

Preface

Securitisation deals have come to the fore during recent years owing to the challenges involved in their assessment and their role in the recent credit crises. These deals are created by the pooling of assets and the tranching of liabilities. The latter is backed by collateral pools. Tranching makes it possible to create liabilities of a variety of seniorities and risk-return profiles.

The assessment of a securitisation deal is based on qualitative and quantitative evaluations of the risks inherent in the transaction and how well the structure manages to mitigate these risks. Examples of risks related to the performance of a transaction are credit risk, prepayment risk, market risk, liquidity risk, counterparty risk, operational risk and legal risk.

In the light of the recent credit crisis, model risk and parameter uncertainty have come into focus. Model risk refers to the fact that the outcome of the assessment of a securitisation transaction can be influenced by the choice of model used to derive defaults and prepayments. The uncertainties in the parameter values used as input to these models add to the uncertainty of the output of the assessment. The rating agencies have been encouraged to sharpen their methodologies, to disclose more information about their methodologies and the underlying assumptions behind the ratings, and to make known the sensitivity of the ratings to those assumptions. It has also been voiced that financial institutions should reduce their mechanistic reliance on credit rating agencies' ratings and strengthen their internal credit risk assessment. New regulatory requirements and amendments to existing regulations on credit rating agencies have been implemented in both Europe and the United States.

In this book, we give an overview of the recently performed research on model risk and parameter sensitivity in asset-backed security (ABS) ratings. We believe that this book can help facilitate a more informed usage of credit ratings by giving some insights into and ideas about how structured finance ratings are derived and by proposing tools for better analysing the uncertainties inherent in credit ratings.

One of the objectives of the book is to propose new default and prepayment models, which try to overcome some of the exposed weaknesses of the existing models (e.g. static, deterministic default and prepayment rates, or the Gaussian

factor model's inability to produce many joint defaults). A second objective is to show how simple comparative statistics can be used to analyse model risk and parameter sensitivity. A third objective is to introduce and advocate global sensitivity analysis techniques which can be used to enhance the understanding of the variability of ratings owing to uncertainty in the input parameters used. Finally, we propose a novel rating approach that takes the uncertainty in the ratings into account when assigning ratings to a tranche.

The outline of the book is as follows.¹⁸ In [Chap. 1](#), an introduction to asset backed securities (ABSs) is given. We describe, for example, key securitisation parties, structural characteristics and credit enhancements.

The cashflow modelling of ABS deals can be divided into two parts: (1) the modelling of the cash collections from the asset pool and the distribution of these collections to the note holders, discussed in [Chap. 2](#), and (2) the modelling of defaults and prepayments. Deterministic models for generating default and prepayment scenarios are presented in [Chap. 3](#); a collection of stochastic models is presented in [Chap. 4](#).

Next, the model risk in rating ABSs is discussed and we elaborate on the parameter sensitivity of ABS ratings. More precisely, in [Chap. 5](#) we look at how the choice of default model influences the ratings of ABSs. We illustrate this using a simple structure with two ABSs. Furthermore, we investigate the influence of changing some of the input parameters one at a time. A more systematic parameter sensitivity analysis is presented in [Chap. 6](#). In this chapter we introduce global sensitivity analysis techniques, which allow us to systematically analyse how the uncertainty in each input parameter's value contributes to the uncertainty of the expected loss and the expected average life of the notes and hence the rating. The chapter ends with describing a novel approach to rating ABSs, called global rating. This new approach takes the uncertainty in the output into account when assigning ratings to ABSs. The book concludes with a summary of the findings in [Chap. 7](#).

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¹⁸ An earlier version of parts of this text was presented *Asset backed securities: Risks, Ratings and Quantitative Modelling*, by Jönsson, H. and Schoutens, W., EURANDOM Report 2009-50, <http://www.eurandom.nl>.

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