

Charles University in Prague

Faculty of Social Sciences
Institute of Economic Studies



MASTER THESIS

**Analysis of the Investment Development
Path in the Central and Eastern European
Countries: Can they move further?**

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Academic Year: 2013/2014

Declaration of Authorship

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Prague, July 25, 2014

Signature

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Abstract

The thesis analyses the investment development path (IDP) of CEE countries and discusses their movement to its later stages, which is conditioned by increase in outward foreign direct investment (FDI). Providing evidence on data until 2012, it enables to test the impact of global financial crisis on the validity of IDP and the stages reached by particular CEE countries. Moreover, the thesis explores the effect of inward reinvestment of earnings on the ability to move to later stages through the relationship with outward FDI, which has not been tested in the literature yet. The thesis on a cross-sectional basis shows that: a) CEE countries follow IDP; however, when using subsamples, it holds only for more developed ones; b) contrary to literature before crisis, CEE countries did not reach the third stage of IDP, which suggests that crisis could have caused movement back along their IDP; c) reinvestment of earnings positively influences outward FDI. According to the latter, countries with high reinvestment of earnings and inward FDI stock are identified and is concluded that they are likely to enter the third stage of IDP. However, further research is needed as also other determinants are relevant for outward FDI, not only reinvestment of earnings.

JEL Classification F21, F23, O11, O52, C33

Keywords foreign direct investment, Central and Eastern Europe, investment development path, reinvestment of earnings

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Abstrakt

Tato diplomová práce zkoumá dráhu investičního rozvoje v zemích střední a východní Evropy a diskutuje jejich schopnost postupu do pozdějších fází, která je podmíněná růstem odchozích zahraničních investic. Využití dat do roku 2012 umožňuje zkoumat vliv celosvětové finanční krize na platnost dráhy investičního rozvoje a na fáze, ve kterých se země nacházejí. Práce navíc analyzuje vliv reinvestovaného zisku na schopnost postupu do pozdějších fází skrze zvýšení odchozích zahraničních investic, což v předchozí literatuře nebylo doposud testováno. Výsledky práce ukazují, že: a) země střední a východní Evropy následují dráhu investičního rozvoje, v případě testování po podskupinách to však platí pouze pro skupinu rozvinutějších zemí; b) na rozdíl od výsledků studií před finanční krizí země nevstoupily do třetí fáze dráhy, což naznačuje, že krize mohla zapříčinit posun zpět po dráze; c) reinvestovaný zisk pozitivně ovlivňuje odchozí zahraniční investice. Vzhledem k tomuto závěru jsou na konci práce představeny země s vysokými reinvestovanými zisky a příchozími investicemi, které pravděpodobně brzy vstoupí do třetí fáze. Tento závěr je však nutné podložit dalším výzkumem, protože reinvestovaný zisk není jediný determinant odchozích zahraničních investic.

Klasifikace JEL

F21, F23, O11, O52, C33

Klíčová slova

přímé zahraniční investice, střední a východní Evropa, dráha investičního rozvoje, reinvestovaný zisk

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Acronyms

| | |
|----------------|--|
| BOP | Balance of Payments |
| CEE | Central and Eastern European |
| EU | European Union |
| FDI | Foreign Direct Investment |
| GDP | Gross Domestic Product |
| IDP | Investment Development Path |
| IMF | International Monetary Fund |
| NOIP | Net Outward Investment Position |
| OLI | Ownership, Location, Internalization |
| R&D | Research and Development |
| UNCTAD | United Nations Conference on Trade and Development |
| USD | United States Dollars |
| WDI | World Development Indicators |

Master Thesis Proposal

| | |
|-----------------------|---|
| Author | Bc. Tomáš Paul |
| Supervisor | PhDr. Jakub Seidler, Ph.D. |
| Proposed topic | Analysis of the Investment Development Path in the Central and Eastern European Countries: Can they move further? |

Topic characteristics The thesis will focus on foreign direct investment (FDI) in the CEE countries within the paradigm of IDP theory introduced by Dunning (1981). The basic notion of this theory suggests that FDI life cycle is connected to the economic development of the country in a sense that as the country develops it proceeds through five stages of IDP. Taking into account that the development of countries is path dependent, the CEE countries formed a specific group that differs from IDP of already developed countries that was caused by a sudden transition from central planning economy to the free market economy starting in 1990's. At that time these countries started to attract inward FDI by cheap labor force, government incentives and other factors that caused their move to the second stage of IDP. The further movement to the third stage is conditional on increase of outward FDI. Recent studies suggest that the more developed countries from this region already reached the third stage while the others are still in the second stage.

The aim of the diploma thesis is to rework the analysis of the stage that CEE countries reached using the most recent data. In addition to that the thesis will answer the question if these countries have a potential to move to later stages of investment development path or their ability to move further is limited by their socio-economical and political characteristics. As there are many factors that influence the outward and inward FDI, the thesis tries to separate from the other factors the effect of the reinvested earnings to the economy. The thesis will follow the basic idea that if the foreign investor repatriates the

earnings back and does not reinvest them to the company; the company does not further develop in terms of R&D and new technologies. This causes that its competitiveness on the international market deteriorates, which has an impact on the ability of the company to provide outward FDI. As was stated rising outward FDI is the main factor that moves the country to the third and final stages of FDI, which leads to the hypothesis that countries with low reinvested earnings can face a problem with approaching the further stages of IDP.

Hypotheses

1. The CEE countries follow the IDP
2. The reinvested earnings are positively correlated with outward FDI
3. CEE countries with low reinvested earnings are not likely to move to further stages of IDP

Methodology The first part of the empirical analysis follows the Dunning (1981) model of Investment Development Path, corrected according to his own future revisions and other author's revisions as Durán & Ubeda (2001) and Boudier-Bensebaa (2008). We will test a fixed effect model that describes the relationship between GDP per capita (as a proxy for the development of the country) and the difference between outward and inward FDI. The IMF and UNCTAD database will be used. In the second part we use outward FDI as the dependent variable, determine the factors that influence the outward FDI (host and home country characteristics) and add reinvested earnings as an important explanatory variable for this study. The fixed effect model will be used and the relationship will be tested firstly as a cross-section and then for individual countries. In the final part of the analysis the countries with low level of reinvested earnings from the foreign investors are identified and their ability to increase the outward FDI and move to the further stages of IDP is discussed.

Outline

1. Literature Review
 - (a) Outward and Inward FDI and Their Determinants
 - (b) IDP Theory and Following Revisions
 - (c) IDP for CEE Countries

2. Empirical Analysis of Stages of IDP of CEE Countries
3. Characteristics of the CEE Countries
 - (a) Variables Influencing the Outward FDI
 - (b) Variables Influencing the Inward FDI
4. Empirical Analysis of the Impact of Reinvested Earnings on Outward FDI
 - (a) Panel Regression for CEE Countries
 - (b) CEE Countries with Low Reinvested Earnings
 - (c) Discussion of Further Movement to Higher Stages of IDP

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Author

Supervisor

Chapter 1

Introduction

The Central and Eastern European (CEE) countries form a specific group that since 1990's experiences a transition process from central planning economy to market economy. In order to reform their economies, they started performing institutional changes to launch the development and the convergence to other developed European countries. These changes in institutional framework started to attract foreign direct investment (FDI) as they opened new opportunities for direct investors in the form of profiting from new opening markets, use of their natural resources or cheap labour force. The development of FDI played a crucial role in the transition process and helped the countries in their convergence to other advanced European countries. In order to describe this FDI development, we employed a theory of Investment Development Path (IDP) introduced by Dunning (1981).

This theory is based on the idea that the evolution of FDI is related to the level of country's development. It defines five stages through which a country passes as it develops. The recent literature (Kottaridi *et al.* 2004; Boudier-Bensebaa 2008; Gorynia *et al.* 2010a) suggests that most of the countries have already moved to the second stage of IDP and some of them are close to reach the third stage. Gorynia *et al.* (2012) even found out that some of the CEE countries have already reached the third stage, which is conditioned, according to the theory, by increasing outward FDI and thus improving the country's net outward investment position (NOIP).

The objective of the first part of the thesis is to answer following hypotheses regarding the validity of the IDP theory for the CEE countries and the stages they reached.

- **Hypothesis 1:** *The CEE countries follow IDP suggested by the underlining theory.*
- **Hypothesis 2:** *The CEE countries have not reached the third stage of IDP.*

The aim of the second part of the thesis is to answer the question whether the CEE countries have a potential to move to later stages of IDP or not, which is conditioned by an increase in outward FDI. As it occurs as a complex problem influenced by many factors, the thesis tries to separate from them the effect of reinvestment of earnings on outward FDI. The rationale behind this effect is that if the direct investor does not reinvest the earnings back to the firm; it does not further benefit from this relationship in terms of strengthening their ownership advantages as advancement of technology and R&D, organizational structure etc. This may impact the firm's ability to grow and reach the state when it can provide outward FDI. Moreover, it influences the productivity of other domestic firms in a form of FDI spillovers. Gorodnichenko *et al.* (2007) found out that FDI has a positive backward spillover effect on domestic firms and also a positive horizontal and forward spillover effect on older firms and firms in the service sector. It leads to the conclusion that ability of other domestic firms to provide outward FDI is influenced by the level of FDI through FDI spillovers.

- **Hypothesis 3:** *Reinvestment of earnings positively influences the level of outward FDI.*

In the case of confirming hypothesis 3, the final part will identify the countries with high level of reinvestment earnings that are likely to have high level of outward FDI, which is a necessary condition for moving to later stages of IDP.

The main contribution of the thesis lies in using the most recent data until 2012 containing the period of global financial crisis. This fact enables us to examine its impact on validity of IDP and on the stages reached by the CEE countries through the comparison with empirical studies written before the crisis. Moreover, we explore the effect of inward reinvestment of earnings on the ability to move to later stages through the relationship with outward FDI, which has not been tested in the literature yet. The main findings of the thesis are that the CEE countries follow IDP; however, when testing it on subsamples,

it holds only for the group of more developed ones. Contrary to some literature before crisis, the CEE countries did not reach the third stage of IDP, which suggests that crisis could have caused movement back along their IDPs. The last finding shows that reinvestment of earnings positively influences outward FDI. To conclude, all three hypothesis are confirmed; however, some of them with exceptions.

The rest of the thesis is structured as follows: Chapter 2 presents the literature review on development of the IDP theory and summarizes the empirical studies on this topic. Chapter 3 introduces the empirical analysis regarding the validity of the IDP theory for the CEE countries. Moreover, it answers the question whether they reached the third stage of IDP or not. Chapter 4 summarizes the home-country determinants of outward FDI. Chapter 5 analyzes the influence of reinvestment of earnings and other home-country determinants on outward FDI. Chapter 6 discusses the implications from results obtained in Chapter 5 on the ability to move to the third stage of IDP. Chapter 7 is a conclusion.

Chapter 2

Literature Review

2.1 IDP Theory

2.1.1 Dunning's Eclectic Paradigm

The origins of the IDP theory stand on the base of the internalization theory and the eclectic paradigm of international investment position, which was introduced by Dunning (1980). The eclectic paradigm, also known as an ownership, localization, internalization (OLI) framework, tries to join the many of separate international trade theories into one individual approach. The OLI framework comprises of three factors, which determine the firms position on the international market.

The first factor, ownership advantages (O), is what a firm possesses or can get access to and foreign firms cannot. These advantages then determine how much the firm is involved in FDI. This factor consists of country-specific, industry-specific or firm-specific determinants. For instance, among the country-specific determinants¹ belong market size, presence of skilled labour force, resources endowment, government policies concerning proprietary rights, industrial structure, competition and innovation.

The second factor, locational advantages (L), determines whether a firm locates its production abroad or runs their business in the home country. This depends on the home and host country's specific endowments that are not transferable across the borders and to which the firm is attracted. For instance, we can mention variables concerning the locational advantages at country-level

¹Since the following empirical analysis in Chapter 4 examines FDI at country-level, we present only country-level determinants. For a list of industry-level and firm-level determinants, see Dunning (1981, pg. 35)

as a distance between countries, government interventions regarding tariffs, quotas, taxes or assistance to foreign investors etc.

The third factor, internalization advantages (I), is connected with the way how a firm chooses to operate in foreign market. The choice is between owned subsidiary, which is a form of FDI that saves transaction and monitoring costs, and other types of operation as export, licensing or joint venture. We can include in this group of advantages variables describing the government policies that encourage firms to internalize transaction, for instance policies regarding mergers, enforcement of contracts, infrastructure etc. Table 2.1 shows, which way of servicing market a firm chooses depending on the OLI advantages it possesses.

Table 2.1: Alternative Routes of Servicing Markets

| Routes of servicing/Advantages | Ownership | Internalization | Location (foreign) |
|--------------------------------|-----------|-----------------|--------------------|
| FDI | yes | yes | yes |
| Exports | yes | yes | no |
| Contractual resource transfers | yes | no | no |

Source: Dunning (1981, pg. 32)

2.1.2 Stages of IDP

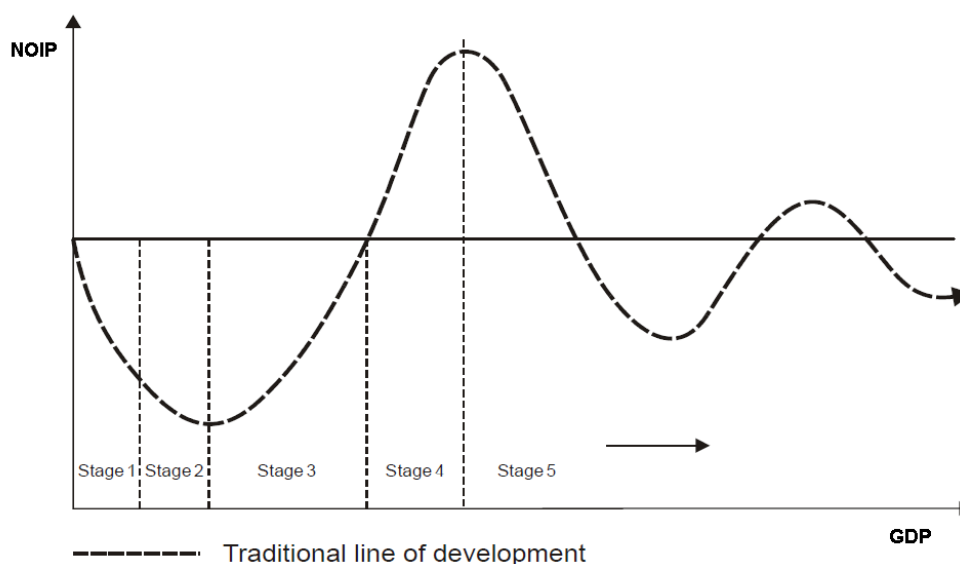
Knowledge of these three factors helps us to understand how firms operate in the foreign market and can explain the evolution of FDI through changes of these three factors. Dunning (1981) used the OLI framework to define the IDP theory whose main objective is to show that there is a relationship between the level of FDI and the level of country's development. As the country's level of development grows, the country goes through five stages of FDI development.² It is necessary to remind that all countries do not have to go through all five stages. Countries may move along their IDPs as their level of development evolves. This implicates that countries do not move only forward on IDP, but they may also move backward when their level of development declines. Figure 2.1 illustrates the stages of IDP. In order to show the relationship, Dunning (1981) used NOIP³ as a proxy for FDI development. NOIP is defined as

² In the original article, there were four stages, but Narula (1996) and Dunning & Narula (1996) extended the IDP theory with the fifth stage. This stage originated from the fourth stage, which was divided into two parts.

³ Originally, the dependent variable was named NOI (net outward investment); however, due to consistency in the thesis, we will call it NOIP.

a difference between outward and inward FDI. Since the level of development contains many structural variables, Dunning used gross national product⁴ per capita as a proxy for it.

Figure 2.1: The Illustration of IDP



Source: Published in Dunning & Narula (1996), modified by author.

Note: For illustrative purposes only, not drawn to scale.

Stage 1 In the first stage, there are the least developed countries that provide no or very small level of outward and inward FDI. Their level of NOIP is either negative or zero, which means that they are net receivers of FDI, which is mainly due to their natural resources endowment. The reason for low outward FDI is the lack of ownership advantages of domestic firms, while the explanation for low inward FDI uses the locational advantages. The least developed countries have very limited amount of these advantages; therefore, they do not attract any inward FDI. To demonstrate it practically, this means that these countries have, for instance, low-skilled labour force, poor infrastructure, small domestic market, underdeveloped government institutions, inappropriate legal framework or they are politically unstable. This is the reason why multinational enterprises prefer more to only trade with these countries (Fonseca *et al.* 2007). If there are some imports of foreign capital, it is due to international aid to improve infrastructure and the whole functioning of the country.

⁴ Later in the literature is almost exclusively used GDP per capita.

Stage 2 In the second stage, inward FDI starts to increase (NOIP decreases) because of the growth of locational advantages. Legal framework begins to improve hand in hand with market conditions, which causes that market size grows. Workers become more skilled, which attracts direct investors because of cheap labour force. Inward FDI mainly goes to sectors that are oriented on natural resources or low-qualified labour force. Outward FDI is still very limited as the firms still lack the ownership advantages to overcome the barrier to the foreign markets. However, this situation changes as domestic firms start to be involved in foreign market product chain. They gain more know-how, which improves their ownership advantages. This allows them to increase their outward FDI to neighbourhood countries in order to seek for new markets (market-seeking FDI), but only in a limited scale.

Stage 3 In the third stage, there are so called emerging countries. The growth of inward FDI decreases compared to the growth of outward FDI, which starts to increase. This in overall implies growing NOIP. One of the reasons for lower growth of inward FDI is that countries lose their comparative advantages in labour-intensive production. Wages rise that move the production of labour-intensive products to countries in lower stages of IDP. On the other hand, domestic firms start to create their own ownership advantages; therefore, they are more competitive, which enables them to generate outward FDI. These investments are aimed mostly to countries in lower stages of IDP. The government still tries to reduce market failures and attract foreign investors in industries in which domestic firms do not have comparative advantages. Moreover, it creates conditions for domestic firms to use their own advantages on the foreign markets.

Stage 4 In the fourth stage, the growth of outward FDI continues, which drives the NOIP from negative numbers to positive ones. This is a consequence of growing ownership advantages of firms, which exploit them rather from foreign locations than from domestic one. The multinational enterprises become bigger and they have to face lowering productivity growth and rising domestic labour costs, which forces them to search for more profitable foreign markets (efficiency-seeking FDI). Moreover, they are attracted to acquisition of strategic assets in other developed countries (strategic asset-seeking FDI). The original locational advantages changed to created assets such as qualified labour force, technological capacities and sophisticated markets, which drives the production

to more capital-intensive industries. Foreign direct investors in the country are now more attracted to strategic asset-seeking, the ones in lower stages of IDP to market-seeking or asset-seeking.

Stage 5 The approach of the fifth stage of IDP is accompanied by decrease of outward FDI to such level that NOIP balances around zero. Domestic firms are multinational so their locational advantages become unimportant because their production is run on an international level. Therefore, they concentrate more on efficiency-seeking strategies and emphasize more on mergers and acquisitions. In this stage, it is not easy to distinguish the relationship between FDI and the level of development because the relationship becomes less reliable. The countries' success in strengthening their international investment position will now depend more on capabilities of domestic firms in coordination of their international activities.

2.2 Empirical Studies Testing IDP

2.2.1 Cross-Sectional Empirical Studies

The empirical studies testing the validity of IDP can be divided into two groups. The first group tests the concept on the multinational basis using the cross-sectional analysis. The second group analyses IDP on the individual basis with relation either to the whole world or to the region that is a FDI partner for the individual country. The review of these two groups of studies can be found in Gorynia *et al.* (2006).

The empirical studies that analyse IDP concept as a cross-section start with Dunning (1986), who tested NOIP of 25 developing countries and concluded that their ownership advantages result from the specific and unique assets they own. This fact differs them from developed countries that gain their advantages from internalizing cross-border activities to avoid transaction costs of the market. Pichl (1989) studied FDI flows of 18 countries and concluded that small and highly developed countries exhibit higher share of inward FDI in GDP than the large ones. This fact points to efficiency type of FDI, while outward FDI is explained by firm-specific characteristics, not by country size.

Tolentino (1993) used the original formula by Dunning (1981), $NOIP_t = \alpha + \beta GDP_t + \gamma GDP_t^2 + \mu_t$,⁵ to test the relationship between NOIP in 30 countries

⁵ All variables are standardized for their corresponding populations (Dunning 1981).

and the level of economic development. The author tested the sample for different periods, 1960–1975, 1976–1984 and 1960–1984, using the data on FDI flows on cross-sectional and longitudinal basis. It was discovered that for all three periods the coefficients are significant, with negative sign for GDP and positive for GDP^2 . This leads to the U or J-shaped form of the relationship; however, this conclusion holds only for the first and the third period. For the second period, the relationship is inverted, which leads to the conclusion that in this period occurred large structural changes, which overcame the relationship between NOIP and GDP per capita.

Dunning & Narula (1994) examined the structure of US–Japan FDI. They discovered that there is a difference between natural and created assets and proposed two modifications to the original model. The first one added macro-organizational policy variables and the second one refers to the need of acquisition of ownership advantages, which suggests that negative NOIP is rather a strength than a weakness of an industry.

Narula (1996) followed Tolentino with the use of quadratic formula for 40 developing countries in years 1975 and 1988. However, the results appeared to be different from the Tolentino's ones in a sense that the relationship formed in both periods U- or J-shape. This difference could have been caused by Narula's use of FDI stock compared to Tolentino's use of FDI flows.

The same formula as Narula (1996) and Tolentino (1993) was used by Dunning & Narula (1996). They analysed 88 developing or developed countries on a cross-sectional basis in years 1980 and 1992. The results confirm the relationship proposed by the IDP theory with small difference for smaller countries. Their NOIP appears to be in earlier stages of IDP above average. Authors explain it by the lack of economies of scale, which decreases inward FDI and forces the firms to expand to the international markets. This expansion increases their outward FDI.

A different formula was used for the study by Buckley & Castro (1998). They chose, for testing the relationship between NOIP and GDP in Portugal in period 1943–1996, a polynomial equation $NOIP_t = \alpha + \beta GDP_t^3 + \gamma GDP_t^5 + \mu_t$.⁶ This equation enables to capture that NOIP decreases very slowly in the early stages of IDP compared to the growth of independent variable. The only exception is the second stage, where it decreases faster than independent variable. The results of the regression are very close to the theoretical model.

Conversely, Bellak (2001) did not find the relationship between NOIP and

⁶ All variables are per capita.

the level of development for Austria in period 1990–1999. Specifically, high level of NOIP does not correspond to high level of GDP per capita and it differs for different type of industry and partner country. This leads to a conclusion that IDP is more determined by the structure of domestic industry and governmental policies.

Barry *et al.* (2003) analysed the FDI flows in Irish economy in period 1980–1999 and found out that it corresponds to the IDP theory. Vavilov (2006) tested IDP on a specific sample of countries that has large resource endowment. The empirical results suggest that this concept is less valid for these countries, especially for countries endowed with petroleum. The reason is that the time span between the stages is larger than is predicted by the theory.

2.2.2 Empirical Studies Testing CEE Countries

There are only few empirical studies in the literature that deal with IDP in the CEE countries and only minority is cross-sectional. One of them was the study of Kalotay (2004), who examined outward FDI in most of the countries that accessed European Union (EU) in 2004.⁷ He discovered that all these countries are in the second stage of their IDPs and he predicted that the accession would mean an increase in inward and outward FDI for them. However, an increase will be in both variables; therefore, the impact on their stage is uncertain.

Boudier-Bensebaa (2004) tested the IDP in the CEE countries and suggests that NOIP was becoming from 1990 to 2002 more negative even though the GDP per capita were unstable in this period and sometimes even decreased. This does not confirm the IDP theory and leads to an idea that IDP is country-specific.

Kottaridi *et al.* (2004) analysed eight new members of EU and two candidate countries, Romania and Bulgaria, in the period 1992–2000. Their aim was to analyse the location determinants of inward FDI and the interrelationship between inward FDI and imports. Their finding states that these countries are in the second stage and are moving towards the third stage of IDP. This evidence corresponds with the third article employing the cross-sectional analysis, which was written by Boudier-Bensebaa (2008).

Boudier-Bensebaa analysed the whole group of the CEE countries, clustered into five subgroups, and 15 member states of EU. The results of the study suggest that the CEE countries are in the first or second stage of IDP, but the

⁷ Croatia as a non-member was included too.

more developed ones approach to the end of the second stage (the Czech Republic, Estonia, Slovenia, Hungary, Slovakia, Poland, Latvia, Lithuania and Croatia). The countries from EU are in the fourth or the fifth stage. Furthermore, the author analysed the convergence between the CEE countries and the EU countries. The evidence shows that the CEE countries are diverging with EU countries in terms of NOIP, but converging in terms of GDP per capita. In conclusion, the author states that cross-sectional analysis was used because of limited time period for individual countries and that observing individual IDPs would better explain their variation, convergence or divergence.

Gorynia *et al.* (2010b) analysed the individual IDPs for 10 CEE countries that are members of EU. The investigated period, 1990-2008, covers also the global financial crisis, which draws interesting results. Firstly, despite the crisis, half of the countries already moved to the third stage, which brings an evidence that a macroeconomic factor that is not directly connected to the structure of FDI can cause a movement from one stage to another. Secondly, the authors argue that the investigated countries did not reconcile from the crisis and that it had negative consequences for their comparative advantages in foreign markets. This leads to a recommendation for government institutions to implement such policy measures to promote outward FDI.

2.3 Revisions of IDP

Since the establishment of the IDP theory, there have been in the literature many changes and refinements of the whole concept. As was stated before, Dunning (1981) proposed a quadratic formula to test the basic relationship $NOIP_t = \alpha + \beta GDP_t + \gamma GDP_t^2 + \mu_t$, where all variables are standardized for their corresponding populations. For calculation of NOIP he used data on FDI flows; however, in recent literature, there are used data on FDI stocks. The reason is that earlier datasets do not provide consistent series on reinvested earnings, which can lead to biased value of NOIP (Bellak 2001). In contrast, data on FDI stocks may cause a measurements problems caused by mergers and acquisition, which are not considered as new FDI activity (they are rather a change of ownership structure); however, they may lead to decrease of outward FDI and increase of inward FDI (or vice versa). That is a reason why results need to be interpreted with caution. The use of FDI flows was firstly questioned by Narula (1996), who argued against biased results of Tolentino (1993) caused by the use of flows.

Recent literature testing the validity of IDP concept faces three methodological problems. The first problem refers to the use of NOIP. It was discovered that it is not an appropriate indicator for observing structural changes in outward and inward FDI and its use can generate some statistical problems. The first of them is related to the fact that in both, first and fifth stage, NOIP is close to zero. However, the difference is that the two components of NOIP are in the fifth stage not equal to zero (Durán & Ubeda 2001). The second statistical problem is caused by different interpretation of the increase in NOIP. The increase can be explained either by disinvestment from the economy (decrease in inward FDI) or increased competitiveness of the economy (Durán & Ubeda 2001). The solution was proposed by Durán & Ubeda (2001), who suggested using outward and inward FDI separately.

The second methodological problem concerns that GDP per capita is not sufficient proxy for measuring the country's development. One of the reasons is that there are countries with the same level of GDP per capita, but their structure of FDI differs. In order to deal with this problem, Dunning & Narula (1996) proposed addition of other structural variables reflecting not only the economic development, but also other country's characteristics. Among them are variables concerning the degree of education, development of health expenditures and others. This issue is also connected with the need of reflecting not only characteristics of home country, but also of host country as the production became more global, which changed also the characteristics of multinational corporations. Originally, the firm ownership advantages depended mostly on the home-country characteristics, but these days the advantages due to globalization depend also on characteristics of host countries (Dunning 2000). Boudier-Bensebaa (2008) concludes that this does not mean that the relationship between FDI and the level of development does not hold, it only shows that this relationship differs among countries, therefore, it is country-specific.

The third methodological problem is that the original quadratic model suggested by Dunning (1981) appeared to be not appropriate for testing IDP. Narula (1996) discovered that the quadratic equation has different forms if the sample of countries varies⁸ and that it suffers from heteroscedasticity. To deal with these problems Durán & Ubeda (2001) suggested a multivariate analysis that combines three methodological tools. The factor analysis allows to test if there is a relationship between economic development and level of outward and inward FDI. Non-parametric test allows testing statistically if the level of

⁸ Dunning & Narula (1996) obtained a J-form, while Tolentino (1993) shows inverted J-form.

inward, outward and net FDI stock is in different stages consistent with the theory. Cluster analysis enables to classify countries in different stages of IDP according to structural similarities.

Another contribution to IDP added Narula & Guimón (2010), who followed the paper of Narula & Dunning (2010) and revised the IDP theory according to recent trends in global economic environment. IDP is an attempt to address series of dynamic processes that are connected to development and multinational enterprises. Thus, this framework has to be understood not normatively, but more indicatively. Therefore, he formulates two versions of the IDP theory: the narrow version and broad version. The narrow version is the original one that enables researchers to better empirically test the basic relationship. However, the interpretation has to be taken with caution because of the simplification of the whole framework. The broad version builds more on different characteristics of countries, governmental policies and the heterogeneity of FDI.⁹

⁹ For a broader literature review concerning the refinements of the IDP theory, see Das (2013).

Chapter 3

Empirical Analysis of IDP Stages of CEE Countries

Following the literature review of empirical studies testing the stages of CEE countries, the aim of this chapter is to test the first two hypotheses stated in Chapter 1: the CEE countries follow IDP and have not reached the third stage of IDP. Confirming the first hypothesis is crucial for further parts of the thesis as the hypotheses introduced in following chapters are based on the assumption that IDP holds for the CEE countries. Within this chapter additional hypothesis will be tested.

3.1 Data

The analysis of IDP of the CEE countries is based on the relationship between NOIP per capita and GDP per capita as a proxy for the countries' level of development. To measure NOIP per capita, we used outward and inward FDI stocks at current prices and current exchange rates from United Nations Conference on Trade and Development (UNCTAD) database. The data on GDP were downloaded from World Development Indicators (WDI) of World Bank database. Both variables are expressed in millions of current United States dollars (USD) and are standardized by population from WDI World Bank database.¹ The time period was chosen from 1990 to 2012. The chosen time period reflects the fact that most of the CEE countries gained independence at the beginning of 1990's; therefore, the availability of the data before this period is limited. The

¹ Both UNCTAD database (<http://unctad.org/en/Pages/Statistics.aspx>) and WDI of World Bank database (<http://databank.worldbank.org/>) were accessed on 27th January 2014.

dataset is not balanced as the independence of many countries was established between 1990 and 1993. The sample consists of 26 countries; the data availability for individual countries is shown in Table 3.1. We dropped from the sample Serbia and Montenegro,² because before their dissolution in 2006 the UNCTAD database does not show data separately for both countries but as a whole. This fact makes their data coverage too short for both countries.

Table 3.1: Data Availability of NOIP per capita

| Country | Year |
|--|------|
| Albania, Bulgaria*, Hungary, Poland, Romania | 1990 |
| Armenia, Belarus, Croatia, Estonia, Georgia, Latvia, Lithuania, Moldova, Slovenia, Tajikistan, Macedonia, Uzbekistan | 1992 |
| Czech Republic, Kazakhstan*, Kyrgyzstan, Russian Federation, Slovakia, Turkmenistan | 1993 |
| Azerbaijan, Bosnia and Herzegovina** | 1997 |

Source: Author's computations, UNCTAD, WDI World Bank

Note: * Outward FDI not available due to negative accumulation of flows (Bulgaria 2004, Kazakhstan 2001, 2004–2006)

** Data on outward FDI available since 1995, on inward FDI since 1997

Table 3.2 and Table 3.3 show the summary statistics for individual countries and for the whole sample. For the whole sample, the negative value of NOIP per capita mean value (– 1453 mil. USD) corresponds with the idea that the CEE countries are still net receivers of inward FDI rather than producers of outward FDI. In addition to that, there are only 13 observations with positive values³ of NOIP per capita and all of them are dated in early 90's. The spread between maximum and minimum values suggests a large difference in the countries' levels of both variables; however, we must take these values with caution as both terms are not expressed in real terms but nominal ones.⁴ Considering this point the difference between the initial values in early 90's and values in 2012 may become significant. That is why we display in both tables the mean values for five-year periods.⁵ For all individual countries, except from Azerbaijan in period 2008–2012, NOIP per capita decreases in time. As we can see, the first

² Both countries formed one state till 2006, since 1992 FRY of Serbia and Montenegro, since 2003 State Union of Serbia and Montenegro.

³ Belarus (1994–1996), Bulgaria (1990), Croatia (1992–1995), Latvia (1992–1993), Romania (1990–1991), Russian Federation (1993).

⁴ The nominal terms for both variables are widely used in literature.

⁵ Except from the first period that lasts three years.

period 1990–1992 differs from the others by the fact that some countries do not exhibit any observations and some of the mean values are positive. The latter can be caused by unreliability of data due to instability and institutional changes during the first phase of transition process. That is why we will test in the empirical analysis also sample starting in 1993.

3.2 Clustering

The existing literature analysed IDP using graphical representation and empirical studies either on cross-sectional or longitudinal time series basis.⁶ Each of these methods faces some methodological problems. Graphical representation cannot prove the validity of IDP trajectory, more it is used for illustrational purposes only. Longitudinal time series for individual countries deal with a problem of short data span as most of the individual countries do not have sufficiently long data period for development of FDI (Boudier-Bensebaa 2008). This is especially the case of the CEE countries when most of them were established in 90's, which allows for maximum of 23 observations.

The cross-sectional empirical analysis, as was pointed out by Durán & Ubeda (2001), faces a fact that countries with the same level of GDP per capita may have a different economic structure. They can differ in terms of availability of natural resources, distance from countries of potential investors, economic and political system and the types of actions run by government (Durán & Ubeda 2001). Since the evolution of FDI is influenced by the economic structure of the country, we might get into a situation where countries with the same level of GDP per capita do not have the same level of FDI.⁷ In order to reduce this problem, it emerges a need to form more homogeneous groups among the CEE countries to better test the countries' IDPs and to avoid biased results with the whole heterogeneous sample caused by different economic structure.

The division of the sample into homogeneous groups followed the methodology of Boudier-Bensebaa (2008), who employed Ward's linkage hierarchical agglomerative cluster analysis. The author chose two variables that divided the CEE countries into more homogeneous subsamples, GDP per capita and NOIP per capita. Despite Durán & Ubeda (2001) argue that GDP per capita is

⁶ See literature review in Section 2.2.

⁷ This corresponds with the fact that the IDP is a concept that is idiosyncratic and country-specific (Dunning & Narula 1996); therefore, testing it on a cross-sectional basis may generate biased results.

Table 3.2: Summary Statistics (Albania–Latvia)

| | Variable | Obs | Mean | Std. Dev. | Min | Max | 90–92 | 93–97 | 98–02 | 03–07 | 08–12 |
|------------------|----------|-----|---------|-----------|----------|---------|--------|---------|---------|---------|----------|
| Albania | NOIPpc | 23 | -366.3 | 453.5 | -1479.8 | 0.0 | -1.9 | -65.0 | -106.8 | -393.5 | -1118.6 |
| | GDPpc | 23 | 1857.4 | 1406.4 | 205.8 | 4109.1 | 381.6 | 645.9 | 1115.8 | 2587.9 | 3965.5 |
| Armenia | NOIPpc | 21 | -498.8 | 575.5 | -1650.4 | -8.9 | -8.9 | -20.3 | -163.5 | -488.6 | -1420.9 |
| | GDPpc | 23 | 1425.9 | 1220.5 | 356.5 | 3916.7 | 531.5 | 447.5 | 659.7 | 1787.5 | 3345.6 |
| Azerbaijan | NOIPpc | 16 | -494.3 | 300.9 | -1085.5 | -157.5 | | -266.0 | -482.1 | -801.6 | -245.0 |
| | GDPpc | 23 | 2139.6 | 2329.7 | 397.2 | 7189.8 | 1040.9 | 455.7 | 651.5 | 1966.3 | 6144.3 |
| Belarus | NOIPpc | 21 | -356.4 | 456.0 | -1481.8 | 14.7 | -0.7 | -2.3 | -131.1 | -279.1 | -1084.3 |
| | GDPpc | 23 | 2863.6 | 1999.1 | 1209.6 | 6784.7 | 1706.1 | 1453.9 | 1343.7 | 3181.8 | 6169.7 |
| Bosnia and Herz. | NOIPpc | 16 | -881.0 | 671.3 | -1952.5 | -196.0 | | -196.0 | -285.3 | -746.9 | -1747.7 |
| | GDPpc | 19 | 2490.6 | 1571.2 | 343.2 | 4802.5 | | 677.8 | 1400.8 | 2939.7 | 4581.4 |
| Bulgaria** | NOIPpc | 22 | -1958.1 | 2600.8 | -6571.6 | 1.4 | -5.1 | -52.2 | -328.1 | -2604.7 | -6148.5 |
| | GDPpc | 23 | 3168.8 | 2234.9 | 1063.1 | 7286.6 | 1619.9 | 1251.0 | 1706.5 | 3887.2 | 6760.1 |
| Croatia | NOIPpc | 21 | -2677.0 | 3087.0 | -9300.6 | 121.4 | 121.4 | -24.8 | -538.1 | -4305.6 | -6399.3 |
| | GDPpc | 23 | 7901.6 | 4370.6 | 2299.7 | 15695.8 | 3836.7 | 4108.1 | 5334.6 | 10324.4 | 14278.3 |
| Czech Rep. | NOIPpc | 20 | -4968.0 | 4145.5 | -11532.9 | -313.8 | | -605.7 | -2234.6 | -6471.8 | -10559.8 |
| | GDPpc | 23 | 10058.2 | 6350.9 | 2783.0 | 21627.2 | 3270.1 | 5181.5 | 6389.5 | 13022.2 | 19712.5 |
| Estonia | NOIPpc | 21 | -4059.7 | 3472.8 | -9731.7 | -23.4 | -23.4 | -400.5 | -1820.6 | -6485.2 | -8339.9 |
| | GDPpc | 18 | 9285.0 | 5580.1 | 2629.0 | 17738.5 | | 3192.9 | 4457.8 | 11081.8 | 15970.7 |
| Georgia | NOIPpc | 21 | -621.1 | 743.0 | -2087.9 | -0.0 | -0.0 | -17.0 | -154.7 | -636.5 | -1800.5 |
| | GDPpc | 23 | 1423.7 | 945.0 | 517.1 | 3490.2 | 1226.4 | 616.3 | 727.9 | 1532.3 | 2936.8 |
| Hungary | NOIPpc | 23 | -3585.9 | 2779.9 | -7888.8 | -39.6 | -180.7 | -1039.8 | -2425.9 | -5941.5 | -6979.6 |
| | GDPpc | 23 | 7743.6 | 4172.6 | 3186.4 | 15364.7 | 3380.0 | 4257.0 | 5127.4 | 10795.3 | 13412.8 |
| Kazakhstan* | NOIPpc | 16 | -1804.4 | 1850.1 | -5116.3 | -77.9 | | -197.7 | -663.3 | -1949.8 | -4265.8 |
| | GDPpc | 23 | 3803.8 | 3543.7 | 1130.1 | 12116.2 | 1558.4 | 1367.6 | 1395.4 | 4155.3 | 9644.2 |
| Kyrgyzstan | NOIPpc | 20 | -151.6 | 139.4 | -493.7 | -2.2 | | -28.8 | -81.2 | -143.0 | -353.4 |
| | GDPpc | 23 | 553.2 | 270.6 | 258.0 | 1159.9 | 566.0 | 391.4 | 302.6 | 511.0 | 1000.3 |
| Latvia | NOIPpc | 21 | -2041.5 | 2041.8 | -5998.9 | 72.3 | 72.3 | -176.5 | -834.1 | -2530.3 | -5047.9 |
| | GDPpc | 23 | 6019.5 | 4579.7 | 1743.1 | 14857.9 | 2399.9 | 2130.3 | 3321.7 | 7817.0 | 12980.5 |

Source: Author's computations, UNCTAD, WDI World Bank

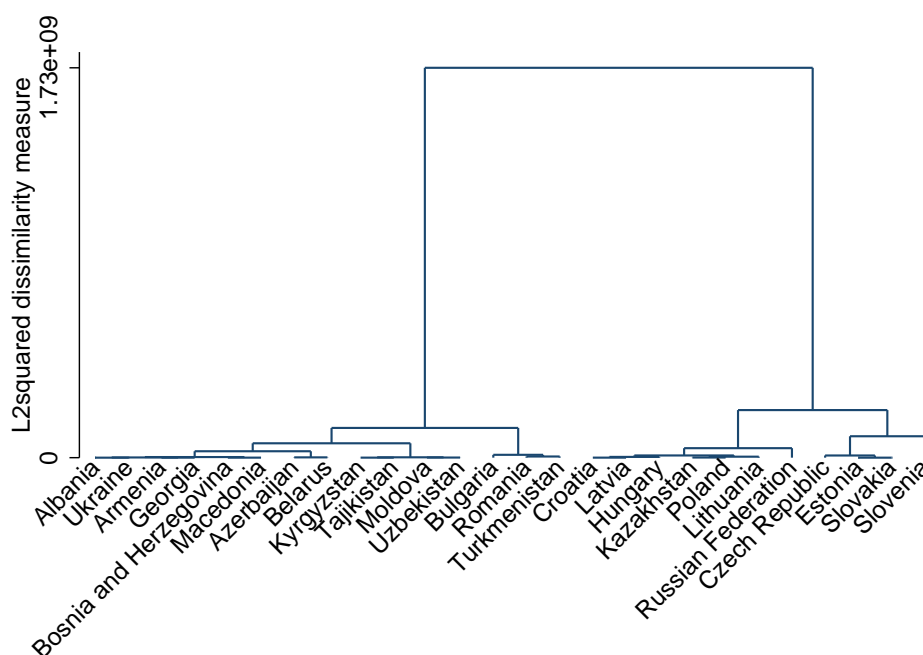
Table 3.3: Summary Statistics (Lithuania–Uzbekistan)

| | Variable | Obs | Mean | Std. Dev. | Min | Max | 90–92 | 93–97 | 98–02 | 03–07 | 08–12 |
|--------------|----------|-----|---------|-----------|----------|---------|--------|--------|---------|---------|---------|
| Lithuania | NOIPpc | 21 | -1665.0 | 1548.6 | -4446.4 | -28.9 | -28.9 | -139.8 | -714.5 | -2452.2 | -3680.6 |
| | GDPpc | 23 | 6122.4 | 4421.2 | 1902.8 | 14183.0 | 2644.2 | 2254.0 | 3425.4 | 8000.9 | 12896.5 |
| Macedonia | NOIPpc | 21 | -865.2 | 856.1 | -2305.1 | -0.0 | -0.0 | -42.2 | -316.4 | -1162.9 | -2112.2 |
| | GDPpc | 23 | 2688.6 | 1197.4 | 1162.3 | 4961.8 | 1909.7 | 1876.5 | 1763.8 | 2963.7 | 4617.8 |
| Moldova | NOIPpc | 21 | -297.8 | 317.2 | -907.6 | -3.0 | -4.3 | -20.6 | -115.1 | -311.6 | -802.4 |
| | GDPpc | 23 | 875.3 | 538.8 | 321.0 | 2037.6 | 810.8 | 513.5 | 398.1 | 856.4 | 1772.1 |
| Poland | NOIPpc | 23 | -1688.7 | 1670.7 | -4490.6 | -0.4 | -14.1 | -193.6 | -867.3 | -2580.0 | -4118.5 |
| | GDPpc | 23 | 6549.7 | 4008.2 | 1693.7 | 13886.5 | 2095.6 | 3396.3 | 4685.8 | 8074.6 | 12714.7 |
| Romania | NOIPpc | 23 | -1109.7 | 1351.1 | -3411.3 | 2.8 | 1.0 | -38.7 | -293.9 | -1519.3 | -3253.4 |
| | GDPpc | 23 | 3793.8 | 3043.9 | 1100.7 | 9497.9 | 1335.2 | 1434.3 | 1804.7 | 4865.6 | 8545.9 |
| Russian Fed. | NOIPpc | 20 | -236.2 | 302.0 | -872.7 | 14.3 | -14.3 | -14.3 | -57.6 | -315.4 | -557.6 |
| | GDPpc | 23 | 5215.9 | 3982.8 | 1339.0 | 14037.0 | 3335.8 | 2732.6 | 1886.9 | 5703.0 | 11669.3 |
| Slovakia | NOIPpc | 20 | -4059.4 | 3755.4 | -9501.1 | -92.6 | -227.0 | -227.0 | -1147.7 | -5910.2 | -8952.8 |
| | GDPpc | 23 | 8732.5 | 5572.7 | 2211.0 | 18109.1 | 2458.3 | 4305.6 | 5677.6 | 11741.0 | 16970.6 |
| Slovenia | NOIPpc | 21 | -1798.0 | 1121.1 | -3755.9 | -488.5 | -631.4 | -694.2 | -1059.7 | -2320.5 | -3350.7 |
| | GDPpc | 23 | 14487.0 | 6741.8 | 6272.3 | 27015.1 | 7103.2 | 9007.0 | 10832.1 | 18450.6 | 24088.5 |
| Tajikistan | NOIPpc | 21 | -55.8 | 55.8 | -160.1 | -1.6 | -1.6 | -7.6 | -21.9 | -70.1 | -134.4 |
| | GDPpc | 23 | 388.1 | 232.4 | 139.1 | 870.5 | 436.7 | 215.1 | 179.9 | 363.9 | 764.6 |
| Turkmenistan | NOIPpc | 20 | -857.3 | 1151.8 | -3866.1 | -19.8 | -86.3 | -86.3 | -220.3 | -548.6 | -2573.8 |
| | GDPpc | 23 | 1883.3 | 1826.6 | 550.8 | 6797.7 | 851.1 | 627.4 | 707.1 | 1839.2 | 4978.8 |
| Ukraine | NOIPpc | 21 | -379.4 | 464.2 | -1391.7 | -5.4 | -5.4 | -19.4 | -81.6 | -376.6 | -1114.8 |
| | GDPpc | 23 | 1729.7 | 1070.9 | 635.7 | 3891.0 | 1492.4 | 1014.0 | 753.4 | 1923.2 | 3370.6 |
| Uzbekistan | NOIPpc | 21 | -64.9 | 76.8 | -263.8 | -0.4 | -0.4 | -7.4 | -27.9 | -53.0 | -184.4 |
| | GDPpc | 23 | 754.2 | 364.3 | 383.3 | 1716.5 | 638.0 | 596.6 | 544.8 | 576.3 | 1368.7 |
| Overall | NOIPpc | 535 | -1453.6 | 2262.0 | -11532.9 | 121.4 | -39.8 | -172.7 | -583.0 | -1972.5 | -3321.0 |
| | GDPpc | 589 | 4354.1 | 4849.8 | 139.1 | 27015.1 | 1942.9 | 2076.3 | 2561.3 | 5421.1 | 8640.8 |

Source: Author's computations, UNCTAD, WDI World Bank

not an appropriate measure of the country's development, for the purpose of clustering are these two variables sufficient enough as we search only for basic division of the CEE countries. The base year for our cluster analysis is 2012. Figure 3.1 shows the cluster tree for this year.

Figure 3.1: Cluster Tree for CEE Countries
(2012)



Source: WDI World Bank, UNCTAD

Note: Author's computations according to Ward's linkage hierarchical agglomerative cluster method for NOIP per capita and GDP per capita, base year 2012

After running the Ward's cluster analysis for the division into two groups (CEE1 and CEE2), we found out that groups still did not result into homogeneous groups according to their NOIP per capita and GDP per capita. Therefore, after running the cluster analysis for six groups, we divided these two groups into three more subgroups CEE11, CEE12, CEE13 and CEE21, CEE22, CEE23. The composition of these groups together with the level of both variables is presented in Table 3.4. From the first view some of the subgroups consist from very few countries, which may cause a potential problem in the empirical analysis as the number of observations is limited. We discuss this problem later in the analysis.

Table 3.4: Division to Clusters
(2012)

| | GDPpc | NOIPpc | | GDPpc | NOIPpc |
|--------------|--------|---------|---------------|-------|--------|
| CEE11 | | | CEE21 | | |
| Slovenia | 22 000 | -3 756 | Bulgaria | 6 978 | -6 572 |
| | | | Romania | 9 036 | -3 411 |
| CEE12 | | | Turkmenistan | 6 797 | -3 866 |
| Czech Rep. | 18 683 | -11 533 | | | |
| Estonia | 16 717 | -9 732 | CEE22 | | |
| Slovakia | 16 847 | -9 501 | Albania | 4 000 | -1 480 |
| | | | Armenia | 3 351 | -1 648 |
| CEE13 | | | Azerbaijan | 7 164 | -387 |
| Croatia | 13 881 | -6 352 | Belarus | 6 685 | -1 482 |
| Hungary | 12 531 | -6 920 | Bosnia and H. | 4 556 | -1 953 |
| Kazakhstan | 12 116 | -5 116 | Georgia | 3 490 | -2 088 |
| Latvia | 14 008 | -5 999 | Macedonia | 4 565 | -2 305 |
| Lithuania | 14 183 | -4 446 | Ukraine | 3 867 | -1 392 |
| Poland | 12 708 | -4 491 | | | |
| Russian Fed. | 14 037 | -667 | CEE23 | | |
| | | | Kyrgyzstan | 1 160 | -494 |
| | | | Moldova | 2 038 | -908 |
| | | | Tajikistan | 871 | -160 |
| | | | Uzbekistan | 1717 | -264 |

Source: Author's computations, UNCTAD, WDI World Bank

3.3 Descriptive Statistics

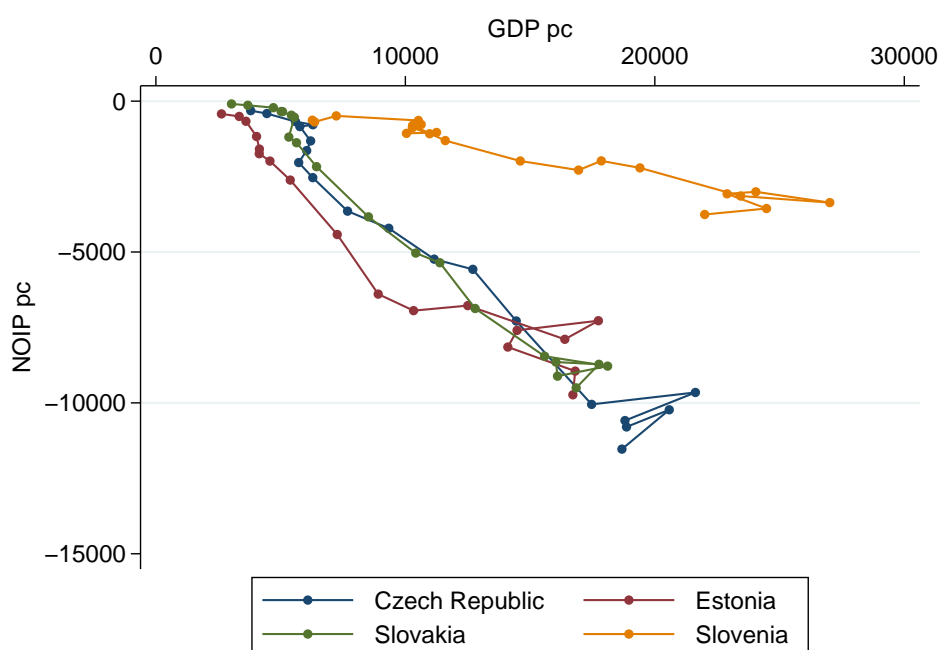
Before performing the empirical analysis we will describe the patterns of FDI of both two groups and six subgroups. The group CEE1 mainly consists of countries that are located in the western part of the CEE region with the exception of the Russian Federation, which is a special case with relatively high level of GDP per capita but low level of NOIP per capita. According to GDP per capita, they range between 12 707 USD for Poland and 22 000 USD for Slovenia, which forms its own subgroup CEE11 with low level of NOIP per capita compared to other members of the CEE1 group. On the other hand, the second group CEE2 is the poorer one according to GDP per capita, as its highest level of GDP is recorded in Romania (9 036 USD) and the lowest in Tajikistan (870 USD).

The view on the comparison of NOIP per capita level shows what the IDP theory suggests. The poorer group, CEE2, has lower level of NOIP per capita, which indicates that they belong to earlier stages of IDP, on the other hand, CEE1 countries show relatively high levels of NOIP per capita, which may be interpreted as that they reached the end of the second stage of IDP or the beginning of the third one. Since there are still big differences within the main

two groups, we move to the description of the characteristics of six subgroups together with the graphical representation of their IDPs.

Slovenia forms its own cluster subgroup CEE11. The comparison to three countries forming subgroup CEE12 in Figure 3.2 shows that its level of GDP per capita corresponds to lower level of NOIP per capita; moreover, in 2012 Slovenia had higher level of GDP per capita than countries in CEE12. The CEE12 countries – the Czech Republic, Slovakia and Estonia – convincingly follow negative relationship between both variables, which is typical for the first two stages of IDP. Nevertheless, as was previously said, we cannot say anything about the stage of all four countries as the IDP is idiosyncratic and country-specific. That is why we are not able to decide whether they are close to enter the third stage or not just from graphical analysis.

Figure 3.2: IDPs of Subgroups CEE11 and CEE12
(1990–2012)

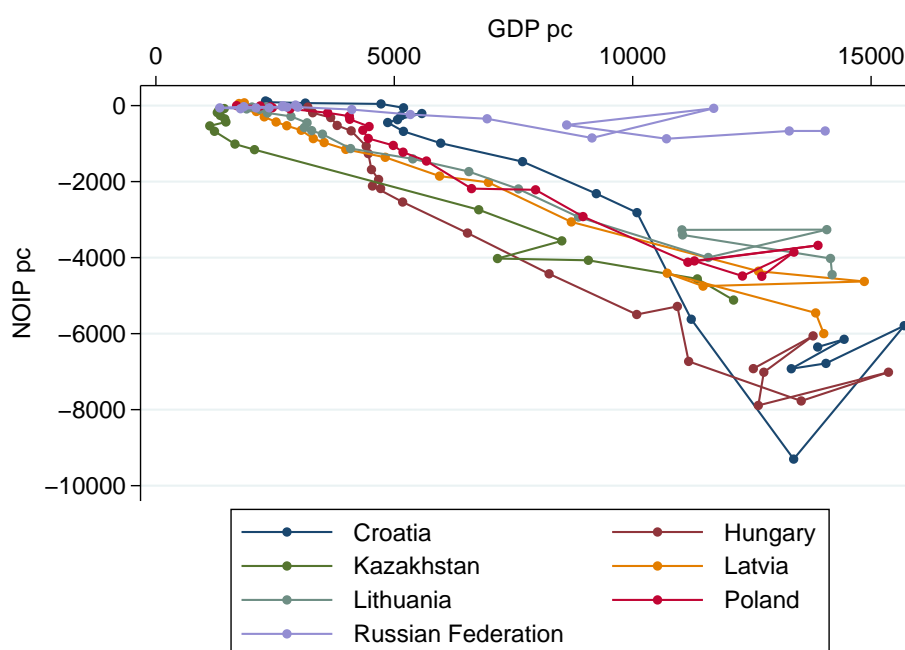


Source: Author's computations, UNCTAD, WDI World Bank

Figure 3.3 shows the third subgroup of CEE1, CEE13, which contains the rest of Baltic countries – Latvia and Lithuania – other western located CEE countries – Croatia, Poland and Hungary – the Russian Federation and Kazakhstan. All countries in 2012 had both lower level of GDP per capita and NOIP per capita than the rest of CEE12 subgroup. Only the Russian Federation exhibits very low

level of NOIP per capita for the level of GDP per capita, which can be explained partly by its huge difference from the rest of the sample in terms of its size, market and political share in the world and partly by different path dependency of its FDI. Durán & Ubeda (2001) pointed out that the disadvantage of NOIP per capita as a measure for country's development is that NOIP per capita around zero can be attributed either to the first or the fifth stage of IDP. This can be related to the case of Russia.⁸ Other countries show the trend suggested by IDP. The interesting case is Croatia when its NOIP per capita exhibited positive relationship with GDP per capita within the sample period that might suggest reaching the third stage of IDP. However, this movement was not caused by increase in outward FDI,⁹ but rather by rapid drop in inward FDI.

Figure 3.3: IDPs of Subgroup CEE13
(1990–2012)



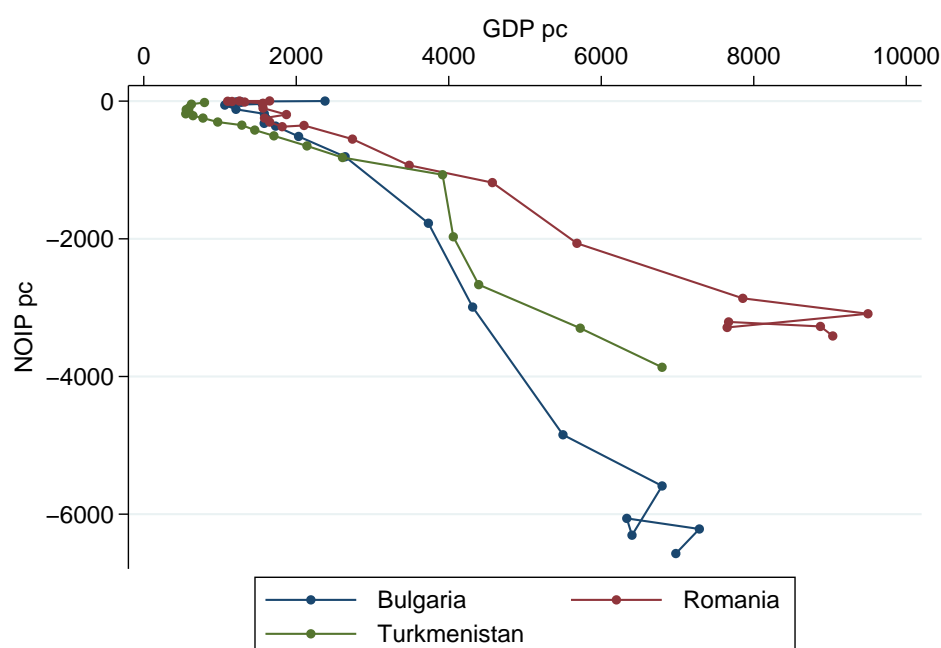
Source: Author's computations, UNCTAD, WDI World Bank

⁸ Developed countries are expected to be in stage five, on the other hand, developing resource-rich countries in the first stage. The Russian Federation is more the latter; although, its high level of outward FDI is not typical for the first stage of IDP. Another explanation is based on the paper by Vavilov (2006), who states that the time span between the stages of IDP for resource-rich countries is longer than suggested by the theory.

⁹ That suggests the IDP theory. Both FDIs should be still increasing, but there is a switch in a growth rate.

The CEE21 subgroup in Figure 3.4, containing Romania, Bulgaria and Turkmenistan, exhibits lower level of both variables than previous subgroups CEE12 and CEE13 (with exception of the Russian Federation's NOIP per capita). According to its GDP per capita, Azerbaijan and Belarus from subgroup CEE22 show the same level, but they are not comparable in terms of their NOIP per capita. All three countries are likely to follow IDP.

Figure 3.4: IDPs of Subgroup CEE21
(1990–2012)

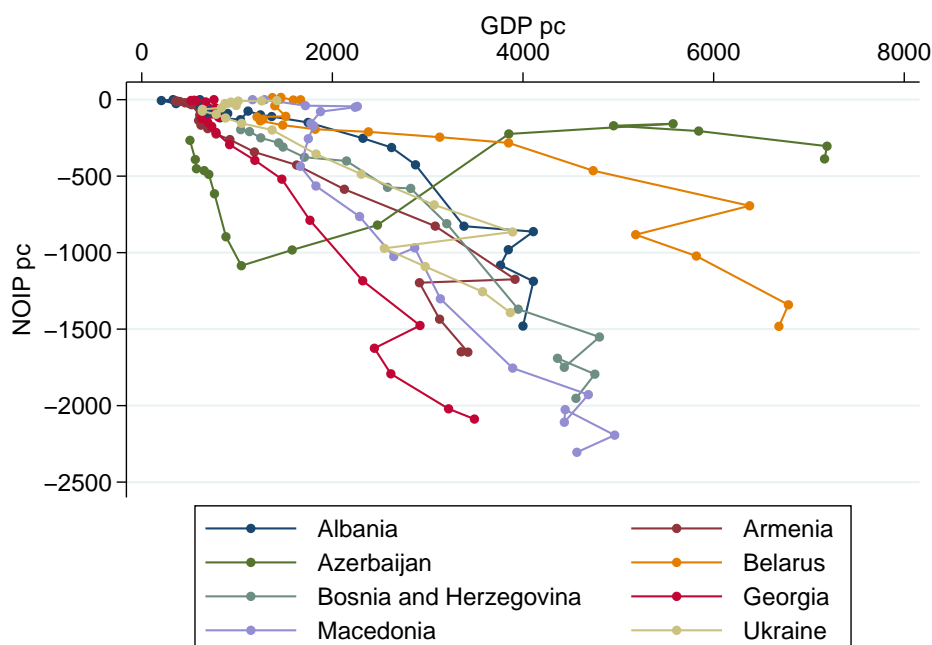


Source: Author's computations, UNCTAD, WDI World Bank

Countries in Figure 3.5 belonging to subgroup CEE22, Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Macedonia and Ukraine, show lower level of NOIP per capita and GDP per capita than subgroup CEE21.¹⁰ The nature of majority of countries' trajectories seems to follow the IDP; the levels suggest that most of them are in the first or second stage of IDP. The only exception appeared in the case of Azerbaijan, which experienced stagnating inward FDI in years 2004–2006 and a huge drop in 2007. Together with constantly growing outward FDI, its IDP does not follow the one suggested by theory.

¹⁰ Exceptions of Azerbaijan and Belarus were mentioned in the previous paragraph.

Figure 3.5: IDPs of Subgroup CEE22
(1990–2012)

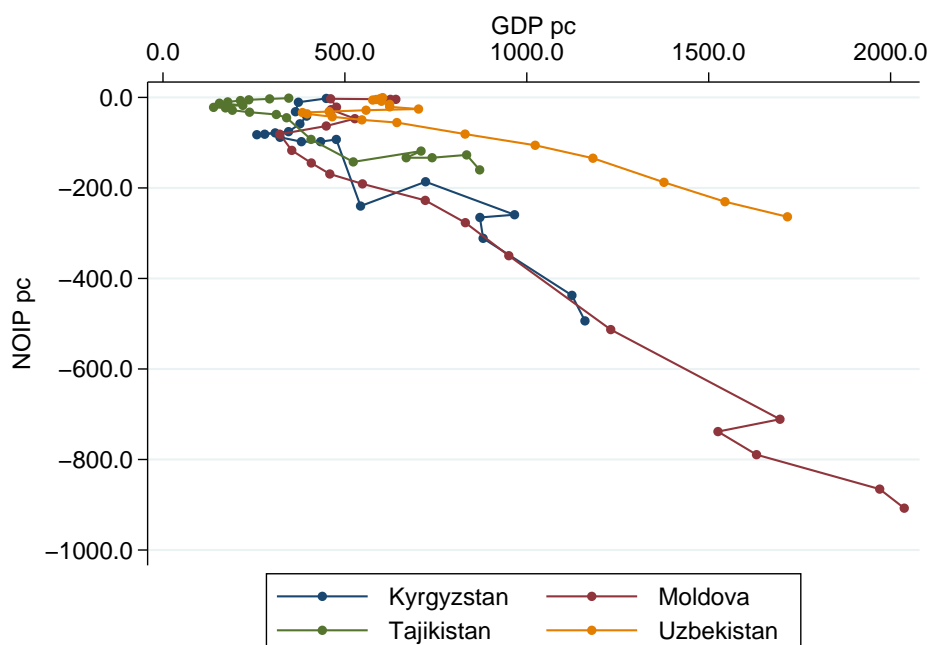


Source: Author's computations, UNCTAD, WDI World Bank

Figure 3.6 shows the last subgroup CEE23, which consists of the countries with the lowest levels of both variables, Kyrgyzstan, the Republic of Moldova, Tajikistan and Uzbekistan. Their IDP is decreasing, which corresponds with the theory, and they are very likely experiencing the first stage of IDP. The country with the highest potential to move to the higher stages is Moldova.

The conclusion we can draw from the graphical analysis is that for the most of countries it is very likely that they follow the IDP suggested by the theory. Moreover, most of them very likely did not reach the third stage of IDP as the change from the negative slope of the curve to the positive one is not observable. Furthermore, it is evident that most of the countries were hit by the global financial crisis, which can be observed as a “zigzag” movement of the curve. For the most of countries it meant that their GDP per capita dropped, but the NOIP per capita was still decreasing. This fact resulted in decelerating the advancement along their imaginative IDP. This finding suggests that global financial crisis could have influenced the IDP of these countries. In order to test if the validity of the IDP theory within the CEE countries did not change, we would run the econometric analysis for two different sample periods, 1990–2008

Figure 3.6: IDPs of Subgroup CEE23
(1990–2012)



Source: Author's computations, UNCTAD, WDI World Bank

and 1990–2012. The invalidity of the IDP theory caused by the global financial crises is implicated by confirming the theory for the first period and rejecting it for the second one. We will assume that clustering corresponding to year 2012 would be valid also for year 2008; otherwise the results of the analysis could have been influenced by the changes in composition of the groups and subgroups.

To assure ourselves whether the composition of the groups and subgroups has changed or not, we performed clustering based on year 2008 and the composition really changed. The CEE1 group in year 2008 is divided into four subgroups while the CEE2 group only into two. This change was also followed by movements of individual countries between subgroups.¹¹

3.4 Model

To test the validity of the IDP for this sample we employ quadratic formula that was firstly used by Dunning (1981):

¹¹ The cluster tree is displayed in Appendix A.

$$NOIPpc_{it} = \beta_0 + \beta_1 GDPpc_{it} + \beta_2 GDPpc_{it}^2 + u_{it}$$

, where $NOIPpc$ is net outward investment position per capita defined as the difference between outward FDI stock per capita and inward FDI stock per capita and $GDPpc$ is the gross domestic product per capita. The index t corresponds with the year, index i with the country. We expect that the coefficient β_1 is negative and coefficient β_2 is positive. This would lead to the confirmation of the first hypothesis that the CEE countries follow IDP suggested by the theory.

The model we use is the fixed-effect model as countries are not randomly drawn from larger sample; moreover, the country's individual effect cannot be taken as random as it depends on country-specific characteristics. We tested if the use of random-effect model is appropriate by Hausman specification test. The test led to rejection of null hypothesis that random-effect model is consistent and efficient, which favours the use of fixed-effect model that is under alternative hypothesis.¹² After testing for heteroscedasticity by Modified Wald test for groupwise heteroscedasticity, we concluded that null hypothesis is rejected; therefore, the sample suffers from heteroscedastic standard errors.¹³ We corrected the heteroscedasticity by using bootstrapped standard errors. Table 3.5 presents the correlation matrix for all variables.

Table 3.5: Correlation Matrix

| | NOIPpc | GDPpc | GDPpc ² |
|--------------------|---------|--------|--------------------|
| NOIPpc | 1.0000 | | |
| GDPpc | -0.8132 | 1.0000 | |
| GDPpc ² | -0.7235 | 0.9370 | 1.0000 |

Source: Author's computations, UNCTAD, WDI World Bank

3.5 Results

Table 3.6 shows the regression results for two time periods, 1990–2008 and 1990–2012. The results of the sample ending in 2008 show the expected negative sign of the coefficient for $GDPpc$. Except from the subgroup CEE2, which is

¹² The result of Hausman specification test: $\chi^2(1) = 11.37$, $\text{Prob} > \chi^2 = 0.0007$.

¹³ The results of the Modified Wald test for groupwise heteroscedasticity: $\chi^2(15) = 96364.74$, $\text{Prob} > \chi^2 = 0.0000$

significant at 10% significance level, coefficients are significant at 1% level. The significance and sign of $GDPpc^2$ is a key answer to the question whether IDP of the sample and the groups has the U-shape form as suggested by the theory. The only non-significant result is for the subgroup CEE2, which in addition does not have the expected positive sign. The coefficients for the whole sample and group CEE1 have the expected positive signs. As a conclusion of this time period, the pattern suggested by the IDP theory is observable only for the whole sample and subgroup CEE1. The CEE2 subgroup exhibits only negative relationship between $NOIPpc$ and $GDPpc$.

The results for the whole period do not differ from the shorter period considering the signs of the coefficient for both variables. The only difference appears in the significance, where the coefficients for $GDPpc$ for subgroup CEE2 and $GDPpc^2$ for the whole sample became significant at higher than 1% significance level. Therefore, we can confirm, as for the shorter period, the validity of IDP for the whole sample and group CEE1. Since the significance for both periods shows the same pattern, we conclude that the global financial crisis did not change the validity of IDP within the sample of CEE countries. Another conclusion taken from the analysis is that trajectory of IDP is not confirmed for group CEE2, which consists mainly of countries that are poorer than the ones in CEE1; therefore, they are very likely situated in lower stages of IDP.

Table 3.6: Regression Results

| Period | 1990–2008 | | | 1990–2012 | | |
|--------------------|----------------------------|----------------------------|-------------------------|----------------------------|----------------------------|----------------------------|
| Group | all | CEE1 | CEE2 | all | CEE1 | CEE2 |
| GDPpc | -.5812495*** (.0737041) | -.6696099*** (.0837867) | -.2719982* (.146295) | -.5719029*** (.0405856) | -.6354842*** (.0618833) | -.3669976*** (.0655446) |
| GDPpc ² | 7.34e-06* (4.13e-06) | .0000109** (4.58e-06) | -.0000192 (.0000281) | 5.89e-06*** (2.03e-06) | 8.51e-06*** (3.10e-06) | -.0000136 (.0000123) |
| Cons. | 913.7276*** (157.7474) | 1863.592*** (323.7414) | 132.5922 (112.0193) | 900.9693*** (116.8697) | 1753.393*** (242.313) | 215.5213*** (66.10205) |
| N | 428 | 180 | 248 | 532 | 224 | 308 |
| Clusters | 26 | 11 | 15 | 26 | 11 | 15 |
| R ² | 0.7506 | 0.7792 | 0.6130 | 0.7633 | 0.7922 | 0.6342 |

Source: Author's computations, UNCTAD, WDI World Bank

Note: * Significant at 10%, ** at 5%, *** at 1% level

Another regression, which is tested, is based on findings from descriptive statistics in Section 3.3; the countries that considerably differed from the sample were excluded. Specifically, these countries are Azerbaijan and the Russian

Federation. The reasons were explained earlier, from the first view Azerbaijan's IDP do not follow the trajectory described by theory, the Russian Federation differs from the rest of the sample considering its characteristics and also its stage of IDP is disputable due to their belonging to the group of resource-rich countries. The differences in results, which are presented in Table 3.7, were not the major ones. The signs of the coefficients remained the same as in the former sample; the only observable change is that in the shorter period the coefficients of $GDPpc^2$ are significant at higher significance level. However, this elimination did not change anything about the fact that CEE2 group results are not consistent with the IDP theory.

Table 3.7: Regression Results without Russian Federation and Azerbaijan

| Period | 1990–2008 | | | 1990–2012 | | |
|--------------------|----------------------------|----------------------------|---------------------------|----------------------------|----------------------------|---------------------------|
| Group | all | CEE1 | CEE2 | all | CEE1 | CEE2 |
| GDPpc | -.6654632*** (.0593997) | -.7634429*** (.0714552) | -.3536496** (.1450319) | -.6857586*** (.0320894) | -.7546662*** (.0659351) | -.4579479*** (.088752) |
| GDPpc ² | .0000104*** (3.45e-06) | .0000143*** (3.45e-06) | -.0000137 (.0000299) | 9.84e-06*** (1.77e-06) | .0000126*** (3.51e-06) | -.0000118 (.0000157) |
| Cons. | 1103.346 *** (141.5742) | 2233.916*** (287.9678) | 238.1088** (109.7117) | 1168.341*** (87.261) | 2227.935*** (295.2777) | 349.3436*** (78.68679) |
| N | 400 | 164 | 236 | 496 | 204 | 292 |
| Clusters | 24 | 10 | 14 | 24 | 10 | 14 |
| R ² | 0.7991 | 0.8248 | 0.6947 | 0.8288 | 0.8479 | 0.7546 |

Source: Author's computations, UNCTAD, WDI World Bank

Note: * Significant at 10%, ** at 5%, *** at 1% level

The last two specifications we tested were the regression for the subgroups and for the whole sample starting at 1993. For the first case, it appeared that all coefficients became significant at least at 10% significance level, except from $GDPpc^2$ for subgroup CEE21. However, coefficient's signs for $GDPpc^2$ appeared negative for subgroup CEE13 and CEE23. Taking into account that subgroup CEE11 consists only from Slovenia, we are left only with subgroups CEE12 and CEE22 that show the pattern of IDP suggested by the theory. The reason for that can be partly caused by low number of observations. In the second case, we have not found any significant changes compared to the samples starting in 1990.

Finally, our division into more homogeneous groups in order to better describe the country-specific nature of IDP did not appear to be necessary. This

result was unexpected and did not correspond with the results of Boudier-Bensebaa (2008), who showed the significance only in the smaller more homogeneous groups, but not in the whole sample of countries. Moreover, the coefficients' signs in the study were in all groups as expected. Taking into account that the author used the same source of data and very similar sample of the countries, the difference of results is surprising. We tried to solve this discrepancy by correcting for the difference between real GDP per capita, which was used by Boudier-Bensebaa (2008), and nominal GDP per capita used in this study. However, the results did not converge; for groups they almost stayed the same, but in the case of subgroups, they became highly insignificant. The second explanation of different sample period and sample's and subsample's composition did not prove, too. After we replicated almost the same data sample as Boudier-Bensebaa (balanced, 23 countries, same cluster groups, same sample period 1991–2005), the significance and the signs did not improve.

The last part of the analysis lies in determination of the stages of IDP for individual countries.¹⁴ We used the method by Boudier-Bensebaa (2008) that is based on a quadratic shape of IDP. Boudier-Bensebaa identified the turning point of the U-shaped IDP, which separates the second and the third stage of IDP. After differentiation of the equation according to GDP_{pc} in order to find the minimum of the function, we obtain a turning point of the IDP curve that is $GDP_{pc} = -\beta/2\gamma$. Since the results were not significant for all groups, we calculated the turning point for the whole sample that is 48 557 USD. This level of GDP per capita was not passed by any country of the sample, which suggests that no country moved to the third stage of IDP. However, this suggestion must be interpreted with caution. The value of the turning point is so high that even some of the developed countries, which are clearly in later stages of IDP, would not pass this point. When looking at the turning point calculated from the regression for the sample without Azerbaijan and the Russian Federation, it is not passed by any of the countries in the sample, too (34 845 USD). These results do not correspond with Gorynia *et al.* (2012), who conclude that 7 CEE countries are already at the beginning of the third stage.¹⁵ However, the observed time period ended in 2008; therefore, it does not consider the global financial crisis, which is observable in the data from year 2009. This fact may suggest that global financial crisis caused a backward movement of some of the

¹⁴ The used method allows us only to decide whether the countries are in the first or second stage of IDP or the third one.

¹⁵ These are the Czech Republic, Estonia, Hungary, Poland, Slovakia, Latvia and Lithuania.

countries along their IDP.

Before the end of this chapter we would like to stress that we were aware that the methodology of this empirical part has its drawbacks suggested by the empirical literature and this drawbacks could have influenced the final results. The IDP attempts to cover the series of dynamic processes and cannot be explained only by single macro-economical determinant. The development of FDI is influenced by other determinants including countries' characteristics, governmental policies and characteristics concerning the industry-specific and firm-specific level. However, accounting for all these factors in the empirical analysis is demanding due to vast complexity of the IDP relationship; therefore, we used a simplified framework. The choice of simplified framework was motivated by better testability of the IDP concept, which allows us to illustrate more intuitively the basic relationship between the level of development and FDI.

To conclude, the first hypothesis that the whole sample of countries follows the IDP, is confirmed. However, when the sample is clustered into two groups, the hypothesis holds only for CEE1. The second hypothesis, that the CEE countries did not reach the third stage of IDP, is confirmed too, but the results may be influenced by the use of simplified version of the IDP framework; therefore, we cannot confirm it with certainty. The confirmation of the first hypothesis allows us to move to next two chapters, which will focus on the impact of reinvestment of earnings on development of outward FDI.

Chapter 4

Home-Country Determinants of Outward FDI

For the purpose of the empirical study presented in Chapter 5, we will shortly review the literature discussing the determinants of outward FDI. Because the outward FDI can be analysed from many points of view, it is not within the scope of this thesis to cover all the literature written on this topic. Therefore, we will introduce briefly the main fields of research and then we will focus on the type of outward FDI determinants that are related to our empirical analysis, the home-country determinants. The outward FDI can be discussed from two perspectives; the first one is concentrated on the determinants that are related to the host country, the second one to the home country. Both of these perspectives can be further divided into three vertical levels, the firm-level, the industry-level and the country-level characteristics.

Since the characteristics from the host-country perspective are not going to be used in our empirical analysis, we will introduce just one example of the empirical study analysing the outward FDI from this point of view. Buckley et al. (2007) analysed the determinants of Chinese outward FDI. The variables the authors tested were variables concerning the absolute and relative size of host market economy and its growth, natural resource endowment, strategic-asset seeking motives, political stability, cultural proximity, exchange rate, inflation rate, trade between both countries, geographical distance and openness to FDI. We will not cover the theoretical justification for these variables as most of these variables will be covered in the next section and their justification will be only the opposite from the one in this part. For the readers who are interested in the recent studies using the host-country perspective, the determinants of

outward FDI for different countries can be explored in: Amal & Tomio (2012) – Brazil, Kim & Rhe (2009) – South Korea, Galan *et al.* (2007)¹ – Spain and Duanmu & Guney (2009) – China and India. The next three sections will discuss the home-country determinants divided into three levels that were mentioned earlier.

4.1 Firm-Level Determinants

The firm's characteristics, which are usually used in the analyses as determinants of outward FDI, describe the basic patterns of a firm as size, age, productivity, profitability, but also others as managerial skills, level of technological development, possession of know-how or export orientation. The next few paragraphs summarize the intuition behind the use of each of them.

The firm's size positively influences the ability to access foreign markets as bigger firms show higher potential to bear uncertainty, which is connected with the cross-border investment. Easier access to information or larger supply of resources belongs to other advantages. These firms tend to outward FDI also because of market-seeking motives as in most cases further enlargement in the terms of domestic market is not as profitable as accessing foreign markets (Pradhan 2004). However, Caves (1999) pointed out that the relationship is not linear. A firm needs to reach a given threshold, after reaching it, the larger firms do not have any advantages to the smaller ones (as well behind the threshold). The impact of the firm's age does not appear as straightforward as the impact of the size too. The main idea is that older firms had more time to acquire business and production experience, but on the other hand, some "too" old firms can face a problem with being behind their peak or that the managers after long time on a domestic market are not able to conduct foreign expansion (Klimek 2009). In other words, the relationship between age and outward FDI does not have to be necessarily linear (positive relationship), but rather quadratic. The firm's profitability and labour productivity are both connected together and both of these variables are expected to have a positive impact on outward FDI. The reason is that unsuccessful and inefficient firms hardly become foreign direct investors as they should satisfy the condition of being stable and healthy functioning firm. Only these firms can bear high initial

¹ This study contains an exhaustive list of main empirical studies on host FDI location factors.

costs of establishing the production in foreign markets in order to decrease transactional costs (Grossman *et al.* 2006).

Another, but hardly measurable, set of variables are intangible assets and R&D. Among these, managerial skills are expected to have a positive impact on outward FDI as only firms with effective and low-cost managerial structure can succeed in foreign markets (Pradhan 2004). Regarding R&D, technological capacity and know-how, the firms possessing these assets face a problem how to fully exploit them by contracting with external party. The negotiations about licensing are problematical as both sides of the contract do not want to either pay the full value or reveal the whole asset before the contract is completed (Blonigen 2005). Apparently, one of the solutions is internalization of this asset rather than contracting it to the third party. The relationship between export orientation and outward FDI is simultaneous. The first lag of this relationship is based on the fact that firms already exporting abroad use their knowledge of foreign market and start to exploit this knowledge by internalization of their production in that country. The second lag lies in the idea that firms being already foreign direct investors expand their activities in exporting to the foreign country to increase their competitiveness there (Pradhan 2004).²

4.2 Industry-Level Determinants

Most of the empirical studies analysing the determinants of outward FDI focus on the firm- or country-level characteristics, only a minimum of them concentrate on the industry-level characteristics. Dunning (1981) in his study, which presents OLI framework, introduces the industry-specific characteristics that influence the location of FDI. These characteristics are divided according to OLI framework and are presented in the Table 4.1.

Pradhan (2004, pg. 625) adds to these determinants that "the greater is the oligopolistic interdependence in an industry, the higher is the likelihood of outward FDI, because of the imitative behaviour of rivals in investing abroad". Furthermore, the variation of outward FDI can be influenced by the difference between industries in the gap between foreign and home firm possession of intangible assets, the governmental regulation of the industry and the policy regime over the industry.

The same pattern as in the previous paragraph suggest Holtbrügge & Krep-

² For more extensive literature review, we recommend the article by Pradhan (2004).

pel (2012). Some of the industries can be supported by government as strategic ones, which can be demonstrated on the case of the Russian Federation, which supports the oil and gas industry. The second example refers to the fact that the firms facing strong competitive pressures in the home market might be attracted to find new opportunities in the foreign markets.

Table 4.1: Industry-Specific Determinants of FDI

| | |
|-----------------|---|
| Ownership | Degree of product or process technological intensity; nature of innovations; extents of product differentiation; production economies (e.g., if there are economies of scale); importance of favoured access to inputs and/or markets |
| Internalization | Extent to which vertical or horizontal integration in possible/desirable, e.g., need to control sourcing of inputs or markets; extent to which internalizing advantages can be captured in contractual agreements (df. Early and later stages of product cycle); use made of ownership advantages; cf. IBM with Unilever type of operation; extent to which local firms have complementary advantage to those of foreign firms; extent to which opportunities for output specialization and international division of labour exists |
| Localization | Origin and distribution of immobile resources; transport costs of intermediate and final goods products; industry specific tariff and non-tariff barriers; nature of competitions between firms in industry; can functions of activities of industry be split? Significance of “sensitive” locational variables, e.g., tax incentives, energy and labor costs |

Source: Published in Dunning (1981, p.35)

4.3 Country-Level Determinants

The last group of determinants, which will be later used in the empirical part, is the group of home-country determinants. Next few paragraphs suggest the justification behind these determinants of outward FDI with the links to existing literature. We will follow the division of the determinants into four categories, market conditions, policy variables, economic variables and production factors, which was by used Bhasin & Jain (2013) in their study of outward FDI home-country determinants of selected Asian countries. We admit that some of the

determinants can belong to more categories; however, this division is performed just for better structuring of this section.

4.3.1 Market Conditions

Market size The idea behind using market size as an explanatory variable is that large markets provide necessary conditions for firms to participate in the foreign markets. In large markets firms gain the possibility to use the economy of scale through specialization (Kyrkilis & Pantelidis 2003) and have the opportunity to gain experience in operating in a bigger scale, which will be beneficial when entering foreign markets. Thus, we expect positive relationship between market size and outward FDI. However, some empirical studies contradict the significance of this variable (Tallman 1988). Mostly GDP is chosen in the literature as a proxy for this determinant. For further summary of the literature on this determinant, see Tolentino (2008).

Market demand and economic development According to Bhasin & Jain (2013), low demand on the domestic market might not allow to fully use the economy of scale. This fact can lead to a firm's consideration of moving its production to foreign markets. Therefore, we expect negative relationship between market demand and outward FDI. The proxy usually used for this determinant is real GDP per capita. This variable is also used in empirical studies that are connected with the level of country's development, according to Dunning's IDP discussed earlier. The higher level of development means that firms possess more ownership advantages, which opens space for exploiting them abroad (Stoian 2013). To conclude, the impact of GDP per capita is ambiguous.

4.3.2 Policy Variables

FDI openness The openness of the home country towards the cross-border flow of capital enables firms to take part in the direct investment abroad in the case when it is more profitable (Buckley *et al.* 2007). Thus, this determinant shows how liberal the FDI policy is, the more it is, the more positive impact it has on outward FDI. The impact of FDI openness can be viewed also from the opposite view. The openness of a country to inward FDI can attract foreign direct investors, which allows firms to benefit from variety of FDI spillovers. These spillovers help firms to generate their own ownership advantages, which

increases their ability to produce on foreign markets (Dunning 1981; Stoian 2013).

Trade openness The determinant of trade openness shows how open a country is to the international markets. The openness enables firms to gain knowledge about the foreign markets and gain experience in operating in foreign markets (Kyrkilis & Pantelidis 2003). This experience generates better conditions for firms to become a foreign direct investor, which suggests a positive relationship between this determinant and outward FDI. Another justification for trade openness lays in the fact that the firm wants to help domestic exporters by providing export opportunities to foreign markets (Buckley *et al.* 2007). However, some empirical studies do not confirm the significance of trade openness (e.g. Wei & Zhu (2007)). A decent review of the empirical literature can be found in the paper by Tolentino (2008).

Political risk and institutional performance The quality of institutions and a political risk affect broad area of home-country characteristics. Firstly, poor legal protection of assets exposes firms to the risk of expropriation. Secondly, poor quality of institutions is often reliable for a malfunction of market, which increases the firms' transaction costs. The last impact is connected with bad quality of public good (e.g. infrastructure), which leads again to higher transaction costs and low profitability of the investment (Blonigen 2005). Therefore, low quality of institutions and political risk is expected to have a positive effect on outward FDI as firms try either to diversify their assets or escape. Despite the impact of both determinants is indisputable, the measurement is problematic. For instance, the empirical study written by Stoian (2013), which analyses the impact of institutional determinants on outward FDI especially for the post-communist countries, put the main emphasis on the impact of variety of reforms, measured by the indices publicized by European Bank for Reconstruction and Development. For future reading on this topic, this paper is recommended.

4.3.3 Economic Variables

Interest rate FDI requires a significant amount of capital. In order to measure the amount of capital in a country, the level of interest rate is used because it shows the country's abundance or scarcity of capital. When the level of

interest rate is low, it indicates that capital is abundant, which decreases the opportunity cost of capital (Kyrkilis & Pantelidis 2003). Firms with large amount of capital can face this problem by searching for higher profitability of their capital abroad. This would lead to a negative relationship between the level of interest rate and outward FDI.

Exchange rate The relationship between exchange rate and outward FDI can be described in two ways. The first way is that appreciation of domestic currency leads to decrease in capital requirements for investment abroad in domestic currency (Buckley *et al.* 2007). This positively influences the level of outward FDI. The second way is based on the decision of domestic firms whether they run their business on foreign markets by employing exports or foreign direct investment. In the case of export, the appreciation of domestic currency, from the host-country perspective, means that they are forced to buy more expensive products and services. This fact lowers the competitiveness of exports compared to foreign direct investment; therefore, it positively influences outward FDI. Finally, we would expect negative relationship between home-country exchange rate and outward FDI (Bhasin & Jain 2013).

Macroeconomic stability Low macroeconomic stability influences outward FDI in a way that firms are likely to search for more stable environment in foreign countries. The proxy for this determinants is most of the times the inflation rate. Higher or more volatile inflation rate suggests a negative business climate (Amal & Tomio 2012), which encourages firms to invest abroad; therefore, there is a negative relationship between these two variables.

4.3.4 Production Factors

Technology and R&D From the perspective of Dunning's OLI paradigm, the technological capability is considered as one of the ownership advantages that contribute to the firms' ability to become foreign direct investors. According to Das (2013), in some cases it is not likely that emerging countries are able to produce technological innovations, which directly turn into the ownership advantages; however, the author argues that even the policies aimed at technological capacity can create spillover effects. Therefore, the proxies usually used for these determinants are either number of patents applications or in the latter case, the share of R&D expenditures of government in GDP. To see broader

discussion of the literature concerning the impact of technological capability on outward FDI, we recommend Tolentino (2008).

Human capital Human capital appears to have the influence on outward FDI. In order to successfully invest abroad, a firm needs to possess skilled labour force, either in the managerial sphere or the production one, which contributes to the firm's characteristics as another ownership advantage. This statement holds especially for the sectors that are skilled-labour intensive (Tolentino 2008). Therefore, we expect positive impact of human capital on outward FDI. For the extensive list of recent empirical studies analysing the outward FDI determinants, see Appendix of the paper written by Stoian (2013).

Chapter 5

Impact of Reinvestment of Earnings on Outward FDI

The objective of this chapter is to answer the third hypothesis that inward reinvestment of earnings influences the country's ability to generate outward FDI. The reason for testing the hypothesis is that moving from earlier stages of IDP to the later ones is conditioned by the increase of outward FDI. Specifically, in the case of the CEE countries it means moving to the third stage of IDP, which is caused by higher growth of outward FDI than inward FDI.

5.1 Definitions and Justification

Before discussing the justification of the model and specification of the method used to test the hypothesis, we need to better understand the basic division of FDI. Since our goal is to find the relationship between outward FDI and inward reinvestment of earnings, we need to use the data on FDI flows, which shows the data on reinvestment of earnings separated from equity.¹ The FDI flows consist of three main components: equity other than reinvestment of earnings, reinvestment of earnings and debt instruments.² As we will be working mainly with the concept of reinvestment of earnings, we introduce its definition. Reinvestment of earnings is a direct investor's share of direct investment enterprise's

¹ The data on FDI stock does not show reinvestment of earnings separately. Reinvestment of earnings is a flow variable from its nature as it is derived from earnings of the enterprise each year.

² This holds according to the Balance of Payment and International Investment Position Manual, the sixth edition (IMF 2009). In 2008 this manual replaced IMF (1993). According to that manual the components were called: equity capital, reinvested earnings and other capital.

earnings that is not retained by the direct investor (IMF 2009).³ In fact, this is a form of injection of additional equity into the direct investment enterprise.

This brings us to the explanation of the rationale behind our hypothesis. In fact, there are two; the first one considers the effect on the direct investment enterprise, the second one on other domestic firms. If the direct investor does not reinvest the earnings back to direct investment enterprise, there are no further benefits from this investment, which may influence the ability of direct investment enterprise to grow and provide outward FDI. The second rationale is based on the idea that the evolution of direct investment enterprise associated with inward reinvestment of earnings (or inward FDI as a whole) influences also the productivity of other domestic firms through FDI spillover channels. Leshner & Miroudot (2008) summarize these channels as: improvements of skills through mobility of labour, export and infrastructure improvements, imitation of advanced products, stronger competition and vertical linkages. The empirical literature did not find evidence on the effect of the first set of spillovers, called horizontal spillovers (Sasidharan 2006). However, there is evidence supporting the effect of vertical spillovers. Gorodnichenko *et al.* (2007), who analysed FDI spillover effects for 17 CEE countries, found out significant positive vertical spillovers. Additionally, he found that even though horizontal and backward spillovers are not insignificant for the whole sample, they are significant in the case of older firms and firms in service sector.

5.2 Choice of Variables

Examining the relationship between outward FDI and inward reinvestment of earnings requires using other explanatory variables since inward reinvestment of earnings is not the only variable describing the behaviour of outward FDI. The recent analytical studies, addressing the issue of determinants of outward FDI as was discussed in the Chapter 4, can be divided into two groups. One group analyses outward FDI from the perspective of home-country characteristics, the second one from the perspective of the host-country characteristics. Considering that the second approach is mainly used to analyse the determinants of a single country, we decided for the first approach, which is concentrated on the home side of the FDI relationship. Certainly both sets of variables determine the level of outward FDI, but the use of these two approaches mainly depends

³ It can be negative in cases of loss from the direct investment or when dividends are higher than earnings.

on the targeted hypothesis. In our case, the main hypothesis refers to the importance of reinvestment of earnings; other characteristics of the home country are considered as a completing element of the whole relationship. However, the final results will suggest which of them influence the outward FDI too; therefore, for each of the chosen variables we obtain an individual hypothesis regarding its significance.

Table 5.1 shows the choice of variables with their description, expected impact on outward FDI and the source. As the justification is presented in Chapter 4, we only briefly summarize it here. Most of the variables are expected to have a positive impact on outward FDI, inward reinvestment of earnings is supposed to contribute by FDI spillover effects to home-country firms; market size enables firms to get an experience of operating on the large international markets. GDP is used as a proxy for it. GDP per capita is used as proxy for country's development and should exhibit the ownership advantages of domestic firms.⁴ Both, Trade and FDI openness, help either to get experience and knowledge from operating on foreign markets or by facilitating the cross-border capital flows. The positive impact is expected from number of patent applications representing the technological capability, which is an ownership advantage needed for becoming a foreign direct investor. As most of the sample consists of developing countries, it would be more appropriate to use a variable describing the expenditure on R&D;⁵ however, there is limited data availability. The labour force with tertiary education, as a proxy for human capital endowment, is expected to have a positive impact too as skilled labour facilitates creation of outward FDI.

Two variables that are expected to have a negative impact are real effective exchange rate and real interest rate. The expectation for real effective exchange rate is based on the idea that appreciation of the home-country exchange rate makes outward FDI cheaper and lowers the competitiveness of export to outward FDI. The real interest rate exhibits the opportunity cost of capital, if it is low we expect higher willingness to search for higher opportunity costs abroad.

⁴We do not expect the opposite impact presented in Subsection 4.3.1, regarding GDP per capita as a proxy for market demand.

⁵For developing countries also the policy aimed at technological progress and R&D matters as the technological capability does not have to be on such a level.

Table 5.1: Choice of Variables

| Variable | Definition | Justification | Sign | Source |
|-----------|---|----------------------|------|---------------|
| outFDI | Direct invest., Assets, USD (mil.) | Dependent variable | | IMF BOP |
| inRE | Direct invest., Liabilities, Equity and invest. fund shares, Reinvestment of earnings, USD (mil.) | FDI spillover effect | + | IMF BOP |
| GDP | GDP, current USD (mil.) | Market size | + | WDI |
| GDPpc | GDP/Population, current USD | Development | + | WDI |
| Tradeopen | (Exports of goods and services + Import of goods and services) /GDP, all current USD | Trade openness | + | WDI |
| FDIopen | Stock of outward FDI/GDP, both current USD | FDI openness | + | UNCTAD WDI |
| REER | Real effective exchange rate, (based on 172 trading partners, 2007=100, CPI) | Competitiveness | - | Bruegel |
| IRreal | Real interest rate (%) | Capital abundance | - | WDI |
| Educ | Labour force with tertiary education (% of total) | Human capital | + | WDI |
| Patent | Patent application residents + nonresidents | Technology and R&D | + | WDI |

Source: IMF Balance of Payments (BOP) database (<http://www.imf.org/external/data.htm> accessed on 17th November 2013); UNCTAD database (<http://unctad.org/en/Pages/Statistics.aspx> on 27th January 2014); WDI World Bank database (<http://databank.worldbank.org/> on 27th January 2014 (GDP, GDPpc, Population), 1st June 2014 (Export, Imports, IRreal, Patent), 20th June 2014 (Educ)); Bruegel database (<http://www.bruegel.org/datasets/> on 20th June 2014)

5.3 Model Specification and Methodology

For the purpose of our empirical analysis, we use the random-effect model⁶ that is corrected for heteroscedasticity by using robust standard errors. Our analysis is based on three models differing in functional form; the first form is linear (1), the second one double-log linear (2) and the third one semi-log linear (3):

$$\textbf{Model (1)} \quad outFDI_{it} = \beta_0 + \beta_1 inRE_{it} + \beta_2 GDP_{it} + \beta_3 GDPpc_{it} + \beta_4 REER_{it} + \beta_5 FDIopen_{it} + \beta_6 Tradeopen_{it} + \beta_7 Patent_{it} + \beta_8 Educ_{it} + \beta_9 IRreal_{it} + u_{it}$$

$$\textbf{Model (2)} \quad loutFDI_{it} = \beta_0 + \beta_1 linRE_{it} + \beta_2 lGDP_{it} + \beta_3 lGDPpc_{it} + \beta_4 lREER_{it} + \beta_5 lFDIopen_{it} + \beta_6 lTradeopen_{it} + \beta_7 lPatent_{it} + \beta_8 lEduc_{it} + \beta_9 lIRreal_{it} + u_{it}$$

$$\textbf{Model (3)} \quad loutFDI_{it} = \beta_0 + \beta_1 linRE_{it} + \beta_2 lGDP_{it} + \beta_3 lGDPpc_{it} + \beta_4 REER_{it} + \beta_5 FDIopen_{it} + \beta_6 Tradeopen_{it} + \beta_7 Patent_{it} + \beta_8 Educ_{it} + \beta_9 IRreal_{it} + u_{it}$$

⁶ Hausman specification test confirmed that random-effect model is consistent and efficient. The results are: $\chi^2(5) = 0.47$, $\text{Prob} > \chi^2 = 0.9930$.

The reason for testing three models lies in the fact that we would prefer the double-log linear functional form (2); however, the sample consists of variables that are not strictly positive so our analysis would suffer from loss of observations, which may imply loss of information. This problem is avoided in the first equation fully, in the third equation partly as real interest rate is not logged and we do not lose its negative observations. The reason why we logged only four variables is that they are displayed in nominal USD and they may be non-stationary. The other variables are either in percentages or in quantities.

5.4 Data Sample and Descriptive Statistics

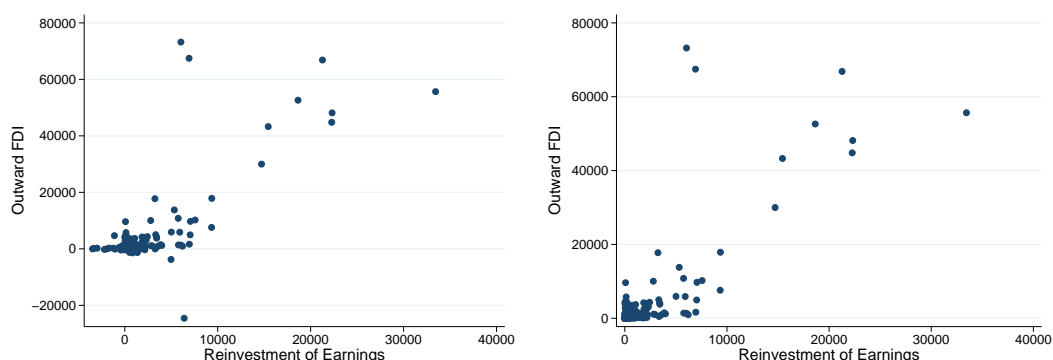
The sample consists of 23 CEE countries and the time period span between 1991 and 2012. Since the dataset is unbalanced as the availability of data differs for individual countries and variables, the time span for most of the countries is shorter.⁷ Firstly, we observe the relationship between the dependent variable and reinvestment of earnings. Figure 5.1 suggests that there is a positive relationship between reinvestment of earnings and outward FDI. The only observation, which seems to be an outlier, is the case of Hungary with a negative value of outward FDI around minus 24 billion USD in year 2010. This outflow of outward FDI was mainly caused by the global financial crisis when the Hungarian direct investors started to disinvest from abroad to strengthen their position on domestic market. This was accomplished by either postponing projects or increasing retained earnings (Czakó & Sass 2012).⁸ This pattern is observable even for other CEE countries when more than a half of the sample experienced decrease in outward FDI since year 2008.

The second graph in Figure 5.1 exhibits the scatter plot for the case of model (2) and (3), where negative values of outward FDI and reinvestment of earnings are omitted. Even in the second graph are still observable two outliers. Both observations are again related to Hungary, specifically to years 2008 and 2009, which suggests that during the financial crisis Hungarian firms still invested a lot abroad. However, in year 2010 they reconsidered their behaviour, which led to earlier mentioned outflow of outward FDI.

⁷Data for 1991 for both variables are available only for Poland. On average the data are available for both variables since 1999.

⁸In the case of Hungary, the extent of disinvestment could have been also influenced by rapid depreciation of Hungarian currency.

Figure 5.1: Outward FDI and Reinvestment of Earnings
(All and Non-Negative Values)



Source: Author's computations, IMF BOP Statistics.

Table 5.2 presents the summary statistics for outward FDI and reinvestment of earnings for individual countries and the whole sample.⁹ Almost all countries have their mean values for both variables positive. The only exceptions are Bosnia and Herzegovina and Romania with negative mean value of reinvestment of earnings. For both of these countries negative values appeared after year 2008. It is likely that it is a consequence of global financial crisis, which either exposed the domestic firms to losses or forced the foreign direct investors to rise the amount of dividends above the level of domestic firms' earnings. The large influence on the whole time series is most likely caused also by the fact that both countries exhibit the lowest number of observations in the sample.

The minimum values for both variables show that, except from Albania, Azerbaijan and the Russian Federation, all countries got at some point of time to negative flow of outward FDI or reinvestment of earnings. Again large part of them experienced it during the global financial crisis or in the following years.

It is not unexpected that the highest mean values for both variables belong to the Russian Federation as they are shown in absolute values. Among other countries with reasonably high mean values of outward FDI flows belong Hungary and Azerbaijan. Countries having high mean values for reinvestment of earnings are Hungary, the Czech Republic and Poland. As our hypothesis is that countries with high level of reinvestment of earnings are likely to move to the third and further stages of IDP, we need to identify them. However, the absolute values, which are exhibited here, are not the appropriate measure.

⁹The summary statistics does not consider that some of the observations will be omitted due to either transformation to logarithms or unavailability of data for other variables.

Table 5.2: Summary Statistics for Individual Countries
(Outward FDI and Reinvestment of Earnings)

| Country | Variable | Obs. | Mean | Std. Dev. | Min | Max |
|------------------|----------|------|---------|-----------|----------|---------|
| Albania | outFDI | 9 | 170.8 | 184.9 | 4.1 | 391.6 |
| | inRE | 8 | 131.1 | 133.2 | 0 | 319.5 |
| Armenia | outFDI | 10 | 31.3 | 66.8 | -2.1 | 216.0 |
| | inRE | 16 | 127.1 | 110.7 | 3.6 | 265.1 |
| Azerbaijan | outFDI | 13 | 3093.9 | 2740.2 | 0.0 | 9628.8 |
| | inRE | 8 | 108.1 | 76.5 | 0 | 200.9 |
| Belarus | outFDI | 16 | 18.0 | 78.1 | -206.2 | 155.5 |
| | inRE | 16 | 165.3 | 221.0 | 0.1 | 585.1 |
| Bosnia and Herz. | outFDI | 9 | 20.7 | 55.0 | -93.5 | 81.8 |
| | inRE | 9 | -18.1 | 171.8 | -422.8 | 141.8 |
| Bulgaria | outFDI | 18 | 237.7 | 369.7 | -217.0 | 1117.5 |
| | inRE | 15 | 240.1 | 698.6 | -590.7 | 2228.2 |
| Croatia | outFDI | 20 | 247.6 | 415.7 | -240.0 | 1353.9 |
| | inRE | 16 | 396.8 | 297.1 | 41.2 | 895.2 |
| Czech Rep. | outFDI | 20 | 641.3 | 1044.6 | -343.6 | 4314.9 |
| | inRE | 15 | 2845.6 | 1871.4 | 180.7 | 6946.9 |
| Estonia | outFDI | 21 | 434.1 | 791.8 | -1311.1 | 2451.7 |
| | inRE | 21 | 552.1 | 600.0 | 9.3 | 1878.6 |
| Georgia | outFDI | 14 | 61.7 | 105.2 | -89.1 | 216.9 |
| | inRE | 13 | 83.1 | 104.0 | -51.8 | 350.3 |
| Hungary | outFDI | 21 | 7343.7 | 22204.1 | -24575.9 | 73197.5 |
| | inRE | 18 | 2862.7 | 2223.8 | -215.2 | 6917.9 |
| Kazakhstan | outFDI | 17 | 1398.7 | 1994.8 | -1278.9 | 5013.9 |
| | inRE | 17 | 1046.5 | 1114.8 | 2.6 | 3431.6 |
| Kyrgyzstan | outFDI | 13 | 6.3 | 13.0 | -1.0 | 43.9 |
| | inRE | 17 | 73.5 | 121.9 | 0.5 | 475.3 |
| Latvia | outFDI | 21 | 87.9 | 193.7 | -194.2 | 768.5 |
| | inRE | 17 | 35.8 | 630.0 | -2184.1 | 734.9 |
| Lithuania | outFDI | 18 | 196.3 | 253.0 | 0.1 | 916.6 |
| | inRE | 18 | 131.6 | 543.4 | -1679.4 | 1058.1 |
| Macedonia | outFDI | 15 | 32.2 | 51.7 | -0.6 | 185.0 |
| | inRE | 15 | 28.6 | 80.2 | -158.0 | 251.1 |
| Moldova | outFDI | 18 | 6.4 | 12.1 | -3.4 | 33.8 |
| | inRE | 16 | 22.3 | 43.8 | -36.6 | 112.8 |
| Poland | outFDI | 22 | 2346.7 | 3512.8 | -90.0 | 10810.0 |
| | inRE | 23 | 2064.7 | 3324.0 | -1224.0 | 9340.0 |
| Romania | outFDI | 21 | 104.8 | 184.1 | -17.0 | 643.0 |
| | inRE | 9 | -429.3 | 2605.8 | -3472.0 | 3353.9 |
| Russian Fed. | outFDI | 19 | 21076.3 | 23147.8 | 281.0 | 66850.7 |
| | inRE | 15 | 11419.1 | 10616.9 | 94.7 | 33449.0 |
| Slovakia | outFDI | 19 | 368.5 | 824.6 | -1410.1 | 2060.4 |
| | inRE | 16 | 586.1 | 588.6 | 0.0 | 1618.7 |
| Slovenia | outFDI | 21 | 338.9 | 611.1 | -439.0 | 2216.2 |
| | inRE | 19 | 30.5 | 187.2 | -414.3 | 343.2 |
| Ukraine | outFDI | 19 | 221.7 | 389.5 | -133.0 | 1206.0 |
| | inRE | 11 | 24.5 | 50.2 | 0 | 172.0 |
| Overall | outFDI | 394 | 1856.0 | 8515.6 | -24575.9 | 73197.5 |
| | inRE | 348 | 1066.7 | 3406.6 | -3472.0 | 33449.0 |

Source: IMF BOP statistics

This issue will be addressed in Chapter 6, which identifies the countries with high level of reinvestment of earnings.

Table 5.3 exhibits the summary statistics of all variables that will be used in all three functional forms of the model, the absolute values and values transformed into logarithms. However, the final number of observations for the regressions does not have to correspond with these numbers as the missing data does not have to match to one observation.¹⁰ The variable with the least number of observations is the proxy for human capital, labour force with tertiary education. The use of this variable may cause a huge loss of information; therefore, we will run also a model that does not contain this variable. The correlation matrices of all three models can be found in Appendix A.

Table 5.3: Summary Statistics of All Variables
(in Absolute Values or Logarithms)

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|------------|------|---------|-----------|-------|-----------|
| loutFDI | 334 | 4.4 | 3.1 | -5.5 | 11.2 |
| GDP | 522 | 73691.9 | 198211.6 | 709.5 | 2014775.0 |
| GDPpc | 522 | 4807.9 | 4990.9 | 205.8 | 27015.1 |
| REER | 477 | 87.0 | 22.6 | 6.6 | 174.1 |
| FDIopen | 473 | 0.0 | 0.1 | 0.0 | 0.3 |
| Tradeopen | 514 | 1.0 | 0.3 | 0.3 | 2.4 |
| Patent | 430 | 2938.5 | 7491.8 | 11.0 | 51344.0 |
| Educ | 263 | 0.2 | 0.1 | 0.0 | 0.5 |
| IRreal | 402 | 6.1 | 25.7 | -91.7 | 374.3 |
| linRE | 300 | 5.0 | 2.4 | -3.0 | 10.4 |
| lGDP | 522 | 9.9 | 1.6 | 6.6 | 14.5 |
| lGDPpc | 522 | 8.0 | 1.1 | 5.3 | 10.2 |
| lREER | 477 | 4.4 | 0.4 | 1.9 | 5.2 |
| lFDIopen | 417 | -4.3 | 1.9 | -12.3 | -1.1 |
| lTradeopen | 514 | -0.1 | 0.4 | -1.3 | 0.9 |
| lPatent | 430 | 6.6 | 1.6 | 2.4 | 10.8 |
| lEduc | 263 | -1.6 | 0.5 | -3.7 | -0.6 |
| lIRreal | 329 | 2.0 | 1.0 | -2.8 | 5.9 |

Source: See Table 5.1

¹⁰ For instance, the number of observation where both *inRE* and *outFDI* are available is 336.

5.5 Results

The comparison of all models, presented in Table 5.4, shows that the worse goodness of fit belongs to model (1). The other two models show similar R^2 , with slightly better performance for model (2). The signs for most of the variables are as expected with the exception of *REER* and *Patent*. *Patent* is not significant in any of three models; however, *REER* is significant in model (3). This follows the fact that different empirical studies show different signs for the relationship and that country's exchange rate is among other potential explanatory variables the one that is least likely correlated with FDI (Tolentino 2008). Not taking into account the model (1), in both remaining models are significant three variables *inRE*, *GDP* and *FDIopen*. Moreover, there are variables that are significant only in one of these models, for model (2) it is *Educ* and for model (3) *Tradeopen* and *REER*.

Table 5.4: Regression Results for Models (1),(2) and (3)

| | Model (1) | | Model (2) | | Model (3) | |
|-----------|-----------|---------|-----------|---------|-----------|----------|
| | Coeff. | | Coeff. | | Coeff. | |
| inRE | 1.293* | (.7285) | .1769*** | (.0558) | .1846** | (.0767) |
| GDP | .0147 | (.0117) | 1.155*** | (.2678) | 1.226*** | (.2637) |
| GDPpc | -.1501 | (.1545) | .0675 | (.3580) | .0805 | (.4586) |
| REER | 20.95 | (15.06) | 1.717 | (1.235) | .0293*** | (.0114) |
| FDIopen | 13032 | (11962) | .5566*** | (.1342) | 6.184** | (3.005) |
| Tradeopen | 1776** | (757.9) | .7759 | (.5605) | 1.171** | (.5005) |
| Patent | -.1641 | (.1035) | -.0229 | (.1957) | -.00003 | (.00004) |
| Educ | 253.2 | (3017) | .7545** | (.3270) | 2.199 | (1.962) |
| IRreal | 17.79 | (48.32) | -.1095 | (.1303) | -.0327 | (.0311) |
| cons | -3843*** | (1335) | -12.64** | (6.257) | -13.87*** | (2.117) |
| N | 199 | | 130 | | 153 | |
| Clusters | 19 | | 18 | | 19 | |
| R^2 | 0.4488 | | 0.8365 | | 0.8026 | |

Source: See Table 5.1

Note: * Significant at 10%, ** at 5%, *** at 1% level, standard errors in parentheses, some variables are in logarithms according to model specifications in Section 5.3

After dropping variable *Educ*, we have got more information from the sample as number of observations increased. Table 5.5 shows that the most influenced was model (1), where *Patent* and *GDP* become significant. The significance of variables in model (2) has not changed much, the only change is that

originally significant variable *Educ* has been substituted by *Patent*. Model (3) suffered a loss of significance for most of the variables except from *inRE*. Variables *REER* and *Tradeopen* ceased to be significant. Overall, dropping *Educ* improved model (1), worsen model (3), while model (2) stayed about the same. This is documented by the change of R^2 measure.

Table 5.5: Regression Results for Models (1),(2) and (3) – without Educ

| | Model (1) | | Model (2) | | Model (3) | |
|-----------|-----------|---------|-----------|---------|-----------|----------|
| | Coeff. | | Coeff. | | Coeff. | |
| inRE | 1.118* | (.5928) | .1941*** | (.0720) | .2401*** | (.0619) |
| GDP | .0202*** | (.0079) | 1.367*** | (.2918) | 1.084*** | (.3275) |
| GDPpc | -.1585 | (.1259) | -.1234 | (.2782) | .6928* | (.3773) |
| REER | 9.581 | (7.384) | -.7377 | (1.330) | .0049 | (.0091) |
| FDIopen | 16231 | (10086) | .8878*** | (.1620) | 7.086* | (4.148) |
| Tradeopen | 1794** | (749.1) | .4386 | (.5037) | .5409 | (.7281) |
| Patent | -.1686*** | (.0467) | -.4396** | (.1991) | -.00003 | (.00004) |
| IRreal | 12.87 | (11.41) | -.0980 | (.1680) | .0098 | (.0159) |
| cons | -3003*** | (1140) | .4511 | (6.626) | -14.83*** | (2.707) |
| N | 281 | | 168 | | 217 | |
| Clusters | 22 | | 22 | | 22 | |
| R^2 | 0.6462 | | 0.8328 | | 0.7416 | |

Source: See Table 5.1

Note: * Significant at 10%, ** at 5%, *** at 1% level, standard errors in parentheses, some variables are in logarithms according to model specifications in Section 5.3

To summarize the results for all six models, we identified that the most influential determinants of outward FDI are inward reinvestment of earnings, market size and openness to FDI. These three determinants are accompanied by trade openness, which appears to be significant in half of the cases. These results confirm our third hypothesis that reinvestment of earnings influences outward FDI, which is, as far as we know, determinant that has not been much examined in the literature. Therefore, we describe the characteristics of this determinant in Chapter 6 together with discussion how it may influence the country's stage of IDP. The significance of the other three determinants was already supported by the empirical literature, which was introduced in Chapter 4. The unexpected result for us is that *GDPpc*, commonly taken as a proxy for level of development, is not significant at any of these models. This contradicts what the IDP theory states about its influence on FDI. This problem

may have been caused by the fact that both variables, GDP and $GDPpc$, are related to each other. More specifically, the results can be biased as both may represent the same effect of market conditions on outward FDI. In order to verify this explanation, we dropped GDP from the regression that caused significance of $GDPpc$ at 1% significance level in four cases of six.¹¹

¹¹ Two insignificant results were observed for model (1); however, its reliability is not high as R^2 remained still low.

Chapter 6

Discussion

The results of Chapter 3 and Chapter 5 confirmed that the CEE countries examined in the analysis did not reach the third stage of IDP and that reinvestment of earnings does have an effect on outward FDI, whose growth conditions the movement to the third stage of IDP. In order to identify the CEE countries that experience high level of reinvestment of earnings, we constructed a coefficient that shows how much of inward FDI stock is reinvested back to the country. It is defined as a ratio of inward reinvestment of earnings to inward FDI stock (ReS).

Table 6.1 shows its summary statistics for individual countries. Examination of mean values identifies countries that exhibit low ReS ratio. Among the countries with ratio lower than 1% belong Ukraine, Bosnia and Herzegovina, Slovenia and Romania. According to our results from previous chapters, these countries may have a problem with providing outward FDI. On the other side, there are countries with coefficient higher than 4%, the Czech Republic, Poland, the Russian Federation, Hungary, Kyrgyzstan, Armenia and Estonia, these countries are likely to be able to provide outward FDI. As we can observe from the statistics, the levels are not distributed according to the level of country's development. To illustrate this statement, we can stress the case of Moldova and Slovenia, which are close to each other in the sample, even though Slovenia has the highest level of GDP per capita and Moldova one of the lowest ones. The same pattern is observable also on the other side of the range, for example in the case of Kyrgyzstan and Estonia.

However, this indicator has to be taken with caution as reinvestment of earnings follows FDI financial life cycle as described by Brada & Tomšík (2003). Figure 6.1 illustrates three stages of the life cycle. The first stage represents

Table 6.1: Summary Statistics of ReS for Individual Countries
(Ratio of Reinvestment of Earnings to Inward FDI Stock)

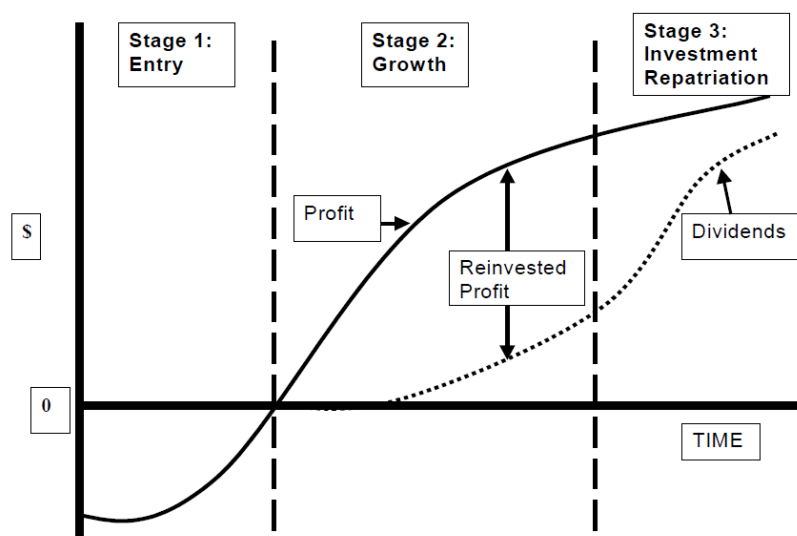
| Country | Obs. | Mean | Std. Dev. | Min | Max |
|------------------|------|------|-----------|--------|-------|
| Ukraine | 11 | 0.1% | 0.1 | 0.0% | 0.4% |
| Bosnia and Herz. | 9 | 0.2% | 2.9 | -6.1% | 3.7% |
| Romania | 9 | 0.8% | 5.4 | -4.9% | 8.8% |
| Slovenia | 19 | 0.8% | 2.1 | -2.7% | 4.5% |
| Moldova | 16 | 1.1% | 3.2 | -6.7% | 6.0% |
| Azerbaijan | 8 | 1.2% | 0.8 | 0.0% | 2.5% |
| Slovakia | 16 | 1.4% | 1.6 | 0.0% | 5.7% |
| Macedonia | 15 | 1.7% | 2.7 | -3.5% | 6.9% |
| Bulgaria | 15 | 1.8% | 2.6 | -1.5% | 5.9% |
| Georgia | 13 | 2.1% | 1.3 | -0.7% | 4.1% |
| Belarus | 16 | 2.2% | 1.9 | 0.0% | 4.9% |
| Latvia | 17 | 2.2% | 6.2 | -18.8% | 9.8% |
| Kazakhstan | 17 | 2.5% | 1.5 | 0.0% | 4.7% |
| Croatia | 16 | 2.8% | 1.8 | 0.7% | 7.8% |
| Lithuania | 18 | 2.9% | 4.5 | -12.7% | 7.1% |
| Albania | 8 | 3.9% | 4.3 | 0.0% | 9.8% |
| Czech Republic | 15 | 4.1% | 1.5 | 1.3% | 6.2% |
| Poland | 23 | 4.2% | 5.5 | -2.5% | 18.3% |
| Russian Fed. | 15 | 4.2% | 3.8 | 0.3% | 15.5% |
| Hungary | 18 | 4.8% | 2.1 | -1.9% | 7.2% |
| Kyrgyzstan | 17 | 5.2% | 5.4 | 0.3% | 19.7% |
| Armenia | 16 | 6.0% | 3.4 | 0.6% | 12.0% |
| Estonia | 21 | 6.5% | 3.0 | 1.4% | 11.2% |

Source: Author's computations, UNCTAD, IMF BOP statistics

the start-up phase when a firm operates a loss and does not pay any dividends to foreign direct investors. In the second stage, firm starts to be profitable due to competitive advantages gained by the inward FDI. The firm experiences growth that requires more capital; therefore, foreign direct investor does not repatriate much of the profits. The third stage exhibits the state where the firm is stabilized; therefore, foreign direct investor repatriates larger part of the profits as the firm does not need so much additional capital as in the second stage.

The implication from this theory is that level of reinvestment of earnings depends also on the age of inward FDI. It means that for some countries is low level of reinvestment only a result of their stage of FDI development. The countries that have just started to attract FDI, mostly the countries in lower stages of IDP, are likely to exhibit low level of reinvestment of earnings as they most likely are in the first stage of FDI financial life cycle. The countries that experience an inflow of inward FDI for longer time are likely to be in the second stage of FDI life cycle, which implies that reinvestment of earnings is large and still growing. The third case is represented by countries that are

Figure 6.1: The FDI Financial Life Cycle



Source: Published in Brada & Tomšík (2003, pg. 22)

Note: For illustrative purposes only, not drawn to scale

close to reach the end of the second stage of IDP or enter the third stage. The inflow of FDI culminates, the investments projects are stabilized, which means that reinvestment of earnings again lowers. This illustrates how the level of reinvestment of earnings may depend on the level of FDI development represented by IDP.

Therefore, in order to capture the recent trend, Table 6.2 shows the value for ReS and other two coefficients as an average of last three years of the sample.¹ The first coefficient indicates what the importance of reinvestment of earnings is compared to other parts of inward FDI flows, equity and debt instruments. This coefficient is defined as a ratio of reinvestment of earnings to inward FDI flows (ReF). The second one shows what the share of inward FDI stock to GDP is and should indicate how far in FDI development the country has got (SG).

Inward FDI stock accounting for more than 50% of GDP is observable in Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan and Slovakia. This may indicate that these countries are in later stages of FDI financial lifecycle. Inward reinvestment of earnings show a significant share in

¹ The aim of the use of average is to deal with the fluctuations of reinvestment earnings. The reason for three years average is that data for year 2009 were influenced by the financial crisis, so many countries experienced a huge outflow of reinvestment of earnings (especially in the case of Latvia and Lithuania).

inward FDI flows in Armenia, Croatia, the Czech Republic, Estonia, Kyrgyzstan, Poland, the Russian Federation and Slovakia. This may be interpreted in two ways: either the reinvestment of earnings is high or the countries' inward equity has reached its limits and the FDI inflow is now guaranteed through inward reinvestment of earnings. This would mean that they are in the middle or at the end of the second stage of FDI financial lifecycle. ReS ratio is significant for Albania, Armenia, Belarus, the Czech Republic, Estonia, Hungary, Kazakhstan, Kyrgyzstan, Poland and the Russian Federation.

Combining all three ratios together suggests that countries with high share of all three variables (or at least SG ratio and one of the other two) are likely to be close to or at the turning point between the second and third stage of IDP. The first reason is that, as was confirmed by analysis in Chapter 5, inward reinvestment of earnings positively influences the level of outward FDI, which conditions the move to the third stage of IDP. The second reason follows the idea of FDI financial life cycle, high level of inward FDI stocks suggests that country is close to reach the point where the inflow of inward FDI starts to slow down or culminates. This is exactly the turning point between the second and the third stage of IDP; growth of outward FDI exceeds the growth of inward FDI.

Table 6.2: Ratios ReS, ReF and SG for Individual Countries
(Average of 2010–2012)

| | ReS | ReF | SG | | ReS | ReF | SG |
|---------------|------|-------|------|--------------|------|--------|------|
| Albania | 3.8 | 12.7 | 33.0 | Kyrgyzstan | 12.2 | 47.8 | 39.0 |
| Armenia | 5.3 | 44.8 | 49.2 | Latvia | 0.6 | -9.8 | 44.6 |
| Azerbaijan | 2.1 | 4.5 | 15.0 | Lithuania | 2.0 | 23.5 | 35.7 |
| Belarus | 4.4 | 29.4 | 20.8 | Macedonia | 1.0 | 14.2 | 47.9 |
| Bosnia and H. | -0.4 | -6.8 | 41.3 | Moldova | 1.0 | 10.9 | 46.9 |
| Bulgaria | -0.5 | -11.6 | 95.1 | Poland | 3.2 | 57.0 | 43.8 |
| Croatia | 1.3 | 43.5 | 54.2 | Romania | -4.5 | -131.1 | 41.8 |
| Czech Rep. | 3.1 | 72.6 | 63.3 | Russian Fed. | 4.3 | 42.0 | 27.2 |
| Estonia | 7.6 | 134.2 | 82.0 | Slovakia | 2.3 | 53.6 | 57.4 |
| Georgia | 2.5 | 25.3 | 70.7 | Slovenia | -1.9 | 38.3 | 31.7 |
| Hungary | 5.4 | 20.9 | 71.9 | Ukraine | 0.0 | 0.0 | 41.3 |
| Kazakhstan | 3.2 | 27.9 | 53.0 | | | | |

Source: Author's computations, UNCTAD, IMF BOP statistics, WDI World Bank

As a conclusion, after exclusion of countries with low level of GDP per capita, which are obviously not close to the turning point (Armenia, Kyrgyzstan); the countries close to the third stage of IDP are Croatia, the Czech Republic, Estonia, Hungary, Slovakia and Poland. However, this conclusion has to be taken with caution. Employing general threshold for the whole sample does not take into account the fact that IDP is country-specific. There would be a need to test the relationship on the individual level.

In the end we would like to mention the limitations of the analyses, which were performed in the thesis, that can affect the interpretation of results. This list of limitations may also show the possibility for further research. The objective of the thesis was to test the hypotheses on country-level; therefore we omitted the determinants on lower levels, which also influence the country's FDI. The hypotheses were also tested on a cross-sectional basis in order to obtain the information for the area of the CEE countries as a whole. Therefore, the conclusion about the validity of IDP theory and stages of IDP for individual countries has to be taken only indicatively, not normatively, because of the idiosyncratic nature of IDP. The same holds for the final discussion about the ability of the CEE countries to move to later stages of IDP. Both hypotheses (second and third) were tested on cross-country level; however, the discussion is held on the individual-country level. The last limitation is that the first and second hypothesis were tested on different sample than the third one, due to unavailability of data for Tajikistan, Turkmenistan and Uzbekistan, this fact could have influenced the results too. However, this speculation was not confirmed; running the regressions without these three countries, did not alter the results.

The limitation of the discussion concerns the fact that reinvestment of earnings is not the only determinant of outward FDI and very likely not the most influential one. There are others on industry-level and firm-level or the level of the host country. Therefore, the conclusion about moving to higher stages has to be again taken with caution. These limitations creates room for further research, which would need to invent more complex model that would test the FDI development concerning the variables on all levels and from both home-country and host-country perspectives.

Chapter 7

Conclusion

The aim of the thesis was to analyse the development of FDI in 26 CEE countries since they started the transition process from central planning economy to market economy in 1990's. The analysis was based on the investment development path (IDP) theory introduced by Dunning (1981), which states that FDI development is related to the level of country's development. The theory divides country's development into five stages, where first three are typical for developing countries, last two for the developed ones.

Recent literature suggests that most of the countries already entered the second stage of IDP; however, the answers on the question if some of them already reached the third stage are ambiguous. As far as we know, the recent empirical studies regarding the stages of IDP used data till 2008 that does not contain the period of global financial crisis and after, which could have changed the conclusions about the stages of IDP the countries reached. Therefore, our main contribution is evaluating the stages of IDP using the most recent data. We confirmed our hypotheses that the CEE countries follow the IDP suggested by the theory and that the CEE countries have not reached the third stage of IDP yet. This contradicts the recent study by Gorynia *et al.* (2012), who identified 7 CEE countries that already reached the third stage, which suggests that the global financial crisis could have caused backward movement along IDP. However, this does not mean that that the global financial crisis influenced the validity of the IDP theory for the CEE countries, as was shown in the analysis. We also tested the validity of IDP for two subsamples, the more developed and the less developed, and we conclude that the IDP suggested by the theory is valid only for the subsample of more developed countries.

The aim of the second part of the thesis was to test the hypothesis that

inward reinvestment of earnings positively influences outward FDI. The hypothesis is based on the idea that reinvestment of earnings to direct investment enterprise further enhance its ownership advantages and also influences the productivity of domestic firms through FDI spillover effects. Both effects help the firms in their growth, which may help them in becoming foreign direct investors and thus generating outward FDI. The thesis confirmed the hypothesis and also found out significant effect of market size and openness to FDI on outward FDI. Final part of the thesis identified that Croatia, the Czech Republic, Estonia, Hungary, Poland and Slovakia are likely to enter the third stage according to their level of reinvestment of earnings and their position in the FDI financial life cycle. These countries exhibit high level of reinvestment of earnings and also high share of inward FDI according to their GDP. However, these results have to be taken with caution as reinvestment of earnings is not the only determinant of outward FDI and possibly not the most influential one.

The thesis contribution to the literature lies in the fact that we analysed the stages of IDP using most recent data including the period of global financial crisis and after, which enables us to compare the results with the studies before the global financial crisis. This comparison may set the field for future research concentrating on the impact of global financial crisis in greater depth and on individual-country level. Moreover, our study was limited by the use of simplified framework for the analysis of IDP, which opens space for use of more sophisticated and complex models. As far as we know, the impact of reinvestment of earnings on outward FDI has never been tested, which may open the area for further research on this topic.

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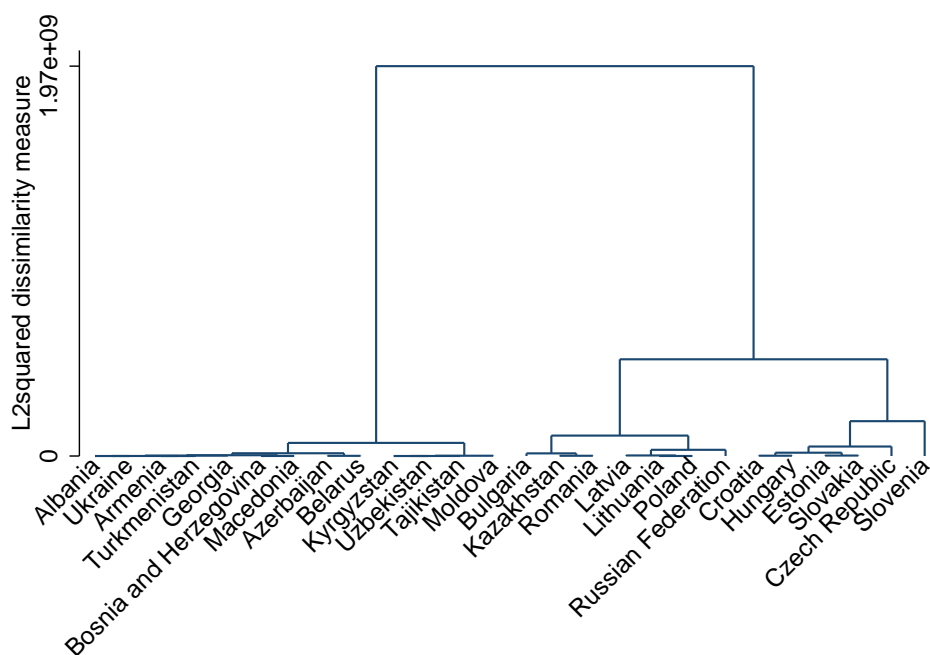
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Appendix A

Appendix

Figure A.1: Cluster Tree for CEE Countries (2008)



Source: WDI World Bank, UNCTAD, author's computations according to Ward's linkage hierarchical agglomerative cluster method for NOIP per capita and GDP per capita, base year 2008.

Table A.1: Correlation Matrix for Model (1)
(130 Observations)

| | outFDI | inRE | GDP | GDPpc | REER | FDIopen | Tradeopen | Patent | Educ | IRreal |
|-----------|---------|---------|---------|---------|---------|---------|-----------|---------|---------|--------|
| outFDI | 1.0000 | | | | | | | | | |
| inRE | 0.6613 | 1.0000 | | | | | | | | |
| GDP | 0.6038 | 0.8853 | 1.0000 | | | | | | | |
| GDPpc | 0.1363 | 0.1824 | 0.1116 | 1.0000 | | | | | | |
| REER | 0.0941 | 0.0779 | 0.0126 | 0.4293 | 1.0000 | | | | | |
| FDIopen | 0.3220 | 0.3999 | 0.3469 | 0.5059 | 0.2508 | 1.0000 | | | | |
| Tradeopen | -0.0441 | -0.1083 | -0.3351 | 0.4906 | 0.1931 | 0.2960 | 1.0000 | | | |
| Patent | 0.4724 | 0.7009 | 0.8700 | -0.0996 | -0.1905 | 0.3556 | -0.3852 | 1.0000 | | |
| Educ | 0.2808 | 0.3679 | 0.3777 | 0.0320 | 0.1004 | 0.4710 | 0.0248 | 0.4116 | 1.0000 | |
| IRreal | -0.2319 | -0.3433 | -0.2860 | -0.2347 | -0.0501 | -0.3252 | -0.1998 | -0.2482 | -0.1878 | 1.0000 |

Source: Author's computations, UNCTAD, WDI World Bank, IMF BOP statistics

Table A.2: Correlation Matrix for Model (2)
(199 Observations)

| | loutFDI | linRE | IGDP | IGDPpc | IREER | IFDIopen | ITradeopen | IPatent | IEduc | IIRreal |
|------------|---------|---------|---------|---------|---------|----------|------------|---------|---------|---------|
| loutFDI | 1.0000 | | | | | | | | | |
| linRE | 0.6602 | 1.0000 | | | | | | | | |
| IGDP | 0.7091 | 0.5872 | 1.0000 | | | | | | | |
| IGDPpc | 0.7306 | 0.4468 | 0.5857 | 1.0000 | | | | | | |
| IREER | 0.3083 | 0.3474 | -0.0573 | 0.3972 | 1.0000 | | | | | |
| IFDIopen | 0.6636 | 0.3238 | 0.2078 | 0.6011 | 0.3877 | 1.0000 | | | | |
| ITradeopen | 0.2760 | 0.0756 | -0.1598 | 0.4298 | 0.3095 | 0.5006 | 1.0000 | | | |
| IPatent | 0.2607 | 0.2086 | 0.6249 | -0.0129 | -0.5739 | -0.0193 | -0.2918 | 1.0000 | | |
| IEduc | -0.0640 | -0.1860 | -0.3537 | -0.1193 | 0.1068 | 0.1156 | 0.1629 | -0.3706 | 1.0000 | |
| IIRreal | -0.2562 | -0.2568 | -0.1381 | -0.1620 | 0.0327 | -0.1807 | -0.3022 | -0.1097 | -0.0035 | 1.0000 |

Source: Author's computations, UNCTAD, WDI World Bank, IMF BOP statistics

Table A.3: Correlation Matrix for Model (3)
(153 Observations)

| | loutFDI | linRE | IGDP | IGDPpc | REER | FDIopen | Tradeopen | Patent | Educ | IRreal |
|-----------|---------|---------|---------|---------|---------|---------|-----------|---------|---------|--------|
| loutFDI | 1.0000 | | | | | | | | | |
| linRE | 0.6835 | 1.0000 | | | | | | | | |
| IGDP | 0.7424 | 0.6405 | 1.0000 | | | | | | | |
| IGDPpc | 0.6549 | 0.4211 | 0.4875 | 1.0000 | | | | | | |
| REER | 0.3308 | 0.2653 | 0.0024 | 0.4277 | 1.0000 | | | | | |
| FDIopen | 0.6092 | 0.3832 | 0.3038 | 0.4383 | 0.2818 | 1.0000 | | | | |
| Tradeopen | 0.1056 | -0.0309 | -0.2713 | 0.4121 | 0.2041 | 0.2283 | 1.0000 | | | |
| Patent | 0.4272 | 0.3752 | 0.6214 | -0.0548 | -0.1711 | 0.3909 | -0.4009 | 1.0000 | | |
| Educ | 0.1798 | 0.0550 | 0.0410 | -0.0338 | 0.0281 | 0.4496 | -0.0447 | 0.4577 | 1.0000 | |
| IRreal | -0.4088 | -0.3180 | -0.2709 | -0.2972 | -0.1315 | -0.3259 | -0.1462 | -0.2863 | -0.1666 | 1.0000 |

Source: Author's computations, UNCTAD, WDI World Bank, IMF BOP statistics