Report on **Master Thesis**

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

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Advisor:	PhDr. Ladislav Krištoufek, Ph.D.
Title of the thesis:	Practical usage of optimal portfolio diversification using maximum entropy principle

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

The thesis presents a detailed analysis of utilizing the maximum entropy principle in the portfolio construction. The theoretical paper of Bera (2008) is closely followed and applied on the DJI components. The entropy maximization enters the optimization procedure in a way that it pushes the weights of the mean-variance (MV) portfolio closer to the uniform distribution (which is the maximum entropy distribution for a fixed mean). This is done to avoid the severe problem of the standard MV procedure of prioritizing only few assets and leaving others with zero or tiny weights, which can lead to huge jumps in weights in time, i.e. significant transaction (rebalancing) costs.

Unfortunately, the question of transaction costs is practically completely omitted in the thesis, which forms a severe discrepancy between the motivation of using entropy and then its actual utilization. The results are then not really surprising – the MV portfolio usually wins based on the Sharpe ratio. This sheds some bad light on otherwise a very good and thorough empirical work.

There are some further issues with the text such as a non-standard structure and sometimes poor graphics but I see these as relatively minor compared to the missing discussion and analysis of weight-changes and transaction costs. **I suggest grade B (2) as a final mark.**

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

CATEGORY		POINTS
Literature	*(max. 20 points)*	18
Methods	*(max. 30 points)*	20
Contribution	*(max. 30 points)*	20
Manuscript Form	*(max. 20 points)*	15
TOTAL POINTS	*(max. 100 points)*	**73**
GRADE	**(1 – 2 – 3 – 4)**	**2**

NAME OF THE REFEREE: PhDr. Ladislav Krištoufek, Ph.D.

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Referee Signature