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## Reading between the Ratings: Modeling Residual Credit Risk and Yield Overlap

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### Abstract

Credit ratings group firms by risk, yet yields are shown to overlap between firms of adjacent ratings. We model this by considering the residual risk arising from differences in the parameters of each firm's value process for firms with the same rating. To do so, our framework simultaneously incorporates jump default with Markov-governed likelihoods and continuous defaults in a default-barrier framework. We provide closed-form approximations for expected default time and tail probabilities, and empirically fit the S-shaped yield curve, intra-rating spread, and inter-rating overlap. Results are robust to time period, rating system, sub-rating, and common characteristics such as liquidity.

*JEL: G32; C32*

*Keywords: credit rating, yield curve, Markov model*

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