

OPINION

by Dr Alexander Mihailov
on the PhD dissertation by Reni Ivanova Pantcheva
entitled “Circular Economy Development in the European Union”
in professional pathway 3.8 Economics, Economics and Management
(Industry), Sofia University St Kliment Ohridski

Reason for the opinion: Ordinance ПД 38-340/28.06.2024 of the Rector of Sofia University St Kliment Ohridski Prof Georgi Valchev.

Overall characterisation of the dissertation

The dissertation work consists of a list of abbreviations, an introduction, three chapters, a conclusion, scientific contributions, a list of publications, and a list of references. The full volume of the dissertation is 155 pages. The list of references comprises 243 sources: 27 in Bulgarian and 216 in English. The dissertation includes 19 figures and 18 tables. The author has published 4 papers (1 in co-authorship) related to the topic of the dissertation, 3 of which are indexed in Scopus. Results have been reported at 4 international conferences.

Topicality of the theme

The theme of the circular economy is among the most recent themes for multidisciplinary research, which expand beyond the usual scope of economics. In such context, this relatively new area of research requires knowledge and background that go beyond the traditional methods of the discipline. The PhD student has demonstrated deep understanding of the literature development in the area.

Subject matter and scientific methods in the dissertation as a whole and by chapter

The submitted dissertation is of a predominantly empirical nature, based on concepts and models that are summarised in the literature review. Its aim is to provide econometric estimates of the effects of macroeconomic and social factors that have been found statistically significant on some of the most commonly used circular economy indicators and to analyse their influence on the circular transformation of economic systems in the European Union (EU).

The dissertation’s main thesis is that a country’s economic development, research and development investment and resource productivity significantly impact the transformation of its economic system during the process of transition to a circular economy.

The data used are sourced from Eurostat, the World Bank, the United Nations, the Confederation of European Waste-to-Energy Plants and Climate Watch. There is a thorough literature review and the data that has been collected and processed is duly described via a wide range of methods, including data visualisation, descriptive statistics, correlation analysis as well

as tests for stationarity, cointegration, Granger causality, fixed or random effects, serial correlation and cross-sectional dependence. Three methods are employed to estimate the panel regression models: ordinary least squares, fixed effects and fully modified ordinary least squares.

“Chapter 1. The Circular Economy Concept” reviews the origins and the development of the circular economy concept. Based on the many previous attempts to derive a standardised notion of the circular economy, a new definition is suggested. The chapter provides an overview of the numerous circular indicators and different monitoring frameworks with their main advantages and weaknesses.

“Chapter 2. Institutional Framework of the Transition to a Circular Economy in the EU” reviews the development of the circular economy in the EU context, focusing on the Circular Economy Action Plan and its underlying strategies and legal framework. The EU monitoring framework is reviewed as well and a comparative analysis between Bulgaria and the EU is undertaken. The framework’s strengths and disadvantages are analysed and suggestions are made with regard to its potential enhancement by additional energy, environmental, and product-life indicators.

“Chapter 3. Analysing the Impact of Macroeconomic and Social Factors on the Transition to a Circular Economy in the EU” explores three key indicators that help track and assess the transition to a circular economy in the EU. The first indicator is the recycling rate of municipal waste, the second one is the circular material use rate, a metric specifically created by the European Commission to capture what proportion of recycled resources are actually re-fed back into the economies. The third indicator is of paramount importance for the decarbonisation of the EU economies and the achievement of the European Green Deal objectives but yet not part of the EU circular economy monitoring framework. In the concluding part of this chapter the three indicators and their determinants are consolidated into a common framework applying cluster analysis. Four clusters are identified that characterise some patterns of transitioning to a circular economy in the EU. The useful insights into the drivers of the transformation open up opportunities for policy makers and business strategies to bring countries closer to the achievement of carbon neutrality goals.

Key recommendations implied by the dissertation

The dissertation arrives at some recommendations: (1) that the EU Circular Economy Monitoring Framework incorporate more energy and environmental aspects; (2) that more incentives for circular design be provided, which is a main prerequisite for waste prevention, rather than focusing on the subsequent treatment of generated waste; (3) that investments in research and development be further encouraged when they are not sufficiently prioritised in order to improve resource productivity and energy efficiency, as well as technologies related to material recovery and renewable energy; (4) to increase the recycling and circularity rates, a wide range of policy tools can be implemented, including subsidies, preferential financing of technological innovations, regulatory measures related to eco-design, environmental

taxation and raising awareness among businesses and the public, introduction of landfill bans on some waste streams so that municipalities undertake measures for separate collection and treatment; (5) to promote the renewable energy sector, various tools can also be used, such as guaranteed purchase of the renewable energy, feed-in tariffs, tax incentives and subsidies, or green finance for projects related to renewable energy sources.

Key contributions claimed by the dissertation

The dissertation claims the following contributions to the theory and practice in the field of the circular economy: (1) a new definition of the circular economy, aiming to facilitate its interpretation; (2) appropriate energy, environmental and product-life indicators suggested to address gaps and provide a better assessment of the circular economy in the EU; (3) confirmed positive influence of factors, such as economic development, research and development and resource productivity; (4) the literature review identifies as one of the most suitable circular metrics from an energy perspective to be the share of renewable energy consumption in gross final energy consumption, and the econometric analysis confirms the positive impact of factors, such as economic development, research and development and population density, along with the negative impact of trade openness and urbanisation; (5) four circular economy transition models in the EU are identified through statistical cluster analysis based on the three circular indicators and their determinants.

Assessment of the publications related to the dissertation

30 points are required from the publications related to the dissertation for the award of a PhD title. In the present case, 100 points are achieved. Three of the publications (one in co-authorship with the PhD supervisor) are indexed in Scopus. All four publications present essential ingredients of the scientific results reported in the dissertation.

Assessment of the author's separate extended dissertation summary

The author's extended dissertation summary submitted as a separate document comprises 41 pages and reflects adequately in a more general form the content and contribution of the dissertation.

Critical remarks

Human deeds always remain somewhat imperfect. Therefore, any dissertation could have been more or less improved. The aim here is not to uphold critical remarks, yet the absence of modelling within a theoretical perspective, or at least more frequent references to such works, in the empirical exercise could be stressed as the main weakness. This is my principal recommendation with regard to the future works of the candidate.

Conclusion

The clarification of concepts and the empirical results this dissertation has presented are original and constitute work along the theme and contribution

to it on behalf of the author. The text reads fluently and exposes at a good academic level the ideas, concepts, legal documents and scientific achievements discussed. It is my opinion that the dissertation meets completely the requirements of the relevant laws and regulations that apply as approved by the Council of Ministers of the Republic of Bulgaria, as well as the respective regulations of Sofia University St Kliment Ohridski. I, therefore, consider that the dissertation by Reni Ivanova Pantcheva corresponds to all requirements for the award of the title of PhD and advocate my positive recommendation for it to be awarded.

A handwritten signature in black ink, appearing to read 'A. Mihailov', with a stylized flourish extending upwards and to the right.

Reading, 31 August 2024
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