

Pick-and-mix spline modelling for Big Data practical applications: the case of credit scoring

Abstract

In this work, we consider the challenge of capturing complex data patterns and relationships by proposing a pick-and-mix splines smoothing approach. By balancing the computational speed and accuracy of two types of splines, the method offers a flexible and scalable framework, making it particularly attractive for large datasets. Although developed with credit risk data in mind, its applicability extends to a wide range of applications across different fields. In particular, we investigate dynamic credit risk models that can feature macroeconomic-varying coefficients and highlight how smoothing techniques can effectively capture intricate interactions between credit risk factors, offering an improvement over traditional methods for handling interaction terms. This work includes the first application of Hermite splines in credit scoring, providing a comparative analysis against penalized splines. The findings not only advance credit risk modelling methodologies but also emphasize the broader potential of spline-based approaches in structured risk assessment problems.

Authors & Affiliations

Dr Viani Djeundje Biatat¹, Prof Jonathan Crook¹, Prof Galina Andreeva¹

¹University of Edinburgh, Edinburgh, United Kingdom