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A UNIFIED FRAMEWORK FOR PRICING CREDIT AND EQUITY DERIVATIVES

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Abstract

We propose a model which can be jointly calibrated to the bonds and equity options of the same company. We also use the historical stock price, historical spot rate, and treasury yield curve data as inputs to our model for parameter estimation. We observe that the model implied credit default swap (CDS) spread matches the market CDS spread and that our model produces a very desirable CDS spread term structure. This is striking since without calibrating any parameter to the CDS spread data, it is matched by the CDS spread our model generates using the available information from the equity options and corporate bond markets. We also observe that our model matches the equity option implied volatility surface well. We demonstrate the importance of accounting for the default risk and stochastic interest rate in equity option pricing by comparing our results to Fouque et. al. (2003), which proposed a similar modeling framework in the context of stochastic volatility models.

Available at: <http://arxiv.org/abs/0712.3617>

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