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Do Central and Eastern European Countries Posses FDI Advantages to More Developed Western Countries?[*]

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Abstract

This paper examines the main determinants of Foreign Direct Investment (FDI) in 26 European countries over the period 1996 -2010. The previous research reports two groups of explanatory factors: gravity factors (proximity, market size) and factor endowments (infrastructure, human capital). Other factors that are found to have significant effect are trade openness, tax policy and tax incentives, labor costs and regional integration. Using regression analysis on a data panel consisting of nearly 390 observations from a total of 26 European countries, the study shows significant relationships between FDI and various proxies for different location, institutional and policy factors. By distinguishing between Eastern and Western European countries, this study provides further evidence that the importance of different location factors is not significantly different across the two groups of countries, whilst there is a set of institutional quality effects that are stronger in the group of more developed Western economies. At the same time cost-related factors such as corporate tax rate and unit labor costs appear to be of high significance only for the group of CEE countries. Thus, we may conclude that Central and Eastern European countries do posses some comparative advantages to more developed Western countries as attractive destination to foreign investors.

Keywords: transition economy, foreign direct investment, multinational enterprise, gravity model

JEL classification: C 31, C33, F21, F23

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1 Introduction

This paper investigates the relative importance of different macroeconomic, policy and institutional quality factors as determinants of FDI inflows into 26 European countries: 15 Western countries and 11 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 Foreign Direct Investment (FDI) are especially valuable.[1]

Levels of FDI into transition economies were very low prior to the fall of the Berlin Wall and the opening of the former socialist economies to world trade and capital flows. However, the process of integration proceeded very rapidly in trade, especially in the so-called Visegrad countries (Poland, former Czechoslovakia, and Hungary) from the early 1990s, and FDI levels also began slowly to increase (Estrin and Meyer, 2011). Even so, FDI to transition economies remained relatively low in the early years of transition. The World Investment Report (2002) indicates that FDI to all transition economies combined represented only 2.1% of global FDI flows between 1990 and 1994, rising to just 3.2% in the period 1995-1999 (UNSTAD, 2002). This contrasts with more than 10% of global FDI flow to Latin America and more than 20% to Asia for the same period (1990-1994). Moreover, even these relatively modest flows were concentrated in a small number of more advanced transition economies; prior to 1996 more than three quarters went to three countries – Poland, Hungary and the Czech Republic (Meyer, 1998).

The levels of investment in CEE increased sharply in the mid-1990s, though FDI flows remained concentrated in the same three countries, which accounted for around 60% of total FDI between 1990 and 2000. Moreover, FDI flows to Russia and the Commonwealth of Independent States (CIS) also increased in the second half of the 1990s, though they remained at around half the levels for CEE countries (Estrin and Meyer, 2011). The period after 2000 has seen sharp increases in FDI to other parts of Central and Eastern Europe and an upswing to CIS, especially Russia and more recently Ukraine.[2] The credit crunch and recession that followed coincided with a collapse of FDI inflows to the CEE countries. In the region as a whole, FDI inflows were 50% lower in 2009 when compared to 2008.[3] Still, when

[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] Data shows that the Central and Eeastern Europe (CEE) region experienced a five-fold increase in foreign direct investment (FDI) inflows between 2003 and 2008, rising from US$30 billion to US$155 billion (see PriceWaterhouse Coopers, 2010). Russia was the destination which attracted much of this additional investment as its inflows rose from less than US$8 billion in 2003 to more than US$70 billion in 2008.

[3] The intensity of the recession was not uniform across the CEE region. Estonia, Latvia and Lithuania are likely to have experienced double-digit rates of contraction in economic output in 2009; Bulgaria and the Czech

asked to identify the world's most attractive investment regions, investors ranked Central and Eastern Europe in third place, behind China and Western Europe (Ernst &Young's 2011).

The FDI driving forces into the CEE countries were intensely analysed in the economic literature. There are numerous empirical studies which describe the specific role of different groups of factors like transition-specific factors (Carstensen and Toubal, 2004; Mateev 2012), economic development (Henriot, 2005), economic reforms (Stoian and Vickerman, 2005), exchange rate regime (Aubin *et al.*, 2006), wages differential (Dupuch and Milan, 2003), or announcements related to the EU accession (Bevan and Estrin, 2004; Hansson and Olofsdotter, 2010). The theoretical foundations and evidence from other regions can offer little insight into the impact of certain factors specific to the transition process on FDI flows. Taken from the behavioural and institutional point of view, CEE countries are very different from both developing countries and industrially advanced countries. The speed with which market oriented policies and legal reforms conducive to foreign firms were introduced did have an important role to play. The likelihood of EU accession helped further to establish this virtuous circle of institutional development, FDI and economic growth. The sectoral distribution of FDI indicated the significance of privatization process in the early FDI flows, especially in utilities and infrastructure, and the importance of resource investments in the period after 2000 (Estrin and Meyer, 2011).

The aim of this paper is to explain the relative advantages of CEE countries (CEECs) to more developed Western European countries (EU-15) as an attractive destination of FDI. Our paper contributes to the existing FDI literature in two ways. First, we investigate the effect of different location determinants on FDI into a group of 26 European countries. One of the recent developments is the incorporation of institutional quality in modeling the location decision of foreign firms. The basic notion is that less corruption, a fair, predictable, and expedient judiciary, and an efficient bureaucracy help attract more FDI. Most of the previous studies on transition economies focus on just one or two aspects of the issue, normally corruption and quality of bureaucracy. In this paper, we examine an array of institutional factors and try to assess their relative importance for each group of European countries. Second, in addition to the traditional location effects, we analyze the impact of different country-specific (macroeconomic and political risk) factors on FDI into both groups of countries (CEECs and EU-15). Our main findings reinforce the argument of some previous studies (see e.g., Campos and Kinoshita, 2003) that country-specific factors related to the economic and political stability of a host country do play an important role in explaining the distribution of FDI across different regions in Europe.

We use a unique panel data set covering 26 European countries between 1996 and 2010. The results show that the main determinants of FDI inflows to these countries are typical gravity factors (market size and distance), trade openness, infrastructure, unit labor costs and country risk. We also investigate whether the set of determinants varies across different

Republic are expected to see milder declines of less than 5% of output. Poland's economy is estimated to have grown in 2009 (PricewaterhouseCoopers, 2010).

regions. We find that for the more developed Western countries institutional quality factors do play an important role in explaining FDI, whilst for the Central and Eastern European countries cost factors such as tax rate and unit labor costs are the main drivers of FDI flows.

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. 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 Theoretical Background: Determinants of FDI

Investors choose a location of investment according to the expected profitability associated with each location. Profitability of investment is in turn affected by various country-specific factors and the type of investment motives. For example, market-seeking investors will be attracted to a country with a large and fast growing local market. Resource-seeking investors will look for a country with abundant natural resources. Efficiency-seeking investors will weigh more heavily geographical proximity to the home country, to minimize transportation costs. Thus, the location of FDI is closely related to a host country's comparative advantage, which in turn affects the expected profitability of investment. The classical sources of comparative advantage are input prices, market size, growth of the market, and the abundance of natural resources (Campos and Kinoshita, 2003).

What are the host country characteristics that attract FDI? The emerging consensus is that it depends on the motives of foreign investors, and thus, which type of FDI they are undertaking. The *market-seeking* FDI aims at penetrating the local markets of host countries and is usually connected with market size and per capita income, market growth, access to regional and global markets, consumer preferences and structure of domestic market. The *resource-asset seeking* FDI depends on prices of raw materials, lower unit labor cost of unskilled labor force and the pool of skilled labor, physical infrastructure (ports, roads, power, and telecommunication), and the level of technology. The *efficiency-seeking* FDI is motivated by creating new sources of competitiveness for firms and it goes where the costs of production are lower. In this last case, prior to decision, foreign investors consider the price of factors of production (adjusted for productivity differences) and the membership in regional integration agreement. Consequently, the efficiency-seeking FDI covers both previously mentioned types of the FDI.[4] It is necessary to stress that is not possible to distinguish exactly between firm-specific and country-specific determinants of FDI, or to determine motives of small versus large foreign affiliates.

There is a growing body of research literature that provides empirical evidence about the factors determining the pattern of FDI across different countries. The majority of previous work in this area reports two groups of explanatory factors: gravity factors (proximity, market

[4] It must be said that the market-seeking and efficiency-seeking do not exclude each other. If the market-seeking FDI have a penetration logic (it looks for the market size and market parts), the efficiency-seeking FDI and resource-asset seeking FDI may be considered as delocalisation investments (Aubin *et al*., 2006).

size) and factor endowments (infrastructure, human capital). Though there has been considerable theoretical work on foreign direct investment (for a literature review see Alfaro *et al.*, 2006; Nonnemberg and Mendonça, 2004; Vavilov, 2005; Blonigen, 2005; Blonigen and Piger, 2011), there is no agreed model providing the basis for empirical work. Rather, the eclectic paradigm, also known as OLI framework (Dunning, 1988 and 1992), has been largely employed in research literature as a general tool of reference for explaining the FDI patterns of multinational enterprises.[5] In addition to the OLI paradigm, there are other theoretical approaches, not necessarily applied to FDI, that help to explain location decisions; the most promising are the gravity approach and the location theory (Resmini, 2000).[6]

The empirical literature indicates that the key location factors determining FDI are host country's market size, input costs – notably of natural resources and labor – and the investment risk associated with both the economic and the political environment (Singh and Jun, 1995). Market size, typically measured by host country's gross domestic product (GDP), captures potential economies of large scale production. In the transition context, survey evidence suggests that most multinational firms invested in search of new market opportunities (Lankes and Venables, 1996; Meyer, 1998), which are related to absolute market size and market growth. Following previous empirical research of host country determinants of FDI (see Altomononte and Guagliano, 2003; Demekas *et al.*, 2005) we include two traditional variables that proxy for market size - GDP and population, in our regression analysis. As a measure of the quality of the market demand we use GDP per capita. A higher GDP per capita implies a larger host country demand for more advanced types of goods of a higher quality. These variables will indicate the importance of market-seeking FDI in a host country. We expect a positive correlation between host country's market size and FDI flows.

Proximity to the home country is an important factor in explaining the volume of trade flows between countries. It is especially relevant for production FDI where economies of scale on plant level at the MNE's affiliate have to be weighed against the costs of exporting. This measure has been frequently used in gravity-type models as well as in different specifications in the empirical studies explaining FDI. The expected sign of the estimated coefficient is ambiguous *a priori* (Leibrecht and Bellak, 2005). While large distance may encourage FDI due to an internalization advantage, it also may discourage FDI due to the lack of market know-how, higher communication and information costs, and differences in culture and institutions (Buch *et al.*, 2004 and 2005). However, if affiliates are relatively new, as is often the case in the CEE countries, they typically depend on headquarter services and

[5] Dunning proposes that FDI can be explained by three categories of factors; ownership advantages (O) for firms to operate oversees, such as intangible assets; location advantages to investment in the host rather than the donor country (L), and the benefits of internalization (I).

[6] Following LeSage and Pace (2008), Leibrecht and Riedl (2010) extend the frequently used gravity model via the inclusion of spatial interaction effects across home countries of FDI as well as across host countries. Moreover, they consider the host country's surrounding market potential as a determinant of FDI flows. This variable captures the possibility that the market size of proximate countries may impact on the volume of FDI a particular host country receives.

intermediate inputs supplied by the parent firm. Therefore, even in the case of horizontal FDI to CEE countries, a negative impact of distance on FDI is plausible.

Several previous studies (Altomonte, 1998; Bevan and Estrin, 2000; Bos and Van de Laar, 2004; Carstensen, and Toubal, 2004; Falk and Hake, 2008) have suggested that trade liberalization has become the more important motive for FDI. 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 for multinational firms to export.[7] According to the sensitivity analysis of Chakrabarti (2001), openness to trade (measured by import plus export to GDP) has the highest likelihood of being correlated (positively) with FDI among all explanatory variables classified as fragile.[8] The expected effects may differ by the type of investment regarding local market or export orientation, the host country's foreign exchange control laws and applied capital taxation. However, for our group of countries, we expect that the openness will indicate also the level of integration of the local economy into the regional economic flows. Therefore, the trade openness will have positive impact on FDI.

Good infrastructure is a necessary condition for foreign investors to operate successfully, regardless of the type of FDI, since it reduces costs of distribution, transportation and production, thereby affecting comparative and absolute advantage of the host country. For FDI in CEE countries, more recent studies have used different proxies for infrastructure. Demekas *et al.* (2007) include an indicator of infrastructure reform from the European Bank for Reconstruction and Development (EBRD). This index reflects the state of regulation of infrastructure services (EBRD, 2004). They find that for the less developed economies in their sample infrastructure is important as determinant of FDI, while it becomes insignificant for the more developed countries. Campos and Kinoshita (2003) use the number of mainline telephone connections as a proxy for infrastructure. A positive impact on FDI is found only for the former Soviet Union countries. Bellak *et al.* (2009) use principal component analysis across telecommunication, electricity and transport production facilities to derive an overall infrastructure index and find a positive correlation with FDI.[9] Similarly to these studies we expect that infrastructure will have positive influence on FDI.

[7] 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.

[8] Chakrabarti (2001) finds that most determinants of cross-country FDI are fairly fragile statistically. For example, the ratio of exports plus imports to GDP suffers from a large-country bias and may, thus, lead to unreliable results.

[9] Based on a panel-gravity model approach Bellak *et al.* (2009) find evidence that FDI in CEECs is attracted by increases in the infrastructure endowment. Especially information and telecommunication as well as transport infrastructure impact on FDI. Goodspeed *et al.* (2006) explain FDI in a broad range of countries and include the consumption of electric power, the number of mainline telephone connections and a composite infrastructure index in their regressions. In a related paper Goodspeed *et al.* (2010) find that a favorable infrastructure endowment attracts FDI to developed as well as less developed countries. Thereby the impact is larger in the latter country group.

Bellak *et al.* (2009) find that both taxes and infrastructure play an important role in the location decisions made by multinational enterprises. They conclude that countries with an inferior infrastructure endowment most likely have to cut corporate income taxes to receive FDI in the short run. In the medium to the long run these countries should improve their infrastructure position in order to make FDI sustainable. However, this increase in infrastructure endowment needs to be funded mainly by non-corporate income taxes in the short run. More recent studies provide similar conclusion as investors are more likely to establish companies in the countries with lower corporate tax rate (Djankov *et al.*, 2010) and this factor is particularly important for the new members of the European Union (Hansson and Olofsdotter, 2010).[10] Following Bellak and Leibrecht (2009) we expect that tax rate will have a significant and negative impact on FDI. Also, investors are found to be sensitive to gravity model variables (marker size and distance) and continuously interested in investing in countries with cheap labor cost as it was underlined in the study of Lefilleur and Maurel (2010).

The indicators of labour costs used in empirical studies can be classified into three major groups: total labour costs, gross wages and unit labour costs (see Bellak *et al.*, 2008 for a comprehensive survey of existing studies in the field).[11] Consequently, these empirical studies show a wide variety of results with respect to the size and significance of the coefficient of the labour cost proxy used. Most of them find a negative impact of labour costs on FDI, while Boudier-Bensebaa (2005) finds a significant positive sign for the unit labour cost variable in a study on regional FDI in Hungary. Since our sample includes both well developed and transition economies we expect the difference between gross wages and total labour costs to vary substantially between EU countries. If foreign investors are seeking low labor costs, the availability of cheap labor will be an important factor affecting FDI. However, firms only prefer low wage locations if the reduced labor cost is not compensated by lower labor productivity, or an overvalued currency. Similarly to Carstensen and Toubal (2004) we use monthly average gross wages as a share of GDP per employment to proxy for unit labor costs in a host country. We expect a negative sign on the coefficient (that is, countries with lower labor costs would attract more FDI), particularly if vertical FDI predominates.[12]

[10] From an empirical viewpoint, corporate income taxes do indeed matter for investment location decisions of MNEs. For example, De Mooij and Ederveen (2008) carry out a meta-analysis of 35 empirical studies and find a median tax-rate elasticity (semi-elasticity) of FDI of about -2.9. However, the typical tax-rate elasticity crucially depends on the tax measure used and the operationalization of FDI applied. Concerning tax rates, various measures are proposed in the literature (see e.g., Devereux, 2004).

[11] The literature using unit labour costs is heterogenous concerning the operationalisation of labour costs. Bevan and Estrin (2004) for example, use annual average wages in the manufacturing sector as a proxy for total labour costs and nominal GDP per capita as a proxy for labour productivity. In contrast, Carstensen and Toubal (2004) employ differences in unit labour costs between home and host countries calculated as monthly average gross wages over nominal GDP per employment.

[12] Potential foreign investors should be concerned not only with the cost of labor, but also with its quality. A more educated labor force can learn and adopt new technology faster, and the cost of training local workers would be less for investing firms. Thus, we also test for the impact of labor quality, using the general secondary

Studies of FDI in emerging markets have put particular stress on indicators of economic and political risk (Lucas, 1993; Jun and Singh, 1996). This comprises three main elements: 1) macroeconomic stability, e.g. growth, inflation, exchange rate risk; 2) institutional stability such as policies towards FDI, tax regimes, the transparency of legal regulations and the scale of corruption; and 3) political stability, ranging from indicators of political freedom to measures of surveillance and revolutions. In the transition context, this issue has been proxied in a variety of ways. For example, Holland and Pain (1998) follow Wheeler and Mody (1992) in using a principal component analysis across macroeconomic and institutional variables, Garibaldi *et al.* (2001) use a variety of World Bank and EBRD indicators, and Resmini (2000) use a synthetic indicator of risk (the 'operation risk index'). In our case, the perception of political stability (and risk) is measured through the Moody's Sovereign Credit Rating, transformed into numerical terms on the scale of 1 (the riskiest country) to 20 (country with the highest creditworthiness). We expect a positive correlation between this risk measure and FDI; that is, the higher the country risk index, or the less risky the investment, the more attractive is a country for FDI.

The quality of institutions is found to be an important determinant of FDI activity, particularly for less developed countries for a variety of reasons. First, poor legal protection of assets increases the chance of expropriation of a firm's assets making investment less likely. Poor quality of institutions necessary for well-functioning markets (and corruption) increases the cost of doing business and, thus, should also diminish FDI activity. And finally, to the extent that poor institutions lead to poor infrastructure (i.e., public goods), expected profitability falls as does FDI into a market. In this study we proxy for the quality of institutions through the World Bank's Worldwide Governance Indicators (WGI), which include six measures: political stability, government effectiveness, regulatory quality, rule of law, control of corruption, and voice and accountability (for more detail explanation and the expected sign of each variable see Appendix A).[13]

In a comprehensive study of the existing FDI literature Blonigen and Piger (2011) find that many of the covariates used in prior FDI studies (and often found statistically significant) do not have a high probability of inclusion in the true FDI determinants model once we consider a comprehensive set of potential determinants. The covariates with consistently high inclusion probabilities are traditional gravity variables, cultural distance factors, home-country per capita GDP, relative labor endowments, and regional trade agreements. Variables with little support for inclusion are multilateral trade openness, host-country business costs, host-country infrastructure (including credit markets), and host-country institutions. We use this finding as a guideline when choosing which FDI determinants should be included in the regression model.

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education enrollment rate (EDU), collected by the World Bank. The results show that the impact of this variable is insignificant.

[13] For example, the rule of law variable reflects the strength and impartiality of the legal system and popular observance of the law. A higher score in the rule of law implies better legal institutions. We expect that countries with better legal infrastructure will be able to attract more FDI.

The literature summarized above suggests that the difference in FDI across different groups of countries and regions may be attributed to the more developed institutional environment in Western European countries (EU-15) than in CEECs. Thus, our first hypothesis (HP1) is that relative to more developed Western countries, FDI in CEE countries is determined to a lesser extent by the quality of institutional environment. Beyond institutional differences there are many other potential factors that may be driving FDI. According to the second hypothesis (HP2) there are macroeconomic and political risk factors that may explain the increased attractiveness of CEECs for foreign investors.

3 Empirical Specification

Our analysis is based on a unique dataset which comprises 26 European countries and covers the period 1996-2010. We employ an estimation model that allows for a combination of traditional location factors (market size and distance), institutional quality factors (control of corruption, political stability, government effectiveness, etc.) and country-specific determining factors (infrastructure, unit labor costs, country risk, etc.). All of these variables are closely related to the theoretical models of FDI presented above. To address the question if the main determinants of FDI are different across the two groups of European countries (EU-15 and CEECs) we introduce in our model host country dummy variables.

Table 1 shows FDI inflows to these two groups of countries during the period 1996 – 2010. The data in Panel A show that EU-15 have received the largest FDI inflows with Poland and the Czech Republic being the only ones close to them. The data in Panel B indicate that the largest group of source countries for both EU-15 and CEECs are countries from Europe (with Germany, United Kingdom and the Netherlands being the leaders), followed by North America and Asia. CEECs have received much less FDI from Australia and Africa than EU-15. When countries in the sample are compared based on relevant macroeconomic indicators, the data in Panel C show that although CEECs lag behind EU-15 in many aspects, countries like Bulgaria and Romania have recorded the highest growth in GDP (11.07 percent and 10.55 percent, respectively), over the period 1996-2010. Within the two samples the data display great variability with respect to GDP per capita, credit volume, unemployment, and tax rates across different countries, showing that these countries have different attractiveness for foreign investors.

[Insert Table 1 here]

Data set

Empirical studies of FDI determinants 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 FDI inflows during the period 1996-2010 to 26 European countries results in approximately 390 observations. The proposed econometric

model rests on a panel data set recording the FDI inflows to a host country *j* at time *t.* Data for FDI is derived from UNSTAD database (2011).[14]

Dependent Variable

The dependent variable is FDI inflows in current millions of U.S. dollars.[15] A sample of 26 European countries, including 15 Western countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden and United Kingdom[16]) and 11 Central and Eastern countries (Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Poland, Latvia, Lithuania, Romania, Slovakia, and Slovenia) is examined to empirically test the determinants of FDI flows. The analysis uses logarithm of FDI inflows to adjust for the skewed nature of the data; many 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 lagged value of the dependant variable (FDI inflows) as an explanatory variable. The inclusion of one-year lagged FDI flows allows us to control for any possible agglomeration effects when more disaggregated data (e.g., at industry level) are missing (Campos and Kinoshita, 2003).[17] Methodologically, the lagged dependent variable helps to control for serial correlation.

Explanatory variables

Two main assumptions for the choice of explanatory variables to be used in the empirical analysis emerge from the preceding discussions. First, in order to better understand the determinants of FDI, it is crucial to specify an empirical model that allows for a combination of typical location characteristics (such as market size and distance) and more specific determining factors (e.g., trade openness, infrastructure, tax rates and unit labor costs). Most of these variables are found to have a high probability of inclusion in the true FDI determinants model (Blonigen and Piger, 2011). We believe that good institutions may also play a crucial mediating role in attracting FDI. Thus, we include in our analysis an array of institutional quality factors in order to address the key question of how important are institutions (and the agglomeration effect) relative to other factors (macroeconomic and political stability) in the host countries.

[14] Most authors in the taxation and FDI field would argue that instead of FDI flows, FDI stocks or PPEs should be used as dependent variables. The argument rests on the fact that FDI variable should depict the productive investment/capital that has been located in a particular country/location. Yet, there is also an argument for using FDI flows, especially in panel analysis when annual data are used. In this case, the annual location decision of MNE refers to FDI flow, which is not location-bound, rather than to the location-bound capital stock invested abroad during earlier periods (Leibrecht and Bellak, 2005).

[15] One alternative is to use the ratio of FDI to GDP. In transition economies, GDP is quite volatile during the initial years of transition. Thus, we prefer to choose log of FDI instead of FDI/GDP ratio.

[16] Malta and Cyprus are excluded from the group of Western countries as they do not belong to the original EU-15 formation and there is scarce information for most of the country-specific variables.

[17] In the past, models often exclude agglomeration effects as a FDI determinant. In reality, it generally takes time for the stock of FDI to reach the optimal level. The introduction of agglomeration economies effect and the partial adjustment mechanism is easily handled by including a lagged dependent variable in the model (see Cheng and Kwan, 2000).

As noted earlier, market-seeking FDI is to serve the host country market. Market size is a measure of market demand in the country. We expect FDI flows to be greater in countries with a larger domestic market. Following some previous studies (see e.g., Demekas *et al.*, 2005) we use GDP per capita rather than absolute GDP as a proxy for market size as the large fall in output that characterised the first years of transition could result in a strange relationship between GDP and FDI inflows. We also use population to proxy for market potential of a host country. Similarly to GDP per capita we expect this variable to have a positive influence on FDI.[18]

Proximity to the home country 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. Following Demekas *et al.* (2005) we compute weighted distance as the sum of bilateral distance to all source countries multiplied by the ratio of GDP of source country to all source countries' GDP. In line with previous studies, we expect a negative correlation with FDI.

We also introduce a number of control variables which capture country-specific effects in FDI. Our choice of control variables is led by FDI-theory and it is based on well established findings in the empirical literature. The control variables used and the expected sign of their impact on FDI are as follows:

1) Trade openness (import plus export as a percent of host country's GDP, TRADE) is used to capture the *de jure* liberalization of trade and foreign exchange transactions. The less restrictions a host country imposes on trade the higher will be FDI attracted by this country. Thus, a positive correlation with FDI is expected.

2) Telecommunication (total telephone lines per 100 people, TELE) is used as a proxy for the quality and availability of infrastructure in a host country. As favorable infrastructure endowment attracts FDI to both developed and less developed countries we expect a positive influence on FDI.

3) Corporate tax burden (statutory corporate income tax rate, TAX) is used as a proxy for macroeconomic risk. Empirical studies (see e.g., Bellak and Leibrecht, 2009) show that low (effective average) corporate tax rates indeed attract FDI in general, and FDI in CEECs, in particular. Thus, we expect a negative correlation with FDI.

4) Unit labor costs (ratio of monthly average gross wages to GDP per employment, ULC) intend to capture labor market conditions. A rise in wages increases, *ceteris paribus*, unit production costs, and therefore, decreases FDI. Thus, we expect a negative correlation with FDI.

[18] We also use GDP in current $US rather than population (POP) as a proxy for market size to reduce the problem of collinearity between the explanatory variables. For both variables we find positive and statistically significant relationship with FDI.

5) Political risk level (Moody's Sovereign Credit Rating, CR_RISK) which *inter alia* captures the likelihood of expropriation of assets and other forms of a weak institutional environment. Less political risk should lead to more FDI. Due to the particular definition of the measure of risk used (see Table 2) we expect a positive correlation with FDI.

In addition to the macroeconomic and political risk effects we introduce a group of factors that measure the level of institutional quality in a host country. We use the World Bank's Worldwide Governance Indicators (WGI), which include six measures: political stability, government effectiveness, regulatory quality, rule of law, control of corruption, and voice and accountability (see Appendix A.) Using Principal Component Analysis (PCA) based on all the above mentioned variables we created an overall institutional quality index (WGI_INSTITUTIONS). This strategy has been widely used in empirical studies (see e.g., Calderón and Servén, 2005; Kumar, 2006). PCA allows reducing the number of variables used in the estimation while still retaining a substantial part of the information contained in the various variables.

[Insert Table 2 here]

To summarize the discussions on model variables and data sources, Table 2 displays these variables and their expected impact on FDI. Table 3 shows the correlation matrix of dependent and explanatory variables and is used to examine the possible degree of collinearity among these variables. As we can see from the data in Table 3, the correlation coefficients are not sufficiently large to cause collinearity problems in the regressions and are statistically significant at the usual levels of significance. To mitigate the problem with possible multicollinearity we exclude those variables that are expected to be highly correlated with the rest of model variables (e.g. GDPPC, CR_RISK)

The data in Table 4 allow for the differentiation of the two groups of European countries – EU-15 and CEECs - based on a number of important macroeconomic and institutional factors. Panel B shows that the nominal size of FDI inflows, on average, into the EU-15 is 24.4 billion for the period 1996 – 2010, whilst CEECs have attracted 3.1 billion for the same period (see Panel C). The two groups of countries are also quite different with respect to GDP per capita ($33,000 versus $8,100, on average). One reason that may explain the increased attractiveness of CEECs for foreign investors is the smaller tax rate (a median of 23.5 percent) as compared with EU-15 (a median of 30 percent), as well as the lower unit labor costs. If the level of policy and institutional development is taken into account (as measured through trade openness, infrastructure and country risk level), the data in Table 4 show that the transition economies still lag behind EU-15 countries. If we compare these two groups of countries by the level of institutional quality (as measured by different Worldwide Governance Indicators, WGI), the data show that EU-15 countries possess relative advantage in terms of government performance and effectiveness as compared with CEECs (a medium of +1.94 versus -1.71, on average).

[Insert Table 3 here]

[Insert Table 4 here]

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:

$$\text{Ln}(\text{FDI}_{\text{jt}}) = \alpha_1 \text{FDI}_{\text{jt-1}} + \beta_1 \text{Y}_{\text{jt}} + \beta_2 \text{X}_{\text{jt}} + \beta_3 \text{Z}_{\text{jt}} + \varepsilon_{\text{jt}}, \quad (1)$$

$$\varepsilon_{\text{jt}} = \eta_{\text{j}} + \gamma_{\text{t}} + \text{u}_{\text{jt}}$$

where FDI_{jt} denotes FDI inflows to host country j at time t, Y_{jt} is a vector of traditional gravity variables, X_{jt} is a vector of control (macroeconomic and political risk) variables, and Z_{jt} is a vector of institutional effects. Here ε_{jt} is an error term that includes the country-specific as well as time-specific effects. Time effects, γ_j, are usually modeled as fixed parameters as they are correlated with the gravity model variables (e.g., GDP_{jt}). Including time fixed effects in the empirical model is one way to consider spatial autocorrelation in disturbances (see Hansson and Olofsdotter, 2010). In order to explore the cross-sectional dimension of the panel we assume that the country-specific effects η_{jt} are random and *i.i.d* with (0; σ_μ^2). As this assumption requires the country-specific effects to be uncorrelated with the considered regressors, we will verify the latter condition by means of a Hausman test. [19] Finally, u_{jt} denotes the stochastic remainder disturbance term which we allow to suffer from heteroskedasticity and serial correlation of unknown forms. If there is an agglomeration effect or a positive feedback effect, then α_1 should be positive.[20] All regressions include year dummies (TIME) to control for time variation from changes in external economic environment common across sample countries.

The analysis employs different model specifications using system GMM estimator, developed by Arellano and Bover (1995), and Blundell and Bond (1998). The baseline specification of the model we use is a one-step robust system GMM with a collapsed set of instruments. However, other specifications and robustness checks were done along the following lines: 1) one-step robust difference GMM with full set of instruments; 2) two-step

[19] Hausman's (1978) 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.

[20] In model (1) the agglomeration economies affect is proxied by the lagged value of FDI. Thus, we expect that countries with a larger stock of FDI will also, *ceteris paribus*, have an advantage in attracting new investment compared to countries with a smaller stock. The use of lag FDI as a determinant of FDI flows underlines a self-reinforcing effect of agglomeration economies that is empirically supported (see e.g., Cheng and Kwan, 2000).

robust difference GMM with full set of instruments; 3) one-step robust system GMM with full set of instruments; 4) two-step robust system GMM with full set of instruments. Our estimator controls for the presence of unobserved country-specific effects and for the endogeneity of explanatory variables. Moreover, the robust standard errors presented by this estimator take into account more complex patterns of variance in the errors. The instruments used depend on the assumption made as to whether the variables are endogenous or predetermined, or exogenous. Instrument validity is tested using the Hansen test of overidentifying restrictions. The second-order correlation of the error term in the first-differenced equation is assessed using Arellano-Bond statistics for autocorrelation, which is asymptotically distributed as N(0,1).

The system GMM estimators reported in Tables 5 though 7 generally produced more reasonable estimates of the autoregressive dynamics than the basic first-differenced estimators. When the number of observations is small relative to that of parameter estimates, however, we should be concerned with small sample bias being introduced in the GMM estimation. Because the data set we employ may suffer from such a bias, we run also fixed (random) effects specification and compare it with those obtained from system GMM where appropriate.[21]

The results for panel data regressions are presented in Tables 5 through 7. The benchmark model is run for seven different specifications. Table 5 shows the results for the total data set of 26 European countries (EU-15 and 11 CEECs). First column in Table 5 displays the estimates for our core model. In line with some recent studies on FDI in transition economies (Demekas *et al.*, 2007; Hansson and Olofsdotter, 2010) we find that the coefficient of GDP per capita is statistically significant.[22] This significance should be treated with caution as it may be driven by the fact that GDPPC simultaneously captures the positive and negative impact of different location factors on FDI as outlined in Section 3. Substituting GDPPC with underlying variables is therefore a viable alternative (see Model 2).[23] With respect to other gravity variables in Model 1, the estimated coefficients of POP and DIST carry the expected signs but only POP variable is statistically significant at 1 percent level. One possible explanation why distance variable enters the model insignificant is that the main investors of FDI to our sample countries are countries from Europe (see Table 1, Panel B).[24]

The coefficient of the lagged FDI variable (α_1) is 0.26, implying a coefficient of partial adjustment (δ) of 0.74. This means that net investment in one year is 74 percent of the difference between equilibrium (desired) and observed level of FDI. If the steady-state level

[21] The Hausman's test rejects the random effects specification.

[22] If GDP coefficient is positive and significant this implies that foreign investors are indeed attracted to a large domestic market (market-seeking FDI). Market size (when proxied by total GDP) shows, however, insignificant in the GMM estimations, which implies that market-seeking motives may not be a robust finding in these countries. Therefore, we replace this variable with population (POP).

[23] Replacing GDP variable with inflation (as a proxy for macroeconomic risk) yields same (insignificant) result for this variable as in the general model.

[24] When fixed (random) effects specification is used (not reported here), the DIST variable shows highly marginally significant and negative.

of FDI flows does not change, it will take about 1.4 years for the gap between the equilibrium and the current FDI levels to close. The partial adjustment coefficient increases in size in the rest of model specifications (see Models 2 through 7), which include different macroeconomic and institutional quality factors, and ranges from 0.76 to 0.81. Since low value of δ implies slower speed of adjustment, our results show relatively low persistence in the pattern of FDI across the European economies in our sample. In contrast, Campos and Kinoshita (2003) find a large persistence in the pattern of FDI in a group of 25 transition economies during the period 1990-1998.

The results in Table 5 show also the marginal impact of FDI determinants that proxy for different macroeconomic and political risk factors. Out of the five control variables, TRADE, TELE and ULC enter the empirical model significantly. The estimated coefficients also carry the expected signs. More specifically, the positive coefficient of trade variable implies that countries with relatively liberal trade regimes capture disproportionate more FDI. It also indicates that a higher level of integration of the local economy into the regional economic flows impact positively FDI flows attracted by this country. The positive and significant coefficient on TELE variable signifies that, in general, countries with more favorable infrastructure endowment attract more FDI. In line with some previous studies (see e.g., Campos and Kinoshita, 2003) we find that this variable has only a marginally statistically significant effect on FDI.

It is worth noting that the two cost-related factors, the TAX and ULC variables, show relatively stable coefficients with the correct sign across all model specifications but only the unit labor costs variable is statistically significant.[25] This result means that countries with higher levels of average tax rates attract fewer FDI. Thus, in the past, tax lowering strategies of governments in many transition economies had an important effect on the distribution of FDI among the CEECs. At the same time, the derived semi-elasticity in our model (-7.5) is considerably higher than the one (-4.5) reported by Leibrecht and Bellak (2005).[26] It must be kept in mind, however, that they use the effective average tax rates rather than statutory tax rate[27]. The negative sign and the magnitude of ULC variable is in line with theoretical reasoning presented above and is empirically supported by other research studies. For example, Demekas *et al.* (2005) using similar definition of unit labor cost, derive a semi-elasticity of -0.95 (GMM estimate). Bellak *et al.* (2009) using wages (labor costs per employee measured as labor compensation per employee in Euro) find a similar semi-elasticity in the range of -0.83 to -1.10. Thus, while these studies consistently reveal negative

[25] When fixed (random) effects specification is used (not reported here), the TAX variable shows highly significant and negative. This result is in line with other similar studies on transition economies (Bellak *et al.*, 2009; Hansson and Olofsdotter, 2010).

[26] In their study of 8 CEECs Leibrecht and Bellak (2005) find that a one percentage point reduction of the effective tax rate would increase FDI inflows by 4.5 percent at maximum, which evaluated at a mean value of FDI inflow of Euro 205.6 million amounts to Euro 9.3 million, on average.

[27] Using the statutory tax rate of the host country instead of the forward looking bilateral effective average tax rates may therefore result in a sort of measurement error bias in the estimated tax rate elasticity as the effective tax rates differ in level and variability from the statutory corporate income tax rates (Leibrecht and Bellak, 2005). When the statutory tax rate is used in their model the semi-elasticity drops to -3.5.

significant effects of labor costs on FDI, the negative effect should be interpreted with caution, as a positive sign for unit labor costs is also possible, if they actually capture a higher skill level and higher per capita income.[28]

In Model 2 we include a variable that controls for possible political risk effects (CR_RISK). The host country credit rating variable is found to be significantly positively correlated with FDI inflows; improved credit ratings are therefore associated with greater FDI receipts in our sample. The commonly available evaluation of country specific risk therefore acts as a parsimonious way to represent the evaluation of the required risk premia in corporate FDI choices. Thus, we find that country risk is an important factor in FDI decisions. We drop CR_RISK variable from Models 3 thought 8 in order to avoid a possible collinearity with institutional quality factors. The estimated coefficients of the rest of the control variables are similar to those obtained in Model 1.

We augment our model including a set of variables that proxy for the level of institutional quality in a host country (see Models 3 through 8). All the institutional indicators (except political stability, WGI_POL_STAB) show a significant effect on FDI. For example, one percentage point change, which is about one standard deviation change, in the index of government effectiveness would lead to an increase in FDI of 53 percent. A semi-elasticity of +53 appears rather high at first glance. However, considering that our institutional index ranges only between -2.5 (weak) and +2.5 (strong) government performance, a one-point change in this variable captures a substantial increase in 'government effectiveness' indicator. Furthermore, our estimations (see Table 5) also suggest that FDI is strongly driven by differences and changes in institutional factors such as control of corruption, regulatory quality, rule of law, and voice and accountability. One possible explanation why 'political stability' indicator shows insignificant is that our host countries are countries with already low levels of macroeconomic and political risks as well as low legal obstacles for trade and capital flows.

We run the same model specifications as in Table 5 using time dummies to control for time variation from changes in external economic environment common across sample countries (available at request).[29] The results show that all year dummies are statistically significant and positive. Including time dummies for each year of the observation period increases significantly the model explanatory power (that is, much higher *p*-values for Hansen test) but leaves the agglomeration economies effect insignificant in all model specifications. The results of the Arellano-Bond and Hansen tests (shown at the bottom of the table) confirm that all models are well specified. In small samples such as ours, the GMM estimators may not be very efficient. Thus, alongside the system GMM, we employ the fixed (random) effects specification for comparison. Its outcome enables us to reject the hypothesis regarding the

[28] When fixed (random) effects specification is used (not reported here) the ULC variable shows highly significant and positive in all model specifications.

[29] The estimate of the time dummy tells us that, all else being equal during the sample period, all countries experienced a change (increase or decrease) in FDI equal to the estimated coefficient. This effect stems purely from some panel-wide effects that happened in years 1996 through 2010.

absence of correlation between the unobservable effects and the explanatory variables in all model specifications. Thus, results are derived based on the fixed effects estimator and are consistent with those reported using system GMM estimators.

[Insert Table 5 here]

The results achieved so far show that there is a set of traditional location factors that may explain the size of FDI inflows to different groups of European countries (EU-15 and CEECs). Thus we find strong evidence in support of previous empirical findings on developed and transition economies (see e.g., Hansson and Olofsdotter, 2010). Although these two groups of countries are geographically closer and share similar market features, they may have different attractiveness to foreign investors. Looking at them as a homogeneous group of economies makes it difficult to disentangle institutional and other effects on FDI that are cross-correlated to these same factors. Following Van Horen (2007), we can measure the asymmetric effects of institutional and other policy factors across EU-15 and CEECs by interacting the explanatory variables in equation (1) with transition economy dummy variables [Dummy]. Thus we are able to control for these additional factors and to estimate the potential asymmetric impacts that may exist between CEECs and more developed European countries (EU-15).[30]

Tabel 6 presents the institutional effects across EU-15 and CEE countries. As in the general model (see Table 5) we investigate the impact of different location variables on FDI. The coefficients of these variables do not change much and remain highly statistically significant, with the expected signs. POP, TRADE, TELE and ULC show a significant impact on FDI attracted by these two groups of countries. The main variables of interest here are the institutional quality factors. The coefficient of the control of corruption variable (WGI_CON_COR) is positive and statistically significant but the coefficient of the interaction term is negative and statistically insignificant; this means that the coefficient of the institutional variable expresses the (positive) link between FDI and control of corruption only in the sub-sample composed of more developed European countries (the dummy variable "country" takes value of 0). The impact of corruption on FDI in CEE countries is given by the coefficient of this variable plus the coefficient of the interaction term (Dummy × CON_COR). As the estimated coefficient is insignificant (see Model 2) we may conclude that the effect of this institutional quality factor (control of corruption) on FDI is not statistically different between the two groups of countries. We find similar effect for the institutional variables that measure the level of government effectiveness

[30] The interpretation of results of models with interaction effects should be considered carefully. First, the coefficients in interaction models no longer show the average effect of the variables entering the interaction effects - here *institutional factor*. Instead, they show the impact of a marginal change of the variable of main interest when the second variable (Dummy) is evaluated at zero. Usually, zero is not an economically meaningful value. Second, in interaction models it is not unusual that one of the interacting variables carries the "wrong" sign with the model nevertheless showing the expected marginal effects (Bellak et *al.*, 2009).

(WGI_GOV_EFFE) and regulatory quality (WGI_REG_QUAL) in a host country (see Models 4 and 5).

With respect to the impact of institutional factors such as rule of law (WGI_RUL_LAW) and voice and accountability (WGI_VOI_ACC), the results in Table 6 reveal that it is statistically significant for both groups of countries (see Models 6 and 7). In both cases, the importance of these variables as drivers of FDI is much lower in the group of transition economies than in the group of EU-15 (all estimated coefficients of the interaction variables are negative and lower for CEE countries). In case of political stability (WGI_POL_STAB), we find that this variable has a significant effect only in the group of CEE countries. Finally, we substitute the individual institutional effects with an overall institutional quality index (WGI_INSTITUTIONS). The coefficient of the interaction variable is insignificant; therefore, the marginal impact of this variable on FDI is not significantly different across the two groups of European countries (see Model 1). We may conclude that countries with better institutional environment attract more FDI. This result is not surprising as most of our sample countries are economies with already low levels of macroeconomic and political risks as well as low legal obstacles for trade and capital flows.

[Insert Table 6 here]

The results of the Arellano-Bond and Hansen tests (shown at the bottom of the table) confirm that all models are well specified. For the purpose of robustness check of our results we also run fixed effects estimator (not reported here). The results are broadly consistent with those reported using system GMM estimators and confirm our first hypothesis that the quality of institutional environment has much stronger (and positive) effect on FDI in the group of EU-15 than in the group of CEECs. When an overall institutional quality index is used in our analysis the marginal effect of this variable is found to be similar between the two groups of sample countries.

Tabel 7 presents both the institutional and macroeconomic effects across EU-15 and CEECs. The average level of institutional quality is proxied by an overall index (WGI_INSTITUTIONS), created by using Principal Component Analysis (PCA). The link between each variable of interest and FDI in the sample of CEECs is given by the coefficient of this variable plus the coefficient of the interaction term. The results in Table 7 show that the marginal effect of institutional quality variable on FDI is not significantly different across EU-15 and CEECs (see Model 2). We may conclude that the quality of institutions in a host country has similar (positive) effect on each group of countries in our sample (the estimated coefficient of interaction variable in Model 1 should be treated with caution as GDPPC and institutional quality variable are highly correlated). With respect to different macroeconomic and political risk effects, Table 7 shows that the relative importance of ULC as a driver of FDI is much higher in the group of CEECs than in EU-15 (see Model 6), whilst other variables such as TRADE and CR_RISK seem to have similar effect on FDI across the two

groups of countries (their estimated coefficients are positive and statistically significant only for the group of more developed European economies but insignificant for the group of transition economies.). The last two variables (TELE and TAX) show a marginal effect on FDI only in the group of CEE countries.

[Insert Table 7 here]

The results of the Arellano-Bond and Hansen tests (shown at the bottom of the table) confirm that all models are well specified. For the purpose of robustness check of our results we also use fixed effects estimator (not reported here). The results are broadly consistent with those reported using system GMM estimators and confirm our second hypothesis that there is a set of important macroeconomic and political risk factors (trade openness and country risk) that have similar effect on both more developed European countries and transition economies. At the same time cost-related factors such as tax rate and unit labor costs do play a significant role in explaining increased attractiveness of CEECs for foreign investors.

5 Conclusion

The analysis presented in this paper has enabled identification of several key determinants of FDI flows into Western and Eastern Europe, and highlighted the implications of macroeconomic, policy and institutional factors for the attractiveness of these countries for foreign investors. We extend the previous research work which focuses mainly on traditional FDI determinants and incorporate institutional quality factors in modeling the location decisions of foreign firms. The results from our panel data analysis support our hypothesis that the most important macroeconomic and political risk characteristics that attract FDI flows to both groups of European countries are trade openness, infrastructure quality and country risk, whilst cost-related factors such as tax rate and unit labor costs seem to contribute to the increased attractiveness of CEECs to foreign investors. In line with previous research, traditional location factors (GDPPC and distance) are found to have a statistically significant effect on both groups of European countries.

For our best knowledge this is the only paper that investigates the marginal effect of institutional quality factors on FDI into different European countries. The explanatory variables that purport to measure the effect of institutional quality environment on FDI for both groups of countries are control of corruption, government effectiveness and regulatory quality. At the same time, indicators such as rule of law and voice and accountability are found to have a much stronger effect on FDI in the group of EU-15 than in CEECs, whilst political stability does play a significant role in explaining the increased FDI to CEEEs. Thus we are able to confirm the Campos and Kinoshita (2003) findings that rule of law and quality of bureaucracy are important determinants of FDI into transition economies. In line with Djankov *et al.* (2010) and Hansson and Olofsdotter (2010) we find that lower corporate tax

rate and unit labor costs are particularly important for the new members of the EU in attracting more FDI.

Similarly to previous research (see e.g., Demekas *et al.*, 2007) these findings can provide an analytical foundation for the evaluation of different policies aimed at making CEECs more attractive to foreign investors. On the one hand, the emphasis placed by international financial institutions, foreign investors and policymakers in these countries on liberalizing the trade and foreign exchange regime as well as controlling labor costs seem appropriate; our results suggest that these policies are indeed likely to have a strong, direct, impact on FDI. On the other hand, efforts to improve institutional environment that lead to high levels of transparency and less bureaucratic risk (and less corruption), may not have a major 'direct' impact on FDI, but they could still, of course, stimulate foreign investment indirectly through their positive effects on the overall economy.

Unfortunately, the research does have some limitations. In the first place, we based our analysis on a relatively large period of time and thus we are more prone to omitted variables bias. In addition, the empirical results are derived from a sample of transition economies, which include only new EU member states. 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 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". This analysis is left for future research.

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Table 1: FDI inflows to sample countries, 1996-2010

Panel A: FDI inflows to EU-15 and CEECs, by years, in $US million

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
EU-15																
Austria	4,426	2,654	4,533	2,974	8,840	5,919	356	7,144	3,891	10,784	7,933	31,154	6,858	9,303	4,265	111,035
Belgium*	14,063.9	11,998	22,691	119,693	88,739	88,203	16,251	33,476	43,558	34,370	58,893	93,429	193,950	61,744	81,190	948,185
Denmark	750	2,787	7,730	16,757	33,823	11,523	6,630	2,709	-10,442	12,871	2,691	11,812	1,824	3,917	-7,397	97,986
Finland	1,109	2,114	12,144	4,610	8,834	3,732	8,046	3,319	2,827	4,750	7,652	12,451	-1,144	398	6,733	77,573
France	21,961	23,174	30,983	46,547	43,252	50,477	49,035	42,498	32,560	84,949	71,848	96,221	64,184	24,219	30,638	712,548
Germany	6,573	12,245	24,593	56,076	198,277	26,414	53,523	32,368	-10,189	47,439	55,626	80,208	8,109	24,156	46,860	662,277
Greece	1,058	984	71	562	1,108	1,589	50	1,275	2,102	623	5,355	2,111	4,499	2,436	373	24,197
Ireland	2,617	2,136	8,865	18,211	25,779	9,651	29,324	22,781	-10,608	-31,689	-5,542	24,707	-16,453	25,960	26,330	132,069
Italy	3,535	4,961	4,280	6,911	13,375	14,871	17,055	19,424	20,126	23,291	42,581	43,849	-10,835	20,077	9,178	232,680
Luxembourg	-	-		-	-	-	4,058	2,914	5,192	6,564	31,837	-28,260	11,216	22,408	9,211	65,140
Netherlands	16,662	11,134	36,939	41,203	63,855	51,927	25,038	32,820	12,453	39,047	13,978	119,383	4,549	36,042	-8,966	496,065
Portugal	1,344	2,360	3,005	1,157	6,635	6,231	1,799	7,149	1,935	3,930	10,908	3,063	4,665	2,706	2,646	59,531
Spain	9,647	8,937	14,173	18,743	39,575	28,408	39,223	25,819	24,761	25,020	30,802	64,264	76,993	10,407	40,761	457,534
Sweden	5,437	10,968	19,919	61,135	23,430	10,914	12,273	4,975	12,122	11,896	28,941	27,737	37,153	10,023	-1,347	275,576
United Kingdom	24,435	33,227	74,321	87,979	118,764	52,623	24,029	16,778	55,963	176,006	156,186	196,390	91,489	71,140	50,604	1,229,935
CEECs																
Bulgaria	109	490	535	825	1,016	809	923	2,089	3,397	3,920	7,805	12,389	9,855	3,385	1,601	49,149
Croatia	479	543	953	1,452	1,051	1,313	1,071	1,989	1,179	1,825	3,468	4,997	6,180	3,355	394	30,249
Czech Republic	1,428	1,301	3,716	6,330	4,985	5,642	8,482	2,103	4,974	11,653	5,463	10,444	6,451	2,927	6,141	82,040
Estonia	151	266	573	303	392	540	289	928	958	2,869	1,797	2,716	1,729	1,839	1,540	16,890
Hungary	3,300	4,167	3,335	3,312	2,764	3,936	2,994	2,137	4,266	7,709	6,818	3,951	6,325	2,048	2,274	59,336
Latvia	382	522	356	346	413	132	253	304	637	707	1,663	2,322	1,261	94	379	9,772
Lithuania	152	354	926	486	379	446	725	180	774	1,028	1,817	2,015	1,965	66	753	12,065
Poland	4,498	4,908	6,398	7,271	9,445	5,701	4,123	4,588	12,874	10,293	19,603	23,561	14,839	12,932	8,858	149,893
Romania	263	1,215	2,031	1,027	1,057	1,158	1,141	2,196	6,436	6,483	11,367	9,921	13,909	4,844	2,940	65,987
Slovakia	370	231	707	429	1,932	1,584	4,142	2,160	3,030	2,429	4,693	3,581	4,687	-6	526	30,493
Slovenia	173	333	218	106	137	369	1,621	305	826	588	644	1,514	1,947	-653	359	8,488

* Data from 1996 to 2001 inclusive refer to Belgium-Luxembourg; from 2002 onwards data cover Belgium only.

Panel B: FDI inflows to EU-15 and CEECs, by source continent, in $US millions

	North America	South America	Europe	Asia	Australia	Africa	Total
EU-15							
Austria	7,074	625	99,494	3,067	105	669	111,035
Belgium	65,612	5,142	842,212	39,782	6,362	3,138	962,249
Denmark	15,572	127	78,800	2,779	605	103	97,986
Finland	3,120	48	72,439	1,787	158	21	77,573
France	118,553	1,537	556,081	28,760	2,725	4,892	712,548
Germany	113,135	2,094	508,708	31,122	3,324	3,895	662,277
Greece	1080	-	22183	922	12	-	24,197
Ireland	39,177	495	83,838	7,580	826	152	132,069
Italy	11,584	1,288	209,822	8,282	477	1,226	232,680
Luxembourg	9,548	446	47,449	7,174	88	435	65,140
Netherlands	86,746	1,898	384,258	20,182	2,421	561	496,065
Portugal	11,214	2,184	45,202	274	397	260	59,531
Spain	56,423	5,060	385,251	10,364	435	-	457,534
Sweden	27,090	190	234,688	8,225	810	4,572	275,576
United Kingdom	249,141	14	854,097	91,861	30,786	4,035	1,229,935
CEECs							
Bulgaria	1,093	10,827	35,736	1,493	-	-	49,149
Croatia	997	-	28,996	255	1	-	30,249
Czech Republic	4,594	33	74,417	2,883	14	100	82,040
Estonia	307	-	16,042	534	2	5	16,890
Hungary	16,946	1,146	34,646	5,927	35	635	59,336
Latvia	459	-	8,711	591	-	11	9,772
Lithuania	544	-	10,151	1,349	3	18	12,065
Poland	10,765	26	133,539	4,991	169	402	149,893
Romania	2,204	-	56,679	6,922	-	182	65,987
Slovakia	643	341	27,247	2,244	3	14	30,493
Slovenia	43	-	8,165	226	27	28	8,488

Panel C: Macroeconomic data by country, on average, 1996-2010

	GDP growth %	GDP per capita (current $US)	Inflation %	Credit volume (% of GDP)	Trade (% of GDP)	Tax rate %	Unemployment %
EU-15							
Austria	3.42	34,073.67	1.76	110.42	93.85	30.40	4.34
Belgium	3.80	32,783.36	1.94	81.38	180.40	36.89	8.12
Denmark	3.71	42,582.41	2.14	140.08	85.80	28.93	4.87
Finland	4.44	33,634.95	1.65	68.58	74.83	27.53	9.37
France	3.48	30,886.05	1.55	93.99	52.99	35.91	9.55
Germany	2.12	31,564.65	1.46	112.21	68.48	41.34	8.95
Greece	5.50	18,856.97	3.83	66.37	47.23	33.83	10.14
Ireland	7.26	38,827.13	2.52	142.24	157.71	11.33	6.81
Italy	3.48	27,064.37	2.26	84.36	50.35	39.51	8.84
Luxembourg	6.80	72,190.39	2.03	133.73	251.87	33.15	3.79
Netherlands	4.45	35,118.90	2.06	155.10	136.88	31.44	4.14
Portugal	4.55	16,136.75	2.51	134.92	64.07	31.67	7.41
Spain	5.83	22,436.69	2.74	133.00	53.60	33.93	14.04
Sweden	3.62	37,028.48	1.16	105.28	80.53	27.77	7.02
United Kingdom	4.39	31,806.70	1.93	154.07	54.60	30.00	5.98
CEECs							
Bulgaria	11.07	3,347.71	84.76	13.93	118.59	20.93	11.96
Croatia	6.84	8,814.04	3.44	47.00	81.68	23.75	12.18
Czech Republic	7.96	11,240.94	3.97	48.75	123.95	28.67	6.87
Estonia	9.92	8,725.02	6.08	60.16	163.23	24.40	10.16
Hungary	7.36	8,636.18	8.81	44.34	134.91	17.79	7.56
Latvia	10.30	6,466.36	6.03	51.03	95.27	19.73	12.82
Lithuania	10.47	6,584.60	4.72	32.98	108.50	21.47	12.32
Poland	7.84	7,293.47	6.15	32.31	64.50	26.27	13.80
Romania	10.55	4,079.97	31.22	21.00	70.26	25.73	7.58
Slovakia	10.12	8,284.80	5.67	42.90	143.23	26.73	14.80
Slovenia	5.69	16,133.73	5.54	47.43	116.94	24.07	6.39

Notes: Data in Panel A represent FDI inflows to 26 host countries (EU-15 and 11 CEECs), over the period 1996-2010. FDI data are taken from UNCTADSTAT Database (2011). Data in Panel B represent FDI inflows by source continent, over the period 1996-2010. FDI data are taken from OECD (2011). Data in Panel C represent relevant macroeconomic indicators, by host country, over the period 1996-2010. EU-15 includes 15 Western European countries and CEECs include 11 Central and Southeastern European countries. Data source are World Bank (2011) and UNSTAD (2011).

Table 2: Dependant and explanatory variables

Variable	Explanation	Data source	Expected Sign
Dependent variable			
FDI	Foreign direct investment inflows (current US$). The data is annual and covers the period 1996 - 2010	UNCTAD (UNCTADSTAT Database, 2011)	
Explanatory variables			
GDPPC	GDP per capita (current $), proxy for market size	UNCTAD (UNCTADSTAT Database, 2011)	+
POP	Total population, proxy for market size	UNCTAD (UNCTADSTAT Database, 2011)	+
DIST	Weighted distance calculated as the sum of bilateral distance to all source countries multiplied by the ratio of GDP of source country in year *t* to all source countries' GDP in year *t*	VIIES (WIIW Database, 2012), OECD (2011)	-
TRADE	Level of imports plus exports (in $US) of the country as a percentage of its GDP (in $US), proxy for trade openness	UNCTAD (UNCTADSTAT Database, 2011)	+
TELE	Telephone lines (per 100 people), proxy for infrastructure endowment	World Bank (WDI Database, 2011) International Telecommunications Union (2011)	+
TAX	Statutory corporate income tax rate, proxy for macroeconomic risk	Mintz and Weichenrieder (2010); Edwards Mitchell (2008); Keen, Kim, and Varsano (2006); KPMG's Corporate and Indirect Tax Surveys (1996-2010)	-
ULC	Unit labor cost (Gross monthly wages in current $US, as share of GDP per employment)	WIIW Database (2012), OECD (2011)	-
CR_RISK	Moody's Sovereign Credit Rating, on a continuous scale from 0 (the lowest possible rating) to 20 (maximum creditworthiness), proxy for political risk	Moody's (2012)	+
CON_COR	Control of corruption	Worldwide Governance Indicators, 2011	+
POL_STAB	Political stability and absence of violence	Worldwide Governance Indicators, 2011	+
GOV_EFFE	Government effectiveness	Worldwide Governance Indicators, 2011	+
REG_QUAL	Regulatory quality	Worldwide Governance Indicators, 2011	+
RUL_LAW	Rule of law	Worldwide Governance Indicators, 2011	+
VOI_ACC	Voice and accountability	Worldwide Governance Indicators, 2011	+
INSTITUTIONS	First principal component of CON_COR, POL_STAB, GOV_EFFE, REG_QUAL, RUL_LAW, and VOI_ACC	Authors' calculations	+
TIME	Dummy variable which takes the value of 1 for a given year in the period 1996-2010 and 0 otherwise	A dummy used to control for different time periods	+/-

Table 3: Correlation matrix of the variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) FDI	1.000															
(2) GDPPC	0.588***	1.000														
(3) POP	0.587***	0.107*	1.000													
(4) DIST	0.202***	0.195***	0.258***	1.000												
(5) TRADE	-0.175***	-0.011	-0.694***	-0.108*	1.000											
(6) TELE	0.474***	0.651***	0.209***	0.181***	-0.250***	1.000										
(7) TAX	0.312***	0.258***	0.458***	0.221***	-0.442***	0.501***	1.000									
(8) ULC	0.328***	0.286***	0.212***	0.063	-0.065	0.396***	0.354***	1.000								
(9) CR_RISK	0.575***	0.849***	0.211***	0.230***	-0.118**	0.595***	0.344***	0.320***	1.000							
(10) CON_COR	0.505***	0.765***	0.085	0.185***	-0.045	0.724***	0.365***	0.374***	0.776***	1.000						
(11) POL_STAB	0.100*	0.462***	-0.276***	0.101*	0.260***	0.360***	0.116**	0.242***	0.530***	0.668***	1.000					
(12) GOV_EFFE	0.510***	0.792***	0.078	0.179***	0.000	0.693***	0.367***	0.410***	0.827***	0.952***	0.655***	1.000				
(13) REG_QUAL	0.456***	0.762***	-0.010	0.178***	0.119**	0.558***	0.170***	0.348***	0.806***	0.881***	0.634***	0.888***	1.000			
(14) RUL_LAW	0.487***	0.823***	0.075	0.221***	-0.030	0.687***	0.357***	0.371***	0.845***	0.955***	0.652***	0.956***	0.909***	1.000		
(15) VOI_ACC	0.439***	0.705***	0.115**	0.213***	-0.113**	0.684***	0.377***	0.332***	0.723***	0.838***	0.560***	0.810***	0.768***	0.866***	1.000	
(16) INSTITUTIONS	0.464***	0.791***	0.022	0.198***	0.027	0.682***	0.325***	0.381***	0.826***	0.970***	0.748***	0.964***	0.930***	0.978***	0.885***	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), Population (POP), Weighted distance (DIST), Imports plus exports as a percentage of GDP (TRADE), Telephone lines per 100 people (TELE), Statutory corporate income tax rate (TAX), Unit labor costs (ULC), Country credit risk (CR_RISK), Control of corruption (CON_COR), Political stability (POL_STAB), Government effectiveness (GOV_EFFE), Regulatory quality (REG_QUAL), Rule of law (RUL_LAW), Voice and accountability (VOI_ACC), and the First Principal Component of Control of corruption, Political stability, Government effectiveness, Regulatory quality, Rule of law, and Voice and accountability (INSTITUTIONS). TIME is a dummy variable and is not included in the correlation matrix.

Table 4: Summary statistics

Panel A: Summary statistics, Total sample

Variable	Obs.	Mean	Median	St. Dev.	Minimum	Maximum
FDI	390	1.57e+10	4.69e+09	2.89e+10	-3.17e+10	1.98e+11
GDPPC	390	22869.16	21304.35	18116.53	1222.82	118673
POP	390	1.89e+07	9700000	2.25e+07	414225	8.30e+07
DIST	325	4988.248	5172.25	1059.258	320.64	7362.19
TRADE	390	1.028559	0.888	0.501	0.368	3.002
TELE	390	0.425	0.423	0.129	0.140	0.722
TAX	390	28.2	28	8.641	10	56.8
ULC	390	0.036	0.039	0.016	3.30e-06	0.066
CR_RISK	388	16.490	18	3.856	5	20
CON_COR	390	1.050	1.033	0.904	-0.823	2.591
POL_STAB	390	0.820	0.846	0.437	-0.464	1.663
GOV_EFFE	390	1.154	1.028	0.706	-0.623	2.338
REG_QUAL	390	1.167	1.182	0.491	-0.161	2.058
RUL_LAW	390	1.060	1.092	0.666	-0.527	2.014
VOI_ACC	390	1.101	1.141	0.431	-0.445	1.826
INSTITUTIONS	390	3.18e-08	-0.039	2.252	-5.801	3.723

Panel B: Summary statistics, EU-15 sub-sample

Variable	Obs.	Mean	Median	St. Dev.	Minimum	Maximum
FDI	225	2.44e+10	1.20e+10	3.41e+10	-3.20e+10	2.00e+11
GDPPC	225	3.37e+04	3.00e+04	16495.93	1.13e+04	1.19e+05
POP	225	2.57e+07	1.10e+07	2.63e+07	4.14e+05	8.30e+07
DIST	201	5256.845	5348.220	825.489	320.640	6974.560
TRADE	225	0.969	0.733	0.590	0.368	3.002
TELE	225	0.510	0.511	0.088	0.233	0.722
TAX	225	31.577	32	8.058	10	56.8
ULC	225	0.044	0.043	0.008	0.022	0.066
CR_RISK	225	19.098	20	1.606	10	20
CON_COR	225	1.644	1.755	0.651	-0.121	2.591
POL_STAB	225	0.971	1.034	0.429	-0.316	1.663
GOV_EFFE	225	1.615	1.755	0.479	0.302	2.338
REG_QUAL	225	1.441	1.524	0.352	0.645	2.058
RUL_LAW	225	1.502	1.638	0.407	0.279	2.014
VOI_ACC	225	1.371	1.389	0.198	0.847	1.826
INSTITUTIONS	225	1.448	1.941	1.498	-2.579	3.723

Panel C: Summary statistics, CEECs sub-sample

Variable	Obs.	Mean	Median	St. Dev.	Minimum	Maximum
FDI	165	3.15e+09	1.80e+09	3.88e+09	-5.80e+08	2.40e+10
GDPPC	165	8.15e+03	6.37e+03	5366.53	1.22e+03	2.71e+04
POP	165	9.76e+06	5.40e+06	1.07e+07	1.30e+06	3.90e+07
DIST	124	4552.861	4867.180	1240.391	1065.630	7362.190
TRADE	165	1.110	1.073	0.331	0.477	1.922
TELE	165	0.308	0.310	0.073	0.140	0.507
TAX	165	23.594	23.5	7.170	10	40
ULC	165	0.026	0.030	0.018	3.34e-06	0.059
CR_RISK	163	12.890	13	3.075	5	18
CON_COR	165	0.239	0.251	0.461	-0.823	1.314
POL_STAB	165	0.613	0.635	0.356	-0.464	1.214
GOV_EFFE	165	0.525	0.603	0.424	-0.623	1.222
REG_QUAL	165	0.793	0.875	0.398	-0.161	1.467
RUL_LAW	165	0.457	0.550	0.436	-0.527	1.224
VOI_ACC	165	0.733	0.883	0.387	-0.445	1.323
INSTITUTIONS	165	-1.974	-1.713	1.473	-5.801	0.373

Notes:_Data in Table 4 represent summary statistic for whole sample of 26 host countries. Total number of observations is 390. For some variables there are missing observations, which are excluded from the dataset. The dependent variable is FDI inflows. The explanatory variables are GDP per capita (GDPPC), Population (POP), Weighted distance (DIST), Imports plus exports as a percentage of GDP (TRADE), Telephone lines per 100 people (TELE), Statutory corporate income tax rate (TAX), Unit labor costs (ULC), Country credit risk (CR_RISK), Control of corruption (CON_COR), Political stability (POL_STAB), Government effectiveness (GOV_EFFE), Regulatory quality (REG_QUAL), Rule of law (RUL_LAW), Voice and accountability (VOI_ACC), and the First Principal Component of Control of corruption, Political stability, Government effectiveness, Regulatory quality, Rule of law, and Voice and accountability (INSTITUTIONS). The observation period is 1996 – 2010.

Table 5: FDI inflows panel regressions (1996 – 2010), Total Sample

Explanatory variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
Lag(FDI)	0.259**	0.192*	0.212*	0.193*	0.228**	0.235**	0.241**	0.220*
	(0.027)	(0.089)	(0.062)	(0.097)	(0.047)	(0.039)	(0.036)	(0.060)
GDPPC	0.524***							
	(0.000)							
POP	0.853***	0.988***	1.097***	1.163***	1.074***	1.051***	1.069***	1.098***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIST	-0.185	-0.148	-0.020	0.010	-0.028	-0.057	-0.052	-0.024
	(0.225)	(0.259)	(0.877)	(0.946)	(0.839)	(0.680)	(0.713)	(0.866)
TRADE	1.331***	1.653***	1.794***	1.984***	1.730***	1.690***	1.766***	1.902***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TELE	0.578*	0.903**	0.634	1.447***	0.742*	0.898**	0.741*	1.049**
	(0.096)	(0.016)	(0.115)	(0.000)	(0.077)	(0.037)	(0.073)	(0.015)
TAX	0.006	-0.075	0.089	0.139	0.079	0.222	0.101	0.119
	(0.978)	(0.780)	(0.783)	(0.696)	(0.812)	(0.479)	(0.757)	(0.722)
ULC	-0.017	-0.040*	-0.059**	-0.055	-0.068*	-0.063*	-0.061*	-0.053
	(0.666)	(0.075)	(0.045)	(0.123)	(0.073)	(0.100)	(0.095)	(0.155)
CR_RISK		1.660***						
		(0.000)						
WGI_CON_COR			0.451***					
			(0.001)					
WGI_POL_STAB				0.209				
				(0.380)				
WGI_GOV_EFFE					0.529***			
					(0.002)			
WGI_REG_QUAL						0.667***		
						(0.007)		
WGI_RUL_LAW							0.536***	
							(0.008)	
WGI_VOI_ACC								0.555*
								(0.064)
Number of observations	288	288	288	288	288	288	288	288
Number of instruments	12	12	12	12	12	12	12	12
P-value for Hansen test	0.110	0.128	0.096	0.076	0.086	0.089	0.095	0.083
P-value for Arellano-Bond test – no first-order autocorrelation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: Model 1 - gravity variables (GDPPC, POP and DIST) and country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC); Model 2 – including political risk variable (CR_RISK); Model 3 – including WGI Control of Corruption variable (WGI_CON_COR); Model 4 – including WGI Political Stability variable (WGI_POL_STAB); Model 5 – including WGI Government Effectiveness variable (WGI_GOV_EFFE); Model 6 – including WGI Regulatory Quality variable (WGI_REG_QUAL); Model 7 – including Rule of Law variable (WGI_RUL_LAW); and Model 8 – including WGI Voice and Accountability variable (VOI_ACC). The table presents results from estimating equation (1) by one-step robust system GMM with collapsed set of instruments, as explained in the text. All variables (expect GDPPC and POP) are taken as ratios or in percent. Symbols *, **, and *** represent $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively. All regressions include time dummies to control for time specific effects. *P*-values are shown in brackets. The null hypothesis for Arellano-Bond test (Ho) is: no autocorrelation. Rejecting the null hypothesis (*p*-value <0.05) of no serial correlation at order one in the first-differenced errors does not imply that the model is misspecified. For Hansen test Ho is: overidentifying restrictions are valid. If *p*-value >0.05, we confirm the null hypothesis that the overidentifying restrictions are valid.

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Table 6: FDI inflows panel regressions (1996 – 2010), Institutional effects for EU-15 and CEECs

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Lag(FDI)	0.225**	0.217*	0.207*	0.235**	0.242**	0.245**	0.229**
	(0.049)	(0.058)	(0.073)	(0.041)	(0.034)	(0.032)	(0.049)
POP	1.105***	1.086***	1.143***	1.057***	1.033***	1.044***	1.075***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIST	-0.023	-0.024	-0.015	-0.026	-0.050	-0.049	-0.030
	(0.868)	(0.855)	(0.918)	(0.849)	(0.711)	(0.726)	(0.835)
TRADE	1.772***	1.810***	1.999***	1.769***	1.736***	1.789***	1.907***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TELE	0.817*	0.516	0.897**	0.499	0.499	0.375	0.499
	(0.053)	(0.194)	(0.043)	(0.273)	(0.319)	(0.403)	(0.284)
TAX	0.142	0.096	0.080	0.080	0.170	0.098	0.045
	(0.663)	(0.753)	(0.783)	(0.791)	(0.521)	(0.725)	(0.872)
ULC	-0.060*	-0.055**	-0.053**	-0.060**	-0.061**	-0.057**	-0.059**
	(0.071)	(0.026)	(0.026)	(0.028)	(0.043)	(0.026)	(0.028)
WGI_INSTITUTIONS	0.175***						
	(0.002)						
Dummy × INSTITUTIONS	-0.064						
	(0.557)						
WGI_CON_COR		0.468***					
		(0.001)					
Dummy × CON_COR		-0.329					
		(0.330)					
WGI_POL_STAB			0.337				
			(0.184)				
Dummy × POL_STAB			-0.685***				
			(0.006)				
WGI_GOV_EFFE				0.541***			
				(0.002)			
Dummy × GOV_EFFE				-0.348			
				(0.181)			
WGI_REG_QUAL					0.691***		
					(0.006)		
Dummy × REG_QUAL					-0.400		
					(0.119)		
WGI_RUL_LAW						0.606***	
						(0.004)	

Dummy × RUL_LAW						-0.511* (0.068)	
WGI_VOI_ACC							0.672** (0.023)
Dummy × VOI_ACC							-0.607*** (0.009)
Number of observations	288	288	288	288	288	288	288
Number of instruments	13	13	13	13	13	13	13
P-value for Hansen test	0.081	0.081	0.064	0.079	0.084	0.077	0.093
P-value for Arellano-Bond test – no first-order autocorrelation	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: Model 1 - gravity variables (POP and DIST), country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC), and average institutional quality variable with interaction term (Dummy × INSTITUTIONS); Model 2 – including WGI Control of Corruption variable with interaction term (Dummy × CON_COR); Model 3 – including WGI Political Stability variable with interaction term (Dummy × POL_STAB); Model 4 – including WGI Government Effectiveness variable with interaction term (Dummy × GOV_EFFE); Model 5 – including WGI Regulatory Quality variable with interaction term (Dummy × REG_QUAL); Model 6 – including WGI Rule of Law variable with interaction term (Dummy × RUL_LAW); and Model 7 – including WGI Voice and Accountability variable with interaction term (Dummy × VOI_ACC). The table presents results from estimating equation (1) by one-step robust system GMM with collapsed set of instruments, as explained in the text. All variables (expect GDPPC and POP) are taken as ratios or in percent. Symbols *, **, and *** represent $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively. All regressions include time dummies to control for time specific effects. *P*-values are shown in brackets. The null hypothesis for Arellano-Bond test (Ho) is: no autocorrelation. Rejecting the null hypothesis (*p*-value <0.05) of no serial correlation at order one in the first-differenced errors does not imply that the model is misspecified. For Hansen test Ho is: overidentifying restrictions are valid. If *p*-value >0.05, we confirm the null hypothesis that the overidentifying restrictions are valid.

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Table 7: FDI inflows panel regressions (1996 – 2010), Institutional and macroeconomic effects for EU-15 and CEECs

Explanatory variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
Lag(FDI)	0.258**	0.225**	0.194*	0.205*	0.209*	0.223*	0.207*
	(0.044)	(0.049)	(0.096)	(0.069)	(0.071)	(0.051)	(0.073)
GDPPC	0.816***						
	(0.000)						
POP	0.582***	1.105***	1.155***	1.131***	1.155***	1.083***	0.978***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DIST	-0.101	-0.023	0.041	0.013	0.035	-0.020	-0.144
	(0.450)	(0.868)	(0.788)	(0.933)	(0.820)	(0.896)	(0.277)
TRADE		1.772***	2.151***	2.087***	2.118***	2.053***	1.690***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TELE		0.817*	1.515***	0.454	0.932*	0.608	0.612
		(0.053)	(0.000)	(0.496)	(0.053)	(0.194)	(0.212)
TAX		0.142	0.181	0.084	-0.026	0.064	-0.083
		(0.663)	(0.583)	(0.779)	(0.937)	(0.816)	(0.742)
ULC		-0.060*	-0.045	-0.068**	-0.071**	-0.339***	-0.045
		(0.071)	(0.111)	(0.040)	(0.024)	(0.006)	(0.361)
CR_RISK							1.534***
							(0.000)
WGI_INSTITUTIONS	0.141*	0.175***					
	(0.095)	(0.002)					
Dummy × INSTITUTIONS	-0.355**	-0.064					
	(0.021)	(0.557)					
Dummy × TRADE			-0.425				
			(0.328)				
Dummy × TELE				0.714**			
				(0.043)			
Dummy × TAX					-0.379*		
					(0.082)		
Dummy × ULC						-0.378**	
						(0.012)	
Dummy × CR_RISK							-0.114
							(0.324)
Number of observations	288	288	288	288	288	288	288
Number of instruments	10	13	12	12	12	12	13
P-value for Hansen test	0.057	0.081	0.075	0.095	0.082	0.104	0.128

P-value for Arellano-Bond test – no first-order autocorrelation	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Notes: Model 1 - gravity variables (GDPPC, POP and DIST) and average institutional quality variable with interaction term (Dummy × INSTITUTIONS); Model 2 – including country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC), and average institutional quality variable with interaction term (Dummy × INSTITUTIONS); Model 3 – including Trade openness variable with interaction term (Dummy × TRADE); Model 4 – including Telecommunications variable with interaction term (Dummy × TELE)); Model 5 – including Corporate tax rate variable with interaction term (Dummy × TAX); Model 6 – including Unit labor costs variable with interaction term (Dummy × ULC); and Model 7 – including Country credit risk variable with interaction term (Dummy × CR_RISK). The table presents results from estimating equation (1) by one-step robust system GMM with collapsed set of instruments, as explained in the text. All variables (expect GDPPC and POP) are taken as ratios or in percent. Symbols *, **, and *** represent $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively. All regressions include time dummies to control for time specific effects. *P*-values are shown in brackets. The null hypothesis for Arellano-Bond test (Ho) is: no autocorrelation. Rejecting the null hypothesis (*p*-value <0.05) of no serial correlation at order one in the first-differenced errors does not imply that the model is misspecified. For Hansen test Ho is: overidentifying restrictions are valid. If *p*-value >0.05, we confirm the null hypothesis that the overidentifying restrictions are valid.

Appendix A: Worldwide Governance Indicators (WGI) and their definitions

WGI Indicator	Definition	Expected effect
Control of Corruption	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	+
Political Stability	Reflects perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.	+
Government Effectiveness	Reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	+
Regulatory Quality	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	+
Rule of Law	Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	+
Voice and Accountability	Reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	+

Source: http://info.worldbank.org/governance/wgi/index.asp