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PhD Thesis Review

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Dynamics and Spatial Polarisation of Rural Regions in Europe.

An Economic Investigation

Doctoral thesis written in the Department of Economic Geography at Faculty of Human Geography and Planning, Adam Mickiewicz University in Poznań under supervision of prof. Tadeusz Stryjakiewicz and prof. Maria Ferreiro.

PhD thesis written as part of RurAction project, which received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 721999.

Legal basis for the preparation of the review

The review was prepared in accordance with statutory provisions of law laid down pursuant to Art. 190 paragraph. 3 of the Act of July 20, 2018 - Law on Higher Education and Science (Journal of Laws 2020, item 85, as amended). The review was prepared in connection with Resolution No. 004/2021/2022 of the Scientific Council of Socio-Economic Geography and Spatial Management, Adam Mickiewicz University in Poznań of September 22, 2021 on the appointment of a reviewer in the procedure for the doctoral degree MEconSc Barraí Hennebry.

Substantive evaluation of the dissertation

The changing reality expects from people to be better adapted to the emerging challenges. One of the challenges faced by the science is engaging in research of a multidimensional issues, distinguished by high public utility. Such thematic contexts include the study of rural polarization, which is of interest to numerous scientific disciplines in the social sciences. There is still insufficient

empirical research into the factors that differentiate structurally strong rural regions from structurally weak rural regions. Reviewed thesis hopes to fill the gap by researching the socio-economic characteristics that lead to polarisation between rural regions, in essence trying to understand why some rural regions are lagging while others are thriving.

PhD thesis of MEconSc Barraí Hennebry is a compact study - it has 127 pages, including 111 pages of the main text, 16 pages of lists (publications, tables, figures, appendixes and research activities). The descriptive layer of the dissertation is supplemented by graphic presentations divided into 26 tables and 17 figures.

The main aim of the study is presented by the author as follows: *The goal of this research is to examine the dynamics and spatial polarisation of rural regions in Europe from an economic perspective* (p. 7). The specific goals are presented as follows: (1) *to understand the extent to which this polarisation exists*, (2) *what factors are leading to polarisation* and (3) *how shocks (such as the financial crisis of 2008) contribute to this polarisation, in other words: how resilient rural regions are* (p. 7). The aim of the dissertation is to be achieved by finding answers to the following research questions:

- 1) *What are the regional disparities among rural regions in Europe? What is the trend over time? Can convergence be observed? What are the determinants of economic growth in rural regions?*
- 2) *What is the structural strength of the rural regions and how did it change over time? What socio-economic characteristics influence the structural strength of the rural regions?*
- 3) *What is the economic resilience of rural regions i.e. how have they responded to the crisis of 2008/09? What are the socio-economic characteristics that contribute to resilience? Will resilience to the 2008 financial crisis be a predictor of resilience to the Covid19 crisis?* (pp. 8-9).

The structure of the dissertation is correct, the materials contained therein form a whole arranged in six chapters preceded by the acknowledgments. The

introduction contains the issues organized in five sections. The goals and research questions (as above) were clearly defined, no hypotheses were formulated, the confirmation or rejection of which would allow for the extension of the inference part. The dissertation begins with the Introduction (1), which contains a justification for undertaking research issues. This part of the study also includes source materials and data, research methods and spatial and temporal scope. The rationale for the formulated objectives has been made in the context of the RurAction Project within which this study was created. The RurAction research and training network focuses on problems in structurally weak rural regions in Europe and on the impact of social entrepreneurship and social innovation can have in creating and providing solutions to the problems in structurally weak rural regions. The terminological arrangements - basic notions, terminology and definitions - closing the introductory chapter - were carried out correctly and do not raise any doubts. The assessment of the initial chapter of the dissertation is completely positive. Understanding the theoretical framework of the study and empirical achievements in various disciplines and areas of reference allowed the author to carry out operationalization with great research sensitivity and respect for the achievements of previous researchers.

The purpose of second chapter (2. *Literature Review*) is to provide an overview of the important literature for answering the three main research questions. The chapter is divided into subsections. Each subsection is referring to the theoretical and empirical literature relevant for one of the research questions. In this part of the study, the author outlined theoretical assumptions and empirical use of the following theories: neo-classical growth, endogenous growth, new economic geography, stages of economic growth and regional inequalities and growth poles. This part of the dissertation was written with great research maturity and awareness of theoretical and empirical achievements in the discussed subject. The author concludes that the mainstream economic growth models tell us little about what differentiates structurally strong rural regions from structurally weak rural regions. Whereas neo-endogenous rural development model attempts to explain how there can be rural polarisation, i.e. a divergence

between thriving rural regions and rural regions which are trapped in a “circle of decline”.

In the third chapter of the study, the author describes and explains regional disparities among European rural regions. The mainstream economic growth models provide alternative implications regarding regional disparities, convergence and the determinants of economic growth for rural regions. This chapter will explore the data to analyse which, if any, of these theories provide the best foundation for understanding the situation in the European rural regions. In an attempt to understand regional disparities among rural regions in the area under consideration this chapter adopts several different techniques. The author presents arguments for choosing independent variables in a quite convincing way. The independent variables were selected from the framework provided by ESPON ECR2 (2014) uses a mix of case studies and quantitative methods. They find that the factors contributing to resilience can be divided into four broad categories: business and economy, people and population, place-based, and society and community. For the purpose of this thesis ‘placebased’ variables author referred to as ‘rurality’ indicators as we are interested in understanding the effect of rurality on economic growth, structural strength and economic resilience.

The analysis in the first section deals with rural disparities at an EU level. It is worth emphasizing that the author, being aware of the weakness of using these measures, performed the planned task with the right approach. The reviewer, understanding the limitations resulting from the availability of data, was not sufficiently convinced in the selection of examples to illustrate the trends at the national level (the second section of this chapter). The rationale for the selection of Germany and Greece seems vague and does not remove doubts as to the most appropriate case studies. When looking for a key to justify the selection of cases, referring to the location, the author uses a mental shortcut that is not reflected in any regionalization of Europe. Writing that: *Germany is a Northern European country* (p. 44) should be considered an unnecessary lapse. The analysis has shown that over the time period 2000 to 2017 there has been convergence among rural regions, i.e. poor rural regions have been growing faster than rich rural regions. This however is not as straightforward as it may

appear. The author also emphasized that further analysis has shown that the convergence effect was much stronger in the pre-crisis years and has slowed down drastically since the recession. This likely means that weak rural regions suffered more from the crisis and have been slower to return to growth. This result was also found for both Germany and Greece, two countries that were affected to much different extents by the financial crisis.

In the fourth chapter of the study, the author describes and explains structural strength of European rural regions. In order to measure the structural strength of rural regions, the Structural Strength of Rural Regions Index (the SSRR index) was developed. Four indicators were selected to develop this index: GDP per capita, employment, net business creation and crude rate of net migration. In order to create the index, the TOPSIS method has been used. In the step 6 the rural regions were divided into classes based on their results using the arithmetic mean and standard deviation. The reviewer points out that the classes (I - IV) are not named precisely enough. Only two names refer to their structural dimension, and yet they are all related to it. The following classes were introduced in the study: I - structurally strong rural region, II - moderately strong rural region, III - moderately weak rural region, IV - structurally weak rural region.

The first section calculates the SSRR index for all available rural regions across the EU for each year between 2008 and 2015. As the author emphasizes this time period was chosen as it has the largest available quantity of data and presents a large enough time period to understand the dynamics of structural strength and structural weakness in rural regions in Europe. Unfortunately, the limited availability makes it possible to conduct this analysis only for 14 EU countries. Austria is an exceptional case that emerged from the analysis. In the opinion of the reviewer, the author insufficiently explained why Austria appears from this study as the structurally strongest rural area. A country-level analysis for 2015 shows that rural regions in Austria are shown to be particularly strong, 23 of the 24 rural regions in Austria are classified as structurally strong. This means that 23 of the all 25 structurally strong rural regions across the fourteen countries are located in this country. The final rural region in Austria is moderately strong, meaning that all rural regions in this country are above

average. This second section provided an analysis on the findings concerning the structural strength of the rural regions in Austria and Portugal, which differ in terms of their natural conditions, types of rural economy and institutional settings.

In the context of the previously cited results for Austria, it would be worthwhile to broaden the inference in relation to the results of the analysis carried out in this section. Table 4.7 shows the number and percentage of Austrian rural regions in each of the four classes, for example the number of structurally strong rural regions fell to a low of 3 in 2013 and 2015. The number of structurally weak rural regions was consistently 4 or 5 for every year from 2008 to 2015. There has been a slight change in the number of rural regions classified as either structurally strong or moderately strong, which was 50% or less from 2008 to 2012 but was greater than 50% from 2013 to 2015. This means that from 2008 to 2012 more than half of the rural regions in Austria were classified as moderately weak or structurally weak. This changed so that less than half of rural regions were classified as moderately weak or structurally weak from 2013 to 2015.

The fifth chapter of the dissertation deals with rural regional resilience. For measuring economic resilience there are two stages to be considered: the resistance to the initial shock and the recovery from that shock. For that reason, two indexes author used - the first, which was referred to as the resistance index, measures the reaction of rural regions to the initial shock. The second index, which was referred to as the resistance and recovery index, showed the effect of both stages of resilience on regional employment. Due to data availability in the first task was to analyse the resilience of rural regions across the EU. In order to this the two indexes, the 'resistance index' and the 'resistance and recovery index', were calculated for 327 rural regions in 22 EU countries. Out of the 27 EU countries 3 countries are not represented because they do not have any rural regions (Cyprus, Luxembourg and Malta) and two countries were dropped due to lack of data (France and Poland). It should be emphasized that the author analyzed in relation to those countries for which data were available. Polish rural regions did not resonate in this study.

The sixth chapter titled *Conclusions and Recommendations* is a specific buckle of the dissertation. In the opinion of the author the mainstream economic theories draw strong conclusions regarding regional disparities and convergence however they do not offer a clear resolution to the question which is fundamental for the current study concerning rural polarisation. There is evidence that regional disparities among rural regions is an issue in the EU and within individual countries. The author proved in the dissertation that the process of rural development is a complex and multi-dimensional issue. Using neo-endogenous rural development as theoretical framework he has created the SSSR index in an attempt to capture the structural strength of rural regions. This index took into account the complex nature of rural regions by using multiple variables (GDP per capita, employment rate, net business creation and net migration) to capture the phenomenon of rural development. This index was analysed over time for fourteen EU countries and econometric analysis was performed to analyse the socio-economic characteristics of structurally strong rural regions. This was then repeated at the national level for two EU countries; Austria and Portugal. Throughout the EU and at a national level it is evident that location is an important determinant of structural strength.

According to the author of this dissertation regions which were resilient to the financial crisis will not necessarily be resilient to the Covid19 crisis. In the opinion of the reviewer, too little time has passed since the outbreak of the pandemic COVID19, and despite the observed events in 2020 and 2021, it is too early to develop more in-depth regularities on this subject. However, one should agree this does provide a valuable opportunity for further empirical research to be undertaken regarding the determinants of economic resilience. As time progresses and more data is made available, research should focus on comparing the determinants of economic resilience to both recessions.

Despite the considerable methodological discipline of the author of the dissertation, which was recognized by the reviewer, some ordering solutions applied had an effect that increased the confusion. The reviewed PhD thesis contain a lot of repetition of the content. An example is the literal quotation of research questions. They should appear at least twice (in the introduction in the relevant subsection 1.2) and in the conclusions (6. Conclusions and

Recommendations). The third repetition, optionally, should be placed at the beginning of the chapter relating to the content covered by the research question. In this paper, research questions 1 and 3 appear six times, and question 2 - seven times. Only on this one example I will illustrate where this research question (What is the structural strength of the rural regions and how did it change over time?) is exactly the same wording - page 8: 1.2 Research Questions, p. 12: 1.4 Source Materials and Data, Research Methods and Spatial and Temporal Scope, p. 16: 2. Literature Review, p. 26: 2.2 Neo-endogenous Rural Development, p. 55: 4.1 Structural Strength of European Rural Regions. Introduction, p. 81: 4.6 Summary, p. 104: 6 Conclusions and Recommendations. This type of meticulousness is not conducive to the clarity of expression, and unnecessarily so often focuses the reader's attention on formulating a research question that is easy to find in the introductory part of the study.

One of the thematic level to which the reviewer submits critical comments is the cartographic setting of the Ph.D. dissertation. The maps were generated by GIS in the absence of reflection as to whether something could be improved. The author of the maps made them in the automatically set rectangular projection - hence the east-west extension. This map projection works only around the equator and is not suitable for Europe. It should be changed to conic projection - in ArcGIS to Equal Area Conic. The maps are actually stretched, which results from adopting a frame of reference other than usual. As a consequence of the frame of reference there is a cartographical distortion.

The linear scales are also incorrect. With such large distortions, the scale should be described, because the scale on the map gives the green light for taking measurements, and here they would be strongly distorted. Figs. 3.1 (GDP per Capita of Rural Regions in the EU), 3.2 (Employment rate of Rural Regions in the EU) - there is no justification for the adopted color scale. This is used when there is zero in the middle or, for example, the average value. And then we have a divergent scale - the brightest in the middle, dark both sides (up and down). This is how the natural increase is shown, for example, which can be positive or negative, and zero is somewhere in the middle. For the comparison, such a color

scale is fully justified in Fig. 5.1 and 5.2 (Resilience of rural regions in Europe using resistance and recovery index) because it is below and above 0.

The bibliography collected and used in the reviewed PhD thesis is sufficient and multifaceted. The author included 111 source publications in the list of bibliographies, although, according to the reviewer, there were more sources used in the study. For unknown reasons, the dissertation contains references to publications not included in the literature list. The following referenced publications are not included in the list of bibliographies - Good (1981), Tödting (1983), Harsanyi, Selten (1988), Lois-González (2007), Kilper (2009), Wink et al. (2016), Neufeld (2017). A less significant flaw that occurs in the study is that the same works are assigned a different publication date in the middle of the dissertation and in the bibliography list - for example Giannakis, E & Bruggeman A (2020) vs. (2017) or Sensier, M & Artis, M (2014) vs. (2016). This does not change the fact that, according to the title of the doctoral dissertation, the sources used take into account the theoretical and empirical achievements of authors from different parts of Europe and, of course, other parts of the world, representing various research schools and disciplines. The bibliographic recording method used in this dissertation does not raise any additional objections.

Final conclusion

Doctoral dissertation "Dynamics and Spatial Polarisation of Rural Regions in Europe. An Economic Investigation" is an original solution to the scientific problem. The author of the dissertation has demonstrated the general theoretical and methodological knowledge used within geographical sciences dealing with spatial polarisation. The author build a conceptual model of polarization of rural regions in Europe including factors are leading to polarisation and rural regional economic resilience.

The aim of the study was accomplished and the author found answers to the research questions posed. The doctoral dissertation is an interesting study on the dynamics and spatial polarization of rural regions in Europe. The theoretical knowledge allowed the author to apply the methodological assumptions in the

conducted analysis of time and space. Reviewed thesis fill the gap by researching the socio-economic characteristics that lead to polarisation between rural regions, in essence trying to understand why some rural regions are lagging while others are thriving. The presented results broaden the knowledge of the socio-economic geography and prove the ability to independently conduct scientific work.

The application dimension of Barraí Hennebry's research determines the possible use the results of the analyzes carried out in various planes of operation. The reviewed work sufficiently relates to the sphere of activity.

Taking into account the importance of the research undertaken, the cognitive and implementation values of the dissertation, good knowledge of the author in the area of the undertaken issues and the ability to obtain and use the information obtained and draw conclusions correctly, I conclude that the reviewed work fully meets the requirements for doctoral dissertations specified in statutory provisions of law laid down pursuant to Art. 190 of the Act of July 20, 2018 - Law on Higher Education and Science (Journal of Laws 2020, item 85, as amended).

I hereby apply for the acceptance of Phd thesis of MEconSc Barraí Hennebry and admitting his doctoral dissertation to public defense.



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