

# Convergence of Croatia towards the European Union

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*Source / Izvornik:* **International Odyssey Conference on Economics and Business, 2024, 217 - 228**

**Conference paper / Rad u zborniku**

*Publication status / Verzija rada:* **Published version / Objavljena verzija rada (izdavačev PDF)**

*Permanent link / Trajna poveznica:* <https://um.nsk.hr/um:nbn:hr:277:248267>

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*Download date / Datum preuzimanja:* **2025-02-22**



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# CONVERGENCE OF CROATIA TOWARDS THE EUROPEAN UNION

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## Abstract

*The main objective of this paper is to examine the real convergence in Croatia towards the European Union (EU27, EU14, and EU10) in the 1995-2022 period and in Croatia's first 9 years of membership, and second how the COVID-19 pandemic affected that process. Additionally, the aim is to test the efficiency of Croatia's achievements regarding the EU10 in their first 9 years of membership and in the 1995-2022 period. The main problem in the paper is the economic disparity in the standard of living and wealth between Croatia and EU member states, and the absence of a consensus among economists on convergence/divergence processes in the literature. An additional problem is that most papers study convergence based on PPP-based GDP per capita, and a more accurate measure of the material well-being of households is PPP-based actual individual consumption (AIC) per capita. The inclusion of AIC per capita in the analysis is the added value of this paper. For the analysis data from the World Bank database were used and converted into the per capita measure. The research results indicate that Croatia has narrowed the income gap regarding the EU27 and EU14, but not with EU10 in the 1995-2022 period and in its first 9 years of membership. The COVID-19 pandemic did not affect that process. The convergence process was less efficient in Croatia than in EU10 in the whole 1995-2022 period and in their first 9 years of membership. The main implication of the paper is the confirmation of the convergence regardless the macroeconomic indicator used and a confirmation of stronger convergence in EU10 than in Croatia. The results are important because they draw attention to the lacked growth-enhancing economic policies and structural reforms that improve competitiveness, productivity and accelerate the convergence in Croatia.*

**Keywords:** economic convergence, economic integration, European Union, Croatia, transition countries

**JEL classification:** F02, F15, F43, O11, O47

## Introduction

The European Union (EU) uses a third of its budget (European Union, 2022) to finance cohesion policy, which is dedicated to economic, social, and territorial cohesion, balanced economic growth, and upward economic convergence (Eurofound, 2021). Therefore, the existence of economic differences is contrary to the purpose of European integration and the concept of solidarity and economic prosperity. According to a large number of studies (literature review), convergence between member states has been achieved during the last decades, however, the global financial crisis in 2008 and the global pandemic in 2020 had a negative influence on convergence trends (Jeleč Raguž and Bajt, 2023).

The expectations of countries accessing the EU are economic growth and reduction of economic inequalities. In these endeavors they are helped by numerous EU funds, which are mostly intended for less developed EU regions. The use of such funds, from which numerous projects are financed, can help in those efforts. Failure to achieve such goals leads to concerns and feelings of injustice and unfairness among citizens, which encourages Euroscepticism and threatens the credibility of the EU.

Croatia joined the EU on July 1, 2013, and in 2023 have celebrated its tenth anniversary of EU membership. This paper is intended to serve two goals: first – is there a real economic convergence between Croatia and the EU (EU27, EU14, and EU10), and second how has the COVID-19 pandemic affected that process? Additionally, the goal is to test how efficiently has Croatia used its first 9 years of EU membership in reducing the income gap with EU14 in comparison with the achievements of EU10 in their first 9 years of membership. The main question is how Croatia fits in the convergence process after almost a decade of EU membership, on which little literature has been published. Croatian convergence is not sufficiently explored in domestic economic literature, especially when it comes to comparison of the effectiveness of convergence in the first almost a decade of membership with transitional countries. In addition, there is no analysis in the literature according to the PPP-based AIC per capita, which more accurately reflects the differences in the achieved level of material well-being of households than GDP per capita.

According to the goals, two main hypotheses are defined in the paper. First hypothesis (**H1**): *Croatia managed to reduce the income gap with the EU27 measured by PPP-based GDP per capita and AIC per capita in the 1995-2022 period with special emphasis on its first 9 years of membership.* The second hypothesis (**H2**) assumes that: *the income gap between Croatia and EU is impaired during the Covid-19 pandemic.* Additionally, the effectiveness of Croatian achievements in the 1995-2022 period with special emphasis on its first 9 years of membership, will be compared with the achievements of EU10 in their first 9 years of membership.

For testing the hypothesis, data from secondary sources of the World Bank international database were used, whereby the data were converted into a *per capita* measure divided by the midyear population since the PPP-based AIC indicator does not exist in a *per capita* form. For testing the hypothesis, descriptive statistics were used (standard deviation, and coefficient of variation as standard measures of sigma convergence).

The paper is structured into four chapters. In addition to the introduction, the next chapter presents the theoretical framework of economic convergence and an overview of scientific and professional literature. The third chapter presents the methodological framework of the research and its results. The last chapter presents the main concluding considerations and implications for Croatia.

## Literature review

In the economic context, the term economic convergence means a process in which the economic differences between the most developed and the least developed countries are reduced according to the most important macroeconomic indicators. On the other hand, if countries diverge according to the macroeconomic indicators, it is known as a process of economic divergence.

A review of literature related to economic convergence, mainly of European countries, revealed the existence of controversial research results. Some authors managed to prove the existence of convergence, mostly among European, mainly EU countries (Matkowski & Próchniak, 2007; Vojinović & Oplotnik, 2008; Raiser & Gill, 2012; Tomljanović, 2019; Marelli, Parisi & Signorelli, 2019; Visković, Burnać & Ramljak, 2020; Eurofound, 2021); European regions (Chocholatá & Furková, 2016; Goecke & Hüther, 2016; Borić, 2017); federal states of the US (Barro-a & Sala-I-Martin, 1991) and among selected countries at the global level (Barro & Sala-I-Martin, 1995; Cole & Neumayer, 2003; Çamurdan & Ceylan, 2013). Other authors claim that there is not enough data on the existence of convergence after the last two enlargements between the East and the West of Europe (Borsi & Metiu, 2013; Bićanić & Deskar-Škrbić, 2019, p. 18) or at the global level (Pritchett, 1996; Bogunović & Vukoja, 2008). There is also a third group of authors who conclude that convergence took place in some periods, while in others divergence of GDP or income *per capita* has happened (Matkowski, Próchniak & Rapacki, 2016; Chocholatá, 2018; Radosavljević, Babin, Erić & Lazarević, 2020; Jeleč Raguž & Bajt, 2023). However, the largest number of authors are those who managed to prove convergence in a longer period of observation, with certain shorter periods of deviation from the long-term convergence trend. By reviewing the literature, it can be pointed that the convergence and divergence process is still incomplete and depends exclusively on countries observed and above all on the periods the analysis refers to.

Whether the convergence of Croatia towards the EU in its almost a first decade of membership exist is a topic that is not sufficiently represented in Croatian economic literature. Buturac (2019) investigated the convergence of Croatia towards the EU countries throughout the 2000-2016 period based on four (4) macroeconomic variables: GDP *per capita*, nominal gross wages, unemployment rate, and public debt. The results indicated different directions and dynamics among variables as well as during the observed period. By 2008, convergence was confirmed according to GDP *per capita* and nominal gross wages, however, this process was stopped in 2008, after which divergence processes began. No convergence was found for the remaining variables. Bilas (2005) examined the convergence of transition countries towards the EU. The Deka Convergence European Indicator (DCEI) was used as a convergence indicator. The comparison was made for Croatia and transition countries throughout the 2002-2004 period. It follows that Croatia is converging more towards the underdeveloped countries, such as Romania and Bulgaria and lags behind the most in real convergence (has a low GDP *per capita*, a high unemployment rate, and a high share of agriculture in GDP). What is worrisome according to the presented research results is that Croatia is not following transitional countries in its development and that is why Croatia is lagging, resulting in divergent trends (Bilas, 2005, p. 235). Puljiz and Rukavina (2022) proved the convergence of personal incomes at local and county level in Croatia in the 2002-2018 period, however, according to GDP per capita, the divergence process was proved.

Croatian convergence is still not sufficiently explored in domestic economic literature, especially when it comes to comparison of the effectiveness of convergence in the first almost a decade of membership with transitional countries. In addition, there is no analysis in the literature according to the PPP-based AIC *per capita*, which more accurately reflects the differences in the achieved level of material well-being of households than GDP *per capita*.

In the literature some papers with similar analyses for other countries can be found, such as for Malta and Poland. Matkowski, Próchniak, and Rapacki (2016) investigated income convergence in Poland regarding the EU. The results confirm the convergence between EU11 and EU15 in the 1993-2015 period. The paper proved beta convergence, which implies

convergence within EU countries, but also sigma convergence, which implies convergence between EU11 and EU15. In the observed period, Poland converged towards all EU countries.

Vella (2015) confirmed that poor countries (EU13) grew faster than rich countries (EU15) in terms of *per capita* income in the 2000-2012 period. However, the speed of convergence for Malta is slower than EU average. The reason for slower convergence rates in Malta's case is because Malta possibly has a narrow income gap to its low steady-state level (Vella, 2015: 240).

## Convergence in Croatia and the European Union

### *Research methodology*

In literature, in case of both nominal and real convergence, we can usually see two different concepts used for determining the rate of convergence:  $\beta$  (beta) and  $\sigma$  (sigma) convergence.

According to beta ( $\beta$ ) convergence, less developed countries catch up with more developed countries due to higher rates of economic growth. It implies the existence of a negative relationship between the initial level of GDP per capita (or some other macroeconomic indicator) and its long-term growth rate. Therefore, according to the implications of beta convergence, poorer countries grow faster than rich ones until they catch up in development.

According to sigma ( $\alpha$ ) convergence, the dispersion of countries according to the level of development, measured by various macroeconomic indicators (GDP per capita, GNI per capita, income, etc.), decreases over time. The concept of  $\sigma$ -convergence implies the existence of convergence if the gap between two countries (or groups of countries, regions) according to selected economic indicators decreases over time. Therefore, if there is a GDP per capita gap reduction among different countries in a certain period, sigma convergence exists.

In this paper, focus is on sigma convergence of PPP-based gross domestic product (GDP) per capita and actual individual consumption (AIC) per capita for Croatia and EU27, Croatia and EU14, and Croatia and EU10. The reason for using sigma convergence is because it enables a comparison between two countries or a group of countries, while beta convergence tests convergence within a specific group of countries, which is not the subject of research in this paper.

This paper aims to assess income convergence, measured by PPP-based GDP *per capita* and AIC *per capita*, among Croatia and EU27, Croatia and EU14, and Croatia and EU10. The aim is also to compare the achieved rates of Croatian progress in its first 9 years of membership with the progress achieved by the transitional countries (EU10). New EU member states are Bulgaria, Cyprus, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Malta, Poland, Romania, Slovak Republic, and Slovenia. They all together are part of EU13. Since the analysis aims to include only transitional countries, Cyprus and Malta were excluded from EU13 as well as Croatia. The EU14, on the other hand, includes all the old member states that joined the EU before the great enlargement started in 2004. Before Brexit it was EU15.

Two main hypotheses are defined in the paper. First hypothesis (H1) Croatia managed to reduce the income gap with the EU27 measured by PPP-based GDP *per capita* and AIC *per capita* in the 1995-2022 period with special emphasis on its first 9 years of membership. The second hypothesis (H2) assumes that the income gap between Croatia and the EU is impaired during

the Covid-19 pandemic. Additionally, the effectiveness of Croatian achievements in the 1995-2022 period with special emphasis on its first 9 years of membership, will be compared with the achievements of EU10 in their first 9 years of membership.

To compare the achieved standard of living two main macroeconomic indicators were used. The first is GDP *per capita* adjusted for differences in price levels, expressed by purchasing power parity (PPP) in constant 2017 international dollars. Namely, PPP-based GDP *per capita* is usually used to compare living standards or to monitor economic convergence or divergence among countries. In most papers that study economic convergence/divergence, GDP *per capita* was used. However, the main disadvantage of that indicator is the inclusion of certain components and transactions that are arguably less relevant when valuing a household's current material well-being. For example, the GDP measure assigns high values to income-rich economies, such as investment hubs or resource-based countries, where household consumption accounts for a relatively small share of total GDP (The World Bank, 2023c).

That is the main reason why, in addition to GDP *per capita*, PPP-based actual individual consumption (AIC) *per capita* is used in the analysis of the convergence. Generally, AIC more accurately measures population's standard of living, and GDP measures the strength of the economy. According to the World Bank, PPP-based AIC *per capita* provides a more accurate measure of the material well-being enjoyed by households in economies across the world. AIC is the sum of the individual consumption expenditures of households, nonprofit institutions serving households (NPISHs), and government (The World Bank, 2023c). It accounts for goods and services consumed by households, irrespective of whether they were purchased and paid for by households directly, by government, or by nonprofit organizations (The World Bank, 2023c). As there is no data for PPP-based AIC *per capita*, data for PPP-based AIC (Households and NPISHs Final consumption expenditure, PPP (constant 2017 international \$)) was taken from the World Bank database, and divided by the midyear population (according to the World Bank data) to obtain a *per capita* measure. So, for each country and each year, the value of the PPP-based AIC (in constant 2017 international dollar) is divided by the number of inhabitants in the middle of that year.

The paper will analyze and test the existence of convergence using the PPP-based GDP *per capita* and PPP-based AIC *per capita*, whereby the analysis according to the second indicator represents the added value of the paper. For testing the hypothesis, descriptive statistics was used and Microsoft Excel. The existence of the convergence/divergence process will be examined by sigma convergence, which is usually measured by standard deviation and coefficient of variation.

### **Research results**

According to the goal of the paper, the values of PPP-based GDP and AIC *per capita* for the 1995-2022 period, including 1995, 2004 (year of great enlargement), 2013 (Croatian accession to the EU), and 2022 are presented in this Chapter. Table 1 indicates PPP-based GDP *per capita* and Table 2 the PPP-based AIC *per capita* in EU14 and transitional countries (EU10 and Croatia).

Table 1: Relative Development Levels in Transitional and EU14 Countries, 1995-2022 (PPP-based GDP per capita, EU14 = 100)

Country	1995	2004	2013	2022
EU14	100.00	100.00	100.00	100.00
Bulgaria	29.87	28.36	38.29	46.25
Croatia	39.65	47.28	48.90	58.66
Czech Republic	59.83	59.08	68.16	71.84
Estonia	33.47	49.04	59.79	65.22
Hungary	43.67	48.35	51.30	60.78
Latvia	25.24	37.60	50.05	56.44
Lithuania	27.97	39.79	57.89	68.26
Poland	32.60	37.67	51.62	63.44
Romania	32.03	33.14	44.74	56.44
Slovak Republic	34.85	38.98	54.11	57.19
Slovenia	56.47	62.18	65.27	72.72

Source: author's own work based on the World Bank data (2023a).

Croatia according to GDP *per capita* in the 1995-2022 period managed to reduce gap with EU14 by 19%, and EU10 reduced gap with EU14 on average by 24.23%. Croatian success seems optimistic until we compare it with the EU10. Furthermore, in 1995 Croatian GDP *per capita* at PPP was higher than in most transitional countries (seven of them), while in 2013, the year of Croatian accession, it was higher only than in Bulgaria and Romania. Transitional countries initially reduced the gap with Croatia and then exceeded it. For example, in 1995 Lithuania was at the level of 70.54% of Croatia's GDP *per capita* at PPP, while in 2022 it exceeded Croatia's GDP *per capita* (PPP) by 16.36%. It is similar in other transitional countries. Table 1 indicates the most successful in catching up with the EU14 countries in the 1995-2022 period was Lithuania (gap narrowing by 40.29%), followed by Estonia (31.75%) and Latvia (31.20%), while the least successful were the Czech Republic (12.01%), Slovenia (16.25%), Bulgaria (16.38%), Hungary (17.11) and Croatia (19.01%).

Comparing the efficiency of reducing the gap with the EU14 in their first 9 years (9.5) of membership, the EU10 reduced the gap on average by 10.70% (2004-2013), while Croatia's gap reduction was 9.76% (2013 -2022), which indicates Croatian's lower efficiency.

Regarding the PPP-based AIC *per capita* (Table 2), EU10 managed to narrow its gap towards the EU14 by 37.39% (1995-2022), while Croatia managed to reduce it by 26.85% (1995-2022), which also indicates lower efficiency in Croatia than in EU10 countries. In its first 9 years of membership, Croatia managed to reduce the gap by 15.07% (2013-2022), and EU10 by 11.38% (2004-2013), which indicates that Croatia has higher efficiency only according to AIC *per capita* in its first 9 years of membership.

It is worth mentioning that the gap between transitional and EU14 countries generally is lower according to the AIC *per capita*, which indicates that the gap in standard of living among citizens is less than the gap in strength of the whole economy, since AIC *per capita* is a better measure of the population's standard of living, comparing to the GDP *per capita* which measures the strength of the whole economy.

Table 2: Relative Development Levels in Transitional and EU14 Countries, 1995-2022 (PPP-based AIC per capita, EU14 = 100)

Country	1995	2004	2013	2022
EU14	100.00	100.00	100.00	100.00
Bulgaria	36.28	34.18	47.86	68.28
Croatia	45.25	57.32	57.03	72.10
Czech Republic	54.63	60.15	66.93	72.17
Estonia	28.78	47.94	59.30	74.39
Hungary	44.97	53.94	51.27	69.29
Latvia	29.96	42.52	60.67	76.20
Lithuania	31.20	49.48	71.07	90.74
Poland	39.96	49.42	64.49	82.14
Romania	26.12	34.91	50.40	80.16
Slovak Republic	39.60	46.68	57.31	69.37
Slovenia	63.17	66.83	70.54	85.84

Source: author's own work based on the World Bank data (2023b).

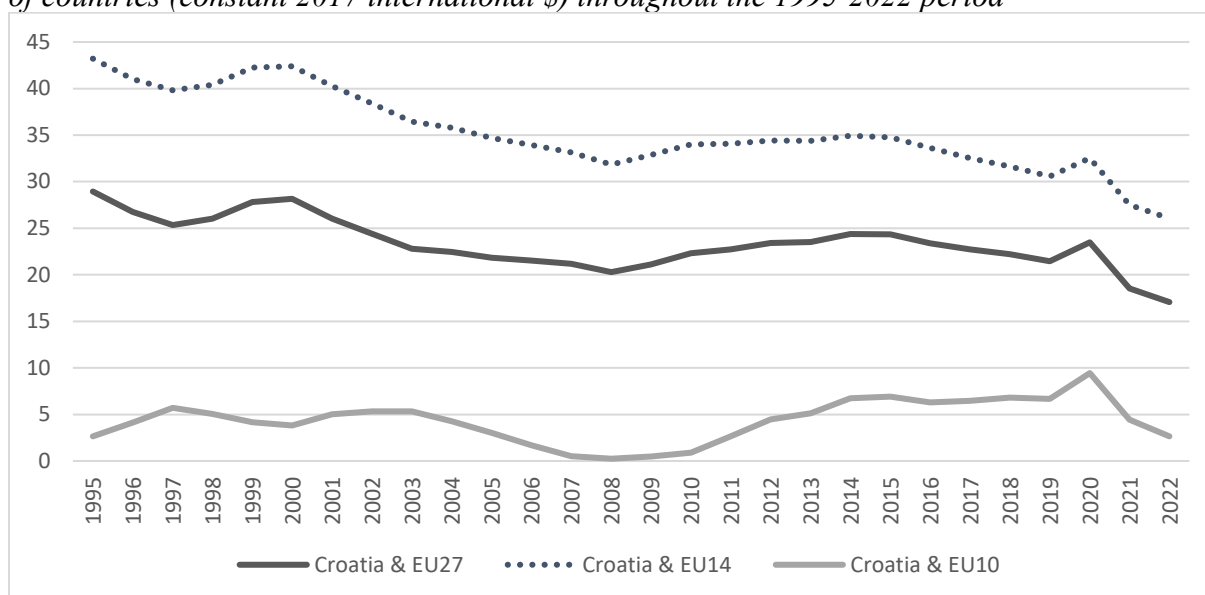
### ***Sigma convergence***

Sigma convergence occurs when the dispersion of GDP *per capita* (PPP) or another indicator declines over time. Income dispersion can be measured in several ways, the most common is the coefficient of variation (CV) and standard deviation ( $\sigma$ ). If the value of standard deviation decreases over time, it follows that absolute differences in incomes of countries decrease, which is usually proof of the convergence. And vice versa, whereby the growth of standard deviation over time implies divergence. Another way of measuring convergence is the coefficient of variation, which is calculated by dividing the standard deviation by the arithmetic mean of the sample, multiplied by 100. If its value decreases over time, it indicates convergence, while divergence means the opposite. At the same time, in the analysis, greater attention is paid to the direction dynamics, not to the absolute value of the indicators.

The existence of sigma convergence will be calculated using the coefficient of variation of PPP-based GDP *per capita* and PPP-based AIC *per capita*, all expressed in purchasing power parity (PPP) in constant 2017 international \$ in the period 1995-2022. Figure 1 indicates the CVs representing the deviation of GDP *per capita* (PPP) from the average (arithmetic mean) expressed as a percentage. It was calculated for Croatia and EU27, Croatia and EU14, and Croatia and EU10. The comparison should reveal the dynamics of the convergence process.



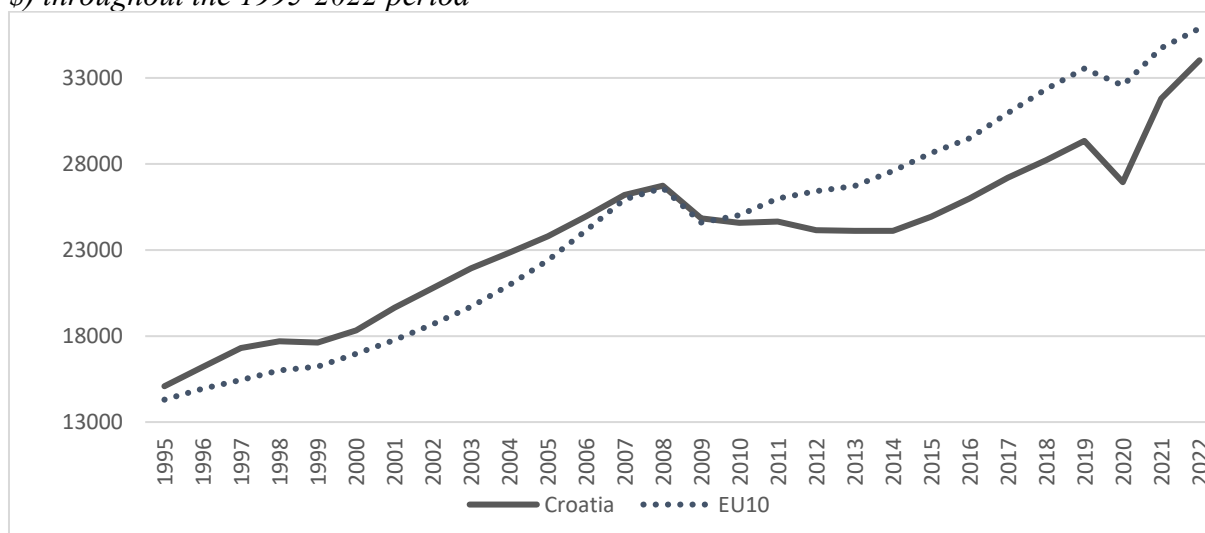
Figure 1: Sigma convergence of GDP per capita at PPP among Croatia and selected EU groups of countries (constant 2017 international \$) throughout the 1995-2022 period



Source: author's own work based on the World Bank data (2023a).

As data in Figure 1 indicates, Croatia has narrowed the GDP *per capita* gap according to the EU27 and EU14. The most pronounced is the reduction of the gap between Croatia and EU14. However, the GDP *per capita* gap among Croatia and EU10 has increased over time. In 1995 Croatia had a higher GDP *per capita* than the average of the transitional countries, but in 2010, the average of the transitional countries exceeded the Croatian GDP *per capita*. Such a trend continued until recently. In 2022, the average of transitional countries still exceeds Croatian, but the gap has slightly narrowed. The GDP *per capita* gap between Croatia and EU10 is also visible in Figure 2.

Figure 2: GDP per capita at PPP in Croatia and EU10 (average) (constant 2017 international \$) throughout the 1995-2022 period

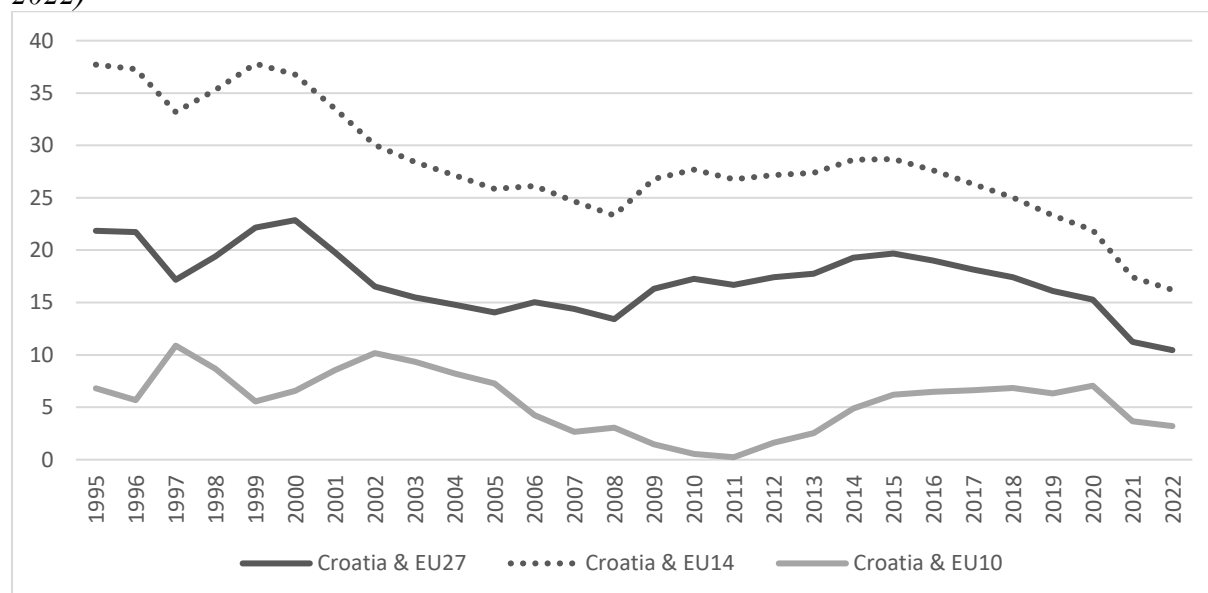


Source: author's own work based on the World Bank data (2023a).

Figure 2 indicates that Croatia is lagging behind the EU10 countries. The economic crisis in the 2009-2015 period 'cost' Croatia considerable divergence compared to the transitional countries.

Another data used in this paper for testing the convergence/divergence trends is AIC *per capita* PPP (constant 2017 international dollar). Figure 3 indicates the results of sigma convergence. Data for AIC *per capita* are calculated by taking the World Bank's data for AIC at PPP (constant 2017 international dollar) divided by mid-year population for each country (World Bank data) to obtain a *per capita* measure. Then, the average for EU27, EU14, and EU10 was calculated.

Figure 3: Sigma convergence of PPP-based actual individual consumption (AIC) per capita (constant 2017 international \$) between Croatia and selected groups of EU countries (1995-2022)



Source: author's own work based on the World Bank data (2023b).

According to the coefficient of variation based on AIC *per capita* at PPP, the convergence process is also evident. It started in the early 2000s and was disrupted by the global financial crisis, which started the divergence process between Croatia and the EU. With Croatia's exit from the economic crisis that lasted for 6 years (the longest in Europe), the process of convergence started again, which is not threatened by the COVID-19 pandemic. It affected the convergence between Croatia and EU10, but in 2021 the convergence process continued again. In 1995 the standard deviation between Croatia and EU27 was 21,85 percentage points of the arithmetic mean (average) of AIC *per capita* at PPP, while in 2022 it was 10,46 percentage points. The deviation of AIC *per capita* from the average decreased by 11,39 percentage points, over 27 years. The results are very similar to the results of the CV based on GDP *per capita* at PPP. However, the research results indicate that the disparities according to the AIC *per capita* at PPP are less pronounced than regarding the GDP *per capita* at PPP. Also, the convergence process was more significant when it came to the AIC *per capita* than GDP *per capita*.

## Discussion and implications

Considering the present integration processes, the topic of economic convergence is extremely popular, since the expectations of countries joining the EU are high in terms of narrowing the income gap with more developed countries.

The main goal of this paper was to research how Croatia fits in the convergence processes after almost a decade of EU membership, on which little literature has been published. The goal was

to explore whether Croatia's expectations of EU membership have been realized and to compare Croatia's convergence experiences with those of the transitional countries. The paper states two hypotheses:

**H1:** *Croatia managed to reduce the income gap with the EU27 measured by PPP-based GDP and AIC per capita in the 1995-2022 period with special emphasis on its first 9 years of membership*

**H2:** *the income gap between Croatia and EU is impaired during the COVID-19 pandemic.*

Additionally, the effectiveness of Croatian achievements in the 1995-2022 period with special emphasis on its first 9 years of membership, is compared with the achievements of EU10 in their first 9 years of membership.

The inclusion of Croatia in the convergence analysis towards the EU27, EU14, and EU10, the comparison of Croatian achievements in its 9 years of membership with the experiences of transitional countries, and the inclusion of the PPP-based AIC *per capita*, as a more accurate measure of material well-being of households, is the added value of this paper.

The research results indicate that Croatia has narrowed the gap according to the EU27 and EU14, but not with EU10, in the 1995-2022 period and in its first 9 years of membership, according to both indicators. The convergence process was more efficient regarding the PPP-based AIC *per capita* than GDP *per capita*, with same trends. The COVID-19 pandemic did not affect the convergence process. According to that, the first hypothesis of the paper was confirmed, and the second hypothesis not. In addition, according to PPP-based GDP *per capita*, the gap reduction was more efficient in EU10's first 9 years of membership than in Croatia's, which is not the case according to AIC *per capita*.

In comparison with EU14, the economic convergence for both Croatia and EU10 has occurred. This indicates the stimulating influence of EU membership on economic growth and development. Positive expectations of the increasing scope of economic freedom, the impact of the single market, common policies, especially cohesion policy, EU funds, and direct foreign investments have at least at some point come true. One of the main reasons for convergence are EU funds as a source of financing for numerous investments in less developed parts of the EU. They are one of the reasons why we have convergence towards the EU14, old and developed member states, which are smaller beneficiaries of EU funds, while we do not have convergence towards the EU10, which are also major beneficiaries of EU funds. However, the differences between the member states still exist, they are quite large, and a regional/cohesion policy is still needed, to further narrow the income gap between rich and poor member states.

Our results draw attention to the lack of growth-enhancing structural reforms in Croatia, which represents a potential danger for future growth rates and convergence. It follows that EU membership and single market are not sufficient for faster economic convergence. Countries need urgent structural reforms that improve competitiveness, and productivity, such as investments in R&D, innovation, education, tax reforms, demographic changes, human capital, FDI (domestic and foreign), trade openness, quality of government, quality of institutions (for example control of corruption, government effectiveness, regulatory quality, rule of law, easy of doing business, property rights).

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