A Closer Look at Credit Ratings for CDOs

Rama CONT & Amal MOUSSA*

Dept of Statistics & Center for Financial Engineering
Columbia University, New York
&
Laboratoire de Probabiltés et Modèles Aléatoires, CNRS (Paris)

Abstract

Credit ratings assigned by rating agencies to structured credit products have played an important role in the development of the structured credit market, which has been cast into the limelight by the recent credit crisis. This study aims at clarifying some misconceptions related to CDO ratings, their interpretation and their use.

We first describe the rating approaches used by major agencies for CDOs and other structured credit products. Most rating agencies have been using static factor models which are slight variations on the Gaussian copula model allowing for intersector and intrasector correlations.
Using this framework, we explore several issues related to CDO ratings. Our findings can be summarized as follows:

- Given the leveraged nature of CDOs, the downgrade risk of a CDO tranche can be quite different from a bond with same initial rating. Therefore, a simple labeling via default probability or expected loss does not discriminate sufficiently their downgrade risk.
- CDO tranche ratings require assumptions on the dependence structure of the default times and are thus exposed to *model risk*. We explore this model risk for CDO and CDO-squared tranches in a multisector factor model.
- The interaction between the rating threshold and the structuring procedure can cause new issues to have tranches structured "at the limit" of rating categories and thus a high probability of downgrading.
- Migration probabilities for tranches with similar rating can vary from structure to structure even for the same underlying debt portfolio: two tranches with the same rating can have completely different transition probabilities.

*The paper will be presented by Amal Moussa. Email: am2810@columbia.edu

- We show that migration probabilities for CDO tranches are path-dependent and non-homogeneous in time.
- While default probability is an adequate representation of the default risk of a corporate bond with known recovery rate, we show that the probability to be hit by default fails to account for the risk carried by CDO tranches and can not differentiate between tranches with different risk profiles, while a risk measure applied to the loss distribution can. Based on these findings, we suggest that different rating scales should be used for corporate bonds and CDO tranches as the latter carry a more complex default risk.
- As a solution to some of the drawback of the current rating methodologies, we propose a risk-based rating system, based on a risk measure applied to the loss distribution of the tranche. We show that such a risk-based approach can lead to quite different ratings for CDO tranches.

Based on these findings, we present a set of recommendations for the design, interpretation and use of credit ratings for CDOs and other structured products.