A Hybrid-Form Model for the Prepayment-Risk-Neutral Valuation of Mortgage-Backed Securities

In this paper we present a prepayment-risk-neutral valuation model for fixed-rate Mortgage-Backed Securities. Our model is based on intensity models as used in credit-risk modelling and extends existing models for individual mortgage contracts in a proportional hazard framework. The general economic environment is explicitly accounted for in the prepayment process by an additional factor which we fit to the quarterly GDP growth rate in the US. In our risk-neutral setting we account for both the fears of refinancing understatement and turnover overstatement which sometimes result in higher option-adjusted spreads (OAS) for premiums and discounts respectively. We apply our prepayment-risk-neutral pricing approach to a sample of generic 30yr GNMA MBS pass-throughs from 1996 to 2006. Our empirical results indicate that the GDP growth factor adds explanatory power to the model.