

**Summary of the doctoral dissertation written under scientific guidance of
Prof. zw. dr hab. Włodzimierz Szkutnik**

**Thesis subject:
Analysis of the income and price convergence in chosen
EU countries - econometric approach**

Adam Staszczyk

The issue of the gradual blurring of differences between the Member States of the European Union is an interesting research area, especially in the context of the effects of integration in the field of the common internal market and the monetary union. Moreover, this issue is of exceptional importance from Poland's point of view. This is due to the fact that from the point of view of comparing the level of economic development of Poland against the level of development of other European Union Member States, convergence can be associated with "catching up" with countries at a higher level of development.

The main goal of the dissertation was to compare the rate at which converging processes occur in terms of income and prices, and their mutual relations. Such a purpose of the work was motivated by the desire to answer the question whether the integration of European countries causes a faster effect in terms of equalizing income levels (increase in living standards) or in terms of equalizing price levels (increasing the cost of living).

On the way to achieving the goal, the main hypothesis (HIP0) of the work and 4 auxiliary hypotheses (HIP1-HIP4) were formulated. The main hypothesis of the thesis was formulated as follows:

The rate of income convergence (β and σ type) in the analysed group of EU Member States exceeds the analogous rate of price convergence (for the general price level and/or broken down into individual divisions of the COICOP classification).

In addition, 4 auxiliary hypotheses were formulated in the work:

- HIP1: In the surveyed group of European Union Member States, the phenomenon of β -type income convergence occurs,
- HIP2: In the surveyed group of European Union Member States, the phenomenon of σ -type income convergence occurs,
- HIP3: In the surveyed group of European Union Member States, the phenomenon of β -type price convergence for the general price level and/or broken down into individual sections of the COICOP classification occurs,

- HIP4: In the surveyed group of European Union Member States, the phenomenon of σ -type price convergence for the general price level and/or broken down into individual sections of the COICOP classification occurs,

The text begins with an introduction. The main part of the work has been divided into two main blocks: the theoretical part and the analytical part. The theoretical part consists of 6 chapters, which are ended with concluding remarks. The analytical part also includes 6 chapters. After the analytical part, a summary of the entire work was presented. In addition, after the bibliography, list of tables and figures, 4 extensive appendices have been added to the work.

The first chapter refers to the topic of economic development and the relationship between this concept and economic growth. In the context of economic growth, the GDP indicator was described. In addition, the criticism of the GDP indicator and alternative methods of measuring economic growth, recently gaining popularity in the literature, were presented.

In the second chapter of the theoretical part, attention was focused on the origins of the issue of income convergence and the convergence hypothesis. Selected models of economic growth were presented. Particular emphasis was put on the Solow model, which is the basis for the formulation of the convergence hypothesis. In addition to the Solow model, other neoclassical models of economic growth are also described, which are extensions of the Solow model in its basic version. At the end of the chapter, selected endogenous models are briefly described, with particular emphasis on their connection with the issue of income convergence.

The third chapter is devoted to the description of the concept of convergence and the characterization of its various types, which have been formulated over many years of research. First, the concept of "convergence" was defined and described, and then 7 ways of defining this term in strictly economic meaning – which can be found in the literature – were systematically described. The most important (from the point of view of the hypotheses presented in the paper) types of convergence described here are the β -convergence and the σ -convergence.

The fourth chapter presents the theoretical foundations of price convergence, e.g. the law of one price. Since the occurrence of convergence was analysed in a specific group of countries – in the group of European Union Member States – a part of this chapter is devoted to European integration and the consequences that this integration (especially the common internal market and monetary union) may have on the price levels observed in individual Member States.

The penultimate chapter of the theoretical part – Chapter 5 – contains a detailed description of the methods used in the study of different convergence types examined in the analytical part, i.e. convergence of the β , σ and additionally γ type. In the case of β -type convergence, two types of the econometric models were presented. One which can be estimated on the basis of cross-sectional data and the other more advanced models which are to be estimated on the panel data.

The theoretical part ends with a chapter on parallel convergence. Parallel convergence is a relatively new concept and differs slightly from the classical approaches described above – studied since the 1980s. Therefore, this chapter presents both the definition of this concept and the methods for examining its occurrence in a holistic way.

The seventh chapter, which begins the analytical part, is devoted to the description of research hypotheses and the connection of these hypotheses with specific methods allowing for their

verification. Sources of data used in the study are quoted and described here. In particular, a source of data on the level of Gross Domestic Product (GDP), comparative price level (CPL) and control variables used in the study of the conditional β -convergence. The exact values on the basis of which the research presented in the further part of the study was carried out are included in Appendix A.

The eighth chapter describes the literature surveys devoted to the topic of convergence which were not addressed in the earlier stages of the dissertation. Mentioned in this chapter are mainly those surveys which are related to the subject of the work, i.e. related to income or price convergence. The list of items includes both Polish and English-language papers.

The ninth chapter is devoted to the analysis of the development over time of the two main measures used in the research presented later in the text. The shaping of GDP per capita was presented in a visual way along with the evolution of the CPL index (both for the general price level and for selected sections of the COICOP classification) in the surveyed group of European Union Member States in the years covered by the survey, i.e. 2004-2019. This chapter contains the justification for excluding Ireland and Luxembourg from further analysis.

In the next chapter – Chapter 10 – the results obtained in the study concerning the income convergence of type β , σ and γ were presented. The study was conducted based on the development of the GDP per capita indicator for 26 European Union member states between year 2004 and 2019. In the case of β -convergence, both conditional and unconditional convergence were examined. The considerations presented in this chapter are closely related to the previously defined auxiliary hypotheses (HIP1-HIP2). Detailed estimates of the structural parameters of the relevant models described in this chapter are provided in Appendix B.

Chapter eleven presents considerations on the price convergence. The calculation results presented in this chapter allow for the verification of two auxiliary hypotheses of the dissertation: HIP3 and HIP4. Similarly to Chapter 10 this chapter presents the results of the research on the occurrence of β -type convergence (conditional and unconditional), σ -type and additionally γ -type convergence. The study of the occurrence of price convergence was carried out both for the general level of prices and broken down into 12 main sections of the COICOP classification. For the sake of transparency, the partial results of the calculations presented in this chapter were moved to Appendix C.

The last chapter presents the results of the study of the parallel convergence. The two previous chapters referred to income and price convergence, but the occurrence of both of these phenomena was examined independently. Meanwhile, chapter twelve presents the results of a simultaneous study of income and price convergence using the concept of parallel convergence described in chapter six. The presented results describe unconditional β -type parallel convergence and unconditional σ -type parallel convergence. This chapter, by comparing the pace of income and price convergence, directly refers to the hypothesis of the main dissertation (HIP0). Detailed results, which are described in this chapter, are provided in Appendix D.