Report on Bachelor / Master Thesis

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

Student:	**René Holešínský**
Advisor:	**PhDr. František Čech, Ph.D.**
Title of the thesis:	**Sector ETF portfolio optimization using differential evolution**

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.

Contribution
The presented thesis concentrates on portfolio optimization using differential evolution. On a set of US ETF portfolios, the author demonstrates the effectiveness of the approach and compares results to standard benchmarks such as global minimum variance and equally weighted portfolio. In various settings (different holding periods, trading restrictions) author carefully comments on the results (and differences) of the analysis.

Methods
The use of differential evolution is not standard in finance. However, the author did a great job and fully justified its application. While the rest of the methods used throughout the thesis are standard in the portfolio optimization literature, they are not typical for a bachelor thesis. To finalize the thesis author successfully studied these methods on his own. We have also discussed the theoretical and empirical application of the methods on a regular basis. Overall, all the methods and concepts are well described and applied correctly.

Literature
All the works mentioned in the thesis are highly relevant to the topic and were published in the respected economic journals. The author shows a good knowledge of the literature, works with it properly and explains all the concepts used throughout the thesis nicely.

Manuscript form
The author considered all of my comments on the previous version of the text - the submitted thesis is well structured, nicely written and reads well.

Summary and suggested questions for the discussion during the defense
Overall, I think it is a nice bachelor thesis – well structured, reads well and all methods and results are presented carefully. During the defense, the author should briefly explain DE algorithm and its application in finance. In my view, the thesis exceeds the requirements for a bachelor thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade A. The results of the Urkund analysis do not indicate significant text similarity with other available sources.

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

CATEGORY		POINTS
Contribution	*(max. 30 points)*	29
Methods	*(max. 30 points)*	29
Literature	*(max. 20 points)*	19
Manuscript Form	*(max. 20 points)*	20

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TOTAL POINTS *(max. 100 points)*	**97**
GRADE (A – B – C – D – E – F)	**A**

NAME OF THE REFEREE: František Čech

DATE OF EVALUATION: 1.9.2020

Frantisek Cech
Digitally signed by Frantisek Cech
Date: 2020.09.01 15:04:24 +02'00'

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.*

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.*

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

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.*

Overall grading:

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