Report on Master Thesis

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

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Advisor:	**Doc. PhDr. Ladislav Krištoufek, Ph.D.**
Title of the thesis:	**Are financial returns and volatility multifractal at all?**

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

The thesis tries to answer the question it poses in its title, i.e. whether there really is multifractality in financial time series, specifically returns and volatility. The main motivation here is given by the fact that a strong majority of texts studying multifractality focuses on estimating some of the characteristic parameters but usually do not bother with statistical inference. The thesis tries to fill this gap.

Multifractality can be understood as a measure of complexity of a time series, in more detail scaling of various moments of such series characterizing its correlation structure. In addition, it is known that multifractality is not only caused by correlations, be it linear or non-linear ones, but also by fat tails of a distribution. In the thesis, these sources of multifractality are used for specifying hypotheses about dynamics of the series as well as in the testing procedure.

The thesis uses some advanced techniques which are not standardly covered in the IES syllabus such as the estimators of multifractality (generalized Hurst exponent approach, multifractal detrended fluctuation analysis, and multifractal detrending moving average) but also Monte Carlo simulations, phase randomization and amplitude-adjusted Fourier transforms. As a result, the author has had to show some much advanced coding skills. The core of the thesis is nicely summarized in Table 5.1 which helps to understand the text even to a non-expert on the topic.

To summarize, the thesis covers an up-to-date topic and it brings novel results, which we intend to publish after the successful defense. The structure is logical and the text reads well even though the topic can get quite technical at times. My only tiny reproach would be towards Chapter 4 which could have been included in Chapter 6. Otherwise, I have no issues with the text **and I gladly recommend the thesis to the defense with a grade of A**.

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

CATEGORY		**POINTS**
Literature	*(max. 20 points)*	20
Methods	*(max. 30 points)*	30
Contribution	*(max. 30 points)*	30
Manuscript Form	*(max. 20 points)*	19
TOTAL POINTS	*(max. 100 points)*	**99**
GRADE	**(1 – 2 – 3 – 4)**	**1**

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

DATE OF EVALUATION: 14.6.2016

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