Report on **Master Thesis**

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	Matyáš Mattanelli
Advisor:	doc. PhDr. Jozef Baruník, Ph.D.
Title of the thesis:	Binning numerical variables in credit risk models

***OVERALL ASSESSMENT** (provided in English, Czech, or Slovak):*

Short summary

The thesis under consideration investigates the effect of binning numerical variables on the performance of credit risk models and finds that binning transformations have positive and significant effect on the performance of the widely used logistic regression, neural network as well as naive classifiers. The thesis is nicely written as well as executed, it contains potentially interesting results.

Contribution

The thesis contributes to the credit risk literature by showing how binning of the variables impacts the models. The results are of potential interest to the academia as well as practitioners since these models are widely used in practice. Understanding the default behavior of clients from the data is one of the most crucial questions financial institutions are trying to deal with. Author shows that data processing can help and improve the accessibility of this problem and improve classical as well as more advanced machine learning based approaches to the problem.

Methods

The thesis uses appropriate statistical methods for the analysis. Author had to deal with number of challenging problems, uses advanced statistical methods appropriately

Literature

Author works with all relevant literature properly, introduces the literature nicely and discusses all relevant sources in sufficient detail.

Manuscript form

The thesis is very nicely and logically written, connects findings to the existing literature well. Introduction and motivation are particularly strong, and reader can see a care author gave the text. Matyas worked consistently to obtain the results for a long period, and we have discussed the results and text on a regular basis during the year.

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Overall evaluation and suggested questions for the discussion during the defense

In conclusion, I believe that during the work Matyas proved himself to be an independent researcher, he obtained interesting results, mastered advanced methods, and mastered skills to deliver sound and economically relevant work. At the same time, I need to highlight exceptionally well written text that is clear, clearly introduces the topic and problem, and thoroughly and deeply answers it.

The thesis deserves to be defended without doubts. In case Matyas is confident presenting the details of the work during the defense, I suggest to award the work with grade „A".

I need to stress that Matyas worked on the thesis for a long time independently, we discussed all important steps carefully and I do not have any further questions for the defense. Finally, the results of the Urkund analysis do not indicate significant text similarity with any other available sources.

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY		POINTS
Contribution	*(max. 30 points)*	30
Methods	*(max. 30 points)*	30
Literature	*(max. 20 points)*	20
Manuscript Form	*(max. 20 points)*	20
TOTAL POINTS	*(max. 100 points)*	**100**
GRADE	**(A – B – C – D – E – F)**	**A**

NAME OF THE REFEREE: Jozef Barunik

DATE OF EVALUATION: 21.8.2023

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Referee Signature

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Overall grading:

TOTAL	GRADE
91 – 100	A
81 - 90	B
71 - 80	C
61 – 70	D
51 – 60	E
0 – 50	F