THE EMPIRICAL ANALYSIS OF THE RELATION BETWEEN FDI, EXPORTS AND ECONOMIC GROWTH FOR ROMANIA

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Abstract: *FDIs are considered a key engine to enhance economic growth both in developed and emerging economies, through various channels such as technology transfer, human and physical capital accumulation, commercial channel. The present paper aims at emphasizing the strong, long – term impact of FDI inflows on economic growth through the volume of exports. Using data over the period 1990 – 2012, the article has proved the existence of an important influence exerted by foreign inflows on the GDP growth rates based on a Johansen Co-integration and VECM analysis. Further research will be developed through a panel study on developed and developing economies.*

Keywords: FDI; exports; economic growth; Johansen Co-integration.
JEL Classification: F1; F21; F43.

INTRODUCTION

Since 2000, Romania was one of the most attractive destinations for foreign investors who want to develop and expand their activities, due to the policies and strategies adopted by the authorities. Unfortunately, even if FDI inflows and trade flows recorded significant increases, their impact on the national economy was relatively low because, despite of the efforts made to increase their effects, our country has to face some serious problems regarding corruption, legal and administrative barriers.

The situation charged under the influence of the wave of globalization and under the integration in the EU community. The foreign capital flows externalities in our economy stimulated the economic activities and generated positive influences on the dynamic and evolution of the macroeconomic indicators. Using various econometric techniques, important researchers and academics demonstrated the key role FDI and trade flows play in boosting economic growth rates.

Relevant research on this topic has emphasized on one hand the most important channels through which FDI may exert a positive and significant impact on economic growth, but highlighted on the other hand that foreign flows impact in the beneficiary country is often correlated with internal features. The

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exports have become in several developed and developing economies an important path in achieving a higher rate of economic growth, which was also our country's objective over the last ten years.

The aim of this paper is to determine the existence of a potential connection between FDI inflows, economic growth and volume of exports. The article is structured in the following sections: a short literature review focusing on the past results of the analysis on the correlation between FDI and growth; the following section presents general aspects on the data and the methodology used; the next part of the paper emphasizes the main findings and the most important conclusions drawn from the research.

1. DO FOREIGN INVESTMENT FLOWS STIMULATE ECONOMIC GROWTH? THEORETICAL ASPECTS

International capital mobility during the globalization phenomenon and financial markets integration had generated a strong positive impact on FDI, especially in developing economies. This effect highlights the increased interdependency between the worldwide economies and the ascending trend of their volatility degree.

FDI can be considered an important opportunity to stimulate the restructuring process of the global economy through the externalities these foreign flows may generate (technological transfer, competitiveness economies). Many relevant previous studies have developed advanced analyses to determine whether foreign capital flows enhance economic growth or not. Unfortunately, their opinion is not unanimous as some of them have identified the existence of a positive correlation, unidirectional or bidirectional between FDI and economic growth (De Mello, 1999; Chong, Baharumshah, 2010) or a negative connection (Moran, 1998), meanwhile others were not able to identify any correlation between FDI and host country economic growth (Ericson, Irandoust, 2001; Li, Liu, 2005).

Globalization has exerted a favorable impact of foreign capital flows movements across the countries, easing their effects on the beneficiary economies. However, these implications are highly dependent on the internal market features – labor force, technology, how – how, exports, exchange rate or the type of investment, having a major contribution in development of certain competitive advantages based on specialized production factors (Anghel, 2002, p. 38).

The literature on the topic has emphasized the main channels through which FDI may stimulate economic growth: gross capital formation, market development and free access, occupancy degree of the work force, fiscal incomes, human and physical capital accumulation, commercial channel (Hermes, Lensink, 2003). Alfaro (2010) has established a strong connection between FDI and national economic development, if the financial markets are developed enough not to limit the externalities generated. Similar results have been confirmed by the analysis carried out by Chee (2010), Abzari, Zarei, Esfahani (2011). The increased interdependencies between national markets stimulate international capital mobility, generally from the developed countries to the emerging ones. In consequence, financial market liberalization, along with the globalization wave and the economic and financial integration have determined a sharp growth of foreign capital flows mobility, creating the environment to gain higher rates of economic development.

The implications of foreign capital flows in the beneficiary economies are highly dependent on their economic characteristics, contributing to the reduction of the lag between the host countries and other developed economies. National politics usually play a key role in attraction of FDI, through the strategies and politics the policy makers develop. Lipsey (2008) appreciates that the national policies regarding international trade are the basis of the interdependency between FDI and economic growth, as the mobility and flexibility of foreign flows at the global scale boosts incoming and outgoing flows (through exports), increasing the national competitiveness in the global economy and creating the perspectives for a higher rate of economic growth.

Jayasuriya (2011) has demonstrated the existence of a positive correlation between FDI and host country economic growth using in his analysis variables such as GDP growth rate, GDP per capita, investment rate and human capital level.

Previous research has provided strong evidence on the influence that national market development has on enhancing the attractiveness of the foreign capital flows over long term, leading to higher economic growth rates in the developed economies. The level of development of the internal market can be considered an indicator for the foreign investors to evaluate the potential of the destination of their flows, providing them an environment for expanding their businesses, technological acquisitions and transfer of managerial and organizational skills.

FDI are widely recognized by their positive influence on the *technological transfer*, multinationals aim to use advanced equipment which requires professional trainings for employees, but, in the meantime, develop the perspectives of gaining a higher level of productivity by stimulating the competition (Javorcik et al., 2006). The expansion of their economic activities often is associated with an increase of the incomes to the national budget and a decrease of the unemployment rate. Alfaro (2009) and Burke (2007) have shown that, actually, not always foreign flows impact on the work force is positive, because FDI as mergers and acquisitions lead in the first place to massive layoffs and a sharp increase of the unemployment rate.

Relevant studies on the topic underlined that, through the *capital accumulation channel*, massive inflows of capitals enhance the implication of the work force in economic activities, increasing the competitiveness in the internal market through the development of their abilities (Salman, Feng, 2009). Bengoa and Sanchez – Robles (2003, p. 529) have emphasized the major importance of the human capital for the success of a multinational and the country's perspectives for development, saying that "host country still requires adequate human capital, economic stability and liberalized markets to benefit from the long term capital flows. Supporting the same idea, De Mello (1999) has focused on investigating the relationship between GDP growth rate and human capital development and provided evidence that "the degree in which FDI stimulate growth are strongly dependent on the substitution degree between FDI and local investments".

Following this perspective, we consider that the impact of FDI in the beneficiary country is higher when foreign flows do not replace national investments, decreasing their role and their impact in the welfare of the country.

Most of the past studies have succeeded to demonstrate a favorable influence of the foreign inflows in the host country through various channels. However, few researches have shown the existence of a negative connection between FDI and economic growth. Durham (2004) has confirmed that the capacity for financial and institutional absorption has a major role over the externalities of FDI in the economy. Carkovic and Levine (2005, p.197) ended by highlighting that, under a minimum level of education, of economic and commercial level of development in the beneficiary country, "the hexogen component of FDI does not exert a positive and robust influence on economic growth" and "there are no empiric evidence which may support the statement that FDI accelerate economic growth". Lipsey and Sjoholm

(2005, p. 297) support the same idea and sustain that "there is not a universal relationship between the percentage of FDI flows in GDP and the economic growth rate of a country".

2. DATA AND METHODOLOGY

The analysis of the relationship between FDI, exports and economic growth is performed in the case of Romania, using data from World Bank database, over the period 1991 – 2012. The variables included in the model are: FDI inflows, GDP growth rate and volume of exports.

The first step in performing the analysis is to determine whether the variables included in the study are stationary, through the Augmented Dickey – Fuller test and afterwards Johansen co-integration test will be implemented. The VECM helps us determine the equations of the model which will be tested using the least square method.

3. RESULTS AND DISCUSSIONS

Augmented Dickey – Fuller test will emphasize the degree of stationary for the selected variables. The findings will confirm whether we can apply Johansen Co-Integration test or not to test the long-run correlation between FDI, exports and economic growth in the case of Romania. The results are provided in the table below.

Table 1 - Augmented Dickey – Fuller test

Null Hypothesis: lgdp has a unit root Fdi has a unit root Lex has a unit root			
Augmented Dickey – Fuller test	Critical values	t-statistic	Probability*
Ln_FDI	-3.052169	-4.796509	0.0017
Ln_GDP	-3.052169	-5.204692	0.0008
Ln_Ex	-3.040391	-4.616936	0.0021

Source: own processing. Note: significance at 5 % level

As we can see in the table above, all the selected variables are stationary at level, meaning that they are I (0), which allows us the application of the Johansen Co-integration test. The findings of this test are presented in the following table.

Table 2 - Johansen Co-integration test

Unrestricted Co-integration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.763232	40.65089	29.79707	0.0019
At most 1 *	0.602146	16.15945	15.49471	0.0397
At most 2	0.028472	0.491044	3.841466	0.4835
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.763232	24.49144	21.13162	0.0162
At most 1 *	0.602146	15.66841	14.26460	0.0298
At most 2	0.028472	0.491044	3.841466	0.4835
Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: own processing

According to the results of the Johansen co-integration test, at a 5 % level, there are two co-integrated equation which can be analyzed and developed. This paper aims to examine the role of foreign capital flows and exports in achieving economic growth and therefore, the VECM will estimate the regression equations and we will chose only the one with FDI as dependent variable and the others as independent variables.

The regression equation whose parameters will be estimated using the least square method is:

D(FDI) = C(1)*(FDI(-1) - 0.0317486933522*GDP(-1) + 1853.07867452) + C(2)*(EXPORTS(-1) - 0.304686998277*GDP(-1) - 2208.44743431) + C(3)*D(FDI(-1)) + C(4)*D(FDI(-2)) + C(5)*D(EXPORTS(-1)) + C(6)*D(EXPORTS(-2)) + C(7)*D(GDP(-1)) + C(8)*D(GDP(-2)) + C(9)

The least square method allows us to estimate the parameters of the regression equation and to identify the independent variables which have a strong influence and explain the evolution of the dependent variable. The results are presented in the table below.

Table 3 - Least Square method

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.548777	0.743366	-0.738232	0.4815
C(2)	0.503938	0.192944	2.611836	0.0310
C(3)	-0.529470	0.741398	-0.714150	0.4954
C(4)	0.326451	0.553748	0.589530	0.5718
C(5)	-0.512184	0.164396	-3.115553	0.0143
C(6)	0.025022	0.159483	0.156897	0.8792
C(7)	0.204871	0.059403	3.448849	0.0087
C(8)	-0.153308	0.044564	-3.440166	0.0088
C(9)	3041.935	1375.686	2.211213	0.0580
R-squared	0.963955	Mean dependent var		167.4118
Adjusted R-squared	0.927911	S.D. dependent var		3051.100
S.E. of regression	819.2037	Akaike info criterion		16.55959
Sum squared resid	5368758.	Schwarz criterion		17.00071
Log likelihood	-131.7566	Hannan-Quinn criter.		16.60344
F-statistic	26.74335	Durbin-Watson stat		2.026983
Prob(F-statistic)	0.000054			

Source: own processing

The regression equation results emphasize the positive and direct correlation between FDI and exports and economic growth at a 5 % level. The Wald test is used to investigate the short – run causality between FDI, economic growth and exports. According to the results of the Wald test, with a probability of p = 0.0000 and chi-square = 67.50685 Ln_GDP can influence in the short – run the volume of the foreign capital flows. Regarding the second interdependency, with a probability of p = 0.0047 and chi-square = 10.70671, it is shown that exports can have an important influence on foreign capital flows in the short – run.

Although the model has shown the significant impact trade and economic growth has on foreign capital flows, the regression model should be examined to establish if it is significant or not, meaning the checking of the residual diagnostics:

The R-square is equal to 96.39 % meaning that 96.39 % of the variation of the dependent variable is explained by the variation of the independent factors and the probability associated is p = 0.000054

With a probability of p = 0.502931, the value of Jarque – Bera test is 1.374604 and proves that the residuals are normally distributed.

To test if the residuals are homoskedastic, we used Breuch – Pagan – Godfrey test and we obtained a value of Obs*R-square = 10.26009 which is associated to a probability of p=0.3298, proving that the null hypothesis is accepted

To investigate if the residuals are not serial correlated, it is implemented a LM test and is obtained a value of Obs*R-square = 1.752772, with a probability of p=0.4163, demonstrating that the residuals aren't serial correlated.

All the above affirmations and demonstrations show that the model is efficient, good and the selected variables are significant in explaining the variation of the dependent one.

CONCLUSIONS

The aim of this paper was to investigate the interdependencies between FDI, economic growth and the volume of exports in the case of Romania, using annual data over the period 1991 – 2012. The results of the analysis highlighted the key role that foreign capital flows play in the national economy through the positive externalities they generate – technology transfer, creating new job opportunities, managerial and organizational skills, stimulating the increase of economic growth rates. On the other side, based on the Wald test, both GDP growth rates and the volume of exports have a strong influence in the short – run on the volume of foreign capital flows attracted by the national economy.

Although Romania passed through a long transition period along with other countries from Central and Eastern Europe, our country has important gaps in the process of development and in the national economy, the differences between Romania and the others are significant and increase each year. The political instability, wrong reforms and policies adopted by the national authorities accentuated the investors distrust in the national business environment. Policy makers should focus on boosting the attractiveness of the domestic economy with positive and important externalities in all economic areas due to the interdependencies among them, boosting the economic growth rates.

REFERENCES

Abzari, M., Zarei, F., Esfahani, S.S. (2011) *Analyzing The Link between Financial Development and Foreign Direct Investment among D – 8 Group of Countries*, International Journal of Economics and Finance, vol.3, no. 6.

Alfaro, L., Chanda, A., Kalemi – Ozcan, S., Sayek, S. (2010) *How Does Foreign Direct Investment Promote Economic Growth? Exploring the Effects of Financial Markets on Linkages*, Journal of Development Economic, vol. 61.

Alfaro, L., Kalemi-Ozcan, S., Sayek, S. (2009) *FDI, Productivity and Financial Development*, The World Economy, vol.32, issue 1, 2009.

Anghel, I.E. (2002) *Investitiile straine directe în România*, Bucuresti: Editura Expert.

Bengoa, M., Sanchez – Robles, B. (2003) *FDI, Economic Freedom and Growth: New Evidence from Latin America*, European Journal of Political Economy, vol.19.

Burke, A., Görg, H., Hanley, A., The Impact of Foreign Direct Investment on New Firm survival in the UK: Evidence for Static v. Dynamic Industries, Leverhulme Centre Research Paper 09, 2007.

Carkovic, M., Levine, R. (2005) *Does Foreign Direct Investment Accelerate Economic Growth?*, in: Moran, T.H., Graham, E.M., Blomstrom, M. (eds.) *Does Foreign Direct Investment Promote Development?*, Washington DC: Institute of International Economics Press.

Chee, L. Y. (2010) *The Impact of FDI and Financial Sector Development on Economic Growth: Empirical Evidence from Asia and Oceania*, International Journal of Economics and Finance, vol.2, no. 2, 2010.

Chong, K., Baharumshah, A.Z. (2010) *Private capital flows, stock market and economic growth in developed and developing countries: a comparative analysis*, Japan and the World Economy, vol. 22.

De Mello, L.R. (1999) *Foreign Direct Investment – led growth: evidence from time series and panel data*, Oxford Economic Papers, vol. 51, issue 1.

Durham, J. (2004) *Absorptive capacity and the effects of foreign direct investment and equity foreign portofolio investment on economic growth*, European Economic Review, vol. 48.

Ericson, J., Irandoust, M. (2001) *On the causality between foreign direct investment and output: a comparative study*, The International Trade Journal, vol.15, issue 1.

Hermes, N., Lensink, R. (2003) *Foreign Direct Investment, Financial Development and Economic Growth*, The Journal of Development Studies, vol.40.

Javorcik, B., Özden, C., Spatareanu, M., Neagu, C. (2006) *Migrants Networks and Foreign Direct Investment*, The World Bank Policy Research Working Paper 4046.

Jayasuriya, D. (2011) *Improvements in the World Bank's Ease of Doing Business Rankings, Do They Translate into Greater Foreign Direct Investment Inflows?*, Policy Research Working Paper no 5787, The World Bank.

Li, X., Liu, X. (2005) *Foreign Direct Investment and Economic Growth – An Increasingly Endogenous Relationship*, World Development, vol. 33, issue 3.

Lipsey, R. (2008) *Measuring the Impacts of FDI in Central and Eastern Europe*, National Bureau of Economic Research, Working Paper 12808, Cambridge.

Lipsey, R., Sjoholm, F. (2005) *The Impact of Inward FDI on Host Countries: Why Such Different Answers?*, in: Moran, T.H., Graham, E.M., Blomstrom, M. (eds.) *Does Foreign Direct Investment Promote Development?*, Washington DC: Institute of International Economics Press.

Moran, T. H. (1998) *Foreign Direct Investment and Development: The New Policy Agenda for Developing Countries and Economies in Transition*, Washington DC: Institute of International Economics Press.

Salman, A., Xiao Feng, H. (2009) *GDP Growth with Economic Stability: An FDI perspective*, International Symposium on Finance and Accounting.