

Modelling Of Credit Risk – The Moody’S KMV Model

Andrej Orolin

Beihang University, Beijing, China

Abstract

This thesis deals with financial risks, specifically credit risk, and presents a case study of the situation of the fictitious Czech bank called “The ABC Bank”, where a sample of the Moody's KMV model is applied to the given credit risk situation. This model is based on the theory of option pricing and the model of the market value of assets, which was originally first applied and created by the American economist Robert Merton. However, this model is not the subject of the paper. The specific focus is on Moody's KMV model, which belongs to the group of discrete models, i.e., "default-mode". In this model, we find an internal connection between the probability of failure and the structure of the client's assets and liabilities. Economic capital is estimated based on an analytical approach, not according to the Value at Risk model. An important concept of the KMV model is the expected default frequency (EDF - Expected Default Frequency), it consists of the probabilities of failure of individual clients and is estimated using an estimate of the value of assets and variance, an estimate of the point of failure, an estimate of the distance to default and an estimate of the EDF itself. Moody's KMV model assumes a two-fold risk, namely systematic risk and specific risk, while the systematic risk is also calculated here on the basis of the company's specific index (takes into account the stock indices of the country and the given industry).

Keywords: credit risk, Moody’s KMV model, default, analysis, modelling.