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COUNTRY RISK AND FOREIGN DIRECT INVESTMENT IN TRANSITION ECONOMIES: A PANEL DATA ANALYSIS

Miroslav Mateev*
American University in Bulgaria, Bulgaria

ABSTRACT

This paper examines the major determinants of Foreign Direct Investment (FDI) inflows in transition economies using panel data. The research makes a distinction between traditional determinants based on the motives for investment and transition-specific determinants of FDI. This empirical study contributes to previous research literature by separating the transition economies into two groups: Central and Southeast European (CSE) countries and Baltic States. Including Baltic countries in the analysis introduces more variation to the data, thus providing better opportunities to distinguish between market-seeking, efficiency-seeking, and resource-seeking motives for FDI. The results from the panel data analyses of FDI inflows to 11 transition economies for the period 1994-2006 show that: (i) there exist a set of traditional variables (population, trade and infrastructure) that affects the attractiveness of each group of transition economies as a destination of FDI, while a number of specific determining factors (risk for the group of CSE countries and labor costs for Baltic States) attributes to the different size of FDI flows across the two regions, (ii) distance as a proxy for transportation and (economic) barriers to trade does matter only for the group of Baltic countries, and (iii) corruption and the choice of primary method of privatisation used in the host country have no explanatory power for the size of FDI flows into the both groups of transition economies.

Keywords: Transition economy; Foreign direct investment; Multinational enterprise; Gravity model

1. INTRODUCTION

This paper investigates the importance of different macroeconomic, policy and institutional reform factors as determinants of FDI inflows into the transition economies in Central and Eastern Europe (CEE). All of the CEE countries have undergone significant changes in their political regimes in the last twenty years. They transformed from a planned and government-controlled economy to one where private business was encouraged and competition accepted, in a short period of time. The need for extensive enterprise

restructuring and modernization in view of limited domestic resources creates an environment where the potential benefits of FDI are especially valuable. It is widely believed that these benefits outweigh possible drawbacks such as a loss of economic independence when a large part of the production is controlled by foreigners or increasing industrial concentration when a single multinational firm achieves a dominant position in an industry (Johnson, 2006).[1] The empirical research shows that over the last 15 years the process of transition to a market economy undertaken by the CEE countries, the progressive removal of restrictions to the free circulation of capital, and the set-up of vast privatization programs of formerly state-owned enterprises have created, in principle, ideal conditions for the attraction of Multinational Enterprises (MNEs).[2]

However, soon after the start of the transition period, it became clear that the process of EU market integration has failed to be as linear and straightforward as the early economic predictions might have implied. Earlier studies of FDI inflows (see e.g., Meyer 1995; Lankes and Venables, 1996) have pointed to the large variation in the amount of FDI that transition economies attracted during the first years of the transition process. In addition, the pattern of operations undertaken in the CEE countries by multinational firms is far from being homogeneous; most of the surveys have, implicitly or explicitly, recognized the heterogeneity of FDI in different regions, in terms of project characteristics and investment determinants at the sectoral and geographical level (see Altomonte, 1998). Recent studies (Demekas et al., 2005; Johnson, 2006; Mateev and Stoyanov, 2008) suggest that these differences have continued during the second half of the 1990s. Consequently, there are substantial variations in the size of the inward stocks of FDI that the transition economies have managed to attract.

This paper addresses the question of what factors determine the size of FDI that the transition economies have received over the last two decades. Furthermore, the research asks what the distribution of FDI inflows among the transition economies look like. Hence, the objective is to provide a fuller and more complete identification of the factors that affect the success and failure of transition economies in attracting FDI. The research contributes to the existing literature in two ways. Firstly, most empirical studies have focused on the more advanced countries in transition, the CEE countries, to the detriment of the Southeast European countries. Also, the Baltic States have so far only received very limited attention in econometric studies of FDI (see e.g., Kinoshita and Campos, 2004; Demekas et al., 2005). This paper, therefore, adds to the existing empirical literature by including the Baltic countries in the analysis as a separate group of transition economies and comparing them to the Central and Southeast European (CSE) countries. Secondly, the basic notion is that less corruption, a fair, predictable, and expedient judiciary, as well as an efficient bureaucracy helps attract more FDI. Thus, in this paper, the author examines policy and institutional factors such as country risk, level of corruption and privatization method, and tries to assess their relative importance for host countries.

[1] Some researchers (see Schoors and van der Tol 2001; Blomstrom and Kokko 1998) argue that at least in the initial stages of development or transition, FDI could have a negative impact on the recipient economy. If domestic firms are so unproductive in comparison with foreign-owed firms, the former may be driven out of business leading to a so-called "market stealing" effect.

[2] From a policy perspective, FDI location decisions of MNEs are important, as FDI may have a substantial economic impact on both the host and home country of FDI. From a host country perspective, existing empirical evidence points to a positive impact of FDI on economic growth and the possibility of spillover effects to local firms (Castellani and Zanfei 2006). Both arguments have been used to justify government policies designed to attract FDI.

This research uses a unique panel data set covering 11 transition economies between 1994 and 2006. The transition economies are split into two groups, Central and Southeast European (CSE) countries and Baltic States, and are analyzed separately. The results show that the main determinants of FDI inflows to both groups of countries are population, trade openness and infrastructure quality. The study also investigates whether the set of traditional and transition-specific determinants varies across the regions. The results show that for the CSE countries, GDP per capita and country risk are also important determinants, while for the Baltic countries distance and labor costs are specific drivers of FDI inflows. At the same time, the primary method of privatization and the severity of corruption are found to play no role in attracting FDI.

The rest of the paper is organized as follows: the next section outlines our conceptual framework and summarises the theory on the determinants of FDI in transition economies. The econometric model and data analysis are presented in section 3. Section 4 presents econometric results from FDI panel regressions. Some concluding remarks are offered in the final section.

2. DETERMINANTS OF FDI IN TRANSITION ECONOMIES

The transition from socialism to capitalism in Central and Eastern European (CEE) countries is both a political and an economic process (Bevan and Estrin, 2000; Demekas et al., 2005). An important aspect of the former is the possibility of reintegration into Europe symbolized for many countries by prospective membership of the European Union (EU). Integration into the world economy, notably through trade and capital flows, is a crucial and related element of the latter. Foreign direct investment (FDI) is a particularly important element of the economic integration, because it opens possibilities for accelerated growth, technical innovation and enterprise restructuring, as well as capital account relief (Garibaldi et al., 2002; Holland and Pain, 1998). This implies that FDI may be of particular importance in the transformation of the former centrally planned economies.

What are the major determinates of FDI flows to transition economies? There is a growing body of research literature that provides empirical evidence about the factors determining the pattern of FDI across transition economies. The majority of previous work in this area reports two groups of explanatory factors: gravity factors (proximity, market size) and factor endowments (infrastructure, human capital). [3] Other factors that are found to have significant effect on FDI in transition economies are cultural proximity, barriers to trade, tax policy and tax incentives, labor costs and regional integration. According to Demekas et al. (2005, 2007) gravity factors explain a large part of FDI inflows into CEE countries, including Southeastern Europe, but policy and institutional environment also matter. Janicki and Wunnava (2004) find that international trade is perhaps the most important determinant of foreign direct investment in this region, while Carstensen and Toubal (2004) argue that

[3] Though there has been considerable theoretical work on foreign direct investment (for a literature review see Alfaro et al. 2006; Blonigen 2005; Nonnemberg, and de Mendonça 2004; Vavilov 2005), there is no agreed model providing the basis for empirical work. Rather, the eclectic paradigm, also known as OLI framework (see Dunning 1988, 1992), has been largely employed in research literature as a general tool of reference for explaining the FDI patterns of multinational enterprises.According to the OLI paradigm, a firm's decision to invest in a foreign country is determined by the existence of three different types of advantages, namely ownership, location and internalisation advantages.

comparative advantages, e.g., low relative unit labor costs, corporate tax rates and relative endowments, also exert a significant influence.

2.1. Traditional Determinants of FDI

The motivation that MNEs have for performing FDI in a host country provides indications of which determinants are likely to be important. Research literature distinguishes three major types of FDI: market-seeking, efficiency-seeking and resource-seeking (see Bevan and Estrin, 2000). These types of FDI are attracted by a large local market demand, low production costs and natural resource abundance, respectively. The host country characteristics therefore affect both the type of FDI and the volume of inflows. The effect of distance between the source and the host country should differ between the three types of FDI.

An important reason for MNEs to undertake foreign direct investment is the so-called market-seeking objective. A market-seeking MNE invests abroad in order to serve the host country demand for goods resulting in horisontal FDI, where the same production activities are replicated in several locations to satisfy local market demand. There are two possible influences of market demand on FDI inflows. The first is obviously the size of the market, as it can be measured by absolute GDP. The second influence can be argued to come from the quality of the market demand (Johnson, 2006). A measure of this quality can be represented by GDP per capita. A higher GDP per capita implies a larger host country demand for more advanced types of goods of a higher quality. More developed transition economies should therefore be able to attract larger volumes of FDI, since MNEs will find it easier to sell their products in these markets.[4] Explanatory variables used as proxies for the size of market demand are found to have a significant positive effect on the magnitude of FDI inflows in most studies of host country determinants of FDI. Based on these findings, this study includes two proxies for market demand (GDP per capita and population) in the panel data analysis. These variables will indicate the importance of market-seeking FDI in transition economies.

Efficiency-seeking FDI means that a MNE invests in a foreign country in order to reduce production costs. While market-seeking FDI results in horisontal investment, efficiency-seeking FDI implies vertical investment. MNE divides the different stages of the production process between different geographical locations in order to minimise production costs. For example, a production stage that is intensive in the use of unskilled labor should be located where unskilled labor is available at low cost. Since the labor costs in the transition economies appear to be very low, it is likely that they would generate efficiency-seeking FDI from MNEs in countries that have higher labor costs. To verify this hypothesis the host country nominal wage rate is used as a proxy for labor costs. At the same time one should recognize the fact that low wages do not necessarily reflect low production costs because labor productivity may be low. Taking this into account, the location decision of a multinational enterprise will depend on the relative productivity-adjusted labor cost in the host country.

[4] Empirical evidence (see Carstensen and Toubal 2004; Johnson 2006) indicates that CEE countries that have received large inflows of FDI also tend to have a high GDP per capita. At the same time it does not appear to be a strong relationship between FDI inflows per capita and the size of absolute GDP.

A firm that has a resource-seeking motive invests in order to acquire resources not available in the home country, such as natural resources, raw materials, or low-cost labor. Especially in the manufacturing sector, when multinational firms directly invest in order to export, factor-cost considerations become important. In contrast to horizontal FDI, vertical or export-oriented FDI involves relocating parts of the production chain to the host country. Availability of low-cost labor in host countries becomes a prime driver for export-oriented FDI. At the same time, as most of CEE countries generally lack significant endowments of natural resources there is no reason to believe that resource-seeking strategy is a dominant motive for FDI in this region.

Distance has long been used successfully as a variable in gravity models explaining international trade. In these models distance functions as a proxy for transportation cost but also as a proxy for the affinity between the trading economies. Affinity is determined by geographical proximity and similarities in culture and language. A high affinity implies that economic interaction between two countries (such as trade or FDI) can occur with reduced friction (Johansson and Westin, 1994). As distance has more recently been included as an explanatory variable in many studies focusing on FDI flows in transition economies (see Kinoshita and Campos, 2004; Demekas et al., 2005), this research takes a similar approach. It is widely recognized fact that distance has a negative impact on FDI flows.[5]

Several previous studies (Altomonte, 1998; Bevan and Estrin, 2000; Bos and de Laar, 2004; Carstensen and Toubal, 2004) have suggested that trade limitations have also had significant impact on the size of FDI flows. Factors such as trade openness are of major importance to investors who usually prefer countries with relatively liberal trade regimes. It is widely argued that FDI and openness of the economy will be positively related as the latter in part proxies the liberality of the trade regime in the host country, and in part - the higher propensity of multinational firms to export. In order to account for this effect a proxy variable (import plus export as a percentage of GDP) is used to assess the relative effect of trade openness on FDI flows.

2.2. Transition-Specific Determinants of FDI

Transition-specific determinants of FDI are important for MNEs irrespective of whether FDI is market-, resource-, or efficiency-seeking. The research literature on FDI asserts that the progress in transition process is fundamental for economies that want to attract FDI flows on a large scale. Transition implies both democratic reforms resulting in an improvement of political freedom and civil liberties, as well as economic reforms (Bevan and Estrin, 2000; Fidrmuc, 2003). How does the transition process affect MNEs incentive to invest? The answer is that a successful transition improves the conditions for MNEs to engage in profitable economic activities in the host country. Foreign firms are actively involved in one of the most important aspects of the transition process - the restructuring of firms. Indeed,

[5] Johnson (2006) argues that distance should have a negative effect on market-seeking FDI. Increasing distance implies lower affinity, resulting in higher costs of investment and more costly adaptions of goods to local preferences. Efficiency-seeking FDI is likely to be affected negatively by distance for the case where the components produced in the host country are shipped back to the source country, since transportation costs increase with distance. Distance can be argued to be relatively unimportant for resource-seeking investment. Resource-seeking MNEs are attracted to a limited number of geographical locations where the needed resource is available, diminishing the importance of distance for the investment decision.

there is some evidence that foreign investors in transition economies are more effective than domestic owners in improving the performance of firms after privatization.[6]

What factors should be taken into account when judging the progress of an economy's transition process? The European Bank for Reconstruction and Development (EBRD) assesses transition progress by constructing different transition indicators. These indicators include measures of large- and small-scale privatization of enterprises, restructuring of enterprises, price liberalisation, trade liberalisation, infrastructure, legal reform, the foreign exchange system as well as financial indicators. The higher the score on a transition indicator, the closer the transition economy is to a market economy in that area.[7]

Are all of these indicators equally important for a multinational firm contemplating investment in a transition economy? One may expect that not all of the available indicators are relevant for a multinational enterprise. Price liberalisation should be fundamental; the MNE does not want to be constrained by governmental price regulations. A situation where prices are controlled by the government would restrict the foreign firm's ability to operate. However, as of 2004, almost all of the economies in Central and Eastern Europe had achieved price liberalisation (EBRD, 2004). Since FDI implies production by the MNE in the host country, trade liberalisation and foreign exchange system are also very important. The MNE should to be able to export the goods it produces and also import intermediate goods to use in its production without restrictions, such as tariffs. FDI restrictions clearly raise barriers to FDI and are likely to influence the choice MNEs make with regards to the investment location.[8]

It is also important that there exist well-established financial institutions providing full banking services as well as well-developed security markets. It is argued (see Alfaro et al., 2006) that the lack of development of local financial markets and institutions can limit the economy's ability to take advantage of potential FDI spillovers. Furthermore, the existence of a developed and effective infrastructure is necessary for the operations of MNEs since it reduces costs of distribution, transportation and production thereby affecting comparative and absolute advantages of the host country. To account for the quality of infrastructure in transition economies this study uses EBRD's Index of Infrastructure Reform and tests its impact on FDI.

Private ownership is a cornerstone of a market economy, and privatisation of state-owned enterprises constitutes a fundamental part of the transition process. Privatisation is important in order to increase the efficiency of the previously state-owned enterprises through creating conditions for the start of a restructuring process. The one-off opportunities offered by the transfer of state monopolies into the private sector, particularly of public utilities, give a strong incentive for strategic investments - domestic or foreign. Most of the research literature

[6] The empirical studies provide evidence that enterprise productivity, R & D expenditure, innovation and company performance are higher in foreign owned firms - both in the transition economies and in the West countries (Barrell and Pain 1999; Holland and Pain 1998).

[7] Johnson (2006) develops a transition progress measure based on the following EBRD transition indicators: trade and foreign exchange system, financial institutions, and infrastructure. The intention is that the transition progress measure should not represent transition performance in general but rather transition progress in areas of particular importance for MNE investment. The index ranges from a minimum value of 4 to a maximum value of 17.2.

[8] Trade policies and, more broadly, trade costs (tariffs, non-tariff barriers, and transportation costs) are generally found to have a significant impact on FDI flows, but in aggregate regressions their sign is ambiguous. This is probably due to the different effect the barriers to trade can be expected to have on horizontal and vertical FDI; they tend to attract horizontal FDI, which aims at penetrating the domestic market, but repel vertical FDI.

argues that the choice of privatisation method has a large impact on the conditions for successful restructuring of the formerly state-owned firms. Holland and Pain (1998) and Carstensen and Toubal (2004) find that the chosen method of privatisation is fundamental for the size of FDI inflows to CEE countries.

According to the World Bank (1997) the most important privatization methods in transition economies had been direct sales to outsiders, voucher-based mass privatisation and so-called management and employee buyouts (MEBOs). Holland and Pain (1998) find that the method that has the largest effect on FDI inflows is direct sales to outside owners. Direct sale implies that each state-owned firm is prepared individually and sold to domestic or foreign investors. It may be concluded that timing and the method of privatisation would have a strong effect on the size of FDI flows that a transition economy receives.[9] In order to account for this effect the analysis employes a dummy variable that proxies the primary method of privatization used in a host country.

Risk perceptions and severity of corruption are also found to be significant transitional determinants of FDI. Previous studies of the relationship between corruption and FDI (Smarzynska and Wei, 2000; Demekas et al., 2005; Stoian and Filippaios, 2007) indicate that host country corruption can have a negative effect on the volume of FDI inflows since it increases the costs of operation in the host country for MNEs and reduces the profitability of investment.[10] One of the measures used as a proxy for the severity of corruption is Transparency International's Corruption Perceptions Index (TI). The TI ranges from 0 to 10, where 10 equals a perfectly clean country, while 0 indicates a country where business transactions are entirely dominated by corruption. The index is used as an explanatory variable in the empirical analysis to proxy for the institutional effects on FDI in transition economies. This study also integrates the perception of host country risk into the analysis through the Moody's Sovereign Credit Rating, transformed into numerical terms on the scale of 1 (the lowest possible rating) to 8 (maximum creditworthiness).

Two main conclusions for the choice of explanatory variables to be used in the empirical analysis emerge from the preceding discussion. Firstly, in order to better understand the determinants of FDI in transition economies, it is crucial to specify an empirical model that allows for a combination of traditional (market size, distance, trade costs, and relative factor endowments), newer (infrastructure), and transition-specific determining factors (risk and corruption). All of these variables are closely related to theoretical models of FDI. Secondly, CEE countries are far from being homogeneous and both the level and the growth of FDI differ across transition economies. Hence, the key question asked in this paper is how important are the traditional determinants in explaining FDI attracted by different groups of CEE countries, and what transition-specific factors contribute to the discrepancy between these regions.

[9] Mateev et al. (2008), following Holland and Pain (1998), find that there is 5.448 percent less FDI inflows into the CEE countries experiencing privatization of type 2 (that is, Vouchers or Buy-Outs as primary methods of privatization, and Sale to Outside Owners as secondary method of privatization), than in the countries experiencing privatization of type 4 (Sale to Outside Owners).

[10] A survey of the World Bank (2005) indicates that multinational firms still perceive corruption as an important obstacle in doing business in CEE countries such as Romania and Bulgaria. However, the literature on FDI and corruption usually finds inconclusive evidence on their relationship. Using Transparency International's 'Corruption Perception Index', Pournarakis and Varsakelis (2004) find that countries that have a more equitable system of rule of law, lower corruption and more freedom in economic activity achieved much better performance than countries that are characterised by significant deficiencies.

3. EMPIRICAL SPECIFICATION

The existing empirical literature focusing on FDI determinants identifies that both traditional and transition-specific factors are important determinants of FDI inflows to CEE countries (see Appendix A for more information on different types of FDI determinants and their proxies). This study complements the existing empirical research (see Lankes and Venables, 1996; Holland and Pain, 1998; Resmini, 2000; Bevan et al., 2001; Kinoshita and Campos, 2004; Bevan and Estrin, 2000, 2004; Demekas et al., 2005; Stoian and Filippaios, 2007) by taking a different approach – the whole sample of transition economies is divided into two groups, Central and Southeast European (CSE) countries and Baltic countries, and they are analyzed separately. Including the Baltic countries in the data set introduces more heterogeneity and incorporates different motives of foreign investment, which may vary across regions.

Table 1 shows FDI total inflows to these two groups of countries during the period 1994 – 2006. While the Baltic States have received the smallest FDI inflows with Slovenia being the only one behind them (see Panel A), the data in Panel B indicate that when FDI per capita is taken into account Baltic countries like Estonia rank first for 2005 and 2006. When FDI stock is analyzed by country of origin, the data in Panel C show that, in the same period, the countries that had invested most in Estonia, Latvia and Lithuania are EU-15 ($96,402.8 million), followed by the U.S. ($7,506.3 million), Russia ($7,504.3 million) and Norway ($4,412.7 million). Again, the largest group of source countries that invested in CSE countries is EU-15 ($1,063,614.9 million). Therefore, one may expect that the attractiveness of these two groups of countries for foreign investors depends not only on the success of the transition process but also the geographical proximity to the source countries.

To address this question the study tests two research hypotheses. The first hypothesis (HP1) is that traditional and transition-specific factors related to the success of transition process in CEE countries do explain, to a large extent, the size of FDI inflows to both groups of transition economies. It is also investigated if the geographical proximity has any specific effect on the size of FDI attracted by each group of transition economies. According to the second hypothesis (HP2) corruption and the primary method of privatization used in a host country should also have an important impact on FDI flows into transition economies, irrespective of their location and the type of FDI.

3.1. Data Set

Empirical studies of FDI in transition economies are restricted by short time series. Data are generally only available for a little more than ten years. To maximise the number of observations, this paper uses panel data. Annual data for total FDI inflows during the period 1994-2006 to 11 transition economies result in approximately 143 observations.[11]

[11] The data set used for estimation is unbalanced because there are missing observations for some key variables in the analysis. Thus, the total number of observations is reduced to 99.

Table 1. FDI total inflows to sample countries, 1994 – 2006

Panel A. FDI total inflows to CSE countries and Baltic States, in $US million

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
CSE countries														
Bulgaria	105.4	90.4	172.2	644.8	537.3	818.7	1,001.6	812.9	904.7	2,096.9	3,461.1	3,869.3	5,171.7	19,687.0
Croatia	117.0	114.2	510.8	538.0	934.8	1,458.6	1,081.6	1,334.5	1,124.0	2,049.1	1,226.8	1,790.2	3,555.7	15,835.2
Czech Republic	868.5	2,562.2	1,428.4	1,300.4	3,717.9	6,324.0	4,986.3	5,641.4	8,482.7	2,101.4	4,974.3	11,658.3	5,956.8	60,002.6
Hungary	1,145.9	4,741.0	3,291.4	4,166.5	3,344.5	3,310.9	2,776.7	3,949.3	3,021.2	2,177.3	4,520.7	7,538.9	6,096.0	50,080.3
Poland	1,875.0	3,659.0	4,498.0	4,908.0	6,365.0	7,270.0	9,343.0	5,714.0	4,131.0	4,589.0	12,890.0	9,602.0	13,922.0	88,766.0
Romania	341.0	419.0	263.0	1,215.0	2,031.0	1,041.0	1,037.0	1,157.0	1,144.0	2,201.0	6,437.0	6,483.0	11,395.0	35,164.0
Slovakia	272.9	270.1	381.8	231.3	706.7	427.9	1,925.4	1,584.1	4,141.1	2,160.0	3,030.6	2,107.4	4,165.3	21,404.6
Slovenia	116.7	150.5	173.5	334.2	215.5	106.6	135.9	370.0	1,659.3	301.6	831.1	540.5	363.0	5,298.4
Baltic countries														
Estonia	214.6	201.5	150.5	266.7	580.6	305.1	387.0	542.4	284.4	918.8	972.0	2,998.4	1,599.8	9,421.8
Latvia	214.5	179.6	381.7	521.1	356.7	347.5	412.6	132.0	253.7	303.5	637.6	730.1	1,634.8	6,105.2
Lithuania	31.3	72.6	152.4	354.5	925.5	486.5	378.9	445.8	732.0	179.2	773.1	1,032.0	1,811.9	7,375.6

Table 1. (Continued)

Panel B. FDI total inflows per capita to CSE countries and Baltic States, in $US

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
CSE countries													
Bulgaria	12.5	10.8	20.6	77.6	65.1	99.7	124.3	102.8	115.0	268.0	444.8	499.9	672.3
Croatia	25.2	24.5	113.8	117.7	207.7	320.6	240.2	300.5	253.0	461.3	276.1	402.9	800.6
Czech Republic	84.0	248.0	138.5	126.2	361.1	615.0	485.4	551.8	831.6	206.0	487.3	1,139.2	580.1
Hungary	110.8	459.0	319.2	404.9	325.8	323.4	271.9	387.7	297.4	214.9	447.3	747.4	605.3
Poland	48.6	94.8	116.5	127.0	164.6	188.1	243.0	149.4	108.1	120.1	337.6	251.6	365.1
Romania	15.0	18.5	11.6	53.9	90.3	46.4	46.2	52.3	52.5	101.2	296.8	299.7	527.8
Slovakia	51.0	50.4	71.0	43.0	131.1	79.3	357.3	294.5	769.8	401.5	563.1	391.2	772.7
Slovenia	58.7	75.6	87.1	168.3	108.7	53.7	68.3	185.7	832.1	151.1	416.2	270.2	180.9
Baltic countries													
Estonia	146.7	140.2	106.3	190.5	418.8	221.8	282.6	397.6	209.3	678.8	720.5	2,227.5	1,190.7
Latvia	84.2	71.4	153.2	212.7	148.0	145.4	173.9	56.0	108.5	130.5	275.7	317.4	714.5
Lithuania	8.6	20.0	42.3	99.0	260.3	137.8	108.3	128.1	211.0	51.9	225.0	302.3	533.8

Panel C. FDI inward stocks to CSE countries and Baltic States by source countries, in $US million

	EU-15	USA	Canada	China	Israel	Japan	South Korea	Liechtenstein	Norway	Russia	Switzerland	Turkey	Cyprus
CSE countries													
Bulgaria	24,573.6	2,547.9	127.7	6.4	118.2	94.1	73.1	256.4	48.3	478.2	1,460.0	539.9	2,686.2
Croatia	58,526.3	2,697.7	-	-	66.1	-	-	2,296.3	-	76.9	1,536.4	2.6	132.4
Czech Republic	248,041.1	16,173.4	1,226.2	45.6	-	3,429.4	-	799.7	1,041.7	304.1	8,145.7	-	2,863.5
Hungary	234,720.6	17,849.1	1,095.9	88.5	144.1	4,408.1	1,570.1	1,622.4	4,372.4	561.9	4,350.5	378.0	2,151.5
Poland	352,523.6	39,239.8	838.5	166.7	168.2	2,082.5	3,550.9	735.3	1,922.0	6,650.0	8,830.2	425.1	3,318.9
Romania	41,856.4	1,966.5	361.0	472.8	119.2	-	272.8	202.7	124.1	11.0	2,854.4	1,003.6	2,305.7
Slovakia	71,105.9	4,196.4	-	-	-	291.0	1,155.9	-	-	58.1	1,177.6	6.9	1,778.7
Slovenia	32,267.2	963.3	-	-	-	89.3	4.8	140.9	-	-10.0	4,911.7	27.5	118.6
Baltic countries													
Estonia	51,927.3	2,449.2	310.3	6.7	96.2	37.2	-	334.5	1,623.7	1,155.4	495.5	-	390.5
Latvia	18,072.0	1,914.3	36.5	-	-	38.6	-	225.7	1,525.5	2,435.6	704.6	24.7	445.8
Lithuania	26,403.5	3,142.9	274.3	31.0	-	.	-	173.6	1,263.5	3,913.3	1,130.2	94.4	608.4

Notes:

Data in Panel A represent FDI total inflows to 11 host countries, over the period 1994-2006. FDI data are taken from WIIW database (2007). Data in Panel B represent FDI total inflows per capita to 11 host counties, over the period 1994-2006. FDI data per capita are taken from WIIW database (2007) and WDI Database (2008). Data in Panel C represent inward FDI stocks to 11 host countries, by country of origin, for the whole period 1994-2006. Central and East European countries, as well as Candidate Member States and CIS, are excluded from the data as source countries. Western European countries are represented as a homogeneous group (EU-15). Total number of source countries varies between 41 and 47. Data source is WIIW database (2007).

Table 2. Dependant and explanatory variables

Variable	Explanation	Data source	Expected Sign
Dependant variable			
FDI	FDI total inflows to host country, in $US. The data is annual and cover the period 1994 - 2006	The Vienna Institute for International Economic Studies (WIIW Database on FDI in Central, East and Southeast Europe, 2007)	
Explanatory variables			
GDPPC	Gross Domestic Product per capita, in $US, proxy for market size	World Bank (WDI Database, 2008)	+
POP	Host country population, in millions, proxy for market size	World Bank (WDI Database, 2008)	+
DIST	Distance between host country capital and Brussels, in kilometers, proxy for cost of undertaking operations	Geobytes Inc. (City Distance Tool, 2008)	-
TRADE	Level of imports plus exports (in $US) of the host country as a percentage of its GDP (in $US), proxy for trade openness	World Bank (WDI Database, 2008)	+/-
INRFA	EBRD's Index of Infrastructure Reform, measuring the degree of reforms and decentralization in electricity generation and distribution, roads, railways, and telecommunications, proxy for infrastructure quality	European Bank for Reconstruction and Development (EBRD Structural Change Indicators, 2008)	+
WAGE	Nominal host country wage in manufacturing sector, in Euro, converted in $US, proxy for labor cost	International Labor Organization (LABORSTA Online Database, 2008)	-
RISK	Moody's Sovereign Credit Rating, on a continuous scale from 1 (the lowest possible rating) to 8 (maximum creditworthiness), proxy for host country risk	Moody's web site	-
CORRUP	Transparency International's Corruption Perceptions Index (TI), on a continuous scale from 0 (squeaky clean) to 10 (highly corrupt)	Transparency International (TI Annual Reports, 1995-2006)	-
PRIVMETHOD	Dummy variable, which takes value of 1 for transition economies that have used direct sales as the primary method of privatisation, and 0 otherwise	National Privatization Agency of the respective host country, 2008	+

Table 3. Correlation matrix of the explanatory variables

	GDPPC	DIST	POP	TRADE	INFRA	WAGE	CORRUP	RISK	GDP × RISK
GDPPC	1.000								
DIST	-0.622***	1.000							
POP	-0.252***	-0.035	1.000						
TRADE	0.382***	-0.179**	-0.552***	1.000					
INFRA	0.522***	-0.097	0.046	0.238***	1.000				
WAGE	0.736***	-0.535***	-0.041	0.369***	0.369***	1.000			
CORRUP	0.612***	-0.276***	-0.451***	0.434***	0.360***	0.423***	1.000		
RISK	-0.829***	0.307***	0.232**	-0.391***	-0.444***	-0.670***	-0.515***	1.000	
GDPPC × RISK	0.552***	-0.560***	-0.094	0.104	0.228**	0.418***	0.144	0.009	1.000

* indicates that correlation is significant at the 10 per cent level.

** indicates that correlation is significant at the 5 per cent level.

*** indicates that correlation is significant at the 1 per cent level.

Notes:

The explanatory variables included in model (1) are GDP per capita (GDPPC), Distance (DIST), Population (POP), Trade openness (TRADE), Infrastructure quality (INFRA), Labor costs (WAGE), Corruption index (CORRUP), and Sovereign credit rating (RISK). Primary privatization method (PRIVMETHOD) is a dummy variable and is not included in the correlation matrix.

The proposed econometric model rests on a panel data set recording the FDI inflows to a host country j at time t. As the study does not use bilateral flows of FDI, the panel data set is unbalanced. Data for FDI are derived from WIIW (USD-PPP) database.

3.1.1 Dependent Variable

The dependent variable is FDI total inflows per year in millions of U.S. dollars. A sample of 11 transition economies including eight CSE countries (Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia, and Slovenia) and the three Baltic States (Estonia, Latvia, and Lithuania) is examined to empirically test the determinants of FDI flows into transition economies. The analysis uses logarithm of FDI inflows to adjust for the skewed nature of the data; other studies of FDI determinants in transition economies undertake similar treatment of the dependent variable (see e.g., Demekas et al., 2005). The analysis also incorporates FDI inflow for the previous year as an independent variable. Substantively, the lagged dependent variable accounts for the path-dependent nature of FDI flows; that is, countries that have received FDI in the past may be more likely to receive it in the present year. Methodologically, the lagged dependent variable helps to control for serial correlation.

3.2.2 Explanatory Variables

This study uses several proxies for which the empirical literature provides evidence to be significant FDI determinants, including both traditional and transition-specific variables (see Appendix B for the determinants included in the empirical analysis). Table 2 describes these variables and their expected impact on FDI. The WIIW database on FDI in Central, East and Southeast Europe (2007) shows that EU-15 countries strongly dominate the FDI flows to most of the transition economies. For example, around 80 percent of the inward FDI stocks to Hungary over the period 2003-2006 are determined by EU-15, while in case of Latvia this percent amounts to 55-56. Following Kinoshita and Campos (2004) distance in kilometers between Brussels and the host country capital (DIST) is used as a proxy for interaction costs and affinity, where strong affinity implies low interaction costs.[12] This variable is also a proxy for the ease of access to the major West European markets. At the same time one may expect that DIST may have a different effect on FDI inflows to the Baltic States. These countries have a dichotomous character owing to the fact that while they are small states, their traditions, languages and institutions are linked to the Baltic basin, primarily Scandinavia. Thus, though they are geographically distant from most potential investors, they are psychologically much closer, and this greatly reduces the cost of undertaking operations (Bevan and Estrin, 2000). Following previous research, it is expected that DIST variable will have a negative effect on FDI flows for a situation where market-seeking or efficiency-seeking investments dominate.

The remaining five traditional variables are selected based on the analysis in Section 2. Population (POP) and GDP per capita (GDPPC) are used as proxies for market size in a host country. Both variables are expected to affect FDI inflows positively because a larger market generates a larger inflow of market-seeking FDI as discussed in the previous section. The

[12] Proximity is an important factor in explaining the volume of trade flows between countries in a gravity model. It is a stylized fact in the empirical literature that trade volumes between two countries are a function of both income levels of the two countries (GDP) and the distance between them. In a gravity model, the smaller the distance between two countries, the more they are expected to trade. Distance is a proxy for transportation costs or (economic) barriers to trade (Kinoshita and Campos 2004).

analysis uses GDP per capita rather than absolute GDP to reflect market size. The large fall in output that characterised the first years of transition could result in a strange relationship between GDP and FDI inflows. Moreover, using population rather than GDP as proxy for market size reduces the problems of colinearity between the explanatory variables.

Labor costs are part of the efficiency seeking considerations, which Altomonte (1998) defines as the comparative advantage of the host country over the source country in wage differences. In this study the host country nominal wage rate (WAGE) is used as a proxy for labor costs. Low wages would create incentives for efficiency-seeking FDI that is performed in order to minimize production costs. In line with Janicki and Wunnava (2004) and Lansbury et al. (1996), it is expected that WAGE variable will have a negative effect on FDI inflows since a rise in relative wages in the host country will adversely affect investment unless offset by a corresponding rise in relative productivity per head.[13] The data for annual nominal wages are collected from Iinternational Labor Organization (2008) and have been converted from EURO into U.S. dollars.

Some recent studies (Kinoshita and Campos, 2004; Demecas et al., 2005; Johnson, 2006) argue that policy and economic reforms as indicators for transition progress, as well as privatization method and the severity of corruption should be important determinants of FDI inflows. To proxy for the quality of infrastructure in a transition economy this study uses the European Bank for Reconstruction and Development's Index of Infrastructure Reform. In line with previous research, this variable (INFRA) is expected to have a positive effect on a host country's ability to attract FDI. Two additional variables are included as proxies for the success of policy and economic reforms - TRADE and RISK. The first variable presents the level of imports plus exports of the host country as a percentage of its GDP, and is used as proxy for trade openness as MNEs who invest in transition economies usually prefer countries with relatively liberal trade regimes. The second variable - host country risk - is proxied by Moody's Sovereign Credit Rating and accounts for the political and macroeconomic stability in the host country. Thus, one may expect that TRADE variable will have a positive effect on a country's ability to attract FDI,[14] while RISK variable is expected to negatively impact FDI flows as political instability related to high risk uncertainty usually discourages foreign investment.

A number of transition-specific variables are included in order to take the special characteristics of transition economies into account. A dummy variable (PRIVMETHOD) is used as a proxy for preferred method of privatization in the host country. Holland and Pain (1998) argue that direct sales privatisation has the largest affect on inflow of FDI. Accordingly, the research let PRIVMETHOD take the value of one for transition economies that have used direct sales to outside owners as their primary method of privatisation, and zero otherwise. To capture the effects of host country corruption on FDI inflows, the

[13] One potential criticism of the use of wage data for labor costs is that it fails to take into account the additional costs imposed by social security burdens on employers. However, it is not possible to obtain cross-country time series data on labor compensation for all the transition economies because of the relative lack of detailed national accounts statistics.

[14] There are contrasting arguments about the relationship between trade openness and FDI. On one hand, FDI may be established as a means to avoid trade restrictions in a highly protected market. By producing within the local market, companies may avoid tariffs or other barriers imposed on imported goods. On the other hand, trade openness may encourage FDI. Trade openness can indicate a country's overall openness to the global economy, and outward-oriented developing economies that cultivate new export markets likely attract more FDI (Jun and Singh 1996).

Transparency International's Corruption Perceptions Index (TI) is used as a proxy for the severity of the corruption. In this study, the index is transformed so that high index values correspond to a high level of corruption.[15] In line with previous research, this variable (CORRUP) is expected to have a negative effect on a country's ability to attract FDI. In overall, the transition-specific variables should be important determinants of FDI flows to all CEE countries, irrespective of the motive for investment and their geographical location.

The correlation matrix of dependent and explanatory variables is presented in Table 3 and is used to examine the possible degree of collinearity among variables. The data show that the two most highly correlated variables are GDP per capita and RISK (a coefficient of -0.829), as well as GDP with WAGE (0.736), and with DIST (-0.622). Same high level of correlation exists between RISK and WAGE (-0.760), and RISK and CORRUP (-0.585). Thus, one may expect that multicollinearity will be present in our model. To mitigate the problem with multicollinearity these two variables (GDP and RISK), together with WAGE, are gradually excluded from our model specifications (see Tables 5 through 7).

The data in Table 4 allow for the differentiation of the two groups of transition economies - CSE countries and Baltic States - based on a number of important economic and institutional factors. Panel B shows that the size of total FDI inflows into CSE countries varies between $90.4 million and $13,922 million for the period 1994 - 2006; when the Baltic States are analyzed as a separate group (see Panel C) the nominal size of FDI attracted by these countries in the same period is much smaller than FDI into CSE countries (a maximum of $2,998.4 million). One reason that may explain different attractiveness of the two groups of countries for foreign investors is the smaller size of GDP per capita in the case of Baltic States ($12,363.3 compared with $19,032.9 for the group of CSE countries). If the level of policy and institutional reforms is taken into account (through a number of proxies such as the quality of infrastructure, trade openness and country risk level), the data in Table 4 show that the two samples of countries (CSE and Baltic States) have achieved similar progress in the analyzed period (1994 – 2006). If one refers to the level of corruption in these two groups (measured by the TI's Corruption Perceptions Index), the data show that corruption is a common problem for all the transition economies in our sample (a maximum level of 6.6-6.7 corresponds to high level of corruption).

4. MODEL AND ECONOMETRIC RESULTS

The use of panel regressions with both a time-series and a cross-country dimension, as opposed to a simple cross-section regression, allows a more sophisticated examination of country-specific effects. This study uses the following specification:

$$Ln(FDI_{it}) = \beta X_{it} + u_i + v_{it}, \quad (1)$$

where FDI_{it} denotes FDI inflows to host country i at time t, X_{it} is a vector of explanatory variables, u_i captures any country-specific effects (unobservable individual specific effects that are time-invariant), and v_{it} is the disturbance term, with i denoting countries (cross-country dimension), and t denoting years (time-series dimension).

[15] The transformation is CORRUP = 11 – TI (TI = 0 to 10).

Table 4. Summary Statistics

Panel A. Summary statistics, Total sample

Variable	Obs.	Mean	Median	St. Dev.	Minimum	Maximum
FDI	143	2,471.2e+06	1,157e+06	2,806.7e+06	31.3e+06	13,922e+06
GDPPC	143	5,486.3	4,425.5	3,499.9	1,150.5	19,032.9
DIST	143	1,266.4	1,161.0	334.8	722.0	1,772.0
POP	143	9,847,131.0	5,382,449.0	10,700,000	1,343,547.0	38,700,000
TRADE	143	108.7	109.2	29.9	44.2	174.4
INFRA	143	2.6	3.0	0.6	1.0	3.7
WAGE	130	388.6	370.3	187.8	37.7	873.1
CORRUP	105	4.3	4.1	0.9	2.6	6.7
RISK	117	8.8	9.0	3.4	2.0	16.0

Panel B. Summary statistics, CSE sub-sample

Variable	Obs.	Mean	Median	St. Dev.	Minimum	Maximum
FDI	104	3,177.7e+06	2,381.6e+06	2,981.3e+06	90.4e+06	13,922e+06
GDPPC	104	5,816.5	4,563.3	3,754.7	1,150.5	19,032.9
DIST	104	1,175.3	1,080.0	349.7	722.0	1,772.0
POP	104	12,600,000	9,253,185.0	11,300,000	1,982,600.0	38,700,000
TRADE	104	104.1	105.5	29.8	44.2	172.6
INFRA	104	2.6	3.0	0.6	1.0	3.7
WAGE	93	405.6	381.8	205.4	37.7	873.1
CORRUP	78	4.2	4.1	0.9	2.6	6.6
RISK	87	9.2	10.0	3.6	2.0	16.0

Panel C. Summary statistics, Baltic sub-sample

Variable	Obs.	Mean	Median	St. Dev.	Minimum	Maximum
FDI	39	587.28 e+06	381.7 e+06	581.0 e+06	31.3 e+06	2,998.4e+06
GDPPC	39	4,605.7	3528.7	2,542.9	1,902.3	12,363.3
DIST	39	1,509.3	1470.0	65.8	1,457.0	1,601.0
POP	39	2,430,025.0	2,372,000.0	885,994.9	1,343,547.0	3,658,000.0
TRADE	39	121.1	111.3	26.9	87.5	174.4
INFRA	39	2.6	2.7	0.5	1.0	3.3
WAGE	37	345.8	354.0	126.5	131.7	665.0
CORRUP	27	4.6	4.7	1.0	2.7	6.7
RISK	30	7.7	8.0	2.8	2.0	12.0

Notes: Data in Panel A represent summary statistic for whole sample of 11 CEE countries. Total number of observation is 143. For some variables there are missing observations. Data in Panel B represent summary statistic for the sample of eight CSE counties. Total number of observation is 104. For some variables there are missing observations. Data in Panel C represent summary statistic for the sample of the three Baltic countries. Total number of observation is 39. For some variables there are missing observations. The dependent variable is FDI total inflows. The explanatory variables are GDP per capita (GDPPC), Distance (DIST), Population (POP), Trade openness (TRADE), Infrastructure quality (INFRA), Labor costs (WAGE), Corruption index (CORRUP), and Sovereign credit rating (RISK). The observation period is 1994 – 2006.

The country-specific term in model (1) may be either fixed parameters that can be estimated ("fixed effects") or random disturbances characterizing the i*th* country ("random effects.") In the first case, the intercept is allowed to vary between countries but does not vary over time while the slope coefficients are assumed to be constant across countries. Such a

fixed effects specification allows FDI inflows to vary between host countries, while the determinants of FDI inflows should have a similar effect on all transition economies. The random effects specification, on the other hand, would allow us to estimate the impact of the two time-invariant variables (distance and privatization method in our case) and actually provide more efficient estimates if the country-specific term is not correlated with the other explanatory variables. Following Demekas et al. (2005) the study uses Hausman's (1978) specification test[16] to distinguish between the two hypotheses regarding the possible effect of country-specific term. The results of this test, reported in Tables 5 through 7, show that the hypothesis regarding the absence of correlation between the unobservable effects and the explanatory variables cannot be rejected and, therefore, one must consider the individual effects as random.

In addition to the fixed and random effects models, the analysis employs identical specifications using GLS model, as well as pooled OLS model. The results for panel data regressions are presented in Tables 5 through 7. The benchmark model is run for five different specifications. Table 5 shows the results for the total data set of 11 transition economies. As in all other studies on FDI in transition economies, "gravity" variables are found to be very significant, expect DIST (see Model 1). Three of the traditional variables - GDP per capita, population, and trade – have a statistically significant effect on FDI with signs of their estimated coefficient as expected. Surprisingly, the empirical tests find RISK variable to be statistically insignificant. One reason might be its high level of correlation with GDP variable, -0.892 (see Table 3). To mitigate the problem with possible multicollinearity the analysis drops GDPPC variable from our further estimations (see Models 2 through 5). This yields strong results for RISK variable – its estimated parameters are statistically significant at 5% for all model specifications.

WAGE variable has the correct sign but is marginally statistically significant only for two model specifications (see Table 5). In contrast with previous research (see e.g., Demekas et al., 2005), this study does find that the quality of infrastructure (measured by the EBRD's Index of Infrastructure Reform) has significant explanatory power when GLS model is used (see Model specifications 2 and 3). As the same time, the two transition-specific variables – CORRUP and PRIVMETHOD – seem to have no significant effect on the size of FDI inflows.[17] The results of pooled OLS regressions (not reported here) show that R^2-adjusted is above 72 percent for all model specifications.

To account for the common effect of GDP and RISK (the two variables that one may expect to have significant impact on FDI but in the same time are highly correlated) the analysis introduces a new, interaction, variable - GDPPC×RISK (see Model 3). The correlation coefficient between RISK and the interaction variable is very low, 0.009 (see Table 3). The interaction variable has the expected positive sign but is statistically insignificant for all model specifications. When both interaction and risk variables are used in the same model, the regression analysis yields strong, statistically significant, results (not reported here). Next two models in Table 5 present fixed and random effects specifications.

[16] Hausman's specification test enable us to test the hypothesis regarding the absence of correlation between the unobservable specific effects and the explanatory variables, and thereby, to consider the individual effects as random or fixed.

[17] In order to mitigate the problem with possible multicollinearity between corruption (CORRUP) and other explanatory variables in our model (see Table 3) we drop CORRUP variable from the final model specification (see Model 5). The magnitude and signs of the estimated coefficients do not change.

Table 5. FDI total inflows panel regressions (1994 – 2006), Total sample

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 4a	Model 5	Model 5a
	GLS	GLS	GLS	Fixed effects	Random effects	Fixed effects	Random effects
GDPPC	0.773***						
	(0.003)						
DIST	0.286	-0.283	-0.107	dropped	-0.076	dropped	0.118
	(0.389)	(0.319)	(0.745)		(0.800)		(0.730)
POP	1.132***	1.008***	1.019***	-13.264*	0.724***	-12.264*	0.718***
	(0.000)	(0.000)	(0.000)	(0.072)	(0.000)	(0.100)	(0.000)
TRADE	1.321***	1.066***	1.104***	-0.054	0.842***	0.443	0.879***
	(0.000)	(0.000)	(0.000)	(0.935)	(0.003)	(0.595)	(0.003)
INFRA	0.448	1.082**	1.288***	0.316	0.548	0.218	0.652
	(0.388)	(0.029)	(0.009)	(0.694)	(0.308)	(0.788)	(0.224)
WAGE	-0.007	-0.157	-0.324**			0.343	0.261*
	(0.964)	(0.354)	(0.032)			(0.286)	(0.090)
CORRUP	-0.204*	-0.080	-0.027	-0.218	-0.076		
	(0.522)	(0.807)	(0.933)	(0.736)	(0.822)		
RISK	0.051	-.352**		-0.411**	-0.288*		
	(0.809)	(0.041)		(0.049)	(0.101)		
PRIVMETHOD	0.129	0.141	0.087	dropped	0.093	dropped	0.045
	(0.332)	(0.309)	(0.533)		(0.507)		(0.757)
GDPPC x RISK			0.232			0.041	0.234
			(0.289)			(0.879)	(0.286)
Lag(FDI)				0.215*	0.313***	.259**	0.338***
				(0.066)	(0.005)	(0.029)	(0.003)
R-squared (overall)				0.504	0.776	0.496	0.771
Number of observations	99	99	99	99	99	99	99
P-value for Hausman test[5]					0.055		0.175

Notes: Model 1 - general model; Model 2 – excluding GDPPP; Model 3 – excluding GDPPP and RISK; Model 4 – Fixed effects (excluding GDPPP and WAGE); Model 4a – Random effects (excluding GDPPP and WAGE); Model 5 – Fixed effects (excluding GDPPP, CORRUP and RISK); and Model 5a – Random effects (excluding GDPPP, CORRUP and RISK). All variables, expect dummies, are in logs. *, **, and *** represent significance at 10, 5, and 1 percent, respectively. All regressions include source country dummies to control for source country effects. *P*-values are in brackets. The null hypothesis for the Hausman test is that the difference in coefficients between fixed effects and random effects specifications is not systematic. Thus a small *p*-value (<0.05) suggests the rejection of the random effects specification.

Table 6. FDI total inflows panel regressions (1994 – 2006), CSE countries sub-sample

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 4a	Model 5	Model 5a
	GLS	GLS	GLS	Fixed effects	Random effects	Fixed effects	Random effects
GDPPC	0.851**						
	(0.018)						
DIST	-0.121	-0.521	-0.232	dropped	-0.286	dropped	0.007
	(0.773)	(0.193)	0.590		(0.497)		(0.988)
POP	1.179***	0.867***	0.963***	-18.180**	0.602***	-12.549*	0.701***
	(0.000)	(0.000)	(0.000)	(0.034)	(0.000)	(0.101)	(0.000)
TRADE	1.335***	0.751**	0.965***	-0.548	0.578*	0.167	0.807**
	(0.001)	(0.017)	(0.009)	(0.555)	(0.080)	(0.867)	(0.033)
INFRA	0.683	1.551***	1.437***	1.096	0.921	0.968	0.696
	(0.277)	(0.003)	(0.009)	(0.185)	(0.129)	(0.266)	(0.267)
WAGE	-0.131	0.161	0.244			0.139	0.176
	(0.591)	(0.464)	(0.191)			(0.695)	(0.359)
CORRUP	-0.416	-0.448	-0.209	-0.456	-0.389		
	(0.276)	(0.258)	(0.585)	(0.505)	(0.339)		
RISK	-0.246	-0.209*		-0.346*	-0.138		
	(0.386)	(0.100)		(0.101)	(0.540)		
PRIVMETHOD	0.182	0.130	0.097	dropped	0.085	dropped	0.061
	(0.215)	(0.387)	(0.506)		(0.586)		(0.687)
GDPPC x RISK			0.341			0.178	0.372
			(0.240)			(0.609)	(0.210)
Lag(FDI)				0.208*	0.325**	0.251*	0.341***
				(0.101)	(0.012)	(0.066)	(0.007)
R-squared (overall)				0.364	0.696	0.343	0.702
Number of observations	73	73	73	73	73	73	73
P-value for Hausman test[5]					0.192		0.651

Notes: Model 1 - general model; Model 2 – excluding GDPPP; Model 3 – excluding GDPPP and RISK; Model 4 – Fixed effects (excluding GDPPP and WAGE); Model 4a – Random effects (excluding GDPPP and WAGE); Model 5 – Fixed effects (excluding GDPPP, CORRUP and RISK); and Model 5a – Random effects (excluding GDPPP, CORRUP and RISK). All variables, expect dummies, are in logs. *, **, and *** represent significance at 10, 5, and 1 percent, respectively. All regressions include source country dummies to control for source country effects. *P*-values are in brackets. The null hypothesis for the Hausman test is that the difference in coefficients between fixed effects and random effects specifications is not systematic. Thus a small *p*-value (<0.05) suggests the rejection of the random effects specification.

Table 7. FDI total inflows panel regressions (1994 – 2006), Baltic States sub-sample

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 4a	Model 5	Model 5a
	GLS	GLS	GLS	Fixed effects	Random effects	Fixed effects	Random effects
GDPPC	-0.286						
	(0.657)						
DIST	-33.416**	-29.272***	-33.169***	dropped	-31.653***	dropped	-36.110***
	(0.015)	(0.004)	(0.000)		(0.006)		(0.000)
POP	2.757***	2.493***	2.741***	44.328*	2.760***	39.987*	3.051***
	(0.007)	(0.003)	(0.000)	(0.060)	(0.004)	(0.101)	(0.000)
TRADE	2.720**	2.586**	2.710***	2.981**	2.884**	3.205***	3.023***
	(0.012)	(0.014)	(0.006)	(0.015)	(0.017)	(0.008)	(0.008)
INFRA	6.619***	6.625***	6.618***	4.506*	7.711***	4.839*	7.768***
	(0.000)	(0.000)	(0.000)	(0.074)	(0.000)	(0.064)	(0.000)
WAGE	-3.212***	-2.814***	-3.190***			-5.592***	-3.952***
	(0.005)	(0.000)	(0.000)			(0.000)	(0.000)
CORRUP	0.168	-0.021	-0.162	1.679	-0.357		
	(0.864)	(0.982)	(0.863)	(0.233)	(0.747)		
RISK	-0.271	-0.248		-0.288	-0.291		
	(0.364)	(0.401)		(0.359)	(0.390)		
PRIVMETHOD	dropped	dropped	dropped	dropped	dropped	dropped	dropped
GDPPC x RISK			-0.273			-0.229	-0.373
			(0.341)			(0.498)	(0.255)
Lag(FDI)				0.429**	0.340*	0.431**	0.365*
				(0.031)	(0.080)	(0.033)	(0.060)
R-squared (overall)				0.008	0.796	0.013	0.802
Number of observations	26	26	26	26	26	26	26
P-value for Hausman test[5]					0.717		0.845

Notes: Model 1 - general model; Model 2 – excluding GDPPP; Model 3 – excluding GDPPP and RISK; Model 4 – Fixed effects (excluding GDPPP and WAGE); Model 4a – Random effects (excluding GDPPP and WAGE); Model 5 – Fixed effects (excluding GDPPP, CORRUP and RISK); and Model 5a – Random effects (excluding GDPPP, CORRUP and RISK). All variables, expect dummies, are in logs. *, **, and *** represent significance at 10, 5, and 1 percent, respectively. All regressions include source country dummies to control for source country effects. *P*-values are in brackets. The null hypothesis for the Hausman test is that the difference in coefficients between fixed effects and random effects specifications is not systematic. Thus a small *p*-value (<0.05) suggests the rejection of the random effects specification.

The results of fixed effects specification (see Model 4) show that only two variables (POP and RISK) have significant impact on FDI inflows to all CEE countries; when random effects specification (see Model 4a) is used to estimate the effect of the two time-invariant variables (distance and privatization method), no evidence for statistically significant effect of these two variables on FDI is found. The Hausman's test shows that fixed effects specification should be rejected (*p*-value is above 5 percent). As expected the coefficient estimates for lagged values of FDI are strongly significant at 1% and 5% level of significance for both fixed and random effects specifications (see Models 4 and 5). When both RISK and CORRUP variables are dropped from the analysis (see Model 5), the results are very similar to those displayed in Model 4. The random effects specification cannot be rejected; so, individual effects are considered as random. Again, the two time-invariant variables are statistically insignificant (see Model 5a).

In order to investigate what determines the different attractiveness of CSE and Baltic countries for foreign investors, the analysis looks at these two regions as separate groups of transition economies. Using separate samples make it possible to analyze whether the motives for FDI differ between these two groups of countries. Another advantage of using separate samples is that it reduces the correlation between explanatory variables. Basically, the same specifications as for the total data set are used. The results for the sub-sample of CSE countries are presented in Table 6. Model 1 shows that traditional variables such as GDP per capita, population, and trade, are statistically significant at the usual levels of significance. Excluding the GDPPP variable from the benchmark model yields same results as for the full sample of 11 transition economies. The RISK variable appears to have a marginally statistically significant effect on FDI (see Model 2). Including the interaction variable (GDP × RISK) in the analysis does not improve the explanatory power of the model. Surprisingly, the two transition-specific variables (CORRUP and PRIVMETHOD) are found to have no significant effect on FDI flows attracted by the CSE group of countries (see Models 1 through 3). The random and fixed effects specifications (see Models 4 and 5) obtain the same results as for the total data set, except for WAGE variable, which is statistically insignificant for all model specifications. Although the *p*-values of Hausman's test suggest no rejection of random effects specification, the two time-invariant variables (distance and privatization method) are not found significant. The results of pooled OLS regressions (not reported here) show that R^2-adjusted is above 62 percent for all model specifications.

Finally, the benchmark model (1) is run for the sub-sample of Baltic States (see Table 7). The results support the first hypothesis that traditional determinants such as population, trade openness, and infrastructure quality do affect FDI inflows to each group of transition economies. Unlike the total and the CSE samples GDPPC variable appears to be statistically insignificant (see Model specification 1). This may be due to the fact that GDP per capita is highly correlated with the rest of explanatory variables. At the same time, a number of specific determining variables (WAGE and DIST) are found to have significant impact on FDI flows to the Baltic States. As they are located farthest away from the West European markets one may expect that distance will have a strong impact on the size of FDI flows attracted by these countries. The results of the panel data analysis support this hypothesis: DIST variable is strongly significant at 1 percent level of significance. The two transition-specific determinants (CORRUP and RISK) have the appropriate signs but are insignificant in

all model specifications.[18] This result contradicts the preliminary expectations that the transition-specific variables will have a significant impact on FDI as they represent important proxies for political and macroeconomic stability in the host country. One may conclude that corruption and high risk uncertainty are seen by foreign investors as less detrimental to FDI flows in the Baltic States than in the group of CSE countries.

One interesting result is that, in contrast to the CSE countries, WAGE variable is found to be a significant determinant of FDI inflows to the Baltic States. One possible explanation is that the mean labor costs in the Baltic States (except Estonia) are lower than in the CSE countries (excluding Bulgaria and Romania). As labor costs (measured by nominal wage rates) in the Baltic countries are well below the levels in their trade partner countries, it is likely that they would generate efficiency-seeking FDI from MNEs in home countries that have higher labor costs. At the same time, the positive effect of low labor costs in some transition economies (such as Bulgaria and Romania) is possibly outweighed by the relatively high labor costs in the rest of the countries in Central and Eastern Europe and the overall effect appears to be weak (see Table 6).

The results of pooled OLS regressions (not reported here) show that R^2-adjusted is above 66 percent for all model specifications. The fixed and random effects specifications (see Models 4 and 5) show that the individual effects should be considered as random (*p*-value is much higher that 5 percent). The time-invariant variable (DIST) is found to be strongly statistically significant.

What general conclusions about FDI motives can be drawn based on these panel data analyses? As far as the traditional variables are concerned, it seems that market-seeking is an important motive for FDI both in the CSE and the Baltic countries. Investigating the importance of efficiency-seeking motives shows that WAGE variable has strong effect on FDI flows only in the group of Baltic States. For the same group of transition economies distance used as a proxy for the transaction costs of undertaking operations in a host country is found to have a significant impact on FDI flows. This is due to the fact that EU-15 countries are the most important source of foreign direct investment for the Baltic States, followed by Russia and the U.S. (see Table 1, Panel C).

Turning to the transition-specific variables, both corruption and the privatization method are not found to be helpful in explaining the size of FDI inflows into the CEE countries. At the same time, RISK variable appears to be of marginal significance only for the group of CSE countries. In general, transition-specific variables should affect FDI inflows to both groups of countries in a similar way, irrespective of the type of FDI. For example, direct sales privatization could attract both market-, efficiency-, and resource-seeking FDI depending on the activity of the firm to be privatized. The corruption effect is supposed to be opposite.

CONCLUSION

The analysis presented in this paper has enabled identification of several key determinants of FDI flows into the transition economies in Central and Eastern Europe, and highlighted the implications of different policy and institutional factors for the attractiveness

[18] Dummy variable used as a proxy for privatization method is omitted from the analysis as all the three Baltic countries had used the same primary method of privatization – direct sales to outside owners.

of these countries for foreign investors. By using both traditional and transition-specific variables, the author extends the previous research work, which focuses on CEE countries as a homogenous group in few ways. Including the Baltic countries in the analysis as a separate group of transition economies makes it possible to analyse whether FDI determinants vary across the regions.

The results from panel data analyses support the first hypothesis that FDI flows attracted by each group of transition economies (CSE and Baltic States, respectively), are significantly influenced by the same type of traditional variables (population, trade and infrastructure), while factors such as credit risk (for the group of CSE countries) and labor costs (for the group of Baltic States) are those that significantly contribute to the differences in the size of FDI flows between the regions. If MNE motives for foreign investment are analyzed, the results show that market-seeking FDI is an important motive for foreign investment in CEE countries if considered as a homogeneous group. Investigating the importance of FDI motives separately for each group of countries shows that efficiency-seeking motives have significant effect only on FDI in the Baltic States.

In line with Bevan and Estrin (2000), this study does find that geographical proximity matters for the Baltic States; the empirical analysis shows that distance has a strong (negative) impact on the size of FDI flows attracted by this group of countries. Thus, the research provides evidence in support of Johnson (2006) who argues that distance should have a negative effect both on market- and efficiency-seeking FDI.

In contrast with previous research (Holland and Pain, 1998; Bevan and Estrin, 2000; Carstensen and Toubal, 2004; Stoian and Filippaios, 2007) the explanatory variables that purport to measure the significance of the policy and institutional environment (such as risk and the level of corruption) are not found to have a strong influence on FDI flows when CEE countries are analyzed by regions; thus the second hypothesis is rejected. Similarly, no evidence in support of previous findings (Carstensen and Toubal, 2004) that the primary method of privatization is an important determinant of FDI flows into transition economies exists. The results for Baltic States have to be treated cautiously as some of the traditional variables (e.g., wage) may be imperfect proxies; they may be correlated with each other or with other factors that also influence investment flows, and their estimated coefficients may thus be hard to interpret.

Unfortunately, the research does have some limitations. On the first place, this is the lack of full data record for some proxy variables (e.g., risk and corruption) for a number of transition economies. In addition, the empirical results are derived from a sample of transition economies, which includes a limited number of countries from Southeast Europe. Thus, the study will improve if candidate Member States (e.g., Macedonia, Bosnia and Herzegovina, Albania, and former Yugoslavia) are included in the analysis. This will help further investigate the role of different economic, policy and institutional factors in explaining the FDI flows attracted by countries at different stages of transition process – the so-called "laggards" and "leaders". Furthermore, the analysis could be enriched by taking another look on FDI motives for multinational enterprises to invest in CEE countries, depending on what type of FDI is predominant in the region - horizontal or vertical. This analysis is left for future research.

APPENDIX A. HOST COUNTRY DETERMINANTS OF FDI

FDI Determinants	Proxy	Empirical Studies
Group 1 : Traditional determinants		
Market size	GDP	Altomonte (1998); Bevan and Estrin (2000); Resmini (2000); Carstensen and Toubal (2004); Janiniski and Wunnava (2004); Demekas et al. (2005); Stoian and Filippaios (2007)
Market demand	GDP per capita; Population	Altomonte (1998); Bevan and Estrin (2000); Resmini (2000); Almononte and Guagliano (2003); Demekas et al. (2005); Bellak et al. (2007)
Geographical proximity	Distance between host and source country' capital cities	Demekas et al. (2005); Altomonte (1998); Resmini (2000); Bevan and Estrin (2000); Almononte and Guagliano (2003)
Labor costs	Wage differential between host and source country; annual host country wage in manufacturing as a share of annual GDP per capita	Lansbury et al. (1996); Altomonte (1998); Holland and Pain (1998); Bevan and Estrin (2000); Resmini (2000); Deichman (2001); Kinoshita and Campos (2004); Janiniski and Wunnava (2004); Carstensen and Toubal (2004); Demekas et al. (2005); Johnson (2006)
Trade openness/Trade regimes	Foreign exchange and trade liberalization (EBRD index); tariff revenue/imports ratio; tariff revenue/GDP ratio	Resmini (2000); Carstensen and Toubal (2004); Janiniski and Wunnava (2004); Demekas et al. (2005); Stoian and Filippaios (2007); Bellak et al. (2007)
Trade linkages	Total trade between source and host country to the total trade of host country; imports plus exports of host country as a percentage of its real GDP	Lansbury et al. (1996); Holland and Pain (1998); Deichman (2001); Falk and Hake (2008)
Infrastructure quality	Infrastructure reform (EBRD index); length of roads and railroads within a host country; number of mainline telephone connections	Lansbury et al. (1996); Deichman (2001); Kinoshita and Campos (2004); Demekas et al. (2005)
Tax burden	Average tariff rate; corporate income tax rate; tax holidays; bilateral effective average tax rates	Devereux et al. (2008); Carstensen and Toubal (2004); Demekas et al. (2005); Bellak et al. (2007)
Group 2: Transition-specific determinants		

Appendix A. (Continued)

FDI Determinants	Proxy	Empirical Studies
Host country risk	Moody's Sovereign Credit Rating; Institutional Investor's Country Risk Rating; Euromoney's Political Risk index	Holland and Pain (1998); Bevan and Estrin (2000); Carstensen and Toubal (2004); Janiniski and Wunnava (2004); Bellak et al. (2007)
Corruption	Transparency International's Corruption Perceptions Index; Frequency of 'bribe tax'	Bevan and Estrin (2000); Demekas et al. (2005); Stoian and Filippaios (2007)
Methods of privatization	Dummy variable (0-1)	Lansbury et al. (1996); Holland and Pain (1998); Carstensen and Toubal (2004)
Perspective EU membership	Dummy variable (0-1)	Bevan and Estrin (2000); Bos and van de Laar (2004)
Group 3: Other determinants		
Cultural/language proximity	Dummy variable (0-1)	Demekas et al. (2005)
Educational attainment	Tertiary enrolment ratio	Almononte and Guagliano (2003)
Human rights	Political Terror Scale (PTS) index	Blanton and Blanton (2006)
Factor endowments	Investment/labor ratio (gross fixed capital formation to working population)	Lansbury et al. (1996); Carstensen and Toubal (2004)
Natural resource endowments	Dummy variable (0-1)	Kinoshita and Campos (2004); Johnson (2006)
Ethnic tensions	Ordinary variable (0-10)	Stoian and Filippaios (2007)
Democratization/Rule of law	Ordinary variable (0-6)	Stoian and Filippaios (2007); Kinoshita and Campos (2004)
Market stability/Macroeconomic risk	Annual exchange rate; Interest rate	Beer and Cory (1996); Deichman (2001); Kinoshita and Campos (2004)
Transition progress	Private market share of GDP; Composite transition progress measure (4-17.2)	Lansbury et al. (1996); Deichman (2001); Carstensen and Toubal (2004); Johnson (2006)
Expropriation risk	Ordinary variable (1-10)	Bevan and Estrin (2004); Stoian and Filippaios (2007)
Industrial concentration	Proportion of the manufacturing sector in total GDP	Altomonte (1998); Resmini (2000)
Business operation climate	Operations Risk Index (ORI); EBRD Transition Indicators	Altomonte (1998); Holland and Pain (1998); Almononte and Guagliano (2003); Bos and van de Laar (2004)
Quality of bureaucracy	Ordinary variable (0-10)	Kinoshita and Campos (2004); Adam and Filippaios (2007); Stoian and Filippaios (2007)

APPENDIX B. MODEL VARIABLES: TRADITIONAL AND TRANSITION-SPECIFIC

Table B.1. Traditional variables

	In Study	Not Included
Market Seeking	Population (G)	Market Size (G)
	GDP per Capita (G)	Cultural Closeness (G)
	Distance – close (G)	
	Trade Openness	
Efficiency Seeking	Labor Costs (E)	Production Costs
	Infrastructure (E)	
	Distance – close (G)	
Resource Seeking	Labor Costs (E)	Natural Resources (E)

Table B.2. Transition-specific variables

In Study	Not Included
Privatization	Legal Reform
Corruption	Liberalization
Country Risk	Democratic Reform
	Economic Reform
	Foreign Exchange Restrictions
	Financial Institutions Development

Note:
E =Endowment Factors.
G =Gravity Factors.

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