The performance of insolvency prediction and credit risk models in the UK: A comparative study, development and wider application.

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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature: ……..

ABSTRACT

Contingent claims models have recently been applied to the field of corporate insolvency prediction in an attempt to provide the art with a theoretical methodology that has been lacking in the past. Limited studies have been carried out in order to empirically compare the performance of these "market" models with that of their accounting number-based counterparts. This thesis contributes to the literature in several ways: The thesis traces the evolution of the art of corporate insolvency prediction from its inception through to the present day, combining key developments and methodologies into a single document of reference. I use receiver operating characteristic curves and tests of economic value to assess the efficacy of sixteen models, carefully selected to represent key moments in the evolution of the art, and tested upon, for the first time, post-IFRS UK data. The variability of model efficacy is also measured for the first time, using Monte Carlo simulation upon 10,000 randomly generated training and validation samples from a dataset consisting of over 12,000 firm-year observations. The results provide insights into the distribution of model accuracy as a result of sample selection, which is something which has not appeared in the literature prior to this study. I find overall that the efficacy of the models is generally less than that reported in the prior literature; but that the theoretically driven, market-based models outperform models which use accounting numbers; the latter showing a relatively larger efficacy distribution. Furthermore, I obtain the counter-intuitive finding that predictions based on a single ratio can be as efficient as those which are based on models which are far more complicated – in terms of variable variety and mathematical construction. Finally, I develop and test a naïve version of the down-and-out-call barrier option model for insolvency prediction and find that, despite its simple formulation, it performs favourably compared alongside other market-based models.

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