The GARCH Structural Credit Risk Model

Enrique Ter Horst

Euromed Management, Marseille

We adapt the GARCH option pricing model of Heston and Nandi (2000) to the valuation of risky corporate debt in a Merton (1974) and Duan (1994, 2004) setting.

In light of recent findings that maximum likelihood estimation methods may be superior to traditional calibration approaches, we develop a new Expectation Maximization (EM) algorithm for a GARCH structural credit risk model. We find that the GARCH model significantly outperforms the Duan and Merton models in a setting with stochastic asset volatility of the GARCH variety.

Finally, we apply the GARCH model to a cross section of US banks and financial institutions on two dates of interest: December 14th, 2007, and August 29th, 2008.