

## EU SPENDING ON VISEGRAD GROUP COUNTRIES AND THEIR SOCIO-ECONOMIC DEVELOPMENT BETWEEN 2000 AND 2023

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### Abstract

This article analyses the relationship between European Union spending on individual Visegrad Group countries (Czechia, Hungary, Poland, and Slovakia) and the level of socio-economic development of these countries between 2000 and 2023. The research hypothesis was that the level of socio-economic development of these countries is positively correlated with EU expenditure directed towards them. This study uses the socio-economic development indicator developed by Akimjak, Marzec, and Krawczyk (2025), based on eleven diagnostic characteristics across the economic, social, and environmental domains. Correlation analysis showed a strong, statistically significant (at the 0.01 level) positive relationship between EU spending and socio-economic development across all Visegrad Group countries. The strength of the correlation varies across countries and development components. For Hungary, no statistically significant correlation was found for the economic development component, whereas it was positive and significant in the other countries. The results confirm that financial support from the European Union has accelerated socio-economic development in the Visegrad Group countries.

**Keywords:** European Union, Visegrad Group, socio-economic development, EU spending, correlation analysis, cohesion policy.

### 1. Introduction

The Visegrad Group (also known as the Visegrad Four or the V4) is a regional forum for political, economic, and cultural cooperation of four Central European countries: Poland, Czechia, Slovakia, and Hungary. It was established on 15 February 1991 in Visegrad, on the initiative of the leaders of the time: Lech Wałęsa, President of Poland, Václav Havel, President of Czechoslovakia, and József Antall, Prime Minister of Hungary. Following the dissolution of Czechoslovakia on 1 January 1993, Czechia and Slovakia, the two newly formed states, joined the V4. The Visegrad Group was established to deepen political, economic, social and cultural cooperation in the region, with particular emphasis on European and transatlantic integration processes, as well as to conduct political consultations and coordinate activities on the international stage. Cooperation within the V4 is based on a rotational system, and its key institutional instrument is the International Visegrad Fund, which finances cultural, scientific, educational, and youth projects, thereby deepening ties between the societies of the member states. The Visegrad Group countries, which are also members of the European Union, actively use EU mechanisms and instruments to promote socio-economic development and strengthen regional cooperation within European structures (for more details, see Czyż, 2018; Węgrzyn-Odzioba, 2017).

The European Union's cohesion policy is one of the key instruments for promoting economic and social convergence in Member States, particularly in underdeveloped regions. Its main objective is to reduce development disparities by financing infrastructure, social and environmental investments (cf. Parysek, 2018; Kułak & Gąsiorek-Kowalewicz, 2018). The Visegrad Group (V4) countries – Czechia, Poland, Slovakia, and Hungary – have been among the largest beneficiaries of European Union structural and investment funds since their accession in 2004 (cf. Nowak & Wieteska, 2021; Eurostat, 2025).

Research to date confirms that the inflow of EU funds has accelerated modernisation and increased the competitiveness of Central and Eastern European economies. The literature emphasises the special role of funds in the development of technical and transport infrastructure, improving the quality of human capital, strengthening social integration, and increasing the effectiveness of measures for environmental protection and sustainable development (cf. Nowak & Wieteska, 2021; cf. Krawczyk & Marzec, 2024; Szymanik, 2017).

It should be stressed that the effectiveness of cohesion policy depends not only on the scale of available financial resources but also on the institutional capacity of individual countries and regions to use them effectively. For the V4 countries, institutional reforms, decentralisation, and the development of local and regional development strategies also played an important role, contributing to a better alignment of financial interventions with the specific socio-economic needs of individual areas (cf. Wicha, 2024).

The positive impact of EU funds on economic growth and social development has been confirmed in numerous quantitative analyses, which have shown strong positive correlations between the amount of EU expenditure and socio-economic development indicators (cf. Nowak & Wieteska, 2021; Krawczyk, 2017). In recent years, research on the impact of cohesion policy on sustainable development and energy and climate transformation in the region has also grown in importance (cf. Krawczyk & March, 2025).

The literature points to strong links between European Union spending and the economic, social, and green growth of the Visegrad Group countries. However, there are still differences in the effectiveness of fund utilisation across the V4 countries, which justifies the need for further research on the determinants and effects of EU fund absorption in the region between 2000 and 2023 (cf. Samborski, 2019).

This article hypothesises that the level of socio-economic development of the Visegrad Group countries is positively correlated with EU spending on these countries between 2000 and 2023.

## 2. Method of Analysis

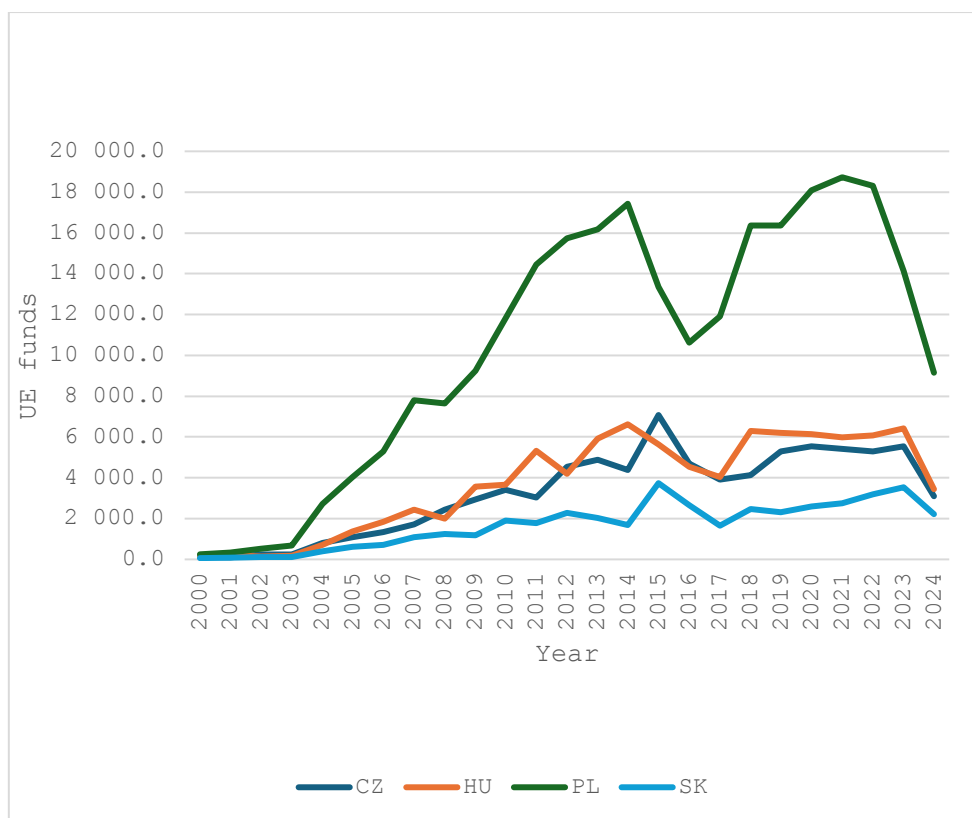
The analysis used the level of socio-economic development calculated in the article “The level of socio-economic development of the Visegrad countries in 1995-2023” by Amantius Akimjak, Pawel Marzec, and Grzegorz Krawczyk, published in *Lex localis –Journal of Local Self-Government*, Vol. 23, No. S5 (2025). The source of this analysis was 11 characteristics developed to determine the level of socio-economic development between 1995 and 2023 (cf. *Jerczyński, 1971; Swianiewicz, 1989; Ziółkowski, 1997, Pocięcha, Podolec & Sokołowski, 1998; Ratajczak, 2000; Wiatrak, 2000; Kosiedowski, 2001; Rakowski & Pakulska, 2001; Madras-Kobus, 2001; Ponikowski, 2002; Roeske-Słomka, 2003; Wysoki & Łuczak, 2004; Ponikowski, 2004; Kapusta, 2004; Brol, 2004; Tokarski, Stepień & Wojnarowski, 2006, Malina & Malina, 2005; Młodak, 2005, 2006; Roszkowska, 2005; Lira & Wysocki, 2004; Rosner, 2007; Rosner & Stany, 2007a; Rosner & Stany, 2007b; Rosner & Stany, 2007c; Czornik, 2008; Ziemiańczyk, 2010; Głuszczyk, 2011; Kocura-Bera, 2011; Szubska-Włodarczyk, 2014; Kołodziejczyk, 2014; Kiniorska, 2014; Ludwiczak, 2014; Adamowicz & Janulewicz, 2016; Chądzyńska, 2016; Krawczyk, 2017; Konecka-Szydłowska & Maćkowiak, 2016; Parysek, 2018; Malina, 2020; Kozubek & Konecka-Szydłowska, 2022; Krawczyk, 2023, 2024; Krawczyk & Marzec, 2024, 2025*). The results of this analysis were correlated with EU expenditure levels for the V4 countries between 2000 and 2023.

## 3. Results

As a result of the analysis, the total expenditure on the Visegrad Group countries in current prices is presented in Figure 1. It shows the systematic increase in European Union expenditure on the Visegrad Group countries between 2000 and 2023. This trend reflects the growing importance of structural and investment funds in EU cohesion policy and the increasing absorption of funds by the countries analysed, especially after they acceded to the EU in 2004.

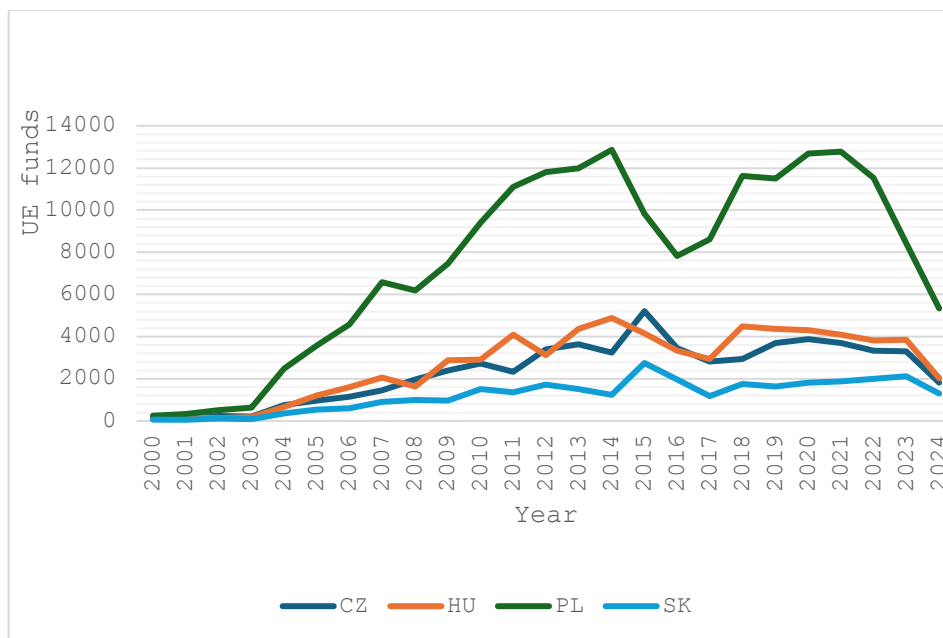
Figure 2 shows total expenditure on the Visegrad Group countries in constant 2000 prices. After accounting for inflation in the euro area, there is also a clear increase in expenditure in real terms. This means that the increase in expenditure is not solely due to nominal effects but actually reflects an increase in real financial support for the region.

Figure 3 presents the level of socio-economic development from 1995 to 2023. The socio-economic development indicator shows a clear upward trend in all V4 countries. In particular, after 2004, the growth rate has accelerated, suggesting a positive impact of EU integration and the use of EU funds.



**Figure 1:** Total EU expenditure on the Visegrad Group countries in current prices (Milion Euro)

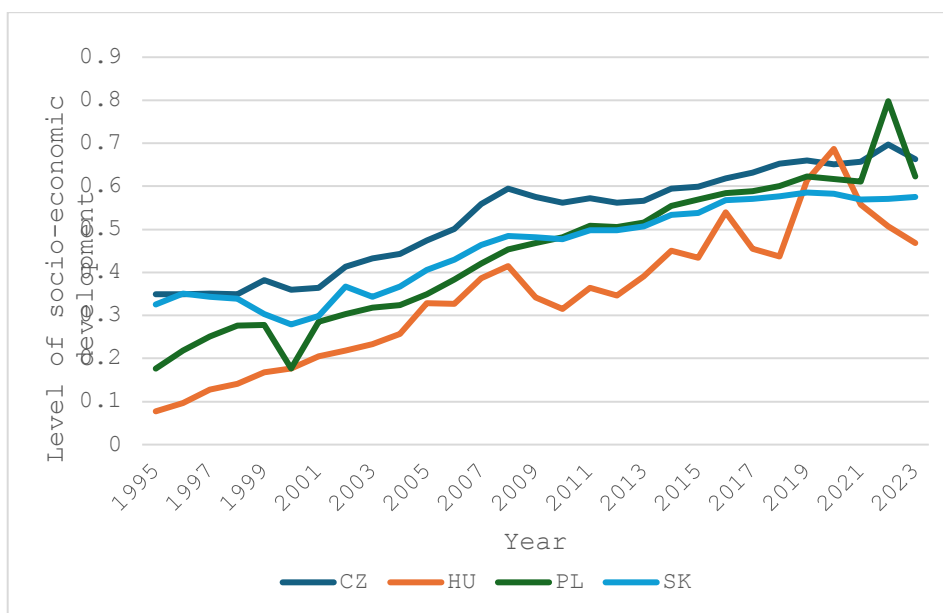
**Source:** Own elaboration based on European Commission data  
 (<https://commission.europa.eu>)



**Figure 2:** Total EU expenditure on the Visegrad Group countries in constant 2000 prices. (Milion Euro)\*

\*The analysis considers inflation in the euro area.

**Source:** Own elaboration based on European Commission and Eurostat data. (<https://commission.europa.eu>)



**Figure 3:** Level of socio-economic development in 1995–2023

**Source:** Akimjak, Marzec & Krawczyk (2025)

Table 1 shows the correlations between the level of socio-economic development and EU

expenditure on individual Visegrad Group countries. All correlation coefficients are positive and statistically significant ( $p < 0.01$ ), confirming the hypothesis of a strong relationship between EU spending and socio-economic development. The highest coefficients were found for Slovakia and Poland, which may indicate particularly effective use of funds in these countries.

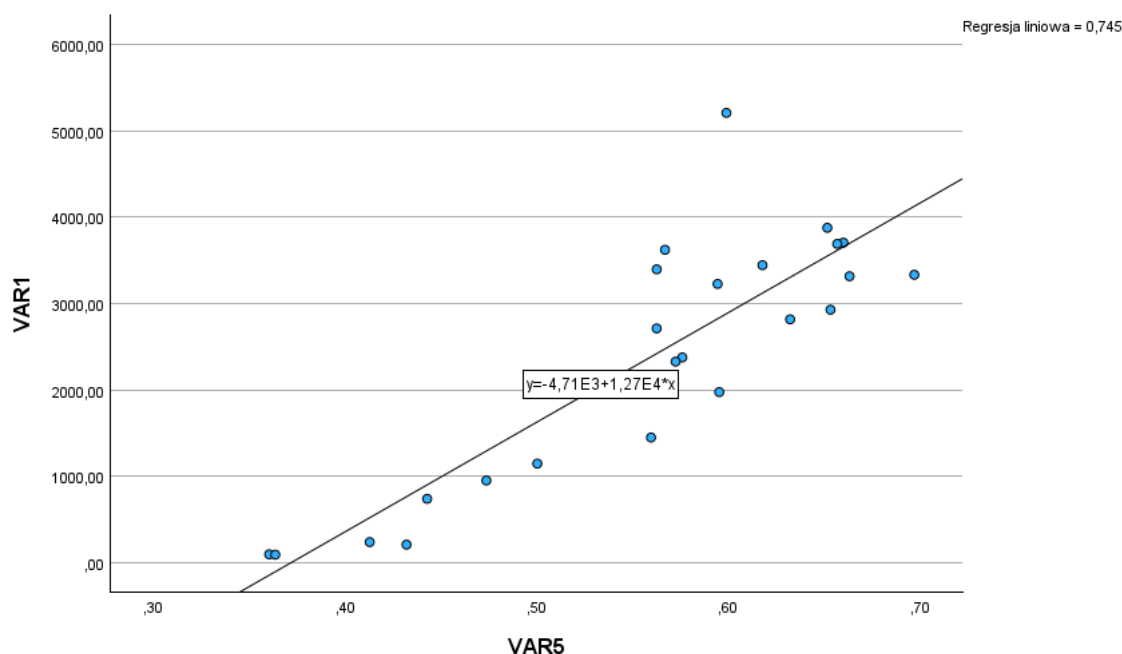
**Table 1.** Correlations between the level of socio-economic development and EU spending on the Visegrad Group countries

Description	Total EU expenditure on the Visegrad Group countries			
	Czechia	Hungary	Poland	Slovakia
Level of socio-economic development in 1995–2023	0.863**	0.796**	0.868**	0.886**

\*\*Significant correlation at the 0.01 level (bivariate)

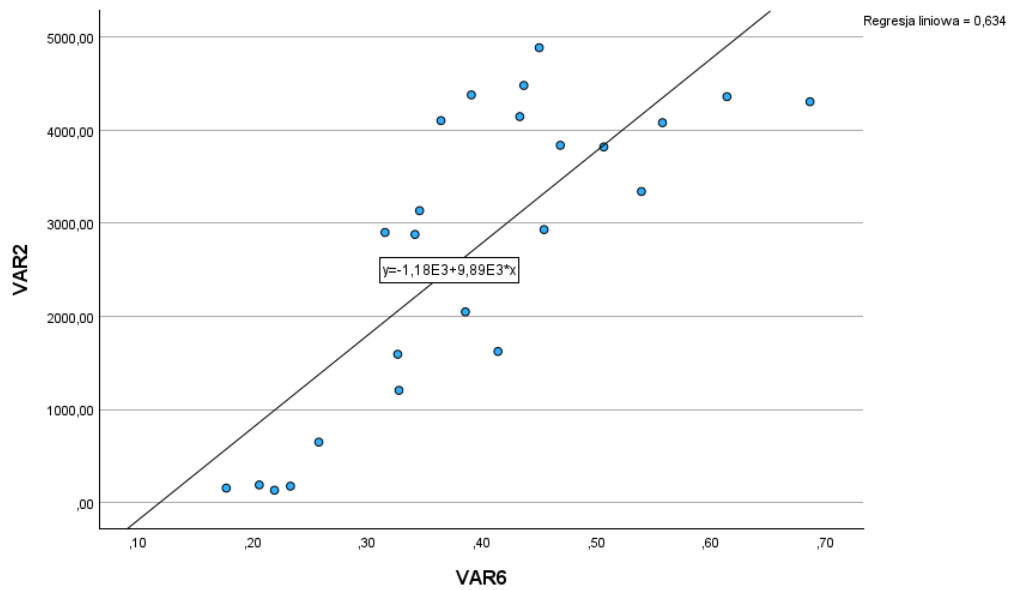
**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.

For a more detailed analysis of the correlations, Figures 4–7 show the distributions of the variables studied. The scatter plots confirm the positive relationship between EU expenditure and the level of development. For Czechia, Poland, and Slovakia, the relationship is strong and clearly linear, while for Hungary, there is greater dispersion of dots, indicating a weaker relationship between the variables analysed.



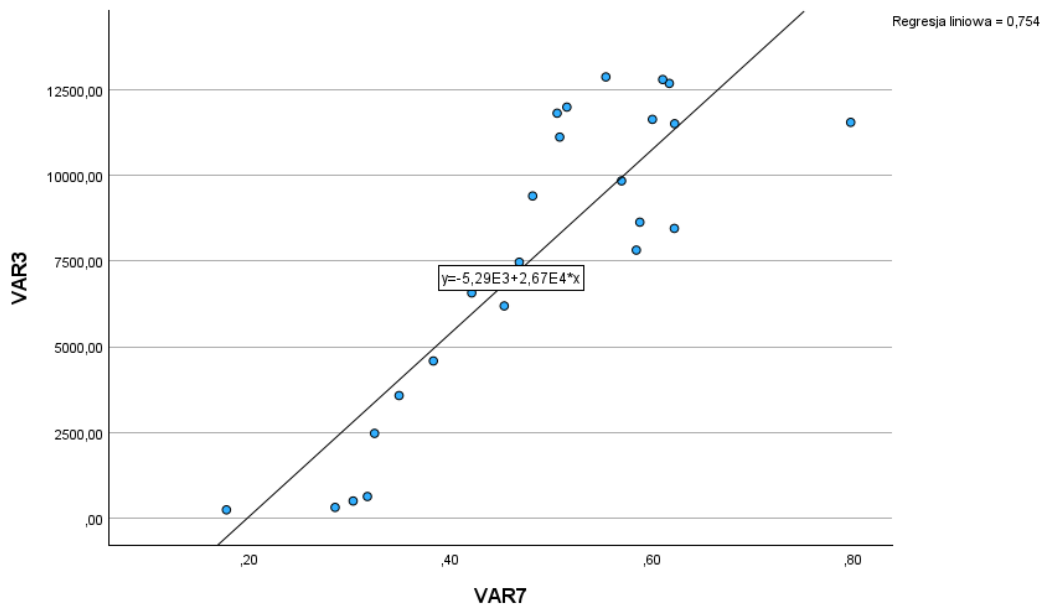
**Figure 4:** Scatter plot for the correlation between total EU expenditure (VAR1) and the level of socio-economic development (VAR5) – Czechia

**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.



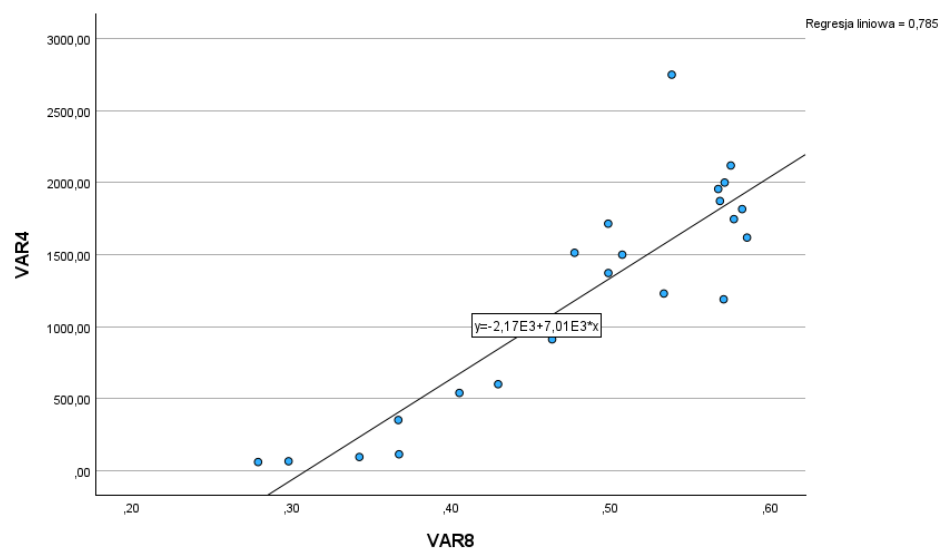
**Figure 5:** Scatter plot for the correlation between total EU expenditure (VAR2) and the level of socio-economic development (VAR6) – Hungary

**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.



**Figure 6:** Scatter plot for the correlation between total EU expenditure (VAR3) and the level of socio-economic development (VAR7) – Poland

**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.



**Figure 7:** Scatter plot for the correlation between total EU expenditure (VAR4) and the level of socio-economic development (VAR8) – Slovakia

**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.

Table 2 presents the correlations between the components of socio-economic development and EU expenditure for individual V4 countries. Most of the correlations are positive and statistically significant. The analysis shows that EU spending has a positive impact on all development components, but the strength of the correlation varies between countries. The weakest correlations concern Hungary’s economy (not statistically significant), while the environmental component shows high consistency across the entire group, indicating the effectiveness of EU environmental policy.

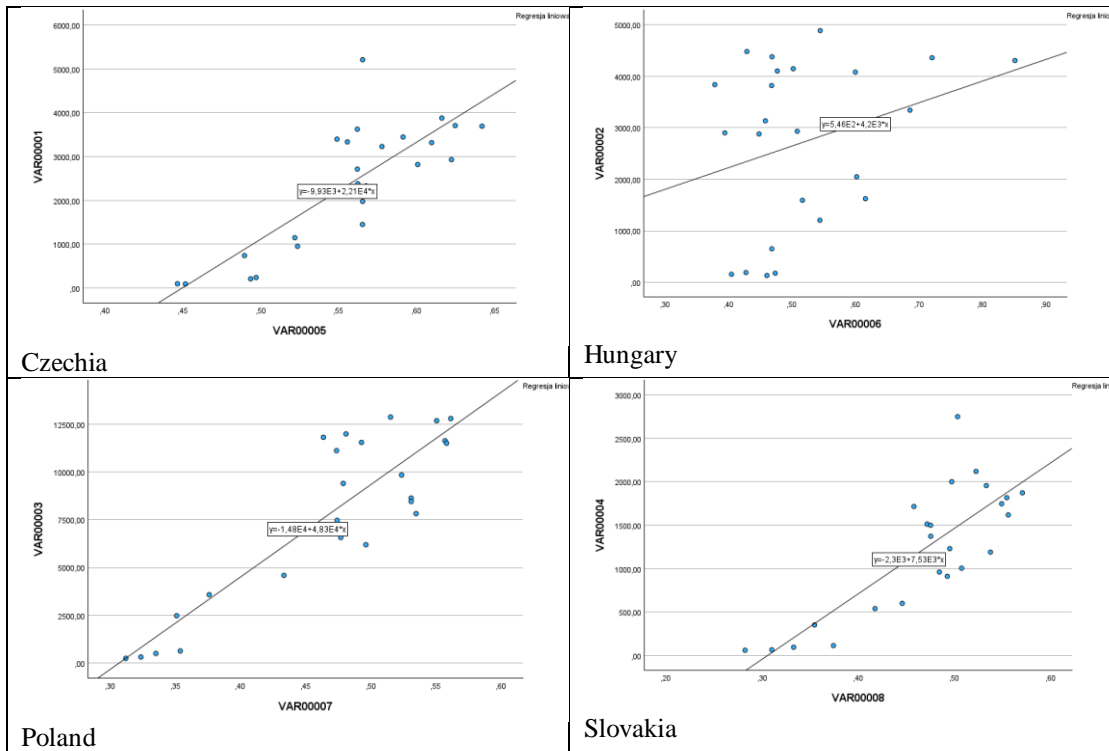
**Table 2.** Correlations between the level of development and EU spending on the Visegrad Group countries

Description	Total EU expenditure on the Visegrad Group countries			
	Czechia	Hungary	Poland	Slovakia
Level of economic development	0.813**	0.292	0.886**	0.818**
Level of social development	0.746**	0.895**	0.662**	0.879**
Level of green growth	0.881**	0.878**	0.862**	0.862**

\*\*Significant correlation at the 0.01 level (bivariate)

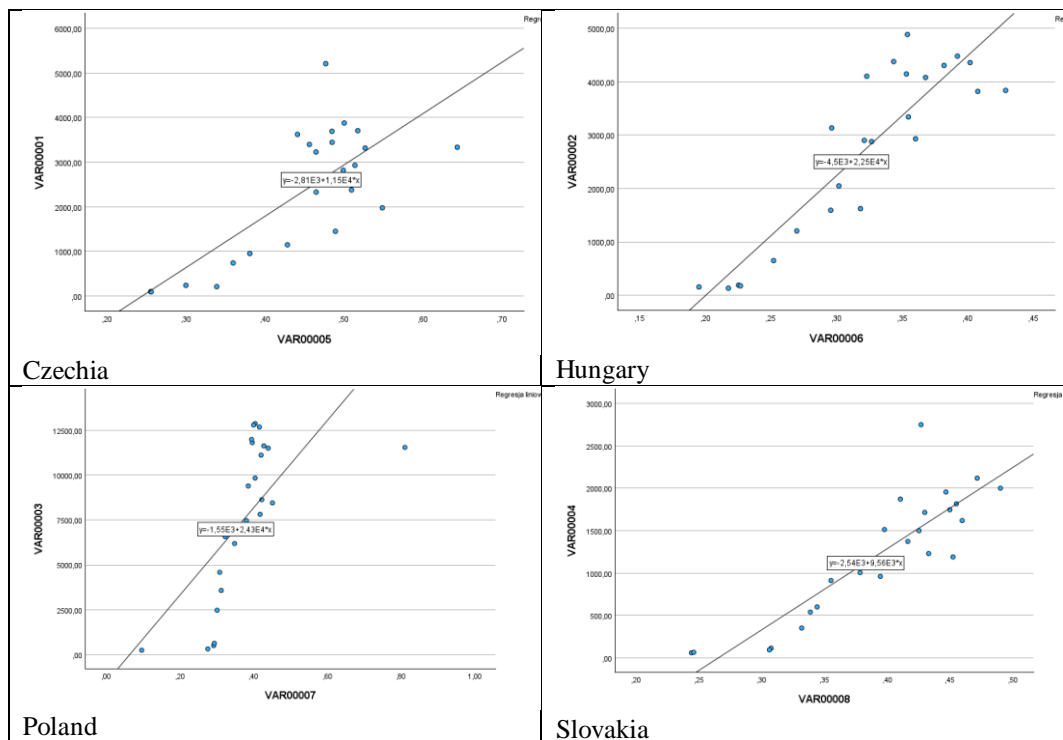
**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.

All correlations are shown in Scatter plots 8–10. Figure 8 (economic component) – a strong correlation is evident for Czechia, Poland, and Slovakia; for Hungary, the scatter plot indicates no significant relationship. Figure 9 (social component) – all countries show a positive, well-defined correlation, confirming the effectiveness of the funds in improving quality of life and social inclusion. Figure 10 (environmental component) – a strong correlation across the entire group, indicating the positive impact of EU funds on environmentally friendly measures and sustainable development.



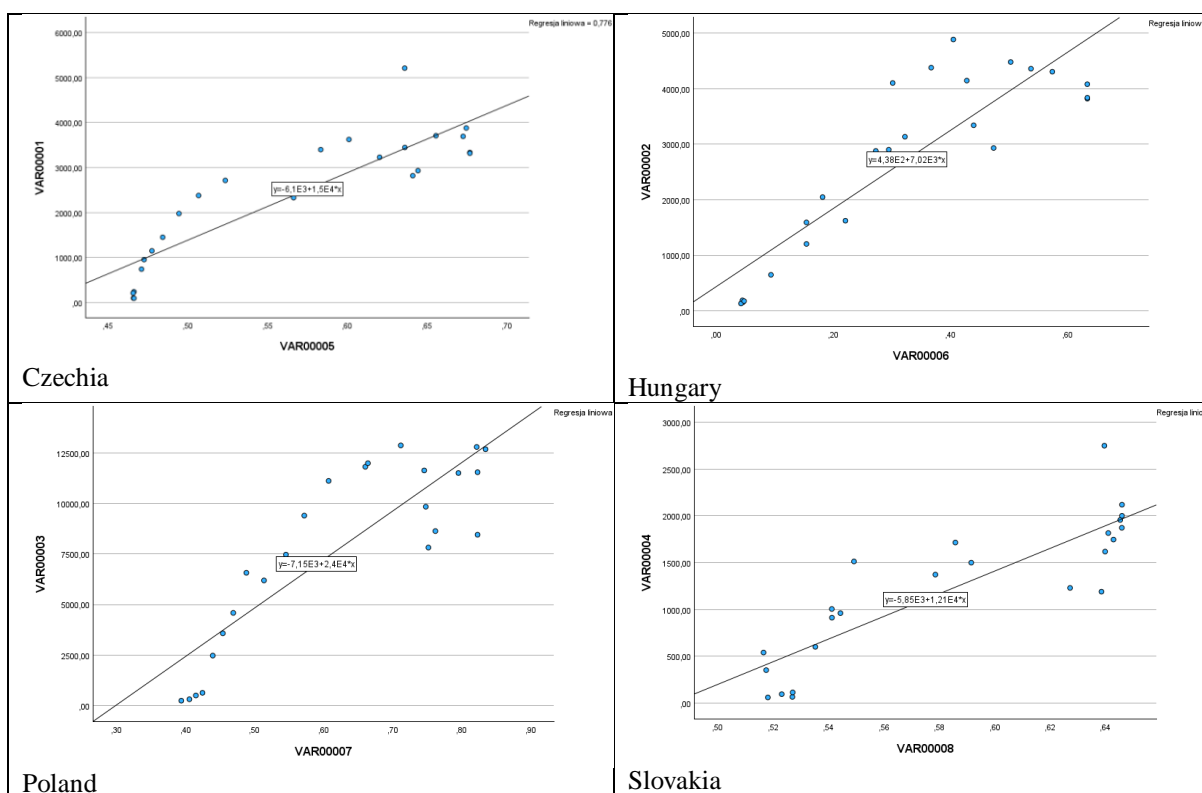
**Figure 8:** Scatter plots for the correlation between total EU expenditure (VAR00001–VAR00004) and the level of economic development (VAR00005–VAR00008)

**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.



**Figure 9:** Scatter plots for the correlation between total EU expenditure (VAR00001–VAR00004) and the level of human development (VAR00005–VAR00008)

**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.



**Figure 10:** Scatter plots for the correlation between total EU expenditure (VAR00001–VAR00004) and the level of green growth (VAR00005–VAR00008)

**Source:** Own elaboration based on World Bank Data, European Commission and Eurostat data.

#### 4. Discussion

The results clearly indicate a strong, positive correlation between the amount of European Union expenditure and the level of socio-economic development of the Visegrad Group countries between 2000 and 2023. These results are consistent with previous studies on the effectiveness of cohesion policy, confirming that European funds are an important factor stimulating development in Central and Eastern Europe.

High correlation coefficients for Poland, Slovakia, and Czechia demonstrate the effective use of cohesion policy funds, particularly in infrastructure investment, human capital development, and environmental transformation. The increase in social and green growth is particularly evident after 2010, which may be due to EU programmes focused on sustainable development and social inclusion.

Hungary is an exception in terms of the relationship between EU funds and economic development. The lack of a statistically significant correlation here may indicate limited effectiveness in the use of funds in the economy, or the influence of internal factors such as fiscal policy, the structure of the public sector, or varying levels of regional fund absorption. As a consequence, there were significant fluctuations in the period under review in the inflow of foreign direct investment as a percentage of GDP (an element of the economic component).

Hungary is pursuing a strategy to strengthen domestic companies in key sectors of the economy. These measures often involve the nationalisation of companies or their takeover by individuals with ties to the government. In practice, this means that Hungarian companies are favoured in public tenders, often at the expense of foreign companies. This translated into a lack of a statistically significant correlation between economic development and the inflow of EU funds in Hungary. This finding confirms that financial transfers alone do not guarantee automatic growth unless accompanied by appropriate institutional reforms and transparent allocation mechanisms.

One interesting observation is the high correlation between EU expenditure and the green growth component in all countries. This may reflect the effectiveness of the Union's climate and environmental policies, which have become a key funding priority since 2014. This indicates that EU funds not only support economic development but also contribute to the transition towards a green economy.

The analysis of the results also shows that EU financial instruments have had a stabilising and modernising effect, mitigating the impact of external economic crises (e.g. the 2008 global financial crisis and the COVID-19 pandemic). In this context, the growing socio-economic development can be interpreted as a synergy effect between the internal reforms of the Visegrad Group countries and the inflow of EU funds.

In summary, the presented results and their interpretation indicate that EU cohesion policy fulfilled its primary function during the period under review, namely, reducing development disparities and supporting economic convergence in the Central European region. At the same time, the analysis suggests that further research is needed on the effectiveness of individual programmes and on the factors that determine variation in outcomes across countries.

## 5. Conclusion

The analysis confirmed the existence of a strong, positive and statistically significant correlation between the European Union's expenditure levels and the socio-economic development of the Visegrad Group countries between 2000 and 2023. The findings indicate that increased EU funding has contributed to improved economic, social, and environmental growth indicators in Czechia, Poland, and Slovakia. However, in Hungary, only the economic development component failed to show a statistically significant correlation with the inflow of EU funds, suggesting a different use of the funds or internal factors limiting their effectiveness.

The analysis revealed that the Visegrad Group countries effectively utilised the European Union's cohesion policy instruments, which in the long term contributed to reducing development disparities in the region. The evident increase in socio-economic development during the period under review confirms the positive impact of European integration and the importance of EU funds as a tool for modernising the economies of Central European countries.

In summary, it can be said that European Union expenditure has played a key role in the development of the Visegrad Group countries, particularly by improving the quality of life of their populations, developing infrastructure, and implementing environmentally friendly measures. In the future, it is advisable to conduct more in-depth research into the effectiveness of individual EU programmes and to identify the factors influencing differences in fund utilisation levels across countries in the region.

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