THE IMPACT OF INVESTMENTS, EXPORTS, AND OPENNESS ON ECONOMIC GROWTH. A COMPARATIVE STUDY ON THE EAST EUROPEAN COUNTRIES

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The study of the economic growth process has old implications. The preoccupation for the study of the economic growth has existed beginning with the representatives of the Classical School and continuing with the Keynesians, Neokeynesians, and Neoclassics. A series of empirical studies have tested the correlation between the dynamics of the different factors and the process of economic growth.
This paper examines the role of investments, export and openness in relation to economic growth for the East European countries using trimestrial data from the Eurostat as well as National Statistical Institute. Also this study has the objective to estimate whith the help of two linear regressions the impact that this 3 variable has on economic growth. The study shows that the most important variable in all the east European countries was the investment from the model that include economic openness as exogen variable.

Keywords: economic growth, export, investments, East European countries
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1. Introduction

The study of the economic growth process has old implications. Starting from the representatives of the classical school – A. Smith, D. Ricardo and Th. Malthus – there have been interests in the study of economic growth. In Malthaus's concept – taking into consideration the limited land available and of the growing population – the balance is achieved when the income is diminished to a level in which the labor force offer rises with a lower rhythm, and the economy is maintained at a stationary status. In their models, the classics omitted the contribution of technological progress to the growth of production per inhabitant. (Socol 2006: 62).
The neoclassic model of Solow represents the fundamental basis in the analysis of the economic growth process. Through this model, the neoclassic show us today the model in which the growth of the savings rate, the population growth, and the technological progress influences the level of production and economic growth in a given time period (Marin and Socol 2006: 122). The neoclassical Solow-Swan model is based on the exogenous aspects of economic growth, based on the attaining of economic convergence between the countries. In his study, Solow starts from the following hypothesis: the capital is submitted to decreasing capacities; the countries with the same demographic growth, technological progress and rate of investments, will have incomes which will converge towards the one from the most developed country; the scale capacities are constant; the technological process is considered to be exogenous; the economy is perfectly competitional as well as the perfect mobility of the production factors (Marinaş 2010: 79-80).
The concept of the inherent unstableness of economy can be found in the Keynesian and Neokeynesian growth models. The element of stability is provided by state intervention. Economic growth is possible, according to these models, through the use of budgetary and monetary policies. The stationary level of economy and its tendency towards complete usage is described in the Neoclassic growth theory. The starting point in the Neoclassic theory is represented by the micro-economic level, meaning that is starts from the preferences of the households, the structure of the market the companies production function. The national income is impacted in the short term by investments, through the aggregated demand. However, long term effects are provided by the growth of the potential national income (Socol 2006: 62). On the long run, the technological modifications represent the main cause of economic growth, together with the capital investments and the new technologies (Angelescu 2006: 89).

The interest for the theory of economic growth reignited with Romer's researches, giving birth to the second generation of models, significantly improving the first ones, as they attempt to explain aspects related to dates which had not been discussed in the neoclassical model, giving a more satisfactory explanation for the differences between the rates of economic growth in different countries, paying a central attention to gathering of know-how as well as they give an increased role to the instruments of the macro-economical policies in the explanation of the growth process (Scarlat and Chiriță: 60 in Meşter and Simuț 2011: 317).

2. Literature review of economic growth models

This paper presents the relationship between economic growth, investments, export and openness economie in East European countries. A series of empirical studies tested the correlation between the dynamics of the exports and the process of economic growth. Pereira and Xu used the Granger causality in order to identifiy the causal relation between these. According to their model, the exports uphold the economic growth, the estimation of growth being improved by including as an independent variable the lagged exports. In a similar manner, growth causes exports, and the estimation of exports variable is improved by including the delayed growth as an independent variable (Marinaş 2010: 280).

Using Granger causality as well, Sultan and Haque studies the relationship between the growth, investments and exports, trying to identify the long run relation between the variables. Using Johnson's cointegration methodology theirs study found the presence of a long term relationship between investment, exports and the economic growth. The study further shows that only domestic investment significantly contributes to economic growth both in the long run and in the short run. The export, though, has positive relation with economic growth, its contribution has not been found to be significant. (Sultan and Haque 2010: 226).

The fundamental objective from Subasat was to capture the structural characteristics which determine the orientation of exports. He proved that exports are a cause of economic convergence, the countries with a medium level of development and with increasing exports, have a bigger growth rate than those with lower exports (Subasat 2002: 333).

Another analysis of the relationship between growth, investments and exports, was accomplished by Dritsakis. He studied the causality between the three variables for Romania and Bulgaria, with the help of auto-regressive VAR model. The results suggest the existence of a co-integration relationship between the three variables, as well as a positive impact of the exports and of the investments on the real GDP (Dritsakis 2004: 1831). For Central and Eastern European countries - Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, Slovakia - there is an obvious lack of studies that examine the effect of exports on economic growth by using the latest time series techniques. The existing studies on this issue are focused only on one up to three transition countries, Dristsakis (2004) for Romania and Bulgaria, Konya (2004) for Hungary among 25 OECD countries, Awokuse (2007) for Bulgaria, the Czech Republic and Poland (Pop Silaghi 2009: 106).

3. Data and methodology

In order to investigate the relantionship between the GDP (LGDP), direct investments (LFDI), export (LEXP) and economic openness (LEOP), we used quarterly deseasonalized data in log for 2000:1 – 2010:4 collected from the Eurostat and the INSSE Tempo Online series, available online on the Romanian Statistical Institutes website.

4 Model specication and results

The regression between growth, investments and exports, prove a decisive contribution of exports over the GDP. Note that all the variables have been analyzed in the log

$$LogGDP = 0.33LogFDI + 3.07LogEXP - 8.15$$

R^2=0.18 and t-statistic and the assumptions regarding errors was semnificativ.

The elasticity of the GDP is 0.33 reported to investments and of 3.07 in the case of exports. Therefore, we can argue that an increase of 10% of the gross capital formation determined an average growth of 3.3% of the dependent variable for the ten East European countries, and an increase of 10% of exports determined an average increase of 30.7% of the dependent variable.

If in the above mentioned regression the export variable is replaced with the openness, the following result is obtained:

$$LogGDP = 0.20LogFDI + 2.97LogEOP - 9.17$$

R^2=0.47, t-statistic and the assumptions regarding errors was semnificativ.

The elasticity of the GDP in regards to the investments is lower to the previous value with approximately 0.1 percentual points, and that of the EOP is positive, but with a smaller impact over the dependent variable in comparison with the export. Researching the annual elasticity evolutions of the economic growth depending on the other variables for economies of the Eastern European countries, one can notice the increase of the influence of the investments within the model that includes the openness (EOP), from 0.27 in 2000, to 1.09 in 2005, according to the data presented in the following table.

Table 1. The annual elasticity of GDP regards to variable models

	Elasticity of GDP regards to the investment (export-exogen variable)	Elasticity of GDP regards to the investment (economic openness- exogen variable)	Elasticity of GDP regards to the export	Elasticity of GDP regards to the economic openness
2000	0.36	0.37	0.27	0.28
2001	0.23	0.11	0.45	0.37
2002	0.05	0.22	0.66	0.52
2003	0.22	0.20	0.98	0.86
2004	0.97	0.02	1.07	0.97
2005	0.31	0.33	1.09	1.00
2006	0.56	0.61	0.67	0.56
2007	0.28	0.32	0.65	0.64
2008	0.46	0.51	0.55	0.47
2009	0.05	0.35	0.90	0.89
2010	0.17	0.18	0.76	0.82

Source: Authors' calculus

The growth of the openness had a positive impact over the GDP, which generated a growth of the investments rate. This was reflected in the enhanced openness of the GDP in reference to the degree of openness of the economy. One of the integration advantages is represented by growth of the openness towards the rest of the world, with beneficial effects on the flows of foreign received direct investments, bilateral flows of labor force, and work productivity (Ivan and Iacovoiu 2008:91). Therefore, starting from the results obtained regarding the elasticity of the GDP in reference to investments, having as an exogen variable the economic openness, we can appreciate, that the economies of the East European countries will attract higher flows of direct

foreign investments, flows that would accelerate, in turn, through engagement effects, the process of European integration. The GDP elasticity to the export variation registered an ascending trend starting in 2000 up until the middle of the analyzed period, and in 2005 it registered the highest level. An increase of 10% of the export for the East European countries determined a growth rate of 10.9%).

In order to emphasize the reaction capacity of the GDP for each economy in reference to the modifications of the independent variables, we create a regression for each of the two models mentioned above. The free element was not assumed to be identical for the studied countries, because the structural characteristics are different.

Table 2. GDP elasticity for Eastern European countries

	Model LogGDP, Log FDI, LogEXP			Model LogGDP, Log FDI, LogEOP		
	Constant	GDP elasticity/FDI	GDP elasticity/EXP	Constant	GDP elasticity/FDI	GDP elasticity /EOP
Bulgaria	2,85	0,05	0,94	1,62	0,01*	1,06
Czech Republic	-2	0,27	2,44	-1,48	0,30	1,99
Estonia	14,63	0,36	1,53	12,68	0,37	-1,34
Latvia	1,85	0,02*	1,43	-4,77	0,15	2,63
Lithuania	-1,17	0,02*	2,12	-4,52	0,10	2,5
Hungary	4,26	0,02*	0,78	3,79	0,04	0,77
Poland	3,19	0,08	1,19	1,26	0,11	1,44
Romania	11,69	0,23	1,43	10,13	0,34	0,81*
Slovenia	1,38	0,03	1,67	0,5	0,04	1,61
Slovakia	-3,38	0,31	2,58	-5,48	0,34	2,63

Source: Authors' calculus

The results confirm a greater importance over the economic investments within the model which includes the degree of economic openness. The greatest values of the elasticity of the economic growth in reference to the investments are registered by Estonia (0.37), Romania and Slovakia, both having an elasticity of 0.34. Also, Slovakia is characterized through a high degree of competitivity of the openness degree, which leads to an elasticity of 26.3% of the GDP. This is the highest value of all the analyzed countries. For the Czech Republic, Estonia, Hungary, Romania and Slovenia, the variation of export produced a greater impact over the economy in reference to the degree of economic openness.

The degree of openness is one of the optimal criteria that the euro zone fulfills. This is defined as part of the economic activity consecrated to the international commerce, that is the rate between the sum of the imports and exports and the GDP. The majority of the countries in the euro zone are very open and the smaller countries have the greatest openness. This can explain the fact that, traditionally, the smaller countries have been the most enthusiast upholders of the monetary union (Puiu 2010: 9). Therefore, it can be observed that, in the case of Bulgaria, Latvia, Lithuania, Poland and Slovakia, the openness degree of the economy constituted the variable over the economic growth in all the East European countries, except for Esthonia. The GDP elasticities that are statistically significant in reference to the openness are between 0.04, in the case of Hungary and Slovenia, and 0.37 in the case of Esthonia.

5. Conclusions and further implications

This paper examines the role of investments, export and openness in relation to economic growth for the East European countries for the period 2000-2010. Result shows that the growth of the openness had a positive impact over the GDP in all the East European countries, which generated a growth of the investments rate. This was reflected in the enhanced openness of the GDP in reference to the degree of economic openness. One of the integration advantages is represented by growth of the openness towards the rest of the world, with beneficial effects on the flows of foreign received direct investments. Therefore, starting from the results obtained regarding the elasticity of the GDP in reference to investments, having as an exogen variable the economic openness, we can appreciate, that the economies of the East European countries will attract higher flows of direct foreign investments, flows that would accelerate, in turn, through engagement effects, the process of European integration

Starting from the two models that analyze the impact of investments, exports and openness on economic growth in all Eastern Europe countries, the results confirm a greater importance over the economic investments within the model which includes the degree of openness. The greatest values of the elasticity of the economic growth in reference to the investments are registered by Estonia (0.37), Romania and Slovakia, both having an elasticity of 0.34. The majority of the countries in the euro zone are very open and the smaller countries have the greatest openness. This can explain the fact that, traditionally, the smaller countries have been the most enthusiast upholders of the monetary union.

Starting from this paper I would like, in the next study, to estimate the long-run relationship between economic growth, investment and export in Eastern European countries using trimestrial data from the Eurostat. I will used Johansen cointegration test to estimate the nature of relationship and Granger causality test is used to determine the direction of causality in the model.

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