

Strategic Mortgage Default and the Role for Incentive-Based Solutions

1. Why Do Homeowners Default on Mortgages?

Traditional mortgage banking is based on the assumption that homeowners will always make a mortgage payment if they are able to. Therefore, they will only default if they have *no choice*: they are simply unable to make the payments because of insufficient net *income*. Consequently, many existing proposals to reduce default aim to reduce the homeowner's expenses (e.g. via payment reductions or tax cuts).

However, an increasingly influential and empirically-supported view is that many homeowners can afford the payment but make a *rational choice* to default, because the value of the mortgage substantially exceeds the value of their home. (This is known as "rational default" or "strategic default".) Defaulting on their loan is a rational decision: while they forfeit their home, they rid themselves of a mortgage liability of even greater value. The source of the problem is the homeowner's *balance sheet*: since he has negative equity in his home, it is not worth keeping it by paying the mortgage.¹

There is substantial support for this *rational choice / strategic default* view from both academics and practitioners.

- A 2000 paper by Deng, Quigley and Van Order, published in the top-ranked academic journal *Econometrica*, finds that the homeowner's equity is a significant driver of default.²
- A survey by Guiso, Sapienza and Zingales (2009) find that 26% of existing defaults are strategic. Respondents who know someone who strategically defaulted are 82% more likely to state their intention to do so, suggesting contagion effects in strategic default.
- Bajari, Chu and Park (2008) find that a 20% decline in house prices leads to a 15% increase in default probability.
- A study by Experian and Oliver Wyman (2009) finds 588,000 strategic defaults in 2008, over double the 2007 figure. The number of strategic defaults was 68 (46) times higher in California (Florida) than in 2005. Homeowners with *high* credit scores are 50% more likely to default strategically. Unlike other delinquencies, strategic defaulters are more likely to

¹ In more technical terms, the homeowner has an equity stake in the property. Equity involves ownership of the underlying asset (property), minus the mortgage, plus a put option on the property with a strike price equal to the mortgage. If the value of the mortgage exceeds the value of the property, the put option is in-the-money and it can be rational to exercise it by defaulting. The homeowner "puts" the property back to the lender in return for wiping out the mortgage.

² The authors note that equity is not the only driver of mortgage termination and that prepayment is another important cause. However, this is not relevant for our setting as we are concerned with defaults, while the authors' goal was to study terminations (through either default or prepayment).

stay current on their home equity lines (and are thus harder to identify) and charge-off rather than cure after delinquency.

- A *Wall Street Journal* article (“New Evidence on the Foreclosure Crisis”, 7/5/09) by Professor Stan Liebowitz states “The evidence from a huge national database containing millions of individual loans strongly suggests that the single most important factor [determining foreclosures] is whether the homeowner has negative equity in a house -- that is, the balance of the mortgage is greater than the value of the house. This means that most government policies being discussed to remedy woes in the housing market are misdirected. ... By far, the most important factor related to foreclosures is the extent to which the homeowner now has or ever had positive equity in a home.... Although only 12% of homes had negative equity, they comprised 47% of all foreclosures.”
- A *New York Times* Op-Ed (“Matters of Principal”, 3/5/09) by Professors John Geanakoplos and Susan Koniak states that “Monthly default rates ... are stunningly sensitive to whether a homeowner has an ownership stake in his home. Every month, another 8 percent of the subprime homeowners whose mortgages (first plus any others) are 160 percent of the estimated value of their houses become seriously delinquent. On the other hand, subprime homeowners whose loans are worth 60 percent of the current value of their house become delinquent at a rate of only 1 percent per month. Despite all the job losses and economic uncertainty, almost all owners with real equity in their homes, are finding a way to pay off their loans. It is those “underwater” on their mortgages — with homes worth less than their loans — who are defaulting, but who, given equity in their homes, will find a way to pay. They are not evil or irresponsible; they are defaulting because ... it is the economically prudent thing to do.”
- *The Economist* (“Can’t Pay or Won’t Pay?”, 2/19/09) quotes independent consultant Edward Pinto as estimating that 20% of borrowers with negative equity went to foreclosure in 2006-8.

Strategic default is a particular concern in the current crisis due to the high frequency of negative-equity mortgages. The *Wall Street Journal* (“1 in 4 Borrowers Under Water”, 11/29/09) reports that one-fourth of homeowners have negative equity. This proportion is consistent with David Rosenberg, formerly Merrill Lynch’s Chief North American Economist, who reported earlier this year that 13 million homes (25%) exhibit negative equity.³ Zillow.com estimates 22% of households have negative equity across the US; the proportion exceeds 50% in some locations.⁴

³ “Some Inconvenient Truths,” Merrill Lynch Economics. 1/26/09.

⁴ www.zillow.com/reports/RealEstateMarketReports.htm.

2. Issues With Current Solutions to Mortgage Default

The government and loan owners are currently pursuing a number of existing solutions to default. However, they have so far proven to be ineffective for two main reasons. First, certain solutions are founded on the idea that default occurs because households have *no choice* due to insufficient *income*, and thus fail to address default that is a *rational choice* that depends on the homeowner's *balance sheet*. Second, certain solutions face substantial practical hurdles to implementation. Below are the main solutions to mortgage default currently practiced:

2.1 Lender-Initiated Solutions

These typically involve modifying the loan and involve two main forms: reducing interest (payment reductions/holidays and principal forbearance⁵) or reducing principal (principal forgiveness). Both types of modification suffer from the following practical issues:

- It involves a significant amount of costs, e.g. legal and documentation fees for the new legal contract, a re-underwriting process, and “closing” costs. Eggert (2007) estimates the cost of a modification to be \$500-600.
- It requires the use of existing mortgage servicing resources, which are currently under extreme pressure due to the crisis. This pressure is likely to increase as the crisis intensifies.
- It is confusing. Many large banks have two different groups contacting delinquent borrowers, and these groups may have conflicting incentives. The group created to administer loan modifications may conflict with another group whose goal is to quickly collect the full amount of payments in arrears. These conflicting messages from the same company will often cause a borrower to default rather than negotiate a solution.
- It requires significant disclosure by homeowners of additional information not required when the loan was originally underwritten, and forms and affidavits to be signed verifying this new information. This often deters homeowners from accepting the modification.
- It is difficult to achieve legally with securitized loans that are not in imminent danger of default, since there are multiple loan owners whose approval is required. This is particularly important given the volume of securitized loans (c. \$2 Tr).

In addition, the two types of loan modification involve their own additional issues.

- *Payment Reductions / Holidays*. Here, the principal balance of the loan is unchanged, but the monthly payments are reduced either through extending the term of the loan or lowering the interest rate (sometimes temporarily). The additional issues are:

⁵ Principal forbearance involves calculating the monthly interest payments over less than the full principal amount of the loan. However, the actual principal amount of the loan is not reduced.

- It only addresses income, rather than the balance sheet that is the root cause of strategic default. Professor Norm Miller, quoted in Bloomberg on 3/17/09, states “The biggest reason modifications end up re-defaulting is because they are in markets where prices have continued to go down ... When people are underwater and don’t see an end to it, a lot of them just walk away, even if they can make the payments because they don’t want to be wiped out financially.” Quercia, Ding and Ratcliffe’s (2009) study of redefault finds “households with negative home equity are more likely to redefault over time, even when a modification has initially lowered mortgage payment.”
- If the homeowner still ends up defaulting, it may be costlier to the lender than taking no action, since the lender will be receiving lower interim interest payments.
- *Principal Forgiveness.* Here, the principal balance of the loan is immediately reduced. It aims to address the negative equity that is the source of strategic default. The additional issues are:
 - It triggers a full and immediate accounting write-down to the value of the loan.
 - It is irreversible and cannot be subsequently “clawed back” for those who redefault or had committed fraud (e.g. when applying for the principal reduction).
 - The lower balance reduces the interest received by the lender. Thus, if the homeowner still ends up defaulting, the lender has been made worse off by the loan modification.
 - It creates a “moral hazard” problem: the homeowner may attempt to make further risky housing investments in the future, believing that he will receive principal forgiveness if he falls into negative equity
 - The impact on homeowner behavior may be limited for two reasons.
 - Even a large dollar reduction in absolute terms is small relative to the size of an existing mortgage. If the homeowner “frames” the reduction together with the mortgage (i.e. compares its magnitude to the size of the mortgage rather than evaluating it in isolation), he may feel that his overall position has changed little – for example, a \$10,000 reduction on a \$200,000 mortgage is only a 5% decrease.
 - The loan modification is “non-salient”: it is a one-time event which may be subsequently forgotten, and thus have little ongoing incentive effect.

The above practical and conceptual issues with a principal reduction are serious in reality. As a result, banks have been very reluctant to write off mortgage principal: only 10% of loan modifications involve principal forgiveness.⁶ Considering all types of loan modification, 58% of the modifications made in Q1 2008 ended up redefaulting.⁷

⁶ Professor Alan White, a member of the Federal Reserve Board of Governors Consumer Advisory Council, quoted in Bloomberg on 3/17/09.

⁷ Source: U.S. Treasury’s Office of the Comptroller of the Currency

2.2 Government-Initiated Solutions

- *Tax Credits.* These improve the homeowner's income, but are ineffective for balance sheet-driven strategic default. First, the effect of tax credits is very small compared to the amount of negative equity, and so does little to repair the homeowner's balance sheet. Second, the homeowner can use the tax credits to rent a new property, allowing him to default on his existing mortgage. In addition, if they fail to prevent default, they are simply a cost to the government. Finally, while the most recent plan to provide tax credits is relatively new, there is increasing evidence that fraud is being used to secure those credits.
- *HOPE for Homeowners Act of 2008.* This involved the FHA insuring lenders that refinance troubled loans into fixed-rate mortgages. As of February 2009, only 451 applications had been received and 25 loans finalized, compared to the expected participation of 400,000. The low participation has been mainly attributed to two issues of loan modifications discussed in the prior subsection: the fees associated with a modification, and the need for the lender to reduce loan principal to 90% of a property's current value.
- *Home Affordable Modification Program (HAMP).* This is similar to a payment reduction: the servicer modifies the loan to reduce monthly payments to 31% of a homeowner's pre-tax income. As of August 2009, only 9% of delinquent borrowers (235,000 loans) were in trial modifications, compared to the goal of having 500,000 participants by November 2009.

This low take-up has been attributed to a number of causes. From the borrower's side, the confusion and disclosure requirements described above have been an impediment; the *New York Times* ("Winning Lower Payments Takes Patience, and Luck", 11/29/09) discusses "the confusing and frustrating ways of the Obama administration program aimed at keeping millions of troubled American borrowers in their homes." One large institution tasked with using a third party to modify loans through HAMP has found that in Q2 2009, nearly 42% of loan modifications that would have resulted a monthly payment reduction were never completed by the borrower.

From the servicer's side, there is a substantial administrative burden in processing loan modifications: by August, certain servicers had only been able to process 4-6% of modification applications received. Many servicers performing modifications are hiring personnel faster than they can be properly trained to administer these modifications effectively.

Moreover, industry sources estimate the total cost to the taxpayer can ultimately reach as high as \$3,000 when factoring in the fees paid to the servicer for implementing these modifications.

3. An Alternative Approach to Mortgage Default

The strategic default view implies a shift in thinking about how to prevent defaults, along two main lines. First, since default is a discretionary, rational choice decision made by the homeowner, an effective solution must provide *incentives* for the homeowner to choose not to default, rather than welfare to enable him to make payments. Second, since this decision to default is driven by negative equity rather than the loan’s affordability, the solution must target the homeowner’s *balance sheet* rather than income.

There is ample evidence that incentives have a powerful effect on individuals’ behavior. For example, Lazear (2000) found that shifting from flat wages to performance-related pay led to a 44% increase in output; researchers at the University of Pennsylvania Medical School successfully paid overweight people \$380 to lose weight and smokers \$750 to quit smoking (Volpp et al. (2008, 2009)); and a New York City program successfully paid students up to \$50 for high achievement on standardized tests (Medina (2008)).

The party that provides the incentives is known as the “principal”; the incentives are given to an “agent” to induce him to engage in behavior beneficial to the principal. To achieve efficiency (maximum effectiveness at minimum cost), an optimal incentive plan should meet the following criteria:

- Use a performance measure that is:
 - Easily measurable and verifiable.
 - Under the control of the agent.
 - Closely tied to the principal’s objective.
- Be simple, so that it is easily understood by the agent.
- Be salient, so that the agent considers it when deciding behavior.
- Pay the individual (and thus cost the provider) only if he actually achieves the performance measure – i.e. provide a contingent incentive/reward for good behavior, rather than a non-contingent handout/welfare payment. In particular, for any solution, it is difficult to identify the individuals for whom it will be effective. It is important that the solution is not costly to the provider if it is offered to individuals for whom it has no effect.

In addition to the above general criteria that apply to any incentive plan, there are further criteria specific to the present setting of mortgage defaults:

- Be scalable. The incentive plan can be rolled out:
 - To a large number of loans at little cost, in particular avoiding the high cost of loan modifications and unnecessary write-downs.
 - To a large number of loans without using existing mortgage servicing resources.
 - To different types of loans, e.g. both whole and securitized loans, so as not to disadvantage a borrower based on how his loan was sold.
 - To different types of loans, including those on second homes, vacation homes and investor-owned homes. Strategic default is more likely on these homes than primary residences.
- Be politically viable:
 - Provide incentives rather than welfare payments (see above).
 - Reward future performance rather than irresponsible behavior (e.g. taking out unaffordable mortgages, becoming delinquent to qualify for a modification). Rewarding irresponsible behavior is an important concern not only for current public perception, but also to avoid future moral hazard problems. If homeowners expect to be bailed out when they become delinquent, they will take less care to avoid delinquency and may even deliberately become delinquent to qualify for the solution.
- Address the homeowner's balance sheet, in addition to (when appropriate) their income statement.

If an incentive-based solution is not adopted rapidly, strategic default will likely accelerate as house prices continue to decline. By contrast, adoption of a successful solution to strategic default will yield substantial benefits to numerous constituencies. Most obviously, it will now be rational for the homeowner to remain in his property, preserving his credit rating and avoiding the dislocation costs caused by having to relocate after foreclosure. Mortgage lenders, investors and insurers will avoid the delinquency, foreclosure and liquidation costs associated with a default, and mortgage servicers will benefit from lower overall servicing costs due to reduced delinquency rates. Moreover, the potential beneficiaries extend far beyond the specific borrower and lender involved in the mortgage. The local society gains from avoiding the social costs of foreclosure, such as the homeowner's failure to maintain property, vandalism of property, or mass emigration from certain communities; in addition, given contagion effects in strategic default, deterring a particular homeowner from defaulting may help deter others. Finally, the government and taxpayers benefit from property tax revenues as borrowers remain in their home; social services and related jobs will also be supported.

References

Bajari, Patrick, Sean Chu and Minjung Park (2008): “An Empirical Model of Subprime Mortgage Default From 2000 to 2007.” NBER Working Paper 14625.

Deng, Yongheng, John M. Quigley and Robert Van Order (2000): “Mortgage Terminations, Heterogeneity and the Exercise of Mortgage Options.” *Econometrica* 68, 275-307.

Eggert, Kurt (2007): “What Prevents Loan Modifications?” *Housing Policy Debate* 18, 279-297.

Guiso, Luigi, Paola Sapienza and Luigi Zingales (2009): “Moral and Social Constraints to Strategic Default on Mortgages.” Working paper, European University Institute, Kellogg School of Management and Chicago Booth School of Business.

Lazear, Edward (2000): “Performance Pay and Productivity.” *American Economic Review* 90, 1346-1361.

Medina, Jennifer (2008): “Next Question: Can Students Be Paid to Excel?” *New York Times* March 5, 2008.

Quercia, Roberto G., Lei Ding and Janneke Ratcliffe (2009): “Loan Modifications and Redefault Risk: An Examination of Short-Term Impact.” Working paper, University of North Carolina.

Volpp, Kevin, Leslie John, Andrea Troxel, Laurie Norton, Jennifer Fassbender and George Loewenstein (2008): “Financial Incentive-Based Approaches for Weight Loss: A Randomized Trial.” *Journal of the American Medical Association* 300, 2631-2637.

Volpp, Kevin, Andrea B. Troxel, Mark V. Pauly, Henry A. Glick, Andrea Puig, David A. Asch, Robert Galvin, Jingsan Zhu, Fei Wan, Jill DeGuzman, Elizabeth Corbett, Janet Weiner and Janet Audrain-McGovern (2009): “A Randomized, Controlled Trial of Financial Incentives for Smoking Cessation.” *The New England Journal of Medicine* 360, 699-709.