Foreign Direct Investment in the Financial Sector:

Panel Data Analysis on the Impact of FSFDI on Growth in Central and Eastern Europe

This master thesis is written to complete the Master program:

International Economics and Business Studies,

Erasmus School of Economics, Rotterdam.

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Panel Data Analysis to the Impact of

FSFDI on Growth in Central and Eastern Europe

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Hand-in-date	30-06-2010 (three-fold)
Academic Year	2009-2010
Master	International Economics and Business Studies
University	Erasmus University Rotterdam
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[1] I would like to thank my supervisor, Dr. J. Emami Namini, for all his useful stimulating comments on previous drafts of this master thesis.

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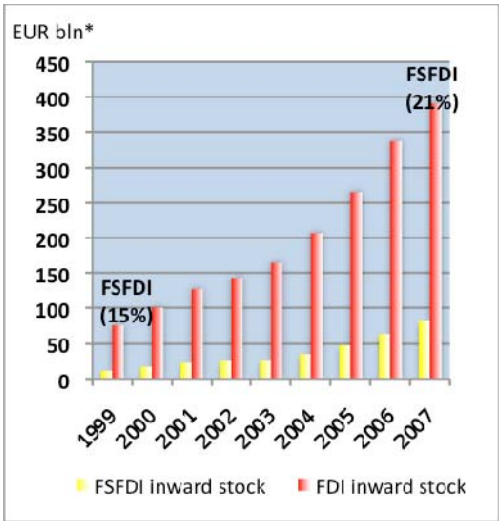
1. INTRODUCTION

Economic globalization is the ongoing process in which national economies integrate in the international economy. The playing fields have extended from regional to international levels. This has triggered two important changes. Firstly, the role of Foreign Direct Investment (FDI) inside international capital flows increased remarkably (Alfaro et al., 2004). Secondly, the financial intermediaries expanded their playing fields to keep facilitating such global trade (Claessens et al., 2001).

One special case in this context is the case of the Central and Eastern European Countries (CEECs). After the collapse of communist regimes in the 1990s, authorities relied upon foreign resources to recapitalise their banking sectors. Financial markets were liberalized. From the period that followed, two important observations can be drawn. On the one hand both *general* FDI stock levels and *financial sector* inward FDI ("FSFDI") stock levels increased enormously. (Figure 1) On the other hand economic growth increased. (Figure 2)

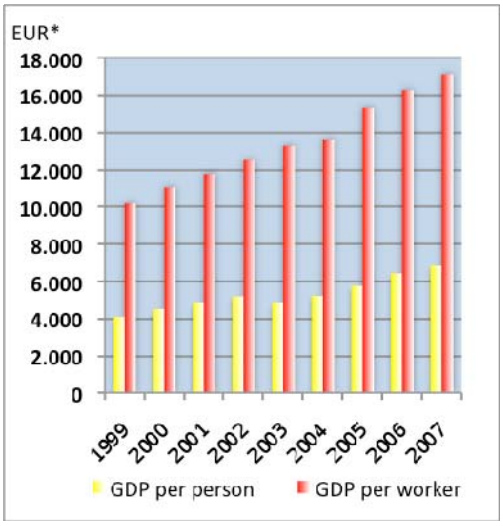
Figure 1: Inward (FS)FDI stock levels CEE-11



* Based on the end-of-the-year exchange rate.

Data source: Vienna Inst. for Intern. Economic Studies.
FSFDI = NACE-code J-Financial intermediation.

Figure 2: GDP growth in CEE-11



* Based on the end-of-the-year exchange rate.

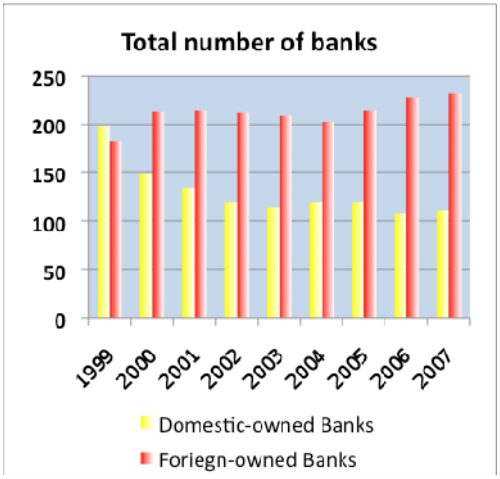
Data source: AMECO

This first trend illustrated by figure 1 is the increase in *general* FDI stock levels. This trend is illustrative for a changing belief among policymakers in the late 1980s. Many developing countries started to focus more on attracting FDI. The rationale for this behaviour was a common belief that host countries could gain from extra benefits, additional to the direct capital financing. The diffusion of new technologies could speed up the technological

innovation progress in the host country and hence stimulate economic growth. This explains the increase in active policies of governments to attract more FDI (Alfaro et al., 2004). Many studies have investigated the impact of FDI on host economic growth. Although results for the CEE-11 countries are mixed, evidence is found that FDI could function as a strong trigger for growth (Borensztein et al, 1998; De Mello, 1999; Mencinger, 2003; Sohinger, 2005).

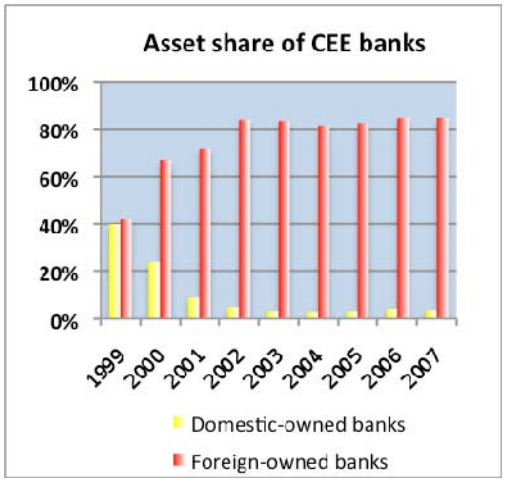
The second trend in figure 1 is the increase of *financial sector* FDI importance relative to total FDI. This trend illustrates the consensus among policymakers about the crucial role of financial markets as determinant for economic growth (Levine et al., 2000). The finance literature describes that financial markets could be strengthened by foreign capital (Sergi, 2004). In case of the 11 CEE countries, FSFDI stock levels increased from EUR 11 billion (2,5% of GDP in 1999) to EUR 83 billion (12,9% of GDP in 2007). The importance of FSFDI relative to total FDI rose from 15% (1999) to 21% (2007). However the causality link between the financial sector and economic growth may change with the level of economic development (Rousseau & Wachtel, 2005). Overall the literature seems to suggest that the financial sector plays a supply-leading role for economic growth (Beck et al., 2000). Finance literature mainly focuses on open markets. The financial sectors in the CEE-11 countries are extremely liberalized, as the majority of banks are foreign owned (figure 3) and also possess the largest share in assets (figure 4).

Figure 3: Total number of banks in 11-CEE



Data source: EBRD & national central banks. Foreign-owned banks are defined as those with foreign-ownership exceeding 50% per end of the year. Figures include commercial and savings banks and exclude cooperative banks.

Figure 4: Asset share of 11-CEE banks



Data source: EBRD. The domestic banks include the federal, regional and municipal levels, as well as state property and state pension fund. Domestic-owned banks are defined as banks with state ownership exceeding 50% per end of the year. Figures show mean over CEE-11.

Some literature combined both the FDI-growth and Finance-Growth stream and analyzed the link between Financial Sector FDI and host economic growth (Levine, 1997, Baudino et al., 2004, Goldberg, 2004, BIS 2004, BIS 2005). This literature seems to focus on positive gains that could spillover from foreign entrance that increases the well functioning of financial markets and hence stimulate economic growth (Levine, 1997). However very little empirical research has been done on this FSFDI-growth relationship. Eller et al. (2006) undertook the first attempt to fill this gap. They identified the importance of several efficiency improvements in the financial sector induced by foreign entrance. Their evidence suggests that the relationship between FSFDI and economic growth might be 'hump-shaped'. They conclude that FSFDI has a positive effect on economic growth in early stages of emerging economies and a negative effect in later stages of emerging economies. This could have important policy implications for countries attracting FSFDI.

This paper is a follow-up research on their work and aims to find such relationship between FSFDI and economic growth. By using the most recent data over the time period 1999-2007, this paper strengthens their estimation procedure. The extended time period used in this paper is even more interesting as eight CEE-countries[2] became member of the European Union in 2004 and two[3] more countries in 2007. In a standard neo-classical growth model FSFDI-induced efficiency gains in the financial sector influence economic growth. Supporting evidence is found that foreign-owned banks may have a direct positive impact on host economic growth. However this impact becomes negative over time. This result is in line with previous research (Eller et al., 2006). Hence my result suggests that further research on this 'hump-shaped' relationship is necessary.

The setup of the paper follows the two important trends mentioned in the introduction. Section 2 reviews, based on the first trend, the FDI-growth literature. Section 3 reviews, based on the second trend, the Finance-growth literature. Section 4 combines these two streams in the literature and creates one framework where FSFDI-induced efficiency spillovers improve the functioning of the host financial sector and hence stimulates economic growth. Section 5 describes the data and the estimation procedure. Section 6 elaborates on the results. And section 7 concludes.

[2] EU member in 2004: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia.
[3] EU member in 2007: Bulgaria and Romania.

2. FDI SPILLOVERS

FDI influences the capital accumulation in a host country directly by injecting new capital. This could promote economic growth. However, other benefits from FDI may arise as well. These extra benefits are generally described as 'spillovers'. The most important spillover is the transfer of new technologies. Diffusion of new technologies is beneficial for host countries that lack these new technologies and speeds up the technological innovation progress in the host country. This process could promote host economic growth (Borensztein et al., 1998). The literature describes five technology spillover channels. These channels will be discussed separately in the following sections:

2.1. Demonstration and Imitation

2.2. Competition

2.3. Backward and Forward linkages

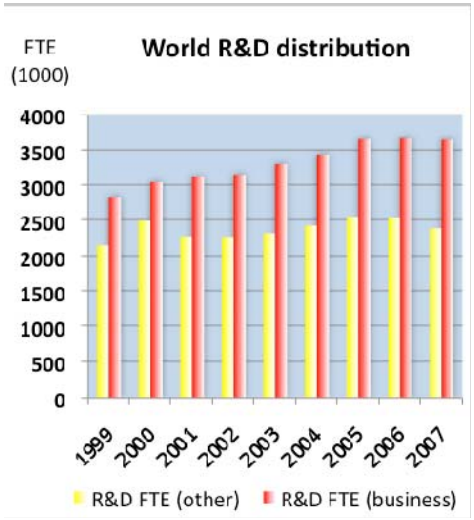
2.4. Labour Mobility

2.5. Exports

2.1. Demonstration and Imitation

Multinational corporations undertake the major part of the world's research and development. These corporations are the ones who produce, own and control most of the advanced production technology (Blomström, 1991). Figure 5 illustrates that total 'Full Time Equivalent' on R&D by business enterprises is high compared to other sectors. By investing in knowledge and know-how these business enterprises create their own competitive-advantage that enables them to operate in foreign countries (Caves, 1982).

Figure 5: World distribution of R&D FTE's



Data source: UNESCO.

International patent laws only protect innovative products and knowledge that are significantly different from existing products. If the innovation is too small, firms cannot claim the ownership. Foreign firms realize this and, given the importance of their

competitive knowledge advantage, are very cautious with transferring knowledge (Blomström, 1991). Once the foreign firm has implemented a new technology or production process abroad with success, the local firms are encouraged to adopt these best practices since the risk of investment is now substantially lowered (Melitz, 3003; Greenaway et al., 2004). This situation encourages copying behaviour of local firms. These firms can copy the technologies used by the foreign firms either by observation or by hiring former workers that are trained by the foreign company (Blomström & Kokko, 1998). The better the domestic firms are able to absorb the foreign technologies in their businesses, the larger and stronger the copying behaviour of these domestic firms (Kokko et al., 2001). Fearing this copying behaviour of local firms, the willingness of foreign firms to bring along technologies as they enter the new market strongly depends on host country policies. Countries have a tendency to increase the requirements on technology transfers. This typically means that foreign firms are legally required to employ local workers or make their technologies available to local firms. Since this increases the cost of introducing these technologies, technology exports decreases (Grosse, 1989).

2.2 Competition

As foreign firms enter new markets they bring along their technology that gives them a firm-specific advantage. This allows them to compete with local firms that possess superior local market knowledge. The threats of deterioration or actual deterioration from previous state caused by increased competition are powerful devices to re-focus local firms on their business practices (Rosenberg, 1976). When competition starts and the current equilibriums are disturbed, domestic firms are forced to take action in order to protect their market shares (Blomström & Sjöholm, 1999). This situation forces both the local firms and the foreign-owned firms to use their existing technology and resources as efficiently as possible (Markusen & Venables, 1999).

In contrast, the increased competition may have negative effects as well. As domestic firms lose market share their marginal costs will increase as fixed costs are spread over a smaller market volume. This will trigger foreign firms to increase their own production to further lower their marginal costs. Hence demand for the more expensive local products will be further lowered and local firms might be pushed out of the market (Aitken & Harrison, 1999)

2.3. Backward and Forward Linkages

Backward linkages affect productivity or technological improvements for local suppliers as foreign firms enter the market. In general when foreign firms enter new markets the

demand for local supplies will increase and often increase profits of these local suppliers (Markusen & Venables, 1999). The degree of local content of the foreign firm seems to determine the strength of these backward linkages. Local-oriented foreign firms purchased more from local suppliers than export-oriented foreign firms (Reuber et al., 1973). This increase of demand for local supplies might initiate other important backward linkage effects. Foreign firms might provide technical information or assistance to upgrade the quality of the local suppliers or facilitate innovations. Moreover they could provide high skilled staff and trainings for local employees or assist them with purchasing raw materials and finding additional customers (Lall, 1980). Besides these cooperation effects, there might be a possibility that domestic suppliers are forced to meet higher standards. This directly influences the technologies used. However evidence is scarce (Blomström & Kokko, 1997).

The existence of these positive backward linkages triggers competition among local suppliers to become the main supplier for these foreign firms. This could make the domestic 'upstream' market for suppliers more efficient. Local firms, operating in the same 'downstream' industry as the foreign firms, may benefit from this increased efficiency of local suppliers. Such increase in efficiency in the 'upstream' market will only arise when the foreign firm uses several independent suppliers (Matouschek, 1999).

Forward linkage effects channels productivity and technological gains for the customers firms. Local industries tend to become more efficient at the cost of out-competed domestic firms. This negative effect might be beneficial for other firms further 'downstream'. The customer firms might benefit from price reductions (Markusen & Venables, 1999). Moreover the entrance of foreign firms opens up the host market as a new market for cheaper and better quality intermediate and final goods. Often these products are accompanied with new services that were not even available to customer firms before the entrance of the foreign firm. The result for local firms, as foreign firms are introducing new goods, depends on their ability to use them to their advantage (Javorcik, 2004).

2.4. Labour Mobility

Foreign technologies could spill over to the local economy via local labourers. After they have been fully trained by the foreign company the domestic economy might benefit from technology spillovers in two ways. Either domestic firms benefit from the knowledge of newly hired former multinational employees (Blomström & Kokko, 1998). Or the former multinational labourers start their own businesses (Alfaro et al., 2004). Evidence suggests that newly established domestic firms that are run by owners, who received training by

multinationals in the same industry, immediately have higher productivity levels than other local firms (Görg & Strobl, 2005).

If these spillovers do not occur, the effect on the host economy depends on both a positive and a negative effect. A positive effect occurs as trained workers receive higher wages from the foreign firms that should prevent them from leaving to local firms (Fosfuri, 2001). Analysis on Ghanaian manufacturing firms supports this theory and suggests that local workers receiving on-the-job training in foreign-owned firms experience more rapid income growth than workers that are trained in domestic firms (Görg et al., 2007). A negative effect on the host economy may occur as the best labourers of the domestic firms are attracted by the higher wages and hence leave the domestic firms (Sinani & Meyer, 2004).

2.5. Exports

When analysing the spillovers from foreign firms to local firms, the type of trade regime seems to matter. Foreign firms operating in inward-oriented countries are forced to bring new technologies to succeed in the competition with the local firms. This increases the potential of productivity spillovers on local firms. In contrast, foreign firms operating in export-oriented countries seem to rely more on their international distribution networks and hence are less likely to introduce new technologies. Therefore productivity spillovers in inward-oriented trade regimes are more likely to occur than in outward-oriented regimes. However, evidence from Uruguay suggests that the export propensity of local firms is positively related with the presence of outward-oriented foreign firms while there seems to be no relation with foreign firms during the import-substituting period. This suggests that in export-oriented countries, the lack of newly introduced technologies by foreign firms is compensated by positive export spillovers (Kokko et al., 2001).

As exporting firms increase their fixed costs, only the most productive firms can stay in business and start exporting (Melitz, 2003; Greenaway et al., 2004). Through demonstration and imitation the other local firms might be triggered and hence the competition increases. This may result in even more productivity gains. Recent evidence describes that local firms need to increase their productivity levels in order to export without the help of an export-broker. If local firms are able to stand the increased competition from multinationals and benefit from the export spillovers (Kokko et al., 2001), they could reach the developed markets by themselves. Hence they are likely to increase their knowledge flows as they receive information from customers and agents in these developed markets. This might increase the innovative productivity of the exporting firm (Salomon, 2006).

3. FINANCIAL MARKET SPILLOVERS

Schumpeter (1911) described the importance of well functioning financial markets as they stimulate technological innovation and capital accumulation and hence stimulate economic growth. Goldsmith (1969) and McKinnon (1973) were one of the first to analyze this view and focused on the contributions of financial structure to economic growth. More recent research of Levine et al. (2000) and Alfaro et al. (2004) confirm the important role of well functioning local financial markets. In contrast, the evidence of Rousseau & Wachtel (2005) shows that the effect of finance on growth varies with country specific levels of economic development. Overall the literature stresses the importance of well functioning financial markets as a determinant for host economic growth. But what important functions do these financial markets fulfil? And how do these functions affect economic growth? The literature describes five important functions that affect economic growth via either the capital accumulation channel or the technological innovation channel (Levine, 1997). These functions will be discussed separately in the following sections:

3.1. Mobilize Savings

3.2. Allocate Resources

3.3. Exert Corporate Control

3.4. Facilitate Risk Management

3.5. Ease Trading of Goods, Services and Contracts.

3.1. Mobilize Savings

Financial markets mobilize capital from savers for investment. If financial markets did not deliver this service, production processes would be constrained to economically inefficient scales (Sirri & Tufano, 1995). Financial systems that are more effective at pooling these savings have a direct effect on capital accumulation and hence affect economic development (Levine, 1997). Moreover the effective mobilization of resources enables entrepreneurs to invest in better technologies and hence stimulate economic growth (McKinnon, 1973).

3.2. Allocate Resources

A financial intermediary can economize on the information acquisition for a group of savers. This improves the allocation of capital (Levine, 1997). Moreover evidence suggests that the financial intermediary that selects the 'best promising projects' will enhance economic growth as they allocate the financial resources more efficiently (Greenwood &

Boyan, 1990). More recent evidence seems to point out that well developed financial markets allocate the existing investment better *even* if financial development does not trigger an increase in investments (Wurgler, 2000). Besides finding these 'best projects', financial intermediaries can boost technological innovation by identifying the best entrepreneurs. Evidence suggests that financial intermediaries promote growth by selecting the best entrepreneurs and finance innovative investments (King & Levine, 1993).

3.3. Exert Corporate Control

Financial systems play an important role in the monitoring of firms. However the monitoring of companies comes at a certain cost. Financial contracts and collateral can lower these monitoring and enforcement costs. Financial systems that use these financial contracts and collateral stimulate efficient investments (Bernanke & Gertler, 1989). Moreover the financial intermediary can even further economize on monitoring costs as they monitor many projects. This is naturally much more efficient compared to a case where many individual savers monitor a few projects on their own (Diamond, 1994). As long as financial intermediaries keep a well-diversified portfolio, they should always be able to meet its contracts with their savers (Levine, 1997). Financial intermediaries that are able to economize on their monitoring costs are able to invest efficiently. This might promote faster capital accumulation. This stimulates economic growth.

3.4. Facilitate Risk Management

Most high-return projects require long-term commitment of capital. However savers dislike committing their capital for a long period, as they want to have quick access to their savings. Therefore the financial system has to come up with a solution for this 'liquidity' risk as it otherwise becomes less likely that investments occur in the high-return projects (Levine, 1997). Financial intermediaries have the ability to price risk and provide mechanisms for pooling and trading risk.

Savers do not have the incentive to sell their assets, like equity or bonds, always at the same time. A saver that receives a shock seeks access to its savings and wants to sell its assets quickly and easily. The stock market is the impersonal place for savers to sell and buy these assets. As it is very costly for market participants to verify whether other savers received a shock, they do not verify. Liquid stock markets enable firms to have long-run access to the capital invested by the initial shareholders, while savers can readily have access to their savings by 'cashing' their shares on the stock market. By facilitating such trade, the stock markets are able to reduce liquidity risk. As transaction costs on the stock

market fall, more investments will occur in the less liquid but high-return projects (Levine, 1997). Since these liquid stock markets facilitate the platform for savers to participate in long-run investments, innovative projects can get financing as well. Innovations increase the technological progress, which triggers economic growth. There are even authors that claim that the industrial revolution, which required long-run capital commitments, would not have taken place without the transformation of liquidity (Hicks, 1969).

Financial intermediaries may enhance liquidity and reduce liquidity risk. Banks have the ability to offer liquid deposits to its savers and undertake a mixture of low-return (liquid) and high-return (illiquid) investments. The low-return investments can satisfy the demands on the deposits and hence eliminates liquidity risk for savers (Levine, 1997). As banks eliminate liquidity risk, they can increase investments in the their high-return projects (Bencivenga & Smith, 1991; Fink et al., 2004). As the savings rates might be influenced by the elimination of liquidity risk, investments could be stimulated. This would stimulate economic growth via the capital accumulation channel (Levine, 1997).

Agents continuously innovate in order to protect their market shares. However investing in new innovations is very risky for these agents (Levine, 1997). A bank has the ability to hold risk-diversified portfolios. By doing so, banks have the ability to reduce risk on these innovative projects. This will trigger investments in these innovative portfolios and this could spur the technological progress. The risk-diversifying ability of financial intermediaries may accelerate growth via the technological innovation channel (King et al., 1993).

3.5. Ease Trading of Goods, Services and Contracts

Centuries ago, Adam Smith (1776) described the theory of specialization and economic growth. He argued that the better economies are able to specialize themselves, the better the machines and production processes will be that they invent. Modern theory suggests that specialization requires more transactions. But transactions are costly. Financial services that lower these transaction costs facilitate specialization (Greenwood & Smith, 1997). Well functioning financial systems facilitate cheques, credit cards and the entire payment-and-clearance system. These services simplify economic transactions as individuals and businesses take the ability to settle financial transactions easily for granted (Levine, 1996). Hence, well functioning financial systems offer services that lower transaction costs, therefore facilitate specialization and hence promote economic growth (Levine, 1997).

4. FSFDI INDUCED EFFICIENCY GAINS

Chapter 2 and 3 described the spillovers effects that may arise from both FDI and financial markets on host economic growth. Chapter 2 described both positive and negative effects from FDI, while chapter 3 mainly described positive effects from sound financial markets. Although it seems obvious to combine these two streams, the economic literature has mainly focused on both streams separately. Moreover the empirical evidence on the impact of FSFDI on economic growth is scarce. Levine (1996) found empirical evidence that financial development accelerates economic development. He describes theoretically, due to a lack of data, the important role that foreign banks can play in developing the domestic financial sector and hence promote host economic growth.

This chapter describes how spillovers from foreign entrance may occur in the financial sector. The research of Eller et al. (2006) focuses on the efficiency channel. This paper uses the same theory described by Eller et al. (2006). They described that there are four types of transmission channels. These channels are discussed separately in the following sections:

4.1. Efficiency Channel

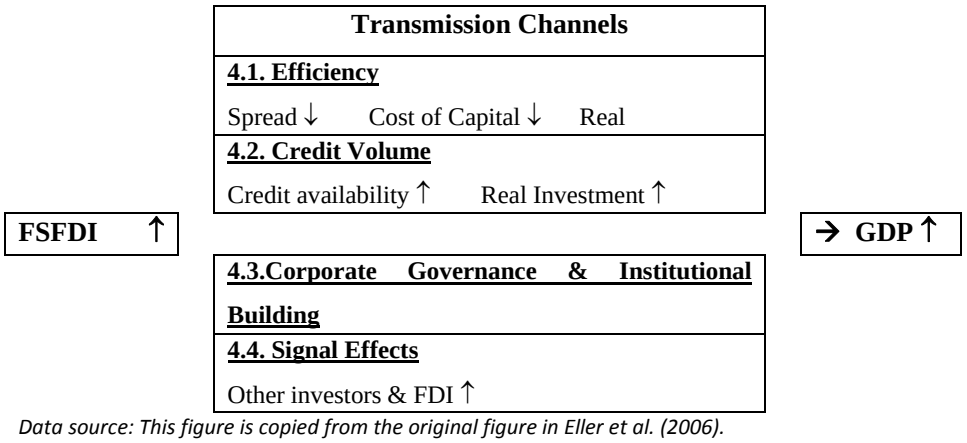
4.2. Credit Volume Channel

4.3. Corporate Governance & Institutional Building Channel

4.4. Signal Effects Channel

Figure 6 visualizes the four different transmission channels. FSFDI induces several effects that occur inside these four channels. This may influence economic growth.

Figure 6: Transmission channels of FSFDI on host economic growth.



Data source: This figure is copied from the original figure in Eller et al. (2006).

4.1. Efficiency Channel

Inside the efficiency channel several FSFDI-induced spillover effects are at work. These efficiency effects occur at several levels. Hence this section is subdivided into three paragraphs. These paragraphs describe the effects on efficiency levels at the strategic level, the management level and the operational level.

Strategic level: The foreign institutions often focus on profits in the long run. This might explain their common strategic focus on volume growth in the host country (BIS, 2004). These long-term strategies result automatically in competition with the established domestic companies. Foreign banks have the expertise to gain market share by offering new innovative financial services (CGFS, 2004). The implementation of these new and better products could stimulate the domestic financial development. If domestic firms are able to cope with the foreign competition, they could watch-and-learn from foreign competitors and use their innovative products and services for their own benefit. Once proved to be able to cope with the competition, the domestic banks should maximize their competitive-advantage of local knowledge (Claessens et al., 2001). However, in case of the CEE-area, this competitive advantage for local firms has been very limited. This was due to the strong historical ties with the neighbouring countries where parent organisations were often located (De Haas & Naaborg, 2005).

FSFDI transforms the acquired firm into a part of one larger financial organisation. Ownership and control are transferred. This leads to the ongoing process of transferring knowledge between the foreign institution and the local subsidiary (CGFS, 2004). This could affect the subsidiary positively in periods of crisis. The parent organisation has the ability to backup local funding issues. However the subsidiary could also be negatively affected in case the home country faces a crisis. Negative effects of such shocks could be transferred from the parent organisation to the foreign subsidiary (BIS, 2004).

FSFDI transfers the reputation of the parent organization. This can be a vital asset when establishing new client relationships in the local market (CGFS, 2004). Moreover the reputation proved to be effective means to lower the moral hazard problems that used to be induced by government bailouts. Governments used to bail out the depositors when banks were liquidated. Neither the bank nor the depositor had an incentive to exercise caution in lending (in case of the bank) or decision-making in where to put their deposits in the future (in case of the depositor) (Tang et al., 2000). Lowering moral hazard problems reduce risk-taking behaviour by the depositor and bank. This improves the financial system.

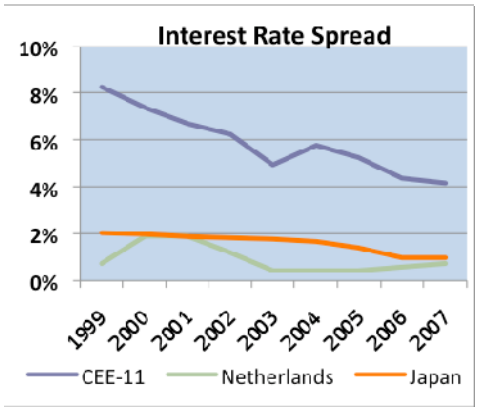
Management level: New management will affect the acquired firm positively as profit efficiency is increased, but also negatively as managerial costs increases (Amel et al., 2002). The new management has great interest to clear risky credit portfolios. Hence the new subsidiary introduces new risk-diversifying techniques and economies of scope that should result in more efficient risk management (ECB, 2005; Eller et al., 2006).

Operational level: Foreign banks have a tendency to standardize on costs by implementing group-standards for back-office routines, credit controls or legal and accounting practices (Pomerleano & Vojta, 2001; CFGS, 2004). Increased competition pushes local banks to adapt to these new circumstances. If local banks copy these routines and procedures, the overall efficiency level of the financial sector may improve.

In terms of cost efficiency, some argue that foreign banks are more cost efficient (Goldberg, 2004, Bonin et al., 2005a) while others argue that economies of scale and scope do not differ among foreign and domestic financial companies (Green et al., 2004). Foreign firms face upfront costs and might have a cost advantage after some time. However domestic banks might enable themselves to cut back on costs by assimilating superior banking practices from the foreign banks (Claessens et al., 2001).

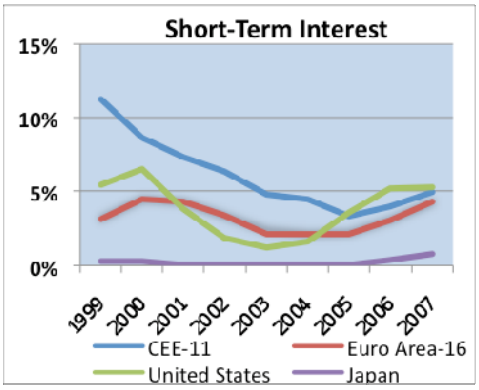
How does these efficiency gains influence the financial sector? As foreigners enter the financial markets new strategies and management are introduced. This results in new products and risk-diversifying techniques. These changes stimulate a more efficient capital allocation. The increased local and regional competition creates a more efficient financial sector (Drakos, 2003). As efficiency levels rise, the interest rate margins fall (Claeyes & Van der Vennet, 2004). Figure 7 illustrates the decline of the average interest rate spread. This rate measures the spread in interest paid (funding costs) and interest received (earnings on financial product) by financial institutions. The increased competition lowered the cost of financing and hence stimulated real investment in the CEE area (Holló & Nagy, 2006). Moreover figure 8 and 9 confirm the decline in short-term and long-term interest rates in the CEE-area.

Figure 7: Interest rate spread



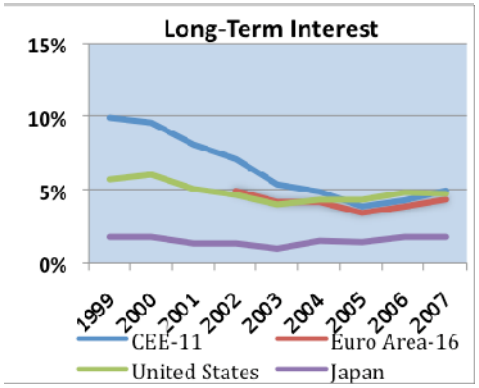
Data source: World Bank. CEE-11 is the average rate over the countries.

Figure 8: Short-Term Interest Rates



Data source: AMECO. CEE-11 is based on median. Figures are based on 3-month interbank rates.

Figure 9: Long-Term Interest Rates



Data source: AMECO. CEE-11 is based on median. Figures are based on government bonds.

Despite this rather positive effect on the interest rates in the CEE area it is important to stress one very important risk of foreign competition as well. Foreign banks might pick the most profitable market niches and by doing so they might exclude small and medium sized enterprises (SME's). This so-called "cherry-picking" might have positive or negative effects. A positive effect could arise as foreign banks exploit their competitive-advantage in their niche markets resulting in better services offered. This occurred in Australia where both domestic firms and customers benefited from this process (McFadden, 1994). Empirical evidence confirms that foreign banks do not seem to discriminate against SME's (BIS, 2004a). In contrast with this positive effect, there might arise a negative effect as well. Domestic banks could be pushed out of the market, as the 'leftover niches' are too risky. This could either lead to growing concentration (Mamatzakis et al., 2005; BIS 2004) or periods of instability (Papi & Revoltella, 2003). Recent evidence suggests that despite the higher degree of concentration, banking markets have often become more competitive due to the presence of foreign banks (Koutsomanoli-Filippaki et al., 2009).

4.2. Credit Volume Channel

Better-capitalized banks may provide more credit to the local market. Empirical evidence is found that this so-called 'financial-deepening' could be a significant determinant of economic growth as investments are stimulated (Wachtel, 2003). As mentioned by Eller et al. (2006), it is crucial to analyse the role of foreign banks in credit allocation as their role has become dominant in the CEE-area. Recall figure 3 and 4 in the introduction of this paper.

The qualitative research of De Haas & Naaborg (2005) shows that credit allocation by foreign-owned banks in the CEE-area may have been initially focussed on the credit supply

to multinationals. However most of these banks started to gradually lend more to the SME's. This result is explained by focusing on the competition effect. In their strong competition for the larger corporations, foreign banks automatically start to move down the market by increasing their credit supply towards the SME's (De Haas & Naaborg, 2005). Even when foreign firms start with 'cherry-picking' the market, the competition for market volume seems to push them towards the more difficult SME segment. Mihaljek (2006) does not find evidence for such relationship. Eller et al. (2006) describe that the impact of foreign bank entry in general strongly depends on the form of market entry. A subsidiary can either be acquired or established. In the first case, the existing client base is maintained. It is likely that the credit volume does not directly changes. In the latter case, a new client base needs to be created. It is likely that the credit volume increases. They argue that the final effect of foreign entry on the host capital accumulation strongly depends on the lending practices (public and private sector) and on their strategies if a crisis hits the host (or home!) country.

When analyzing the credit supply by foreign-owned banks, it is important to make a distinction between the *private sector* and the *public sector*. Evidence is found that foreign-owned banks lend more intense to the private sector than domestic-owned banks (Bol et al., 2003). The financing of the private sector is important, as real investments can be stimulated. Given the dominant role of foreign-owned banks in the CEE private sector, it is important to analyse what specific segments they are financing. Opinions seem to differ. Some found evidence that foreign-owned banks 'cherry-pick' and hence only service the most profitable segments, often subsidiaries of the large corporate organisations (Papi & Revoltella, 2003; Mehl & Winkler, 2003). The potential negative effects of such strategy have already been discussed in the previous paragraph. Others argue that the focus of foreign-owned subsidiaries could also be on retail banking (Breyer, 2004). The potential positive effects of such strategy could be that the more efficient foreign-owned banks replace the less efficient domestic-owned banks by natural competition. This stimulates the soundness of the financial system.

Total credit supply to the *public sector* is much larger than to the *private sector* (Fink et al., 2004; Bonin et al., 2005a). The public sector delivers several crucial services that are important determinants for economic growth. Infrastructure, education, national safety and health care are well-known determinants for economic growth. Another, less well-known, service provided by the public sector is the flow of communication. These telecommunication services had little priority in the centralized CEE economies as socialist

regimes only focused on hierarchical communication instead of individual communication. As CEE economies moved towards market economies, upgrading the telecommunication network became full priority of central governments. Well functioning communication networks seem to stimulate economic growth (Madden & Savage, 1998).

One important common characteristic of lending practices in the CEE area is that SME's prefer 'relationship lending' (Eller et al., 2006). The difficulty with relationship lending is the potential problem of moral hazard. This could result in a situation that credit is not distributed among the most profitable and efficient local businesses, but rather on to the businesses that maintain a 'good' relationship with the local lender. The potential danger of such 'relationship lending' is that the economy would grow below their potential. Foreign-owned banks use international standards for their credit decisions. These banks experience difficulties in local lending based on such relationship lending, as the information asymmetries in the CEE area are substantial. Eller et al. (2006) argues that this might explain why local SME's profit less from foreign entry than the large corporations in the short run. In the long run the SME's might benefit more from foreign entry as the use of international standards pushes institutional building and overall stability in the financial sector. This will be further elaborated on in the third transmission channel.

How does the increase in credit volume affect the well functioning of the financial sector?

The steady growth of the credit volume is in general a good signal. Credit supply to both the public sector and private sector might stimulate real investments. Whether in this process foreign banks 'cherry-pick' is difficult to analyze. SME's might benefit less in the short run but more in the long run due to the positive effects on the framework of the financial sector. This increase in real investments could spur economic growth. However the growth of credit alone is not enough to have a significant positive impact on economic growth. It seems to be very important that the (new) credits are allocated towards the most profitable projects. This only occurs in an efficient system (Gianetti & Ongena, 2005). Hence the positive impact of the credit volume growth seems to depend strongly on a simultaneous increase in overall efficiency. The growth of credit volumes increases the dominance of foreign-owned banks in the CEE area as well. Therefore the reaction of foreign-owned banks in times of crisis becomes increasingly important. No evidence is found for a decrease in credit supply by foreign banks in case a crisis hits the host country (De Haas & Van Lelyveld, 2002). As a matter of fact, the reputation of foreign-owned banks works in their advantage in times of host economy crisis as domestic depositors seems to trust these foreign-owned banks more

than domestic-owned banks (Levine, 1996). However a crisis could also hit in the home country. Foreign-owned banks might react by cutting back on the local credit supply (Vittas, 1995; IADB, 2005). Therefore the strong dependency on foreign-owned banks remains a key risk for the financial stability in the CEE area. This is something to consider carefully for national policymakers in the CEE area.

4.3. Corporate Governance & Institutional Building Channel

After the collapse of the communist regimes in the CEE area, policymakers opened up their borders for foreign-owned financial institutions mainly because they believed that foreigners could improve the quality of the banking system (De Haas & Van Lelyveld, 2002). Two important aspects form a financials sectors backbone: corporate governance and institutional building. Both these aspects are discussed in this paragraph separately as they both have strong influence on the quality of the financial system.

Corporate Governance: Foreign-owned banks may have a positive influence on the stability of the host financial sector. FSFDI stimulates the integration of the local subsidiary into the parent organisation that uses international standards and processes. The implementation of these standards and processes helps to clear the bad loans in the existing portfolios of the foreign subsidiaries (Fink et al., 1998). These better portfolios contribute to more stability in the financial sector (King & Levine, 1993). Eller et al. (2006) stresses the important spillover effect from these standardized foreign-owned banks on domestic-owned banks. By using international standards themselves, foreign-banks push both domestic-banks and local businesses to switch to these new standards. This process of implementing international standards for accounting, auditing and corporate governance contributes to the soundness of the financial sector, as the overall build-up of non-performing assets in the financial system is limited (CGFS, 2004).

Institution building: Foreign-owned firms introduce new products, services and know-how. Hence the supervisory and regulatory system needs to be adapted and the definition and enforcement of property rights needs to be redefined. Financial systems that have better institutional frameworks provide better services (Levine, 1996). The domestic-owned firms could also induce a change in the institutional framework. As foreign-owned firms enter the host country, the competition increases. Domestic-owned banks that fear the increased competition will start seeking access to developed markets. ‘Appropriate’ supervision and regulation by developing authorities will be a requirement from the developed countries

before granting such access to these domestic banks. Domestic banks may therefore pressure regulatory authorities themselves, to 'harmonize' their supervisory and regulatory procedures (Levine, 1996).

4.4. Signal Effects Channel

Several developments can be interpreted as signals by other investors and hence attract them to the CEE markets. Eller et al. (2006) mentions several signals. The increased competition forces foreign-owned firms to develop new market segments. The development of these new market segments can be interpreted as a signal by other investors. Another signal arises as rather risk-averse investors start entering CEE markets. One final signal example is the rise of host national income in CEE area. Such increase pushes domestic pension funds to reform. Both can be seen as a signal and might be picked up as such by other players.

5. DATA & EMPIRICAL MODEL

This chapter focuses on the required empirics for researching the relationship between FSFDI and economic growth. The methodology consists of five steps. First, the dependent variable is explained. Second, the main independent variable is discussed. Third, some stylized facts and descriptive statistics of these variables are provided. Fourth, the empirical model is explained. Fifth, the estimation procedure and control variables are discussed.

The model is estimated using the method of Ordinary Least Squares (OLS). For comparative reasons, this paper follows the empirical strategy of Eller et al. (2006). The total sample consists of a group of 10 CEE countries (Romania is excluded due to the lack of data) over the period 1999-2007. Detailed data information can be found in Appendix A.

5.1. Dependent Variable

To estimate the influence of FSFDI on economic growth, a measure for economic growth is required. Eller et al. (2006) uses, as most literature does, the growth of real GDP per worker as a measurement for economic growth in a country. However they do not explicitly explain why they used GDP *per worker* instead of GDP *per capita* as the dependent variable. This report uses both measures and focuses later on what fits best. Country specific data for population and GDP are accessible via the database of AMECO.

5.2. Independent Variable

FSFDI data is based on the "NACE-Code J", better known as "financial intermediation". This means FSFDI includes all activities under financial intermediation (subcode 65), insurance and pension funding except compulsory social security (subcode 66) and activities auxiliary to financial intermediation (subcode 77). FSFDI is measured in inward stock levels and expressed in both *per capita* and *per GDP* terms. The data on FSFDI inward stock levels of the countries in the CEE area is not publically available. Data is purchased from the Vienna Institute for Economic Studies (Wiener Institut für Internationale Wirtschaftsvergleiche).

A complete overview of all (other) independent variables is given in figure 10. This overview contains for each independent variable a very short description, its source and the total amount of observations. The 'detailed' description per variable is provided in Appendix A. The 'descriptive statistics' of the main variables are provided in Appendix B.

Figure 10: overview of the dataset

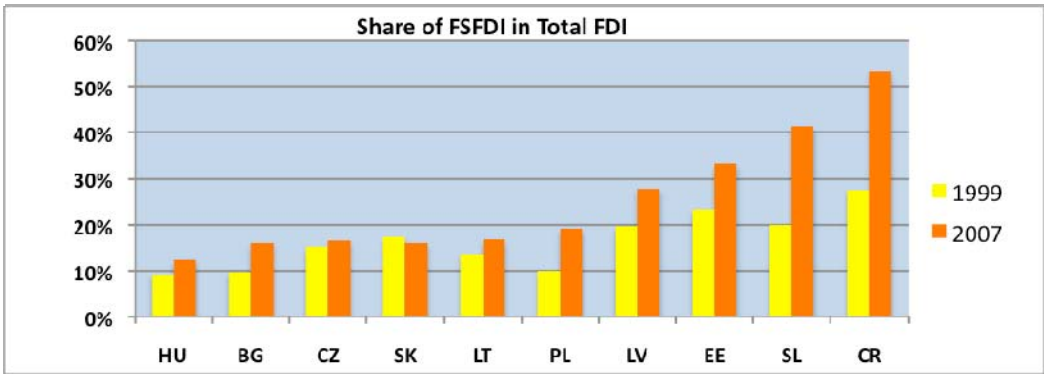
Variable	Definition	Source (Obs)
$RGDPemp_{it}$	GDP at 2000 market prices per employed person.	AMECO (90)
$RGDPcap_{it}$	GDP at 2000 market prices per head of population.	AMECO (90)
$FSFDIemp_{it}$	Inward FSFDI stock data based on "NACE-Code J"*** / workforce.	WIIW* (88)
$FSFDIcap_{it}$	Inward FSFDI stock data based on "NACE-Code J"*** /population.	WIIW* (88)
$FSFDIgdp_{it}$	Inward FSFDI stock data based on "NACE-Code J"*** / GDP.	WIIW* (88)
$Kemp_{it}$	Real Gross Capital Formation at 2000 market prices / workforce.	AMECO (90)
$Kcap_{it}$	Real Gross Capital Formation at 2000 market prices / population.	AMECO (90)
$Hemp_{it}$	Constructed index: total number of people in workforce (25yr-64yr) that has attained at least upper secondary school / total workforce.	EUROS**(86)
$Hcap_{it}$	Constructed index: total number of people in workforce (25yr-64yr) that has attained at least upper secondary school / total population.	EUROS**(86)
GC_{it}	Real consumption of the government at 2000 market prices / GDP.	AMECO (90)
π_{it}	Price Deflator Gross Domestic Product at 2000 market prices.	AMECO (90)

Missing Data: (*) = Croatia: 1999 and Slovakia: 2007; (**) = Bulgaria: 1999 and Croatia: 1999, 2000, 2001. (***) = "NACE-Code J" includes all data in the sector of "financial intermediation", this includes all activities on financial intermediation, insurance and pension funding and activities auxiliary to financial intermediation.

5.3. Stylized facts

Figure 1 illustrated the remarkable increase of FSFDI relative importance to total FDI. Figure 11 subdivides this FSFDI increase over all CEE countries separately. The shares of FSFDI to total FDI have increased over the years for all countries, except for Slovakia that continued at approximately the same level. Some have increased much stronger (Estonia, Slovenia, Croatia, Latvia, Poland) compared to others (Czech-Republic, Bulgaria, Hungary, Lithuania). *Total* FSFDI share to *total* FDI measured over all CEE countries increased from 15% in 1999 to 21% in 2007 (figure 1). The role of FSFDI has become increasingly important.

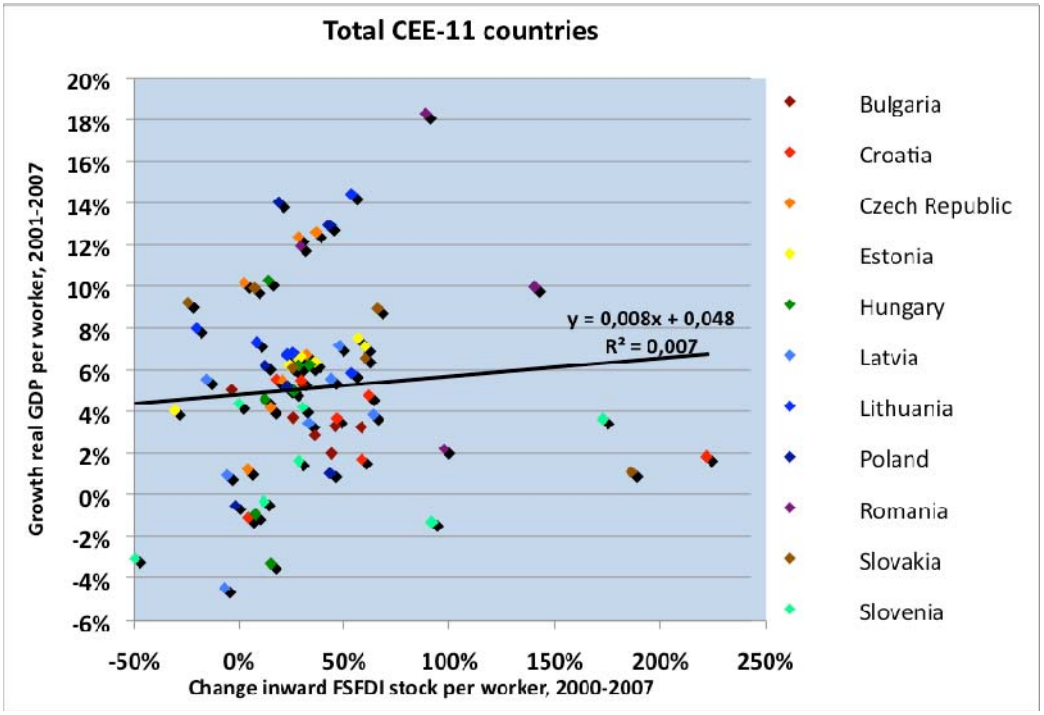
Figure 11: Share of FSFDI to total FDI for all CEE countries.



Data source: Vienna Institute for Economics. FSFDI: inward stock in mln. EUR; based on own calculations.

Given the increase in importance of FSFDI flows and the economic growth in the CEE area (figure 2) it might be possible to obtain a relationship straight from the descriptive statistics. Such a relationship might visualize the direct link between the growth in FSFDI stock values and economic growth in the CEE countries. A simple scatter plot between the change in inward FSFDI stock per worker and the real GDP per worker growth is drawn in figure 12.

Figure 12: Change FSFDI stock - growth



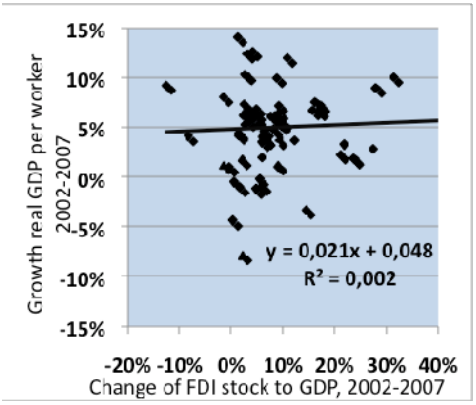
Data source: AMECO & Vienna Institute for Economics; based on own calculations.

The trend line over all countries suggests that there is a weak linear positive link between inward FSFDI growth and real GDP growth per worker. However the relationship seems to be very fragile. The low R-squared is caused by strong outliers. To further clarify these outliers, separate scatter plots for each CEE country are provided in Appendix C. Some countries experienced high FSFDI growth combined with low GDP growth (Croatia & Slovenia) while other countries experienced the opposite (Hungary & Czech Republic).

Figure 13 is a scatter plot of the direct relationship between total FDI and economic growth. There seems to be a weak positive link. The relationship is again fragile, given the low R-squared. Eller et al. (2006) found a (weak) negative relationship for this scatter. The combination of both the negative relationship between FDI and economic growth and the positive relationship between FSFDI and economic growth forms their argument for a possible 'hump-shaped' relationship.

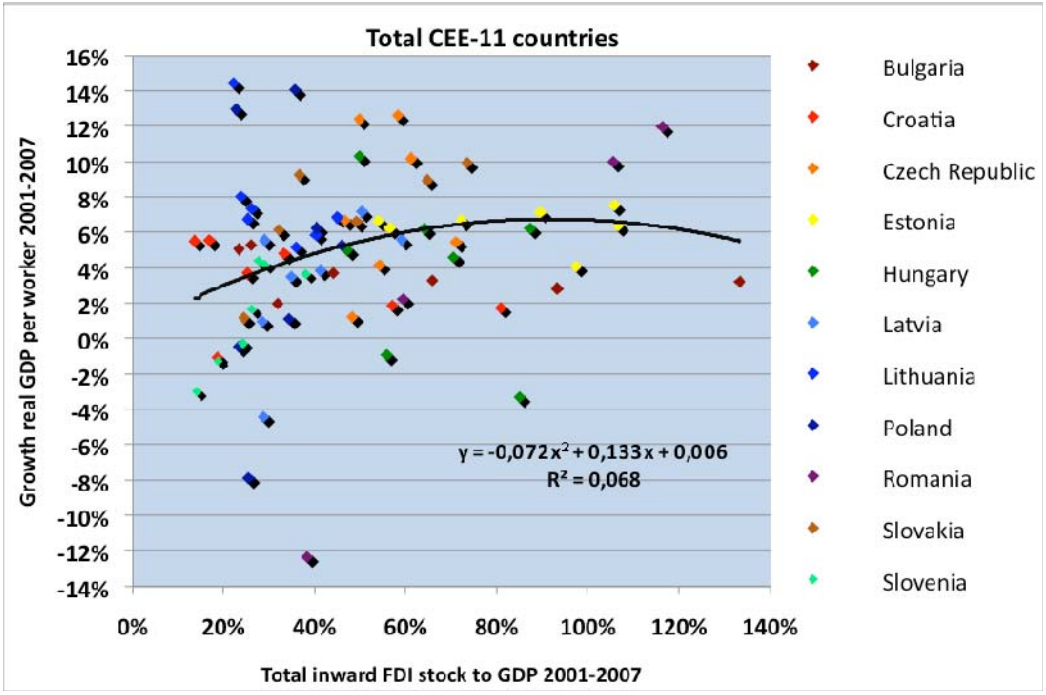
Here, figures 12 and 13 can be interpreted in approximately the same way. These figures suggest two (weak) positive links that could indicate a potential 'hump-shaped' relationship between FSFDI and economic growth as well. Therefore, figure 13 is here not further clarified per country. Instead it is more interesting to directly start analyzing this potential 'hump-shaped' relationship.

Figure 13: Change FDI stock (% GDP) - growth.



Data source: data based on AMECO and Vienna Institute for Economics; based on own calculations.

Figure 14: FDI stock to GDP growth

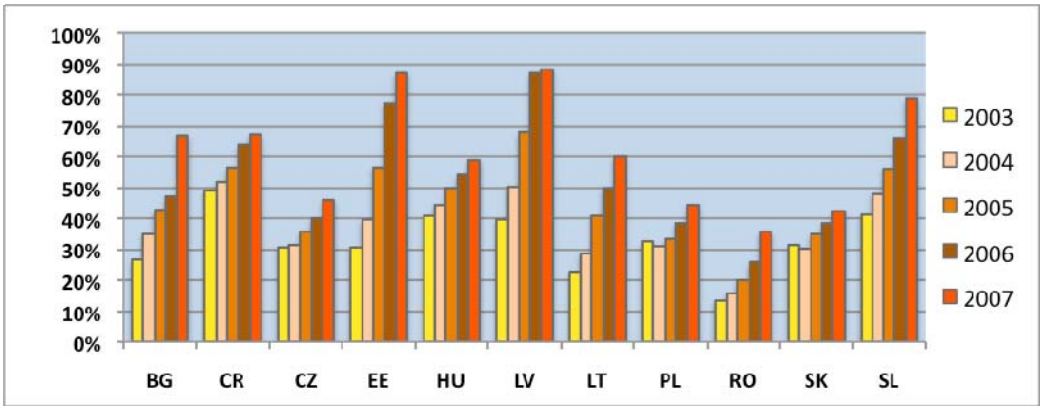


Data source: AMECO & Vienna Institute for Economics; based on own calculations.

Figure 14 shows the scatter plot over all countries using a non-linear relationship. A 'hump-shaped' relationship can be observed. Each country is given a different colour. In order to clarify different patterns among countries, appendix D summarized all scatter plots for each country individually. Most countries show indeed a parabolic relationship. Only three countries (Bulgaria, Hungary and Lithuania) show opposite relationships. Overall these results create the parabolic relationship in figure 14. It seems that FDI might not have an unlimited positive impact on economic growth. If this holds for FSFDI, than early-stage FSFDI might be more beneficial for the economy than later-stage FSFDI (Eller et al., 2006).

Figure 15 and 16 are related to the credit volume transmission channel (paragraph 4.2). Figure 15 illustrates the relative and absolute increase of domestic credit to the private sector in the CEE area over the past years. Credit to the private sector has steadily increased.

Figure 15: Private Credit to GDP in 11 CEE countries.



Data source: EBRD Structural and Institutional Change Indicators (2009); based on own calculations.

The differences between the countries in terms of the domestic credit distributed to the private sector are rather large. Whereas in countries as Slovenia, Latvia and Estonia the domestic credit towards the private sector is at 80%; other countries as Slovakia, Romania, Poland and Czech Republic barely reach 40%. This situation is in contrast with the period from 1998-2003 (Eller et al., 2006). Over that period the private sector was declining. Reasons for this decline seem to differ among countries. Late privatisation (Romania), clearing risky portfolios (Czech Republic) and poor banking conditions (Slovakia) explain the stagnation in domestic credit to the private sector (Eller et al., 2006). Figure 15 visualizes the period after this stagnation and shows significant growth in almost all countries. Figure 16 shows that the renewed increase in private sector credit goes hand in hand with a reduction of non-performing loans in most countries. Only Estonia stabilized at a 0,5% level. But this is already the lowest level of non-performing loans among these countries. Romania (slightly) increased from 1,5% to 3% level. Overall the quality of the CEE loan portfolio has increased.

Figure 16: Non-performing loans (as percentage of total loans)

	BG	CR	CZ	EE	HU	LV	LT	PL	RO	SK	SL
2003	4,4%	13,1%	5,0%	0,5%	3,8%	1,4%	2,6%	25,1%	1,5%	9,1%	9,4%
2004	3,7%	7,5%	4,1%	0,3%	3,6%	1,1%	2,4%	17,4%	1,7%	7,2%	7,5%
2005	3,8%	6,2%	4,0%	0,2%	3,1%	0,7%	3,4%	11,6%	1,7%	5,5%	6,4%
2006	3,2%	5,2%	3,8%	0,2%	2,9%	0,5%	3,1%	7,7%	1,8%	7,1%	5,5%
2007	2,5%	4,8%	2,8%	0,5%	2,8%	0,4%	2,7%	5,4%	3,0%	2,6%	3,9%

Data source: EBRD Structural and Institutional Change Indicators (2009); based on own calculations.

5.4. Empirical Model

In line with Eller et al. (2006) the method of cross-country growth accounting is being used. The advantage of this method is that the relative contributions of growth in inputs and efficiencies can be measured, whereas other models treat efficiency as an unobserved variable. The standard neoclassical growth model can be re-written to a dimension where output, physical capital and human capital are expressed *per worker* or *per capita*. This equation is expanded to both country and time dimensions by taking logarithms and the first differences on both sides of the equation. We obtain 'the growth rate of output per worker':

$$\Delta \log (y_{it}) = \Delta \log (A_{it}) + \alpha \, \Delta \log (k_{it}) + \beta \, \Delta \log (h_{it}) \qquad (1)$$

y = output-labor ratio (Y/L), i = 1, …, N (country index),
A = total factor productivity (overall efficiency), t = 1, …, N (time index),
k = physical capital-labor ratio (K/L), α = physical capital elasticity,
h = human capital-labor ratio (H/L), β = human capital elasticity.

The modelling of FSFDI into this equation seems to be rather arbitrary. Literature describes three ways in which *general* FDI can be modelled into such equation. Firstly, Borensztein et al. (1998) describes the influence of *general* FDI on the domestic physical capital stock. This could either be positive, as greenfield investments increase the domestic physical capital stock, or negative, as these foreign investments 'crowd-out' domestic investments. Borensztein et al. (1998) found (non robust) evidence for a positive 'crowd-in' effect. Secondly, FDI can be treated as a channel through which knowledge spillovers occur and so influence the level of human capital. Borensztein et al. (1998) find strong complementary effects between the level of human capital and FDI. This implies that FDI is more productive if the host country has a certain level of absorptive capacity. This requires a minimum threshold stock of human capital. Thirdly, FDI is assumed to stimulate host economic growth through its positive effect on the total factor productivity of the host country.

Eller et al. (2006) follow the third modelling technique. Total factor productivity 'A' is influenced by a component that is determined outside the model and the change in FSFDI. Moreover FSFDI could influence total factor productivity either '*temporary*' or '*permanent*'.

'Temporary effect': the *change* in the inward stock levels of FSFDI induces efficiency gains and hence influence total factor productivity. This can be modelled as follows:

$$\Delta \log (A_{it}) = \gamma_{A0} + \gamma_{A1} \, \Delta \, FSFDI_{it} \qquad (2)$$

γ_{A0} = exogenous factor influencing 'A', γ_{A1} = endogenous factor influencing 'A'.

'Permanent effect': the *total* inward stock levels of FSFDI have an influence on the total factor productivity. This can be modelled as follows:

$$\Delta \log (A_{it}) = \gamma_{A0} + \gamma_{A1} FSFDI_{it} \quad (3)$$

γ_{A0} = exogenous factor influencing 'A', γ_{A1} = endogenous factor influencing 'A'.

Both the permanent and temporary effect will be separately estimated in two different hypotheses. These will be further elaborated on in paragraph 5.6.

5.5. Estimation Procedure

These hypotheses will be estimated using the panel data procedure. The strength of this approach lies in its ability to use both time- and country-effects. This increases the total number of observations and thus increases the degrees of freedom. Overall this leads to long-run growth effects that possess a higher degree of confidence (Eller et al., 2006). The panel data set is static. Although dynamic panels have some advantages above static panels as they control for omitted variable bias, the theoretical model does not require specific lagged dependent variables (Eller et al., 2006). The model includes time-fixed effects, as the focus lies on the differences between the CEE countries. These CEE countries are not randomly chosen; hence time-fixed effects seem to be the best procedure (Eller et al., 2006). The model shows large differences in the standard deviations of the residuals. To correct for heteroskedasticity, the diagonal White-test is used. This test corrects for biased standard errors (Eller et al., 2006).

The regressions can be checked on their robustness by adding control variables. A robustness check provides extra comfort about the significance and the sign of the estimated coefficients. The first control variable that is added into the model is the size of the public sector. The theory predicts that the size of the public sector is negatively related to economic growth. As the public sector grows, higher revenues are needed to finance the government expenditures and keep central budgets balanced. This implies higher taxes and, via the real income per capita, hence a negative effect on economic growth (Afonso & Furceri, 2008). The second control variable that is added in to the model is the inflation rate. The expected sign of this variable is ambiguous. On the one hand a positive sign might be expected, as predicted by the theory of Okun's law. Okun developed a theory that linked unemployment levels with the output level. In case the unemployment level drops below its 'natural' level (in case of 'full employment'), the output level is pushed above its 'natural' level. This situation increases inflation. On the other hand a negative sign might be

expected, as there seems to be a negative relationship (Barro, 1995). This is especially the case in transition economies where the high inflation rate affects the level of financial depth. High inflation rates force the financial agents to keep their portfolios liquid. This situation is inefficient. This worsens the level of financial development and may lead to a negative effect on economic growth (Rousseau & Wachtel, 2001).

5.6. Two Hypotheses

The two central hypotheses can be created by integrating separately both expressions for total factor productivity (2) & (3). From here the control variables can be added into both these central models (Eller et al., 2006):

'Temporary Growth Hypothesis':

$$\Delta \log (y_{it}) = \gamma_{A0} + \gamma_{A1} \Delta \log (FSFDI_{it}) + \alpha \Delta \log (k_{it}) + \beta \Delta \log (h_{it}) + \phi_1 \Delta \log (GC_{it}) + \phi_2 \pi_{it} \quad (4)$$

'Permanent Growth Hypothesis':

$$\Delta \log (y_{it}) = \gamma_{A0} + \gamma_{A1} \log (FSFDI_{it}) + \alpha \Delta \log (k_{it}) + \beta \Delta \log (h_{it}) + \phi_1 \Delta \log (GC_{it}) + \phi_2 \pi_{it} \quad (5)$$

y = output-labor ratio (Y/L),	t = 1, …, N (time index),
FSFDI = inward stock levels (mn EUR)	γ_{A0} = exogenous factor influencing 'A',
k = physical capital-labor ratio (K/L),	γ_{A1} = endogenous factor influencing 'A',
h = human capital-labor ratio (H/L),	α = physical capital elasticity,
GC = size of public sector (gov.cons./GDP),	β = human capital elasticity,
π_{it} = inflation,	ϕ_1 = government cons. elasticity,
i = 1, …, N (country index),	ϕ_2 = inflation elasticity.

Both these hypotheses (4) and (5) will be estimated in chapter 6. Positive signs for the coefficients are expected for γ_{A0}, γ_{A1}, α and β. Negative sign for the coefficient is expected for ϕ_1. The sign for ϕ_2 is difficult to predict as explained in paragraph 5.5.

6. Results

This chapter analyses separately the results of the estimated hypotheses (4) and (5). Firstly, the so-called 'temporary growth hypothesis' (4) will be analyzed. Secondly, the so-called 'permanent growth hypothesis' (5) will be further discussed.

6.1. 'Temporary growth hypothesis'

Figure 17 visualizes the estimated output for the 'temporary growth hypothesis' (4) using the method of ordinary least squares over the panel data set. Note that both time- and country-fixed effects have been used. Moreover the dependent variable is measured in *per capita* terms as these regressions contained the most significant results. Estimated results in *per worker* terms can be found in Appendix E.

Figure 17: Fixed effects panel data analysis: impact of FSFDI on economic growth.

Explantory Variables	**Dependent variable: Δln RGDPcap$_t$**			
Regression	**(4a)**	**(4b)**	**(4c)**	**(4d)**
TEMPORARY EFFECTS	FSFDI$_{it}$ = **Δln FSFDIcap$_{it}$**	FSFDI$_{i,t-m}$ = **Δln FSFDIcap$_{i,t-3}$**	FSFDI$_{it}$ = **Δln FSFDIgdp$_{it}$**	FSFDI$_{i,t}$ = **Δln FSFDIgdp$_{i,t-3}$**
Constant	0.048 ***	0.065 ***	0.048 ***	0.063 ***
	(3.644)	*(4.971)*	*(4.759)*	*(4.903)*
FSFDI$_{it}$	0.019	-0.028 **	0.002	-0.026**
	(1.308)	*(-2.607)*	*(0.149)*	*(-2.632)*
Δln (k**cap**$_{it}$)	0.127 *	0.169 *	0.139 **	0.175 *
	(1.783)	*(1.718)*	*(1.995)*	*(1.764)*
Δln (h**cap**$_{it}$)	-0.309	-1.112 ***	-0.316	-1.124 ***
	(1.003)	*(-3.002)*	*(-1.039)*	*(-3.029)*
Δln (GC**gdp**$_{it}$)	-0.189	-0.131	-0.192	-0.123
	(-1.274)	*(-0.788)*	*(-1.233)*	*(-0.741)*
π_{it}	-0.074			
	(-0.429)			
Observations	75	49	75	49
Period Fixed Effects	yes	yes	yes	yes
Country Fixed Effects	yes	yes	yes	yes
Durbin-Watson	1.765	1.914	1.728	1.893
Adjusted R^2	0.333	0.489	0.329	0.484
F-Value	2.762	3.707	2.813	3.654

T-statistics are in parentheses and based on heteroskedasticity-robust standard errors (White-test 'diagonal'; with no degrees of freedom correction) Asterisks indicate significance levels at respectively 1% (***), 5% (**) and 10%(*). Romania is not included in this regression due to a lack of FSFDI data. For the definitions of the variables see appendix A.

Regressions (4a) and (4b) capture the effect of FSFDI *per capita* while the regressions (4c) and (4d) measure the effects of FSFDI *per GDP*. Either way both types of regressions yield more or less the same results. The change in the physical capital stock per capita is positive

and significant and behaves as expected. However the change in the human capital stock is unexpected. The sign is always negative. In regressions (4b) and (4d), where the FSFDI variable is lagged three periods, the estimated coefficient is highly significant. A further elaboration on this result is provided after having analyzed the results on the 'permanent growth hypothesis' in the next paragraph. The size of the public sector was expected to influence economic growth negatively. This negative sign is found in all regressions, but not significant in all cases. The negative sign of the inflation is in line with the theory of Rousseau et al. (2001) that high inflation rates hampers financial development and hence negatively affect economic growth. However the sign is not significant. When the inflation drops out of the equation the estimated signs of the coefficients of all other variables stay approximately the same. Moreover the constant and the physical capital stock per capita stay significant. This could indicate robustness in the model.

Estimations for the important FSFDI variable are more difficult to analyze. In regressions (4a) and (4c), where the FSFDI variable is non-lagged, the estimated coefficients are positive but not significant. This result is in line with Eller et al. (2006). In regressions (4b) and (4d), where the FSFDI variable is lagged three periods, the estimated coefficients are negative and significant. These significant negative results show that the growth of the FSFDI both per capita and per GDP are related negatively to economic growth with a lag of three periods. This result might be in contrast with Eller et al. (2006), as they found positive and significant results using a lag of two periods. However they measure FSFDI *per worker* while this paper measure FSFDI both *per capita* and *per GDP*.

6.2. 'Permanent growth hypothesis'

Figure 18 summarizes the estimation output for the 'permanent growth hypothesis' (5) using the method of ordinary least squares over the panel data set. Time- and country-fixed effects have been used here as well. Again, FSFDI is both measured in FSFDI *per capita* and FSFDI *per GDP.* In line with the results on the 'temporary growth hypothesis', both measurements of FSFDI yield approximately the same results. The change in the physical capital stock per capita is positive and significant. This result is as expected. The change in the human capital stock is unexpected. The sign is always negative but not significant. Hence we cannot draw strong conclusions here. The size of the public sector was expected to influence economic growth negatively. This negative sign is found in all regressions, but not significant in all cases. Just as in the 'temporary growth hypothesis' the results show a negative sign for inflation. The sign is as expected but the findings are not significant. If we

drop inflation out of the regression this influences the significant levels of some estimates. However the sign of these estimates do not change. Moreover the sign and the significance level of the physical capital stock stay intact. The change of the significance levels of some estimators seems to be more the result of the used lag of three periods than the dropped inflation variable. Again this indicates robustness in the used model.

In regressions (5a) and (5c), where the FSFDI variable is non-lagged, the estimated coefficients are positive and significant. However in regressions (5b) and (5d), where the FSFDI variable is lagged three periods, the estimated coefficients are insignificant and have both positive as well as negative signs.

Figure 18: Fixed effects panel data analysis: impact of FSFDI on economic growth.

Explantory Variables	**Dependent variable: Δln RGDPcap$_t$**			
Regression	**(5a)**	**(5b)**	**(5c)**	**(5d)**
PERMANENT EFFECTS	FSFDI$_{it}$ = **ln FSFDIcap$_{it}$**	FSFDI$_{i,t-m}$ = **ln FSFDIcap$_{i,t-3}$**	FSFDI$_{it}$ = **ln FSFDIgdp$_{it}$**	FSFDI$_{i,t}$ = **ln FSFDIgdp$_{i,t-3}$**
Constant	-0.125 ** *(-2.198)*	0.012 *(-0.139)*	0.098 *** *(3.514)*	0.076 ** *(2.441)*
FSFDI$_{it}$	0.113 ** *(2.317)*	0.008 *(0.603)*	0.019 ** *(2.033)*	-0.124 *(-1.385)*
Δln (k**cap**$_{it}$)	0.143 ** *(2.297)*	0.164 ** *(2.390)*	0.137 * *(1.980)*	0.137 ** *(2.067)*
Δln (h**cap**$_{it}$)	-0.466 * *(-1.735)*	-0.304 *(-0.935)*	-0.297 *(-0.964)*	-0.320 *(-1.104)*
Δln (GC**gdp**$_{it}$)	-0.008 *(-0.050)*		-0.169 *(-1.131)*	-0.147 *(-1.579)*
π_{it}		-0.200 *(-1.041)*		
ln(FSFDI$_{it}$) x ln(k$_{it}$)	0.004 *(0.613)*			
ln(FSFDI$_{it}$) x ln(h$_{it}$)	0.139 *** *(2.740)*			
Observations	75	76	75	49
Period Fixed Effects	yes	yes	yes	yes
Country Fixed Effects	yes	yes	yes	yes
Durbin-Watson	1.907	1.706	1.754	1.792
Adjusted R^2	0. 415	0.354	0.346	0.346
F-Value	3.395	3.058	2.954	2.779

T-statistics are in parentheses and based on heteroskedasticity-robust standard errors (White-test 'diagonal'; with no degrees of freedom correction) Asterisks indicate significance levels at respectively 1% (***), 5% (**) and 10%(*). Romania is not included in this regression due to a lack of FSFDI data. For the definitions of the variables see appendix A.

Overall the results on both the 'temporary' and 'permanent' growth hypotheses show positive estimates for FSFDI when the data is not lagged. However only in case of the

'permanent growth hypothesis' these positive estimates were found to be significant. Furthermore these results show (mainly) negative results for both hypotheses when the FSFDI is lagged three periods. However, only in case of the 'temporary growth hypothesis' these negative estimates were found to be significant. These results can be interpreted as follows: first there is a positive impact of FSFDI induced efficiency gains (no time lags, figure 18) on economic growth and after some time (three lagged periods, figure 17) there is a negative impact of FSFDI on economic growth. As suggested by the stylized facts (figure 14) in chapter 5, these results point towards a hump-shaped relationship between FSFDI and economic growth. Eller et al. (2006) point towards the same relationship, although their evidence is rather weak. This research confirms their thoughts using the most recent data.

The dynamics in the model can further be analysed, as suggested by Eller et al. (2006), by adding interaction terms. Although significant interaction terms turned out to be scarce in this dataset, figure 18 shows one interaction term with the human capital stock that was indeed significant and positive. This is in line with the theory of Borensztein et al. (1998). Their theory on FDI spillover effects describes that economic growth requires a certain human capital 'absorptive' capacity in the host country. A minimum threshold of human capital enables a country to absorb the technologies brought along with FDI flows and hence increase economic growth. FSFDI-induced technology spillovers could be general knowledge spillovers by foreign banks (CFGS, 2004), management spillovers (Amel et al., 2002) or auxiliary services as legal and accounting practices (Pomerleano et al., 2001). This positive interaction term might explain the significant negative sign for the human capital stock that was found in some regressions. These results suggest that a country needs a certain level of FSFDI to use the current human capital stock and hence affect economic growth positively (as explained by the positive sign on the interaction term), if this is not the case than the human capital stock might not be used (efficiently) and hence have a negative influence on economic growth (as explained by the negative human capital stock term).

This paper did not found any supporting evidence for the interaction between FSFDI and the physical capital stock. Therefore this aspect is not further being elaborated on.

7. Conclusion

This paper reviews two main streams in the growth literature. These two streams, the Finance-growth and FDI-growth, are combined into one theoretical framework. This framework describes how foreign-owned banks can have an impact on the financial development in the host country via certain 'efficiency spillovers' (Eller et al., 2006). Using ordinary least squares, the impact of FSFDI-induced efficiency gains on host economic growth in 10 CEE countries is estimated. The hypotheses are tested in a panel data analysis using both time- and country fixed effects over the period 1999 to 2007. The analyses suggest that FSFDI-induced efficiency gains have a direct positive impact on host economic growth. However the analyses suggest that over time the impact of FSFDI could become negative. A similar result also found by others (Eller et al., 2006). They suggest that there might be a hump-shaped relationship between FSFDI and economic growth. This paper provides supporting evidence for their vision by using the most recent data. If the analyses are indeed correct than Eller et al. (2006) could be right with their conclusion that during the 'catch-up' phase the influence of FSFDI on economic growth is strong but that this impact shrinks as CEE countries reach European Union standards. This paper found evidence that this impact could even become negative. Policymakers in the CEE countries should seriously reconsider to what extent they keep putting efforts in attracting FSFDI. Further research could strengthen the estimation approach used in this paper by introducing other econometric techniques. Moreover it would be very interesting to analyse the relationships between FSFDI and economic growth for other areas such as Latin America and South-East Asia.

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Appendices

Appendix A: Data Description

RGDPemp (RGDPcap): real GDP at 2000 market prices divided by the total number of people employed (population) in the economy.
Data source: AMECO (Annual Macro Economic database of the European Commission's Directorate General for Economic and Financial Affairs, March 2010.

FSFDIemp (FSFDIcap) ((FSFDIgdp)) – inward stock levels: stock data, in million EUR, based on 'financial intermediation' according to the NACE-Code J divided by the total number of people employed (population) ((gdp)) in the economy. Financial intermediation includes reinvested earnings, equity capital and loans for ten CEE countries from 1999 to 2007, including insurance and pension funding and activities auxiliary to financial intermediation. Romania is dropped due to a lack of data. Missing observations: Croatia (1999), Slovakia (2007). Romania: no classification for financial intermediation available.
Data source: data was purchased from the Vienna Institute for Economic Studies (Wiener Institute für Internationale Wirtschaftsvergleiche – WIIW database).

FDI: stock data (mn EUR) based on total reinvested earnings, equity capital and loans for all ten CEE countries. Romania is dropped due to a lack of data.
Data source: WIIW database.

Kemp (Kcap) – physical capital stock: real capital stock at 2000 market prices divided by the number of people employed (population) in the economy. Gross fixed capital formation (GFCF) is used as a proxy for total physical capital stock.
Data source: AMECO database.

Hemp (Hcap) – human capital stock: index is constructed by expressing the number of people in the working force (25 yrs – 64 yrs) having completed *at least* upper secondary education, as a percentage of the total number of people employed (population) in the economy. Missing observations: Bulgaria (1999), Croatia (1999, 2000, 2001).
Data source: EUROSTAT database.

Employment: number of people employed of the total economy.
Data source: AMECO database.

GC – government expenditure: real final government consumption as a percentage of real GDP at 2000 market prices. This measure represents the size of the public sector. *Data source: AMECO database.*

π - inflation rate: growth rate of the GDP price deflator at 2000 market prices.

Data source: AMECO database.

Overview Dataset

Variable	Definition	Source	Obs.
$RGDPemp_{it}$	Gross Domestic Product at 2000 market prices per employed person.	AMECO	90
$RGDPcap_{it}$	Gross Domestic Product at 2000 market prices per head of population.	AMECO	90
$FSFDIemp_{it}$	Inward FSFDI stock data based on "NACE-Code J" ***per employed person.	WIIW	88*
$FSFDIcap_{it}$	Inward FSFDI stock data based on "NACE-Code J" per head of population.	WIIW	88*
$FSFDIgdp_{it}$	Inward FSFDI stock data based on "NACE-Code J" as percentage of GDP.	WIIW	88*
$Kemp_{it}$	Real Gross Capital Formation at 2000 market prices per employed person.	AMECO	90
$Kcap_{it}$	Real Gross Capital Formation at 2000 market prices per head of population.	AMECO	90
$Hemp_{it}$	Constructed index: absolute number of people in workforce (25yr-64yr) that has attained at least upper secondary school, as a % of total workforce.	EUROST.	86**
$Hcap_{it}$	Constructed index: absolute number of people in workforce (25yr-64yr) that has attained at least upper secondary school, as a % of total population.	EUROST.	86**
GC_{it}	Real final consumption of the government at 2000 market prices per GDP.	AMECO	90
π_{it}	Price Deflator Gross Domestic Product at 2000 market prices.	AMECO	90

Missing Data: (*) = Croatia: 1999 and Slovakia: 2007; (**) = Bulgaria: 1999 and Croatia: 1999, 2000, 2001.
(***) = "NACE-Code J" includes all data in the sector of "financial intermediation", this includes all activities on financial intermediation, insurance and pension funding and activities auxiliary to financial intermediation.

Appendix B: Descriptive Statistics

GDP per worker

	BUL	CRO	CZ	EST	HUN	LAT	LIT	POL	SK	SL
Min.	4203	16073	11582	9773	13575	7301	7130	11451	10164	22710
Max.	5435	20528	20705	15996	17939	11164	14936	17119	19441	25998
Median	4774	18402	15176	13332	15581	9499	11684	14392	12458	23692
Average	4789	18446	15725	13450	15793	9517	11472	14271	13377	23848
Sum	43101	166016	141524	121051	142138	85655	103250	128438	120391	214636
No obs.	9	9	9	9	9	9	9	9	9	9

GDP per capita

	BUL	CRO	CZ	EST	HUN	LAT	LIT	POL	SK	SL
Min.	1581	5029	5569	4077	4902	2971	2948	4413	3890	10997
Max.	2622	7481	10403	7923	6821	5455	6765	6815	7843	12397
Median	2030	6039	7288	5670	5889	5182	4822	5182	4772	10775
Average	2067	6146	7649	5826	5894	4150	4812	5337	5174	10997
Sum	18606	55315	68844	52431	53050	37348	43309	48029	46566	98977
No obs.	9	9	9	9	9	9	9	9	9	9

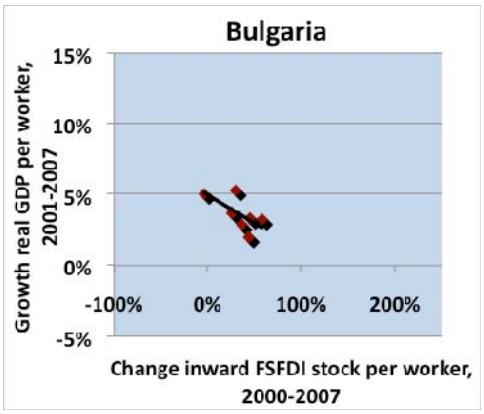
FSFDI per worker

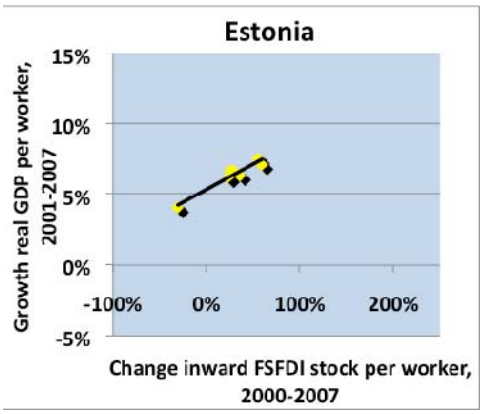
	BUL	CRO	CZ	EST	HUN	LAT	LIT	POL	SK	SL
Min.	69	461	546	981	479	256	192	316	197	595
Max.	1163	8827	2432	5729	1889	1836	1126	1500	1771	4099
Median	296	1072	1252	2436	1093	399	475	637	821	900
Average	411	2462	1390	3111	999	731	555	845	954	1273
Sum	3703	19698	12507	28001	8993	6583	4998	7609	7631	11457
No obs.	9	8	9	9	9	9	9	9	8	9

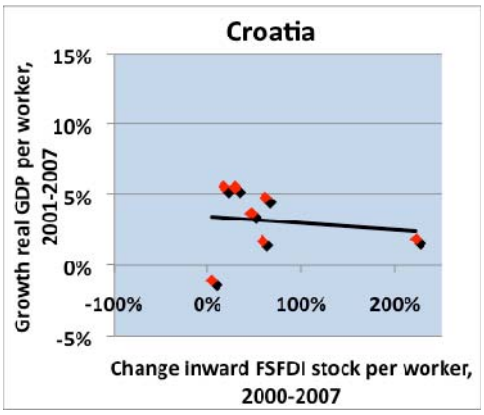
FSFDI per capita

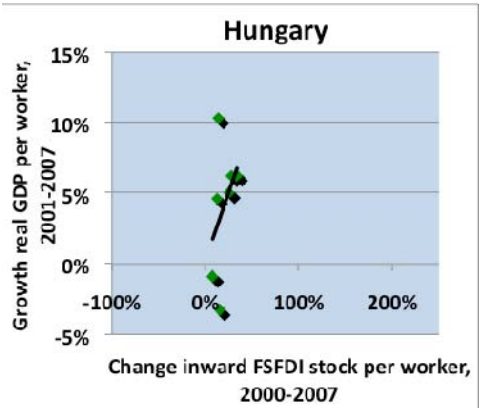
Appendix C: FSFDI – Growth (11 CEE Countries)

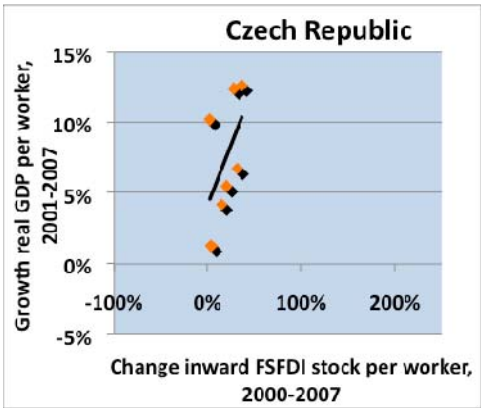
	BUL	CRO	CZ	EST	HUN	LAT	LIT	POL	SK	SL
Min.	26	145	256	416	178	104	79	120	78	268
Max.	564	3217	1213	2805	737	897	510	600	756	1963
Median	125	302	590	1074	330	213	197	268	363	414
Average	187	867	669	1422	685	330	236	318	389	594
Sum	1679	6929	6021	12799	3468	2968	2120	2861	3115	5350
No obs.	9	8	9	9	9	9	9	9	8	9

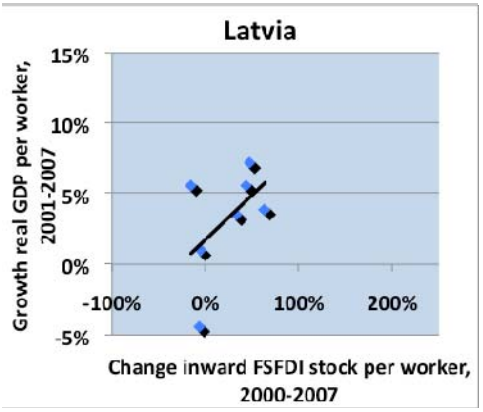

Bulgaria
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

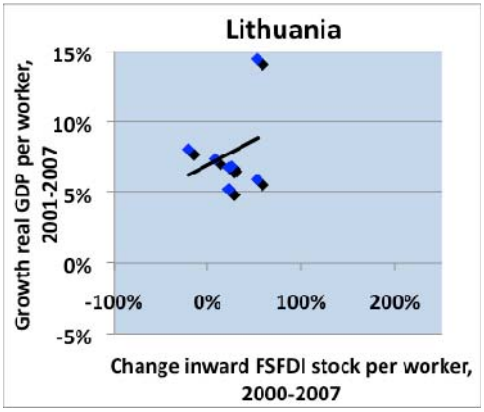

Estonia
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

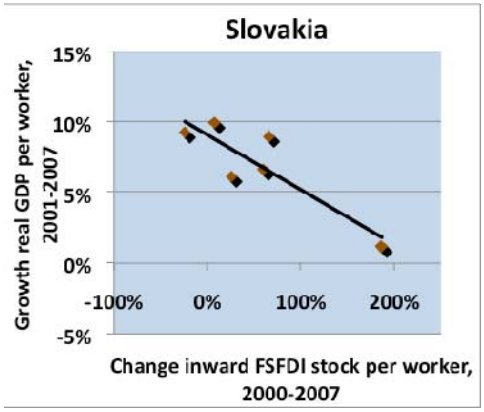

Croatia
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

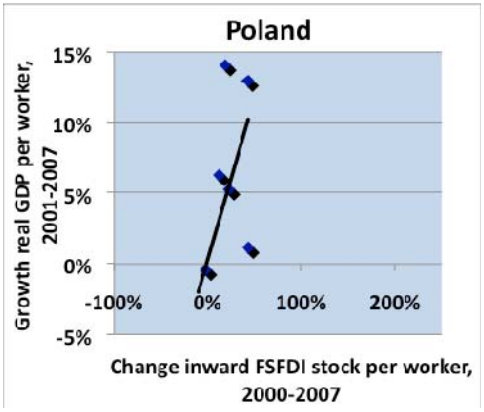

Hungary
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

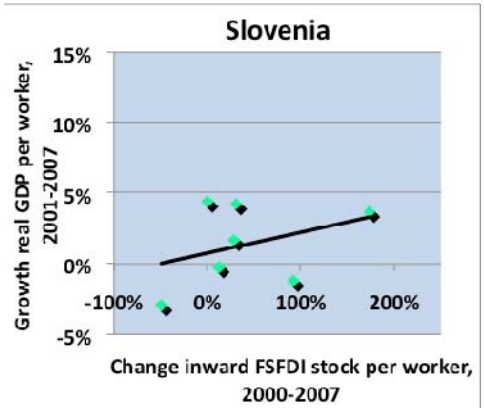

Czech Republic
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

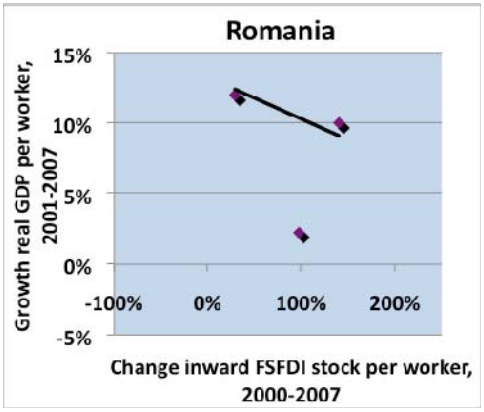

Latvia
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007


Lithuania
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

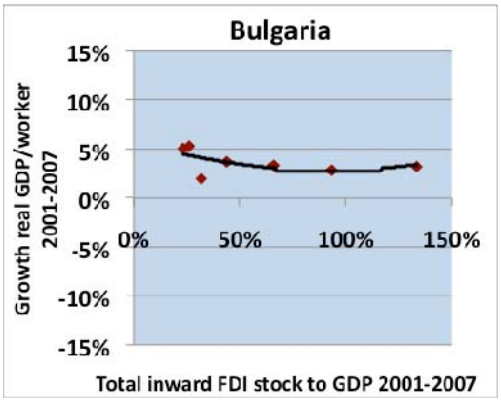

Slovakia
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

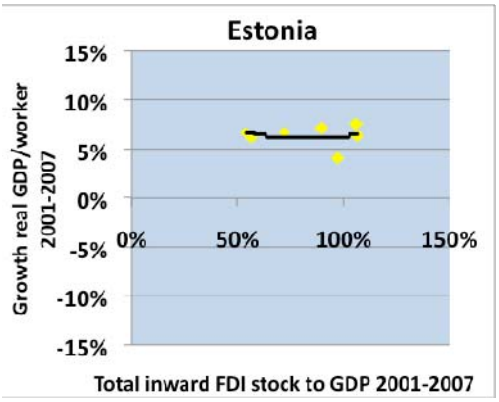

Poland
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

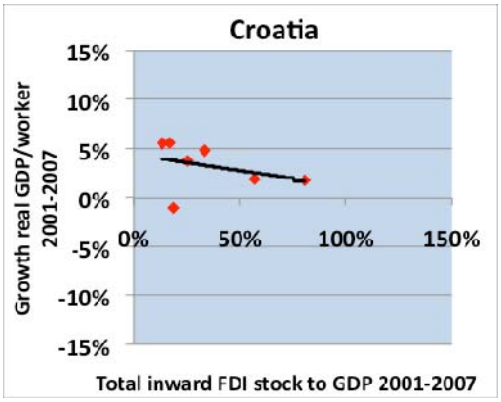

Slovenia
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

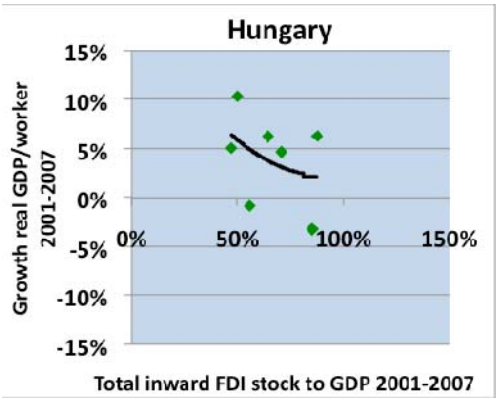

Romania
Growth real GDP per worker, 2001-2007
15%
10%
5%
0%
-5%
-100%
0%
100%
200%
Change inward FSFDI stock per worker, 2000-2007

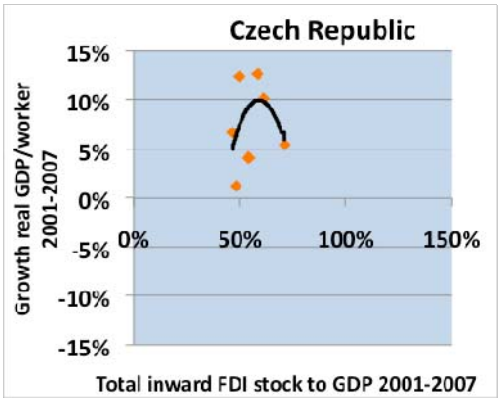
Appendix D: FDI – Growth (11 CEE Countries)

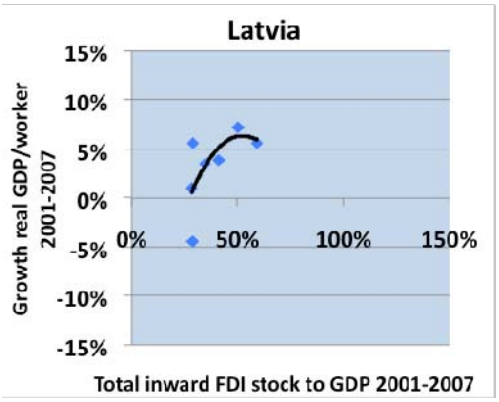


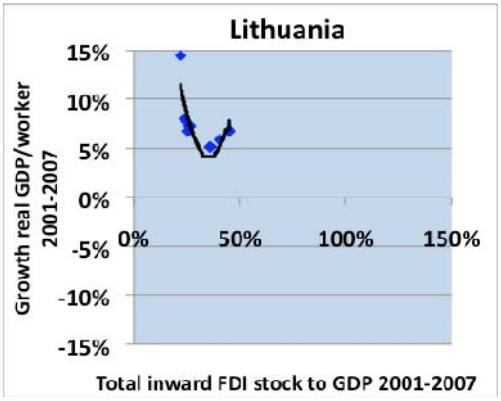




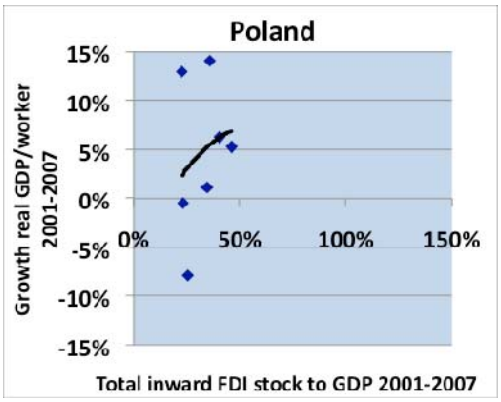


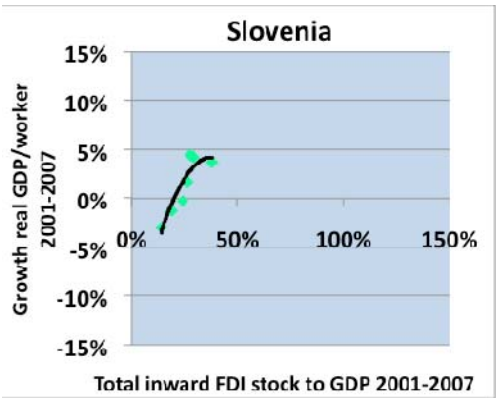


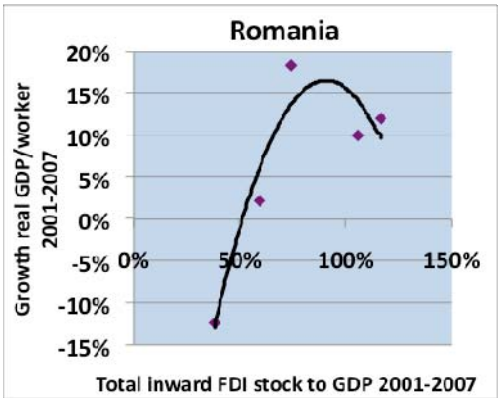



Lithuania
Growth real GDP/worker 2001-2007
15%
10%
5%
0%
-5%
-10%
-15%
0%
50%
100%
150%
Total inward FDI stock to GDP 2001-2007


Slovakia
Growth real GDP/worker 2001-2007
15%
10%
5%
0%
-5%
-10%
-15%
0%
50%
100%
150%
Total inward FDI stock to GDP 2001-2007


Poland
Growth real GDP/worker 2001-2007
15%
10%
5%
0%
-5%
-10%
-15%
0%
50%
100%
150%
Total inward FDI stock to GDP 2001-2007


Slovenia
Growth real GDP/worker 2001-2007
15%
10%
5%
0%
-5%
-10%
-15%
0%
50%
100%
150%
Total inward FDI stock to GDP 2001-2007


Romania
Growth real GDP/worker 2001-2007
20%
15%
10%
5%
0%
-5%
-10%
-15%
0%
50%
100%
150%
Total inward FDI stock to GDP 2001-2007

Appendix E: Estimation Output (Eviews 5.0)

Dependent Variable: $\Delta \ln(RGDPcap_{it})$ – *measured per capita*

	TEMPORARY EFFECTS				PERMANENT EFFECTS			
Regression	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	$FSFDI_{it}$ = **Δln**	$FSFDI_{i,t-m}$ = **Δln**	$FSFDI_{it}$ = **Δln**	$FSFDI_{i,t}$ = **Δln**	$FSFDI_{it}$ = **ln**	$FSFDI_{i,t-m}$ = **ln**	$FSFDI_{it}$ = **ln**	$FSFDI_{i,t}$ = **ln**
Explanatory Variables	**FSFDIcap$_{it}$**	**FSFDIcap$_{i,t-3}$**	**FSFDIgdp$_{it}$**	**FSFDIgdp$_{i,t-1}$**	**FSFDIcap$_{it}$**	**FSFDIcap$_{i,t-3}$**	**FSFDIgdp$_{it}$**	**FSFDIgdp$_{it-3}$**
Constant	0.048 ***	0.065 ***	0.048 ***	0.063 ***	-0.125 **	0.012	0.098 ***	0.076 **
	(3.644)	*(4.971)*	*(4.759)*	*(4.903)*	*(-2.198)*	*(-0.139)*	*(3.514)*	*(2.441)*
$FSFDI_{it}$	0.019	-0.028 **	0.002	-0.026 **	0.113 **	0.008	0.019 **	-0.124
	(1.308)	*(-2.607)*	*(0.149)*	*(-2.632)*	*(2.317)*	*(0.603)*	*(2.033)*	*(-1.385)*
$\Delta \ln$ (k**cap**$_{it}$)	0.127 *	0.169 *	0.139 **	0.175 *	0.143 **	0.164 **	0.137 *	0.137 **
	(1.783)	*(1.718)*	*(1.995)*	*(1.764)*	*(2.297)*	*(2.390)*	*(1.980)*	*(2.067)*
$\Delta \ln$ (h**cap**$_{it}$)	-0.309	-1.112 ***	-0.316	-1.124 ***	-0.466 *	-0.304	-0.297	-0.320
	(1.003)	*(-3.002)*	*(-1.039)*	*(-3.029)*	*(-1.735)*	*(-0.935)*	*(-0.964)*	*(-1.104)*
$\Delta \ln$ (GC**gdp**$_{it}$)	-0.189	-0.131	-0.192	-0.123	-0.008		-0.169	-0.147
	(-1.745)	*(-0.788)*	*(-1.233)*	*(-0.741)*	*(-0.050)*		*(-1.131)*	*(-1.579)*
π_{it}	-0.074					-0.200		
	(-0.429)					*(-1.041)*		
$\ln(FSFDI_{it}) \times \ln(k_{it})$					0.004			0.012
					(0.613)			*(1.579)*
$\ln(FSFDI_{it}) \times \ln(h_{it})$					0.139 ***			-0.061
					(2.740)			*(-0.940)*
Observations	75	49	75	49	75	76	75	75
Period fixed	yes	yes	yes	yes	yes	yes	yes	yes
Country fixed	yes	yes	yes	yes	yes	yes	yes	yes
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Durbin-Watson	1.765	1.914	1.728	1.893	1.907	1.706	1.754	1.792
Adjusted R^2	0.333	0.489	0.329	0.484	0.415	0.354	0.346	0.346
F-Value	2.762	3.707	2.813	3.654	3.395	3.058	2.954	2.779

T-statistics are in parentheses and based on heteroskedasticity-robust standard errors (White-test 'diagonal'; with no degrees of freedom correction) Asterisks indicate significance levels at respectively 1% (***), 5% (**) and 10%(*). Romania is not included in this regression due to a lack of FSFDI data. For the definitions of the variables see Appendix A.

Dependent Variable: $\Delta\ln(RGDPcap_{it})$ – *measured per worker*								
	TEMPORARY EFFECTS				**PERMANENT EFFECTS**			
Regression	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$FSFDI_{it}$ = **Δln**	$FSFDI_{i,t-m}$ = **Δln**	$FSFDI_{it}$ = **Δln**	$FSFDI_{i,t}$ = **Δln**	$FSFDI_{it}$ = **ln**	$FSFDI_{i,t-m}$ = **ln**	$FSFDI_{it}$ = **ln**	$FSFDI_{i,t}$ = **ln**
Explanatory Variables	**FSFDIemp**$_{it}$	**FSFDIemp**$_{i,t-3}$	**FSFDIgdp**$_{it}$	**FSFDIgdp**$_{i,t-1}$	**FSFDIemp**$_{it}$	**FSFDIemp**$_{i,t-3}$	**FSFDIgdp**$_{it}$	**FSFDIgdp**$_{it}$
Constant	0.030 ***	0.040 ***	0.033 ***	0.038***	-0.159 *	0.130	0.098 ***	0.093 **
	(3.205)	*(3.703)*	*(3.728)*	*(4.974)*	*(3.205)*	*(1.502)*	*(3.077)*	*(2.522)*
$FSFDI_{it}$	0.023	-0.026 **	0.003	-0.025 **	0.028 **	-0.015	0.024 **	-0.064
	(1.365)	*(-2.125)*	*(0.202)*	*(-2.086)*	*(2.118)*	*(-1.127)*	*(2.155)*	*(-0.806)*
Δln (k**emp**$_{it}$)	0.092	0.048	0.106	0.054	0.110	0.150 **	0.105	0.087
	(1.202)	*(0.604)*	*(1.353)*	*(0.692)*	*(1.439)*	*(2.375)*	*(1.368)*	*(1.184)*
Δln (h**emp**$_{it}$)	0.220	-0.587 *	0.253	-0.585 *	0.286	-0.352	0.268	0.157
	(1.109)	*(-1.868)*	*(1.229)*	*(-1.848)*	*(1.416)*	*(-1.597)*	*(1.317)*	*(0.740)*
Δln (GC**gdp**$_{it}$)	-0.265	-0.195	-0.256	-0.185	-0.224	0.026	0.226	-0.142
	(-1.564)	*(-1.240)*	*(-1.488)*	*(-1.181)*	*(-1.361)*	*(-0.170)*	*(-1.366)*	*(-0.856)*
$\ln(FSFDI_{it}) \times \ln(k_{it})$								0.011
								(1.237)
$\ln(FSFDI_{it}) \times \ln(h_{it})$								-0.082
								(-1.469)
Observations	75	49	75	58	75	59	75	75
Period fixed	yes	yes	yes	yes	yes	yes	yes	yes
Country fixed	yes	yes	yes	yes	yes	yes	yes	yes
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Durbin-Watson	1.662	2.129	1.605	2.118	1.662	2.233	1.660	1.759
Adjusted R^2	0.321	0.430	0.302	0.425	0.333	0.423	0.327	0.349
F-Value	2.747	3.131	2.606	3.090	2.849	3.362	2.797	2.800

T-statistics are in parentheses and based on heteroskedasticity-robust standard errors (White-test 'diagonal'; with no degrees of freedom correction) Asterisks indicate significance levels at respectively 1% (***), 5% (**) and 10%(*). Romania is not included in this regression due to a lack of FSFDI data. For the definitions of the variables see Appendix A.