

Does bank FDI trigger general FDI and trade? An analysis of signal effects of foreign bank entry

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Abstract

Does financial sector foreign direct investment (FSFDI) trigger general capital inflows and foreign trade? Do these inflows to New EU Member States (NMS) provide positive signals (Spence 1973) towards economic development or “crowd out” investment and trade? While the direct impact of financial deepening has received much attention (Rousseau and Wachtel 2006, Detragiache et al. 2006) indirect effects have received less consideration. To fill this gap, we review the literature on possible links and apply panel regressions for NMS plus Croatia over the period between 1997 and 2006. We find significant and positive associations between FSFDI and non-financial foreign direct investment (FDI) and between FSFDI and merchandise trade, especially merchandise imports. However, the correlation between FSFDI and foreign portfolio investment (FPI) is insignificant or significantly negative after including a one-year-lead for FSFDI. We argue that the relative impact of FSFDI, real sector FDI and trade needs to be taken into consideration in companies’ internationalization strategies and in shaping economic policies conducive to economic development.

Key Words: foreign banks, foreign trade, FDI, economic development, signal theory
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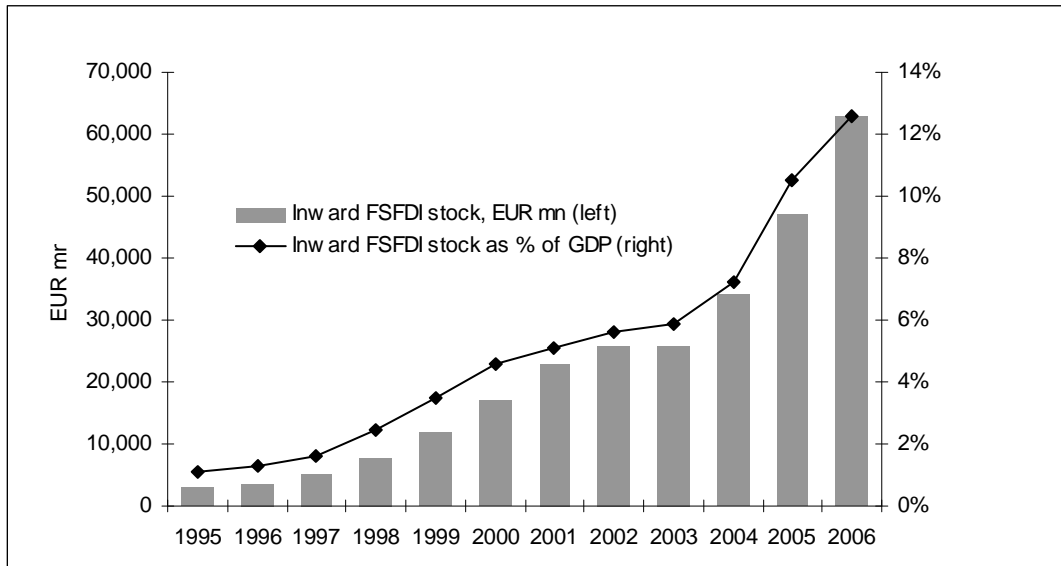
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1. Introduction

During the past 15 years a great expansion of foreign banks into Central and Eastern Europe (CEE), the Baltic States and South-Eastern Europe has occurred. The main motivation behind these financial sector foreign direct investments (FSFDI) is built on promising growth prospects and higher interest margins in the host country compared to those in their home country (EBRD 2006a, 28). As a consequence, foreign banks (mostly from the “old” EU-15) now account for 80-90% of total banking assets in most of the New Member States (NMS) and the Accession Countries (AC). Only Slovenia and Turkey show a rather low level of foreign bank involvement comparable to the Euro area of 30% (EC 2007, 22; Ferrazzi 2008, 16), up from 16% in 2004 (ECB 2006). With the financial sector alone accounting for about 20% of total FDI stock in the region (WIIW 2006), equivalent to about 8% of GDP (Eller, Haiss and Steiner, 2006), what are the implications of this massive inflow?

Figure 1: Inflow of FSFDI to CEE-10



Source: Steiner, Haiss, Eller 2008, 226

There is indeed a growing body of literature on whether and how this massive financial sector foreign direct investment (FSFDI) has directly supported economic development and provides a competitive advantage to the host country. First, with regard to the “volume channel”, Detragiache, Tressel and Gupta (2006), Mihaljek (2006) and Arena, Reinhart and Vázquez (2006) analyze whether foreign banks promote capital accumulation, i.e. whether they promote growth by lending more, with rather mixed results. There is related research whether foreign banks lend more to certain sectors of the host economies, e.g. to large versus small companies (Gianneti and Ongena 2005). Second, with regard to the “efficiency channel”, whether foreign banks improve the productivity of the host country financial sector and of the economy at large (e.g. Eller, Haiss and Steiner 2006; Hermes and Lensink 2003; Lehner, 2007), with rather positive results. Third, with regard to the financial market stability (“governance channel”), i.e. whether foreign banks improve the regulatory environment and add to financial market stability (Faria and Mauro, 2004;

de Haas and van Lelyveld 2006). Indirect effects of FSFDI onto the host economies development, e.g. via influencing trade flows, by attracting general FDI and by drawing foreign investment into the local stock markets (foreign portfolio investment, FPI), however, have received much less attention, perhaps with the exception of whether foreign banks follow their major corporate clients in entering host countries or not (e.g. Focarelli and Pozzolo 2005; Haselmann 2006).

Given the enormous and highly visible volumes of capital inflows and the massive public and media attention that the foreign bank takeovers of most of the Central, Eastern and South-Eastern European markets receive, we argue that these indirect, collateral-type implications of FSFDI could also be massive. If investors who are regarded as rather cautious and risk averse (a usual perception of banks) enter and invest into a certain market, this initial move may pull in followers (Eller et al. 2007). After all, banks' core business is to acquire information about firms, business conditions and policy changes to overcome asymmetric information problems (Levine 1996; Mehl, Crespo and Winkler 2006). They provide price information that helps coordinate decentralized decision-making in various sectors of the economy (Merton and Bodie 1995). So any such large-scale move by banks (e.g. of the acquisition of Bulbank in Bulgaria 1994 or more recently of BCR in Romania) should provide strong signals in the sense of the Spence (1993) "signal model" to other market participants (export/import traders; industrial investors from other sectors; financial investors) to follow that bold banks' move and thus support economic development. Additional non-financial portfolio investment as well as non-financial FDI might be drawn in, which in turn can influence economic development (Durham 2003).

We build on the Spence (1973) signal theory and contribute to the literature by (1) combining research on the impact of the financial sector on growth with research on the impact of FDI; (2) extending previous research about foreign bank investment from direct effects (credit volume, efficiency, governance) to indirect effects; (3) establishing possible links between FSFDI and trade, between FSFDI and general FDI and between FSFDI and FPI and (4) applying regression analyses for the New EU Member States (NMS) plus Croatia to empirically investigate these possible links. We focus on the following research questions: What are the repercussions of foreign bank entry on the level of trade in the country receiving the direct investment? What are the effects on non-financial FDI succeeding foreign bank entry? What are the effects on foreign portfolio investment (FPI) in the host country? What are the effects of FDI-inflows of banks on non-financial FDI, trade and FPI in the NMS plus Croatia?

In particular, we focus on the New EU Member States² and Croatia over the 1997–2006 period in order to assess possible effects of foreign bank entry in transition countries. We conduct panel regressions with the inclusion of various control variables in order to test for the link between FSFDI/non-financial FDI, FSFDI/trade and FSFDI/FPI.

The tobit regressions suggest significant and positive associations between FSFDI and the level of non-financial FDI and between FSFDI and merchandise trade. However, FSFDI has a significant impact only on merchandise imports, confirming results of Mencinger (2003). Regarding the relationship between FSFDI and FPI, foreign banks

² NMS are the following countries: The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, Bulgaria, Romania

do not seem to have a significant impact on the level of FPI; in fact, they may even have a negative impact, as suggested by regressions with a one-year-lead of FSFDI.

The contribution of this paper to the existing literature is as follows: First, the paper focuses on indirect impacts of foreign bank entry in contrast to direct impacts, which already have been investigated in great detail. Lipsey (2007, 38) explains the need to examine the sectoral impacts of FDI inflows:

“FDI flows very unevenly to the various sectors of an economy. As more disaggregated data become available, one could ask about the effects of FDI inflows on particular industrial sectors or regions, particularly the industries or regions receiving the investments”

Accordingly, the paper extends previous research on foreign banks, trade, FDI and foreign portfolio investment. Second, the empirical results of the paper demonstrate the necessity to discuss the different forms of impact foreign banks have on the host economy – although they may e.g. trigger merchandise trade and thus improve economic integration they may increase the host country’s current account deficit. These findings also have implications for economic policy, i.e. whether it is reasonable to attract more foreign banks and which repercussions to expect. Third, as we base the indirect effects of FSFDI on signals provided by foreign banks when entering foreign markets, signals should help to understand the behaviour of investors – investors in merchandise trade, FDI, and FPI. Signals can explain a wide range of behaviours in economics (Hardy and Tieman 2008, 6) and the investigation of foreign banks’ indirect effects in the form of signals is a new topic in economic literature which is necessary to assess in the light of the highly visible expansion of foreign banks in the NMS of Central and Eastern Europe.

The remainder of the paper progresses as follows: Section 2 presents four transmission channels which explain various ways in which FSFDI stimulates economic growth and further examines the signal channel in greater detail, namely the effects of foreign bank entry on non-financial FDI, on trade and on foreign portfolio investment. Following this theoretical background, Section 3 presents the paper’s panel data analysis: For each link, tobit regressions are conducted with the inclusion of various control variables and the corresponding results are discussed. Finally, Section 4 summarizes, draws main conclusions and proposes directions for future research.

2. Literature Review

2.1 Transmission channels between FSFDI and economic growth

Finance-growth theory suggests that financial services affect economic growth. More precisely, literature concentrates on four channels providing the linkages between FSFDI and economic growth. In 1996, Levine defined two channels, namely the “volume channel” and the “efficiency channel”, followed by Haiss et al. (2005) defining the “corporate governance channel” and the “signal channel”. The following sections provide a review of adequate research findings concerning these four transmission channels.

2.1.1 Volume Channel

Bol et al. argue that foreign banks replaced domestic banks as creditors for the public and the private sector in CEE (Bol et al. 2003, 15). Partly owing to the backup by their holding companies, foreign-owned banks may grant a higher volume of credit in the host country, thus increasing the level of investment and growth (Eller et al. 2007, 6). However, Detragiache, Tressel and Gupta (2006) empirically investigated the relation between foreign bank penetration and credit growth in poor countries, showing that poor countries with a higher bank presence exhibit slower credit growth (Detragiache et al. 2006, 21). Giannetti and Ongena (2005) used data of listed and unlisted companies in 14 Eastern European transition economies and assumed that foreign banks may not be able to serve as a credit source for small firms because they might lack local or soft information, the latter being especially crucial since it is often the only information available on small and young firms. Indeed, their findings suggest that while foreign lending improves credit allocation and stimulates growth in firm sales, assets and leverage, effects for small firms are dampened: Small firms have a lower market share and a lower proportion of total assets in countries with stronger foreign bank presence (Giannetti and Ongena 2005, 33). Finally, Mihaljek (2006) highlights the significant increase of the share of household loans in total loans granted by foreign banks in the last five years, especially in Hungary, Korea and Turkey (Mihaljek 2006, 53).

The preceding review shows that the effects of foreign bank entry on the credit volume depend on some main factors: While on the macroeconomic level the repercussions depend on the stage of development of the host country, on the microeconomic level, the size and age of the firm are crucial to assess the possible benefits or losses due to foreign bank presence.

2.1.2 Efficiency Channel

Foreign banks can improve the efficiency with which economies combine capital and labour in production (Levine 1996). FSFDI may increase financial sector efficiency on the microeconomic level by transferring superior managerial skills, bank management systems and technology to the target bank (Amel et al. 2002). Better diversification of risks, lower transaction costs and improved pooling and allocation of financial resources to projects of higher productivity may result in macroeconomic efficiency gains (Eller et al. 2007). In an efficient financial sector, narrower net interest rate margins can enhance investment activity and stimulate economic growth (Holló and Nagy 2006). Technology changes and an introduction of new products by foreign investors may stimulate financial market development (Eller et al. 2007, 5). Drawing on the experience of U.S. banks abroad, Goldberg (2004) argues that FSFDI from well-regulated countries improves the risk management tools of the host emerging market (Goldberg 2004, 18) and leads to a more efficient credit allocation (Goldberg 2004, 8).

The preceding arguments implicate that foreign owned banks are more efficient. Eller, Haiss and Steiner (2006) find a hump-shaped impact of FSFDI on economic growth via the efficiency channel for 11 CEE countries. Green et al. (2004) show that foreign banks cannot exploit higher efficiency in terms of economies of scale and scope than an average domestic bank (Green et al. 2004; 2, 17). The underlying cause of this contradictory result might be the initial costs foreign owners have to bear when modernizing the acquired bank, which signifies a time lag for cost efficiency to occur

(Haiss et al. 2007, 6). Finally, Papi and Revoltella (2003) stress the importance of a certain threshold of foreign ownership in order to influence the acquired bank's efficiency.

2.1.3 The Corporate Governance Channel

Some policy makers in CEE aim at attracting foreign banks based on the assumption that foreign bank presence improves the quality of their banking system (De Haas and Van Lelyved 2002, 5). Indeed, foreign-owned banks are less involved in connected lending as they need to comply with internal group-wide risk management rules which contribute to a reduction in bad loans (Fink et al. 1998, 433).

As to impacts on supervision, the entry of sound foreign banks leads to an import of efficient supervision, which may have a positive impact on the stability of the domestic banking system (Roldos 2001, 8). There is a need to improve the ability of emerging markets' supervisors to analyse the rising use of new financial products (particularly OTC derivative products) by international banks, since these products can be used to evade regulations (Roldos 2001, 13). This reorientation of the legal environment contributes to institutional quality, i.e. the absence of corruption, red tape, or political violence (Faria and Mauro 2004, 3).

2.1.4 Signal Channel

In 1973, Michael Spence furthered the literature on signaling theory by constructing a job market signaling model. In this framework he aims at determining the signaling power of personal characteristics in the job market: Since hiring is an investment under uncertainty, the employer tries to reduce the risks involved by drawing on indices (i.e. observable, unalterable attributes) and on signals, being observable characteristics of the individual that are subject to manipulation by him (Spence 1973; 356, 357). In the following years he continued to examine signals, referring to things “*that would carry information persistently in equilibrium from sellers to buyers, or more generally from those with more to those with less information*” (Spence 2002, 434). We extend this signaling theory to signals which FSFDI may provide towards economic integration and development via the stimulation of non-financial FDI and trade. As to the contribution to non-financial FDI, banks may have more information about the foreign markets they entered and consequently send signals to investors from their home country who benefit from the information exchange with these banks. Besides adding physical capital and efficient banking technology, FDFDI inflows may catalyse “collateral benefits” (Kose et al. 2006), such as contributing to improve the host country economic environment by importing “reputational capital” (Hellmann and Murdock 1998). FSFDI and the presence of reputable foreign-owned banks may send signals towards merchandise trade and non-financial FDI, thus indirectly contributing to economic growth. Since this paper focuses on this particular channel, the next section provides a literature review concerning the potential signals of foreign bank entry drawing on Haiss and Roessl (2008). For each of the links discussed – FSFDI/trade; FSFDI/non-financial FDI – we will start by discussing general FDI vis-à-vis these links, and then add FSFDI vs. the links.

2.2 Signals of foreign bank entry

2.2.1 Foreign bank entry and non-financial FDI

When examining the impacts of foreign bank entry, the effects of the foreign investor on the home economy have to be considered as well. Studies in the United States undertaken by Goldberg and Johnson (1990) and Miller and Parkhe (1998) both show a positive correlation between non-bank and bank FDI inflows. Furthermore, Brealey and Kaplanis (1996) introduced an analysis of nearly 2000 overseas offices across 37 parent and 82 host countries. They draw the conclusion that countries with the highest foreign bank presence registered the greatest level of non-bank FDI links, although the relationship between the location of bank offices and trade or FDI is not very strong (Brealey and Kaplanis 1996, 594). Besides, Focarelli and Pozzolo (2005), by conducting a survey of 260 large banks from OECD countries, show a positive relationship between banks' choice of location and non-bank FDI. However, this relationship is less significant than other factors in determining banks' FDI decisions (Soussa 2004, 5). Besides, this finding does not support the argument that foreign bank entry influences non-financial FDI because it refers to decision criteria chosen by banks when entering foreign markets, which is in this case the level of non-bank FDI. Still, this finding is crucial to our analysis, because for a sound interpretation of the results both possible directions of causalities have to be kept in mind.

In this context, Clarke et al. (2002) underline, by drawing on various studies (Ball and Tschoegl 1982, Grosse and Goldberg 1991, Goldberg and Saunders 1980, Yamori 1998), that the causality between non-financial sector FDI and banking sector FDI is blurred. Firstly, the causality might run in the opposite direction. Secondly, some factors, which have been neglected in the studies, stimulate FDI in both sectors: Most studies use market size measured by GDP or population and foreign trade links between home and host countries, their results showing that market size and trade are positively related to banking sector FDI. But this positive connection between banking- and non-financial FDI does not imperatively mean that foreign banks finance only the affiliates of clients from their home countries (Clarke et al. 2002, 5). Concerning the eventual effects of this intra-relations, these likely repercussions of financial-sector foreign direct investment on non-financial FDI may indirectly lead to an overall better performing banking system, since efficiency rises due to the increased number of new and potential entrants (Cárdenas et al. 2003, 3). In this context Sohinger (2005) touches upon the so-called "economic conditionality", which refers to the long-term quality of FDI and the changes of the economic system as a whole. These economic changes result – in the long run – in growth. But for this economic conditionality to happen, transparency and institutional quality of the host country are crucial (Sohinger 2005, 90): *"If an investor-friendly environment is in place, both for domestic and foreign investors, FDI will flow to that economy regardless of any extra measures designed to promote FDI entry, as their potential alone can never be powerful enough. In fact, it will flow only to those places that can provide such environments."* (Sohinger 2005, 91) Consequently, one could argue that foreign banks enhance transparency and the institutional quality of the host country by providing an improved mix of services, thus attracting non-financial FDI and eventually leading to growth.

2.2.2 Foreign bank entry and trade

Empirical evidence supports a positive impact of overall FDI on trade. Developing host countries benefit from FDI in terms of trade because they are integrated more closely into the world economy in a process expected to include higher imports and exports (OECD 2002, 91). Besides, Walkenhorst (2004), examining the determinants of inward manufacturing FDI in Poland, emphasises the complementarity of trade and FDI in the transition process and suggests a positive impact of FDI on trade between CEE-countries and Western European countries (Walkenhorst 2004, 13): “*FDI and trade are complements, rather than substitutes, in the transition process*” (Walkenhorst 2004, 21). Concerning empirical evidence on FDI’s impact on goods exports, UNCTAD (1999) highlights the critical role of multinational enterprises (MNEs) from developed countries in the initial stages in stimulating labour-intensive exports from developing countries (UNCTAD 1999, 234). Moreover, Chen (1997) proves a positive and statistically significant impact of FDI on China’s goods exports and on provincial trade flows among Chinese provinces (Chen 1997, 36). Finally, long-term impacts of FDI improve the host country’s export competitiveness due to the effects of FDI on competition, enterprise restructuring, human capital formation and technology transfer (OECD 2002, 83). As to the impact of FDI on goods imports there are two forms of effects, namely a direct impact due to the actual investment and the repercussions on the import pattern of the targeted enterprises (OECD 2002, 85). Focusing on the former impact, empirical evidence suggests that FDI leads to an increase in goods imports, although this effect is likely to weaken over time (OECD 2002, 86). To sum up, these FDI-trade linkages explain why policy makers in developing countries consider FDI as a potential vehicle for boosting export performance and stimulating import-competing production in the host economy (OECD 2002, 77).

Levine (1996) argues that financial systems facilitate trade. Concentrating on financial-sector foreign direct investment, there are two directions in which the repercussions can go: While foreign bank entry can lead to increased trade, a higher level of trade may stimulate bank expansion. The evidence of the latter is more evident, which should be explained with the help of a study conducted by Goldberg and Saunders (1980). They used the level of U.S. exports as a measure of business activity of U.S. firms abroad and suggested that a higher level of exports may result in an increased overseas presence of American banks (Goldberg and Saunders 1980, 633). Indeed, their results show that exports to the U.K. were positively correlated with the amount of US bank FDI in the U.K. (Soussa 2004, 4).

Consequently, recent studies seem to focus on the argument that trade stimulated bank expansion. However – or rather, that is why – this paper’s survey focuses on the first direction, i.e. the impact of financial-sector foreign direct investment on trade. Some studies already exist which support the positive correlation between foreign bank presence and an increased level of trade. For example, the international study of bank FDI (see Section 2.2.1) leads Brealey and Kaplanis (1996) to the conclusion that there may be a relationship between the location of overseas offices of large banks and trade, again highlighting the uncertainty behind such a conclusion owing to the correlation between different economic variables (Brealey and Kaplanis 1996, 594). Furthermore, by drawing on Easterly (2001), Rhee and Belot (1990), Alfaro et al. (2004) show that the lack of financial markets can constrain potential entrepreneurs with reference to export industries: After the establishment of a textile plant by Daewoo in Bangladesh in 1979, a textile export industry emerged. Although in this

case the trigger technically was not a foreign bank, the Bangladeshi workers would not have been able to set up the factories without the help of external finance: *“Had loans not been forthcoming to finance their enterprises and many export industries that followed, it is unlikely that garment exports from Bangladesh would have increased from \$55 000 in 1980 to \$2 billion in two decades”* (Alfaro et al. 2004; 91, 92).

Still, Sohinger (2005), who examined growth in transition economies, questions the influence of overall services sectors FDI on the host country’s export competitiveness – countries with larger stocks of manufacturing FDI (such as Hungary) seem to have greater growth in their export competitiveness than countries that received more FDI in their services sectors, like Croatia (Sohinger 2005, 84): *“Restructuring in production has resulted in the increase and restructuring of exports, in raised technological content, and in their reorientation toward developed countries’ markets, mostly toward the European Union.”* (Sohinger 2005, 91, 92) In most transition economies, telecommunications and financial intermediation (banking in particular) were the service sector industries to receive the majority of the capital inflow. Regarding the final impact of this relationship between foreign bank entry and trade, foreign-bank entry in particular leads to increasing efficiency and reduced transaction costs in the business environment. However, those efficiency gains are not as readily measurable as manufacturing FDI (Sohinger 2005, 92).

2.2.3 Foreign bank entry and FPI

To distinguish between foreign portfolio investment (FPI), which is usually effected via the stock market, and foreign direct investment, the key difference lies in the level of control taken by the two types of investors: While FDI investors have ownership and control positions in the domestic enterprises, FPI investors only take ownership without control of domestic firms (Goldstein and Razin 2005a, 2). Thus, the intention of foreign portfolio investors is to obtain capital gains rather than entrepreneurial income (Sohinger 2005, 74). The threshold between a portfolio investment and a controlling interest depends on factors that are different on firm and country level, like managerial agreements and corporate governance laws (Soussa 2004, 11). Besides, FPI investors have to delegate decisions to managers but limit the managers’ freedom in making these decisions since the managers’ intentions might differ from those of the owners (Goldstein and Razin 2005a, 2).

These differences show that FDI investors are more informed about their projects in the host country than FPI investors (Goldstein and Razin 2005a, 2). This information-based trade-off between direct and portfolio investments is explained in a model developed by Goldstein and Razin (2005a) providing various results: First, the higher production costs in developed economies lead to less profitable projects, which in turn reduces the attracted FDI volume. Second, FPI is more efficient in developed countries because of the generally high transparency. Therefore, mature market economies register larger shares of FPI than developing and emerging economies. What is more, since FPI is more volatile than FDI, there are higher withdrawal rates of the former (Goldstein and Razin 2005a, 23). Smaller differences between the withdrawal ratios of FPI and those of FDI in developed economies are registered as well. This is, among others, explained by the fact that high levels of transparency in these countries lead to higher efficiency, thus attracting more investors with expected liquidity needs to FPI (Goldstein and Razin 2005a, 24). Consequently, FDI provides an advantage of efficiency, but imposes higher costs, such as initial costs necessary

for acquiring the expertise for the management of the project and information-based costs occurring from the possibility that investors need to sell their investments before maturity due to liquidity shocks (Goldstein and Razin 2005b, 3). Kekic (2005), examining the upturn in FDI in the Balkans, states additional advantages of FDI in comparison with other capital flows: Among other effects, FDI contributes to upgraded physical and human capital, an increased export capacity, a decreased external vulnerability, and an increase in domestic investment (Kekic 2005, 176). However, these advantages mainly refer to positive effects on the macroeconomic conditions and not to advantages for the investor himself.

After this comparison of FPI and FDI, the relationship between FDI and FPI ought to be discussed. In this context, De Santis and Ehling (2007) contributed to the literature. They examined the joint determinants of FDI and FPI between developed countries (Germany, the six remaining G-7 countries plus Switzerland) and the informational linkages (“channels of information transmission”) between FDI and FPI. The survey shows that stock market is the most important factor determining FDI and FPI: First, stock market explains FDI since it produces signals relevant for firm investments via q theory. This theory suggests that:

“if expected profits of a firm increase and, as a result, the market value of a firm over its book value becomes greater than one, then the firm should increase its capital stock also abroad as investing is profitable” (De Santis and Ehling 2007, 7).

Second, the relative growth rate of the foreign market capitalization and home stock market return determine FPI since the former controls for the relative investment opportunity set and wealth effects in foreign markets and the latter measures wealth effects in the home market (De Santis and Ehling 2007, 7).

As to the informational linkages between FDI and FPI, De Santis and Ehling (2007) tested three possible outcomes of the process by which managers of firms and portfolio investors acquire information about foreign countries (De Santis and Ehling 2007, 5), the so-called “channels of information transmission” (De Santis and Ehling 2007, 10):

- (1) firms follow swift and more knowledgeable portfolio investors, which implies that portfolio investors send signals to foreign direct investors, i.e. FPI → FDI
- (2) portfolio investors watch firms since they have information not available to the public, i.e. FDI → FPI
- (3) firms and portfolio investors produce valuable information that is revealed by investment, i.e. FDI → FPI and FPI → FDI

The empirical results support only hypothesis (2), i.e. information about foreign fundamentals is revealed via direct investment: FDI transactions measured by fitted growth rates of the stock of FDI help explaining current growth rates of the stock of FPI:

“As a rule of thumb, we find that a 1% increase in the expected growth rate of FDI raises the growth rate of FPI by 0.5%.” (De Santis and Ehling 2007, 25)

This is the first statistically significant evidence that international portfolio investors follow firms’ foreign investment decisions (De Santis and Ehling 2007, 26).

This finding can be linked to the signal channel of FDI: Foreign portfolio investors follow firms to foreign countries due to the informational advantage firms have in comparison to portfolio investors, thus foreign direct investors send signals to potential foreign portfolio investors when entering foreign markets.

Finally, EBRD (2006b) explicitly highlights the impact (foreign and domestic) banks have on the stock market:

“ [...] in some [transition] countries stock market capitalisation has reached levels comparable with those of advanced economies, signalling an important link between growth of the banking sector and stock market development.” (EBRD 2006b, 45)

As to the eventual repercussions of FPI on economic growth, Durham (2003) suggests that FPI does not have a statistically significant effect on growth. In fact, some results even indicate a negative impact which does not depend on the “absorptive capacity” of host countries, i.e. their ability to harness foreign capital toward productive enterprises (Durham 2003; 16, 17). Anyhow, proceeding on the assumption that foreign bank presence has a positive impact on FPI, this higher level of FPI may as well further the development of the host capital market, which in turn stimulates economic growth (Errunza 2001; 709, 710). Yet, this question should be investigated in more depth in order to draw sound conclusions.

This literature review on the signals of FSFDI on non-financial FDI, trade and foreign portfolio investment show that previous findings seem to be inconclusive: First, repercussions of FDI on non-financial FDI, trade and FPI are much more evident than effects of foreign bank entry on the stated variables. Second, there is a lack of empirical surveys on the effects of foreign bank entry, particularly on foreign portfolio investment. That is why it is crucial to investigate these links in more depth in order to provide more conclusive findings.

Tables A1–A6 present snapshots of the most important empirical analyses on the transmission channels and on the various linkages between foreign bank entry and non-financial FDI/trade/FPI.

3. Empirical analysis

3.1 Method and data

Following the literature review, coherence between FSFDI and non-financial FDI, FSFDI and trade and FSFDI and foreign portfolio investment is tested in an empirical framework by the application of a panel data analysis. The examined time frame comprises the years from 1997 to 2006 and the relevant links are investigated for the following eleven countries which are all – with the exception of Croatia – New EU Member States (NMS):

- CEE-Countries: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic, Slovenia
- SEE-Countries: Bulgaria, Romania, Croatia

Due to data limitations, Croatia and Romania are included only in the investigation of the impact of FSFDI on merchandise trade. Accordingly, we focus on the NMS plus Croatia, which has been conducting accession negotiations with the EU since October 2005. The motivation behind the focus on the NMS is easily explained: First, FSFDI flows to NMS, especially from CEE, are relatively larger than to any other emerging region (Mihaljek 2006, ECB 2006b). Second, the extent of financial integration within Europe is greater than in any other region (Abiad et al. 2007, 5), including between the old EU-15 and the NMS from CEE.³ Third, FSFDI inflows were not just large, but also concentrated in a short transition period in the NMS. Much of it was

³ Most of FSFDI into the NMS originates from the EU-15.

privatization-based and received strong media and public attention. Thus, signal strength should be highest in the NMS, especially in countries from CEE.

The integration into the EU may enhance the strength of the signal effects of foreign bank entry since banks are more likely to invest in the NMS than in other emerging markets, thus increasing the surge of FSFDI and the signals of the profitability of such an investment. However, the EU integration may also distort the signal effects because investors may decide investing in these NMS only due to the fact that these countries are now members of the EU and not the banks' expansion. Nevertheless, we believe that for potential investors to invest in these NMS, stronger signals are necessary, especially for the attraction of non-financial FDI and trade. Empirical results of Breitenfellner et al. (2008, 114) confirm this hypothesis since they do not find significant effects of EU enlargement in 2004 and 2007 on FDI and conclude that not a particular enlargement date but rather the general perspective of improved circumstances are decisive. Accordingly, we argue that strong bank FDI provide signals that support this perception of "improved circumstances". While e.g. Kekic (2006) investigates the impact of EU-accession, we concentrate onto FSFDI-related signals in the following.

Regarding data sources, most of the data was provided by the *Vienna Institute for International Economic Studies* (wiiw), various *Transition Reports* of the *European Bank for Reconstruction and Development* (EBRD), the *Institute of International Finance* (IIF) and in the *World Development Indicators* (WDI). Hereafter, the variables used in the regression analyses are presented and the presumed correlations are explained. Table A7 provides a summary of the applied variables, their sources and their abbreviations used.

3.1.1 Independent variable (FSFDI)

Since this paper aims at examining the impact of financial sector foreign direct investment, FSFDI represents the explanatory variable. Following previous research, in particular Eller et al. (2005) and Detragiache et al. (2006), the **asset share of foreign banks (%)** provided by the *EBRD* is used to model the development of FSFDI. This variable is defined as the "*share of total bank sector assets in banks with foreign ownership exceeding 50 per cent, end-of-year*" (EBRD 2007, 215).

3.1.2 Dependent variables (non-financial FDI, trade, FPI)

First, non-financial FDI is computed with the help of sectoral data provided in EUR by the wiiw (2007a)⁴. Therefore, **total inward FDI stock minus inward FDI stock of financial intermediation** is calculated in order to obtain non-financial FDI. FDI stocks are a better variable than flows for measuring the extent of international production and the risk of underestimation of FDI stocks (due to their documentation at historical costs and not at replacement costs) is less likely to be a problem in countries from CEE because these countries have only recently emerged as significant host and home countries of FDI (Boudier-Bensebaa 2008, 45). Since some data was missing, we interpolated data for 1997 and 2006 in Hungary and for 2006 in Poland and Slovenia. Concerning Bulgaria, data was missing for the years 1997, 1998 and 2006; still we only interpolated data for 2006, thus using an unbalanced panel.

⁴ We used the publication of wiiw (2007) due to new methodologies applied in the publication of wiiw (2008) and structural breaks of the data.

Second, merchandise trade is calculated as the **sum of merchandise exports and merchandise imports**, provided in USD by the *EBRD* and converted into EUR with the corresponding annual average exchange rates. Due to the fact that some of the investigated countries have substantial service imports (mainly thanks to tourism, for example in the case of Croatia), the analysis only includes merchandise trade, assuming that the inclusion of service trade would distort the impact of FSFDI on trade.

The last dependent variable is foreign portfolio investment, which is part of a country's balance of payments, namely of the financial account under the heading "**portfolio investments, liabilities**". The corresponding data is provided in EUR by *wiiw* (2007b), however, due to a lack of data for Estonia, Latvia and Lithuania, we used the corresponding balances of payment published by the countries' national banks. Since these balances of payment were mainly denominated in national currencies, FPI was converted into EUR with the corresponding annual average exchange rates.

3.1.3 Control variables

3.1.3.1 Control variables of non-financial FDI

Since previous research underlines the relationship between various forms of investments and the host country's level of development (Detragiache et al. 2005, Brealey and Kaplanis 1996, Haselmann 2006), **nominal GDP** is included as a factor influencing non-financial FDI. In particular, Campos and Kinoshita (2008) highlight that market size, measured by GDP, is one of the classical determinants of FDI and is expected to attract market-seeking forms of investment, whose main goal is to sell in the local market (Campos and Kinoshita 2008, 8). This paper models the GDP's development, provided by the *IMF* (converted into EUR based on annual average exchange rates) and assumes that non-financial FDI rises with increasing levels of GDP.

Another traditional determinant of any flow of investment is **inflation**, which represents an indicator of a country's macroeconomic stability. In particular, Kolstad and Villanger (2007) include inflation as a variable controlling for FDI flows, although they point out that previous studies did not always find evidence for this relationship. We follow Campos and Kinoshita (2008) in expecting that "*low inflation is perceived by foreign investors as a favorable signal and it should lead to more FDI*" (Campos and Kinoshita 2008, 8). In particular, low inflation signals high government credibility and commitment (Campos and Kinoshita 2008, 15). Measured by percentage changes in annual averaged consumer prices provided by the *EBRD*, this paper therefore factors in this variable.

To control for institutional and governmental differences between countries, two distinct variables are applied: First, an indicator for **corruption**, which is measured by means of the "Corruption Perceptions Index" (*corrup*) documented by *Transparency International*. Regarding the assumed correlation there are two possible lines of argumentation: On the one hand, one might assume that non-financial FDI decreases with higher levels of corruption, drawing on Campos and Kinoshita (2008, 8). With this assumption the paper also somehow follows the argumentation of Kolstad and Villanger (2007) who used corruption to model an index of institutional quality. Although they underline that general political risk and institutional quality are mainly crucial in industrialized countries, one might argue that low levels of corruption are

important signals also for transition countries to attract FDI. On the other hand, it is possible to suggest that higher levels of corruption increase FDI. For instance, Cuervo-Cazurra (2008) underlines the positive view of corruption (“corruption as grease”) in the sense that corruption triggers FDI because it helps avoid the costs of operating in an environment characterized by poorly-developed regulations (e.g. in transition countries), thus facilitating transactions (Cuervo-Cazurra 2008, 14). In the examined transition countries one might assume a positive correlation of corruption with FDI as well.

Second, host country institutions have an impact on investment decisions as well. They affect non-economic costs like bribery and time lost in dealing with bureaucracy and local authorities (Campos and Kinoshita 2008, 13). To proxy the effectiveness of institutions, the analysis factors in the **rule of law** provided by Kaufmann et al. (2007), who defines this index as the measurement of the “*extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence*” (Kaufmann et al. 2007, 4). Thus, it is likely that countries with better legal systems attract more (non-financial) FDI-inflows. Kaufmann et al. (2007) find evidence for this correlation, though it is found to be especially strong for Latin American countries in comparison with European transition countries.

Furthermore, infrastructure variables are often regarded as potentially important determinants of FDI-flows, e.g. in Kolstad and Villanger (2007). Assuming that the more favorable the infrastructure reform is, the more non-financial FDI is attracted, two proxies for infrastructure are included. For data availability reasons and following the approach of Campos and Kinoshita (2008), this paper factors in the **number of fixed main telephone lines (per 1,000 persons)** provided in the *WDI* as “soft evidence” for the development of the host country’s infrastructure. This measure is reasonable because the availability of main telephone lines facilitates communication and promotes the domestic market’s integration (Campos and Kinoshita 2008, 8). Campos and Kinoshita (2008) point out that this variable loses its importance for countries which are already capable to benefit from cellular networks (Campos and Kinoshita 2008, 20). That is why the analysis also considers the **number of mobile phone subscribers (per 1,000 persons)**, representing a supplemental infrastructure variable in the *WDI*.

If one thinks of costs of business, one directly thinks of taxes to be paid. In fact, the reduction in corporate tax rates represents a successful key policy instrument to attract FDI in CEE (Bellak and Leibrecht 2005, 21; Piatkowski and Jarmuzek 2008, 3). Thus, including a tax variable seems to be evident. Although we initially aimed at including corporate income tax rates, differences in the taxation of corporations in the New EU Member States made a sound comparison impossible. That is why this analysis takes into account **taxes on income and wealth (direct taxes)** as a percentage of GDP at market prices. This measure is well documented by the *European Commission* (2008) and available for all countries included in the regression. We assume that this measure makes a sound comparison easier and supposes that more FDI-inflows are registered in countries with lower taxes.

There are debates in the economic literature regarding the role of labour productivity in attracting FDI, e.g. in Kucera (2002). By arguing that an increase in industry labour productivity leads to a rise in non-financial FDI, the **change in labour productivity in industry** is included which is an *EBRD* structural change indicator.

Clearly, another signal to attract potential investors is the host country’s educational attainment. Following studies of Barro and Lee (1993, 2000), we initially collected

data on the gross enrolment ratio for the ISCED⁵ levels 5 and 6, provided by *UNESCO*. The two levels represent the first two of three stages of tertiary education, requiring the successful completion of secondary education (or evidence of the attainment of an equivalent level of knowledge). However, there are some setbacks of this control variable. First, the gross enrolment ratio may overstate the accumulation of human capital if one considers that students might repeat the concerned levels of education (Barro and Lee 2000, 7). Second, Barro and Lee (2000) argue that the variable does not adequately measure the aggregate stock of human capital available as an input to production (Barro and Lee 2000, 1). Nevertheless, we believe in the variable's purpose, since the gross enrolment ratio represents an adequate signal of educational attainment – whether it effectively represents human capital's input to production is for this paper's purpose not very important, as long as investors consider this variable (or the “impression” of its value in form of other measures) as a factor influencing their investment decisions. Though, initial regressions showed a strong insignificance of the gross enrolment ratio, which might be due to some interpolation of the data or due to the fact that the mentioned concerns of Barro and Lee (2002) are justified in this case as well. Therefore the analysis factors in a **weighted index of highest level of education attained by employees** between the age of 15 and 64. This variable is provided by *Eurostat* and we suppose that this variable might be more relevant in investigating the relationship with non-financial FDI.

Since the analysis focuses on the New Member States of the European Union, it is evident that investors might be considering investing in these countries only or mainly thanks to their EU accession (e.g. Kekic 2005, Breitenfellner et al. 2008). EU accession influences other control variables and vice versa: On the one hand, institutional variables might improve due to EU accession; on the other hand, the countries' EU accession took place partly owing to legal and institutional improvements. Thus, an **EU membership dummy** is included, though the year of the actual EU accession was not selected, but the year when the signal of an imminent EU membership seems to have been strong enough, i.e. several years before the actual year of accession.

Finally, FPI has to be factored in, because previous research focuses on the relationship between FPI and FDI, e.g. De Santis and Ehling (2007). This paper does not assume a strong influence of FPI on FDI; nevertheless this matter needs to be investigated in more detail, so FPI is included as an additional control variable.

3.1.3.2 Control variables of trade

To provide a volatility indicator especially important to trade, this paper includes the changes in **exchange rates**. More concrete, it models the annual changes of each host country's currency vs. EUR in average rates and absolute terms. On the one hand, one might argue that host countries with higher volatility in terms of exchange rates attract lower levels of trade, on the other hand, changes in exchange rates might trigger exports or imports due to possible gains in exchange rates speculations.

Similarly to non-financial FDI, the level of **corruption** in the trade partner's country influences the exporter's confidence in the country's reliability thus having an impact on trade flows.

Furthermore, the **integration in terms of geographical proximity** is taken into account, which is especially crucial to minimize transportation costs (Svensson 1996, 319). For this purpose, we measured the distance of each host country's capital to

⁵ ISCED stands for „International Standard Classification of Education“.

Brussels, being the administrative and geographical centre of the European Union. An underlying assumption is that the majority of exports and imports of the concerned countries goes to, or comes from, members of the European Union, which seems to be confirmed by figures presented by the *wiiw*. We suppose that the longer the distance between a host country's capital and Brussels is, the lower the sum of merchandise exports and imports is due to higher transportation costs and less geographical integration in the EU. Future analyses could measure the distance between the host country's capital and the capital of the corresponding main trade partner (provided that there is a definite trade partner both for merchandise exports and merchandise imports).

To factor in a measure of the progress in transport infrastructure, the paper includes **air transport** provided in the *WDI*. This figures measures domestic takeoffs and takeoffs abroad of air carriers registered in the country. Corresponding figures concerning railways would be relevant as well, but unfortunately time series were not as complete as in the case for air transport. Since progress in transportation should lead to lower transportation costs, thus triggering merchandise trade, we presume a positive relationship between this variable and merchandise trade.

Finally, previous research (OECD 2002, Chen 1997) suggested a strong impact of total FDI on trade flows. Although this analysis focuses on FSFDI, **total FDI inward stock** is included to underpin previous research and to contribute to the regressions' robustness.

Further analyses should include sound measures of terms of trade and common borders. We initially included the "index of trade and foreign exchange system" which is a transition indicator provided by the *EBRD*. However, since this index does not vary much over time and between countries, the variable is not considered useful for the panel regressions. According to Breuss (2003, 185), differences in factor endowments between countries are crucial for trade flows. In particular, Breuss (2003, 184) draws on Ethier (1986) who suggests that the relative factor endowments and the degree of uncertainty on the global market are crucial for the emergence of multinational corporations: The more uncertainty, the more multinational corporations emerge; the more similar factor endowments, the more direct investments are registered. When factor prices (in particular labour prices) align internationally, bilateral direct investments are enhanced which in turn increases trade flows.⁶ Accordingly, factor endowments should be included in future analyses, especially when conducting bilateral regressions.

3.1.3.3 Control variables of foreign portfolio investment

Concerning foreign portfolio investment (FPI), we assume that the control variables do not play such an important role as in the case for non-financial FDI and trade because the latter represent much more important capital flows: The decision to realize a foreign direct investment should be based on much more good reasons than the decision to "only" invest e.g. in a foreign company. Therefore, one might suppose that there is a stronger correlation between the mentioned control variables and non-financial FDI or trade than between the control variables and foreign portfolio investment. Nevertheless, the analysis aims at testing for this correlation, wherefore a set of control variables is included.

First, FPI shares some of the already mentioned control variables for the previous two dependent variables, namely: nominal GDP, inflation, changes in exchange rates, rule

⁶ For an in-depth review of trade theories and related empirical results see Breuss (2003).

of law and the EU membership dummy. Their inclusion is a result of more or less the same arguments: **Nominal GDP** stands for the host country's level of development, attracting any form of capital flow; **inflation** and **exchange rates** control for macroeconomic stability (De Santis and Ehling 2007), whereas exchange rates might further influence trade in securities due to possible exchange rates speculations. The **rule of law** signals the effectiveness of the legal system which may positively influence the level of FPI; and the **EU membership dummy** is in any case important for the attraction of capital flows.

Additionally, by drawing on De Santis and Ehling (2007), some common stock variables such as **stock market capitalization** (in per cent of GDP) and **stock trading volume** (in per cent of market capitalization) are taken into account, both provided by the *EBRD*. The former represents the market value of all shares listed on the stock market, whereas listed domestic companies are the domestically incorporated companies listed on the host country's stock exchanges at the end of the year (EBRD 2007, 215). Stock trading volume stands for the total value of shares traded during the period, divided by the average market capitalization for the period (EBRD 2007, 216).

Another index provided by the *EBRD* which is used in the analysis is the index of **securities markets and non-bank financial institutions**. This figure measures the regulation of securities exchanges, its scale varying from 1 to 4+. 1 implies only little progress of securities markets and non-bank financial institutions. 2 indicates that the country has formed securities exchanges, market-makers and brokers and some trading in government paper and/or securities and that there is a rudimentary legal and regulatory framework for the issuance and trading for securities. 4+ implies, among others, that the norms of securities laws correspond to those of advanced industrial economies.

Finally, since De Santis and Ehling (2007) find that FDI transactions measured by fitted growth rates of the stock of FDI influence current growth rates of the stock of FPI, **non-financial FDI** and **total FDI** are included as additional variables controlling for FPI, implying signals of FDI to foreign portfolio investors. So, a positive correlation between FDI stocks and FPI is assumed.

3.2 Panel regressions

This section is the core of our analysis, i.e. the regression analyses. For each link, we conducted regressions with fixed-effects and tobit regression. However, since tobit regressions provided more sound results mainly due to the dependent variables' distributions, only the corresponding tobit regressions are presented hereafter.⁷

3.2.1 FSFDI and non-financial FDI

Regarding the relationship between foreign bank entry and non-financial FDI, the following equation is used:

$$\text{genfdi} = f(\text{fsfdi}, \text{gdpnom}, \text{tax}, \text{infl}, \text{labprod}, \text{law}, \text{educ}, \text{corrup}, \text{fixedtel}, \text{mobiletel}, \text{eu}, \text{fpi})^8$$

⁷ The distribution of a regression's residuals was used as indicator for the robustness of the regression and since the residuals of the regressions with fixed-effects were not normally distributed, tobit regressions were considered, whose residuals are normally distributed.

⁸ For information regarding the data, see table A7.

Initially, FSFDI turned out to be insignificant when conducting regressions with fixed-effects and tobit regressions. However, due to the distribution of the regression's residuals, these results are not sound enough. While testing for the regression's robustness, we found that by excluding the year 2006, FSFDI turns out to be significantly positively correlated with non-financial FDI (with residuals being normally distributed).⁹ The corresponding regression is presented in table 1.

Table 1: Tobit regression, exclusion of the year 2006, FSFDI & non-financial FDI

Random-effects tobit regression						Number of obs	= 80
Group variable (i): idno						Number of groups	= 9
Random effects u_i ~ Gaussian						Obs per group: min	= 8
						avg	= 8.9
						max	= 9
Log likelihood = -792.66949						Wald chi2(7)	= 305.10
						Prob > chi2	= 0.0000
genfdi	Coef.	Std.Err.	z	P>z	[95% Conf. Intervall]		
fsfdi	79.98601	33.35006	2.40	0.016	14.6211	145.3509	
gdptom	.1916664	.0132821	14.43	0.000	.1656339	.2176988	
tax	2568.048	693.2007	3.70	0.000	1209.4	3926.697	
infl	834.3509	209.1438	3.99	0.000	424.4366	1244.265	
labprod	-256.9212	151.7272	-1.69	0.090	-554.3012	40.45871	
corrup	-4181.429	998.4655	-4.19	0.000	-6138.386	-2224.473	
fixedtel	73.70515	17.52377	4.21	0.000	39.35919	108.0511	
mobiletel	13.57716	2.917607	4.65	0.000	7.858752	19.29556	
_cons	-37795.62	8689.905	-4.35	0.000	-54827.52	-20763.72	
/sigma_u	.0002406	1202.137	0.00	1.000	-2356.145	2356.145	
/sigma_e	6744.581	550.1437	12.26	0.000	5666.319	7822.843	
rho	1.27e-15	1.27e-08			0	1	
Observation summary: 1 left-censored observation							
77 uncensored observations							
2 right-censored observations							

Source: own calculation

Table 1 shows that when excluding the year 2006, **FSFDI** is significantly positive correlated with non-financial FDI.¹⁰ Thus, there is a significantly positive association between foreign bank entry and the level of non-financial FDI during the 1997–2005

⁹ We attribute this trend to a combination of threshold effects, of waning signal strength, and of a change of FDI investors from primary (typically a large Western bank buying in course of privatization) to a more M&A-type of deals among western owners (secondary transactions) in maturing markets. For more information, see the discussion as follows.

¹⁰ The regression indicates that a 1% rise in FSFDI increases non-financial FDI by USD 80 mn. However, this does not hold true because effects of FSFDI are not linear, i.e. there are threshold levels of FSFDI to keep in mind.

period, confirming the signal channel of FSFDI. However, causality might be blurred, meaning that it is non-financial FDI that attracts FSFDI (especially via the “follow your client”-strategy of banks) and not vice-versa. Nevertheless, we emphasise the opposite direction of impact since foreign banks do not exclusively finance affiliates of clients from their home countries (Clarke et al. 2002) and since it is likely that foreign banks improve the banking system’s efficiency (Cárdenas et al. 2003) which in turn promotes FDI.

The finding that FSFDI is associated with non-financial FDI only until the year 2005 can be taken as an indication of a “hump shaped effect” also found in related research: While signals of foreign banks provide positive triggers initially up to 2005, their strength could fade out in importance over time. Imam (2007) similarly finds that the size of IMF programs lose in signal strength over time with regard to public expectation about the respective economy. Borovicka (2007, 68) argues that foreign investors tend to acquire the most cost efficient banks. If FSFDI is implemented at first by the most efficient (and supposedly profitable) banks, follow-up FSFDI may not send signals as strong as the previous ones. In investigating whether FSFDI has an impact on economic growth via the efficiency channel over the 1996–2003 period in 11 CEE countries, Eller, Haiss and Steiner (2006; 314, 316) find a hump-shaped impact of FSFDI on economic growth. They argue that while medium FSFDI supports growth, crowding-out of local physical capital caused by the entry of foreign banks seems to hamper economic growth above a certain threshold. Altomonte and Pennings (2005, 12) similarly found positive intra-industry effects on domestic firms’ productivity from initial foreign investments in an industry and region, but weaker and eventually negative effects as the foreign share grew. The same hump-shaped effects may apply to the impact of FSFDI under investigation in this analysis.

Another aspect is the increasing importance of FDI in the automotive industry (e.g. Meyer 2000, Rhys 2004). Recently, especially in Slovakia and the Czech Republic a mounting wave of automotive FDI cumulated to new heights. These flows may have overshadowed other triggers for FDI and trade, given the magnitude and high share the automotive industry reached in terms of these countries’ manufacturing products and exports.

Regarding the control variables in the regression, **nominal GDP** is positively associated with non-financial FDI, i.e. higher levels of economic development attract higher stocks of non-financial FDI. This confirms findings of Campos and Kinoshita (2008) who suggest that GDP is one of the classical determinants of FDI and is expected to attract market-seeking forms of investment (Campos and Kinoshita 2008, 8). **Taxes on income and wealth** show a positive coefficient as well which does not confirm our previous expectations. However, this finding might state the opposite direction of impact, namely that the more FDI a country attracts, the more taxes it registers. Or, the analysis might omit some important variables like promotions to attract foreign investment which may overrule tax costs. In fact, Piatkowski and Jarmuzek (2008, 10) found no significant association between falling corporate income tax rates and FDI flows in countries from CIS and SEE. They argue that other factors such as the institutional environment are much more important determinants for FDI flows. **Fixed telephone mainlines** and **mobile telephone subscribers** both show positive coefficients. The regression analysis further indicates that the more corrupt the host country’s business environment is, the more non-financial FDI inward stocks are registered. Consequently, one might argue that in these transition countries the positive view of **corruption** explained by Cuervo-Cazurra (2008) holds

true: Corruption increases FDI because it speeds up transactions and procedures in countries with poorly-developed regulations (Cuervo-Cazurra 2008; 13, 14). For further analysis, it would be interesting to differentiate between the type of corruption, namely between pervasive corruption (certain and widespread corruption) and arbitrary corruption (uncertain corruption). For example, Cuervo-Cazzura (2008, 25) found that investors favour arbitrary corruption in transition countries. The coefficient of **inflation** does not show the expected sign, since this regression finds that the higher the (positive) changes in consumer prices, the more non-financial FDI inward stocks are registered. One could explain this finding by arguing that since inflation is a natural by-product of the catch-up-process in the transition economies especially in the NMS from CEE (Breuss et al. 2004), investors are not scared off from higher inflation as it may be the case in other emerging markets. **Industry labour productivity** is negatively correlated with non-financial FDI, although the variable's significance is not very strong ($P > z = 0.090$). This finding was not expected. However, with rising FSFDI, demand for skilled labour may go up and the following wage rise may spill over to the manufacturing sector, which is an interesting question for further research. Methodologically, this indicator (measured as the ratio of industrial production to industrial employment) may be distorted due to transition effects in emerging markets, e.g. when single employers of systemic influence on an economy (like *Skoda* in the Czech Republic) are restructured. The other control variables turned out to be insignificant, such as the **EU membership dummy**, which is in line with recent research of Breitenfellner et al. (2008, 114) who did not find any significant impact of EU enlargement in 2004 and 2007 on FDI.

3.2.2 FSFDI and trade

To test for the association between FSFDI and trade, the following equation is modelled:

$$\text{trade} = f(\text{fsfdi}, \text{exratechg}, \text{corrup}, \text{airtransp}, \text{fdi}, \text{dist})^{11}$$

At first, it has to be mentioned that the following regression analyses only comprise the years between 1997 and 2005, since the year 2006 is excluded due to missing data points for air transport. However, this restriction is tolerable because air transport is an important and significant control variable and therefore crucial to include.

The results of the corresponding tobit regression seems are presented in table 2.

Table 2: Tobit regression, FSFDI & trade

Random-effects tobit regression	Number of obs = 92
Group variable (i): idno	Number of groups = 11
Random effects u_i ~ Gaussian	Obs per group: min = 3 avg = 8.4 max = 9
Log likelihood = -921.42438	Wald chi2(5) = 3766.11 Prob > chi2 = 0.0000

¹¹ For information regarding the data, see table A7.

trade	Coef.	Std.Err.	z	P>z	[95% Conf.Intervall]	
fsfdi	42.61142	21.85101	1.95	0.051	-.2157695	85.4386
corrup	1472.53	606.8636	2.43	0.015	283.0994	2661.961
airtransp	573.5834	92.45692	6.20	0.000	392.0994	754.7956
fdi	1.220399	.1057728	11.54	0.000	1.013088	1.42771
dist	-16.98621	2.178532	-7.80	0.000	-21.25606	-12.71637
_cons	21537.65	4524.331	4.76	0.000	12670.12	30405.17
/sigma_u	6014.952	487.9598	12.33	0.000	5058.568	6971.336
/sigma_e	4930.657	383.71	12.85	0.000	4178.599	5682.715
rho	.5980995	.0530475			.4918805	.6974971

Observation summary: 1 left-censored observation

91 uncensored observations

0 right-censored observations

Source: own calculation

Similarly to the regression with fixed-effects, this type of regression shows a positive association between **FSFDI** and the sum of merchandise exports and imports. Although causality is blurred and one decision criteria of banks to enter foreign markets might be a high level of trade flows to/from the host country, one may argue that it is FSFDI that triggers merchandise exports and imports. In fact, the literature review showed that previous research confirmed both possible directions of the impact. Nevertheless, we argue that FSFDI influences the flow of merchandise exports and imports, due to two main reasons: First, trade flows are more likely to be attracted to economies with developed financial markets because financial systems facilitate trade (Levine 1996). Second – or that is why –, the entry of foreign banks may send signals to exporters or importers that trade flows are easier to implement and that the integration of the host country is enhanced thanks to foreign banks and their efficiency spillovers on the host country.

Regarding the included control variables, the impact of changes in **exchange rates** turned out to be insignificant, whereas **air transport** and **total FDI** show significant positive coefficients, the latter finding confirming previous research (Chen 1997, OECD 2002). Furthermore, trade is positively affected by the value of **corruption** and since higher values of the “Corruption Perceptions Index” correspond to a less corrupt business environment, these results confirm our previous assumption that lower levels of corruption attract more trade. Regarding the host country’s integration in terms of **geographical proximity**, the distance of country’s capital to Brussels is negatively correlated with trade flows, i.e. the more far away the city is from Brussels, the lower the level of trade flows is.

However, since FSFDI is likely to have different effects on exports and imports, additional regressions are conducted in which the impact of FSFDI on merchandise exports and merchandise imports is tested separately. To save space, the results of the corresponding regression analyses are only presented in short and without concrete numbers.¹² Still, results are interesting: Regarding **merchandise exports**, FSFDI is insignificant both in the regression with fixed-effects (presenting an *R Square* of 88%) and in the tobit regression. Furthermore, air transport and FDI have positive

¹² Details are available from the authors.

coefficients, whereas distance negatively affects merchandise exports. However, in the case for **merchandise imports**, FSFDI has significantly positive coefficients in both regressions (regression with fixed-effects shows an *R Square* of 89.73%), meaning that higher levels of FSFDI increase the level of merchandise imports. This finding confirms results of Mencinger (2003) who suggests that the higher the inflow of FDI into a country, the higher its current account deficit (Mencinger 2003, 12). Consequently, one might state two “sides” of foreign bank’s possible impacts: On the one hand, FSFDI enhances economic integration by triggering trade flows, on the other hand, it leads to an increase in the current account deficit, which obviously is not a favorable situation for the host economy.

The conducted regressions in the case of merchandise imports further showed a positive association between air transport and imports and FDI and imports and a negative correlation between distance and merchandise imports. While corruption and changes in exchange rates turned out to be insignificant in the case of merchandise exports, both show significant associations with merchandise imports: First, the changes of exchange rates are negatively correlated with the level of merchandise imports. Second, the less corrupt the host country’s business environment is, the more merchandise imports it registers. So, low levels of corruption might be a mean to attract merchandise imports, whereas they do not affect the level of merchandise exports.

3.2.3 FSFDI and FPI

The following equation is modelled to test for the correlation between FSFDI and foreign portfolio investment:

$$FPI = f(\text{fsfdi}, \text{gdpnom}, \text{infl}, \text{exratechg}, \text{law}, \text{eu}, \text{cap}, \text{stocktrad}, \text{sec}, \text{fdi}, \text{genfdi})^{13}$$

It has to be kept in mind that this regression only includes nine countries because FDI data was missing for Croatia and Romania. Regression with fixed-effects showed that FSFDI and all control variables except FDI showing a positive coefficient turned out to be insignificant. The finding of a positive correlation with FDI is in line with previous research, e.g. De Santis and Ehling (2007) proved that international portfolio investors follow firms’ foreign investment decisions (De Santis and Ehling 2007, 26). The corresponding tobit regression suggests that only non-financial FDI has an impact on FPI. This again confirms results of De Santis and Ehling (2007), although total FDI inward stock turned out to be insignificant. However, one might argue that since non-financial FDI does not include a high share of services FDI (i.e. financial intermediation), these figures might have a greater impact on FPI because previous research suggests that effects of services FDI are not as readily measure as those of manufacturing FDI (Sohinger 2005).

However, findings might be blurred due to the fact that large domestic banks are often delisted after takeovers by foreign-owned banks (Mihaljek 2006, 59). For example, in the Czech Republic this concerned one institution with a 12% share in market capitalization and in Poland three institutions with a combined share in stock market capitalisation of 5% (Mihaljek 2006, 60). Consequently, while the asset share of foreign-owned banks increases, stock market capitalization might decrease due to the

¹³ For information regarding the data, see table A7.

delisting of these newly foreign-owned subsidiaries, which in turn might lower levels of foreign portfolio investment.

Moreover, it might be reasonable to include lead effects, because the entry of a foreign bank usually is evident and known (or at least expected) to (by) the public some years before the actual investment. For example, in the case of BCR in Romania, from initial seven banks two were left over in the third round and in the end *Erste Bank* was chosen. So, the firm's commitment to invest is proven to the market consecutively already prior to the final deal. That is why signals of FSFDI to potential portfolio investors might start earlier than at the time of the actual entry. Following this argumentation, one might assume this lead to exist also in the case of non-financial FDI and trade. However, we argue that in order to attract additional FDI and trade by sending signals, the foreign bank's entry already has to be very certain in order to strengthen investors' confidence in the actual entry, because both represent more important and riskier investment flows. Thus, the lead might play a more important role for FPI, which is a much less risky investment and which might react much less to rumours like possible take-overs.

Anyhow, regressions with a lead for FSFDI are conducted for the association between FSFDI and FPI. Table 3 provides the results of the tobit regression with a lead of one year for FSFDI.

Table 3: Tobit regression, 1-year-lead of FSFDI, FSFDI & FPI

Random-effects tobit regression				Number of obs = 79		
Group variable (i): idno				Number of groups = 9		
Random effects u_i ~ Gaussian				Obs per group: min = 7		
				avg = 8.8		
				max = 9		
Log likelihood = -652.31836				Wald chi2(5) = 65.88		
				Prob > chi2 = 0.0000		
fpi	Coef.	Std.Err.	z	P>z	[95% Conf.Intervall]	
fsfdi F1	-12.32953	6.780829	-1.82	0.069	-25.61971	.9606476
gdptom	.0107429	.006508	1.65	0.099	-0.0020126	.0234983
law	-2199.616	802.4598	-2.74	0.006	-3772.409	-626.8239
cap	36.86949	17.58243	2.10	0.036	2.408566	71.33042
genfdi	.0762742	.031203	2.44	0.015	.0151175	.137431
_cons	696.5841	646.2844	1.08	0.281	-570.1101	1963.278
/sigma_u	442.7737	248.412	1.78	0.075	-44.10497	929.6523
/sigma_e	1047.195	95.53234	10.96	0.000	859.9552	1234.435
rho	.1516621	.1534507			.0104488	.5991579
Observation summary: 1 left-censored observation						
77 uncensored observations						
1 right-censored observations						

Source: own calculation

With a **one-year-lead-of FSFDI**, the asset share of foreign-owned banks turned out to be negatively correlated with FPI, thus not confirming the assumption that FSFDI triggers FPI by sending signals. One might explain the negative correlation in two ways: Either the entry of foreign banks decreases the confidence foreign investors have in the host economy or FSFDI substitutes foreign portfolio investment. The first presumption could be affirmed if it is true that financial crises are feared by investors if the banking industry booms, whereas the latter would be affirmed if foreign banks themselves realized foreign portfolio investment before substituting these kinds of investment by entering the foreign market via direct investment, which in turn decreases foreign portfolio investment.

Moreover, some control variables are significant in this regression: First, **nominal GDP** is positively associated with FPI, implying that higher levels of economic development attract more foreign portfolio investment. Second, **stock market capitalization** shows a positive coefficient, which affirms our previous assumption that the higher the capitalization, the more foreign portfolio investment is registered. However, the **rule of law** is negatively associated with FPI, which might be due to the interpolation of some data points or due to the fact that FPI flows in despite some corruption. Finally, **non-financial FDI** is positively associated with FPI.

Unfortunately, the residuals of the tobit regressions are not normally distributed. Also, due to the distribution of FPI itself, it might be necessary to use other statistical analyses in order to test for the association between FSFDI and FPI. However, since this analysis would go beyond the scope of the paper, a further examination of the link between FSFDI and FPI would be an important issue for further research.

3.3 Results at a glance

The following tables present the most important results. For complete argumentations, please see the previous sections.

Table 4: Short presentation of results, FSFDI & non-financial FDI

Variable	Direction	Argumentation
FSFDI	+	FSFDI improves the host country's business environment and sends signals to non-financial FDI; impact of FSFDI seems to fade over time
nominal GDP	+	Higher levels of economic development attract non-financial FDI
taxes	+	Opposite direction of impact: More non-financial FDI leads to more taxes (or omitted variables such as promotions overrule tax costs)
inflation	+	Higher inflation may be seen as a by-product of the catch-up process during transition

Variable	Direction	Argumentation
industry labour productivity	–	With rising FSFDI, demand for skilled labour may go up and the following wage rise may spill over to the manufacturing sector, which might decrease non-financial FDI inflows
corruption (“Corruption Perceptions Index”)	–	Corruption in transition countries increases FDI by facilitating transactions
fixed telephone mainlines	+	Fixed telephones as a proxy for the progress of the infrastructure attract FDI
mobile telephone mainlines	+	Mobile telephone mainlines as another proxy of infrastructure trigger FDI as well

Table 5: Short presentation of results, FSFDI & trade

Variable	Direction	Argumentation
FSFDI	+	FSFDI facilitates trade and sends signals to trade flows (in particular, FSFDI increases the host country’s imports)
corruption (“Corruption Perceptions Index”)	+	Lower levels of corruption attract trade flows (especially imports)
air transport	+	The more air carriers a country registers, the more trade flows it attracts
total FDI	+	FDI influences trade flows (e.g. Chen 1997, UNCTAD 2002)
distance	–	The further away the host country’s capital is from Brussels, the lower levels of trade flows are attracted

Table 6: Short presentation of results, FSFDI & FPI

Variable	Direction	Argumentation
FSFDI with a one-year-lead	–	FSFDI substitutes FPI or FSFDI causes delistings which may turn the already small CEE-stock market unattractive
nominal GDP	+	Higher levels of economic development attract more FPI
FDI	+	FDI sends signals to foreign portfolio investors (confirming results of De Santis and Ehling, 2007)
rule of law	–	Some corruption is favoured by investors because it may facilitate transactions
stock market capitalization	+	The higher the stock market capitalization is, the more FPI is registered

4. Summary and Conclusions

This paper discusses the repercussions of foreign bank entry on economic development via the attraction of non-financial foreign direct investment (FDI), trade and foreign portfolio investment (FPI) in the host country. We conduct tobit regression analyses in order to assess these possible effects of foreign bank presence in the New EU Member States (NMS) from Central and Eastern Europe (CEE) and South Eastern Europe (SEE) plus Croatia.

From our literature review we suggest that there are four channels through which financial sector foreign direct investment (FSFDI) affects economic growth: The efficiency channel, the volume channel, the corporate governance channel and the signal channel. While direct effects from foreign bank entry to host country economic development and competitiveness via credit volume, bank efficiency and stability receive ample attention in the literature, the indirect, collateral-type impact of FSFDI has not yet been explored. We follow the Spence (1973) signal theory and argue that the massive inflow of foreign banks may stimulate non-financial FDI, trade and FPI by sending signals.

From reviewing the literature, we draw the conclusion that these repercussions on non-financial FDI may result in an overall better performing banking system, since efficiency rises due to the increased number of new and potential entrants (Cárdenas et al. 2003, 3). Repercussions on trade are not that evident, since the majority of studies suggest that a high level of trade leads to an increased number of foreign banks, thus neglecting the opposite direction of repercussions. However, surveys underline the importance of a well-functioning banking system for the emergence and improvement of export industry (e.g. Roldos 2001) and Brealey and Kaplanis (1996) suggest a likely relationship between the location of overseas offices of large banks

and trade. Regarding the link between foreign bank entry and foreign portfolio investment (FPI), there is a lack of economic studies. However, the association between FDI and FPI is shown by De Santis and Ehling (2007) who suggest that FDI stocks trigger stocks in FPI.

In the empirical part, we survey the development in the NMS plus Croatia. We conduct regression analyses covering the years between 1997 and 2006, thus focusing on the period, where the level of FSFDI surged considerably.

First, regarding the link between FSFDI (modelled by the asset share of foreign-owned banks) and non-financial FDI, the tobit regression finds a positive association between the two variables over the period between 1997 and 2005, confirming the signal channel. Although causality might be blurred, we argue that it is FSFDI that triggers non-financial FDI since foreign banks do not only finance affiliates of clients from their home countries (Clarke et al. 2002) and since it is likely that foreign banks promote FDI by improving the banking system's efficiency (Cárdenas et al. 2003). However, when excluding the year 2006, this correlation seems to fade. This finding is in line with previous research indicating "saturation effects" of FSFDI (e.g. Borovicka 2007, Eller et al. 2006). Concerning the control variables included in the regression analysis, nominal GDP, taxes, inflation, fixed telephone mainlines and mobile telephone subscribers (measures of infrastructure reform) are positively correlated with non-financial FDI. Industry labour productivity is negatively correlated with non-financial FDI which might be due to increasing demand for skilled labour and a consequent rise in wages. Finally, the more corrupt the host country's business environment is, the more non-financial FDI stocks are registered. Consequently, the positive view of corruption holds true, i.e. corruption triggers FDI in transition countries by facilitating transactions.

Second, the tobit regression testing for the relationship between FSFDI and merchandise trade shows a positive association between foreign bank entry and trade. Again, causality might be blurred. Nevertheless, we argue that foreign banks influence trade flows and not vice-versa, because financial markets enhanced by foreign banks facilitate trade, wherefore foreign banks may send signals to exporters or importers that trade flows are easier to arrange and that the integration of the host country may be enhanced thanks to foreign banks and their efficiency spillovers on the host country. Regarding other variables, air transport and total FDI inward stock are both positively correlated with trade, and the more corrupt the host country's business environment is, the less trade flows are registered. Finally, the distance of the host country's capital to Brussels is negatively associated with trade flows. However, by conducting separate regressions for exports and imports, FSFDI turned out to be insignificant in the case of merchandise exports, but positively correlated with the level of merchandise imports. This confirms results of Mencinger (2003) who suggest that the higher the inflow of FDI into a country, the higher its current account deficit (Mencinger 2003, 12). Consequently, on the one hand, FSFDI enhances economic integration by triggering trade flows, on the other hand, it leads to an increase in the current account deficit, which obviously is not a favourable situation for the host economy.

As to the link between FSFDI and foreign portfolio investment (FPI), there is no significant association between the two variables. This might be explained by the fact that large domestic banks are often delisted after takeovers by foreign-owned banks (Mihaljek 2006, 59), thus decreasing stock market capitalization. Moreover, it might be reasonable to include lead effects, because the entry of a foreign bank usually is evident and known to the public some time before the actual investment, wherefore

signals of FSFDI to potential portfolio investors might start earlier than at the time of the actual entry. However, by including a lead of one year of FSFDI, the asset share of foreign-owned banks is significantly negatively correlated with FPI. One might explain the negative correlation between FSFDI and FPI in two ways: Either the entry of foreign banks decreases the confidence foreign investors have in the host economy or FSFDI substitutes FPI. The first presumption could be affirmed if it is true that financial crises are feared by investors if the banking industry booms, whereas the latter would be affirmed if foreign banks themselves realized FPI before substituting these kinds of investment by entering the foreign market via direct investment, which in turn decreases foreign portfolio investment. Concerning the included control variables, stock market capitalization and nominal GDP both show positive coefficients. The rule of law is negatively correlated with FPI, which might be due to mistakes in the interpolation of some data points or due to assumption that FPI flows in despite some corruption. Finally, non-financial FDI is significantly positively correlated with FPI, which confirms results of De Santis and Ehling (2007) who showed that international portfolio investors follow firms' foreign investment decisions (De Santis and Ehling 2007, 26).

This paper contributes in the following aspects. For one, we provide a framework for the discussion of indirect effects of financial sector direct investment, whereas so far rather direct spillover effects within the host country within the financial sector were discussed in the literature. For two, this is one of the few papers dealing with sectoral effects of FDI from both the theoretical and empirical side. For three, we extend the literature of spillover effects of sectoral FDI on trade and foreign portfolio investment, which again is a novelty. Most importantly, we also investigate these interactions for a sample of structurally similar European transition countries over the 1997–2006 period. Our preliminary empirical results suggest that financial sector FDI can trigger growth in foreign trade and in FDI into other sectors that is conducive to economic development and competitiveness of the host country. These indirect effects also need to be taken into consideration by public policy and investors.

The paper provides a rather positive picture of the effects of foreign bank entry. After reviewing the literature and the paper's analysis, one could argue that incentives offered by government policies to attract FSFDI (and total FDI) are maintainable. Research should be deepened to question and/or confirm this view: First, the examined time period should be extended in order to present a more complete picture. By focusing on the years between 1997 and 2006 the most critical years of bank crises are omitted: Including the period of bank crises could on one hand lead to a distortion of the data's presentation. On the other hand, interesting conclusions could be drawn referring to foreign banks' influence during a period of bank crises. Second, although regression analysis is a sound instrument to show coherence between two variables, it does not show causality. This insufficiency could be reduced by a supplemental analysis of so-called "news-based indicators", which shows the length and strength of the signals by foreign banks. GMM methodology and event study methodology might be considered as well.

One may further address the topic by conducting surveys with managers investing in foreign countries in order to determine whether decisions of banks influence their investment behaviour. This might help to find the reason for the attraction of investment flows, i.e. whether foreign banks really send signals about the host country's competitiveness or whether the attraction is due to additional reasons.

Further research could focus on the different forms of impact foreign banks have on economies depending on their industrial specialization: Since economies with an industrial specialization strongly reliant on external finance are likely to benefit more from financial expansion (EBRD 2006b, 50), it would be interesting to conduct more panel regressions with different groups of countries according to their industrial specialization. Another aspect would be to test for the different effects of foreign banks on host countries according to the level of development of their financial markets.

Finally, it would be interesting to link the findings concerning effects of FSFDI on non-financial FDI, trade and FPI with their further impacts on economic growth. In other words, tracking time series from the starting point of FSFDI until their implementation in the host economies and their final contribution to growth and welfare. Extending the analysis from the NMS to other emerging markets (Asia, Latin America) would allow regional comparisons and answer whether the findings reported in this paper are region-specific or general.

APPENDIX

Table A1: Transmission channels between FSFDI and economic growth, Volume channel – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Detragiache, Tressel, Gupta (2006)	Region: Low-income and lower middle-income countries (definition by World Bank) Time: 1995–2002	ratio of bank credit to the private sector to GDP	share of foreign bank assets to total assets	GDP per capita, dummy for transition to a market economy, inflation, freedom from corruption, creditor information, contract enforcement speed	country-level and bank-level regressions	foreign bank penetration → financial sector development in poor countries	foreign bank entry may improve total lending, cost efficiency and welfare; but may also result in cream-skimming increasing overall operating costs and lowering welfare	foreign bank entry only benefits more transparent firms; foreign banks have a less risky loan portfolio
Eller, Haiss, Steiner (2007)	Region: 10 CEE countries Time: 1996–2003	growth rate of real GDP per worker	inward FSFDI stock, financial M&A (scaled to GDP; measured per employee)	size of the public sector (growth rate of government consumption to GDP), inflation	fixed-effects panel data analysis	FSFDI → economic growth	foreign banks grant a higher volume, thus increasing investment and growth	FSFDI requires some time to affect the real economy

Table A1 (continued): Transmission channels between FSFDI and economic growth, Volume channel – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Giannetti, Ongena (2005)	Region: 14 Eastern European transition countries (almost 60,000 firm–year observations) Time: 1993–2002	firm sales, asset growth, debt/assets, trade credit/sales, number of firms	foreign bank lending, total bank lending/GDP; Financial loans/total liabilities, firm employees	institutional and legal framework variables, business cycle effects, sectoral employment, number of employees, dummy for the time when firm started to operate	panel data regressions	foreign bank lending → firm growth (differential impact on firms with different characteristics according to size, age, efficiency)	foreign lending stimulates growth in firm sales, assets, leverage – but dampened effect for small firms; connected lending problems mitigated by foreign banks	foreign lending improves allocation efficiency; foreign bank entry affects industrial structure
Mihaljek (2006)	Region: 14 emerging market economies Time: 1994–2004	total commercial bank credit to GDP	shares of state-owned, domestic and foreign-owned bank lending (to GDP)	-	descriptive examination and regression analysis	foreign bank entry → bank lending	in several countries foreign-owned banks have expanded lending more rapidly than private domestic banks	significant increase of the share of household loans in total loans granted by foreign banks in the last five years
Naaborg, Scholtens, De Haan, Bol, De Haas (2003)	Region: 8 CEE countries Time: 1991–2000	foreign vs. domestic ownership (dummy variable)	non-interest costs, after-tax income, interest margin, return on assets, private credit/total bank credit	Per capita income	simple correlation analysis	foreign owned banks → credit supply	bank assets increased during the 1990s, but credit to the private sector remained relatively low (but rose slightly)	foreign owned banks became main creditors, public credit exceeded private credit

Table A2: Transmission channels between FSFDI and economic growth, Efficiency Channel – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Eller, Haiss, Steiner (2006)	Region: 11 CEE countries Time: 1996–2003	economic growth (real GDP at 1995 domestic market prices divided by the number of employed persons of the economy)	growth or level of FSFDI, growth of physical and human capital stock per worker	government consumption to GDP ratio, inflation	cross-country growth accounting framework	FSFDI → efficiency	hump-shaped impact of FSFDI on economic growth	level and quality of foreign investment stimulates growth
Green, Murinde, Nikolov, (2004)	Region: 273 banks in 9 European transition countries Time: 1995–1999	total costs (interest expenses + operating expenses); Output (loans, other earning assets, non-interest income); Inputs (labour, capital, deposits)	foreign vs. domestic ownership (dummy variable)		augmented translog cost function and two cost share equations	foreign bank entry → efficiency of domestic banks	foreign banks are not more efficient than an average domestic bank (in terms of economies of scale and scope)	bank ownership is not an important factor in reducing the banks' total costs
Holló, Nagy (2006)	Region: 2,459 banks from 25 EU member states Time: 1999–2003	difference of the natural logarithm of efficiency values in year 2003 and 1999	natural logarithm of the efficiency value in 1999	inflation, depth of financial intermediation, market concentration, regulatory regime	estimation of X-efficiency and alternative profit-efficiency scores, regression analysis	efficiency convergence process among banks in EU countries?	efficiency convergence exists among banks in EU countries, X-efficiency convergence is faster in relation to new member states than old members	narrower net interest margins enhance investment activity, stimulate economic growth and increase consumer surplus

Table A2 (continued): Transmission channels between FSFDI and economic growth, Efficiency Channel – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Levine (1996)	Region: non-OECD countries Time: 1960–1989	per capita GDP growth	liquid liabilities of the financial system divided by GDP; ratio of deposit-bank domestic credit divided by deposit-bank domestic credit plus central-bank domestic credit	economical and political factors	regression analysis	financial development → economic growth	financial development stimulates economic growth	foreign banks may promote financial development by providing high-quality financial services, by exerting downward pressure on the financial services' prices and by putting pressure on domestic banks to improve the quality of their services
Papi, Revoltella (2003)	Region: 112 banks from 9 transition countries Time: 1993–1997	return on assets, overhead costs/total assets	total assets, net loans/total assets, operating income/net interest revenue, foreign ownership	–	regression analysis; General Least Squares (GLS) estimations	FDI in the financial sector → efficiency levels	foreign participation is positively linked to profitability	improvements in operating efficiency require a foreign majority interest (for cost efficiency >70%)

Table A3: Transmission channels between FSFDI and economic growth, Corporate Governance Channel – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
De Haas, Van Lelyveld (2002)	Region: 5 CEE countries Time : 1993–2000	GDP growth	domestic credit, foreign subsidiaries credit, cross-border credit	–	simple correlation analysis	foreign bank credit → volatility of credit supply compared to domestic credit	increase in foreign bank credit relative to GDP and relative to domestic credit	reduction in cross-border credit between 1997 and 2000 was offset by increases in local subsidiary's credit
Faria, Mauro (2004)	Region: 55 developing and emerging market countries Time: 2001	shares of total liabilities and shares of GDP: Total equity, portfolio equity, FDI, portfolio debt, other liabilities; portfolio equity ratio to FDI;	institutional index, GDP, primary & secondary school attainment, natural res., openness, English legal origin, transition dummy	natural resources, openness, English legal origin, transition	cross-country growth regressions	institutional quality → FDI, portfolio investment	institutional quality is significantly positively correlated with FDI, portfolio equity and total equity	natural resources, human capital, economic size and openness may trigger FDI
Roldos (2001)	Region: emerging countries Time: 1990s	foreign bank entry: foreign control and foreign participation	years of banking crises	–	mix of descriptive analysis and of empirical analysis	banking crises → foreign bank presence	banking crises explain to a certain extent the increased foreign bank presence in emerging markets	other reasons for increased foreign bank presence: globalisation of the financial services industry and removal of barriers to entry of foreign financial institutions

Table A4: Foreign bank entry and non-financial FDI – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Brealey, Kaplanis (1996)	Region: 1,937 overseas banks offices across 37 parent and 82 host (developed) countries Time: 1990	number of banks from each parent country	stock of FDI into the host country, FDI from the host country, exports/imports to/from the parent country	GDP	cross-sectional analysis	determinants of foreign bank location; FDI → bank expansion	significant positive relationship between bank location and FDI	FDI by UK companies prompts UK banks to follow the investment but does not prompt foreign banks to locate in the UK
Focarelli, Pozzolo (2005)	Region: 260 large banks from OECD countries (488 observations) Time: 1994–1997	probability of the existence of a bank's foreign subsidiary (dummy variable)	geographical distance and the level of bilateral trade (ratio between the flow in a destination country and the total exports of the origin country)	bank-level data (e.g. ROA, availability of FCF, cost-income ratio), Country-level data (e.g.: inflation, schooling, stock market capitalization/GDP, total credit/GDP)	probit model in a panel data regression	economic integration → bank location	small but positive effect of the degree of integration between the home- and the host-country on the banks' location	the main determinant of banks' location are local market opportunities
Haselmann (2006)	Region: 12 CEE transition economies Time: 1994–2002	difference of loans provided by a bank in period t and t-1 divided by total assets	FDI between the home and host country; sum of exports and imports divided by GDP	parent bank factors (profit before tax divided by total assets of the parent bank, total assets of parent bank), Bank specific variables (e.g. solvency, liquidity), macroeconomic variables	panel regression with fixed effects from estimating a loan supply model	strategies of foreign banks in transition economies; Follow-your-client (FYC)	foreign banks do not pursue a FYC strategy; decision of foreign banks to enter CEE countries is driven by long-term strategic goals	foreign banks compete with domestic banks in the same market segments

Table A4 (continued): Foreign bank entry and non-financial FDI – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Miller, Parkhe (1998)	Region: 32 countries from the Federal Reserve Board Time: 1990–1995	percentage of subsidiary offices of U.S. Banks, assets overseas, number of offices	outward FDI	permission for universal banking, entry barriers, adoption of Second Banking Directive; total claims of deposit banks/GDP, difference in corporate tax rates	three pooled cross-sectional time-series regressions	U.S. banks' patterns of foreign operations; FDI → level of banking services	positive correlation between non-bank and bank FDI inflows in developing countries	FYC-strategy in industrialized countries
Voinea, Mihaescu (2006)	Region: 12 source countries, 16 recipient countries (from SEE, CEE, former Soviet Union) Time: 1995–2004	consolidated foreign claims of reporting banks between source and recipient countries	trade (exports plus imports between source and recipient countries), FDI from source to recipient countries (stocks, outward flows)	real interest rate differential Banking reform index, corruption, distance, GDP	bilateral regressions	FDI, bilateral trade, EU policies → foreign banks	foreign banks follow their customer and exploit profit opportunities, FDI is significant with a two-year lag	banking sector reform and EU policies influence foreign banks activity in SEE and CEE; corruption is significant, distance does not matter

Table A5: Foreign bank entry and trade – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Brealey, Kaplanis (1996)	Region: 1937 overseas bank offices across 37 parent and 82 host countries Time: 1990	number of banks from each parent country	stock of FDI into the host country, FDI from the host country, exports/imports to/from the parent country	GDP	cross-sectional analysis	determinants of foreign bank location; Trade → bank expansion	negative correlation between the number of foreign offices of US banks and their total foreign assets and the level of trade with the destination country of investment	relationship between bank presence and trade differs by host country
Chen (1997)	Region: China & 101 of China's trade partners Time: 1990–1993	sum of merchandise exports and imports between China and each of its trade partners (j) in a year in 1987 constant US dollars	product of GDPs of China and country j; distance between China and country j; Accumulated FDI stock invested by country j in China	–	OLS cross-section regression analysis with White's heteroskedasticity-consistent covariance matrix correlation for unknown form of heteroskedasticity	FDI (and other factors) → trade	positive and statistically significant impact of FDI on China's goods exports/imports and on trade flows among Chinese provinces	a country's size and geographical distance are very important factors influencing bilateral trade flows
Focarelli, Pozzolo (2005)	Region: 260 large banks from OECD countries (488 observations) Time: 1994–1997	probability of the existence of a bank's foreign subsidiary (dummy variable)	geographical distance and the level of bilateral trade (ratio between the flow in a destination country and the total exports of the origin country)	bank-level data (e.g. ROA, availability of FCF, cost-income ratio), Country-level data (e.g. inflation, schooling, stock market cap/GDP, total credit/GDP)	probit model in a panel data regression	economic integration → bank location	positive, but small relationship between bank choice of location and bilateral trade flows	the main determinant of banks' location are local market opportunities

Table A5 (continued): Foreign bank entry and trade – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Goldberg, Saunders (1980)	Region: U.S. banks' expansion to Great Britain Time: 1961–1978	deposits of U.S. banks in Great Britain	90 day Eurodollar interest rate; difference between the 90 day US Treasury bill rate & the interest ceiling for a 90 day US time deposit; total US commercial bank deposits; total US exports; exchange rate between dollars & pounds	dummy variable for US capital restrictions, dummy variable for British regulation of foreign banks	regression analysis using a generalized least squares approach, employing the Cochrane-Orcutt iterative process	US exports and other factors → expansion of US banks into Great Britain	exports to the U.K. were positively correlated with the amount of U.S. bank FDI in the U.K	support for the hypothesis that a main reason for US bank expansion abroad was the need to locally finance US multinationals
Haselmann (2006)	Region: 12 CEE transition economies Time: 1994–2002	difference of loans provided by a bank in period t and t-1 divided by total assets	FDI between the home and host country; sum of exports and imports divided by GDP	parent bank factors (profit before tax / total assets of the parent bank, total assets of parent bank); bank specific variables (solvency, liquidity); macroeconomic variables	panel regression with fixed effects from estimating a loan supply model	strategies of foreign banks in transition economies; FYC	no relationship between trade and foreign bank entry	foreign banks compete with domestic banks in the same market segments

Table A5 (continued): Foreign bank entry and trade – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Kolstad, Villanger (2007)	Region: 57 developed, transition and developing countries Time: 1989–2000	logged FDI inflows per capita in the financial industry	GDP/capita, GDP growth, trade, inflation, FDI in the secondary industries, political risk, democracy, institutional quality, stability	country size (FDI flows/population size)	panel data regressions	determinants of services FDI	FDI in finance is most robustly linked to FDI in manufacturing, but no association with trade	significant association with FDI: GDP/capita, FDI in secondary industries; Insignificant association: political economy variables, growth, trade, inflation
Kravis, Lipsey (1988)	Region: U.S. parent companies in various industries Time: 1982	parent exports in the service industry and in the manufacturing industry	parent sales in the US; net sales (sales minus imports from the US) of majority/minority-owned affiliates, respectively (each for the service and the manufacturing industry)	parent wage, Parent property, plant and equipment / employment	cross-sectional regression analysis	foreign affiliate activity (net sales) → US exports	net sales or production by foreign affiliates increase U.S. parent exports in both manufacturing and services	a firm that produces more abroad has usually fewer employees in the US and pays slightly higher average
Lipsey, Weiss (1984)	Region: five areas of the world composed of developed countries, 14 industries (>200 firms) Time: 1970	exports by country i to area j	parent's sales in the US; sales of manufacturing affiliates minus their imports from the US, sales by manufacturing affiliates of each company in area j, GDP	measure of the innovativeness of each parent firm	crude gravity model of exports without a distance variable	foreign production → firms' exports	the higher a firm's output in a foreign area, the larger its exports from the US to that area	this relationship is particularly strong between foreign output and exports of intermediate goods for further processing

Table A5 (continued): Foreign bank entry and trade – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Svensson (1996)	Region: Swedish MNCs Time: 1965, 1970, 1974, 1978, 1986, 1990	parent exports / total sales of the whole MNC	foreign production / sales of the whole MNC; R&D expenditures divided by total sales; average wage in the home country; economies of scale at the plant level	GDP; host country's trade policy; physical distance between Sweden and the host country; gross domestic expenditure on R&D / GDP; number of research scientists; engineers and technicians per 1000s of the population	simultaneous Tobit model	foreign production → parent exports	although Swedish investment abroad tends to replace parent exports of finished goods, it complements parent exports of intermediates	exports from affiliates create a strong substitution effect in "third countries"

Table A6: Foreign bank entry and foreign portfolio investment – selected empirical analyses

Authors, Year of Publication	Sample coverage data	Dependent variable	Explanatory Variables	Control variables	Empirical methodology	Investigated links	Major findings	Additional results
Buch, Piazzolo (2000)	Region: 9 countries, mostly CEE Time: 1997 (for FPI)	cross-border portfolio investment, portfolio asset holdings	market size, state of development, institutional restrictions	EU dummy, distance, presence of financial centres,	cross-country OLS regressions	determinants of FPI (and other foreign asset holdings and trade)	GDP per capita and population have a significant positive impact on FPI	EU membership is an important signal for potential investors
De Santis, Ehling (2007)	Region: Germany, six remaining G-7 countries plus Switzerland Time: 1971–2006	bilateral growth rates of FDI and FPI (assets and liabilities)	bilateral growth rates of FDI and FPI (assets and liabilities)	Tobin's q (market-to-book), relative foreign equity return, home equity return, resources, lagged growth rates & stock of foreign capital, net equity FDI, stock market cap, exchange rate volatility, alternative instruments	HAC-GMM panel model	FDI → FPI	FDI explains current growth rates of the stock of FPI – international portfolio investors follow firms' expected foreign investment decisions	foreign and home stock market return explain the variation of the growth rate of the stock of FPI
Durham (2003)	Region: 88 countries, OECD countries in the case of FPI Time: 1977–2000	FPI flows (FPI using OECD data, FPI using IFS Data) FPI stock data	average annual real per capita economic growth	real per capita income, average total investment ratio to GDP, years of secondary schooling in population > 25 years, average population growth	simple OLS cross-sectional regressions	FPI → economic growth	FPI does not have a statistically significant effect on growth, but FPI using the OECD has a statistically significant and negative effect on economic growth	

Table A7: Variables used in the regression analysis

Variable	Abbr.	Description	Remarks	Source
Main variables				
FSFDI: asset share of foreign-owned banks (%)	FSFDI	<i>“Share of total bank sector assets in banks with foreign ownership exceeding 50 per cent, end-of-year”</i> (EBRD 2007, 215)		EBRD
Non-financial FDI (EUR mn)	genfdi	Total inward FDI stock minus financial intermediation inward FDI stock	Some missing data for Croatia and Romania	Wiiw (Database on FDI)
Trade (EUR mn)	trade	Merchandise exports + merchandise imports	Denominated in USD – converted in EUR with average annual exchange rates	EBRD
FPI (EUR mn)	fpi	Part of the Balance of Payments: Portfolio investment, liabilities	Sources for Estonia, Latvia and Lithuania: BOPs published by the countries’ national banks	Wiiw (Handbook of Statistics)
Control variables				
GDP nominal (EUR mn)	gdptom		Converted into EUR based on annual average exchange rates	IMF
Taxes on income and wealth (direct taxes) (%)	tax	Percentage of GDP at market prices (excessive deficit procedure)	Croatia is not included	European Commission, Directorate General ECFIN
Inflation (%)	infl	Consumer prices: percentage changes in annual averages		EBRD
Exchange rate (%)	exratechg	Annual changes of national currencies vs. EUR in average rates and absolute terms	Rates provided by the IFS were denominated vs. USD – we converted them with average exchange rates of USD/EUR into rates denominated vs. EUR	IMF (IFS)
Change in labour productivity in industry (%)	labprod	<i>“Labour productivity is calculated as the ratio of industrial production to industrial employment. Changes in productivity are calculated on the basis of annual averages”</i> (EBRD 2007, 215)		EBRD
Rule of law (index)	law	<i>“extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence”</i> (Kaufmann et al. 2007, 4)	Scale from approximately - 2.5 to 2.5; higher values correspond to better governance; some interpolation necessary	Kaufmann et al. (2007)

Table A7 (continued): Variables used in the regression analysis

Variable	Abbr.	Description	Remarks	Source
Educational attainment: weighted index of highest level of education attained by employees (aged 15–64)	educ			OeNB
Corruption Perceptions Index	corrup	The index ranks 180 countries by their perceived levels of corruption (expert assessments and opinion surveys)	ranges from 0 (highly corrupt) to 10 (highly clean)	Transparency International
Fixed telephone mainlines (per 1,000 people)	fixedtel	Telephone lines connecting a subscriber to the telephone exchange equipment	Interpolation for 2006 was necessary	WDI
Mobile phone subscribers (per 1,000 people)	mobiletel	Subscribers to a public mobile telephone service using cellular technology	Interpolation for 2006 was necessary	WDI
Air transport: registered carrier departures worldwide	airtransp	Domestic takeoffs and takeoffs abroad of air carriers registered in the country	To be regarded as an indicator for the progress of the transportation infrastructure	WDI
EU membership dummy	eu	Year when the signal of a likely EU accession becomes strong enough	0 = no EU membership 1 = (likely) EU membership	Own estimation
Distance (km)	dist	Length of beeline between the country's capital and Brussels	No change over time might distort the results	Own estimation
Stock market capitalization (in per cent of GDP)	cap	<i>“market value of all shares listed on the stock market, calculated by multiplying the share price by the number of shares outstanding; presented as a percentage of GDP, end-of-year. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchange at the end of the year”</i> (EBRD 2007, 215)		EBRD
Stock trading volume (in per cent of market capitalization)	stocktrad	<i>“total value of shares traded during the period, divided by the average market capitalization for the period”</i> (EBRD 2007, 216)		EBRD

Table A7 (continued): Variables used in the regression analysis

Variable	Abbr.	Description	Remarks	Source
Securities markets and non-bank financial institutions (index)	sec	Index from 1 to 4+, 2 = <i>“Formation of securities exchanges, market-makers and brokers; some trading in government paper and/or securities; rudimentary legal and regulatory framework for the issuance and trading of securities”</i> ; 4+ = <i>“Standards and performance norms of advanced industrial economies; full convergence of securities laws and regulations with IOSCO standards; fully developed non-bank intermediation”</i> (EBRD 2007, 211)		EBRD
Total FDI (EUR mn)	fdi	Inward FDI stock		Gabor and Hunya (OeNB) & wiiw

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