

# Report on Master Thesis

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

<b>Student:</b>	<b>Bc. Jiří Kolísko</b>
<b>Advisor:</b>	<b>PhDr. Michael Princ</b>
<b>Title of the thesis:</b>	<b>Bankruptcy prediction models in the Czech economy: New specification using Bayesian model averaging and logistic regression on the latest data</b>

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

*Please provide your assessment of each of the following four categories. The minimum length of the report is 300 words.*

The thesis concerns bankruptcy prediction models for the Czech Republic. My overall assessment of the thesis is very good, as the structure and content of the thesis is very well prepared and I have enjoyed all parts of the thesis. The manuscript serves as a nice overview of models which are frequently used by previous authors, so it serves as a nice introduction to the topic to an interested reader without deep previous knowledge. At the same time, it proposed some model advancements, so it contains interesting new results for a skilled reader in this topic too. A thorough work with empirical data illuminates the usefulness of the proposed theoretical advancements and the author presents comments and comparison with previously obtained results by other authors.

### **Contribution**

The author aimed at developing a new model, previously not used in literature concerning Czech market, taking an inspiration in foreign literature and recent advances in statistical. Being able to specify a new prediction model using an up-to-date data set (despite the reported problems with the data) and performing the numerical analysis via Bayesian model averaging technique constitutes an impressive contribution of the author to the topic. This, according to the author of the thesis, was not applied in connection to the Czech market before.

### **Methods**

The author uses advanced methods of econometrics and Bayesian statistics. He is well aware of the standard methods previously proposed by other authors and of their shortcomings and he proposes an alternative using an approach which is innovative in connection to this topic. All calculations are skillfully done in R and achieved results are nicely presented in the text.

### **Literature**

The thesis contains an impressive list of references and the first two chapters of the manuscript, Introduction and Literature review, serve as a nice overview of the development in the the topic of the thesis, encompassing world literature from 1930s to very recent local publications, in some cases student theses or papers published in just mediocre conference proceedings. In chapter 6, Results, the author is often referencing other authors to compare his own results and conclusions with those achieved in previous studies on this topic.

### **Manuscript form**

A slight criticism can be mentioned regarding the manuscript form and presentation of mathematical expressions. Occasionally, mathematical variables used in the text part are not emphasized in the slanted script. Some confusion arises also when presenting regression lines, e.g. on page 5, I believe  $Z$  on the left-hand side of the equation should be with hat to denote the estimate of random variable  $Z$ . Also, in expressions (2) and (4) on pages 29 and 30, respectively, the error term seems to be missing. In expressions (7)-(10), the graphical presentation of the argmax and argmin operators is misleading (beta below should be centered and not aligned just to the min/max part of the operator). I was a bit

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puzzled with the role of variable  $s$  in expression (11), I could not find any comment regarding what it stands for; similarly  $\rho$  prime in expression (12). As there is  $2^K$  models  $M_j$ , I am quite confident that the upper bound in the sum in expression (16) is not  $K$ .

On occasion, the author tends to translate Czech sentences word by word to English, thus creating awkward formulations. However, in all such cases one can pick up the true meaning and it does not cause any confusion for the reader to follow the text.

On the other hand, I praise the skillful presentation of graphs and tables which are always very well commented in the text so the reader can understand the meaning of the presented material. Although, some graphs could be considered to be inserted in higher graphical resolution.

My only question for the defence concerns the deviation of goals and formulations of the hypotheses in the manuscript from those in the thesis proposal. Could you comment on answers to the original goals from the thesis proposal?

Taking into account all above, I am confident that the thesis fulfills the requirements for a master thesis at IES FSV UK. In case of a successful defense, I suggest grade 1, see the summary table below.

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

<b>CATEGORY</b>		<b>POINTS</b>
<i>Contribution</i>	<i>(max. 30 points)</i>	29
<i>Methods</i>	<i>(max. 30 points)</i>	29
<i>Literature</i>	<i>(max. 20 points)</i>	20
<i>Manuscript Form</i>	<i>(max. 20 points)</i>	16
<b>TOTAL POINTS</b>	<i>(max. 100 points)</i>	<b>94</b>
<b>GRADE</b>	<b>(1 – 2 – 3 – 4)</b>	<b>1</b>

**NAME OF THE REFEREE: RNDr. Michal Červinka, Ph.D.**

**DATE OF EVALUATION: September 6, 2017**

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**Referee Signature**

### **EXPLANATION OF CATEGORIES AND SCALE:**

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

Strong                  Average                  Weak  
20                          10                          0

**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.*

Strong                  Average                  Weak  
30                          15                          0

**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.*

Strong                  Average                  Weak  
30                          15                          0

**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.*

Strong                  Average                  Weak  
20                          10                          0

### **Overall grading:**

TOTAL POINTS	GRADE		
81 – 100	<b>1</b>	= excellent	= výborně
61 – 80	<b>2</b>	= good	= velmi dobře
41 – 60	<b>3</b>	= satisfactory	= dobře
0 – 40	<b>4</b>	= fail	= nedoporučuji k obhajobě