

# Report on Bachelor Thesis

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

<b>Student:</b>	<b>Inés Horváthová</b>
<b>Advisor:</b>	<b>RNDr. Michal Červinka, Ph.D.</b>
<b>Title of the thesis:</b>	<b>Robust Portfolio Selection</b>

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

This thesis concerns several approaches to portfolio optimization, in particular modifications of a classical mean-risk approach. In the first part of the thesis, the author describes various risk measures and states many desirable properties for considered measures of risk. In particular, she focuses on variance and standard deviation, Value-at-Risk (VaR) and Conditional Value-at-Risk (CVaR). For each she gives precise definition, comments on properties and both advantages and shortcomings. Chapters 4 and 5 are devoted to portfolio selection models where the author presents the classical Markowitz Mean-Variance model along with Mean-VaR and Mean-CVaR models (Section 4) and their robust versions – Worst-case Mean-Variance, Worst-case Mean-VaR and Worst-case Mean-CVaR models. The last part of the thesis concerns numerical comparison of previously described models on historical data of share prices of 12 selected companies retrieved from Yahoo Finance.

This work is, in short, **remarkable**. The topic concerns advanced mathematical tools, the text is written using clear mathematical notation, with high precision and formalism, the English is nearly flawless. Despite the advanced mathematics used, the manuscript does not require previous knowledge of the topic and any medium-skilled bachelor student can follow the text. The practical part is very illustrative and graphical representations of the obtained results are clear for interpretation. The author without any doubt shows good understanding of data analysis and software. In fact, this bachelor thesis is comparable to master theses of the Faculty of Mathematics and Physics.

In the case of successful defense, I recommend “**výborně**” (**excellent, 1**). I am convinced that this thesis deserves to be nominated for the price of the dean of the faculty.

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

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

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

**DATE OF EVALUATION: 20.8.2014**

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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