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Abstract

We use survey data to study American households' propensity to default when the value of their mortgage exceeds the value of their house even if they can afford to pay their mortgage (strategic default). We find that 26% of the existing defaults are strategic. We also find that no household would default if the equity shortfall is less than 10% of the value of the house. Yet, 17% of households would default, even if they can afford to pay their mortgage, when the equity shortfall reaches 50% of the value of their house. Besides relocation costs, the most important variables in predicting strategic default are moral and social considerations. Ceteris paribus, people who consider it immoral to default are 77% less likely to declare their intention to do so, while people who know someone who defaulted are 82% more likely to declare their intention to do so. The willingness to default increases nonlinearly with the proportion of foreclosures in the same ZIP code. That moral attitudes toward default do not change with the percentage of foreclosures in the area suggests that the correlation between willingness to default and percentage of foreclosures is likely to derive from a contagion effect that reduces the social stigma associated with default as defaults become more common.

For the first time since the Great Depression, millions of American households find themselves with a mortgage that exceeds the value of their home. According to Zillow.com, in the entire United States, 22% of households have negative equity in their home, while in some areas of the country (such as Las Vegas and some areas in California) this percentage exceeds 50%.[1] More importantly, the difference between the value of the mortgage and that of the house is often very large. For example, the median owner's equity for those who bought their house in the Salinas, CA metropolitan statistical area (MSA) in 2006 is -$214,305. Given the magnitude of this phenomenon, it is important to address the question of whether homeowners with such a large negative equity value will choose to walk away from their houses even if they can afford to pay their mortgages. The answer to this question is crucial to assess the near term future of the real estate market and of the U.S. economy in general. Not only strategic defaults may produce contagion effects, they can also exercise price pressure on sales. Campbell et al. (2009) estimate that forced sales due to foreclosure sell at 28% discount on the house's value.

Unfortunately, we know very little about this question. In an influential paper, Foote et al. (2008) show that during the 1990-91 recession in Massachusetts very few people who could afford their mortgage payment chose to walk away from their houses. This paper has deeply influenced the Obama Administration's policy, which has entirely focused on reducing households' cash flow problems, ignoring the negative equity problem. However, their sample is based on a moderately mild recession where only 6% of the borrowers had negative equity and where the extent of their negative equity was less than 10% of the value of the house (Foote et al. (2008)). As Figure 1 shows, mortgage delinquencies do not seem to be affected much by the house prices when house prices drop less than 20%. After that level, however, there is a strong correlation between the two. If, as this picture suggests, there are important nonlinearities in the response, the Foote et al. evidence is unlikely to have a strong predictive power in areas where close to half the households have negative equity and the magnitude of this negative equity approaches 40%.

While only few states have mandatory non-recourse mortgages (i.e., do not allow creditors to pursue borrowers who walk away from their mortgages for the difference between

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[1] http://www.zillow.com/reports/RealEstateMarketReports.htm.

the amount of the mortgage and the resale value of the house), the cost of legal procedures is sufficiently high that most lenders are unwilling to sue a defaulted borrower unless he has significant wealth besides the home. Given the limited legal punishment, it is important to study the economic and non economic incentives for strategic default. Not only are we interested in estimating the likelihood of this event as a function of the decline in house prices – an potentially important economic motive for strategic default - but also what other non-economic factors can increase or decrease this likelihood. In fact, if social and moral considerations play a role, it is important to understand how economic policy may have an indirect effect on the likelihood of strategic default via its impact on the bite of social and moral norms. For example, a policy aimed at helping people in arrears with their mortgages could have devastating effects on the incentives to strategically default of people who can afford to pay their mortgage if it is perceived to bail out people unjustly and thus undermine the moral commitment to pay.

Assuming that a homeowner will default as soon as his home equity becomes negative is clearly wrong. Negative equity may be a necessary conditions to trigger default, but it is not a sufficient one (see Deng, et al., 2000; Bajari et al., 2008). Even in the absence of any social and moral considerations, there are several economic reasons not to default. First, if the interest on the mortgage is less than the rental of an alternative house, the homeowner has an advantage in delaying the default. Second, walking away from the house involves relocation costs. Third, defaulting on the mortgage ruins a person's credit rating, with negative consequences on his future ability to borrow. Finally, if the mortgage is a recourse-loan, the borrower faces the risk of losing any assets he might have if the lender comes after him with a deficiency judgment.

In addition to these pure economic reasons, individuals may have moral considerations that affect their willingness to default. Default can be perceived as morally wrong and as such something to avoid if not at all costs, at some significant cost. Moral norms, if widespread, may strongly mitigate the likelihood that Americans households will default on their mortgage, even if the value of housing continues to depreciate. The effectiveness of moral rules, in turn, may be affected by economic policies that may undermine a sense of fairness.

Finally, even amoral people can choose not to default when it is in their narrow economic interest to do so because of the social costs this decision entails. For example, defaulting on a mortgage may lead to social stigma.

It is difficult to study the strategic default decision, because it is de facto an unobservable event. While we do observe defaults, we cannot observe whether a default is strategic. Strategic defaulters have all the incentives to disguise themselves as people who cannot afford to pay and so they will appear as non strategic defaulters in all the data.

Given this constraint, one way to assess the likelihood of a strategic default is to estimate a structural model of default that includes both cash flow considerations and negative equity considerations. One can then use the estimated parameters to simulate a shock to home equity alone and compute the predicted effect. This strategy has been followed by Bajari et al. (2008), who estimate that ceteris paribus a 20% decline in home prices would lead to a 15% increase in the probability that a borrower would default.

An alternative way, which we follow in this paper, is to resort to survey data. While survey data have the obvious drawback in that they that are responses to hypothetical questions, rather than actual decisions with monetary consequences, they do have several advantages. First, they allow us to study how households would behave when their home equity reached negative amounts not commonly reached yet. One of the problems of the current recession is that it is so extreme in its intensity that one has to strongly believe in linearity to extrapolate estimates obtained during the past recent recessions to predict the outcome of the current one. Second, survey data provide an opportunity to separate contagion effects from sorting effects, which is difficult to do with field data. By asking questions about social and moral attitudes toward default, we can identify whether the high propensity to default in areas where foreclosures are more frequent is due to a clustering in those areas of individuals prone to default or to a contagion effect.

For these reasons, we study the incentives and costs of strategic default by using some new data on a representative sample of US households surveyed in December 2008 and March 2009. We asked the respondents information about their home ownership and the date when they bought or refinanced their house. Moreover, we asked the following questions: "If the value of your mortgage exceeded the value of your house by 50K would you walk away from your house (that is, default on your mortgage) even if you could afford to pay your monthly mortgage?" where people could answer "yes," "no," or "I do not know." For people who answered negatively, we repeated the same question with a negative equity of 100K. For people who answered negatively, we repeated the same question with a negative equity of 200K (March

survey) or 300K (December survey). In addition, we asked whether the respondent thought it was morally wrong to walk away from a house when one can afford to pay the monthly mortgage. Finally, we asked a list of questions about their political views and their views about recent economic policies and current events.

Consistent with Foote et al. (2008), we find that no household is willing to default if the equity shortfall is less than 10% of the value of the house. The percentage of households willing to default strategically increases to 5% if the shortfall is between 10 and 20% of the value of the house and reaches 17% when the shortfall reaches 50%.

We correlate the declared willingness to walk away when the equity shortfall is equal to $50K/$100K with various proxies for the typical economic drivers of this decision: cost of relocation (number of children, numbers of years in the current location), the risk of losing other assets (whether the respondent is in a nonrecourse state and whether the household has more than $50k in financial assets), the stability of the financial position (income and probability of becoming unemployed). Not surprisingly, the biggest determinants are the value of the equity shortfall as a percentage of the value of the house and the fact that the house was bought more than 5 years ago – a measure of the attachment to (and thus of the cost of leaving) the current location. Ceteris paribus a person who has bought his house more than five years ago is 78% less likely to default. A one standard deviation increase in the relative size of this equity shortfall increases the probability of strategic default by 24%.

The more surprising results emerge when we add moral and social considerations. 80% of the people think it is morally wrong to do a strategic default. Everything else being equal, people who do not think that it is immoral to default even if able to repay are 7.4 percentage points less likely to declare strategic default (a 79% in the sample mean) than people who think it is immoral when the equity shortfall is $50K. The effect of this moral barrier weakens when the equity shortfall increases to $100K: from 79% to 57% of the sample mean. This moral barrier to default is an important and often ignored aspect of the default decision.

To explore the origins of this conviction, we correlate it with several demographic variables. Younger people (less than 35 years old) are less moral, but so are older ones (older than 65). More educated people exhibit less moral conviction as do African Americans. Wealthier people have higher moral standards, while people from the Northeast and the West less so. Interestingly, we do not observe any correlation between how upset people are about the

current economic situation and their opinion about the morality of strategic default. Yet, we do find a strong correlation between the positive opinion about the need of a Government intervention to help homeowners near default and the view of morality of default, but this correlation cannot be interpreted in any causal sense. It is likely to be the manifestation of the fact that people differ in their view on the moral commitment embedded in a debt contract. Those who think there is none are more willing to help households in default. Finally, we do not find any difference in the moral view of Republicans and Democrats. The less moral ones are the Independents.

As a measure of social considerations, we use either the percentage of foreclosures in the same ZIP code or the positive answer to the question whether the respondents personally know somebody who defaulted strategically. In both cases, we find that people who have been exposed more to defaults are more willing to strategically default. Holding morality constant, people who know someone who defaulted strategically are 82% more likely to declare their intention to do so. Similarly, a one standard deviation increase in the percentage of foreclosed property in the ZIP code increases the likelihood of a strategic default by 23%. This effect is highly nonlinear. When we fit a linear spline, we find that the effect of the percentage of foreclosures is zero for a percentage of foreclosures less than 16%, yet it becomes not only statistically, but also economically very significant above that level. A one standard deviation increase in the percentage of foreclosures above the 16% threshold doubles the probability of strategic default. This result hints at the possibility of vicious circles, where an initial shock in foreclosures leads to a reduction in the value of houses (which increases the percentage of people with negative equity) and reduces the social constraints to default, both factors that lead to more defaults and foreclosures.

One obvious limitation of our analysis is that it is based on declared intentions, not actual decisions. It is possible, albeit unlikely, that people respond that they are willing to walk away, but then they do not actually do. To validate our results and estimate the importance of strategic defaults on actual defaults in the March survey we asked each interviewed person "How many people do you know who have defaulted on their house?" To those who know at least one, we also ask "How many people do you know who have walked away from his/her house (that is, defaulted on their mortgage) even if he/she could afford to pay the monthly mortgage?" By taking a ratio of the two we get an estimate of the percentage of actual default that is considered

"strategic" by their acquaintances: this rate is 26%. Another indirect validation is the pattern of mortgage delinquencies as a function of the drop in house prices and unemployment. When we regress mortgage delinquencies (at the MSA level) on the changes in unemployment and the drop in house prices we find that mortgage deliquencies are not sensitive to a drop in house prices as long as the drop in house prices is no more than 20%. After that, the mortgage delinquencies are very sensitive to the drop in house prices even controlling for changes in unemployment, suggesting that people default because of the size of their negative equity, not just because they cannot afford to pay.

The rest of the paper proceeds as follows. Section 1 introduces the theoretical framework. Section 2 describes the new survey data used in the paper. Section 3 presents some MSA-level evidence of the nonlinearity in the relation between mortgage delinquencies and house prices, suggesting the importance of strategic default. Section 4 presents the result of regressing the declared intention to make a strategic default on individual and ZIP-code level characteristics. Section 5 presents the results on the determinants of the moral cost of default. Conclusions follow.

1. The Theoretical Framework

The narrowest economic framework would hold that in non-recourse states a household will default whenever the value of the mortgage exceeds the value of the house. While negative equity is a necessary condition for strategic default, it is not a sufficient condition. In practice, even in non recourse states there are frictions that make defaulting less appealing. First of all, there are significant pecuniary and non-pecuniary relocation costs, which include difficulty in renting or buying a new house, moving expenses, possible change of school for the children, and loss of friends in the community (unless one can easily relocate around the corner). To add to these costs, there is some specificity in the housing stock. Most people remodel their house to fit their needs. After this remodeling they are likely to pay a premium for their house with respect to a similar house with the same general characteristics. As proxies for these relocation costs we use the age of the person (where older people have a higher cost to move), the number of children (more children, the higher the relocation cost), whether the children go to local schools,

and whether s/he has bought the house more than five years ago (the longer the tenure, the stronger the attachment to the house and thus the higher the relocation cost).[2]

In the presence of moving costs, relocation is a (partially) irreversible investment with an uncertain payoff. Thus, there is some value in waiting. With uncertain house prices, the option to wait is more valuable because the higher the volatility of house prices, the higher the expectations that they will recover. Since the survey asks about the long-term expectations about house prices, we will use those.

In addition to relocation costs, when an individual defaults his credit rating is very severely affected, reducing his future chances to buy a house or more generally to borrow. It is not entirely clear for whom this cost should be higher: for young people with a marginal credit rating, which will find it very difficult to restore it or for richer people with a good credit rating, since they lose more. Unfortunately, we do not have data on the credit rating, but we have other characteristics (such as income and age) that should proxy for that.

If the mortgage is a recourse-loan, an individual faces the risk of being forced to pay the remaining amount, if the lender comes after him with a deficiency judgment. More risk-averse people, thus, should be less likely to default. Also richer people should be less likely to default. As a proxy for income, we have a self-reported income bracket and a self reported assessment whether they had more than $50,000 outside of their home. We chose this level because a rational lender is unlikely to sue a borrower who has less than $50,000 in wealth.

In addition to these pure economic reasons, individuals may have moral considerations that affect their willingness to default. Default can be perceived as morally wrong and as such something to avoid if not at all costs, at some significant cost. Moral considerations, if widespread, may strongly mitigate the likelihood that Americans households will default on their mortgage, even if the value of housing continues to depreciate. Non-economic incentives to default and obedience to moral norms, in turn, may be affected by what other people do and by economic policies that may undermine a sense of fairness.

Finally, even amoral people can choose not to default when it is in their narrow economic interest to do so because of the social costs this decision entails. In a society where the vast majority of people think it is immoral to default when able to repay, people who do that can pay

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[2] Ideally we would like when they bought the house, not when they refinance it, but this is the only variable we have.

a social cost. In this context, the perceived cost of this decision might be affected by the frequency with which people default. For this reason, we asked if they know people who defaulted and we also use the percentage of foreclosure, assuming that the more common it is for people to default, the more socially acceptable is to do so.

2. The Survey Data

Our main data sources are two waves of the Chicago Booth Kellogg School Financial Trust Index survey.[3] Each survey, conducted by Social Science Research Solutions, collects information on a representative sample of 1,000 American households. The main purpose of these surveys is to study how the level of trust people have in the financial system will change over time. We did, however, include variables that can help us assess the frequency and the determinants of strategic defaults. The first wave of the survey took place from the 17th to the 28th of December 2008.[4] The second wave took place the third week of March 2009. One adult respondent in each household was randomly contacted and asked whether they were in charge of household financials, either alone or together with the spouse. Only individuals who claimed such responsibility are included in the survey.

The survey collected information about demographics, home ownership, the date of purchase or refinance of the house, and the fraction borrowed. Most of the questions in the two surveys are the same. In the second survey, however, we added a few more variables to control for some characteristics of the borrower, so the regressions limited to the second survey have more control variables.

2.1 Strategic Default Variables

To elicit information about the individuals' willingness to commit strategic default, we asked the following question: "If the value of your mortgage exceeded the value of your house by 50K would you walk away from your house (that is, default on your mortgage) even if you could afford to pay your monthly mortgage?" Among the homeowners, only 9 percent answered affirmatively to this question (see Table 1a). We restrict our analysis to homeowners for two

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[3] http://financialtrustindex.org/

[4] The survey was conducted using ICR's weekly telephone omnibus service. It used a fully-replicated, stratified, single-stage random-digit-dialing sample of landline telephone households

reasons. First, if there are significant differences in the characteristics of homeowners vs. non-homeowners, to predict the actual defaults, we are interested in the responses of the former and not the latter. Second, the question is more realistic for a homeowner, who might face this decision, rather than for a renter, who might never face it and does not have a clear sense of what are the costs of leaving a owned house.

Those who answered negatively to the decision to default at -50K were then asked "If the value of your mortgage exceeded the value of your house by 100K, would you walk away from your house (that is, default on your mortgage) even if you could afford to pay your monthly mortgage?" Of the respondents, 26% answered "yes." The respondents who had answered negatively to the last question were finally asked the same question, but with a higher difference between the mortgage and the value of the house. In the December survey, this value was 300K, in the March survey, 200K. Interestingly, the difference between the two is not so large. Forty-one percent of the respondents declare they would default if their negative equity equals 200K, while 45 percent declare so if the negative equity is 300K.

2.2 Morality of Strategic Default

Respondents were also asked "Do you think that it is morally wrong to walk away from a house when one can afford to pay the monthly mortgage?" A large majority (81%) respond positively to this question. While considering strategic default morally wrong does not prevent people from doing so, the propensity to default strategically is much higher for people who think strategic default is morally acceptable. As Table 1a shows, 20% of the "immoral" people are willing to default if the negative equity equals -50K vs. 7% of the "moral"ones. The gap is even bigger at   -100K: 41% vs. 22% and remains very large (in fact, increases slightly) when we move to -200K (59% versus 37%) and -300K (63% versus 38%).

Given these are answers to a survey it is possible that the responses are affected by the subjects' desire to "look good" in the eyes of the interviewer. If this is the case, respondents who are concerned about their social image are more likely to say that they are unwilling to default and that default is morally wrong. We do not regard this as a major problem. Since default is a publicly observable variable, the very same people who do not want to appear as bad people to the interviewer will also be less likely to default so as to not appear as bad people in front of their neighbors. If we think—as it is likely—that the social pressure is stronger when there is no

money on the table than when there is a lot, then the likelihood of actual default should be closer to the declared probability of default of the "immoral" people (who are less sensitive to social pressure) than to the "moral" ones.

2.3 Diffusion of Strategic Default

To capture the diffusion of defaults in a certain area we constructed a ZIP-code level variable with the percentage of mortgages in foreclosures. From RealtyTrack.com, we collected the number of foreclosures in December (for the December survey) and in March (for the March survey) for each ZIP code represented in the survey. We then multiplied this number by 12 (to turn it into an annual figure) and divided it by the number of mortgages in the same ZIP code as of December 31, 2008. The number of outstanding home-related loans is from the Analytical Services group at Equifax (Mian and Sufi, 2009).[5] The results, presented in Table 1b, show that the average percentage of foreclosures is 4%, with a median of 2% and a standard deviation of 39%.

To measure the diffusion of actual strategic defaults in the December survey, we asked "Do you know anyone who has walked away from his/her house (that is, defaulted on their mortgage) even if he/she could afford to pay the monthly mortgage?" Of those interviewed 8.4% of the responded affirmatively. While this question gives us a measure of the exposure to strategic default, it does not give us an estimate of the percentage of defaults that are strategic (at least in the eyes of their acquaintance). For this reason, in the March survey we asked first "How many people do you know who have defaulted on their house?" and then "How many people do you know who have walked away from his/her house (that is, defaulted on their mortgage) even if he/she could afford to pay the monthly mortgage?" By taking a ratio between the answer to the second and the first question, we get an estimate of the percentage of default that is considered strategic. We obtain that 26% of the observed defaults are considered strategic.

With these two different sets of questions, we construct a dummy variable common to the two surveys that indicates whether the respondent knows at least one person who defaulted strategically. Overall, 9% of the households know somebody who defaulted strategically while 26% of the households know somebody who defaulted.

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[5] We thank Amir Sufi for providing us with these data and Equifax for allowing us use it.

2.4 Other variables

In the second survey, we ask directly for an estimate of the value of the house. Unfortunately, the first survey does not contain a similar question. To compute one, we average the value of the house in the second survey by income class and then apply this value to respondents in the first survey, on the basis of their declared income bracket. The value of this house and the percentage that 50K and 100K represent of the value of this house is reported in Table 1a. On average, 50K represents 34% of the value of the house and obviously, 100K, 68%.

To measure individuals' attachment to their current house, we asked them how long ago they bought their home. Unfortunately, in the first survey this question is mixed with the refinancing decision (When did you buy or last refinance your house"), while in the second it is separate. In spite of this distortion, we find that 69% of the respondents bought the house more than 5 years ago.

Besides standard demographic variables, the survey collects also information some more specific ones summarized in Table 1b. We measure risk attitudes by using a question previously asked and validated by Dohmen et. al (2008): "On a scale from 1 to 10, where 1 is unwilling and 10 fully willing, are you generally a person who is willing to take risk?" To obtain a measure of risk aversion, we recode it so that 1 indicates a person fully willing to take risk and 10 a person totally unwilling to take risk. On average, this measure equals 6 (standard deviation 2.5).

To measure individual expectations about house price appreciation, we ask them "In the next 5 years do you think house prices will…" where there are five possible responses that go from "1: Increase a lot (greater than 20%)" to "5:Decrease a lot (greater than -20%)." On average, people expect moderate increase in house prices over the next 5 years (between 5 and 20%). Once again we recoded the variable so that 1 means decrease a lot and 5 increase a lot.

We also elicit a subjective probability of unemployment by asking "On a scale from 0 to 100, where 0 equals "absolutely no chance" and 100 equals "absolutely certain", what do you think are the chances that you will lose your job during the next year?" On average, respondents think they have a 13% chance to become unemployed within the following 12 months, with a median equal to 0 and substantial heterogeneity (standard deviation 26%).

Finally, we tried to measure the feeling respondents had in the (then) current economic environment by asking how angry they were ("On a scale from 1 to 5 with 1 being 'not angry at

all' and 5 being 'very angry,' how angry are you about the current economic situation?") and their attitude toward using Government money to help homeowners ("Do you think the Government should intervene to help homeowners who are defaulting?). People exhibit a moderately high level of anger 3.7 out of 5, with a median of 4 and a slight majority in favor of helping homeowners (53%).

3. MSA-level evidence

While direct evidence of strategic default at the aggregate level is hard to gather, we start by looking at some indirect evidence. First of all, our discussion on the determinants of strategic default suggests that strategic default does not occur when home equity just turns negative, but only when it is significantly negative. Since homeowners typically have an equity cushion at least of 10% of the value of the house, we do not expect strategic default to play any role until house prices have dropped significantly more than 10%. In Figure 1, we plot the fraction of existing mortgages that are at least 120 days late at the end of 2008 by MSA (obtained from Equifax) on the changes in house prices from their peak (per Zillow.com). As the plot shows, there is very little relationship between the two in MSAs where house prices dropped less than 20% from their peak. By contrast, this relationship becomes very strong in areas where house prices dropped more than 20%.

Figure 2 shows that this effect goes through the magnitude of the negative equity. Unfortunately, we do not have an estimate of the home equity of all the households by MSA level, but Zillow.com provides an estimate for the amount of equity of the median household who bought a house in 2006. Not surprisingly, there is a negative relationship between delinquencies and home equity at any level of home equity, since households with cashflow problems can more easily pay their mortgages by refinancing if they have positive home equity. This relationship becomes stronger, however, when the median household has a negative equity that exceeds 10%.

In Table 2, we explore these relationships in a more systematic way. In Column 1, we show that changes in unemployment in 2008 predict the end of 2008 mortgage delinquencies at the MSA level. Once we control for the drop in house prices, however, the coefficient of the change in unemployment loses statistically significant, while that of the change in house prices is both statistically and economically significant (Column 2). A 10% drop in house prices increases

the proportion of delinquent mortgages by 1.4 percentage points (a 36% increase with respect to the sample mean). In columns 3 and 4, we split the sample on the basis of the magnitude of the house price drop. In MSAs where the drop in house prices is above the median, house price changes have a large effect on delinquencies: a 10% drop in house prices increases the proportion of delinquent mortgages by 1.9 percentage points (almost a 50% increase with respect to the sample mean). By contrast, in MSAs where house prices dropped less than 17% (the median drop), neither unemployment nor house price drop have any effect in explaining the proportion of mortgage delinquencies.

In Column 5 and 6, we redo the split based on the level of unemployment. The effect of house prices is present in both samples, but it is stronger in the areas where the increase in unemployment is larger.

This evidence, while consistent with strategic default, is also consistent with the existence of non-linearities in non-strategic defaults. It is well possible that the MSAs with the largest decrease in house prices are also the ones that have the sharpest deterioration of the real economy. In these areas, households may be less likely to make their monthly payment because of underlying economic reasons. Thus, to explore the existence and the importance of strategic default, we resort to survey data.

4. Determinants of Strategic Default

In section 2.3, we found that according to their acquaintances, 26% of the actual default are strategic, i.e. are done by people who can afford to pay their monthly mortgages. In this section, we try and use our survey data to see what the determinants of these strategic defaults are.

4.1 Non parametric analysis

We start with a nonparametric analysis of the responses. Figure 3 reports the percentage of respondents who declare they would default strategically as a function of the magnitude of the equity shortfall relative to the value of their own house. Figure 3A is obtained using the responses obtained for a 50K shortfall and the percentage of shortfall is 50K divided by their reported value of the house. Figure 3B is obtained using the responses obtained for a 100K shortfall and the percentage of shortfall is 100K divided by their reported value of the house.

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Figure 3A shows that no respondent is willing to default strategically if the negative equity shortfall is less than 10%. This percentage rises almost linearly to 17% if the value of the shortfall is in the 50-60% range. As already seen in Table 1A, this percentage is much higher for people who think it is morally acceptable to default at all levels of the shortfall above 10%. Albeit the relation is non monotonic (probably due to the paucity of observations), the fraction of those willing to default strategically among the "immoral" people raises from 0% to 27% as the shortfall increases from 10 to 50-60%.

Figure 3B, which uses the answers for when the shortfall is 100K, shows the same pattern, but at a higher level. The percentage of people willing to do strategic default goes from 7% if the value of the shortfall is less than 10%, to 25% if the value of the shortfall is between 50% and 60% of the value of the house.

The difference between the level of responses (if not the trend) can be easily attributed to the fact that the decision to default is not only driven by an assessment of how big the shortfall is relative to the personal wealth, but also how large it is in absolute terms.

Figure 4 reports the percentage of respondents who are willing to do strategic default as a function of the frequency of foreclosure in the same ZIP code. The figure shows that the percentage of strategic default is constant until the percentage of default remains below 5%. Past that, there seems to be a raising trend, especially when we use the answers to the 100K shortfall question. We are going to explore this point further in the regression analysis.

4.2 Parametric Analysis

In Table 3, we regress individual responses to the question on strategic default on individual characteristics. In Panel A the dependent variable equals 1 if the answer to the 'walk away' question is yes when the shortfall is $50K. All the estimates are obtained through a probit regression and the coefficients reported are the marginal effects computed at the average value of the independent variables.

We start (Column 1) with only the second survey, for which we have more individual characteristics. As measures of relocation costs, we insert the age of the respondent (less than 35 years and more than 65), the number of kids, whether the kids go to local schools, and whether the house was bought more than five years before 2009.

As proxies for the financial cost of this decision, we insert the fraction of the shortfall with respect to the value of the house, the expectation about house price increases, the existence of significant assets outside the retirement account, the level of income, and the probability of being unemployed. As measures of the riskiness of this decision, we insert a dummy equal to 1 if the individual lives in a non-recourse state (i.e., the lender cannot go after his/her wealth outside of the house) and our measure of risk aversion. Finally, we control for several demographic variables like the macro geographic areas they live in (not reported) and the respondent's race.

Of all these variables, the most significant (both from an economic and a statistical point of view) are the value of the shortfall as a fraction of the value of the house, the attachment to the house, measured by whether the house was bought more than five years ago, and whether the respondent is young. The first two variables have the expected sign. When the shortfall increases by 10% of the value of the house, the probability of strategic default increases by 1 percentage point (11% of the sample mean). People who bought more than five years ago are 7 percentage points less likely to declare a strategic default. More surprising is that young people are less willing to walk away (6 percentage points). One possibility is that the young are more dependent on the loans market and thus face higher reputation costs from defaulting, which in this sample outweigh the effect on the propensity to default of their lower relocation costs. More marginally significant is the expectation about future house prices: the higher the expectation, the lower the probability of default. Moving from the expectation that house prices will remain flat (a value of 3 in our response scale) to a moderate increase (a value of 4) decreases the probability of default by only 2 percentage points.

In Column 2, we show that not much is lost if we restrict our attention to the variables present in both surveys. So, in Column 3, we merge the two surveys. The results are very similar. The major difference is that now older people are more likely to declare that they want to default while the effect of younger people becomes zero. Also the perceived probability of becoming unemployed becomes statistically significant. An increase in the probability of becoming unemployed of 10 percentage points increases the probability of declaring default in case of negative equity by one percentage point.

In Column 4, we insert a person's view on the morality of declaring strategic default. A person who considers it immoral to walk away from a mortgage when one can afford to pay its monthly cost is 7.2 percentage points less likely to declare strategic default (79% of the sample

mean). This variable appears orthogonal to all the other factors, whose coefficients are virtually unchanged.

In Column 5, we insert the percentage of foreclosures taking place in the same ZIP code. This variable has a positive and statistically significant effect on the probability of being willing to default strategically. A one-standard deviation increase in the percentage of foreclosures in the area increases the probability of a strategic default by two percentage points (24% of the sample mean).

In Column 6, we try to dig deeper into the source of this effect by inserting a dummy variable equal to one if the interviewed person knows somebody who did a strategic default. The coefficient of this variable is positive, but not statistically significant.

There are two potential problems in interpreting these results. First, since the question: "Do you think that it is morally wrong to walk away from a house when one can afford to pay the monthly mortgage?" was asked after respondents answered the questions about strategic default, to be consistent and provide justification to their behavior, respondents who have declared that would strategically default may state that they do not think it is immoral to do so. In this case, the correlation between strategic default and morality could be simply an artifact of the survey. In principle, the data are suggesting the opposite. While less than 20% of the respondents think it is morally acceptable to walk away, 9% are willing to walk away with a shortfall of 50K, 26% with a shortfall of 100K and 41% with a shortfall of 200K. Thus, there are many that *first* report that they would default *after* declare who it is immoral to do so, even if they had the opportunity to justify their stated behavior by answering that it is not immoral. Nevertheless, we cannot completely rule out that declared morality may partly reflect justification of defaults (creating an artificial positive correlation) nor that our index of morality is measured with error (biasing the effects of morality on default downward). To account for this, in column (7) we run a two step model in which we instrument morality with two indicators variables of whether the respondent is a Democrat or a Republican. Both these variables have strong prediction power on morality (F test for the instruments in the first stage regression is above 11; see also Section 5). The qualitative results stay the same, but the coefficient on morality increases 7-folds, suggesting that error in measuring morality may be an issue.

The second problem arises in interpreting the coefficient of the fraction of foreclosed mortgages as evidence of a contagion effect. In principle, what appears as a contagion may in

fact be the result of a correlated effect due to a clustering of individuals with similar characteristics. In this case this fear is reduced, if not eliminated, by the fact we are able to control for personal opinions on morality and for the value of the shortfall. In addition, in Table 5 we will be able to show that there is no evidence that people with weaker moral attitudes toward default tend to congregate in ZIP codes where defaults are more frequent.

If we remove the percentage of foreclosures in the ZIP code (Column 8), the effect of knowing somebody who did a strategic default increases in size and becomes marginally statistically significant at the 10% level. Quantitatively, though, the effect is large. Knowing somebody who did a strategic default increases the willingness to make a strategic default by 8 percentage points (82% of the sample mean). In Column 9, we also insert a personal opinion on whether the Government should help homeowners in trouble. The effect is positive, but not statistically significant.

Table 3B repeats the same analysis with a slightly different dependent variable. In this table, we use the willingness to default when the negative equity shortfall is equal to 100K. Consequently, when we measure the value of the shortfall with respect to the value of the house we divide 100K by the value of the house.

By and large the results are very similar, but there are some interesting differences. The coefficient on the dummy variable which is equal to 1 if the house had been purchased more than five years before 2009 halves in value and becomes statistically insignificant. This is consistent with the idea that relocation costs and emotional attachment to the house is an effective barrier against default at a low level of negative equity. When the equity shortfall becomes bigger, this effect vanishes. The second major difference is that at 100K negative equity, Hispanics are much more likely to default than black or white. Depending upon the specifications, the effect varies between 18 and 27 percentage points (between 70 and 112% of the sample mean). One possible interpretation is that many Hispanics are Mexicans and have the intention (or the outside option) to go back to Mexico, hence they face lower cost of default.

The marginal effect of the moral view doubles in size (15 percentage points), but slightly decreases as a percentage of the sample mean (from 77% to 57%). The same is true for the effect of house foreclosures in the same ZIP code area, which increases 50% in absolute size, but drops in half as a percentage of the sample mean.

Finally, a respondent view on whether the government should help homeowners becomes highly statistically significant. People who answer yes to that question are nine percentage points (35% of the sample mean) more likely to declare they want to do a strategic default when their negative equity equals 100K.

If the effect of foreclosures on the willingness to default is the result of some form of weakening social pressure or norm, it is likely to be non linear. In fact, Figure 4 seems to suggest that the effect increases nonlinearly with the percentage of foreclosures. For this reason, in Table 4 we rerun the last specification of Table 3A and splicing the percentage of foreclosures variable at the 75% level of foreclosures, which corresponds to 16% of foreclosures. As Table 4, shows the effect of foreclosures on the willingness to default is zero up to the 16% threshold and is both economically and statistically important above that threshold. In the 50K shortfall regression, a one-standard deviation increase in the percentage of foreclosures in the area increases the probability of a strategic default by 4 percentage points (46% of the sample mean), while in the 100K, it is regression by nine percentage points (36% of the sample mean).

Overall, we find that the most important variables in predicting the likelihood of a strategic default are moral and social considerations. Social considerations are directly affected by the frequency of foreclosures and the probability that somebody knows somebody else who strategically defaulted. What factors drive the morality consideration? We investigate this next.

5. The Moral View of Strategic Default

81% of the respondents think it is morally wrong to default on a mortgage when you can afford to pay it. Table 5 tries to explore how this moral attitude differs across socioeconomic groups. The regression is a probit model, where the dependent variable is equal to one if the respondent declares that it is morally wrong to default if one can pay the mortgage. The estimated coefficients are the marginal effects computed at the mean of the independent variables.

Not surprisingly, younger people are 12 percentage points (15% of the sample mean) less likely to think it is morally wrong to default (see Column 1). More surprisingly, older people are also less likely to think it is morally wrong to default, while the effect is roughly half. More educated people are less likely (8 percentage points) to think it is morally wrong to default and so are African American (14 percentage points). Richer people are more likely to think that

default is morally wrong. One standard deviation increase in income increases the likelihood of a positive response by 1.92 percentage points.

In Column 2, we add some geographical dummies. Default is perceived as morally wrong less in the Northeast (6 percentage points) and the West (8.5 percentage points). The remaining coefficients are unchanged.

In Columns 3 and 4, we explore whether the knowledge of other defaults (or other strategic defaults) changes a person moral stance. In both cases, we find that there is no evidence of that. If anything, both variables have a positive effect, in the sense that being in an area with a lot of foreclosures increases one's moral stance against strategic default rather than reducing it. This effect could reflect a resentment for the negative externalities strategic defaults impose on the neighbors' property. Alternatively, it could be due to the fact that the temptation to default is higher in areas where there are a lot of foreclosures (which are areas where house prices have fallen a lot) and thus people need to hang on more strongly to their moral beliefs. Finally, it could be a self selection effect: people who did default strategically are unlikely to answer a phone survey. Regardless of the reason, there is no evidence that areas where there are a lot of defaults are areas where people have weaker norms against default.

In Column 5, we explore whether the attitude toward strategic default differs according to political opinions. Self-reported Republicans are 9.5 percentage points more likely than independents to think that strategic default is morally wrong, but so are the self reported Democrats, albeit much less do (5.7 percentage points). In other terms, independents are really the most "immoral" from this point of view.

Given that moral consideration represents an important barrier to default, one risk is that some economic decisions, otherwise aimed at improving the situation, might have perverse effects by undermining the moral determination not to default. For this reason, in Column 6 we insert a measure of how people feel angry about the current situation. The effect is both economically and statistically indistinguishable from zero.

This effect seems to be present, when we insert a dummy variable equal to one if the respondent thinks the government should help the homeowners (Column 7). The coefficient is negative and statistically significant. Individuals who think that the government should help homeowners are 12 percentage points less likely to say that strategic default is morally wrong. Interestingly, when we introduce this variable, there is no longer a difference between

Republicans and Democrats. This result is not surprising, as Democrats are overwhelmingly more likely to support help for homeowners, thus this control is correlated with being a Democrat. This result is also not just limited to the attitude towards homeowners. If we substitute the opinion on whether the Government should help homeowners with a similar question on whether the Government should help banks, we obtain the same result. Hence, the attitude toward using government money to help distressed situation is negatively correlated with the perception of the morality of a strategic default.

In unreported regression, we test whether other political opinion/perception of fairness in the system are correlated with the perception of morality of strategic default. We do not find any statistically significant relation, suggesting that the morality question is fairly stable and not affected by current events. This result is interesting, per se, suggesting that this opinion are deeply rooted and unlikely to be changed by policies, or current events.

6. Conclusions

Both the Bush and the Obama administration policies are based on the presumption that the current housing crisis is only due to the excessive burden current mortgage payments imposed on many households: no attempt has been made to resolve the negative equity problem, i.e., the fact that 22% of U.S. households have a mortgage that is bigger than the value of their house and might have a strong temptation to walk away from their mortgages even if they could afford to pay.

While these people are unlikely to walk away when the amount of this negative equity is small, very little is known about their willingness to walk away when the negative equity becomes large in absolute value. Our survey data addresses this gap. We find that relocation costs and other considerations prevent homeowners from defaulting as long as their negative equity does not exceed (in absolute value) 10% of the value of their house. After that level, they start to default at an increasing pace, reaching 17% of households defaulting strategically when their equity shortfall reaches 50% of the value of their house.

The most important barriers to strategic default seem to be moral and social. Ceteris paribus, people who consider it immoral to default are 77% less likely to declare their intention to do so, while people who know someone who defaulted are 82% more likely to declare their

intention to do so. While moral attitudes toward default do not seem to be affected by the surrounding environment nor by the anger people exhibit vis-à-vis the current environment, the social pressure not to default is weakened when homeowners live in areas with high frequency of foreclosures or know other people who defaulted strategically. Our results suggest that these contagion effects should be seriously considered in public policy regarding housing.

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Figure 1: Delinquent mortgages and house prices

On the y-axis there is the fraction of existing mortgages that are at least 120 days late by MSA area. The data is from Equifax. On the x-axis the changes in house prices from their peak at the MSA level. The data are from Zillow.com
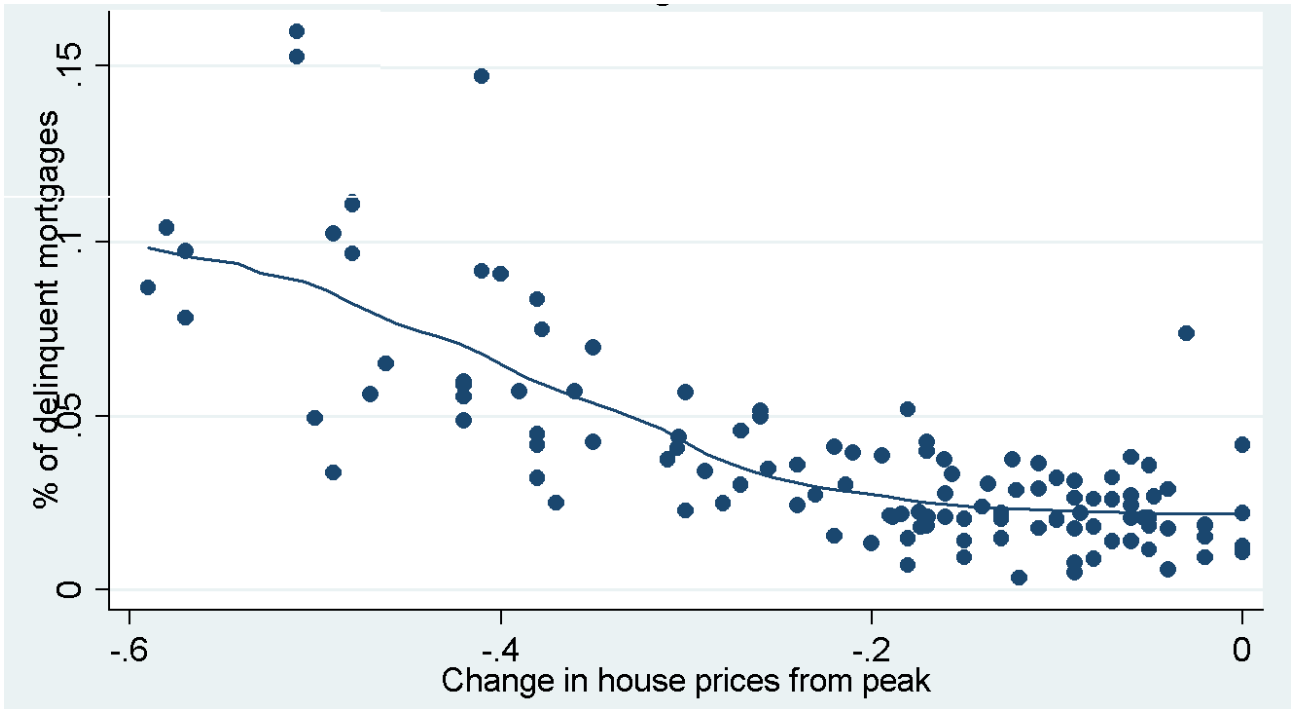
Figure 2: Delinquent mortgages and negative equity

On the y-axis there is the fraction of existing mortgages that are at least 120 days late by MSA area. The data is from Equifax. On the x-axis the median equity in houses purchase in 2006 at the MSA level. The data are from Zillow.com
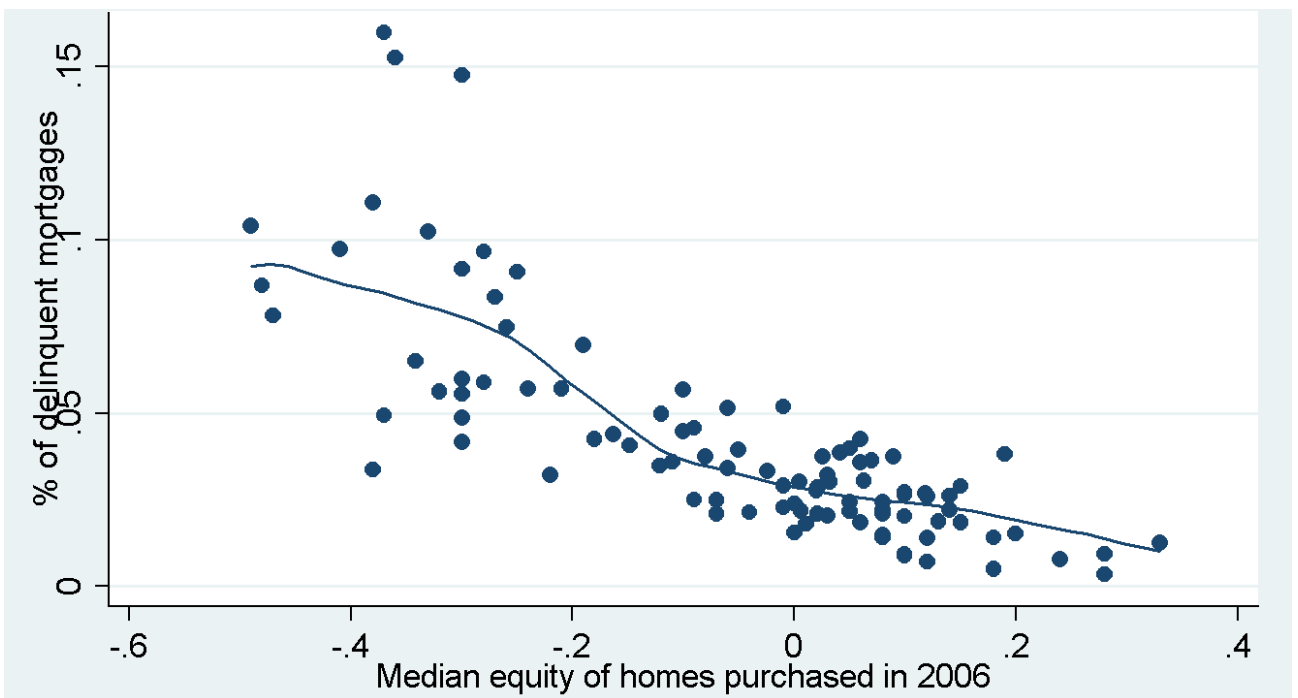
Figure 3: Percentage of homeowners willing to default as a function of the equity shortfall

On the y-axis there is the fraction of homeowners who claim they will default if the equity in their house was equal to -50K (-100K). On the x-axis the ratio between the negative equity amount (-50K/-100K) and the self-reported value of the house of that person. Source:www.financialtrustindex.org.

A: When the equity shortfall equals 50K
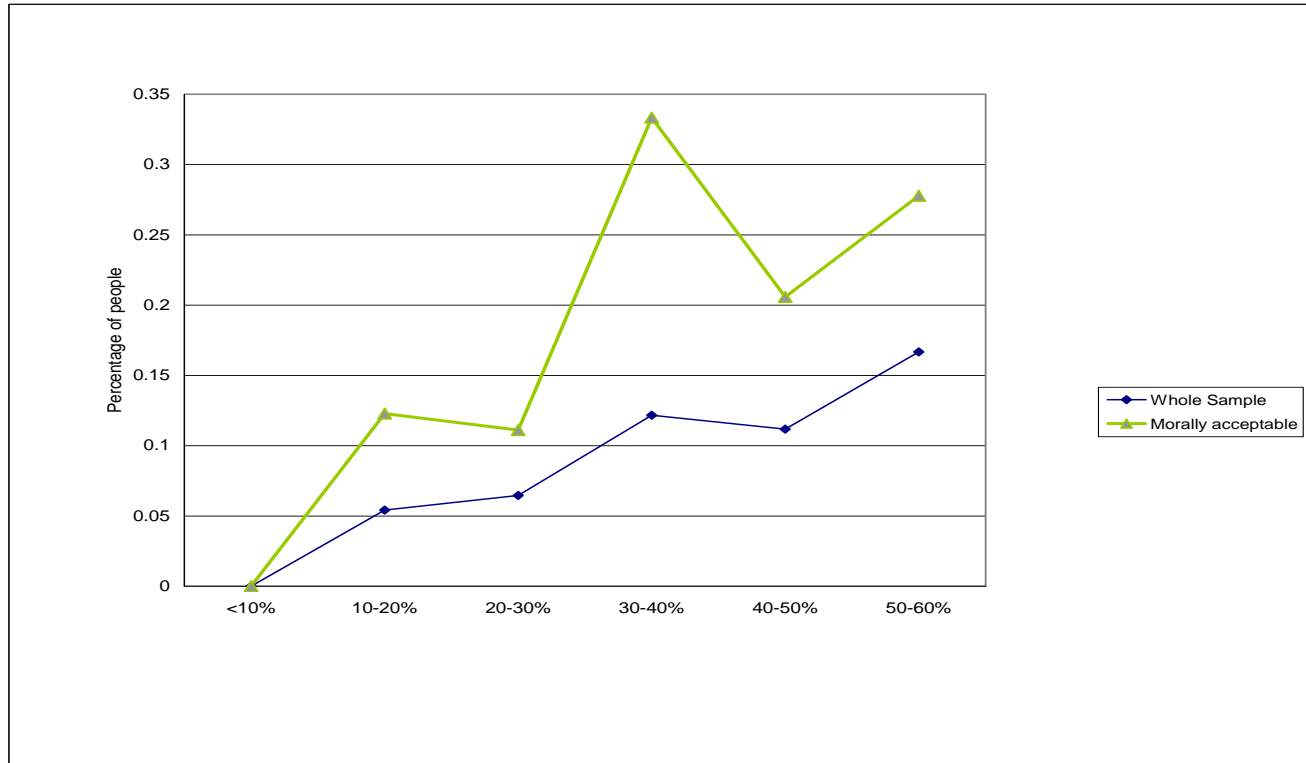
B: When the equity shortfall equals 100K
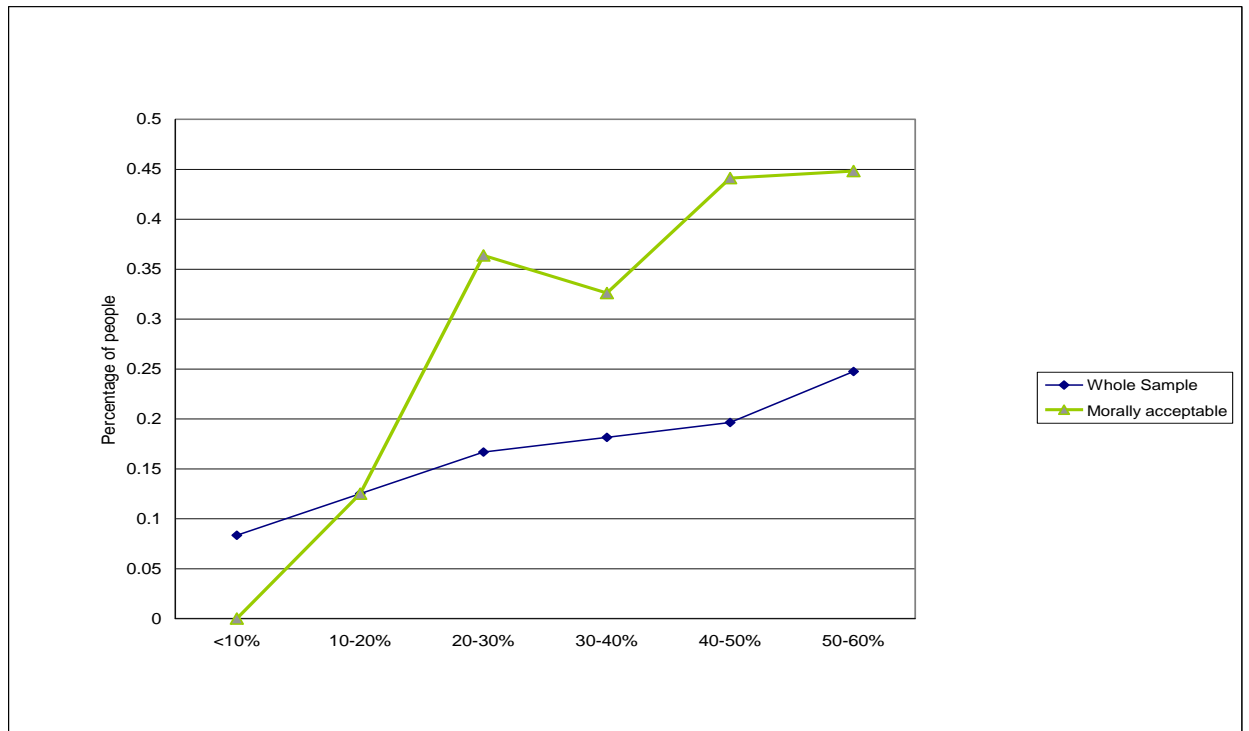
Figure 4: Percentage of homeowners willing to default as a function of the foreclosures in the area

On the y-axis there is the fraction of homeowners who claim they will default if the equity in their house was equal to -50K (-100K). Source: www.financialtrustindex.org. On the x-axis the percentage of initiated foreclosures as a fraction of the total number of outstanding mortgages in the ZIP code in which the homeowner lives. Source: www.realtytrack.com and Equifax.
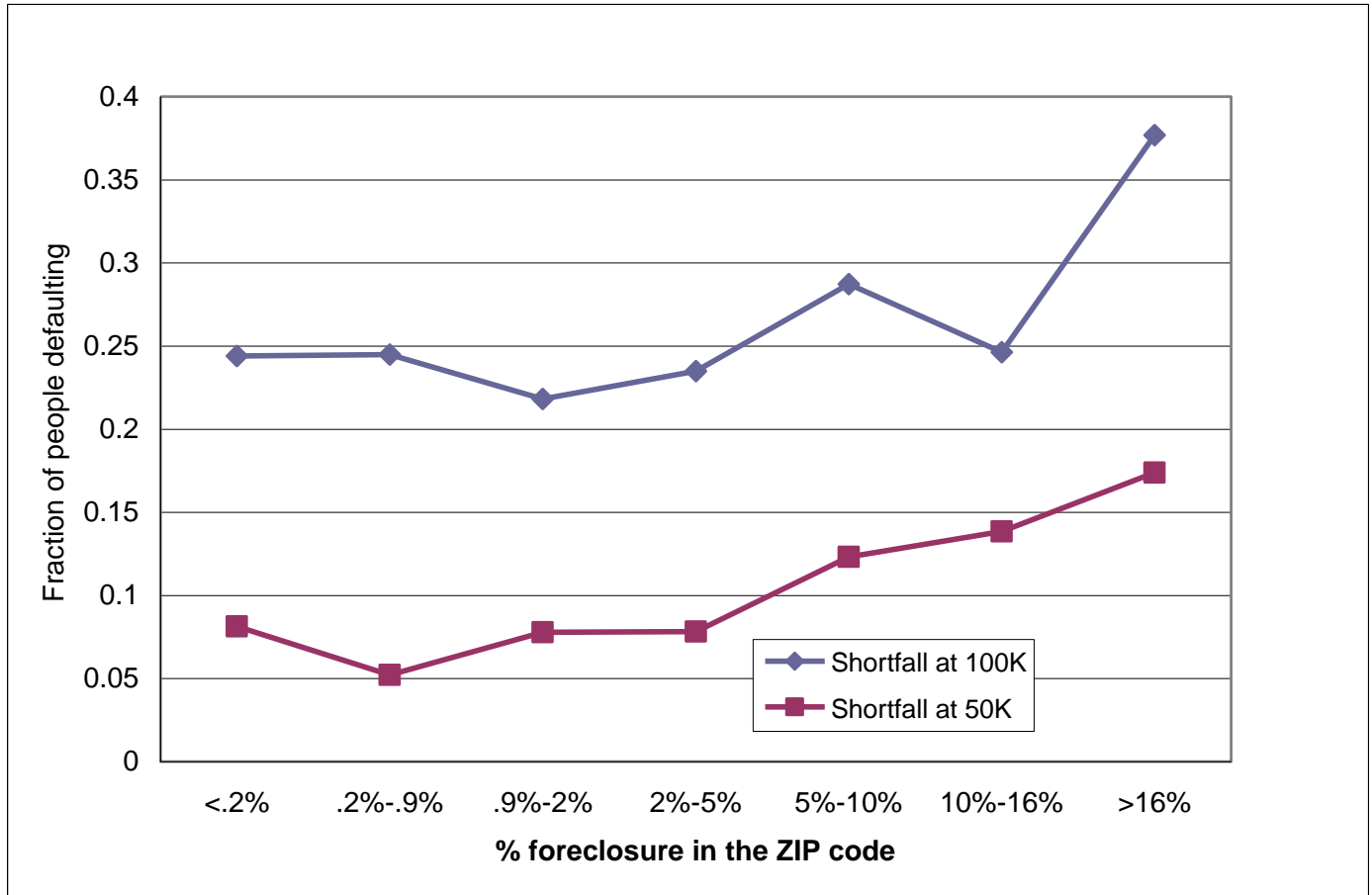
Table 1: Summary Statistics

Data are from two waves of the Chicago Booth –Kellogg School Financial Trust Index survey. Each survey, conducted by Social Science Research Solutions, collects information on a representative sample of 1,000 American households. The first wave of the survey took place from the 17th to the 28th of December 2008. The second wave took place the third week of March 2009. One adult respondent in each household was randomly contacted and asked whether they were in charge of household financial, either alone or together with the spouse. Only individuals who claimed such responsibility are included in the survey. We only examined data for people who declare themselves homeowners.

Negative equity=50K is the percentage of people that answered yes to the question "If the value of your mortgage exceeded the value of your house by 50 thousand dollars would you walk away from your house (that is, default on your mortgage) even if you could afford to pay your monthly mortgage?"; for the people who answered negatively, we asked "If the value of your mortgage exceeded the value of your house by 100 thousand dollars would you walk away from your house (that is, default on your mortgage) even if you could afford to pay your monthly mortgage?"; Negative equity=100K is the percentage of people answering yes to the latter question. For people who answered negatively, we repeated the same question with a negative equity of 200 (March survey) or 300K (December survey).

Percentage of foreclosures in the area is the ratio between the monthly foreclosures (in December 2008 for the first wave survey, and in March 2009 for the second wave) and the number of outstanding home-related loans in the zipcode as of December 2008, multiplied by 12. The monthly foreclosures are the total number of properties that receive foreclosure notices (default notice, foreclosure auction notice, or bank repossession) (source: Realtytrac). The number of outstanding home-related loans is from the Analytical Services group at Equifax (Mian and Sufi, 2009). Defaulting is morally wrong is the percentage of people responding positively to the following question: "Do you think that it is morally wrong to walk away from a house when one can afford to pay the monthly mortgage?" Know someone who has walked away is the percentage of people who answered positively to a question asking whether they knew somebody who have defaulted on their mortgage but still could afford to pay the monthly mortgage. Government should help homeowner is the percentage of respondents agreeing with that statement.

A: Percentage of homeowners declaring intention to default

	Whole sample	Default is morally wrong	Default is not morally wrong
Percentage of people declaring intention to default with:			
Negative equity=50K	9.38%	7.02%	20.00%
Negative equity=100K	25.81%	21.96%	40.69%
Negative equity=200K	41.23%	37.38%	59.15%
Negative equity=300K	44.65%	38.12%	63.29%

Variable	Mean	Median	Std. Dev.	Min	Max	Obs.
Defaulting is morally wrong	0.81	1	0.39	0.00	1	1569
Percentage of foreclosures in the area (as fraction of home loans)	0.04	0.02	0.06	0.00	0.36	1477
Know someone who has walked away	0.09	0	0.29	0.00	1	1604
Government should help homeowners	0.53	1	0.50	0.00	1	1532
Age < 35	0.09	0	0.29	0.00	1	1646
Age > 65	0.30	0	0.46	0.00	1	1646
N. of kids in the household	0.55	0	0.99	0.00	5	1636
Do you have kids in local schools?	0.26	0	0.44	0.00	1	815
Own > $50K in financial assets excluding retirement?	0.53	1	0.50	0.00	1	774
Bought/refinanced >5 years	0.69	1	0.46	0.00	1	1293
House price expectations over next 5 years	3.57	4	0.89	1.00	5	1599
Probability of becoming unemployed (%)	13.29	0	25.63	0.00	100	1495
Value of the house	218,695	175,000	284,055	25,000	5,350,000	1378
50K shortfall as a fraction of the value of the house	0.34	0.29	0.23	0.01	2	1378
100K shortfall as a fraction of the value of the house	0.68	0.57	0.45	0.02	4	1378
Income (K dollars)	73.29	62.50	52.44	5.00	250	1468
Risk aversion	6.27	6	2.51	1.00	10	1645
Nonrecourse	0.30	0	0.46	0.00	1	1646
Black	0.06	0	0.24	0.00	1	1646
Hispanic	0.03	0	0.17	0.00	1	1646
North east	0.22	0	0.41	0.00	1	1646
South	0.34	0	0.48	0.00	1	1646
West	0.19	0	0.39	0.00	1	1646
North-Center	0.25	0	0.43	0.00	1	1646
Republican	0.34	0	0.47	0.00	1	1593
Democratic	0.35	0	0.48	0.00	1	1593
Independent	0.30	0	0.46	0.00	1	1593
Angry	3.70	4	1.30	1.00	5	1631
Some or completed college	0.16	0	0.37	0.00	1	1646

Table 2: MSA-level Data

The fraction of existing mortgages that are at least 120 days late at December 2008 by MSA area is from Equifax. The changes in house prices from their peak at the MSA level are from Zillow.com. The changes in the percentage level of unemployment during 2008 are from the Bureau of Labor Statistics. In Panel B the dependent variable is the fraction of existing mortgages that are at least 120 days. The estimation is by OLS. Robust standard errors are reported in brackets. */**/*** indicates statistically significance at the 10%, 5%, and 1% level.

Panel A: Sample Statistics

	Mean	Median	Std. Dev	Min	Max	N
Mortagage delinquency	0.04	0.03	0.03	0.00	0.16	121
Drop in house prices from the peak	-0.21	-0.17	0.16	-0.59	0.00	121
2008 Changes in unemployment	2.53	2.30	0.94	0.50	5.40	121

Panel B: Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	Whole sample	Whole sample	Unemployment change		House prices drop	
			Below median	Above median	Below median	Above median
2008 changes	0.016***	0.002	0.003	0.002	0.005	0.001
in unemployment	(0.003)	(0.002)	(0.004)	(0.001)	(0.003)	(0.004)
Drop in house prices		-0.135***	-0.191***	-0.002	-0.034*	-0.161***
from the peak		(0.017)	(0.031)	(0.032)	(0.019)	(0.020)
Constant	-0.002	0.004	-0.020*	0.018***	0.011*	-0.001
	(0.007)	(0.005)	(0.010)	(0.005)	(0.006)	(0.015)
Observations	121	121	60	61	60	61
R-squared	0.247	0.567	0.53	0.017	0.091	0.544

Table 3: Determinants of the Probability of Strategic Default

The dependent variable is a dummy equal to one if the homeowner says s/he is willing to default when the value of his home equity equal -50 (in Panel A) or -100K (in Panel B) even if s/he can afford to pay the monthly mortgage costs. All the other variables are defined in Table 1. The reported coefficients are marginal effect estimated with a probit model and computed at the mean of the independent variables. In columns (7) the reported coefficients are the marginal effect estimated through a probit model where "default is morally wrong" is instrumented with indicator variables on whether the respondent is a Democrat, or a Republican. This model is estimated using maximum likelihood estimation. Robust standard errors are in brackets. */**/*** indicates statistically significance at the 10%, 5%, and 1% level.

Panel A: Shortfall at -50K

	(1) wave=2	(2) wave=2	(3) wave1&2	(4) wave1&2	(5) wave1&2	(6) wave1&2	(7) wave1&2	(8) wave1&2	(9) wave1&2
Default is morally wrong				-0.072**	-0.074**	-0.071**	-0.567**	-0.057**	-0.062**
				(0.028)	(0.029)	(0.029)	(0.232)	(0.028)	(0.030)
Percentage of foreclosures in the area					0.375***	0.363**	0.580***		0.380***
					(0.142)	(0.143)	(0.185)		(0.146)
Know someone who has walked away						0.048	0.058*	0.077*	0.051
						(0.035)	(0.039)	(0.041)	(0.037)
Government should help homeowners defaulting								0.017	0.011
								(0.018)	(0.017)
Age <=35	-0.061***	-0.062***	0.008	0.001	-0.013	-0.012	-0.047	0.002	-0.013
	(0.018)	(0.020)	(0.785)	(0.029)	(0.024)	(0.025)	(0.036)	(0.029)	(0.025)
Age >=65	0.051	0.049	0.054**	0.053*	0.048*	0.050*	0.038	0.061**	0.049*
	(0.036)	(0.037)	(0.029)	(0.028)	(0.028)	(0.029)	(0.038)	(0.031)	(0.030)
N. of kids	0.014	0.002	0.004	0.006	0.008	0.005	0.014	0.002	0.005
	(0.017)	(0.012)	(0.605)	(0.008)	(0.008)	(0.008)	(0.012)	(0.008)	(0.008)
Kids in local schools?	-0.030								
	(0.036)								
Own >$50K in fin. assets excluding retirement?	0.009								
	(0.024)								
Bougth/refinanced>5 years	-0.072**	-0.064*	-0.042**	-0.041**	-0.042**	-0.041**	-0.045*	-0.040*	-0.040*
	(0.035)	(0.034)	(0.034)	(0.020)	(0.021)	(0.021)	(0.030)	(0.021)	(0.021)
House price expectations: 5 year	-0.016	-0.014	0.000	0.001	0.003	0.004	0.011	0.001	0.003
	(0.011)	(0.012)	(0.982)	(0.009)	(0.009)	(0.009)	(0.013)	(0.009)	(0.009)
Prob. become unemployed	0.001*	0.001**	0.001***	0.001***	0.001**	0.001**	0.001*	0.001**	0.001**
	(0.000)	(0.000)	(0.005)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Shortfall as a fraction of the the value of the house	0.103***	0.098***	0.099***	0.096***	0.095***	0.096***	0.122**	0.094***	0.097***
	(0.036)	(0.035)	(0.002)	(0.034)	(0.032)	(0.032)	(0.052)	(0.035)	(0.034)
Income: K dollars	-0.010	-0.015	-0.024	-0.023	-0.012	-0.012	-0.007	-0.022	-0.014
	(0.026)	(0.027)	(0.270)	(0.021)	(0.021)	(0.021)	(0.026)	(0.023)	(0.022)
Risk aversion	-0.006	-0.006	-0.002	-0.002	-0.001	-0.000	-0.003	-0.002	-0.001
	(0.005)	(0.005)	(0.543)	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)
Nonrecourse	0.011	0.015	0.006	0.005	-0.005	-0.006	-0.012	0.003	-0.010
	(0.028)	(0.029)	(0.782)	(0.022)	(0.022)	(0.022)	(0.027)	(0.023)	(0.022)
Black	0.082	0.076	0.037	0.031	0.020	0.025	-0.023	0.029	0.021
	(0.066)	(0.066)	(0.278)	(0.038)	(0.036)	(0.038)	(0.046)	(0.040)	(0.038)
Hispanic	0.155	0.136	0.061	0.050	0.023	0.016	0.005	0.052	0.026
	(0.124)	(0.120)	(0.267)	(0.064)	(0.056)	(0.054)	(0.058)	(0.066)	(0.059)
Observations	493	500	939	920	847	835	816	862	792

Panel B: Shortfall at -100K

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	wave=2	wave=2	wave1&2	wave1&2	wave1&2	wave1&2	wave1&2	wave1&2	wave1&2
Default is morally wrong				-0.147***	-0.153***	-0.152***	-0.685***	-0.130***	-0.137***
				(0.042)	(0.045)	(0.045)	(0.192)	(0.044)	(0.046)
Percentage of foreclosure in area					0.551*	0.465	0.749**		0.434
					(0.284)	(0.287)	(0.289)		(0.294)
Know someone who has walked away						0.077	0.071	0.091*	0.070
						(0.054)	(0.053)	(0.054)	(0.054)
Government should help homeowners								0.095***	0.091***
								(0.030)	(0.031)
Age <=35	-0.016	-0.035	0.123**	0.110*	0.087	0.093	0.000	0.098*	0.074
	(0.074)	(0.073)	(0.057)	(0.057)	(0.059)	(0.059)	(0.037)	(0.056)	(0.058)
Age >=65	0.118**	0.097*	0.122***	0.106**	0.118***	0.136***	0.091*	0.149***	0.157***
	(0.056)	(0.054)	(0.041)	(0.041)	(0.043)	(0.044)	(0.057)	(0.045)	(0.046)
N. of kids	-0.054	-0.003	-0.002	-0.000	0.002	-0.001	0.015	0.003	0.006
	(0.034)	(0.019)	(0.014)	(0.014)	(0.015)	(0.015)	(0.017)	(0.014)	(0.015)
Kids in local schools?	0.150*								
	(0.088)								
Own >$50K in fin assets excluding retirement	-0.060								
	(0.044)								
Bougth/refinanced> 5 years ago	-0.087	-0.077	-0.033	-0.023	-0.042	-0.036	-0.027	-0.014	-0.033
	(0.053)	(0.053)	(0.034)	(0.034)	(0.035)	(0.035)	(0.036)	(0.034)	(0.036)
House price expectations: 5yr	-0.010	-0.007	-0.006	-0.006	-0.000	0.001	0.010	-0.011	-0.007
	(0.023)	(0.023)	(0.016)	(0.016)	(0.017)	(0.017)	(0.018)	(0.017)	(0.018)
Prob. become Unemployed	0.002**	0.002***	0.001***	0.001***	0.001***	0.001***	0.001*	0.001**	0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Shortfall as a fraction of the value of the house	0.134***	0.135***	0.124***	0.123***	0.120***	0.115***	0.097**	0.125***	0.122***
	(0.039)	(0.038)	(0.035)	(0.036)	(0.036)	(0.036)	(0.040)	(0.038)	(0.039)
Income:Kdollars	-0.002	-0.025	-0.019	-0.025	-0.008	-0.009	-0.001	-0.014	0.002
	(0.042)	(0.041)	(0.033)	(0.034)	(0.034)	(0.034)	(0.035)	(0.036)	(0.036)
Risk aversion	-0.002	-0.004	0.006	0.005	0.007	0.005	-0.001	0.002	0.004
	(0.009)	(0.009)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Nonrecourse	-0.044	-0.042	-0.021	-0.018	-0.026	-0.021	-0.028	-0.012	-0.020
	(0.048)	(0.048)	(0.036)	(0.037)	(0.039)	(0.039)	(0.038)	(0.038)	(0.041)
Black	0.112	0.125	0.026	0.005	-0.014	-0.046	-0.118	-0.051	-0.063
	(0.088)	(0.089)	(0.058)	(0.058)	(0.057)	(0.054)	(0.059)	(0.053)	(0.053)
Hispanic	0.262*	0.286**	0.222**	0.219**	0.192*	0.179*	0.123	0.236**	0.216**
	(0.157)	(0.145)	(0.097)	(0.101)	(0.103)	(0.103)	(0.104)	(0.103)	(0.105)
Observations	493	500	939	920	847	835	816	862	792

Table 4: Spline Regression

The dependent variable is a dummy equal to one if the homeowner says s/he is willing to default when the value of his home equity equal -50 (first column) or -100K (second) even if s/he can afford to pay the monthly mortgage costs. All the other variables are defined in Table 1. The percentage of foreclosures is splined at the 75% level of the distribution of foreclosures. The reported coefficients are marginal effect estimated with a probit model and computed at the mean of the independent variables. Robust standard errors are in brackets. */**/*** indicates statistically significance at the 10%, 5%, and 1% level.

	Shortfall 50	Shortfall 100
Age <=35	-0.013 (0.024)	0.086 (0.059)
Age >=65	0.050* (0.028)	0.121*** (0.043)
N. of kids	0.008 (0.008)	0.002 (0.015)
Bought/refinanced > 5 years	-0.042** (0.020)	-0.042 (0.035)
House price expectations: 5 year	0.003 (0.009)	-0.000 (0.017)
Prob. become unemployed	0.001** (0.000)	0.001*** (0.001)
Shortfall as a fraction of the value of the house	0.096*** (0.032)	0.121*** (0.036)
Income: K dollars	-0.012 (0.021)	-0.007 (0.034)
Risk aversion	-0.000 (0.004)	0.008 (0.007)
Nonrecourse	-0.002 (0.022)	-0.019 (0.039)
Black	0.024 (0.037)	-0.008 (0.057)
Hispanic	0.019 (0.057)	0.182* (0.104)
North East	-0.010 (0.023)	0.003 (0.044)
South	0.015 (0.023)	0.051 (0.042)
West	-0.039* (0.023)	-0.075 (0.048)
Default is morally wrong	-0.073** (0.029)	-0.154*** (0.045)
Percentage of foreclosures (<16%)	0.144 (0.229)	-0.004 (0.444)
Percentage of foreclosures (>16%)	0.719** (0.313)	1.564** (0.713)
Observations	847	847

Table 5: Determinants of Morality View

The dependent variable is a dummy equal to one if the homeowner says it is morally wrong to default when you can afford to pay the monthly mortgage costs. All the other variables are defined in Table 1. The reported coefficients are marginal effect estimated with a probit model and computed at the mean of the independent variables. Robust standard errors are in brackets. */**/*** indicates statistically significance at the 10%, 5%, and 1% level.

Dependent variable: Morally wrong to walk away?							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age <=35	-0.123*** (0.043)	-0.120*** (0.042)	-0.124*** (0.042)	-0.133*** (0.046)	-0.142*** (0.047)	-0.141*** (0.047)	-0.123*** (0.046)
Age >=65	-0.065** (0.027)	-0.064** (0.026)	-0.066** (0.027)	-0.071** (0.028)	-0.085*** (0.029)	-0.084*** (0.029)	-0.072** (0.030)
Post college education	-0.084*** (0.033)	-0.083** (0.032)	-0.084** (0.033)	-0.081** (0.034)	-0.067** (0.034)	-0.063* (0.034)	-0.058* (0.035)
Black	-0.136*** (0.052)	-0.153*** (0.054)	-0.174*** (0.056)	-0.177*** (0.058)	-0.165*** (0.061)	-0.164*** (0.061)	-0.146** (0.061)
Hispanic	-0.031 (0.063)	-0.015 (0.061)	-0.018 (0.062)	-0.010 (0.062)	-0.018 (0.063)	-0.020 (0.064)	-0.028 (0.066)
Income:Kdollars	0.037* (0.022)	0.044** (0.022)	0.047** (0.022)	0.042* (0.023)	0.042* (0.023)	0.043* (0.023)	0.037 (0.024)
North East		-0.066* (0.034)	-0.063* (0.034)	-0.045 (0.035)	-0.046 (0.035)	-0.044 (0.035)	-0.035 (0.035)
South		-0.007 (0.029)	-0.008 (0.029)	0.015 (0.030)	0.003 (0.030)	0.003 (0.030)	0.008 (0.031)
West		-0.085** (0.036)	-0.091** (0.037)	-0.084** (0.039)	-0.086** (0.039)	-0.085** (0.039)	-0.086** (0.040)
Know someone who has walked away			0.033 (0.034)	0.030 (0.036)	0.023 (0.037)	0.022 (0.037)	0.016 (0.039)
Republican					0.095*** (0.024)	0.094*** (0.024)	0.072*** (0.027)
Democratic					0.057** (0.025)	0.057** (0.025)	0.075*** (0.026)
Angry index						0.004 (0.008)	0.008 (0.009)
Percentage of foreclosures				0.301 (0.208)	0.307 (0.215)	0.308 (0.215)	0.385* (0.213)
Government should help homeowners defaulting							-0.120*** (0.024)
Observations	1407	1407	1382	1250	1220	1215	1148