# 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 depend on the region of the investment and the size of the site. | | | | |
| Construction costs | These will very much depend on the nature of the project. | | | | |
| Taxes | Is paid an annual fee and it depends especially on the type of real estate and territory. | Upon the purchase of land, is paid a transfer tax of 10%, unless the buyer of the land undertakes the construction of residential property within | Is paid an annual fee and it depends on various factors: on type, location, purpose and use of real estate. | Notaries' fees: between 0.5%- 2.5% of the price. Is paid an annual fee and it depends especially on the type of real estate and | Purchasing the land is free. |

| | | | | | |
|---|---|---|---|---|---|
| | | four years. | | territory. | |
| ***Taxation*** | | | | | |
| Corporation tax | 19% | 19% | 19% | 16% Certain small companies pay tax of 3% of their turnover. A minimum is imposed on companies if the annual tax payable is less than the minimum tax fixed by the tax authority. | 19% |
| VAT (general rate) | 20% | 25% | 23% | 24% | 20% |
| Export tax | VAT payable on import from a non-EU country; import from an EU country comply EU VAT rules. | | | | |
| Personal income tax rate | 12.5% | 17% -32% | 18% – 32% | 16% | 19% |
| ***Availability of EU Structural and Cohesion Funds*** | | | | | |
| Amount allocated for period 2007-2013(EUR million) | 26,692 | 25,307 | 67,284 | 19,667 | 11,588 |
| ***Labour issues*** | | | | | |
| Monthly minimum wages (euro) 2009 | 305 | 270 | 281 | 153 | 296 |
| ***Availability of workforce*** | | | | | |
| Recorded Unemployment (12.2010) | 7.7% | 11.8% | 9,7% | 7,3% (09.2010) | 14,5 |
| ***Access to target market(s)*** | | | | | |
| CEE countries enjoy geographical benefits, being located in the centre of the pan-European market. | | | | | |
| | The Czech Republic borders the Western European markets of Germany and Austria. | Hungary, also, has a good opening to Western Europe. | Poland has good access to Western European markets of Germany and the Baltic Sea. | Romania is adjacent to other EU states, and has direct access to the Black Sea and to the Danube . | Slovakia is adjacent with other three CEE countries and its capital city is very close to Vienna. |
| ***Economic stability*** | | | | | |
| Real GDP growth rate 2009 | -4,1% | -6,7% | 1,7% | -7,1% | -4,8% |
| GDP per | 82 | 65 | 61 | 46 | 73 |

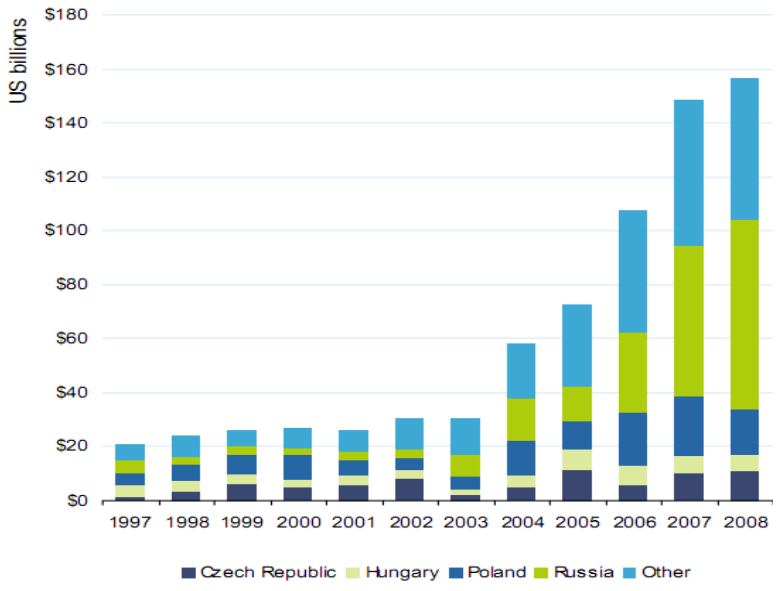
| | | | | | |
|---|---|---|---|---|---|
| capita in Purchasing Power Standards (PPS) 2009 | | | | | |
| Inflation rate 12.2010 | 1,2% | 4,7% | 2,7% | 6,1% | 0,7% |
| Central bank interest rates - Annual data 2009 | 2% | 7,25% | 5% | 8% | - |

Source: http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-30-09-149/EN/KS-30-09-149-EN.PDF, www. worldwide-tax.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&footnotes=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)**




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

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

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).

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

| Sector | Annual change in FDI inflows (2009) | Share of regional FDI 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% |

| | | |
|---|---|---|
| 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.

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

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

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, GDP and unemployment rate in Romania (1991-2009)**

| Year | FDI (volume-Euro millions) | GDP (volume-Euro billions) | Unemployment 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 ρ 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 **ρ=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).

**Correlations**

| | | FDI | GDP |
|---|---|---|---|
| FDI | Pearson Correlation | 1 | .935(**) |
| | Sig. (2-tailed) | | .000 |
| | N | 19 | 19 |
| GDP | Pearson Correlation | .935(**) | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 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) < (α = 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% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | 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 |

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) < (α = 0.05) shows that β (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) < (α = 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)**

| Model | R | R Square | Adjusted R Square | Std. Error of 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 ρ= -0.496 shows an inverse correlation between variables.

**Correlations**

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

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

The properly Sig. value is (Sig = 0.031) < (α = 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)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | 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 |

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) < (α = 0.05) shows that β (slope) corresponds to a significant link between the two variables. The Sig. value properly F statistics is (sig = 0.031) < (α = 0.05), which means that the independent variable – FDI explains the variation of dependent variable- unemployment rate.

**ANOVA (b)**

| 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 | | | |

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 ρ=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 ρ= -0.496 shows an inverse correlation between these variables. Unlike the previous case, the coefficient of determination $R^2$ =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 income-enhancing directions, by improving a country's comparative advantages and enhancing its competitiveness.

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