

Report on Master Thesis

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

Student:	Marie Ptáčnicková
Advisor:	Barbara Pertold-Gebicka
Title of the thesis:	Investigation of cross-country differences in student performance in standardized tests: the role of modern and traditional teaching methods

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 of Marie Ptáčnicková contributes to the literature on the relationship between teaching methods and students' performance. There exists a number of studies investigating this research question, but their results are not unanimous. This is the starting point for Marie's thesis, as she points towards international differences in the identified relationships and tries to find out what drives them. This makes the contribution of the presented thesis very clear and policy-relevant. Instead of relying on one country to study which teaching methods affect students' performance the most, Marie studies a set of 43 countries, shows that different results are obtained in different countries and investigates which country characteristics are responsible for these differences.

Methods

Analytical methods applied in this thesis are appropriate given the question asked and the data used. The econometric techniques used by Marie are well beyond the curriculum at IES. The analysis is naturally split in two steps. In the first step each country is analyzed separately following the methodology proposed by Bietenbeck 2014 and also used by Korbel & Paulus 2018. This means identifying the relationship between the share of teaching time devoted to specific teaching method and students' performance by relying on within-student variation in the exposure to teaching methods. Marie has carefully studied both papers cited above and did her best to follow the proposed methodology. This was not easy, because the TIMSS dataset is rather complicated and there are some differences across countries which ask for individual approach towards each analyzed country. In the second step the country-specific coefficients estimated in the first step are compared and inserted into a cross-country model. These first-step coefficients serve as dependent variables in the second-step analysis. The independent variables in the second step are country characteristics that might explain differences in the relationship between teaching methods and students' performance. Because country-specific coefficients are estimated with different precision in the first step, estimation in the second step is performed using weighted least squares with weights inversely proportional to standard errors from the first step. In other words, more precise estimates get higher weight. As there is no clear a priori list of variables that should be included in the second step analysis, Marie has turned to Bayesian model Averaging to assist her with the choice of preferred model.

All these methods were new to Marie and she put a lot of effort to understand them and correctly apply. She never just blindly plugged data into formulas. She always wanted to understand what she is doing and she always double or even triple checked whether everything is correct.

Literature

The literature review presented in this thesis is complete and brings a good picture of up to date research on the topic. The review is logically structured and allows the reader to understand the topic and the position of Marie's research within it.

Manuscript form

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The manuscript is well structured and written in good English. Although typos and grammatical errors appear here and there, the whole work is easy to read and understand. I appreciate the careful introduction and well-structured flow of chapters.

The methodology section could have been written better, as currently it is not clear from the very beginning what is the final goal of the analysis. Nevertheless, after reading the whole section, the reader gets all the necessary information. Moreover, it is clear from the description presented in the methodology section that Marie understands WHY specific methods need to be applied, what is not the case with many master theses.

The results section is a bit lengthy, but it reflects Marie's effort towards understanding not only the methods, but also the results. Here I appreciate especially comparison of her results to other studies and attempt to explain the identified differences (as compared to the literature and differences across countries).

Interpretation of results could be more specific and should take into account the econometric specification. Sentences such as „Lastly, in almost half of the countries (19) in our sample, we find neither modern nor traditional teaching practices have any effect on student performance“ are difficult to understand without the context. To identify the effects of teaching practices, the author relies on the variation in the share of teaching time using the specific teaching methods within a country and – because fixed effects transformation is used – most of the identification is actually driven by within student variation. This means that what is estimated is the effect of deviating from a student specific average. How to interpret results then? The estimated coefficients tell us how student's test results are affected when he/she experiences more time than usual of the specific teaching method.

But I do not consider this a major drawback of the presented thesis. It really IS difficult to interpret results. Not only for students.

Summary and suggested questions for the discussion during the defense

Altogether this is a very good thesis. Marie put a lot of effort into it and it is visible in the product that she has delivered. The analysis is complex and carefully performed. Its results are well presented and carefully interpreted. This thesis is a solid draft of a publishable research paper! This is why I conclude that this thesis fulfills the requirements for a master thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade A.

The results of the Urkund analysis do not indicate significant text similarity with other available sources.

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

CATEGORY	POINTS
<i>Contribution</i> (max. 30 points)	30
<i>Methods</i> (max. 30 points)	28
<i>Literature</i> (max. 20 points)	30
<i>Manuscript Form</i> (max. 20 points)	25
TOTAL POINTS (max. 100 points)	93
GRADE (A – B – C – D – E – F)	A

NAME OF THE REFEREE: *Barbara Pertold-Gebicka*

DATE OF EVALUATION: 21.1.2021

Digitally signed (21.1.2021)
Barbara Pertold-Gebicka

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