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# THE DYNAMICS OF FOREIGN DIRECT INVESTMENTS IN CENTRAL AND EASTERN EUROPE UNDER THE IMPACT OF INTERNATIONAL CRISIS OF 2007

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Abstract: As an engine for economic development of CEE countries, FDI inflows have contributed to creating new jobs and access to modern technologies; have had positive effects on balance of payments and state budget revenues. The purpose of this article is to highlight the implications of international financial and economic crisis of 2007 on FDI in CEE countries. Also, we realized a comparative approach of the factors that influence investors' decisions in Czech Republic, Hungary, Poland, Romania, Slovakia and a SWOT analysis of FDI in Romania at the end of 2009. The second part of the article represents an econometric analysis using SPSS of FDI impact on GDP and unemployment rate on the example of Romanian economy during 1991-2009. The fundamental hypothesis of econometric analysis is the following: it is a direct link between FDI and GDP, respectively, an inverse link between FDI and unemployment rate.

**Keywords:** FDI, unemployment rate, GDP, financial crisis, CEE countries **JEL Classification**: G01, E22, E24

#### 1. INTRODUCTION

Foreign direct investments (FDI) have become a primary factor in the economic development and modernization of Central and Eastern Europe countries (Kornecki, 2006). According to the IMF and OECD definitions, direct investment reflects the aim of obtaining a lasting interest by a resident entity of one economy -direct investor in an enterprise that is resident in another economy- the direct investment enterprise (Duce, 2003, p.2).

We can affirm that the direct foreign investments represent a phenomenon with a worldwide importance because (Voinea, 2010):

• they fill a significant weighting in the economic activities made worldwide.

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- they have been marked by a big dynamics which coincides with the extending and recession process of the globalization.
- they allow the worldwide development finance's, in the developed countries and also in developing ones.

Among trends in FDI evolution in CEE countries are noted:

• the orientation, especially, in the late 1990s and early 2000s, to service industries (banking, IT, telecoms etc.) and the recent move back to traditional manufacturing;

• reinvesting profits in these countries, detrimental greenfield and brownfield investment.

## 2. THE IMPLICATIONS OF INTERNATIONAL ECONOMIC AND FINANCIAL CRISIS ON FOREIGN DIRECT INVESTMENTS IN CEE COUNTRIES

During 2003-2008, FDI inflows in CEE countries (Czech Republic, Hungary, Poland, Slovakia and Romania) recorded an upward trend, rising from US\$30 billion to US\$ 155 billion (PriceWaterHouseCoopers, 2010). Due to this issue, the CEE region is considered, after Western Europe and China, the most attractive foreign investment locale. A key feature of FDI projects in CEE is unemployment rate reducing.

Many different factors influence the investor's decision of which country to choose, according to the nature of the project. There are conflicting views: while many investors do not consider incentives as a primary factor, in other business their availability may influence investors' decisions in one country's advantage. Also, low labour costs and low tax rates are important factors, although experts believe that labour costs will align with European Union standards and variations in tax rates are difficult to predict.

 Table 1- A comparative analysis of factors which influence investors' decisions on the example of CEE countries

	Czech Republic	Hungary	Poland	Romania	Slovakia	
Real estate costs						
Cost of land	This will very much	n depend on the regior	n of the investment a	and the size of the s	ite.	
Construction	These will very mu	ch depend on the natu	re of the project.			
costs						
Taxes	Is paid an annual	Upon the purchase	Is paid an	Notaries' fees:	Purchasing	
	fee and it	of land, is paid a	annual fee and it	between	the land is	
	depends	transfer tax of	depends on	0.5%- 2.5% of	free.	
	especially on the	10%, unless the	various factors:	the price. Is paid		
	type of real estate	buyer of the land	on type,	an annual fee		
	and territory.	undertakes	location,	and it depends		
		the construction of	purpose	especially on the		
		residential	and use of real	type of real		
		property within	estate.	estate and		



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		four years.		territory.	
		Turret			
Companying	100/		1001	1.00/	100/
Corporation	19%	19%	19%	16%	19%
tax				Certain small	
				companies pay	
				tax of 3% of	
				their turnover.	
				A minimum is	
				imposed on	
				companies if the	
				companies if the	
				annual tax	
				payable is less	
				than the	
				minimum tax	
				fixed by the tax	
				authority.	
VAT	20%	25%	23%	24%	20%
(general					
rate)					
Export tax	VAT payable on im	port from a non-EU o	country; import from	an EU country con	ply EU VAT
	rules.				
Personal	12.5%	17% -32%	18% - 32%	16%	19%
income					
tax rate					
	A	vailability of EU Stru	ctural and Cohesion	n Funds	
Amount	26 692	25 307	67 284	19 667	11 588
allocated	20,092	25,507	07,201	17,007	11,500
for period					
2007					
2007- 2012/ELD					
2013(EUR					
million)					
37 41	205	Labour i	ssues	1.50	206
Monthly	305	270	281	153	296
minimum					
wages (euro)					
2009					
	T	Availabili	ty of workforce	T	
Recorded	7.7%	11.8%	9,7%	7,3% (09.2010)	14,5
Unemploym					
ent					
(12.2010)					
		Access to a	target market(s)		
CEE countries	enjoy geographical b	enefits, being located	in the centre of the	pan-European mark	et.
	The Czech	Hungary, also,	Poland has good	Romania is	Slovakia is
	Republic	has a good	access to	adjacent to other	adjacent
	borders the	opening to	Western	EU states, and	with other
	Western European	Western Europe	European markets	has direct access	three CEE
	markets of	Western Europe.	of Germany and	to the Black Sea	countries
	Germany and		the Baltic Sea	and to the	and its
	Austria		ule Dalue Sea.	Donubo	and its
	лизита.				capital
					city is very
					close to
					Vienna.
		Economic	stability		
Real GDP	-4,1%	-6,7%	1,7%	-7,1%	-4,8%
growth rate					
2009					
GDP per	82	65	61	46	73

capita in					
Purchasing					
Power					
Standards					
(PPS) 2009					
Inflation rate	1,2%	4,7%	2,7%	6,1%	0,7%
12.2010					
Central bank	2%	7,25%	5%	8%	-
interest rates					
- Annual					
data 2009					

Source: http://epp.eurostat.ec.europa.eu/cache/ITY\_OFFPUB/KS-30-09-149/EN/KS-30-09-149-EN.PDF, www. worldwidetax.com, http://epp.eurostat.ec.europa.eu/cache/ITY\_PUBLIC/3-01102010-AP/EN/3-01102010-AP-EN .PDF, http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsieb020, http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&language=en&pcode=tsieb060&tableSelection=1&foot notes=yes&labeling=labels&plugin=1 [accesed on 12.01.2011]

After a spectacular increase in FDI inflows, during 2009, the implications of international economic crisis had a different impact on CEE countries: while Estonia, Latvia and Lithuania have registered a significant contraction in economic activity in 2009; Bulgaria and the Czech Republic faced a slight decrease of less than 5% of output; Poland's economy registered an uptrend in 2009.

In 2008, Russia recorded the largest increase in value of FDI.



Figure 1- The evolution of FDI inflows in CEE countries (US billions, 1997-2008)

🔳 Czech Republic 📃 Hungary 🔳 Poland 📒 Russia 🔳 Other

2002 2003 2004 2005 2006 2007 2008

Source: Allen & Overy (2008) Foreign Direct Investment in Central and Eastern Europe: A case of boom and bust?, PriceWaterHouseCoopers, accessed on December 2010 at http://www.pwc.com/en\_CZ/cz/tiskove-zpravy-2010/fdi-in-cee-final-report-march10.pdf

2000 2001

The figure above shows that, between 1990 and 2008, the favorite destination for FDI was Russia. After, in 2008, Russia recorded the largest increase in value of FDI, in 2009, their value was

\$0

1997

1998

1999

reduced by 48% compared with the same period of last year, because of the credit crunch in real estate and the collapse in the extractive industries.

Poland was the second favorite destination of investors in the region, fields like coal, oil, natural gas and real estate, which presented a particular interest, but the international crisis affected the financial sector and FDI value experienced a significant decline in 2009.

The Czech Republic was less affected by the economic recession, FDI value declined by 19% in 2009 compared with previous year. One explanation would be the fact that, in 2008, the key sector for investments was the automotive sector which totaled almost US\$ 1billion.

In Slovakia, FDI rose by 55% in 2009, due to an announced US\$ 2.3 billion real estate investment by Tri Granit, which accounted for more than 40% of total Slovakian FDI inflows in 2009.

Latvia and Slovenia have been the most affected, the FDI value recorded a decline at 71% respectively 70% (PriceWaterHouseCoopers, 2010), because of the fact that real estate sector enjoyed the bulk of FDI inflows.

Country analysis shows that real estate and extractive industries are the areas preferred by investors in the region, these two sectors accounted for more than a third of total FDI inflows between 2003 and 2009. The following table shows the FDI evolution, during 2009, in twenty largest sectors, and we note that FDI inflows experienced a significant decline (71% in real estate, 81% in automotive component, 82% in consumer electronics).

Sector	Annual change in	Share of regional FDI	
	FDI inflows (2009)	value (2003-2009)	
Real estate	-71%	25%	
Coal, oil and natural gas	-52%	13%	
Transportation	-34%	6%	
Alternative energy	31%	6%	
Automotive equipment	-67%	5%	
Metals	-70%	5%	
Food and tobacco	-16%	5%	
Building materials	-60%	5%	
Wood products	-68%	4%	
Automotive components	-81%	3%	
Paper, printing and packaging	-49%	3%	
Electronic components	43%	2%	
Consumer products	-52%	2%	
Consumer electronics	-82%	2%	
Hotels and tourism	-17%	2%	
Communications	14%	1%	

Table 2- The FDI evolution in twenty most important sectors in CEE region (%)

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Industrial machinery	-34%	1%
Warehousing and Storage	-42%	1%
Chemicals	171%	1%
Rubber	-79%	1%

Source: Allen & Overy LLP (2008) Foreign Direct Investment in Central and Eastern Europe: A case of boom and bust? processed after FDI Intelligence from the Financial Times Ltd,

Despite a significant decline, sectors like electronic components, alternative energy or chemicals have enjoyed a positive trend of FDI value.

## 3. ANALYSIS OF THE IMPACT OF FOREIGN DIRECT INVESTMENT ON GDP AND UNEMPLOYMENT RATE IN ROMANIA DURING THE PERIOD 1991-2009

Since 1991 it has been an upward trend of FDI, primarily due to investment flows from Europe to Romania as a consequence of proximity of accession and the improvement of country's rating and economic performance.

Strengths	Weaknesses				
<ul> <li>functional market economy</li> </ul>	• risen inflation rate comparing to Europe's				
• favorable geographic position- gateway to	average				
Europe	• inadequate and degraded transport				
<ul> <li>natural resources</li> </ul>	infrastructure,				
• a great consumer market , numerous,	<ul> <li>diminishing yield,</li> </ul>				
cheap and with a good education labor	• risen long-term unemployment rate				
force.	between youth and adults.				
Threats	Opportunities				
•a risen level of the taxation for the	• the seventh EU's member state from the				
enterprises,	point of view of the size,				
• degraded infrastructure,	• renewable energetic resources,				
• the migration of the developing sectors to	• catching location for FDI,				
cheaper locations, youth and specialist's	• a bigger mobility for the labor force				
emigration.	inside the European Union's market.				

A SWOT analysis of FDI	in Romania, at the end of 2009,	presents the situation as follows:
------------------------	---------------------------------	------------------------------------

We analyze the impact of FDI on GDP and unemployment rate in Romania during 1991-2009 using data from the following table:

Table 3-	The evolution	of FDI. GDI	and unem	olovment rate	in Romania	(1991-2009)
						(

Year	FDI (volume-	GDP (volume-	Unemployment
	Euro millions)	Euro billions)	rate (%)
1991	0.035	25.10	1.80
1992	0.059	15.10	5.40
1993	0.081	22.60	9.20
1994	0.280	25.30	11.00



1995	0.320	27.40	10.00
1996	0.210	28.20	7.80
1997	1.070	31.30	7.50
1998	1.800	37.40	9.30
1999	0.980	33.50	11.40
2000	1.140	40.30	11.20
2001	1.290	44.90	9.00
2002	1.210	48.50	10.20
2003	1.940	52.60	7.60
2004	5.180	60.80	6.80
2005	5.210	79.30	5.80
2006	9.060	97.20	5.40
2007	7.250	112.10	4.30
2008	9.100	137.00	4.40
2009	3.490	30.50	7.80

Source: INSSE

Foreign investments represented an engine of economic recovery, a generator of sustainable economic growth with beneficial effects in Romania during 1991-2009. In support of this statement, I identified the degree of correlation between the level of foreign direct investments and GDP, and between foreign direct investments and unemployment rate by calculating the correlation coefficient  $\rho$  using SPSS. The correlation coefficient may take a value between -1 and +1, if the correlation coefficient has a value closer to -1 or +1, the relationship between those two variables is closer, while its value is more close to 0 this indicates the absence of a link between the two variables. (Jaba and Grama, 2004, p. 233).

Based on the stated sample, the relationship between variables can be estimated by simple linear regression model equation of the form  $Y = a + b^*X$ , where *Y* will be independent variable FDI, *X* will be dependent variable GDP or unemployment rate, *a* and *b* are the values of model parameters of the regression estimators.

**Case 1**: The variables considered are:

- the value of foreign direct investments (FDI)- independent numerical variable (X)
- GDP- dependent numerical variable (Y)

Pearson correlation coefficient  $\rho$ =0.935 which shows that the correlation between FDI and GDP, in Romania, is direct and strong, the coefficient is very close to 1 (which corresponds to a perfect correlation).

	Correlat	tions	
		FDI	GDP
FDI	Pearson Correlation	1	.935(**)
	Sig. (2-tailed)		.000
	Ν	19	19
GDP	Pearson Correlation	.935(**)	1
	Sig. (2-tailed)	.000	
	Ν	19	19

\*\* Correlation is significant at the 0.01 level (2-tailed).

For testing the significance of the correlation coefficient, we use the T test. The properly Sig. value is  $(Sig = 0.000) < (\alpha = 0.01)$  highlights that we obtained a significant correlation coefficient to a threshold of 0.000, so are less than 1% chance of error if we say that between the two variables it is a significant correlation.

The estimated regression equation is FDI=23.139+10.250\*GDP.

	Coefficients (a)							
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confide	nce Interval for B
		В	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	23.139	3.725		6.212	.000	15.280	30.998
	FDI	10.250	.942	.935	10.886	.000	8.263	12.236

Coefficients (a)

a. Dependent Variable: GDP

Coefficient b=10.250 correspond to a direct (positive) link between the variables considered. A growth of FDI with a unit determines an increase of GDP on average with 10.250 billion euro, in Romania. For testing the parameters of the regression model, we use the T test. Value (Sig = 0.000)  $< (\alpha = 0.05)$  shows that  $\beta$  (slope) corresponds to a significant link between the two variables. F test has a high value (F = 118.504) and the Sig. value properly F statistics is low: (sig = 0.000)  $< (\alpha = 0.05)$  which means that the independent variable – FDI explains the variation of dependent variable-GDP.

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17581.164	1	17581.164	118.504	.000(a)
	Residual	2522.103	17	148.359		
	Total	20103.267	18			

a. Predictors: (Constant), FDI

b. Dependent Variable: GDP

The coefficient of determination  $R^2 = 0.875$  (R Square Model Summary table) shows that 87.5% of GDP variation can be explained by FDI value made in Romania during 1991-2009.

Model Summary (b)						
			Adjusted R	Std. Error of		
Model	R	R Square	Square	the Estimate		
1	.935(a)	.875	.867	12.18027		

a. Predictors: (Constant), FDI

b. Dependent Variable: GDP

Case 2: The variables considered are:

- the value of foreign direct investments (noted by FDI)- independent numerical variable (X)
- the unemployment rate (noted by Ur) dependent numerical variable (Y).

Pearson correlation coefficient  $\rho$ = -0.496 shows an inverse correlation between variables.

	Correlations				
		FDI	Unemployment rate		
FDI	Pearson Correlation	1	496(*)		
	Sig. (2-tailed)		.031		
	Ν	19	19		
unemployment rate	Pearson Correlation	496(*)	1		
	Sig. (2-tailed)	.031			
	Ν	19	19		

\* Correlation is significant at the 0.05 level (2-tailed).

The properly Sig. value is  $(\text{Sig} = 0.031) < (\alpha = 0.05)$  highlights that we obtained a significant correlation coefficient to a threshold of 0.031, so are less than 5% chance of error if we say that between the two variables it is a significant correlation.

The estimated regression equation is **FDI= 8.811-0.433\*Ur**.

Coefficients (a)									
		Unstandardized		Standardized					
Model	odel Coeff		fficients	Coefficients	t	Sig.	95% Confidence	e Interval for B	
		В	Std. Error	Beta			Lower Bound	Upper Bound	
1	(Constant)	8.811	.726		12.134	.000	7.279	10.343	
	FDI	433	.184	496	-2.358	.031	820	046	

**Coefficients (a)** 

a. Dependent Variable: unemployment rate

Coefficient b=-0.433 correspond to an inverse (negative) link between the variables considered. A growth of FDI with a unit determines a decrease of unemployment rate on average

with 0.433% in Romania. Value (Sig = 0.031) < ( $\alpha$  = 0.05) shows that  $\beta$  (slope) corresponds to a significant link between the two variables. The Sig. value properly F statistics is (sig = 0.031) < ( $\alpha$  = 0.05), which means that the independent variable – FDI explains the variation of dependent variable- unemployment rate.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.350	1	31.350	5.561	.031(a)
	Residual	95.842	17	5.638		
	Total	127.192	18			

	AN	OV	'A	(b)
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a. Predictors: (Constant) FDI

b. Dependent Variable: unemployment rate

The coefficient of determination  $R^2 = 0.246$  (R Square Model Summary table) shows that 24.6% of the variance in the dependent variable (unemployment rate) can be explained by changes in the independent variable (FDI).

Model Summary (b)							
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate			
1	.496(a)	.246	.202	2.37439			

a. Predictors: (Constant), FDI

b. Dependent Variable: unemployment rate

#### 4. CONCLUSION

The CEE region has experienced an uptrend FDI inflow since 2003, but it was halted by the global recession. While Latvia and Slovenia have been the most affected (the FDI value recorded a decline at 71% respectively 70%), in Slovakia, FDI rose by 55% in 2009. Country analysis shows that real estate and extractive industries are the areas preferred by investors in the region.

In terms of development, there is a general agreement of the potential benefits of Foreign Direct Investment. We illustrated this point making an econometric analysis on the example of Romanian economy, using a linear regression model. The relationship between GDP Growth and the increase of the relationship between FDI and GDP (FDI/GDP (%)) can be clearly established. The estimated regression equation is FDI=23.139+10.250\*GDP and Pearson correlation coefficient  $\rho$ =0.935.

Also, the coefficient of determination shows that 87.5% of GDP variation can be explained by FDI value made in Romania during 1991-2009. The relationship between FDI and unemployment rate can be estimated by the following regression equation FDI= 8.811-0.433\*Ur. Pearson

correlation coefficient  $\rho$ = -0.496 shows an inverse correlation between these variables. Unlike the previous case, the coefficient of determination R<sup>2</sup> =0.246 shows that 24.6% of the variance in the dependent variable (unemployment rate) can be explained by changes in the independent variable (FDI) in Romania.

Foreign direct investments have a significant impact on pattern of trade in many incomeenhancing directions, by improving a country's comparative advantages and enhancing its competitiveness.

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