

Foreign Direct Investment in New EU Members from Central and Eastern Europe: the Investment Development Path Perspective

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Abstract

In the context of the Investment Development Path model (IDP), a comparative analysis is conducted of IDPs of ten Central and Eastern European (CEE) countries, all members of the European Union. The main purpose of the paper is to determine the timing and explore the factors that have influenced the movement of these ten CEE economies through their IDP stages. The authors try to determine the current positioning of the ten countries on the IDP, using both a graph depicting the relationship between net outward investment position (NOIP) per capita and GDP per capita, as well as detailed data on inward and outward FDI stocks and NOIP's absolute values presented in tables. Then a regression analysis is conducted to verify findings from the previous section. Thereafter, the authors focus on the CEE-10 countries' outward FDI and apply the outward FDI performance index in their analysis of that outward investment. In the concluding section, the authors summarize their findings and reveal a need to add new theoretical considerations to the original IDP model.

1. Introduction

The interface and interplay between inward and outward FDI coupled with economic development constitutes the essence of the investment development path (IDP) paradigm, the central theoretical model in this study. In the context of this model, a comparative analysis is conducted of IDPs of ten Central and Eastern European (CEE) countries, all members of the European Union. They include Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. This group of countries shows relative homogeneity in terms of sharing the same communist heritage, common experience in establishing and developing a market economy, and in acceding to the European Union (EU): with eight countries joining the EU in 2004 and two (Bulgaria and Romania) in 2007. Moreover, all of these countries show relative homogeneity in terms of many socio-economic variables (Niroomand and Nissan, 2007) and have exhibited a tendency to economic convergence over the last two decades (Amplatz, 2003, and Matkowski and Próchniak, 2007). At the same time though, there are considerable differences between them in their level of development and in completion of the transition process to the market led system. In fact, one can distinguish more homogenous sub-regions in the CEE-10 group (see e.g. Caporale, Rault, Sova and Sova, 2009), namely the CEE-5

(the Czech Republic, Hungary, Poland, Slovakia and Slovenia), the Baltic countries (B-3: Estonia, Latvia and Lithuania), and the two Balkan countries located in Southeastern Europe (SEE-2: Bulgaria and Romania). Particularly the latter states are handicapped with a considerable development gap separating them from the transition leaders of CEE-5. Thus this study undertakes to determine how these factors of homogeneity in some areas and heterogeneity in other areas influence the individual countries IDP trajectories.

But the main purpose of the present investigation is to determine the timing and explore the factors that have influenced the movement of these ten CEE countries through their IDP stages. Thereafter, conclusions and policy recommendations are presented, which are not only applicable to the analyzed countries but which might serve as guidelines or simply be of interest to other CEE states, particularly those that may be or want to be considered as prospective members of the EU.

The data sets used in this study have been derived from UNCTAD's Handbook of Statistics and the Statistical Yearbook of the Republic of Poland. The data collected cover the entire period of the ten countries' said transition process up to 2008, the last year for which the relevant data for all countries were available.

The paper sets out by presenting the IDP model (paradigm) and briefly describing its five stages. The same section reviews the relevant literature, focusing on those studies that applied the IDP model to CEE economies. In the subsequent section, the authors try to determine the current positioning of the ten countries on the IDP, using both a graph depicting the relationship between net outward investment position (NOIP) per capita and GDP per capita, as well as detailed data on inward and outward FDI stocks and NOIP's absolute values presented in tables. In doing so, the authors also highlight the EU accession effects on the countries' move through stages 2 and 3, and the effects of the recent economic and financial crisis on their NOIP dynamics. In the second analytical section, a

regression analysis is conducted to verify findings from the previous section. Thereafter, the authors focus on the CEE-10 countries' outward FDI and apply the outward FDI performance index in their analysis of that outward investment. The index is used to supplement and enrich the analysis of the countries' IDP positioning conducted in the previous sections. In the concluding section, the authors summarize their findings and reveal a need to add new theoretical considerations to the IDP original model. The concluding section also outlines future research avenues in the area of CEE countries' IDP.

2. The IDP Concept and Its Application in the Studies of CEE Countries

The concept of the investment development path (IDP), which relates to foreign direct investment (FDI), was first proposed by Dunning in the early eighties (Dunning, 1981). It was thereafter refined by Dunning (1986 and 1997), Dunning and Narula (1994, 1996 and 2002) and Narula and Dunning (2000). Several other authors have made significant contributions to the concept development, including Lall (1996), and Durán and Úbeda (2001 and 2005).

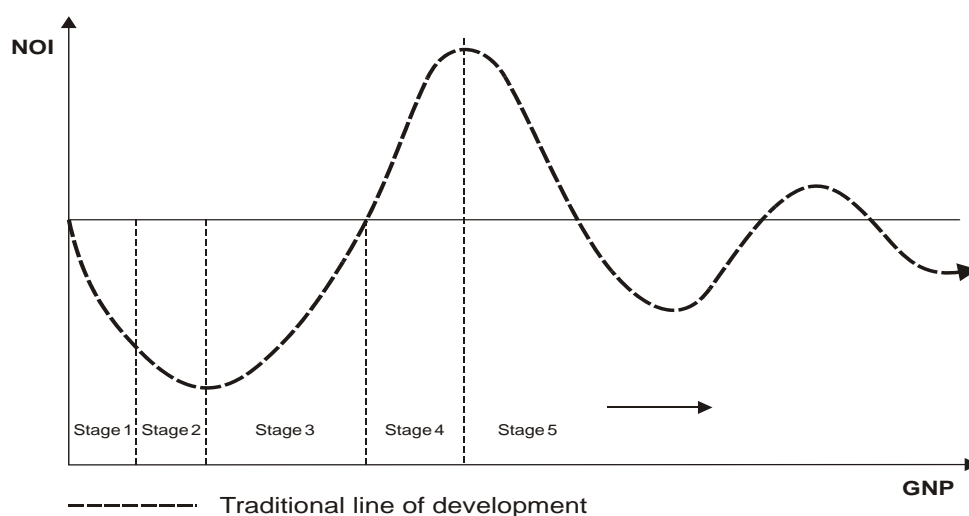
According to the basic IDP proposition, the inward and outward foreign investment position of a country is tied with its economic development. Changes in the volume and structure of FDI lead to different values in the country's net outward investment (NOI) position, defined as the difference between gross outward direct investment stock and gross inward direct investment stock. The changing NOI position passes through 5 stages intrinsically related to the country's economic development (Dunning and Narula, 2002).¹ A diagrammatic representation of the IDP model is depicted in Figure 1.²

¹ In its original version (Dunning, 1981), the path had four stages. The fifth stage was added later (Dunning and Narula, 1996).

² The IDP curve shown is called by Dunning and Narula (2002) a traditional one. On this traditional curve, they superimposed a curve, parallel to the traditional one but flatter (*ibid.*, p.139) that, according to these authors, reflects technological and organizational changes in FDI emerging in the 1990s.

In Stage 1 of the IDP the NOI position is initially close to zero and subsequently assumes negative, but rather small, values. Inward FDI is negligible and flowing mostly to take advantage of the country's natural assets. Outward FDI is also negligible or non-existent, as foreign firms prefer to export and import as well as to enter into non-equity relationships with local firms (Dunning and Narula, 2002, p. 140). As a country develops and improves its L-specific advantages³, it experiences an increased inflow of FDI and enters Stage 2 of the IDP. With outward FDI remaining still low but larger than in the previous stage, the NOI position continues to decrease, although towards the latter part of Stage 2, the rate of decrease slows down as the growth of outward FDI converges with that of inward FDI. Stage 3 is reached by a country when it experiences an improving NOI position, although being still negative, due to an increased rate of growth of outward FDI

Figure 1. The Pattern of the Investment Development Path



Note: Not drawn to scale – for illustrative purposes only

Source: Dunning and Narula, 2002, p. 139.

³ L-specific advantages denote a country's advantages as a locus for investment vis-à-vis other countries. Such advantages may include large markets, low input costs, tax and financial incentives or strategic geographic location.

and a gradual slowdown in inward FDI, geared in this case more towards efficiency-seeking motives and away from import-substituting production. Outward FDI is stimulated by domestic firms acquiring new O-specific advantages,⁴ which are increasingly based on the intangible assets and reflect these firms' ability to manage and co-ordinate assets and activities across national borders (Dunning & Narula, 2002, p. 142). In Stage 4, outward FDI stock continues to rise faster than the inward one, and the country's NOI position crosses the zero level and becomes positive. Country L-specific advantages are now mostly derived from created assets and its firms' O-specific advantages develop and lead to their increased international competitiveness, as the indigenous firms seek to maintain their competitiveness by moving their operations to foreign countries. In Stage 5, the NOI position first falls and thereafter demonstrates a tendency to fluctuate around zero but usually with both inward and outward FDI increasing. This stage is characterized by two main phenomena: MNE's growing propensity to internalize their cross-border transactions (as opposed to relying on the market), engaging in an increasingly complex web of co-operative agreements among themselves; and a convergence of Stage 5 countries' economic structures and their international direct investment positions. Stages 4 and 5 are typical of the most developed countries (ibid., p. 143-144).

A conceptual evaluation of the IDP concept, as evidenced in developed as well as in developing and newly industrialized countries, is undertaken by Lall (1996). Lall maintains that structural changes in ownership and location factors influence trends in international capital flows, corporate behaviour and government policy. According to one of his suggestions the IDP could be better measured by the international transfer of intangible

⁴ O-specific advantages denote ownership advantages of firms, such as brand name, ownership of proprietary technology, or lower costs due to economies of scale.

assets instead of relying only on FDI. His main observation is that countries exhibit long term deviations from the IDP model caused mainly by the nature and efficacy of government policy. This might necessitate extending and modifying the model itself to encompass all the identified sub-patterns.

A more recent comprehensive evaluation of the IDP concept, its shortcomings and suggestions for its modification are found in the studies of Durán and Úbeda (2001 and 2005). In calling for a new approach to the IDP, they draw attention to such methodological problems as the incompleteness of the concept of NOI position as an indicator for analyzing the effects of structural changes on inward and outward FDI, and then the insufficiency of GDP per capita as the indicator of a country's level of economic development. The first dilemma appears in countries where hardly any inward and outward FDI is made and which are classified as being in stage 1 of the IDP. Their NOI position will be close to zero, similarly to developed countries in stage 5 of their IDP. To solve this paradox, Durán and Úbeda propose to look at inward and outward FDI in absolute and relative terms. Suggestions to deal with the second issue revolve around the inclusion of structural variables which would reflect not only the degree of economic development but also each country's peculiarities and the nature of its international trade.

Another significant contribution to the debate around the IDP concept made by Durán and Úbeda concerns their redefinition of Stage 4. In the amended version it is proposed to include developed countries which have: a) a structural gap due to fewer endowments of created assets; b) the same levels of inward FDI as those in Stage 5 but smaller outward FDI compared to those in stage 5; c) a positive or negative NOI position but in all cases lower than that of countries in stage 5. All the proposed modifications depend on the availability of additional or more detailed data and offer much wider analytical possibilities.

The IDP model has been used as a framework in numerous empirical studies, which by and large attempted to validate it by either employing cross-sectional or longitudinal data sets.⁵ However, a relatively small number of studies could be identified that directly or indirectly deal with IDPs of CEE countries, of which only four represent a cross-nation comparative analysis.⁶

Boudier-Bensebaa (2008) undertakes a comparative analysis of the IDP in the whole region of Central and Eastern Europe (including the former Soviet Republics) and the European Union of 15 member states. The “Eastern” countries concerned are classified into 4 distinct groups according to their per capita level of GDP and NOI. The NOI of the “Eastern” countries places them in stages 1 or 2 of the IDP, while that of the EU countries points to stages 4 or 5. The first most advanced group of the “Eastern” countries consists of the Czech Republic, Estonia, Slovenia, Hungary, Slovakia, Poland, Latvia, Lithuania and Croatia. The said group is identified as moving towards the end of stage 2 of their IDPs or even towards the beginning of stage 3. Within the “Eastern” countries groups and sub-groups their NOI reveals a tendency to converge. But as far as income levels are concerned no convergence is found either inside the “Eastern” countries or between them and the EU. Finally the author draws attention to the fact that data on FDI stocks and GDP do not cover all the factors affecting FDI and development. In the FDI sphere, left out are the non-equity forms of investment. As for the effect on FDI, besides GDP, elements such as EU accession, globalization and the transformation process per se should be also taken into account. Boudier-Bensebaa focuses on cross-sectional analysis across countries and does not attempt to assess and explain the individual countries’ IDP trajectories. This missing

⁵ A succinct review of the two types of IDP empirical studies, cross-sectional and longitudinal, can be found in Gorynia, Nowak and Wolniak (2006).

⁶ Several studies focus on individual CEE countries’ IDP. They either explicitly use the IDP framework or focus on some of its elements, typically on outward FDI. A review of these studies is presented in Gorynia, Nowak and Wolniak, 2008.

element is taken up by the authors of this study who argue that individual countries' IDP idiosyncrasies can provide a deeper understanding and more insightful explanation of the varying IDPs and their convergence or divergence within groups of countries.

In the second cross-nation study focused on Central and Eastern Europe, Kottaridi, Filippaios and Papanastassiou (2004) attempt to integrate Dunning's IDP model with Vernon's Product Life Cycle and Hirsch's International Trade and Investment Theory of the Firm. These authors analyze the location determinants of inward FDI and the interrelationship between inward FDI and imports during the years 1992-2000 in eight new EU member states from CEE and two candidate countries – Bulgaria and Romania. They find evidence of the ten CEE countries going through the second stage of the IDP and gradually moving towards the third stage, which corroborates the findings of Boudier-Bensebaa (2008) with respect to the most advanced CEE economies, labeled CEECs¹.

Studies by Kalotay (2004) and Svetličič and Jaklič (2003) focus on outward FDI from CEE. While the former study uses the IDP framework, the latter does not.

Kalotay (2004) examines outward FDI from most of the 2004 accession CEE countries plus Croatia, placing these countries in stage 2 of their IDPs. This author predicts that accession of the eight CEE countries to the EU in 2004 should give a major push to both their outward and inward FDI, with an uncertain net impact of such a development on the IDP. However, based on the experience of Portugal (Buckley and Castro, 1998) and Austria (Bellak, 2001), Kalotay hypothesizes that CEE countries being at the time of accession to the EU on the verge of moving from stage 2 to 3 will be held back in their transition to stage 3.

Svetličič and Jaklič (2003), while not using the IDP paradigm as a framework, conduct a comparative analysis of several CEE countries' outward FDI (the Czech

Republic, Estonia, Hungary, Poland and Slovenia). Their analysis clearly demonstrates that major increases of FDI outflows started in the latter part of the 1990s. This is yet another indication of the CEE countries entering stage 2 of the IDP during that period. At the same time Svietličič and Jaklič find positive correlation between a country's level of development and its rate of investment abroad, and observe that outward FDI of the five countries under study tends to be geographically concentrated in countries with close historical or cultural ties.

2.1. Regression Models Used in IDP Studies

Many of the IDP studies apply econometric modeling in testing the paradigm. Dunning himself (1981, 1986 and 2002) postulated and used a quadratic specification to describe the IDP curve (the formula for this specification is presented later in this paper). A quadratic function allows for the non-linearity in the relationship. The same function has been used by several other authors analyzing IDPs of individual countries or groups of countries (see e.g. Tolentino, 1987; Narula 1996; Barry, Goerg and McDowell, 2003; and Boudier-Bensebaa, 2008). Other authors (see e.g. Buckley and Castro, 1998; and Bellak, 2001) found a cubic specification better fitting their empirical data.⁷

Some other approaches to econometric analysis of IDP are also noteworthy. Durán and Úbeda (2001 and 2005) for example applied factor and cluster analyses to identify the countries reaching specific stages of the IDP. These authors also applied panel data analysis for a number of 4th stage countries. Similarly Boudier-Bensebaa (2008) applied a quadratic equation to a panel of 27 CEE countries and ran the regression not only for the entire sample but also for two clusters in that group.

⁷ A cubic specification is as follows: $NOI = a + b_1 GDPpc^3 + b_2 GDPpc^5 + m$

3. Current Positioning on the IDP

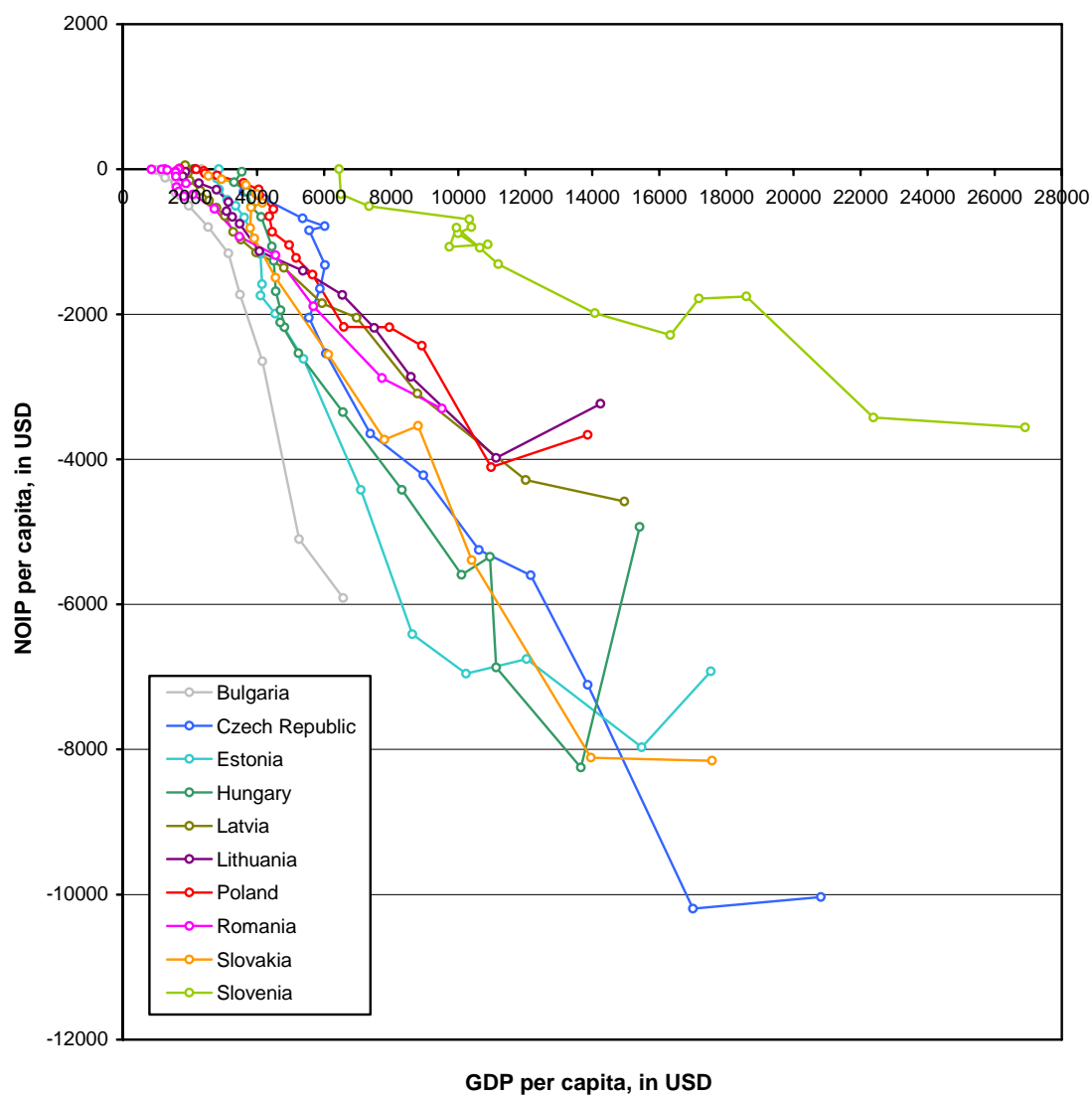
The last two years under consideration have brought significant changes in the positioning of the ten investigated economies on their respective IDP trajectories. As visualized in Figure 2, and further recorded in Table 1, five countries in descending order (Hungary, Estonia, Lithuania, Poland and the Czech Republic) were clearly in their IDP stage 3. Their net outward investment positions (NOIPs)⁸ per capita increased in 2008 relative to the previous year (i.e. decreased in absolute values). The smallest increase was curiously recorded for the Czech Republic – the country exhibiting the highest GDP per capita of the above-listed group (20815 USD). Hungary had the highest increase but at a lower GDP per capita of 15408 USD. The lowest GDP per capita was that of Poland in the stage 3 group of countries (13861 USD). Those leaders were with respect to their level of development in the upper middle segment of all the analyzed countries. On the least developed end, there was Bulgaria with decreasing (i.e. rising negative) NOIP and GDP per capita of only 6573 USD in 2008. On the other end was Slovenia with the top GDP per capita of 26905 USD but her NOIP in 2008 was still slightly decreasing indicating however the forthcoming advent into IDP stage 3 as well. Bulgaria and Romania were still in the second half of their IDP stage 2, as well as Latvia, which was however closer to the beginning of her IDP stage 3. Slovakia's NOIP per capita in 2008 was only very slightly higher than in 2007 indicating that the country was at the turning point from stage 2 to stage 3 of its IDP.

According to the original model of Dunning, the shift to IDP stage 3 takes place when the NOIP, and in our case NOIP per capita, starts to rise. In the latest two years for which data are available such shifts in the whole group of countries under investigation were described above. But it must be stressed that in four countries such shifts were already

⁸ The abbreviations NOI and NOIP are used interchangeably in this paper but in both cases denote net outward investment position.

observed a few years earlier. In the case of Hungary, Slovenia and Slovakia such shift was visible four years earlier, i.e. in 2004. In 2004, all of them became full members of the EU and this accession effect could be held responsible for the said shift in their NOIPs. Also a reinforcing factor was the fact that those three economies were considered to be the most developed in the group of CEE states and most advanced in the transition process to the market led economic system. In the case of Estonia, a relatively small Baltic economy, a similar shift occurred in 2005, indicating a somewhat delayed EU accession effect. Thus the closeness to the latest shifts observed in 2008 indicates that final conclusions as to the permanency of passing to IDP stage 3 require more time for verification.

Figure 2. NOIP per capita and GDP per capita in USD, 1990 – 2008, CEE-10 countries



Source: Authors' calculations based on UNCTAD and Statistical Yearbook of the Republic of Poland (2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 2009)

Table 1. NOIP per capita, GDP per capita in USD and Outward Foreign Direct Investment Performance Index (OFDIPI) for CEE-10 countries, 1990-2008

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bulgaria																			
NOIP p.c.	0.001	-0.006	-0.011	-0.016	-0.029	-0.041	-0.058	-0.12	-0.187	-0.297	-0.327	-0.362	-0.506	-0.799	-1.162	-1.728	-2.647	-5.1	-5.914
GDP p.c.	2350	873	995	1267	1149	1568	1197	1265	1567	1607	1574	1711	1965	2546	3148	3496	4160	5259	6573
OFDIPI	-0.014	-0.093	-0.045	-0.029	0	-0.05	-0.223	-0.012	0	0.037	0.006	0.025	0.114	0.089	-0.419	0.61	0.195	0.172	0.481
Czech Republic																			
NOIP p.c.				-0.314	-0.412	-0.679	-0.784	-0.845	-1.323	-1.646	-2.046	-2.542	-3.646	-4.217	-5.248	-5.598	-7.106	-10.195	-10.036
GDP p.c.				3603	4230	5360	6022	5559	6030	5880	5549	6058	7379	8959	10615	12165	13863	17004	20815
OFDIPI				0.257	0.269	0.055	0.188	0.027	0.088	0.042	0.019	0.113	0.167	0.149	0.444	-0.008	0.44	0.236	0.287
Estonia																			
NOIP p.c.				-0.13	-0.278	-0.422	-0.506	-0.666	-1.169	-1.585	-1.742	-1.994	-2.616	-4.419	-6.413	-6.957	-6.754	-7.971	-6.922
GDP p.c.			2859	2813	2874	3114	3365	3622	4102	4152	4108	4544	5385	7093	8638	10230	12038	15471	17538
OFDIPI				0.102	0.112	-0.17	0.203	0.275	0.281	-0.504	0.036	0.121	0.027	0.495	-0.024	0.178	0.267	2.126	1.517
Hungary																			
NOIP p.c.	-0.036	-0.182	-0.31	-0.518	-0.657	-1.067	-1.262	-1.683	-1.943	-2.181	-2.114	-2.537	-3.351	-4.422	-5.593	-5.343	-6.867	-8.249	-4.933
GDP p.c.	3546	3319	3702	3836	4125	4443	4499	4564	4708	4820	4695	5233	6563	8326	10101	10942	11134	13660	15408
OFDIPI	0.042	0.093	0	0.029	0.11	0.105	-0.007	0.613	0.247	0.142	0.332	0.293	0.254	1.287	0.52	1.131	1.076	0.69	0.351
Latvia																			
NOIP p.c.				0.054	-0.055	-0.155	-0.296	-0.431	-0.529	-0.647	-0.866	-0.97	-1.148	-1.358	-1.85	-2.046	-3.095	-4.285	-4.581
GDP p.c.			2095	1854	1938	1991	2310	2568	2788	3041	3293	3520	3972	4802	5944	6969	8781	12013	14956
OFDIPI				0.102	0.112	-0.17	0.203	0.275	0.281	-0.504	0.036	0.121	0.027	0.495	-0.024	0.178	0.267	0.31	0.224
Lithuania																			
NOIP p.c.				-0.037	-0.088	-0.097	-0.193	-0.284	-0.453	-0.578	-0.658	-0.752	-1.131	-1.401	-1.734	-2.187	-2.863	-3.98	-3.233
GDP p.c.			2168	1867	1730	1788	2271	2795	3147	3096	3260	3487	4076	5373	6543	7494	8592	11133	14244
OFDIPI				0.102	0.112	-0.17	0.203	0.275	0.281	-0.504	0.036	0.121	0.027	0.495	-0.024	0.178	0.267	0.407	0.246
Poland																			
NOIP p.c.	0.008	-0.001	-0.025	-0.057	-0.086	-0.189	-0.278	-0.361	-0.553	-0.651	-0.864	-1.044	-1.222	-1.455	-2.174	-2.18	-2.436	-4.109	-3.662
GDP p.c.	1694	2189	2406	2446	2813	3603	4059	4073	4487	4364	4458	4959	5165	5655	6592	7951	8916	10978	13861
OFDIPI	0.007	-0.01	0.018	0.02	0.026	0.025	0.026	0.018	0.078	0.005	0.002	-0.02	0.071	0.093	0.149	0.536	0.508	0.287	0.222
Romania																			
NOIP p.c.	0.003	0.002	-0.002	-0.005	-0.013	-0.031	-0.043	-0.102	-0.197	-0.248	-0.308	-0.374	-0.349	-0.549	-0.932	-1.187	-1.891	-2.879	-3.299
GDP p.c.	1659	1254	854	1157	1327	1575	1576	1583	1885	1600	1673	1824	2090	2726	3475	4557	5684	7726	9518
OFDIPI	0.045	0.012	0.026	0.028	0	0.005	0	-0.016	-0.009	0.013	-0.009	-0.017	0.023	0.043	0.044	-0.016	0.012	0.042	-0.044
Slovakia																			
NOIP p.c.				-0.093	-0.137	-0.216	-0.347	-0.347	-0.466	-0.528	-0.811	-0.953	-1.493	-2.553	-3.727	-3.54	-5.391	-8.115	-8.153
GDP p.c.				2550	2939	3676	3977	4007	4164	3825	3795	3917	4552	6122	7800	8804	10402	13958	17566
OFDIPI				0.102	0.112	-0.17	0.203	0.275	0.281	-0.504	0.036	0.121	0.027	0.495	-0.024	0.178	0.267	0.129	0.089
Slovenia																			
NOIP p.c.				-0.345	-0.511	-0.693	-0.799	-0.886	-1.083	-1.038	-1.071	-0.808	-1.309	-1.985	-2.286	-1.782	-1.754	-3.422	-3.559
GDP p.c.			6445	6496	7347	10329	10393	9992	10640	10887	9737	9950	11197	14075	16323	17182	18596	22379	26905
OFDIPI				0.102	0.112	-0.17	0.203	0.275	0.281	-0.504	0.036	0.121	0.027	0.495	-0.024	0.178	0.267	1.019	0.867

OFDIPI - outward FDI performance index reflects the ratio of the share of a country's outward FDI in a given year in world outward FDI, to the share of the country's GDP in a given year in world GDP.

Source: UNCTAD and Statistical Yearbook of the Republic of Poland (2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 2009)

The underlying causes for the NOIP per capita movements in countries which as of 2008 have been positioned to be in stage 3 of their IDP require more scrutiny of changes in their stocks of outward and inward FDI. These changes are recorded in Table 2. In two cases, that of Poland and Estonia, the net outcome of a decrease in their NOIPs per capita was due to their outward FDI stock increasing for at least two years before and the inward FDI stock decreasing since 2007 inclusive. This indicated that as for outward FDI expansion and thus competitiveness of their firms these two economies had shown a relatively positive performance in face of the severe economic downturn which started to afflict the global economy towards the end of 2007. But simultaneously this same business cycle factor may have been responsible for the fall in inward FDI stocks. Also it cannot be easily determined whether the continuing outward expansion via FDI from those two countries was due to competitive advantages of domestic firms (the desired expected outcome) or simply indirect FDI, signifying expansion of subsidiaries of foreign MNEs from those countries, thus reflecting their much stronger and sustainable competitive advantage versus their domestic rivals. The retreat of foreign investors in those two cases also demonstrates that the risk associated with recession is not dependent on the size of these two countries internal market, since Poland had the largest market measured by population whereas Estonia a much smaller one.

Hungary, on the other hand, was the only country in the whole group which recorded falls both in inward and outward FDI stocks which contributed to the decrease in its NOIP per capita. This of course meant that the outward FDI retreat was relatively smaller than the inward one. Thus the country leading in the movement into stage 3 of its IDP was also the most sensitive to changes in the downturn of the business cycle.

Table 2. Outward FDI stock, inward FDI stock and NOIP for CEE-10 countries, in millions of USD, 1990 – 2008

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Bulgaria																			
FDI Outward	124	118	116	112	113	105	76	74	75	11	85	68	81	103	*	181	343	528	1248
FDI Inward	112	168	210	250	355	446	555	1059	1597	2403	2704	2945	4074	6371	9058	13565	20707	39484	46011
NOIP	12	-50	-94	-138	-242	-341	-479	-985	-1522	-2392	-2619	-2877	-3993	-6268	-9058	-13384	-20364	-38956	-44763
Czech Republic																			
FDI Outward	..	70	91	181	300	345	498	548	804	698	738	1136	1473	2284	3760	3610	5058	8557	9913
FDI Inward	1363	1886	2889	3423	4547	7350	8572	9234	14375	17552	21644	27092	38669	45287	57259	60662	77460	112408	114369
NOIP		-1816	-2798	-3242	-4247	-7005	-8074	-8686	-13571	-16854	-20906	-25956	-37196	-43003	-53499	-57052	-72402	-103851	-104456
Estonia																			
FDI Outward			57	63	65	68	108	215	198	281	259	442	676	1028	1419	1940	3613	6174	6686
FDI Inward			96	258	473	675	825	1148	1822	2467	2645	3160	4226	7002	10064	11290	12664	16815	15962
NOIP			-39	-195	-408	-607	-717	-933	-1624	-2186	-2386	-2718	-3550	-5974	-8645	-9350	-9051	-10641	-9276
Hungary																			
FDI Outward	197	224	224	226	291	278	265	647	784	924	1280	1556	2166	3509	6018	7993	12693	17596	14179
FDI Inward	569	2107	3424	5576	7087	11304	13282	17968	20733	23260	22870	27407	36224	48340	62585	61886	81760	100335	63671
NOIP	-372	-1883	-3200	-5350	-6796	-11026	-13017	-17321	-19949	-22336	-21590	-25851	-34058	-44831	-56567	-53893	-69067	-82739	-49492
Latvia																			
FDI Outward			365	361	296	231	209	222	281	244	24	39	59	114	235	284	447	880	1066
FDI Inward			176	221	436	616	936	1272	1558	1795	2084	2328	2751	3277	4517	4993	7532	10637	11447
NOIP			189	140	-140	-385	-727	-1050	-1277	-1551	-2060	-2289	-2692	-3163	-4282	-4709	-7085	-9757	-10381
Lithuania																			
FDI Outward			0	0	0	1	3	26	17	26	29	48	60	120	423	721	1183	1570	1990
FDI Inward			107	137	321	352	700	1041	1625	2063	2334	2666	3981	4960	6389	8211	10939	15062	12847
NOIP			-107	-137	-321	-351	-697	-1015	-1608	-2037	-2305	-2618	-3921	-4840	-5966	-7490	-9756	-13492	-10857
Poland																			
FDI Outward	408	401	414	432	461	539	735	678	1165	1024	1018	1156	1457	2146	3223	6439	10705	19369	21814
FDI Inward	109	425	1370	2621	3789	7843	11463	14587	22461	26075	34227	41247	48320	57877	86366	89694	103616	175851	161406
NOIP	299	-24	-956	-2189	-3328	-7304	-10728	-13909	-21296	-25051	-33209	-40091	-46863	-55731	-83143	-83255	-92911	-156482	-139592
Romania																			
FDI Outward	66	87	79	103	107	121	120	126	135	144	136	117	144	208	273	214	278	1240	912
FDI Inward	0	44	122	215	402	821	1097	2417	4527	5671	6951	8350	7799	12188	20523	25894	41001	62961	71864
NOIP	66	43	-43	-112	-295	-700	-977	-2291	-4392	-5527	-6815	-8233	-7655	-11980	-20250	-25680	-40723	-61721	-70952
Slovakia																			
FDI Outward	..	127	136	149	166	139	183	236	408	346	374	449	485	823	835	705	1282	1509	1901
FDI Inward	282	363	463	642	897	1297	2046	2103	2920	3188	4746	5582	8530	14576	20910	19775	30327	45251	45933
NOIP		-236	-327	-493	-731	-1158	-1863	-1867	-2512	-2842	-4372	-5133	-8045	-13753	-20075	-19070	-29045	-43742	-44032
Slovenia																			
FDI Outward			279	281	365	524	470	459	636	626	768	988	1505	2350	3025	3515	3942	7197	8650
FDI Inward			841	954	1365	1886	2043	2207	2777	2682	2893	2594	4112	6308	7590	7077	7452	14048	15872
NOIP			-562	-673	-1000	-1362	-1573	-1748	-2141	-2056	-2125	-1606	-2607	-3958	-4565	-3562	-3510	-6851	-7222

*According to UNCTAD data outward FDI stock for Bulgaria in 2004 was negative but no exact value is available. Therefore it was assumed that in this case outward FDI stock = 0.

Source: UNCTAD and Statistical Yearbook of the Republic of Poland (2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008 and 2009)

The effects of recession in 2008 were also visible in Lithuania's inward FDI stock rising in 2007 and then falling in the following year. At the same time her outward FDI continued its unabated rise since 1998.

The Czech Republic, as observed earlier, entered stage 3 of her IDP registering the smallest increase in her NOIP per capita in the whole group. This was due to her outward FDI stock rising slightly faster than her inward FDI stock, which was also larger.

The remaining countries in the group, i.e. Slovakia, Slovenia, Latvia, Romania and Bulgaria, all displayed slower rising outward FDI stocks compared with faster rising inward FDI stocks. This trend embraced relatively high GDP per capita countries (the first three) as well as the two least developed ones in the group.

4. Regression Analysis

The above observations and findings based on descriptive analytical tools were subjected to verification using regression analysis. Regression analysis was applied to the two principal variables of the IDP model: NOI per capita, as the dependent variable, and GDP per capita as the independent variable. Two nonlinear function specifications, quadratic and cubic, were applied.

In the analysis attempt was made firstly to eliminate "outliers" - extreme cases - and then to fit the appropriate curve to empirical data. Figure 3 shows the plot with country curves according to modeled data. The curves are different because of different data configuration. These regression curves were drawn through points on the scatterplot to summarize the relationship between the variables under investigation. In the analysis it definitely slopes down (from top left to bottom right). This indicates inverse relationship between the variables. The regression curve represents the regression equation on a scatterplot. The regression equation allowed to express

the relationship between two variables: NOI per capita and GDP per capita or in other words show the nature of the relationship between the said variables.

4.1. Data description

At first a regression analysis based on quadratic equation (in *SPSS* software) was conducted, related to the said variables. Nonlinear regression was appropriate because the relationship between the dependent and independent variables was not intrinsically linear. It has been implemented according to Dunning's [1981] solution, with the idea of regressing NOI on GDP, and thus utilizing a quadratic specification (and further cubic one) in order to allow for the nonlinearity in the relationship. As a result a nonlinear relationship was obtained between GDP per capita and NOI per capita.

A regression equation was primarily written as:

$$\text{NOI} = \alpha + \beta_1 \text{GDPpc} + \beta_2 \text{GDPpc}^2 + \mu \quad (1)$$

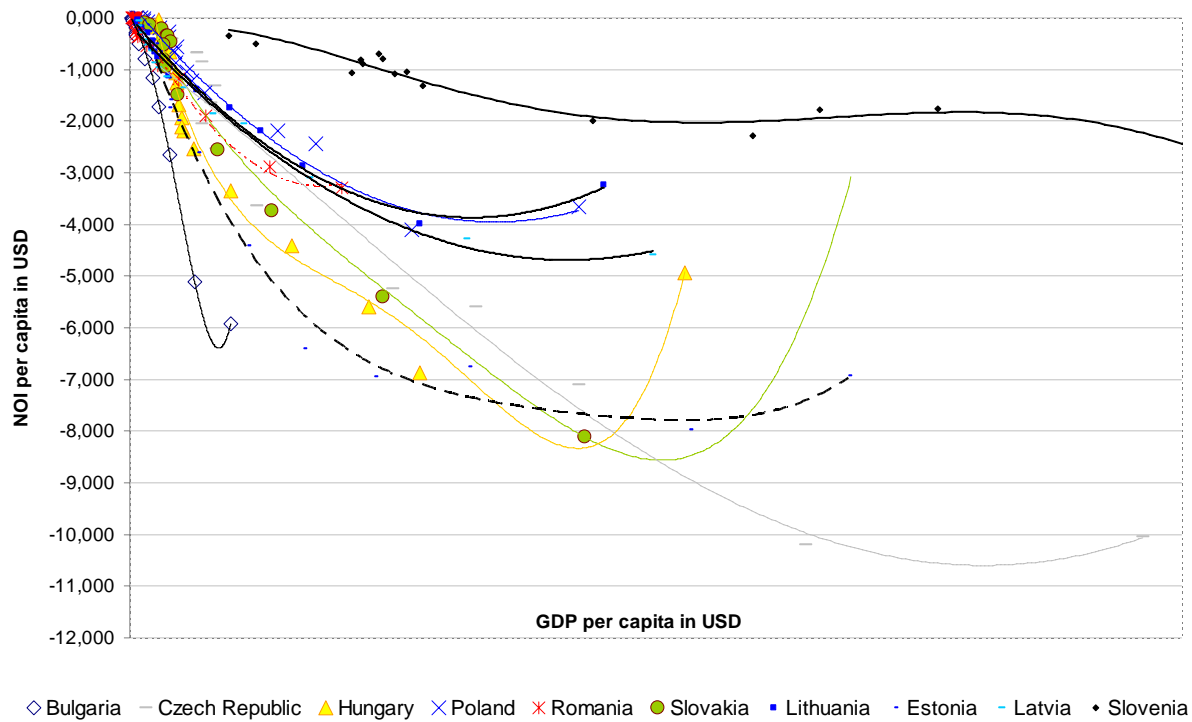
The equation specified the average magnitude of the expected change in *Y* given a change in *X*. In the course of examination according to available time series data the analysis embraced the period from 1990 to 2008 (countries: Bulgaria, Hungary, Poland and Romania). A shorter period starting from 1993 to 2008 was used for the Czech Republic, Slovakia, Estonia, Latvia, Lithuania and Slovenia, because of lack of data prior to 1993.

The analysis continued by experimenting with the regression function by allowing in a formula with a cubic equation, which was written in the following way:

$$\text{NOI} = \alpha + \beta_1 \text{GDPpc} + \beta_2 \text{GDPpc}^2 + \beta_3 \text{GDPpc}^3 + \mu \quad (2)$$

Obviously the starting point of regression analysis was at first to fit a line to a number of points (crossing NOIP and GDP) in order to see at least the shape of data on the plot. This is presented in the figure below.

Figure 3. Nonlinear relationship between NOI and GDP



Source: Authors' calculations

In proceeding further with the analysis based on quadratic and cubic formulas it was detected that regression coefficient values and fit of the models for quadratic assumptions were slightly lower than in the cubic ones. In some cases cubic formulas showed a much better fit of variability being under estimation. The relationship between the model and the dependent variable was quite strong. One can consider for example the R score as a multiple correlation coefficient.

In the case of obtained R^2 values⁹, they were ranked in descending order (according to the nonlinear regression quadratic function) of variability within the observed values. As a result, the variability of models could be explained for the investigated countries in the following descending order: 1). Latvia, 2). Romania, 3). Slovakia, 4). Czech Republic, 5). Bulgaria, 6). Poland, 7). Slovenia, 8). Lithuania, 9). Estonia and 10). Hungary. And as far as R^2 values were concerned based on cubic calculations, the following descending order of countries was obtained: 1). Latvia, 2). Romania, 3). Slovakia, 4). Czech Republic, 5). Bulgaria, 6). Lithuania, 7). Poland, 8). Slovenia, 9). Estonia and 10). Hungary.

Having thus compared both types of analysis, one may infer that different characteristics in formulas result in only minor alterations (changes) in each country model's variability explanation. In some countries the R^2 values remain actually on the same level – no matter whether the quadratic or cubic equation is selected. This specific situation refers to countries such as: Slovakia, Romania, Poland and Latvia. The biggest change appears in Bulgaria, Hungary and Lithuania.

⁹ In linear regression models the quality of fit of a model is expressed in terms of the coefficient of determination, also known as the R^2 . In nonlinear regression, such a measure is, unfortunately, not readily defined. One of the problems with the R^2 definition is that it requires the presence of an intercept, which most nonlinear models do not have. A measure relatively closely corresponding to R^2 in the nonlinear case is $R^2 = 1 - \text{SS}(\text{Residual})/\text{SS}(\text{Total}_{\text{Corrected}})$. The degree to which predictor (independent variable) is related to the dependent variable is expressed in the R^2 , which can assume values between 0 and 1.

Table 3. Nonlinear regression statistics for quadratic and cubic equations.

	Bulgaria	Czech Republic	Hungary	Poland	Romania	Slovakia
Calculations based on nonlinear function						
Quadratic models GDPpc²						
<i>R</i> - [Multiple R]	0,973	0,979	0,912	0,963	0,994	0,983
<i>R</i> ² - [R – square]	0,946	0,959	0,831	0,927	0,987	0,967
Cubic models GDPpc³						
<i>R</i> - [Multiple R]	0,979	0,981	0,928	0,964	0,994	0,983
<i>R</i> ² - [R – square]	0,958	0,963	0,862	0,929	0,988	0,967
	Estonia	Latvia	Lithuania	Slovenia		
Quadratic models GDPpc²						
<i>R</i> - [Multiple R]	0,939	0,994	0,956	0,958		
<i>R</i> ² - [R – square]	0,881	0,988	0,913	0,917		
Cubic models GDPpc³						
<i>R</i> - [Multiple R]	0,941	0,994	0,964	0,960		
<i>R</i> ² - [R – square]	0,885	0,989	0,930	0,921		

Source: Authors' calculations based on SPSS software.

Independent variable denotes NOI per capita and dependent variable GDP per capita. The **nonlinear model** provided very strong results for all parameters which are highly significant in the overall model (F statistic at 5% level).

4.2. Interpretation of Findings

Based on the results of the regression analysis as visualized in Figure 3, certain amendments to the findings based on the more descriptive analysis presented in section 3 need be considered in this section. Firstly, Slovakia appears as the leader in the whole group being most advanced in stage 3 of her IDP. In the descriptive approach she was positioned at the turning point from stage 2 to stage 3. Hungary, Lithuania and Estonia generally exhibit the same level of advancement into stage 3 of their IDPs whereas in the previous approach they were visibly differentiated, although also all well into the said stage 3. Poland, Latvia and the Czech Republic all are positioned at the beginning of stage 3 of their respective IDPs, whereas earlier Latvia was described as being still positioned in stage 2 of her IDP. In the regression analysis, Poland as the largest economy enters stage 3 at a smaller GDP per capita than Latvia, and Latvia enters the same stage at a GDP per capita level still smaller than that of the Czech Republic.

Then there is the curious case of Slovenia. This country's positioning seems to show a fluctuation pattern around the turning point from stage 2 to stage 3 of its IDP. In the descriptive approach it was edging towards the end of stage 2, with the highest GDP per capita of all the countries of the group positioned still in stage 2 of their IDPs.

Romania and Bulgaria in the descriptive analysis were said to be somewhere in the second half of stage 2 of their IDPs. But according to the regression analysis, Romania seems to be at the turning point from stage 2 to stage 3 of her IDP. However, the largest discrepancy concerns the positioning of Bulgaria. At first glance, Figure 3 suggests that Bulgaria is already in stage 3 of her IDP, whereas descriptive analysis positioned her economy in the last place among the group of 10 countries analyzed, both with respect to the GDP per capita and movement along her IDP. However, one cannot help noticing an atypical regression curve in the case of Bulgaria, which does not have the same shape as the curves of the stage 3 countries. Bulgaria's curve first slopes

to the left, which is an indication of a country going through the first part of stage 2, and then suddenly turns up at the end of the analyzed period. Therefore, it could be interpreted as a “more dramatic” passage to the second part of stage 2 rather than to stage 3. Indeed, a closer look at the FDI outward and FDI inward stock statistics for Bulgaria (Table 2) confirms this assertion: the country’s outward FDI remained negligible until 2006, when it started to grow rapidly and continued over the next two years. However, even in 2008, when FDI outward stock doubled compared to the previous year, it was still seven times lower than that of Slovenia, which incidentally recorded only a third of Bulgaria’s FDI inward stock in the same year. All of this seems to confirm Bulgaria’s progress through stage 2 and not yet passing to stage 3.

Nevertheless both analytical approaches (the descriptive as well as the regression one) yield results confirming the undisputed leading role in the advancement on the IDP and a firm positioning in its stage 3 of Hungary, a medium sized advanced CEE economy. Lithuania and Estonia, the two Baltic states, and Poland, the largest country in the group, can also be classified in this leading category.

5. The Outward FDI Performance Index

The analysis of the outward FDI performance index (OFDIP) provides an indication as to magnitude of outward FDI which a country generates relative to the size of its economic potential, thus indirectly pointing out which country has the capacity to move into stage 3 of its IDP or, being in that stage, continue moving towards stage 4. The values of the said index less than 1 signify that outward FDI is less than proportional to the size of the home country’s economy as measured by its participation in the global economy as such. If, on the other hand, the values of the said index are higher than 1 then the outward FDI generated is more than proportional relative to the aforementioned size of the home economy. From the point of view of

positioning on the IDP the closer the index is to 1 or higher than 1 the more predisposed a given country is to advance on its IDP trajectory or in this case reach stage 3 of its IDP, or continue moving within stage 3 faster than others.

In this context the values of the said index as applied to the ten countries in this study are presented in Table 1. Among those countries Hungary was the unquestioned leader recording the highest OPI values in 1991, 1995, 1997 and from 1999 onwards, surpassing in 2003, 2005 and 2006 the threshold value of 1, reflecting the highest relative effectiveness in outward FDI expansion, which in turn was perceived as the key factor in upgrading the country's international competitiveness. Until the end of 2006 no other country in the group recorded OFDIPI values higher than 1. At that moment Hungary showed the greatest propensity to be capable of being the first to move into her IDP stage 3.

In the two ensuing years: 2007 and 2008 however a radical change occurred in the OFDIPI values of certain countries. Estonia's value of this index jumped from 0.267 in 2006 to the highest recorded value in the whole group so far of 2.126 thus succeeding Hungary as the new leader. The reason for that outstanding turnaround of Estonia was due to a sudden surge in outward FDI even in the face of rising inward FDI stock. On the other hand Hungary's index fell to 0.69 indicating a substantial worsening of its international competitive position. Then in 2008, when recession became prevalent, Estonia's index somewhat deteriorated but still to an impressive level of 1.51 showing sustained outward competitiveness in a difficult external environment. Hungary suffered more with her index going down to a mere 0.351 level.

A trend similar to that of Estonia was seen in the case of Slovenia's OFDIPI. In 2007 it rose from 0.267 to a high of 1.019 in 2007 only to fall back to 0.867 in 2008. This also can be considered as evidence of a relatively small but well developed economy demonstrating a sustained capacity to maintain its competitiveness on foreign markets.

Then there is the case of 5 countries (Latvia, Lithuania, Poland, Romania and Slovakia) exhibiting a decline in their OFDIPI in 2007 and 2008. The first three registered in 2008 a similar level of the said index ranging from 0.222 for Poland to 0.246 for Lithuania, thus revealing that these economies (one with a large market and two with small internal markets) were underperforming in their outward FDI relative to their economic potential, mainly as a result of recession. Thereafter came Slovakia, another small country, with its OFDIPI plunging down to 0.089 in 2008. And the lowest level of this index (-0.044) was recorded by Romania, confirming that also in this dimension the performance of this Balkan economy was in line with the second lowest GDP per capita level for the whole group and in essence attested to its companies' paucity of significant competitive advantages that could be successfully exploited via FDI in foreign markets in addition to the negatively reinforcing effect of economic slowdown.

Bulgaria and the Czech Republic differentiated themselves from the rest by recording increased values of OFDIPI in 2007 and 2008 although both had higher values of the said index in 2006. Also worth noting is the fact that Bulgaria, the least developed in the group of all the 10 countries, had a much higher OFDIPI of 0.481 in 2008 than the Czech Republic, the second most developed in the whole group with an OFDIPI of 0.287. This can be interpreted as evidence of rising international competitiveness of Bulgarian firms stemming from an economy in the second half of stage 2 of her IDP or, according to the regression analysis, even in stage 3, especially when compared with their Czech competitors in foreign markets having behind them and being supported by a much more developed economic potential of an economy positioned at the beginning of her IDP stage 3. Only these two countries, although being at opposing ends of the economic development scale, were able to withstand the onslaught of recession and improve in these challenging years their OFDIPI values.

6. Conclusions

The negative thrust of the last global recession exerted a surprising and paradoxical effect of pushing seven of the investigated CEE-10 economies well into stage 3 of their IDPs. This provided a new theoretical consideration which could be added to the general IDP model in that exogenous macroeconomic factors such as in this case a downturn in the business cycle which was not directly connected to and/or affecting changes in the NOIP construct, as envisaged originally by J. Dunning, could expedite the movement of an economy from one stage to another (in this case from stage 2 to stage 3). Moreover, in the case of two Balkan economies with a considerable development gap towards the rest (Romania and Bulgaria) this same factor accelerated movement along their IDP stage 2 trajectory. This so far short term effect, observed in a time frame of two years, has still to be proven to be sustainable since evidence from the past shows that in some cases this movement into stage 3 can be reversible. This reversibility was observed previously as a consequence of accession to the European Union in 2004, in the case of Hungary, Slovenia and Slovakia one year later, and in the case of Estonia two years later. Thus external factors or influences may exert a considerable impact on the IDPs of the former transition economies.

The evidence provided by the analysis of the OFDIPI also confirmed that the investigated countries weathered with different strength and success the negative consequences for their international competitiveness and sustainability of their competitive advantages in foreign markets brought about by the last global recession. Only a minority of the CEE-10 countries was able to improve its OFDIPI values. This of course brings into focus the necessity of all the remaining countries in the group to institute economic policy measures addressed to remedy and

eliminate the existing unfavorable situation. From the point of view of the IDP paradigm, the key thrust lies in sustaining and promoting outward direct investment, especially by domestic MNCs and/or national firms since subsidiaries of foreign based MNCs usually wield so much economic power that they are fully capable of re-exporting capital without additional host country assistance, encouragement or support. Of course the economic recovery underway in Western EU countries should lead to a resurgence of increased FDI flows to the CEE economies and it remains to be seen how will these increases compare with increases also anticipated in outgoing FDI from the CEE region.

The analysis of the IDPs of the group of 10 CEE countries leads to a general conclusion that in their economic development viewed from a time perspective of 19 years from the start of the said transition process they have all followed the basic premises and trajectories as set forth in the original IDP model. The regression analysis showed that all of the investigated CEE economies except those of Bulgaria, Slovenia and Romania were well into stage 3 of their IDPs. This observation can be construed as an indirect confirmation of the success of the transition process to a market led system which those countries had implemented almost two decades ago and of the role which foreign direct investment has been playing in this process, and generally in the economic development of these economies. The stage 2 economies were also in a specific positioning regarding IDP. Slovenia, much more developed than Bulgaria and Romania, showed a tendency to fluctuate around the border of IDP stage 3 whereas Romania, according to the regression analysis, was about to enter her IDP stage 3.

All the above country specificities can be attributed to external factors such as the effect of a downturn in the business cycle and to the idiosyncratic nature of development per se. The first effect is relatively short term, whereas the second effect is more long term but both are prone to possible reversals. Thus all of those conclusions must undergo a further extensive verification

process in the coming years since definite/sustainable patterns and trends are clearly visible only in a long term approach. Also a comparative dimension is advisable with the remaining members of the EU and/or selected CEE countries which are currently outside the EU.

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