

Economic and Social Cohesion in the European Union: An Empirical Analysis

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Abstract

Since the establishment of the European Economic Community, decision-makers have strived to find the optimal model of development, oscillating between economic and social cohesion and the configuration of poles of excellence. Although more and more analysts are recommending a focus on competitiveness, the remaining development gaps in the European Union require the reconsideration of the strategic objective of economic, social and territorial cohesion. On the background of the economic, financial and more recently, sanitary and geopolitical crises, solidarity was reaffirmed as a key objective of the Community and preserving the unity between Members has become more important than ever. In this paper, the authors assess some specific facets of economic and social cohesion in the European Union between 2000-2020, trying to have a complementary perspective on prosperity and wellbeing. In order to clarify some analytical and methodological dilemmas, we have used the instruments absolute and conditional β -convergence and focused on two main indicators: GDP per capita and Actual Individual Consumption per capita. Estimating β -convergence on cross-sectional regressions, we have illustrated that the initially least developed Members experienced higher GDP and Actual Individual Consumption per capita growth rates between 2000 and 2020 compared to the wealthy Members. Moreover, we have estimated conditional β -convergence using panel data and seemingly unrelated regressions and examined the influence of macroeconomic and social variables on prosperity and welfare gains at Community level. Our study suggests that increasing the level of investment, percentage of labor force with advanced education and real labor productivity has positively influenced the GDP per capita and Actual Individual Consumption per capita growth rates in the European Union. However, the Covid-19 pandemic negatively influenced the economic and social cohesion, calling into question the capacity of the European Union to achieve this objective in the short term.

Keywords

Convergence; solidarity; economic and social cohesion; competitiveness; β -convergence; Covid-19 pandemic

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Introduction

The regional integration process in Europe, advancing from the stage of customs union to that of Economic and Monetary Union, solved some problems, but obliged decision-makers and businesses in European Union to cope with a paradigm shift from war and pauperism to collaboration and prosperity, opening a new chapter for the Member States. Even if, given most of the macroeconomic indicators, European integration can be considered a success story, which changed the European destiny, as well as the global economic and political order, there are still a number of threats, and some strategic opportunities are being missed. Consequently, some of the European Union's economic potential is not being fully realized what makes that this global economic actor to not manage complex challenges that has threatened the regional stability.

In this paper, we have tested the hypothesis that there is an important change in the pan-European economic and social landscape at the beginning of the 21st century, considering that all those involved in an turbulent

economic and political environment need to answer the question if the European group can assure appropriate level of cohesion between its 27 Members. In order to determine if the European Union has managed to come closer to the objective of economic and social cohesion, the paper is based on the methodology proposed by Barro and Sala-i-Martin (1992): absolute and conditional β -convergence. We have expanded the scope of analysis by taking into consideration besides the level of GDP per capita which is representative for economic cohesion, the Actual Individual Consumption (AIC) per capita, a variable which is suggestive for the material wellbeing of the European households, thus for social cohesion. Moreover, we have analyzed the most relevant correlations and causalities between the Covid-19 crisis and economic and social cohesion in the European Union by including a dummy variable in the estimation of conditional β -convergence. Computing absolute β -convergence on cross-sectional regressions, we have found evidence in favor of the “*iron law of convergence*” (Barro, 2012), illustrating that the average catching-up speed in the European Union was 2.4% between 2000 and 2020. Furthermore, our paper confirms that the initially least developed Members from Central and Eastern Europe experienced a higher speed of improvement both in terms of GDP per capita and AIC per capita compared to the wealthy Members. Complementary to absolute β -convergence, we have determined the influence of macroeconomic variables on GDP per capita and AIC per capita between 2000 and 2020 using panel data and seemingly unrelated regressions. Our paper suggests that a high percentage of investment (Próchniak, 2011), labor force with advanced education and real labor productivity enhanced the catching up speed in the European Union both in terms of GDP per capita and the AIC per capita. In contrast, the empirical study suggests that a high percentage of governmental debt hampered the economic and social advance between 2000 and 2020. Moreover, the estimation confirms the negative impact of the Covid-19 pandemic on the annual growth rates.

The remainder of the study is structured as follows. The next section explains the concept of economic and social cohesion, bringing to the fore the main findings of the empirical studies focused on the European Union. Our research is continued with an empirical study, section 3 comprising the database and the methodology used in order to assess economic and social cohesion. Section 4 describes the results of the analysis based on absolute and conditional β -convergence. Lastly, we have summarized the main findings, presenting policy implications and suggesting future directions of research.

1. Review of the scientific literature

As the process of economic integration at Community level advanced from the stage of customs union to that of Economic and Monetary Union, from six to 28 (and starting with 2020, 27) component countries, the subject of economic, social and territorial cohesion has become increasingly debated in academia, European decision makers also trying to find the appropriate balance between competitiveness and convergence in order to merge the interests of all its Members. The theoretical studies, but also empirical research coupled with the programmatic documents adopted by supranational bodies, suggest that economic and social convergence will remain for years to come one of the European Union's key promises.

In the political discourse, cohesion is often synonymous with convergence, aiming the reduction of economic disparities between Member States and the catching-up of the least developed regions. From another point of view, the experts of Eurofound (2018) make a distinction between the two concepts, considering that the term of convergence refers to the process of narrowing the gaps, while cohesion is a status, aimed to be achieved by the European Union. Moreover, cohesion is referring to the European Union's capacity to maintain unity between Member States, but does not necessarily imply convergence, being essential in order to finally reach to objective of cohesion (Eurofound, 2018). In addition, social cohesion has become popular in the academic literature and public speeches, in order to reflect the objectives of European Union. According to Chan et al. (2006), the concept of social cohesion can be analyzed from the perspective of social sciences and public policy guidelines. From an academic perspective, social convergence is often analyzed in relation to social integration, stability, and disintegration. In the field of public discourse, social cohesion was brought to the fore through the policies and objectives of the European group, focused on promoting the principle of diversity and increasing labor mobility (Chan et al. 2006). According to Jenson (2010), social cohesion has become a debated subject in OECD, the leaders identifying the danger of sectorial transformation to cohesion. Complementary, the European Union stated social cohesion, together with economic cohesion as key objectives, aimed to be achieved through new forms of social policies and multi-layer governance, which involved the active participation of citizens. The starting point of the empirical studies in the field of convergence is represented by the economic growth theories, developed in the second half of the 20th century. The exponents of the neoclassical growth model, Solow (1956) and Swan (1956), estimated the economic growth as a function of capital and labor, with the technology being an exogenously determined factor. In this framework, poor

economies experienced higher growth rates than advanced economies, based on the higher returns on capital. According to the neoclassical growth model, all economies tend to reach the same state of equilibrium on the long term. In addition to this perspective, researchers as Lucas (1988) and Romer (1987, 1990) developed the endogenous growth theory, which tried to explain the economic growth process by the specialization in production, increasing returns to scale, learning-process and human capital. In this framework, the capital no longer includes only the physical abilities, but also the intellectual capabilities of the labor.

With the advancement of the integration process on the European Union, researches were not only interested to study the fundamentals of growth, but also the capacity of the European Union to promote economic and social cohesion, as stated in the primary and secondary legislation. Having as starting point the economic growth theories developed in the 20th century, researches mainly focused on economic convergence, considering as main indicator for Member States' performance the GDP per capita. Using the methodological instruments developed by Barro and Sala-i-Martin (1992), researchers examined the relationship between the initial level of GDP per capita and the average growth rates (absolute β -convergence), the determinants of growth (conditional β -convergence) or the degree of homogeneity between economies (σ -convergence). The majority of the empirical researches (Rapacki and Próchniak, 2009; Dobrinsky, 2013; Dobrinsky and Havlik, 2014; Rapacki and Próchniak, 2019) confirm the „*iron law of convergence*” (Barro, 2012), illustrating that the European Union tend to experience an average growth rate around 2% per year. Some researchers (Rapacki and Próchniak, 2009; Dobrinsky, 2013; Dobrinsky and Havlik, 2014; Alcidi et. al, 2018; Rapacki and Próchniak, 2019) were interested to study the convergence patterns in Central and Eastern Europe (CEE), reaching a consensus that the New Member States experienced a higher catching-up speed compared to the wealthy Old Members. Regarding conditional β -convergence and the main determinants of growth, analysts have brought evidence in favor of the argument that investment played a dominant role in catalyzing economic growth (Próchniak, 2011; Marelli et al., 2019). At the same time, as shown in the studies conducted by Dobrinsky and Havlik (2014), Rapacki and Próchniak (2019) and Marelli et al. (2019) trade openness is an important driver of economic growth. At the same time, Próchniak (2011) highlighted the importance of human capital in the economic emancipation of Central and Eastern European group, illustrating that a higher proportion of employees with tertiary education will positively influence the GDP per capita growth rate, while Dobrinsky and Havlik (2014) brought to the fore the contribution of labor productivity in generating prosperity gains.

There are experts who offer a complementary perspective on the status of cohesion, focusing both on the economic and social dimensions. In this respect, Di Tella et al. (2001) and Hagerty and Veenhoven (2003) tried to determine the relationship between economic growth and wellbeing. Di Tella et al. (2001) illustrated that the increase of economic performance determines an improvement of the citizens' welfare. However, according to Di Tella et al. (2001), the welfare effects determined by the increase GDP per capita tend to reduce over time as citizens develop a sense of familiarity with the increased national prosperity. In the Eighth Report on Economic, Social and Territorial Cohesion (2022), the European Commission identified a clear trend towards improving social inclusion in the European Union, by relating to variables that are representative of the labor market (e.g., employment rate) or quality of life (number of people exposed to poverty and social exclusion). However, the gaps between regions in terms of employment rates remain higher than before the onset of the global financial crisis, while there are clear gaps in employment opportunities by gender, especially in the least developed regions.

In conclusion, economic and social cohesion represents a challenge not only for European decision-makers, but also from the perspective of researchers, given the complexity of the topic. Having as starting point the economic growth theories, analysts tried to assess the perspectives of the European Union to fully accomplish the objective of economic, social and territorial cohesion. Initially focusing on GDP per capita as a key indicator of economic prosperity, experts expanded the scope of their studies by including besides macroeconomic variables, indicators which are representative for the wellbeing of the citizens.

2. Research methodology

Our analytical approach was focused on assessing economic and social cohesion in the European Union, trying to capture the main determinants of prosperity and wellbeing and the impact of Covid-19 pandemic. In this respect, focusing on the timespan 2000-2020, we have tried to determine if the poorest Members experienced an improvement in terms of GDP per capita and AIC per capita. We have selected the first year of analysis as 2000 given the data availability for all the variables. The empirical analysis is based on the instrument developed by Barro and Sala-i-Martin (1992) and widely applied in the study of economic growth – convergence binomial: absolute and conditional β -convergence. We have expanded the scope of

these instruments, by looking besides the GDP per capita at the evolution of AIC, considered to be a more representative indicator for the material welfare than income (Eurostat). Absolute β -convergence is calculated on cross-sectional regressions with the purpose to determine the relationship between the initial level of income or consumption and the subsequent growth rates. A negative relationship between variables confirms the convergence hypothesis and the neoclassical growth model assumptions, as the initially poorer economies experience higher growth rates than the rich ones. The absolute β -convergence assumes that economies with similar initial development levels will tend towards “*a state of balanced growth*” (Solow, 1956). In contrast, conditional β -convergence takes into consideration the structural differences between economies, considered to tend towards different states of equilibrium. In order to account the differences between economies, we have included in the regression equations economic and social-related variables, studying the influence on the GDP per capita and AIC per capita growth rates. In this respect, conditional β -convergence was determined based on panel regressions and using the generalized least squares method. We have selected three explanatory variables aiming the level of investment, trade openness and public finance and two indicators representative for the labor market (labor force with advanced education and real labor productivity). Moreover, we have included a dummy variable to account the influence of Covid-19 pandemic in 2020.

We have studied the evolution in the field of economic and social convergence, by employing cross-sectional regressions and taking by turn, as dependent variables, the annual growth rates of GDP per capita and AIC per capita between 2000 and 2020. The independent variable was the natural logarithm of the variable in the initial year (2000). The equation was computed as follows:

$$\frac{1}{T} \ln\left[\frac{y_{i,t}}{y_{i,0}}\right] = a + a_1 \ln(y_{i,0}) + u_i \tag{1}$$

$y_{i,t}$ = GDP per capita/AIC per capita in Member State “i” in 2020

$y_{i,0}$ = GDP per capita/AIC per capita in Member State “i” in 2000

T = number of years

a = constant

u = error term

$$\frac{1}{T} \ln\left[\frac{AIC_{i,t}}{AIC_{i,0}}\right] = a + a_1 \ln(AIC_{i,0}) + u_i \tag{2}$$

The speed of convergence was computed based on the results of the cross-sectional regression illustrated in equation 1, as follows (For conditional β -convergence estimated on panel regressions, T=1):

$$\beta = -\frac{1}{T} \ln(1 + \alpha_1 T) \tag{3}$$

In order to study the determinants of prosperity and wellbeing, we have employed panel regressions taking into consideration several macroeconomic and social explanatory variables. The regressions were estimated using the generalized least squares with robust standard errors. We studied, by turn, the impact of investment, trade openness, government debt, percentage of labor force with advanced education and real labor productivity on the GDP per capita and AIC per capital growth rates. Moreover, in order to find evidence in favor of conditional β -convergence, we have included in the equation the lagged value of GDP per capita and AIC per capita and a dummy variable related to Covid-19 pandemic (1 for 2020, 0 for the rest of years)

$$\ln(\Delta GDP_{i,t}) = a + \beta_1 \ln(GDP_{i,t-1}) + \beta_2 \ln(GFCF_{i,t}) + \beta_3 \ln(Trade_{i,t}) + \beta_4 \ln(Debt_{i,t}) + \beta_5 \ln(LFAE_{i,t}) + \beta_6 \ln(RLP_{i,t}) + Dummy \tag{4}$$

$$\ln(\Delta AIC_{i,t}) = a + \beta_1 \ln(AIC_{i,t-1}) + \beta_2 \ln(GFCF_{i,t}) + \beta_3 \ln(Trade_{i,t}) + \beta_4 \ln(Debt_{i,t}) + \beta_5 \ln(LFAE_{i,t}) + \beta_6 \ln(RLP_{i,t}) + Dummy \tag{5}$$

The variables, sources and the expected influence are presented in Table no. 1:

Table no. 1. Variables, definitions and sources

Variable	Definition	Source	Expected sign
Gross domestic product (GDP) per capita	GDP per capita at market prices (PPS per capita)	Eurostat	The lagged value - negative
Actual individual consumption (AIC) per capita	Actual individual consumption per capita (PPS per capita)	Eurostat	The lagged value - negative

Variable	Definition	Source	Expected sign
Gross fixed capital formation (GFCF)	Gross fixed capital formation (% GDP)	World Bank	Positive
Trade	Sum of exports and imports (% of GDP)	World Bank	Positive
Debt	General government gross debt (% of GDP)	Eurostat	Negative
Labor force with advanced education (LFAE)	Labor force with advanced education (% of total working-age population)	World Bank	Positive
Real labor productivity (RLP)	Real labor productivity per person employed (2010 = 100)	Eurostat	Positive
Dummy	Dummy variable for Covid-19 pandemic (1 for 2020, 0 for the rest of the interval)	-	Negative

3. Results and discussion

Absolute β -convergence

Figure no. 1 compares the initial level of GDP per capita with the average growth rates between 2000 and 2020. Estimating absolute β -convergence based on equation 1, we have found evidence in favor of the neoclassical growth model assumptions, as the initially less developed Members from Central and Eastern Europe experienced higher GDP per capita growth rates compared with the wealthy countries, being placed in the upper part of the graph. Considering the results of absolute β -convergence, we have identified a polarization between the Central and Eastern group and the Old Members. According to our estimation, the highest growth rates between 2000 and 2020 were registered by Romania (7%) and the Baltic States - Lithuania (6.2%), Estonia (5.6%) and Latvia (5.4%). With the exception of Slovenia, all the Central and Eastern European Members recorded average growth rates above 3% during the period under review. As far as the Old Members are concerned, the highest growth rate was experienced by Ireland (4.3%) and Luxembourg (2.6%), two wealthy countries. This result is in line with the endogenous growth model theories, that suggest that wealthy countries can continue their growth trajectory based on investment in human capital, specialization and increase productivity. In contrast, the lowest growth rates in the European Union were experienced by Greece (0.06%) and Italy (1%). The average catching up speed identified in the European Union, which was computed on equation 3, was 2.4%.

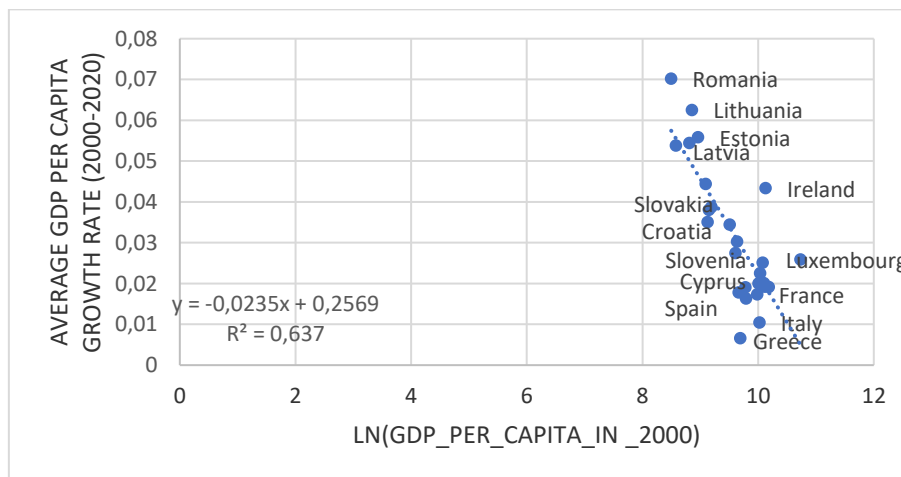


Figure no. 1. Absolute β -convergence in the European Union based on Gross Domestic Product per capita

The analysis of the evolution of GDP per capita is complemented by the AIC per capita, an indicator which is considered representative for the material wellbeing of the citizens. The negative slope of the trend line confirms that the least developed Members in 2000 experienced a higher pace of improvement of the material wellbeing compared to the wealthy Members. In this respect, the main winner of the catching-up process, was similarly to income convergence, the Central and Eastern European group. In this respect, Romania experienced an average growth rate of 7%, being followed by Lithuania (5.7%) and Bulgaria (5.3%). Moreover, the neoclassical growth model assumptions are confirmed for the social indicators as well, based on the modest evolution of the initially developed Members, such as Luxembourg. Not surprisingly, the Mediterranean countries - Italy and Greece - experienced the lowest improvement of

material wellbeing, although the growth rates were slightly higher in the case of AIC compared to GDP per capita. Overall, the average catching-up speed identified in the European Union (27) was 3%, this percentage being determined by the progress of the New Members from Central and Eastern Europe.

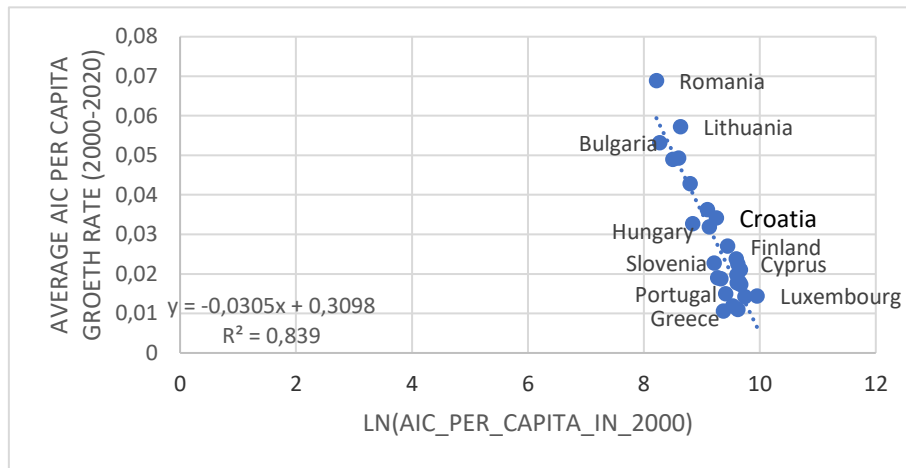


Figure no. 2. Absolute β -convergence in the European Union based on Actual Individual Consumption per capita

Conditional β -convergence

In order to account for the structural differences between economies, we have estimated conditional β -convergence based on panel regressions, as illustrated in equations 4 and 5. We have tried to determine the influence of macroeconomic, public finance and labor market related variables on the annual growth rates, selecting by turn as dependent variable the GDP per capita and the AIC per capita. With the purpose to confirm the conclusion reached on cross-sectional regressions, we have also included in the equations the lagged values of the dependent variables. We have used seemingly unrelated regressions in order to manage the heteroskedasticity and contemporaneous correlation in the errors across equations. Based on the negative relationship between the annual growth rates and the lagged value of GDP per capita and AIC per capita, we have found evidence in favor of conditional convergence in the European Union. The convergence speed, estimated on equation 3, is 1.8% for GDP per capita and 4.6% for AIC per capita. The explanatory variables have the expected signs in both equations, our study illustrating that investment, as reflected by the gross fixed capital formation (% GDP) was a major determinant of economic and social cohesion. Moreover, trade openness had a positive influence both on income and wellbeing, while the governmental debt had a negative impact. Consequently, our study draws attention to the danger of over-indebtedness, which has become rather the rule and not the exception on the background of Covid-19 pandemic. In the field of labor market variables, the paper confirms that a high percentage of labor force with advance education have a beneficial influence on the selected dependent variables, but mainly in the case of GDP per capita. Moreover, the increase of labor productivity proved to be a major catalyzer of wellbeing. Lastly, the dummy variable confirms that the Covid-19 pandemic which started in 2020 had a negative impact on economic and social cohesion. The values of the coefficient of determination illustrate that the model explains in a high proportion – of 66% in the case of GDP per capita and 82% for AIC per capita – the variation of the dependent variables. Moreover, the Durbin-Watson test confirm that there is no first order correlation between errors (values are around 2).

Table no. 2. Conditional β -convergence

Conditional β -convergence		
Method: Seemingly Unrelated Regressions		
Dependent variable	Annual GDP per capita growth rate (2001-2020)	Annual AIC per capita growth rate (2001-2020)
Total panel obs./Variable	475	475
<i>a</i>	-0.5662* (0.0809) (-6.9907)	0.3394* (0.0405) (8.3684)
Lagged GDP per capita / AIC per capita	-0.0175* (0.0034) (-5.0707)	-0.0452* (0.0012) (-37.254)
GFCF	0.0561* (0.0037) (15.089)	0.0296* (0.0022) (13.038)
Trade	0.0091** (0.0036) (2.5424)	0.0050* (0.0009) (5.2004)
Debt	-0.0038* (0.0019) (-1.9901)	-0.0071* (0.0007) (-9.7564)
LFAE	0.1295* (0.0179) (7.1988)	0.0070 (0.0083) (0.8389)
Real labor productivity	0.0015 (0.0071) (0.2121)	0.0119* (0.0043) (2.7101)

Dummy	-0.0648* (0.0021) (-30.3832)	-0.0657* (0.0029) (-22.5387)
Prob (F-statistic)	0.0000	0.0000
R-squared	0.6649	0.8250
Adjusted R-squared	0.6598	0.8224
Durbin Watson	2.0086	2.0313
β (convergence speed)	1.8%	4.6%

Note: standard errors and t-statistics in parentheses. * - p-value < 1%, ** - p-value < 5%

Conclusions

After seven decades since the materialization of the first initiatives of economic integration on the European continent, the European Union continues to have both opponents and supporters. In order to preserve the unity of the group and to remain a powerful political and economic global actor, the European Union has the difficult task to balance the interests of all its 27 Members. In order to preserve peace and stability on the continent, the European group has to promote its initial objectives, that have gathered the admiration of so many countries, decision makers and citizens. Among these, one of the main objectives of the European Union aims since its establishment the promotion of harmonious development and the catching-up of the less developed economies. This pillar has become even more important during the crisis generated by Covid-19 pandemic, when the European Union had the difficult task to concertedly manage unexpected sanitary and economic challenges. The aim of this paper was to study the economic and social cohesion patterns between 2000 and 2020, with the purpose to determine of European Union has made progress towards this goal. In this respect, we have considered representative for economic cohesion the GDP per capita, while the social dimension was studied by considering evolution of the AIC per capita.

Using the methodological instruments developed by Barro and Sala-i-Martin (1992) starting from the neoclassical growth model – absolute and conditional β -convergence – we have illustrated that the initially least developed Member States experienced a higher catching-up speed compared to the wealthy Members. This conclusion applies both for economic and social dimension in the European Union, although the convergence rate in terms of AIC was higher compared to GDP per capita (3 % versus 2.4%). This high speed of convergence recorded at the aggregate level was determined by the progress achieved by the Central and Eastern European group, members such as Romania and Baltic States experiencing average income and consumption growth rates above 5% between 2000 and 2020. The analysis of the relationship between the initial level of income or consumption and the average growth rates (absolute β -convergence) was complemented by conditional β -convergence, with the purpose to account the structural differences between economies. Estimating panel regressions, we have found evidence in favor of conditional β -convergence, given the negative relationship between the lagged value of GDP per capita and AIC per capita on the one hand and the annual growth rates on the other hand.

The study has a number of policy implications. First of all, the empirical model illustrated that investment was a key driver of both economic and social cohesion. Moreover, trade openness proved to have a beneficial influence on the annual growth rates, so the European decision-makers should continue the efforts of liberalization, promoting exchange of goods and services with third countries. Our study also emphasizes the role of human capital in generating both welfare and prosperity gains. Consequently, the European decision-makers should adopt policies and measures that encourage the enrollment in the tertiary education on the one hand and the life-long learning process, in order to increase the labor productivity, on the other hand. In contrast, our study draws attention on the danger of over-indebtedness, suggesting that increasing the governmental debt might hamper the economic and social progress. The empirical model also confirms the negative impact of Covid-19 pandemic on the GDP per capita and AIC per capita growth rates. The main shortcoming of the study derives from the limited perspective on economic and social cohesion. In this respect, we have mainly focused on two indicators (GDP per capita and AIC per capita), but economic and social cohesion is influenced by a wide range of factors. Similarly, in the study of conditional β -convergence, we have selected few variables, considered to be representative for the catching-up process. Consequently, the study can be expanded by accounting the influence of other macroeconomic, social or governance-related variables.

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