The Crash-NIG-Factor Copula Model: Modeling dependence in Credit Portfolios through the Crisis

Abstract:

It is well known that the one-factor copula models are very useful for risk management and measurement applications involving the generation of scenarios for the complete universe of risk factors and the inclusion of CDO structures in a portfolio context. For this objective, it is necessary to have a simple and fast model that is also consistent with the scenario simulation framework. In this paper we present three extensions of the NIG one-factor copula model which jointly have not been considered so far: (i) tranches with different maturities modeled in a consistent way, (ii) a portfolio with different rating buckets, relaxing the assumption of a large homogeneous portfolio, and (iii) different correlation regimes. The regime-switching component of the proposed Crash-NIG copula model is especially important in view of the current credit crisis. We also introduce liquidity premiums into the Crash-NIG copula model and show that the actual credit crisis is substantially driven by liquidity effects.

Intellectual Contribution:

Contribution to Practice