

# Report on Master Thesis

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

<b>Student:</b>	<b>Bc. Barbora Máková</b>
<b>Advisor:</b>	<b>PhDr. Ladislav Krištoufek, Ph.D.</b>
<b>Title of the thesis:</b>	<b>Fractal dimension and efficient markets</b>

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

The diploma thesis “Fractal dimension and efficient markets” is based on an interesting idea that fractal dimension of the financial time series is connected to its efficiency (in a sense of correlation structure and/or predictability). The essential idea is that the fractal dimension as a measure of roughness of the series can catch even only local inefficiencies and correlation structures. This would make the measure unique compared to various others such as simple autocorrelations, variance ratios or long-term memory measures. Importantly, the thesis presents novel results as such topic has been discussed only sparsely in the literature, which is probably due to the fact that fractal dimension is tightly connected to the long-term memory series but only if the series is self-similar. It turns out that the financial series are not self-similar and thus the analysis of fractal dimension separately makes sense and gives additional information about dynamics of the series. Such novelty of the approach naturally makes writing the thesis much harder as there are not many sources to build upon as well as to compare with. However, Barbora has dealt with such challenge bravely and the results are very interesting. Probably the biggest potential issue was the presentation of results of a very wide Monte Carlo study. However, it still reads nicely and the description is well structured.

The quality and novelty of results suggests that these should be published as research articles. There is a plan to publish these results after the defense. **In the case of a successful defense, I suggest grade A.**

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

<b>CATEGORY</b>	<b>POINTS</b>
<i>Literature</i> (max. 20 points)	19
<i>Methods</i> (max. 30 points)	30
<i>Contribution</i> (max. 30 points)	30
<i>Manuscript Form</i> (max. 20 points)	19
<b>TOTAL POINTS</b> (max. 100 points)	<b>98</b>
<b>GRADE</b> (1 – 2 – 3 – 4)	<b>1</b>

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

**DATE OF EVALUATION: 17.6.2014**

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**Referee Signature**