

# FOREIGN DIRECT INVESTMENT AND DEVELOPMENT IN THE VISEGRAD COUNTRIES – A PANEL DATA ANALYSIS

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## Abstract

The V4 countries (Czech Republic, Hungary, Poland and Slovakia) are linked not only by geographical proximity, but they also have similar experience with the transformation process. In this process, an important role is played by foreign direct investments, which – as is emphasized by many authors – not only complement the shortage of domestic capital, but also have a positive influence on a number of macroeconomic parameters, such as economic growth, exports, imports, and the labor market (Kornecki & Raghavan, 2015; Popescu, 2014). In the literature, the positive impact of FDI on the economy of the host country as regards the flow of knowledge and technology is indicated. The purpose of the paper is to present the volume and dynamics of FDI during the years 1993–2015 in the V4 countries in the context of economic development. Data on FDI is derived from UNCTAD and other data is retrieved from the World Bank. The research methodology is based on the concept of Investment Development Path (IDP) and a synthetic indicator Net Outward Investment (NOI) position of a country. NOI position is related to the level of economic development and determines the stage of economic development of analyzed countries. The analysis carried out has revealed that the Visegrad Group countries transform between the second and the third stage of IDP.

**Key words:** foreign direct investment, inward FDI, outward FDI, Investment Development Path, economic development, Visegrad Group

**JEL Code:** F21, F23, F55

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## Introduction

The year 2016 saw the 25<sup>th</sup> anniversary of the establishment of the Visegrad Group. This informal and non-institutionalized alliance originally functioned as the Visegrad Triangle. Since the dissolution of Czechoslovakia (1 January 1993), it has been known as the Visegrad Four or V4, currently comprising Poland, Czech Republic, Hungary and Slovakia. In the part of the founding document devoted to economic issues, its signatories declared that they would support the free flow of capital and manpower, they would develop economic cooperation upon

market principles and would deepen commercial exchange of goods and services. Furthermore, they stated that they would aim at creating favorable conditions for direct cooperation of enterprises and for investments with foreign capital aimed at increasing economic efficiency.

Even though some claim that the Visegrad Group is heterogeneous and the countries allied differ from each other in many aspects, it should be emphasized that they are also linked by numerous similarities. These concern, for example, geographic location in Central and Eastern Europe, the level of economic development and similar experience with the reconstruction of centrally-planned economies towards market economies where foreign direct investments played a considerable role during the reconstruction process.

The objective of this article is to present the volume and dynamics of FDI during the period 1993–2015 in V4 countries in the context of economic development. Data on FDI is derived from UNCTAD and other data is retrieved from the World Bank. The research methodology is based on the concept of the Investment Development Path (IDP) and a synthetic indicator Net Outward Investment (NOI) position of a country. NOI position is related to the level of economic development and determines the stage of economic development of analyzed countries. The analysis carried out has revealed a two-way relation between the level of economic development and the NOI position for the Visegrad Group.

## **1 FDI and economic development – theoretical framework**

Foreign direct investments are the most significant of all forms of capital flow in world economy as the capital of this kind contributes to a country's economic development.

The Investment Development Path (IDP) is a concept which refers to the linking of the country's position in terms of both inward FDIs and outward FDIs and its economic development. The IDP concept was introduced into the economic literature by John H. Dunning (1981), who noted co-dependencies between a country's level of development (proxied by GDP per capita) and its international investment position (proxied net FDI stock).

The IDP concept refers directly to the theory of international production, which appears in literature also under the name of the eclectic theory of foreign investments or the OLI paradigm (ownership-location-internationalization). The OLI paradigm of FDI integrates elements of three economic theories: the monopolistic advantage theory, internalization and the location theory (Pilarska & Wałęga 2014, p. 1169). In the Investment Development Path (IDP) concept, OLI factors are subject to modifications depending on individual stages of a country's

economic development and, in particular, mutual relations between advantages of foreign branches of transnational concerns and domestic enterprises.

The IDP theory suggests that a country may progress through five stages of economic development relative to the rest of the world (tab. 1). These stages are identified by the country's net outward investment (NOI) position (the stock of outward FDI less the stock of inward FDI). It is emphasized in literature that these stages are approximate only and that the progress within a stage and between stages does not necessarily entail automation. Countries may move backwards as well as forwards (Narula & Guimón, 2010, p. 7).

**Tab. 1: Characteristics of the investment development path**

<b>Stage I</b> Natural resource-based	<b>Stage II</b> Investment driven	<b>Stage III</b> Innovation driven	<b>Stages IV &amp; V</b> Increasing knowledge and service intensity; knowledge economy
<b>Inward FDI (IFDI)</b>			
Little FDI initially. As L-advantages improve, resource-based motives, and market seeking later.	Growing presence of market-seeking FDI, which may attract some labor-intensive manufacturing.	Raising IFDI, market-seeking and increasing efficiency-seeking FDI in manufacturing, even in activities involving the supply of more sophisticated products for domestic markets, or requiring more skilled labor.	Increasing market-seeking, efficiency-seeking and asset-augmenting investments.
<b>Outward FDI (OFDI)</b>			
Very little OFDI. Mainly minor strategic investment and capital flight.	Little OFDI. Some resource- and market seeking investments in other developing countries; some 'escape' investments to developed countries; mostly natural resource-seeking investments or light manufacturing employing established technologies	Growing OFDI. All kinds of investments including efficiency-seeking and some asset augmenting investments; consumer goods, e.g. electrical products, clothing, more service investments, e.g. construction, banking.	Increasing efficiency-seeking and asset-augmenting investments; regional and global; M&As and alliances; investments in knowledge-intensive sectors, e.g. ICT, biotechnology, and high value-added services, e.g. consultancy.
<b>NOI position</b>			
Around zero.	Increasingly negative.	Negative, but increasing.	Positive, next falling and then fluctuation around zero.

Source: (Narula & Guimón, 2010, p. 9; Kuzel, 2017, p. 5).

Despite the fact that the investment development path has numerous advantages when it comes to the identification of the dynamic relationship between foreign direct investment and the level of development of a given country, some authors point at its certain disadvantages and the need for considering not only fast changes related to globalization processes, rapid development of international corporations but also certain specific characteristics of countries

and their experience (e.g. transformation processes in CEE countries) which have had an impact on the development of IDP in individual countries. Another weakness is that the use of GDP as proxy per capita may exhibit completely different economic structures and technological specialization patterns (Fonsca & Mendonça & Passos, 2016, p. 8).

It is emphasized in literature that the influence of FDI on the economic development has multiple aspects. It is stressed that it depends not only on the intensity and volume of inward FDI for the economy of a given country but also on their kind and numerous specific characteristics of different weight as regards the influence on the consequences of FDI in the sphere of economy privatization and restructuring, employment, technical progress, competitive production, foreign trade and the resulting economic growth.

Some economists are of the view that FDI's affect the economic development positively not only through effects in the economic sphere but also those in the social sphere. The most frequently mentioned economic effects include accelerated economic growth rate, increase in the savings rate, increase in exportation and in employment. Social effects, in turn, include reduction of poverty and decreased inequality in income.

However, it should be emphasized here that there is consensus among economists that the development benefits of FDI are not automatic, but will depend on a number of conditions in a host economy. FDI's ability to push the knowledge frontier may depend on a host country's level of economic development and education to introduce new exports and open up markets to existing trade policies and the overall competitive environment, and to generate spillovers (Alfaro, Chauvin, 2016, p. 3).

## **2 Influence of FDI on the economic development of V4 countries**

The inflow of foreign capital in the context of economic development was particularly important for CEE countries which underwent economy transformation (including all V4 countries) and since 1989 have functioned in isolation from the global economy and FDI inflows.

The FDI inflow in Central and Eastern Europe (CEE) has been a key component in the first phase of the privatization process during the transition period (Estrin, 2017, p. 2). FDI augments economic development and the level of living in CEE. The CEE economies enhanced their percentage of the entirety of EU trade (Popescu, 2014, p. 8156). Currently, the main reasons for pursuing FDI are to boost productivity, encourage employment, stimulate innovation and technology transfer, and enhance economic growth. CEE countries have

identified the positive effects of FDI on the transformation process of their economies (Kornecki & Raghavan, 2015, p. 116).

Although it is stressed in literature that the influence of FDI on economic development does not always bring positive outcomes, and if so, on certain conditions only (for example, effect is dependent on the initial conditions in the country that allow it to exploit FDI spillovers or the growth enhancing effect of FDI is only possible in countries with developed financial systems), in the case of CEE countries, those which indicate that FDI has a positive significant effect on the economic growth are predominant. For instance, based on Bayesian linear regressions, Simionescu (2016) proved that during the years 2008-2014 a positive impact of FDI on the economic development was experienced in the group of 18 out of 28 analyzed European Union countries (including all V4 states). Kornecki and Raghavan (2015), who used the modified Cobb-Douglas Production function, drew similar conclusions for Poland, Czech Republic, Hungary, Slovakia and Slovenia during the period 1990-2003. They positively verified the hypothesis that FDI stock, in comparison with other factors such as labor, capital and export, constitutes an essential factor of economic growth in these countries.

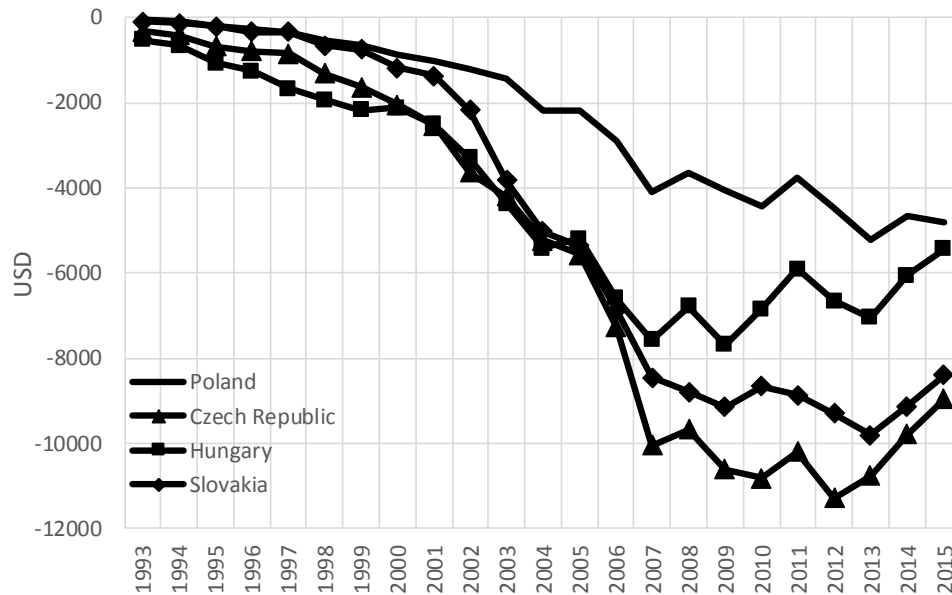
Using the linear gravity model, Zysk & Śmiech (2014) proved that FDI strongly influenced the volume of Polish, Slovak and Czech exports and imports in 2001-2011 (only in the case of Hungary did FDI fail to stimulate foreign trade).

Finally, Wach and Wojciechowski (2016) verified the impact of inward FDI on domestic entrepreneurship in four Visegrad countries in the years 2000-2012. Based on their analysis, they proved that a statistically significant positive correlation between the stock FDI and the entrepreneurship rate occurred in all V4 countries during the analyzed period. However, the impact of FDI was different in different analyzed countries – the strongest in Slovakia and the weakest in Hungary. Furthermore, in their research the authors also found notable positive relationships between GDP and FDI stock per capita in the case of Poland and the Czech Republic.

### **3 Data, model and empirical results**

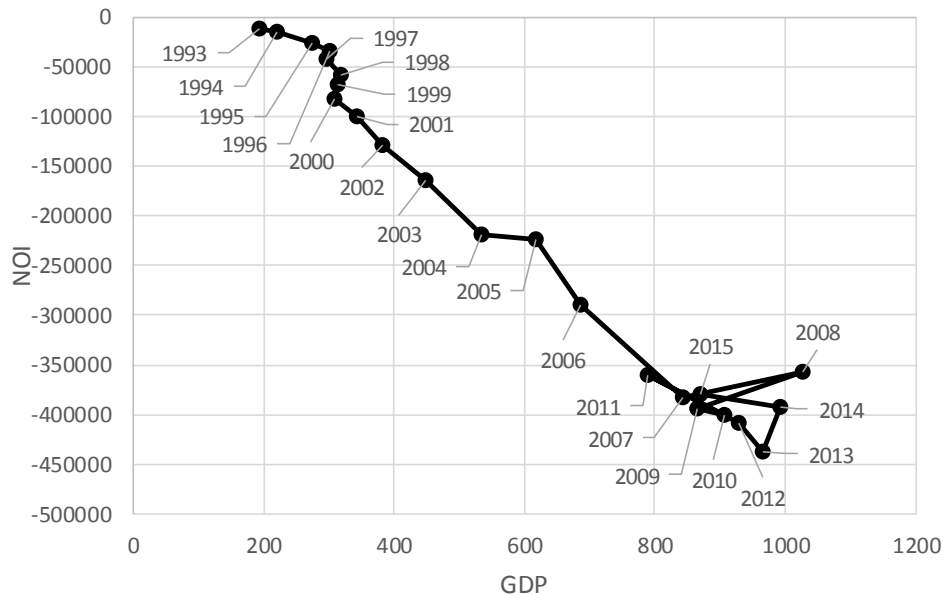
Similar to other studies on IDP, in the present research FDI stock data was used to determine the net outward investment (NOI) position. In order to preserve the comparable methodology of data regarding inward and outward FDI stocks, UNCTAD data was used whereas for GDP data was taken from the World Bank database. The examined period encompassed the years 1993–2015.

**Fig. 1: NOI position (outward FDI stock per capita – inward FDI stock per capita) of Poland, Czech Republic, Slovakia and Hungary (1993–2015, in USD)**



Source: authors' calculations based on UNCTAD's data.

**Fig. 2: IDP of the Visegrad Group**



Source: authors' calculations based on UNCTAD's and World Bank data.

The net value of foreign direct investments *per capita* in the Visegrad Group countries was negative in the period 1993–2015 (fig. 1), which coincides with the theoretical model (see tab. 1). Until 2000, the dynamics of FDI inflow were relatively low and this may be associated

with the first stage. A broader flow of FDI, typical of the second stage, was interrupted in 2007 by the emerging symptoms of a global economic slowdown. After 2012, symptoms of a reverse tendency were observed for the Czech Republic, Slovakia and Hungary: NOI began to rise, yet it was still negative. In order to confirm the maintained dynamics and transition to the third stage, it is necessary to have data for a longer time horizon at one's disposal.

In the IDP study, aggregated data for V4 countries were used due to their similar level of economic development. The adoption of such a research procedure was dictated mainly by the need to smoothen NOI which is susceptible to the inflow of large individual investments in particular countries. The course of the IDP path is compliant with the assumptions until the outbreak of the world crisis (figure 2), which disturbed the flow of FDI and affected the rate of changes in GDP.

The nature of data in possession (data for four countries from a period of 23 years) forced the author to use the panel model to estimate the IDP path. Model parameters of the following form were estimated:

$$NOI_{it} = \beta_0 + \beta_1 GDP_{it} + \beta_2 GDP_{it}^2 + \alpha_i + v_t + u_{it}, \quad i=1, \dots, N, \quad t=1, \dots, T,$$

where:  $NOI$  – net FDI stock;  $\beta_0$  – intercept;  $\beta_1$  and  $\beta_2$  – structural parameters of the model;  $GDP$  – gross domestic product in current prices,  $GDP^2$  – squared gross domestic product in current prices;  $\alpha_i$  – individual effects, part of variability of variable  $NOI$  typical of  $i$ -th unit ( $N$  effects);  $v_t$  – periodic effects, part of variability of variable  $NOI$  typical of  $t$  period ( $T$  effects);  $u_{it}$  – purely random interfering component.

First, parameters of the pooled model were estimated. Such a model assumes that all units within a model are similar, so they may be described with the use of a simple joint regression model. It was followed by diagnostics in order to state whether there were significant effects which would suggest the choice of fixed effects or random effects model.

The results of the residual variance test with regard to the significance of individual effects allowed for rejecting the zero hypothesis which assumed that the LS panel was correct in favor of an alternative hypothesis which recommended the use of the model with fixed effects ( $F(3.86) = 38.0186$  with value  $p < 0.001$ ). The verification of the assumption of the fixed variance of the random component of objects with the use of the Breusch-Pagan test ( $LM = 67.2069$  with value  $p < 0.001$ ) led to the rejection of hypothesis  $H_0$  that the LS panel model was correct in confrontation with hypothesis  $H_1$  that the model of random effects was more suitable. Finally, the use of the Hausman test ( $H = 120.996$  with value  $p < 0.001$ ) which resulted in the rejection of the zero hypothesis of the random effect model in confrontation with the alternative

hypothesis of a model with fixed effects enabled the author to make a decision to estimate the parameters of the panel model with fixed effects (tab. 2).

**Tab. 2: Estimation of IDP of the Visegrad Group**

	Parameter	Standard error	t-Student	p-value
Constant	25800,60	4848,92	5,32	<0,0001
GDP	-0,6319	0,0525	-12,04	<0,0001
GDP <sup>2</sup>	3,1784e-07	8,7858e-08	3,62	0,0005
Model fitting statistics				
Mean of dependent variable	-54048,52	St. deviation of dependent variable	49827,29	
Residual sum of squares	1,99e+10	Standard error of the residuals	15223,56	
R-squared	0,9118	Adjusted R-squared	0,886727	
F(5,86)	177,77	p-value for F test	8,82e-44	

Source: authors' calculations based on UNCTAD's and World Bank data.

The estimated parameters of the econometric model for Poland, Slovakia, Czech Republic and Hungary enabled the assessment of the relation between NOI and GDP. The model parameters obtained in the course of estimation confirm that the analyzed group of countries is in the process of transformation between the second and the third stage – the parameter with the GDP variable is negative but with GDP<sup>2</sup> variable it is positive but low (3.1784e-07). Yet these results should be approached with caution as the current changes in the economic policy and political tension in Central and Eastern Europe may turn out to be stronger than economic determinants of the inflow of FDI to the region (Buckley & Castro, 1998, p. 13).

## Conclusions

The analyses conducted for the Visegrad Group countries confirm that NOI is compliant with the investment development path paradigm even though the model curve was disturbed after 2007 due to crisis-related phenomena. This means that there is a relation between GDP and NOI, and the IDP path is U-shaped. Gorynia, Nowak and Wolniak (2010) came to similar conclusions. It will be possible to confirm the transition of V4 countries to stage III in the next few years upon the diminishing of uncertainty in world economy and the regaining of the trust of foreign investors. Then, it will be possible to determine the sources of competitiveness of Poland, Czech Republic, Slovakia and Hungary. Further analyses of IDP for the V4 Group and changes to the structure of FDI flows are also interesting in the context of determining whether the transformation and opening of the economies of Central and Eastern Europe allowed them to avoid the trap of moderate development.



## Acknowledgment

Publication was financed from the funds granted to the Faculty of Economics and International Relations at Cracow University of Economics, within the framework of the subsidy for the maintenance of research potential.

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