

# THE INFLUENCE OF SOCIAL EFFECTS ON STOCKS OF DIRECT INVESTMENT IN EASTERN EUROPEAN COUNTRIES

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## Abstract

Currently, the countries of Eastern Europe and the European Union are focused on economic development. And this is governed by respect for environmental rules and human rights. For this reason, the UN has set 17 sustainable development goals, which is in fact a universal program used on a global scale. These SDGs manage 3 types of effects, namely economic, environmental and social. In recent years, developing countries have attracted a fairly high level of direct investment that has contributed to economic growth. In general, direct investment is positively correlated with the level of growth or the cost of labor. Thus, the influence of economic effects in attracting direct investments is usually pursued. In this paper we want to see how the social effects of sustainable development influence the size of direct investment stocks in Eastern European countries. We will analyze the countries of Eastern Europe and which are members of the European Union in the period 1995-2020 and we will use the Eviews program. Thus, following the running of the multiple regression equation, we found that in attracting direct investments in Eastern Europe in the period 1995-2020, the social effects have a positive influence, over 40% of the total stocks.

**Keywords:** stock of direct investments; sustainable development; social effect; economical growth; Est Europe.

**JEL Classification:** G28, O11, Q01

## 1. Introduction

Currently, an economically developed country is based on an abundance of capital (Horobeț and Popovici, 2017). Thus, we can say that underdeveloped countries are experiencing a limitation of public sources of investment. These limitations can be attributed to different national interests, such as controlling the budget deficit, paying pensions or salaries. And due to a weak investment activity, the economy has to lose. On the other hand, if public resources are limited, then public policies should encourage private funding. Direct investment is a healthy resource on which the economy can rely on both stability and imbalance.

Since the 1990s, direct investment has become a major source of capital inflows into both developed and emerging economies. This type of investment is mainly made by multinational companies entering a local market and creating new production facilities in the host countries (Qiu L.D., Wang S., 2011).

The long-term success of investors also implies the economic progress of the companies in which they invest and, automatically, the employees will also know a social progress. This idea of progressivity is intertwined with the goals of sustainable development, which are based on social progress, environmental balance and economic growth. Thus, in this context we

want to focus on the social effects of sustainable development and observe their influences on direct investment stocks.

Although the beginning of 2020 did not seem to bring anything different from the reality we were used to living in, in March we began to come into contact with a new life marked by the decision of the world's states to declare a health crisis, pandemic and lockdown. Thus, we will include in the analysis the period 1995-2020 in order to have an extended area of time and in which to include this recent crisis.

## 2. Direct investment

The Organization for Economic Co-operation and Development (OECD) defined FDI in 2008 as “a reflection of the objective of obtaining a long-term interest in an entity resident in an economy (referred to as a “direct investment enterprise”) by an entity resident in another economy (referred to as a “direct investor”), this interest implying a long-term relationship between the direct investor and the direct investment firm, as well as a significant degree of influence of the investor on the management of the receiving enterprise ”([https : //www.oecd.org/investment/fdibenchmarkdefinition.htm](https://www.oecd.org/investment/fdibenchmarkdefinition.htm)).

Foreign direct investment hosting a long-term investment relationship that takes place between 2 entities, respectively a resident and the other non-

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resident ([https://www.bnr.ro/Cercetarea-statistica-pentru-determinarea-investi%C8%9Bilor-foreign-direct-\(ISD\)-18375.aspx](https://www.bnr.ro/Cercetarea-statistica-pentru-determinarea-investi%C8%9Bilor-foreign-direct-(ISD)-18375.aspx)). This relationship usually involves significant managerial influence by investors in the companies in which they have invested.

In general, direct investments are correlated with economic growth, given the fact that the volume of investments and their efficiency increase. Direct investment is also believed to contribute to economic growth through technologies that are dispersed from the developed economies of developing countries (Borensztein et al., 1998).

In Table 1 we have presented a description of the descriptive statistics of direct investments in Eastern European countries in the period 1995-2020.

Table 1: Descriptive statistics for direct investment

	Direct investment in the reporting economy (stocks) - annual data, % of GDP
Mean	74.73821
Median	57.80000
Maximum	327.3000
Minimum	12.20000
Std. Dev.	58.08744
Skewness	2.125208
Kurtosis	7.127930
Jarque-Bera	179.9174
Probability	0.000000
Sum	9192.800
Sum Sq. Dev.	411646.4
Observations	123

Source: Author

On average, all the analyzed countries in Eastern Europe recorded a level of direct investment stocks of 74.74% of the total GDP in the period 1995-2020. Most DI stocks as% of GDP have values between 12.20-327.20% in the analyzed period.

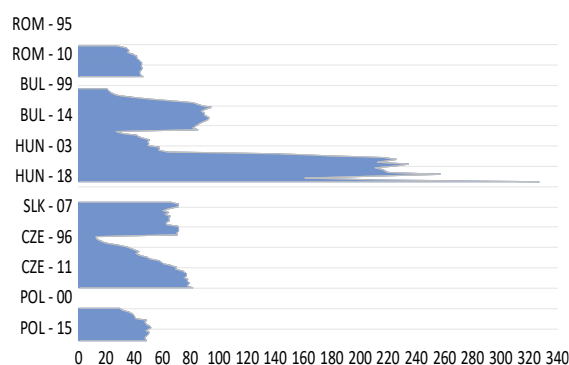
The skewness has the value of  $2.13 > 0$ , therefore we have an asymmetry to the right.

Kurtosis has a value of  $7.13 > 3$ , so it is called leptocurtic.

Coefficient of variation ( $\text{std, dev} / \text{mean} * 100 = 58.09 / 74.74 * 100 = 77.72\%$ )  $> 50\%$ , therefore we have a heterogeneous distribution.

In graph 1 we presented the direct investments from 1995-2020 in the analyzed countries.

Chart 1: Evolution of direct investment



Source: Author

It is noted that Hungary has the highest level of direct investment stocks in the period under review. At the opposite pole is Romania, with the lowest level of direct investment stocks from 1995-2020. However, there is an upward trend in direct investment stocks in Romania.

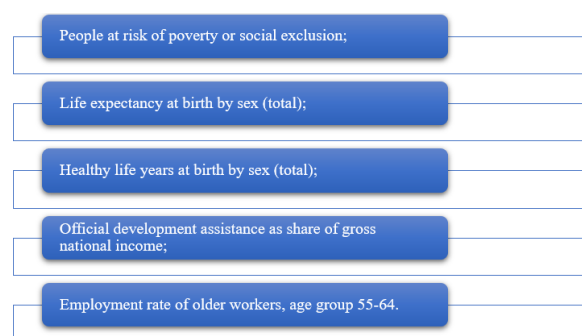
### 3. Indicators of social influence, a pylon of sustainable development

The concept of sustainable development has its origins in the Brundtland Report of 1986. Sustainable development is based on 3 fundamental pillars, namely the environment, the economy and society. This first vision dates back to 1979 and belongs to economist Rene Passet. The concept has also been defined on the basis of the phrase "ecology, economy and equity" (Passet R., 1979).

In this paper we will focus only on the social side of sustainable development. Thus, we will analyze the influences of the social effects of sustainable development on the level of direct investment stocks.

In Chart 2 we made a presentation of the indicators used to define the social effects of sustainable development.

Chart 2: Indicators used to define the social effects of sustainable development



Source: Author

Among the 17 goals included in the 2030 Agenda by the UN is the eradication of poverty. Thus, we introduced the indicator People at risk of poverty or social exclusion. People exposed to poverty have an equivalent disposable income below the at-risk-of-poverty threshold, which is set at 60% of the median equivalent disposable income (after social transfers).

Another goal refers to health and well-being. Thus, life expectancy at birth is an indicator that measures the number of years a newborn is expected to live. Thus, this indicator measures the health of the population. However, it is not an indicator capable of answering the question of whether the extra years of life gained through increased longevity are spent in good or poor health. Thus, the indicator of healthy life years has developed. This indicator focuses on the quality of life of a person who spends his life in a healthy state. It does not focus on the amount of life.

Another goal of the UN is decent work and growth. Thus, we introduced the official development assistance indicator. It takes the form of grants or loans from the official sector to promote economic development and well-being in the beneficiary countries. Thus, through these payments an international transfer of financial resources / goods / services valued at the cost of the donor is registered.

Through the goal of decent work and growth, full employment is desired. Thus, people aged 55-64 have a fairly high risk of not being employed in the event of dismissal. For this reason, we have introduced the indicator of the employment rate of older workers, with the specification of this age category.

#### 4. Data and methodology

In Table 1 we will make a presentation of the notations made to determine the influence of social effects on direct investment in Romania, Bulgaria, Hungary, Slovakia, the Czech Republic and Poland in the period 1995-2020.

Table 1: Notations

Variable	Type of variable	Explication
Y	Dependentă	Direct investment in the reporting economy (stocks) - annual data, % of GDP
X <sub>1</sub>	Independentă	Healthy life years at birth by sex (total)
X <sub>2</sub>	Independentă	Life expectancy at birth by sex (total)
X <sub>3</sub>	Independentă	Official development assistance as share of gross nation income
X <sub>4</sub>	Independentă	Employment rate of older workers, age group 55-64
X <sub>5</sub>	Independentă	People at risk of poverty or social exclusion

Source: Author

Data on official development assistance as a share of gross national income were obtained from the OECD website. The other data related to the other 4 variables were obtained from the Eurostat website.

We will first check if the analyzed variables are stationary. And if they are not stationary we will apply the Unit ROOT test with a difference.

Next, we run the regression equation. All these operations will be performed using the Eviews 12 software.

The equation used to determine the social effects of direct investment is:

$$Y = \beta_0 + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 + \beta_4 * X_4 + \beta_5 * X_5 + \varepsilon$$

where,

B0 = constant

B1 = parameter of the independent variable X<sub>1</sub>, Healthy life years at birth by sex (total);

B2 = the parameter of the 2nd independent variable X<sub>2</sub>, Life expectancy at birth by sex (total);

B3 = the parameter of the 3rd independent variable X<sub>3</sub>, Official development assistance as share of gross national income;

B4 = the parameter of the 4th independent variables X<sub>4</sub>, Official development assistance as share of gross national income;

B5 = the parameter of the 5th independent variables X<sub>5</sub>, People at risk of poverty or social exclusion;

ε = error term of the equation.

#### 5. Results

In Table 2 we will apply 2 unit root tests to see which of the 6 variables are stationary.

Table 2: Unit root tests for social effect

Levin, Lin and Chu	Level		1 <sup>st</sup> difference	
	Statis.	Prob.	Statis.	Prob.
Y	-2.56738	0.0051	-	-
X <sub>1</sub>	-0.45398	0.3249	-6.42987	0.0000
X <sub>2</sub>	1.50384	0.9337	-5.68546	0.0000
X <sub>3</sub>	1.02292	0.8468	-6.37779	0.0000
X <sub>4</sub>	1.53208	0.9372	-6.85644	0.0000
X <sub>5</sub>	-0.99595	-0.1599	-7.29972	0.0000
ADF test				
Y	8.95612	0.7067	62.8102	0.0000
X <sub>1</sub>	4.64840	0.9687	44.5339	0.0000
X <sub>2</sub>	2.46757	0.9983	41.2620	0.0000
X <sub>3</sub>	2.00314	0.9994	57.6300	0.0000
X <sub>4</sub>	1.17771	1.0000	47.0859	0.0000
X <sub>5</sub>	9.29197	0.6778	54.6419	0.0000

Source: Author

It can be seen that in the case of the first test, the first variable, the stocks of direct investments as% of GDP, are stationary with a probability of 5% level. The other 4 variables are stationary by applying the test with a difference of 5% significance threshold.

In the case of the second test performed, we notice that all variables are stationary at the first difference.

Once the variables are stationary, we can run the regression equation to determine the influence of the social effects on direct investment stocks in the period 1995-2020.

Within the table 3 we made a presentation of the regression equation using the least squares method.

Table 3: The results of the equation for social effect

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	17.04286	3.094265	5.507887	0.0000
X <sub>1</sub>	-0.721045	0.287432	-2.508579	0.0133
X <sub>2</sub>	0.896295	0.267654	3.348706	0.0010
X <sub>3</sub>	612.2165	102.1025	5.996099	0.0000
X <sub>4</sub>	-1.101827	0.432672	-2.546562	0.0120
X <sub>5</sub>	1.185305	0.316033	3.750577	0.0003
R-squared	0.440984	Prob (F-statistic)		0.000000
Adjusted R-square	0.421019	Mean dependent var		54.33767
S.E. of regression	41.63674	S.D. dependent var		54.71980
F-statistic	22.08800			

Source: Author

We used a total of 146 observations for 25 periods. It is observed that all variables are accepted at a significance level of 5%.

Prob F statis. is less than 0.05 so the model is valid. Thus, the variables can together influence 42.10% (Adjusted E-square) of direct investments.

The regression equation can be written as follows, according to Table 3:

$$Y = 17.04286 + (-0.721045) * X_1 + 0.896295 * X_2 + 612.2165 * X_3 + (-1.101827) * X_4 + 1.185305 * X_5$$

It is observed that variables X<sub>2</sub> and X<sub>4</sub> have a negative influence on direct investments. And the variables X<sub>2</sub>, X<sub>3</sub> and X<sub>5</sub> have a positive influence on direct investments in the period 1995-2020.

We checked with the White test whether the errors were not correlated with each other. The test results showed a sig = 0.0000 less than 5%, so I reject the null hypothesis and accept the second hypothesis, namely that there is heterodasticity.

We checked the cross-sectional dependence on residues, as there is a fairly large difference between the included periods (24) and the cross-section periods (6). Thus, in the table no. 4 we presented the results of the cross-section dependency test in residues.

Table 4: The test results of cross-section dependence in residuals

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	71.64367	15	0.0000
Pesaran scaled LM	10.34167		0.0000
Bias-corrected scaled LM	10.21667		0.0000
Pesaran CD	0.762566		0.4457

Source: Author

The first 3 tests reject the null hypothesis, which states that there is no cross-section dependence in

residues. Only the 4th test has a probability higher than 0.05% and it would accept the null hypothesis. Analyzing the 4 tests, we can reject zero hypotheses, as there is a probability higher than 0.05% in the case of 3 tests. Therefore there is a cross-section correlation between residues.

In table 5 we made a presentation of the correlations that are established between the variables for social effects.

Table 5: The correlations that are established between the variables

Variable	Y	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>
Y	1.000000	0.590327	0.583820	0.619405	0.558636	0.495161
X <sub>1</sub>	0.590327	1.000000	0.785087	0.861631	0.772996	0.859089
X <sub>2</sub>	0.583820	0.785087	1.000000	0.819203	0.977761	0.588286
X <sub>3</sub>	0.619405	0.861631	0.819203	1.000000	0.833190	0.568781
X <sub>4</sub>	0.558636	0.772996	0.977761	0.833190	1.000000	0.549308
X <sub>5</sub>	0.495161	0.859089	0.588286	0.568781	0.549308	1.000000

Source: Author

Analyzing these values we can see if there are statistical links between statistical variables, if:

- $r < 0$  then there is a negative connection;
- $r$  is included between (0; 0.4) then there is a positive connection, of low intensity;
- $r$  is included between (0.4; 0.7) then there is a positive connection, of medium intensity;
- $r$  is included between (0.7; 1) then there is a positive connection, of strong intensity.

Thus:

Y and X<sub>1</sub>:  $r = 0.590327 > 0$ , so there is a direct, average correlation;

Y and X<sub>2</sub>:  $r = 0.583820 > 0$ , so there is a direct, average correlation;

Y and X<sub>3</sub>:  $r = 0.619405 > 0$ , so there is a direct, average correlation;

Y and X<sub>4</sub>:  $r = 0.558636 > 0$ , so there is a direct, average correlation;

Y and X<sub>5</sub>:  $r = 0.495161 > 0$ , so there is a direct, average correlation;

X<sub>1</sub> and X<sub>2</sub>:  $r = 0.785087 > 0$ , so there is a direct, strong correlation;

X<sub>1</sub> and X<sub>3</sub>:  $r = 0.861631 > 0$ , so there is a direct, strong correlation;

X<sub>1</sub> and X<sub>4</sub>:  $r = 0.772996 > 0$ , so there is a direct, strong correlation;

X<sub>1</sub> and X<sub>5</sub>:  $r = 0.859089 > 0$ , so there is a direct, strong correlation;

X<sub>2</sub> and X<sub>3</sub>:  $r = 0.819203 > 0$ , so there is a direct, strong correlation;

X<sub>2</sub> and X<sub>4</sub>:  $r = 0.977761 > 0$ , so there is a direct, strong correlation;

X<sub>2</sub> and X<sub>5</sub>:  $r = 0.588286 > 0$ , so there is a direct, average correlation;

X<sub>3</sub> and X<sub>4</sub>:  $r = 0.833190 > 0$ , so there is a direct, strong correlation;

$X_3$  and  $X_5$ :  $r = 0.568781 > 0$ , so there is a direct, average correlation;

$X_4$  and  $X_5$ :  $r = 0.549308 > 0$ , so there is a direct, average correlation.

It is observed that direct investments are positively correlated and with an average intensity with all the independent variables introduced in this equation.

It can also be seen that the strongest correlation exists between the independent variables  $X_2$  and  $X_4$  (Life expectancy at birth by sex (total) and Employment rate of older workers, age group 55-64).

The results of this study show that the social effects have a positive, average influence on the stock of direct investments in the 6 countries of Eastern Europe. Thus, social indicators have a positive influence on direct investment, explaining 44.10% of the evolution.

## 6. Conclusions

In conclusion, following the study, we found that the UN aims to create a developed society both economically and socially by fulfilling its objectives.

Thus, the development of a company is achieved through capital.

The long-term success of investors also implies the economic progress of the companies in which they invest and, automatically, the employees will also know a social progress. This idea of progressivity is intertwined with the goals of sustainable development, which are based on social progress, environmental balance and economic growth. Thus, in this context we want to focus on the social effects of sustainable development and observe their influences on direct investment stocks.

The results of this study show that the social effects have a positive, average influence on the stock of direct investments in the 6 countries of Eastern Europe. Thus, social indicators have a positive influence on direct investment, explaining 44.10% of the evolution.

These results may help to reinforce the idea that direct investment creates great benefits in both economically and socially developing countries. Thus, the study can also be used for future studies in which to expand the sample. A comparison can also be made between the influence of social and economic effects on the stock of direct investment.

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