increase. The results from the High elasticity markets again are not significant. On average, home prices fall 15% from 2006-09 with a standard deviation of 18%.

In order to determine if the house price behavior over the last decade is unique, I regress house price growth during the Boom on the change in the *Local Share* from 1999-2002. Table 6 shows the variables are not correlated when I test the relationship in my counterfactual. This result holds for both High and Low elasticity markets as well. The positive correlation between the housing Bust and the *Local Share* change during the Boom is particular to there first being the Boom in housing prices. This would support the reasoning that local lenders have more information and stopped making loans in areas with overzealous housing price growth. The housing prices increased during the crisis in areas where the *Local Share* change increased during the Boom. This result is special to the timing of the Bust following the Boom.

4.1 Originate to Hold verse Originate to Distribute

Table 7 details the results from equation (2a). I separate local loans the lender sells from loans the lender retains. I calculate an *Local Loans Held Change*. I test to see if the results are stronger now that the loans will directly impact the lender because they remain on the lender's balance sheet. In the contemporaneous regression (2a) the *Local Loans Held Change* is still negatively correlated with the Home Price Growth. The result is stronger in the Low elasticity markets as well. I use the *Local Loans Held Change* to examine if the lenders have additional information that leads them to loan less in overheated housing markets and the results support my hypothesis.

During the housing boom, the *Local Share* falls in markets where the housing prices increase the most. The *Local Loans Held Change* decreases even more when housing prices rise. A 1 standard deviation increase in Home Price Growth translates to a .09 standard deviation decrease in the *Local Share* from 2002-06. The magnitudes are larger for the held local loans in Low elasticity markets as well. A 1 standard deviation increase in Low elasticity markets translates to a .16 standard deviation decrease in the local share.

I also calculated the *Non-Local Loans Held Change* to use as a control group for the local lenders. The change in the non-local and held share is not correlated with overall housing prices during the bust. Surprisingly the *Non-Local Loans Held Change* is positively correlated with the Low elasticity markets, which provides further support that those lenders are uninformed.

Table 8 documents the positive correlation between the *Local Loans Held Change* in the Boom and Home Price Growth in the Bust. While the *Local Loans Held Change* is

positively correlated, the *Non-Local Loans Held Change* is not (not reported). A 1 standard deviation increase in the *Local Loans Held Change* is associated with a .05 increase in the home price growth during the crisis. The results are no longer significant in the Low elasticity subsample.

4.2 California Foreclosure Rates

California is representative of a rich subsample and accounts for nearly 20% of my sample from 2002 to 2006. Over that time the average foreclosure rate does not change. In 2009, however, the foreclosure rate increases to be 17 more foreclosures per one thousand houses than in 2006. During the Boom the change in foreclosure rates is not correlated with the change in the *Local Share* nor the *Local Loans Held Change*. Table 9 details the results for equation (3a) and (3c). Foreclosures are highly negatively correlated with home price growth, however, since borrowers tend not to default on their homes when the price is appreciating. Since the prices fall substantially over the Bust period, I include the housing price change along with the economic controls in equation (3b) and (3d).

Table 10 details the results over the Bust period. The change in the Foreclosure Rate during the Bust is negatively correlated with the change in the *Local Share* during the Boom. The results hold when I control for the home price growth during the Boom as well. In California, the *Local Share* falls 11 points on average from 2002-06. A 1 standard deviation increase in the *Local Share* from 2002-06 is associated with a .08 standard deviation decrease in foreclosures from 2006-09. The standard deviation of foreclosures during the Bust is 63 foreclosures per one thousand ones, so a 1 standard deviation increase in the *Local Share* during the Boom translates to 5 less foreclosures for every thousand homes

during the Bust in the state of California.

As with the housing price growth regressions, the results are stronger for the share of local loans that are held by the lender. A 1 standard deviation change in the Local and Held change during the Boom relates to 7 fewer foreclosures per one thousand houses during the Bust. The *Non-Local Loans Held Change* is uncorrelated with the change in foreclosures and further confirms that local lenders behaved differently over the last decade. The state of California represents a highly varied subsample that includes areas that experience both high and minimal home price growth during the Boom and differing foreclosure rate changes during the Bust. Due to California's variety and size it makes for a useful subsample to study.

The change in the *Local Share* is negatively correlated with the change in foreclosure rates even after controlling for the contemporaneous home price growth. Since foreclosures have a negative effect on surrounding properties, the desire of local lenders to avoid foreclosures adds positively to the local economy.

4.3 Local and Non-Local Lending Growth Rates

Table 11 shows the relationship between the growth rates of local and non-local lenders with housing prices. The market share of local lenders could mechanically be decreasing because more loans are originated in an area. In order to determine the reason for the decrease in the market share of local lenders I calculate growth rates of local and non-local lending. As with *Local Share*, the growth rate of local lenders is negatively correlated with housing price growth during the boom. Non-local lending is positively correlated. For a 1% increase in housing prices, local lending decreases by a little over two percent and

non-local lending increases by roughly 2.5%. It may be the case that non-local lenders are entering markets with riskier borrowers because the poverty rate enters the regression as positive and statistically significant. These results show that local market share is not mechanically falling but rather local lenders are in fact reducing their lending regardless of non-local lenders' behavior.

I find that the growth in local lending also forecasts the bust. Table 12 presents the results for the lead-lag model that regresses home price growth on the growth in lending by local and non-local lenders. Local lending growth is positively correlated with future home price growth whereas non-local lending growth is non-significant. This supports the information story that local lenders are acting on soft information that they have via operating in the local economy. The results remain even when both local and non-local lending growth rates are included in the same regression. Non-local lenders are not able to forecast the future housing price bust.

4.4 Size: Fifty Percent of Market Share in 2002

In order to explore the relationship between location and size I define size three different ways to cover the range of market share between small and large lenders. I cover the results for small and large lenders defined by asset size in the online appendix that accompanies this paper.[12] When I define small lenders as those that have less then the median asset size those lenders have roughly 30% of the market share of mortgages in 2002; if I define small lenders as those that have less then ten billion dollars in assets those lenders have roughly 70%. Instead of using the total assets to define small versus large, I back out

[12]The online appendix is found at:
https://sites.google.com/site/krisromerocortes/CortesLocalLendersForecastBustOnlineAppendix.pdf?attredirects=0.

the asset size of lenders by fixing the amount of market share to be 50%. Now the Small Lenders have assets totaling less than 700 million and by design 50% of the market share of mortgages in 2002.

Table 13 reports the results from the contemporaneous regression of Local Share for both the Small and Large Lenders on Home Price Growth. The correlation is negative, as before, and now the magnitude for the Small Lenders is even larger than before, translating to roughly four times that of the Large Lenders. Since the cut-off for Small may be too small at 200 million it seems that setting it at 700 million in 2002 and 800 million in 2006 more accurately reflects the behavior of Small Lenders and the way they seem to take advantage of soft information in their local economies.

Table 14 reports the analysis for the regression of future home price growth on past changes in local share and again the results show the variables are positively correlated. A 1 standard deviation increase in the Small Lenders' Local Share is associated with a 2% increase in housing prices during the bust. An increase of a standard deviation of the Large Lender's Local share is still associated with a 1% increase in housing prices. Note again that home prices on average fell 15% from 2006-09 so the relationship is still quite strong for the Large Lenders yet even double for the Small Lenders. Now when I test across the two coefficients I cannot reject that the coefficients are equal so the cut-off is important when defining the size of the lenders.

I find similar results to the Local Share analysis without the size dimension when I deconstruct the Local Share into Local and Held and Non-Local and Held Share. Table 15 details that again the loading from the regression occurs mainly with the Local and Held Share for both the Small and Large Lenders. The ability to sell off the loan is clearly

important to the decision to originate loans and as I include larger lenders in the Small Lender bin, it appears that more lenders are taking advantage of the ability to originate the mortgage yet sell it within the year.

Table 16 reports the results from the OLS regression which finds that both Small and Large Lenders' Local Share are negatively correlated with the number of foreclosures during the Bust. Interestingly, again the relationship is stronger for the Large Lenders' Local Share perhaps because of the Lender's access to greater funds.

5 Conclusion

This is firstly an information story and I find evidence that lenders with a physical presence in the market are better informed about housing prices and are able to forecast that prices will fall during the bust. House prices during the crisis fall more in areas where the local share decreased during the run-up. It is possible that local lenders are trying to minimize their exposure to future foreclosures since borrowers with a mortgage loan greater than the value of the home are more likely to default.

Local lenders reduced their market share most in areas with the greatest price appreciation during the run-up to the housing crisis. The change in the share of local loans is negatively correlated with home price growth from 2002-06. The results are stronger in areas with Low housing supply elasticity (i.e. Miami, FL). The results are also stronger when the lender holds the local loans. The evidence in regards to elasticity and the held loans suggests that local lenders exited overheated housing markets prior to the crisis.

It seems that local lenders try to avoid the foreclosure process. The number of foreclo-

sures is less during 2006-09 in areas where the local share increased from 2002-06. Again, the relationship is stronger when the lender holds the local loans rather than securitizing. A 1 standard deviation increase in the share of held local loans is associated with 7 less foreclosures per one thousand homes in California during the mortgage default crisis. Since foreclosures are costly for both the lender and the surrounding area it is socially beneficial if lenders can decrease the possibility of defaults.

The ability to forecast future housing prices, as well as avoid foreclosures, suggests that investment in information pays off for local lenders. Collecting information is costly, which is why lenders with a branch in the area have an advantage over non-local lenders. However, the incentives in lending practices should be such that investing in information is rewarded even for non-local lenders. Large and diversified banks may theoretically be able to minimize risk in their loan portfolio yet understanding the nuances of their markets can lead to less risk as well as better investments.

The rapid rise of housing prices and mortgage default crisis provides an excellent setting to study the role local lenders play in the economy. Previous literature suggests that local lenders are more informed about their borrowers and in this paper I examine if local lenders are also informed about housing prices. Future research can extend this information story further to test if local lenders can capitalize on their soft information about other aspects of the local economy.

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A Definition of Variables

Zillow Home Value Index, Zillow.com

- Home Price Growth$_{i,Boom}$ = (All Homes Price$_{i,2006}$ -All Homes Price$_{i,2002}$) / All Homes Price$_{i,2002}$
- Home Price Growth$_{i,Bust}$ = (All Homes Price$_{i,2009}$ -All Homes Price$_{i,2006}$) / All Homes Price$_{i,2006}$

Branch level data, FDIC Summary of Deposits

- Local Loan= indicator equal to 1 if the lender has a branch in the county where the loan is to be made.
- Total Deposits$_{i,Boom}$ = (Total Deposits$_{i,2006}$ -Total Deposits$_{i,2002}$) / Total Deposits$_{i,2002}$
- Total Deposits$_{i,Bust}$ = (Total Deposits$_{i,2009}$ -Total Deposits$_{i,2006}$) / Total Deposits$_{i,2006}$

HMDA variables, Home Mortgage Disclosure Act (1975)

- Local Share$_{i,t}$ = Total Local Loans$_{i,t}$ / Total Loans Originated$_{i,t}$
- Local Share Change$_{i,Boom}$ = (Local Share$_{i,2006}$ -Local Share$_{i,2002}$)
- Local Share Change$_{i,Bust}$ = (Local Share$_{i,2009}$ -Local Share$_{i,2006}$)
- Local Loans Growth$_{i,Boom}$ = (Local Loans$_{i,2006}$ -Local Loans$_{i,2002}$) / Local Loans$_{i,2002}$
- Local Loans Held Share$_{i,t}$ = Total Local Loans Held$_{i,t}$ / Total Local Loans $_{i,t}$
- Local Loans Held Change$_{i,Boom}$ = (Local Loans Held Share$_{i,2006}$ -Local Loans Held Share$_{i,2002}$)
- Local Loans Held Change$_{i,Bust}$ = (Local Loans Held Share$_{i,2009}$ -Local Loans Held Share$_{i,2006}$)
- Local Median Income$_{i,t}$ = Log of Borrower Income$_{i,t}$
- Local Median Income$_{i,Boom}$ =(Local Median Income$_{i,2006}$ -Local Median Income$_{i,2002}$)
- Local Loan Income Ratio$_{i,t}$ = Local Loan Amount$_{i,t}$ / Borrower Income$_{i,t}$
- Local Loan Income Ratio$_{i,Boom}$ = (Local Loan Income Ratio$_{i,2006}$ -Local Loan Income Ratio$_{i,2002}$)

  All loans held and borrower variables are also calculated for non-local loans.

  All borrower variables are also calculates over the Bust period (2006-09).

California Foreclosure Rates, California RAND Business and Economics Statistics

- Foreclosure Rate$_{i,t}$ = Total Foreclosures$_{i,t}$ / Total Housing Units$_{i,2000}$
- Foreclosure Rate$_{i,Boom}$ = (Foreclosure Rate$_{i,2006}$ - Foreclosure Rate$_{i,2002}$)
- Foreclosure Rate$_{i,Bust}$ = (Foreclosure Rate$_{i,2009}$ - Foreclosure Rate$_{i,2006}$)

House Supply Elasticity, Saiz Housing Supply Elasticity Measure

- High elasticity = indicator equal to 1 is the value of the elasticity is above the median elasticity value, e.g., Wichita, KS.
- Low elasticity = indicator equal to 1 is the value of the elasticity is below the median elasticity value, e.g., Miami, FL.

Size Definitions

- Median Assets (covered in the online appendix)
  - Small Lenders = lenders with less than the average median asset size of lenders from 2002-06: roughly below 200 million dollars.
- Market Share
  - Small Lenders = lenders with less than 50% of market share in 2002: roughly below 700 million dollars in 2002, 800 million in 2006.
- Larges Lenders (covered in the online appendix)
  - Small Lenders = lenders with less than than 10 billion dollars in assets in 2002.

Microeconomic Variables

- Median Income $_{i,Boom}$ = (Median Household Income$_{i,2006}$ - Median Household Income$_{i,2002}$) / Median Household Income$_{i,2002}$
- Median Income $_{i,Bust}$ = (Median Household Income$_{i,2009}$ - Median Household Income$_{i,2006}$) / Median Household Income$_{i,2006}$
- Unemployment Rate$_{i,Boom}$ = (Unemployment Rate$_{i,2006}$ - Unemployment Rate$_{i,2002}$) / Unemployment Rate$_{i,2002}$
- Unemployment Rate$_{i,Bust}$ = (Unemployment Rate$_{i,2009}$ - Unemployment Rate$_{i,2006}$) / Unemployment Rate$_{i,2006}$
- Poverty Rate$_{i,Boom}$ = (Poverty Rate$_{i,2006}$ -Poverty Rate$_{i,2002}$) / Poverty Rate$_{i,2002}$
- Poverty Rate$_{i,Bust}$ = (Poverty Rate$_{i,2009}$ -Poverty Rate$_{i,2006}$) / Poverty Rate$_{i,2006}$

Figure 1: **Local Share Time Trend**
This figure reports the average Local Share from 1998-2009. Local Share-All reflects the average local share for the entire sample in a year. Local Share-Balanced reflects the average local share for a balanced panel which includes all of the ZIP codes that are available in 2002. A loan is considered local if made by a lender that has a branch in the county where the loan is made. The Local Share is the total number of local loans scaled by the total loans originated. Branch data comes from the FDIC Summary of Deposits. Loan origination data comes from HMDA data which is made available per the Home Mortgage Disclosure Act of 1975. The unit of observation is at the ZIP code level.

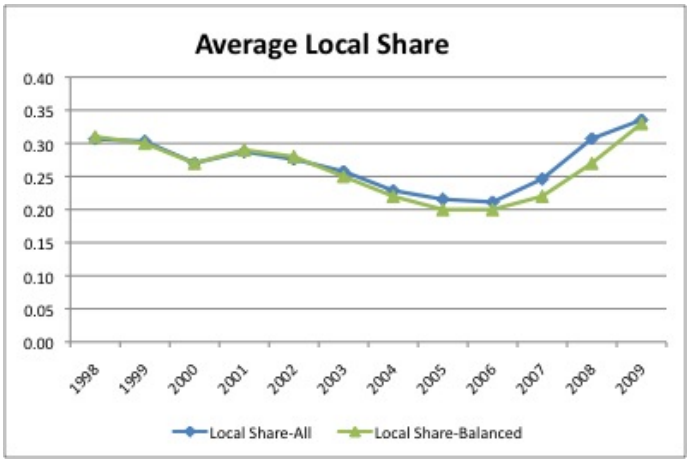

Table 1: **HMDA Summary Statistics**

This table reports summary statistics for HMDA data variables over the Boom period (2002-06). HMDA data are made available per the Home Mortgage Disclosure Act of 1975. The unit of observation is at the ZIP code level. A loan is considered local if made by a lender that has a branch in the county where the loan is made. Branch data comes from the FDIC Summary of Deposits. The Local Share is the total number of local loans scaled by the total loans originated. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income.

	HMDA Annualized Changes 2002-06		
Variable	Mean	St. Dev.	Obs.
Local Share	-0.02	0.03	8,935
Local Median Income (log)	0.05	0.1	8,935
Non-Local Median Income (log)	0.06	0.08	8,935
Local Loan to Income	0.04	0.1	8,935
Non-Local Loan to Income	-0.01	0.07	8,935

Table 2: **Zillow Summary Statistics**

This table reports summary statistics for the Zillow Home Value Index data over the Boom (2002-06) and Bust (2006-09). Zillow data are made available by Zillow.com. The unit of observation is at the ZIP code level. The Zillow Home Value Index reports median home prices based on a proprietary formula. The Top, Middle and Bottom tier report the top, middle and bottom third of the Index values, respectively. The number of observations changes per housing type because certain housing types may not be available to price in a ZIP code.

	Home Price Growth Annualized 2002-06			Home Price Growth Annualized 2006-09		
Home Type	Mean	St. Dev.	Obs.	Mean	St. Dev.	Obs.
All Homes	0.12	0.09	9,043	-0.05	0.06	10,706
Single Family	0.12	0.09	8,966	-0.05	0.06	10,628
Condo	0.13	0.15	4,313	-0.06	0.06	5,145
Top Tier	0.11	0.08	7,388	-0.05	0.05	9,046
Middle Tier	0.11	0.09	8,351	-0.05	0.05	9,969
Bottom Tier	0.12	0.18	7,470	-0.05	0.07	8,881
Studio	0.13	0.19	6,371	-0.04	0.08	7,621
One Bed	0.14	0.12	2,297	-0.06	0.07	2,619
Two Bed	0.12	0.09	6,699	-0.05	0.06	7,899
Three Bed	0.12	0.08	8,008	-0.05	0.06	9,512
Four Bed	0.12	0.08	7,000	-0.05	0.05	8,356
Many Bed	0.12	0.08	4,418	-0.05	0.06	5,316

Table 3: **California Foreclosure Summary Statistics**

This table reports summary statistics for foreclosures and foreclosure rates for the state of California from 2002-09. Panel A reports average total foreclosures and Panel B reports foreclosure rates defined as total foreclosures per one thousand houses. The number of observations in panel A is 1720 and 1640 in Panel B, it decreases because data on the number of housing units is unavailable. Foreclosure data are provided by California RAND Business and Economic statistics. Housing units data are provided by the Census Bureau via the Missouri Census Data Center. The unit of observation is at the ZIP code level.

Panel A: Total Foreclosures					
Year	Mean	St. Dev.	Minimum	Median	Max
2002	10	21	0	3	219
2003	6	11	0	2	1225
2004	3	5	0	1	61
2005	2	3	0	1	27
2006	8	12	0	3	122
2007	53	86	0	16	749
2008	147	243	0	44	1910
2009	117	173	0	43	1303

Panel B: Foreclosure Rates (per 1,000 houses)					
Year	Mean	St. Dev.	Minimum	Median	Max
2002	1	3	0	<1	18
2003	1	5	0	<1	9
2004	1	2	0	<1	15
2005	1	3	0	<1	10
2006	1	4	0	1	91
2007	7	31	0	3	213
2008	22	85	0	9	161
2009	18	66	0	9	150

Table 4: **Local Share Change Contemporaneous Regression**

This table reports OLS regression coefficients for the following model: Local Share Change$_{i,Boom}$ = β Home Price Growth$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Boom}$ + $\phi_k + \alpha + \varepsilon_i$ in which ϕ_k is state fixed effects. Boom denotes 2002-06. The unit of observation is at the ZIP code level. The Local Share is the total number of local loans scaled by the total loans originated. Home Price Growth refers to median home prices from Zillow.com for all homes. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. High (e.g., Wichita, KS) and Low (e.g., Miami, FL) elasticity measure based on Saiz housing supply elasticity. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Local Share Change	(2) Local Share Change	(3) Local Share Change
Home Price Growth	-0.0215*	-0.0271	-0.0357**
	(0.0112)	(0.0188)	(0.0176)
Total Deposits	0.0190	0.0229	-0.000834
	(0.0124)	(0.0197)	(0.0434)
Poverty Rate	-0.0251	0.141**	-0.0609
	(0.0319)	(0.0550)	(0.0860)
Median Income	-0.0867	-0.0980	-0.136
	(0.0764)	(0.167)	(0.172)
Unemployment Rate	0.108**	-0.0420	0.281**
	(0.0468)	(0.0645)	(0.138)
Local Median Income (log)	0.0391***	0.0529***	0.0486***
	(0.00675)	(0.0143)	(0.0130)
Non-Local Median Income (log)	-0.00501	-0.00282	-0.0133
	(0.00950)	(0.0155)	(0.0185)
Local Loan Income Ratio	0.0156**	0.0269**	0.0460**
	(0.00692)	(0.0110)	(0.0186)
Non-Local Loan Income Ratio	0.0227***	0.0112	0.0111
	(0.00861)	(0.0167)	(0.0137)
Constant	-0.0359**	-0.0924***	0.0361
	(0.0166)	(0.0292)	(0.0445)
Observations	8,643	1,949	1,979
R-squared	0.304	0.339	0.369
State Fixed Effects	Yes	Yes	Yes
Elasticity		High	Low

County level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: **Home Price Growth Lagged Regression**

This table reports OLS regression coefficients for the following model: Home Price Growth$_{i,Bust}$ = β Local Share Change$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Bust}$ + $\phi_k + \alpha + \varepsilon_i$ in which ϕ_k is state fixed effects. Bust denotes 2006-09, Boom denotes 2002-06. The unit of observation is at the ZIP code level. Home Price Growth refers to median home prices from Zillow.com for all homes. The Local Share is the total number of local loans scaled by the total loans originated. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. High (e.g., Wichita, KS) and Low (e.g., Miami, FL) elasticity measure based on Saiz housing supply elasticity. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Home Price Growth	(2) Home Price Growth	(3) Home Price Growth	(4) Home Price Growth
Local Share Change	0.104***	0.0851***	0.0140	0.0725*
	(0.0248)	(0.0245)	(0.0457)	(0.0418)
Home Price Growth (Boom)		-0.164***	-0.0991***	-0.189***
		(0.0155)	(0.0298)	(0.0198)
Total Deposits	-0.00269	0.00682	0.0279	0.0100
	(0.0104)	(0.00807)	(0.0245)	(0.0208)
Poverty Rate	-0.0888**	-0.0799*	-0.0344	-0.153**
	(0.0445)	(0.0410)	(0.0574)	(0.0654)
Median Income	0.367***	0.378***	0.231	0.256*
	(0.1000)	(0.0966)	(0.174)	(0.145)
Unemployment Rate	-0.0829***	-0.0777***	-0.102***	-0.0552**
	(0.0227)	(0.0199)	(0.0312)	(0.0269)
Local Median Income (log)	-.000034	0.00277	-0.0257	0.0105
	(0.00664)	(0.00663)	(0.0179)	(0.0143)
Non-Local Median Income (log)	-0.0364***	-0.0216**	0.00606	-0.0359*
	(0.00915)	(0.00861)	(0.0207)	(0.0200)
Local Loan Income Ratio	0.00728	0.00749*	0.000498	0.0109
	(0.00525)	(0.00452)	(0.0113)	(0.00922)
Non-Local Loan Income Ratio	0.0294***	0.0328***	0.00358	0.0283*
	(0.00838)	(0.00869)	(0.0150)	(0.0145)
Constant	-0.0512**	0.0236	0.0688*	0.0204
	(0.0260)	(0.0234)	(0.0359)	(0.0409)
Observations	8,645	8,628	1,945	1,973
R-squared	0.570	0.620	0.599	0.760
State Fixed Effects	Yes	Yes	Yes	Yes
Elasticity			High	Low

County level clustered standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: **Home Price Growth Counterfactual Regression**

This table reports OLS regression coefficients for the following model: Home Price Growth$_{i,Boom}$ = β Local Share Change$_{i,Prior}$ + Borrower Controls$_{i,Prior}$ + Economic Controls$_{i,Boom}$ + ϕ_k + α + ε_i in which ϕ_k is state fixed effects. Bust denotes 2006-09, Prior denotes 1999-2002. The unit of observation is at the ZIP code level. Home Price Growth refers to median home prices from Zillow.com for all homes. The Local Share is the total number of local loans scaled by the total loans originated. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. High (e.g., Wichita, KS) and Low (e.g., Miami, FL) elasticity measure based on Saiz housing supply elasticity. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Home Price Growth	(2) Home Price Growth	(3) Home Price Growth
Local Share Change	0.0353	0.0477	-0.0494
	(0.0620)	(0.0552)	(0.106)
Total Deposits	-0.0268**	-0.0236	-0.00414
	(0.0130)	(0.0377)	(0.0179)
Poverty Rate	-0.374***	-0.102	-0.262**
	(0.0843)	(0.0621)	(0.111)
Median Income	1.112***	-0.00289	0.755*
	(0.212)	(0.308)	(0.417)
Unemployment Rate	0.357***	-0.0286	0.107
	(0.135)	(0.127)	(0.230)
Constant	0.497***	0.365***	0.562***
	(0.0379)	(0.0382)	(0.0785)
Other Controls	Yes	Yes	Yes
Observations	8,545	1,919	1,972
R-squared	0.624	0.662	0.697
State Fixed Effects	Yes	Yes	Yes
Elasticity		High	Low

County level clustered standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: **Home Price Growth Contemporaneous Regression: Local Loans Held Share vs. Non-Local Loans Held Share**
This table reports OLS regression coefficients for both local and non-local loans with the following model: Local, Non-Local Loans Held Change$_{i,Boom}$ = β Home Price Growth$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Boom}$ + $\phi_k + \alpha + \varepsilon_i$ in which ϕ_k is state fixed effects. Boom denotes 2002-06. The unit of observation is at the ZIP code level. The Local Held Share is the number of local loans held by the lender, scaled by the total local loans. Home Price Growth refers to median home prices from Zillow.com for all homes. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. High (e.g., Wichita, KS) and Low (e.g., Miami, FL) elasticity measure based on Saiz housing supply elasticity. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Local Loans Held Change	(2) Local Loans Held Change	(3) Local Loans Held Change	(4) Non-Local Loans Held Change	(5) Non-Local Loans Held Change	(6) Non-Local Loans Held Change
Home Price Growth	-0.0200**	-0.00262	-0.0295**	-0.000180	-0.00213	0.0342***
	(0.00883)	(0.0154)	(0.0125)	(0.00976)	(0.0202)	(0.0124)
Total Deposits	0.00966	-0.0118	-0.00449	0.0145***	0.0246*	0.0280**
	(0.00911)	(0.0140)	(0.0308)	(0.00535)	(0.0141)	(0.0141)
Poverty Rate	-0.00921	0.0971***	-0.0243	-0.0234	0.00770	-0.0709*
	(0.0233)	(0.0343)	(0.0617)	(0.0239)	(0.0393)	(0.0400)
Median Income	-0.0882*	-0.122	0.0306	0.0351	-0.0169	-0.168
	(0.0498)	(0.122)	(0.116)	(0.0555)	(0.121)	(0.107)
Unemployment Rate	0.0232	-0.0405	0.0812	-0.0806**	-0.0249	-0.0516
	(0.0322)	(0.0495)	(0.0970)	(0.0322)	(0.0565)	(0.0756)
Local Median Income (log)	0.0125**	0.00616	0.0171*	-0.00646	-0.0187	-0.0294*
	(0.00603)	(0.00845)	(0.0102)	(0.00877)	(0.0198)	(0.0162)
Non-Local Median Income (log)	-0.00611	0.0153*	-0.0162	0.0106	0.0391*	0.0236
	(0.00805)	(0.00876)	(0.0143)	(0.00976)	(0.0206)	(0.0190)
Local Loan Income Ratio	0.0173***	0.0300***	0.0448***	0.00620	-0.00594	0.0116*
	(0.00543)	(0.00896)	(0.0144)	(0.00425)	(0.0116)	(0.00661)
Non-Local Loan Income Ratio	0.0175***	0.0118	0.00580	-0.0114	-0.00847	-0.0199
	(0.00569)	(0.0121)	(0.00949)	(0.00855)	(0.0156)	(0.0135)
Constant	-0.0226**	-0.0567***	-0.00578	-0.0749***	-0.0796***	-0.0719**
	(0.0113)	(0.0207)	(0.0320)	(0.0129)	(0.0188)	(0.0282)
Observations	8,643	1,949	1,979	8,545	1,919	1,942
R-squared	0.293	0.345	0.418	0.132	0.180	0.132
State Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Elasticity		High	Low		High	Low

County level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: **Home Price Growth Lagged Regression: Local Loans Held Share**
This table reports OLS regression coefficients for the following model: Home Price Growth$_{i,Bust}$ = β Local Share Change, Local Loans Held Change, Non-Local Loans Held Change$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Bust}$ + ϕ_k + α + ε_i in which ϕ_k is state fixed effects. Boom denotes 2002-06. The unit of observation is at the ZIP code level. The Local Held Share is the number of local loans held by the lender, scaled by the total local loans. Home Price Growth refers to median home prices from Zillow.com for all homes. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. High (e.g., Wichita, KS) and Low (e.g., Miami, FL) elasticity measure based on Saiz housing supply elasticity. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	Home Price Growth	Home Price Growth	Home Price Growth
Local Share Change	0.0204	0.0422	0.0253
	(0.0324)	(0.0562)	(0.0542)
Local Loans Held Change	0.171***	-0.0326	0.159*
	(0.0504)	(0.0750)	(0.0813)
Non-Local Loans Held Change	0.0257	0.0353	-0.0566
	(0.0302)	(0.0358)	(0.0439)
Total Deposits	-0.00262	0.0177	-0.0116
	(0.0101)	(0.0230)	(0.0302)
Poverty Rate	-0.0808*	-0.0340	-0.200***
	(0.0447)	(0.0595)	(0.0708)
Median Income	0.363***	0.188	0.135
	(0.101)	(0.169)	(0.187)
Unemployment Rate	-0.0849***	-0.0934***	-0.0567*
	(0.0225)	(0.0309)	(0.0315)
Local Median Income (log)	0.000559	-0.0230	0.0115
	(0.00689)	(0.0177)	(0.0140)
Non-Local Median Income (log)	-0.0411***	0.00234	-0.0481**
	(0.00962)	(0.0204)	(0.0200)
Local Loan Income Ratio	0.00561	0.00155	0.00727
	(0.00536)	(0.0116)	(0.00954)
Non-Local Loan Income Ratio	0.0278***	0.000119	0.00723
	(0.00846)	(0.0151)	(0.0157)
Constant	-0.0457*	0.0331	-0.0751*
	(0.0255)	(0.0333)	(0.0430)
Observations	8,547	1,921	1,939
R-squared	0.575	0.593	0.733
State Fixed Effect	Yes	Yes	Yes
Elasticity		High	Low

County level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: **Foreclosure Rate Contemporaneous Regression**

This table reports OLS regression coefficients for the following model: Foreclosure Rate Change$_{i,Boom}$ = β Local Share Change, Local Loans Held Change, Non-Local Loans Held Change$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Boom}$ + ϕ_j + α + ε_i in which ϕ_j is county fixed effects. Boom denotes 2002-06. The unit of observation is at the ZIP code level. Foreclosure data are from the Californian Rand Business and Economic Statistics. Home Price Growth refers to median home prices from Zillow.com for all homes. The Local Share is the total number of local loans scaled by the total loans originated. The Local Held Share is the number of local loans held by the lender, scaled by the total local loans. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Foreclosure Rate Change	(2) Foreclosure Rate Change	(3) Foreclosure Rate Change
Local Share Change	-0.000979		
	(0.00114)		
Local Loans Held Change		-0.00298	
		(0.00334)	
Non-Local Loans Held Change			-0.000673
			(0.000700)
Home Price Growth	-0.00302***	-0.00298***	-0.00319***
	(0.000618)	(0.000585)	(0.000665)
Unemployment Rate	-0.00101	-0.000982	-0.00199
	(0.00319)	(0.00342)	(0.00249)
Poverty Rate	-0.00446	-0.00467	-0.00405
	(0.00282)	(0.00289)	(0.00332)
Median Income	-0.00360	-0.00280	0.00338
	(0.00592)	(0.00596)	(0.00610)
Local Loan Income Ratio	0.000309**	0.000312**	0.000194
	(0.000154)	(0.000155)	(0.000139)
Non-Local Loan Income Ratio	0.000604	0.000616	0.000306
	(0.000395)	(0.000404)	(0.000247)
Local Median Income (log)	0.000346	0.000311	-0.000235
	(0.000393)	(0.000401)	(0.000221)
Non-Local Median Income (log)	-0.000444	-0.000365	-0.000567
	(0.000684)	(0.000647)	(0.000378)
Total Deposits	0.000265	0.000225	0.000129
	(0.00163)	(0.00156)	(0.00191)
Constant	0.00305*	0.00280	0.00197
	(0.00176)	(0.00174)	(0.00173)
Observations	1,155	1,155	1,146
R-squared	0.237	0.238	0.235
County Fixed Effects	Yes	Yes	Yes

ZIP code level clustered standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10: **Foreclosure Rate Lagged Regression**

This table reports OLS regression coefficients for the following model: Foreclosure Rate Change$_{i,Bust}$ = β Local Share Change, Local Loans Held Change, Non-Local Loans Held Change$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Bust}$ + ϕ_j + α + ε_i in which ϕ_j is county fixed effects. Bust denotes 2006-09, Boom denotes 2002-06. The unit of observation is at the ZIP code level. Foreclosure data are from the Californian Rand Business and Economic Statistics. Home Price Growth refers to median home prices from Zillow.com for all homes. The Local Share is the total number of local loans scaled by the total loans originated. The Local Held Share is the number of local loans held by the lender, scaled by the total local loans. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Foreclosure Rate Change	(2) Foreclosure Rate Change
Local Share Change	-0.0376***	-0.0432**
	(0.0134)	(0.0182)
Local Loan Held Change	-0.0152*	-0.0259*
	(0.00836)	(0.0152)
Non-Local Loan Held Change	-0.00688	0.00353
	(0.00556)	(0.00832)
Home Price Growth		-0.0738***
		(0.0158)
Unemployment Rate	-0.00701	-0.00318
	(0.0100)	(0.0133)
Poverty Rate	0.00451	-0.0371
	(0.0155)	(0.0279)
Median Income	0.0961***	0.0193
	(0.0313)	(0.0673)
Local Loan Income Ratio	0.00376*	0.00545*
	(0.00208)	(0.00323)
Non-Local Loan Income Ratio	0.00102	0.0115
	(0.00748)	(0.0118)
Local Median Income (log)	0.00594**	0.00623
	(0.00242)	(0.00399)
Non-Local Median Income (log)	-0.00374	-0.0153
	(0.00567)	(0.00985)
Total Deposits (Boom)	0.00868	0.0190
	(0.0174)	(0.0243)
Constant	0.0124	-0.00847
	(0.0138)	(0.0192)
Observations	1,405	1,140
R-squared	0.085	0.106
County Fixed Effects	Yes	Yes

ZIP code level clustered standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 11: **Loan Growth Rates Contemporaneous Regression**
This table reports OLS regression coefficients for the following model: Local Loans Growth, Non-Local Loans Growth$_{i,Boom}$ = β Home Price Growth$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Boom}$ + ϕ_k + α + ε_i in which ϕ_k is state fixed effects. Boom denotes 2002-06. The unit of observation is at the ZIP code level. Local Loans Growth is the difference in local loans made from 2002-2006, scaled by the total local loans made in 2002. Home Price Growth refers to median home prices from Zillow.com for all homes. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Local Loans Growth	(2) Local Loans Growth	(3) Non-Local Loans Growth	(4) Non-Local Loans Growth
Home Price Growth	-0.201***	-0.221***	0.257***	0.252***
	(0.0702)	(0.0725)	(0.0757)	(0.0753)
Total Deposits	0.0259	0.0321	-0.0332	-0.0361
	(0.101)	(0.101)	(0.0411)	(0.0407)
Poverty Rate	0.0836	0.0750	0.525***	0.528***
	(0.200)	(0.198)	(0.167)	(0.167)
Median Income	-0.338	-0.390	0.940**	0.933**
	(0.592)	(0.584)	(0.372)	(0.376)
Unemployment Rate	0.332*	0.313*	-0.356	-0.340
	(0.173)	(0.170)	(0.227)	(0.227)
Local Median Income (log)	0.231***	0.205***		0.155***
	(0.0438)	(0.0585)		(0.0374)
Non-Local Median Income (log)		0.0298	0.500***	0.389***
		(0.0864)	(0.0457)	(0.0532)
Local Loan Income Ratio	0.102***	0.0765**		0.00223
	(0.0328)	(0.0342)		(0.0290)
Non-Local Loan Income Ratio		0.129**	-0.0697	-0.0855*
		(0.0543)	(0.0490)	(0.0471)
Constant	0.0394	0.0594	-0.345***	-0.343***
	(0.113)	(0.111)	(0.0851)	(0.0849)
Observations	7,258	7,258	7,284	7,284
R-squared	0.131	0.133	0.156	0.159
State Fixed Effects	Yes	Yes	Yes	Yes

County level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: **Loan Growth Rates Lagged Regression**

This table reports OLS regression coefficients for the following model: β Home Price Growth$_{i,Bust}$ = Local Loans Growth, Non-Local Loans Growth$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Boom}$ + ϕ_k + α + ε_i in which ϕ_k is state fixed effects. Boom denotes 2002-06. Bust denotes 2006-09. The unit of observation is at the ZIP code level. Local Loans Growth is the difference in local loans made from 2002-2006, scaled by the total local loans made in 2002. Home Price Growth refers to median home prices from Zillow.com for all homes. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Home Price Growth	(2) Home Price Growth	(3) Home Price Growth
Local Loans Growth	0.0342***		0.0381***
	(0.00401)		(0.00462)
Non-Local Loans Growth		0.000522	-0.00192
		(0.000322)	(0.00441)
Total Deposits	-0.00519	-0.000626	-0.00280
	(0.0107)	(0.0120)	(0.0101)
Poverty Rate	-0.0862*	-0.0938*	-0.0866*
	(0.0466)	(0.0489)	(0.0454)
Median Income	0.369***	0.364***	0.365***
	(0.112)	(0.112)	(0.111)
Unemployment Rate	-0.0780***	-0.0845***	-0.0767***
	(0.0245)	(0.0250)	(0.0242)
Local Median Income (log)	-0.0185***		-0.00695
	(0.00676)		(0.00689)
Local Loan Income Ratio	0.0112*		0.00656
	(0.00576)		(0.00553)
Non-Local Median Income (log)		-0.0342***	-0.0441***
		(0.00998)	(0.0107)
Non-Local Loan Income Ratio		0.0324***	0.0351***
		(0.00909)	(0.00879)
Constant	-0.0776***	-0.0651**	-0.0672**
	(0.0287)	(0.0287)	(0.0278)
Observations	7,262	7,347	7,230
R-squared	0.589	0.574	0.595
State Fixed Effects	Yes	Yes	Yes

County level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: **Market Share: Local Share Change Contemporaneous Regression**
This table reports OLS regression coefficients for the following model: Local Share Change$_{i,Boom}$ = β Home Price Growth$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Boom}$ + $\phi_k + \alpha + \varepsilon_i$ in which ϕ_k is state fixed effects. Boom denotes 2002-06. The unit of observation is at the ZIP code level. Small Lenders refers to lenders with less than half of the market share of mortgages in 2002. The Local Share is the total number of local loans scaled by the total loans originated. Home Price Growth refers to median home prices from Zillow.com for all homes. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Small Lenders' Local Share	(2) Large Lenders' Local Share
Home Price Growth	-0.0837***	-0.0125**
	(0.0193)	(0.00505)
Total Deposits	0.00380	-0.000142
	(0.0143)	(0.00355)
Poverty Rate	-0.0593	0.00732
	(0.0672)	(0.0134)
Median Income	-0.0601	0.0291
	(0.134)	(0.0323)
Unemployment Rate	0.0671	0.106***
	(0.0800)	(0.0116)
Small Lenders' Local Median Income (log)	0.0716***	
	(0.00744)	
Small Lenders' Non-Local Median Income (log)	-0.00448	
	(0.00810)	
Small Lenders' Local Loan Income Ratio	0.00992	
	(0.00736)	
Small Lenders' Non-Local Loan Income Ratio	0.000268	
	(0.00905)	
Large Lenders' Local Median Income (log)		0.0613***
		(0.00340)
Large Lenders' Non-Local Median Income (log)		-0.0314***
		(0.00745)
Large Lenders' Local Loan Income Ratio		0.0137***
		(0.00344)
Large Lenders' Non-Local Loan Income Ratio		-0.00706
		(0.00558)
Constant	0.0997***	-0.0620***
	(0.0288)	(0.00597)
Observations	8,643	8,643
R-squared	0.388	0.378
State Fixed Effects	Yes	Yes

County level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 14: **Market Share: Home Price Growth Lagged Regression**
This table reports OLS regression coefficients for the following model: Home Price Growth$_{i,Bust}$ = β Local Share Change$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Bust}$ + $\phi_k + \alpha + \varepsilon_i$ in which ϕ_k is state fixed effects. Bust denotes 2006-09, Boom denotes 2002-06. Small Lenders refers to lenders with less than half of the market share of mortgages in 2002. The unit of observation is at the ZIP code level. Home Price Growth refers to median home prices from Zillow.com for all homes. The Local Share is the total number of local loans scaled by the total loans originated. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Home Price Growth	(2) Home Price Growth
Small Lenders' Local Share	0.0644***	0.0491***
	(0.0161)	(0.0162)
Large Lenders' Local Share	0.0426**	0.0513***
	(0.0215)	(0.0193)
Home Price Growth (Boom)		-0.163***
		(0.0155)
Total Deposits	-0.00164	0.00722
	(0.0104)	(0.00795)
Poverty Rate	-0.0894**	-0.0811**
	(0.0439)	(0.0404)
Median Income	0.363***	0.371***
	(0.0995)	(0.0959)
Unemployment Rate	-0.0878***	-0.0810***
	(0.0220)	(0.0192)
Local Median Income (log)	-0.000125	0.00214
	(0.00672)	(0.00660)
Non-Local Median Income (log)	-0.0379***	-0.0226***
	(0.00918)	(0.00852)
Local Loan Income Ratio	0.00753	0.00778*
	(0.00525)	(0.00455)
Non-Local Loan Income Ratio	0.0292***	0.0320***
	(0.00834)	(0.00869)
Constant	-0.0501*	0.0250
	(0.0255)	(0.0230)
Observations	8,645	8,628
R-squared	0.572	0.621
State Fixed Effects	Yes	Yes

County level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: **Market Share: Home Price Growth Lagged Model: Local Loans Held Share**
This table reports OLS regression coefficients for the following model: Home Price Growth$_{i,Bust}$ = β Local Share Change, Local Loans Held Change, Non-Local Loans Held Change$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Bust}$ + ϕ_k + α + ε_i in which ϕ_k is state fixed effects. Boom denotes 2002-06. Small Lenders refers to lenders with less than half of the market share of mortgages in 2002. The unit of observation is at the ZIP code level. The Local Held Share is the number of local loans held by the lender, scaled by the total local loans. Home Price Growth refers to median home prices from Zillow.com for all homes. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Home Price Growth
Small Lenders' Local Share	0.0162
	(0.00994)
Small Lenders' Local and Held Share	0.0643***
	(0.0133)
Small Lenders' Non-Local and Share	0.0354
	(0.0330)
Large Lenders' Local Share	0.0277
	(0.0185)
Large Lenders' Local and Held Share	0.0557**
	(0.0277)
Large Lenders' Non-Local and Held Share	-0.0164
	(0.0294)
Home Price Growth (Boom)	-0.161***
	(0.00858)
Total Deposits	0.00730
	(0.00493)
Poverty Rate	-0.0756***
	(0.0150)
Median Income	0.362***
	(0.0433)
Unemployment Rate	-0.0831***
	(0.00799)
Local Median Income (log)	0.00258
	(0.00630)
Non-Local Median Income (log)	-0.0232***
	(0.00768)
Local Loan Income Ratio	0.00694*
	(0.00378)
Non-Local Loan Income Ratio	0.0310***
	(0.00606)
Constant	0.0266***
	(0.0101)
Observations	8,628
R-squared	0.623
State Fixed Effect	Yes

County level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16: **Market Share: Foreclosure Rate Lagged Regression**
This table reports OLS regression coefficients for the following model: Foreclosure Rate Change$_{i,Bust}$ = β Local Share Change, Local Loans Held Change, Non-Local Loans Held Change$_{i,Boom}$ + Borrower Controls$_{i,Boom}$ + Economic Controls$_{i,Bust}$ + ϕ_j + α + ε_i in which ϕ_j is county fixed effects. Bust denotes 2006-09, Boom denotes 2002-06. Small Lenders refers to lenders with less than half of the market share of mortgages in 2002. The unit of observation is at the ZIP code level. Foreclosure data are from the Californian Rand Business and Economic Statistics. Home Price Growth refers to median home prices from Zillow.com for all homes. The Local Share is the total number of local loans scaled by the total loans originated. The Local Held Share is the number of local loans held by the lender, scaled by the total local loans. Median income (log) is the log of the borrowers' median income. Loan to Income is the ratio of the amount of the loan to the borrower's income. Data on median income and poverty rates are from the U.S. Census Bureau Small Area Income and Poverty Estimates (SAIPE). Data on the unemployment rate are from the Bureau of Labor local area unemployment statistics.

VARIABLES	(1) Foreclosure Rate Change	(2) Foreclosure Rate Change
Small Lenders' Local Share	-0.0154***	-0.0101**
	(0.00513)	(0.00504)
Large Lenders' Local Share	-0.0507***	-0.0433**
	(0.0189)	(0.0168)
Home Price Growth		-0.0705***
		(0.0148)
Unemployment Rate	-0.0110	-0.00909
	(0.0127)	(0.0138)
Poverty Rate	0.0228	-0.0248
	(0.0199)	(0.0248)
Median Income	0.0943**	0.0516
	(0.0449)	(0.0382)
Small Lenders' Local Loan Income Ratio	0.00107	0.00212
	(0.00140)	(0.00187)
Small Lenders' Non-Local Loan Income Ratio	-0.00246	0.00272
	(0.00396)	(0.00346)
Small Lenders' Local Median Income (log)	0.00377***	0.00445**
	(0.00120)	(0.00184)
Small Lenders' Non-Local Median Income (log)	-0.00589	-0.00313
	(0.00575)	(0.00515)
Large Lenders' Local Loan Income Ratio	0.00609***	0.00490**
	(0.00227)	(0.00248)
Large Lenders' Non-Local Loan Income Ratio	0.00690	0.0132
	(0.00717)	(0.00943)
Large Lenders' Local Median Income (log)	0.000617	0.000667
	(0.00255)	(0.00349)
Large Lenders' Non-Local Median Income (log)	0.0122	0.00546
	(0.00817)	(0.00582)
Total Deposits	-0.00574	0.0394
	(0.0193)	(0.0263)
Constant	0.0177	-0.0124
	(0.0165)	(0.0235)
Observations	1,448	1,155
R-squared	0.110	0.118
County Fixed Effects	Yes	Yes

ZIP code level clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1