# Report on **Bachelor / Master Thesis**

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

| | |
|---|---|
| **Student:** | **Jan Matyáš** |
| **Advisor:** | **PhDr. Jakub Seidler, Ph.D.** |
| **Title of the thesis:** | **Two-stage backtesting of Value-at-Risk models** |

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

The aim of the thesis is to evaluate performance of several variation of the value-at-risk method which is used to asses to risk of loss on a specific portfolio. The thesis starts with a brief non-technical motivation followed by a literature review and theoretical description of employed methods. More precisely, normal and stable distributions are discussed as possible candidates of parametric estimation of the VaR. Then several variations of the VaR methodology are discussed, followed by the concept of loss function used to evaluate VaR performance. The third chapter provides empirical results and the last part provides a brief conclusion.

The author seems to understand the topic well. Beside some concerns below the motivation for the work is justifiable. The literature review is satisfactory and prepares ground for description of methods in the next part. I have no objections to methods used. The provided results are understandable, yet they in some cases rather brief and austere (e.g. Backtesting results at p. 31). I have following concerns:

The author uses many terms without properly defining them or at least explaining them in words. Some of these terms are rather specific and they might not be known to an audience that is not really well informed about the topic of the thesis. The text then becomes hard to read and sometimes very difficult for a reader to understand it. For example, the fourth paragraph of Chapter 1 (Motivation, the very first part I read) talks about *unconditional* and *conditional coverage* or *traffic-light approach* without explaining the terms before. Other examples are *higher-order dynamics* (p. 16), *gamma and vega risk* (p.12) etc. Sometimes the definitions provided are rather vague without formal mathematic description (e.g. definition of conditional coverage at p. 16).

p. 24 – The author refers to Nolan (2001) who discusses maximum likelihood estimation of stable parameters and does not provide any further insight into the method himself. The estimation is one of the key technical parts of the thesis and should be discussed to a more detail. Moreover, such a brief approach might be disputable even in a journal paper and more so in a bachelor thesis.

I suggest that shortcomings of the VaR modelling should be discussed more broadly as a part the introduction into the topic. There has been a wide discussion about it.

I suggest the following question for the defense: “In which period recently (and which events occurred during that time) the suggested method for measuring risk failed and brought losses to (imaginary) economic agent? How would you defend your method after such event against your employee/manager?”

In the case of successful defense, I recommend **“výborně” (excellent, 1)**.

# Report on **Bachelor / Master Thesis**

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

| | |
|---|---|
| **Student:** | **Jan Matyáš** |
| **Advisor:** | **PhDr. Jakub Seidler, Ph.D.** |
| **Title of the thesis:** | **Two-stage backtesting of Value-at-Risk models** |

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

| **CATEGORY** | | **POINTS** |
|---|---|---|
| *Literature* | *(max. 20 points)* | 17 |
| *Methods* | *(max. 30 points)* | 23 |
| *Contribution* | *(max. 30 points)* | 23 |
| *Manuscript Form* | *(max. 20 points)* | 19 |
| **TOTAL POINTS** | *(max. 100 points)* | **82** |
| **GRADE** | **(1 – 2 – 3 – 4)** | **1** |

***NAME OF THE REFEREE: Mgr. Josef Brechler***

***DATE OF EVALUATION: 3.9.2014***

***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 | **1** | = excellent | = výborně |
| 61 – 80 | **2** | = good | = velmi dobře |
| 41 – 60 | **3** | = satisfactory | = dobře |
| 0 – 40 | **4** | = fail | = nedoporučuji k obhajobě |