

# Report on Master Thesis

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

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| <b>Student:</b>             | <b>Bc. František Čech</b>  |
| <b>Advisor:</b>             | <b>PhDr. Jozef Baruník, Ph. D.</b>   |
| <b>Title of the thesis:</b> | <b>Dynamic Portfolio Optimization During Financial Crisis Using Daily Data and High-frequency Data</b> |

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

The master's thesis "Dynamic Portfolio Optimization During Financial Crisis Using Daily Data and High-frequency data" focuses on the variance-covariance matrix forecasting and compares the "standard" methods of RiskMetrics (specifically exponential moving average approach) and DCC-GARCH with the high-frequency based estimators – realized variance and covariance (the "raw" realized measures and realized kernels) – combined with the heterogeneous autoregressive model and the Wishart autoregressive model. The comparison is then shown on different types of assets – DAX index, Gold and Light Crude Oil futures – during a period divided by the financial crisis. Moreover, the author not only aims on the "statistical" forecasting performance but also the "economic" one with Value-at-Risk and Global Minimum Variance Portfolio approach. The outcome of the thesis is that the results are not unambiguous – in some cases, the standard techniques outperform the realized measure, and vice versa.

The thesis is very well structured and reads well. One of the strong points of the thesis is that the author does not try to hide the weak points of his analysis, which is mainly the synchronization of different trading hours and days of the analyzed assets and its consequential loss of quite large part of the dataset. However, this might have been discussed in more detail and some further references could have been given so that the reader is able to judge whether such a data loss is or is not so severe. The work with references and literature is, I believe, the weakest point of the thesis as there is no, at least brief, literature review about multivariate forecasting (either in general, or using the realized measures, or both). From the other side, I really like the inclusion of Chapter 5, which summarizes and discusses the results, because otherwise, a reader can be easily lost in a "sea of results".

Overall, the thesis has a very high quality and successfully deals with a topic that is very up-to-date and technically challenging. The author showed a good orientation in the topic and brought novel results to the literature. Therefore, in the case of successful defense, I recommend "**výborně**" (excellent, 1).

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

| <b>CATEGORY</b>                         | <b>POINTS</b> |
|---|---------------|
| <i>Literature</i> (max. 20 points)      | 16            |
| <i>Methods</i> (max. 30 points)         | 30            |
| <i>Contribution</i> (max. 30 points)    | 28            |
| <i>Manuscript Form</i> (max. 20 points) | 20            |
| <b>TOTAL POINTS</b> (max. 100 points)   | <b>94</b>     |
| <b>GRADE</b> (1 – 2 – 3 – 4)            | <b>1</b>      |

**NAME OF THE REFEREE: PhDr. Ladislav Krištofuk**

**DATE OF EVALUATION: 24.1.2013**



**Referee Signature**