Shifting Confidence in Home Ownership: The Great Recession*

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Abstract: We study the responses to several questions related to real estate that were added to the Michigan Survey of Consumers in July and August of 2011. In particular, we asked about attitudes toward renting versus buying a home; about commuting; and about how much to spend on a mortgage. By matching the results to data about relative house price declines during the recent crisis (at the ZIP-code level), we can study the relationship between the housing crash and individual attitudes. We find that younger respondents are relatively less confident about home ownership after larger declines, while older respondents are relatively more confident. In both cases, this is observed only for those with personal experience of loss (via themselves or someone close) during the crash. We find no effect on attitudes toward commuting, and we find that people who live in the high-decline areas believe it is appropriate to spend more on a mortgage.

JEL Codes: R21; E32; D12; D03; D83

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"A setback to confidence means a setback to the recovery of the housing market."
- Doug Duncan, chief economist at Fannie Mae[1]

1. Introduction

As part of the great recession, American households saw the value of residential real estate fall by over $4 trillion in 2007 and 2008, in addition to a decline in the total value of US stocks of approximately $8 trillion in 2008 alone. In spite of this massive decline in home value, a Pew Research Center survey of over 2000 US adults during March 2011[2] finds, surprisingly, that 37 percent still strongly agree that "buying a home is the best long-term investment a person can make" (and even more weakly agree with the statement). Moreover, although homeownership has fallen since the crisis, it is nevertheless remarkably stable: the homeownership rate fell from 69.2 percent at its apex in mid-2004 down to 66.5 percent at the end of 2010 (see Starobin 2011). Given the drop in real estate value, the persistent belief in homeownership seems to reflect attitudes that go beyond financial rationales. This is supported by the finding that 37 percent of those surveyed think being able to own a home is an "extremely important long-term financial goal," greater than the percentage who said the same for being able to live comfortably in retirement (35 percent) or being able to pay for their children's college education (31 percent). For better or worse, this aspect of life remains both a long-term driver of the economy and also an important psychological benchmark for many citizens. Hence, it is important to understand whether and how the recent crisis affected beliefs related to homeownership.

In this paper we examine the relationship between the real estate crisis and individual beliefs and attitudes toward home ownership. There is good reason to suspect an effect of the crisis on such beliefs: previous work has shown that macroeconomic shocks at various ages can affect portfolio choice (Malmendier and Nagel 2011), as well as attitudes regarding the role of government and even the degree of personal agency in determining success (Giuliano and Spilimbergo 2009). Other work has studied the relationship between exposure to stressors, such as violent conflict, and underlying economic preferences like risk aversion (e.g. Voors *et al.* 2011). All of this literature finds significant individual-level consequences of macro shocks, albeit along varying dimensions, leading to the supposition that we may currently be seeing the consequences of an analogous and potentially long-lasting shift in attitudes.

Following previous research, we also give special attention to the effect of experience on the magnitude of any attitude changes, where experience is measured along two separate dimensions: age (existing evidence suggests that beliefs are most malleable in younger people) and level of personal exposure to the crisis. We are able to proxy the latter version of experience by asking individuals if they or someone they know was foreclosed upon or lost a significant amount of money in the housing crash.

[1] Quoted in Panchuk (2011)
[2] See Taylor *et al.* (2011)

Whereas previous papers have mostly looked at variation over time in order to ascertain the link between aggregate shocks and individual beliefs, we instead use variation over space. In particular, we are able to combine several data sets to match ZIP code level declines in housing prices (and foreclosures) with responses to questions that were added to the monthly Michigan Survey of Consumers. Our main outcome variable asks people whether and how strongly they believe that owning a home is better financially than renting a home. Other outcome variables include asking the maximum amount that should be paid toward a mortgage; the relative willingness to commute; and general risk aversion via a standard (hypothetical) investment decision.

Our main results are as follows. People who lived (in 2008) in ZIP codes that were hardest hit by the crash in housing prices, as compared to those in areas that were least severely affected, are significantly *more* likely to be confident about owning a home if they are older (above 58 in our sample) but are significantly *less* likely to be confident about owning a home if they are younger. These results control for demographics, current absolute house price levels, and other factors, but importantly they are concentrated in the approximately one-third of our sample who report that either they or someone close to them actually lost a large amount of money in real estate during the crisis. We argue that the latter result implies that mere information is not enough, and instead something like hands-on experience is required to change confidence in home ownership. This is because presumably almost everyone was exposed to multiple media headlines about what had happened in their neighborhood and around the country, and yet they do not show a similar divergence in confidence.

In terms of the striking age differential, one possibility is that relatively younger respondents were indeed more malleable, and hence they internalized the sharp drop as a regime change. In the new perceived regime, housing is an insecure investment and thus (relatively) to be eschewed. Available evidence from economics and psychology further suggests that such a change is likely to be persistent. On the other hand, older respondents – whose models of the world are harder to alter – see the drop in house prices as a temporary dip in a stable long-term upward trend, making it a particularly good time to purchase. Of course it is also possible that older consumers buy homes more for consumption and less for investment, although the wording of the question was explicitly designed to hone in on general beliefs and away from individual circumstances.

There is, clearly, a potential endogeneity issue here: we believe that the differences in attitudes are due to the declines in real estate prices and not to other characteristics of those particular ZIP codes (which could have led to both), but we do not have survey data from before the crisis to prove this connection. That being said, there are no significant correlations (across ZIP codes) between house price declines and various relevant observable individual characteristics. In particular, there is no link between the size of the fall and any of the following: average age, income, risk aversion, or home ownership rates. This initial identification, along with the bifurcating nature of the result across age groups (which would be difficult to explain with pre-existing differences), suggests that the reason for currently existing variation is indeed the crash itself. However, as in most of this literature, we cannot fully rule out the possibility of an alternate explanation.

For mortgage spending, an analogous regression shows that there is a positive link between aggregate house price decline and a willingness to commit a larger percentage of income to a mortgage. This relationship is economically and statistically significant overall and for younger respondents, but not for older individuals on their own. There is perhaps a greater danger of reverse causality here than for confidence in home ownership, since a natural story is that spending more on mortgages is more likely to lead to a bubble and resulting crash. We are therefore hesitant to push this result as far. Meanwhile, we find no main effect on either willingness to commute or general risk attitudes, where the latter result weakly suggests that there was no spillover from attitudes toward housing to attitudes in other specific domains.

We proceed by reviewing two strands of recent results: first what is known about the effects of financial crises and other stressors on individual beliefs, and second some specifics regarding housing attitudes and the overall environment of the great recession. After that we describe our data sources in more detail, including relevant summary statistics. The heart of the paper outlines our empirical approach and reports the key regression results. Finally, we conclude and discuss the results in more detail, including possible policy implications.

2. Literature Review

We are interested in examining whether the recent crisis had an effect on individuals' preferences and potentially on their future behavior. The approach we take involves analyzing survey data across geographic locations which differ in their crisis experience. Hence there are several distinct but equally relevant strands of the literature. First, going through a crisis (with potential concomitant loss of wealth, employment, etc.) may naturally lead to a negative affective state. Therefore we examine studies looking at the effect of emotional reactions, in particular due to a negative experience, on economic decision making. We then turn to field papers which study adverse personal experiences, and indeed disasters more generally, and their implications for response to e.g. uncertainty. Third, since we are interested in the relationship between financial crisis and individual beliefs, we report studies that examine, albeit using slightly different empirical strategies, the effect of previous financial crises on attitudes and economic decision making. Finally, we report three studies looking at the relationship between the recent real estate crisis and self-reported individual outcomes.

It has long been known to psychologists that affective states such as emotion and confidence can impact decision-making, including risk attitudes and other decisions that are quantitatively important to the economy. In our context a classic paper by Lerner and Keltner (2001) is relevant: they show that fear and anger, emotional states that are likely during a negative experience such as a recession, have an effect on risk taking in a heterogeneous manner. Fear, they find, is associated with a reduced sense of control and more risk aversion, whereas anger is associated with active agency, optimism, and relatively more risk seeking behavior.

However, not all experiences influence attitudes and beliefs equally. In an early comprehensive review of the psychological literature on exposure to traumatic situations, Weinstein (1989)

concludes that having firsthand experience of dangerous situations (such as crime and natural hazards) disproportionately leads to behavior change, although the effect does not appear in every situation (e.g. vehicular accidents don't seem to induce greater seatbelt utilization). In economics, Simonsohn *et al.* (2008) perform a laboratory experiment and find that people are influenced more by those they actually interact with rather than those they simply observe, contrary to standard theory. This work is what prompted us to include a measure of individual-level exposure to the housing crash. Although these studies are not concerned with financial crises, they suggest that different levels of experience with a crash may have different effects on beliefs and behavior.

Exogenous external stressors of many types have been found to be relevant for shaping preferences: for example Nunn and Wantchekon (2009) conclude, somewhat controversially, that modern Africans whose ancestors were more heavily raided in the slave trade are now less trusting toward both their neighbors and their governments and institutions. Similarly focusing on social preferences, Eckel *et al.* (2007) find a relationship between exposure to hurricane Katrina and later charitable giving, including a potentially unexpected reversal in which those closest to the effects of the hurricane actually give less when primed to recall the events of that period. This may be due to over-stimulation or reduced sensitivity to adverse outcomes.

Along similar lines, one recent paper stands out as relevant to the current study. Voors *et al.* (2011) look at the causal impact of violent conflict in Burundi on risk, time, and social preferences. Using geographic variation in exposure to violence, as we do, and fairly convincingly controlling for possible endogeneity issues using instrumental variables and other methods, they find that the stress of exposure to violence leads to substantially *less* risk-aversion, in addition to more impatience and more pro-sociality; the latter perhaps surprising result actually matches previous literature (e.g. Bellows and Miguel 2006), but the risk and time dimensions are novel here. Their conclusion is: "Adverse, but temporary, shocks can thus alter savings and investment decisions, and potentially have long-run consequences."

Turning to financial crises specifically, analogous mechanisms appear to be at work despite the milder immediate consequences. Nishiyama (2006) finds more risk aversion on the part of financial institutions in the US and (weakly) in Asia following the 1997 Asian crisis, although direct causality is difficult to tease out. Mudd *et al.* (2010) use survey data to study the effects of the 1996 Bulgarian banking crisis. They find that individuals who self-report having lost money in the crisis are more pessimistic about future crises, and indeed are more likely (during the global crisis in 2009) to withdraw their savings from financial institutions. Likewise, Osili and Paulson (2009) study immigrants to the US and find that those who came from countries with banking crises in the past have a higher probability of being currently unbanked in the US, an effect which is attenuated by time spent in the US (i.e. experience with relative stability). As in Mudd *et al.* and our results below (and thus confirming the psychological evidence above), they find that direct exposure to the pertinent crisis has a larger effect than second-hand knowledge.

Closely related are two recent papers, which look at the effects of macroeconomic cycles in the US on attitudes of investors and consumers. Giuliano and Spilimbergo (2009) create a dummy variable to capture whether regional GDP growth (in the region where individuals lived at age 16) was

worse than -3.8 percent for at least one year in various stages of life. They find the strongest effect for the formative stage, namely ages 18-25; this is especially interesting for us as it means that such impacts are long-lasting. Their outcome variables are psychosocial measures taken from the General Social Survey (GSS), and the results are that growing up during a recession (as defined above) leads to a higher belief in luck over skill as a contributor to success, with a corresponding greater desire for government intervention, but a simultaneous lower level of confidence in government as an institution. They control for demographic measures and use an identification strategy that exploits differences in experience across both time and geographic region. However, like us, they do not have panel data.

The other paper that most closely inspired the current study is Malmendier and Nagel (2011), which looks at interactions with the stock market; see also Malmendier and Nagel (2009) for a similar study re inflation. They ask whether people who have experienced lower returns over the course of their life behave differently when making financial choices. Using an empirical strategy that exploits variation over time in US stock returns (and therefore also across cohorts of individual investors), they indeed find an effect of economic hardship on economic behavior: those with worse experiences are less likely to participate in the stock market and hold fewer stocks within their portfolio, even conditional on participation. As in our results, they find a stronger negative effect for younger individuals, although they study the accumulated experience of a life-time rather than a single crisis event. Note that they do not actually observe individual-level experience with stock returns, only aggregate returns at the given point in time.

Turning to the real estate crisis in particular, Guiso *et al.* (2011) study strategic default, defined as default for reasons other than direct liquidity issues (most commonly relating to 'underwater' mortgages, although that is not a necessary condition in their formulation). Using survey data (not actual defaults), they find that the probability of strategic default is decreasing in the level of trust toward financial institutions but increasing in the level of anger (paralleling the original Lerner and Keltner results). Relevantly for the present study, they also find that default-prone individuals do not tend to cluster at the ZIP-code level (strengthening it as a unit of analysis) and that the absolute level of real estate prices is less predictive of default than is the relative decline in prices.

Finally, two papers examine the effects of foreclosures during and following the recent housing crash. Molloy and Shan (2011) look at individuals who have recently suffered foreclosure, finding lower credit, fewer mortgages, and lower rates of owner-occupied housing for that group (non-randomly selected, by construction). On the other hand, those individuals do not appear to have defrayed housing consumption by e.g. moving in with family or to lower quality neighborhoods. Collins and Choi (2010) study attitudes toward housing in August 2008, toward the end of the real estate crash. They find that higher foreclosure rates (at the ZIP level) correspond to more pessimistic beliefs regarding the risks of home ownership, which is not surprising and roughly matches our results for younger individuals (their sample was restricted to under 65 years). However, unlike us, they do not find a link between housing price declines in the previous year and beliefs re home ownership. This is possibly due to the restricted time period of their house price data (which is culled from zillow.com), or possibly to the non-representativeness of their internet survey sample: age under 65; income under $75,000 per year; and most importantly location in the

nine-county San Francisco Bay Area only. They control for basic demographics but not for first- vs. second-hand experience with the shock, which we found to be an important mediator, since they have only aggregate foreclosure rates.

3. Data

To investigate the effect of the great recession—in particular the crisis in the real estate market—on attitudes towards risk and investment in real estate, we surveyed 986 individuals age 18 to 95 using the Michigan Survey of Consumers. This is a telephone survey which is nationally representative of households with a landline. The University of Michigan added seven questions of our design to their standard consumer survey. In these questions we asked respondents about (1) their ZIP code in late 2008, (2) their current ZIP code, (3) their opinion on whether buying or renting is better financially, (4) whether they or someone close to them was foreclosed on or suffered a large loss in the real estate market, (5) whether they would be willing to increase their commute to reduce housing expenses, (6) how much they think is reasonable to pay on a mortgage given a certain income, and (7) a hypothetical investment decision to measure risk attitude. These questions were included in the July and August 2011 surveys, and all survey respondents at that time were asked our additional questions. We also use a subset of the standard Michigan consumer survey, including demographic information at the individual level on age, gender, race, education level, income category, and homeownership. A list of the variables we use is provided in the Appendix (see Table A1).

The novel contribution of our data is the use of current and 2008 ZIP codes to match each individual's survey responses with the real-estate market conditions in his or her residential location.[3] Collecting both current and 2008 ZIP codes enables us to differentiate the effect of recent real estate conditions from the effect of the conditions at the peak of the crisis. The real-estate data we use is CoreLogic Home Price Index (HPI) data and Lender Processing Services (LPS) data on loans processed and percentage of loans that are delinquent or foreclosed upon, all at ZIP code level. The HPI is a repeat-sales index which is normed to 100 for the month of January 2000. That is, the levels are comparable over time within a ZIP code, but are not comparable across ZIP codes. We will primarily be interested in *changes* in the HPI, which are all fully comparable since the scaling factor cancels out.

We compiled HPI data for each month between January 2001 to May 2011, and calculated for each month its 7-month moving average. That is, a simple average of the HPI over the 7-month period which includes the month of interest and the three months preceding and following months.[4] We

[3] Due to privacy restrictions, we were not able to get the ZIP code data along with the other survey responses. Hence, we constructed the data in two steps: first, the Michigan Survey of Consumers sent us a file with the ZIP code responses only; we sent them back the file of ZIP codes responses merged with the local economic data (described in full in this section). In the second step, Michigan Survey of Consumers sent us back a full data set of the survey responses which did not contain the ZIP codes but did have the economic data by ZIP code merged.

[4] The reason for the moving average is that the HPI data has only a few sales observations per ZIP code per month, so the raw data is quite noisy and potentially quite unrepresentative.

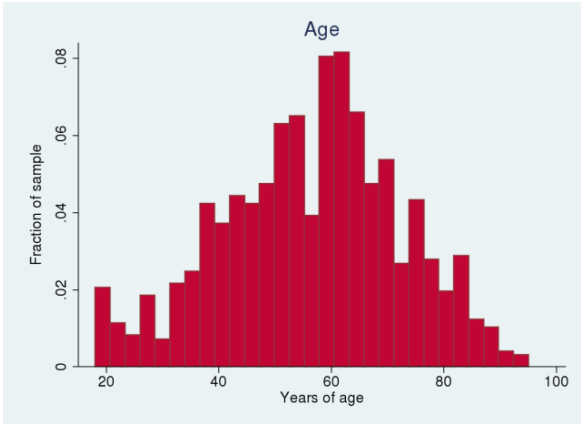
then found the month in which the HPI moving average was at its peak and the month where HPI was at its lowest level after the peak. In this way, we calculated the highest drop in HPI for a given location. Note that CoreLogic data is limited to 6521 ZIP codes. Hence, we imputed HPI data for the remaining ZIP codes by using city HPI averages. If using a city average was not possible, we used the county HPI average, and if using a county average was also not possible, we used the state average HPI. We did not have this problem with delinquency data, which is available for all ZIP codes. We collected delinquency data for two months per year—May and October—from 2006 to 2011 (excluding October 2011 as it was not yet available).

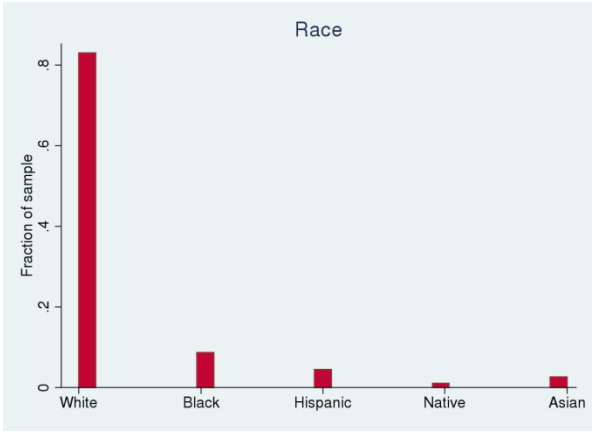
In addition to real estate market information, we use gas and food price information by location. Gas prices are taken from the US Energy Information Administration (EIA) and are at the state level. We use gas price on a monthly basis for 2001- 2011, and for each month we computed a 7-month moving average (i.e., average price over a 7-month period including three months preceding and three months following a given month). Food prices (whole and 2% milk; grain bread, rolls, rice, pasta and cereal; and fresh and frozen regular fat meat) are taken from the US Department of Agriculture (USDA) and are given quarterly at the "market group level" which we link to a Federal Information Processing Standards (FIPS) code using a conversion chart, and then use Geocode data to match with ZIP codes. With food prices, as with HPI and gas prices, we computed a 7-month moving average, and then found the months in which the moving average was at its peak and in which it reached a minimum after the peak. Lastly, we use data on neighborhood characteristics from the 2000 U.S. Census, including gender composition, racial composition, poverty percentages, and percentage of residents with a college degree in a given ZIP code.

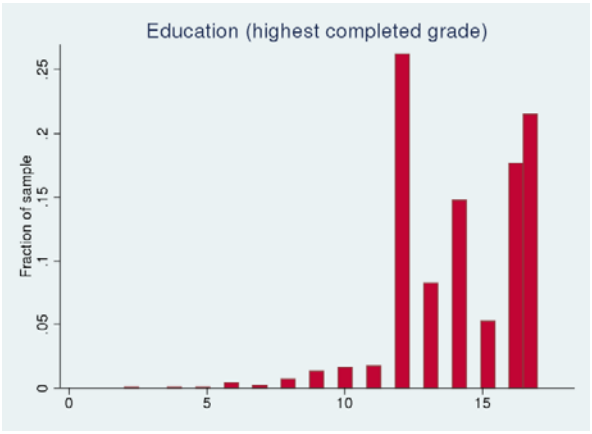
The vast majority of respondents gave their ZIP codes for both 2008 and 2011: only 18 people out of 986 did not supply this information in full. However, those respondents who could not provide ZIP codes were asked their city and state. We therefore matched the responses of these individuals to average HPI, delinquency, food and gas price data associated with their FIPS code (which is roughly county level data) if they reported their city. If they did not report their city, we supplemented their data with the average data for their state. After this process, we were left with 6 respondents to which we could not match any geographic real-estate and price data.

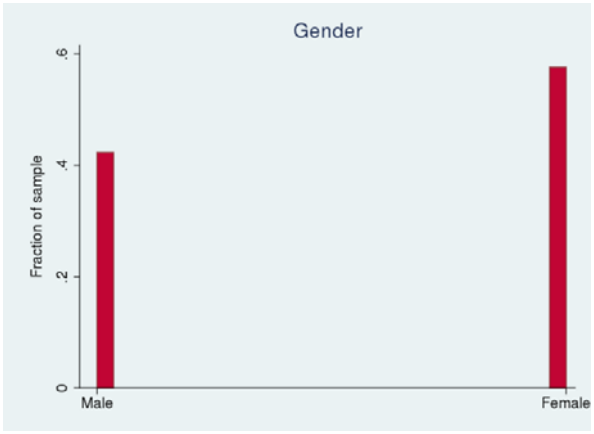
The median age in our sample is 57, with 82.9 percent white, 8.7 percent black, 4.5 percent Hispanic, 1.0 percent Native American, and 2.7 percent Asian. The median highest grade completed is 14, the median income category is 50,000- 59,999 dollars; 57.6 percent of the sample is female, and 83.4 percent of respondents are home owners. The exact distributions are provided in Figure 1 below.

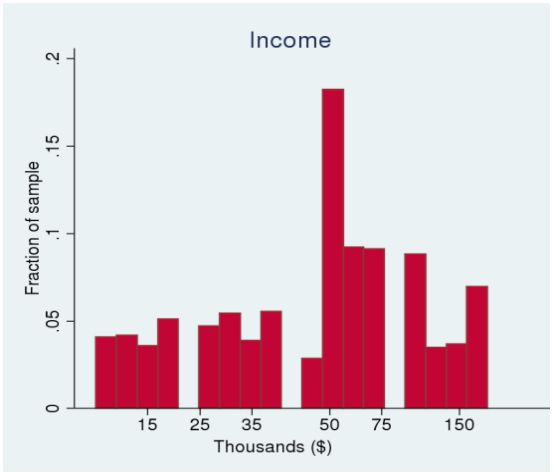
Figure 1. Summary Statistics

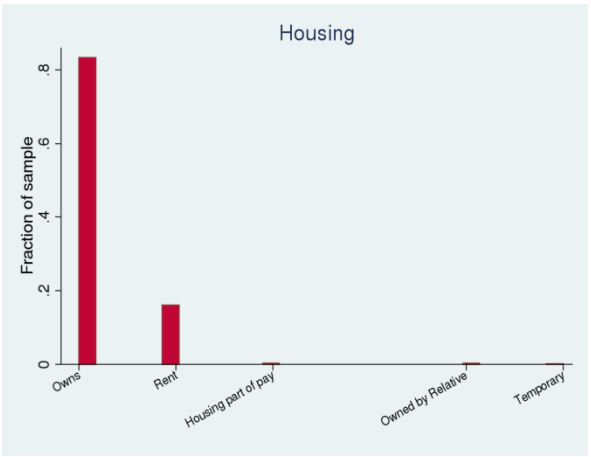












4. Results

4.1 Overall Outlook

The standard Michigan consumer survey includes questions on the general state of the economy and perception of key variables such as inflation and unemployment.

The exact wording of the question addressing overall state of the economy is: "A year from now, do you expect that in the country as a whole business conditions will be better, or worse than they are at present, or just about the same?" The five possible responses are (1) better a year from now, (2) about the same, (3) worse a year from now, (4) don't know, and (5) not available.

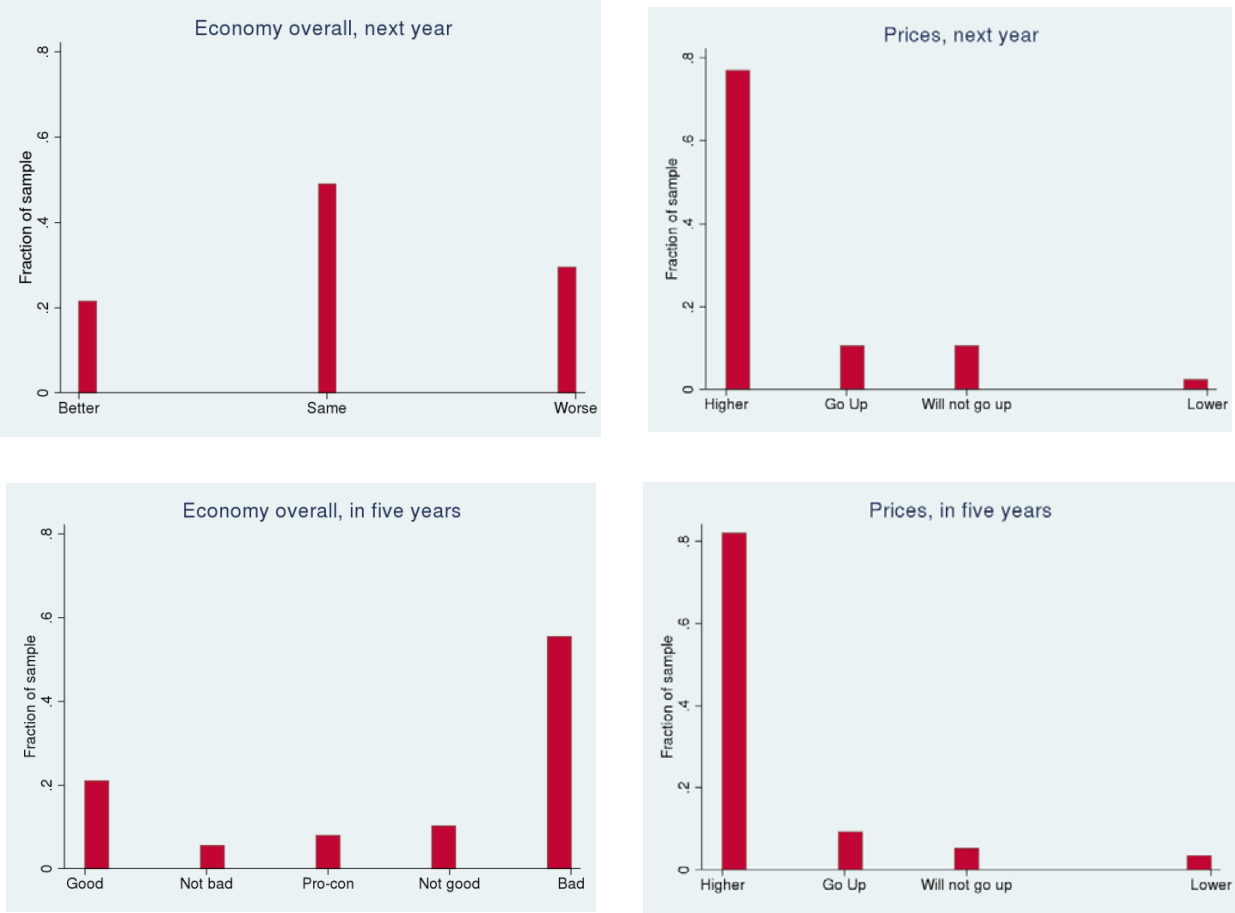
Regarding inflation, respondents are asked: "During the next 12 months, do you think that prices in general will go up, or go down, or stay where they are now? Do you mean that prices will go up at the same rate as now, or that prices in general will not go up during the next 12 months?" The possible answers here are (1) go up, (2) go up (at same rate), (3) will not go up, (4) go down, (5) don't know, and (6) not available. Both of these questions are also asked with respect to the expected state of the economy and inflation 5 years from now. This allows us to look at the prospects of the economy, as people perceive it, in the long and short run.

We find that 49 percent of our sample think the economic situation will remain unchanged in the short run (one year), but at the same time, 65 percent think that the economic situation will be worse five years from now. As for price change, the expectation is that prices will go up both in the short run (85.66 percent think prices will go up) and in the longer run (89.19 percent). The exact distributions of responses are presented in Figure 2 below.

The Michigan survey also provides us with respondents' expectations regarding the unemployment rate and interest rates. Unfortunately, these measures are available only for the short run. The question on unemployment asks, "How about people out of work during the coming 12 months—do you think that there will be more unemployment than now, about the same, or less?" the possible answers are (1) more unemployment, (2) about the same, and (3) less unemployment. We find that 49 percent think unemployment rate will remain high but will not increase, while 36 percent believe it will increase. Only 13 percent think unemployment will improve in the short run. As for interest rates, the question asks "what do you think will happen to interest rates for borrowing money during the next 12 months—will they go up, stay the same, or go down?" The possible answers are (1) go up, (2) stay the same, and (3) go down. We find that 52 percent of ours sample think rates will go up, and 92 percent think they will either go up or stay unchanged. Only 7 percent think rates will go down. This is not surprising as interest rates are at a record low, but it is a good indication that the survey respondents are answering non-randomly.

Figure 2. Macroeconomic Outlook

The Economy overall **Inflation**



Real Estate Market

To examine attitudes specific to the real-estate market, we added questions as described above. Our three main questions of interest address whether attitudes towards buying or renting have changed, how much individuals are willing to spend on mortgages, and how willing they are to increase their commute to reduce housing expenses. We cannot directly examine attitude change over time; rather, we examine the implied effect using geographical variation for identification, since different locations differed in the severity of the real-estate crash preceding and during the great recession. Our aim is to determine to the extent possible whether different experiences of the crash had different effects on any of these attitudes—toward owning a home, paying a mortgage, and commuting.

4.2 Rent vs. Own

The first question of interest is whether the different experiences individuals had during the real estate market crash led to corresponding differences in their attitude towards buying a home. As mentioned, home ownership rates, although declining, are still high and Americans still consider home ownership as an "important long term financial goal." Moreover, in the past 50 years, since 1960, American households' home ownership was stable at a rate of well over 60 percent. In 1960 the rate was 62.1 percent, increasing to almost 70 percent in the mid-2000s and dropping slightly in 2010 (Current Population Survey/Housing Vacancy Survey, Series H-111 Reports, Bureau of the Census, Washington, DC). Hence, a majority of Americans reveal that they think home ownership is better financially then renting. To investigate whether there has been a change in this sentiment, we asked the following question:

> We are interested in your opinion about whether, financially speaking, it is better to buy a home or to rent a home. Which of the following five options best describes your opinion: 1) owning a home is without a doubt better financially than renting a home; 2) owning a home is probably better financially; 3) owning and renting a home are equally good financially; 4) renting a home is probably better financially; or 5) renting a home is without a doubt better financially than owning a home?

The percentage of homeowners in the U.S. population differs by race, and is highest among whites, 74.5 percent of whom owned their home in 2010. Changes in answering this question may be especially interesting in our sample, as most of our respondents are white (82.9 percent) who are the most likely to own a home. Indeed, 83.4 percent of our sample own their home – see Figure 1 above.

Examining the responses to our rent vs. own question (see Figure 3) we find that the majority of respondents think either that (1) owning a home is without a doubt better financially than renting a home, or that (2) owning a home is probably better financially. Nevertheless, there is some variation: about 20 percent answered either that the two options (renting and owning a home) are about the same, or that renting is better financially. Moreover, even the two most common answers (1) and (2) are different on an important dimension—the *confidence* people express in the assertion that buying a home is better financially. Given the historic rates of home ownership it is not surprising that the majority of our sample expresses a preference for buying over renting. However, the choice of (2) rather than (1) reveals shaken confidence in buying a home. With shaken confidence, it is likely that these respondents would hold back or advise others to hold back on buying a home.

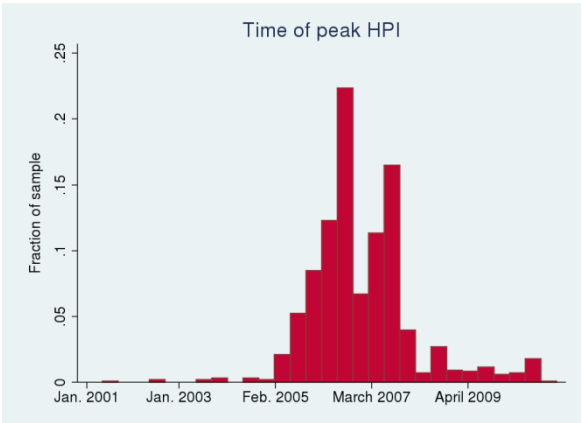
We therefore distinguish responses that express strong confidence that home ownership is the better financial choice from the other responses. We classified these strong responses as one, and all other responses as zero. We then examine, using a Probit regression, what affects the probability of strong confidence in homeownership.

Figure 3. Rent vs. Own

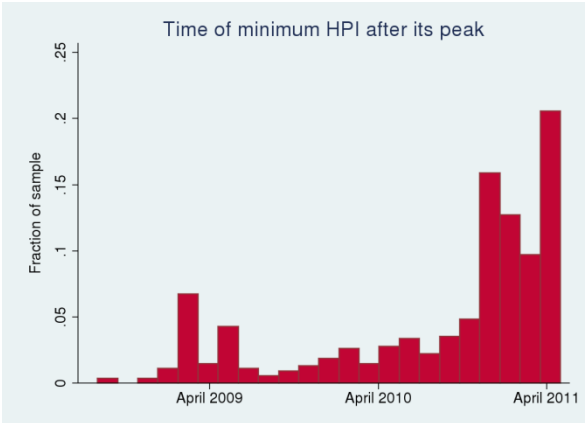
Our main focus is the relationship between the 2008 real estate crash and the confidence in home ownership. To examine this relationship we calculated the greatest percentage decline in the 7-month moving average home price index (CoreLogic HPI) for a given location. Specifically, we recorded the highest HPI in a given location and then searched for the lowest HPI point after the peak. We then calculated the percentage change of this decline from the peak price. As Figure 4A shows, most locations experienced a peak in home price index between February 2005 and May 2007. Across the different ZIP codes the times at which the lowest HPI occurred after its peak are concentrated at the end of the period in May 2011. Excluding this month, we reveal two secondary periods—mid 2009, and between October 210 to April 2011—with the bulk being again towards the end of the period. This is shown in Figure 4B.

Figure 4. Time of Highest and Lowest Home Price Index level

(A)



(B)



Our main variable of interest is the decline in HPI; however, there are other explanatory variables that can impact housing confidence: demographics and neighborhood characteristics, risk aversion, experience, and current market conditions. We control for these factors one at a time, explaining the rationale for each and then adding them to the previous specification so that the individual effects are clear. As the literature suggests, experience, both in term of age and personal exposure to the crisis, is likely to be important for understanding attitudes towards home ownership, and we control for these two types of experience separately. For age, in addition to a basic linear demographic variable, it is possible that different age groups have systematic (non-monotonic) differences in attitudes towards home ownership, and in particular that younger individuals are more influenced by economic conditions. We therefore search econometrically for a break point in the data by age, and indeed we find a difference in attitudes towards home ownership between younger and older age groups, leading to independent analyses of each subgroup. We conclude this subsection by presenting some robustness analysis of different response classifications.

We first regressed the rent vs. own responses (buying is undoubtedly better as "1" vs. other responses as "0") on individual demographics, including gender, marital status, age, number of kids below the age of 18, education, income bracket, race, language in which the survey was conducted (English/Spanish), and home ownership categories (rent, own, home owned by relative, etc.) We add to this the main variable of interest—percentage change in HPI—for the location of the respondent in early 2008 just after the height of the crisis.

We find that, relative to married individuals, those who are separated, divorced, widowed, or never married are less confident that owning a home is better financially than renting. This is even after controlling for the effect of actual home ownership. All else equal, women are less confident in the financial benefit of buying a home than men, which may reflect gender differences in risk aversion. Surprisingly, we find that some lower income groups are more confident in the financial benefits of owning a home. However, this is evident only for some of the low income groups. Furthermore, compared with white respondents, those who identify as Hispanic have stronger confidence in home ownership, controlling for all other effects. However, respondents whose interview was conducted in Spanish, which could be an indication of recent immigration or less assimilation, were less confident in the merit of buying a home. This is consistent with the results of Collins and Choi (2010) who find that in their sample of San Francisco Bay Area residents, having English as one's primary language has a significant positive effect on the likelihood of buying a home within one year. Lastly, and as expected, those who currently rent are less confident in the benefits of buying a home compared to those who currently own a home. The results of this regression are presented in Table 1, column (1). Interestingly, the percentage drop in the home price index does not seem to have a relationship with the confidence in the financial benefit of owning a home compared to renting.

Next, we control for the neighborhood characteristics of the respondent's current (2011) community, as these may affect their inclination to buy a home or not. We control for gender composition, racial composition, poverty percentages, and percentage of residents with a college degree. Unfortunately, the latest Census data for these measures is from 2000. Nevertheless, since

the demographic composition of a neighborhood usually changes slowly we believe that these are strong proxies for the residential characteristics of the respondents' current location.[5] Adding neighborhood controls does not change the results; in particular, the percentage drop in home price index remains insignificant. We do find that the more educated a neighborhood is, the more likely the respondents' are to have lower confidence in the benefit of buying a home compared with renting a home. It is possible that the more educated the neighborhood is, the more people are exposed to the news, and thus they may be better at revising their views. The full set of results for this specification is given in Table 1, column (2).

There is a growing literature investigating the factors affecting well-being, including retrospective evaluation of past experiences, which may be relevant for a study such as ours that addresses the effect of severe crisis. Interestingly, the literature finds that decision utility is best described by the peak and end of the experienced utility. The motivating example for this theory was in the domain of medical procedures and pain evaluation. It was argued and demonstrated that the individual's retrospective evaluation of a painful experience was best described by the peak sense of pain and the pain at the end of the procedure (Kahneman 1999). This is known as the "peak-end" rule, and although it was originally exhibited in the medical domain, it is thought to be a general rule that applies to various areas; indeed, it was recently argued to be important in explaining the probability that a worker will quit his or her job (Clark and Georgellis 2007). Applying this rule to the real estate market in the economic recession, the "peak" would be the greatest percentage decline in home prices and the "end" would be current prices, also measured as a change relative to some baseline. The HPI value is exactly such a measure (since it is the ratio of current prices to those of Jan 2000), although admittedly the baseline here is somewhat arbitrary. To capture this as well as possible, we add the mean and standard deviation of the HPI in 2011 in the respondent's most recent (2011) location. As Table 1 column (3) reveals, adding the end effect does not change the results.

Although we find no relationship between the real-estate crisis and confidence in buying a home, this may be different for individuals who had personal experience with the crisis, namely those individuals who suffered from the crisis or are close to someone who did, and for individuals who had only impersonal experience with it. The idea here is that knowing someone close to you who suffered from the downturn in the real estate market may make the crisis more salient and thus more likely to change one's attitudes, while a person who does not know anyone who suffered from the crisis will pay less attention and her attitudes will not change as a result.

To capture this, we asked the following question:

> Have you or has anyone close to you experienced foreclosure or lost a lot of money in the real estate market in the last five years?

We then add a dummy variable to capture the response to this question. The baseline is a "Yes" response, i.e., people who either experienced foreclosure or lost a lot of money in the real-estate

[5] In our sample, only 108 of 980 respondents moved. Using the census data of the respondents' 2008 location does not affect results.

market or know someone close to them who did. Hence, the main effect is for those who do know someone, and the dummy variable captures the effect on those who do not know anyone close who suffered from the crisis in that way. We also add an interaction of this dummy variable and the percentage change in HPI in the respondent's 2008 location. This is to capture the potentially different effect of the local real-estate market on those who do not know someone close who suffered from the crisis compared to those who do. The results of this specification are given in Table 1, column (4). As before, whether one knows someone close who suffered from the real estate crisis (or experienced this themselves) or not, real estate conditions do not seem to influence the confidence in buying a home.

Lastly, it is possible that people of different risk attitudes respond differently to the rent vs. own question due to risk aversion. To control for that, we add the response to our risk-attitude question:

> Suppose you have ten thousand dollars and you have the opportunity to invest in a project. Each dollar you invest in this project has a fifty percent chance to double and a fifty percent chance that it will lose half of its value. How much of the ten thousand dollars would you invest in the project?

The lower the amount one is willing to invest, the more risk averse she is. Indeed, consistent with past evidence (e.g., Morin and Suarez 1983), we find that older people (above the median age in the sample) are more risk averse relative to the young (median age and below in the sample). This can be seen by comparing Figure 5(A) to Figure 5(B)—about a third of the older people in the sample decide not to invest at all in the project, while less than 20 percent of the young individuals choose not to invest. In addition, over a third of the younger individuals would invest half their money in the project, while the older individuals are less likely to do so.

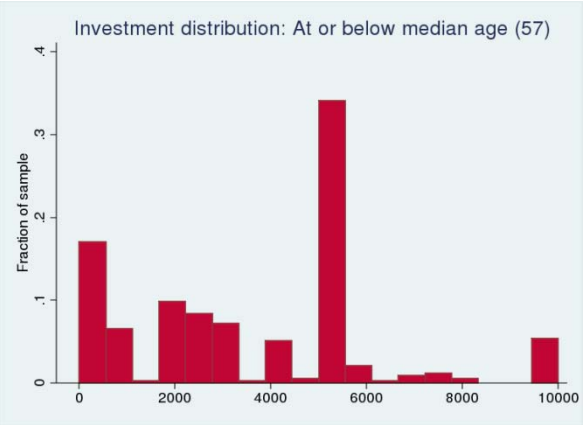
Hence, we add to the regression the investment amount an individual chose, and its interaction with age. Based on this proxy for risk aversion we do not find a significant effect of risk aversion on the confidence in buying a home and inclusion of the proxy also does not change the basic results: the percentage drop in the real-estate prices does not seem to be related to the confidence regarding the financial benefit of owning a home vs. renting one.[6]

[Table 1 about here]

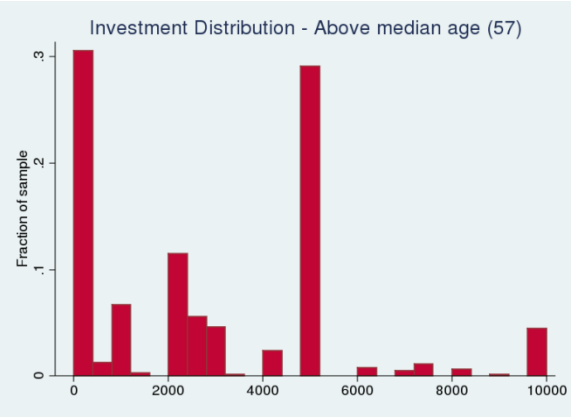
[6] Note that in all specifications, adding age squared to capture a nonlinear relationship between age and attitudes towards buying a home does not change any of the results.

Figure 5. Investment Distribution by Age

(A)



(B)



Interestingly, looking at the San Francisco market, Collins and Choi (2010) find that ZIP code level change in home prices during the great recession did not influence home buying attitudes. They measured home buying attitudes by querying individuals on how likely they were to buy a home in the next six, twelve, and thirty-six months; whether the benefit of owning exceeded the risks, how likely they were to recommend buying a home in their neighborhood to a friend; and their beliefs regarding the potential for profit from selling a home in the future. While these questions clearly differ from our rent vs. own question; they are very close in spirit. Although Collins and Choi did not find an effect of the change in home prices, they did find that foreclosure rates influence some aspects of home buying attitudes. Namely, the probability that an individual will recommend buying a home in the neighborhood to a friend, and whether they think a person who buys a house now will be able to sell it with profit in the future. For this reason, we ran the same specification as in Table 1, column (5) with the mean annual foreclosure rates at the respondents' current location. However, we find no effect of foreclosure rates on home buying attitudes or an effect of the relationship between the other variables and home buying attitudes.[7]

Different Age Groups

The literature, as mentioned earlier, indicates that economic experiences may affect the attitudes of different age groups differently. That is, individuals form their beliefs early in life, and hence their experiences at that time are potentially more influential. Applying this logic to the context of our

[7] We also tried for the 2008 location, and annual rates in 2008, 2009, 2010, or 2011. None of these different specifications change the results.

study, it is possible that the real-estate market crash affected attitudes of the young but not of the older. We therefore check for a break in the data by age. That is, we want to see whether holding all else equal, different age groups have systematic difference in attitudes towards buying or renting a home. To check this, we ran the following regression:

$$Rent\ vs. Own = \beta_1 X + \beta_2 X \times \delta(I > AGE)$$

$$where\ X = (const, demogr., neighb. charact., \%\ change\ in\ HPI, HPI\ mean\ and\ sd\ in\ 2011)$$

This is the same specification as Table 1, column (5), with the addition of interactions of each of the explanatory variables with a dummy variable taking a value of 1 if an individual's age is above a certain threshold. We run this regression for every age in our sample—18 to 95[8]—and look for the age break that yields the regression with the highest explanatory power (reflected by the highest pseudo R^2).[9] We also examine whether in that "best" regression the coefficient on the dummy variable for age group interacted with the drop in HPI, as well as the triple interaction of the age dummy variable, drop in HPI, and personal experience with the crisis are significant. We find the highest pseudo R^2 at an age of 58 (just above our median), and examining this regression we find that the main variables of interest are significant (pseudo R^2= 0.1365, higher than previous highest R^2 of 0.085; see Table 1).

Given this break point in the data, we ran an additional regression for each sub-group, that is, the sample of those age 58 or below and the sample of those over the age of 58. The results are given in Table 2. We find that the gender and marital status effects found in the regression with the overall sample are mainly driven by the older respondents, while the language effect is driven solely by the younger respondents (in fact, none of the older respondents had the survey conducted in Spanish). More importantly, splitting the sample we do find a significant relationship between the percentage drop in HPI and confidence in home ownership. Interestingly, this relationship runs in opposite directions for the younger and older groups. This difference in the direction of the relationship across age groups explains the null result evident in the regressions for the entire sample.

For the individuals, age 58 or younger, we find different relationships between the 2008 decline in HPI and confidence in home ownership for those who suffered from the real-estate market themselves or know someone close who did, and those who did not. Adults age 58 or less who experienced first or second hand the real-estate crash are marginally less confident in the benefits of owning vs. renting a home (recall that "1" is "owning is without a doubt better financially"). However, those who had no personal experience with the crash were not affected by it. That is, their confidence in buying a home is unaffected by their geographical location, and thus the magnitude of the crash that they were exposed to (interaction of those who did not have personal experience with percentage change in HPI is in the opposite sign and same magnitude of the main effect of the percentage change in HPI; Chi-square test, p= 0.4018).

[8] For a subset of the age levels the regression failed to converge, namely ages 21 to 37 and 80 to 82.
[9] This method follows the idea of Ferreira and Gyourko (2011), based on Hansen (2000).

For individuals older than 58 years of age, the effect is the opposite: those who had personal experience with the crash are more likely to express higher confidence in buying a home. This effect is marginally significant at the 10 percent level. For those who did not personally experience the housing crash, there is again no effect. A Chi-square test confirms that the sum of the coefficients—main effect of percent drop in HPI, and the interaction of the two—is not different from zero (p= 0.91).[10]

Hence, the results of these regressions reveal a relationship between the drop in the HPI and confidence in the financial desirability of owning a home. It also reveals that personal experience—knowing someone close to you who suffered from the real-estate crash or suffering from it first hand—plays an important role in this relationship. Impersonal experience, in the form of hearing about the crisis in the news, does not seem to be enough to change attitudes. It is possible that personal experience increases the salience of the crisis or the permanence of any subsequent learning, and this is the reason that people with such experience were affected by the crisis while those with impersonal experience were not.

The results indicate that younger [older] individuals in areas that experienced a large drop in HPI, and who had a personal experience with the real estate crisis, are less [more] confident in the financial desirability of buying a home. One question is whether this relationship indicates a real change: is it that the large drop and personal experience drive a lower confidence in buying a home, or is it the case that people in locations experiencing different drops in HPI are different to begin with? Likewise, the null effect we find on individuals without personal experience could be because different populations had different starting points and the HPI drop actually did have an effect.

To argue that the coefficient on HPI drop in our regression captures a change in confidence, we must be able to say that people in different locations, differing in HPI drop, are not different in other relevant dimensions. We cannot argue this with certainty; however, by examining data on observable and relatively fixed variables such as income, age, education, marital status, number of children below the age of 18, actual home ownership, and risk aversion (as captured by the amount they would invest in a hypothetical project), we can begin to answer this question. We find no significant correlations (p>0.3 in all cases) between these observables and the drop in HPI.[11] Moreover, any such population differences would have to explain the opposite signs on younger and older individuals, whereas it is not clear how *a priori* selection could have led to that particular dichotomy in confidence.

There is another similar reason to believe that people in different geographical locations did not have different initial attitudes towards home buying: in all our regressions, the main effect of no personal experience with the crisis is insignificant. That is, the two communities—those who had personal experience and those who had not—do not appear to differ except in the different relationships between HPI drop and confidence in home-buying. Since two-thirds of our sample did not have personal experience with the crisis and the range of different drops in HPI did not differ

[10] Note that adding average annual foreclosure rates in 2011 does not change the results for either one of the age groups.
[11] The only demographic variable for which we do find any correlation is race.

across those with and without personal experience(see Figure 7 below), the possibility that drop in HPI is correlated with different initial attitudes towards buying a home appears less likely.

Of course, even accepting that geographical variation based on HPI drop is not correlated with different initial attitudes towards home ownership, it is possible that the crisis in the real-estate market did not affect attitudes towards owning a home *per se*, but rather it affected risk attitudes. However, we find the effect of change in home price index in a regression that controls for risk attitudes by including the amount one would like to invest in a risk project as an explanatory variable. To investigate this concern further, we regressed the response to the investment decision on the same specification as the rent vs. own question. Here we were looking to see whether the percentage change in HPI has any effect on risk aversion, as captured by the response to the investment question. The results are presented in Table A4 in the Appendix. We find that whether examining the entire sample or each of the two age groups separately, the percentage change in HPI does not affect the hypothetical investment decision. Furthermore, we find that the null effect of change in HPI on investment is similar whether or not the individual has had personal experience with the housing crisis. The lack of effect of home prices on investment, our proxy for risk aversion, is inconsistent with the idea that the effect of HPI on confidence in buying a home is due to an effect of HPI on risk aversion.

Going back to the results in Table 2, we can summarize the results by saying that impersonal experience does not have an effect on attitudes, while personal experience does. Yet, the immediate question is why personal experience with the crash increased the likelihood of confidence in the financial advantage of buying a home for the older age group.

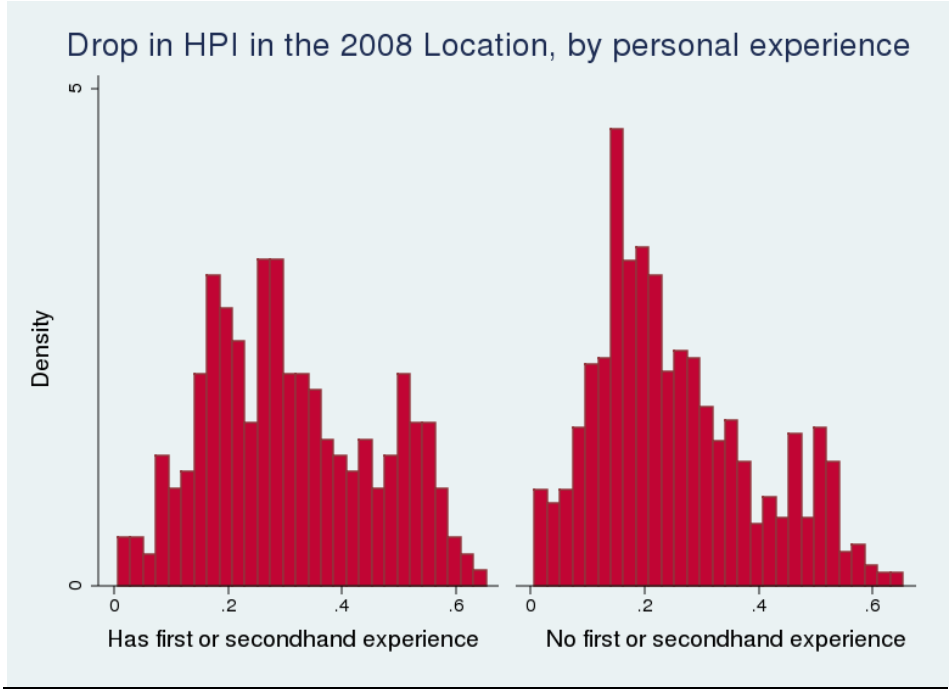
Higher home ownership rates among the older individuals cannot be the explanation per se, since the difference in confidence is based on personal experience (first or second hand) with the crisis rather than home ownership. It is possible, however, that those who have had personal experience (first or second hand) with the real-estate market crash have different home ownership composition across the different age groups. If, for instance, those who have had personal experience among the older group are the ones who own a home rather than rent a home, while the opposite holds in the younger group, this might explain the different results across age groups. Examining the correlation of personal experience and home ownership, we find small and insignificant negative correlations for both age groups: -0.0709 for the younger group (p= 0.1138), and -0.0397 for the older group (p= 0.3909). Negative correlation implies that home ownership (1=owning, 2=renting) and personal experience (1=have/knowing, 5 =do not have/not knowing) go in opposite directions. That is, those who have personal experience with the real-estate market crash are more likely to be renters. Yet, we find no significant correlation and we find that among the older age group, having personal experience with the crisis, which is correlated with being a renter, is related to *more* confidence in the financial benefits of owning a home.

Examining the older group, we find that the median respondent's age in this subgroup is 68 years. This fact, along with the broadness of the question's phrasing (in particular, the lack of differentiation between whether their experience of the crash was first or second hand), may be the

reason for this result. More specifically, a 68 year old who owns a home is more likely than a younger individual to have bought his or her house a few decades ago and to have made a net profit from this investment *in spite of* the recent crisis. If this is the case for many of the older subjects, then the greater the actual drop in the housing market that their investment has withstood, the more confident the individual may become in the desirability of buying rather than renting a home. Furthermore, since the older group has many people over 68, it is less likely that renters in this group were foreclosed upon than renters among the younger group, even if they lost a substantial amount of money in the housing crash. This is by the mere fact that many renters who are over 68 years move to retirement communities and are often done paying their mortgage.

We argued that personal experience may be instrumental in causing the housing crash to impact one's confidence in buying a home. However, it is possible that personal experience is a result of a large drop in the home price index, and in effect we have a threshold-type of model: below a certain threshold individuals do not pay attention to the crisis and hence their confidence in buying a home is intact, while above the threshold people do pay attention and as a result their confidence is affected. To examine this argument, we plot the histogram of the percentage change in home price index at the 2008 location by whether individuals had personal experience ("Know Someone") or had not ("Do Not Know Someone") with the real estate crisis of 2008 (see Figure 7). Eyeballing the graphs, we do find that among individuals who have personal experience, a large drop in HPI is more prevalent. A Mann-Whitney test confirms the difference in distributions ($p=0.00$), and a Probit regression explaining the probability of having personal experience with the crisis controlling for homeownership and age, shows that there is a significant positive effect of the drop in HPI in 2008 on the probability of having personal experience with the crisis. Nevertheless, we can also see from Figure 7 that there is a considerable fraction of individuals who have personal experience and yet experienced a relatively low drop in HPI in their residential location of 2008; likewise, there is a significant fraction of individuals who did not have personal experience with the crisis while the HPI dropped considerably in their residential location in 2008. This is reflected in the average drop in HPI in the 2008 location: a 31.1 percent drop among those who had personal experience, and a 25.5 percent drop among those who did not have personal experience. Hence, although those who lived in an area that had large drop in HPI are more likely to have personal experience with the crisis, the results do not appear to reflect a threshold-type of model where one pays attention to the crisis only if the drop in HPI is above a certain level.

Figure 7.



Lastly, we examined the relationship between HPI drop and confidence in the desirability of home buying compared with renting. We did this by differentiating strong confidence in buying from all other possible responses to our "rent vs. own" question. One may wonder whether our results are driven by changing attitudes from buying to renting, or is it indeed a difference in confidence in buying a home. To examine this, we opted for two additional classifications: the first is classifying both confidence level of buying together as "1", while the two confidence level in renting as "0". We excluded those who expressed indifference between buying and renting a home. We then ran the same specification as in Table 2, column (5), and find no effect of drop in HPI on attitudes among the young or the old.

Next we examine confidence in home buying, restricting our attention to only those who expressed a favorable view of home ownership. We then classified strong confidence in home ownership as "1" and the lower confidence as "0". We again ran the same specification as in table 2, column (5) and by age group. In this case, we find no effect of HPI drop on confidence among the older age group, but we do find an effect on the younger group. Specifically, we find that individuals age 58 or younger, who had personal experience with the real-estate crisis, express marginally lower confidence that buying a home is better than renting. The higher the drop in HPI they experienced, the more likely they are to have lower confidence in home ownership. As before, we find no similar effect on those individuals who had impersonal experience with the crisis (p= 0.2546). These additional regressions are presented in Tables A2-3 in the Appendix.

To summarize, personal experience emerges as an important factor in affecting individuals' confidence towards buying a home. For the older age group, personal experience with the crisis is associated with stronger home buying confidence, while for the younger age group, personal experience with the crisis is instead associated with shaken confidence in the desirability of buying a home.

[Table 2 about here]

4.3 Mortgage Spending

The second question of interest is whether the different experiences individuals had with the real estate market crash changed what they consider to be a reasonable monthly expense on mortgage. That is, whether people are more conservative in their real-estate spending, a response which could shed light on future demand for housing. To investigate whether individuals became more conservative about real-estate spending as a result of their crisis experience, we asked the following question:

> Suppose that a family of an average size has an income of four thousand dollars a month after taxes and that the family would like to buy a house. In your opinion, what is the maximum monthly payment that this family should make on its mortgage?

We then used an OLS regression to explain the amount individuals indicated is reasonable to spend on mortgage a month for this hypothetical family. We used a similar specification to the one used to explain changes in buying confidence. That is, we examined the effect of demographics such as age, gender, marital status, education, income, number of kids younger than 18, race, home ownership, and language, as well as the effect of neighborhood characteristics such as racial composition, gender composition, poverty level, and percent of college graduates in the area. We then add percent change in HPI, our main variable of interest, a dummy variable to capture whether the respondent did not have personal experience with the crisis, the interaction of this dummy variable with the change in HPI, and the HPI level and standard deviation in 2011 for the so-called "peak-end" rule. We further add the percentage change in gas prices, since the price of gas influences the household budget and should therefore affect the choice of how much to spend on mortgage. We also add the response for investment to control for risk aversion, with the idea that the more risk-averse a person is, the less she will be willing to spend. We then added an interaction of the investment decision with age, as risk aversion is thought to increase with age.

The results are in Table 3 below. Although we cannot compare recent responses to the responses that individuals would have given before the crisis, we can explore the relationship between the crisis and mortgage spending by comparing people at different locations with different experiences. We find a positive and significant coefficient for the drop in HPI on mortgage spending. This is true for the sample overall and for those age 58 or younger. For respondents over age 58 the HPI main

effect is negative and insignificant. A positive number implies that the greater the drop in HPI, the more one thinks a family should spend on mortgage. This main effect of the drop in HPI on mortgage spending is for those individuals who had personal experience with the real-estate crisis (either first or second hand). The effect on those without personal experience is lower but still positive overall.

The *prima facie* implication of this result is that the greater the drop in HPI, the more that individuals think the hypothetical family should spend on a mortgage. This seems counterintuitive, but it could be due to strategic thinking: if one thinks that it is a good time to buy real estate, it may be worth investing more in real estate (and hence paying more as a percentage). Alternatively, these responses may reflect the tighter lending practices, where people realize that as a result of the crash banks will be stricter and, for example, won't give variable-rate mortgages or nice low rates, etc. Hence, even for the same or lower house price the monthly mortgage payment will need to be higher.

However, it is also possible that in this case the link is at least partially going in the other direction. If for some reason individuals who believe in spending more on housing aggregate together, or if certain areas gravitate toward such beliefs together, those communities might end up facing more extreme housing bubbles and crashes – leading to the observed results in the data. Either way, and interestingly, for mortgage spending the end effect is driven by the HPI level at the end of the period, i.e. the higher the HPI level in the respondent's 2011 location, the more he or she thinks a family should spend on mortgage. This makes sense: in areas where the average prices are higher, people need to spend more on mortgages.

[Table 3 about here]

4.4 Commuting vs. Housing Prices

A third question of interest is whether the different experiences individuals had with the real estate market crash changed their willingness to commute as a substitute for lower housing expenses. The effect of the housing crisis on willingness to commute in order to reduce housing expenses, if it exists, may shed light on future attitudes towards the housing market. Specifically, if markets that experienced a large drop in HPI have a substantial share of residents who are willing to relocate in order to reduce housing expenses, then these markets may have trouble recovering from the drop in prices. Finding such a pattern may also indicate whether we should expect housing prices to increase more in the distant suburbs rather than in areas closer to city centers.

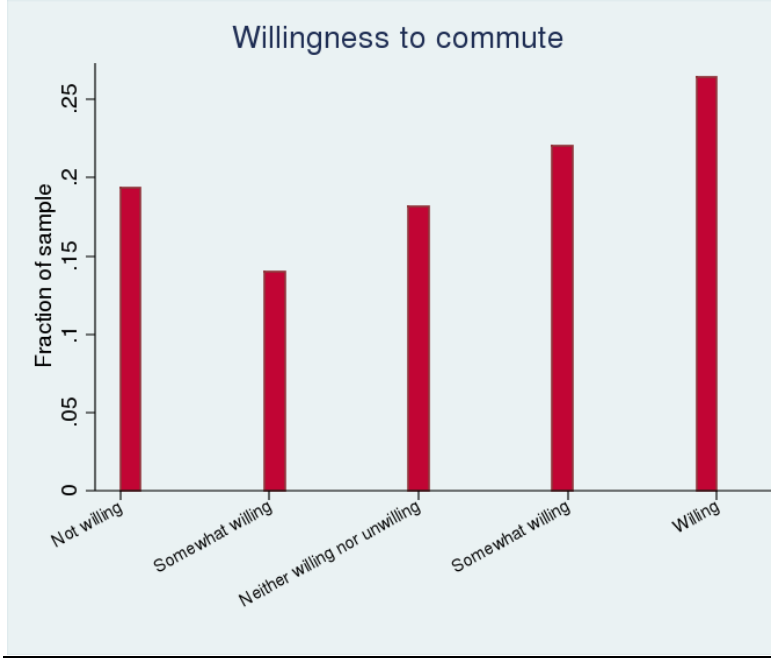
To investigate how an individual's experience of the housing market downturn affected their willingness to commute, we asked the following question:

> We are interested in your attitude towards commuting to work -- specifically, how willing you are to increase your commute to work if that would reduce your housing expenses. Which of the following five options best describes your opinion: 1) you

are not at all willing to increase your commute if it would reduce your housing expenses; 2) you are somewhat unwilling; 3) you are neither willing nor unwilling; 4) you are somewhat willing; or 5) you are definitely willing to increase your commute if it would reduce your housing expenses?

The average response in the sample to the "commute" question was 3.22, indicating that, on average, respondents were neither willing nor unwilling to substitute commuting for housing expenses. A histogram of the distribution of the responses is presented below:

Figure 8.



As Figure 8 reveals, responses to the commute question are quite evenly distributed, with some skewness towards "willingness" to commute in order to defray housing expenses.

In the sample, willingness to commute is coded as an ordinal variable, with values of 1-5, where 1 is not at all willing to commute and 5 is definitely willing to commute. Since about half the sample (51.68 percent) answered 1-3, capturing different degrees of unwillingness to commute, and the other half answered 4-5 capturing different degrees of willingness to increase commute, we chose to recode the commute variable as a binary variable in order to capture the crude difference between positive or negative attitudes towards commuting. We therefore coded the values 1, 2 and 3 as "0" and the values 4 and 5 as "1", i.e. "1" captures willingness to commute.

We then ran a probit regression to explain the willingness to commute of a given respondent. We used a similar specification to the one for the renting vs. owning question. That is, we examined the effect of demographics such as age, gender, marital status, education, income, number of children

younger than 18, race, home ownership, and language, as well as the effect of neighborhood characteristics such as race composition, gender composition, poverty level, and percent of college graduates in the area. We also included a dummy variable capturing lack of personal experience with the crisis. We further included percent change in HPI in the 2008 location, the interaction of the HPI drop with the non personal experience dummy variable, as well as the HPI level and standard variation in 2011 to capture the "peak-end" effect. We also include the current level and standard deviation of gas prices in the 2011 location, since gas prices are likely to affect commuting decisions. We first ran regressions using both housing and gas price variables, and then only with gas price variables.

We also add the response to the hypothetical investment decision to control for risk aversion, with the idea that the more risk averse a person is, the less willing she will be to commute. We then added an interaction of the investment decision with age, as before. We ran the same specification for the overall sample and then for the sample by age. The results are presented in Table 4 below.

[Table 4 about here]

As can be seen from Table 4, we do not find any significant effect of the housing market decline on the willingness to commute. The direction of the coefficients is negative, signifying that for a larger drop in the housing market, individuals would be less likely to be willing to commute. This result is justifiable by the fact that individuals are asked whether they would be willing to commute in order to offset housing expenses, which presumably would not be as severe given a larger decline of the market in their area. However, the effect is statistically insignificant. In addition, there does not seem to be any effect of having known someone who was foreclosed on or lost money, nor of the interaction term of this variable with the decline in housing prices. Overall, there appears to be little evidence to suggest that experience of the housing downturn had any effect on the willingness to commute. This insignificance result also persists when we split the sample into our two age groups, indicating that there is no difference by age in the effect of experience of the housing downturn on attitudes towards commuting.

Interestingly, in no specification do we find evidence that gas prices have a significant effect on commuting attitudes. Though the sign of the coefficient is always positive (indicating that a higher price goes with more willingness to commute) the effect is always insignificant. Although insignificant in most specifications, we find that the volatility coefficient is negative, indicating that more uncertainty in gas prices implies less willingness to commute. The latter is fairly intuitive, while the former is not. One possible explanation (other than insignificance) is that in areas with higher gas prices, the cost of commuting is already more salient and hence respondents are generally more sensitive to options for saving along that dimension.

It is also possible that we do not find an effect of gas prices because, given the height and volatility of gas prices in recent years, past experience is not highly predictive of future expectations. Thus it would be interesting to see whether expectations regarding gas prices have an effect on commuting attitudes. In fact, such a question does exist in the Michigan survey questions which we had access

to; however due to the infrequency of response, including it in our regressions would cut our sample in half (resulting in an overall sample of 404 individuals across ages). Nevertheless, when we include expectations about gas prices as an explanatory variable, we do find that gas price expectations matter for the willingness to commute. That is, we find that if one expects gas prices to decrease, he or she is more likely to be willing to commute relative to an individual who expects gas prices to increase. This result is robust to splitting the sample by age.

Overall, it seems that experience of the housing market decline in 2008 and experience of changes in gas prices have had no effect on attitudes towards commuting. Although there may have been an effect through gas price expectations, we do not find evidence for it.[12]

5. Conclusions

This paper addresses the question whether the recent housing crash affected individuals' confidence in home ownership, which is historically a central life goal for many people. In order to do this, we surveyed 986 individuals during July and August 2011, asking them about their attitudes toward buying vs. renting a home; paying a mortgage; and commuting. We matched their responses to the specific fall in house prices in their ZIP code, and examined whether the actual HPI decline in their locality affected their confidence in home ownership. Our identification strategy rests on the fact that we find no differences on observable individual characteristics (such as home ownership, income, or even risk aversion) across ZIP codes that experienced various levels of decline in real estate prices, and it is supported by finding different effects for different age groups, which is more difficult to explain via pre-existing variation.

We find that recent housing market conditions had little effect on individuals without personal experience of the crisis. That is, for individuals who were not foreclosed on, did not lose a substantial amount of money in real-estate, and do not know anyone close to them who did, attitudes towards the financial soundness of buying as opposed to renting were unchanged by the magnitude of the decline in home prices in their area. This result is also evident in the lack of effect of the decline in home prices on the willingness to increase commute in order to reduce housing expenses. However, we do find a positive link between the drop in housing prices and the maximum amount individuals think a family ought to spend on a mortgage. In contrast, those who did have personal experience with the crisis appear to have been influenced by the housing price decline. Those individuals who are relatively young (under 58) are less confident in the soundness of buying a home, the greater the drop in home prices in their location. At the same time, individuals over 58 who had personal experience with the crisis have more confidence in the soundness of buying a home the greater the drop in home prices in their location.

[12] We ran a regression of gas price expectations on percent change in gas prices and housing prices, as well as 2011 averages and standard deviations of house and gas prices, we did not find any significant effect of any of these variables on expectations. This lack of significance was true both for all ages and for when we split the specification by age.

This study provides two main insights: First, personal experience with a shock plays a central role in determining whether attitudes change. Even an extreme negative experience such as the great recession was not enough to shift attitudes of those who heard about the crisis, but did not have strong first or second-hand experience with it. As the great recession has been a severe and extreme situation, this analysis may point to a more general rule: information alone may not be sufficient to change attitudes, and rather actual experience is necessary. Furthermore, any effects of the crisis seem to be confined to attitudes toward buying a home, and not attitudes toward other dimensions such as commuting or general risk aversion.

The second insight, consistent with some past papers (e.g. Giuliano and Spilimbergo 2009), is our finding that real-estate prices negatively affected confidence in buying a home mainly for younger individuals, whereas, interestingly, the drop in house prices is associated with older individuals gaining more confidence in the financial soundness of buying rather than renting a home. This observation is consistent with the idea that older individuals have a fixed set of beliefs and interpret the crisis as a temporary decline from a known trend. In contrast, the younger individuals who personally experienced a drop in house prices tend to have lower confidence in buying a home, which is consistent with the idea that their beliefs are still flexible and can be changed by experience.

Tables

Table 1. Rent vs. Own Probit Regression

Dependent Variable: Own or rent better financially	(1)	(2)	(3)	(4)	(5)
% drop in 2008 ZIP code HPI	0.040	0.049	0.033	-0.082	-0.055
	(0.13)	(0.16)	(0.10)	(-0.14)	(-0.09)
Female	-0.201*	-0.208*	-0.208*	-0.199*	-0.206*
	(-2.22)	(-2.29)	(-2.28)	(-2.19)	(-2.24)
Separated	-0.622*	-0.655*	-0.648*	-0.641*	-0.635*
	(-2.06)	(-2.15)	(-2.12)	(-2.10)	(-2.07)
Divorced	-0.416**	-0.400**	-0.398**	-0.397**	-0.384**
	(-2.88)	(-2.74)	(-2.72)	(-2.71)	(-2.60)
Widowed	-0.338*	-0.302+	-0.299+	-0.299+	-0.276+
	(-2.12)	(-1.88)	(-1.86)	(-1.85)	(-1.70)
Never Married	-0.375*	-0.297+	-0.297+	-0.273+	-0.272+
	(-2.37)	(-1.84)	(-1.83)	(-1.67)	(-1.66)
Spouse lives away	0.202	0.156	0.160	0.148	0.137
	(0.49)	(0.37)	(0.38)	(0.35)	(0.32)
Age	0.002	0.003	0.003	0.003	0.002
	(0.47)	(0.78)	(0.77)	(0.85)	(0.48)
Number of children<18	0.021	0.022	0.021	0.032	0.032
	(0.40)	(0.42)	(0.40)	(0.61)	(0.60)
Education	-0.039+	-0.025	-0.024	-0.027	-0.024
	(-1.76)	(-1.09)	(-1.05)	(-1.15)	(-1.03)
Income: 10,000- 14,999	0.446	0.436	0.436	0.467	0.501
	(1.29)	(1.26)	(1.26)	(1.34)	(1.42)
Income: 15,000- 19,999	0.637+	0.630+	0.633+	0.630+	0.624+
	(1.85)	(1.82)	(1.82)	(1.81)	(1.79)
Income: 20,000- 24,999	0.911**	0.971**	0.972**	0.968**’	0.947**
	(2.79)	(2.94)	(2.94)	(2.93)	(2.84)
Income: 25,000- 29,999	0.078	0.050	0.050	0.048	0.0420
	(0.24)	(0.15)	(0.15)	(0.14)	(0.12)
Income: 30,000- 34,999	0.728*	0.804*	0.802*	0.811*	0.777*
	(2.21)	(2.42)	(2.41)	(2.43)	(2.31)
Income: 35,000- 39,999	0.043	0.068	0.068	0.076	0.082
	(0.12)	(0.19)	(0.19)	(0.21)	(0.23)
Income: 40,000- 44,999	0.432	0.425	0.427	0.440	0.440
	(1.33)	(1.30)	(1.30)	(1.34)	(1.33)
Income: 45,000- 49,999	0.342	0.384	0.383	0.392	0.391
	(0.93)	(1.04)	(1.03)	(1.05)	(1.05)
Income: 50,000- 59,999	0.435	0.472	0.474	0.479	0.476
	(1.48)	(1.59)	(1.60)	(1.61)	(1.59)
Income: 60,000- 74,999	0.220	0.257	0.259	0.270	0.268
	(0.69)	(0.80)	(0.81)	(0.84)	(0.82)
Income: 75,000- 99,999	0.230	0.288	0.290	0.297	0.315
	(0.72)	(0.90)	(0.90)	(0.92)	(0.97)
Income: 100,000- 124,999	0.607+	0.736*	0.738*	0.762*	0.776*
	(1.86)	(2.23)	(2.23)	(2.29)	(2.31)

Table 1. Rent vs. Own Probit Regression

Dependent Variable: Own or rent better financially	(1)	(2)	(3)	(4)	(5)
Income: 125,000- 149,999	0.459	0.597	0.598	0.603	0.667+
	(1.25)	(1.59)	(1.60)	(1.61)	(1.75)
Income: 150,000- 174,999	0.450	0.623+	0.627+	0.629+	0.630+
	(1.22)	(1.66)	(1.67)	(1.67)	(1.67)
Income: 175,000 or more	0.307	0.471	0.475	0.480	0.492
	(0.90)	(1.35)	(1.36)	(1.37)	(1.40)
Income: Below $50,000	0.361	0.299	0.296	0.291	0.284
	(0.59)	(0.48)	(0.48)	(0.47)	(0.45)
Income: Above $50,000	0.331	0.625	0.627	0.623	0.622
	(0.47)	(0.90)	(0.90)	(0.89)	(0.89)
Black	0.216	0.338+	0.341+	0.345+	0.332+
	(1.29)	(1.74)	(1.75)	(1.76)	(1.69)
Hispanic	0.603*	0.673*	0.674*	0.678*	0.677*
	(2.28)	(2.36)	(2.37)	(2.37)	(2.36)
American Indian/Alaska Native	0.050	0.123	0.123	0.120	0.109
	(0.12)	(0.28)	(0.28)	(0.27)	(0.25)
Asian	-0.369	-0.246	-0.246	-0.260	-0.328
	(-1.27)	(-0.81)	(-0.80)	(-0.85)	(-1.04)
Language of Interview: Spanish	-1.560**	-1.568**	-1.567**	-1.576**	-1.558**
	(-3.05)	(-3.05)	(-3.05)	(-3.07)	(-3.03)
Rents Home	-0.604**	-0.571**	-0.569**	-0.586**	-0.571**
	(-4.22)	(-3.93)	(-3.91)	(-3.96)	(-3.83)
Housing is part of pay; minister, church owns home	0.124	0.180	0.181	0.153	0.136
	(0.13)	(0.19)	(0.20)	(0.16)	(0.15)
Home owned by relative	0.264	0.252	0.255	0.238	0.244
	(0.32)	(0.29)	(0.29)	(0.27)	(0.28)
% Male in ZIP code in 2000		-1.961	-1.990	-1.581	-1.150
		(-0.96)	(-0.97)	(-0.77)	(-0.55)
% Black in ZIP code in 2000		-0.440	-0.442	-0.471	-0.467
		(-1.22)	(-1.22)	(-1.30)	(-1.28)
% Hispanic in ZIP code in 2000		-0.440	-0.416	-0.453	-0.541
		(-0.48)	(-0.44)	(-0.48)	(-0.57)
% Asian in ZIP code in 2000		-0.451	-0.417	-0.360	-0.414
		(-0.52)	(-0.47)	(-0.41)	(-0.46)
% below poverty level in ZIP code in 2000		-0.253	-0.247	-0.147	-0.142
		(-0.30)	(-0.29)	(-0.17)	(-0.16)
% with Bachelor's in ZIP code in 2000		-1.960**	-1.947**	-1.857**	-1.872**
		(-2.93)	(-2.89)	(-2.74)	(-2.75)
Mean 2011 HPI in 2011 ZIP code			0.000	0.000	0.000
			(-0.11)	(-0.21)	(-0.22)
St. Dev of 2011 HPI in 2011 ZIP code			-0.008	-0.002	0.000
			(-0.21)	(-0.04)	(0.00)
Do Not Know Someone who Lost Money				-0.011	-0.014
				(-0.05)	(-0.06)
Do Not Know Someone*% drop in 2008 ZIP code HPI				0.216	0.270
				(0.32)	(0.40)

Table 1. Rent vs. Own Probit Regression

Dependent Variable: Own or rent better financially	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Amount Invest					0.000
					(-0.30)
Age*Amount Invest					0.000
					(0.21)
Constant	0.213	1.220	1.265	1.049	0.866
	(0.46)	(1.07)	(1.08)	(0.87)	(0.71)
Observations	910	910	910	906	897
Pseudo R-squared	0.074	0.084	0.084	0.085	0.085

T statistics in parentheses + p<0.10 * p<0.05 **p<0.01

Table 2. Rent vs. Own Probit Regression, By Age Group

Dependent Variable: Own or rent better financially **(defined s.t. responses of 1 are coded as 1, all other responses coded as 0)**	**(1)** **Age 58 or less**	**(2)** **Age above 58**
% drop in 2008 ZIP code HPI	-1.443+ (-1.70)	1.664+ (1.71)
Female	-0.048 (-0.36)	-0.477** (-3.21)
Separated	-0.353 (-0.95)	
Divorced	-0.039 (-0.16)	-0.512 (-2.39)
Widowed	0.646 (0.87)	-0.335+ (-1.69)
Never Married	-0.183 (-0.86)	-0.666+ (-1.77)
Spouse lives away	0.568 (0.70)	0.168 (0.31)
Risk aversion (amount invested in project)	0.000 (-0.24)	0.000 (-0.58)
Age	-0.003 (-0.26)	0.007 (0.56)
Age x risk aversion	0.000 (0.20)	0.000 (0.56)
Number of children<18	-0.004 (-0.06)	0.532+ (1.76)
Education	0.022 (0.63)	-0.051 (-1.37)
Income: 10,000- 14,999	0.322 (0.58)	0.106 (0.21)
Income: 15,000- 19,999	0.255 (0.45)	0.554 (1.09)
Income: 20,000- 24,999	0.333 (0.67)	1.149* (2.18)
Income: 25,000- 29,999	-0.581 (-0.91)	-0.082 (-0.17)
Income: 30,000- 34,999	1.332* (2.52)	-0.032 (-0.06)
Income: 35,000- 39,999	-0.541 (-0.87)	0.085 (0.17)
Income: 40,000- 44,999	0.270 (0.52)	0.073 (0.15)
Income: 45,000- 49,999	0.077 (0.14)	0.495 (0.88)
Income: 50,000- 59,999	0.538 (1.16)	0.117 (0.26)
Income: 60,000- 74,999	0.406	-0.381

Table 2. Rent vs. Own Probit Regression, By Age Group

Dependent Variable: Own or rent better financially (defined s.t. responses of 1 are coded as 1, all other responses coded as 0)	(1) Age 58 or less	(2) Age above 58
	(0.82)	(-0.76)
Income: 75,000- 99,999	0.218 (0.45)	0.019 (0.04)
Income: 100,000- 124,999	0.682 (1.37)	0.611 (1.16)
Income: 125,000- 149,999	0.612 (1.14)	0.006 (0.01)
Income: 150,000- 174,999	0.722 (1.35)	0.369 (0.59)
Income: 175,000 or more	0.426 (0.83)	0.110 (0.190
Income: Below $50,000		0.055 (0.08)
Income: Above $50,000	0.101 (0.11)	
Black	0.515* (1.97)	-0.186 (-0.51)
Hispanic	0.845* (2.33)	0.557 (0.99)
American Indian/Alaska Native	-1.050 (-1.43)	1.235 (1.53)
Asian	-0.449 (-1.00)	-0.035 (-0.06)
Language of Interview: Spanish	-1.520** (-2.68)	
Rents Home	-0.575** (-2.84)	-0.551+ (-1.91)
Housing is part of pay; e.g. minister, church owns home	0.483 (0.50)	
Home owned by relative		0.162 (0.18)
% Male in ZIP code in 2000	-1.815 (-0.59)	0.598 (0.19)
% Black in ZIP code in 2000	-0.338 (-0.69)	-0.895 (-1.36)
% Hispanic in ZIP code in 2000	0.187 (0.14)	-1.792 (-1.16)
% Asian in ZIP code in 2000	-3.051+ (-1.80)	2.539+ (1.68)
% below poverty level in ZIP code in 2000	0.959 (0.77)	0.382 (0.26)
% with Bachelor's in ZIP code in 2000	-1.117 (-1.14)	-2.439* (-2.23)

Table 2. Rent vs. Own Probit Regression, By Age Group

Dependent Variable: Own or rent better financially **(defined s.t. responses of 1 are coded as 1, all other responses coded as 0)**	**(1)** **Age 58 or less**	**(2)** **Age above 58**
Do Not Know Someone who Lost Money	-0.481 (-1.50)	0.541 (1.53)
Do Not Know Someone*% drop in 2008 ZIP code HPI	1.975* (2.00)	-1.728 (-1.60)
Mean 2011 HPI in 2011 ZIP code	0.000 (-0.41)	0.000 (0.02)
St. Dev. Of 2011 HPI in 2011 ZIP code	0.015 (0.28)	-0.009 (-0.16)
Constant	0.972 (0.56)	0.054 (0.03)
Observations	470	416
Pseudo R-squared	0.122	0.152

T statistics in parentheses + p<0.10 * p<0.05 **p<0.01

Table 3. Maximal Mortgage Spending

Dependent Variable: Maximum Monthly Mortgage Payment	(1) All Ages	(2) Age<=58	(3) Age>58
% drop in 2008 ZIP code HPI	600.7**	1167.5**	-214.1
	(2.85)	(4.16)	(-0.60)
Female	-13.71	-51.03	16.29
	(-0.44)	(-1.18)	(0.34)
Separated	43.76	42.30	-43.51
	(0.46)	(0.36)	(-0.25)
Divorced	15.72	-52.40	-13.03
	(0.32)	(-0.66)	(-0.19)
Widowed	66.08	264.8	11.17
	(1.16)	(1.30)	(0.17)
Never Married	-65.28	-77.45	-219.0+
	(-1.16)	(-1.15)	(-1.86)
Spouse lives away	-56.24	58.46	-159.7
	(-0.38)	(0.23)	(-0.83)
Amount Invest	-0.00256	-0.0443	-0.0585
	(-0.12)	(-1.28)	(-0.75)
2011 mean annual gas price	321.4	5.321	1016.1*
	(1.30)	(0.02)	(2.41)
2011 std dev annual gas price	-657.8	-553.6	-375.7
	(-1.09)	(-0.65)	(-0.40)
2009 mean annual milk price	1621.6	516.0	2883.5
	(1.01)	(0.23)	(1.21)
2009 std dev annual milk price	-990.3	-11477.1	12430.9
	(-0.15)	(-1.23)	(1.26)
Age	-1.569	-9.365**	-13.11**
	(-0.25)	(-2.62)	(-2.99)
Age^2	-0.0312		
	(-0.58)		
Age x Amount Invested	0.000	0.001	0.001
	(0.22)	(1.52)	(0.68)
Number of children<18	-20.00	-24.05	49.62
	(-1.11)	(-1.17)	(0.78)
Education	6.226	0.861	17.40
	(0.79)	(0.08)	(1.46)
Income: 10,000- 14,999	-10.46	20.58	36.33
	(-0.09)	(0.12)	(0.22)
Income: 15,000- 19,999	88.12	59.68	91.15
	(0.76)	(0.33)	(0.57)
Income: 20,000- 24,999	55.56	142.0	-14.50
	(0.52)	(0.86)	(-0.09)

Table 3. Maximal Mortgage Spending

Dependent Variable: Maximum Monthly Mortgage Payment	(1) All Ages	(2) Age<=58	(3) Age>58
Income: 25,000- 29,999	11.39	153.2	-134.5
	(0.11)	(0.82)	(-0.94)
Income: 30,000- 34,999	0.114	197.8	-132.3
	(0.00)	(1.18)	(-0.84)
Income: 35,000- 39,999	59.50	183.4	-84.32
	(0.53)	(1.00)	(-0.56)
Income: 40,000- 44,999	5.667	29.78	-82.46
	(0.05)	(0.18)	(-0.56)
Income: 45,000- 49,999	23.42	55.56	-36.01
	(0.19)	(0.30)	(-0.20)
Income: 50,000- 59,999	18.51	123.1	-106.6
	(0.19)	(0.81)	(-0.80)
Income: 60,000- 74,999	50.02	142.1	-72.93
	(0.48)	(0.87)	(-0.50)
Income: 75,000- 99,999	61.09	224.0	-157.5
	(0.59)	(1.41)	(-1.04)
Income: 100,000- 124,999	121.0	229.1	27.50
	(1.11)	(1.39)	(0.17)
Income: 125,000- 149,999	12.70	181.9	-236.9
	(0.10)	(1.02)	(-1.12)
Income: 150,000- 174,999	86.96	219.4	-166.1
	(0.71)	(1.25)	(-0.87)
Income: 175,000 or more	36.62	164.3	-165.3
	(0.32)	(0.97)	(-0.94)
Income: Below $50,000	-130.9		-272.6
	(-0.63)		(-1.22)
Income: Above $50,000	-329.9	-218.8	-599.4
	(-1.38)	(-0.74)	(-1.29)
Black	-39.66	-21.34	-47.59
	(-0.61)	(-0.26)	(-0.44)
Hispanic	14.54	27.20	-133.8
	(0.15)	(0.23)	(-0.67)
American Indian/Alaska Native	-221.5	-233.2	-305.9
	(-1.51)	(-1.23)	(-1.19)
Asian	66.74	-36.66	214.7
	(0.68)	(-0.29)	(1.24)
Language of Interview: Spanish	-136.9	-138.4	-140.3
	(-0.91)	(-0.83)	(-0.34)
Rents Home	16.34	65.34	-3.069
	(0.35)	(1.06)	(-0.04)
Housing is part of pay; minister, church owns home	-119.4	-157.0	
	(-0.39)	(-0.50)	

Table 3. Maximal Mortgage Spending

Dependent Variable: Maximum Monthly Mortgage Payment	(1) All Ages	(2) Age<=58	(3) Age>58
Home owned by relative	-184.9 (-0.74)		-208.9 (-0.82)
Mean 2011 HPI in 2011 ZIP code	2.364** (3.25)	2.822** (2.92)	1.351 (1.15)
St. Dev of 2011 HPI in 2011 ZIP code	-20.47 (-1.65)	-33.79* (-2.03)	3.822 (0.19)
Do Not Know Someone who Lost Money	56.64 (0.77)	197.6+ (1.91)	-84.16 (-0.75)
Do Not Know Someone*% drop in 2008 ZIP code HPI	-243.5 (-1.09)	-684.2* (-2.17)	283.0 (0.80)
% Male in ZIP code in 2000	-348.9 (-0.48)	-1218.3 (-1.07)	328.5 (0.33)
% Black in ZIP code in 2000	30.91 (0.25)	6.506 (0.04)	-19.42 (-0.10)
% Hispanic in ZIP code in 2000	448.6 (1.42)	401.1 (0.93)	428.2 (0.84)
% Asian in ZIP code in 2000	591.8* (1.99)	973.7* (2.38)	106.5 (0.22)
% below poverty level in ZIP code in 2000	-690.1* (-2.42)	-704.8+ (-1.78)	-622.8 (-1.40)
% with Bachelor's in ZIP code in 2000	407.1+ (1.79)	333.6 (1.05)	643.2+ (1.83)
Constant	-98.84 (-0.12)	1459.8 (1.32)	-1687.9 (-1.33)
Observations	860	460	400
R-squared	0.175	0.221	0.222

T statistics in parentheses = + p<0.10, * p<0.05, ** p<0.01

Table 4. Commute

Dependent Variable: Willingness to commute	(1) All ages	(2) Age 58 or less	(3) Age above 58	(4) All ages	(5) Age 58 or less	(6) Age above 58
% drop in 2008 ZIP code HPI	-0.713	-1.017	-0.944			
	(-1.11)	(-1.13)	(-0.85)			
Female	0.006	0.055	0.000	0.025	0.082	-0.011
	(0.06)	(0.42)	(0.00)	(0.27)	(0.63)	(-0.07)
Separated	-0.604*	-0.648+	-0.440	-0.599*	-0.679+	-0.456
	(-2.03)	(-1.77)	(-0.67)	(-2.04)	(-1.88)	(-0.72)
Divorced	-0.104	0.183	-0.312	-0.108	0.152	-0.314
	(-0.68)	(0.77)	(-1.38)	(-0.73)	(0.65)	(-1.41)
Widowed	0.067	0.647	-0.020	0.088	0.741	0.017
	(0.37)	(0.87)	(-0.10)	(0.49)	(0.95)	(0.08)
Never Married	-0.285	-0.058	-0.795+	-0.281	-0.065	-0.763+
	(-1.64)	(-0.28)	(-1.89)	(-1.64)	(-0.32)	(-1.84)
Spouse lives away	0.094		-0.999+	0.092		-1.034+
	(0.22)		(-1.72)	(0.24)		(-1.84)
Risk aversion (amount invested in project)	0.000	0.000	0.000	0.000	0.000	0.000
	(-0.77)	(1.45)	(-0.87)	(-0.45)	(1.41)	(-0.32)
Age	-0.035+	0.008	0.003	-0.035+	0.006	0.006
	(-1.78)	(0.74)	(0.21)	(-1.80)	(0.52)	(.45)
Age^2	0.000			0.000		
	(1.40)			(1.40)		
Age x risk aversion	0.000	0.000	0.000	0.000	0.000	0.000
	(1.22)	(-1.53)	(1.17)	(0.82)	(-1.50)	(0.58)
Number of children<18	-0.017	-0.003	0.062	-0.029	-0.017	0.042
	(-0.31)	(-0.05)	(-0.26)	(-0.55)	(-0.27)	(0.22)
Education	-0.011	-0.050	0.024	-0.006	-0.045	0.033
	(-0.47)	(-1.46)	(0.63)	(-0.26)	(-1.33)	(0.89)
Income: 10,000-14,999	-0.034	1.031+	-0.950+	-0.113	0.952+	-0.972+
	(-0.10)	(1.93)	(-1.78)	(-0.33)	(1.85)	(-1.87)
Income: 15,000-19,999	0.251	1.041+	-0.355	0.221	0.909+	-0.356
	(0.72)	(1.92)	(-0.69)	(0.64)	(1.74)	(-0.70)
Income: 20,000-24,999	0.257	1.149*	-0.496	0.241	1.027*	-0.451
	(0.81)	(2.42)	(-0.97)	(0.77)	(2.27)	(-0.089)
Income: 25,000-29,999	-0.014	0.694	-0.567	-0.035	0.545	-0.515
	(-0.04)	(1.26)	(-1.25)	(-0.11)	(1.02)	(-1.14)
Income: 30,000-34,999	0.252	1.078*	-0.176	0.157	0.923*	-0.286
	(0.78)	(2.22)	(-0.35)	(0.49)	(1.98)	(-0.58)
Income: 35,000-39,999	-0.144	0.852	-0.903+	-0.178	0.708	-0.886+
	(-0.42)	(1.57)	(-1.82)	(-0.52)	(1.36)	(-1.80)
Income: 40,000-44,999	-0.101	0.635	-0.477	-0.137	0.489	-0.462
	(-0.32)	(1.32)	(-0.99)	(-0.44)	(1.06)	(-0.96)
Income: 45,000-49,999	-0.169	0.716	-0.962+	-0.214	0.603	-0.929
	(-0.47)	(1.34)	(-1.67)	(-0.60)	(1.17)	(-1.63)
Income: 50,000-59,999	-0.131	0.698	-0.777+	-0.193	0.589	-0.858*
	(-0.47)	(1.62)	(-1.80)	(-0.70)	(1.45)	(-2.01)
Income: 60,000-	-0.273	0.536	-0.856+	-0.317	0.429	-0.845+

Table 4. Commute

Dependent Variable: Willingness to commute	(1) All ages	(2) Age 58 or less	(3) Age above 58	(4) All ages	(5) Age 58 or less	(6) Age above 58
74,999	(-0.88)	(1.14)	(-1.79)	(-1.04)	(0.96)	(-1.79)
Income: 75,000-99,999	-0.130 (-0.42)	0.602 (1.32)	-0.337 (-0.68)	-0.157 (-0.52)	0.491 (1.13)	-0.369 (-0.76)
Income: 100,000-124,999	-0.278 (-0.87)	0.384 (0.81)	-0.699 (-1.36)	-0.275 (-0.87)	0.290 (0.64)	-0.627 (-1.24)
Income: 125,000-149,999	-0.281 (-0.75)	0.315 (0.60)	-0.185 (-0.27)	-0.308 (-0.83)	0.257 (0.51)	-0.250 (-0.37)
Income: 150,000-174,999	0.305 (0.85)	1.061* (2.10)	-0.120 (-0.20)	0.240 (0.68)	0.869+ (1.79)	-0.067 (-0.11)
Income: 175,000 or more	-0.469 (-1.38)	0.530 (1.08)	-1.750** (-2.76)	-0.493 (-1.47)	0.423 (0.91)	-1.696** (-2.71)
Black	0.415* (2.13)	0.408 (1.59)	0.487 (1.45)	0.414* (2.14)	0.358 (1.41)	0.526 (1.58)
Hispanic	0.236 (0.83)	-0.010 (-0.03)	1.511* (2.01)	0.159 (0.57)	-0.139 (-0.42)	1.553* (2.04)
American Indian/Alaska Native	0.091 (0.22)	0.397 (0.65)	-0.047 (-0.07)	0.121 (0.29)	0.371 (0.63)	-0.048 (-0.07)
Asian	0.330 (1.11)	0.382 (0.98)	-0.325 (-0.57)	0.336 (1.16)	0.390 (1.04)	-0.273 (-0.48)
Language of Interview: Spanish	-0.692 (-1.53)	-0.536 (-1.05)		-0.530 (-1.21)	-0.343 (-0.70)	
Rents Home	0.049 (0.34)	0.108 (0.57)	-0.081 (-0.30)	0.086 (0.61)	0.191 (1.03)	-0.048 (-0.18)
Home owned by relative	0.180 (0.22)		0.221 (0.26)	0.267 (0.33)		0.204 (0.24)
% Male in ZIP code in 2000	-1.846 (-0.89)	-3.907 (-1.31)	0.018 (0.01)	-1.860 (-0.90)	-3.143 (-1.07)	0.025 (0.01)
% Black in ZIP code in 2000	-0.325 (-0.85)	-0.622 (-1.23)	0.421 (0.64)	-0.398 (-1.06)	-0.749 (-1.51)	0.306 (0.47)
% Hispanic in ZIP code in 2000	-0.478 (-0.50)	-0.075 (-0.06)	0.671 (0.38)	-0.459 (-0.49)	-0.321 (-0.26)	0.775 (0.45)
% Asian in ZIP code in 2000	-0.740 (-0.83)	-0.354 (-0.29)	-2.797_ (-1.65)	-0.637 (-0.72)	-0.303 (-0.25)	-2.452 (-1.50)
% below poverty level in ZIP code in 2000	0.714 (0.79)	0.034 (0.03)	0.578 (0.37)	0.676 (0.76)	0.174 (0.14)	0.604 (0.40)
% with Bachelor's in ZIP code in 2000	-1.693* (-2.38)	-1.954* (-2.00)	-1.646 (-1.35)	-1.684* (-2.42)	-1.872+ (-1.95)	-1.647 (-1.41)
Don't know Someone who Lost Money	-0.128 (-0.56)	-0.077 (-0.24)	-0.352 (-0.96)	-0.060 (-0.60)	-0.066 (-0.49)	-0.024 (-0.14)
Don't know Someone*% drop in 2008 ZIP code HPI	0.199 (0.29)	-0.041 (-0.04)	1.188 (1.02)			
Mean 2011 HPI in 2011 ZIP code	0.000 (-0.20)	-0.003 (-1.06)	0.003 (1.030			
St. Dev. Of 2011 HPI	0.033	0.044	-0.005			

Table 4. Commute

Dependent Variable: Willingness to commute	(1) All ages	(2) Age 58 or less	(3) Age above 58	(4) All ages	(5) Age 58 or less	(6) Age above 58
in 2011 ZIP code	(0.89)	(0.85)	(-0.08)			
Mean 2011 gas price in 2011 ZIP code	0.490 (0.65)	1.029 (1.02)	0.079 (0.06)	0.058 (0.09)	0.112 (0.13)	0.301 (0.27)
St. Dev of 2011 gas price in 2011 ZIP code	-1.269 (-0.72)	2.074 (0.86)	-5.444+ (-1.83)	-2.290 (-1.36)	0.386 (0.17)	-6.510* (-2.29)
Constant	1.467 (0.62)	-0.436 (-0.14)	0.135 (0.03)	2.495 (1.12)	1.373 (0.46)	-0.558 (-0.15)
Observations	827	456	366	840	462	372
Pseudo R-squared	0.056	0.085	0.128	0.052	0.079	0.118

T statistics in parentheses = + p<0.10, * p<0.05, ** p<0.01

Appendix

Table A1. Michigan Consumer Survey Variable List	
Variable	**Variable name**
Gender	sex
Race	race
Age	age
Marital status	marry
Income Bracket	qincsum
Number of children under 18 in household	numkid
Highest educational level achieved	egrade
Language of interview	language
Home ownership status	homeown
Expectations regarding gas prices in next 5 years	gaspx1

Table A2. Rent vs. Own, By Age Group (1st alternative definition of rent vs. own)
(with first alternative definition of rent vs. own: defined s.t. responses of 1,2 are coded as 1; responses of 4,5 are coded as 0; responses of 3 are dropped.)

Dependent Variable: Own or rent better financially responses of 1,2 are coded as 1; responses of 4,5 are coded as 0; responses of 3 are dropped.)	**(1) Age 58 or less**	**(2) Age above 58**
% drop in 2008 ZIP code HPI	-0.675 (-0.56)	2.110 (1.63)
Female	0.282 1.48	-0.253 (-1.19)
Separated	-0.205 (-0.41)	-0.535 (-0.92)
Divorced	-0.796* (-2.57)	-0.430 (-1.56)
Widowed	0.000 (.)	-0.272 (-1.03)
Never Married	-0.098 (-0.33)	-0.383 (-0.81)
Spouse lives away	0 (.)	-0.893 (-1.21)
Risk aversion (amount invested in project)	0.000 (0.59)	0.000 (0.92)
Age	0.008 (0.48)	0.042* (2.32)
Age x risk aversion	0.000 (-0.59)	0.000 (-0.88)
Number of children<18	-0.050 (-0.57)	0.098 (0.33)
Education	0.002 (0.03)	0.050 (1.01)
Income: 10,000- 14,999	0.857 (1.34)	-0.270 (-0.51)
Income: 15,000- 19,999	1.136+ (1.72)	-0.092 (-0.15)
Income: 20,000- 24,999	1.539* (2.23)	0.388 (0.61)
Income: 25,000- 29,999	1.255 (1.58)	0.004 (0.01)
Income: 30,000- 34,999	1.510* (2.04)	-0.257 (-0.49)
Income: 35,000- 39,999	1.136 (1.40)	-0.047 (-0.09)
Income: 40,000- 44,999	0.801 (1.27)	-0.296 (-0.58)
Income: 45,000- 49,999	0.162 (0.25)	0.814 (1.00)
Income: 50,000- 59,999	1.065+ (1.86)	-0.438 (-0.97)
Income: 60,000- 74,999	0.573	-0.703

Table A2. Rent vs. Own, By Age Group (1st alternative definition of rent vs. own)
(with first alternative definition of rent vs. own: defined s.t. responses of 1,2 are coded as 1; responses of 4,5 are coded as 0; responses of 3 are dropped.)

Dependent Variable: Own or rent better financially responses of 1,2 are coded as 1; responses of 4,5 are coded as 0; responses of 3 are dropped.)	**(1) Age 58 or less**	**(2) Age above 58**
	(0.95)	(-1.38)
Income: 75,000- 99,999	0.834 (1.39)	-0.197 (-0.38)
Income: 100,000- 124,999	0.781 (1.26)	
Income: 125,000- 149,999	0.946 (1.30)	
Income: 150,000- 174,999	1.062 (1.56)	-0.009 (-0.01)
Income: 175,000 or more	1.026 (1.53)	
Income: Below $50,000		-0.267 (-0.36)
Income: Above $50,000	-0.529 (-0.49)	
Black	-0.002 (-0.01)	0.521 (1.13)
Hispanic	0.551 (1.04)	0.859 (0.87)
American Indian/Alaska Native	-0.488 (-0.61)	
Asian	-0.560 (-1.03)	-0.500 (-0.70)
Language of Interview: Spanish	-0.757 (-1.07)	
Rents Home	-0.570* (-2.21)	-1.231** (-4.03)
% Male in ZIP code in 2000	0.703 (0.18)	2.920 (0.65)
% Black in ZIP code in 2000	-0.685 (-1.11)	-0.904 (-1.08)
% Hispanic in ZIP code in 2000	-1.291 (-0.75)	-3.553+ (-1.66)
% Asian in ZIP code in 2000	5.166+ (1.84)	0.922 (0.37)
% below poverty level in ZIP code in 2000	0.993 (0.58)	-0.499 (-0.30)
% with Bachelor's in ZIP code in 2000	-1.040 (-0.74)	-1.631 (-0.99)
Do Not Know Someone who Lost Money	0.310 (0.64)	0.784+ (1.74)
Do Not Know Someone*% drop in 2008 ZIP code HPI	-1.275 (-0.90)	-2.388+ (-1.65)

Table A2. Rent vs. Own, By Age Group (1st alternative definition of rent vs. own)
(with first alternative definition of rent vs. own: defined s.t. responses of 1,2 are coded as 1; responses of 4,5 are coded as 0; responses of 3 are dropped.)

Dependent Variable: Own or rent better financially responses of 1,2 are coded as 1; responses of 4,5 are coded as 0; responses of 3 are dropped.)	**(1) Age 58 or less**	**(2) Age above 58**
Mean 2011 HPI in 2011 ZIP code	-0.006+	0.002
	(-1.91)	(0.46)
St. Dev. Of 2011 HPI in 2011 ZIP code	-0.014	-0.090
	(-0.19)	(-1.09)
Constant	0.862	-3.658
	(0.38)	(-1.30)
Observations	417	337
Pseudo R-squared	0.170	0.206

T statistics in parentheses + p<0.10 * p<0.05 **p<0.01

Table A3. Rent vs. Own, By Age Group (2nd alternative definition of rent vs. own)

Dependent Variable: Own or rent better financially. Responses of 1 coded as 1; responses of 2 coded as 0; responses of 3,4,5 dropped.	**(1) Age 58 or less**	**(2) Age above 58**
% drop in 2008 ZIP code HPI	-1.896+	0.501
	(-1.92)	(0.45)
Female	-0.132	-0.520**
	(-0.87)	(-3.09)
Separated	-0.250	
	(-0.56)	
Divorced	0.250	-0.400+
	(0.86)	(-1.65)
Widowed	0.759	-0.328
	(0.96)	(-1.48)
Never Married	-0.135	-0.384
	(-0.56)	(-0.80)
Spouse lives away	0.189	0.651
	(0.22)	(0.88)
Risk aversion (amount invested in project)	0.000	0.000
	(-0.38)	(-0.97)
Age	-0.007	-0.004
	(-0.56)	(-0.29)
Age x risk aversion	0.000	0.000
	(0.40)	(0.90)
Number of children<18	0.013	0.486
	(0.19)	(1.38)
Education	0.025	-0.050
	(0.65)	(-1.19)
Income: 10,000- 14,999	-0.683	-0.180
	(-0.91)	(-0.27)
Income: 15,000- 19,999	-0.912	0.475
	(-1.21)	(0.69)
Income: 20,000- 24,999	-0.553	0.982
	(-0.81)	(1.46)
Income: 25,000- 29,999	-1.419+	-0.312
	(-1.71)	(-0.51)
Income: 30,000- 34,999	0.702	-0.311
	(0.93)	(-0.47)
Income: 35,000- 39,999	-1.475+	-0.240
	(-1.81)	(-0.36)
Income: 40,000- 44,999	-0.502	-0.083
	(-0.70)	(-0.13)
Income: 45,000- 49,999	-0.691	0.073
	(-0.91)	(0.10)
Income: 50,000- 59,999	-0.260	-0.082
	(-0.40)	(-0.14)
Income: 60,000- 74,999	-0.421	-0.424
	(-0.61)	(-0.65)

Table A3. Rent vs. Own, By Age Group (2nd alternative definition of rent vs. own)

Dependent Variable: Own or rent better financially. Responses of 1 coded as 1; responses of 2 coded as 0; responses of 3,4,5 dropped.	**(1) Age 58 or less**	**(2) Age above 58**
Income: 75,000- 99,999	-0.692	-0.303
	(-1.02)	(-0.47)
Income: 100,000- 124,999	-0.147	0.156
	(-0.21)	(0.23)
Income: 125,000- 149,999	0.054	-0.381
	(0.07)	(-0.48)
Income: 150,000- 174,999	-0.232	0.095
	(-0.32)	(0.12)
Income: 175,000 or more	-0.419	-0.367
	(-0.60)	(-0.51)
Black	0.687*	-0.239
	(2.15)	(-0.52)
Hispanic	0.701	0.320
	(1.62)	(0.52)
American Indian/Alaska Native	-1.150	0.696
	(-1.21)	(0.83)
Asian	-0.096	-0.072
	(-0.19)	(-0.11)
Language of Interview: Spanish	-1.324*	
	(-2.03)	
Rents Home	0.292	
	(0.30)	
% Male in ZIP code in 2000	-2.530	0.172
	(-0.66)	(0.05)
% Black in ZIP code in 2000	-0.235	-1.074
	(-0.38)	(-1.45)
% Hispanic in ZIP code in 2000	1.309	1.192
	(0.76)	(0.53)
% Asian in ZIP code in 2000	-5.531**	1.896
	(-2.64)	(1.14)
% below poverty level in ZIP code in 2000	0.661	0.373
	(0.44)	(0.21)
% with Bachelor's in ZIP code in 2000	-1.122	-1.634
	(-0.99)	(-1.35)
Do Not Know Someone who Lost Money	-0.727+	0.276
	(-1.92)	(0.68)
Do Not Know Someone*% drop in 2008 ZIP code HPI	2.729*	-0.940
	(2.35)	(-0.78)
Mean 2011 HPI in 2011 ZIP code	0.000	-0.003
	(0.17)	(-0.79)
St. Dev. Of 2011 HPI in 2011 ZIP code	0.041	0.052
	(0.65)	(0.75)
Constant	2.471	1.914

Table A3. Rent vs. Own, By Age Group (2nd alternative definition of rent vs. own)

Dependent Variable: Own or rent better financially. Responses of 1 coded as 1; responses of 2 coded as 0; responses of 3,4,5 dropped.	**(1) Age 58 or less**	**(2) Age above 58**
	(1.13)	(0.85)
Observations	375	329
Pseudo R-squared	0.140	0.118

T statistics in parentheses + p<0.10 * p<0.05 **p<0.01

Table A4. Effect of Change in HPI on Investment Decision

Dependent variable: Amount Invest in project	(1) All ages	(2) Age<=50	(3) Age>50
% drop in 2008 ZIP code HPI	808.9	1807.3	-392.4
	(0.70)	(1.14)	(-0.22)
Female	-273.0	-419.0	-113.9
	(-1.49)	(-1.64)	(-0.40)
Separated	417.2	384.9	782.7
	(0.74)	(0.56)	(0.76)
Divorced	510.2+	985.6*	9.798
	(1.75)	(2.16)	(0.02)
Widowed	464.5	294.2	393.9
	(1.41)	(0.24)	(1.03)
Never Married	-197.2	-66.68	-87.12
	(-0.59)	(-0.17)	(-0.13)
Spouse lives away	967.2	-614.7	1508.9
	(1.13)	(-0.39)	(1.39)
Age	7.785	-23.26	-50.31**
	(0.22)	(-1.57)	(-2.76)
Age^2	-0.314		
	(-1.02)		
Number of children<18	40.49	62.17	257.9
	(0.38)	(0.52)	(0.66)
Education	-23.67	-140.3*	103.4
	(-0.51)	(-2.11)	(1.48)
Income: 10,000- 14,999	742.5	522.0	1166.4
	(1.13)	(0.53)	(1.25)
Income: 15,000- 19,999	1218.3+	2299.0*	694.9
	(1.84)	(2.25)	(0.76)
Income: 20,000- 24,999	703.2	984.2	658.7
	(1.14)	(1.07)	(0.73)
Income: 25,000- 29,999	1116.3+	1684.7	604.6
	(1.81)	(1.60)	(0.73)
Income: 30,000- 34,999	754.0	1124.0	519.2
	(1.21)	(1.18)	(0.59)
Income: 35,000- 39,999	770.9	1906.8+	-16.36
	(1.16)	(1.82)	(-0.02)
Income: 40,000- 44,999	703.5	2073.0*	-438.1
	(1.14)	(2.21)	(-0.51)
Income: 45,000- 49,999	1386.8*	2313.8*	632.1
	(1.97)	(2.21)	(0.63)
Income: 50,000- 59,999	347.4	1481.6+	-404.0
	(0.64)	(1.77)	(-0.53)
Income: 60,000- 74,999	1348.7*	2558.1**	400.1
	(2.24)	(2.82)	(0.46)
Income: 75,000- 99,999	1268.3*	2594.6**	79.94
	(2.11)	(2.94)	(0.09)
Income: 100,000- 124,999	1414.5*	2463.4**	797.5
	(2.25)	(2.67)	(0.85)
Income: 125,000- 149,999	2274.6**	3607.1**	1346.5

Table A4. Effect of Change in HPI on Investment Decision

Dependent variable: Amount Invest in project	(1) All ages	(2) Age<=50	(3) Age>50
	(3.14)	(3.66)	(1.06)
Income: 150,000- 174,999	903.8	1867.6+	123.7
	(1.27)	(1.89)	(0.11)
Income: 175,000 or more	1270.5+	3005.3**	-569.7
	(1.93)	(3.19)	(-0.56)
Income: Below $50,000	347.4		-254.4
	(0.27)		(-0.19)
Income: Above $50,000	2473.7+	2442.2	5071.1+
	(1.72)	(1.40)	(1.80)
Black	270.4	174.1	172.8
	(0.71)	(0.36)	(0.28)
Hispanic	469.7	818.2	206.2
	(0.83)	(1.19)	(0.18)
American Indian/Alaska Native	26.91	-1323.7	1519.2
	(0.03)	(-1.16)	(1.07)
Asian	735.5	1000.0	903.5
	(1.23)	(1.30)	(0.84)
Language of Interview: Spanish	-12.55	-276.4	-333.4
	(-0.01)	(-0.28)	(-0.13)
Rents Home	181.2	381.2	-122.3
	(0.64)	(1.04)	(-0.25)
Housing is part of pay; minister, church owns home	-893.5	-1052.4	
	(-0.48)	(-0.56)	
Home owned by relative	716.1		490.3
	(0.47)		(0.31)
Mean 2011 HPI in 2011 ZIP code	4.453	8.543+	-2.581
	(1.32)	(1.88)	(-0.48)
St. Dev of 2011 HPI in 2011 ZIP code	29.36	104.8	-0.473
	(0.40)	(1.06)	(0.00)
Do Not Know Someone who Lost Money	428.7	509.4	262.6
	(0.98)	(0.82)	(0.39)
Do Not Know Someone*% drop in 2008 ZIP code HPI	-658.4	-843.3	-87.20
	(-0.50)	(-0.45)	(-0.04)
% Male in ZIP code in 2000	-3758.1	2981.1	-8874.9
	(-0.92)	(0.51)	(-1.47)
% Black in ZIP code in 2000	-870.0	-940.9	-636.3
	(-1.21)	(-1.01)	(-0.54)
% Hispanic in ZIP code in 2000	-399.7	-1038.7	912.9
	(-0.22)	(-0.43)	(0.32)
% Asian in ZIP code in 2000	1300.5	-456.6	2435.8
	(0.77)	(-0.19)	(0.93)
% below poverty level in ZIP code in 2000	2.453	409.6	-990.7
	(0.00)	(0.17)	(-0.37)
% with Bachelor's in ZIP code in 2000	-345.6	1041.0	-1004.5
	(-0.26)	(0.56)	(-0.48)
Constant	3917.3	671.5	9295.6*

Table A4. Effect of Change in HPI on Investment Decision

Dependent variable: Amount Invest in project	(1) All ages	(2) Age<=50	(3) Age>50
	(1.60)	(0.20)	(2.50)
Observations	907	473	434
R-squared	0.084	0.125	0.100

T statistics in parentheses = + p<0.10, * p<0.05, ** p<0.01

References

Bellows, John and Edward Miguel. 2006. "War and Institutions: New Evidence from Sierra Leone." *American Economic Review* 96(2): 394-399.

Clark, Andrew E., and Yannis Georgellis. 2007. "Kahneman meets the Quitters: Peak-End Behaviour in the Labour Market." Paris School of Economics, mimeo.

Collins, Michael J. and Laura Choi. 2010. "The Effects of the Real Estate Bust on Renter Perceptions of Homeownership." Community Development Working Paper Series, 2010-01. Available at http://frbsf.org/community.

Eckel, Catherine C., Angela De Oliveira and Philip J. Grossman. 2007. "Is More Information Always Better? An Experimental Study of Charitable Giving and Hurricane Katrina." *Southern Economic Journal* 74(2): 388-411.

Ferreira, Fernando and Joseph Gyourko. 2011. "Anatomy of the Beginning of the Housing Boom: U.S. Neighborhoods and Metropolitan Areas, 1993-2009." NBER Working Paper 17374.

Giuliano, Paola and Antonio Spilimbergo. 2009. "Growing up in a Recession: Beliefs and the Macroeconomy." NBER Working Paper 15321.

Hansen, Bruce. 2000. "Sample Splitting and Threshold Estimation." *Econometrica* 68(3): 575-603.

Hurd, Michael and Susann Rohwedder. 2010. "Effects of the Financial Crisis and Great Recession on American Households," NBER Working Paper 16407.

Guiso, Luigi, Paola Sapienza and Luigi Zingales. 2011. "The Determinants of Attitudes towards Strategic Defaults on Mortgages." European University Institute, Northwestern University and University of Chicago working paper.

Kahneman, Daniel (1999). "Objective Happiness," In *Well-Being: The Foundations of Hedonic Psychology*, ed. D. Kahneman, E. Diener and N. Schwarz, 3-25. New York: Russell Sage.

Lerner, Jennifer S. and Dachar Keltner. 2001. "Fear, Anger, and Risk." *Journal of Personality and Social Psychology* 81(1): 146-159.

Malmendier, Ulrike and Stefan Nagel. 2009. "Learning from Inflation Experiences." Stanford University and UC Berkeley Working Paper.

Malmendier, Ulrike and Stefan Nagel. 2011. "Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?" *Quarterly Journal of Economics* 126: 373-416.

Molloy, Raven and Hui Shan. 2011. "The Post-Foreclosure Experience of U.S. Households in the Current Housing Market Downturn." Finance and Economics Discussion Series, 2011-32. Available at http://www.federalreserve.gov/pubs/feds/2011/201132/index.html.

Morin, Roger-A. and A. Fernandez Suarez. 1983. "Risk Aversion Revisited." *The Journal of Finance* 38 (4): 1201-1216.

Mudd, Shannon, Konstantin Pashev and Neven Valev. 2010. "The Effect of Loss Expectations in a Banking Crisis on Future Expectations and Behavior." *The B.E. Journal of Macroeconomics* 10(1): 1-19.

Nishiyama, Yasuo. 2006. "The Asian Financial Crisis and Investors' Risk Aversion." *Asia-Pacific Financial Markets* 13(3): 181-205.

Nunn, Nathan and Leonard Wantchekon. 2009. "The Slave Trade and the Origins of Mistrust in Africa." NBER Working Paper 14783.

Osili, Una and Anna Paulson. 2009. "Banking Crises and Investor Confidence: An Empirical Investigation." Federal Reserve Bank of Chicago PDP 2009-9.

Panchuk, Kerri. 2011. "Fannie Mae: Negative Equity Environment Saps Would-be Homebuyers." On www.housingwire.com, Aug 15.

Simonsohn, Uri, Karlsson, Niklas, Loewenstein, George and Ariely, Dan (2008). "The Tree of Experience in the Forest of Information" *Games and Economic Behavior* 62, 263-286.

Starobin, Paul (2011). "A Dream Endangered (Yeah, So?)" *National Journal*, Mar 17.

Taylor, Paul, Parker, Kim, Kochhar, Rakesh, Wang, Wendy, Velasco, Gabriel and Dockterman, Daniel (2011). "Home Sweet Home. Still." Pew Research Center: Social and Demographic Trends, Apr 12.

Voors, Maarten, Eleonora Nillesen, Philip Verwimp, Erwin Bulte, Robert Lensink, and Daan van Soest. 2011. "Does Conflict Affect Preferences? Results from Field Experiments in Burundi." *American Economic Review*, forthcoming.

Weinstein, Neil. 1989. "Effects of personal experience on self-protective behavior." *Psychological Bulletin* 105(1): 31-50.