

Report on Master Thesis

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

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Title of the thesis:	Multifractal analysis of petrol and diesel prices in the Czech Republic

The thesis focuses on multifractal properties of the petrol and diesel compared to crude oil. The hypothesis is that the (global) crude oil market is efficient and the (local) petrol and diesel retail market is inefficient. These results have been indeed confirmed. Technically, the thesis uses the generalized Hurst exponent approach (GHE) and the multifractal detrended fluctuation analysis (MFDFA).

Introduction (Section 1) quotes a number of interesting facts from the markets. What I miss is more of economics in the understanding of the phenomena. Only a single economic hypothesis (related to market penetration and stickiness) is briefly mentioned. If elaborated further, it could serve as a source of additional testable hypotheses.

Survey (Section 2) is extensive and very well focused. The methods (Section 3) are advanced and state-of-the-art in the field, and I can only applaud mastering them in this application. It is difficult to review the entire math, but since this part does not contain any original contribution, it does not have to be put under scrutiny. Relevant dataset (Section 4) is collected and conveniently presented. As an economist, I am not fully convinced that the level of market penetration is sufficient to judge on market competitiveness, and in this aspect I see a potential for extended thoughts about the matter.

The results (Section 5) reveal persistence connected with multifractality for the studied petrol and diesel series in the Czech Republic. As far as I can see the literature, this is a novel result, yet rather expected.

My first-hand impression was that this is a well-crafted work in quantitative finance. After re-reading, I am still impressed by the toolkit, but I feel that the main tested hypothesis (differences between crude oil on one hand and petrol and diesel on the other hand) is rather obvious. For extensions, I would recommend to think of how to apply these tools to answering finer and less straightforward questions.

I definitely recommend grading the thesis as **excellent (A)**.

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

CATEGORY	POINTS
<i>Literature</i> (max. 20 points)	20
<i>Methods</i> (max. 30 points)	29
<i>Contribution</i> (max. 30 points)	24
<i>Manuscript Form</i> (max. 20 points)	20
TOTAL POINTS (max. 100 points)	93
GRADE (1 – 2 – 3 – 4)	1

NAME OF THE REFEREE: PhDr. Martin Gregor, PhD

DATE OF EVALUATION: September 5th, 2013

Referee Signature