

Report on Bachelor / Master Thesis

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

Student:	Patricie Mittigová
Advisor:	Evžen Kočenda
Title of the thesis:	Consumer Credit Risk Analysis: Evidence from the Czech Republic

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

Please provide your assessment of each of the following four categories, summary and suggested questions for the discussion. The minimum length of the report is 300 words.

The thesis employs a large dataset of variables on borrowers who were granted an unsecured consumer loans in the Czech Republic and analyzes the core default predictors based on several credit-scoring classification methods.

Contribution

The thesis applies seven classification methods employed in the credit-scoring process to analyze large set of the consumer loans granted to customers in the Czech republic. The core default predictors are analyzed systematically and in accordance with the practice in the literature. The logistic regression is employed as a benchmark. The approach represents a significant contribution to the studied topic because (i) the credit risk is the most important type of risk that commercial banks have to face and (ii) there is only a very limited amount of literature that deals with the issue in the Czech republic. Specific findings are: borrower's age, monthly income, region of residence, and the number of children substantially influence the probability of default. On the other hand, borrower's gender and education level do not seem to improve assessment of a client's creditworthiness. The robustness of the results is shown via performance of multiple employed classification methods that yield very similar results. New findings on the default determinants for unsecured consumer loans complement nicely scarce evidence in the Czech republic and can be used as a source of comparison for other countries in the region.

Methods

Analysis is performed on a large anonymized randomly drawn data-set containing personal information on about 4000 persons and provided by one of the largest Czech banks that requested to remain unidentified. This is an excellent starting material that is not easy to obtain. Further, the source of the data is a guarantee that the data on consumer loans do not represent only a specific segment where the result could be subject to specific loan characteristics. The variables represent two information groups. The first group provides information about the particular loan such as its type, amount borrowed, unpaid balance, interest rate, instalment amount, and dates when the loan was granted and paid. The second group contains personal and socio-demographic characteristics, along with the information on the default of a client.

Several methods are used in the analysis: logistic regression, linear discriminant analysis, quadratic discriminant analysis, classification tree, random forest, k-nearest neighbors, and support vector machines. Logistic regression is one of the most frequently employed methods in the existing credit scoring research and for that it is used as a principal mean of analysis as well as a useful benchmark for interpretation of the results.

Performance of the methods and related models is assessed via employing a confusion matrix, that provides intuition behind employed measures, and then by providing results of the receiver operating characteristic curve and corresponding area under the curve. Finally, a cross-validation of the proper model quality testing is used.

The methods are aptly described and used. The methods represent the best practice in the field and allow to assess the topic from various needed angles. Overall, the methodology approach is fine, well motivated and executed.

Literature

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The literature section summarizes the current state of research in the field with the accent on the European context. Further, the thesis also provides a well structured overview of the credit scoring techniques that are employed in the empirical literature. Hence, the literature is reviewed in a detail and covers all relevant papers and angles.

Manuscript form

The manuscript conforms to formal requirements for the master thesis. It reads well and contains only some minor typos. Introduction is clear and motivates well the researched topic, plus it nicely sets the stage for the subject analysis within the economic development in the Czech Republic. Data are fully described. Hypotheses are clearly stated. Tables and figures are presented in an organized and legible manner. References are ample and correctly presented. There is simply nothing I can think of that could raise objections with respect to the manuscript form

Summary and suggested questions for the discussion during the defense

The thesis represents a solid piece of work on the subject that has so far only a limited treatment in the Czech republic, mainly due to the data constraints. It provides clear and articulated results.

In case of the successful defense, I recommend the grade A.

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

CATEGORY	POINTS
<i>Contribution</i> (max. 30 points)	28
<i>Methods</i> (max. 30 points)	28
<i>Literature</i> (max. 20 points)	20
<i>Manuscript Form</i> (max. 20 points)	20
TOTAL POINTS (max. 100 points)	96
GRADE (A – B – C – D – E – F)	A

NAME OF THE REFEREE: *Evžen Kočenda*

DATE OF EVALUATION: *June 5, 2018*



Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

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

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

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

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