Report on **Bachelor / Master Thesis**

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

Student:	**Marija Radonjic**
Advisor:	**PhDr. Jaromír Baxa, PhD**
Title of the thesis:	**The Growth Effects of Education in CEE and Balkan Countries**

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

Summary of thesis: The author Marija Radonjic provides on 67 pages of text (plus appendices and attachments) a thorough analysis of the growth effects of education in 17 countries in the CEE and Balkan regions . She utilized fixed-effects panel data approach with first testing the effect of the whole stock of education and then disaggregating it to primary, secondary and tertiary levels while dealing with the assumed endogeneity problem with the instrumental variable approach. The effect was found, largest for the tertiary education, but interestingly no effect was found for the Balkan countries. The author then concludes that this finding implies that economic growth without a proper educational system is impossible and draws policy implications upon that.

Manuscript form: The manuscript is logically structured and well organized, the sections are not too long while including all important information. The literature review is detailed, quite dense and the author cites most of the relevant literature, also with the description of the discrepancy of the micro and macro points of view. This section almost resembles an introduction to a meta-analysis since the author reviews the results of 28 studies on the effect of education on growth. She also describes the development of transition in the Balkan countries. Moreover, she provides a detailed set of regression results in the appendix as well as the dataset and code she used for the analysis, which I appreciate. There can be of course some mistakes and typos found in the text, but this can be neglected.
However, I miss graphs that would show the overall development of GDP and education, and in the regression model outputs I miss the diagnostic statistics like number of observations or F-statistics of the whole regression, which is provided only in the appendix.

Methods: In accordance with the literature, the author uses the augmented Solow-Swan model for the theoretical base and also because of lack of the data on some of the countries studied. She uses panel data estimation with country fixed effects and she accounts for the assumed endogeneity by using instrumental variables in the regressions plus she also uses estimator with robust standard errors. She also tests for the robustness of the results with different variables for education.
Maybe I misread something, but what I miss is in the case of estimation with fixed effects panel data the inclusion of time-trend or year(or period)-dummies or another way of tackling the time-trend in the data in order to avoid the misinterpretation the result being a product of spurious correlation. The fact that the author uses only initial values in 5year periods and averages of growth over five years is quite spectacular – it is probably a good way of dealing with endogeneity. And if you have done that, why do you need IV estimation? Would you test for endogeneity with Hausman-Wu test? If the effects of investment into education are lagged by ten years, should not there be thus a lagged variable(s) of education in the regression specification?
Next, in the literature on growth-accounting there have been frequently discussed the issues of non-linearity of parameters, which is not mentioned in the thesis. Having in mind the turbulent times in the Balkan region (mainly the unfortunate war), I would expect that the relationship between education and growth will change over these years – this type of estimation used seems to me to be plausible for the countries with a stable political and

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institutional situation. No wonder there was no relationship found. Apart from that, the finding that the highest contribution to growth is made by tertiary level of education also seems to be quite intuitive since there is the highest value added – but it cannot exist without the preceding two and a suitable labor market as the author actually mentions in the discussion of results.

Contribution: The author claims that the main contribution of the thesis to the literature is in the sample of countries and the dataset she uses. In the related literature studying the same relationship, the results depended on the sample of countries used, the estimation technique as well as on the underlying model. She combines CEE and Balkan countries because of the assumption of a different way of transformation of the economy thus also different educational policies. She claims that the Balkan countries are affected by this transformation process which destroyed the channels of efficiency by which education improves economic growth. The dataset she created consists of two halves: Penn World Tables and Barro and Lee (2013) database which has supposedly not yet been used so far at the time of writing the thesis.

Conclusion:
I admit this was a big load of work the author has done, she showed a good orientation in the relevant literature and use of advanced econometric methods of estimation. The results are in line with intuition and have important policy implications. The whole work may be a solid basis for a future research. I suggest grade "1" (výborně).

Questions for the defense:

How did you tackle the time-trend of the data in your estimation techinque?

Do you think the relationship between education and growth could be non-linear? How would you test for that?

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

CATEGORY		POINTS
Literature	*(max. 20 points)*	19
Methods	*(max. 30 points)*	27
Contribution	*(max. 30 points)*	25
Manuscript Form	*(max. 20 points)*	17
TOTAL POINTS	*(max. 100 points)*	**88**
GRADE	**(1 – 2 – 3 – 4)**	**1**

NAME OF THE REFEREE: PhDr. Lubomír Cingl
DATE OF EVALUATION: January 22, 2014

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Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

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

Strong	Average	Weak
20	10	0

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.*

Strong	Average	Weak
30	15	0

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.*

Strong	Average	Weak
30	15	0

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.*

Strong	Average	Weak
20	10	0

Overall grading:

TOTAL POINTS	GRADE		
81 – 100	1	= excellent	= výborně
61 – 80	2	= good	= velmi dobře
41 – 60	3	= satisfactory	= dobře
0 – 40	4	= fail	= nedoporučuji k obhajobě