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The Role of Public Policy in Closing Foreign Direct Investment Gaps: An Empirical Analysis

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Christian Bellak,
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The Role of Public Policy in Closing Foreign Direct Investment Gaps: An Empirical Analysis

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Abstract

Using public policy instruments to attract foreign direct investment (FDI) has become standard in most countries, irrespective of their level of development, geographical location or industrial structure. Against this background the paper analyses the suitability of various public policies to attract inward FDI stock based on a sample of 11 countries and 10 industries from the manufacturing sector over 10 years. For this aim we derive an empirical baseline model of the determinants of inward FDI stock. From this baseline model, FDI gaps – measured as the difference between the 'estimated actual' inward FDI stock and the 'potential' FDI stock which could be realized if a certain 'best practice policy' were carried out – are derived. The analysis focuses on business taxation, public research and development expenditures, the information and communication infrastructure endowment, labour costs as well as institutional and skill-related policies. The analysis inter alia *reveals the share of each of these location factors in the total industry- and country-level FDI gap.*

Keywords: *economic policy, foreign direct investment, European Union, industry-level study, location decision*

JEL classification: *F21, H25, H71*

Christian Bellak, Markus Leibrecht and Robert Stehrer

The role of public policy in closing foreign direct investment gaps: an empirical analysis

1 Introduction

Using public policy instruments to attract foreign direct investment (FDI) has become standard in most countries, irrespective of their level of development, geographical location or industrial structure. A central policy question in this context is, which location factors should be influenced by public policies to attract FDI. Yet, even if the most important determinants of FDI are isolated, the question remains which of these determinants should be focused on to attract FDI given a country's or an industry's relative position with respect to the various determinants of FDI.

In this paper we address both these questions with the aim of providing some insights for policy makers seeking promising areas of action and an efficient means of conducting FDI attraction policies. We proceed in two steps. In step one we address the first question by estimating an empirical baseline model using econometric panel data methods which shows the most important determinants of industry-level inward FDI stock in the US and six old EU member countries (US-plus-EU-6) as well as in four Central and Eastern European new EU member countries (CEEC-4) over a time span of ten years (1995-2004).[1] Step two addresses the second question. Given the baseline model, various FDI gaps – measured as the difference between an 'estimated actual' and a 'potential' inward FDI stock – are derived. These gaps *inter alia* show the particular location factors which should be addressed by policy makers to increase inward FDI stock in certain countries and industries. We focus on the following location factors: effective corporate income taxes, public research and development (R&D) expenditures, the information and communication (ICT) infrastructure endowment as well as the skill level of workers, labour costs and the FDI-related institutional environment.[2]

The paper is structured as follows: Section 2 focuses on the empirical model, the econometric methodology applied and the baseline results derived (i.e., step one). It also provides information about the choice and the measurement of the location factors considered and the data sources used. In Section 3 we explain the derivation of FDI gaps and then provide some policy analysis based on the results of the above analysis (i.e., step two). Section 4 summarizes and concludes.

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[1] The EU countries included are: Austria (AUT), Finland (FIN), France (FRA), Great Britain (GBR), the Netherlands (NLD) and Germany (GER) as well as the Czech Republic (CZE), Hungary (HUN), Slovenia (SVN) and Slovakia (SVK).

[2] These variables are titled 'policy variables' throughout the paper.

2 Determinants of inward FDI stock

2.1 The empirical model

The empirical model applied is to some extent based on the gravity model equation (see, e.g., Demekas et al., 2007). It relates the logarithm of FDI, in our case the inward FDI stock of country i and industry j in year t, to a set of location factors:

$$\log\ FDI_{ijt} = b_1 + b_2 X_{i,t} + b_3 Z_{ij,t} + \gamma_t + \alpha_{ij} + \varepsilon_{ij,t}\ ) \qquad (1)$$

The matrix X_{it} contains FDI-relevant location factors which vary over countries and over time and Z_{ijt} includes variables varying over time and over country-industry pairs. The former reflect the economic environment which is the same across all industries, while the latter group of variables reflects specific industry conditions. γ_t denotes a matrix of (T-1) time dummies, α_{ij} are (n-1) country-industry-pair-specific effects capturing the impact of time-invariant country, industry and country-industry factors and ε_{ijt} is the remainder error term.

In order to isolate the relevant determinants of the FDI location decision of a Multinational Enterprise (MNE) which are contained in X_{it} and Z_{ijt} we follow Devereux and Griffith (1998: 344 and 349) and assume that, out of a number of *k* potential locations, a firm will decide to invest where after-tax profits are higher compared to alternative locations. And, given the location decision, an MNE invests until the investment exactly earns the cost of capital.

Generally, profits are a function of revenues and production costs, which in turn depend on the optimal level of output. Put differently, profits *inter alia* depend on the determinants of marginal costs and marginal revenues. Furthermore, profits also depend on any fixed costs incurred by investing in a foreign location. For example, a country's political and macroeconomic risk level may generate transaction costs that have to be covered independently of any effective production activity. Net or after-tax profits as well as the cost of capital also depend on the taxation of (gross) profits in the host country.

The choice of variables is, on the one hand, based on FDI theories which stress the difference between market-related (e.g. market size) and efficiency-related (e.g. factor endowment) location factors (see, for instance, Markusen and Maskus, 2002).[3] On the other hand, variables are derived from existing, partly gravity-model based, empirical studies on the determinants of FDI (e.g. Devereux and Griffith, 1998; Markusen and Maskus, 2002; Yeaple, 2003; Clausing and Dorobantu, 2005; Bénassy-Quéré et al., 2007a

[3] However, as Helpman (2006) argues, '… the traditional classification of FDI into vertical and horizontal forms has become less meaningful in practice. Large multinationals invest in low-cost countries to create export platforms from which they serve other countries around the world …' (p. 590). Thus, in this paper, we do not classify the determinants into market- and efficiency-related factors.

and 2007b; Demekas et al., 2007; Buch and Lipponer, 2007). Moreover, instruments from the expenditure and the revenue side of the public budget together with variables capturing the regulatory and the FDI-related institutional environment are included in the empirical model.

Specifically, the variables considered to enter X_{it} are market size (Pot_{it}) and GDP per capita ($GDPcap_{it}$), which are gravity-type variables, the average effective tax rate on corporate profits ($Eatr_{it}$), public R&D expenditures as per cent of GDP ($Govgerd_{it}$), the political risk level ($Risk_{it}$), the macroeconomic risk level ($Infl_{it}$), the ICT-infrastructure endowment (Ict_{it}), and the level of legal barriers to FDI ($Freefdi_{it}$). Variables entering Z_{ijt} are labour costs ($Labcst_{ij,t}$), labour productivity ($Labprd_{ij,t}$) and the share of low-skilled hours worked ($H\_ls_{ij,t}$).

We expect Pot_{it} to have a positive impact on FDI as this variable captures market size. An increase in market size, *ceteris paribus,* should have a positive impact on revenues and hence the profits of a firm. The sign of the coefficient of $GDPcap_{it}$ is ambiguous *a priori* (see, e.g., Bénassy-Quéré et al., 2007a), pointing to its role as a 'catch-all' variable: On the one hand, this variable captures the capital abundance of a host country and, if capital-abundant countries receive less capital, a negative sign should be expected (see, e.g., Egger and Pfaffermayr, 2004). Moreover, $GDPcap_{it}$ might represent effects of labour costs on the production costs (see, e.g., Mutti and Grubert, 2004), again implying a negatively signed coefficient. On the other hand, $GDPcap_{it}$ captures positive effects on the profit level of an FDI via a favourable infrastructure endowment (see, e.g., Mutti, 2004), high demand and labour productivity (e.g., Mutti and Grubert, 2004), as well as better institutions (e.g., Bénassy-Quéré et al., 2007a).

Thus, in principle, the host country's GDP per capita could be substituted by these underlying variables. As we do not have valid proxies for all of these variables we include $GDPcap_{it}$ in the empirical model. Yet, at the same time we wish to include some of these underlying variables explicitly (the ICT-infrastructure endowment, labour costs, labour productivity, political risk level, the macroeconomic risk level, public expenditures on R&D). This creates the problem of a high correlation between $GDPcap_{it}$ and some of these variables. To cope with this problem, we follow Bénassy-Quéré et al. (2007a) as outlined in Section 2.3 below.

Labour costs partly reflect to what extent the FDI location decision is driven by efficiency considerations. An increase in $Labcst_{ij,t}$ *ceteris paribus,* increases production costs. We therefore expect a negatively signed coefficient. An increase in $Labprd_{ij,t}$ should impact positively on FDI, not least via its favourable impact on production costs and thus on profitability. Moreover, more productive firms are more competitive (in terms of exports etc. – see, e.g., Girma et al., 2005). Thus, high productivity is a signal to foreign investors beyond pure costs but about the general conditions in the host country/industry. Thus, the sign of this variable's coefficient is expected to be positive.

The share of low-skilled workers, $H\_ls_{ij,t}$, is used as a proxy for the skill level. We opt for the share of low-skilled workers as the data seem to be more reliable than those on high-skilled workers, which to a large extent also reflect country specificities in the educational system that may blur the distinction between medium-skilled and high-skilled workers. Further, in the manufacturing sector in particular, the medium-educated workers (including technicians) are important for productivity performance, among other factors. The sign of the coefficient depends on the underlying motive for FDI, i.e. whether it is vertically or horizontally motivated. In the first case, an increase in $H\_ls_{ij,t}$ could lead to an increase of FDI originating in high-skill countries/industries as MNEs exploit differences in factor endowments. In the second case, the sign should be negative, as firms duplicate plants (export substitution) and most FDI originates in high-income, high-skill countries (see, e.g., Barba Navaretti and Venables, 2004, chapter 2). Thus, the sign is indeterminate *a priori*.

The change in the consumer price index, $Infl_{it}$, is used as a proxy for macroeconomic risk, as a high inflation rate indicates macroeconomic uncertainty (Buch and Lipponer, 2007). Larger uncertainty may translate into higher fixed costs of production, for example due to larger efforts to insure against risks of various forms or due to larger transaction costs in establishing and enforcing contracts. Thus, on the one hand, we expect an increase in $Infl_{it}$ to lead to a decrease in FDI. Yet, on the other hand, Buch and Lipponer (2007) also note that 'the impact of inflation on FDI and cross-border services is not clear-cut a priori […] higher inflation might also have a positive impact on the nominal dependent variables […]' (p. 816). As our dependent variable is measured in nominal terms (see Table 1) the sign of this variable's coefficient is also ambiguous *a priori*.

Similarly to $Infl_{it}$ a higher level of political risk ($Risk_{it}$) should impact negatively on FDI. Yet, due to the particular definition of the measure of $Risk_{it}$ used[4] we expect a positively signed coefficient. Variable $Freefdi_{it}$ is intended to capture legal barriers to inward FDI. In particular, this variable incorporates restrictions on FDI which limit the inflow of capital and thus hamper economic freedom. By contrast, little or no restriction of foreign investment enhances economic freedom because foreign investment provides funds for economic expansion. For this factor, the more restrictions countries impose on foreign investment, the lower is their level of economic freedom and the higher their score. Thus, we expect a negative sign for this variable as less economic freedom means less opportunities to generate profits.

[4] The level of political risk decreases with an increase in the value of the risk variable chosen.

The variable $Eatr_{it}$ serves as a proxy for the effective average corporate income tax burden, as the after-tax profit is directly determined by the average tax rate (see Devereux and Griffith, 1998: 344). Moreover, $Eatr_{it}$ is calculated as the weighted average of an adjusted statutory tax rate on corporate income and the effective marginal tax rate (see Devereux and Griffith, 1999 for details). Thus, it combines the effects of corporate taxes on FDI with very high levels of profitability and effects on marginal investments, which earn the cost of capital. A negatively signed coefficient is expected here: A higher $Eatr_{it}$ directly implies a lower level of after-tax profits and, if paired with a higher effective marginal tax rate, it also implies a lower optimal level of investment.

An increase in the share of public R&D expenditures in GDP ($Govgerd_{it}$) should have a positive impact on FDI, as a country's R&D level can be considered a type of public good that makes firms more productive without causing additional costs. That is, firms may gain from positive knowledge spill-over effects which contribute to a higher profit level from their investment. As an increasing part of FDI constitutes R&D-related activities (see Guimón, 2008) a high level of public expenditures on R&D might be particularly relevant for an MNE's location decision. Moreover, De Santis and Vicarelli (2007) argue that a positive relationship exists between FDI and R&D expenditure as a proxy of technical progress. Hence, $Govgerd_{it}$ is expected to have a positive effect on FDI.

The infrastructure endowment is generally considered to have a positive impact on FDI, yet it is difficult to measure it in an internationally comparable way (see Bellak et al. 2008a for details). The latter is especially the case for measuring a country's transport infrastructure endowment. By contrast, measuring the endowment with ICT-infrastructure is somewhat easier due to the availability of internationally comparable data. Moreover, this type of infrastructure is shown to be particularly relevant for FDI attraction (see, e.g., Bellak et al., 2008a; Mollick et al., 2006). Thus, we focus on ICT-infrastructure, Ict_{it}, here. However, it should be stressed that other FDI-relevant infrastructure components, such as the transport or the power generation infrastructure, are captured to some extent by $GDPcap_{it}$ as outlined above. Moreover, as these infrastructure components are only slowly evolving over time, they also might be captured by the country-industry-specific effects (α_{ij}) included in our empirical model. We expect the sign of the Ict_{it} coefficient to be positive as a larger Ict_{it} endowment reduces production costs and thus leads, *ceteris paribus*, to higher profitability of the investment.

Table 1 summarizes the above discussion, also including the rationale behind these variables, the expected sign of the estimated coefficients, the data sources and a detailed description of the measurement and definition of the variables.

Table 1

Variable rationale and variable description

Variable	Rationale	Exp. Sign	Definition	Source
	Endogenous variable		Inward FDI stock of 10 manufacturing sectors in millions of current euro (see Table A1 in the appendix for details)	OECD and wiiw database on FDI (see Table A1 in the appendix for details)
Pot_{it}	Larger markets should experience more inward FDI. Opportunities to generate profits are higher.	+	Own market potential; calculated as follows: POT = (GDP / internal distance) GDP in millions of current euro	Eurostat: New Cronos database; CEPII internal distance measures: http://www.cepii.org/anglaisgraph/bdd/distances.html
$GDPcap_{it}$	Captures positive effects of infrastructure endowment, labour productivity and institutions on FDI; captures negative effects of wage costs and a host country's capital abundance on FDI.	?	GDP per capita in euro-PPP	Eurostat: New Cronos database
$Eatr_{it}$	A higher effective tax rate should decrease inward FDI, since it directly impacts negatively on the after-tax profit level of an FDI.	–	Effective average tax rate (in per cent)	Own calculations based on Devereux and Griffith 1999; assumptions follow Devereux and Griffith as well as the IFS data available under http://www.ifs.org.uk/publications.php?publication_id=3210; raw tax data are taken from the European Tax Handbook and KPMG's Corporate Tax Rate Surveys
$Govgerd_{it}$	Higher R&D expenditures in GDP should encourage inward FDI due to knowledge spill-over effects.	+	Government-financed expenditures on R&D as a percentage of GDP	OECD Main Science and Technology Indicators
$Freefdi_{it}$	Higher institutional barriers to FDI imply fewer possibilities to invest. Opportunities to generate profits are lower.	–	Barriers to FDI (1 = very low; 5 = very high)[5]	The Heritage Foundation
$Risk_{it}$	Riskier countries should receive less inward FDI, as the fixed costs of production are higher; concerning	+ (due to measurement)	Political risk (0 = high; 25 = low)	Euromoney
$Infl_{it}$	$Infl_{it}$ one has to bear in mind that the endogenous variable is denominated in nominal terms	?	Change in consumer price index	Eurostat: New Cronos database
$H\_ls_{ij,t}$	Depending on the motive of FDI, this variable signals either higher incentives to fragment production (vertical FDI) or lower possibilities to duplicate plants (horizontal FDI)	?	Share of low-skilled employees in total employment	EUKLEMS
$Labcst_{ij,t}$	Higher labour costs imply higher production costs and thus lower FDI.	–	Compensation of employees (in millions of euro) / Total hours worked by employees (millions)	EUKLEMS
$Labprd_{ij,t}$	Higher labour productivity attracts FDI via its favourable effect on production costs.	+	Goss value added at current basic prices (in millions of euro) / Total hours worked (millions)	EUKLEMS
Ict_{it}	Larger ICT-infrastructure endowment lowers production costs and thus increases FDI	+	Sum of telephone mainlines, mobile phone subscribers, internet connections and personal computers per 1000 inhabitants	World Bank: World Development Indicators database

5 Data on $Freefdi_{it}$ are missing for Finland, Netherlands and Slovenia for 1995 and have been replaced with values of 1996.

2.2 Econometric methodology

We apply a kind of general-to-specific-approach, starting with the most general model (including all location factors considered), the full model, and testing down until only statistically significant variables remain (at the 10 per cent significance level), which finally leads us to the baseline model. This procedure is expected to reduce the possibility of an omitted variable bias and also shows the robustness of our results to the inclusion and exclusion of particular location factors. In doing so we generally conduct one-sided tests with the alternative hypothesis based on the expected sign of the coefficient (cf. Table 1). However, to test the significance of the coefficients of those location factors for which the expected sign is *a priori* unambiguous we apply two-sided tests.

The variables contained in matrices X_{it} and the Z_{ijt} in equation (1) are specified in logs and enter in a one-year lagged form. Logging of variables reduces the likelihood of outliers. One-year lagged values are chosen because, firstly, contemporary FDI reacts to certain information on location factors with a time lag (see, e.g., Bevan and Estrin, 2004) and, secondly, the lagged values account to some degree for endogeneity (see Wooldridge, 2002: 301).

As mentioned above, including the per capita GDP besides other location factors in an empirical model creates multi-collinearity problems that have to be tackled. Following Bénassy-Quéré et al. (2007a) we address this specific difficulty by using the residuals of regressing each of the highly correlated variables, i.e. (logged) $Labcst_{ij,t}$, $Labprd_{ij,t}$, $Govgerd_{it}$, Ict_{it}, $Risk_{it}$ and $Infl_{it}$ on (logged) $GDPcap_{it}$ rather than the (logged) variables themselves. As this results in a generated regressor problem (see Wooldridge, 2002: 115ff) bootstrapped standard errors are used throughout, with sampling done over the country-industry dimension. Thus, standard errors are also fully robust with respect to heteroscedasticity and serial correlation (see Cameron and Trivedi, 2005: 362ff).

Equation (1) is estimated in both a random effects and a fixed effects specification with respect to α_{ij}. The reason for this is that the Hausman-test for the validity of the random effects assumption is not applicable in case of bootstrapped standard errors. Since in our case the random effects estimator is more efficient, these results are used for the policy analysis below as the signs are equal to, and the magnitude of the relevant coefficients is not markedly different from, the corresponding fixed effects estimates.

Finally, to show the suitability of using one-year lagged variables to tackle the endogeneity issue we estimate the baseline model with two-years lagged variables and also by applying an Arellano-Bond-type GMM-estimator (see, e.g., Wooldridge, 2002: 304f) using the two- and three-years lagged variables as instruments.

Table 2 provides the means and standard deviation for all variables used together with the number of observations. In particular, the table shows that the between country-industry-pair variability of the variables is usually larger than the within variability.

Table 2

Descriptive statistics

Variable		Mean	Std.Dev	Min	Max
lnFDI	Overall	7.17	1.96	0.62	11.89
	Between	1.86	3.24	11.41	
	Within	0.55	3.69	10.30	
lnPOT	Overall	7.50	1.34	5.20	9.18
	Between	1.32	5.52	9.10	
	Within	0.17	7.06	7.87	
lnGDPcap	Overall	9.83	0.37	8.91	10.43
	Between	0.35	9.18	10.30	
	Within	0.12	9.57	10.08	
lnIct	Overall	7.08	0.54	5.55	7.80
	Between	0.34	6.40	7.74	
	Within	0.43	6.24	7.94	
lnEatr	Overall	3.30	0.23	2.82	3.64
	Between	0.22	2.85	3.60	
	Within	0.09	2.97	3.49	
lnGovgerd	Overall	-0.50	0.34	-1.38	-0.04
	Between	0.32	-1.17	-0.14	
	Within	0.10	-0.81	-0.21	
lnInfl	Overall	0.97	0.92	-2.25	2.91
	Between	0.74	0.11	2.32	
	Within	0.55	-2.37	2.25	
lnFreefdi	Overall	0.75	0.25	0.00	1.39
	Between	0.19	0.46	1.10	
	Within	0.17	0.23	1.06	
lnRisk	Overall	3.04	0.21	2.51	3.22
	Between	0.20	2.62	3.21	
	Within	0.05	2.74	3.21	
lnLabprd	Overall	3.23	0.66	1.01	5.54
	Between	0.65	1.56	4.82	
	Within	0.18	2.12	4.00	
lnLabcst	Overall	2.49	0.95	0.32	4.13
	Between	0.94	0.61	3.98	
	Within	0.18	1.92	3.17	
lnH_ls	Overall	2.97	0.55	1.46	4.23
	Between	0.54	1.85	4.12	
	Within	0.10	2.57	3.23	
N = 889	n = 108				

Variable		Mean	Std.Dev	Min	Max
Eatr	overall	27.95	6.07	16.74	38.27
	between	5.59	17.21	36.72	
	within	2.54	18.41	33.58	
H_ls	overall	22.51	11.75	4.29	69.06
	between	11.54	6.38	61.57	
	within	1.97	14.15	32.31	
Labcst	overall	17.14	11.91	1.38	62.48
	between	11.67	1.87	54.26	
	within	3.24	-0.82	42.44	
Labprd	overall	31.43	25.01	2.75	255.37
	between	24.04	4.78	130.24	
	within	9.99	-25.66	156.56	
Freefdi	overall	2.18	0.55	1.00	4.00
	between	0.43	1.67	3.00	
	within	0.32	1.18	3.18	
Risk	overall	21.37	4.09	12.32	25.00
	between	3.97	13.81	24.84	
	within	0.87	16.85	24.29	
Govgerd	overall	0.64	0.19	0.25	0.96
	between	0.18	0.31	0.87	
	within	0.05	0.51	0.78	
Infl	overall	3.96	3.71	0.11	18.28
	between	3.18	1.18	11.03	
	within	2.01	-2.43	12.03	

Table 3

Correlation matrix

	lnGDPcap	lnPot	lnRisk	lnIct	lnGovgerd	lnLabcst	lnLabprd	lnFreefdi	lnEatr	ln_Hls	lnInfl	res_lnIct	res_lnGovgerd	res_lnInfl	res_lnRisk	res_lnLabprod	res_lnLabcost
lnGDPcap	1.00																
lnPot	0.81	1.00															
lnRisk	0.92	0.84	1.00														
lnIct	0.82	0.52	0.67	1.00													
lnGovgerd	0.79	0.64	0.83	0.53	1.00												
lnLabcost	0.88	0.79	0.90	0.67	0.81	1.00											
lnLabprod	0.63	0.54	0.60	0.50	0.52	0.80	1.00										
lnFreefdi	-0.32	-0.34	-0.32	-0.32	-0.10	-0.26	-0.24	1.00									
lnEatr	0.36	0.51	0.32	0.00	0.29	0.30	0.28	-0.21	1.00								
lnH_ls	0.13	0.10	0.25	0.04	0.42	0.22	-0.01	0.15	-0.19	1.00							
lnInfl	-0.68	-0.59	-0.73	-0.54	-0.67	-0.68	-0.45	0.19	-0.40	-0.17	1.00						
res_lnIct	0.00	-0.24	-0.13	0.58	-0.20	-0.10	-0.02	-0.10	-0.51	-0.12	0.03	1.00					
res_lnGovgerd	0.00	0.00	0.17	-0.19	0.61	0.19	0.04	0.24	0.01	0.51	-0.21	-0.33	1.00				
res_lnInfl	0.00	-0.05	-0.13	0.02	-0.17	-0.11	-0.03	-0.04	-0.21	-0.12	0.73	0.04	-0.28	1.00			
res_lnRisk	0.00	0.25	0.40	-0.19	0.26	0.22	0.06	-0.07	-0.01	0.33	-0.25	-0.34	0.42	-0.34	1.00		
res_lnLabprd	0.00	0.04	0.03	-0.01	0.03	0.31	0.78	-0.05	0.07	-0.12	-0.03	-0.02	0.05	-0.04	0.08	1.00	
res_lnLabcst	0.00	0.17	0.19	-0.12	0.24	0.47	0.51	0.05	-0.03	0.22	-0.17	-0.21	0.40	-0.23	0.48	0.66	1.00

Note: Prefix res_ is used for the generated regressors as explained in the text.

Table 3 presents the correlation matrix of the explanatory variables. Correlations are rather low with a zero correlation coefficient between $GDPcap_{it}$ and the generated variables (indicated by prefix 'res_').

2.3 Estimation results

Table 4 presents the results of our econometric analysis. The full and preferred models for the fixed and the random effects specifications are presented in columns two to five.[6]

Comparing the random and fixed effects coefficients reveals that most of them are rather similar in magnitude. Notable exceptions are the coefficients of Pot_{it} and $GDPcap_{it}$. It has to be noted, however, that these gravity-type variables are not included in the policy analysis conducted as outlined below. Moreover, the implied elasticities using the random effects estimator are in line with theoretical predictions (see, e.g., Head, 2003: 5) and the coefficients derived from the Arellano-Bond-type GMM estimator and the random effects estimator with two-years lagged variables are similar to those given in columns four and five of Table 4. For these reasons it seems justified to consider the random effects estimator model as the baseline model (i.e., column four of Table 4) to be used in the subsequent policy analysis.

Besides the gravity-type variables $H\_ls_{ij,t}$, $Eatr_{it}$, $Govgerd_{it}$, Ict_{it}, $Freefdi_{it}$ and $Labcst_{ij,t}$ enter significantly in the baseline model.[7] The share of low-skilled hours worked ($H\_ls_{ij,t}$) shows a negative sign. The negative impact is in line with many other studies (e.g., Markusen and Maskus, 2002; Yeaple, 2003). This suggests that FDI is of a predominantly horizontal nature in our sample. It also hints towards barriers to restructuring and modernizing production in the countries included in our sample. The average effective tax rates on corporate profits ($Eatr_{it}$) shows an elasticity of -0.57 implying that a decrease in $Eatr_{it}$ by one per cent increases FDI by about 0.57 per cent. This negative impact of the $Eatr_{it}$ on FDI is again in line with many other studies, notably the meta-analysis carried out by DeMooij and Ederveen (2005). Moreover, Stöwhase (2005) analyses the tax responsiveness of FDI flows into several EU countries at a sectoral level. Using effective tax rates to measure tax incentives, Stöwhase (2005) is able to show that the tax sensitivity of FDI crucially depends on the economic sector. While investment in the primary sector (not included here) is driven by factors other than tax incentives, investment in the secondary and especially in the tertiary sector (again not included here) is deterred by high tax rates.

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6 To save space we do not present detailed results of the general to specific approach. These are made available upon request.

7 Note that the labour costs variable is insignificant in the fixed effects specification. Yet, its coefficient is comparable to that of the random effects specification. The insignificance, thus, can be seen as an indication of the inefficiency of the fixed effects estimator.

Table 4

Estimation results

The endogenous variable is the log of inward FDI stock of ten industries in eleven countries over 1995-2004

Variables	RE_FULL	FE_FULL	RE_PREF	FE_PREF	AB_PREF	Variables	RE_2_LAG
			lag t-1				lag t-2
lnPot	1.07***	0.53	1.06***	0.59	0.70	lnPot	0.88***
	(7.06)	(0.90)	(6.79)	(0.87)	(1.03)		(4.72)
lnGDPcap	1.04***	2.52***	1.10***	2.62**	2.83***	lnGDPcap	1.34***
	(1.98)	(1.96)	(2.20)	(1.94)	(2.05)		(2.42)
lnIct	0.80***	0.73***	0.73***	0.64**	0.59**	lnIct	0.83***
	(2.67)	(2.16)	(2.11)	(1.82)	(1.67)		(3.03)
lnH_ls	-0.77"'	-0.75"	-0.73"'	-0.76"	-0.58'	lnH_ls	-0.74"'
	(-4.31)	(-2.71)	(-5.74)	(-2.61)	(-1.65)		(-3.85)
lnLabcst	-0.56**	-0.32	-0.65**	-0.46	-0.46	lnLabcst	-0.68***
	(-1.78)	(-0.57)	(-1.70)	(-0.74)	(0.76)		(-1.99)
lnLabprd	-0.12	-0.34	dropped			lnLabprd	dropped
	(-0.53)	(-1.19)					
lnEatr	-0.51**	-0.51*	-0.57**	-0.52*	-0.70***	lnEatr	-0.73***
	(-1.65)	(-1.49)	(-1.77)	(-1.51)	(-2.08)		(-2.91)
lnInfl	0.07'	0.05	dropped			lnInfl	dropped
	(1.77)	(1.56)					
lnFreefdi	-0.19**	-0.22**	-0.21**	-0.23**	-0.25***	lnFreefdi	-0.17
	(-1.73)	(-1.83)	(-1.80)	(-1.84)	(-2.06)		(-1.18)
lnGovgerd	0.41**	0.44**	0.35**	0.43**	0.39*	lnGovgerd	0.44**
	(1.82)	(1.94)	(1.68)	(1.68)	(1.39)		(1.75)
lnRisk	0.49	0.17	dropped			lnRisk	dropped
	(0.89)	(0.29)					
cons	-7.28'	-19.41"	-7.83'	19.35"		cons	-8.18'
	(-1.66)	(-1.96)	(-1.89)	(-2.01)			(-1.79)
obs.	889	889	889	889	765		804
R^2_adj of RE_PREF	--	--	0.89	--	--		--

Notes: time dummies included and jointly significant; z- and t- values in parenthesis;
Standard errors are bootstrapped (1000 replications);
Standard errors are fully robust;
*** / ** / * = significantly different from zero at 1 / 5 / 10 percent level (one-sided test);
" / ' = significantely different from zero at 5 / 10 percent level (two-sided test; for lnInf, lnH_ls and constant)
(-1) = one-year lagged; (-2) = two-year-lagged
For the AB-estimator the standard errors shown are not boostrappe, yet fully robust;
For the AB-estimator orthogonal deviations are used due to missing values;
For the AB-estimator the Arellano-Bond test for second order serial correlation has a p-value of 0.12, respectively;
For the AB-estimator the Hansen-test for the validity of the instruments used has a p-value of 0.48;
For the AB-estimator two and three years lagged variables are used as instruments;
For the AB-estimator the number of instruments = 111 with 108 cross-sections;
RE_pref is used as baseline model in the policy analysis of section 3

Public R&D expenditures as per cent of GDP ($Govgerd_{it}$) has a positive impact on FDI. An increase in $Govgerd_{it}$ by one per cent leads to an increase in the inward FDI stock by about 0.40 per cent. This result is in line with those of De Santis and Vicarelli (2007) suggesting that an increase in R&D expenditures would crucially improve Italy's FDI attractiveness.

Finally, in line with many other studies (see, e.g., Bellak et al., 2008a and 2008b; Yeaple, 2003; Bénassy-Quéré et al., 2007a and 2007b; Buch and Lipponer, 2007) a higher ICT-infrastructure endowment leads to an increase in FDI by about 0.73 per cent while institutional barriers to FDI and high labour costs have a significant negative impact on inward FDI. The coefficient on $Freefdi_{it}$ suggests an elasticity of about -0.40 and $Labcst_{ij,t}$ one of -0.65, respectively.

By contrast $Risk_{it}$, despite having the expected sign, falls short of statistical significance. This result is plausible as the countries included are among the most developed market economies with a high level of political stability throughout the sample period considered. The macroeconomic risk level, captured by $Infl_{it}$, appears to be weakly significant in the full model (random effects specification), yet carrying a very low coefficient with a positive sign. However, in the baseline model this variable loses its weak statistical significance. This is not unexpected as time dummies are included which *inter alia* control for inflationary pressures common to all countries (see, e.g., Egger and Pfaffermayr, 2004). Moreover, $Labprd_{ij,t}$ is also not significant. This suggests that firms are able to transfer their productivity internally from the parent company to the affiliate in the host country (see, e.g., Bellak et al., 2008b), which is not unrealistic given the selection of countries included in the analysis.

In the policy analysis of the next section we do not consider these three insignificant variables. Similarly, as already mentioned above, market size (Pot_{it}) and per capita GDP ($GDPcap_{it}$) are not considered. Pot_{it} is excluded as it can hardly be influenced by public policy makers in a direct way at least in the short to medium run. $GDPcap_{it}$ is excluded as it captures various different, time-varying but not observed location factors. The remaining variables of the baseline model are chosen, on the one hand, as they are continuously mentioned in the discussion about appropriate FDI-attracting public policies and they also often appear on websites of investment promotion agencies and in policy memoranda. On the other hand, these variables can directly be influenced by public policy makers in the short to medium run (see Demekas et al., 2007 and De Santis and Vicarelli, 2007). Note that, although labour costs are usually determined by negotiations between employers and employees, the proxy used for labour costs also includes non-wage labour costs, making labour costs also a policy variable.

Before turning to the policy analysis we also have to discuss the goodness of fit of the baseline model. One might argue that, if there are large deviations of the realized FDI values and the predicted values, the predictive power of our model is too low to use it for the policy analysis in the remaining part of our paper. In order to address this issue, we re-estimate the preferred model in column four of Table 4 by OLS on GLS-transformed variables (see Verbeek, 2008: 366). The adjusted R^2, which shows how good the model replicates the variation in the endogenous variable (Verbeek, 2008: 23), turns out to be 0.89.

3 Policy analysis: policies to close the FDI gap

Demekas et al. (2007) and Resmini (2000) are earlier studies calculating FDI gaps. Demekas et al. (2007: 378f) define FDI gaps as the difference between the level of FDI predicted by their baseline model and 'potential FDI', which is the level of FDI receivable if all relevant policy variables included in their model are set at 'best practice policy' values; the 'best practice policy' values are defined as the lowest or highest values of each location factor in the sample. Demekas et al. (2007) calculate gaps for a range of Central and East European host countries of FDI. The gaps range from 2 to 83 per cent of 'potential FDI', depending on the country in question (see Table 3 and Figure 3 in Demekas et al., 2007). One drawback of this study is, however, that it seems to be questionable that minimum and maximum values as 'best practice policy' values will reflect likely policy scenarios in a sample of heterogeneous countries, especially in the short run.

Resmini (2000: 682) defines the gap as the ratio of actual FDI flows to the fitted values from her baseline specification and distinguishes several types of industries in several CEECs in 1995. The estimated gaps range from 43 per cent for high-tech sectors to 88 per cent in traditional sectors (see Table 5 in Resmini, 2000 for details). A drawback of this study is that the fitted values from her benchmark specification compared to actual levels are used to represent FDI 'potential'. Yet, from a statistical point of view, the gap between this potential FDI and actual FDI values reflects that part of the model which is not explained by the variables included in the model. Thus, this gap cannot be closed by changing the policy variables included in the model.

Therefore, we essentially follow the approach suggested in Demekas et al. (2007), yet using the mean values of the policy variables as 'best practice policy' values instead of the minima/maxima used by Demekas et al. (2007).[8]

3.1 The calculation of FDI gaps: methodological aspects

To derive FDI gaps, the 'potential FDI' is calculated in a first step similar to Demekas et al. (2007). For this aim, first the 'best practice policy' value is determined for the policy variables included in our analysis and for the most recent year (i.e. 2004). As mentioned

[8] Using minimum/maximum values leads to a range of total FDI gaps between 9 and 33 per cent. Results are available upon request.

above, in our case the 'best practice policy' value is assumed to be the sample mean. Second, the 'best practice policy' value is substituted for the actual value of the policy variables if the actual value can be improved.[9] Third, the estimated coefficients from the baseline model are used to predict the value of inward FDI stock if the 'best practice policy' value is realized, keeping everything else equal, including the assumption that other countries have not improved their location factors. This predicted value then is the 'potential' inward FDI stock (P).

In a second step the predicted value of the inward FDI stock as given by our baseline model is calculated, which yields the 'estimated actual' inward FDI stock (E). This value is used instead of actual inward FDI stock value in order to establish a common benchmark (same data generation process) for all country-industry pairs against which changes in policy variables are evaluated. Moreover, using predicted FDI allows for a direct comparison of the effects of changes in a policy factor on attracted FDI across country-industry pairs, as all other conditions (including the coefficients of the data generation process) remain constant. In a third step the FDI gap (Q) is calculated as the difference between P and E in per cent of P (i.e. Q = (P-E)/P*100).

3.2 Results: FDI gaps and the contribution of policy variables to gap closing

Our results are presented with respect to two dimensions: First, the total FDI gap for each country and gaps for each industry under consideration are presented in subsection 3.2.1 and in Table 5. Second, individual gaps by country with respect to each of the six policy variables are discussed in subsection 3.2.2 and are summarized in Table 6. Detailed results by country-industry pair and each of the six policy variables can be found in Appendix Table A2.

3.2.1 Total country- and industry-specific FDI gaps

When looking at the total FDI gap, a simultaneous change of the policy variables to the respective 'best practice' value is assumed (see Table 5).

The interpretation of the gap is straightforward: For example, a gap of 5.92 per cent for the chemical industry in Germany implies that the FDI stock in this industry would – *ceteris paribus* – increase by almost 6 per cent if Germany introduced policies that change all six policy variables, independently of whether they are industry-specific or macro variables, to the 'best practice' value. This result is of interest if FDI policy is selective and aims at attracting FDI into specific sectors.

9 For example, for $Govgerd_{it}$ the 'best practice policy' value in 2004 is 0.91 per cent of GDP (for Finland). The log of this value is substituted for the actual values of each country-industry pair.

Table 5

Total country gap and industry-specific gaps

Industry	AUT	FIN	FRA	GBR	GER	NLD	US	CZE	HUN	SVK	SVN
Food	2.67	4.32	3.77	3.00	4.11	**3.37**	2.56	1.93	4.04	4.54	4.39
Textiles	2.86	3.73	3.99	1.99	5.31	3.34	**4.01**	1.90	3.68	4.44	4.05
Wood and paper	3.63	**5.43**	4.88	2.47	4.86	1.92	2.77	**2.02**	4.24	4.60	5.30
Coke	**6.26**	2.64	2.89	**3.98**	5.68	1.96	1.80	1.98	4.75	**4.64**	5.38
Chemicals	3.21	3.10	**5.99**	2.09	5.92	2.37	3.18	1.95	4.41	4.44	5.56
Plastic	3.51	4.19	4.61	1.74	5.53	2.58	2.16	1.94	4.07	4.42	5.03
Mineral products	3.67	4.15	4.36	1.76	5.73	2.56	2.56	1.93	4.03	4.45	5.05
Machinery	3.17	2.49	4.81	1.33	**7.21**	2.17	3.25	1.89	5.32	4.44	5.19
Electrical machinery	3.84	3.32	5.13	1.58	5.18	2.46	3.15	1.88	**5.71**	4.41	**5.70**
Transport	3.37	2.02	5.18	2.08	5.91	1.64	3.03	1.90	**5.71**	4.50	5.59
Mean (= **total country gap**)	3.62	3.54	4.56	2.20	5.54	2.44	2.85	1.93	4.60	4.49	5.12
Minimum	2.67	2.02	2.89	1.33	4.11	1.64	1.80	1.88	3.68	4.41	4.05
Maximum	6.26	5.43	5.99	3.98	7.21	3.37	4.01	2.02	5.71	4.64	5.70
Range	3.59	3.41	3.10	2.65	3.10	1.73	2.21	0.13	2.03	0.23	1.65

However, before turning to the industry-specific results let us summarize the results at the country level. Table 5 also presents the gaps for total manufacturing (calculated as mean over the industry-specific gaps; 'total country gap'); they vary from less than 2 per cent in the Czech Republic to more than 5 per cent in Germany and Slovenia. For the group of the Western economies, Great Britain, the Netherlands and the United States show the lowest gaps with 2.2, 2.4 and 2.9 per cent respectively, followed by Finland and Austria with gaps around 3.6 per cent. Finally, the gaps in France and Germany are much higher with 4.5 and 5.5 per cent, respectively. In the group consisting of the Eastern European economies three countries show rather large gaps similar to France or Germany. Only for the Czech Republic is the FDI gap rather low as already mentioned above.

Let us now turn to the industry-specific results ('industry-specific gaps'). In Table 5, we also present the minimum and maximum gaps over industries together with the range (i.e. maximum minus minimum value). The maximum value in Table 5 is marked in bold whereas the minimum value is marked grey. As the table shows, there is some heterogeneity with respect to the industry dimension across countries. In particular, the calculated range is rather low in the Czech and the Slovak Republics, suggesting that country-specific policies play the dominant role in closing FDI gaps. For the other countries one observes more heterogeneity of gaps across industries. In Austria, Finland, France and Germany the range is above 3 percentage points. However, one should note that this large range results from country-specific industry heterogeneity. Let us give two examples:

In Austria the large range is mainly caused by a high potential in 'Manufacture of coke, refined petroleum products and nuclear fuel' whereas the gap for the other industries is at similar magnitudes. In Finland, the industries 'Wood and wood products' and 'Pulp, paper and paper products' show a large gap with 5.4 per cent whereas the gap in industry 'Transport equipment' is rather low, at 2 per cent.

Table 5 also reveals that there is no specific pattern with respect to the structure of gaps by industry across countries. This suggests a country- and industry-specific pattern of the relevance of particular policy variables to which we turn next.

3.2.2 Policy variable-specific FDI gaps

We now consider the gaps with respect to each of the six policy variables. Results are presented in Table 6 where we present for each particular country the FDI gap which could be closed if a particular policy variable were set at its 'best practice' value with the other policy variables unchanged. Similar to above, we do this by averaging over industries. (See Appendix Table A2 for detailed results.) In Table 6 we express these 'policy variable-specific gaps' in per cent of the total country gap (i.e. the mean over industries as reported in Table 5).

Table 6

Total country gap and shares of policy variables in total country gap in per cent (2004)

	Freefdi	Eatr	Govgerd	Ict	H_ls	Labcst	Country gap
Austria	2.32	16.18	0.00	0.00	41.48	42.43	3.62
Finland	2.66	0.00	0.00	0.00	53.07	46.11	3.54
France	1.72	8.50	0.00	5.29	46.59	40.84	4.56
Great Britain	3.30	0.00	14.07	0.00	4.45	78.99	2.20
Germany	0.00	23.29	0.00	0.00	43.08	37.30	5.54
Netherlands	0.00	28.08	0.00	0.00	0.00	72.91	2.44
United States	2.48	41.87	0.00	0.00	5.37	51.89	2.85
Czech Republic	4.41	0.00	31.72	64.81	0.00	0.00	1.93
Hungary	2.03	0.00	25.40	52.48	23.07	0.00	4.60
Slovak Republic	2.03	0.00	58.48	41.81	0.00	0.00	4.49
Slovenia	19.79	0.00	28.86	7.28	47.62	0.00	5.12

Note: The percentages shown do not add up to 100 as the sum of the 'policy variable-specific gaps' is not equal to the 'total country gap'. Indeed, the sum of the 'policy variable-specific gaps' has to be higher as the denominator of each individual gap is smaller in value than that of the 'total country gap'.

Thus, we assume that each of the policy variables is changed to the respective 'best practice' value with the remaining variables unchanged. In this case interpretation of the results presented in Table 6 is as follows: For example, the value of 14.07 per cent for $Govgerd_{it}$ in the case of Great Britain implies that, if Great Britain exclusively focused on

R&D policy and left all other policies unchanged, this might reduce its total FDI gap, which is 2.2 per cent, by about 14 per cent. Yet, if the UK were to focus on $Labcst_{ij,t}$, its gap would be reduced by as much as 79 per cent. In other words, this information provides the basis for the selection of promising policy areas as due to certain constraints governments are usually not able to influence all variables simultaneously. This type of information is thus key for the design of area-specific policies, e.g. an increase in government spending on R&D in order to attract R&D-intensive FDI.

Table 6 reveals that reducing the barriers to FDI generally contributes little to closing the 'total country gap' (with the exception of Slovenia), while all the other variables have a larger effect on closing the gap. The most promising policies seem to relate to one or two main policy variables in each country, rather than gaps being distributed evenly between policy fields. This is least the case in Slovenia but striking in the Netherlands and Great Britain ($Labcst_{ij,t}$). For these two countries the analysis conveys a rather clear policy message. In all other countries a mix of policies seems to be in order. Table 6 also suggests some specificities with respect to country groups: Whereas in the CEEC-4 (with the exception of Slovenia) the gaps are particularly pronounced in ICT-infrastructure and public spending on R&D, the restructuring of production towards a lower share of low-skilled employment or an up-skilling of the workforce and a reduction in labour costs could attract most FDI in old EU member states and the United States. Consequently, these two country groups should focus on different policies.

Note that using different policy measures will also attract FDI to different industries, as the policy areas analysed here will have different impacts in the various industries. To isolate these different impacts of the policy variables at the industry-level, Table A2 in the appendix again shows 'policy variable-specific gaps', yet these are now separated by countries as well as industries. The results suggest that country-specific policies (e.g. effective corporate income taxes or barriers to FDI), despite being invariant over industries, nevertheless have a differential impact on the possibility to close FDI gaps at the industry level. Finally, it has to be stressed that at the industry level, various additional analyses might be performed on the basis of these results.[10] We do not provide a detailed analysis by country, industry and policy variable here due to lack of space. Detailed results are displayed in Appendix Table A2. However, as we have already shown, both the analysis at the industry level as well as the analysis at the country level combined with specific policy measures reveal interesting results to the policy area of general interest as well as to the targeting of FDI for certain industries.

10 For example, industries may be clustered by important characteristics such as R&D intensity or educational intensity, export propensity, scale intensity etc.

4 Summary

The purpose of this paper is to provide information on promising fields of policy intervention under the assumption that the policy goal is to attract additional FDI. In doing so we provide insights on the FDI gaps that can be closed if a 'best practice policy' is implemented. The first question was answered by examining the determinants of FDI. Here, the analysis basically replicates conventional wisdom about the main determinants of FDI, yet in a broader context concerning the chosen location factors included so far in many earlier studies. The second question was tackled by a detailed analysis of those location factors which may directly be influenced by policy measures in the short to medium run. The results show how these policy variables contribute to closing the gap between 'estimated actual' and 'potential' FDI. The analysis reveals that measures taken in these policy fields may impact differently in different industries and countries, which opens the possibility for a selective FDI location policy. In addition, our analysis shows which of the relevant location factors should be improved by policy makers in certain countries. For example, there seems to be a relatively clear division between the CEEC-4 and the other countries included in the analysis (US-plus-EU-6). While the former may gain most by focusing on infrastructure and R&D policies, in the latter group policies to reduce the share of low-skilled workers, for example by encouraging firms to restructure production and increase capital intensity and through a reduction of labour costs via a decrease in non-wage-labour costs, would attract most FDI.

On a final point, we wish to emphasize again that these results are subject to the *ceteris paribus* condition in the sense that they are derived on the basis of the assumption that the other countries do not change their location factors. Finally, the size of the gaps reported in this paper depends of course crucially on the choice of the 'best practice policy' value (extreme values vs. averages or medians) though the broader policy conclusions drawn are not affected by this.

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Appendix

Table A1

Classification of industries

Database	OECD IDI	wiiw	EUKLEMS
Industry classification	ISIC rev. 3	NACE rev. 1*)	NACE rev. 1*)
Data	Inward FDI stock for US-plus-EU6	Inward FDI stock CEEC-4	Various industry data
Source	Source OECD	Wiiw online database on Foreign Direct Investment	EUKLEMS Homepage: Data
Broad industry term	Detailed industry codes taken from the classification schemes		
Food	15 – Manufacture Of Food Products And Beverages 16 - Manufacture Of Tobacco Products (1605) **)	DA Manufacture Of Food Products, Beverages And Tobacco	Food , Beverages and Tobacco 15t16
Textile	17 - Manufacture Of Textiles 18 - Manufacture Of Wearing Apparel; Dressing And Dyeing Of Fur (1805)	DB Manufacture Of Textiles And Textile Products	Textiles And Textile 17t18
Leather	*19 - Tanning And Dressing Of Leather; Manufacture Of Luggage, Handbags, Saddlery, Harness And Footwear*	DC Manufacture Of Leather And Leather Products	Leather, Leather And Footwear 19
Wood and Paper	20 - Manufacture Of Wood And Of Products Of Wood And Cork, Except Furniture; Manufacture Of Articles Of Straw And Plaiting Materials *21 - Manufacture Of Paper And Paper Products* 22 - Publishing, Printing And Reproduction Of Recorded Media (2205)	DD Manufacture Of Wood And Wood Products DE Manufacture Of Pulp, Paper And Paper Products; Publishing And Printing	Wood And Of Wood And Cork 20 Pulp, Paper, Paper , Printing And Publishing 21t22
Coke	23 - Manufacture of coke, refined petroleum products and nuclear fuel (2300)	DF Manufacture of coke, refined petroleum products and nuclear fuel	Coke, refined petroleum and nuclear fuel 23
Chemicals	24 - Manufacture of chemicals and chemical products (2400)	DG Manufacture of chemicals, chemical products and man-made fibres	Chemicals and chemical 24
Plastic	25 - Manufacture of rubber and plastics products (2500)	DH Manufacture of rubber and plastic products	Rubber and plastics 25
Mineral products	*26 - Manufacture of other non-metallic mineral products*	DI Manufacture of other non-metallic mineral products	Other Non-Metallic Mineral 26
Metals	27 - Manufacture of basic metals 28 - Manufacture of fabricated metal products, except machinery and equipment (2805)	DJ Manufacture of basic metals and fabricated metal products	Basic Metals And Fabricated Metal 27t28
Machinery	29 - Manufacture of machinery and equipment n.e.c. (2900)	DK Manufacture of machinery and equipment n.e.c.	Machinery, Nec 29
Electric mach.	30 - Manufacture of office, accounting and computing machinery 32 - Manufacture of radio, television and communication equipment and apparatus (3000, 3200, 3300)	DL Manufacture of electrical and optical equipment	Electrical And Optical Equipment 30t33
Transport	34 - Manufacture of motor vehicles, trailers and semi-trailers 35 - Manufacture of other transport equipment (3400, 3500)	DM Manufacture of transport equipment	Transport Equipment 34t35
Miscellaneous	*31 - Manufacture of electrical machinery and apparatus n.e.c.* *36 - Manufacture of furniture; manufacturing n.e.c.* *37 - Recycling*	DN Manufacturing n.e.c.	Manufacturing Nec; Recycling 36t37

*) NACE rev. 1 codes may be reported in Letters or Numbers. - **) In brackets the numbers as they appear in the OECD database

Table A2

Shares of the policy variables in industry-specific gap by country, industry and policy variable in % (2004)

		FreeFDI	Eatr	Govgerd	ICT	H_ls	Labcst	Industry gap
Austria	Food	3.11	21.69	0.00	0.00	48.60	28.36	2.67
	Textiles	2.89	20.16	0.00	0.00	37.45	41.42	2.86
	Wood and paper	2.39	16.69	0.00	0.00	40.49	42.81	3.63
	Coke	1.42	9.91	0.00	0.00	28.32	63.80	6.26
	Chemicals	2.63	18.38	0.00	0.00	54.16	26.85	3.21
	Plastic	2.36	16.45	0.00	0.00	40.32	43.17	3.51
	Mineral products	2.26	15.80	0.00	0.00	39.28	45.04	3.67
	Machinery	2.60	18.14	0.00	0.00	41.91	39.46	3.17
	Electrical machinery	2.15	15.03	0.00	0.00	46.54	38.76	3.84
	Transport	2.45	17.10	0.00	0.00	50.10	32.51	3.37
Czech Republic	Food	4.41	0.00	31.72	64.81	0.00	0.00	1.93
	Textiles	4.41	0.00	31.72	64.80	0.00	0.00	1.90
	Wood and paper	4.42	0.00	31.74	64.83	0.00	0.00	2.02
	Coke	4.42	0.00	31.73	64.82	0.00	0.00	1.98
	Chemicals	4.41	0.00	31.73	64.82	0.00	0.00	1.95
	Plastic	4.41	0.00	31.72	64.81	0.00	0.00	1.94
	Mineral products	4.41	0.00	31.72	64.81	0.00	0.00	1.93
	Machinery	4.41	0.00	31.71	64.80	0.00	0.00	1.89
	Electrical machinery	4.41	0.00	31.71	64.80	0.00	0.00	1.88
	Transport	4.41	0.00	31.72	64.80	0.00	0.00	1.90
Finland	Food	2.20	0.00	0.00	0.00	46.24	53.85	4.32
	Textiles	2.51	0.00	0.00	0.00	46.25	53.22	3.73
	Wood and paper	1.84	0.00	0.00	0.00	43.43	57.56	5.43
	Coke	3.63	0.00	0.00	0.00	96.55	0.00	2.64
	Chemicals	3.06	0.00	0.00	0.00	83.27	14.59	3.10
	Plastic	2.23	0.00	0.00	0.00	53.11	46.88	4.19
	Mineral products	2.26	0.00	0.00	0.00	54.21	45.73	4.15
	Machinery	3.68	0.00	0.00	0.00	29.15	68.33	2.49
	Electrical machinery	2.78	0.00	0.00	0.00	37.45	61.46	3.32
	Transport	4.53	0.00	0.00	0.00	55.77	40.78	2.02
France	Food	2.06	10.19	0.00	6.34	41.16	42.77	3.77
	Textiles	1.94	9.59	0.00	5.97	33.60	51.47	3.99
	Wood and paper	1.66	8.23	0.00	5.12	41.47	46.65	4.88
	Coke	2.74	13.54	0.00	8.42	76.46	0.00	2.89
	Chemicals	1.34	6.65	0.00	4.13	38.32	53.23	5.99
	Plastic	1.68	8.32	0.00	5.17	42.23	45.56	4.61
	Mineral products	1.78	8.79	0.00	5.46	45.02	41.79	4.36
	Machinery	1.61	7.98	0.00	4.96	49.60	38.90	4.81
	Electrical machinery	1.51	7.49	0.00	4.66	54.72	34.76	5.13
	Transport	1.51	7.45	0.00	4.63	52.66	36.97	5.18
Great Britain	Food	2.45	0.00	10.46	0.00	11.97	76.34	3.00
	Textiles	3.63	0.00	15.51	0.00	7.84	73.88	1.99
	Wood and paper	3.02	0.00	12.90	0.00	0.00	84.76	2.47
	Coke	1.90	0.00	8.10	0.00	0.00	90.72	3.98
	Chemicals	3.49	0.00	14.89	0.00	0.00	82.26	2.09
	Plastic	4.09	0.00	17.46	0.00	0.00	79.06	1.74
	Mineral products	4.04	0.00	17.23	0.00	0.00	79.35	1.76
	Machinery	5.35	0.00	22.82	0.00	0.00	72.40	1.33
	Electrical machinery	4.53	0.00	19.33	0.00	17.39	59.68	1.58
	Transport	3.46	0.00	14.75	0.00	9.11	73.60	2.08

(Table A2 contd.)

Table A2 (contd.)

		FreeFDI	Eatr	Govgerd	ICT	H_ls	Labcst	Industry gap
Germany	Food	0.00	30.91	0.00	0.00	55.23	16.36	4.11
	Textiles	0.00	24.11	0.00	0.00	39.43	40.05	5.31
	Wood and paper	0.00	27.19	0.00	0.00	52.25	23.66	4.86
	Coke	0.00	23.35	0.00	0.00	48.87	31.52	5.68
	Chemicals	0.00	22.12	0.00	0.00	47.07	34.73	5.92
	Plastic	0.00	23.10	0.00	0.00	44.64	35.95	5.53
	Mineral products	0.00	22.37	0.00	0.00	43.53	37.94	5.73
	Machinery	0.00	17.99	0.00	0.00	49.42	37.27	7.21
	Electrical machinery	0.00	24.49	0.00	0.00	28.61	50.26	5.18
	Transport	0.00	21.69	0.00	0.00	23.86	58.05	5.91
Hungary	Food	2.28	0.00	28.57	59.05	12.46	0.00	4.04
	Textiles	2.42	0.00	30.30	62.64	6.63	0.00	3.68
	Wood and paper	2.27	0.00	28.47	58.81	12.95	0.00	4.24
	Coke	2.14	0.00	26.78	55.28	18.77	0.00	4.75
	Chemicals	2.11	0.00	26.38	54.51	19.79	0.00	4.41
	Plastic	2.26	0.00	28.33	58.55	13.27	0.00	4.07
	Mineral products	2.25	0.00	28.17	58.23	13.75	0.00	4.03
	Machinery	1.74	0.00	21.83	45.11	34.91	0.00	5.32
	Electrical machinery	1.60	0.00	20.05	41.44	40.76	0.00	5.71
	Transport	1.63	0.00	20.42	42.19	39.61	0.00	5.71
Netherlands	Food	0.00	20.58	0.00	0.00	0.00	80.51	3.37
	Textiles	0.00	20.54	0.00	0.00	0.00	80.54	3.34
	Wood and paper	0.00	36.69	0.00	0.00	0.00	64.20	1.92
	Coke	0.00	36.13	0.00	0.00	0.00	64.78	1.96
	Chemicals	0.00	29.49	0.00	0.00	0.00	71.50	2.37
	Plastic	0.00	26.56	0.00	0.00	0.00	74.44	2.58
	Mineral products	0.00	26.70	0.00	0.00	0.00	74.30	2.56
	Machinery	0.00	30.39	0.00	0.00	0.00	70.53	2.17
	Electrical machinery	0.00	26.95	0.00	0.00	0.00	74.02	2.46
	Transport	0.00	40.27	0.00	0.00	0.00	60.52	1.64
Slovak Republic	Food	2.03	0.00	58.50	41.82	0.00	0.00	4.54
	Textiles	2.03	0.00	58.47	41.80	0.00	0.00	4.44
	Wood and paper	2.03	0.00	58.51	41.84	0.00	0.00	4.60
	Coke	2.03	0.00	58.52	41.85	0.00	0.00	4.64
	Chemicals	2.03	0.00	58.47	41.80	0.00	0.00	4.44
	Plastic	2.03	0.00	58.47	41.79	0.00	0.00	4.42
	Mineral products	2.03	0.00	58.48	41.80	0.00	0.00	4.45
	Machinery	2.03	0.00	58.47	41.80	0.00	0.00	4.44
	Electrical machinery	2.03	0.00	58.46	41.79	0.00	0.00	4.41
	Transport	2.03	0.00	58.49	41.81	0.00	0.00	4.50
Slovenia	Food	23.22	0.00	33.86	8.54	37.55	0.00	4.39
	Textiles	24.60	0.00	35.88	9.05	33.43	0.00	4.05
	Wood and paper	20.06	0.00	29.24	7.38	47.01	0.00	5.30
	Coke	18.99	0.00	27.69	6.98	50.00	0.00	5.38
	Chemicals	18.81	0.00	27.43	6.92	50.61	0.00	5.56
	Plastic	19.95	0.00	29.09	7.34	47.12	0.00	5.03
	Mineral products	19.86	0.00	28.97	7.30	47.37	0.00	5.05
	Machinery	19.14	0.00	27.92	7.04	49.44	0.00	5.19
	Electrical machinery	17.50	0.00	25.52	6.44	54.28	0.00	5.70
	Transport	17.83	0.00	26.00	6.56	53.32	0.00	5.59
United States	Food	2.81	47.40	0.00	0.00	0.00	51.16	2.56
	Textiles	1.82	30.68	0.00	0.00	38.16	32.12	4.01
	Wood and paper	2.67	45.01	0.00	0.00	0.00	53.79	2.77
	Coke	3.89	65.81	0.00	0.00	0.00	31.16	1.80
	Chemicals	2.18	36.77	0.00	0.00	0.00	62.63	3.18
	Plastic	3.26	55.04	0.00	0.00	0.00	42.85	2.16
	Mineral products	2.76	46.70	0.00	0.00	0.00	51.90	2.56
	Machinery	2.12	35.87	0.00	0.00	0.00	63.60	3.25
	Electrical machinery	2.16	36.57	0.00	0.00	0.00	62.83	3.15
	Transport	2.29	38.75	0.00	0.00	0.00	60.49	3.03

Note: For industry classification see Table A1.

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