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## Do Foreign Direct and Portfolio Investments Affect Long-Term Economic Growth in Central and Eastern Europe?

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### Abstract

This paper contributes to the literature which investigates the impact of foreign investment on the host country economic growth. More precisely, we test the effect of the foreign direct investment (FDI) and of the foreign portfolio investment (FPI) on the long-term economic growth in Central and Eastern European (CEE) countries, in a panel framework. For this purpose, we resort to a system-GMM approach, which corrects the endogeneity issues between growth and investment, and we employ a large set of control variables, as the interest rate, the CPI inflation, the unemployment rate, the money in circulation, the exchange rate, the primary energy consumption and the level of education. The analyzed time-span is 2005-2012 and the sample includes 13 CEE countries, namely Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic and Slovenia. We find that both direct and portfolio investments exert an influence on the long-term economic growth, when we consider equity and investment funds instruments. Our results show that incentive packages should be oriented toward both types of investments. These findings are documented both in the case of inwards and outwards investments.

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*Keywords:* Foreign direct investment; foreign portfolio investment; economic growth; panel models; system-GMM; CEE countries.

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## 1. Introduction

The aim of this paper is to see to what extent the inward and outward foreign direct investment (FDI) and foreign portfolio investment (FPI) promote the CEE countries economic growth in the long-run. The removal of barriers to capital flows in CEE countries has encouraged the regional outward and inward investments, which certainly influence the economic activity of these countries.

The relationship between foreign investment and economic growth has been a topic for research in the last years. However, most of the scholars focused on the effect of inward FDI on the host economies. In this line, the FDI influence on the economic performance was investigated in terms of international trade (Herrmann and Jochem, 2005; Kutan and Vukšić, 2007), macroeconomic stabilization (Fukao, 2007), productivity and profitability (Torlak, 2004), as well as in terms of industrial specialisation (Aubin et al., 2008). Consequently, as Lipsey (2002) suggests, the FDI affects host economies through different channels, influencing the market structures and having competition and employment effects. Similarly, Evans (2002) underlines the potential benefits of the FDI such as the increased performance due to diversification, competition and the development of the human capital. Lee (2013) highlights in his turn the positive externalities, capital financing opportunities and the technology transfer. All these aspects suggest that inward FDI positively influences the economic growth.

However, the empirical literature is not in agreement regarding the positive role of the FDI on the host economies. The most often situation encountered is that the empirical evidence remains controversial and ambiguous (Omri et al., 2014). While some studies observe a positive impact of the FDI on the economic growth, others detect a negative impact (Li and Liu, 2005). Borensztein et al. (1998) suggest that the technological absorptive ability may explain the differences in the growth effects of the FDI across countries. Recent studies investigate the bi-directional causality between the FDI and the economic growth (Batten and Vo, 2009; Anwar and Nguyen, 2010), explore this relationship at sectorial level (Doytch and Uctum, 2011), or make the distinction between the horizontal and vertical FDI (Beugelsdijk et al., 2008).

The role of the outward FDI on the economic growth was also investigated, representing a central point of debate in developed countries. Outward FDI can have positive or negative effects on the domestic income, depending on the role of the outward FDI in the domestic market (Chen and Zulkifli, 2012). If the outward FDI is a substitute to the domestic production, it reduces the economic growth (Stevens and Lipsey, 1992). However, if the outward FDI is a complementary to the domestic investment, it stimulates the economic growth (Desai et al., 2005). The empirical literature provides mixed results in this case also. While Herzer (2008) finds that the outward FDI has positive long-run effects on the domestic output in 14 industrialized countries over the period 1971–2005, Lee (2010) document a bi-directional causality in the long-run for Japan.

If the FDI role in influencing the economic growth is intensively scrutinized, less attention is paid to the FPI. The potential benefits of the FPI on the economic activity in the host country are underlined by Evans (2002). Foreign portfolio investment increases the liquidity of domestic capital markets, brings discipline and know-how into the domestic capital markets, and facilitates the use of new products and instruments for risk mitigation.

Few studies compare the role of the FDI and FPI in promoting the economic growth. On the one hand, the researchers argue that the FDI is more likely to stimulate the economic growth because of the lack of the agency problem between managers and owners (Goldstein and Razin, 2006). On the other hand, FDI flows tend to be more stable as compared to FPI ones (Lipsey, 1999). The empirical study of Durham (2004) shows that neither the FDI, nor the FPI, has a direct and immediate effect on the economic growth.

Our paper contributes to the existing literature in several ways. First, we test the impact of both the FDI and FPI on the economic growth. Moreover, we consider both the inward and outward investment. However, because we are interested in the structure of the investment, we proxy the outward investment by assets and the inward investment by liabilities items (for details, see OECD, 2008). Second, we make the distinction between equity investment and debt instruments. Some economists (i.e. Rogoff, 1999) advance the virtues of cross-border equity investment, in the detriment of the debt investment, represented by currency, deposits, loans, debt securities and special drawing rights. Third, we address the endogeneity problems between growth and foreign investment, using a panel data analysis and a system- generalized method of moments (GMM) estimation, similar to Hong (2014). Finally, we assess the case of CEE countries, where the domestic firms restructuring and modernization create an environment where the potential

benefits of the FDI are considerably valuable and where the FPI became significant after the capital account liberalization.

Our results can be summarized as follows. In the case of the FDI, both equity assets and liabilities positively influence the economic growth. However, the debt instruments have no impact on the GDP per capita. Similar results are reported in the case of the FPI. The results are robust against a series of control variables which influence the economic growth, like the inflation, the money in circulation, the interest and the exchange rate, the unemployment or the primary energy consumption.

The organization of the paper is the following. Section 2 describes the data and methodology, Section 3 presents the results and Section 4 concludes.

## 2. Data and methodology

### 2.1. Data

The dependent variable is the GDP per capita expressed in natural log. The explanatory variables of interest are the FDI and the FPI (equity and debt assets, respectively equity and debt liabilities). We use annual data for the period 2005-2012 and we consider 13 CEE countries, namely Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic and Slovenia.

The descriptive statistics and the definition of the variables, together with the expected sign of the explanatory variables, are presented in Table 1. In line with most of the empirical researches on the FDI–economic growth nexus, we expect a positive impact of investments on the GDP per capita.

Table 1. Descriptive statistics

Statistics	Mean	S.D.	Min.	Max.	Exp. sign	Definition and description
<b>Dependent variable</b>						
(1) gdpcap	9.51	0.44	8.22	10.3		Gross domestic product at market prices (Euro per capita) – expressed in natural log.
<b>Explanatory variables</b>						
(2) fdica	21.8	1.56	18.6	25.9	+	Foreign direct investment, equity and investment fund shares (assets) – expressed in natural log.
(3) fdida	21.5	1.43	18.7	24.9	+	Foreign direct investment, debt instruments (assets) – expressed in natural log.
(4) fdicel	23.9	1.07	22.0	26.1	+	Foreign direct investment, equity and investment fund shares (liabilities) – expressed in natural log.
(5) fdicdl	22.7	1.17	20.2	25.2	+	Foreign direct investment, debt instruments (liabilities) – expressed in natural log.
(6) fpicla	21.2	1.15	16.9	23.3	+	Foreign portfolio investment, equity and investment fund shares (assets) – expressed in natural log.
(7) fpicda	22.2	1.10	20.1	24.8	+	Foreign portfolio investment, debt instruments (assets) – expressed in natural log.
(8) fpicel	23.9	1.07	22.0	26.1	+	Foreign portfolio investment, equity and investment fund shares (liabilities) – expressed in natural log.
(9) fpicdl	22.5	1.45	19.4	25.6	+	Foreign portfolio investment, debt instruments (liabilities) – expressed in natural log.
(10) ir	3.61	2.64	0.06	12.2	-	Interest rate (money market rate).
(11) infl	3.92	2.61	-1.20	15.3	+	Inflation rate (Harmonized Index of Consumer Prices).
(12) unem	9.15	3.68	3.70	19.5	-	Unemployment rate.
(13) M2	9.37	8.83	-9.60	35.3	+	Growth rate of the monetary aggregate M2 – expressed in natural log.
(14) ber	-0.69	7.90	-18.4	25.8	-	Bilateral exchange rate reported to the US dollar – logarithmic growth rate.
(15) pec	2.37	1.20	-0.11	4.57	+/-	Primary energy consumption (million TOE) – expressed in natural log.
(16) edu	21.6	2.11	17.7	27.1	+	Education level (students as % of total population).

Notes: (i) the FDI and FPI (stock data) are extracted from International Financial Statistics (IMF); (ii) the bilateral exchange rate and M2 are extracted from World Bank Development Indicators; (iii) the GDP per capita, the level of inflation, unemployment, education and the primary energy consumption, are extracted from Eurostat; (iv) the money market rate is extracted from Eurostat and International Financial Statistics (IMF).

A series of control variables are considered to validate our findings. First, we resort to monetary variables which affect the economic growth, as the interest rate, the CPI inflation, the money in circulation and the bilateral exchange rate. Second, we consider several real economy variables, as the unemployment rate, the primary energy consumption and the education level. These are common factors analyzed in the empirical economic growth literature. The data are collected from different databases, as the International Financial Statistics (IMF), Eurostat and World Development Indicators (World Bank).

In the case of the primary energy consumption, the expected influence is not very clear. On the one hand, most of the empirical studies addressing the energy consumption – economic growth issues, document a positive relationship. On the other hand, primary energy consumption characterizes less developed countries, which do not resort to alternative energy resources.

Table 2 presents the correlation between variables. The IMF statistics shows that FDI equity liabilities are identical with the FPI equity liabilities. Identical results are expected in this case. The following table also describes the results of the Levin et al. (2002) panel unit root tests (LLC tests). We notice that for all the considered variables the panels are stationary.

Table 2. Correlation matrix and Levin–Lin–Chu (2002) panel unit root test

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) gdpcap	1.00															
(2) fdiea	0.43	1.00														
(3) fdida	0.12	0.67	1.00													
(4) fdiel	-0.11	0.68	0.58	1.00												
(5) fdidl	-0.29	0.55	0.62	0.87	1.00											
(6) fpica	0.57	0.82	0.48	0.58	0.39	1.00										
(7) fpida	0.76	0.28	0.06	-0.02	-0.24	0.45	1.00									
(8) fpiel	-0.11	0.68	0.58	1.00	0.87	0.58	-0.02	1.00								
(9) fpidl	0.06	0.70	0.51	0.76	0.72	0.62	0.05	0.76	1.00							
(10) ir	-0.36	0.08	0.20	0.31	0.41	-0.09	-0.55	0.31	0.16	1.00						
(11) infl	-0.30	-0.18	0.00	-0.02	0.10	-0.35	-0.46	-0.02	-0.12	0.51	1.00					
(12) unem	-0.23	-0.04	0.06	0.01	0.13	-0.09	-0.18	0.01	0.07	-0.24	-0.30	1.00				
(13) M2	-0.33	-0.27	-0.20	-0.12	-0.11	-0.28	-0.22	-0.12	-0.08	0.12	0.16	-0.26	1.00			
(14) ber	-0.03	0.06	0.10	0.02	0.06	0.05	-0.00	0.02	0.03	-0.16	-0.27	0.21	-0.35	1.00		
(15) pec	-0.46	0.31	0.34	0.78	0.81	0.28	-0.30	0.78	0.72	0.35	0.11	0.08	0.09	-0.06	1.00	
(16) edu	-0.03	-0.01	0.21	-0.09	-0.11	0.06	-0.18	-0.09	0.14	0.18	0.12	0.07	0.21	-0.11	0.09	1.00
LLC (2002) –	-13.3	-10.9	-17.6	-7.37	-23.9	-26.6	-25.0	-7.37	-1.98	-2.54	-6.59	-6.62	-6.45	-3.84	-1.35	-3.49
Adjusted-t*	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)

Note: (p-value); Levin–Lin–Chu (2002): H0- Panels contains unit roots; Ha-Panels are stationary.

## 2.2. Methodology

Noteworthy papers provide evidence of the bidirectional causality between foreign investment inflows and the economic growth (see Li and Liu, 2005; Omri et al., 2014). Consequently, a related problem with assessing the effects of the foreign investment on growth is the endogeneity. To deal with the potential endogeneity, we perform a dynamic panel data analysis, using a system-GMM approach of Blundell and Bond (1998). As these researchers show, the proposed system-GMM estimator derived from the estimation of a system of two simultaneous equations, one in level (with lagged first differences as instruments) and the other in first difference (with lagged levels as instruments). It has a considerable advantage over the classic Arellano and Bond (1991) model, which has poor finite sample properties, and it is downwards biased, especially when T is small. In addition, it requires that the panel-level effects are uncorrelated with the first difference of the first observation of the dependent variable.

The system-GMM equation is:

$$Y_{i,t} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 X_{i,t} + \mu_i + u_{i,t} \quad (1)$$

where:  $Y_{i,t}$  is the dependent variable, namely the GDP per capita in natural log;  $X_{i,t}$  is the vector of explanatory variables;  $\mu_i$  represents the country effect;  $u_{i,t}$  is the error term which varies over both country and time.

When performing the system-GMM tests, usually the control variables are split in two categories: strictly

exogenous variables and non-strictly exogenous variables. However, because the long-term economic growth may impact upon all the explanatory variables retained into the analysis, as Hong (2014), we prefer to take the control variables as non-strictly exogenous variables out of caution.

### 3. Results

Eight models are tested. Models 1-4 check for the FDI impact on the long-term economic growth. While Models 1 and 2 are related to the outward FDI (assets), considering equity and debt instruments respectively, Models 3 and 4 are related to the inward FDI (liabilities). Similar, Models 5-8 consider the influence of the FPI on the long-run economic growth. The results are presented in Table 3.

Table 3. Results of the panel data analysis

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)
c	1.190***	1.062***	0.714***	0.978***	1.045***	1.163***	0.714***	1.069***
gdpcap(-1)	0.853***	0.879***	0.846***	0.872***	0.836***	0.877***	0.846***	0.868***
fdica	0.009*							
fdida		0.004						
fdiel			0.032***					
fdidl				0.010				
fpica					0.028***			
fpida						0.000		
fpiel							0.032***	
fpidl								0.009
ir	-0.012***	-0.011***	-0.013***	-0.013***	-0.011***	-0.012***	-0.013***	-0.012***
infl	0.009***	0.009***	0.010***	0.009***	0.010***	0.009***	0.010***	0.009***
unem	-0.005***	-0.005***	-0.005***	-0.006***	-0.005***	-0.005***	-0.005***	-0.005***
M2	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***
ber	-0.010***	-0.011***	-0.011***	-0.011***	-0.010***	-0.011***	-0.011***	-0.011***
pec	-0.016**	-0.009	-0.034***	-0.015	-0.022***	-0.005	-0.034***	-0.015
edu	0.005	0.004	0.006**	0.006**	0.001	0.005	0.006**	0.004
Sargan test	chi2=140.4 (0.134)	chi2=139.0 (0.152)	chi2=136.2 (0.195)	chi2=135.1 (0.214)	chi2=143.7 (0.097)	chi2=135.7 (0.203)	chi2=136.2 (0.195)	chi2=134.2 (0.229)

Notes: (i) \*, \*\*, \*\*\* means significance at 10 %, 5 % and 1 %; (ii) Sargan test for over-identifying restrictions related to the instruments is presented; (iii) GMM errors are used; (iv) The maximum lags of the dependent variables used as instruments was established to 1, in order to avoid the instrument proliferation problem associated to the system GMM; (v) For the explanatory variables the maximum number of lags is considered; (vi) In all the cases, the Arellano-Bond test for zero autocorrelation in first-differenced errors shows no autocorrelation.

First of all, we notice that only the equity and fund investment instruments positively impact the GDP per capita. This observation is valid as well in the case of the FDI as in the case of the FPI, both for the outward and inward investments. However, no significant impact is documented for the debt instruments. The monetary control variables present a significant coefficient and the sign is that expected. While the interest rate and the exchange rate appreciation negatively influence the economic growth, the inflation rate and the money in circulation have a positive impact. The unemployment rate and the primary energy consumption have a negative influence on the economic growth. However, the level of education, even if it has a positive influence, this influence is not significant in most of the cases. This result is not surprising because the education contributes to the economic growth with considerable lags. The Sargan test shows that the instruments were well chosen.

These results show that both the FDI and FPI must be encouraged, but the accent should fall on the equity products. The development of capital markets and the easy access to finance encourage the economic activity of the CEE countries in the long-run.

### 4. Conclusions

As far as we know, this is the first study which investigates the impact of both inward and outward FDI and FPI on the long-run economic growth, making the delimitation between equity and fund investment instruments, and debt instruments. We focus on the foreign investment as determinant of the economic growth, considering the case of the CEE countries, for the period 2005-2012.

Our panel system-GMM approach shows that both liabilities and assets FDI and FPI (a proxy for inward and outward investments) have a positive impact on the economic growth in the CEE countries. However, this affirmation is valid only in the case of equity instruments. These findings confirm the theory advanced by Rogoff (1999), which underlines the advantages of cross-border equity investment for stimulating the economic activity, in the detriment of the debt investment.

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