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STRATEGIC DEFAULT ON MORTGAGES

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The Determinants of Attitudes towards Strategic Default on Mortgages*

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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). The cost of defaulting strategically increases in wealth, but at a decreasing rate. It is driven both by pecuniary and non pecuniary factors, such as views about fairness and morality. Exposure to other people who strategically defaulted increases the propensity to default strategically because it conveys information about the probability of being sued.

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For the first time since the Great Depression, in 2009 millions of American households found themselves with a mortgage that exceeded the value of their home. According to Zillow.com, in the entire United States, 23% of households had negative equity in their home, while in some areas of the country (such as Las Vegas and some areas in California) this percentage exceeded 50%.¹ More importantly, the difference between the value of the mortgage and that of the house is often very large. For example, in 2009 the median owner's equity for those who bought their house in the Salinas, CA metropolitan statistical area (MSA) in 2006 was -\$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 -- also known as a strategic default.

Unfortunately, we know very little about the importance and the determinants of strategic defaults on mortgages. In an influential paper, Foote et al. (2008) show that during the 1990-91 recession in Massachusetts very few people (6.4%) chose to walk away from their houses when their home equity was negative. Yet, the 1990s behavior of Massachusetts residents may not be predictive of the U.S. one during the 2007-2009 recession, since there are important nonlinearities. Hence, in assessing the risk of strategic default, what matters is not the average decline in home prices, but the decline in the worst-hit areas.

The main problem in studying strategic defaults is that this 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 be difficult to identify in 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. To this purpose, we study a new quarterly survey on a representative sample of US households. We use the waves from December 2008 (the first) to March 2010 for two purposes: to identify the percentage of current defaults that is strategic and to study the determinants of homeowners' attitudes towards strategic default.

¹ <http://www.zillow.com/reports/RealEstateMarketReports.htm>.

To identify the proportion of strategic default we use two questions. One asks “How many people do you know who have defaulted on their house mortgage?” Those who know at least one, are also asked “Of the people you know who have defaulted on their mortgage, how many do you think walked away even if they could afford to pay the monthly mortgage?” By taking a ratio of the two we obtain an estimate of the percentage of actual default that is considered “strategic” by their acquaintances.

We find that this proportion is large and rising. In March 2009 23.6% of defaults appear as strategic, in March 2010 35.6%. As we discuss in the paper, both the level and the trend we have identified are corroborated by subsequent studies using borrower level data (Experian and Oliver Wyman (2009), Titupatur et al (2010), and Amherst Securities Group, 2009)).

Given the importance of strategic default, we study the drivers of homeowners’ attitudes towards strategic default. To this purpose we use the answers to the question “If the value of your mortgage exceeded the value of your house by 50K [100K/150K] would you walk away from your house (that is, default on your mortgage) even if you could afford to pay your monthly mortgage?”

By using these answers we can infer the nature of the cost of defaulting, which appears to be increasing in wealth but at a decreasing rate. Doubling the ratio of home equity shortfall to house value increases the frequency of homeowners who express a willingness to default by 14 percentage points if we double the home equity shortfall, but only by 5 percentage points if we halve the value of the house.

Then, 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), the stability of the financial position (income and probability of becoming unemployed).

We find that the cost of defaulting strategically is driven both by pecuniary and non pecuniary components, such as views about fairness and morality. 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 one standard deviation increase in the relative size of this hypothetical equity shortfall increases the probability of strategic default by 25%; a person who has bought his house more than five years ago is 27% less likely to default.

We also find that *ceteris paribus* blacks, Hispanics, and older people are more willing to do strategic default, while women are less likely. Blacks are 80% more likely than the sample mean to default strategically, Hispanics 113%, older people 35%, while women are 65% less likely. The

fear to become unemployed also plays a role. If a person becomes unemployed, it is likely to be forced to default in the future. Anticipating this possibility reduces the benefit of not defaulting strategically today. A one standard deviation increase in the perceived probability of becoming unemployed increases the probability of strategic default by 13% of sample mean.

Surprisingly, the fact that a state requires mortgages to be nonrecourse (i.e., the lender cannot go after his/her wealth outside of the house) does not seem to affect the willingness to default strategically. One possible reason is that most people do not know the legal status of the mortgage in their state, the other is that most people do not have any asset outside their house and thus the difference between recourse and non recourse is moot. To test the first hypothesis in the 5th and 6th wave of the survey we ask people their subjective estimate of the probability a bank will go after a defaulted borrower. On average this subjective probability is 55%, but it does not differ between recourse and non recourse states.

Then, we consider moral and social determinants of the attitudes towards strategic default. 82% of the people think it is morally wrong to do a strategic default. Everything else being equal, people who think that it is immoral to default strategically are 8.2 percentage points less likely to declare strategic default (92% of the sample mean). Even if the morality question is asked after the willingness to default strategically, this correlation could be spurious: the result of the respondent's desire to be consistent across responses (i.e., to answer that it is not immoral to default after responding that they will default). Since, the waves 3 to 6 of the survey randomizes the order of the morality and default questions, we use this randomization to correct the estimate for the potential spurious correlation in the responses. While smaller, we find that the effect of morality on the probability of default persists even after the correction.

The decision to default strategically might be driven by other emotional considerations. People have been shown to be inequity averse (Fehr and Schmidt, (1999)) and more likely to inflict a loss to others when they suffered a loss, especially if this loss is considered unfair (Fowler et al, 2005). For this reason, we regress the willingness to default strategically on the some measures of anger and trust. We find that people who are angrier about the current economic situation are more willing to express their willingness to default, as are people who trust banks less. Similarly, people who want to regulate executive compensations and the financial sectors are more likely to declare their willingness to walk away.

Finally, we find that people who know somebody who defaulted strategically are more likely to declare their intention to do so. This effect is present even if we control for the number of foreclosures in the area and for whether the respondent knows somebody who defaulted non strategically. This effect could be the result of a social contagion, of some learning about the cost of

defaulting strategically, or the spurious effect of clustering: people with lower moral standards live nearby and know each other. We do not find any evidence for the clustering effect. *Ceteris paribus*, knowing somebody who defaulted does not affect the moral attitude toward defaulting. By contrast, there is evidence consistent with the learning hypothesis. Knowing somebody who strategically defaulted reduces the perceived probability that a bank would go after a borrower who defaults.

On average, we find that homeowners' declared willingness to default per given home equity shortfall is roughly constant during this period. This stability is the result of two opposite effects: on the one hand, the decreased level of anger, which reduces the willingness to default, on the other hand, the learning about the cost of defaulting, which over time increases the willingness to default. Given the stability in the willingness to default per given size of the shortfall, the most likely cause of the increased proportion of strategic default is the decline in house prices. Aggregate house prices, however, continued to slide during the entire period. This decline, however, covers an important cross sectional difference. From the second quarter of 2009 house prices stabilized in the areas where they had declined the most in the previous period, while continued to slide in the areas where they had not dropped much before. As a result, the percentage of households with negative equity, which increased dramatically from the second quarter 2008 to the second quarter 2009, stabilized afterwards, stabilizing the frequency of strategic defaults.

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 evidence on the importance of strategic default. Section 4 presents the results on the determinants of strategic default. Section 5 discusses the possible reasons of the increase of strategic defaults over time. 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 (see, e.g. White, 2009). While negative equity is a necessary condition for strategic default, it is not sufficient. 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), 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 addition to relocation costs, a default severely affects an individual credit rating. In the 6th wave we find that 88.6% of the respondents consider maintaining their credit rating important or very important. Unfortunately, there is too little variation to identify any effect of this response on the willingness to default. While we do not have data on the credit rating itself, we observe other characteristics (such as income and age) that should proxy for that.

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. The value of holding on to the house is smaller if a person fears to become unemployed and be forced to default in the future. Hence, we use the subjective probability of becoming unemployed as a measure of the value of this option.

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.

In addition to these pure economic reasons, individuals may have other 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 American households default on their mortgage, even when faced with a large home-equity shortfall.

People have been shown to be inequity averse (Fehr and Schmidt, (1999)) and more likely to inflict a loss to others when they suffered a loss, especially if this loss is considered unfair (Fowler et al, 2005). Therefore, per given view of the morality of default we expect that an individual is more likely to default strategically when he/she feels treated unfairly. If people respond to the sense of unfairness asking for more regulation (Di Tella and MacCallough, 2009), demand for regulation can be used to measure the level of the unfairness feeling.

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

² In the first survey we cannot distinguish between purchase and refining of the house.

of people think it is immoral to default when able to repay, people who default can pay 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; 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. The interpretation of this variable, however, is ambiguous. Knowing somebody who defaulted strategically can also change the assessment about the cost this decision entails. Borrowers might not be well informed about the probability a lender will pursue a deficiency judgment against a borrower. Observing an acquaintance going through default might impact that decision.

2. The Survey Data

2.1 Why Survey Data?

Survey data have the obvious drawback that are responses to hypothetical questions, rather than actual decisions with monetary consequences. One of the limitations of survey answers is that they can easily be affected by the framing of the question. Since the framing here is common, however, the cross sectional variability of the answers should be unaffected by it. They can provide some insights, thus, on the determinants of people's attitudes toward strategic default.

Survey data, however, have several advantages and have been increasingly been used in financial economics (e.g., Graham and Harvey, 2001). 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 2008 crisis is that it was so extreme in its intensity that one has to strongly believe in linearity to extrapolate estimates obtained during the previous recessions to predict the outcome of the current one.

Second, by asking the willingness to default at different levels of negative equity we can measure the effect of the shortfall in equity, while keeping all the other individual characteristics constant, including the level of wealth. As we will argue, this measure is useful from a policy point of view in assessing the potential impact of further deterioration in real estate prices in the areas worst hit.

Third, 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.

Finally, survey data allows us to ask about other attitudes and perceptions of the respondents that are not otherwise observable, which can be used to disentangle where certain effects -- like the

correlation between knowing somebody who defaulted strategically and willingness to default strategically -- come from.

2.2 *Our Main Survey Data*

Our main data source is 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. This survey, however, includes variables that can help us assess the frequency and the determinants of strategic defaults. The interviews for each wave of the survey took place in the third week of the last month of each quarter, from December 2008 to March 2010.⁴ 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 of the house, and the fraction borrowed. Most of the questions in the various waves remained the same.

While the survey collects information for both renters and homeowners, we restrict our analysis to homeowners alone for two 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 house he owns.

2.3 *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

³ <http://financialtrustindex.org/>

⁴ The survey was conducted using ICR's weekly telephone omnibus service. In the wave 1 to 4 it used a fully-replicated, stratified, single-stage random-digit-dialing sample of landline telephone households. In wave 5 and 6 it used both landline and cellular phones. In the time series results we correct the series to assume comparability of the survey.

afford to pay your monthly mortgage?” Among the homeowners, only 8.9 percent answered affirmatively to this question (see Table 1).⁵

Those who answered negatively to the decision to default at a shortfall of 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, 23% answered “yes.”

In Figure 1 we report the behavior over time of the willingness to default both at 50K and at 100K. The fluctuations over time are very modest and a formal test rejects any time trend. In Figure 2 we report the willingness to default as a function of the value of the shortfall relative to the value of the house declared by each household (Panel A). The willingness is clearly increasing over the relative value of the shortfall, with only 4.7% of the people willing to default when the shortfall is 10% of the value of the house and 11.4% when this is between 40% and 50%. As Figure 2 shows, not only the relative value, but also the absolute value matters. Per given relative value of a shortfall, roughly 7% more of the households are willing to default when the shortfall is 100K instead of 50K.

2.4 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 Figure 3 shows, this percentage is roughly constant over time.

In the first two surveys we asked the morality question after the willingness to default question. It is possible that this order may affect the willingness to state that default is immoral. In particular, a respondent who just stated that he will default might be hard pressed to justify his choice by saying that he does not consider this choice immoral.

For this reason, from the third wave onward we randomized the order of the morality and the willingness to default questions, with half of the data having the morality question first and half of the data with morality question later. When we ask the morality question first, 85% of the respondents state that defaulting strategically is immoral, while when we ask the question after

⁵ In various waves we experimented with higher amounts. For example, in the first wave we used 300K, in the second 200K and in the third to the sixth 150K. The results for these levels are not very different from the one for a 100K shortfall and therefore we omit them from this paper.

asking the willingness to default that percentage dropped to 81%. This difference is statistically significant, suggesting that the answers are not invariant to the order, a problem we will deal with in section 4.2. The same is true for the default question. If we ask the morality question first, the willingness to walk away when the shortfall is -50K drops to 6.2% from 11.2%.

For consistency, in all the time series comparison for these variables we will only use the half sample where the morality question is asked after the default question.

2.5 Other Attitudes

To measure the degree of disenfranchisement of the respondent we ask “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?”. Figure 4A reports the percentage of people who respond angry or very angry. In December 2008 and March 2009 this percentage was very high (more than 60%), but it has dropped to around 50% since June 2009.

A measure of people’s resentment for the economic situation is their level of trust towards banks, often seen as the main culprit of the 2008 crisis. To measure it, we ask “On a scale from 1 to 5 where 1 means “I do not trust them at all” and 5 means “I trust them completely”, can you please tell me how much do you trust banks?” Figure 4A reports the percentage of people who trust banks at the level of 4 and 5. This percentage is fairly stable at around 35%.

In all the waves (except March 2009) the survey includes the questions: “Do you think the Government should intervene to impose a cap on executive compensation?” and “Do you think that the Government should intervene to regulate the financial sector more?” Figure 4B reports the proportion of people who answered affirmatively to these two questions. Interestingly, the percentage of respondents who will like a government cap to executive compensations drops from 61% in December 2008 to 58% in March 2010, while the percentage of people who want to regulate financial institutions more raises from 48% in December 2008 to 56% in March 2010.

2.6 Percentage of people who know defaulters

To measure the diffusion of actual strategic defaults, from March 2009 the survey asks “How many people do you know who have defaulted on their house mortgage?” People who know at least one are also asked “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?”

Figure 5 reports the percentage of people who know somebody who defaulted and the percentage of people who know somebody who defaulted strategically. In this case, there is a clear

trend up, which is confirmed by a simple t-test. This is hardly surprising, since during this period the number of defaults increased.

2.7 Other variables

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 the last month of the quarter correspondent to each 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. The number of outstanding home-related loans is from the Analytical Services group at Equifax (Mian and Sufi, 2009).⁶ The results, presented in Table 1A, show that the average percentage of foreclosures is 4.6%, with a median of 2.4% and a standard deviation of 6.8%.

From the second wave onward, the survey asks 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 36% of the value of the house and obviously, 100K, 73%.

To measure individuals' attachment to their current house, the survey asks how long before they bought their home.⁷ We find that 69% of the respondents bought the house more than 5 years earlier.

Besides standard demographic variables, the survey collects also information on some more specific ones, summarized in Table 1A. 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 2.6).

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

⁶ We thank Amir Sufi for providing us with these data and Equifax for allowing us use it.

⁷ Unfortunately, in the first survey this question is mixed with the refinancing decision (When did you buy or last refinance your house"). From the second onwards it is separate.

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 12% chance to become unemployed within the following 12 months, with a median equal to 0 and substantial heterogeneity (standard deviation 25%).

In the sixth wave we also asked “When people default on their mortgage, the lender repossesses the house. Sometimes the mortgage is more than the value of the house. On a scale from 0 to 100, where 0 equals “absolutely no chance” and 100 equals “absolutely certain” what do you expect are the chances that the lenders will go after people who default on their mortgage for the full amount of the mortgage?” On average this probability is 55%.

To test whether respondents are aware of the difference between recourse and non recourse states, we attribute to each state the label recourse and non recourse according to the classification of Ghent and Kudlyak (2009). As Figure 6 shows, the distribution of the perceived probability a lender will go after a defaulted mortgage with a deficiency judgment is almost identical between recourse and non recourse states.

3. Diffusion of Strategic Default

3.1 Temporal Trend in Strategic Default

To measure the diffusion of strategic defaults we can simply take the ratio between the number of strategic defaulters and the number of total defaulters each respondent knew. As Figure 7 shows, this method estimates that in March 2009 23.6% of defaults are strategic. By March 2010 this figure rose to 35.6%. Most of the increase took place between March and September 2009, while the estimated amount is relatively stable afterward.

To validate our results we compare them with several subsequent studies that have followed a different approach. A study by Experian and the consulting firm Oliver Wyman tries to measure strategic default by using borrower level data. They define a borrower to have defaulted strategically if he goes straight from current to 180 days late--while staying current on all his other debt obligations, such as credit cards and auto loans. The idea is that if somebody pays the credit card but not the mortgage, it is probably because he wants to default on the mortgage, not because he must. While this method underestimates strategic default (by construction borrowers with no other debt and borrowers who by accident have been late on a mortgage payment are not considered strategic), this study estimates that in 2008, 17 percent of all U.S. defaults were strategic, though

that figure differs tremendously across groups and regions. For instance, 27 percent of defaults among people with high credit scores appear to be strategic, a figure that jumps to 40 percent in California.

Tituppatur et al (2010) use a similar strategy to identify strategic default from 2007 to 2010. They find that while at the beginning of 2007 the percentage of strategic default was close to zero, by December 2008 had risen to 7% and by February 2010 to 12%.

Finally, a study by the Amherst Securities Group takes a different approach. It shows that in areas where homeowners generally were not underwater, less than 1.5 percent of subprime mortgages became nonperforming each month during the third quarter of 2009. But in areas where the average mortgage exceeded the current value of a house by 20 percent or more, the rate of monthly subprime defaults was 4.5 percent. The difference between the two rates probably is not due to homeowners' ability to pay, because the study corrects for unemployment. The assumption, therefore, is that it is due to homeowners' willingness to pay when they see how much more expensive their mortgages are than their houses. The difference between the two default rates--the 1.5 percent "natural" rate and the 4.5 percent rate in areas where home prices dropped significantly--suggests that in those areas, two-thirds of defaults in subprime mortgages seem to be strategic.

All these studies suggest that strategic defaults represent an important fraction of defaults when home equity is negative. They also seem to indicate that, as in our sample, this percentage had risen during 2009. In what follows we analyze this important phenomenon.

3.2 Do Strategic Default Costs Increase with Wealth?

From a policy point of view it is important to understand how the willingness to default changes with the size of the home equity shortfall. Unfortunately, this comparative static is difficult to do with actual data, since individuals who have a different level of shortfall have ex ante different characteristics, which cannot be easily controlled for in the empirical analysis. In this respect surveys are superior, since the survey asks to the same person his willingness to default strategically for different levels of shortfall. Hence, we can observe the effect of a change in shortfall for given individual characteristics.

This is what we have in Table 1B. For a given row, comparisons across columns allow to see the effect of a change in the relative size of the shortfall while holding individual wealth constant. At low levels of wealth (i.e., in the first couple of rows) a \$50K increase in the shortfall increases the fraction of households who default by 12 percentage points (starting at a zero shortfall), by 16 percentage points (starting at 50K shortfall), and by 12 percentage points (starting at 100K). Thus, the relationship between default and shortfall seems nonlinear, with a peak of the

sensitivity of default to shortfall when the value of the shortfall is 50% of the value of the house. The pattern looks similar in the next couple of rows, but when the value of the house exceeds 250K, the derivative with respect to the shortfall seems to peak at higher level of shortfall. As Figure 2B shows, the shape of the relation between default and size of the hypothetical shortfall changes with the level of wealth.

To understand how the cost of default may vary with the level of wealth it is useful to formalize the default decision. Let $U(W_i - S)$ denote the level of utility for an individual i with initial assets W_i and a home equity shortfall S , who chooses not to default. The utility if he defaults is $U(W_i - C_i)$, where C_i denotes the monetary-equivalent cost of defaulting of individual i , which includes both pecuniary and non pecuniary components. Thus, an individual defaults if $S > C_i$. Let $F(C_i)$ be the distribution of the cost of default in the population. If the distribution of C_i were independent of wealth, the fraction of people defaulting at different levels of the relative shortfall should be constant, given that in our set up S is the same for all individuals. In other words, looking at Table 1B the fraction of defaulters should be constant along the columns. This is clearly not the case. Thus, we can reject that the cost of default is independent of wealth.

An alternative hypothesis is that the cost of default is a proportional to wealth, i.e. $C_i = c_i W_i$. In this case an equal increase in the relative size of the shortfall should have a similar effect whether it results from an increase in the absolute value of the equity loss or from a decrease in the value of individual wealth. Formally, let $s_i = S / W_i$ denote the relative shortfall. If c_i were a invariant to wealth, doubling s_i by doubling S or by halving W should have the same effect on the fraction of defaulters, since an individual will default when $s_i > c_i$. The frequency of strategic defaults among households with a house value of 200K on average (between 100K and 300K) when the shortfall increases from 50K to 100K (i.e., doubling the relative shortfall) increases from 8.4% to 22.8% (i.e., an increase of 14 percentage points). When we double the relative shortfall by halving the value of house wealth (i.e., considering households with an average value of 100K (from 50K to 200k), the frequency of strategic defaults increases from 8.4% to 13% (i.e., an increase of less than 5 percentage points). Therefore, keeping the relative level of the shortfall constant, increasing the absolute value of the shortfall has a much larger effect than halving the value of the house. This implies that the cost of defaulting increases less than proportionally with wealth This conclusion is consistent with the patters in Figure 2B, where we see that the frequency of defaults decreases with wealth, but less than proportionally.

4. Determinants of Attitudes toward Strategic Default

In this section we study the determinants of the propensity to walk away from a mortgage that exceeds the value of a house by 50K and 100K. Unless otherwise specified all the regressions are probit model estimates and the coefficient reported are the marginal effects computed at the sample mean of the independent variables. In these regressions we use both the subsample where strategic default is asked first and the subsample where morality is asked first. Since the allocation in the two subsamples was properly randomized, this pooling does not impact the relationship between the other variables and willingness to default.

4.1 The Role of Demographic Variables

In Table 2 we start by analyzing the effects of some demographic variables. In table 2A the dependent variable equals to one if the respondent states he would walk away if his mortgage exceeds the value of his house by 50K.

Black and Hispanics appear much more likely to walk away from an underwater mortgage. Blacks are 80% more likely than the sample mean to default strategically than whites, Hispanics 113%. These effects are not the results of omitted economic differences, since they persist after controlling for those (see columns 4 and 5). By contrast, women are 65% less likely to default strategically. This effect is not due to a difference in risk aversion, since it exists when we control for risk aversion in column 5. It is consistent with a growing body of experimental evidence that women behave in a more ethical way (e.g., Eagly et al. (1986) and Eckel and Grossman (1998)). The geographical dummies are also significant, but this effect disappears when we control for other economic differences.

In column 2 we insert the ratio of the size of the shortfall and the self-reported value of the house, which is a proxy for household's wealth. The effect is positive and statistically significant. A one standard deviation increase in the shortfall relative to the value of the house leads to a 25% increase in the probability of strategic default. This effect is unchanged after we control for other variables.

In column 3 we add life cycle factors. We insert a dummy if an individual is young (less than 35 years of age) or old (more than 65) and whether he has kids. We find that younger people are more likely to walk away, but this effect is only marginally statistically significant and this significance disappears when we control for the timing of the house purchase (column 4). Hence, it is simply due to the fact that younger people are less attached to their house because on average they moved in more recently. Older people are also more likely to walk away and this effect survives other controls. An older person is 35% more likely to walk away; this is consistent with

stronger incentives to default when a borrower residual horizon shrinks and thus reputational costs fall. Surprisingly, the number of kids does not increase significantly the propensity to walk away.

In column 4 we control for the economic incentives to default. The first variable we insert is a dummy equal to one if the respondent states that he bought the house more than five years earlier. This is a proxy for the specific investments made in the house. As expected, this dummy has a negative coefficient. People who spent at least five years in the current house are 27% less likely to walk away in the presence of a negative shortfall.

We then insert two proxies for the option value of waiting. One is the individual's expectation about the future movement of house prices. As expected, more optimistic expectations about future house prices reduces the likelihood of walking away, but this effect is not statistically significant. The other is the subjective probability of becoming unemployed over the next 12 months. The higher this probability is, the less valuable it is to keep paying for an underwater mortgage, since an individual is likely to be forced to give up the house anyway. Consistent with this interpretation, the probability of unemployment increases the willingness to walk away in a statistically significant way. One standard deviation increase in the probability of becoming unemployed increases by 14% the likelihood of walking away. Similarly, more wealthy people are less likely to walk away. One standard deviation increase in income increases by 15% the likelihood of walking away. In an unreported regression we also controlled for education, but we find it to have no impact on the probability of walking away.

Finally, in column 5 we control for two other factors linked to the risk of walking away. The first is risk aversion. By walking away, a homeowner risks to be sued. Hence, more risk-averse individuals should be less likely to walk away. As expected, the Dohmen et al. (2008) measure of risk aversion has a negative impact, but its coefficient is not statistically significant. By contrast, residents in non recourse states should be more likely to walk away, because the risk they face is lower. The dummy variable has a positive coefficient, but this coefficient is not statistically different from zero. As we discussed in section 2.4 this is not that surprising since the respondents do not perceive a difference between recourse and non recourse states in the probability a lender will go after a defaulted borrower.

In table 2B we repeat the same regression with the dependent variable equal to one if the respondent states he would walk away if his mortgage exceeds the value of his house by 100K. The results are substantially unchanged.

4.2 *The Role of Morality*

A large majority (81%) of respondents state that it is immoral to walk away from a mortgage if one can afford to pay it. Does this moral stand affect the willingness to walk away? In Table 3 we try to answer this question. We start by re-estimating the last specification in Table 2 after dropping the variables that were not significant. In column 2 we insert a dummy variable equal to 1 if the respondent answers positively to the question whether it is immoral to walk away. The coefficient is negative and highly statistically significant. People who answer it is immoral to default are 8.2 percentage points less likely to walk away (92% of the sample average).

This coefficient, however, could be biased by the respondent desire to be consistent in his answers. In fact, as we showed in Section 2.2, the answers to the morality question and the default question depend upon the order in which these questions are asked.

One way to address this measurement-error problem is to instrument our morality proxy. We would like a variable that predicts morality, but it does not affect directly the decision to walk away. A measure of ideology might be good in this sense, on the ground that views about politics tend to induce views about morality. The survey contains a self-reported political affiliation. Therefore, we use a dummy equal to one if the respondent declares himself a Republican. As the first stage shows (column 4) this dummy is positively and statistically significantly related to the morality variable. The F test is 22.7, thus this is not a weak instrument.

Column 3 reports the instrumental variable estimation, when the dummy Republican is used as an instrument. The coefficient of morality remains negative and statistically significant. The problem, however, is that the magnitude of the coefficient increases dramatically. In general, this is an indication that the instrument violates the exclusion restriction and has a direct effect on the dependent variable.

To obviate to this problem we try to model directly the measurement error. Suppose that the true relation between the decision to default and the norm of morality is

$$d^* = -am^* + \varepsilon$$

Where d^* and m^* are respectively the true answer to the default question (equal to one if the respondent is willing to default strategically) and to the morality question (equal to one if strategic default is considered immoral), and ε is a classical noise.

When the morality question is asked first, we observe morality without any non classical measurement error, but observe default with a systematic measurement error.⁸ We assume that the observed answer to the default question is generated by

⁸ It is possible that the answers to the morality question are biased even when this question is asked first, because people tend to over state their moral standards to look good in the eyes of the interviewer. If this error is uncorrelated with their

$$(1) \quad d = d^* - k_0 - k_1 m^*$$

where d is the observed default answer which contains a measurement error. This measurement error is composed of two parts: k_0 represents a classical error that induces an underestimate of default because respondents want to look good in the eyes of the interviewer; by contrast, k_1 represents the “consistency” bias. The idea is that if the respondent has answered that default is immoral ($m^* = 1$), he feels more compelled to answer that he will not default to be consistent in his answers. This reduces the probability that ($d = 0$) when $m^* = 1$.

In the presence of this measurement error, the estimated slope coefficient of the effect of morality on default will be

$$(2) \quad \frac{\text{cov}(d, m^*)}{\text{var}(m^*)} = \frac{\text{cov}(d^* - km^*, m^*)}{\text{var}(m^*)} = \frac{\text{cov}(d^*, m^*)}{\text{var}(m^*)} - k_1 = -(a + k_1).$$

If we had an estimate of k_1 we could correct the estimated slope coefficient to obtain the true coefficient a .

Taking the expectation of (1), we find that

$$k_1 = \frac{\bar{d}^* - \bar{d} - k_0}{\bar{m}^*}$$

So if k_0 were zero, we could estimate k_1 by replacing \bar{d} and \bar{m}^* with their corresponding sample means in the subsample where morality is asked first (so that default is measured with error and morality not) and \bar{d}^* with the sample mean of the answers to the default question in the subsample where default is asked first and thus measured without any non-classical. The estimate of k_1 we obtain is 0.059.

This estimate is the true k_1 only under the assumption that k_0 is zero. To check whether this is a reasonable assumption we re-estimate k_1 by using a different sample where the interviewer effect is smaller. To this purpose we repeat the same interviews with the same randomization scheme on a sample of 1,088 individuals on line, where the interviewer effect is known to be smaller (Mann and Stewart, 2000). The estimate of k_1 we obtain is 0.018. The difference suggests that k_0 is positive. In fact, scaled by \bar{m}^* , the difference represents a lower bound of k_0 (it is the true k_0 only if the interviewer effect in the on-line survey were zero).

answers to the default question, however, the effect of this measurement error is only to bias downward the coefficient, underestimating the magnitude of the effect.

With this estimate of k_0 , we can obtain the true k_1 and use equation (2) to eliminate the effect of measurement errors on our estimate of a . Since our correction method works only in a linear model, we start from a linear probability model (column 5) and we correct this estimate using (2). The corrected estimate is reported in column 7. To compute the coefficient standard error we bootstrap this procedure 5000 times and use the standard deviation of the estimate coefficients as our standard error. As column 7 shows, the corrected coefficient is positive, albeit 30% smaller than the uncorrected one, and statistically different from zero. A person who considers default immoral is 57% less likely to default.

Table 3B repeats the same regression with the default question at 100K of shortfall. The results are substantially identical.

4.3 The Role of Anger and Other Emotions

As a proxy for the feeling of unfairness, we use several questions asked in the Financial Trust Index Survey. First we look at the level of anger for the current economic situation. As Table 4 shows, the angrier a person is, the more willing to default strategically is. One standard deviation increase in the level of anger increases the probability of default by 19%. Similarly, the higher the level of trust towards banks is, the lower is the probability of a strategic default. One standard deviation increase in the level of trust decreases the probability of default by 23%. These effects are robust to controlling for the answer to the morality question.⁹

Di Tella and MacCulloch (2009) show that the demand for government intervention increases in the perception of corruption and unfairness. Therefore, we use people's attitude toward regulation as a measure of their sense of unfairness. As expected, the probability of defaulting strategically is positively related to the demand for regulation. People who think that the government should cap executive compensations are 53% more likely than average to default strategically. Similarly, people who think that the financial sector should be regulated more are 38% more likely than average to default strategically.

All together these results confirm the view that the decision to default is not just based on economic considerations, but also on ideological or emotional ones.

4.4 Social Contagion

⁹ The trust question is asked before the default question, while the anger and regulations questions are asked after.

An important question is whether there is any risk of social contagion in strategic defaults. Social contagion can arise because people learn from each other, or because the social stigma associated with an action considered immoral decreases with the number of people doing it.

To answer this question, in Table 5 in the basic regression we insert a dummy variable equal to one if the respondent knows somebody who has defaulted strategically. Knowing somebody who defaulted strategically increases the probability that a homeowner declares he is willing to default strategically by 46% (column 1). This effect is not due to the clustering of default-prone individuals in certain areas, since the effect is unchanged if we control for the percentage of foreclosures in the same ZIP code (column 2). The effect does not arise just from knowing somebody who defaulted, but mostly from knowing somebody who defaulted strategically. As column 3 shows, inserting a dummy variable equal to one if the respondent knows somebody who defaulted in general reduces the coefficient on the other dummy variable only marginally.

While these controls reduce the likelihood that the observed effect is simply due to the clustering of default-prone individuals in the same areas, they do not eliminate it completely. To further address this issue in an unreported regression we look whether people who know other people who defaulted strategically or people who live in ZIP code with a higher number of foreclosures tend to have lower moral standards, i.e., are less likely to respond that a strategic default is immoral. We do not find any evidence in this sense. In fact, the coefficient is positive and statistically significant in some specifications. Thus, there is no evidence that more default-prone individuals tend to cluster together.

The second strategy to address this problem is to look at default at different levels of shortfall. If the observed effect is due to clustering, we should observe a similar pattern for default when the shortfall is 50K and shortfall is 100K. As Table 5B shows, this is not the case. Both the knowledge of somebody who defaulted and the number of foreclosures in the same ZIP code area have no effect on the probability of default when the equity shortfall is 100K. This pattern is inconsistent with the clustering hypothesis, while it is consistent with both the information and social stigma hypotheses. Social stigma can prevent strategic default when the cost is not too large, but when it is too large, it becomes infra-marginal. The same can be true about the information about the cost of strategic default. If the benefit of strategic default is very large (like in the case of a 100K shortfall), the possible costs are infra-marginal and thus learning about them does not alter the decision.

All these are only indirect ways to answer the question of what determines this social contagion. Thanks to a variable inserted in the 6th wave, however, we have a more direct way to discriminate between the various hypotheses. One implication of the information spill over

hypothesis is that respondents who know somebody who defaulted strategically update their estimates of the cost of this decision. A major determinant of these costs is the decision of a lender to sue. Talking with several legal experts we arrived to the conclusion that these suits are very rare. Nevertheless, the perception is different. On average, people think that the probability that a lender will go after a borrower is 50%. Hence, if knowing somebody who defaulted strategically leads to some learning, we should observe a reduction in the perceived probability that a lender goes after the borrower when the respondent knows somebody who defaulted strategically.

In Table 6 we regress this perception on several individual characteristics, whether a state is non recourse, and a dummy variable equal to one if the respondent knows somebody who has strategically defaulted. While the legal treatment of mortgages in the state does not impact the perceived probability, knowing someone who defaulted does it. Knowing a strategic defaulter decreases the perceived probability a lender will go after a borrower by 7.5 percentage points.

In sum, all the evidence is consistent with the information spillover effect and inconsistent with the clustering hypothesis. We cannot exclude that there is also a social stigma effect, but (unlike for the information spillover hypothesis) we do not have any direct evidence to support it.

4.5 The Effect of the Media

White (2009) argues that there are emotional constraints that restrain people from strategically defaulting and that “social control agents such as the government, the media, and the financial industry use both moral suasion and disinformation to cultivate these emotional constraints in homeowners.” That even in non recourse states respondents think that lenders will come after borrowers with a 50% probability seems consistent with this claim. To explore more directly this hypothesis, we use the last three waves of the survey that contain a comparable measure of the exposure of respondents to the media (average hours spent in a day reading or watching news).

In Table 7 we insert this measure of media exposure in the basic specification. Contrary to White’s (2009) claim, individuals more exposed to the media are more (not less) likely to default strategically (column 1). It is hard, however, to interpret this coefficient as causal. People who choose to spend more time reading/ watching news may differ on other dimensions, which we are unable to properly observe and control for.

To address this problem, we exploit some time variation in the coverage that strategic default had on the main media. Figure 8 reports the number of articles containing the words “walking away” and “housing” appearing in Factiva from December 2008 to March 2010. As Figure 8 shows, there is an explosion of coverage since the beginning of 2010. Searches of similar words

exhibit the same pattern. A likely cause of this increase in coverage is the publication on January 7, 2010 of an article by Roger Lowenstein in the *New York Time Magazine*. As the title (“Walk Away From Your Mortgage!”) suggests, this article, which also cites White (2009), looks very favourably at strategic defaults.

In column 2 we insert a dummy for the waves (the three waves we use are September 2009, December 2010, and March 2010, where information on time spent reading/watching the news is available) and an interaction between exposure and the number of the wave. Contrary to White’s (2009) hypothesis, when the media talk more favourably about strategic default people who are more exposed to the media are less likely to be willing to default strategically. This result can be interpreted as a decreasing marginal effect of time spent reading/watching news when it comes to learning about the costs and benefits of strategic default. When the media were talking very little about the subject, only people who spent a lot of time watching/reading news would learn more about the costs of defaulting. By contrast, after the media started to talk about this phenomenon at a great length, even the most casual reader/watcher would learn about it, hence the decreased marginal effect.

5. What Explains the Increase in Strategic Default?

Figure 7 shows that the proportion of strategic defaults has significantly increased during 2009. What can account for this phenomenon?

As Figure 1 shows, the willingness to default has remained fairly stable over time. This stability is the result of an increase over time in the number of people who know somebody who defaulted strategically (Figure 5) and a reduction in the level of anger (Figure 4). The first change increases the willingness to default, the second decreases, roughly of the same amount.

Since the propensity to do strategic default is increasing in the size of the home equity shortfall (see Figure 2), a possible explanation is that the number of people with a home equity shortfall has increased during 2009. This conjecture is supported by Figure 9 that shows the percentage of households with negative equity from the third quarter 2008 to the first quarter 2010, as reported by Zillow.com. As Figure 9 shows, the big jump is between the third quarter 2008 and the second quarter 2009. The percentage seems to have stabilized between the second quarter 2009 and the first quarter 2010. If we look at the behavior of aggregate house prices, however, these have been dropping at the national level over the entire period. How can we explain, then, the pattern of the percentage of people with negative equity?

In determining the percentage of people with negative equity (and the percentage of strategic defaults), what matters is not the *average* of house prices, but the behavior of house prices

in the areas that have been hit the hardest in the past. It is irrelevant if house prices have dropped 5% from September 2009 to March 2010 in the Augusta (SC) metro area, since this is an area where in June 2009 only 2% of the family had negative equity. It is much more relevant that during the same period in the Stockton (CA) metro area prices have increased slightly, since according to Zillow.com in that area 51% of the households had negative equity in June 2009.

This distinction highlights the importance of understanding the nonlinearity of the relationship between house prices and strategic default. What matters for strategic default is not the aggregate level of house prices, but the behavior in the areas worse hit.

6. Conclusions

While homeowners are unlikely to walk away when the amount of 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 tries to address this gap. We find that the cost of defaulting strategically increases in wealth, but at a decreasing rate. It is driven both by pecuniary and non pecuniary factors, such as views about fairness and morality. Even controlling for the possible spurious effect due to the fact that the morality and the default questions are asked in the same survey, we find that people who considers immoral to default are less willing to default. It is also true that people who are angrier against for the economic situation, trust banks less, and want them to be regulated more are more likely to default strategically.

Finally, we find some social contagion in the decision to default strategically: people who know somebody who defaulted strategically are more willing to do so. This effect does not seem to be due to clustering of people with similar attitudes, but to a learning of the actual cost of default. We find a similar learning effect from exposure to the media, effect that is reduced when the media starts to cover the topic more massively. These contagion and information effects should be seriously considered in the design of any public policy regarding housing.

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Figure 1. Percentage of people willing to default strategically

Fraction of homeowners who say are willing to default when the value of own home equity falls short of the value of the loan by 50K and 100K respectively even if the homeowner can afford to pay the monthly mortgage costs.

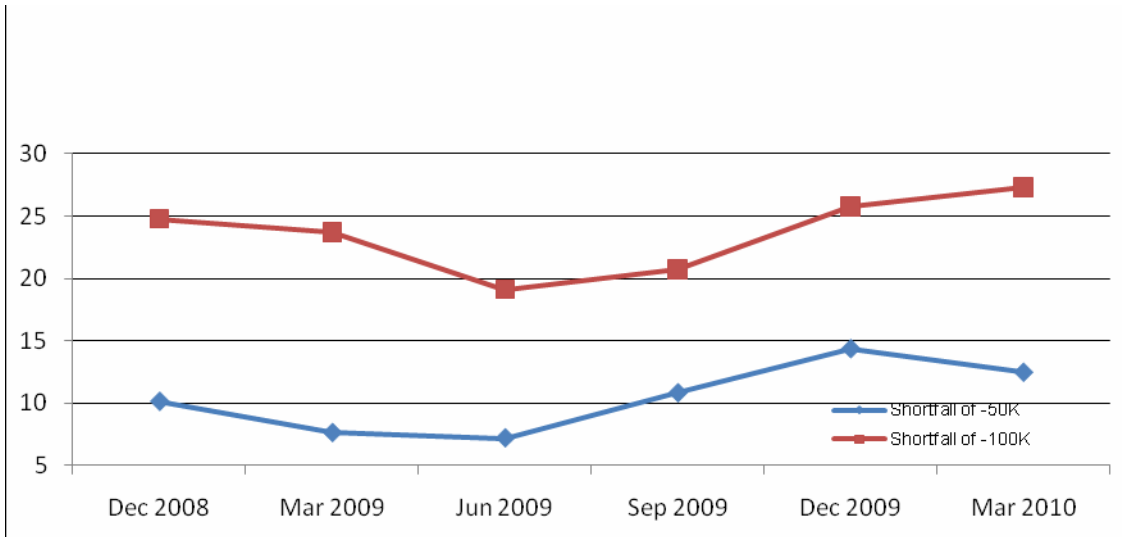
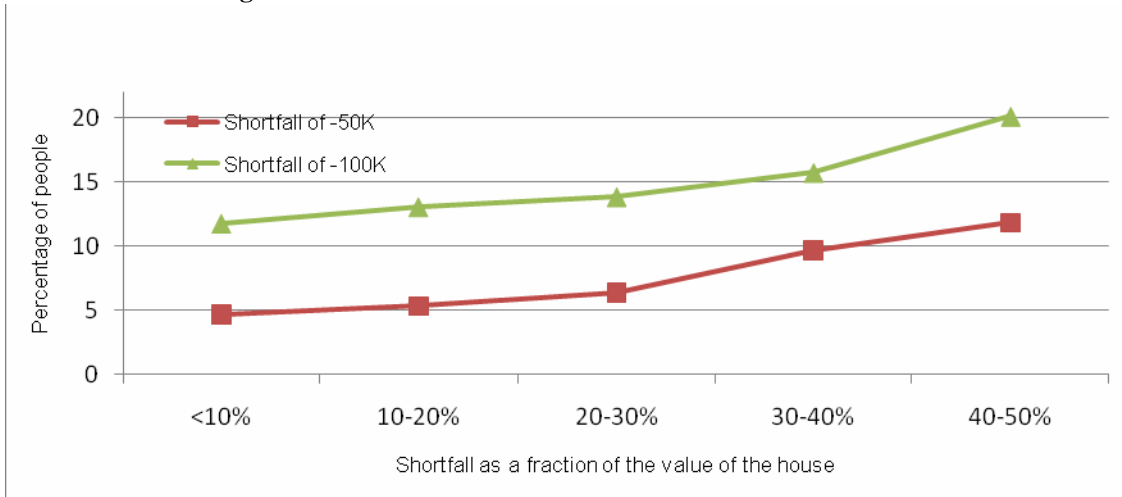


Figure 2. Percent of homeowners willing to default as a fraction of the size of the shortfall

Fraction of homeowners who say are willing to default when the value of own home equity falls short of the value of the loan by 50K and 100K respectively even if the homeowner can afford to pay the monthly mortgage costs as function of the incidence of this shortfall on the value of their house (Panel A) or the value of the house (Panel B).

A. Percent defaulting and relative shortfall



B. Percent defaulting and absolute shortfall for different values of an individual wealth

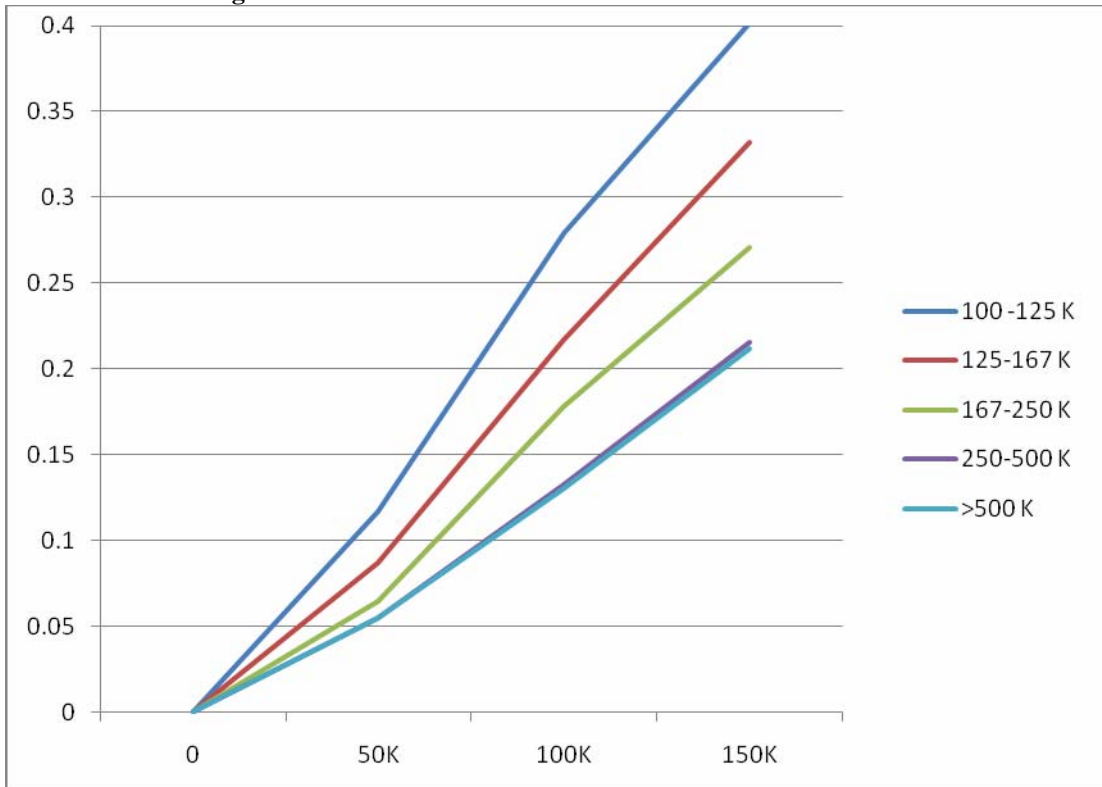


Figure 3. Fraction of people who think its is morally wrong to walk away

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?”

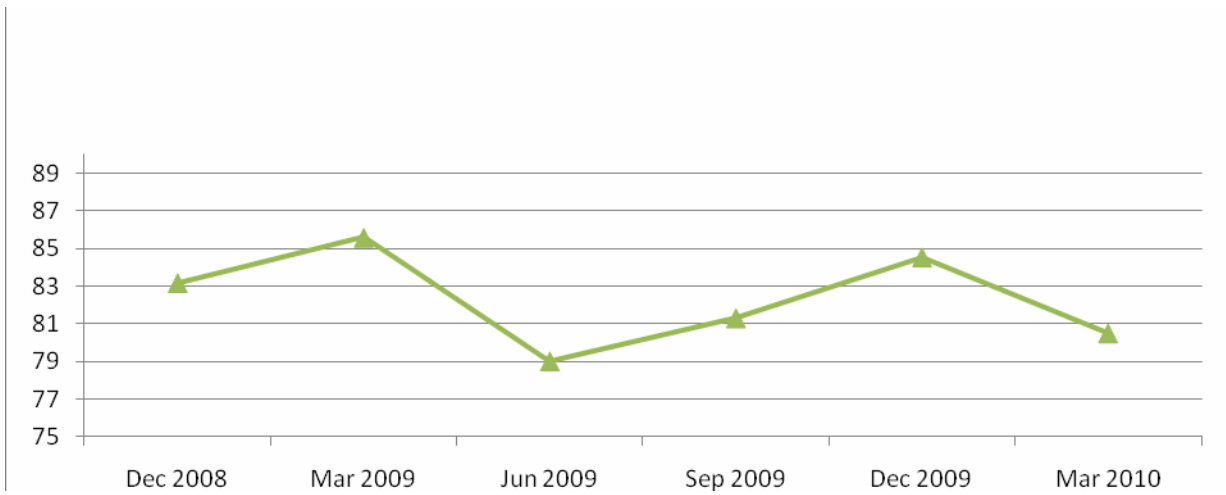
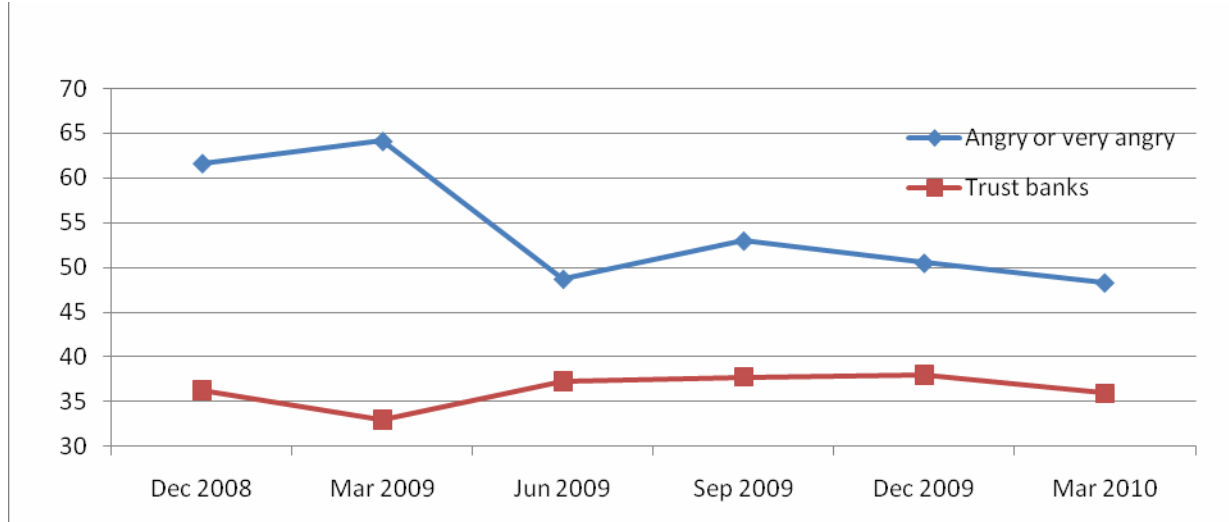


Figure 4. Evolution of resentment and trust

In Panel A angry is the percent of people who report to be angry or very angry about the economic situation following the financial crisis. Trust banks is the percentage of people who report they trust banks completely or a lot in a question asking how much people trust banks on a scale from 1(no trust) to 5 (completely). In Panel B Cap on executive compensation and Regulate financial sector are the percentage of people answering yes to the questions: “Do you think the Government should intervene to impose a cap on executive compensation?”, “Do you think that the Government should intervene to regulate the financial sector more?” respectively.

A. Anger and Trust in Banks



B. Support to Regulation

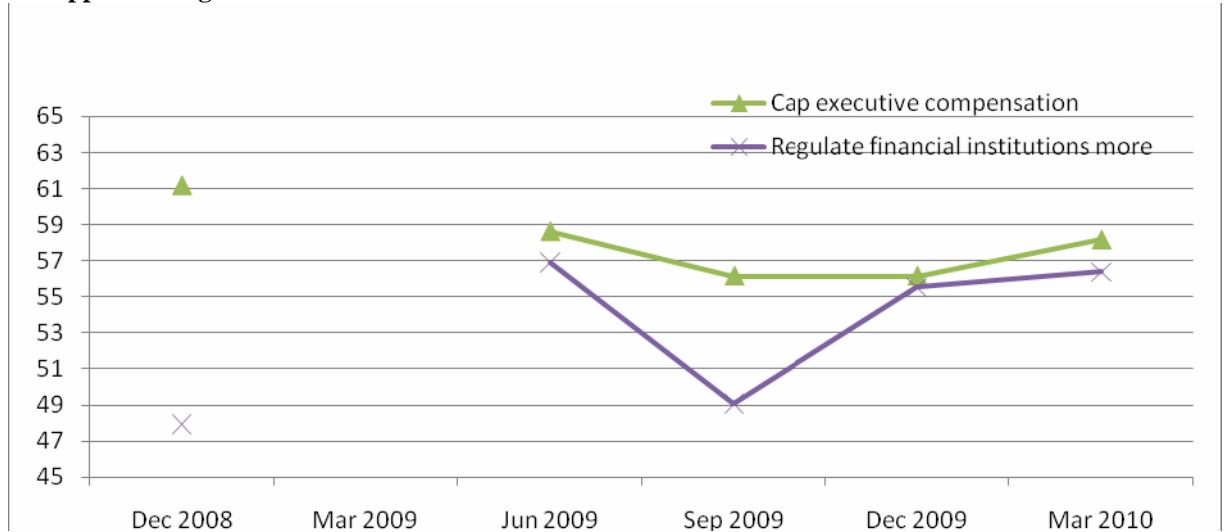


Figure 5. Percentage of people who know defaulters

Know defaulters is the percentage of people who report they know at least one person who has defaulted on his/her mortgage when answering the question “How many people do you know who have defaulted on their house mortgage?”. Know strategic defaulters is the percentage of people who know at least one strategic defaulter based on the answers to the question: “Of the people you know who have defaulted on their mortgage, how many do you think walked away even if they could afford to pay the monthly mortgage?”

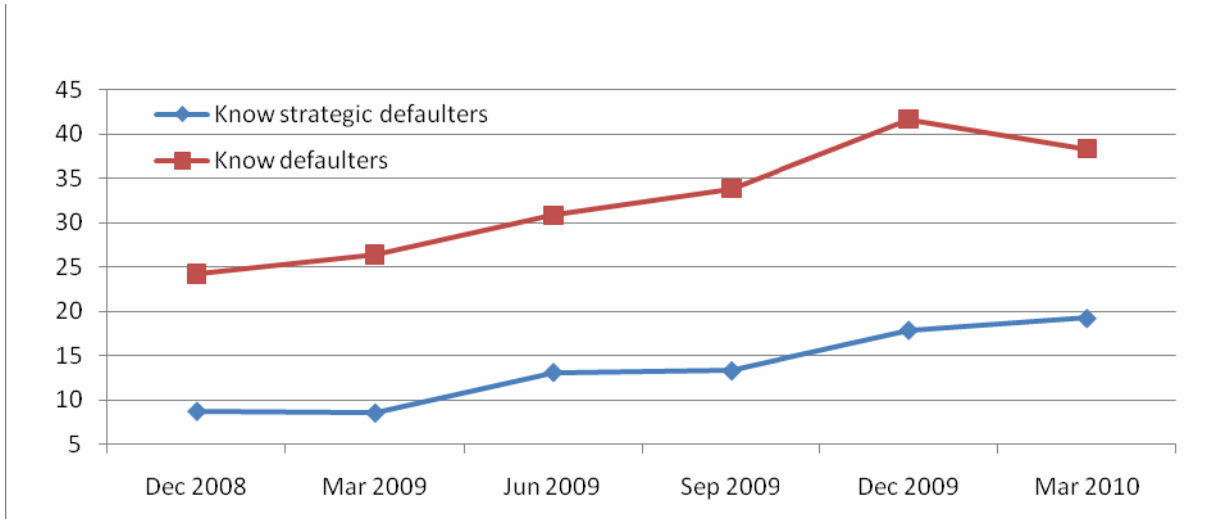


Figure 6. Perceived probability that lender would go after defaulter: recourse and non-recourse states

Histogram of the subjective probability that lenders go after defaulters in recourse and non-recourse states using the answers to the question “ When people default on their mortgage, the lender repossesses the house. Sometimes the mortgage is more than the value of the house. On a scale from 0 to 100, where 0 equals “absolutely no chance” and 100 equals “absolutely certain” what do you expect are the chances that the lenders will go after people who default on their mortgage for the full amount of the mortgage?”

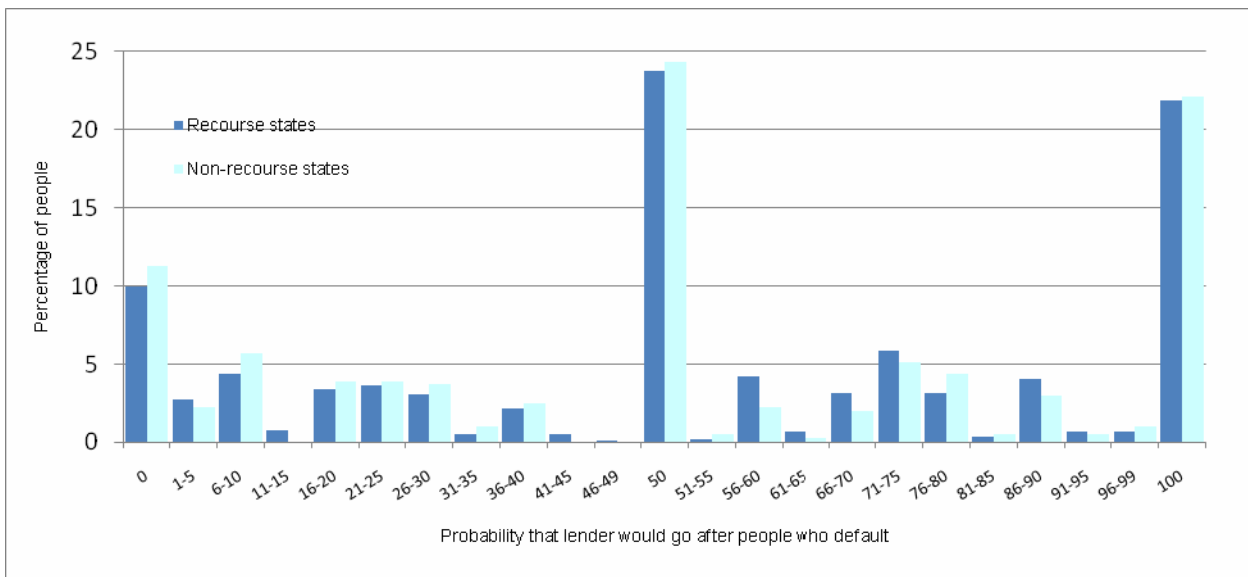


Figure 7. Ratio of strategic defaults to total defaults

The figure shows the ratio of strategic defaults to total defaults estimated as the number of people who respondents know have defaulted strategically on the total number of people who respondents know that have defaulted on the basis of the questions: “How many people do you know who have defaulted on their house mortgage?”. “Of the people you know who have defaulted on their mortgage, how many do you think walked away even if they could afford to pay the monthly mortgage?”

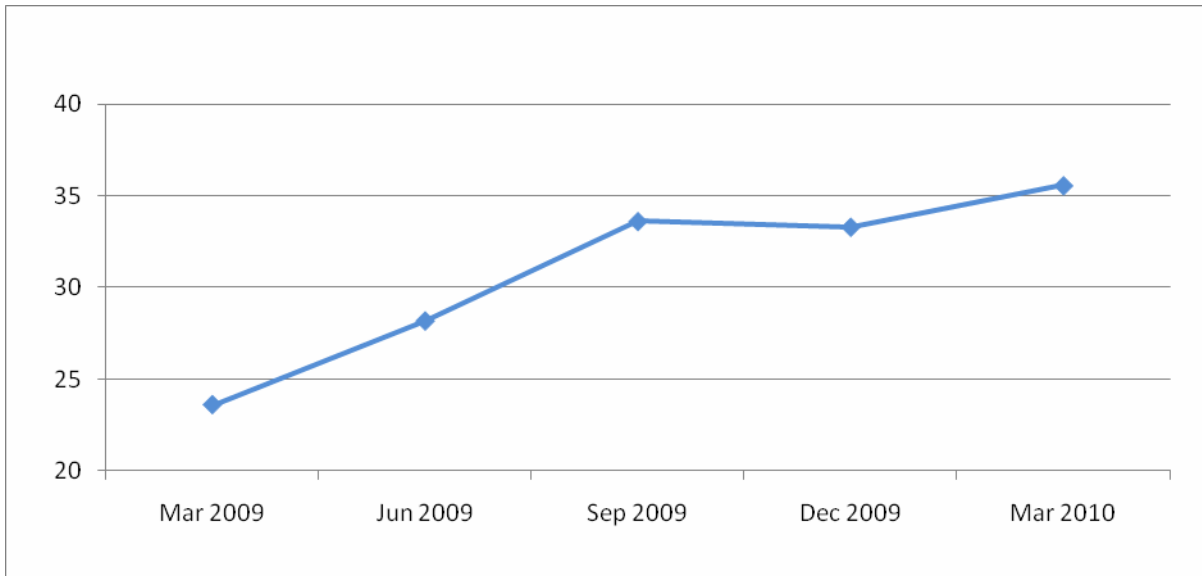


Figure 8. News coverage of strategic defaults over time

Number of articles found by searching the Factiva database for the joint appearance of the words walking away and housing.

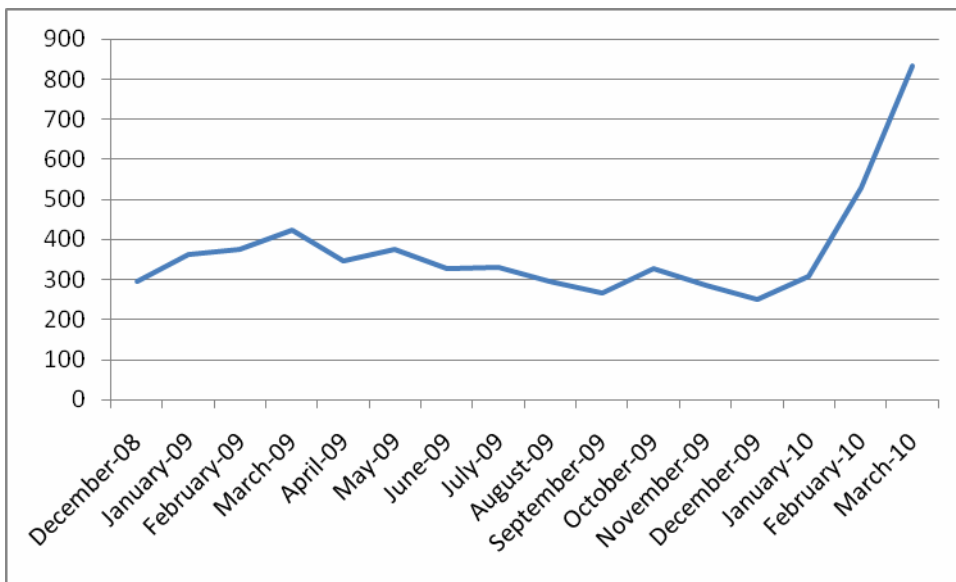


Figure 9. Percentage of households with negative equity

Evolution of the fraction of US homeowners with negative equity based on estimates from Zillow.com.

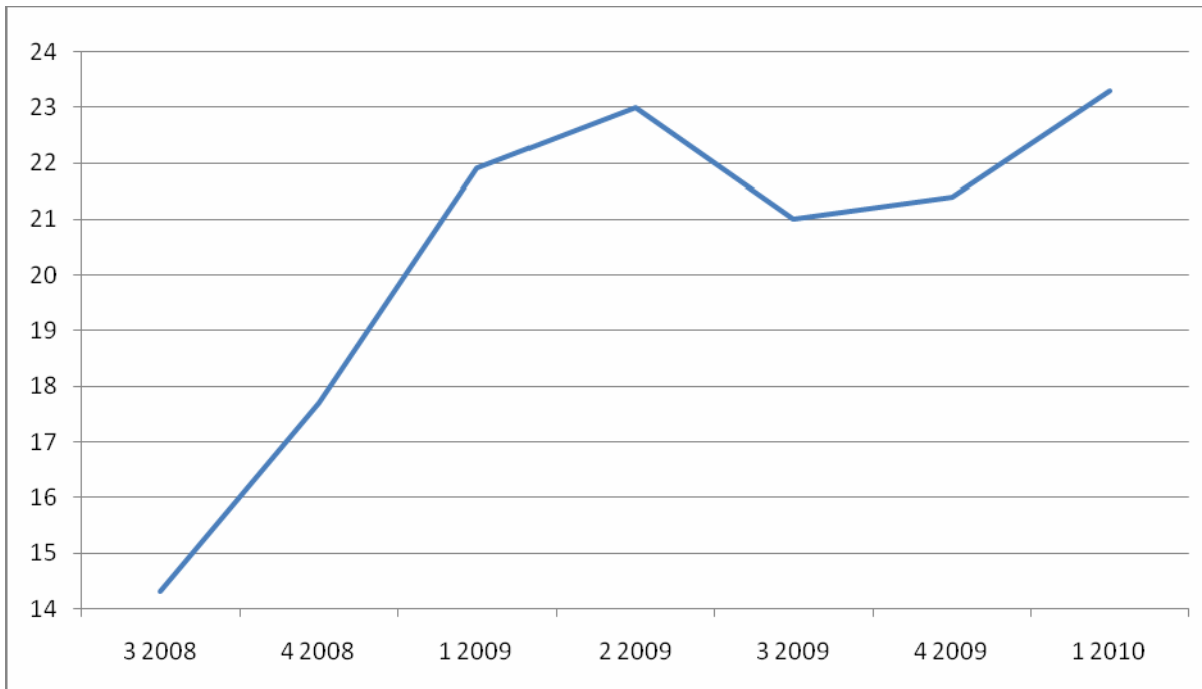


Table 1. Descriptive statistics

Data are from six 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 other waves took place in the third week of the last month of each quarter. 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. In wave 4-60 for people who answered negatively, we repeated the same question with a negative equity of 150.

Percentage of foreclosures in the area is the ratio between the monthly foreclosures (in December 2008 for the first wave survey, and in March 2010 for the sixth 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). 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. Angry about economic situation is the fraction of people who feel that sentiment because of the financial crisis. Government should impose a cap on executive compensation and government should regulate financial sector more are the percentage of respondents agreeing with those statements. Trust banks is the average answer to a question on how much people trust banks on a scale from 1 (no trust) to 5 (full trust). Perceived probability lender would go after defaulters is the answer to the question “When people default on their mortgage, the lender repossesses the house. Sometimes the mortgage is more than the value of the house. On a scale from 0 to 100, where 0 equals “absolutely no chance” and 100 equals “absolutely certain” what do you expect are the chances that the lenders will go after people who default on their mortgage for the full amount of the mortgage?” Probability of becoming unemployed is the average answer to a question asking the chances ones loses his job over the following 12 months. Risk aversion is the average answer to the question “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 a 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

A. Summary statistics

Variable	Mean	Median	Std. Dev.	Min	Max	Obs
Default at -50K	0.089	0	0.285	0	1	4720
Default at -100K	0.230	0	0.421	0	1	4505
Morally wrong to walk away	0.821	1	0.383	0	1	4743
Angry about the economic situation	3.545	4	1.329	1	5	4916
Govt should impose cap on executive compensation	0.579	1	0.494	0	1	3940
Govt should regulate financial sector more	0.525	1	0.499	0	1	3880
Know someone who defaulted	0.310	0	0.463	0	1	4788
Know someone who strategically defaulted	0.132	0	0.339	0	1	4652
Trust banks	3.074	3.000	1.199	1.000	5.000	4,912
Percentage of foreclosures in the area	0.046	0.024	0.068	0	0.662	4304
Perceived prob that lender would go after defaulters	55.012	50	34.293	0	100	1461
Time spent reading/watching news during an average day (hours)	1.398	1.000	1.204	0.000	12.000	2,541
Female	0.508	1	0.500	0	1	4973
Age <=35	0.086	0	0.281	0	1	4813
Age >=65	0.328	0	0.470	0	1	4813
Number of kids	0.496	0	0.972	0	6	4915
Bought A11 >5 years	0.772	1	0.420	0	1	4357
House price expectations (5 years)	3.575	4	0.886	1	5	4809
Prob. become unemployed	0.123	0	0.246	0	1.000	4615
50K shortfall as a fraction of the value of the house	0.363	0.278	0.283	0.006	2	4606
100K shortfall as a fraction of the value of the house	0.727	0.556	0.567	0.012	4	4606
Value of the house	235,812	180,000	335,128	25,000	8,500,000	4606
Income (K dollars)	0.715	0.563	0.552	0.050	2.500	4431
Risk aversion	6.197	6	2.582	1	10	4939
Graduate studies	0.170	0	0.376	0	1	4812
Some or complete college	0.484	0	0.500	0	1	4812
Black	0.065	0	0.246	0	1	4885
Hispanic	0.036	0	0.187	0	1	4885
North-East	0.205	0	0.404	0	1	4973
South	0.358	0	0.479	0	1	4973
West	0.190	0	0.392	0	1	4973
Non-recourse state	0.318	0	0.466	0	1	4973

B. Fraction defaulting strategically by value of wealth and size of the shortfall

House value	Shortfall at			Change in default probability when shortfall increases:		
	50K	100K	150K	from 0 a 50	from 50 a 100	from 100 a 150
100 -125 K	0.117	0.279	0.401	0.117	0.162	0.122
125-167 K	0.087	0.217	0.332	0.087	0.130	0.115
167-250 K	0.065	0.178	0.271	0.065	0.114	0.092
250-500 K	0.055	0.133	0.216	0.055	0.078	0.083
>500 K	0.055	0.131	0.212	0.055	0.076	0.081

Table 2. Demographic determinants of the decision to default strategically

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 effects estimated with a probit model and computed at the mean of the independent variables. Robust standard errors are in brackets. */**/** indicates statistical significance at the 10%, 5%, and 1% level.

A: Walk away at -50K

VARIABLES	(1)	(2)	(3)	(4)	(5)
Black	0.078*** (0.022)	0.067*** (0.022)	0.071*** (0.022)	0.069*** (0.025)	0.071*** (0.025)
Hispanic	0.076** (0.030)	0.067** (0.029)	0.072** (0.030)	0.103*** (0.037)	0.101*** (0.037)
North-East	-0.029*** (0.011)	-0.024** (0.011)	-0.019 (0.011)	-0.008 (0.013)	-0.006 (0.014)
South	-0.018* (0.010)	-0.016 (0.010)	-0.012 (0.010)	0.000 (0.012)	-0.001 (0.012)
West	-0.028** (0.011)	-0.023** (0.012)	-0.019 (0.012)	-0.019 (0.013)	-0.022 (0.014)
Female	-0.033*** (0.008)	-0.033*** (0.008)	-0.036*** (0.009)	-0.035*** (0.009)	-0.033*** (0.009)
Shortfall as a fraction of the value of the house		0.089*** (0.012)	0.090*** (0.012)	0.077*** (0.014)	0.079*** (0.015)
Age <=35			0.030* (0.018)	0.021 (0.018)	0.020 (0.018)
Age >=65			0.021** (0.010)	0.029** (0.013)	0.031** (0.013)
Kids			-0.001 (0.005)	-0.002 (0.005)	-0.002 (0.005)
Bough>5 years				-0.026** (0.012)	-0.024* (0.012)
House price expectations (5 years)				-0.002 (0.005)	-0.003 (0.005)
Prob. become unemployed				0.049*** (0.018)	0.049*** (0.018)
Income (K dollars)				-0.024** (0.011)	-0.024** (0.011)
Risk aversion					-0.002 (0.002)
Non-recourse state					0.007 (0.012)
Observations	4,647	4,360	4,220	3,322	3,311

B: Walk away at -100K

VARIABLES	(1)	(2)	(3)	(4)	(5)
Black	0.108*** (0.029)	0.090*** (0.029)	0.097*** (0.030)	0.111*** (0.035)	0.115*** (0.035)
Hispanic	0.100*** (0.038)	0.095** (0.038)	0.108*** (0.039)	0.155*** (0.047)	0.153*** (0.047)
North-East	-0.033* (0.018)	-0.019 (0.019)	-0.016 (0.019)	0.016 (0.023)	0.016 (0.023)
South	-0.025 (0.016)	-0.022 (0.017)	-0.022 (0.017)	-0.006 (0.019)	-0.009 (0.020)
West	-0.070*** (0.017)	-0.056*** (0.019)	-0.053*** (0.019)	-0.032 (0.022)	-0.036 (0.024)
Female	-0.047*** (0.013)	-0.058*** (0.013)	-0.057*** (0.013)	-0.059*** (0.015)	-0.058*** (0.015)
Shortfall as a fraction of the value of the house		0.106*** (0.011)	0.101*** (0.011)	0.083*** (0.013)	0.085*** (0.014)
Age <=35			0.066** (0.027)	0.069** (0.030)	0.068** (0.030)
Age >=65			0.065*** (0.016)	0.063*** (0.020)	0.066*** (0.020)
Kids			-0.011 (0.007)	-0.010 (0.008)	-0.009 (0.008)
Boughth>5 years				-0.037* (0.019)	-0.036* (0.019)
House price expectations (5 years)				-0.004 (0.009)	-0.003 (0.009)
Prob. become unemployed				0.091*** (0.029)	0.091*** (0.029)
Income (K dollars)				-0.081*** (0.016)	-0.081*** (0.017)
Risk aversion					-0.001 (0.003)
Non-recourse state					0.010 (0.019)
Observations	4,438	4,177	4,046	3,194	3,183

Table 3. The effect of morality on 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. In Columns (1), (2), (5) the reported coefficients are marginal effects estimated with a probit model (IV-probit in column (5)) and computed at the mean of the independent variables. In column (3), (4) and (7) and marginal effects from estimates of a linear probability model (LPM). In the IV estimates “default is morally wrong” is instrumented with an indicator variable on whether the respondent is a Republican. Robust standard errors are in brackets. */**/** indicates statistical significance at the 10%, 5%, and 1% level.

A: Walk away at -50K

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Probit		IV - Second stage (Probit)	IV - First stage	LPM	LPM (Morality first only)	LPM (Morality first only) -
Morally wrong to walk away		-0.082*** (0.016)	-2.401*** (0.267)		-0.088*** (0.016)	-0.070*** (0.027)	-0.057* (0.030)
Shortfall as a fraction of the value of the house	0.078*** (0.014)	0.078*** (0.014)	0.347*** (0.129)	-0.003 (0.027)	0.115*** (0.024)	0.075** (0.031)	
Female	-0.033*** (0.009)	-0.031*** (0.009)	-0.111* (0.063)	0.014 (0.013)	-0.033*** (0.010)	-0.037*** (0.014)	
Age <=35	0.021 (0.018)	0.015 (0.017)	-0.067 (0.092)	-0.061** (0.025)	0.016 (0.019)	0.034 (0.033)	
Age >=65	0.028** (0.012)	0.023* (0.012)	0.012 (0.076)	-0.049*** (0.017)	0.023* (0.012)	0.005 (0.016)	
Bought >5 years	-0.024** (0.012)	-0.027** (0.012)	-0.153** (0.064)	-0.014 (0.016)	-0.028** (0.012)	-0.018 (0.019)	
Prob. become unemployed	0.050*** (0.017)	0.048*** (0.017)	0.187* (0.108)	-0.013 (0.027)	0.055** (0.022)	-0.024 (0.020)	
Income (K dollars)	-0.025** (0.011)	-0.025** (0.011)	-0.052 (0.060)	0.020 (0.013)	-0.015 (0.010)	-0.007 (0.014)	
Black	0.070*** (0.024)	0.049** (0.023)	-0.078 (0.138)	-0.109*** (0.033)	0.054** (0.025)	0.073* (0.043)	
Hispanic	0.088** (0.035)	0.064** (0.032)	-0.009 (0.163)	-0.110*** (0.041)	0.069** (0.032)	0.075* (0.045)	
Republican				0.062*** (0.013)			
Constant			1.164** (0.462)	0.832*** (0.024)	0.147*** (0.025)	0.119*** (0.040)	
Observations	3406	3321	3239	3239	3321	1177	
R-squared					0.048	0.045	

B: Walk away at -100K

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Probit	IV - Second stage (Probit)	IV - First stage	LPM	LPM (Morality first only)	LPM (Morality first only) - corrected	
Morally wrong to walk away		-0.176*** (0.023)	-2.161*** (0.397)		-0.174*** (0.022)	-0.144*** (0.038)	-0.083** (0.042)
Shortfall as a fraction of the value of the house	0.086*** (0.013)	0.089*** (0.013)	0.219*** (0.065)	-0.004 (0.014)	0.106*** (0.016)	0.073*** (0.023)	
Female	-0.056*** (0.015)	-0.057*** (0.015)	-0.131** (0.058)	0.013 (0.013)	-0.056*** (0.014)	-0.048** (0.022)	
Age <=35	0.066** (0.029)	0.059** (0.029)	0.062 (0.097)	-0.053** (0.025)	0.056** (0.027)	0.035 (0.045)	
Age >=65	0.069*** (0.019)	0.050*** (0.019)	0.066 (0.077)	-0.048*** (0.017)	0.050*** (0.018)	0.011 (0.027)	
Bought >5 years	-0.031* (0.019)	-0.031* (0.019)	-0.109** (0.055)	-0.014 (0.016)	-0.030* (0.017)	-0.005 (0.028)	
Prob. become unemployed	0.092*** (0.029)	0.084*** (0.028)	0.214** (0.096)	-0.005 (0.027)	0.083*** (0.030)	-0.033 (0.040)	
Income (K dollars)	-0.081*** (0.016)	-0.083*** (0.016)	-0.187*** (0.069)	0.017 (0.013)	-0.061*** (0.013)	-0.049*** (0.018)	
Black	0.105*** (0.034)	0.071** (0.033)	-0.030 (0.140)	-0.108*** (0.034)	0.070** (0.033)	0.067 (0.058)	
Hispanic	0.137*** (0.045)	0.111** (0.044)	0.067 (0.156)	-0.102** (0.041)	0.111*** (0.041)	0.093 (0.059)	
Republican				0.060*** (0.013)			
Constant			1.268*** (0.467)	0.838*** (0.025)	0.354*** (0.033)	0.292*** (0.055)	
Observations	3271	3198			3198	1139	
R-squared					0.084	0.060	

Table 4. Anger, trust and strategy defaults

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 effects estimated with a probit model and computed at the mean of the independent variables. Robust standard errors are in brackets. */**/** indicates statistical significance at the 10%, 5%, and 1% level.

A: Walk away at -50K

VARIABLES	(1)	(2)	(3)	(4)
Angry about the economic situation	0.013*** (0.004)			
Trust banks		-0.017*** (0.004)		
Govt should impose cap on executive compensation			0.047*** (0.010)	
Govt should regulate financial sector more				0.034*** (0.010)
Shortfall as a fraction of the value of the house	0.079*** (0.014)	0.078*** (0.014)	0.075*** (0.016)	0.081*** (0.016)
Female	-0.034*** (0.009)	-0.029*** (0.009)	-0.038*** (0.010)	-0.033*** (0.010)
Age <=35	0.022 (0.018)	0.026 (0.018)	0.025 (0.020)	0.031 (0.020)
Age >=65	0.029** (0.012)	0.034*** (0.013)	0.023* (0.013)	0.026* (0.014)
Bought>5 years	-0.025** (0.012)	-0.021* (0.012)	-0.022* (0.013)	-0.026** (0.013)
Prob. become unemployed	0.045*** (0.017)	0.044** (0.017)	0.036* (0.019)	0.038* (0.019)
Income (K dollars)	-0.024** (0.011)	-0.025** (0.011)	-0.025** (0.012)	-0.023* (0.012)
Black	0.071*** (0.024)	0.070*** (0.024)	0.058** (0.025)	0.054** (0.025)
Hispanic	0.086** (0.034)	0.082** (0.034)	0.084** (0.037)	0.082** (0.036)
Observations	3386	3377	2702	2669

B: Walk away at -100K

VARIABLES	(1)	(2)	(3)	(4)
Angry about the economic situation	0.021*** (0.006)			
Trust banks		-0.017*** (0.006)		
Govt should impose cap on executive compensation			0.090*** (0.016)	
Govt should regulate financial sector more				0.070*** (0.016)
Shortfall as a fraction of the value of the house	0.088*** (0.013)	0.088*** (0.013)	0.075*** (0.014)	0.077*** (0.014)
Female	-0.058*** (0.015)	-0.052*** (0.015)	-0.065*** (0.016)	-0.055*** (0.016)
Age <=35	0.067** (0.029)	0.071** (0.029)	0.059* (0.031)	0.065** (0.032)
Age >=65	0.070*** (0.019)	0.074*** (0.019)	0.063*** (0.021)	0.066*** (0.021)
Bought >5 years	-0.032* (0.019)	-0.027 (0.019)	-0.029 (0.020)	-0.035* (0.021)
Prob. become unemployed	0.085*** (0.029)	0.085*** (0.029)	0.073** (0.031)	0.069** (0.032)
Income (K dollars)	-0.079*** (0.016)	-0.080*** (0.016)	-0.086*** (0.018)	-0.092*** (0.018)
Black	0.109*** (0.034)	0.108*** (0.034)	0.083** (0.036)	0.069* (0.036)
Hispanic	0.135*** (0.045)	0.132*** (0.045)	0.129*** (0.049)	0.120** (0.048)
Observations	3254	3246	2598	2567

Table 5. Defaults and information about other defaulters

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 effects estimated with a probit model and computed at the mean of the independent variables. Robust standard errors are in brackets. */**/** indicates statistical significance at the 10%, 5%, and 1% level.

A: Walk away at -50K

VARIABLES	(1)	(2)	(3)	(4)	(5)
Know someone who strategically defaulted	0.041*** (0.016)	0.043*** (0.016)	0.031* (0.019)		0.032* (0.019)
Percentage of foreclosures in the area		0.138** (0.064)		0.124** (0.062)	0.135** (0.064)
Know someone who defaulted			0.011 (0.013)	0.023** (0.011)	0.013 (0.013)
Shortfall as a fraction of the value of the house	0.078*** (0.015)	0.070*** (0.016)	0.078*** (0.015)	0.071*** (0.016)	0.069*** (0.016)
Female	-0.030*** (0.009)	-0.032*** (0.010)	-0.030*** (0.009)	-0.033*** (0.010)	-0.032*** (0.010)
Age <=35	0.017 (0.018)	0.011 (0.018)	0.016 (0.018)	0.013 (0.018)	0.011 (0.018)
Age >=65	0.031** (0.013)	0.025* (0.013)	0.032** (0.013)	0.026** (0.013)	0.026** (0.013)
Bought>5 years	-0.027** (0.012)	-0.028** (0.013)	-0.027** (0.012)	-0.027** (0.013)	-0.028** (0.013)
Prob. become unemployed	0.054*** (0.018)	0.056*** (0.018)	0.053*** (0.018)	0.054*** (0.018)	0.054*** (0.018)
Income (K dollars)	-0.032*** (0.012)	-0.029** (0.012)	-0.032*** (0.012)	-0.026** (0.011)	-0.029** (0.012)
Black	0.084*** (0.026)	0.068** (0.027)	0.084*** (0.026)	0.067** (0.026)	0.068** (0.027)
Hispanic	0.095** (0.037)	0.053 (0.033)	0.094** (0.037)	0.052 (0.032)	0.052 (0.033)
Observations	3217	2841	3217	2917	2841

B: Walk away at -100K

VARIABLES	(1)	(2)	(3)	(4)	(5)
Know someone who strategically defaulted	0.014 (0.022)	0.013 (0.023)	0.011 (0.027)		0.007 (0.028)
Percentage of foreclosures in the area		0.144 (0.116)		0.128 (0.112)	0.141 (0.116)
Know someone who defaulted			0.004 (0.021)	0.011 (0.017)	0.009 (0.022)
Shortfall as a fraction of the value of the house	0.091*** (0.014)	0.082*** (0.015)	0.091*** (0.014)	0.081*** (0.015)	0.082*** (0.015)
Female	-0.051*** (0.015)	-0.048*** (0.016)	-0.051*** (0.015)	-0.048*** (0.016)	-0.048*** (0.016)
Age <=35	0.062** (0.029)	0.060* (0.031)	0.062** (0.029)	0.058* (0.031)	0.059* (0.031)
Age >=65	0.074*** (0.020)	0.066*** (0.021)	0.075*** (0.020)	0.062*** (0.020)	0.067*** (0.021)
Bought>5 years	-0.035* (0.019)	-0.049** (0.020)	-0.035* (0.019)	-0.049** (0.020)	-0.049** (0.020)
Prob. become unemployed	0.097*** (0.030)	0.099*** (0.031)	0.097*** (0.030)	0.100*** (0.031)	0.098*** (0.031)
Income (K dollars)	-0.084*** (0.017)	-0.079*** (0.017)	-0.084*** (0.017)	-0.080*** (0.017)	-0.079*** (0.017)
Black	0.125*** (0.036)	0.123*** (0.038)	0.125*** (0.036)	0.123*** (0.038)	0.123*** (0.038)
Hispanic	0.171*** (0.048)	0.142*** (0.049)	0.170*** (0.048)	0.128*** (0.048)	0.141*** (0.049)
Observations	3092	2734	3092	2807	2734

Table 6 : Determinants of the probability that lenders go after defaulters

The dependent variable is the perceived probability that the lender would go after defaulters dummy on a scale between 0 and 100. The table reports beta coefficients from OLS regressions. Robust standard errors are in brackets. */**/** indicates statistical significance at the 10%, 5%, and 1% level.

VARIABLES	(1)	(2)	(3)
	Perceived probability that lender would go after defaulters		
Know someone who strategically defaulted	-7.500*** (2.590)		-5.095 (3.372)
Know someone who defaulted		-5.368** (2.097)	-3.252 (2.791)
Female	-0.388 (2.024)	-0.762 (2.002)	-0.375 (2.023)
Age <=35	4.046 (3.092)	5.078 (3.085)	4.276 (3.114)
Age >=65	-0.752 (2.446)	-0.540 (2.413)	-1.017 (2.456)
Black	6.164 (4.414)	7.858* (4.352)	6.130 (4.431)
Hispanic	2.812 (5.791)	3.113 (5.705)	2.687 (5.776)
Graduate studies	-5.468* (3.131)	-6.548** (3.111)	-5.580* (3.133)
Some or complete college	-2.641 (2.308)	-3.414 (2.285)	-2.616 (2.307)
Income (K dollars)	-4.262** (2.022)	-3.662* (1.997)	-4.250** (2.028)
Risk aversion	-0.137 (0.446)	-0.071 (0.437)	-0.159 (0.445)
Non-recourse state	-0.697 (2.514)	-0.474 (2.495)	-0.585 (2.509)
North-East	-5.829* (3.007)	-5.550* (2.975)	-5.930** (3.007)
South	-0.271 (2.664)	0.145 (2.632)	-0.292 (2.662)
West	-5.239 (3.435)	-4.558 (3.420)	-4.883 (3.460)
Constant	63.762*** (3.986)	63.753*** (3.909)	64.641*** (3.989)
Observations	1168	1197	1168
R-squared	0.031	0.032	0.032

Table 7. The role of the media in explaining strategic defaults

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 even if s/he can afford to pay the monthly mortgage costs. All the other variables are defined in Table 1. Since data on the media were collected starting with wave 4, estimates are based on waves 4-6. The reported coefficients are marginal effects estimated with a probit model and computed at the mean of the independent variables. Robust standard errors are in brackets. */**/** indicates statistical significance at the 10%, 5%, and 1% level.

Walk away at -50K (waves 4-6)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Time spent reading/watching news during an average day (hours)	0.009*	0.084***	0.010*	0.088**	0.010*	0.088**
	(0.005)	(0.032)	(0.006)	(0.035)	(0.006)	(0.035)
Wave		0.024**		0.027**		0.027**
		(0.012)		(0.013)		(0.013)
Time news*Wave		-0.016**		-0.016**		-0.016**
		(0.007)		(0.007)		(0.007)
Know someone who strategically defaulted			0.040*	0.036*	0.056*	0.050*
			(0.021)	(0.021)	(0.031)	(0.030)
Percentage of foreclosures in the area			0.056	0.055	0.062	0.060
			(0.099)	(0.098)	(0.099)	(0.098)
Know someone who defaulted					-0.016	-0.015
					(0.019)	(0.019)
Shortfall as a fraction of the value of the house	0.071***	0.070***	0.047*	0.047*	0.047*	0.047*
	(0.020)	(0.020)	(0.025)	(0.025)	(0.025)	(0.025)
Female	-0.043***	-0.043***	-0.032**	-0.033**	-0.032**	-0.033**
	(0.013)	(0.013)	(0.015)	(0.015)	(0.015)	(0.015)
Age <=35	0.034	0.034	0.022	0.022	0.023	0.023
	(0.027)	(0.027)	(0.028)	(0.028)	(0.029)	(0.029)
Age >=65	0.021	0.022	0.018	0.019	0.016	0.017
	(0.017)	(0.017)	(0.019)	(0.019)	(0.019)	(0.019)
Bought>5 years	-0.025	-0.025	-0.037*	-0.036*	-0.037*	-0.036*
	(0.018)	(0.018)	(0.021)	(0.021)	(0.021)	(0.021)
Prob. become unemployed	0.028	0.030	0.047*	0.051*	0.050*	0.053**
	(0.025)	(0.025)	(0.028)	(0.027)	(0.027)	(0.027)
Income (K dollars)						
	(0.014)	(0.014)	(0.016)	(0.016)	(0.016)	(0.016)
Black	0.081**	0.083**	0.091**	0.096**	0.091**	0.095**
	(0.034)	(0.035)	(0.041)	(0.042)	(0.041)	(0.042)
Hispanic	0.117**	0.118**	0.084	0.086	0.085	0.088
	(0.050)	(0.050)	(0.054)	(0.054)	(0.054)	(0.054)
Observations	1790	1790	1453	1453	1453	1453

