Report on Bachelor/Master Thesis

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

Student:	**Pavel Dvorak**
Advisor:	**PhDr. Ing. Petr Jakubik, Ph.D**
Title of the thesis:	**Macroeconomic Determinants of Probability of Default and Loss Given Default for Households**

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

The thesis evaluates several statistical models (regression and classification trees) to study macroeconomic components of PD and LGD. Empirical part of the work is based on Czech credit card data. In general the author presents original ideas on the actual topic of credit risk modelling for credit cards and also demonstrates solid understanding of recent literature. The added value of the study is in Chapter 5. The author proposes models to estimate all key parameters of economic loss, namely for PD, EAD and LGD and therefore the investigated research is demanding and required a lot of efforts from the author. Thanks for that.

However the study has several weak points. Most important are not clear explanation of applied methods and interpreting the results, spelling mistakes especially at citation.

Methods

- On page 11 default definition: borrower is 180 days past with payments. Why? Basel II in general uses definition 90 days past due.
- Author mentioned that there are several methods how to measure the model performance, like ROC curve, gini coefficient. In literature, the performance of credit risk models are usuallly evalauted by these non-parametric methods. However author is evaluated the model performances only by parametric R-squared, which is not the best way. Why?
- On page 25 there is written: „ ...p-values lower than 0.000..." How could be p-value negative?
- It is not clear what are the final outputs of decision trees (for example several notes could be joined, because itself they are not relevant, identified 24 segments are not described) and how will be used in the practice
- In order to interpret the results from decision trees, it will be usefull tool to describe the final segments by their characteristics (combination of factors, size relevance, average PD and LGD value...) instead of just putting the outcomes from the software into appendix
- Can you explain, how the PD macro model on segment level is works, equation 4.1? There are 24 equations with 48 unknown parameters + in each equation the same error term....
- How do you get the formula 4.6 for MOB at default? Is it based on own expert opinion or is it based on historical data?
- Is in your case LGD a continuous variable or categorical? If continuous, how you received LGD score from decision trees?

Manuscript forms

- On page 3 first chapter should be second chapter, second chapter should be third one
- In section related studies there is a good literature review with relevant studies about macroeconomic factors. However on page 7 there is mentioned article about implied market LGD, which is not directly linked in the text. Why is it then mentioned there? The autors of article should be Seidler and Jakubik (2009) instead of Sailder and Jakuik (2009)!
- Author several times uses CCF, but it is not explained what the abbreviaton CCF stands for? Is it Credit Conversion Factor?
- In appendix the PD, LGD dataset distribution is not easy to understand, there is no explanation how to understand the output from decision trees. It will be much better to use graphs to demonstrate the distributions and correlation among factors instead of putting there a lot of decision trees output with full details.
- In table 3.1 it is not clearly stated what are the advantages and disadvantages of global and local approaches.

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- On page 22 what is f_i ?
- In equation 4.5, what is ENR growth means?
- There are lot of spelling mistakes in reference

It would be better to focus rather just one component of economic loss, for example LGD and investigated it in more details with full and clear explanation of the modelling steps.

In the case of successful defence, I recommend **"velmi dobře" (good, 2)**. However the committee will be satisfied with the author's explanations on above mentioned weak points/questions at the state exam, then I am willing to put additional 10 points for methods.

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

CATEGORY		**POINTS**
Literature	*(max. 20 points)*	20
Methods	*(max. 30 points)*	15
Contribution	*(max. 30 points)*	30
Manuscript Form	*(max. 20 points)*	10
TOTAL POINTS	*(max. 100 points)*	**75**
GRADE	**(1 – 2 – 3 – 4)**	**2**

NAME OF THE REFEREE: Juraj Kopecsni

DATE OF EVALUATION: 31.8.2009

Referee Signature