

Opponent's report on doctoral dissertation

**Olesya Petrenko:
Tertiary Education and Its Impact on Economic Development
in 27 EU Member States**

The author chose a highly topical area for her dissertation. The issue of the relationship between educational indicators, on the one hand, and indicators of economic growth or development, on the other hand, is the subject of numerous theoretical and empirical studies and analyses; the results have the potential to significantly influence not only educational but also economic and social policies in general in individual countries. Higher education is, at least in part, a public good. At a time of severe budgetary constraints in some countries, the debate on the usefulness of public support for higher education and its various components is timely and entirely legitimate in the first half of the 2020s. The author builds on the extensive existing research in the field and finds as a research gap a relationship between the structure of university graduates and economic growth.

In the context of the above, the objectives of the thesis are appropriately chosen, precisely formulated and elaborated into individual research questions and statistical hypotheses and fulfilled. The author conducts a thorough literature search but does not avoid minor inaccuracies (e.g. missing items in the reference list). The formulation of hypotheses in the narrowly understood statistical sense has the advantage of the possibility to verify or falsify them using the apparatus of inferential statistics; conversely, it is tricky when justifying null (tested) hypotheses. Thus, for example, justifying the first null hypothesis states, "Due to the fact that the percentage of educated population in EU Member States is high, it is expected that additional graduates will not impact the GDP." What does she base this assumption on? Is it true that from a certain saturation level (where does it lie?), further growth in the educated population or workforce has no additional effect? Similarly, for the third and fourth hypotheses, the author argues the null hypothesis that with a low proportion of university-educated women, new female graduates have no additional effect on GDP or GPG. This reasoning is not intuitive.

The author's paper is clear, appropriately and logically structured, readable and linguistically perfect, with only minor formal inaccuracies. Some passages could be more concise. The models are well-chosen and quite challenging. Some of the outputs could be more user-friendly; see, for example, the form with exponents in Table 3 (p. 61), where it would have been more appropriate to present individual indicators in thousands, millions, etc.

During the defence, it would be helpful to discuss the data sources used in more detail and the implications of their possible limited explanatory power on the relevance of the conclusions reached. The author states in connection with the GDP per capita in the PPS indicator (p. 61) that "the definition of Eurostat indicator tec00114 states that the index is designed for cross-country comparisons only and should not be used in case temporal comparisons are carried out". However, this is because this indicator is expressed as a spatial base index (EU27=100) and not because the PPS. Would it not be possible to use the indicator "Purchasing power adjusted GDP per capita (sdg_10_10)" instead? It would also be helpful to explain the education indicators in more detail. What is the basis for the author's assumed link between the number of (recent) graduates and overall GDP development, where GDP is made

up of graduates and the entire workforce? To what period do the graduate headcount figures in Table 3 refer? Are these aggregates for the period? While in most of the thesis, the author works with an indicator of the number of graduates, on page 75, the data sources show an indicator of "STEM higher education (measured by the percentage of the population with a degree in a STEM field - Eurostat)", which indicates the educational structure of the population rather than the number of graduates. In the results (chapter 3.5), however, only the number of graduates appears again, which gives an incomprehensible impression.

It is positive that the PhD thesis was written as part of the PhD student's research activities. Considering the gap between the date of submission of the dissertation and the date of its defence, I recommend a brief presentation of the current status of the author's publications, including the current status of the manuscript review process.

Based on the above, I recommend the submitted dissertation for defense and recommend that the author Olesya Petrenko be awarded the degree of Doctor of Philosophy (Ph.D.).

In Prague, 14th January 2024

Prof. Jakub Fischer, Ph.D.

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