

# RERISummary

---

**Title: Risk and Information Tranching, Security Governance, and Incentive Compatible Capital Structure Design**

---

Authors: Timothy Riddiough and Jun Zhu

Funding: Funded by RERI and presented at 2016 RERI conference

Reviewer: Christopher Cain, College of Charleston

**RERI is a not-for-profit organization dedicated to bridging the gap between cutting edge academic research and the practice of commercial real estate investment. Each year, RERI funds research projects that have been determined to be both academically rigorous and of value to practicing real estate professionals. The following provides a brief overview of one of these research projects; please see the RERI website at [www.reri.org](http://www.reri.org) for full research papers, as well as more information on RERI.**

The general research question addressed by this paper is whether security design can be used to manage agency conflicts in the mortgage backed security market. The specific question addressed is whether security design can be used to manage agency conflicts between senior and junior security holders when borrowers encounter financial distress. The paper creates a theoretical model of security design that manages these risks successfully, and supports the theoretical model with some initial empirical testing. In order for these conflicts to be managed effectively in the model, the junior security holder must be the entity issuing the original loan.

The importance of these results to practicing real estate professionals is twofold. First, if agency conflicts can be managed through security design, the need for costly and burdensome regulation is reduced. Second, by managing and reducing agency conflicts, the cash flows to loan issuers can be increased through risk reduction.

The theoretical model begins by recognizing the conflict that may exist between senior and junior security holders when a borrowing firm encounters financial distress. In some cases, liquidation of the borrower may be preferred by all security holders, resulting in no conflict. In other cases, a reorganization of the debt payments may be preferred by all security holders, again resulting in no conflict. However, some circumstances may result in the senior security holder preferring liquidation, while junior holders prefer reorganization.

If the senior security holders will receive enough money in a liquidation to fully pay off their loan, they will not care what happens to the junior security holders or the borrower. Even if the expected value of the borrowing firm is greater in reorganization, the senior security holders are not interested if liquidation will fully compensate them. But the junior security holders are very interested in what may happen with reorganization, particularly if there is a possibility the reorganization will pay them more money than liquidation will. Because reorganization is risky, the senior borrowers may not be willing to take the chance of losing what they could receive from liquidation.

On the other hand, junior security holders may prefer reorganization even when the expected value of reorganization is lower than liquidation. If the junior security holders receive little or nothing from liquidation, they will prefer to gamble on reorganization. Reorganization imposes no additional cost on the junior security holders, but may result in increased benefits.

If the junior security holder is assumed to be the original loan issuer, then the junior security holder has specialized knowledge of the debtor's ability to handle reorganization, so the junior security holder should be in charge of the decision to reorganize or liquidate. This information asymmetry between junior and senior security holders implies that there are actually two risks involved for the senior security holder. The first risk is of course the possibility of borrower default. The second risk is that the junior security holder will choose to reorganize when there is little chance of a successful reorganization, because the junior security holder has nothing to lose. In order to eliminate this conflict, the junior security holders must pay the senior holders enough money to make the expected value from reorganization equal to that of liquidation for the senior security holders. In addition to compensating the

## RERISummary

senior security holders, this payment reduces the incentive of the junior security holders to reorganize when there is little chance of a successful reorganization.

The empirical results support the existence of such a payment mechanism. It appears that funding for the payment exists in the form of senior securities that are issued at a premium to par value. So if the loan is for \$1,000, the security might be issued for \$1,100. If the loan is liquidated, the security holder will (possibly) receive the \$1,000 back, minus some liquidation discount. The only way the security holder can receive the extra \$100 is to forego liquidation and receive higher coupon payments. These higher coupon payments, in excess of what market interest rates already dictate, represent the payment from junior security holders to senior security holders. If the borrower is liquidated, these payments will cease. They will only continue to occur if there is reorganization.

This also implies that there may be two different types of safe investors who are interested in holding senior securities. The first type, called super senior creditors, desires the elimination of all risk of principal loss. The second type of senior creditors is willing to accept some low possibility of principal loss, so long as the information asymmetry problem is solved and reorganizations are fairly chosen. Importantly, the empirical results support the existence of these two different types of safe investors.

The theoretical model is empirically tested using commercial mortgage backed securities issued between 2004 and 2007. The data is obtained from the CMA (Commercial Mortgage Alert) database and eventually consists of 334 AAA-rated securities from 167 different issuances. Several assumptions and restrictions are placed upon the theoretical model in order to test it empirically. The empirical testing is accomplished using summary statistics and ordinary least squares regression. As summarized above, the empirical results generally support the theoretical model and help explain the relatively good performance of commercial mortgage backed securities relative to their residential counterparts.

For real estate professionals, these results highlight specific security design features that can be implemented to mitigate agency problems. It also clearly identifies two different types of safe investors that security designers may wish to target. This quick summary only presents a basic understanding of the research, the paper itself contains many more specific results that can be realistically implemented with a reasonable effort. It also provides the impetus for professionals to think about security design as a way to mitigate other agency problems as well.

This paper appears to set the stage for a new area of research. There is substantial room for further research in this area. Empirically, there is room for further exploration using more sophisticated regression techniques and exploring the effect of relaxing some of the model restrictions. Theoretically, this paper focuses on only one specific type of agency conflict. There are many other types of agency conflict that might be addressed by security design. Some, as in the present case, may have already been implemented in practice, but not studied theoretically. But there is also room for purely theoretical research on security designs that may not yet have been implemented, but may solve other agency conflicts beyond those explored the present work.