
Foreign direct investments in Europe: are the East-West differences still so noticeable?

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Abstract

This article strives to successively compare the FDI determinants in the former EU-15 and in the CEECs in order to analyze the possible differences between the two areas. The econometric analysis, led over the 1993-2010 period, shows that over that period few noticeable differences can be observed between the two areas, with the traditional effects of market size and openness remaining as factors of attraction in either side of Europe. However, some differences keep up on the role played by the technological gap as well as the wage and the tax system costs variables. The estimates also show that the workforce education level also matters. The results bring out an evolution of the determinants in time suggesting that the social and mainly tax system competitiveness show up on the technological gap. This coincides with the crisis occurrence which generates a greater volatility in FDI flows.

JEL Classification: F15, F21, 052.

Keywords: Foreign direct investments, EU-15, Central and Eastern European countries

1. Introduction

Ten years after the European Union's enlargement which has included ten new member states among Central and Eastern European countries (CEECs) - which was considered as a major step of European integration and as the promise of an economic catch-up for the new member states - it seems appropriate to question which factors motivate the direct investments realized by multinational firms in the enlarged Union. In particular, this article examines whether investment choices that prevail in the former EU-15 and the new and more heterogeneous EU-28 are driven by the same motivations or not. In other words, if the determinants of FDI in the Eastern part of Europe are similar to those realized in the former EU-15, it can be considered that a kind of convergence has been achieved between the two parts of the enlarged EU.

Foreign direct investment has often been considered as « convergence keys » (Boillot, 2002). Actually, the debates which occurred before the realization of the EMU as well as the EU enlargement emphasized the thesis of an « automatic » convergence across member countries. The model that prevailed at the beginning of the European integration process would continue in a context of a deeper economic integration in the EU. In the early steps of European integration, the countries participating in the EEC then in the EU benefitted from large economic and social outcomes, favored by the transformation of the size and contents of trade flows and the increase in FDI. The latter would be part of a virtuous circle: FDI tend to accelerate the production diversification and to increase trade in goods and services. The less developed countries would therefore catch up with the more advanced ones in their productive structures and their standards of living.

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However, the enlargement process encompassed major uncertainties (Chavance et al., 2004). The enlargement could widen the wealth gaps and increase inequalities across EU member states, as a result of deeper productive globalization on the one hand, trade and financial liberalization on the other hand. While economic integration tends to promote direct investments, especially on an intra-European basis, it also contributed to deepen the existing gaps, fostered social and tax competition enhanced by individual strategies of competitive devaluation, which are no longer about monetary variables but rather about wage, employment and social protection systems. The convergence hypothesis would not hold in such a context and huge differences would be noticed between the former EU-15 countries on one hand and the new member states on the other hand.

The aim of this work is to analyze whether determinants of FDI in the two parts of the enlarged EU reflect such differences. Some studies based on the analysis of FDI showed huge differences in direct investment choices within the EU with a clear divide between the East and the West (Dupuch, 2004). Before the enlargement, CEECs were considered heterogeneous with large internal gaps. This article intends to reexamine this issue ten years later. Have the FDI choices of European countries changed towards a closer path than the one which prevailed in the former EU-15? From this point of view, can a kind of convergence be observed between the East and the West? Is there a form of FDI normalization in the EU or a persistence of specificities across the new member states?

The article is structured as follows: the next section will deal with FDI-related literature and its relevance within the enlarged European Union. This is then followed by the presentation of stylized facts on FDI in Europe since 1993 so as to enhance the econometric analysis of their determinants and to bring forward possible differences between Eastern and Western Europe.

2. Literature review

There are many motivations prompting a firm to expand internationally. They can be classified into four categories according to Berhman's classification (1972) which was resumed by Dunning (1993, 2008) on the mainspring of multinationals: Market seeking, Resource seeking, Efficiency and Strategic Asset seeking. However, in the case examined here, the new international trade theory provides more relevant orientations to our analysis. Thus, the distinction between horizontal and vertical direct investment strategies is privileged.

A first investment type, called horizontal, meets the target of searching new markets. This type of investment aims at serving the host countries' markets, since the multinationals are setting up subsidiaries and developing local goods and services productions that can replace exports from the home country.

According to Brainard (1997), the choice of FDI rather than exportation to serve a foreign market can be explained by a firm's trade-off between the advantages linked either to the proximity or to the concentration of activities. The firm's choice will then be determined by the weight of scale economies balanced with the transport costs. The horizontal FDI choice seems an alternative to exportation if the exchange costs exceed those of an abroad establishment. The transport costs and the international exchange obstacles are therefore factors in favour of direct investment strategies.

Consequently, the direct investment in a foreign country makes it possible to produce a part of domestic production operations in order to reduce distribution costs or even to improve the multinational's position in the target market. The size of the host country's market, its economic growth potential, but also its proximity and the access to the neighboring economies are the main driving forces of these investments (Brenton et al., 1999; Campos and Kinoshita, 2003; Faeth, 2008, Bevan and Estrin (2000), Carstensen and Toubal (2004)). Moreover, the geographic and cultural proximity also seem determinant factors for the direct investments realized by a multinational towards another country (Resmini (1999); Tondel (2001); and Rasciute and Pentecost (2010)). The perspectives of markets growth in the countries of Eastern Europe formed from this point of view a favorable field to the development of the multinationals' activities.

A second type of investment is about the FDI seeking economic efficiency. The companies are then motivated by the search for low-cost production factors (capital or workforce). These investments are called « vertical » and imply movements of productive activities relocation rather than the deployment of production activities similar to those of the home country. Helpman (1984, 1985) then Helpman and Krugman (1985) elaborated a vertical FDI model starting from the differences of factorial endowments. These models are based on the factors proportion theory developed by Hecksher-Ohlin. The vertical FDI is based on the gaps between the countries regarding factorial endowments and can be explained by the technological distance between countries. This explanation can apply in the case of North-South investments. Nevertheless, the vertical FDI develop when the transaction costs between two economies are weak enough for such an operation to be profitable. The weakness of the access costs in the host country is a determinant factor for the foreign subsidiary to be able to import inputs at low costs.

Regarding the link between international trade and FDI, foreign investment has been considered by economic theory not only as a substitute for international trade but also as its complement. For instance, international trade and FDI flows have dramatically soared in the last decades. Certain market imperfections and mainly the possibility of achieving vertical investment lead to the conclusion that these two variables are closely linked. On the other hand, strong theoretic foundations, either linked to the factors exchange model or to the fundamental trade-off between exports and investment emphasized by the traditional trade theory (Mundell, 1957), support the idea of substitution. Therefore, empirical analysis can contribute to the debate on the role played by multinational firms in international trade. Many econometric studies have closely investigated the impact of FDI on international trade. For example, Fontagné and Pajot(1999) introduced bilateral FDI flows in a gravity equation applied to trade flows between twenty-one OECD countries over the 1980-1995period. They put forward a strong relation of complementarity between the two variables: a 10% increase of FDI towards a foreign country is linked to a 5% growth of exports to that same country.

In addition, the theory shows a different effect of the geographic distance on horizontal and vertical FDI. Distance from the host country increases the transport costs which will favor horizontal strategies of establishing subsidiaries in the host country rather than exporting from the home country. Conversely, a small geographic distance between two countries can enhance vertical investment strategies towards a given country followed by the re-importation of final goods towards the home country. In this case, low transport costs implied by the proximity between the two countries will favor this type of strategy.

Again, since the opening of their markets, the CEEC's have shown economic characteristics which made them a favorable destination for the relocation of companies coming from the former EU-15.

In such a context, looking for lower costs (wages and other costs) can be the main factor. Wage costs are much lower than in the EU-15, so that EU countries are more and more challenged by the competition of goods and services coming from the new Member States. Simultaneously, competitiveness factors can incite firms to increase their presence abroad, both through trade flows and FDI.

However, the theory according to which the vertical FDI would be justified by the labor costs does not have common agreement. Thus, Kravis and Lipsey (1982) used unitary salary costs in order to explain the relocation place choice of the American multinationals exporting their production to the United States or another country. They try to explain that the lack of significance that their regression eventually grants to the exogenous variable is linked to the difficulty of satisfactorily evaluating the productivity and the labor costs. The works of Girma, Greenaway and Wakelin (1999); Farrell, Gaston and Sturm (2004) as well as Görg, Molana and Montagna (2009) confirm the difficulty of convincingly demonstrating the effects of the unit labor costs on the FDI.

In the precise CEEC case, Carstensen and Toubal (2004) bring out that the combination of a skilled and relatively low-cost labor force exerts a significant influence on the capital inflows. According to Resmini (1999), the relocation of various production parts can be linked to the growth of exports to other destinations of the production chain. Therefore, the degree of an economy's openness to trade exchanges must also be taken into consideration. However, a part of direct investments can be motivated by the availability of resources or raw materials such as natural gas or oil (Campos and Kinoshita, 2003). While these investments are fairly widespread in the post-communist CIS, they are rarer in the countries of Central and Eastern Europe.

The frontier between the horizontal and vertical FDI is often fuzzy as the two types can sometimes be complementary. It is the idea developed by the « knowledge-capital model » of Markusen, Venables, Konan and Zhang (1996) and Markusen (1997). Rather than being a distinct investments logic in search for low-cost markets or production costs, the direct investments can result from a combination of two logics so as to take advantage from the best possible geographic configuration for a multinational's activities.

3. Some stylized facts

The EU as a whole is an attractive host investment zone for the FDI both on the West European and the CEECs sides, as suggested by Tables 1 and 2. A strong increase of inward investments in the EU-15 during the 1999-2004 period is observed, followed by a global stabilization at high levels over the 2005-2010 period. In reality, FDI has been sharply increasing until 2007 before collapsing after the financial crisis. Similar trends can be observed in the CEECs. In percentage of GDP, the cumulative investment flows remain higher in the EU-15 over the periods examined (Tables 3 and 4). Despite their new attractiveness for multinational firms at the beginning of the 90s, investing firms do not go into the CEECs, at the detriment of the EU-15 countries.

In the EU-15, France and the UK are the main FDI host countries in the 90s, followed by the Netherlands and Benelux. At the beginning of 2000, Germany received

large investments. The German share of FDI in the EU grew rapidly like Benelux while the share of France and the UK decreased. During the last period, FDI flows in the UK recovered, and investments in Benelux kept growing. Foreign investments towards France and the Netherlands kept falling in relative terms, similarly for Germany where the FDI resumed their 90s level.

In the CEECs, three countries (Poland, Czech Republic and Hungary) concentrated $\frac{3}{4}$ of their FDI in 93-98. Then, two countries joined Poland and the Czech Republic among the main FDI receivers: Slovakia at first, then Bulgaria and Romania. Hungary lost some of its relative attraction as it moved from 28% of the whole FDI between 1993 and 1998 to only 9% recently. At the same time, the respective shares of the Czech Republic and Poland remained fairly stable. The steady progress of Bulgaria and Romania is noteworthy.

The FDI share in the CEECs compared to the EU-15 grew slowly. It went from 8.9% over the 1993-1998 period to 10.6% over the 2005-2010 period.

In a nutshell, there are movements within the areas, with countries progressing relatively and others receding. This can be checked both in the EU-15 and the CEECs. After 2008, the crisis led to a sudden fall of FDI almost everywhere, with a similar magnitude decline in the two zones taken globally. Only some countries (Spain, Benelux and Slovenia) had stable or progressing FDI flows. Everywhere else, the decline was intense, with sometimes massive disinvestments like in Ireland or Denmark.

Table1: Distribution of the FDI cumulative flows towards the EU-15

	Cumulative FDI flow (1993-1998) (USD m)	Distribution in %	Cumulative FDI flow (1999-2004)	Distribution in%	Cumulative FDI flow 2005-2007	Distribution in %	Cumulative FDI flow 2008-2010	Distribution in %
Spain	59674,23	7,70	176529,17	7,80	120086,97	6,85	127271,62	11,02
France	131814,65	17,01	264369,92	11,68	253023,19	14,43	122030,58	10,57
Italy	23575,89	3,04	91761,63	4,05	109721,57	6,25	18419,54	1,59
Germany	62937,74	8,12	356468,23	15,75	183273,35	10,45	87996,86	7,62
Portugal	10196,85	1,31	24905,04	1,10	17900,34	1,02	10017,05	0,86
Ireland	16996,30	2,19	95138,47	4,20	-12524,43	-0,71	52066,47	4,51
Austria	16755,89	2,16	26681,96	1,17	49871,40	2,84	17001,41	1,47
Denmark	22314,39	2,88	61000,76	2,69	27373,81	1,56	-5798,19	-0,50
Benelux	78704,98	10,16	402083,61	17,76	196781,88	11,22	412141,44	35,71
Finland	18872,52	2,43	31367,33	1,38	24852,90	1,41	6932,48	0,60
United Kingdom	176009,91	22,72	373322,82	16,49	534133,11	30,46	215930,92	18,71
Netherlands	90638,54	11,70	227296	10,04	172407,77	9,83	35793,20	3,10
Greece	5124,20	0,66	6686,54	0,29	8089,48	0,46	7265,06	0,62
Sweden	60967,72	7,87	125366,16	5,53	68003,21	3,87	46856,98	4,06
EU-15	774583,86	100	2262977,70	100	1752994,60	100	1153925,48	100

Source: UNCTAD, authors' calculations

Table2: distribution of cumulative flows towards the CEECs

	Cumulative FDI flow (1993-1998) (USD m)	Distribution in %	Cumulative FDI flow (1999-2004)	Distribution in %	Cumulative FDI flow 2005-2007	Distribution in %	Cumulative FDI flow 2008-2010	Distribution in %
Czech Republic	10529,77	15,24	32515,89	21,94	27559,69	14,97	15518,40	12,57
Poland	23053,40	33,37	44002,16	29,70	53457,37	29,05	41646,38	33,75
Latvia	1695,57	2,45	2085,30	1,40	4692,38	2,55	1734,85	1,40
Lithuania	1567,55	2,26	2990,21	2,01	4859,87	2,64	2777,83	2,25
Estonia	1571,85	2,27	3409,11	2,30	7382,44	4,01	5170,02	4,18
Slovenia	1104,59	1,59	3360,23	2,26	2745,78	1,49	2958,88	2,39
Hungary	19491,56	28,21	19408,74	13,10	18477,33	10,04	10482,84	8,49
Bulgaria	1370,36	1,98	9058,25	6,11	24113,71	13,10	14765,16	11,96
Romania	4363	6,31	13014,26	8,78	27771,20	15,09	21692,85	17,58
Slovakia	4328,63	6,26	18293,25	12,34	12929,96	7,02	6643,86	5,38
CEECs-10	69076,32	100	148137,46	100	183989,79	100	123391,10	100

Source: UNCTAD, authors' calculations

Table3: Cumulative flows in GDP percentage (CEECs)

	FDI in GDP % (1993-1998)	FDI in GDP % (1999-2004)	FDI in GDP % (2005-2010)	
			2005-2007	2008-2010
Czech Republic	1,26	3,06	3,83	1,90
Poland	1,27	1,69	2,44	1,90
Latvia	2,05	1,64	4,51	1,68
Lithuania	1,58	1,43	2,95	1,56
Estonia	3,75	3,60	9,59	6,17
Slovenia	0,96	1,46	1,79	1,74
Hungary	3,39	2,31	3,38	1,68
Bulgaria	0,48	2,65	9,51	5,03
Romania	0,56	1,39	4,09	2,76
Slovakia	1,54	4,54	4,32	1,75
CEECs-10	1,69	2,38	4,64	2,62

Source : UNCTAD, authors' calculations

Table 4: Cumulative flows in GDP percentage (EU-15)

	FDI in GDP % (1993-1998)	FDI in GDP % (1999-2004)	FDI in GDP % (2005-2010)	
			2005-2007	2008-2010
Spain	1,52	3,08	3,02	2,86
France	1,78	2,71	4,24	1,83
Italy	0,32	1	2,05	0,30
Germany	0,56	2,65	2,22	0,96
Portugal	1,21	2,15	2,46	1,24
Ireland	4,06	12,78	-2,32	9,30
Austria	1,47	1,83	5,57	1,70
Denmark	3,02	6,36	4,70	-0,87
Benelux	5,34	20,75	16,58	30,87
Finland	3,17	3,75	4,71	1,17
United Kingdom	2,42	3,70	8,38	3,28
Netherlands	4,36	7,68	9,25	1,72
Greece	0,53	0,49	0,91	0,73
Sweden	5,21	8,05	7	4,31
EU-15	2,50	5,50	4,91	4,24

Source : UNCTAD, authors' calculations

4. FDI econometric analysis

The direct investment data used are taken from the International Investment Statistics of the OECD and the Eurostat and are expressed in millions of dollars. The estimated equations take the shape of a gravity equation expressed in logarithms and as certain flows take negative values³ the log-linear transformation of the FDI variable, put forward by Fontagné and Pajot (1999), is used :

$$TFDI_{ijt} = \ln \left(1 + \frac{FDI_{ijt}}{\alpha} \right),$$

with *i* standing for the home country, *j* the host country and α a threshold close to the most important disinvestment value of the sample.

This analysis of FDI determinants considering the bilateral cumulative flows ($TFDI_{ijt}$ of country *i* towards country *j* at time *t*) is estimated in a cross section with host-countries fixed effects⁴ in the enlarged union over the 1993-2010 period.

In order to identify the possible differences between the two zones to be analyzed here, the FDI determinants in the EU-15 and in the CEECs⁵ are successively compared over the whole period then during 1993-2001 and 2002-2010. The first period corresponds to the end of the transition period towards the single market then the single currency for the EU-15. For the CEECs, this corresponds to the transition period towards a market-based economy and to the first steps of the EU integration process, which ends in 2004 with their full accession to the EU. The second period is marked by the EU enlargement and then by the financial crisis. The choice of 2001 as the turning point also relies on the fact that it splits our whole period into two sub-periods of equal length.

The tested equation takes the following shape:

$$TFDI_{ijt} = a_0 + a_1 * \ln GDP_{it} + a_2 * \ln GDP_{jt} + a_3 * \ln DIST_{ij} + a_4 * \ln ULC_{ijt} + a_5 * \ln TAX_{ijt} + a_6 * \ln RD_{ijt} + a_7 * \ln STOCK93_{jt} + a_8 * \ln OPEN_{ijt} + a_8 * \ln EDUC_{jt} + U_{ijt}$$

The FDI flows are explained by a set of control variables, namely the old variables of gravity models which include the size of the home and host countries and the geographic distance separating them. Moreover, a relative unit labor costs variable is tested. After that, the impact of the tax burden changes on the country's attractiveness is

³The variables are expressed in logarithms. Difficulties can occur when some flows take negative values and the value of the invested capital is less than the amounts of capital distributed in the home country. 2 observations are lost with the transformation.

⁴All the estimations are made with host country fixed effects to take into account the heterogeneity of host countries.

⁵The countries selected are Hungary, Poland, the Czech Republic, Slovakia, Slovenia, Estonia, Bulgaria, Romania, Latvia and Lithuania.

tackled and a relative taxation rate is introduced in the estimated model. The difference of technology between home and host countries is also introduced.

To better examine FDI investments polarization patterns, the total FDI stock reported to the host country's GDP is introduced. This stock is taken at the beginning of the period.

Finally, a degree of bilateral openness between the home and the host countries is added as well as a proxy for skilled labor measured by the level of education attained by the active population (see annex for definitions).

The motivation for the variables choice is the following: the calculation details and the sources of data are indicated in annex A.

5. Econometric Results

In the remainder of this section, the results focusing on the differences between the various areas and the different periods are discussed. First, the results for the two areas over the whole 1993-2010 period will be discussed and then the estimations will be compared across the two sub-periods, beginning with the former EU-15 and then the CEEC's.

Table 5a: Estimation results EU-15(93-2010)

VARIABLES	(1) <i>TFDI</i>	(2) <i>TFDI</i>	(3) <i>TFDI</i>	(4) <i>TFDI</i>	(5) <i>TFDI</i>
GDP_j	0.425*** (0.135)	0.381** (0.147)	0.352** (0.146)		
GDP_i	0.463*** (0.0901)	0.505*** (0.0935)		0.743*** (0.0852)	0.868*** (0.184)
$DIST_{ij}$	-0.997*** (0.133)	-1.224*** (0.128)	-1.344*** (0.133)	-0.293** (0.141)	-1.095*** (0.147)
ULC_{ij}	-1.850* (0.966)	0.209 (0.991)	-1.123 (1.088)	-1.700 (1.057)	-1.800 (1.294)
TAX_{ij}	-1.056*** (0.334)		-1.062** (0.421)	-0.772** (0.307)	-1.580*** (0.460)
RD_{ij}	0.101 (0.0913)	0.110 (0.0911)		0.126 (0.0777)	0.254** (0.106)
$STOCK93_j$	0.474*** (0.0817)			0.586*** (0.0669)	0.479*** (0.0830)
$OPEN_{ij}$				0.698*** (0.0835)	
$EDUC_j$					0.0911 (0.301)
<i>Constant</i>	-2.392 (2.251)	3.655** (1.676)	11.22*** (0.948)	-12.24*** (2.071)	4.150** (2.032)
<i>Obs</i>	154	154	154	154	154
<i>R-squared</i>	0.570	0.464	0.366	0.676	0.485

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Host country fixed effects are included

Table 5b: Estimation results CEECs (93-2010)

VARIABLES	(1) <i>TFDI</i>	(2) <i>TFDI</i>	(3) <i>TFDI</i>	(4) <i>TFDI</i>	(5) <i>TFDI</i>
GDP_j	1.810*** (0.377)	1.692*** (0.407)	1.651*** (0.337)		
GDP_i	0.262** (0.112)	0.418*** (0.116)		0.127 (0.110)	0.262** (0.112)
$DIST_{ij}$	-0.656*** (0.168)	-0.474*** (0.175)	-0.604*** (0.167)	-0.499*** (0.185)	-0.656*** (0.168)
ULC_{ij}	-5.708** (2.650)	-6.080** (2.679)	-3.395 (2.291)	-4.310* (2.541)	-5.708** (2.650)
TAX_{ij}	-1.982*** (0.370)		-2.305*** (0.417)	-0.941** (0.404)	-1.982*** (0.370)
RD_{ij}	0.553* (0.319)	0.851*** (0.300)		0.167 (0.306)	0.553* (0.319)
$STOCK93_j$	1.220* (0.616)			0.911*** (0.141)	1.195*** (0.304)
$OPEN_{ij}$				0.678*** (0.175)	
$EDUC_j$					2.551** (1.101)
<i>Constant</i>	-11.86*** (3.572)	-5.837*** (2.154)	-2.919* (1.594)	-3.559* (1.996)	-13.69** (5.472)
<i>Obs</i>	108	108	108	108	108
<i>R-squared</i>	0.528	0.456	0.487	0.554	0.528

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Host country fixed effects are included

Table 6a : Estimation results EU-15(93-2001)

VARIABLES	(1) <i>TFDI</i>	(2) <i>TFDI</i>	(3) <i>TFDI</i>	(4) <i>TFDI</i>	(5) <i>TFDI</i>
GDP_j	1.029*** (0.190)	0.321** (0.131)	0.289** (0.139)		
GDP_i	0.292*** (0.0802)	0.252*** (0.0844)		0.546*** (0.0761)	0.642*** (0.156)
$DIST_{ij}$	-1.153*** (0.132)	-1.344*** (0.130)	-1.398*** (0.130)	-0.485*** (0.135)	-1.175*** (0.128)
ULC_{ij}	-0.160*** (0.0472)	-0.140*** (0.0504)	-0.140** (0.0562)	-0.169*** (0.0383)	-0.141*** (0.0517)
TAX_{ij}	-0.322 (0.298)		-0.393 (0.373)	-0.474* (0.273)	-0.634* (0.350)
RD_{ij}	0.124 (0.0940)	0.177* (0.100)		0.150* (0.0791)	0.429*** (0.134)
$STOCK93_j$	0.854*** (0.169)			0.103 (0.109)	0.375*** (0.0941)
$OPEN_{ij}$				0.656*** (0.0783)	
$EDUC_j$					0.679** (0.273)
<i>Constant</i>	5.416*** (1.634)	7.385*** (1.614)	11.02*** (0.955)	0.477 (1.477)	7.510*** (1.420)
<i>Obs</i>	154	154	154	154	154
<i>R-squared</i>	0.549	0.478	0.435	0.668	0.531

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Host country fixed effects are included

Table 6b: Estimation results EU-15(2002-2010)

VARIABLES	(1) <i>TFDI</i>	(2) <i>TFDI</i>	(3) <i>TFDI</i>	(4) <i>TFDI</i>	(5) <i>TFDI</i>
<i>GDP_j</i>	0.185** (0.0845)	0.0605 (0.0769)			
<i>GDP_i</i>	0.209*** (0.0575)	0.229*** (0.0588)	0.229*** (0.0565)	0.324*** (0.0542)	0.264*** (0.0602)
<i>DIST_{ij}</i>	-0.401*** (0.104)	-0.511*** (0.102)	-0.505*** (0.106)	-0.128 (0.124)	-0.445*** (0.102)
<i>ULC_{ij}</i>	-0.0502** (0.0217)	-0.0397 (0.0245)	-0.0350 (0.0231)	-0.0535** (0.0215)	-0.0377 (0.0234)
<i>TAX_{ij}</i>	-0.487*** (0.125)		-0.200** (0.0978)	-0.553*** (0.115)	-0.427** (0.174)
<i>RD_{ij}</i>	0.0216 (0.0631)	0.0723 (0.0659)		0.0577 (0.0610)	0.0542 (0.0842)
<i>STOCK2002_j</i>	0.277*** (0.0538)			0.110* (0.0579)	0.355*** (0.102)
<i>OPEN_{ij}</i>				0.253*** (0.0534)	
<i>EDUC_j</i>					0.571** (0.253)
<i>Constant</i>	-0.0471 (1.140)	4.069*** (0.738)	4.035*** (0.763)	1.158 (1.047)	3.555*** (0.741)
<i>Obs</i>	154	154	154	154	154
<i>R-squared</i>	0.423	0.312	0.314	0.477	0.369

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Host country fixed effects are included

Table 7 : Estimation results CEECs (93-2001)

VARIABLES	(1) <i>TFDI</i>	(2) <i>TFDI</i>	(3) <i>TFDI</i>	(4) <i>TFDI</i>	(5) <i>TFDI</i>
GDP_j	1.722*** (0.243)	1.679*** (0.240)	1.448*** (0.285)		
GDP_i	0.585*** (0.0971)	0.649*** (0.0890)		0.464*** (0.0976)	0.585*** (0.0971)
$DIST_{ij}$	-1.101*** (0.124)	-1.117*** (0.131)	-0.931*** (0.135)	-0.540*** (0.165)	-1.101*** (0.124)
ULC_{ij}	1.165*** (0.237)	1.127*** (0.244)		0.690*** (0.234)	-5.016*** (1.859)
TAX_{ij}	-5.016*** (1.859)	-4.043** (1.835)	-1.447 (1.943)	-3.265* (1.771)	-0.452 (0.352)
RD_{ij}	1.217* (0.619)			0.560*** (0.124)	1.165*** (0.237)
$STOCK93_j$	-0.452 (0.352)		-0.874** (0.414)	-0.289 (0.234)	0.937*** (0.212)
$OPEN_{ij}$				0.521*** (0.129)	
$EDUC_j$					1.098** (0.477)
<i>Constant</i>	-9.301** (3.723)	-2.128 (1.389)	1.853 (1.337)	-3.572** (1.528)	-6.887** (2.839)
<i>Obs</i>	108	108	108	108	108
<i>R-squared</i>	0.775	0.762	0.652	0.801	0.775

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Host country fixed effects are included

Table 8 : Estimation results CEECs (2002-2010)

VARIABLES	(1) <i>TFDI</i>	(2) <i>TFDI</i>	(3) <i>TFDI</i>	(4) <i>TFDI</i>	(5) <i>TFDI</i>
GDP_j	0.293 (0.264)	0.709*** (0.191)	1.014*** (0.187)		
GDP_i	0.208*** (0.0645)	0.207*** (0.0701)		0.120* (0.0644)	0.178*** (0.0670)
$DIST_{ij}$	-0.245*** (0.0881)	-0.133 (0.101)	-0.116 (0.100)	-0.183* (0.0974)	-0.216** (0.0910)
ULC_{ij}	-5.049*** (1.414)	-0.564 (1.367)	-2.280** (1.137)	-3.842*** (1.349)	-4.003*** (1.379)
TAX_{ij}	-6.368*** (1.068)		-3.914*** (0.999)	-4.525*** (1.204)	-3.119*** (0.715)
RD_{ij}	0.790*** (0.247)	0.399 (0.261)		0.466** (0.219)	0.458** (0.229)
$STOCK2002_j$	2.274*** (0.545)			2.177*** (0.420)	3.688*** (0.826)
$OPEN_{ij}$				0.314*** (0.100)	
$EDUC_j$					1.953** (0.879)
<i>Constant</i>	-2.313 (1.394)	-2.958** (1.353)	-2.847*** (1.046)	-0.504 (0.893)	-5.982** (2.944)
<i>Obs</i>	108	108	108	108	108
<i>R-squared</i>	0.450	0.310	0.334	0.486	0.389

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Host country fixed effects are included

5.1. Comparison of the EU-15 and the EU- CEECs

Over the 1993-2010 period, only few noticeable differences between the two areas are observed. The gravity variables are significant with the expected signs. The initial FDI stocks turn out to be both positive and significant as well as the openness degree variables.

Market size and initial conditions for FDI (measured by the initial FDI stock) are therefore important determinants to attract new foreign investments.

Overall, trade integration has a significantly positive effect on intra-EU FDI and FDI towards CEECs. The results suggest a complementarity relationship between trade and foreign investment, which confirms earlier studies, such as those of Brainard (1997) or Fontagné and Pajot (1999). In addition, the level of education of the labor force in the host country has a strong positive impact on FDI inflows, but only in the CEECs.

However, there is a larger difference between the two areas in terms of technological gap: this is not important in the EU-15 while it is so in most of investment specifications towards Eastern Europe. Indeed, the bigger the gap, the higher the FDI flows. This can be partly explained by the fact that these disparities are lower in the EU-15 and that this difference is no longer a factor of discrimination for multinational firms. Another explanation can stem from the fact that firms contribute to lower technological gaps while they seek to invest where the catch-up possibilities are greater, by using the specific advantages they have.

The tax system variable seems equally significant with a negative sign, suggesting that the tax competition hypothesis can be confirmed. However, differences in unit labor costs are not crucial in the EU-15 as in new member states. In the latter case, the variable appears to be significant in most of the specifications. This can reflect strategies of lowering labor costs but the model presented here does not allow the disentanglement of the effects of the technological disparities implied by productivity differences which can be as important as wage differences.

Now, have FDI determinants changed between the two observation sub-periods, first in EU-15 and then in the CEECs?

5.2. Comparison of the two sub-periods in the EU-15

Considering the EU-15 countries, no net change from one sub-period to another is noticed, but the model is less precise in the second period. Due to the financial crisis, there is much more volatility in the FDI variables while the gravity variables remain important with the expected signs, the unit labor costs as well as the degree of openness. In this way, FDI determinants in the 1990 decade seem various, reflecting at the same time horizontal and vertical investment strategies, access to the markets and reducing production costs in the EU-15. While technological gaps are not significant, the tax differences are relevant only in the second period. At the same time, the unit labor costs variable, which is clearly significant, is not so in the second period. This suggests that tax competition effects are substituted to wage competition effects in the strategies of multinational firms. Finally, it is more difficult to say if the initial stock of FDI is relevant as it appears to be significant in only some specifications. This result can be attributed to multi co-linearity effects.

5.3. Comparison of the two sub-periods in the CEECs

In the case of the CEECs, the model is also less sturdy in the second period. The gravity variables are important with the expected signs. Yet, the distance is no longer significant during this second period which can bring out a reorientation of the European

investments towards farther destinations. This is sustained by the increase of FDI towards countries which later joined the EU, namely Bulgaria and Romania.

The unit labor costs are important but positive in the first period, which implies that the multinational firms did not at first necessarily look for the countries with lower costs but rather those which are nearer and offering opportunities of markets access with the enlargement of the EU in focus. Investors may prefer to invest in a country where the wages are relatively lower than in another country of the zone, but where the environment is otherwise more favorable and the opportunities greater : an attractive tax system, prior openness and an already effective presence of foreign investors.

During the 2000 decade, the strategies seem to reverse. Always significant, the variable sign becomes negative during the second period, which is in favor of the thesis of wage competition in the enlarged EU. The technologic gap variable is often important. The tax system is almost always significant with a negative sign, which still reinforces that the tax system competition has played a big role in the EU investment decisions. The degree of openness is important with the expected sign in the two periods while the initial FDI stock seems more determinant during the 2000 decade.

Thus, a drop is noticed not only in the investors' geographic orientation but also in their motivations. The social and tax competition is reflected on the technologic differences. Finally, the estimates of the education variable are positive and significant. This emphasizes the importance of a highly educated workforce in FDI motivations of multinational firms in addition to relatively lower unit labor costs.

In order to highlight the size of the different effects on FDI flows between the two areas, Standardized Coefficients for the first regression specifications of each period and each geographical area are calculated.

Table 11: Standardized Coefficients of the Variables in the cross sectional Regressions

Model (1)	93-2010		93-2001		2002-2010	
	EU-15	CEECs	EU-15	CEECs	EU-15	CEECs
GDP_j	+1.177	+1.305***	+4.483***	+1.110***	+1.171**	+3.375
GDP_i	+3.323***	+1.180**	+2.222***	+3.347***	+2.259***	+2.260***
$DIST_{ij}$	-4.424***	-3.317***	-5.520***	-4.454***	-3.336***	-2.215***
ULC_{ij}	-1.103*	-4.434**	-1.179***	+3.378***	-1.123**	-7.710***
TAX_{ij}	-1.176***	-6.609***	-0.059	-4.435***	-2.231***	-1.49***
RD_{ij}	+0.066	+2.214*	+0.062	+9.983*	+0.018	+4.484***
$STOCK_j$	+3.358***	+1.136*	+4.429***	-2.219	+3.325***	+1.845***

Table 12: Standardized Coefficients of the Variables in the cross sectional Regressions

Model (4)	93-2010		93-2001		2002-2010	
	EU-15	CEECs	EU-15	CEECs	EU-15	CEECs
GDP_i	+0.518***	+0.087	+0.415***	+0.275***	+0.401***	+0.148*
$DIST_{ij}$	-0.124**	-0.377***	-0.218***	-0.222***	-0.107	-0.162*
ULC_{ij}	-0.094	-0.346*	-0.189***	+0.224***	-0.131**	-0.616***
TAX_{ij}	-0.128**	-0.274**	-0.087*	-0.283*	-0.262***	-1.112***
RD_{ij}	+0.082	+0.059	+0.075*	+0.452***	+0.048	+0.282**
$STOCK_j$	+0.442***	+0.741***	+0.052	-0.140	+0.128*	+1.695***
$OPEN_{ij}$	+0.484***	+0.41***	+0.603***	+0.309***	+0.449***	+0.340***

Table 13: Standardized Coefficients of the Variables in the cross sectional Regressions

Model (5)	93-2010		93-2001		2002-2010	
	EU-15	CEECs	EU-15	CEECs	EU-15	CEECs
GDP_i	+0.867***	+0.180**	+0.301***	+0.347***	+0.264***	+0.222***
$DIST_{ij}$	-1.094***	-0.317***	-0.530***	-0.454***	-0.444***	-0.189**
ULC_{ij}	-1.799	-0.434**	-0.158***	-0.435***	-0.037	-0.563***
TAX_{ij}	-1.579***	-0.609***	-0.117*	-0.219	-0.427**	-0.733***
RD_{ij}	+0.254**	+0.188*	+0.216***	+0.378***	+0.050	+0.281**
$STOCK_j$	+0.478***	+1.113***	+0.234***	+0.756***	+0.353***	+2.992***
$EDUC_j$	+0.091	+0.636**	+0.221**	+0.301**	+0.563**	+0.786**

Standardized coefficients allow the following highlighted results: First, a drop in labor costs in the EU is related to a rise in FDI but the effect over the period 1993-2010 appears to be larger in the CEECs than in the EU-15. A 1% standard deviation decrease in the unit labor costs would translate into a 0.103 standard deviation increase in FDI flows to the EU-15, compared to a 0.434 standard deviation increase in FDI flow into the CEECs. A similar effect can be observed for tax rate variations and the effect becomes higher in the CEECs in the last period. As mentioned before, there is an exception in CEECs in the first period with a positive link between labor costs and FDI. This result can be explained by the fact that multinational firms at the beginning choose to invest in the closest destinations from the EU⁶, which are also the countries with higher wages.

⁶These initial choices of location by the multinational firms in the countries which were the closest to the EU can also be explained by the fact that the first association agreements were signed between the EU and Hungary Poland and Czechoslovakia at the end of 1991. These countries share a border with the EU. The asymmetric implementation of these agreements across countries associated with different rhythms of the transition towards a market based economy and different initial conditions can then

Another explanation can be suggested, as the sign of the variable is reversed when the education variable is introduced. Higher wages would also reflect higher education, which suggests the evidence of multicollinearity between the two variables.

These coefficients also reflect the effects of trade openness and the education level of the active population on the FDI flows. Regarding trade openness, the estimates put forward in this paper confirm the hypothesis of complementarity. Over the whole period, a 1% standard deviation increase in trade openness would translate into a 0.484 standard deviation increase in FDI flows to the EU-15, with a 0.410 standard deviation increase in FDI flow into the CEECs. When the education variable is considered, the effects are larger in the CEECs in the last period.

6. Conclusion

This article aims at examining the foreign investors' possible differing behavior between the old EU-15 and the CEECs. Ten years after the EU enlargement, is it worth considering that the CEECs differentiation characteristics remain and the specific attraction factors allure FDI that are different from those of the EU-15? For this reason, an estimation strategy is successively used to compare the FDI determinants in the EU-15 and in the CEECs over the whole period, then during the periods of 1993-2001 and 2002-2010.

Over the whole 1993-2010 period, few noticeable differences between the two areas are observed. The gravity variables are important with the expected signs. The initial FDI stock comes out equally positive and significant as well as the degree of openness. The prior openness to the international exchanges and to the MNF is an important determinant to attract foreign investments.

However, the two areas differ in terms of the role played by the technologic gap which does not seem important in the EU-15, contrary to most of the investment specifications towards Eastern Europe. Another explanation stems from the fact that the companies participate in the reduction of the technologic gap as they invest where the catch-up possibilities are bigger, by exploiting the specific advantages they have.

The effects relative to the labor and tax system variables imply the following: the tax system variable is overall significant with a negative sign, thus sustaining the thesis of tax competition, and this factor is important both in the EU-15 and in the CEECs. Yet, the unit labor costs differences are not determinant in the EU-15 but fairly determinant in the zone of the new member countries. Nevertheless, the results in this paper put forward a determinants' time evolution. Thus, the costs variable is more significant during the 1990s than in the 2000 decade for the EU-15 while the reverse happens in the CEECs. This suggests that, at first, the MNF have not looked for low-cost countries but rather the nearest ones offering opportunities of markets access with the EU enlargement in focus. The investors may prefer to invest in a country where the wages are lower compared to another country in the zone, but with a more favorable environment and greater opportunities. The evidence suggested by the education variable also shows that the level of education attained by active workers also matters in investment choices. In

explain that CEECs were split into two groups of countries in 1997 by the Luxembourg European Council regarding the accession process.

the EU-15, the FDI determinants are numerous, reflecting both horizontal and vertical investment logics, markets access and costs rationalization in the EU-15.

According to the results presented, a drop is therefore found not only in the investors' geographic orientation but also in their motivations. There is no link between the CEECs variables towards those of the EU-15, but reversely the effect of the tax system competition tends to spread in the CEECs firm strategies towards the whole EU. This matches with the crisis occurrence which generates a bigger FDI flows volatility.

Annex A. Construction of variables

This section describes the construction of the variables used in this empirical analysis. The index i stands for the home country and j is the host country while t is the time period. The data sources are presented in table A.1.

GDP_i and GDP_j represent the gross domestic product and measures the scope of the market: the higher this variable, the bigger the market; and therefore the more attractive it is to FDI. The size of the home and host countries is approximated by the GDP which is expressed in national currency and then converted to dollar after using the average annual exchange rate.

1. $DIST_{ij}$ represents the geographic distance between the home and host countries capitals. According to the literature, the expected sign of this variable can be positive or negative.
2. RD_{ij} is the technologic gap measured with the R&D expenses share ratio in the GDP between the home and the host countries. (Source: OCDE)

$$INT.RD_{ij} = \frac{(DEP.RD/GDP)_i}{(DEP.RD/GDP)_j}$$

3. $OPEN_{ij}$ is the degree of bilateral openness between the home and the host countries measured as follows :

$$OPEN_{ij} = 1/2 \left[\frac{X_{ij}+M_{ij}}{GDP_i} + \frac{X_{ij}+M_{ij}}{GDP_j} \right]$$
 where X_{ij} and M_{ij} represent respectively bilateral exports and imports between country i and country j .
4. $STOCK93_j$ is the early FDI stock reported to the host country's GDP. This variable makes it possible to check whether the bilateral flows move further towards the countries where the presence of foreign firms is initially high.
5. TAX_{ij} is the legal rate of companies' taxation, it is the ratio between the tax system of the two countries. This means that if the taxation is high in the host country, and therefore the ratio is important, then few investments should head for it.

$$TAX_{ij} = \frac{TAX_j}{TAX_i}$$

TAX_i measures the companies' taxes share in the home country's GDP. Accordingly, TAX_j measures the companies' taxes share in the host country's GDP. Bellak et al., 2009, show that generally a low companies taxation rate attracts the FDI, in particular those in the CEEC. Thus, a negative correlation with FDI is expected.

6. ULC_{ij} is the relative unit labor cost between the host and home countries :
 (ULC_j/ULC_i)

$$ULC_j = \left[\frac{COMP_j/EMPE_j}{GDP_j/EMP_j} \right] \times 100$$

Where $COMP_j$ is the annual nominal work remuneration in the national currency of the host country j converted in dollars; $EMPE_j$ is the salaried employees in the host country j ; GDP_j is the current GDP in dollars of the host country j and EMP_j is total employment in the host country j .

7. EDUC_j is the share of the active population with upper secondary or tertiary education attainment.

Table A.1: Sources of data

Variables	Abbreviations	Sources
Flow of foreign direct investments	$TFDI_{ijt}$	OECD International Direct Investment Statistic Yearbook, European Union Foreign Direct Investment Yearbook (Eurostat, several editions).
Size of the home and host countries	GDP_i et GDP_j	IMF's World Economic Outlook database (2012)
Distance between the capitals of the home and host countries	$DIST_{ij}$	CEPII (center of prospective studies and international information)
Early FDI stock to the host country's GDP	$STOCK93_j$ and $STOCK2002_j$	UNCTAD
Degree of bilateral openness between the home and host countries	$OPEN_{ij}$	CHELEM (harmonized accounts on the exchanges and the world economy)
Technological gap	RD_{ij}	OECD (Organization of cooperation and economic development)
Gap of taxation pressure on companies between the two countries	TAX_{ij}	OECD Tax Database
Relative unit labor cost between host and home countries	ULC_{ij}	Eurostat, OECD and KLEMS
Share of the active population with upper secondary or tertiary education attainment	EDUC _j	Eurostat

A.2:List of countries in our sample

CEECs	EU
Bulgaria Hungary Romania	Austria Finland Italy Sweden
Czech Republic Latvia Slovakia	Benelux(BelgiumLuxembourg) France Netherlands United Kingdom
Estonia Lithuania Slovenia	Denmark Germany Portugal Spain
Poland	Greece Ireland

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