The Risk Microstructure of Corporate Bonds: A Bayesian Analysis

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Abstract

This article presents joint econometric analysis of interest rate risk, issuer-specific risk (especially credit risk) and bond-specific risk (especially liquidity risk) in a Lando (1998) type model within the Duffie/Singleton framework. Using this framework we are able to construct an affine term structure model with a correlation between interest rate risk and issuer-specific risk *and* nevertheless a separate estimation of the risk-free term structure parameters and issuer-specific and bond-specific components is feasible. By means of data augmentation we develop a framework that allows for an exact Bayesian analysis to estimate the model parameters and to separate the different components of risk. In particular we do not require an arbitrary benchmark bond that is free of any bond-specific risk. Our methodology infers a risk-free term structure process from swap market data. Based on these estimates, issuer-specific and bond-specific risk can be estimated from corporate bond data. The estimation procedure is applied to coupon bond data from the German corporate bond market.

Keywords: Credit risk, Density approximation, Duffie/Singleton framework, Liquidity risk, Markov Chain Monte Carlo estimation.

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