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Collateral pledge, sunk-cost fallacy and mortgage default [☆]



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ABSTRACT

Individuals and firms pledge collateral to mitigate agency costs or contracting frictions in a world with asymmetric information. However, the option value theory suggests that once the mark-to-market asset valuation is below the current debt, the firms and individuals should default on their debt contract irrespective of the initial collateral pledged. In this paper, we estimate default models and find that after controlling for mark-to-market asset valuation, initial collateral remains an important predictor of mortgage default. Specifically, individuals that pledge higher collateral have a lower hazard to default. Our results are consistent with models of sunk cost fallacy.

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1. Introduction

Economic theory explains the role of collateral in debt contracts as an attempt to mitigate agency costs or contracting frictions in a world with asymmetric information. Chan and Thakor (1987) argue that collateral alleviates adverse selection problem while Holmstrom and Tirole (1997) argue that

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collateral alleviates the moral hazard problem. [Inderst and Mueller \(2007\)](#) show that collateral allows local banks that use soft information to be more competitive against banks that use hard information in their lending. [Benmelech et al. \(2005\)](#) find that liquidation values of collateralized assets are first-order determinants of loan contract terms.

[Berger et al. \(2011\)](#) suggests that the use of hard information like the credit scoring technology reduces the pledged collateral in debt contracts. They argue that pledging collateral imposes a cost on the lender and the borrower. Specifically, the lenders incur the screening costs of valuing the pledged assets; the costs of monitoring the secured assets; and any enforcement/disposal expenses in the event of repossession (e.g., [Leeth and Scott, 1989](#)). The use of collateral may impose opportunity costs on borrowers to the extent that it ties up assets that might otherwise be put to more productive uses. Borrowers may also suffer fluctuations in their credit availability as the values of their securable assets vary.

In this paper we use down-payment size as a measure of collateral pledged by the home buyer and test if the collateral pledged explains the mortgage default hazard, conditioned on the current loan-to-value ratios that vary across time because of changes in housing markets and paying down of the interest and principal on the house. Our thought experiment is as follows: Imagine two households looking to buy houses in two different locations. The first household puts down a 20% down payment and the second household puts down a 5% down payment. The first household by putting down more collateral is trying to signal to the lender that he is low risk. Over the next few months the first homeowner experiences a house price decline of 21% and the second homeowner experiences a house price decline of 6%. Essentially the option to default for both of them is in the money and they both should be equally likely to default. Since at that point they both have a -1% equity in the house. However, if there is some behavioral bias (like sunk cost fallacy) then it is possible that the first household is less likely to default. In other words, if households with higher initial down-payments are less prone to default, it could mean that down-payment is a proxy for commitment, or that those who put high down-payments on their houses are more likely to be motivated by nominal loss aversion. We also use measures of local house price volatility as an explanatory variable for default hazard. In the presence of foreclosure-induced transactions costs, the put option will be greater in areas with higher house price volatility, and therefore we would expect higher house price volatility to predict lower defaults.

Our results show that default risks increase with cumulative loan-to-value at origination (CLTV) conditional on the mark-to-market CLTV (MCLTV). In other words, households who have more equity in their house despite the fact that their MCLTV is negative they are less likely to default on their mortgage. Moreover, comparison of change in default probabilities along CLTV and MCLTV suggests that incremental risks owing to initial down payment and to our mark-to-market measure are similar in scale. We conduct a number of robustness tests to check if our results could be driven by other factors like the heterogeneity in house price, recourse vs non-recourse states, and macroeconomic conditions. Additionally, we replicate our analysis by matching homeowners on observable characteristics except for CLTV. Consistent with our hypothesis, we find that collateral pledged at origination does create a sunk cost fallacy in mortgage default behavior.

An alternative explanation of our results is that origination CLTV proxies for borrower characteristics that affect mortgage default directly (e.g. the borrowers use the origination CLTV to signal their type to the lender). Under this alternative interpretation, the coefficient simply captures the fact that borrowers with lower origination LTV are less likely to default because of unobserved borrower characteristics. It is difficult to completely rule out this interpretation unless we conduct a field experiment with a control and treatment groups. However, we conduct the following thought experiment to address the above concern. We look at two different borrowers with an origination CLTV of 80% and an origination CLTV of 90% on their mortgages and study their credit card usage behavior. If it is the case that they have differently default characteristics as they use the origination CLTV to signal their type, we should find the credit card default behaviour of these two borrowers to be different. However, our results show that credit card default behaviour of these two individuals is the same. This suggests that the origination CLTV may not reflect some unobserved borrower characteristics that captures their type.

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