Foreign Direct Investment in Central and Eastern European Countries: A Dynamic Panel Analysis
First Draft

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Abstract

This paper examines the short- and long-term determinants of Foreign Direct Investments (FDI) into Central and Eastern European Countries (CEEC). We use a dynamic panel data analysis of ten OECD countries' FDI outflows into seven CEEC from 1993 to 1999. Our empirical model shows that the traditional determinants of FDI, such as market potential, low unit labor cost, a high ratio of skilled labor relative to the total workforce and low nominal corporate tax rate have significant effects of the expected sign. Moreover, we show that trade and FDI share a complementarity relationship and FDI increases the more specialized are the countries. In addition, transition specific factors such as privatization and the method of privatization and the country risk, play a significant role in determining the flows of FDI into the CEEC.

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1 Introduction

The rapid growth of world FDI flows has motivated the renewal of the new trade theories. The literature has principally concentrated on North-North FDI relying on the stylised fact that FDI is mainly observed between developed countries (Brainard, 1993; Horstmann and Markusen, 1992; Markusen, 1995).

This literature heavily relies on market access rather than comparative advantages as a primary determinant of FDI. In this paper, we follow Markusen et al. (1996), and show that comparative advantages are still important factors for foreign investment when countries differ in their level of development.

We choose Eastern European countries for several reasons. First, the last decade has seen a remarkable growth of European but also American direct investments in this region. This is certainly due to the process of enlargement of the European Union (EU) which began in the mid-nineties. However, other factors such as the large market potential and a relatively cheap and skilled labor force have also played a significant role with respect to the decision of a multinational enterprise (MNE) to invest there. Moreover, the pattern and growth of FDI is different across Eastern countries. That allows us to distinguish between two broad groups of countries: Central European countries[1] (CEE) and South Eastern European countries[2] (SEE), and analyse why some countries perform better in terms of FDI than others.

We add to the existing literature on FDI in Eastern Europe by employing a dynamic panel data approach which not only allows us to make use of all information available in the cross section and time series dimensions but also to distinguish between the short- and long-term determinants of FDI in CEEC. To the best of our knowledge, no-one has used this approach to analyse FDI in Eastern Europe before. So far, few studies have used panel data at all but estimated static models only (Garibaly et al. 2002). By stressing the dynamic nature of FDI we hope to get step closer to reality.

The structure of this paper is as follows. In section 2 below, some relevant stylised facts are presented which guide the subsequent analysis. Then, in section 3 we review the theoretical and empirical literature from which we derive factors with potential impact on FDI in Eastern Europe. The econometric specification and estimation strategy is laid out in sections 4 and 5. In section 6 we present the empirical results while section 7 concludes.

2 Some Stylised Facts

FDI is much more related to developed countries than to developing countries. The world FDI inflows have grown subsequently as seen in Table 1. According to Branton and Gros (1997), the commercial integration of some Eastern european Countries into the European Union has been achieved. Western FDI outflows to Eastern Europe are the characteristics of a deeper phase of integration which

[1] Czech Republic, Hungary, Poland, Slovak Republic, Slovenia

[2] Bulgaria and Romania

has been underway since the mid-nineties. As seen in Table 1, one group of countries, the Central and Eastern European Countries (CEEC), is performing better in term of the attraction of FDI over the period than the Community of Independent States (CIS) and the Baltic countries. Over two third of FDI inflows into Eastern Europe went to the CEEC in 1999. The share was even more higher at the begining of the transition process.

Table 1: FDI inflows in CEEC (Billion US Dollars 1989-2000)

Countries Regions	1989-1994	1995	1996	1997	1998	1999
World	200,10	331,10	384,90	478,00	692,60	1075,00
Developed countries	137,10	203,50	219,70	271,40	483,20	829,80
Developing Countries	59,60	113,30	152,50	187,40	188,40	222,00
Eastern Europe	3,77	16,30	15,68	21,25	24,25	26,03
CIS*	21,88	25,62	37,44	44,5	32,46	31,47
(% of Eastern Europe Total)						
Baltic**	3,62	2,78	4,36	5,37	7,68	4,38
(% of Eastern Europe Total)						
CEEC***	74,50	71,60	58,20	50,03	59,85	64,15
(% of Eastern Europe Total)						
CEEC***	1,70	4,32	3,30	4,02	3,03	2,16
(% of World Total)						
CEEC***	5,40	11,21	7,69	9,29	10,03	9,46
(% of Developing Countries Total)						

Sources: UNCTAD (2001), Promoting linkages. Own Calculations.
* Albania, Armenia, Azerbaijan, Belarus, Croatia, Georgia, Kazakhastan, Krygyz Republic, Macedonia, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan
** Estonia, Latvia, Lithuania
*** Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Slovenia.

Despite the rapid growth of FDI in the region, the inflows to CEEC remain low compared to those in developing countries and to global flows. From Table 1 we see that on average CEEC attains roughly 10% of the FDI inflows to developing countries and 2% of total world FDI inflows. Since 1997, CEEC inflows have even started to decrease relative to world inflows.

However, the CEEC group is not homogenous and, as noted by Bevan and Estrin (2000), the countries where the positive initial conditions have attracted more FDI than their more risky and less performing neighboring countries. The

table 2 presents a brief overview of the state of the transition in some Eastern Economies. The FDI stocks in 1999 are rather high but remain concentrated on some economies.

Table 2: FDI stock by countries (as of december 1999, share in percent)

Countries	FDI Stock 1999 (Billion US dollars)	Gross Domestic Product (Billion US dollars)	wage (US dollars)	Skilled labour force* (%)	Privatization (%)	Country Risk*	Transition index**
Czech Republic	21,10	133,80	297,78	18,84	80	61,96	3,49
Hungary	19,86	115,08	320,90	18,46	80	65,75	3,69
Poland	36,48	326,63	418,67	24,13	65	62,06	3,48
Slovak Republic	4,89	57,15	264,48	14,81	75	48,33	3,33
Slovenia	2,90	31,72	792,82	26,57	55	70,06	3,20
Bulgaria	3,40	41,62	111,69	21,36	70	37,87	2,86
Romania	6,44	135,68	111,70	15,77	60	36,28	2,80
Sources:	UNCTAD (2001)	World Development Indicator (2001)	Countries in Transition (2001)	UNICEF (2001)	EBRD (2001)	Euromoney (1999)	EBRD (2001)

* The higher is the index the less risky is the country

**Own computations. This index is taken as a simple average of the progress in transition indicator proposed by the EBRD

The vast majority of investments goes to Poland, Czech Republic and Hungary, three of the largest CEEC, but also the earliest member of the Central European Free Trade Area[3] (CEFTA). From this first look at the data, we see that the macroeconomic stability, the transition to a private market economy, a sound business environment and a high skilled and cheap labor force may also explain the success of these Central European Countries[4]. For Bulgaria and Romania the same determinants, which developed much less favorable, and the slow progress toward a market economy could have impeded FDI inflows.

As shown in Table 3, the inflows come largely from the EU, with Germany, the Netherlands and Austria being the main investors. The proximity to the

[3]The CEFTA was created in 1992 by the former Czechoslovakia, Hungary and Poland. On March 1993, the CEFTA goes into effect, eliminating duties on approximately 40 % of industrial goods. On January 1997, duties on industrial product were completely remove except for some "sensitive" sectors.

[4]In the Following, we often make the distinction between the Central European Countries (CEE: Czech Republic, Hungary, Poland, Slovak Republic and Slovenia) and the South Eastern European Countries (SEE: Bulgaria and Romania).

Table 3: FDI stock by countries (as of december 1999, share in percent)

Countries	Czech Republic	Hungary	Poland	Slovak Republic	Slovenia	Bulgaria	Romania
EU	82,7	76,9	63,8	74,5	81,2	60,2	56,8
Austria	11,5	11,7	2,3	16,9	37,5	4,5	5,1
France	4,7	6,1	11,0	4,2	12,8	3,0	7,1
Germany	29,6	28,0	17,3	22,0	12,3	15,3	10,2
Italy	0,9	3,2	9,1	1,6	6,6	1,2	7,6
Netherlands	27,1	15,5	9,2	15,0	3,8	6,0	11,6
UK	4,7	6,4	5,9	9,1	4,8	5,7	5,1
Others	4,2	6,0	9	5,7	3,4	24,5	10,1
USA	8,2	12,2	14,7	13,0	4,4	7,1	7,7

Sources: UNCTAD (2001), Promoting linkages.

European Union has surely stimulated market-seeking investment of EU-based multinationals but also, to a smaller extent, greenfield investments. The latter benefit from few large privatization projects mostly in the late 1990's. The position of the US is also non-negligible, particularly in the Visegrad countries (Poland, Czech Republic and Hungary), which absorb about 90% of US investment in the region.

3 Theoretical Background

In order to compensate the costs of operating abroad, a firm must incur significant advantages for going multinational. Dunning (1977, 1981) provides a taxonomy of micro- and macro-economic determinants which explain a firm's willingness and ability to undertake FDI. He suggests a framework of ownership, location and internalization (OLI) advantages as determining factors for FDI.

The ownership advantages come in several forms, all based on the concept of knowledge-based or firm-specific assets. They are associated with R&D, scientific and technical workers, human capital and product differentiation, but also with patents, blueprints, and other marketing assets like trademarks, reputations and brand name. Those firm-specific assets, tangible or intangible, confer the firm cost advantages and market power sufficient to cover the costs of producing abroad.

The sources of location advantages differ with the type of multinational involved. Horizontal multinationals produce the same goods and services across countries. They invest abroad to avoid trade costs (in the form of transport costs, tariffs and quotas) associated with exporting from the home plant to the foreign market. Given the existence of plant-level scale economies, horizontal direct investment is likely to arise when trade costs are high and when the host market is large. These location advantages differ for vertical multinationals

which geographically fragment their production process by stages. They invest abroad to reduce the overall cost of production. Vertical direct investment is likely to arise when these stages of production use different factor intensities and when countries have different factor endowments and/or factor-prices. It is also encouraged by low trade barriers. For instance, a vertical multinational may locate R&D and skill-intensive activities in relatively skill abundant countries and carry out unskill-intensive activities in relatively unskilled-labor abundant countries.

Finally, a multinational must incur an internalization advantage to invest abroad. According to Markusen (2001), firms transfer their specific assets internally in order to prevent them from dissipation which can arise through licensing or cooperation agreements with an independent foreign firm.

An important task of the theory is to connect these advantages in a consistent way[5]. The new trade theory offers rich predictions about the direction and volume of trade between countries. Both are functions of industry characteristics such as factor intensities, increasing returns to scale, product differentiation and country characteristics such as relative endowment differences and trade costs. However, it has failed to incorporate multinational firms.

Recently, a small body of the literature has integrated the key elements of the ownership and locational advantages into imperfect competition models where multinationals arise endogenously. Prominent papers include Horstmann and Markusen (1992) and Brainard (1993). In Brainard's model, three types of equilibria can arise: a pure multinational equilibrium, a pure trade equilibrium and a "mixed equilibrium" where multinationals coexist with national single-plant firms. The model considers identical countries and transport costs. FDI arises as a trade-off between the additional variable cost of exporting and the cost of setting a branch plant abroad. When transport costs are high, FDI becomes much more profitable for firms than exporting in the host countries.

All these models do not account for the host countries' characteristics. The endowment-based approach of FDI is the result of a new stream of the literature which integrates multinationals into general equilibrium models (Markusen and Venables, 1998, 2000; Markusen et al., 1996). Markusen and Venables (1998) propose a model of two countries, two homogenous goods and two factors. Firms in each country can be of two types, either national or multinational. Assuming Cournot competition and free entry, the model can solve for different production regimes[6]. Again, the key variables for determining the presence of multinationals are transport costs, plant and firm-level economies of scale and market size. Asymmetry of countries in terms of relative factor endowments does not lead to vertical multinationals since they are excluded by assumption. Instead, multinationals become more and more important as countries become more similar in size, in relative factor endowments and as the world income grows.

In Markusen and al. (1996), the model is further refined with the formal introduction of both types of multinationals: horizontals and verticals. Verti-

[5] For a detailed discussion see Markusen (1995,1998).

[6] That is the combination of firms which operate in equilibrium.

cal multinationals dominate production when the countries differ significantly in relative factor endowment but are somewhat similar in size. Horizontal multinationals dominate when the countries are similar in both size and relative factor endowments, and when trade costs are moderate to high. Although the complexity of these recent papers does not allow for analytical results, they are still a valuable guide for empirical research as shall be outlined below.

4 Empirical Specification

According to the endowment-based approach, the presence of multinationals in the host country is driven by a set of determinants like relative country size, trade costs, plant and firm specific costs, and relative factor endowment. It also requires other indirect factors such as public or private infrastructure, ranging from utilities to telecommunication, to transport services or legal systems (Markusen and Zhang, 1999).

A relative increase of host market size through integration or free trade agreements should increase multinational activities in the countries involved. However, any econometric analysis of the impact of market size on FDI inflows in CEEC should be undertaken with care. FDI inflows coincided initially with a period of recession until 1995, which can be associated with the transition to a market economy. This suggests a perverse but spurious relationship between FDI and market size if this is simply measured as the actual output of the host country. Practical ways to overcome this statistical problem is to proxy market size by population size (Meyer, 1996), start the analysis at the point of recovery (Barrell and Holland, 2000) or look at FDI inflows relative to GDP (Holland and Pain, 1998). All of these approaches found FDI to be ceteris paribus significantly and positively influenced by market size. As a more promising approach, we propose to consider the market potential associated with a specific location because this is the variable a multinational most probably is concerned about. This market potential is not only related to the domestic market but also to the market of all the neighbouring countries. Even inside a country, the domestic market is limited by transportation costs between the subsidiary and the various regional markets. Therefore, we measure the market potential of a country as the average of the output of all countries in the sample weighted by an inverse distance measure which is derived on a region-to-region basis using transportation costs (see Appendix 1 for details).

According to Brainard (1997), the decision to invest in a country is determined by a trade-off between the willingness to be near customers and suppliers and the aim to exploit the economies of scale from a single plant production. She finds some empirical support for the horizontal model: an increase of the fixed plant cost has a positive impact on exports (because firms can benefit from the economies of scale) while an increase of trade cost (tariffs or transportation costs) has a positive impact on FDI and impedes exports. In empirical applications, distance has often been used to model trade costs. However, since this variable is constant over time it cannot be distinguished from any other

time-invariant variable in our panel. As a consequence, we decide to use the percentage of the host country's tariffs revenue to imports as a proxy for trade costs. This variable has the advantage that it carries much more information than a simple distance measure since it changes over time. In particular, relative tariffs revenues decline in the course of EU enlargement. Because of the aggregate nature of our data, we cannot differentiate between horizontal and vertical FDI and, thus, expect tariffs to have either a negative or a positive impact on FDI.

Given the relatively low labor costs in CEEC, firms are expected to have a strong incentive to locate their labor intensive activities in the area. Holland and Pain (1998), for instance, find that wage differences between CEE countries have a significant impact on FDI inflows from the EU. However, they do not control for the wage relation to the low cost locations within the EU. This in turn does not give the entire impact of the wages on FDI. This is also why we decide to compare bilateraly the costs of each member of our panel. Moreover, low wages do not necessarily reflect low production costs if labor productivity is also low. Taking this into account, the location decision of a multinational rather depends on the relative productivity-adjusted labor cost and the potential access to skilled labor in the host country.[7] We thus expect high unit labor costs of the host country relative to the reporting country to depress FDI while the abundance of a skilled labor force has a positive impact on FDI inflows. In this paper, we measure skill as the fraction of higher-educated workers in the labor force.

Growing trade when countries are different in their relative factor endowments is commonly associated with higher gains due to specialization. According to Helpman (1987), this hold true for multinationals when there are only two factors of production (capital and labour) and all goods are freely traded. Markusen and Venables (1998) show that the effect of a change in relative factor endowments depends on the type of multinational. Vertical direct investment is likely to arise when these stages of production use different factor intensities and when countries have different factor endowments while horizontal direct investment arises when countries are rather similar in their level of development. The absolute difference in GDP per capita is often taken as a proxy for the difference in relative factor endowments. A better measure is the ratio of capital (gross fixed capital formation) over the working population. We expect this variable to be either positive or negative. To some extent, this will give us some information about the type of multinationals operating in Eastern Europe[8].

The 1996 UNCTAD report on FDI incentives concludes that even if the "traditional" determinants mentioned above are still important in the location decision, firms also look for places to invest that offer specific financial and fiscal advantages such as the existence of favourable investment and tax regimes. The lack of data on incentives given to multinationals does not permit to control for

[7] At this point, we depart from the theoretical literature (Markusen at al., 1996) by considering skill in the host instead of the home country.

[8] One has to be careful with this interpretation since we use macroeconomic data, which does not really allow to make the difference between vertical and horizontal FDI.

governments' discriminatory policies towards FDI. However, non-discriminatory practices such as low corporate tax rates should enhance FDI as noted by Raff (2002). We decide to have a closer look at the impact of nominal corporate tax rates corrected for the fiscal regime. This variable is expected to have a negative impact on FDI inflows into CEEC.

There are, of course, other variables with particular importance for transition economies. "Intangible assets" such as the business culture may have a potential positive impact on FDI inflows. The method and the level of privatization can catch such an effect because they are closely related to the effectiveness of the corporate governance. Moreover, we also control for the quality of the business environment and the overall stance of the economy by employing a country risk variable. In fact, we find the uncertainty associated with a country is a strong deterrent for investments.

From the preceding discussion we end up with the following variables with potential influence on FDI inflows to the CEEC. The market potential of the host country $MK_{\mathsf{j}\mathsf{t}}$, tariffs $TARIFF_{\mathsf{j}\mathsf{t}}$ as a proxy for trade costs, relative unit labor costs $RULC_{\mathsf{i}\mathsf{j}\mathsf{t}}$ between the host country j and the home country i, the fraction of skilled labor to total labor $SKILL_{\mathsf{j}\mathsf{t}}$, the relative labor-capital endowment $RLK_{\mathsf{i}\mathsf{j}\mathsf{t}}$ between host and home country, the corporate tax rate $TAX_{\mathsf{i}\mathsf{j}\mathsf{t}}$ which also controls for the different fiscal regimes, the private market share $PRIV_{\mathsf{j}\mathsf{t}}$ of host country j and a political risk index $RISK_{\mathsf{j}\mathsf{t}}$. Note that this index takes higher values the less risk is associated with a specific country and is, therefore, expected to have positive impact on FDI inflows. The the method of privatization which has been used in the host countries is measured by the general index $METH_{\mathsf{j}\mathsf{t}}$ which takes values 1 to 5 indicating different methods ordered from one the most deterrent to the one most attractive for FDI. Since this index has only a natural ordering, it may be more appropriate to split it into five dummy variables $M^{\mathsf{1}}_{\mathsf{j}\mathsf{t}}$ to $M^{\mathsf{5}}_{\mathsf{j}\mathsf{t}}$. More details of the construction of the variables and the data sources are given in Appendix 1 and 2, respectively. The expected signs of the impact of the explanatory variables on FDI are given in Table 4.[9]

The panel comprises eleven OECD reporting countries ($N_{\mathsf{i}} = 10$): Austria, Belgium (including Luxembourg), Denmark, France, Italy, Germany, Portugal, Spain, UK and USA, as well as seven Eastern European partner countries ($N_{\mathsf{j}} = 7$): Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic and Slovenia. We consider the period 1993-1999 for which yearly data are available ($T = 7$).

[9] Since the influence of the dummy variables should be increasing from $\mathsf{M}^{\mathsf{1}}_{\mathsf{j}\mathsf{t}}$ to $\mathsf{M}^{\mathsf{5}}_{\mathsf{j}\mathsf{t}}$, their signs depend on the dummy which we have to drop for the regression in order to avoid perfect collinearity. For instance, if $\mathsf{M}^{\mathsf{3}}_{\mathsf{j}\mathsf{t}}$ is dropped, $\mathsf{M}^{\mathsf{1}}_{\mathsf{j}\mathsf{t}}$ and $\mathsf{M}^{\mathsf{2}}_{\mathsf{j}\mathsf{t}}$ should be negative and $\mathsf{M}^{\mathsf{4}}_{\mathsf{j}\mathsf{t}}$ and $\mathsf{M}^{\mathsf{5}}_{\mathsf{j}\mathsf{t}}$ positive.

Table 4: Variables expected signs

Variables Name	Expected Sign
Market Potential	+
Trade Costs	−/+
Relative Unit Labor Costs	−
Skill Ratio	+
Relative Endowment	+/−
Corporate Tax Rate	−
Private Market Share	+
Methods of Privatization	+
Country Risk	+

5 Econometric Methodology

Our data give rise to a specific panel model with two cross-section dimensions (reporting countries i, $i = 1, \ldots, N_{\mathsf{i}}$, and host countries j, $j = 1, \ldots, N_{\mathsf{j}}$) and one time dimension t, $t = 1, \ldots, T$:

$$y_{\mathsf{ijt}} = x'_{\mathsf{ijt}}\beta + \varepsilon_{\mathsf{ijt}}, \tag{1a}$$

$$\varepsilon_{\mathsf{ijt}} = \mu_{\mathsf{ij}} + \nu_{\mathsf{ijt}}, \tag{1b}$$

where y_{ijt} is the net annual outward bilateral FDI of the reporting country i into host country j at time t and x_{ijt} denotes a $1 \times k$ vector of exogenous variables which vary in the cross-section (either with the reporting country i, the partner country j, or with both) and in the time dimension t. Depending on the model we estimate, x_{ijt} can comprise the following variables described in the preceding section: MK_{ijt}, $TARIFF_{\mathsf{jt}}$, $RULC_{\mathsf{ijt}}$, $SKILL_{\mathsf{jt}}$, RLK_{ijt}, TAX_{ijt}, $PRIV_{\mathsf{jt}}$, $RISK_{\mathsf{jt}}$, $METH_{\mathsf{jt}}$ and $M^{\mathsf{k}}_{\mathsf{jt}}$, $k = 1, \ldots, 5$. Due to the fact that FDI can take negative values meaning a desinvestment, we choose a semi-log model, i.e., only the exogenous variables are given in logs except for $TARIFF_{\mathsf{jt}}$, $RULC_{\mathsf{ijt}}$, $PRIV_{\mathsf{jt}}$, TAX_{ijt} which given in percentage and the dummy variables $M^{\mathsf{k}}_{\mathsf{jt}}$.

The typical error component structure is given in (1b) where μ_{ij} models the time-invariant country pair specific effects[10] and ν_{ijt} is a stochastic error term which is assumed to be uncorrelated over all i, j and t. Due to the heterogeneity of the country pair specific effects, the F-test-statistic rejects the ordinary least square estimation (test statistic 89.82, p-value 0.000). Turning to the choice between fixed and random effects μ_{ij}, the fixed effects model has been preferred because we want to control for structural determinants other than the ones

[10] We also tried to decompose μ_{ij} into a home country specific effect μ_{i} and a host country specific effect μ_{j} with $\mu_{\mathsf{ij}} = \mu_{\mathsf{i}} + \mu_{\mathsf{j}}$. By putting more structure on the model, this decomposition considerably reduces the number of (fixed-effects) parameters from $N_{\mathsf{i}}N_{\mathsf{j}} = 70$ to $N_{\mathsf{i}} + N_{\mathsf{j}} = 17$. However, it is of course not able to resolve the autocorrelation problem reported below. In a dynamic setting the country pair specific effects are simply wiped out by first differencing the model, regardless of the specific (time-invariant) structure. We therefore stick with the traditional one-way error component structure (1b).

associated with the explanatory variables. In addition, the Hausman χ^2-statistic rejects the random effects model (test statistic 14.36, p-value 0.045).

The residuals of the static FDI model exhibit a considerable degree of autocorrelation indicating the presence of a sluggish adjustment process. The LM test for autocorrelation described by Baltagi (2001, p. 95) clearly rejects the null of no autocorrelation (test statistic 23.67, p-value 0.000). We therefore proceed by specifying a dynamic FDI model. For this purpose, we use one lagged endogenous variable as an additional regressor in the economic model:

$$y_{ijt} = y_{ij,t-1}\alpha + x'_{ijt}\beta + \mu_{ij} + \nu_{ijt}, \qquad |\alpha| < 1. \tag{2}$$

The parameter α reflects the persistence in the process of adjustment towards an equilibrium. Note that β now measures the short-run effect of x_{ijt} on y_{ijt} given $y_{ij,t-1}$. The long-run effect is then given as $\beta/(1-\alpha)$.

It is well-known from the work of Nickell (1981) that the least squares dummy variables (LSDV) estimator of the dynamic panel data model (2) is inconsistent because the within transformation of the data which is used to get rid of the individual effects μ_{ij} leads to a correlation between the lagged endogenous variable and the disturbance term. The resulting "Nickell bias" may be severe, in particular for small time dimension T. As a consequence, Anderson and Hsiao (1981) suggest the first difference transformation to wipe out the individual effects,

$$\Delta y_{ijt} = \alpha \Delta y_{ij,t-1} + \Delta x'_{ijt}\beta + \Delta \nu_{ijt}, \tag{3}$$

and then use an instrumental variable like $y_{ij,t-2}$ which is uncorrelated with the disturbance $\Delta\nu_{ijt}$ to obtain a consistent estimator. However, this estimator is inefficient because it does not use all available orthogonality restrictions and neglects the differenced structure of the disturbances. In fact, the assumption of uncorrelated level disturbances ν_{ijt} implies a moving average structure for $\Delta\nu_{ijt}$.

The general method of moments (GMM) estimator of Arellano and Bond (1991) tackles these two problems. First, it employs all possible lags of the variables y_{ijt-1} and x_{ijt} to generate orthogonality restrictions. Second, it uses a nonparametric estimator of the covariance matrix as proposed by Hansen (1982). For predetermined variables x_{ijt}, this results in the moment conditions $E[x_{ij,t-1}\Delta\nu_{ijs}] = 0$ for $t \leq s$ and $E[y_{ij,t-2}\Delta\nu_{ijs}] = 0$ for $t \leq s$. The GMM estimator minimizes the criterion function

$$(\Delta\nu' W) V_N^{-1} (W'\Delta\nu), \tag{4}$$

where $\Delta\nu$ is the vector of differenced disturbances, W denotes the stacked matrix of instruments W_{ij} and V_N^{-1} is the GMM weighting matrix which is optimally given by the inverse of the asymptotic covariance matrix of the orthogonality restrictions. In practice, V_N is estimated as

$$\hat{V}_N = \sum_{i=1}^{N_i} \sum_{j=1}^{N_j} W'_{ij} \Delta\hat{\nu}_{ij} \Delta\hat{\nu}'_{ij} W_{ij}, \tag{5}$$

where $\Delta\hat{\nu}_{\mathsf{ij}}$ are obtained from a first step estimation using a covariance matrix implied by the moving average structure of the disturbances. The closed form solution for the second step Arellano–Bond GMM estimator is then given by

$$\begin{pmatrix} \hat{\alpha}_{\mathsf{AB}} \\ \hat{\beta}_{\mathsf{AB}} \end{pmatrix} = \left(Z'W\hat{V}_{\mathsf{N}}^{-1}W'Z \right)^{-1} Z'W\hat{V}_{\mathsf{N}}^{-1}W'\Delta y, \tag{6}$$

with $Z = [\Delta y_{-1} \Delta X]$.

While this estimator has been widely used in the literature, various authors have proposed additional moment conditions to further improve its efficiency (Arellano and Bover, 1995; Ahn and Schmidt, 1995). In particular, Blundell and Bond (1998) show both asymptotically and in Monte Carlo simulations that using lagged differenced variables as instruments for the equation (2) in levels offers dramatic efficiency gains, in particular for small T. We implement their system GMM estimator by exploiting the additional conditions $E[\Delta y_{\mathsf{ij,t-1}}\varepsilon_{\mathsf{ijt}}] = 0$ and $E[\Delta x_{\mathsf{ij,t-1}}\varepsilon_{\mathsf{ijt}}] = 0$.

With respect to the explanatory variables x_{ijt} we face the problem that there are more moment restrictions available than country pairs $N = N_{\mathsf{i}}N_{\mathsf{j}}$. Since estimation in panel data models normally means averaging only over the cross section dimension, this implies linear dependencies within the moment restrictions and, thus, non-invertibility of the first part of the GMM estimator (6) and of the covariance matrix $\hat{V}_{\mathsf{N}}$. We therefore follow Arellano and Bond (1991, p. 290) and average the moment conditions of the explanatory variables over N and T. Given a time dimension of $T = 7$ we obtain the instrument matrix

$$W_{\mathsf{ij}}^{\mathsf{d}} = \begin{bmatrix} y_{\mathsf{ij1}} & 0 & 0 & \cdots & 0 & \cdots & 0 & x'_{\mathsf{ij2}} \\ 0 & y_{\mathsf{ij1}} & y_{\mathsf{ij2}} & \cdots & 0 & \cdots & 0 & x'_{\mathsf{ij3}} \\ \vdots & \vdots & \vdots & \cdots & \vdots & \cdots & \vdots & \vdots \\ 0 & 0 & 0 & \cdots & y_{\mathsf{ij1}} & \cdots & y_{\mathsf{ij5}} & x'_{\mathsf{ij6}} \end{bmatrix} \tag{7}$$

for the equation in differences and the instrument matrix

$$W_{\mathsf{ij}}^{\mathsf{l}} = \begin{bmatrix} \Delta y_{\mathsf{ij2}} & 0 & \cdots & 0 & \Delta x'_{\mathsf{ij2}} \\ 0 & \Delta y_{\mathsf{ij3}} & \cdots & 0 & \Delta x'_{\mathsf{ij3}} \\ \vdots & \vdots & \cdots & \vdots & \vdots \\ 0 & 0 & \cdots & \Delta y_{\mathsf{ij6}} & \Delta x'_{\mathsf{ij6}} \end{bmatrix} \tag{8}$$

for the equation in levels. Stacking the equations yields the system instrument matrix

$$W_{\mathsf{ij}}^{\mathsf{s}} = \begin{bmatrix} W_{\mathsf{ij}}^{\mathsf{d}} & 0 \\ 0 & W_{\mathsf{ij}}^{\mathsf{l}} \end{bmatrix}. \tag{9}$$

The calculation of the two–step GMM estimator proceeds as outlined for the Arellano–Bond estimator described above.

6 Estimation Results

The estimated coefficients of the dynamic model (2) are presented in Table 6 while the long-run parameters are displayed in Table ?? in Appendix 3. We report five different, increasingly complex specifications (S1) to (S5). This allows us to study the effects of taking up more and more explanatory variables and assess the robustness of our model.

The baseline specifications (S1) and (S2) are designed to catch the effects of the "traditional" determinants for FDI inflows, thereby neglecting the determinants specific to the CEE host countries. The only difference between (S1) and (S2) is that we use the skill ratio as endowment variable in the first specification while we replace it with the labor-capital ratio in the second.

For specifications (S3) and (S4) we pay attention to the transition process in the CEEC by controlling for the private market share and the privatization method. While specification (S3) uses the privatization index $METH_{jt}$ which takes values between 1 and 5, we replace it by the four dummy variables M^1_{jt} (vouchers), M^2_{jt} (MEBO), M^4_{jt} (SOO and MEBO) and M^5_{jt} (SOO) in (S4).[11] In the last specification (S5) we additionally control for the host country specific risk which is obviously also closely related to the transition path each country pursues.

As a first step to assess the validity of the five specifications we compute for each of them the Sargan test for overidentifying restrictions and the Arellano and Bond (1991) m_2 test for autocorrelation.[12] Except for specification (S4), the overidentifying restrictions cannot be rejected at the 5% level. Moreover, since Arellano and Bond (1991) notice a strong tendency of the Sargan test to overrejection, the p-value of 0.045 in model (S4) is not very troublesome. The m_2 test for absence of second order autocorrelation of the differenced disturbances is particularly important because the consistency of the GMM estimator hinges on this property. For each of the five specifications we cannot reject the null of uncorrelatedness at any conventional significance level. We therefore conclude that the GMM method is appropriate for our model and the data at hand.

In all specifications, the significant and positive short-term impact of the lagged FDI indicates that the adjustment process plays an non-negligible albeit limited role. The maximum estimate of $\hat{\alpha} = 0.375$ in specification (S2) can be interpreted as follows: a permanent change in an exogenous variable has $(1-\alpha) \times 100\% = 63.5\%$ of its long-run impact in the first period, $(1+\alpha)(1-\alpha) \times 100\% = 85.9\%$ after two periods, $(1+\alpha+\alpha^2)(1-\alpha) \times 100\% = 94.7\%$ after three periods and so on. As a single measure of persistence we can use the mean lag (Hendry, 1995, p. 215) which in our case takes the value $\hat{\alpha}/(1-\hat{\alpha}) = 0.6$ years.

The low coefficient of the lagged FDI variable can be explained by two reasons. First, Mergers and Acquisitions are the principal vehicles of FDI in the region. in this case, the high participation or entry costs are followed by much

[11] Note that we leave out M^3_{jt} (MBEO and SOO) to avoid perfect collinearity.

[12] In fact, we employ a variant of the m_2 test adjusted for the extended number of moment conditions we use.

Table 5: The Dynamic Model Results: Short-Term Parameters

Independent variables	Label	(S1)	(S2)	(S3)	(S4)	(S5)
Lagged FDI	FDI_{t-1}	0.335***	0.375***	0.194***	0.240***	0.194***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.008)
Market Potential	MK_{jt}	171.26***	98.058***	57.934**	181.884***	102.441**
		(0.000)	(0.000)	(0.032)	(0.000)	(0.019)
Trade Costs	$TARIFF_{jt}$	-19.639***	-22.980***	-3.512*	-10.203***	-6.229*
		(0.000)	(0.000)	(0.052)	(0.008)	(0.063)
Relative Unit Labor Costs	$RULC_{ijt}$	-25.878***	-14.446***	-19.336***	-24.979***	-21.145**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.014)
Skill Ratio	$SKILL_{jt}$	121.822**		203.916***	223.915***	328.904***
		(0.0122)		(0.000)	(0.002)	(0.000)
Corporate Tax Rate	TAX_{ijt}	-1.909*	-5.710***	-1.860**	-3.946**	-5.904***
		(0.061)	(0.002)	(0.031)	(0.049)	(0.008)
Relative Endowments	RLK_{ijt}		20.418**			
			(0.0434)			
Private Market Share	$PRIV_{jt}$			242.454***	47.680	233.444*
				(0.003)	(0.373)	(0.057)
Methods of Privatization	$METH_{jt}$			75.479***		
				(0.000)		
Vouchers	M^1_{jt}				-83.744**	-70.200*
					(0.033)	(0.072)
MEBO	M^2_{jt}				-30.476***	-53.878***
					(0.010)	(0.000)
SOO and MEBO	M^4_{jt}				111.822***	83.010***
					(0.000)	(0.000)
SOO	M^5_{jt}				362.372***	347.208***
					(0.004)	(0.000)
Country Risk	$RISK_{jt}$					12.781***
						(0.000)
Number of Observations		420	420	420	420	420
Sargan Test		23.628	21.092	30.342	43.165**	41.58*
		(0.483)	(0.633)	(0.254)	(0.045)	(0.078)
Second Order Autocorrelation		0.253	0.199	0.305	-0.266	-0.345
		(0.800)	(0.842)	(0.760)	(0.790)	(0.729)
Long Run Multiplier		1.504	1.600	1.241	1.316	1.241

Notes: p-values in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

smaller capital flows (restructuration, training of the work force, etc.). Second, greenfield or brownfield investments, even if increasing in transition economies, have remained marginal relative to the other forms of FDI (Alessandrini et al., 2000).

With respect to the exogenous variables the first thing to note is that the signs of their estimated parameters are all in accordance with our theoretical expectations presented in Table 4.

Turning now to the first specification we can assess the impact of "traditional" determinants on FDI. Remember that only the exogenous variables are in logs so that the parameters have to be interpreted as semi-elasticities. Market potential has a substantial positive effect on FDI. If it increases by 1%, the average bilateral FDI outflows from one home to one host country rise by about 171 million dollars in the first year and 258 million dollars in the long run. Given the ten home countries in our sample, each of the seven CEE host countries would receive additional FDI inflows of 1.71 billion dollars in the first year and 2.58 billion dollars in the long run. From this perspective, the EU enlargement should have dramatic effects of the FDI flows to CEEC because their market potential is expected to rise considerably in case of their integration into EU by increasing the GDP of the CEEC and reducing the distance (i.e. transportation costs) to the EU.

The decreasing trade costs in the course of the EU enlargement should also be reflected by a reduction of CEEC tariffs. This is a second channel by which integration into EU is expected to have positive effects on FDI in CEEC. A reduction of 1% of the tariffs increases FDI by almost 20 million dollars in the first year and 30 million dollars in the long run. Again taking all home countries together, each CEE host country receives additional 200 million dollars (300 million in the long run). The fact that FDI inflows rise with decreasing tariffs indicates a complementarity relationship between trade and FDI but is also a feature of vertical multinational activities.

According to the endowment-based theory, vertical multinationals reduce the overall costs of production by locating their labor-intensive activities in countries with relatively low unit labor costs. This is also the case in our sample, where a decrease of the unit labor costs of one CEE country vis-à-vis a reporting country increases the outflows of FDI into this country by roughly 25 million dollars in the first year and 39 million in the long run. However, one should expect the process of integration to reduce the unit labor costs differences between the CEEC and the European Union. This catching-up process should reduce the inflows of FDI in the long run.

The education of the labor force in the host country as measured by our skill ratio has a strong positive impact on FDI inflows. Obviously, a skilled labor force plays a crucial role for the adaptation to the western business culture but also for innovations and for the size and composition of demand as noted by Egger (2001). Not surprisingly, multinationals investing in CEEC are not only motivated by relatively cheap labor but also discriminate between more or less skilled labor in the host countries.

Relatively high corporate tax rates exert pressure on profits and have an

adverse effect on FDI outflows to Central and Eastern Europe. However, the estimated parameter value is small and not significant at the 5% level. A decrease of the nominal corporate tax rate in the host countries by 1 percentage point increases bilateral FDI flows by only 2 million dollars in the first year. This small impact may be due to the fact that we do not take into account the special tax regimes designed to attract FDI.

The second specification (S2) replaces the skill variable with a relative endowment variable. This has a particular strong effect on the coefficients of market potential and relative unit labor costs, both of which remain highly significant. The construction of the these variables may have led to some weak collinearity between them. However, it does not affect the main results which confirm Helpman (1984). Our empirical evidence shows that FDI increases as countries become more and more different in their relative endowments. This also means that the FDI flows are growing up with the spezialization. As mentioned above, the sign of the relative endowment variable in not so clear-cut and obviously depends on its definition. The positive impact indicates activities of vertical multinationals but this result cannot be clearly confirmed due to the aggregated nature of the data.

In the specifications (S3) to (S5), we introduce two transition specific variables: the market share of private businesses and the method of privatization. As argued above, not only the level but also the method of privatization are expected to seriously affect the flows of FDI. The estimation results confirm this view. In specification (S3) both the private market share and the privatization index are highly significant and positive. Moreover, the introduction of these variables does not change the sign of the baseline variables but considerably lowers their (absolute) impacts in comparison to specification (S1) with the skill ratio being the only notable exception. We interpret this as indication for the importance of the transition specific variables. The relevance of other determinants nonwithstanding, the decision to invest in CEEC relies heavily on level and method of privatization. This is in accordance with the stylised fact that, despite their large markets and their relative low costs, Bulgaria and Romania were always performing badly in terms of FDI before 1996. It is only recently with the introduction of new privatization laws which enable sales to outside owners, that they succeed to attract FDI.

The estimated coefficient of $PRIV_{\mathrm{jt}}$ means that a rise of private market share by 1% leads on average to additional 242 million dollars bilateral FDI into this country in the short run (300 million in the long run). Given the ten reporting countries under consideration, this implies a total FDI increase of 2.42 billion dollars in the first year (3 billion in the long run). At the same time, the method of privatization as defined by Holland and Pain (1998) is also particularly important. The estimated coefficient of roughly 75 can only interpreted with caution because the privatization index used in specification (S3) is constructed as a metric variable although it is really only an ordinal measure. It implies that changing the privatization scheme from, say, vouchers ($METH_{\mathrm{jt}} = 1$) to MEBO ($METH_{\mathrm{jt}} = 2$) has the same short-run impact of additional 75 million dollars bilateral FDI inflows as a change from SOO and

MEBO ($METH_{jt} = 4$) to SOO ($METH_{jt} = 5$). This equidistance assumption may be very unrealistic.

In specification (S4), we therefore replace the method of privatization variable by five dummies, M^1_{jt} to M^5_{jt}. To avoid perfect collinearity, we arbitrarily omit M^3_{jt}. As a consequence, the impacts of the other dummy variables have to be interpreted as departures from privatization method 3 (MEBO and SOO). For instance, using method 1 (vouchers) leads to roughly 84 million dollars less bilateral FDI inflows than using method 3. Using the four estimated coefficients, we can thus derive that a change from vouchers to MEBO has a short-run effect of additional $-30 + 84 = 54$ million dollars bilateral FDI inflows while a change from SOO and MEBO to SOO leads to an FDI increase of $362 - 112 = 250$ million dollars in the first year. From this result we infer that the equidistance assumption is clearly untenable and recommend using the dummy variables instead of the privatization index $METH_{jt}$.

However, this has an adverse effect on the relevance of the private market share as an explanatory variable. The estimated coefficient is much smaller than in specification (S3) and insignificant. On the one hand, this can be explained by the fact that the method and level of privatization are correlated which leads to collinearity between the dummy variables and the private market share. On the other hand, the Sargan test is significant at the 5% level which might indicate a misspecification although, as argued above, this tests tends to overreject the null hypothesis.

In specification (S5) we therefore introduce the additional explanatory variable $RISK_{jt}$ which controls for the overall risk of the host countries. This variable which takes values between 10 (no risk of non-payment of foreign debt) and 0 (no chance of payment) should be highly relevant for firms making investment decisions. Moreover, it should be expected that this variable is somewhat correlated with the level of privatization because the countries with the fastest privatization are also the less risky country in our panel. In order to separate the two effects, it might be necessary to include both variables at the same time. The estimation results confirm this view. The coefficient of private market share is virtually the same as in specification (S3) and significant at the 10% level. The parameters of the dummy variables have the same overall magnitude as in specification (S4). The fact that they shrink somewhat towards zero indicates that the impact of the method of privatization is slightly overestimated in specification (S4).

As expected, the coefficient of the $RISK_{jt}$ variable is highly significant and positive. The higher the country risk index, i.e. the less risky the investment, the more attractive is a country for FDI. Note however, that the introduction of the country risk variable lowers considerably the coefficient and the significance level of the trade costs variable. Since country risk is defined as the risk of non-payment or non-servicing payments for goods or services, loans, trade-related finance and dividends and the non-repatriation of capital, it is also a type of trade costs which is associated with the business environment and obviously shares some common information with the $TARIFF_{jt}$ variable. Finally, the

large coefficient of the skill ratio again indicates the importance of a highly educated workforce in addition to relative unit labor costs.

7 Concluding Remarks and Extensions

This paper analyzes the factors that encourage and impede FDI flows from OECD countries into Central and Eastern Europe. We estimate a dynamic panel data model and find a robust and positive impact of the market potential on FDI. However, market access explains only partly the motivation for multinationals to invest in CEEC. Comparative advantages matter when countries differ in their level of development. We find that the more the countries are specialized, the more FDI they get and that FDI and trade share a complementarity relationship. Moreover, a relatively cheap and skilled labour force exerts a positive and significant impact on direct investments while high corporate tax rates impede FDI.

Controlling for some transition indicators, we find that the level of private market share, the method of privatization, and the country's risk are of considerable importance for FDI in CEEC. The privatization level is an indicator of the transition to a market economy while the methods of privatization indicate the efficiency of the corporate governance. Both influence positively the FDI flows. However, as shown by the country risk, the uncertainty linked to the legal and economic environment is an important deterrent of FDI.

The model allow us to distinguish between two broad country groups. The Central European economies are the most successful transition countries in attracting FDI. This is due to their relative high market potential and their sound legal and economic environment. However, the relative high cost location (relative to the member of the panel) may have impeded FDI. Southern Eastern Europe has certainly beneficiated from the low labor cost. However, as noted earlier, Bulgarian and Romanian turned to attract FDI only late in the nineties with their foreign-oriented privatization policies.

The Enlargement of the European union is two folds. Our empirical evidence shows that the first effect of the formation of a custom union with the EU is the raise of FDI flows into CEEC through higher market potential and lower tariffs. In the long run, a second effect, the catching-up process, should reduce the competitiveness of those countries by increasing unit labor costs. This result depends crucially on the type of multinational operating in the East. Vertical FDI benefits from low cost locations while horizontal FDI is likely to arise the higher the market potential is. Future research raises the need for firm-level data, which should allow us to determine more precisely the Enlargement's impact on the location of multinationals.

We should also pay more attention to the relationship between trade and FDI. Our model shows some complementary relationships between FDI and trade. However, one has to be cautious with this result, because no trade variables were included in the estimation. A SUR model that takes trade and FDI into account should be much more accurate. This is also a topic for further

empirical research.

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Appendix 1: Construction of Variables

The subscript i refers to the home country while j refers to the host country, t is the period. All the data were converted in US dollars.

1. MK_{jt} denotes the market potential of the host country. This market potential is not only related to the domestic market but also to the market of all the neighbouring countries. We measure MK_{jt} by taking into account the host internal transportation costs proxied by the distance in minutes and the transportation cost between the host and the home country.

   - In a first step, we compute the weighted arithmetic distance d_{ijt} over all region-to-region distances $\delta_{kk'}$ between country j and i. R_i is defined as the set of all regions in country i and $\widetilde{GDP}_{kt}$ the GDP of region k at time t.

     $$d_{ijt} = \sum_{k \in R_j} \sum_{k' \in R_i} \frac{\widetilde{GDP}_{kt}}{GDP_{jt}} \frac{\widetilde{GDP}_{k't}}{GDP_{it}} \delta_{kk'}$$

   - In a second step, we introduce the transportation costs in the calculation of market potentials for each year

     $$MK_{jt} = \sum_i \frac{GDP_{it}}{d_{ijt}}$$

2. $TARIFF_{jt}$ is the trade cost proxy for country j. We consider the tariff revenues as percentage of imports.

3. $RULC_{ijt}$ is the relative unit labor cost between the host county j and the home country i:

   $$RULC_{ijt} = \frac{ULC_{jt}}{ULC_{it}},$$

   where ULC_{jt}, the unit labor cost of Eastern European Countries, are computed as $ULC_{jt} = \frac{W_{jt} * E_{jt}}{GDP_{jt}}$ with W_{jt} the average monthly gross wage, E_{jt} the total employment and GDP_{jt} the gross domestic product in millions US$. The unit labor costs of the reporting countries ULC_{it} are calculated as $ULC_{it} = \frac{C_{it}E_{it}}{GDP_{it}e_{it}}$ with C_{it} the compensation of employees, E_{it} the total employment, e_{it} the wage and salary earners and GDP_{it} the gross domestic product in millions US$.

4. RKL_{ijt} measures the relative capital labor ratio between country j and country i:

   $$RKL_{ijt} = \ln \frac{K_i}{L_i} - \ln \frac{K_j}{L_j},$$

   where K is gross fixed capital formation and L is employment.

5. $SKILL_{jt}$ measures the relation of skilled to total labor in CEEC:

$$SKILL_{jt} = \frac{EDU^3_{jt} + EDU^2_{jt}}{EDU^3_{jt} + EDU^2_{jt} + EDU^1_{jt}},$$

with EDU^h_{jt} being the gross education enrollment, $h = 1, 2, 3$, where $h = 3$ denotes tertiary education, $h = 2$ secondary education and $h = 1$ primary education.

6. TAX_{ijt} is the corporate tax rate which also controls for the different fiscal regimes

   $TAX_{ijt} = TAX_{jt} - TAX_{it}$.

   - If the investing country has adopted an exemption scheme, the above calculation applies.
   - If the investing country has adopted a (partial) credit scheme and $TAX_{it} > TAX_{jt}$, then $TAX_{ijt} = 0$.
   - If the investing country has adopted a (partial) credit scheme and $TAX_{it} < TAX_{jt}$, then the above calculation applies.

7. $PRIV_{jt}$ is the market share of private businesses in country j as percent of GDP.

8. $METH_{jt}$ indicates the method of privatization that has been used in Eastern europe. We follow Holland and Pain (1998) and construct the $METH_{jt}$ variable as in Table A1. We use the abbreviations SOO and MEBO for Sales to Outside Owners and Managers and Employees Buy-Outs, respectively. Additionally, we split the variable into 5 dummies: M^1_{jt} to M^5_{jt} each corresponding to the method used at time t.

   Table A1: The Method of Privatization (From Holland and Pain, 1998)

Ranking	Primary Method	Secondary Method
5	SOO	-
4	SOO	Voucher or MEBO
3	Voucher or MEBO	SOO
2	Voucher or MEBO	MEBO or Voucher
1	Voucher or MEBO	-

9. $RISK_{jt}$ is the poltical risk index taken from various issues of Euromoney. It is defined as the risk of non-payment or non-servicing payments for goods or services, loans, trade-related finance and dividends and the non-repatriation of capital. This variable takes values from 10 (nil risk of non-payment) to 0 (no chance of payments). Countries were scored in comparison both with each other and with the previous year.

Appendix 2: Data Sources

Table A2: The Data Sources

Variables Name	Label	Sources
Foreign Direct Investments	FDI	OECD International Direct Investment Statistic Yearbook, European Union Foreign Direct Investment Yearbook. Several Editions
Market Potential	MK_{jt}	The GDP data were taken from the World Developement Indicators, several editions. Regional GDPs and distances were kindly provided by Prof. Johannes Bröcker (see Bröcker et al, 2001)
Trade Costs	$TARIFF_{jt}$	EBRD (2001), Transition Report
Relative Unit Labor Costs	$RULC_{ijt}$	European Economy (2002); the Vienna Institute of International Economic Studies; International Labor Office
Skill Ratio	$SKILL_{jt}$	UNICEF (2001), "A Decade of Transition", The MONEE Project CEE/CIS/Baltic, Regional Monitoring Report, 8. The World Development Indicator, several editions.
Relative Factor Endowments	RKL_{ijt}	The gross fixed capital formation was taken from the Transition Report (2001). The employment variable comes from the World Developement Indicators 2001 CD-ROM
Corporate Tax Rate	TAX_{ijt}	PriceWaterhouseCoopers, Corporate Taxes, Worlwide summaries. Several Editions.
Private Market Share	$PRIV_{jt}$	EBRD (2001), Transition Report
Methods of Privatization	$METH_{jt}$	EBRD (1997), Transition Report; Holland and Pain (1998); Böhm A. Simoneti M., (1993-1995), Privatization in Central and Eastern Europe, CEEPN.
Country Risk	$RISK_{jt}$	Euromoney. Several Editions

Appendix 3: Long-Run Parameters

Table A3: The Dynamic Model Results: Long-Run Parameters

Independent variables	Label	(1)	(2)	(3)	(4)	(5)
Market Potential	MK_{jt}	257.623***	156.863***	71.896**	239.415***	127.133***
		(0.000)	(0.000)	(0.023)	(0.000)	(0.010)
Trade Costs	$TARIFF_{jt}$	-29.543***	-36.762***	-4.359*	-13.430***	–7.730*
		(0.000)	(0.000)	(0.053)	(0.008)	(0.066)
Relative Unit Labor Costs		-38.929***	-23.109***	-23.996***	-32.880***	-26.242**
	$RULC_{ijt}$	(0.000)	(0.000)	(0.001)	(0.000)	(0.018)
Skill Ratio	$SKILL_{jt}$	183.255***		253.057***	294.742***	408.185***
		(0.007)		(0.000)	(0.002)	(0.000)
Corporate Tax Rate	TAX_{ijt}	-2.872*	-9.128***	-2.308**	-5.194**	-7.333***
		(0.071)	(0.004)	(0.034)	(0.051)	(0.009)
Relative Endowments	RLK_{ijt}		32.662**			
			(0.044)			
Private Market Share	$PRIV_{jt}$			300.883***	62.761	289.714*
				(0.005)	(0.374)	(0.062)
Methods of Privatization	$METH_{jt}$			93.667***		
				(0.000)		
Vouchers	M^1_{jt}				-110.233**	-87.121*
					(0.031)	(0.075)
MEBO	M^2_{jt}				-40.115***	-66.865***
					(0.009)	(0.000)
SOO and MEBO	M^4_{jt}				147.192***	103.019***
					(0.000)	(0.000)
SOO	M^5_{jt}				476.993***	430.900***
					(0.001)	(0.002)
Country Risk	$RISK_{jt}$					15.862***
						(0.000)
Number of Observations		420	420	420	420	420
Long Run Multiplier		1.504	1.600	1.241	1.316	1.241

p-values in parentheses, * significant at 10%, ** significant at 5%, *** significant at 1%