The Reviewer’s Appraisal

Title: Application of Matlab in Portfolio Optimisation
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The topic of the thesis is the issue of application of Matlab software in portfolio optimization. The theme is undoubtedly highly topical and appropriately chosen. Portfolio optimization belongs to the most typical tasks in financial modelling area in general. Measuring the degree of risk in combination with expected returns represents key parameters.

The goal of this thesis is to apply different portfolio optimization strategies and to compare their out-of-sample results. For the propose of this thesis, the author used weekly time series of Hang Seng index covering the period of 2006 - 2015 years.

The proposed structure of the thesis corresponds to main goal of this thesis. Problem solving procedure is fully adequate to the analysis of the problem and goal of the thesis. Appropriately chosen methods and techniques enabled to obtain adequate results. The author applied various types of portfolio optimization and carried out back testing of portfolio allocation strategies.

The main goal of this thesis, as declared in the Introduction, was fulfilled as supported by the methods applied and final results achieved. The thesis is, in accordance with the assignment, divided into five chapters. The fourth chapter can be considered crucial and the most important part of this thesis.

The second chapter has mainly descriptive character, and is focused on the development of Matlab software. Attention was also given to basic language rules and basic function commands that were applied in practical part of this thesis.

The third chapter that can be considered a methodological part of this thesis. This chapter is devoted to theory of strategies that were applied in practical part. In particular, these strategies include Markowitz model, minimum variance strategy, Bayesian strategy and portfolio with risk-free rate strategy. Finally, the author introduced two indicators of portfolio performance (Sharpe ratio and Maximum drawdown). In my mind, subchapters 3.4 and 3.5 could precede subchapters 3.1 – 3.3.

The fourth chapter represents practical part of this thesis. First of all, master student described data sample. Then, there were carried out portfolio optimization using strategies that were defined in Chapter 3. Furthermore, for Markowitz model, minimum variance strategy, Bayesian strategy and strategy with risk-free asset there were calculated portfolio back testing to get portfolio returns and corresponding values of wealth for different values of parameter \( k \). In the final step, the author of the thesis evaluates performance of different strategies on the basis of Sharpe ratio and Maximum drawdown. Results were finally graphically presented in an appropriate manner (figures and tables) and interestingly commented.

The whole thesis constitutes original work on empirical portfolio optimization using real data from Chinese stock market. Master student has demonstrated ability to work professionally with software Matlab. In general, the quality of this thesis reached an excellent value.

The out-of-sample results achieved by author are conclusive and interesting. Conclusions are correct and are based on achieved results without contradictions. The comparison of achieved results can be considered very positive as well.
The whole text is written logically, argumentation and expression is at good level. The author's language is generally understandable although sometimes it is quite volatile. References to equations, graphs and tables are also well done.

To sum up, this thesis by its conception, structure and applied methodological base fully meets qualitative requirements for this kind of works. Therefore, I definitely recommend it for defense.

Ostrava, May 12th 2016

Ing. Petr Seďa, Ph.D.
Thesis reviewer