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Securitization and moral hazard: Evidence from credit score cutoff rules

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ABSTRACT

A growing literature exploits credit score cutoff rules as a natural experiment to estimate the moral hazard effect of securitization on lender screening. However, these cutoff rules can be traced to underwriting guidelines for *originators*, not for securitizers. Moreover, loan-level data reveal that lenders change their screening at credit score cutoffs in the absence of changes in the probability of securitization. Credit score cutoff rules thus cannot be used to learn about the moral hazard effect of securitization on underwriting. By showing that this evidence has been misinterpreted, our analysis should move beliefs away from the conclusion that securitization led to lax screening.

1. Introduction

It has become conventional wisdom that securitization contributed to the sharp rise in mortgage defaults that precipitated the recent financial crisis. The logic of the moral hazard problem posed by securitization seems straightforward: lenders that sell loans they originate to dispersed investors may bear less of the cost when loans default and hence may have less incentive to screen borrowers. The belief that this moral hazard problem played an important role in the financial crisis has influenced regulatory reform, with the 2010 Dodd-Frank Act adopting a requirement that securitizers retain a 5% interest in mortgages they securitize to better align their incentives.[2]

However, securitization may not have had a large moral hazard effect on underwriting. Economists usually believe that moral hazard causes profitable trade to not occur, or that it leads to the development of incentive mechanisms to overcome the problem. And indeed, mortgage lenders and securitizers developed a range of practices to mitigate moral hazard (Gorton, 2009), including contractual provisions as well as software systems that automate mortgage underwriting, and achieved a high level of trade years before the crisis without apparent incident.[3]

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[2] Section 941 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, codified at 15 U.S.C. Section 78o-11. This law includes a set of exceptions to this requirement and also applies this requirement to other types of securitizations.

[3] As far back as 1993, nearly two-thirds (65.3%) of mortgage volume was packaged into MBS, about the same fraction as in 2006 (67.6%) on the eve of the crisis (2010 *Mortgage Market Statistical Annual*, published by Inside Mortgage Finance). The contractual structures of securitization did become more complex over time, but the same potential moral hazard problem posed by securitization existed decades ago.

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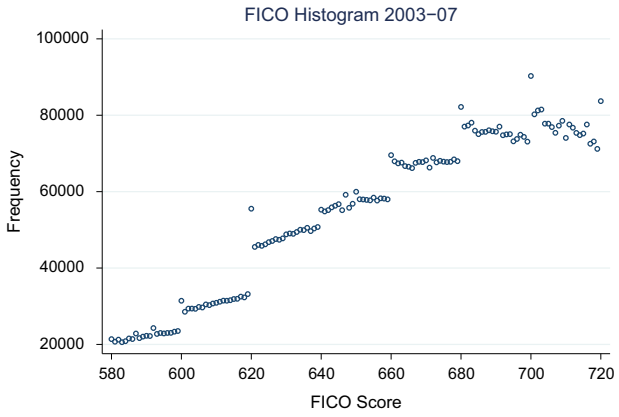

Fig. 1. Discontinuities in the density of mortgages by FICO credit score. Data source: Lender Processing Services Applied Analytics, Inc. Sample of first-lien, non-buydown, owner-occupied, single-family mortgage loans originated between January 2003 and December 2007.

Moreover, there are other plausible explanations for the loose lending of the pre-crisis years. For instance, lenders, securitizers, and investors alike may have been over-optimistic about housing prices, causing them to underestimate the risk of low-downpayment loans (Foote et al., 2012). Hence it is an empirical question whether moral hazard due to securitization, as opposed to some other factor, was the key driver of the decline in underwriting standards leading up to the crisis.

This paper investigates the most influential evidence to-date on the moral hazard effect of securitization, which is based on discontinuities in lender behavior at certain credit scores. Credit scores are used by lenders as a summary measure of default risk, with higher credit scores indicating lower default risk. Despite the smoothness of the distribution of credit scores in the overall population, histograms of mortgage borrower credit scores, such as Fig. 1, exhibit a series of large discontinuities.

A number of recent papers employ a regression discontinuity (RD) research design that exploits these discontinuities as a "natural experiment" to learn about the moral hazard effect of securitization on lender screening (Keys et al., 2009; Krainer and Laderman, 2009; Keys et al., 2010b; Jiang et al., 2010; Rajan et al., 2010; Keys et al., 2012). This research design is based on a particular theory for the origin of these discontinuities—the *securitization rule-of-thumb theory*. First offered by Keys et al. (2010b), this theory posits that private-label securitizers employ a rule of thumb whereby they are exogenously more willing to purchase loans made to borrowers with FICO[4] scores just above 620 than those to borrowers with scores just below 620. Based on this theory, these papers interpret jumps in mortgage default at credit score thresholds as establishing that securitization led to moral hazard in screening. This literature has been highly influential among economists and policymakers. For example, Treasury Secretary Timothy Geithner cited this literature in a recent report supporting the Dodd-Frank Act's new securitization risk retention requirements.[5]

However, crucial to the validity of this RD design is the assumption that lenders' discontinuous change in screening at these credit score cutoffs is exclusively driven by a change in the probability of securitization at the cutoff. If there is another reason for lenders' behavior to change discontinuously, then the jump in defaults at the cutoff cannot be attributed to securitization. In the terminology of instrumental variables (IV) this assumption is the exclusion restriction.

We develop an alternative theory for the origin of credit score cutoff rules—the *origination rule-of-thumb theory*. Institutional evidence shows that in the 1990s, with the goal of improving underwriting, Fannie Mae and Freddie Mac (the Government-Sponsored Enterprises, or GSEs) required originators to adopt credit score cutoff rules to determine how carefully to screen mortgage borrowers. These cutoff rules were later incorporated into widely used automated underwriting software, and in time they became industry-wide origination standards.

A simple model based on discreteness in the cost of information collection provides a simple explanation for why the GSEs directed originators to adopt such credit score cutoff rules. Furthermore, the discontinuity in lender screening at the credit score cutoffs creates discontinuities in the amount of private information originators have about loans. Information asymmetry can inhibit trade, and the model shows that origination rules of thumb can thus result in discontinuities in the securitization rate.

The origination rule-of-thumb theory and the institutional evidence on which it is based show that the evidence for moral hazard based on credit score cutoff rules has been misinterpreted. The independent change in lender screening intensity at the cutoffs violates the exclusion restriction, invalidating an RD design based on these cutoffs. The jumps in

[4] The credit scoring model developed by Fair Isaac and Company (FICO) is the industry standard.

[5] Timothy Geithner, "Macroeconomic Effects of Risk Retention Requirements," January 2011. The report notes that "subprime borrowers with credit scores just above a threshold commonly used by securitizers to determine which loans to purchase defaulted at significantly higher rates than those with credit scores below the threshold" (p. 11). The report concludes "that markets are unable, in certain circumstances, to align the incentives of parties in the securitization chain adequately" and that "such weaknesses demonstrate the need for regulatory reforms" (p. 14).