

# Calibration of structural credit portfolio models

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## Abstract

In a typical bank, risk capital for credit risk far outweighs capital requirements for any other risk class. Key drivers of credit risk are concentrations in a bank's credit portfolio caused by systematic factors that affect the credit quality of multiple borrowers. The objective of this paper is to analyze techniques for specifying default correlations through systematic factors. Our analysis is performed in the framework of a structural credit portfolio model.

The specification and calibration of credit factor models can be classified according to the data source used as input. The most common approach is based on equity data. The main advantage is that equity information comes from liquid markets with wide coverage both in terms of industry and geography. In this paper, we apply a variety of calibration techniques to equity time series and analyze the quality of the resulting factor models from a statistical as well as from an economical point of view.

An alternative approach to the calibration of credit factor models is based on historical credit default or rating information. Compared to equity data the usage of historical rating changes and defaults has the important advantage that the calibration results are not distorted by information unrelated to credit quality. On the other hand, this type of information does not allow for firm-specific pairwise correlations but requires some aggregation, typically by rating class, country or industry. We use correlations derived from default and rating time series for validating the calibration results based on equity data. In addition, we investigate whether t-distributed factor models replicate historical rating and default data better than normally distributed models.