Adverse selection in mortgage securitization

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A B S T R A C T

Using several large data sets of mortgage loans originated between 2004 and 2007, we find that in the prime mortgage market, banks generally sold low-default-risk loans into the secondary market while retaining higher-default-risk loans in their portfolios. In contrast, these lenders retained loans with lower prepayment risk relative to loans they sold. Securitization strategy of lenders changed dramatically in 2007 as the crisis set in with most unwilling to retain higher-default-risk loans in return for lower prepayment risk. Contrary to the prime market, the subprime market does not exhibit any clear pattern of adverse selection.

1. Introduction

The U.S. economy recently experienced one of the worst financial and economic crises since the Great Depression. The crisis was triggered by a collapse of the bubble in residential real estate markets. Many commentators cite the remarkable growth of securitization in recent years as a major contributor to the rise of the real estate bubble and the ensuing crisis. Part of the argument is that securitization creates additional layers of agency problems in loan origination, which lead to lax underwriting and thus higher default rates (Rajan et al., 2011).

In this paper, we investigate determinants of lenders’ choice to securitize loans, focusing on the quality of loans they sell to investors in the secondary mortgage market relative to ones they retain on their balance-sheets. Lenders typically obtain information—both soft and hard (Petersen, 2004; Agarwal and Hauswald, 2010)—about the borrowers when screening their applications (origination) and may use this information when deciding the quality of loans to sell to the investors (post-origination). The conventional wisdom is that lenders may know more about the credit quality of a borrower than what is reflected in the hard information collected, such as the credit score, income, and debt payments of the borrower. Lenders could have incentives to take advantage of their unobservable private information about borrowers and retain higher-quality loans on their balance-sheets while selling inferior-quality loans. However, market mechanisms, such as lender reputation concerns, due diligence practices in the securitization chain including the originator...
representation and warranties may prevent this from occurring. The ultimate impact of lender ability to securitize on the quality of loans they retain is an empirical question—one which we investigate in this paper.

There are marked differences between securitization in the subprime and prime markets. Prime lenders typically sell mortgage loans in the secondary market to Fannie Mae or Freddie Mac, which are GSEs (Government-Sponsored Enterprises) who in turn sell to investors. In contrast, subprime loans, originated largely by different sets of lenders (Mayer and Pence, 2009), are typically packaged and sold to investors by private issuers such as investment banks. Important differences between the control GSEs or private issuers impose on the securitization chain (e.g., provision of incentives/monitoring) can influence both the origination and post-origination practices of the lenders. For instance, GSEs offer investors guarantees against default risk, while private issuers pass the default risk on to parties that are willing to bear it. As a result, it can be expected that GSEs would impose more stringent underwriting standards regarding default risk for lenders who sell loans to them. Similarly, regulatory capital requirements which are a bigger consideration for prime lenders might also influence lenders’ decisions to retain risky mortgages in the prime market. Due to such differences in these markets, we examine the origination and post-origination decisions in these markets separately.1

In the empirical analysis, we will look at two margins of risk that the lender faces—prepayment and default risk.2 Prepayment risk refers to the risk that mortgages may be repaid; prepayments often take place in the form of refinancing due to a decline in the interest rate, which is precisely when prepayment is costly for the investor. Default risk refers to the likelihood that the borrower may stop making payments. Earlier studies of adverse selection in mortgage markets focus mostly on default risk. In this paper, we consider both prepayment risk and default risk, and show that both risks play a critical role in lenders’ securitization strategies.

We use a large detailed data set of residential mortgage loans from Lender Processing Services (LPS) Applied Analytics, Inc.3 to compare default and prepayment risks of loans retained on lenders’ balance-sheets with those that are sold to investors between 2004 and 2007. We infer the quality of the loan based on the ex post performance (whether the loan defaults or prepays) of the loan. As a result, we need to account for endogeneity, that is, observed securitization and loan performance are co-determined, with each affecting the outcome of the other. To circumvent this problem, the central identification of

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1 A more detailed presentation of the securitization process for the prime and subprime markets can be found in the two figures in Appendix A.

2 Investors in mortgage loans are concerned with three kinds of risk. Interest risk refers to the fact that a change in interest rates leads to an opposite change in the value of the mortgage. Interest rate risk is independent of the borrower’s characteristics, and hence, is not subject to potential adverse selection concerns.

3 LPS Analytics, Inc. was known as McDash Analytics before this company was acquired by Lender Processing Services, Inc. in 2008.
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