Report on **Master Thesis**

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

Student:	**Jan Ježek**
Advisor:	**Karel Janda**
Title of the thesis:	**Analysis of Dynamic Networks in Large Biofuels Related Financial and Economic System**

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

Please provide your assessment of each of the following four categories, summary and suggested questions for the discussion. The minimum length of the report is 300 words.

Contribution

The thesis analyzes the role of ethanol as a biofuel in the United States in terms of its impact on retail gasoline prices. In his thesis, the student first replicates some earlier influential studies and then performs an independent analysis. A novelty is brought in two ways. First, the impact on retail gasoline prices is analyzed also via the margins of oil producers, and these margins are quantified by the crack spread and crack ratio. Second, the wavelet coherence analysis is put into practice, in addition to standard methods used in similar analyses. The key contribution of the thesis is the evidence suggesting that ethanol production exhibits a significant impact on the US retail gasoline prices over more extended periods, while its effect on the margins of the oil producers is much less pronounced. In sum, the effect of ethanol is less important than that of other factors (natural gas and oil prices), though.

Methods

Two key approaches are used in a modeling framework: (i) estimation of a panel model via standard GMM, and (ii) wavelet coherence analysis. The analysis is performed on a regional level (via appropriate fixed effects) according to the Petroleum Administration for Defense Districts (PADD) covering the US territory divided into five PADDs. The wavelet coherence analysis is employed to provide a more detailed characterization of the dynamic links among variables of interest: how ethanol production interacts with various economic indicators. The wavelet coherence analysis underlines the importance of both time and frequency domains to fully capture such dynamics. All methods are rightly used and executed.

Literature

The literature review section summarizes the current state of research in the field quite well. Moreover, the literature review covers two important angles of the research topic from the perspective of the biofuel price effects and interdependencies analysis methods. There is also an informative and relevant section on the economic background of the analyzed topic that covers biofuels, corn as a feedstock, and the Renewable Fuel Standard (RFS). Hence, the literature is reviewed in detail and covers all relevant papers and angles.

Manuscript form

The manuscript conforms to the formal requirements for the master thesis. The text reads well, but it could be marginally improved after some minor imperfections in sentence and grammar are accounted for. The results are presented with enough detail. The introduction is informative, and the goal of the thesis is clearly stated. Data are described with ample detail. Hypotheses are not stated in the thesis

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itself, but they are clearly defined in the thesis proposal. Tables and figures are presented in an organized and legible manner, but most of them lack self-explanatory notes. References are complete.

Summary and suggested questions for the discussion during the defense

The thesis represents very good work in the area of biofuel analysis. The results of the Urkund analysis do not indicate significant text similarity with other available sources. I believe the thesis definitely fulfills the requirements for a master's thesis at IES, Faculty of Social Sciences, Charles University. I suggest a grade of A.

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

CATEGORY	POINTS
Contribution (max. 30 points)	29
Methods (max. 30 points)	29
Literature (max. 20 points)	20
Manuscript Form (max. 20 points)	17
TOTAL POINTS (max. 100 points)	**95**
GRADE (A – B – C – D – E – F)	**A**

NAME OF THE REFEREE: Evžen Kočenda

DATE OF EVALUATION: 24 August, 2024

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Referee Signature