

THE IMPACT OF INWARD FDI ON TRADE: EVIDENCE FROM ROMANIA

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ABSTRACT

The present paper provides a research on the extent to which the foreign direct investments are influencing Romania's foreign trade. The analysis temporary range is between the years 1998-2014. It is analysed the influence of the foreign investments effect on exports, respectively the country's annual imports, using as analytical method the linear regression. The research results reveal that FDI exert significant influences on both indicators, but with a larger impact on imports. From the analysis performed, it appears that FDI influence 51.7% of the variation in exports and 68.7% of the variation in imports, in accordance with the linear regression model. The multinationals in Romania are greater importers than exporters contributing to the increase of the trade balance deficit, aspect that does not represent a win-win situation for the country's economy. Ultimately the paper suggests some policies regarding an increase in exports and their reorientation towards to new markets.

Keywords: foreign direct investment, exports, imports, linear regression, Romania

INTRODUCTION

The Foreign Direct Investment (FDI) represents an important source of capital for many of the world's economies, especially for the developing countries, which may influence the development of various macroeconomic indicators of the countries. The effects that FDI can exert on the economies are both, positive and negative, but most researchers agree that the effects are in generally positive. FDI is an important external capital inflows, together with the country equity, can contribute to the growth and development of their economies.

The problem requires a rich gradation and a particular analysis, from country to country, since there are involved many factors, such as, for example, the macroeconomic indicators of the countries, the natural and human resources, the existing legislative framework in the field, the political stability, the government policies, the country affiliation to a regional integration organization etc.

The present paper aims to accomplish a research about the impact that the foreign direct investment produce on the Romania's foreign trade, by analysing the influence of this type of capital both on exports and also on import, using as analytical method the linear regression. There are analysed also the empirical results and there are presented the conclusions and suggestions related to this paper.

BACKGROUND OF THE STUDY

Several empirical studies have tried to emphasize throughout the years that there is a strong connection between FDI and trade determinant factors that contribute to the economic growth of countries in which FDI are located. Albu (2013) notes, for example, that in the countries where the FDI stock is large, the foreign trade is expanding and has a high level of efficiency,

which contributes to a sustainable economic growth. The author investigates the relationship between FDI, exports and GDP in Romania's case, concluding that FDI have a major impact on the efficiency of the foreign trade and the growth.

The existence of a causal relationship between FDI, exports and growth has been investigated within a study (Acaravci and Ozturk, 2012) conducted on ten transition countries in Europe (Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, Slovenia, Slovakia and Hungary) over the time range 1994-2008. The results brought to light the fact that only in four of the ten countries there is a long-term relationship between FDI, export and growth.

A research on the relationship that is created between FDI and trade, taking into account the real exchange rate has exposed a number of features for the surveyed countries, namely USA and Japan, on the one hand, as being industrialized countries that provide FDI and part of the Latin America and South-East Asia, on the other hand (Goldberg and Klein, 1997). The empirical results revealed two types of links: a link between the real exchange rate and FDI and a link between the exchange rate and trade. The real exchange rate has the greatest effect on FDI and the trade for the Asian countries, a region where the effects of FDI on trade are the strongest. Moreover, the research shows that FDI coming from Japan to Asian countries have determined the imports growth from Japan mostly for the production imports, and triggered increases in exports from these countries to the USA and Japan while the Japanese FDI towards Latin America determine increases in exports from these countries to the USA.

A recent study (Tan and Tang, 2016) that investigated the relationship between FDI, domestic investment, trade, interest rates and economic growth in five ASEAN countries, Indonesia, Malaysia, Philippines, Singapore and Thailand for the period 1970-2012, revealed the fact that all variables considered in the analysis presents multiple cointegration relationships between them on long term. Thus, the empirical results show that the attraction of FDI is vital for a sustainable economic growth in Indonesia and Malaysia, together with the domestic investment, whose existence stimulates FDI. Also, the FDI and the domestic investment stimulate the growth, whereas in Singapore and Thailand the domestic investment and the FDI are interdependent. All of the five variables considered in the analysis influence each other, with strong interdependencies between them, aspect that determine the need for some government policy measures for maintaining and even strengthening the links between all these factors.

In the study of the researchers Hussain and Haque (2016) it is highlighted a long-term relationship between FDI, trade and growth rate of the GDP per capita in Bangladesh for the period 1973-2014. The authors find that FDI and trade are two important components of the economic growth for this country, the people's standard of living depending on trade and foreign investment. There is a close and direct correlation between these variables in the sense that when the volume of the attracted FDI increases, the employment, incomes and production also increase, all these having the effect of promoting the economic growth in the long term.

Zhang and Kevin (2001) ascertain that the export boom of China was determined by the substantial FDI inflows during the period 1978-2004. The exports made by multinationals in China accounted for 57% of the total exports of the country, highlighting a strong direct connection between FDI and exports. They concluded the fact that, in the surveyed period, FDI had a positive impact on China's export performance, higher than the internal capital, with a significantly greater effect on labour-intensive industries. The export growth is largely due to the government's strategy regarding the negotiations with the multinational corporations for supporting the export promotion through FDI and achieving positive effects of FDI in China's economy. The authors return with a study that confirms the contribution of

FDI to China's export growth (Zhang and Kevin, 2007) suggesting the fact that the developing countries can promote their exports by participating in the international production networks organized by the multinational corporations. They also found that FDI promote China's exports, mainly by the intensive use of labour and components specialization in vertically integrated industries at international level.

Belloumi (2014) investigates the relationship between FDI, commercial openness, domestic capital and economic growth in Tunisia for a period of time between the years 1970-2008, resulting that there is a long-term relationship between the analysed variables, but provided that the FDI is the dependent variable. The empirical result does not confirm the positive impact of FDI on economic growth but the fact that the domestic capital is the main engine of the economic growth in Tunisia. The author suggests the fact that attracting FDI is important in order to promote the economic growth, but not sufficient and that the efficacy of FDI to foster the economic growth depends on their volume, on the nature of investment type, on the sectors in which the investments are made etc.

PRESENTATION AND ANALYSIS OF THE REGRESSION MODEL

Data and Empirical Results

The present research aims to conduct an analysis concerning the influence that FDI exerts upon the Romania's foreign trade, namely on the country exports and imports. The period under review extends temporally for the period 1998-2014. The data are collected from official sources published by the Statistics National Institute of Romania and the National Trade Register Office.

The evolution of indicators of FDI, exports and imports during the period considered in the analysis is shown in Figure 1.

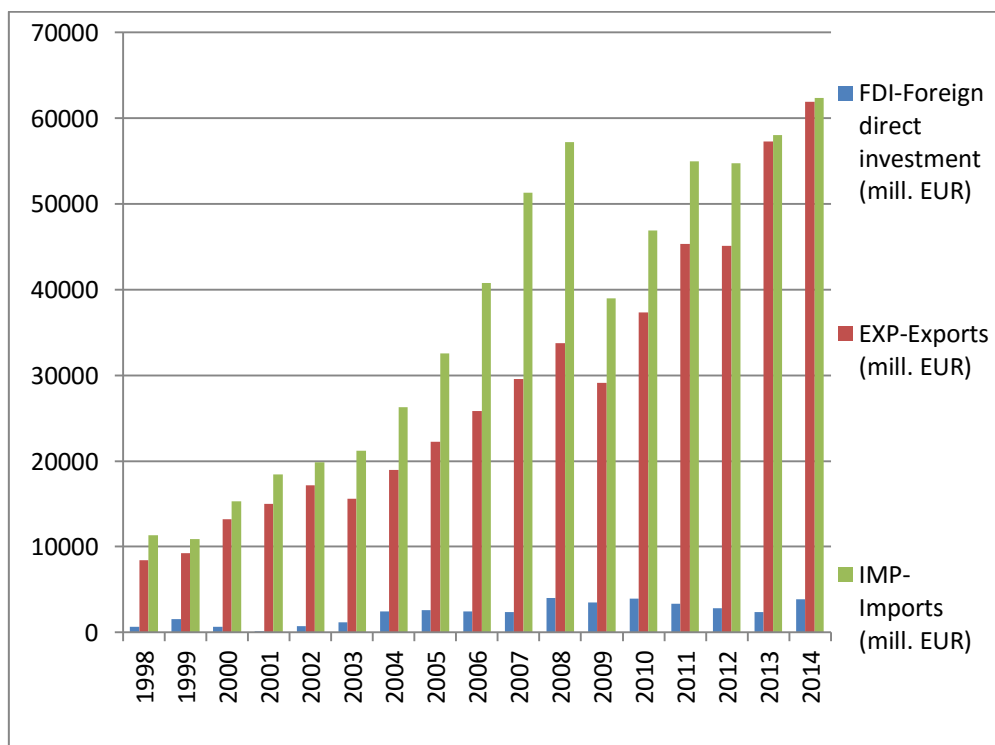


Figure 1. The evolution of analysed indicators in period 1998-2014

Table 1. Descriptive Statistics

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
FDI-Foreign direct investment (million EUR)	17	169.1591	3984.4328	2272.996635	1255.5399584
EXP-Exports (million EUR)	17	8457.9398	61908.00	28528.944299	16261.0482335
IMP-Imports (million EUR)	17	10856.41	62376.00	36535.3095	18169.94233
Valid N (listwise)	17				

According to the Table 1 and Figure 1, the minimum amount of FDI is 169.1591 million EUR in 2001 and the maximum value is 3984.4328 million EUR in 2008, for the EXP indicator the minimum value is 8457.9398 million EUR, achieved in 1998, and for the IMP indicator the minimum value is 10856.41 million EUR achieved in 1999. In 2014 the exports and imports reached the highest value, namely, 61 908 million EUR for exports, respectively 62 376 million EUR for imports.

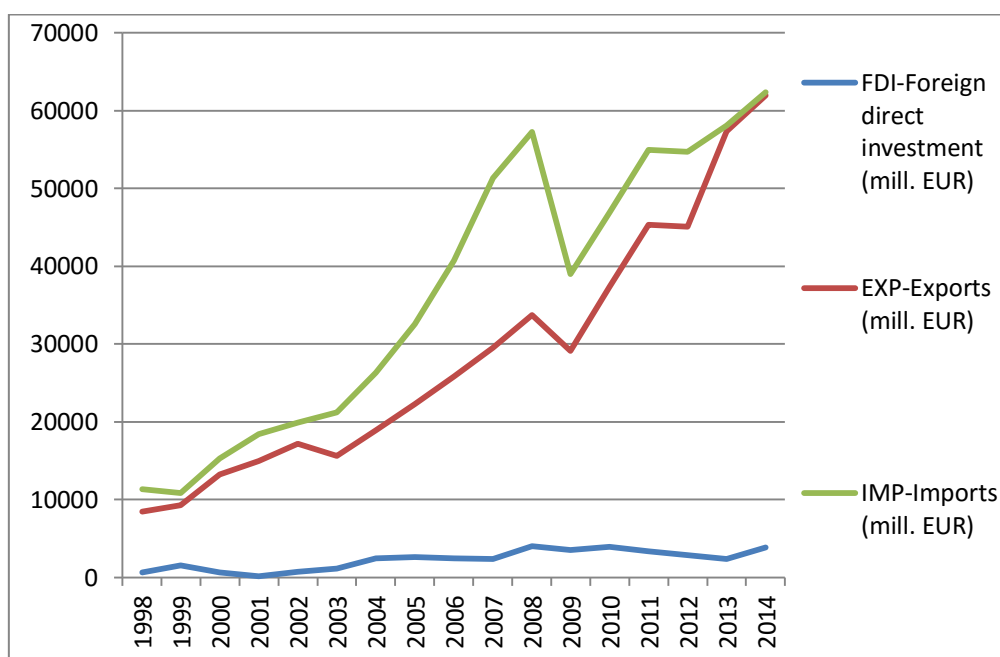


Figure 2. The trend evolution of the indicators analysed in the period 1998-2014

Analysing the trend of indicators we see that it is ascending, as shown in Figure 2. During the analysed period there was found a mutual critical point of these three analysed indicators corresponding to the period 2008-2009, caused by the financial imbalances created in the Romanian market because of the financial crisis onset, at the international level.

Further on there is analysed the influence of FDI on exports and on imports using the linear regression:

Table 2. The variables of the regression models

Variables Entered			Variables Entered		
Model	Variables Entered	Method	Model	Variables Entered	Method
1	FDI-Foreign direct investment (million EUR)	Enter	1	FDI-Foreign direct investment (million EUR)	Enter
a. Dependent Variable: EXP-Exports (million EUR)			a. Dependent Variable: IMP-Imports (million EUR)		

The estimated equations for the linear regression model for the analysed indicators is:

$$EXP = \alpha_1 + \beta_1 \cdot FDI \tag{1}$$

$$IMP = \alpha_2 + \beta_2 \cdot FDI \tag{2}$$

where:

- EXP represents the value of exports – is a dependent variable (million EUR);
- IMP represents the value of imports – is a dependent variable (million EUR);
- FDI represents Foreign Direct Investment – is an independent variable(million EUR);
- α_1 represents the initial ordinate for the equation (1) and is the value of variable EXP when $FDI = 0$;
- β_1 represents the slope of the line given by equation (1), or the regression coefficient, $\beta_1 = \frac{\partial EXP}{\partial FDI}$;
- α_2 represents the initial ordinate for the equation (2) and is the value of variable IMP when $FDI = 0$;
- β_2 represents the slope of the line given by equation (2), or the regression coefficient, $\beta_2 = \frac{\partial IMP}{\partial FDI}$.

The dependence between the dependent variable EXP and the independent variable FDI is explained by the linear model, according to the graphical representation in Figure 3:

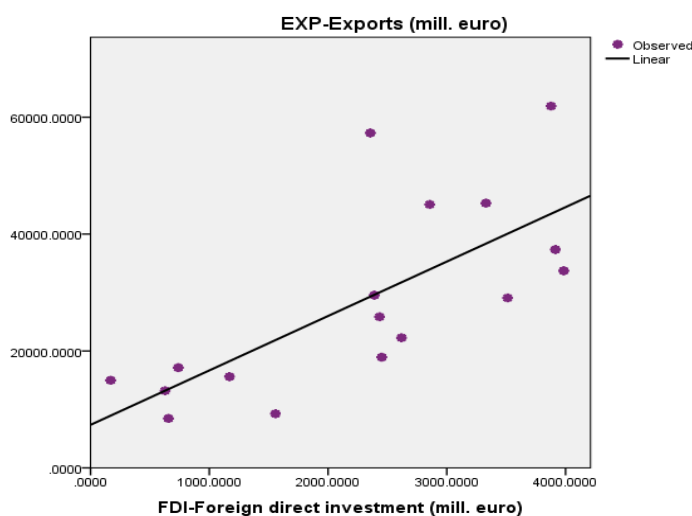


Figure 3. The link between the variables EXP and FDI

The estimation results of the first regression model, based on the least squares method, for the EXP and FDI variables are presented in Table 3:

Table 3. The estimation results of the first regression model

Coefficients ^a							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	7361.104	5993.033		1.228	.238	-5412.743	20134.952
1 FDI-Foreign direct investment (million EUR)	9.313	2.324	.719	4.007	.001	4.359	14.266

a. Dependent Variable: EXP-Exports (million EUR)

In accordance with the Coefficients Table (Table 3) we have $\alpha_1 = 7361.104$ and $\beta_1 = 9.313$, both of them being significantly different from zero. With a 95% probability the parameters of the model α_1 and β_1 are covered by the confidence intervals $(-5412.743, 20134.952)$, respectively $(4.359, 14.266)$. Accordingly to Table 3, the estimated equation of the regression model is:

$$EXP = 7361.104 + 9.313 FDI \tag{3}$$

Equation (3) shows the link between EXP and FDI, i.e. whether the FDI are increased by 1 million EUR, then EXP increase by an average of 9.313 million EUR.

Analysing the linear regression model and Table 3 where for FDI we have Sig. = 0.001, which is below the significance threshold, we can say with a 95% probability that there is a significant link between the variables of FDI and EXP. The same conclusion we can draw from Table 4, where are calculated the correlation and the determination ratio:

Table 4. Model Summary

Model Summary b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.719 ^a	.517	.485	11671.3464946

a. Predictors: (Constant), FDI-Foreign direct investment (million EUR)

b. Dependent Variable: EXP-Exports (million EUR)

The correlation and the determination ratio are indicators which measure the intensity of the connection between the EXP and the FDI and for the second model, they measure the connection intensity between the IMP, dependent variable, and the FDI, independent variable.

From Table 4 (Model Summary) we have the correlation ratio $R = 0.719$ and determination ratio $R^2 = 0.517$. The value of the correlation and determination ratio shows that between EXP and FDI variables, there is a high correlation. It follows that 51.7% of the EXP variation is explained by the FDI variation in the linear regression model.

Table 5. ANOVA

ANOVA^a

<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
	Regression	2187442099.477	1	2187442099.477	16.058	.001 ^b
1	Residual	2043304934.971	15	136220328.998		
	Total	4230747034.449	16			

a. Dependent Variable: EXP-Exports (million EUR)

b. Predictors: (Constant), FDI-Foreign direct investment (million EUR)

In ANOVA Table (Table 5) there are presented the explained estimated variation in the amount of 2187442099.477, the residual variation estimated in the amount of 2043304934.971, the total variation estimated in the amount of 4230747034.449 and the value of Fisher Statistics in the amount of 16.058.

According to the Fisher Distribution Table, in specialised literature, the appropriate value for a significance threshold of 0.05, $df_1 = 1$ and $df_2 = 15$ is 4.543. The high value of Fisher Statistics indicates that the linear regression model is valid, which can be seen also in the charts corresponding to Figure 1. The decision may also be taken based on the Sig. value because Sig. F = 0.001, which is lower than the elected significance threshold. It results that there is a significant connection between the FDI, independent variable and the EXP, dependent variable.

Considering the same linear regression model, we further study the dependence between the dependent variable IMP and the independent variable, FDI (figure 4):

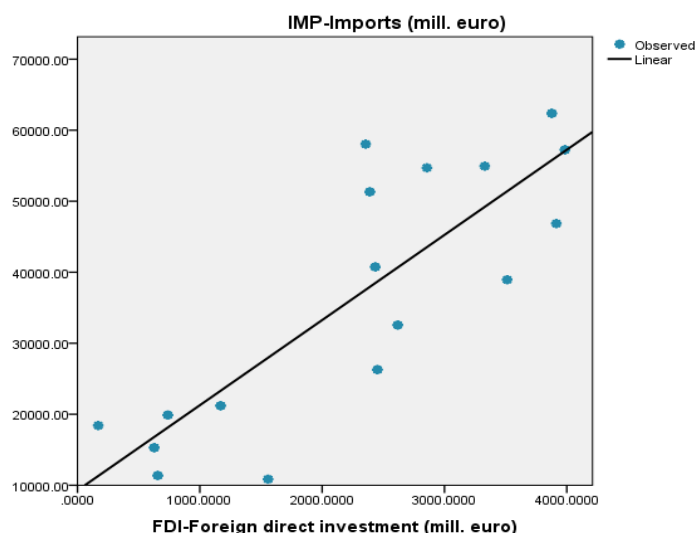


Figure 4. The link between IMP and FDI

In following table 6 there are presented the estimation results of the second regression model, where we have as variables the IMP and FDI.

Table 6. The estimation of the second regression model

Model	Coefficients ^a						
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	9276.053	5393.303		1.720	.106	-2219.500	20771.605
1 FDI-Foreign direct investment (million EUR)	11.993	2.091	.829	5.734	.000	7.535	16.450

a. Dependent Variable: IMP-Imports (million EUR)

In Table 6 we have $\alpha_2 = 9276.053$ and $\beta_2 = 11.993$, both of them being significantly different from zero. With a 95% probability the parameters of the model α_2 and β_2 are covered by the confidence intervals (-2219.500, 20771.605), respectively (7.535, 16.450). In Table 6 we have the second estimated equation of the regression model in the form of:

$$IMP = 9276.053 + 11.993 FDI \tag{4}$$

Equation (4) shows the link between IMP and FDI, namely if FDI increase by 1 million EUR, then IMP will grow by an average of 11.993 million EUR.

By analysing the linear regression model and Table 6 for where FDI we have a Sig. = 0.000, which is lower than the significance threshold 0.05, then we can say with a 95% probability that there is a significant relationship between the variables of IMP and FDI. The same conclusion we can draw from Table 7, where the correlation and determination ratio are calculated as follows:

Table 7. Model summary

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.829 ^a	.687	.666	10503.37980

a. Predictors: (Constant), FDI-Foreign direct investment (million EUR)

b. Dependent Variable: IMP-Imports (million EUR)

In Table 7 we have the correlation ratio $R = 0.829$ and the determination ratio $R^2 = 0.687$. The value of the correlation and determination ratio shows that between the variables of IMP and FDI there is a high correlation. It follows that 68.7% of the IMP variation is explained by the FDI variation in the linear regression model.

In table 8, according to the ANOVA table we have the explained estimated variation in the amount of 3627534058.413, the estimated residual variation in the amount of 1654814807.235, the estimated total variation in the amount of 5282348865.648 and the Fisher Statistics value, amounting 32.882. The high value of the Fisher Statistics shows that the second linear regression model is valid. The decision may also be taken based on the value of Sig. F = 0.000, therefore there is a significant connection between the FDI and the IMP.

Table 8. ANOVA

ANOVA^a

<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
	Regression	3627534058.413	1	3627534058.413	32.882	.000 ^b
1	Residual	1654814807.235	15	110320987.149		
	Total	5282348865.648	16			

a. Dependent Variable: IMP-Imports (million EUR)

b. Predictors: (Constant), FDI-Foreign direct investment (million EUR)

CONCLUSIONS

The evolution of the FDI in Romania during the period 1998-2014 has registered a fluctuant evolution, with modest values up to 2002, the highest values being registered between the period 2003-2008, followed by a sharp decline as from 2009, since the debut of the worldwide financial crisis. All these aspects emphasize, however, that the market in Romania is an attractive market for foreign investors, being a market with a great potential for development.

In this paper we have achieved a research about the influence that FDI exert upon exports and imports from Romania during a period of 17 years (1998-2014) using the official databases. Following the analysis of the data by means of linear regression models, it was revealed the fact that Romanian exports and imports are significantly influenced by FDI. Thus, if FDI increase by 1 million EUR, then the exports grow by an average of 9.313 million EUR, while the imports grow by an average of 11.993 million EUR. In terms of percentage, we can state that the FDI variation influences the EXP variation in a proportion of 51.7%, while 68.7% of the IMP variation is explained by the FDI variation, in the linear regression model.

Therefore, FDI influence to a greater extent the imports rather than the exports from Romania. In other words, the multinationals in Romania are greater importers than exporters contributing to the increase of the trade balance deficit, aspect that does not represent a win-win situation for the country's economy.

Considering this issue one can say that these actually contribute to the country's external economic imbalance and to its transformation into a trade market for imported goods and services and do not determine the economic recovery. In order to counteract this situation the government can take some strong measures, some of these being suggested in the National Export Strategy for the period 2014 - 2020, measures that concern the re-launch of Romanian exports affected by the economic and financial crisis from the European market. Considering the fact, at present time, the exports to EU states account for 70% of the country's total exports and the imports from these countries exceed 75% of the total concrete measures consist of Romanian companies shifting to other markets, such as, for example Russia, China, USA, Japan, some Arab countries and also some countries from the African continent.

It is also necessary that the government to establish arrangements with foreign companies which operate commercial activities in Romania so that their production to be oriented in a significantly higher percentage than the current one (we propose a proportion of at least 70 -

80%) towards foreign markets and not towards the domestic market, a policy that has been adopted with great success by the Chinese government.

ACKNOWLEDGEMENTS

The author Liliana Scutaru would like to specify that this paper has been financially supported within the project entitled: “SOCERT. Knowledge society, dynamism through research”, contract number POSDRU/159/1.5/S/132406. This project is co-financed by European Social Fund through Sectoral Operational Programme for Human Resources Development 2007-2013. Investing in people!

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