

Finance Seminar at University of Maryland

Topic: Strategic Loan Modification – A response to the foreclosure crisis.

Sanjiv R. Das, Santa Clara University (joint work with Ray Meadows, Recovery Company)

Synopsis: In this seminar I present two papers and some empirical realities and proposed solutions related to the housing crisis. (a) Strategic Loan Modification: An Options-Based Response to Strategic Default; (b) The Principal Principle.

The first paper provides a reduced-form approach suitable for application by banks who want to optimally restructure loans using principal resets, or investors who speculate in negative equity loan portfolios. The second paper provides a more detailed model that supports the results of the first one, and shows that principal resets are more likely to be effective than other approaches to restructuring.

This presentation comprises a reduced-form barrier model for the optimal principal reset in a loan modification, thereby maximizing the loan value to the lender bank and minimizing the likelihood of foreclosure by the homeowner. Reducing the loan-to-value (LTV) ratio will reduce the present value of future payments on the loan, but will also reduce the probability of default, thereby saving foreclosure losses. The optimal trade-off of these two countervailing effects will pinpoint the optimal LTV at which the loan must be reset. We present a reduced-form barrier option decomposition of the loan value that makes the optimization of LTV easy to implement. An extension of the model is shown to account for varying growth rate assumptions about house prices. A useful structuring device, the shared appreciation mortgage, enhances the ability to pay, mitigates adverse selection, and reduces the present value of expected deadweight foreclosure costs.

The full-blown model analyzes optimal loan modification schemes in a stochastic home price and stochastic interest-rate environment. Lenders maximize their loan values by managing the value of the borrower's option to default on the loan and prepayment option. In the presence of negative equity, controlling for the borrower's ability to pay, loan modifications via rate reductions and maturity extensions result in a higher probability of re-default by homeowners even after modification of their loans. In contrast, loan write-downs (the Principal Principle), not a favored recipe, and sometimes prohibited by covenants, are value-maximizing for the lender. Once negative equity has been tackled by principal write-downs, rate reductions are optimal.