# Report on Bachelor / Master Thesis

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

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|---|---|
| **Student:** | **Elisa Trouble** |
| **Advisor:** | **Jaromir Baxa** |
| **Title of the thesis:** | **Emissions-output decoupling: Evidence from long-run and short-run elasticities.** |

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

*Please provide a short summary of the thesis, your assessment of each of the four key categories, and an overall evaluation and suggested questions for the discussion. The minimum length of the report is 300 words.*

**Short summary**

Elisa Trouble submitted a thesis discussing a topical question of decoupling economic growth and CO2 emissions. These emissions have already caused global warming and they are projected to lead to climate crisis in the near future if not decreased significantly in the near term. To contribute to the debate, Elisa estimates the elasticities between CO2 emissions and economic activity measured by the real GDP per capita. Elasticities below zero would suggest absolute decoupling, i.e., economic growth associated with decreasing CO2 emissions over time. She finds that although many countries have already lowered their dependence on fossil fuel in economic growth, negative consumption-based elasticities remain rare suggesting that the current economic growth is not consistent with emission reduction necessary to limit the global surface temperature increase safely below 2°C.

**Contribution**

This thesis builds on previous papers aiming to estimate these elasticities. More precisely, she builds on the framework of Cohen, et al. (Energy Policy, 2018; Journal of Macroeconomics, 2022) who estimate the cyclical and trend elasticities separately, with the aim to get more refined estimates particularly of long term elasticities of emissions and output. In contrast to those studies, she uses more recent data stemming to 2021 and she extends the approach to estimate the environmental Kuznets curve and to detect the turning point in real GDP per capita after which the emissions start to decrease with higher economic growth. The results are consistent with the previous literature only to some extent. Therefore, there is a clear value added in the thesis, that is also acknowledged in the thesis explicitly.

**Methods**

In the first part, the methods closely follow the papers by Cohen et al. (2018, 2022). Thus, Elisa separates trend and cycle using HP filter (she also uses Hamilton's regression filter as a sensitivity check) and then estimates country-specific elasticities both with production-based and consumption-based emissions. These estimates are performed on a short sample with barely 30 observations, but the previous literature in this subfield faces the same issue, so from my perspective, this is acceptable, although particularly standard errors shall be taken with a grain of salt. Therefore, it might be more appropriate to include estimates of standard errors in all tables in the thesis, rather than stars indicating significance of any elasticity estimate based on the respective p-values.
In the second part, Elisa uses panel data to estimate break points in the environmental Phillips curve. Last but not least she also employs dynamic OLS estimator to account for potential cointegration. This and other checks are used as robustness checks to Elisa's main results.
Besides DOLS, the methods are fairly standard, but implemented well, and the results are properly interpreted, with honest evaluation of what is robust, what is not, and which result is likely more credible than the others. I do not have anything to object here, with one exception. Elisa considers her results in section 5.5 depicted in Figure 5.9 as unrealistic, but the only benchmark which she uses for comparison are some previous relatively old estimates in the literature. I do not consider this as a reason to discount validity of the results presented in the thesis.

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**Literature**

Literature review is undoubtedly strong part of the thesis. Relevant literature is well surveyed, minor glitch is that the paper by Cohen et al. (2022) is mentioned in the text itself but does not appear in the list of references.

**Manuscript form**

The text has relatively logical and coherent structure, although not on par with the very best theses I have supervised. Writing style is OK, a bit more polishing devoted to typesetting would be welcomed. Sometimes, I did not know what exactly is on which axis in charts, so notes accompanying all figures and tables would have been helpful as well. More time for editing tables would have helped, too.

**Overall evaluation and suggested questions for the discussion during the defense**

Overall, I recommend the thesis for defense, and I suggest grade B.
It has interesting and timely topic, it has a clear contribution to the existing literature, it employs methodology that is relatively easy and suffers by dozens of limitations but still was enough for decent journals in the field. The results are honestly reported and discussed, the uncertainty related to those results is carefully pointed out.
Let me add that I've enjoyed collaboration with Elisa and the debates on the topic. Also, I would like to highlight the progress Elisa has made over the past year when writing her diploma thesis.
Last but not least, the results of the Turnitin analysis do not indicate significant text similarity with other available sources.

Suggested question for the defense:
What do your results imply for policy? Are the policies fostering and incentivizing green transition necessary?

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

| **CATEGORY** | | **POINTS** |
|---|---|---|
| *Contribution* | *(max. 30 points)* | 28 |
| *Methods* | *(max. 30 points)* | 25 |
| *Literature* | *(max. 20 points)* | 18 |
| *Manuscript Form* | *(max. 20 points)* | 15 |
| **TOTAL POINTS** | *(max. 100 points)* | **86** |
| **GRADE** | **(A – B – C – D – E – F)** | **B** |

***NAME OF THE REFEREE:*** ***Jaromír Baxa***

***DATE OF EVALUATION:*** ***May 26, 2023***

Jaromír Baxa
Digitálně podepsal Jaromír Baxa
Datum: 2023.05.26 12:58:30 +02'00'

***Referee Signature***

***EXPLANATION OF CATEGORIES AND SCALE:***

***CONTRIBUTION:*** *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

***METHODS:*** *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

***LITERATURE REVIEW:*** *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

***MANUSCRIPT FORM:*** *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

***Overall grading:***

| TOTAL | **GRADE** |
|---|---|
| 91 – 100 | **A** |
| 81 - 90 | **B** |
| 71 - 80 | **C** |
| 61 – 70 | **D** |
| 51 – 60 | **E** |
| 0 – 50 | **F** |