Pricing and Hedging Synthetic CDO Tranche Spread Risks

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Abstract

The recent credit crisis has focussed attention on the models used for pricing and assessing risk of structured credit transactions including bespoke CDO's. There are many models that have been proposed for pricing bespoke CDO's including the base correlation mapping methods with the market standard Gaussian copula model as well as the implied copula models. Methods commonly used in the market for hedging and pricing bespoke CDO's make explicit assumptions for the relationship between default probability and default correlation and calibrate the model to current CDO prices only. The ability of a model to hedge CDO tranche spread risks using a credit index is closely related to it's ability to price CDOs on bespoke portfolios. This paper examines the measurement and hedging of synthetic CDO tranche spread risks based on market spread data following the sub-prime crisis. A range of methods proposed for pricing bespoke CDOs are examined to assess their ability to hedge the credit spread risk. The methods assessed are calibrated to the traded CDO index spread and then compared based on the mean absolute pricing errors over a time period including the sub-prime crisis. Standard pricing methods and variations used to price bespoke CDOs generally perform poorly in hedging credit spread risk. Past data can be used to improve the performance of the methods. The results of this analysis also raise concerns with the accuracy of "mark-to-model" valuations of bespoke CDOs using standard market methods.

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