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Corruption and Human Development: Panel Data Analysis in Transition Economies

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ABSTRACT

Human capital is currently referred to as the driving force of national economies. It includes all the knowledge, talents, skills, abilities, experience, intelligence, and training of the country's workforce. The governments of individual countries are fully aware of this and are trying to stimulate human capital and stimulate its development. Apart from the economic consequences of corruption, several social consequences of corruption have also been empirically proven. As a result of inefficient use of public budgets, resources are limited in healthcare, education, and culture, in short, areas proven to cultivate human capital. Despite that, many authors have studied the effect of corruption on various macroeconomic variables, but only a few studies have empirically investigated the relationship between corruption and human capital development. This article aims to analyze the effects of corruption on the development of human capital in transitional economies, which are often mentioned as problematic in the context of bureaucratic corruption. By analyzing panel data for the period 1996-2021, it was found that corruption affects the development of human capital in the transitive economies examined. Corruption also affects human development indirectly through the dimensions of "Knowledge" and "Standard of Living".

INTRODUCTION

Corruption is perceived as an obstacle to economic development. It undermines the credibility of the political system, which limits the delivery and quality of public services. Economic growth and investment are very costly because they increase the cost of public and private business activities. It clouds the business environment with uncertainty and disrupts the regulatory and legal framework that businesses must rely on.

Transition economies are very specific in human capital development. During the period of communism, the development of human capital was not supported, on the contrary, unification and mediocrity in all aspects of human life were explicitly favored and supported by the communist ideology.

Transitional economies are very often associated with so-called bureaucratic corruption, for which the transformation and privatization processes that the mentioned countries have gone through are an ideal breeding ground for the development of corrupt practices. Regarding the above, the question arises whether the obstacle to the development of human capital in the environment of transitive economies is not exactly bureaucratic corruption, which is often mentioned in connection with these countries.

The article aims to analyze the influence of corruption on human capital in nine transitional economies of Central and Eastern Europe (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia), which are often mentioned in connection with the so-called bureaucratic corruption. The issue of the influence of corruption on the development of human capital will be investigated in these countries using the analysis of panel data for the period 1996-2019. That is the longest time series for which the observed variables are currently available.

Three hypotheses are verified concerning the aim of the paper:

H1: There is a mutual relationship between corruption and human development.

H2: Corruption affects human development.

H3: Corruption affects human development through life expectancy/knowledge/standard of living dimension.

1. LITERATURE REVIEW

1.1 Corruption

Corruption is still a serious problem in the whole world and in many countries has reached a high level and is considered one of the main causes hindering the process of economic development. Corruption has adverse effects on the economic growth and development of any country by reducing income, hindering domestic and foreign investment, increasing inflation, promoting rent-seeking activities, misallocation of resources, reducing tax revenue, increasing income inequality and poverty, increasing child mortality and deteriorating the quality of education. (Iskandar and Saragih, 2018; Murshed and Mredula, 2018;)

If efforts are made to describe and analyze corruption more closely, the universality of this concept disappears, as it is assessed individually and is usually quite different. The best-known existing definition of corruption, given by Joseph S. Nye, defines this phenomenon as *"behavior that, due to the achievement of private (personal, family, narrow group) financial and/or status gains, deviates from the formal obligations arising from a public role or transgresses the norms against the performance a certain type of the private influence"* (Linhartová and Halásková, 2022). Transforming economies struggle with corruption more than other countries. According to Holmes (2013), *"corruption has replaced communism as the scourge of Eastern Europe"*. In 1990, the countries of Central and Eastern Europe began to transition from communism to free market capitalism. After more than thirty years of reforms, some countries in Central and Eastern Europe show different results in the level of corruption. (Linhartová and Halásková, 2022)

The institutional aspect was not given enough attention in the transformation process. The new formal rules were imperfect, suffered from many shortcomings, and were not even effectively enforced. They were opposed by informal rules in the form of customs, traditions, and established patterns of behavior that had evolved over decades of the socialist system, and were not compatible with the new formal rules, one could even say that they were in direct conflict with them. The result of neglecting the institutional level of transformation is the current state of transitive economies. Although in some countries the transformation has already officially ended, transitional economies show the same weaknesses in the institutional environment. These undoubtedly include corruption and rent-seeking in general. The natural outcome of such an approach is a significant scope of corrupt activities, common to all countries undergoing the process of transforming a centralized economy into a market one.

1.2 Human Development

Founder of the theory of human capital Gerry Becker defined human capital as abilities, skills, and the corresponding motivation to apply those abilities and skills. It also states that individuals decide to participate in human capital formation as investments based on a comparison of benefits and costs. In his view, the benefits are, for example, higher wages, and better employment, but also non-monetary benefits such as improved health, cultural education, and a shift in the social ladder. The cost is the value of time (the cost of lost opportunity) and the value of the expenses to manage these investments. Human capital is considered one of the key variables determining economic growth, and investment in it is considered one of the most important in terms of its importance and return (Becker, 2009).

The Human Development Index describes and evaluates how people can pursue their potential in a certain environment and how this environment determines them. It is more than just income, wealth, or commodity production and capital accumulation. Access to resources is undoubtedly an essential part of human development, but it is not the only goal of human development efforts. According to UNDP, *"The HDI was created to emphasize that people and their capabilities should be the ultimate criterion for evaluating a country's development, not just economic growth"* (UNDP, 2023). An important advantage of the index, which adds to its credibility, is the sources from which it draws data for its calculations. These are long-term monitored indicators and statistics covered by organizations that operate around the world and the areas are credible and generally respected (UNDP, 2023). Human Development Index dimensions are depicted in Figure 1.

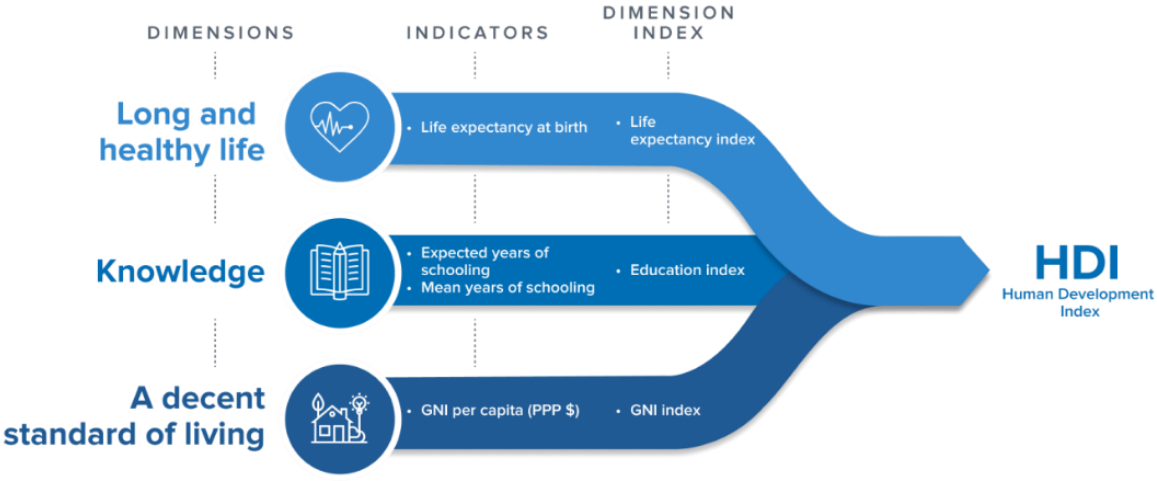

Figure 1. HDI dimensions and indicators

Source: UNDP (2023)

The Human Development Index (HDI) is an aggregate measure of the level of human capital in the key dimensions of human development: having a long and healthy life, being educated, and achieving a decent standard of living. HDI is the geometric mean of the normalized indices for each of the three mentioned dimensions. The dimension of health is evaluated according to life expectancy at birth. The educational dimension is measured using the number of years of schooling for adults aged 25 and over and the expected years of schooling for school-age children. The standard of living dimension is measured by gross national income per capita. The resulting values of these three HDI dimension indices are then aggregated into a composite index using the geometric mean (UNDP, 2023)

1.3 Impact of Corruption on HDI

Many studies have analyzed the impact of corruption on various macroeconomic variables (e.g. Mauro, 1996; Nizam ana Niaqvat, 2022, etc.), but only a few studies have conducted empirical research on the impact of corruption on humans. capital development (e.g. Qizilbash, 2001; Najar Nahavandi and Khorsand Asiabar, 2019; etc.). Mauro (1996) specifically dealt with these questions, in his work focused on the influence of corruption on government spending on education and concluded that corruption has a significant influence on the size of spending on education, the use of their use, and thus also on human capital, which is mostly approximated by the share of the population with at least a high school education in the workforce. Specifically, it states that a decrease in the perception of corruption by one point (on a range of 0-10) reduces government spending on education in relation to GDP by 0.7-0.9 percentage points.

In their work, Gupta et al. (2000) focus on the provision of health care and education. Their analysis is the finding that corruption affects the productive population, human capital, and technological progress through its effect on infant mortality rates and the "dropout" of primary and secondary school students. If the corruption rating drops by one point, it results in an increase in child mortality by 1.1-2.7 per 1000 births. In education), the deterioration of the perception of corruption will lead to an increase in the number of students who do not complete their studies, by 1.4-4.8 percentage points. Kaufmann, Kraay, and Zoido-Lobaton (2000) found that corruption reduces life expectancy, lowers population literacy, and increases infant mortality.

Vittal (2003) examined how corruption in countries with high levels of corruption affects the poor. Despite the argument that bribery can be seen as the price of speed and efficiency for the rich, in countries with high levels of corruption the poor must pay even for access to basic services. Since I pay a large portion of my income in bribes, the already significant income inequality is exacerbated. Using panel data analysis and Granger causality, Akcay (2006) investigated the influence of corruption on human capital development in a sample of sixty-three countries in the world and proved that *"more corrupt countries tend to have lower levels of human development. In brief, this study extends the list of negative consequences of corruption and argues that corruption in all its aspects retards human development"*. Corruption limits the development of human capital by 0.13, respectively. 0.48 percentage points depending on the used indicator of the level of corruption.

According to Akcay (2006), urbanization is a natural part of human capital development. Living in the city provides not only more opportunities for higher incomes but also better access to education, health care, and other social services. Also, Emara (2020) considers the rate of urban population as a factor influencing the development of human capital in a country. According to Akcay (2006), urbanization is a natural part of human capital development. Living in the city provides not only more opportunities for higher incomes but also better access to education, health care, and other social services. Abdulla (2021) showed that corruption affects several observed human capital inputs such as health status, school enrollment, and school dropout rates. *„According to the prediction derived from the empirical analysis, corruption harms the stocks of human capital. The counterfactual findings using the calibrated model suggest that the elimination of corruption increases aggregate output by 18–21% on average.“*

Governance is central to human development because, without it, power will almost certainly be used in ways that do not promote and sustain overall human development. The development of human capital is thus fundamentally determined by the volume of public spending in general (Kamalu et al., 2021).

2. MATERIALS AND METHODS

To investigate the impact of corruption on human development, data on corruption from two different sources were used. These are the Corruption Perception Index (CPI) compiled by Transparency International (TI) and the Control of Corruption (CC) compiled by the World Bank (WB). The CPI index ranges from 0 to 100, with a value of 0 indicating a high level of perceived corruption, while a value of 100 indicates a country without corruption. The CC indicator takes on values from -2.5 to + 2.5, where the lowest value again represents a high level of corruption, and conversely, the highest value means a country without corrupt practices. The empirical analysis will be carried out on nine transitional economies of Central and

Eastern Europe. HDI is used as the dependent variable. As already explained, the HDI measures a country's achievements in three aspects of human development, namely longevity, knowledge and a decent standard of living. The indicator ranks countries on a scale from 0 to 1, where 0 represents the lowest level of human capital development while 1 represents the highest level of human capital development.

To verify each other. of the relationship between corruption and human capital development, i.e. Hypothesis number 1, the method of correlation analysis was chosen. Hypothesis 2 and Hypothesis 3 on the direct influence of corruption on the development of human capital, respectively. influence through distribution channels, will be verified using regression analysis of panel data. The overview of the applied determinants for the data panel analysis and their resources is seen provided in Table 1.

Table 1. Used indicators for panel data analysis

Indicator	*Abbreviation*	*Unit*	*Source*
Human Development Index	HDI	0-1	UNDP
Corruption Perceptions Index	CPI	0-100	Transparency International
Control of Corruption	CC	-2,5 – 2,5	WorldBank
GNI per capita	GNI	USD (PPP)	World Bank
Life expectancy at birth	LEB	years	World Bank
Expected years of schooling	EYS	years	World Bank
Mean years of schooling	MYS	years	World Bank
Rural population	RP	% of the total population	World Bank
GDP per capita	GDP	USD (PPP)	Eurostat
General government final consumption expenditure	GE	% of GDP	Eurostat
Urban population	UP	% of the total population	World Bank

Source: own processing

Panel data analysis is a statistical method to analyze two-dimensional panel data that are a subset of longitudinal data where observations are for the same subjects each time. Because of the more significant information set in panel data, panel analysis is a good direction to address the multicollinearity problem. It also allows for dealing with the endogeneity and measurement error of various variables. It also makes it possible to account for heterogeneity by including time-invariant variables. Due to the fixed number of observed units (countries) in time, the resulting panel data set is balanced, and it is possible to use classic tools for estimating models with panel data (Baltagi, 2008). Baltagi (Ibid.) considers the basic regression model of panel data to be the model:

$$y_{it} = \beta_1 x_{it1} + \beta_2 x_{it2} + \ldots + \beta_k x_{itk} + \alpha_1 z_{i1} + \alpha_2 z_{i2}\, \alpha_3 + \ldots + \alpha_q z_{iq} + u_{it} \quad (1)$$

where the index i denotes the cross-sectional dimension i = 1,..., n, the index t the time dimension t = 1,..., t, the variables x_1 to x_k are explanatory variables not including the vector of units and the variables z_1 to z_q represent individual effects - diversity that can distinguish an individual or a whole group from other entities - a possible vector of units is included here. Individual effects do not change over time.

Due to the presence of fixed effects and lagged dependent variables among the regressors, equation (2) cannot be estimated using the method of least squares (OLS). As it is standard in panel data analysis, fixed effects can be solved using fixed effects (FE) or random effects (RE) estimators (for more information please see Baltagi, 2008).

3. RESULTS

The development of the HDI in the period from 1996 to 2019 in a selected set of countries is shown in Figure 2. The graph shows a positive trend in the development of this indicator, the monitored countries have come a long way in the monitored period toward the development of the human potential of their inhabitants. Except for the Czech Republic and partially Estonia, however, all transitive economies lag behind the European Union (EU) average throughout the monitored period, i.e. worsen the average rating, which also includes countries that did not go through the process of transformation from a centrally planned economy to a market economy. It is important to mention that the very process of joining the EU significantly and positively influenced the building of anti-corruption policy, the implementation of anti-corruption mechanisms, and the creation of a transparent economic environment (Linhartová and Halásková, 2022). The analyzed transition economies began to join the EU in 2004.

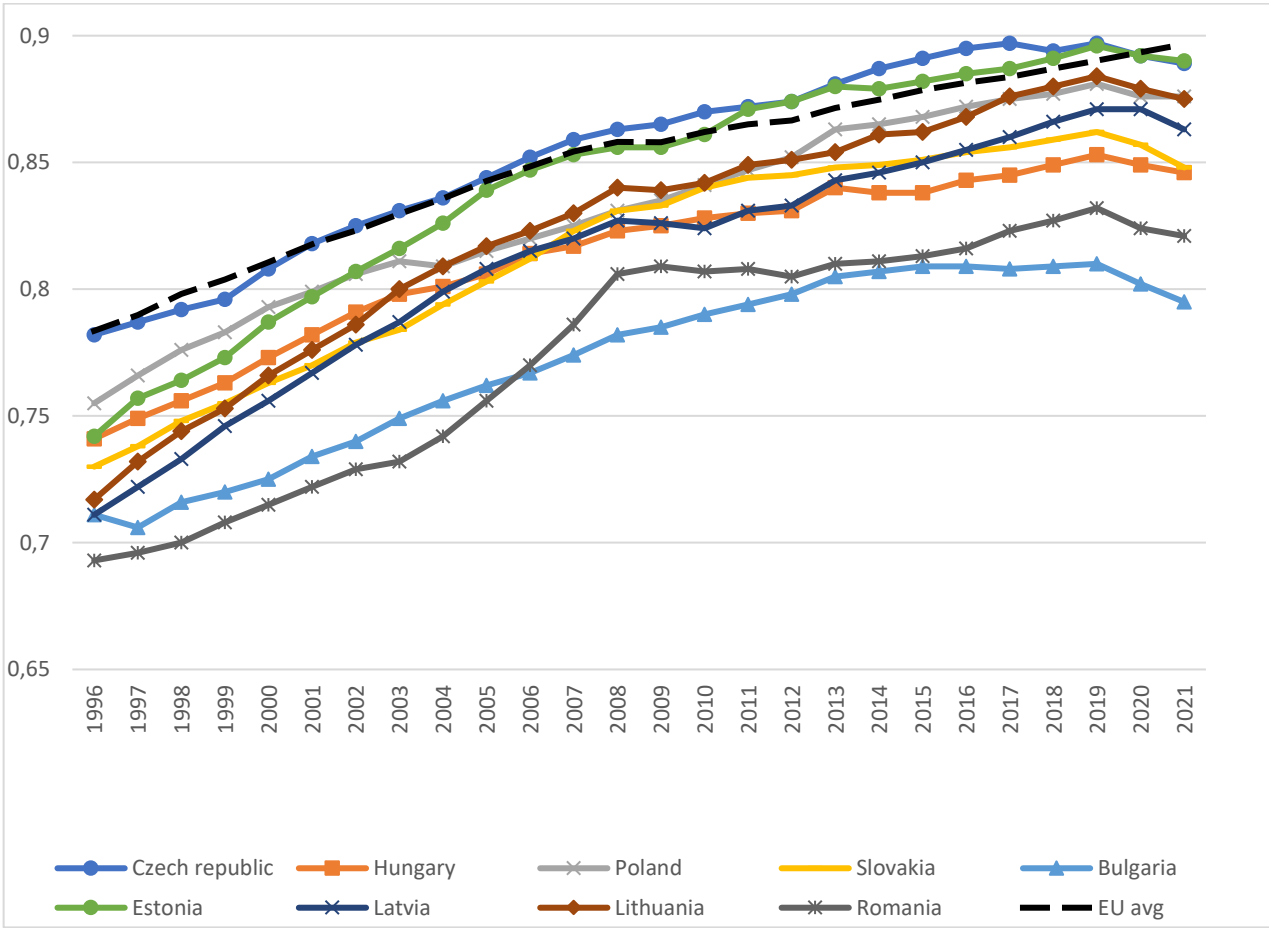

Figure 2. HDI development 1996-2021

Source: Own compilation based on UNDP (2023)

The development of CPI in analyzed countries is depicted in Figure 3. In recent years, according to Transparency International, there has been a significant improvement in the ranking of only 22 countries out of less than 200 countries evaluated. Within Europe, states show a tendency to decrease the incidence of corruption in the direction of the West. The best-placed state with the lowest incidence of this phenomenon is Estonia (Transparency International, 2022).

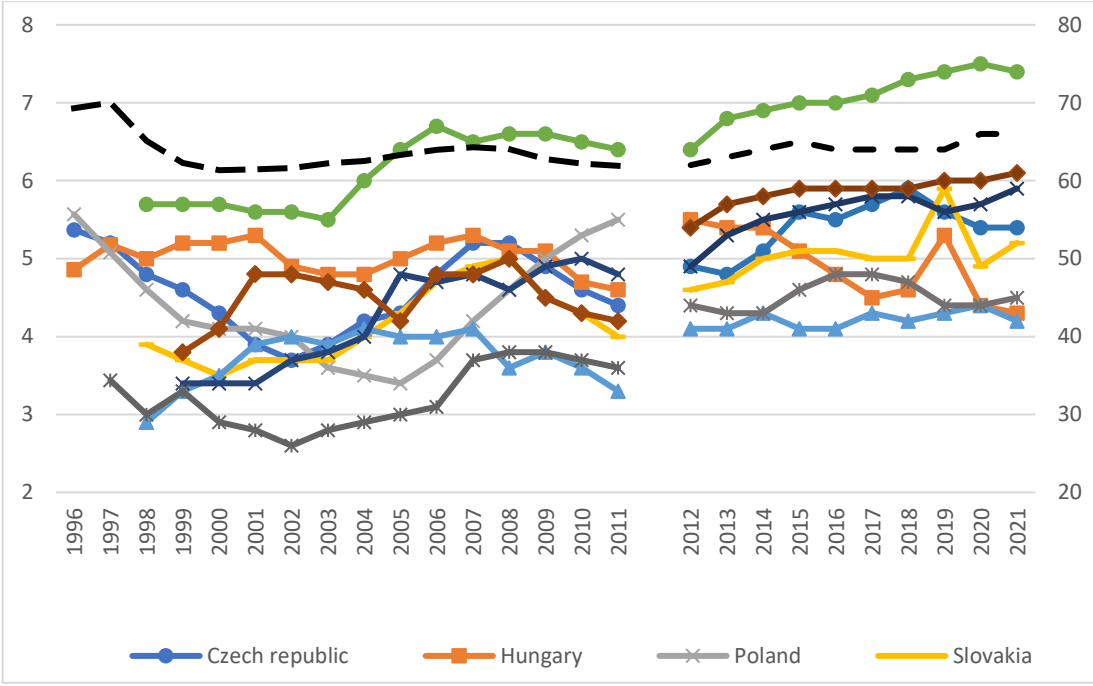

Figure 3. CPI development 1996-2021

Source: Own compilation based on Transparency International (2022)

The relationship between the human capital development index and the level of corruption was proven by correlation analysis. Thus, hypothesis number 1 was proven. A correlation matrix is depicted in Figure 4.

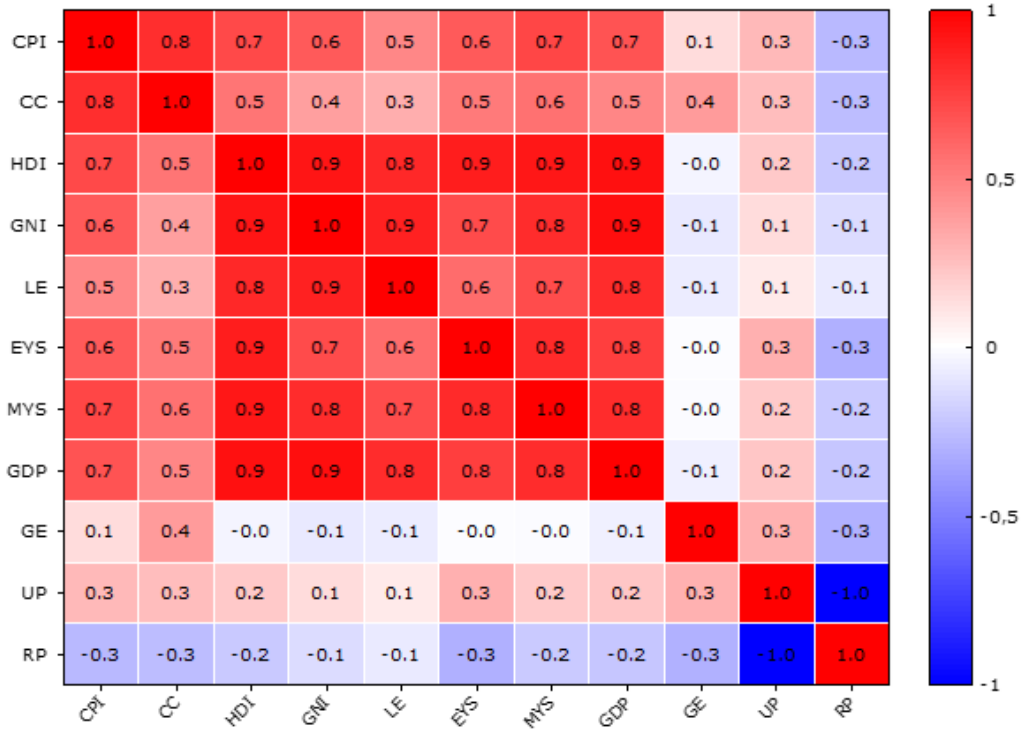

Figure 4. Correlation matrix

Source: Own elaboration

A strong correlation dependence was demonstrated especially for the CPI indicator. A possible cause may be the different construction of the CPI indicator compared to the CC indicator. The CPI is based on the perception of corruption by survey respondents, who are domestic and foreign businessmen, analysts, and representatives of the professional public from the evaluated countries. The index is published once a year, and the surveys used to compile it mostly contain questions focused on the bribery of public officials or commissions in public contracts. It is thus an indicator of so-called perceived corruption in the public sector. That is, the area in which subsectors cultivating human capital (education, sports, culture) are classified. It can therefore be summarized that there is a mutual relationship between the development of human capital and corruption, especially public sector corruption.

The following Figures 5 and 6 are scatter plots of corruption and human capital development indices. A simple linear regression shows a positive relationship between corruption and human development. Two corruption indices were used, both the Corruption Perception Index and Control of Corruption too. In other words, a better rating of a country's level of corruption goes hand in hand with a better level of human capital in the analyzed group of countries.

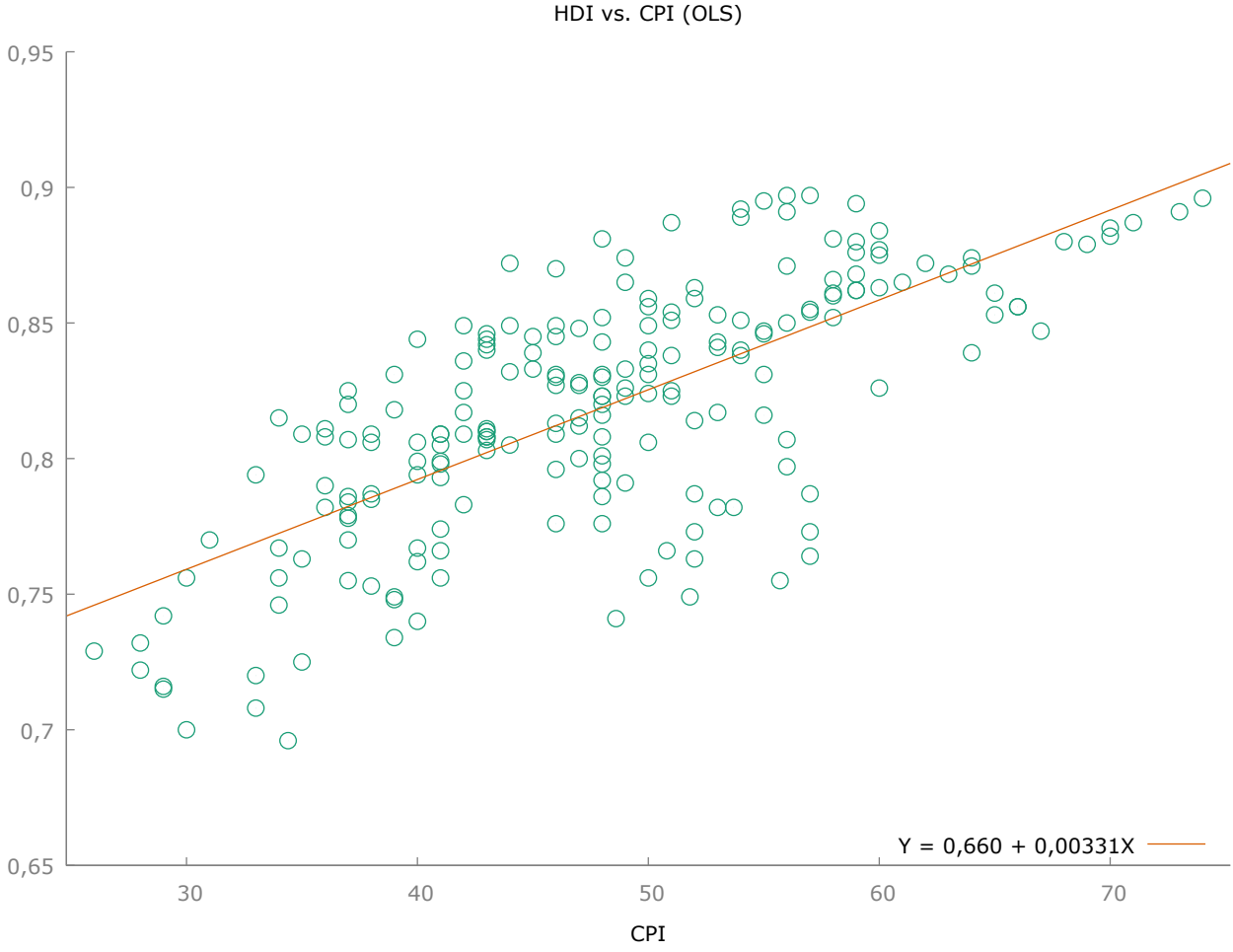

Figure 5. Scatter plot of HDI and CPI
Source: Own elaboration

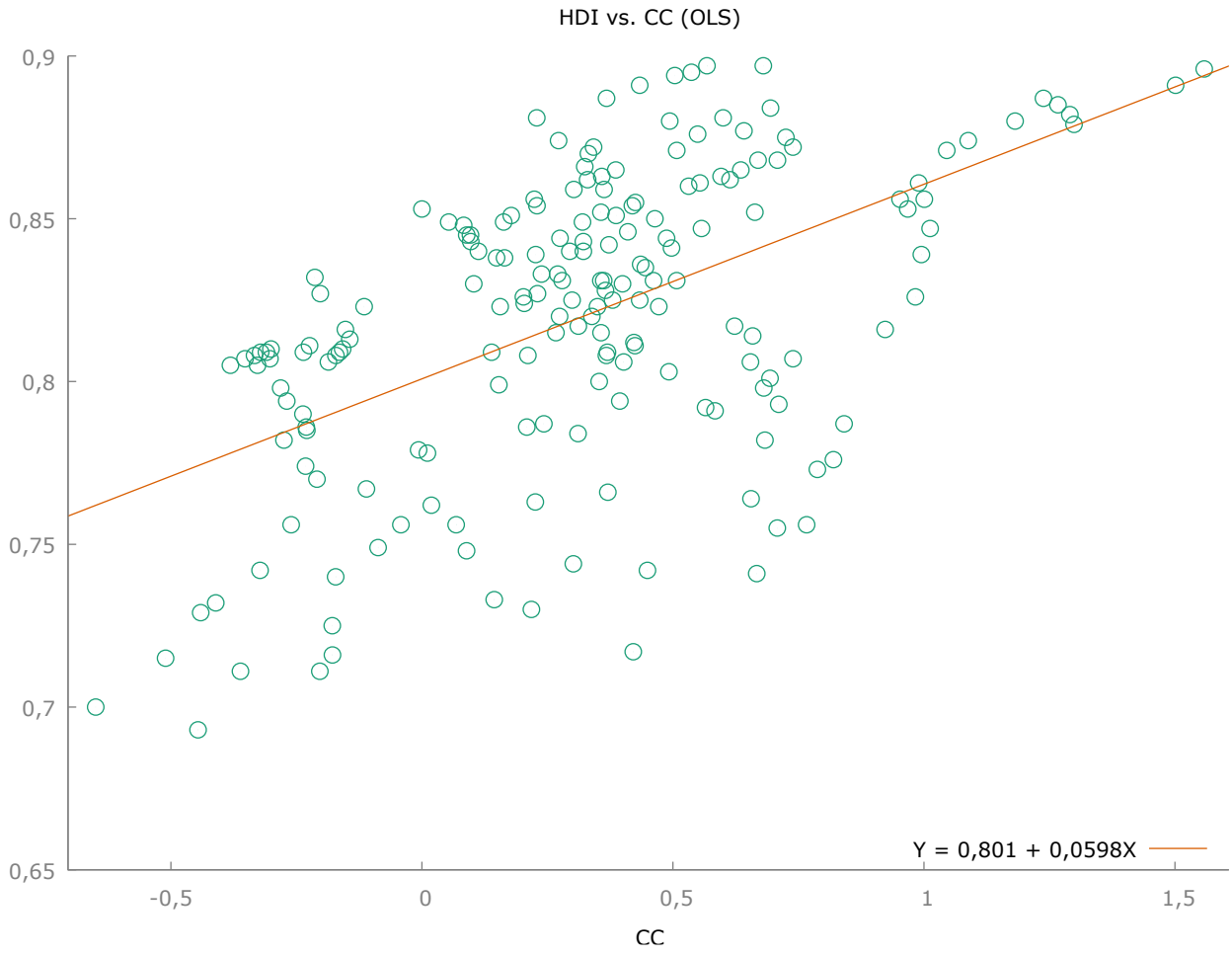

Figure 6. Scatter plot of HDI and CC

Source: Own elaboration

To verify the one-sided influence of corruption on human capital development, panel data analysis was applied. As already mentioned, several panel data models can be used. Recommendations about the suitability of individual panel models are given by panel diagnostics tests (see e.g. Baltagi, 2008). The output of the tests is a report on the suitability of using individual panel models. One frequently used panel test is the Breusch-Pagan test, which is performed to determine whether a pooled OLS or FEM model should be used. If the p-value > 0.05, the OLS model is considered appropriate. In the case of our data, the p-value is 2.07124e-017. A low p-value argues against the null hypothesis that the pooled OLS model is adequate and in favor of the random effects alternative.

Another panel diagnostic test used is the Hausman test, which is used as a basis for deciding whether FEM or REM is more appropriate. If the p-value is > 0.05, the REM is considered valid (Baltagi, 2008). In our case, the p-value of the Hausman test is $5.34023e^{-010}$. A low p-value argues against the null hypothesis that the random-effects model is consistent and in favor of the fixed-effects alternative. The aforementioned panel diagnostic tests identified that FEM should be used to perform the analysis. If the individual effects z_1 to z_q are unobservable but correlated with explanatory variables, the solution is to include all effects in the predictable conditional average using the relation $\alpha i = \alpha_1 z_{i1} + \alpha_2 z_{i2} \alpha_3 + \ldots + \alpha_q z_{iq}$ and the FEM equation is as follows (Baltagi, 2008):

$$y_{it} = \alpha_i + \beta_1 x_{it1} + \beta_2 x_{it2} + \ldots + \beta_k x_{itk} + u_{it} \quad (2)$$

where y_{it} is the dependent variable observed for the individual I at time x_{it1} and β is the $k \times 1$ matrix of parameters; α_i means a specific constant for each cross-sectional unit and u_{it} is the error term.

The estimation of the influence of independent variables on human development using regression analysis of panel data can then be given by the following equation:

$$HDI = \alpha_i + \beta_1 * COR + \beta_2 * GNI + \beta_3 * LE + \beta_4 * EYS + \beta_5 * MYS + \beta_6 * RP + \beta_7 * GDP + \beta_8 * GE + \beta_9 * UP + u_{it} \quad (3)$$

Table 3 shows the results of the panel data analysis using the fixed-effects model.

Table 3. Results of the panel data analysis – Fixed effects model

Variable	*Coeff.*	*Std. Error*	*t-ratio*	*p-value*	
const	0,0326607	0,0426629	0,7656	0,4451	
CPI	6,52876e-05	2,59047e-05	2,52	0,0527	*
CC	−0,00112216	0,00256709	−0,4371	0,6626	
GNI	−8,28858e-07	3,17290e-07	−2,612	0,0098	***
LE	0,00700941	0,000623748	11,24	<0,0001	***
EYS	0,0123584	0,000636275	19,42	<0,0001	***
MYS	0,00334071	0,00109729	3,045	0,0027	***
RP	−0,000664627	0,000348601	−1,907	0,0584	*
GDP	3,22015e-06	3,74676e-07	8,595	<0,0001	***
GE	−0,000630650	0,000351984	−1,792	0,0751	*
UP	0,000262186	0,000135079	1,941	0,0540	*
R^2	0,991077				
Adjusted R^2	0,985338				
Prob (F-statistic)	$6{,}5e^{-155}$				

Note: ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Standard errors are in parentheses.

Source: Own elaboration

By analysing panel data, the influence of corruption on human capital in selected transitional economies was proven in the case of the CPI index at a significance level of 0.1. For the CC indicator, the effect is not statistically significant. The reason is likely to be the already mentioned different measurement methodology of both indices, where the CPI indicator takes into account public sector corruption, which is more fundamental to human capital. The second hypothesis was thus confirmed for the CPI indicator. Specifically, a one percentage point improvement in the CPI will lead to a 0.000065 percentage point improvement in the HDI. Other variables that were marked as statistically significant at the 10% significance level are Rural population, General government final consumption, and Urban population. All these variables influence the development of human capital in transitive economies in the period under review.

Higher statistical significance was demonstrated for the variables GNI, Life expectancy at birth years, Expected years of schooling, Mean years of schooling, and GDP per capita. All these mentioned variables should also affect the development of human capital, even at a significance level of 0.01.

In the previous model, it was possible to demonstrate a significant positive influence of the variables GNI, Life expectancy at birth years, Expected years of schooling, and Mean years of schooling on human capital. This is quite logical, as these are dimensions of the human development index. Here, the question arises as to whether these could be transmission channels through which corruption could also influence the development of human capital indirectly. The influence of corruption on these areas of human life has been proven by several empirical studies.

To verify this hypothesis, three models were constructed in which GNI, Life expectancy, Expected years of schooling, and Mean years of schooling became the explained variables. Models taking into account the stationarity of variables were built using formulas (4), (5), (6), (7) as follows:

$$GNI = \alpha_i + \beta_1 * COR + \beta_2 * HDI + \beta_3 * LE + \beta_4 * EYS + \beta_5 * MYS + \beta_6 * RP + \beta_7 * GDP + \beta_8 * GE + \beta_9 * UP + u_{it} \quad (4)$$

$$LE = \alpha_i + \beta_1 * COR + \beta_2 * GNI + \beta_3 * HDI + \beta_4 * EYS + \beta_5 * MYS + \beta_6 * RP + \beta_7 * GDP + \beta_8 * GE + \beta_9 * UP + u_{it} \quad (5)$$

$$EYS = \alpha_i + \beta_1 * COR + \beta_2 * GNI + \beta_3 * LE + \beta_4 * HDI + \beta_5 * MYS + \beta_6 * RP + \beta_7 * GDP + \beta_8 * GE + \beta_9 * UP + u_{it} \quad (6)$$

$$MYS = \alpha_i + \beta_1 * COR + \beta_2 * GNI + \beta_3 * LE + \beta_4 * EYS + \beta_5 * HDI + \beta_6 * RP + \beta_7 * GDP + \beta_8 * GE + \beta_9 * UP + u_{it} \quad (7)$$

Diagnostic tests recommended again the FEM. Table 4 shows the results of the panel data analysis using the fixed-effects model for the aforementioned regression equations.

Table 4. Results of the panel data analysis – Fixed effects model

GNI			*Life Expectancy*			*Expected years of schooling*			*Mean years of schooling*		
Variable	p-value		Variable	p-value		Variable	p-value		Variable	p-value	
const	<0,0001	***	const	<0,0001	***	const	0,3098		const	0,2067	
CPI	0,0099	***	CPI	0,1787		CPI	0,0994	**	CPI	0,0946	*
CC	0,8119		CC	0,5488		CC	0,9744		CC	0,0032	***
HDI	0,0098	***	HDI	<0,0001	***	HDI	<0,0001	***	HDI	0,0027	***
LE	<0,0001	***	RP	0,1638		RP	0,1531		RP	0,5471	
EYS	<0,0001	***	GDP	<0,0001	***	GDP	<0,0001	***	GDP	0,1159	
MYS	0,4533		GE	0,0120	**	GE	0,0833	*	v	0,0538	*
RP	0,1695		v	0,4100		v	0,2471		UP	0,0528	*
GDP	<0,0001	***	EYS	<0,0001	***	MYS	0,1868		GNI	0,4250	
GE	0,6080		MYS	0,5661		GNI	0,6080		LE	0,5661	
UP	0,4250		GNI	<0,0001	***	LE	<0,0001	***	EYS	0,1868	
R2	0,985041		0,971436			0,942079			0,912767		
Adjusted R2	0,981798		0,954901			0,882223			0,841163		
Prob (F-statistic)	$7,2e^{-137}$		$2,6e^{-114}$			$1,08e^{-89}$			$1,74e^{-75}$		

Note: ***, **, and * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Standard errors are in parentheses.

Source: Own elaboration

To verify the statistical significance of the relationship between corruption and individual dimensions of the HDI, panel data analysis was also applied to them. It was verified whether individual dimensions could be transmission channels through which corruption affects the development of human capital in the monitored set of countries. Thus, the dependent variable was always a certain dimension influencing the variable CPI index, which in the analysis of panel data appeared as a statistically significant variable influencing the development of human capital. In the cases of GNI, Expected Years of Schooling and Mean Years of Schooling, a statistically significant influence (statistical significance at the 10% or 5% significance level) of corruption on this chosen dimension was demonstrated. Therefore, it can be assumed that corruption affects the development of human capital in the country through the transmission channel of the dimension "Knowledge" and the dimension "A decent standard of living". The "Long and healthy life" dimension has not been statistically proven. Hypothesis 3 was thus only partially proven.

4. DISCUSSION

The impact of bureaucratic corruption in particular on the economic performance of various countries has been a popular topic of various studies and debates for decades. Several empirical studies have confirmed the negative effect of corruption on human capital, through reductions in government spending on education, science and research, and health. However, the issue of the influence of corruption on the development of human capital, i.e. the main source of economic growth, is still largely unexplored territory. However, it can be assumed that corruption and human capital development are two closely related variables and the influence of corruption on human capital is undoubtedly significant.

The conclusions of the analysis confirm the conclusions of several authors (Akçay, 2006; Qizilbash, 2001) that highly corrupt countries tend to have a low level of human capital development, and the level of bureaucratic corruption defined by the CPI indicator was marked as a statistical variable in the regression model significantly influencing the HDI indicator. Akçay (2006) and Emar (2020) considers the level of urbanization as a factor influencing the development of human capital in a country. The analysis carried out confirms this assumption of theirs also for the selected transitive economies. In general, it can be summarized that the performed data analysis confirmed statistical significance at least at the 10% significance level for most variables that were selected as the main variables influencing the development of human capital in the country based on the literature review.

As mentioned earlier, empirical studies by foreign authors found that corruption not only affects several variables directly but also indirectly through transmission channels. The influence of corruption on the HDI indicator was confirmed through two out of three HDI dimensions. Hypothesis number 3 about the indirect influence of corruption through the life expectancy/knowledge/standard of living dimension was thus confirmed for the "knowledge" and "standard of living dimension". Thus, the performed analysis did not confirm the conclusions of the authors Kaufmann, Kraay and Zoido-Lobaton (1999) about the influence of corruption on life expectancy, through which corruption could influence the development of human capital.

CONCLUSION

The presented contribution carried out an empirical analysis of data from the period 1996-2021 to verify the influence of corruption on the development of human capital in selected European transitional economies. Even though the transformation process of the selected economies should be over and their entry into the European Union fundamentally influenced the anti-corruption policy of these countries, in terms of the level of bureaucratic corruption, the selected European countries still do not stand alongside those from Western or even Northern Europe.

By applying correlation analysis, the validity of hypothesis 1 on the mutual relationship between corruption and human capital development was verified. Through the analysis of panel data, it was found that corruption in the observed period had a statistically significant effect on the development of human capital in the selected set of countries, thereby verifying the validity of hypothesis 2 on the one-sided influence of corruption on the development of human capital. In addition to corruption, GDP, the number of rural residents, and public expenditures have also been proven to be other variables affecting human capital. Furthermore, the analysis of panel data revealed that corruption can affect human capital indirectly, through the dimensions "knowledge" and "standard of living". This verified the validity of hypothesis number 3, which was only partially confirmed.

The limitation of the results of the analysis of the impact of corruption on human development can be seen in the basic problem of quantifying corruption. Corruption is difficult to identify as well as quantify. Most of the currently existing indicators are based on soft data. On the other hand, the corruption indicators compiled by the World Bank and Transparency International, which were used in this study, are the most reliable that can currently be used for economic analysis.

The authors of this article see as a subject for further research not only the solution of the aforementioned relationship between corruption and the development of human capital in transition countries but also their wider context in European and international comparison. A detailed analysis of the dimensions

primarily influencing the development of human capital, i.e. the "knowledge" and "standard of living" dimensions, is also worth paying attention to. Several studies have shown the negative impact of corruption on the country's economic development. Here, from the area of transmission channels, the question arises as to whether human capital is the main transmission channel through which corruption affects the gross domestic product and other indicators of macroeconomic performance. This presents an interesting research question for the authors of this paper for further research.

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