IJER © Serials Publications
12(4), 2015: 1237-1279
ISSN: 0972-9380

DO INSTITUTIONAL QUALITY DIFFERENCES MATTER FOR FDI? NEW EVIDENCE FROM WESTERN AND EASTERN EUROPEAN COUNTRIES

Miroslav Mateev* and Iliya Tsekov*

Abstract: *This paper examines the main determinants of Foreign Direct Investment (FDI) in 26 European countries during the period of 1996 to 2012. 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 panel data regression analysis of net FDI inflows to 26 European Union (EU) countries, the study reveals significant relationship between FDI and various proxies for different macroeconomic, policy and institutional factors. By distinguishing between Western and Eastern European countries, we provide new evidence that institutional quality differences do matter and may explain the FDI pattern into different groups of European countries. We find that the impact of country-level location factors on FDI is not significantly different across the two regions, whereas the institutional quality effects are more pronounced in the group of Western European countries. When all the countries in the sample are ranked based on the level of FDI dominance, we find that institutional quality and corruption do play an important role in explaining FDI flows. However, cost-related factors such as tax rate and unit labor costs appear to be of high significance only in the group of less developed EU countries.*

Keywords: *foreign direct investment, gravity model, multinational enterprise, institutional quality*

JEL classification: *C33, F21, F23*

1. INTRODUCTION

This paper investigates the relative importance of different macroeconomic, policy and institutional quality factors as determinants of FDI inflows into 26 European Union (EU) 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

* Americal University in Bulgari

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), starting in 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 in 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 of 1995 to 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 Central and Eastern Europe increased sharply in the mid-1990s, though FDI flows remained concentrated in the same three countries, accounting for around 60% of total FDI in CEE between 1990 and 2000. 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 in 2007 and recession that followed coincided with a collapse of FDI inflows to CEE countries. In the region as a whole, FDI inflows were 50% lower in 2009 when compared to 2008. The year 2012 saw the re-emergence of CEE FDI flows on the back of large job-intensive projects, notably in Poland, Russia, Serbia and Turkey (Ernst & Young, 2013). As a consequence, Central and Eastern Europe overtook Western Europe to become the leading destination for FDI jobs in Europe.[3]

The FDI driving forces into 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 2013), economic development (Henriot, 2005), economic reforms (Stoian and Vickerman, 2006), 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 principle goal of this paper is to explain the relative importance of different macroeconomic, policy and institutional quality factors as determinants of FDI. We believe that this paper strongly contributes to the current literature, because it allows us to compare the impact of these determining factors on FDI across two of the most dynamic FDI markets - Western Europe and Central and Eastern Europe. Stating this differently, growing FDI activities in these two regions motivate us to examine whether the effects of country-level location factors related to market- and efficiency-oriented FDI in Europe are different between Western and Eastern European countries. One of the recent developments of FDI literature is the incorporation of institutional quality in modeling the location decision of foreign firms. The basic notion is that less corrupted, a fair, predictable, and expedient judiciary environment, 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. To the best of our knowledge, this is the only paper that examines an array of institutional factors and tries to assess their relative importance for FDI in both developed and transition economies in Europe. We provide new evidence that institutional quality differences do matter and may explain FDI pattern across different groups of European countries.

In this paper we use a unique panel data set covering 26 EU countries between 1996 and 2012. Previous research is mainly focused on bilateral FDI flows between EU countries; thus it disregards how these flows interact with each other as well as with the rest of the world. To deal with this problem, we consider the host country's total inward FDI flows, which allow us to capture some of the interactions between investments to a particular host country and with other countries. Our main findings reinforce the argument of prior research that the traditional location factors are important determinants of FDI into both developed and transition economies. What is more important is that institutional quality factors do play a role in explaining the difference in FDI pattern across Europe. However, the importance of these factors as drivers of FDI is significantly different between the EU-15 and CEE countries. While institutional quality factors do have a strong positive effect on FDI flows attracted by the EU-15 countries, these same factors are only marginally significant when FDI to the group of transition economies is analyzed. Cost-related factors such as tax rate and unit labor costs appear to be of high significance only in the group of less developed

EU countries. Our results are confirmed when the host countries in our sample are ranked based on their level of FDI dominance.

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. Section 3 presents the econometric model and data set. In section 4 the estimation results are presented and discussed. Section 5 reports the results from different robustness and sensitivity checks. Some concluding remarks and policy recommendations are offered in the final section.

2. LITERATURE REVIEW: FDI DETERMINANTS

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 in FDI literature is that the impact of FDI on host economy 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 and regions, including Europe. The majority of previous work in this area reports two

groups of explanatory factors: gravity factors (proximity, market size) and factor endowments (infrastructure, human capital). 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[5] (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. 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). According to Demekas *et al.* (2005) gravity factors consistently explain about 60 percent of aggregate FDI flows, regardless of the region.

The gravity model rests on the assumption that FDI flows are larger between large economies and even more if the countries are close neighbors.[6] The GDP-related core gravity variables (GDP of home country and GDP of host country) capture size effects: the larger the home country of FDI, the more FDI should emerge from this country; the larger the market size of a host country, the more FDI it should receive. Thus, the two variables are positively correlated with FDI. Following previous empirical research on FDI determinants (Altomononte and Guagliano, 2003; Demekas *et al.*, 2005), we include two traditional variables that proxy the market size - GDP and population, in our regression analysis. Nominal (or real) GDP is traditionally used as a proxy for the market size of the host country, while growth rate in GDP is used as a measure of the quality of the market demand in the same country. The two variables indicate the importance of market-seeking FDI in a host country. In line with previous findings, we expect a positive correlation between host country's market size and FDI. As our analysis is based on FDI net inflows to the host country, we do not include home country's GDP as an explanatory variable.

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 foreign firm'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. From a theoretical point of view, 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 Central and Eastern European (CEE) countries, they typically depend on headquarter services and 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.

Previous empirical 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 limitations also have a significant impact on the size of FDI flows. Factors such as openness to trade are of major importance to investors who usually prefer countries with relatively liberal trade regimes. It is widely argued that FDI and openness of the economy should 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. 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.[7] The expected effect 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. In addition, for our sample of EU countries, which are geographically close and share similar market features, the openness to trade will also indicate the level of integration of the local economy into the regional economic flows. Therefore, the trade openness is expected to have a 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. Empirical studies of FDI use different proxies for infrastructure. For example, 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). The study finds that, for the less developed economies in their sample, infrastructure is an important determinant of FDI, while it becomes insignificant for the more developed EU 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. A number of studies use principal component analysis across telecommunication, electricity and transport production facilities to derive an overall infrastructure index and find a positive correlation with FDI.[8] As favourable infrastructure endowment attracts FDI to both developed and less developed countries, we expect a positive influence on FDI.

Bellak *et al.* (2009) find that both taxes and infrastructure play an important role in the location decisions made by multinational enterprises (MNEs). 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 draw similar conclusions 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). Bellak

and Leibrecht (2009) show that low (effective average) corporate tax rates indeed attract FDI in general, and FDI in CEE countries, in particular. Thus, a negative relationship between the corporate income tax rate and FDI is expected.[9]

In general, 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 is underlined in 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). 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 report 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.[10] A rise in wages increases, *ceteris paribus*, unit production costs, and therefore, decreases FDI. Thus, a negative sign on the labor cost coefficient (that is, countries with lower labor costs would attract more FDI) is expected, particularly if vertical FDI predominates.[11]

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 including 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 general, it might be expected that FDI is more likely to flow from more developed countries into developing economies that are politically stable and have access to large, regional markets. In the transition context, this issue has been addressed in a variety of ways. For example, Holland and Pain (1998) following Wheeler and Mody (1992) use 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) employs a synthetic indicator of risk (the so called 'operation risk index'). In this paper the perception of political stability (and risk) is measured through 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 environment, the more attractive is a country for FDI.

The quality of institutions is also found to impact on FDI activity, particularly in 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. Second, poor quality of institutions, together with high level of corruption, increases the cost of doing business and, thus diminishes FDI activity in a country. And finally, to the extent that poor institutions lead to poor infrastructure (i.e., public goods), expected profitability falls as does FDI flows into a market. To account for institutional quality effects 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.[12] Since our sample includes both well developed and transition economies a significant difference in the level of institutional quality between the EU-15 and CEE countries should be observed. To explore the marginal impact of institutional quality and other important country-level determinants of FDI in Western and Eastern European countries we test two research hypotheses:

Hypothesis 1: European countries with more developed institutional and policy environment should be able to attract more FDI than countries with poor quality of institutions. We expect this effect to be more pronounced in countries with large FDI dominance.

Hypothesis 2: Because the two groups of EU countries (EU-15 and CEECs) are geographically close and share similar market features, there should be a set of common country-level location factors that explain FDI flows to each group of EU countries.

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 base our choice of FDI determinants to be included in the regression analysis on these findings.

3. EMPIRICAL SPECIFICATION AND METHODOLOGY

This study addresses the question whether the traditional location characteristics identified by the existing empirical literature can explain the difference in FDI pattern across more and less developed EU countries (in this case, EU-15 and CEECs), or there are other specific (e.g., policy and institutional quality) factors that play a role in determining FDI flows to each group of countries. This issue will be investigated by analyzing FDI inflows to 26 EU countries during the period of 1996 to 2012. 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, tax rate, etc.). All of these variables are closely related to the theoretical models of FDI presented above. Since we expect the marginal impact of these factors on FDI to be different across the two samples of EU countries (EU-15 and CEECs), we use a 'country' dummy to control for possible host country effects.

Table 1 displays FDI net inflows to 26 host countries over the period of 1996 to 2012. The data in Panel A show that the EU-15 countries (except Greece) have received the largest FDI flows (as percentage of GDP) with Estonia and Hungary being the only ones close to them. Bulgaria also shows outstanding performance as an attractive destination for foreign investors until 2010. The data in Panel B indicate the origin of FDI flows by continent. The largest group of source countries is located in Europe (with Germany, United Kingdom and the Netherlands being the largest source countries), followed by North America and Asia. CEE countries have received much less FDI from Australia and Africa than the EU-15. When EU countries are compared based on relevant macroeconomic indicators, the data in Panel C show that although CEECs lag behind the EU-15 in many aspects, countries like Romania and Lithuania have recorded the highest growth in GDP (10.62 percent and 10.44 percent, respectively), over the period of 1996 to 2012. Within the two samples the data display great variability with respect to GDP per capita, credit volume, trade, unemployment and tax rate, across different countries, showing that these countries have different attractiveness for foreign investors.

3.1. 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 of 1996 to 2012 to 26 EU countries results in approximately 442 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.[13]

3.2. Dependent Variable

The dependent variable is FDI net inflows per year (in current U.S. dollars.)[14] We use aggregate data for 26 EU countries, including 15 Western countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, Netherlands, Portugal, Spain, Sweden and United Kingdom[15]) and 11 Central and Eastern European countries (Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Poland, Latvia, Lithuania, Romania, Slovakia, and Slovenia) 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

Table 1
FDI inflows to sample countries (1996-2012)

Panel A: FDI inflows to EU-15 and CEECs, by year

	1996	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
EU-15																	
Austria	1.87	1.25	2.08	1.37	4.33	2.89	0.06	2.38	1.06	3.43	2.37	8.06	1.60	2.34	0.22	2.65	1.55
Belgium[a]	5.01	4.72	8.73	46.09	37.39	37.15	6.29	10.51	11.76	8.88	14.34	19.78	37.29	12.55	17.69	19.55	-0.32
Denmark	0.40	1.61	4.37	9.42	20.60	6.99	3.71	1.24	-4.16	4.87	0.95	3.70	0.52	1.23	-3.61	3.71	0.89
Finland	0.84	1.67	9.07	3.41	7.04	2.89	5.77	1.94	1.44	2.32	3.53	4.88	-0.40	0.29	2.97	0.97	-0.71
France	1.36	1.59	2.05	3.10	3.16	3.65	3.27	2.30	1.53	3.86	3.09	3.61	2.20	0.90	1.27	1.35	0.93
Germany	0.26	0.55	1.10	2.55	10.18	1.36	2.58	1.29	-0.36	1.66	1.86	2.33	0.22	0.66	1.68	1.30	0.19
Greece	0.72	0.69	0.05	0.39	0.85	1.17	0.03	0.63	0.88	0.25	1.96	0.66	1.27	0.74	0.11	0.40	1.18
Ireland	3.46	2.58	9.87	18.48	25.96	8.90	23.05	13.94	-5.49	-15.06	-2.40	9.18	-6.01	11.01	19.60	4.82	13.21
Italy	0.27	0.40	0.34	0.55	1.17	1.28	1.35	1.24	1.12	1.26	2.19	1.99	-0.45	0.92	0.43	1.51	0.46
Luxembourg	-	-	-	-	-	-	17.43	10.01	15.18	17.73	76.08	-57.43	30.66	39.78	66.65	37.60	49.52
Netherlands	3.76	2.72	8.57	9.37	15.45	12.19	5.39	5.75	1.93	5.81	1.94	14.33	0.49	4.50	-0.88	1.92	-0.03
Portugal	1.10	2.02	2.42	0.91	5.61	5.13	1.34	4.33	1.02	1.99	5.23	1.28	1.78	1.11	1.11	4.55	4.09
Spain	1.51	1.52	2.30	2.96	6.65	4.54	5.56	2.85	2.31	2.16	2.44	4.34	4.71	0.69	2.79	1.79	2.05
Sweden	1.89	4.15	7.47	22.57	9.02	4.55	4.65	1.63	3.20	2.99	6.55	5.91	7.18	2.34	-0.01	1.64	2.52
United Kingdom	1.87	2.31	4.86	5.65	7.87	3.52	1.50	1.41	2.49	7.38	6.05	6.75	3.19	3.30	2.10	1.97	2.38
CEECs																	
Bulgaria	1.08	4.38	3.66	6.04	7.61	5.65	5.64	9.90	13.11	13.38	23.19	28.39	18.48	6.75	3.13	3.28	3.61
Croatia	2.02	2.28	3.75	6.21	4.83	5.64	3.98	5.74	2.84	4.02	6.88	8.39	8.83	5.33	0.72	2.41	2.21
Czech Republic	2.14	2.11	5.60	9.78	8.11	8.37	10.38	2.12	4.18	8.57	3.52	5.53	2.74	1.42	2.97	1.02	5.12
Estonia	3.18	5.26	10.23	5.30	6.89	8.65	3.95	9.45	7.94	20.49	10.59	12.22	7.16	9.37	8.21	1.13	6.49
Hungary	7.10	8.85	6.87	6.76	5.87	7.35	4.44	2.52	4.14	6.89	5.97	2.85	4.04	1.54	1.67	4.13	10.62
Latvia	6.85	8.52	5.38	4.75	5.27	1.58	2.72	2.72	4.63	4.41	8.34	8.07	3.75	0.36	1.58	5.15	3.48
Lithuania	1.81	3.50	8.22	4.43	3.31	3.67	5.12	0.97	3.41	3.94	6.01	5.12	4.14	-0.04	2.18	3.36	1.97
Poland	2.86	3.12	3.69	4.32	5.50	2.99	2.08	2.11	5.08	3.38	5.71	5.49	2.80	2.96	2.91	3.61	0.68
Romania	0.74	3.44	4.82	2.89	2.83	2.85	2.48	3.69	8.49	6.54	9.26	5.82	6.81	2.95	1.78	1.38	1.32
Slovakia	1.33	0.83	2.37	1.41	9.35	7.41	16.69	6.36	7.03	4.96	8.24	4.67	4.88	-0.01	1.99	2.20	3.05
Slovenia	0.81	1.61	0.98	0.47	0.65	1.77	6.88	1.03	2.40	1.62	1.63	3.15	3.50	-1.30	0.75	1.95	0.31

[a] 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	9,904	875	139,292	4,294	147	937	155,448
Belgium	91,857	7,199	1,179,097	55,695	8,907	4,393	1,347,147
Denmark	21,801	178	110,320	3,891	847	144	137,180
Finland	4,368	67	101,415	2,502	221	29	108,602
France	165,974	2,152	778,513	40,264	3,815	6,849	997,567
Germany	158,389	2,932	712,191	43,571	4,654	5,453	927,189
Greece	1,512	-	31,056	1,291	17	-	33,876
Ireland	54,848	693	117,373	10,612	1,156	213	184,895
Italy	16,218	1,803	293,751	11,595	668	1,716	325,751
Luxembourg	13,367	624	66,429	10,044	123	609	91,196
Netherlands	121,444	2,657	537,961	28,255	3,389	785	694,492
Portugal	15,700	3,058	63,283	384	556	364	83,343
Spain	78,992	7,084	539,351	14,510	609	-	640,546
Sweden	37,926	266	328,563	11,515	1,134	6,401	385,805
United Kingdom	348,797	20	1,195,736	128,605	43,100	5,649	1,721,908
CEECs							
Bulgaria	1,530	15,158	50,030	2,090	-	-	68,809
Croatia	1,396	-	40,594	357	1	-	42,349
Czech Republic	6,432	46	104,184	4,036	20	140	114,857
Estonia	430	-	22,459	748	3	7	23,646
Hungary	23,724	1,604	48,504	8,298	49	889	83,069
Latvia	643	-	12,195	827	-	15	13,681
Lithuania	762	-	14,211	1,889	4	25	16,891
Poland	15,071	36	186,955	6,987	237	563	209,849
Romania	3,086	-	79,351	9,691	-	255	92,382
Slovakia	900	477	38,146	3,142	4	20	42,689
Slovenia	60	-	11,431	316	38	39	11,885

Panel C: Macroeconomic data by host country, on average (1996-2012)

	GDP growth (%)	*GDP per capita (current $US)*	*Inflation (%)*	*Credit volume (% of GDP)*	*Trade (% of GDP)*	*Tax rate (%)*	*Unemployment (%)*
EU-15							
Austria	4.04	35,666	1.93	108.09	96.71	29.76	4.25
Belgium	4.23	33,922	1.95	80.38	150.63	36.55	7.95
Denmark	4.43	44,488	2.23	127.22	89.76	29.12	5.35
Finland	5.68	35,196	1.60	68.23	76.58	27.26	9.12
France	4.01	31,854	1.60	93.05	52.89	35.60	9.71
Germany	2.80	32,510	1.59	110.75	74.11	39.94	8.45
Greece	3.85	19,573	4.61	61.96	56.39	32.21	11.31
Ireland	8.32	39,879	2.61	132.22	163.69	11.47	7.71
Italy	4.31	28,064	2.56	81.15	51.94	38.55	9.22
Luxembourg	7.33	75,598	2.07	127.20	280.31	32.62	3.79
Netherlands	5.09	36,642	2.18	147.01	133.35	30.68	3.98
Portugal	5.48	16,822	2.88	126.18	67.65	30.89	7.52
Spain	6.32	23,247	3.06	125.89	56.74	33.47	15.11
Sweden	4.70	39,277	1.33	104.71	86.60	27.60	7.25
United Kingdom	4.82	32,665	2.02	148.92	56.80	37.86	5.99
CEECs							
Bulgaria	10.43	3,808	15.76	13.11	117.80	19.65	12.09
Croatia	9.17	9,427	9.68	44.74	86.30	23.31	12.68
Czech Republic	10.06	12,187	4.79	51.68	122.31	27.53	6.86
Estonia	9.95	9,892	10.33	54.89	153.90	24.00	10.25
Hungary	7.33	9,144	10.81	42.01	132.95	17.93	8.01
Latvia	10.02	7,580	9.00	46.59	95.25	19.18	12.95
Lithuania	10.44	7,735	10.97	31.15	108.90	20.71	12.39
Poland	10.15	7,983	9.43	30.60	71.06	25.41	13.25
Romania	10.62	4,505	19.07	21.00	72.75	24.59	6.81
Slovakia	9.74	9,362	6.65	42.29	141.42	25.82	14.62
Slovenia	7.54	16,906	7.17	44.71	110.95	23.47	6.58

Source: Authors' calculation

Note: This table reports FDI inflows to 26 host countries over the period of 1996 to 2012. Data in Panel A represent FDI inflows (as percentage of GDP) to the samples of EU-15 and CEE countries. Data in Panel B represent FDI inflows by source continent, in $US millions. Data in Panel C represent relevant macroeconomic indicators by host country, averaged over the 1996-2012 period. EU-15 includes 15 Western European countries and CEECs include 11 Central and Southeastern European countries. Data source are UNSTAD (2014) and World Bank (2014).

level) are missing (Campos and Kinoshita, 2003). Methodologically, the lagged dependent variable helps to control for serial correlation.

3.3. 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 (trade openness, infrastructure, tax rate and unit labor costs).[16] Most of these variables are found to have a high probability of inclusion in the true FDI determinants model (Blonigen and Piger, 2011). Second, European Union (EU) countries are far from being homogeneous. Both the level of economic development and the size of FDI differ significantly across the two groups of countries: EU-15 and CEECs. Good institutions also play a crucial mediating role in attracting FDI. Hence, in addition to the country-level (macroeconomic and political risk) factors, we include an array of institutional quality factors in order to address the question of how important the institutions are in explaining the FDI pattern across EU countries,

As noted earlier, the typical gravity model includes market-related variables such as market size and distance. Market size is a measure of market demand in the host country. We expect FDI flows to be greater in countries with a larger domestic market. Similarly to Demekas *et al.* (2005) we use three gravity variables: population (POP) - either alone, or in conjunction with GDP per capita in current US dollars - as a proxy for market size and potential, the distance between source and host capitals (in logs), and a dummy capturing cultural or historical ties between source and host country.[17] We use population (POP) rather than GDP in nominal terms 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 expect the two proxies for market size to have a strong positive influence on FDI.

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 (DIST) 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. We also expect a negative correlation between this variable and FDI.

We introduce a number of control variables which capture the impact of country-level (macroeconomic and political risk) factors on FDI. Our choice of control variables

is led by FDI-theory and is based on well established findings in the empirical literature (see section 2). The control variables used in our analysis and their expect impact on FDI are as follows:

1) Trade openness (import plus export as a percent of host country's GDP, TRADE) is used as *de facto* measure of 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.[18]
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.[19]
3) Corporate tax burden (statutory corporate income tax rate, TAX) is used as an indicator of macroeconomic stability. 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.[20]
4) Unit labor costs (ratio of monthly average gross wages to GDP per employment, ULC) intend to capture labor market conditions in a host country. A rise in wages increases, *ceteris paribus*, unit production costs, and therefore, decreases FDI. Thus, we expect a negative correlation with FDI.
5) Political risk (Moody's Sovereign Credit Rating, CR_RISK) *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 (see Appendix A) 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. To summarize the information contained in these indicators, we utilize principal component analysis (PCA). PCA permits the reduction of the number of variables used in the estimation and yet retains a substantial part of the information contained in the various variables. This strategy has been widely used in previous empirical studies (Calderón and Servén, 2005; Kumar, 2006). A detailed explanation and the expected sign of each proxy variable included in the composite index of institutional quality are presented in Appendix C.

To summarize our discussions on model variables and data sources, Appendix A displays both dependent and explanatory variables and their expected impact on FDI. We use the correlation matrix of dependent and explanatory variables (see Appendix

B) to examine the possible degree of collinearity among these variables. The explanatory variables used as proxies for policy and institutional quality effects are highly correlated with the rest of the variables included in our regression analysis. Thus, we may expect that multicollinearity will be present in our model. To mitigate this problem institutional variables are included in the model specifications one at a time.

Table 2 reports summary statistics for the sample of 26 host countries. Panels A and B display the differences between the two groups of EU countries (EU-15 and CEECs), based on a number of relevant macroeconomic, policy and institutional factors. The data indicate that the nominal size of FDI inflows into the EU-15 countries is, on average, 25.3 billion over the period of 1996 to 2012, whereas CEE countries have attracted 3.2 billion for the same period. The two groups of countries are also quite different with respect to GDP per capita ($35,053 vs. $8,957, on average). One reason that may explain the increased attractiveness of CEECs for foreign investors is the smaller tax rate (a median of 21 percent) in these countries as compared with EU-15 (a median of 30.4 percent), as well as the lower unit labor costs. If the two groups of countries are compared based on the level of institutional quality (as measured by different Worldwide Governance Indicators, WGI), the data in Table 2 reveal that the EU-15 countries possess relative advantage in terms of quality of institutions over CEECs, as reflected in the total institutional quality index (a mean of +1.42 vs. -1.94). Panel C displays the mean difference in the level of macroeconomic and institutional development between the EU-15 and CEE countries. We observe statistically significant difference in all but two country-level characteristics of the two samples of EU countries.

Table 2
Summary statistics

Panel A: EU-15 sub-sample

Variable	*Obs.*	*Mean*	*Median*	*St. Dev.*	*Minimum*	*Maximum*
FDI	249	2.53E+10	1.25E+10	3.47E+10	-3.17E+10	2.00E+11
GDP p.c.	255	35,053	31,291	17,138	11,360	112,346
POP	255	25,675,292	10,587,731	26,584,653	5,805	83,848,844
DIST	234	5,219	5,346	997	0	6,991
TRADE	255	0.997	0.780	0.610	0.446	3.335
TELE	255	0.508	0.502	0.093	0.165	0.722
TAX	255	0.310	0.304	0.079	0.100	0.568
ULC	255	0.659	0.054	0.774	0.030	1.950
CR_RISK	255	18.773	20.000	2.655	0.000	20.000
CON_COR	255	1.626	1.725	0.665	-0.254	2.591
POL_STAB	255	0.951	1.021	0.435	-0.316	1.663
GOV_EFFE	255	1.596	1.732	0.487	0.302	2.338
REG_QUAL	255	1.434	1.525	0.366	0.498	2.058
RUL_LAW	255	1.499	1.638	0.418	0.279	2.014
VOI_ACC	255	1.365	1.385	0.211	0.650	1.826
INSTITUTIONS	255	1.422	1.803	1.568	-3.381	3.768

Panel B: CEECs sub-sample

Variable	*Obs.*	*Mean*	*Median*	*St. Dev.*	*Minimum*	*Maximum*
FDI	187	3.24E+09	1.82E+09	3.99E+09	-6.53E+08	2.36E+10
GDP p.c.	187	8,957	7,538	5,683	1,074	26,843
POP	187	9,770,934	5,388,448	10,685,119	1,290,778	38,480,234
DIST	147	4,570	4,857	1,229	1,066	7,362
TRADE	187	1.103	1.101	0.357	0.000	1.809
TELE	187	0.305	0.307	0.078	0.141	0.513
TAX	187	0.229	0.210	0.071	0.100	0.400
ULC	187	0.274	0.052	0.345	-0.262	1.224
CR_RISK	185	12.919	13.000	2.989	5.000	18.000
CON_COR	187	0.244	0.250	0.452	-0.823	1.314
POL_STAB	187	0.621	0.638	0.352	-0.464	1.214
GOV_EFFE	187	0.539	0.622	0.421	-0.623	1.222
REG_QUAL	187	0.804	0.892	0.386	-0.161	1.467
RUL_LAW	187	0.475	0.572	0.435	-0.527	1.224
VOI_ACC	187	0.740	0.883	0.375	-0.445	1.323
INSTITUTIONS	187	-1.939	-1.594	1.463	-5.846	0.386

Panel C: *T*-test on mean difference

Variable	*EU-15*	*CEECs*	*Difference*
FDI	2.53E+10	3.24E+09	9.94***
GDP p.c.	3.51E+04	8.96E+03	0.11
POP	2.57E+07	9.77E+06	8.65***
DIST	5.22E+03	4.57E+03	5.30
TRADE	0.997	1.103	-2.30**
TELE	0.508	0.305	24.67***
TAX	0.310	0.229	9.08***
ULC	0.659	0.274	4.12***
CR_RISK	18.773	12.919	20.64***
CON_COR	1.626	0.244	25.91***
POL_STAB	0.951	0.621	8.82***
GOV_EFFE	1.596	0.539	24.39***
REG_QUAL	1.434	0.804	17.32***
RUL_LAW	1.499	0.475	24.85***
VOI_ACC	1.365	0.740	20.53***
INSTITUTIONS	1.422	-1.939	23.12***

Source: Authors' calculation

Note: This table reports summary statistic for the sample of 26 host countries. Panel A shows statistics for the EU-15 countries, and Panel B – the statistics for CEE countries. Panel C shows the results of *t*-test on the mean difference between the two sub-samples. The dependent variable is net-FDI inflows. The explanatory variables are GDP per capita (GDP p.c.), 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 - 2012. *, **, and *** represent significance at 10, 5, and 1 percent, respectively.

4. EMPIRICAL RESULTS AND DISCUSSION

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

$$Ln(FDI_{jt}) = \alpha_1 FDI_{jt-1} + \beta_1 Y_{jt} + \beta_2 X_{jt} + \beta_3 Z_{jt} + \varepsilon_{jt}, \quad (1)$$

$$\varepsilon_{jt} = \eta_j + \gamma_t + u_{jt}$$

where FDI_{jt} denotes FDI inflows to host country j at time t, Y_{jt} is a vector of traditional location (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_t, 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 (Hansson and Olofsdotter, 2010). In order to explore the cross-sectional dimension of the panel, we assume that the country-specific effects η_j are random and *i.i.d* with $(0; \sigma_\mu^2)$. 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 (1978) test.[21] 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.[22]

From an econometric point of view γ_t and η_j can be treated either as random or fixed effects. We expect the fixed effects approach to be the proper choice for our sample consists of an ex-ante determined selection of countries and because we are interested in the specific (country) effects *per se*: home country fixed effects can be interpreted as the propensity of the home countries to undertake FDI in the EU countries, and the host country specific effects can be substituted by various location factors in our analysis. Moreover it does not make sense to assume that we have a random sample of time periods. Hence, time effects are treated as fixed as well. These effects account *inter alia* for the business cycle and for common shocks (Egger and Pfaffermayr, 2003). At the same time, the addition of a time dimension creates a problem when FDI stock is used in regressions: the dependent variable in each period now reflects not only the impact of FDI policies in this period but also the cumulative impact of past policies. To address this problem, we include the lagged value of FDI on the right-hand side in all model equations. In turn, this creates correlation between the lagged FDI and the residuals, which would imply inconsistent estimators. To correct for this, we have estimated our model specifications using the Generalized Method of Moments (GMM) proposed by Arellano and Bond (1991), which yields consistent estimators.[23]

In the first step of analysis, we estimate the basic gravity model (without control variables) and test for the significance of the various fixed effects to avoid

misspecification in further steps (see Mátyás, 1997 on this topic). The various groups of dummy variables are tested for their joint significance using Wald-Tests and the regression outputs show their individual significance. Source country and time dummies are mostly significant individually as well as jointly significant, whilst host country dummies are only jointly significant. To avoid possible misspecification we include source country and time dummies in our analysis; host country dummies are substituted by location factors. Therefore, in a second step, we replace the host country fixed effects with the various location factors measuring macroeconomic, policy and institutional quality effects, and test for their statistical significance. We thereby start from a more general model (including all considered location factors) and test down until the preferred specification is reached. This procedure may reduce the probability of an omitted variable bias and it provides information about the robustness of our regression results.[24]

An additional robustness and stability analysis is done via separating the total sample into two sub-samples that include the old (EU-15) and the new (CEECs) member states. We investigate if institutional quality differences do matter and can explain the observed differences in FDI pattern across the two groups of EU countries. Next, in order to check if our results are robust to possible differences in the level of FDI performance among EU countries, we split the total sample of 26 host countries into two sub-samples: FDI-dominant and FDI-nondominant countries, and run model (1) separately for each group. Finally, long-run estimates of our gravity and location variables are derived via a traditional cross-section regression (Egger and Pfaffermayr, 2003). Estimation is done via OLS regressions with heteroskedasticity-robust standard errors.

The results from panel data regressions for the total sample are presented in Table 3. Model (1) is run for eight different specifications using the GMM estimator.[25] First column in Table 3 displays the estimates for our preferred model. Contrary to some previous studies on transition economies using bilateral FDI flows between old and new member states (Demekas *et al.*, 2005; Hansson and Olofsdotter, 2010), we find that the coefficient of GDP per capita variable is statistically significant. This significance should be treated with caution as it may be driven by the fact that GDP simultaneously captures the positive and negative impact of different location factors on FDI as outlined in Section 3. Therefore, we omit this variable from the rest of the model specifications. With respect to other gravity variables in Model 1, the estimated coefficients of POP and DIST carry the expected signs but only market size is statistically significant at the 1 percent level. One possible explanation why distance variable enters the model insignificant is that the main source of FDI to our sample are the countries from EU-15 (see Table 1, Panel B), which may indicate lower trade costs within European Union.

We find that the estimated coefficient for the lagged FDI variable is positive but statistically insignificant suggesting that the agglomeration economies effect is not present in our sample of host countries. Table 3 displays also the marginal impact of FDI determinants that proxy different macroeconomic and political risk effects. Out

of the five control variables, only TRADE and ULC are statistically significant. The estimated coefficients carry the expected signs (see Appendix A). 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 coefficient on TELE variable signifies that, in general, countries with more favorable infrastructure endowment attract more FDI. Since this variable is highly correlated with policy and institutional quality factors, it is omitted from the rest of the model specifications.

It is worth noting that the two cost-related factors, tax rate and unit labor costs, enter the model with the correct sign but only the coefficient estimate of ULC is (marginally) statistically significant. The negative sign of TAX variable indicates that countries with higher levels of average tax rates attract fewer FDI.[26] Thus, in the past, tax lowering strategies of governments in many transition economies had an important effect on the distribution of FDI among the CEE countries. Contrary to Bellak et al. (2009) and Hansson and Olofsdotter (2010), we do not find supportive evidence that statutory corporate income tax rate has a significant impact on FDI.[27] The positive sign and the magnitude of ULC variable are not unexpected – they are in line with theoretical reasoning presented above and are empirically supported by previous studies. Demekas *et al.* (2005) using unit labor costs (the ratio of US dollar wages in manufacturing and GDP per capita) derive a semi-elasticity of -0.69 (GMM estimate), and 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. While these studies consistently reveal a negative significant impact of labor costs on FDI, a positive sign for unit labor costs is also possible, if they actually capture a higher skill level and higher per capita income. This reasoning is in line with Hunya (2004) who suggests that after the first wave of vertical FDI into CEECs, FDI flows have shifted "further East" due to the increasing labor costs in some of these countries. Bedi and Cieslik (2002) find that industries which receive more FDI also reveal higher wages and a higher wage growth.[28]

Next, we include a variable that controls for political risk effects (see Model 2). As expected, the host country's credit rating (CR_RISK) is found to be significantly positively correlated with FDI; improved credit ratings are therefore associated with greater FDI receipts in our sample countries. We may conclude that country risk is an important factor influencing FDI decisions. The estimated coefficients of other control variables keep their sings and magnitude. In Models 3 through 8 we add a set of variables that measure the level of institutional quality in a host country. The risk variable is omitted from these models to avoid a possible collinearity with institutional factors. As expected, the institutional quality indicators have a significant impact on FDI (except political stability, WGI_POL_STAB). For example, one standard deviation change in the index of government effectiveness would lead to an increase in FDI of 65.5 percentage points. A semi-elasticity of +65 appears somewhat high at first glance.

However, considering that our institutional index for government performance ranges only between -2.5 (weak) and +2.5 (strong), a one-point change in this variable captures a substantial increase in government effectiveness indicator. Furthermore, our estimations in Table 3 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 variable is only marginally significant is that most of our host countries are well-developed economies with already low levels of macroeconomic and political risks as well as low legal obstacles for trade and capital flows.

We also control for time variation from changes in external economic environment common across sample countries. Including time dummy 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.[29] The source country dummies clearly indicate the differences between the overrepresented European countries like the UK, France and the Netherlands and the comparatively low importance of Austria, Belgium and Sweden as investors in our sample countries, their coefficients being individually not significant. The results of the Arellano-Bond and Hansen tests reported at the bottom of the table confirm that all models are well specified. As a robustness check, we run our models using fixed effects specification (not reported here); the results are broadly consistent with those obtained from using the system GMM estimator.

The results achieved so far show that there is a set of country-level (location) factors common across different groups of European countries (EU-15 and CEECs) that explain FDI flows to these countries.Thus, we provide further evidence in support of previous empirical findings on FDI in Europe (Hansson and Olofsdotter, 2010; Mateev and Tsekov, 2014). These studies report significant differences in the determinants of FDI going to the old and the new EU member states. 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) approach, we measure the asymmetric effects of institutional and other policy factors across EU-15 and CEECs by interacting the institutional variables in equation (1) with a dummy ('country') variable that takes value of one if the host country is a transition economy. Thus we are able to control for these additional factors and to estimate the potential asymmetric impacts that may exist between the EU-15 and CEE countries.

Tabel 4 presents the institutional effects across the EU-15 and CEE countries. In addition to the gravity and country-level (macroeconomic and political risk) variables, we also control for institutional quality impact on FDI. The coefficients of the location variables (GDP, TRADE, and ULC) do not change much and remain statistically significant, with the expected signs. The institutional quality variables enter the model individually and with their interaction terms. The coefficient of the control of corruption variable (WGI_CON_COR) is positive and statistically significant but the coefficient

Table 3
FDI inflows panel regressions (1996-2012), Total sample

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
POP	0.919***	0.931***	1.050***	1.011***	1.062***	1.000***	1.032***	1.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP p.c.	0.825***							
	(0.000)							
DIST	-0.204	-0.100	-0.200	-0.144	-0.165	-0.170	-0.165	-0.136
	(0.254)	(0.511)	(0.182)	(0.383)	(0.258)	(0.262)	(0.275)	(0.423)
TRADE	0.836***	1.065***	1.134***	1.123***	1.107***	1.007***	1.087***	1.149***
	(0.004)	(0.006)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)
TELE		0.606						
	(0.527)							
TAX	-1.716	-0.368	-1.872	0.492	-2.199	-0.492	-1.766	-1.039
	(0.221)	(0.803)	(0.204)	(0.760)	(0.148)	(0.743)	(0.241)	(0.500)
ULC	0.236*	0.368**	0.182	0.446**	0.211*	0.207	0.189	0.272*
	(0.101)	(0.045)	(0.212)	(0.011)	(0.100)	(0.136)	(0.195)	(0.080)
CR_RISK		1.123**						
		(0.024)						
WGI_CON_COR			0.675***					
			(0.000)					
WGI_POL_STAB				0.447*				
				(0.083)				
WGI_GOV_EFFE					0.928***			
					(0.000)			
WGI_REG_QUAL						1.150***		
						(0.000)		
WGI_RUL_LAW							0.895***	
							(0.000)	
WGI_VOI_ACC								1.086***
								(0.004)

contd. table 3

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
Lag(FDI)	0.067	0.076	0.076	0.112	0.064	0.078	0.086	0.098
	(0.877)	(0.567)	(0.516)	(0.369)	(0.583)	(0.512)	(0.470)	(0.441)
Time dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	332	331	332	332	332	332	332	332
Number of instruments	29	28	28	28	28	28	28	28
P-value for Hansen test	0.971	0.307	0.743	0.729	0.668	0.132	0.772	0.441
P-value for Arellano-Bond test	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: This table reports the results of panel data regressions for 26 host countries. Model 1 includes gravity variables (GDP p.c., POP and DIST) and country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC); Model 2 adds political risk variable (CR_RISK); Models 3 through 8 include World Governance Indicators (WGI): Control of corruption (WGI_CON_COR), Political stability (WGI_POL_STAB), Government effectiveness (WGI_GOV_EFFE), Regulatory quality (WGI_REG_QUAL), Rule of law (WGI_RUL_LAW); and Voice and accountability (VOI_ACC). The table presents results from estimating equation (1) using one-step robust system GMM with collapsed set of instruments, as explained in the text. All variables (expect GDP p.c. 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 and source country dummies to control for country 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.

of the interaction term between the 'country' dummy and this variable is negative and statistically insignificant (see Model 2). As the estimated coefficient of the interaction term is insignificant, we may conclude that the marginal impact of this institutional factor (control of corruption) on FDI is not statistically different between the two groups of EU countries. When we control for the impact of other institutional factors such as political stability, government efficiency, regulatory quality, rule of law, and voice and accountability, the results in Table 4 show an asymmetric (statistically significant) effect between the two groups of EU countries.

For example, the coefficient of the institutional variable 'political stability' (WGI_POL_STAB) is positive and statistically significant and the coefficient of the interaction term is negative, statistically significant, and smaller. This means that the estimated coefficient of the institutional quality variable expresses the (positive) link between FDI and political stability only in the sub-sample composed of more developed EU countries (the 'country' dummy takes value of 0 in this case); the link between political stability variable and FDI in the sample of CEE countries is given by the coefficient of institutional quality variable *plus* the coefficient of the interaction term.[30] The results in Table 4 show that the impact of institutional quality factors on FDI is significantly *larger* in the group of EU-15 than in the group of transition economies (the estimated coefficient of the interaction variables is negative and smaller for the group of CEE countries). When we substitute the individual institutional effects with an overall institutional quality index (WGI_INSTITUTIONS), the estimated coefficient of the interaction term is found insignificant; therefore, the marginal impact of total institutional quality on FDI is not statistically different between the two groups of EU countries. Yet, the positive effect of institutional quality on FDI is more pronounced in the sample of EU-15. These countries are able to attract more FDI due to the better quality of their institutional environment. In opposite, the poor quality of institutions in CEE countries has a negative impact on their attractiveness for foreign investors.

All regressions include time and source dummies to control for possible time and source country effects. The results of the Arellano-Bond and Hansen tests (shown at the bottom of the table) confirm that all models are well specified. The results in Table 4 confirm our first hypothesis that institutional quality differences do matter and EU countries with more developed institutional environment are able to attract more FDI than countries with poor quality of institutions. When an overall institutional quality index is used in our analysis the marginal effect of this variable is not significantly different across the two groups of EU countries. The question of asymmetries between the importance of institutional quality effect on FDI in more and less developed EU countries is further investigated by separating the total sample into two sub-samples: the EU-15 and CEECs.

Tabels 5 and 6 present the institutional quality effects for each sample of EU countries. Model 1 in Table 5 shows that the gravity variables (except distance) are statistically significant. While GDP and POP variables have strong positive impact on

Table 4
FDI inflows panel regressions (1996 - 2012), Institutional quality effects

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
POP	0.919***	1.072***	1.839***	1.059***	1.058***	1.021***	1.037***	1.057***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP p.c.	0.825***							
	(0.000)							
DIST	-0.204	-0.202	-1.464*	-0.192	-0.199	-0.239*	-0.215	-0.230
	(0.254)	(0.176)	(0.097)	(0.221)	(0.171)	(0.101)	(0.164)	(0.166)
TRADE	0.836***	1.108***	1.929***	1.208***	1.138***	1.098***	1.142***	1.224***
	(0.004)	(0.002)	(0.003)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
TELE	0.606							
	(0.527)							
TAX	-1.716	-1.657	-2.606**	-1.636	-2.565*	-1.926*	-2.417*	-2.973**
	(0.221)	(0.292)	(0.013)	(0.240)	(0.058)	(0.101)	(0.071)	(0.027)
ULC	0.236*	0.212	0.097	0.344**	0.197*	0.154	0.174	0.195
	(0.100)	(0.148)	(0.727)	(0.043)	(0.100)	(0.256)	(0.222)	(0.177)
WGI_CON_COR		0.734***						
		(0.001)						
Country* CON_COR		-0.251						
		(0.744)						
WGI_POL_STAB			0.610***					
			(0.009)					
Country* POL_STAB			-1.055***					
			(0.000)					
WGI_GOV_EFFE				0.909***				
				(0.000)				
Country* GOV_EFFE				-0.309*				
				(0.100)				
WGI_REG_QUAL					1.098***			
					(0.000)			
Country* REG_QUAL					-0.558**			
					(0.011)			
WGI_RUL_LAW						0.896***		
						(0.000)		
Country* RUL_LAW						-0.535**		
						(0.021)		

contd. table 4

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
WGI_VOI_ACC							1.093***	
							(0.000)	
Country* VOI_ACC							-0.817***	
							(0.000)	
WGI_INSTITUTIONS								0.267***
								(0.000)
Country* INSTITUTIONS								-0.023
								(0.842)
Lag(FDI)	0.017	0.084	0.176	0.087	0.062	0.061	0.074	0.052
	(0.877)	(0.493)	(0.259)	(0.468)	(0.591)	(0.596)	(0.523)	(0.660)
Time dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	332	332	332	332	332	332	332	332
Number of instruments	29	28	29	29	29	29	29	29
P-value for Hansen test	0.971	0.748	0.617	0.999	0.644	0.618	0.916	0.951
P-value for Arellano-Bond test	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000

Note: This table reports the results of panel data regressions for 26 host countries. Model 1 includes gravity variables (GDP p.c., POP and DIST) and country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC); Models 2 through 7 include World Governance Indicators (WGI): Control of corruption and interaction term (Country*CON_COR), Political stability and interaction term (Country*POL_STAB), Government effectiveness and interaction term (Country*GOV_EFFE), Regulatory quality and interaction term (Country*REG_QUAL), Rule of law and interaction term (Country*RUL_LAW), and Voice and accountability and interaction term (Country*VOI_ACC). Model 8 adds a composite index for institutional quality and interaction term (Country*INSTITUTIONS), instead of individual indicators. The table presents the results from estimating equation (1) using one-step robust system GMM with collapsed set of instruments, as explained in the text. All variables (expect GDP p.c. 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 and source country dummies to control for country 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.

FDI, weighted distance remains insignificant. Including macroeconomic factors as control variables yields similar results as those for the total sample. Openness to trade and tax variables appear to have a significant impact on FDI flows into the group of EU-15. In the next few models we control for different institutional and political risk effects. Credit risk and institutional quality factors (except political stability) are all found to be positively correlated with FDI. The results in Table 5 show that the agglomeration economies effect is marginally statistically significant and negative. In all model specifications we control for time and source country effects. When the average level of institutional quality in a host country is proxied by an overall index, created by using Principal Component Analysis (PCA), the link between institutional quality and FDI remains strongly positive.

When the results reported in Table 5 for the sample of EU-15 countries are compared with those for the CEECs sample (see Table 6), we find that same country-level location factors are able to explain FDI flows to both groups of EU countries, which is in line with our second hypothesis. The most striking difference is related to the cost-based determinants of FDI such as tax rate and unit labor costs. While high corporate income tax rates show to be an important determinant of FDI in the sample of EU-15 countries, unit labor costs are found to play a similar role in explaining FDI attracted by the group of less developed EU countries. The latter finding is consistent with previous empirical studies on transition economies (Bellak *et al.*, 2008; Demekas *et al.*, 2005) that consistently reveal negative significant effect of labour costs on FDI; yet this effect should be interpreted with caution, as a positive sign for unit labour costs is also possible, if they actually capture a higher skill level and higher per capita income.[31] Although the better quality of institutions in a host country has a positive effect on FDI attracted by each group of EU countries, the importance of this variable as a driver of FDI is significantly different across the EU-15 and CEECs. While institutional quality is indeed as important driver of FDI in the group of EU-15, this variable is found to have only marginally significant effect on FDI in transition economies. Government effectiveness and regulatory quality are the only institutional factors that appear to have an impact on FDI flows attracted by the group of less developed EU countries. As expected, political risk effect (proxied by a host country's credit rating) is found significant FDI driver in both groups of EU countries. As a robustness check we also run our models using fixed effects specification (not reported here). The results are broadly consistent with those reported in Tables 5 and 6, and confirm our main hypothesis that institutional quality differences do matter for FDI and play an important role in explaining the difference in FDI pattern across the EU-15 and CEECs.

5. ROBUSTNESS AND STABILITY CHECKS

We also expect a significant difference in the level of FDI performance among the countries in our sample. In order to investigate whether our results are robust to such differences, we rank all the countries in the sample based on the index of relative

Table 5
FDI inflows panel regressions (1996 - 2012), Institutional effects for EU-15

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
POP	1.239***	1.425***	1.455***	1.489***	1.421***	1.398***	1.418***	1.461***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP p.c.	0.733**							
	(0.036)							
DIST	-0.301	-0.030	-0.025	-0.058	-0.009	-0.037	-0.032	-0.068
	(0.379)	(0.890)	(0.915)	(0.843)	(0.969)	(0.874)	(0.899)	(0.806)
TRADE	1.653***	2.240***	2.165***	2.332***	2.109***	2.078***	2.079***	2.144***
	(0.007)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TELE	0.207							
	(0.895)							
TAX	-3.191**	-4.988**	-4.274***	-4.477**	-4.296***	-3.677**	-3.840**	-4.602***
	(0.030)	(0.011)	(0.009)	(0.017)	(0.007)	(0.023)	(0.015)	(0.009)
ULC	0.279	0.209	0.139	0.235	0.174	0.139	0.162	0.155
	(0.154)	(0.253)	(0.418)	(0.216)	(0.252)	(0.408)	(0.350)	(0.341)
CR_RISK		0.656**						
		(0.019)						
WGI_CON_COR			0.541***					
			(0.005)					
WGI_POL_STAB				0.152				
				(0.669)				
WGI_GOV_EFFE					0.691***			
					(0.005)			
WGI_REG_QUAL						0.822**		
						(0.026)		
WGI_RUL_LAW							0.812**	
							(0.019)	
WGI_VOI_ACC								1.257**
								(0.024)

contd. table 5

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
Lag(FDI)	-0.179*	-0.186*	-0.142	-0.176*	-0.132	-0.145	-0.132	-0.166
	(0.069)	(0.081)	(0.172)	(0.089)	(0.207)	(0.164)	(0.223)	(0.138)
Time dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	194	193	194	194	194	194	194	194
Number of instruments	29	28	28	28	28	28	28	28
P-value for Hansen test	0.619	0.842	0.671	0.269	0.289	0.369	0.742	0.717
P-value for Arellano-Bond test	0.003	0.005	0.004	0.006	0.005	0.005	0.004	0.004

Note: This table reports the results of panel data regressions for the sample of EU-15 countries. Model 1 includes gravity variables (GDP p.c., POP and DIST) and country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC); Model 2 adds political risk variable (CR_RISK); Models 3 through 8 include World Governance Indicators (WGI): Control of corruption (WGI_CON_COR), Political stability (WGI_POL_STAB), Government effectiveness (WGI_GOV_EFFE), Regulatory quality (WGI_REG_QUAL), Rule of law (WGI_RUL_LAW); and Voice and accountability (WGI_VOI_ACC). The table presents results from estimating equation (1) using one-step robust system GMM with collapsed set of instruments, as explained in the text. All variables (expect GDP p.c. 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 and source country dummies to control for country 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.

Table 6
FDI inflows panel regressions (1996 - 2012), Institutional effects for CEECs

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
POP	0.702***	0.706***	0.680***	0.632***	0.758***	0.708***	0.680***	0.622***
	(0.001)	(0.001)	(0.003)	(0.003)	(0.005)	(0.002)	(0.003)	(0.003)
GDP p.c.	0.470**							
	(0.040)							
DIST	-0.082	-0.254	-0.371	-0.345	-0.307	-0.317	-0.348	-0.328
	(0.693)	(0.255)	(0.189)	(0.251)	(0.217)	(0.206)	(0.199)	(0.254)
TRADE	0.325	0.277	0.436	0.487*	0.344	0.364	0.408	0.472*
	(0.289)	(0.317)	(0.168)	(0.100)	(0.236)	(0.250)	(0.183)	(0.101)
TELE	0.340							
	(0.608)							
TAX	-0.250	-0.322	-0.129	-0.588	-0.679	-0.369	-0.049	-0.453
	(0.834)	(0.806)	(0.932)	(0.708)	(0.675)	(0.770)	(0.972)	(0.745)
ULC	-0.630**	-0.692**	-0.447*	-0.342	-0.651**	-0.514**	-0.534*	-0.398*
	(0.035)	(0.022)	(0.101)	(0.205)	(0.033)	(0.044)	(0.058)	(0.062)
CR_RISK		1.017*						
		(0.051)						
WGI_CON_COR			0.135					
			(0.681)					
WGI_POL_STAB				0.145				
				(0.608)				
WGI_GOV_EFFE					0.620*			
					(0.071)			
WGI_REG_QUAL						0.414*		
						(0.100)		
WGI_RUL_LAW							0.264	
							(0.180)	

contd. table 6

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
WGI_VOI_ACC								0.053
								(0.749)
Lag(FDI)	0.208	0.236	0.315*	0.359*	0.278	0.301*	0.320*	0.368*
	(0.237)	(0.205)	(0.102)	(0.074)	(0.174)	(0.101)	(0.089)	(0.051)
Time dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	138	138	138	138	138	138	138	138
Number of instruments	29	28	28	28	28	28	28	28
P-value for Hansen test	0.659	0.194	0.889	0.232	0.340	0.135	0.532	0.618
P-value for Arellano-Bond test	0.018	0.009	0.012	0.015	0.015	0.010	0.013	0.016

Note: This table reports the results of panel data regressions for the sample of CEE countries. Model 1 includes gravity variables (GDP p.c., POP and DIST) and country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC); Model 2 adds political risk variable (CR_RISK); Models 3 through 8 include World Governance Indicators (WGI): Control of corruption (WGI_CON_COR), Political stability (WGI_POL_STAB), Government effectiveness (WGI_GOV_EFFE), Regulatory quality (WGI_REG_QUAL), Rule of law (WGI_RUL_LAW); and Voice and accountability (WGI_VOI_ACC). The table presents results from estimating equation (1) using 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 and source country dummies to control for country 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.

dominance of FDI flows (Sinha, 2012) and group them into FDI-dominant and FDI-nondominant countries (see Appendix D for more details). Then, we run model (1) for each of these two sub-samples in order to determine the impact of country-level location factors and institutional quality measures on FDI across the two groups. The results are reported in Table 7. As expected, gravity variables (except distance) are important determinants of FDI. At the same time we observe significant differences in country-level (macroeconomic and political risk) effects. While openness to trade and infrastructure are important drivers of FDI in the group of FDI-dominant countries, lower tax rates and lower unit labour costs attract more FDI in poor performing (in terms of FDI) EU countries. This finding is not unexpected as the second group is dominated by transition economies where cost-related factors are known to play an important role as FDI drivers.

When we analyze the impact of policy and institutional quality factors on FDI across the two groups of EU countries, we find that quality of institutions and the level of corruption (as measured by TI's Corruption Perceptions Index[32]) in a host country are important determinants of FDI in each group. We observe that less political risk (as indicated by higher credit rating of a host country) induce larger FDI flows to the group of FDI-nondominant countries. These findings provide further support to the argument that countries with better institutional environment are able to attract more FDI than countries with poor quality of institutions. As said before labour costs (and tax rates) in the latter group of countries appear to be relatively low, so it is likely that they are able to attract predominantly efficiency-seeking FDI from MNEs in countries that have higher labour costs (and tax rates).

We also derive long run estimates for our gravity and location variables via OLS regression on the time-averaged cross-sectional data (Egger and Pfaffermayr, 2003), excluding institutional quality and political risk variables. The results reported in Table 8 show that cost-related factors (tax rates and unit labor costs) do not gain in importance in the long-run, while the significance of the location factors (trade openness and infrastructure) implies that the share of market-seeking FDI in total FDI flows into our sample countries increases. Moreover, including policy and institutional quality variables shows these factors are all statistically significant. Thus, in general, our findings on taxation, labor costs and the quality of institutions indicate the importance of government policies in CEECs in influencing inward FDI, with no outstanding role of institutional quality.[33]

6. CONCLUSION

The analysis presented in this paper brings new evidence on the key FDI determinants in 26 European Union (EU) countries, and highlights the significance of different 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. Moreover, we investigate the impact of

Table 7
FDI inflows panel regressions (1996 - 2012), FDI by level of dominance

	FDI-dominant countries				*FDI-nondominant countries*			
Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*	*Model 8*
POP	0.869***	0.838***	0.980***	0.919***	0.723***	0.955***	1.297***	1.173***
	(0.000)	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
GDP p.c.	0.684**				1.052***			
	(0.016)				(0.004)			
DIST	-0.101	-0.042	-0.163	-0.029	-0.125	-0.658	-0.316	-0.520
	(0.564)	(0.782)	(0.174)	(0.836)	(0.631)	(0.156)	(0.285)	(0.146)
TRADE	0.969**	1.231**	1.415***	1.303***	0.485	0.420	0.912***	0.536
	(0.023)	(0.013)	(0.004)	(0.004)	(0.167)	(0.293)	(0.009)	(0.169)
TELE	1.570**				-1.732			
	(0.031)				(0.411)			
TAX	-0.391	-1.034	-0.482	-0.856	-5.268**	-6.065*	-5.130*	-6.116*
	(0.749)	(0.470)	(0.677)	(0.510)	(0.022)	(0.054)	(0.078)	(0.052)
ULC	0.119	0.304*	0.204	0.250	-0.779*	-0.854*	-0.086	-0.233
	(0.556)	(0.082)	(0.192)	(0.145)	(0.073)	(0.101)	(0.871)	(0.667)
CR_RISK		1.075				1.408**		
		(0.182)				(0.011)		
CORRUP			-0.189***				-0.338***	
			(0.005)				(0.001)	
INSTITUTIONS				0.152**				0.247**
				(0.032)				(0.012)
Lag(FDI)	0.014	0.178	0.170	0.179	-0.018	-0.104	-0.003	-0.038
	(0.941)	(0.369)	(0.361)	(0.364)	(0.873)	(0.420)	(0.978)	(0.678)
Time dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Source dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	182	182	182	182	150	149	145	150
Number of instruments	29	28	28	28	29	28	28	28
P-value for Hansen test	0.784	0.948	0.188	0.331	0.564	0.623	0.546	0.679
P-value for Arellano-Bond test	0.008	0.006	0.005	0.005	0.018	0.020	0.012	0.020

Note: This table reports the results of panel data regressions for 26 host countries. The sample is divided into two sub-samples based on the index of rank dominance (IRD): FDI-dominant and FDI-nondominant countries. Model 1 includes gravity variables (GDP p.c., POP and DIST) and country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC); Model 2 adds political risk variable (CR_RISK); Models 3 includes corruption perceptions index (CORRUP); and Model 4 includes a composite index for institutional quality (INSTITUTIONS). The table presents results from estimating equation (1) using one-step robust system GMM with collapsed set of instruments, as explained in the text. All variables (expect GDP p.c. 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 and source country dummies to control for country 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.

Table 8
Long-run estimates, on average (1996 – 2012)

Explanatory variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*
POP	1.141***	1.174***	1.213***	1.200***
	(0.000)	(0.000)	(0.000)	(0.000)
GDP p.c.	0.209			
	(0.162)			
DIST	-0.746	-1.188	-1.371	-1.528
	(0.491)	(0.249)	(0.142)	(0.125)
TRADE	1.912***	1.841***	1.879***	1.814***
	(0.000)	(0.000)	(0.000)	(0.000)
TELE	2.934**	2.365*	0.912	1.503
	(0.033)	(0.081)	(0.499)	(0.269)
TAX	-1.391	-1.183	-2.873	-2.703
	(0.576)	(0.618)	(0.179)	(0.226)
ULC	0.055	0.173	0.083	0.127
	(0.774)	(0.258)	(0.552)	(0.381)
CR_RISK		1.325*		
		(0.057)		
CORRUP			-0.248***	
			(0.006)	
INSTITUTIONS				0.170**
				(0.041)
Number of observations	26	26	26	26
Adj. R^2	0.855	0.868	0.893	0.881

Note: This table reports the results of cross-section regressions for 26 host countries. Model 1 includes gravity variables (GDP p.c., POP and DIST) and country-specific (macroeconomic) variables (TRADE, TELE, TAX, and ULC); Model 2 adds political risk variable (CR_RISK); Models 3 includes corruption perceptions index (CORRUP); and Model 4 includes a composite index for institutional quality (INSTITUTIONS). Symbols *, **, and *** represent $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively.

institutional quality differences on FDI pattern across EU-15 and CEE countries. The results from our panel data analysis show that in addition to important country-level (macroeconomic and political risk) characteristics that are common FDI drivers for both groups of EU countries, there is a set of institutional quality factors that explain the observed difference in FDI pattern across EU-15 and CEECs. Our main finding is that EU countries with more developed institutional environment are able to attract more FDI than countries with poor quality of institutions.

To the best of our knowledge this is the only paper that investigates the relative importance of institutional quality factors for FDI attracted by EU countries. Among others, Demekas *et al.* (2005), Leibrecht and Bellak (2005), and Hansson and Olofsdotter (2010) are closely related to our paper. Using similar time periods (up to 2006) and a group of between eight to twelve CEE countries, they arrive at similar findings about the predominance of traditional location (gravity and macroeconomic) factors in explaining FDI flows to Central and Southeastern Europe, in line with the findings of the existing empirical literature on other regions. They also report that the policy

environment in the host country do matter for FDI. Using a longer period and larger sample of home and host countries, we reconfirm their findings but also provide new evidence that institutional quality differences do play an important role in determining the FDI pattern across more advanced and less developed EU countries.

We find that the importance of institutional quality as a driver of FDI is significantly different across the EU-15 and CEE countries. While institutional quality factors are found to have a strong positive effect on FDI flows attracted by the EU-15, these same factors are only marginally significant when the group of transition economies is analyzed. Campos and Kinoshita (2003) find that both rule of law and quality of bureaucracy are important determinants of FDI into transition economies. Similarly, we find government effectiveness and quality of regulations to play a significant role in explaining FDI into CEECs. Our results also support Djankov *et al.* (2010) and Hansson and Olofsdotter (2010) who find that cost-related factors such as tax rate and unit labor costs are particularly important for the new members of the European Union in attracting more FDI. When the total sample is divided into two sub-samples based on the level of FDI performance, we find that the quality of institutions and corruption do matter for both groups of EU countries, but political stability (and risk) is important driver of FDI only in the group of FDI-nondominant countries. For the same group of less developed economies, tax rate and unit labour costs seem to be relevant factors in attracting efficiency-seeking FDI from more developed EU countries. Thus, in general, our findings on taxation, labor costs, and the quality of institutions indicate the importance of government policies in CEE countries in influencing inward FDI. Government efforts to improve institutional environment that lead to high levels of transparency and less bureaucratic risk (and less corruption), may not have an 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 FDI flows into countries at different stages of transition process: the so-called "laggards" and "leaders". Last but not least, the impact of effective corporate tax rates and unit labor costs differential on FDI flows into new member states should be further investigated. This analysis is left for future research.

Acknowledgements

We thank the conference participants at the 7th International Finance Conference in Paris, 2012 for valuable comments and suggestions, especially Victoria Galsband (Deutsche Bundesbank and Johannes Gutenberg University of Mainz) and Ugur Adiguzel (Cumburiyet University).

Project financial support from Faculty Research Fund of AUBG (American University in Bulgaria) is gratefully acknowledged.

Notes

1. Prior research (Schoors and Van der Tol, 2001; Blomstrom and Kokko, 1998) argues 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 (PriceWaterhouseCoopers, 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. Europe is still the world's top destination, with 22.4% of global FDI value in 2012, although its share has diminished by 6 percentage points since 2011. This is partly due to a prolonged Eurozone crisis impacting investors' confidence and risk appetite, but is also in line with a broader shift of focus toward developing and transition economies, which, according to the United Nations Conference on Trade and Development (UNCTAD), secured in 2012 more FDI (52.1%) than the developed world.
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).
5. Based upon various theories (e.g. trade theory, theory of the firm, and theory of industrial organization) the OLI paradigm avers that FDI emerges if a firm has an Ownership (O) advantage (e.g. a patent) combined with a Location (L) advantage (e.g., low production costs; large market size) and an Internalization (I) advantage (e.g., economies of interdependent activities).
6. Following LeSage and Pace (2008), Leibrecht and Riedl (2010) extent 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.
7. 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. Therefore, other measures such as the ratio of tariff revenues to the value of import are used in the empirical studies on FDI (Demekas *et al.*, 2007).
8. 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 more recent paper, Goodspeed et al. (2010) find that a favorable infrastructure endowment attracts FDI to developed as well as less developed countries. However, the impact is larger in the latter country group.

9. 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 Devereux, 2004 on this topic).
10. 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. To test for the impact of labor quality on FDI we use the general secondary education enrollment rate (EDU), collected by the World Bank (2014). The results from our preliminary tests show that the impact of this variable on FDI is insignificant.
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. 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 countries with better legal infrastructure to be able to attract more FDI.
13. Most authors in the taxation and FDI field would argue that instead of FDI flows, FDI stocks or PPEs should be used as dependent variable. 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 a strong argument for using FDI flows, especially in panel analysis when annual data are employed. 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).
14. One alternative approach 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 use log of FDI instead of FDI to GDP ratio. We also tried using per capita FDI stocks and flows as the dependent variable, and again the results are broadly similar.
15. 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 some of the country-specific variables.
16. Leibrecht and Bellak (2005) group the location factors in three groups: 1) market-related variables (home market size, host market size, distance), 2) cost-oriented location factors (unit labor costs, tax rate), and 3) transition-specific location factors (inflation, privatization, political risk).
17. Distance and cultural proximity variables for each host country are weighted by source countries' GDP. Contrary to Demekas et al. (2005) our preliminary tests find cultural ties variable insignificant in all model specifications and we decided to drop it from our further analysis.

18. As regards the macroeconomic and policy variables, since aggregate FDI data cannot distinguish between vertical and horizontal FDI, our specifications explore the policies suggested by the literature as having an effect on *either* type of FDI. This, however, means that - as in all studies using aggregate data, the expected coefficient sign is in some cases ambiguous. The impact of trade policy, in particular, is different on horizontal and vertical FDI: trade barriers can be expected to attract horizontal FDI, which aims at penetrating the domestic market, but repel vertical FDI. Thus, at the aggregate level, the sign of the trade policy coefficient would thus depend on which kind of FDI is prevalent in the particular host country.
19. Leibrecht and Bellak (2005) argue that indicators like telephone lines are an inappropriate proxy for infrastructure endowment as there are tremendous operationalisation problems. Others (ses e.g., Campos and Kinoshita, 2003) find this variable significant in their sample of CIS countries.
20. Similarly to us, all earlier studies have used statutory tax rates or backward-looking tax rates as the measure of tax burden in the host country. According to Leibrecht and Bellak (2005) this measure is not appropriate, since only effective tax rates are able to capture the specific features of the tax burden of FDI.
21. The null hypothesis for the Hausman test is that the difference in coefficients between fixed effects and random effects specifications is not systematic. Thus a small *p*-value (<0.05) suggests the rejection of the random effects specification.
22. 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 effects and the partial adjustment mechanism is easily handled by including a lagged dependent variable (Cheng and Kwan, 2000). Thus, one may 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.
23. 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 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.
24. We also run a number of pre-estimation tests to show that the presented specifications (or variables) are indeed relevant for the underlying hypothesis. The results of the unit root tests for the stationarity of variables are available upon request.
25. The system GMM estimators generally produce 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 dataset we employ may suffer from such a bias, we run also fixed-effects specification and compare the results with those obtained by using system GMM estimator.
26. When fixed effects specification is used (not reported here), TAX variable is found highly significant and negative. Similar negative effect on FDI is observed when using real GDP instead of GDP per capita in the analysis.

27. According to Leibrecht and Bellak (2005) using the statutory tax rate of the host country instead of the forward looking bilateral effective average tax rates may 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. When the statutory tax rate is used in their model the semi-elasticity drops from -4.5 to -3.5.
28. One possible explanation of this effect is the distinction between market-oriented and efficiency-oriented FDI, which varies by industry. Thus, in general, low labor costs of the host country should exert a positive impact upon efficiency FDI; for market-oriented FDI the relationship should be positive, indicating purchasing power of consumers and/or a high skill level in case of horizontal FDI.
29. In order to test time dummies for individual significance, we ran a model specification including only the gravity variables and a time dummy for each year in our sample period. We found that eight (out of 17) time dummies are strongly significant, so to avoid model overspecification and parameter redundancy we include only these eight time dummies in the rest of our model specifications.
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, even if interaction term coefficient is not statistically significant, it is possible for the marginal effect of *institutional quality* to be significant for relevant values of 'country' dummy. Third, 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).
31. For example, Hansson and Olofsdotter (2010) using unit labor cost difference between host and home countries, find that this variable has a positive (yet insignificant) effect on the group of new member states but is negative and significant within the EU-15.
32. Transparency International's Corruption Perceptions Index (TI), computed on a continuous scale from 0 (squeaky clean) to 10 (highly corrupt), is used as a proxy for institutional risk.
33. In addition, we perform a number of sensitivity analyses. The outcomes are, in most cases, insensitive to these tests, and, hence, we do not report the results here. For example, the results are insensitive to dropping some explanatory variables, such as trade openness and infrastructure endowment, or adding GDP growth rate and inflation. Some of the sensitivity analyses change the results, however. For example, when we separate our estimation period into three time periods (1996 - 2001, 2002 - 2007, and 2008 – 2012), we find that, except gravity variables, other FDI determinants are mostly insignificant in the first period. The results for the other two periods are consistent with those from benchmark analysis.

References

Alfaro L., Chanda A., Kalemli-Ozcan S. & Sayek S., (2006), 'How does foreign direct investment promote economic growth? Exploring the effects of financial markets on linkages', Working Paper No. 12522, National Bureau of Economic Research (NBER), Cambridge, United States.

Altomonte, C., (1998), 'FDI in the CEEC's and the theory of real options: an empirical assessment', Discussion Paper No.7698, LICOS Centre for Institutions and Economic Performance, K.U.Leuven, Belgium.

Altomonte C. & Guagliano C., (2003), 'Comparative study of FDI in Central and Eastern Europe and the Mediterranean', *Journal of Economic Systems* 27(2), 223-246.

Arellano, M. & Bond, S., (1991), 'Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations', *Review of Economic Studies* 58(2), 277-97.

Aubin, C., Berdot, J.P., Goyeau, D. & Leonard, J., (2006), 'Investissements directs américains et européens dans les PECOs: Quel rôle des effets de change?', Revue économique 57(4), 771-792.

Bhanu Murthy, K.V., (2011), 'State of environment in South Asia', in R. Jha (ed.), Handbook of South Asian Economics. London: Routledge.

Bedi A.S. & Cieslik A., (2002), 'Wages and wage growth in Poland', Economics of Transition 10(1), 1-27.

Bellak, C. & Leibrecht, M., (2009), 'Do low corporate income tax rates attract FDI? Evidence from Eight Central- and East- European Countries', *Applied Economics* 41 (21), 2691-2703.

Bellak, C., Leibrecht, M. & Riedl, A., (2008), 'Labour costs and FDI flows into Central and Eastern European countries: A survey of the literature and empirical evidence', Structural Change and Economic Dynamics 19, 17–37.

Bellak, C., Leibrecht, M. & Damijan, J.P., (2009), 'Infrastructure endowment and corporate income taxes as determinants of foreign direct investment in Central and Eastern European Countries', *World Economy* 32(2), 267-290.

Bevan, A.A. & Estrin, S., (2000), 'The determinants of foreign direct investment in transition economies', Working Paper No.342, William Davidson Institute, University of Michigan, Michigan, United States.

Bevan, A.A. & Estrin, S., (2004), 'The determinants of foreign direct investment into European transition economies', *Journal of Comparative Economics* 32, 775–787.

Blomstrom M. & Kokko, A., (1998), 'Multinational corporations and spillovers', *Journal of Economic Surveys* 12(3), 247-277.

Blonigen, B.A., (2005), 'A review of the empirical literature on FDI determinants', NBER Working Paper No. 11299, National Bureau of Economic Research, Cambridge, Massachusetts, United States.

Blonigen, B.A. & Piger, J., (2011), 'Determinants of foreign direct investment', NBER Working Paper No. 16704, National Bureau of Economic Research, Cambridge, Massachusetts, United States.

Bos, J.W.B. & Van de Laar, M., (2004), 'Explaining foreign direct investment in Central and Eastern Europe: an extended gravity approach', DNB Working Paper No. 008, Research Department, Netherlands Central Bank, Amsterdam, the Netherlands.

Boudier-Bensebaa, F., (2005), 'Agglomeration economies and location choice: Foreign direct investment in Hungary', *Economics of Transition* 13, 605–628.

Buch, C., Kleinert, J. & Toubal, F., (2004), 'The distance puzzle: On the interpretation of the distance coefficient in gravity equations', *Economics Letters* 83(3), 293-98.

Buch, C., Kleinert, J., Lipponer, A. & Toubal, F., (2005), 'Determinants and effects of foreign direct investment: Evidence from German firm-level data', *Economic Policy* 20(41), 51-110.

Calderón, C. & Servén, L., (2005), 'The effects of infrastructure development on growth and income distribution', DEGIT Conference papers, Dynamics, Economic Growth, and International Trade, Mexico (June).

Campos, N.F. & Kinoshita, Y., (2003), 'Why does FDI go where it goes? New evidence from transition economies', IMF Working Paper No 228, IMF Institute, International Monetary Fund, Washington, United States.

Carstensen, K. & Toubal, F., (2004), 'Foreign direct investment in Central and Eastern European countries: A dynamic panel analysis', *Journal of Comparative Economics* 32(1), 3–22.

Chakrabarti, A., (2001), 'The Determinants of foreign direct investment: Sensitivity analyses of cross-country regressions', Kyklos 54(1), 89-113.

Cheng, L. & Kwan, Y., (2000), 'What are the determinants of the location of foreign direct investment? The Chinese experience', *Journal of International Economic,* 51, 379-400.

Demekas, D.G., Horváth, B., Ribakova, E. & Wu Yi, (2005), 'Foreign direct investment in Southeastern Europe: How (and how much) can policies help?', IMF Working Paper No. 110, International Monetary Fund, Washington, United States.

Demekas, D.G., Horváth, B., Ribakova, E. & Wu Yi, (2007), 'Foreign direct investment in European transition economies: The role of policies', *Journal of Comparative Economics* 35(2), 369-386.

De Mooij, R. & Ederveen, S., (2008), 'Corporate tax elasticities: A reader's guide to empirical findings', *Oxford Review of Economic Policy* 24(4), 680-697.

Devereux, M., (2004), 'Measuring taxes on income from capital', in B. Sorensen (ed.), Measuring the tax burden on capital and labor (35-71). MIT: MIT Press.

Djankov, S., Ganser, T., McLiesh, C., Ramalho, R. & Shleifer, A., (2010), 'The effect of corporate taxes on investment and entrepreneurship', *American Economic Journal: Macroeconomics* 2(3), 31-64.

Dunning, J.H., (1988), Explaining International Production. London: Unwin Hyman.

Dunning, J.H., (1992), Multinational Enterprises and the Global Economy. London: Addison Welsey.

Dupuch, S. & Milan, C., (2003), 'Les déterminants des investissements directs européens dans les PECO', Working Paper No. 07, Centre d'Economie de l'université Paris Nord, Paris, France.

Edwards, C. & Mitchell, D.J., (2008), Global tax revolution: The rise of tax competition and the battle to defend it. Washington: Cato Institute.

Egger, P. & Pfaffermayr, M., (2003), 'The proper panel econometric specification of the gravity equation: A three-way model with bilateral interaction effects', *Empirical Economics* 28, 571-580.

Estrin, S. & Meyer, K. E., (2011), 'Foreign direct investment in transition economies: Strengthening the gains from integration', in R. Vos and M. Koparanova (ed.), Globalization and economic diversification: Policy challenges for economies in transition. London: BloomsburyAcademic.

Falk, M. & Hake, M., (2008), 'A panel data analysis on FDI and exports', FIW Research Report No 012, Austrian Institute of Economic Research (WIFO), Vienna, Austria.

Garibaldi, P., Mora, N., Sahay, R. & Zettelmeyer, J., (2001), 'What moves capital to transition economies?', IMF Staff Papers, International Monetary Fund, 48, 109-145.

Goodspeed, T., Martinez-Vazquez, J. & Zhang, L., (2006), 'Are other government policies more important than taxation in attracting FDI?', Working Paper No 06-28, Andrew Young School of Policy Studies, Georgia State University, United States.

Goodspeed, T., Martinez-Vazquez, J. & Zhang, L., (2010), 'Public policies and FDI location: Differences between developing and developed countries', GSU paper 1001, Andrew Young School of Policy Studies, Georgia State University, United States.

Hansson, A. & Olofsdotter, K., (2010), 'Tax differences and foreign direct investment in the EU 27', Scandinavian Working Papers in Economics No. 2010:13, Department of Economics, Lund University, Sweden.

Hausman, J. A., (1978), 'Specification tests in econometrics', Econometrica 46, 1251–1271.

Henriot, A., (2005), 'L'investissement direct dans une Europe élargie', Papeles del Este, Vol. 10, Universidad Complutense de Madrid, Madrid, Spain.

Holland, D. & Pain, N., (1998), 'The determinants and impact of foreign direct investment in the transition economies: A panel data analysis', in V. Edwards (ed.), Convergence or divergence: Aspirations and reality in Central and Eastern Europe and Russia, Proceedings of 4th Annual conference, Centre for Research into East European Business, University of Buckingham, United Kingdom.

Hunya, G., (2004), 'Foreign direct investment in South-East Europe 2003-2004', Vienna Institute for International Economic Studies (WIIW), Vienna, Austria.

Jun, K. W. & Singh, H., (1996), 'The determinants of foreign direct investment in developing countries', Transnational Corporations 5, 67-105.

Keen, M., Kim, Y.K. & Varsano, R., (2006), 'The "Flat Tax(es)": principles and evidence', IMF Working Paper No. 218, International Monetary Fund, Washington, United States.

Kumar, N., (2006), 'Infrastructure availability, FDI inflows and their export-orientation: A cross-country exploration', *India Economic Journal* 54(1), 125-140.

Lankes, H.P. & Venables, A.J., (1996), 'Foreign direct investment in economic transition: The changing pattern of investments', *Economics of Transition* 4, 331-347.

Lefilleur, J. & Maurel, M. (2010), Inter- and intra-industry linkages as determinant of FDI in Central and Eastern Europe. *Economic Systems*, 34, 309-330.

Leibrecht, M. & Bellak, C., (2005), 'Foreign direct investment in Central- and East European countries: A panel study', Working Paper, Department of Economics, Vienna University of Economics and Business, Vienna, Austria.

Leibrecht, M. & Riedl, A., (2010), 'Taxes and infrastructure as determinants of FDI in Central and Eastern European countries revisited: New evidence from a spatially augmented gravity model', Discussion Paper No. 42, Vienna University of Economics and Business, Vienna, Austria.

LeSage, J. & Pace, K., (2008), 'Spatial econometric modeling of origin-destination flows', *Journal of Regional Science* 4(5), 941-967.

Lucas, R., (1993), 'On the determinants of direct foreign investment: Evidence from East and Southeast Asia', World Development 21(3), 391-406.

Mateev, M., (2013), 'Country risk and foreign direct investment in transition economies: A panel data analysis', *International Journal of Management Accounting Research* 2(1), 101-130.

Mateev, M. & Tsekov, I., (2014), 'Are there any top FDI performers among EU-15 and CEE countries? A comparative panel data analysis', Finance Theory and Practice 38(3), 337-374.

Mátyás, L., (1997), 'Proper specification of the gravity model', *The World Economy* 20(3), 363-368.

Meyer, K. E., (1998), Direct investment in economies in transition. Aldershot, UK and Northampton, MA: Edward Elgar.

Mintz, J. M. & Weichenrieder, A. J., (2010), 'The indirect side of direct investment: Multinational company finance and taxation', CESifo Book Series, Cambridge: MIT Press.

Nonnemberg, M.B. & Cardoso de Mendonça, M.J., (2004), 'The determinants of foreign direct investment in developing countries', Discussion Paper No. 061, Proceedings of the 32th Brazilian Economics Meeting, Brazilian Association of Graduate Programs in Economics, São Paulo, Brazil.

PricewaterhouseCoopers, (2010), 'Foreign direct investment in Central and Eastern Europe: A case of boom or bust?', Economic Views (March), 1-10.

Resmini, L., (2000), 'The determinants of foreign direct investment into the CEECs: New evidence from sectoral patterns', The Economics of Transition 8(3), 665-689.

Schoors, K. & Van der Tol, B., (2001), 'The productivity effect of foreign ownership on domestic firms in Hungary', Mimeo, University of Ghent, Gent, Belgium.

Sinha, M. K., (2012), 'Patterns of foreign direct investment flows and economic development; A cross-country analysis', Ph.D. Thesis, Delhi School of Economics, University of Delhi, Delhi, India.

Stoian, C.R. & Vickerman, R., (2006), 'The interplay between security factors, European integration and security in Central and Eastern Europe', *Journal of International Business and Economics* 5, 152-168.

Van Horen, N, (2007), 'Foreign banking in developing countries: Origin matters', *Emerging Markets Review* 8(2), 81-105.

Vavilov, S., (2005), 'Foreign direct investment in transition economies: Evidence from energy industry', Ph.D. Thesis, University of Paris I Pantheon-Sorbonne, Department of Economics, Paris, France.

Wheeler, D. & Mody, A., (1992), 'International investment location decisions: The case of US firms', *Journal of International Economics* 33, 57-76.

Ernst & Young, (2013), 'Ernst & Young's Attractiveness Survey: Europe 2013', Available at *http://www.ey.com/Publication/vwLUAssets/European-Attractiveness-Survey-2013/$FILE/European-Attractiveness-Survey-2013.pdf* [accessed March 22, 2014].

EBRD, (2004), 'Transition Report 2004: Infrastructure', European Bank for Reconstruction and Development (EBRD), London, UK, Available at *http://www.ebrd.com/downloads/research/transition/TR04.pdf* [accessed February 16, 2014].

International Telecommunications Union, (2014), 'ICT Data and Statistics', Available at *http://www.itu.int/en/Pages/default.aspx* [accessed February 12, 2014].

KPMG, (2014), 'KPMG's Corporate and Indirect Tax Surveys', Available at *http://www.kpmg.com/Global/en/services/Tax/tax-tools-and-resources/Pages/corporate-tax-rates-table.aspx* [accessed March 6, 2014].

Moody's, (2014), 'Moody's Sovereign Credit Ratings', Available at *http://www.moodys.com* [accessed February 10, 2014].

OECD, (2014), 'OECD Database', Available at *http://www.oecd.org/statistics/* [accessed March 8, 2014].

Transparency International, (2014), 'TI Annual Reports: 1995-2012', Available at *http://www.transparency.org/whatwedo/publications/doc/ar/* [accessed March 16, 2014].

UNCTAD, (2002), 'World Investment Report 2002: Transnational Corporations and Export Competitiveness', United Nations Conference on Trade and Development (OECD), Geneva, Switzerland.

UNCTAD, (2014), 'UNCTADStat Database', Available at *http://unctadstat.unctad.org* [accessed January 15, 2015].

Vienna Institute for International Economic Studies, (2014), 'WIIW database on Foreign Direct Investment in Central, East and Southeast Europe', Available at *http://www.wsr.ac.at/* [accessed March 18, 2014].

World Bank, (2014), 'Worldwide Governance Indicators', Available at *http://info.worldbank.org/governance/wgi/* [accessed March 8, 2014].

World Bank, (2014), 'World Development Indicators Database', Available at *http://databank.worldbank.org/ddp/home.do* [accessed March 15, 2014].