2 The effects of FDI on recipient countries in Central and Eastern Europe[+]

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Abstract

Literature on economic growth and FDI implies that FDI can facilitate growth of recipient economy via capital formation channel directly and via positive spillovers and inclusion into international productive and innovative networks indirectly. In this paper, the role of FDI in explaining growth is examined in two quantitative steps. In the first step, a bi-variate Granger causality test is used to examine whether FDI Granger causes growth, merchandise exports and imports. In the second step, growth equation with FDI as one of the explanatory variables is estimated based on panel data set for 11 transition economies in the period 1994-2002. The final results of the analysis imply that FDI is not statistically significant in explaining variation in the growth rates of the observed economies. The finding can be explained by the fact that FDI have not contributed to the capital formation strongly because they have dominantly flown into the observed economies as "brownfield" investments, moreover, they have been directed into service sector.

Key words: Foreign direct investment, economic growth, bi-variate Granger causality test, panel regression analyisis, Central and Eastern Europe
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1 Introduction

FDI inflows in CEEC have been given vast political and economic attention since the beginning of the 1990s. It has been argued that, among many benefits, foreign investors would also transfer the latest technology and thus improve productivity, product quality and accelerate exports in the recipient economies, and that would eventually spur growth. These attitudes have been described and formulated as a benign concept of FDI in economic literature (Moran, 1998). However, scientific evidence and research on the links between FDI and economic growth have shed some doubt on the validity of those arguments, at least in Central and Eastern Europe (CEE). So far, not enough evidence has been given to support either benign or malign (Moran, 1998) concept of FDI. We find only two studies that specifically research the link and possible effect that FDI might have had in CEE, using a quantitative approach from a macroeconomic perspective (Fabry, 2001; Mencinger, 2003). Perhaps that can be explained by the difficulties that researchers encounter with the consistency of macroeconomic data in the observed region, as well as a limited availability of uniform data for the whole region. Although more evidence is present from the results of microeconomic studies, these are mostly confined to case studies of a single recipient country or to case studies of a single foreign investing country. Microeconomists encounter the same problems with data as macroeconomists, and that is why we find that their studies using a quantitative approach have been based on their own data (collected through surveys of firms). That evidence and the results have been most helpful in interpreting our own results and understanding better the nature of foreign investment enterprises (FIE) in CEE.

Our approach to researching the connection between FDI and growth in CEE is embodied in two major parts of the paper. In the first part of the paper, we give an overview of a theoretical base to studying the link between FDI and growth and then move on to provide an empirical overview of the evidence and interpretations of the link in CEE given by different authors. The primary intention of the first part of the paper is to explain better a possible "dual" (benign vs. malign) nature of FDI, as opposed to inclining to one concept

only. Secondly, an overview of both macroeconomic and microeconomic evidence from CEE has been written with the intention to encompass the multifaceted nature of FDI, as the main theory of FDI - the eclectic theory of FDI - is built on both branches of micro- and macroeconomic theory. Finally, the results of microeconomic studies and the case studies would help us understand better the results of our quantitative research.

The second part of the paper is concerned with a quantitative examination of the link between FDI and growth. A bi-variate Granger causality test is done for each of the countries in the sample of 11 CEE countries, and used to find out whether changes in the FDI inflows precede changes in the level of quarterly GDP, merchandise exports and imports. When the test results show that changes in FDI precede changes in other variables, we complement the result with a cross correlation coefficient to establish the sign of a connection.

By having an overview of these possible connections, we are able to interpret better the results of a growth model. We then move on to test a growth equation that was used on a sample of 8 countries in CEE by Mencinger (2003). Pool regression is used to test the equation, which is insignificantly altered with the omission of one of the explanatory variables (country dummy variable) used by Mencinger.

2 Starting points: links between economic growth and foreign direct investment in theories, models and empirical work

As a component of capital, FDI[1] together with labour and technology can compose the production function in the neoclassical growth model (Solow, 1956), but in the long run an increase in FDI will result in decreasing returns. The neoclassical theory assumes there is no interdependence or relation

[1] *The purist definition by which FDI is only considered in financial terms is not surprising as a neoclassical growth model arose in 1950s. A new, expanded definition of FDI was proposed by Hymer (1976). His definition of what he referred to as "international operations", besides capital also includes the transfer of knowledge, skills and technology.*

between capital, labour and technology – all variables are exogenous. On the other hand, should FDI provoke technological progress (although there is no explanation how this may happen), it may indirectly affect long-term economic growth.

The next group of models, known as endogenous growth models, considered the technological progress to be an endogenous variable (Romer, 1986, 1990). In those models technological progress stems from the activity of individuals or firms. Growth theorists also allowed for the possibility of increasing returns and the expansion of the definition of (financial) capital to human and physical capital. There are two ways – a direct and an indirect way – for capital to influence growth. Firstly, an increase of capital per capita will result in rising productivity, which will in turn result in stronger growth. And secondly, foreign investors may be creators of technological progress, on which impetus to growth is based. Externalities are additionally introduced in the model as a route to spilling over of technological progress (for example, from a foreign investment enterprise) unintentionally to other agents in the economy. Learning from others, training at work, knowledge and experience of others are freely available to all.

Models based on research and development models of endogenous growth (also known as Neoshumpeterian models) are considered more realistic than previous models because of their assumption that markets are imperfect (Grossman and Helpman, 1990, 1991; Aghion and Howitt, 1992). This assumption implies that technology is no longer available freely and therefore firms with market power have an incentive to innovate and protect their innovations via patenting. Innovators-leaders can capture extra profits while their followers, to which innovators can sell their technology, earn lower profits. However, the knowledge that has resulted from innovating can spill over and thus is still available freely.

Indeed, in his theory of international business operations, Hymer (1976) recognizes that market power is at the heart of international businesses. Multinational organizations achieve their market power as a result of a specific

advantage[2] embodied in their unique assets and not vice versa – their market power is not what causes their proprietary advantage over other firms because the inefficiency stemming from monopoly power would not enable the maintenance of extra profits in the long run (Dunning, 1988). With extra profits earned by owning the proprietary advantage, new investments and breakthrough into foreign markets are possible.

Lastly, Akamatsu's "Flying geese" model of development explains how a less developed economy can catch up with more developed economies through international trade (Dunning, 1988; Kojima, 2000). Imports of more sophisticated goods than the less developed economy is producing, gradually gives an opportunity to the less developed economy to start producing sophisticated products and, in due course, exporting them. The levels of technological complexity of production as well as the levels of sophistication of the products increase over time. Kojima (2000) adds a new dimension to the model with the inclusion of FDI in the development process. For him, foreign investments must be oriented towards trade. In other words, foreign investor country will move its production to another country to strengthen a comparative advantage that has previously been deteriorating in the home country. As a consequence, the host country's economy will grow because it has received new technology and capital for the purpose of its being employed to stimulate production and export growth. The outcome of foreign investment is beneficial for both home and host country because comparative advantages of both countries are enhanced.

Authors of empirical work in the area of growth and FDI rely mostly on endogenous growth models as a theoretical starting point and use cross country regression analysis to prove the link.

[2] *This advantage pertains to monopoly power and can be accomplished on final product markets or input markets, or can it can be a result of the economies of scale, diversification of risk or government support (Blough, 1970, p. 1258). Hymer (1976) outlines few routes through which proprietary advantages are realized: a. obtaining lower-priced inputs, b. knowing how to produce more efficiently and/or strict overseeing of production and c. successful distribution and/or differentiated product.*

Some of the most prominent authors found the influence of FDI on host economy to be dependent on the country's internal conditions and setting[3]. Borensztein, De Georgio and Lee (1998) show that foreign investments are more important for growth than domestic investments (due to the transfer of technology, productivity spillovers etc.) in developing economies but only if there is an adequate absorptive capacity within the country, which enables efficient reception, transmission and diffusion of new technologies. Absorptive capacity thus facilitates the absorption by domestic agents of the technology and knowledge spilled over from foreign investment. It is determined by the accumulated human capital of the economically active population in the host country, i.e. on the levels and structure of knowledge and skills[4].

On the contrary, De Melo (1999), using a sample of OECD members and non-members, finds the influence of FDI to be more significant in the countries that are technological laggards i.e. developing economies. He asserts that the existing domestic technology and foreign technology that is introduced are

[3] Moran (1998, pp. 19-20) summarizes different perspectives of FDI into two dominant views. FDI not only brings in additional capital, but also brings along know-how, technology, managerial skills, new resources, all of which, according to the benign concept of FDI, can be spilled over to the host economy. Benign concept of FDI stipulates that due to foreign investment into a capital-labor ratio, labor productivity can be enhanced, and then lead to higher wages. That concept is relevant only if two conditions are satisfied: the industry that the foreign investors' activity belongs to, must have (almost perfect) competition on the global level and free competition in that industry must exist in the host economy. Highly developed economies have better chances of capturing all the benefits coming from FDI because their markets are functioning efficiently - with developed systems of suppliers and subcontractors, modern telecommunication networks, national systems of innovation, specialized human resources and strong domestic competition. When these conditions of perfect and free competition are not satisfied, a malign concept of FDI, which criticizes the behavior of multinational enterprises, emerges. The malign concept recognizes that FDI may have negative effects on a host economy when a foreign investor firm is a monopoly or oligopoly on the global level and/or market structure of the host economy is imperfect. The critique of multinational enterprises also asserts that these enterprises are able to achieve competitive advantages on the global scale because in some developing countries, due to their negotiating skills and economic strengths they are able to circumvent health and safety standards, environmental laws and legislated minimum wages. The institutional and innovative infrastructure that is either missing or is still being built in some developing economies, make the potential spillovers improbable. Due to their cost advantages over local firms, multinational enterprises are able to keep market concentration in the host economy high.

[4] The term "absorptive capacity" may be expanded from human capital to social capital, but not without methodological difficulties. Putnam (1995, p. 67) defines social capital as "features of social organization such as networks, norms and social trust that facilitate co-ordination and co-operation for mutual benefit". The inclusion of social capital is intuitively plausible, because knowledge diffusion and technology transfer crucially depend on the networks of individuals and institutions that create and reproduce social capital. However, modeling social capital in growth equation using cross-country regression is yet impossible because of measurement problems and the lack of consistent and/or comparable data, especially on regional and global levels.

complementary, and that occurs because: a. new technology is used less efficiently in the countries that are technological laggards and/or b. foreign technology and knowledge are not more productive or modern than those existing in the host economy.

There have not been many studies focusing specifically on the links between economic growth and FDI for CEE, but many researchers did try to identify the factors, amongst them FDI, that explain economic growth in the region. Havrylyshyn, Izvorski and van Rooden (1998) conclude on their sample of 25 transition economies, including those in Central and Eastern Europe (CEE), that the key determinants of growth in the transition period were macroeconomic stabilization, structural reforms and reduced public expenditures. FDI influences growth only when reforms index is excluded from the model, but that influence is less significant than that of reforms. Havrylyshyn et al. (1999) make another attempt to identify the reasons behind different growth patterns across transition economies, again including CEE. Their main finding is that initial conditions, economic policies along with the institutional, legal and political framework, are significant factors of growth in the region. By grouping countries according to their real GDP growth and FDI inflows, authors estimate that FDI accounted for economic growth of Estonia, Hungary, Poland and Slovenia – countries that attracted the highest portion of FDI in CEE, and whose economies were growing by 4 percent on average or more. In their conclusion, authors speculate that FDI may have an impact on growth after conditions pertaining to growth have been achieved (after implementing economic stabilization and reforms).

Papers focusing specifically on the link between FDI and growth in CEE have started to emerge since the early 2000. Fabry (2001) tries to identify the existence of a link between FDI, growth and exports by using bi-variate Granger causality testing for ten host countries. She detects Granger causality from FDI to economic growth in the case of Albania and the Russian Federation, while the opposite direction i.e. causality from economic growth to FDI is found in the case of Hungary, Poland and Romania. However, Fabry's conclusion is that exports seem to boost growth more than FDI, and in her research it appears that Granger causality from FDI to exports simply does not

exist. Mencinger (2003) writes a paper with the same objective for a sample of eight CEE countries, which joined the EU in 2004. He also uses a Granger causality test to prove the connection between FDI, economic growth and trade deficit, but with the purpose of using them to complement the results of a cross-country regression growth model based on Solow's approach. It appears that the relationship between FDI and growth indeed does exist, but it is negative, implying that FDI retards economic growth. The author explains that this is caused by takeovers as the main mode of entry of foreign investors, as well as the fact that the capital used for buying the firms was later directed into consumption and imports, thus failing to raise efficiency. Additionally, the negative "competitive" effect, seen as elimination of local competitors because of their inability to compete with foreign investment enterprise, might have prevailed. Mencinger also regards the sectoral breakdown of FDI as unfavourable – FDI in CEE predominantly flowed into (local market oriented) services sector, mostly retail and banking, which might have hindered productivity spillovers in smaller economies. Lastly, he attributes a widening of the current account deficit in the countries to FDI.

3 Stylised facts and findings related to FDI in Central and Eastern Europe during the period of transition

It is not surprising that most CEE countries attempt to attract FDI (over other forms of complementing insufficient domestic savings such as foreign debt). Apart from representing new capital with a package of management skills, know-how and technology, it has been proven that FDI is more stable during economic shocks than other forms of capital such as portfolio investment. Additional benefits from FDI may include an increase of employment, human resources training, transfer of technology and higher exports. Thus, the effects of FDI may substitute some economic and social policy interventions. Additionally, foreign investors can help CEE firms raise their competitiveness and integrate into the single European market by including local firms into their industrial networks. At the moment, many researchers consider that the process of economic integration is not developing in the desired direction i.e.

that the process of divergence (and not convergence) of CEE with the EU is underway (Gristock et al., 2003).

Inflows of FDI have been uneven across the countries in the region, with their bulk in value terms flowing towards the former EU candidates – mostly the Czech Republic, Hungary and Poland. The main reason behind an uneven distribution of flows may lie in the modes of privatisation in those countries that allowed foreign capital to enter in the early stages of transition (Hunya, 2002), stimulating mergers and acquisitions as the dominant mode of entry into CEE. Hungary's model of privatisation has attracted foreign investors more than the privatisation models of other countries because of its efforts to attract strategic investors.

Since the late 1990s numerous studies, which attempt to reveal the factors determining why foreign investors have invested in a certain location/country in the CEE region by using cross-country regression analysis, have appeared (Resmini, 2000; Babić and Stučka, 2001; Campos and Kinoshita, 2003; Bačić, 2004). What most of them had in common is a finding that agglomeration[5] is important for new investments. New foreign investors seem to have been realizing their projects in locations where favourable conditions[6] have been created by the presence of their counterparts. Bačić (2004), by using a regression analysis, finds that FDI in CEE was also motivated by the positive rates of economic growth and by the international trade openness of the countries. That is not surprising: it indicates that foreign investors' interests are twofold. On the one hand, foreign investors want to maximize profits and base their expectations on the potential of prospective markets (usually approximated by the purchasing power or size of the population in models), and on the other hand, the foregoing exports to the host country must be large enough to validate investment (thereby taking into account the cost aspect). The finding that the growth rate may influence the flow of investment has an implication for an analysis of the influence of FDI on economic

[5] *The stock of FDI already accumulated or number of foreign investors already present in a location. These locations are, in principle, concentrated in the capitals or big urban centers in the observed economies.*

[6] *These may be pools of educated human resources, access to certain markets, sharing of information etc.*

growth. It indicates a potential presence of the endogenous determination of variables, suggesting that both the dependent (rate of economic growth) and independent variable (FDI) may influence each other or may be influenced by the same factors. That is why the results of the forthcoming analysis must be interpreted with reasonable caution.

Another conclusion stemming from the results of the analysis of FDI determinants is that two types of foreign investors dominate the region – the market-oriented and the efficiency-oriented (i.e. cost-oriented) investors. An identification of these two types of investors makes it possible to tackle the assumptions about possible effects of FDI on growth and the economies. The market-oriented investors may develop links with local suppliers so as to minimize costs and familiarize themselves with a new market. It is characteristic for this type of investors that they prefer to settle in the locations where other foreign investors are already present, confirming the security of the location.

The market-oriented investors' presence may enhance the level of local competition by raising the standards of quality and likewise by empowering consumers' expectations about product quality. On the contrary, should local competition prove too weak in terms of catching up with the foreign investor's enterprise (FIE), it could get completely eliminated from the market.

Hunya (2002) stresses the fact that some evidence from the region suggests that local entrepreneurs are facing difficulties in obtaining bank loans, so financing the catching-up with FIE in reality might have proven cumbersome. Bačić's analysis (2004) dismisses the geographic diversification of risk (approximated by the home country growth rates) as the motivation for investment into the observed region. In theory, foreign firms may decide to invest abroad to overcome the economic troughs they may be facing at home – but in CEE, economic growth is highly dependent on the economic developments in the EU-15 as their key export market.

Data on the transfer of technology throughout the region has so far not been collected and that is why technological upgrading, considered one of the main

advantages of FDI, cannot be assessed. If strong economic growth in the host economies allowed foreign investors to focus on local markets exclusively, technological upgrading might have been overlooked because of the low levels of technological capability of local competitors, at least at the beginning of transition. Requirements for higher quality of products were probably more important to foreign investors who were export-oriented (Hunya, 2002). In the literature, export-oriented investors are those who started their business as greenfield projects, while in CEE most of the investment falls into the (privatisation-related) brownfield category. Regardless of the type of investment, FIEs are more prone to importing or exporting goods and services than local firms because of the nature and structure of multinational enterprises.

A breakdown of FDI by activity illustrates a very similar structure in both countries – most FDI flowed into the manufacturing industry, wholesale and retail, transportation, telecommunications and financial intermediation – and therefore cannot explain the difference in international trade patterns of FIE in Hungary and Poland. Perhaps the difference lies in the fact that Hungary attracted more greenfield investment that is more export-oriented by definition, than Poland.

Table 1: **FDI stock breakdown by activities, December 2002, shares in percent**

	Bulgaria	Croatia	Czech R.	Hungary	Poland	Romania	Slovak R.	Slovenia	Average
National classification of activities									
Agriculture, forestry and fishing	0.3	0.3	0.2	1.1	0.4	0.8	0.3	0.0	0.4
Industry, total	38.8	37.3	45.4	51.8	38.7	53.7	50.3	44.3	45.0
Mining and quarrying	1.2	3.0	1.7	0.3	0.3	.	0.5	0.0	1.0
Manufacturing	36.7	33.0	37.6	46.1	35.8	.	37.1	43.3	38.5
Electricity, gas and water supply	0.9	1.2	6.1	5.4	2.6	.	12.7	1.0	4.3
Construction	2.8	1.1	1.5	1.4	2.6	2.7	0.6	0.1	1.6
Wholesale, retail trade, repair of motor vehicles	15.0	5.7	15.1	10.6	17.1	16.1	10.7	14.5	13.1
Hotels and restaurants	1.8	4.2	0.7	1.2	0.6	2.1	0.5	0.4	1.4
Transportation and telecommunications	13.5	26.3	10.4	11.8	10.4	8.5	10.0	4.4	11.9
Financial intermediation	19.4	22.9	14.8	10.6	21.3	.	24.2	18.8	18.9
Real estate, renting & business activities	4.1	1.8	11.4	10.6	7.5	.	2.9	15.2	7.6
Public admin., defence, compul. soc. security	.	0.2	.	.	.	.	.	.	
Education	0.3	0.0	0.0	0.0	.	.	.	0.0	0.1
Health and social work	0.0	.	0.2	0.1	.	.	0.0	0.1	0.1
Oth. community, social & personal services	0.9	0.2	0.4	0.8	.	.	0.4	0.5	0.5
Other activities not classified elsewhere	2.9	0.0	.	.	1.4	16.1	0.0	1.7	3.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Total, USD mn	4,454	5,256	27,092	22,203	41,247	8,939	7,580	4,081	120,852

Source: The Vienna Institute for International Economic Studies (WIIW) Database, CDROM, 2003.

Remarks: Data for the Czech Republic and Hungary refer to 2001. Deviations from the general methodological definitions (see table VIII/3.2) are given below. Bulgaria: FDI inward stock 1999 as of BNB increased by the cumulated annual USD inflow. Croatia: Cumulative USD inflows of equity capital only. Hungary: New methodology applied by the Central Statistical Office. Romania: Equity capital given by the National Trade Register Office. Adjusted to NACE. Slovak Republic: Excluding loans.

Škudar (2002) finds that the shares of FIEs in both the exports and imports of goods in Croatia are about the same, but below the CEE average. However, considering that Croatia's merchandise import is twice the size of its exports, he postulates that FIEs by performing their international trade activities, contribute to the widening of the current account gap. Moreover, FIEs in Croatia have recorded rising revenues from exports, while revenues from exports of local firms seem to be falling. A peculiarity of FDI that has flown into Croatia is that almost 50 percent of the total FDI has gone into the services sector – transportation and telecommunications, and financial intermediation. In other observed economies, this share on the average stands at 31 percent. In the Croatian case, it seems that FDI into services has prompted intense links with suppliers and subcontractors from the country of the investment's origin more than with local firms. That has possibly hindered productivity spillovers while also raising the abilities and quality of local firms. The other explanation is that FIE in Croatia might have manipulated transfer pricing in order to repatriate profits to a larger extent than in other countries. Profit may, instead of an "outflow of income", be transferred abroad as loan repayment (to a parent company), payment of services and goods (to home country suppliers or parent company), etc. By doing this, FIE will be charged less tax, and that gives FIE cost advantage over local firms. Šonje and Vujčić (2001) demonstrate in their model that the welfare of the host country will increase, even if 100 percent of the profit is repatriated, only if the value of exports created from FDI is greater than the repatriated profit.

Market structure and strength as well as an activity breakdown of FDI are important determinants of the competition between local firms and FIEs. According to the data on FDI stock in CEE in December 2002, an average 38.5 percent of the stock is invested in the manufacturing industry. Financial intermediation, falling into the category of services, attracted by far the most FDI with almost 19 percent share in the total, followed by whole- and retail-sales (13.1 percent) and transportation and telecommunications (11.9 percent). It is exactly these activities that have been growing most strongly during the transition period. Possible explanation for that situation may be that foreign investors have entered prospective firms and activities. Alternatively, foreign investors might have spurred growth of the activities they entered or

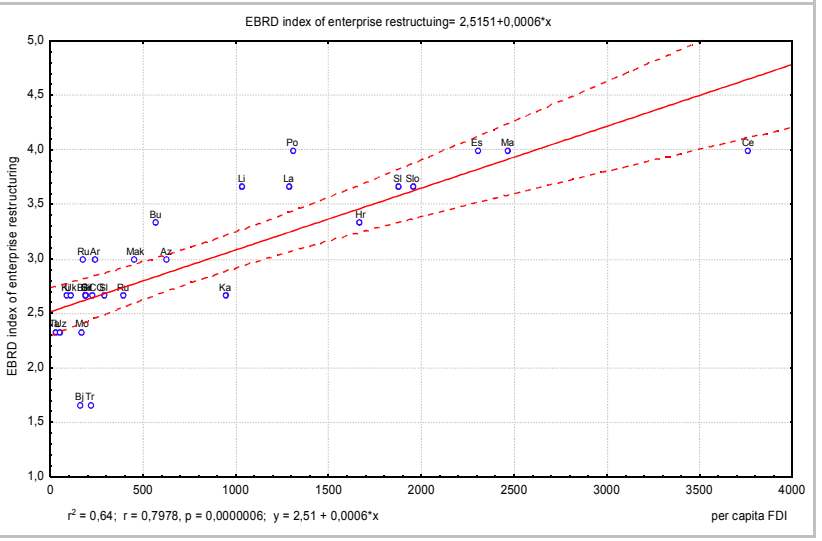
propulsive sectors underwent expansion and were targeted by foreign investors simultaneously. Apart from noticing the progressiveness of FIE activities, it is noticeable that foreign investors have entered some bigger monopolistic or oligopolistic firms – in particular, the telecommunications (in some segments) and the banking sector.

Privatisations of some larger companies have been planned and carried out separately from the ongoing privatisation processes. Apart from trying to maintain a social consensus (with the goal of keeping employment high) in this way, many governments also decided to sell off large companies to help cover their budget deficits with the proceeds of such sales. Often in those separate processes with a government acting as the seller, the highest offer was the main criterion, while the future business plans made by a prospective buyer came second. As a result of those sales, restructuring may have been delayed or they may have led to lower capital investments in general. Hunya (2002) might have referred to those sales or the sales of monopolistic firms when he wrote about the «hot» opportunities that foreign investors seized. When firms that had previously not been restructured were being sold, their price might have been underestimated. Those include, in particular, firms with often obsolete technology and managerial issues, usually facing problems of illiquidity or insolvency that require immediate investment. The potential of those firms normally lies in their access to a certain market or markets.

Generally, automobile and electronics industry received by far the most FDI across the region (except in Croatia and Bulgaria) – UNCTAD in 2003 reports that these investments continue to grow most, contributing to the restructuring of activities toward a higher value added. Products of these industries are launched globally. The FDI into the automobile industry in the Czech Republic has created a web of subcontractors and outsourcing to local firms. Identifying these industries in CEE is vitally important for the receiving countries because of the possibility of FIE helping integrate local firms into international industrial networks. Additionally, these industries are by definition more export-oriented than other types of FDI.

Krkoska (2001) reports that the restructuring of the firms taken over by foreign owners has been more frequent than that of the firms owned by residents. In more than 70 percent of cases FIE upgraded the technology, which must have improved the firms' efficiency. In comparison, local firms upgraded their technology in less than 55 percent of cases on average. That is why it is not surprising that indicators of the firms' success, such as profitability for FIEs, are double to three times that of local firms (Konings, 2001; Hunya, 2002; Škudar, 2002). The only move made by both FIE and local firms that is equally frequent is a decision to reduce the number of employees – a decision that is least demanding in comparison to other business decisions, such as upgrading technology or managerial practices (Krkoska, 2001).

Figure 1: **Cumulative USD value of FDI per capita (x) in the period 1993-2002 and company restructuring in 2003 (EBRD index)**



Source: Authors' calculations made after the figure from Krkoska (2001, p. 9). Data was taken from UNCTAD CD-ROM, 2003 and EBRD, 2003.

Data on employment in FIEs in several CEE countries in 1998 and 1999 reveals that FIEs' share in total employment was 2.5 and 2.7 percent (UNCTAD, 2001), respectively. Interestingly, employment in FIEs between

those years rose regardless of ongoing recessions in the host economies (in the midst of the "Russian crisis") and global economic turbulence, coupled with the fact that total employment in half of those economies fell. That situation must have been a result of FIEs' strong competitive position in the host country market or exporting markets. If that was the case, it might support the idea of the existence of enclaves i.e. a group of progressive firms, more successful than the rest of the economy, and in this case composed of FIEs[7].

Halpern and Kőrösi (2001) present evidence from the Hungarian manufacturing industry asserting that FIEs are in a better position to exploit market imperfections and earn extra profit. They see differences in corporate efficiency as an explanation, because it can influence the ability to exploit market imperfections. Zukowska-Gagelman (2000) tackles the issue of the rise of a two-tier economy in Poland, where FIEs dominate the economy while local enterprises only try to catch up. A similar occurrence in Hungary is remarked on by Hamar (2001) who reports the signals of dual economic development, first noted in 1996. Since then local firms have improved their export capabilities and productivity, but the gap between local firms' and FIE performance in 1999, Hamar writes, has not vanished but has in fact widened.

The arrival of multinational enterprises into transition countries has led to some integration of local firms into global production networks (Linden, 1998; Van Tulder and Ruigrok, 1998; Kaminski and Smarzynska, 2001). However, the benefits of multinationals-centred networks accruing to domestic enterprises have often been narrow. The networks being built are often restricted to the multinational firms' subsidiaries with limited local subcontracting (Radošević, 2002). Integration into international networks, upgrading of quality and efficiency are perceived as the main goals of local firms when cooperating with FIEs. The integration of local suppliers into the multinational enterprises' global production networks has so far been mostly limited to low-value added activities (Linden, 1998; Van Tulder and Ruigrok, 1998; Dunin-Wasowitz, Gorzynsky and Woodward, 2002). Capability

[7] *An additional assumption about enclaves is that they do not interact with local firms, and restrict themselves to the use of local resources only where necessary.*

enhancements and technology transfer benefits accruing to domestic companies partnering with multinational enterprises on innovative projects is limited (Sadowski, 2001), and usually restricted to FIEs (Biegelbauer, Griebler, and Leuthold, 2001).

Hungary – as a small open economy with high inflows of FDI since the onset of transition – is a good example for identifying various types of cooperation between local firms and FIEs. Szanyi (2002) writes that in the Hungarian case, cooperation between local firms and FIEs began in the early stage of transition and that its nature and intensity depended on FIE parent companies' global strategy. It was estimated that FIEs cooperated with 10-20 percent of local medium-sized firms in order to service local and foreign markets. It is due to this cooperation that local value-added increased. Local firms were mostly confined to the production of intermediary products (components production and subcontracting). Szanyi also provides an extensive overview of different authors' points of view, according to which the cooperation between local firms and FIEs has negative consequences for those local firms. According to those views, subcontractors become isolated from the rest of the national economy and/or FIEs do not transfer enough technology. There is also the possibility that subcontractors may lose their R&D functions and thereby neglect their own product development. This is not the case with local firms that act as suppliers and manufacture their own products.

The effects of FDI on productivity spillovers in Bulgaria, Poland and Romania for 5000 firms in the period of 1993-1997 were explored by Konings (2001). He finds that FIEs are more successful than local firms only in Poland, while he explains the lack of success over local firms in Bulgaria and Romania by the fact that FIE devoted that period to restructuring. The author did not find evidence of positive spillovers in any of the economies. However, he did find negative spillovers in Bulgaria and Romania due to the prevalence of a competitive effect[8] over positive technological or productivity spillover. Spillovers from FIEs to local firms are also researched by Smarzynska (2002),

[8] *FIE effort to crowd out local competition. The attempt may prove possible because of local firms' inability to compete with FIEs technologically, in financing, efficiency or managerial practices.*

but for Lithuania. While she finds that there were positive productivity spillovers in downstream production (suppliers, contractors), she finds none horizontally – in the industry that FIEs belonged to. Productivity spillovers were associated with (host country) market-oriented FIEs and not with export-oriented FIEs. Zukowska-Gagelman (2000) finds that in Poland, FIEs' share in employment, ownership structure and invested capital have strengthened in nearly all industries. An increase in labor productivity in FIE was higher than the rise in overall productivity. Zukowska-Gagelman estimates that FIEs are twice more productive than local firms, and explains that there is a trend of a shrinking productivity gap because of layoffs in local firms. In cases where competing with FIEs has provoked restructuring of local firms, that restructuring was mostly defensive and short-term. Overall, a higher presence of FIE in an industry seems to affect local firms negatively. The author detected a negative impact of FIEs on local firms' performance in highly competitive industries, while in the least productive state firms in low competition industries, the effect on productivity is positive.

It seems that, at the level of stylized facts, the extent of spillovers from FIE onto local firms that would spur economic growth in CEE has been limited. That may have occurred due to competitive advantages and strategic behaviour of FIE, as well as due to the limited capacity of host countries to utilize the available opportunities and spread them throughout the local economy. For example, problems with the transfer and application of knowledge remain widespread even in the most advanced CEE countries (Mickiewicz and Radošević, 2002). In the next section, we undertake a quantitative analysis in order to explore the relationship between FDI and growth in CEE.

4 Quantitative analysis of effects of FDI on economic growth in CEE

4.1 Data and statistical indicators

The sample of countries for analysis of importance of FDI for growth consists of 11 transition economies in CEE: eight countries that acceded to the EU in May 2004 (the Czech Republic, Poland, Hungary, Latvia, Lithuania, Estonia, Slovenia and Slovakia) and three countries of the second wave of accession to the EU (Bulgaria, Croatia and Romania). The period under observation is 1993-2002 because between those years all of the economies began to recover from the "transition shock" and record positive rates of economic growth. That, along with a simultaneous inflow of FDI into the region and similar economic structures, makes the sample relatively homogenous[9]. Data used are both quarterly and annual data and have been collected from various sources: UNCTAD's CDROM (2003), EBRD Transition Report (2003), IMF International Finance Statistics' CDROM (2003), national statistical offices and central banks' websites.

Slovenia, among the countries in the sample, exhibits the most persistently high growth rate of 4.1 percent with only a 0.9 percent deviation from its average value. That is not the case with the average FDI inflows into Slovenia – they are not above the sample's average, and their deviation from the average inflow is significant. Non-persistent FDI inflows into Slovenia may be the first sign that in the course of the observed period high and robust rates of economic growth cannot directly be credited to FDI inflows. A low correlation coefficient for economic growth and FDI confirms that doubt. Bulgaria, on the other hand, stands out as the country with the least persistent growth rate (0.9 percent on average) with a high deviation from its average value. Bulgaria has, on average, received more FDI inflows than Slovenia, and they have also been more stable than the ones flowing into Slovenia. The most

[9] *Some differences in the level of development among countries are more obvious when the level of GDP per capita is taken into consideration. Most of those countries (8 of them) belong to a medium-income range (2,000-4,999 USD per capita), while Slovenia (upper-higher income 5,000-19,999), and Romania and Bulgaria (lower income 500-1,999 USD) do not fall into that category.*

obvious outstanding candidate for determining the existence of a relationship between growth and FDI is Latvia, because of its positive rates of growth and persistent FDI inflows. That is why its correlation coefficient for economic growth and FDI is high (0.9). However, a high value of the correlation coefficient may point to a problem of endogenous determination of variables. FDI itself may be influenced by innovations and other factors characteristic for the processes that provoke economic growth (USITC, 1997).

In Table 2, countries are positioned by the size of their population. Within the observed sample, in smaller countries, correlation coefficients for economic growth and FDI are positive, while the opposite is true for larger countries (Hungary, Romania and Poland) – with the exception of the Czech Republic, where correlation is weak.

Cross-section data (Table 3) do not provide a clearer picture of the observed relationship. After the recovery from transition shock, positive rates of economic growth begin to fall gradually toward 1999, when most of the economies from the sample were hit by the Russian financial crisis. Since then, the rates of economic growth have stabilized at a pre-crisis level and their non-persistence has weakened. The year 1999 marks a turning point in the relationship between FDI and economic growth. In the 1996-1998 period, the countries with higher growth rates were at the same time those that attracted larger FDI inflows, suggesting that foreign investors were more attracted to the countries that grew progressively. On the other hand, growth in those countries can be a result of the effects of FDI.

Table 2: **Time series with annual data for the real rate of economic growth (rGDP) and FDI inflows (FDI, USD millions)**

1994-2002	Est	Slo	Lit	Lat	Cro	Slk	Bul	Hun	Czk	Rom	Pol
Average FDI inflow	236	201	114	139	182	199	61	212	391	42	137
Standard deviation	107	283	85	51	119	235	42	104	273	25	56
Average GDP growth	4. 2	4. 1	2. 2	4.0	4. 3	4. 3	0. 6	3. 6	2. 1	1. 2	4. 5
Standard deviation	3. 7	0. 9	5. 5	3. 3	2. 3	1. 8	5. 6	1. 4	2. 8	4. 8	2. 1
Value of correlation coefficient 1992-2002											
Growth, FDI	0.4	0.2	0.6	0.9	0.3	0.1	0.6	-0.3	0.1	-0.2	-0.4
Growth, FDI (t-1)	0.0	-0.1	0.2	0.8	0.1	0.0	0.7	-0.2	0.3	-0.4	-0.8
Growth (t-1), FDI	0.5	0.3	0.8	0.7	0.4	0.1	0.4	-0.1	-0.2	-0.1	-0.2

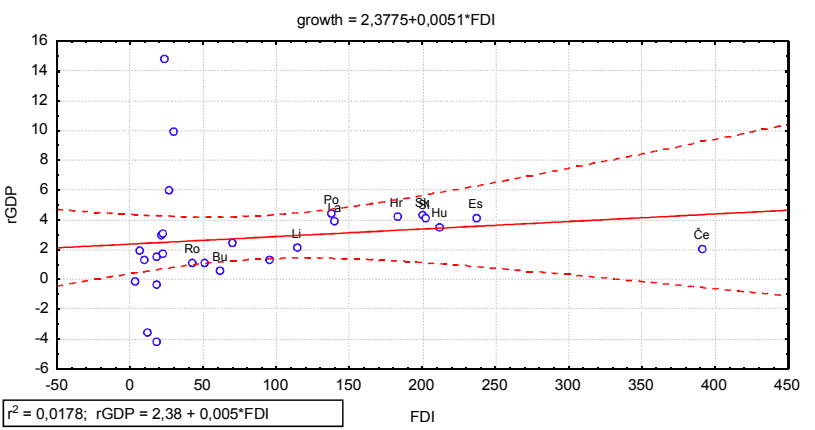
Source: Authors' calculations, data taken from EBRD Transition Report 2003 and World Investment Report 2003 Statistical Annex (UNCTAD).

Table 3: **Main statistical indicators of FDI (million, USD per capita) and countries' GDP growth rates in cross section**

	Average FDI inflow	Standard deviation	Average real rate of GDP	Standard deviation	Correlation coefficient
1994	60.2	46.6	1.9	4.5	-0.02
1995	111.3	132.7	4.4	2.6	-0.25
1996	98.1	65.3	3.0	4.8	0.27
1997	129.7	63.3	3.7	5.8	0.57
1998	196.6	111.6	2.7	3.4	0.08
1999	191.6	163.1	0.9	3.0	-0.16
2000	208.2	131.4	4.3	1.7	-0.18
2001	234.2	154.4	4.3	1.7	-0.30
2002	337.0	346.5	3.5	0.8	-0.10
1994 – 02	174.1	135.0	3.2	3.2	-0.01

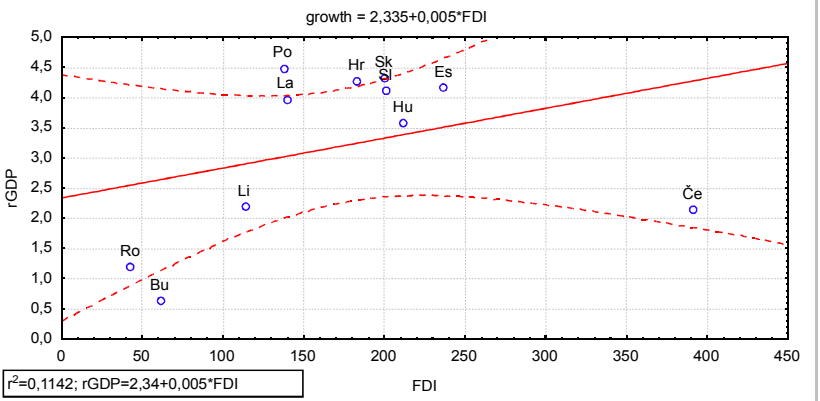
Source: Authors' calculations, data taken from EBRD Transition Report 2003 and World Investment Report 2003 - Statistical Annex (UNCTAD).

Figure 2: **Regression line within 95% confidence bands for real growth rate and average annual FDI inflow per capita in the 1994-2002 period for 27 transition economies**



Source: Authors' calculations, data taken from IFS IMF-CDROM and different editions of the EBRD Transition Report.

Figure 3: **Regression line within 95% confidence bands for real growth rate and average annual FDI inflow per capita in the 1994-2002 period for 11 transition economies**



Source: Authors' calculations, data taken from IFS IMF-CDROM and different editions of the EBRD Transition Report.

A result of the simple regression, with average growth rates (of 27 transition economies) as a dependent variable and average FDI inflows (in USD) as an explanatory variable, shows that the countries grew by 2.4 percent on average without the influence of FDI (the constant) and that only 2 percent of a variation in growth can be explained by the difference in FDI flows. The dollar value of FDI increases growth but not strongly, since its coefficient is close to zero. If the sample is narrowed to the 11 economies under observation plus Macedonia, an almost identical result is obtained, but only with a higher percentage in the variation of growth attributed to the changes in FDI – 11.4 percent.

4.2 Testing of causality

Although the question "does a change in one variable cause a change in another variable in a relationship founded on economic theory?" has implicitly been posed, the answer has yet not been given because it must be

found in determining the existence of causality. Additionally, the strength of the relationship may be examined with a correlation coefficient. Fabry (2001) and Mencinger (2003) try to find an answer to the relevant question for FDI and rate of economic growth by using a Granger causality test. They use annual data for the transition period with lagged FDI. Fabry (2001) uses annual data with lagged FDI for countries individually, while Mencinger (2003) uses cross-section data for eight countries that were integrated into the EU in May 2004 and tests the causality for the whole sample. Although Fabry produces results for individual countries, a low number of her observations may be problematic. Mencinger's approach assumes the same pattern of causality for the whole sample, but his test results appear more reliable.

The general weakness of the Granger causality test is that it does not produce the sign (positive vs. negative) of the relationship between variables, and Fabry (2001) solves this problem by introducing a correlation coefficient to complement the findings of the test. Granger causality is tested for two variables, where if the second variable provides information about the first variable in the presence of lagged first variable, then "the second variable Granger causes the first variable". Causality is tested in both directions, from the first to the second variable and in the opposite direction.

In order to Granger test the countries from the sample, quarterly FDI, merchandise exports (MG) and imports (XG) and nominal GDP (all in USD) data for the period 1993-2002 is used, thus making series of 35-38 observations on average. Data are taken from the IMF International Finance Statistics CDROM (2003). Bi-variate causality is tested for each country individually, with lags (signified by "p") varying 2-8 (i.e. from 6 to 24 months). A wide range of lags allows for the possibility that the effects of FDI in various economies may disperse unequally fast/slow, and the possibility to capture the effects of FDI that might have not been registered promptly in the official statistics. The dependant variable is also included in the equation as a lagged variable in order to capture systematic changes in the series. If the hypothesis Ho is rejected, then Granger causality is present.

Equation specifications:

$$GDP_t = c_1 + \sum_{i=1}^{p} \alpha_i GDP_{t-1} + \sum_{i=1}^{p} \beta_i FDI_{t-1} + u_t$$

$$H_0 : \beta_1 = \beta_2 = ... = \beta_p = 0$$

$$MG_t = c_1 + \sum_{i=1}^{p} \alpha_i MG_{t-1} + \sum_{i=1}^{p} \beta_i FDI_{t-1} + u_t$$

$$H_0 : \beta_1 = \beta_2 = ... = \beta_p = 0$$

$$XG_t = c_1 + \sum_{i=1}^{p} \alpha_i XG_{t-1} + \sum_{i=1}^{p} \beta_i FDI_{t-1} + u_t$$

$$H_0 : \beta_1 = \beta_2 = ... = \beta_p = 0$$

The goal of the testing is to explain whether changes in FDI inflows cause changes in the level of GDP, merchandise exports and imports. Results of the Granger causality test are only to be used as a complement to growth equation testing results, and not as main findings of the paper. FDI directly complements fixed capital formation if it comes in the form of greenfield investment, and may indirectly affect growth if it changes exports and imports – and it should, as theory and empirical evidence suggest. Reverse causality in the test will help to find out whether the problem of endogenous determination of variables is present. That problem in regression (that is to follow) is normally solved by using lagged FDI values, logarithmic values of GDP and by introducing more explanatory variables in the equation (USITC, 1997).

The test results presented in Table 4 show that lagged FDI (by 9-15 months) Granger caused changes in the GDP levels of Slovenia, Slovakia and Lithuania. The established link is most robust in Lithuania because of a positive and high correlation coefficient, whereas in Slovenia it is positive but low at the same time. Slovakia's results are inconclusive because the established relationship on lags 5-7 carries both negative and positive signs and, coupled with that, the link is not strong.

Table 4: **Granger bi-variate causality test results for FDI as an explanatory variable**

Variable lagged at **t-2, ... , t-8 → (explanatory variable)**	FDI					
Variable at t **→ (dependant variable)**	**GDP**		**Merchandise exports**		**Merchandise imports**	
Countries	**Presence of causality (∃) and the sign of cross correlation coefficient**	**Lags at which causality is present**	**Presence of causality (∃) and the sign of cross correlation coefficient**	**Lags at which causality is present**	**Presence of causality (∃) and the sign of cross correlation coefficient**	**Lags at which causality is present**
Croatia						
Czech Republic					∃+	2
Bulgaria					∃+	2–3
Slovenia	∃+	3–6	∃+	2–5	∃+	2–7
Slovakia	∃ –, ∃+	5–7				
Estonia			∃+	2–6, 8	∃+	2–5
Lithuania	∃+	3			∃+	2–8
Latvia			∃+	2–4	∃+	4
Hungary			∃+	5		
Poland						
Romania	n.a.				∃+	2–3
No. of countries with an established presence of causality	3		4		8	

Table 5: **Granger bi-variate causality test results for GDP, merchandise exports and imports as explanatory variables**

Variable lagged at **t-2, ... , t-8 → (explanatory variable)**	**GDP**		**Merchandise exports**		**Merchandise imports**	
Variable at t **→ (dependant variable)**	FDI					
Countries	**Presence of causality (∃) and the sign of cross correlation coefficient**	**Lags at which causality is present**	**Presence of causality (∃) and the sign of cross correlation coefficient**	**Lags at which causality is present**	**Presence of causality (∃) and the sign of cross correlation coefficient**	**Lags at which causality is present**
Croatia					∃+	2–4
Czech Republic	∃+	3	∃+	2		
Bulgaria						
Slovenia	∃+	2–3			∃+	2
Slovakia						
Estonia			∃+	2–8	∃+	2–8
Lithuania	∃+	2–5	∃+	2–8	∃+	2–8
Latvia	∃+	4, 6–8			∃+	4
Hungary						
Poland			∃+	2–3	∃+	2–4
Romania	v.α.		∃+	2	∃+	2–5
No. of countries with an established presence of causality	4		5		7	

Source: Quarterly data from IFS IMF-CDROM, web-sites of central banks and national statistical offices. Remark: data for Polish exports and imports include services.

The results in Table 5 point to the possible existence of the problem of endogenous determination of variables because, apart from "FDI Granger causing GDP", results show that "GDP Granger causes FDI". All the economies with the established relationships are open and rather small, making it possible that the effects of FDI may be stronger in smaller economies with a possibly less diversified or complex economic structure.

FDI Granger causes changes in international trade flows in Slovenia, Estonia, Latvia and Hungary, and in all these cases the relationship is positive. The problem of endogenous determination of variable emerges in the Estonian case. However, Granger causality stemming from FDI to merchandise imports is most strongly present, having been established in eight countries. This implies that FIEs have been using their parent companies' or home country supplier services or products strongly, while probably also contributing strongly to widening the current account deficit.

No causality stemming from FDI was found in Croatia's or Poland's case, but there was the opposite causality – coming from international merchandise flows to FDI. Merchandise imports (which strongly correlate with merchandise exports) have Granger caused FDI in 7 countries, and those large imports may be interpreted as a cost argument for market-oriented investors to invest in the observed countries.

4.3 Growth Equation

Results of the Granger causality test will supplement the results of a growth equation similar to the one used by Mencinger (2003) in his research with general specification:

rGDP = f (pcGDP, rINV, rEMP, FDI, rEU),

where rGDP signifies real rates of economic growth (in percentage terms), per capita GDP (pcGDP) initial conditions, rINV rate of growth of total domestic investments (in percentage terms), rEMP rate of growth of employment (in

percentage terms), and rEU rate of economic growth of EU-15 (in percentage terms). Data is taken from the Transition Report (EBRD, 2003). The difference between Mencinger's model and the one used in this paper is that there are no country dummy variables in the outlined model. The method used to test the equation is a pool regression with cross-section weights (CSW). A fixed effects model does report on standard errors for the fixed effects coefficients (in each cross-section), except when there is the constant term as a cross-section regressor. CSW are used when data problems may appear. If data problems with some cross sections exist, then their standard errors should be higher. Cross-section weighting, in comparison with the regular fixed effects regression, improves the fit of the pool regression because it uses standard errors in each cross section. That allows weighting the cross sections according to the size of their standard error.

Table 6: **Results of regression of growth equation for the 1994-2002 period**

	Basic model	Model-1	Model-2	Model-3	Model-4	Model-5	Model-6*
Const.	1.8 (3.17)	0.9 (1.05)	1.79 (3.21)	0.93 (1.14)	1.79 (3.34)	0.71 (0.90)	3.77 (3.37)
pcGDP	6.64E-05 (0.85)	9.17E-05 (1.05)	6.89E-05 (0.87)	8.71E-05 (1.12)	-3.58E-06 (-0.05)	2.25E-05 (0.31)	-0.0001 (-1.54)
rINV	0.16 (8.83)	0.16 (8.94)	0.16 (8.81)	0.16 (8.85)	0.14 (7.2)	0.13 (7.27)	0.09 (3.87)
rEMP	0.25 (2.64)	0.25 (2.77)	0.25 (2.67)	0.26 (2.81)	0.21 (2.29)	0.22 (2.40)	0.34 (2.67)
EU growth	-	0.33 (1.49)	-	0.32 (1.45)	-	0.37 (1.80)	0.32 (1.32)
FDI (-1)	0.0001 (1.22)	0.0001 (1.3!)	-	-	3.02E-05 (0.39)	1.19E-05 (0.09)	-0.0005 (-2.34)
FDI	-	-	0.0001 (1.37)	0.0001 (1.45)	-	3.73E-05 (0.31)	-
rGDP(-1)	-	-	-	-	0.22 (3.27)	0.22 (3.34)	-
R^2 **R^2, adj.**	0.72 0.71	0.74 0.72	0.73 0.71	0.74 0.73	0.77 0.76	0.79 0.77	0.82 0.87

** Sample composed of the countries in which «FDI Granger cause GDP or merchandise exports»: Lithuania, the Slovak Republic, Slovenia, Estonia and Hungary.*

Remark: T-statistics are within brackets.

In the basic model, the constant equals a long-term average growth rate of 11 economies in the sample – and is significant in the specifications with the value above 1. The main result of the analysis is that changes growth can be explained by a rise in domestic investments and employment, and these variables are robust in all specifications of the equation. Lagged FDI, initial conditions and growth in EU-15 turn out to be insignificant. When the sample is reduced to the economies identified as those where FDI has Granger caused either growth or exports or both (Model 6*), lagged FDI becomes significant and has a negative impact on growth but its strength is negligible (because its coefficient is close to zero). Although the sample is too small for the results to be reliable, they are consistent with the results of the basic model – with the constant, domestic investments and employment, remaining the significant explanatory variables.

5 Conclusion

An overview of recent empirical evidence, together with pool regression results, strongly suggests that the role of FDI in stimulating growth directly through complementing capital formation was negligible. Had FDI complemented host countries' fixed investments more strongly, the results would have been reflected in a higher rate of economic growth (see regression models 2, 3 and 5). That finding supports the fact that most FDI has flown into the region in the form of brownfield investments. If those FDI inflows had come in the form of greenfield investments, the results on the economy would have automatically been visible in a higher growth rate. More importantly, the presence of positive indirect effects of FDI after the initial year of investment is not confirmed for the whole sample (see basic model and models 4 and 5). However, the results of the Granger causality test, which enable individual approach to economies, imply that the growth rates of three open and small economies – the Slovak Republic, Slovenia and Lithuania – have been positively influenced by FDI. Perhaps the explanation to this influence lies in their economic structures that are probably less complex and less diversified than those in the large economies, simultaneously more receptive to spillovers. When the sample is restricted to five economies in which the presence of FDI

influence on growth and exports was established, the influence of lagged FDI on growth appears and is negative. Although the restricted sample is too small to provide any conclusive results, a cautious conclusion may still be made. The indirect negative effects of FDI, achieved through trade and competing with local firms, seem to overweigh a positive direct effect on capital formation in those countries.

Furthermore, the influence of FDI is strong in international trade of the observed economies, and mostly so in rising merchandise import levels. The evidence of FIE activity contributing to the goods exports is less present in the sample. That is why these results confirm the notion that FIEs contribute to the current account deficit widening in several of the observed economies. High shares of non-export oriented FDI, which has flown mostly into the services sector, can account for that development. Those results also imply that FIEs were probably using their home country suppliers' and/or parent company services or goods quite extensively. By doing so, apart from limiting cooperation with local firms, they also made it more likely for transfer-pricing manipulation, as a mechanism of retrieving pre-taxed profits, to occur. Positive spillovers in the form of productivity enhancement on the level of FIEs' activity, in downstream and upstream production, were more likely to occur in larger economies, the economic structure of which probably had more local competition and a wider choice of local suppliers and subcontractors. However, those effects are probably less significant on the level of the economy as a whole, with no consequences on the growth rate.

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