Short-Run Strategies For Attracting Foreign Direct Investment*

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Abstract

This paper empirically investigates the effectiveness and feasibility of two FDI policies, fiscal incentives and deregulation, aimed at improving the attractiveness of a country in the short run. Using disaggregated data on sales by US MNEs' foreign affiliates in 43 developed and developing countries over the 1982-1994 period, results show that the provision of fiscal incentives or the deregulation of the labour market would exert a positive impact on total FDI. Given the drawbacks frequently associated with the use of incentive packages, economy-wide policies which ease firing procedures and reduce severance payments would certainly be the best policy option. This paper also highlights the different aggregation and omitted variable biases that have affected results of previous studies and provides some support to recent theoretical models of FDI by showing that third country effects and spatial interdependence influence respectively the location of export-platform FDI and vertical FDI.

Keywords: Foreign direct investment; fiscal incentives; regulations, market potential; spatial interdependence.

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1 Introduction

Most countries in the world welcome and compete for foreign direct investment (FDI) as foreign firms are believed to foster the growth of their host countries. Recent literature (Globerman and Shapiro, 2002; Daude and Stein, 2007) emphasises that countries wishing to attract significantly more FDI need to improve their governance. The aggregate indicators used in these studies provide a clear but not very informative message for the policymarkers desiring to implement specific policies in order to rapidly improve the attractiveness of their countries. The more detailed analysis of Bénassy-Quéré et al. (2007) pinpoints that in addition to the rule of law and control of corruption, product and labour markets regulations are important determinants of FDI. Whereas broad changes in the former are likely to occur mainly in the long run, the "malleability" (Kucera, 2002) of the latter provides a government, potentially motivated by short-term political considerations, with some policy options to complement or replace the FDI incentives package traditionally used to lure FDI.

This paper investigates and compares the effectiveness and feasibility of these two FDI policies, fiscal incentives and deregulation, using disaggregated data on sales by foreign affiliates of US multinational enterprises (MNEs) in 43 developed and developing countries over the 1982-1994 period. Four significant contributions to the literature are made. First, the country sample and variables used provide a comprehensive picture of the role of unit labour costs, taxation and regulations in simultaneously attracting FDI. Second, the knowledge of sales destination allows the isolation of horizontal (HFDI), vertical (VFDI) and export-platform (EPFDI) FDI. Their distinction is essential to avoid any aggregation bias and to expose the different composition and volume effects of each FDI policy. Third, an innovative panel data estimator is employed. The "fixed effects vector decomposition" (FEVD) estimator possesses the unbiasedness and consistency properties of an usual fixed effects estimator but authorises the estimation of the effects of time-invariant variables. Thanks to its application, various omitted variable biases which have affected previous research and generated in some cases puzzling results can be uncovered. Finally, in line with recent theoretical models of FDI, the influence of third country effects and spatial interdependence on the location of FDI is investigated. A potential limitation of our empirical approach is our reliance on the regulatory quality *Doing Business* indicators created by the World Bank (2004). Their values are only available from 2003 whereas the rest of our data cover the 1982-1994 period. Hence,

we make the debatable assumption, which we motivate in section 3.a.ii, that regulatory quality has been fairly stable in the two preceding decades.

Results show that the provision of fiscal incentives or the deregulation of the labour market would exert a positive impact on total FDI. Given the drawbacks frequently associated with the use of incentive packages, economy-wide policies aimed at easing firing procedures and reducing severance payments would certainly be the best policy option. Their implementation would have large volume effects and potentially positive compositional effects. The effect of easing the entry of new firms is more ambiguous as results hint that their hindrance of competition generates economic rents which attract HFDI. This suggests that reducing barriers to entry would have a direct negative effect on total FDI. However, this negative effect is likely to be eventually dominated by the positive effects of the increase in market size and labour market flexibility generated by product market deregulation. Finally, environmental policies is an area in which countries can afford to regulate more as even FDI seeking to minimise costs are indifferent to the stringency of environmental regulations. More generally, findings of this paper underline the importance of disaggregating FDI by motive and of controlling for external market potential and unobserved time-invariant factors. Failing to do so generates both aggregation and omitted variable biases and results in the ignorance of important spatial effects which are found to affect the location of VFDI and EPFDI.

The remainder of the paper is constructed as follows. Section 2 provides a selective literature review. Section 3 describes the empirical model and estimation technique employed. Section 4 presents the empirical results. Section 5 quantifies the impacts of incentives and deregulation on FDI and discusses the effectiveness and feasibility of these policies. Section 6 concludes.

2 Foreign Direct Investment and Malleable Attractiveness Policies

There are three broad motives for FDI. In the horizontal view (Markusen, 1984), MNEs arise between countries similar in factor costs and in market size when exporting is costly and firm-level economies of scale are important relative to plant-level economies of scale. FDI is horizontal because MNEs replicate the same production activities in different locations in order to gain an advantage in supplying the local

market. In the vertical view (Helpman, 1984), FDI occurs between dissimilar countries to take advantage of factor-price differences when trade costs are low. Production is exported back to the home country. FDI is vertical because each production stage is located in the country with the highest comparative advantage. Finally, export-platform FDI (Yeaple, 2003; Baltagi et al., 2007; Ekholm et al., 2007) share characteristics with both horizontal and vertical FDI as production takes place in a low-cost country and is exported to proximate large third markets.

These different FDI motives imply that the sensitivity of FDI to host country determinants will vary according to the destination of production, although the three FDI types will often share common determinants. Only the data collected by the US Bureau of Analysis on the operations of US MNEs allow investigation of this issue, by providing information on the orientation of US foreign affiliate sales. Table 1 presents a selective literature review of the papers that have used these data to discriminate between the three FDI types. Empirical findings are usually in line with theoretical predictions, with sign and importance of each determinant depending on the nature of the observed FDI. However, these papers, by focusing on the structural determinants of FDI location -market size, trade costs and factor endowments, have frequently ignored the factors that host countries can manipulate in the short run, such as labour costs, corporate taxation or regulations.

As can be seen in Table 1, wages have been hardly tested but the few studies which include them confirm their negative impact on FDI, whichever the type. It is nevertheless fairly common to find in the broad FDI literature an insignificant or even positive effect of wages on FDI (see for instance Wheeler and Mody (1992), Wei (2000a) or Head and Mayer (2004)). These studies, with others finding a positive impact of skill abundance on FDI, may be interpreted not as rejecting the relevance of labour costs in FDI decision but as indirectly highlighting the crucial link between labour productivity, highly correlated with wages, and production costs. This ambiguity emphasises the need to use productivity-adjusted wages, i.e. unit labour costs. Regarding taxes, their empirical impact has become much more clear-cut in recent years. Table 1 reports that they tend to exert a statistically significant and negative impact on foreign sales of US MNEs, an unambiguous effect supported by the meta-analysis of Mooij and Ederveen (2003). Harding and Smarzynska Javorcik (2007) directly test the impact of tax incentives and find that

the presence of tax holidays quintuples aggregate FDI in developing countries granting them.[1] This has led a number of studies (Bénassy-Quéré et al., 2005; Azémar and Delios, 2008) to stress the ability of low taxes to compensate for weak fundamentals, in line with Tiebout (1956)'s trade-off between public inputs and taxes. Although less considered by the literature, the same reasoning obviously holds for policies aiming at lowering labour costs (Davies, 2005), e.g. labour subsidies (lower labour taxes) or free job training.

In very recent times, a growing number of papers have shifted their attention away from fiscal and financial incentives to point out that looser labour market regulations, usually in the form of lower redundancy payments, can foster FDI when there is uncertainty about future market conditions. Haaland et al. (2003) theoretically demonstrate the trade-off between upfront investment subsidy (entry costs) and labour market flexibility (exit costs). Haaland and Wooton (2007) refine this argument by taking into account endogenous wages determined through national bargaining and the risk level faced by MNEs. It is worthwhile to note that a reduction of entry costs, through the provision of an investment subsidy, exerts a smaller impact on FDI than a reduction of redundancy payments as the former only increases the likelihood of FDI but not the size of any FDI that occurs whereas the latter positively influences both. The option approach to investment (see Dixit and Pyndick (1994)) provides relatively similar intuitions. Dixit (1989), and more recently Yu et al. (2007), show that investment is less likely to be made the higher the sunk costs, the higher the operating costs and the higher the exit costs. Taking as a starting point this theoretical framework, Görg (2005) empirically shows that US outward manufacturing FDI stocks in 33 mostly developed countries are lower in countries with high labour market regulations. Bénassy-Quéré et al. (2007), using the OECD bilateral FDI database, reach the same conclusions. In these two studies, the included labour market variable captures the rigidity of both hiring and firing practices, making impossible to know whether entry or exit costs have been *in fine* tested. Smarzynska Javorcik and Spatareanu (2005) specifically test the impact of the strength of employment protection legislation and find, for a specific sample of 19 Western and Eastern European countries, that firing costs and regulations

[1] The impact is based on the estimated coefficient (1.431) and standard errors (0.594) reported in the second column of Table 23, p.47. Following Kennedy (1981), the percentage impact is $100 * \exp(1.431 + (0.594^2/2) - 1 \simeq 400\%$. As the authors point out, this large effect may in fact represent the cumulative impact of tax holidays *and* the presence of an investment promotion agency on FDI. Their results thus suggest that investment promotion activities (national image building, investment generation, investor servicing and policy advocacy) may be an additional short-run strategy for attracting FDI. We thank the referee for drawing our attention to this study.

affect the location and volume of FDI from other European countries. However, part of this negative effect may capture the impact of the untested difficulty of hiring. Concerning entry costs, there is little empirical work on their direct influence on FDI, at the exception of Bénassy-Quéré et al. (2007) who show that ease of market entry for new firms is associated with greater FDI. Since this study includes labour regulations, entry costs or other institutional characteristics separately and instrument them with the same exogenous variables, the coefficients of each of these institutional variables may only reflect the influence of a common institutional factor and not a truly independent effect. Overall, there is some limited empirical support for a positive influence of labour and product markets deregulation on FDI.

Finally, a few studies have investigated whether foreign investors, especially in pollution-intensive industries, try to minimise production costs by investing in countries with weak environmental regulations and therefore low environmental compliance costs (Wheeler, 2001). Xing and Kolstad (2002) find some fragile evidence that US pollution-intensive industries tend to invest more in countries with high sulphur dioxide emissions, their proxy of environmental regulations, in a sample of 22 mostly developed countries. On the other hand, Javorcik Smarzynska and Shang-Jin (2005), using a sample of 25 economies in Eastern Europe and the former Soviet Union, reject the hypothesis that US pollution-intensive industries invest more in countries with low environmental standards than other industries but find in a minority of cases that the volume of US FDI is higher *ceteris paribus* in those countries. Overall, the "pollution haven" hypothesis has little empirical support but cannot be entirely dismissed.

Table 1: Host country determinants of foreign sales of US MNEs: Selective literature review

	Destination of sales	Market size	Market access	Market potential	GDP per capita	Population	Country risk	Trade openness	Wages	Skill endowments difference
Brainard (1997)	TOTAL	+	x	x	+	x	x	-	x	x
Hanson et al. (2001)	LOCAL	+	x	x	+	x	x	x	x	x
	EXPTOT	+	x	x	+	x	x	+	x	x
Carr et al. (2001)/Blonigen et al. (2003)	TOTAL	+	x	x	x	x	-/ ns (if FE)	ns	x	+ (CMM) /- (BDH)
Shatz (2003)	TOTAL	+	x	x	+	x	-	x	x	x
Yeaple (2003)	LOCAL	+	x	x	x	x	x	-	x	x
	EXPUS	+	x	x	x	x	x	ns	x	x
	TOTAL	+	x	x	x	x	x	-	x	x
Aizenman and Marion (2004)	LOCAL	+	x	x	x	x	-	x	x	x
	EXPTOT	+	x	x	x	x	-	x	x	x
Shatz (2004)	LOCAL	+	x	x	x	x	+	ns	ns	x
	EXPUS	ns	x	x	x	x	ns	+	-	x
	EXPOTH	ns	x	x	x	x	-	+	-	x
Braconier et al. (2005)	LOCAL	x	+	x	ns	x	x	-	-	x
	EXPUS	x	+	x	ns	x	x	ns	-	x
	EXPOTH	x	+	x	ns	x	x	ns	-	x
	TOTAL	x	+	x	ns	x	x	ns	-	x
Baltagi et al. (2007)	TOTAL	+	x	-	x	x	ns	x	x	+/-
Blonigen et al. (2007)	TOTAL	+	x	- / ns (if FE)	x	-	-	+	x	x

	Destination of sales	Education	Corporate taxes	Distance	Trade costs	English Speaking	Spatial lag on FDI	Period	Country fixed effects (FE)
Brainard (1997)	TOTAL	x	+	x	-	+	x	1989	n
Hanson et al. (2001)	LOCAL	x	-	-	x	+	x	1989	n
	EXPTOT	x	-	-	-	+	x	and 1994	
Carr et al. (2001)/Blonigen et al. (2003)	TOTAL	x	x	-	x	x	x	1986-1994	y
Shatz (2003)	TOTAL	+	x	-	-	ns	x	1995	n
Yeaple (2003)	LOCAL	+ & -	-	x	-	x	x	1994	n
	EXPUS	+ & -	-	x	-	x	x		
	TOTAL	+ & -	-	x	-	x	x		
Aizenman and Marion (2004)	LOCAL	x	x	-	x	+	x	1989,	n
	EXPTOT	x	x	-	x	ns	x	1994	
								and 1999	
Shatz (2004)	LOCAL	ns	ns	ns	ns	ns	x	1986-1995	n
	EXPUS	ns	-	-	ns	+	x		
	EXPOTH	-	ns	x	x	ns	x		
Braconier et al. (2005)	LOCAL	x	x	nr	x	x	x	1986,	n
	EXPUS	x	x	nr	x	x	x	1990,	
	EXPOTH	x	x	nr	x	x	x	1994,	
	TOTAL	x	x	nr	x	x	x	and 1998	
Baltagi et al. (2007)	TOTAL	x	x	na	x	na	x	1989-1999	y
Blonigen et al. (2007)	TOTAL	+ / - / ns (if FE)	x	-/ na (if FE)	x	x	+ / ns (if FE)	1983-1998	y

Notes: 'TOTAL': total sales. 'LOCAL': local sales. 'EXPTOT': sales exported to US and third countries. 'EXPUS': sales exported to US 'EXPOTH': sales exported to third countries.'+': statistically significant positive effect. '-': statistically significant negative effect. 'x': not tested. 'na': not applicable.'ns': non-statistically significant effect. 'nr': not reported. 'y': yes. 'n': no. Studies may contain industry-specific variables such as plant scale and corporate scale economies or skilled-labour intensity. In Yeaple (2003), impact of education depends on industry skilled-labor intensity.

This short literature review identifies three areas in which contributions to the literature on FDI can be made. First, the usual set of determinants, mainly related to domestic market access, needs to be expanded in order to provide more evidence on the role of unit labour costs, taxation and regulations in attracting FDI. From a host country perspective, investigation of the impact of cost and regulatory factors are particularly important as they are those which can be relatively quickly altered by appropriate government policies. Second, there is a need for using panel data and more representative country samples. Cross-sectional studies comprise the bulk of research on determinants of total and decomposed US foreign sales. The possibility of an omitted variable bias raises some doubt about their results. On the other hand, panel data, more frequently used in studies investigating the determinants of financial FDI flows/stocks, allows the introduction of individual effects which can at least capture the influence of unobserved time-constant factors. In addition, many conclusions on important issues, such as the importance of labour costs, labour market flexibility or weak environmental standards have been mainly derived from works focusing on FDI in Western and Eastern European countries. It is unclear whether they still hold for a more representative sample including developed and developing countries. Third, the heterogenous nature of FDI implies that the impact of usual determinants government policies will vary according to FDI motives. Using total FDI, as done in most studies, creates an aggregation bias and without distinguishing between FDI motives, it cannot be shown the different composition and volume effects of alternative policies on total FDI received by a given country. The composition effect may be important if some FDI types are believed to be more beneficial to the local economy than others. With a familiar log-log specification, the volume effect crucially depends on the currently predominant FDI type in the host country. The rest of the paper is devoted to addressing these three issues.

3 Empirical Model and Data Description

The following 'gravity' model[2] will be estimated:

$$\begin{aligned}\text{Ln(Sales)}_i^t = {} & \alpha_1\text{Ln(Unit labour costs)}_i^{t-1} + \alpha_2\text{Ln(Tax rate)}_i^t + \alpha_3\text{Ln(Diff. starting a business)}_i + \\ & \alpha_4\text{Ln(Diff. hiring)}_i + \alpha_5\text{Ln(Diff. firing)}_i + \alpha_6\text{Ln(Envt. regulation stringency)}_i^{t-1} + \\ & \alpha_7\text{Ln(GDP)}_i^{t-1} + \alpha_8\text{Ln(External market potential)}_i^{t-1} + \alpha_9\text{Ln(Population)}_i^{t-1} + \\ & \alpha_{10}\text{Ln(Country risk)}_i^{t-1} + \alpha_{11}\text{Ln(Trade openness)}_i^{t-1} + \alpha_{12}\text{Ln(Distance)}_i + \\ & \alpha_{13}\text{English dummy}_i + T^t + \epsilon_i^t\end{aligned}$$

where $\epsilon_i^t = C_i + \upsilon_i^t$, with time-invariant country-specific effects C_i and idiosyncratic shocks υ_i^t. The production of MNEs in a given country can be sold on the local market, exported to the United States or exported to other foreign countries. Surveys of US direct investment abroad carried by the US Bureau of Economic Analysis (BEA) allow the investigation of these three motives by providing a decomposition of the total sales of majority-owned foreign affiliates of US MNEs into these three destinations.[3] As customary in the literature, data of the 1982, 1989 and 1994 benchmark surveys are used since data in non-benchmark survey years are usually estimated for small affiliates, which may be particularly numerous in developing countries. Nominal values are converted into millions of real 1996 US dollars using the US chain-type price index for gross domestic investment as reported in the Economic Report of the President.[4]

Table 2 shows that, on average, local sales account for slightly more than two-thirds of total affiliate sales in developed and developing countries alike. However, at the country level, the pattern is less obvious since in some locations, such as Ireland or Singapore, affiliates export most of their goods and services to other markets. These large variations in FDI motives across countries suggest that the

[2] As noted by Blonigen et al. (2007) "*the gravity model is arguably the most widely used empirical specification for FDI*" (p. 1309). Bergstrand and Egger (2007) and Head and Ries (2008) have recently provided theoretical rationales for estimating FDI gravity equations.

[3] `http://www.bea.gov/bea/di/di1usdop.htm` Sales are a good proxy of the productive activities of US foreign affiliates as long as most of the goods and services are not imported by affiliates for resale without further manufacture. That seems to be the case, since in 1994 these imports represented on average only 4 per cent of the value of total sales.

[4] Deflator data are provided by Bruce Blonigen on his website `http://www.uoregon.edu/~bruceb/workpap.html`

Table 2: Foreign sales of US MNE, by motivation

Country	Total Sales	Local sales	*Share of* Sales to USA	Sales to other foreign countries
Argentina	7,400	81	3	16
Australia	39,429	86	3	11
Austria	6,857	76	4	20
Belgium	32,587	44	4	53
Brazil	32,661	89	5	6
Canada	171,068	73	24	3
Chile	2,899	78	7	17
China	1,769	86	4	10
Colombia	5,360	88	5	7
Denmark	5,370	76	4	21
Ecuador	798	58	28	7
Finland	2,688	93	2	8
France	75,512	73	3	24
Germany	119,493	70	2	28
Greece	2,676	91	1	8
Guatemala	792	81	5	12
Honduras	1,160	77	11	14
Hongkong	18,936	47	20	33
India	696	94	2	5
Indonesia	10,015	42	21	37
Ireland	12,421	34	6	61
Israel	1,403	67	16	17
Italy	44,245	82	3	15
Jamaica	1,202	52	27	20
Japan	64,251	89	4	7
Korea	2,999	71	23	6
Malaysia	7,586	54	23	23
Mexico	23,721	75	21	4
New Zealand	3,582	94	2	5
Nigeria	3,659	28	64	6
Norway	8,823	53	9	31
Panama	2,499	41	14	44
Peru	1,688	62	14	6
Philippines	4,246	78	11	14
Portugal	3,706	81	1	18
Singapore	26,896	27	26	47
South Africa	5,329	92	0	8
Spain	22,525	75	2	23
Sweden	8,763	81	1	16
Thailand	6,246	75	9	17
Turkey	2,079	94	2	5
United kingdom	174,026	71	6	23
Venezuela	5,703	96	2	2
Developed countries	**40,250**	**71%**	**7%**	**22%**
Developing countries	**5,932**	**72%**	**14%**	**13%**

Notes: Average values of the benchmark survey years 1982, 1989 and 1994. Data come from the US BEA.

sensitivity of affiliate sales to host country characteristics varies according to their destination market.

a Government Policies

i Cost variables

Two major determinants of the profitability of FDI are labour costs and taxation.

Low wage locations are attractive as long as low labour compensation does not reflect low labour productivity. Hence, an appropriate measure of labour costs is unit labour costs, i.e. the cost of labour per unit of output. Since health and education enhance a worker's productivity, this measure implicitly controls for the level of human capital in the workforce. For data availability reasons, unit labour costs correspond to those prevailing in the manufacturing sector. They are calculated by dividing average wage per worker, including supplements, by value added per worker. Data come from UNIDO (1997) and are available for the years 1980, 1985, 1990 and 1995. Missing values have been filled through linear interpolation.

Statutory tax rates may give a poor picture of the effective fiscal burden faced by MNE as they are often eligible to a number of fiscal incentives. Hence the average tax rates paid by US MNEs are used. They have been calculated by Grubert and Mutti (2000), on the basis of tax returns of more than 500 large US manufacturing MNE. Data have been kindly provided by the authors and are available for even years between 1980 and 1996. Following Altshuler et al. (1998) and Mutti and Grubert (2004), in order to reduce measurement error, average tax rates effectively paid correspond to the average of the current year value and the values of the previous two even years.

Table 3 provides summary statistics on unit labour costs and average tax rates across countries. Developing countries offer, on average, cost saving opportunities as labour is much cheaper than in developed countries. Average corporate taxes tend also to be lower but the difference is less pronounced, suggesting that both country groups are involved in an international tax competition. Indeed, a comparison between

Table 3: Labour costs and corporate taxes

Country	Unit labour costs	Average tax rates (%)	Statutory top marginal tax rate (%)
Argentina	0.24	14	32
Australia	0.43	36	39
Austria	0.65	34	40
Belgium	0.45	31	43
Brazil	0.23	26	30
Canada	0.45	35	41
Chile	0.17	22	39
China	0.16	7	42
Colombia	0.18	31	33
Denmark	0.62	33	41
Ecuador	0.30	19	22
Finland	0.53	34	34
France	0.65	37	41
Germany	0.50	40	52
Greece	0.49	31	41
Guatemala	0.21	27	36
Honduras	0.43	40	38
Hongkong	0.57	13	17
India	0.46	46	50
Indonesia	0.16	33	38
Ireland	0.33	4	44
Israel	0.73	16	38
Italy	0.70	34	32
Jamaica	0.43	32	37
Japan	0.35	51	40
Korea	0.28	33	31
Malaysia	0.29	14	36
Mexico	0.21	34	38
New Zealand	0.65	34	35
Nigeria	0.19	30	40
Norway	0.71	31	28
Panama	0.36	11	45
Peru	0.17	38	40
Philippines	0.24	34	35
Portugal	0.62	28	38
Singapore	0.32	9	33
South Africa	0.50	38	43
Spain	0.54	25	34
Sweden	0.39	41	40
Thailand	0.33	28	30
Turkey	0.31	44	36
United Kingdom	0.49	27	40
Venezuela	0.23	27	43
Developed countries	**0.53**	**30%**	**37%**
Developing countries	**0.28**	**28%**	**37%**

Notes: Values are averaged over the 1982-1994 period. Data come from UNIDO (1997) and Grubert and Mutti (2000).

the average tax rates paid by US MNEs and the statutory top marginal tax rate[5] clearly shows, despite the discrepancies in tax measures, that most developed and developing countries offer US foreign investors preferential tax treatment.

ii Regulation variables

Regulations can affect the volume of FDI received by a country by increasing entry costs, operational costs and exit costs. Until recently, no measures of the regulatory environment were available for a large number of countries. However, since 2004, the World Bank has addressed this gap by constructing objective indicators of regulatory quality (see World Bank (2004)). For the purpose of this paper, three variables have been selected, which broadly capture entry and exit regulatory costs:

1. *the cost of starting a business*: expressed as a percentage of income per capita, it corresponds to the cost of fulfilling all procedures officially required for an entrepreneur to start a new business.

2. *the difficulty of hiring workers*: it covers the availability of part-time and fixed-term contracts, which may provide a firm with more flexibility and lower costs than full time indefinite contracts. The index ranges from 0 to 100, with higher values indicating more rigid regulations.

3. *the difficulty of firing*: it encompasses grounds for dismissal, firing procedures, notice periods, and severance payments. The index ranges from 0 to 100, with higher values indicating more rigid regulations.

Data can be found on the World Bank Doing Business website.[6] The *Doing Business* indicators have been preferred to subjective measures of regulatory quality, such as those based on perception surveys of enterprise managers, as it is not clear whether the latter convey meaningful information, especially in the context of cross-country comparisons (Bertrand and Mullainathan, 2001; World Bank, 2004).[7] Furthermore, the World Bank regulation variables allow to distinguish the effects of the difficulty of firing from those of the difficulty of hiring on FDI. Unfortunately, data are only available for the years

[5]Data have been retrieved from the World Tax Database `http://www.bus.umich.edu/otpr/otpr/introduction.htm`

[6]`http://www.doingbusiness.org/`

[7]For instance, there is quasi no correlation between the observed starting costs and labour market rigidities and the answers to the corresponding survey questions in the World Economic Forum's Global Competitiveness Report 2001-2002, as reported in Gwartney and Lawson (2005).

2003 and beyond. It is therefore postulated that regulations have been relatively stable in the last two decades. Two pieces of evidence hint at the plausibility of this assumption. First, the World Bank (2005) *Doing Business* report argues that reforms in developing countries have been very rare, even though their regulations were developed decades or even a century ago. Second, the extremely high correlation between the 1985 and 2003 values of the OECD's overall summary indicator of the strictness of employment protection legislation[8] ($r \simeq 0.92$) suggests that regulations, at least in the labour market, have not much changed in developed countries either. Values of the regulatory quality indicators for 2003 have been used.

Firms may also have to comply with regulations which increase their operational costs. For example, stringent environmental regulations imply high pollution abatement costs. No measure of environmental regulations is readily available. Following Damania et al. (2003) and Cole et al. (2006), it is assumed that the stringency of environmental regulations is correlated with the grams of lead content per litre of gasoline. As argued by the latter study, lead content in gasoline is mostly determined by policy decisions and the high toxicity of lead emissions can make the reduction of this local air pollutant an early priority during a country's development. Yearly data on average maximum lead content in gasoline come from Grether and Mathys (2002).

Values of the various measures of government regulations are provided in Table 4. On average, developing countries tend to regulate business more than developed countries, with the exception of environmental regulations. Entry costs are particularly higher in developing countries whereas the gap is much narrower concerning exit costs, i.e. the difficulty of firing workers. These observations are in line with Djankov et al. (2002) and Botero et al. (2004), who find that richer countries tend to regulate less entry but do not offer more flexible labour laws than poorer countries. Finally, the large difference in lead content per litre of gasoline suggests that the protection of the environment is a normal good (Torgler and Garcia-Valinas, 2007).

[8]Data can be found at `http://www.oecd.org/dataoecd/1/5/39069225.xls`

Table 4: Regulation variables

Country	Cost of starting a business (% of GDPPC)	Difficulty of hiring (0-100)	Difficulty of firing (0-100)	Lead content per litre of gasoline
Argentina	12	44	20	0.39
Australia	2	0	10	0.52
Austria	6	0	40	0.08
Belgium	11	11	10	0.20
Brazil	13	67	0	0.19
Canada	1	11	0	0.18
Chile	12	33	20	0.63
China	18	11	40	0.14
Colombia	29	22	20	0.41
Denmark	0	0	10	0.08
Ecuador	52	44	50	0.78
Finland	1	33	40	0.13
France	1	67	40	0.24
Germany	6	33	40	0.08
Greece	37	44	40	0.24
Guatemala	66	44	0	0.43
Honduras	77	89	0	0.84
Hongkong	2	0	0	0.15
India	53	33	70	0.55
Indonesia	137	72	60	0.64
Ireland	10	11	20	0.21
Israel	6	11	0	0.22
Italy	17	33	40	0.26
Jamaica	16	11	0	0.74
Japan	11	0	30	0.00
Korea	18	11	40	0.17
Malaysia	26	0	30	0.35
Mexico	18	33	70	0.22
New Zealand	0	11	10	0.49
Nigeria	90	22	20	0.66
Norway	4	44	40	0.09
Panama	26	78	70	0.64
Peru	39	44	60	0.69
Philippines	25	56	30	0.65
Portugal	12	50	50	0.29
Singapore	1	0	0	0.20
South Africa	9	56	30	0.50
Spain	17	78	30	0.36
Sweden	1	17	40	0.08
Thailand	7	33	0	0.29
Turkey	37	44	30	0.44
United Kingdom	1	11	10	0.20
Venezuela	44	78	100	0.69
Developed countries	**7**	**22**	**24**	**0.21**
Developing countries	**37**	**42**	**35**	**0.50**

Notes: For the first columns, 2003 values are given. For the last column, values are averaged over the 1982-1994 period. Data come from World Bank (2004) and Grether and Mathys (2002).

b Control Variables

Besides the difficulties and costs of doing business, other country characteristics are controlled for: domestic market size, external market potential, population, country risk, trade openness, bilateral distance and common language. Domestic market size, corresponding to GDP in millions of 2000 constant PPP US$, reflects the potential domestic demand for the goods and services produced by US MNEs. On the other hand, external market potential, a "third country effect", captures the potential demand for the goods and services produced by US MNEs in neighbouring countries. Following Harris (1954) and Blonigen et al. (2007), it is calculated as the sum of the GDPs of all other countries weighted by their distance to a given country: $\sum_{i \neq j} \frac{GDP_j^t}{Dist_{ij}}$. Population size controls for the effect of host country wealth on FDI since for a given GDP, a higher population decreases GDP per capita. GDP and population data come from Heston et al. (2006) and bilateral distances have been calculated by Mayer and Zignago (2006) based on bilateral distances between the biggest cities of those two countries.[9] The measure of country risk comes from *Institutional Investor*. Institutional Investor credit ratings are based on a survey of senior economists and sovereign-risk analysts at leading global banks and money management and securities firms, who are asked to rate each country on a scale from 0 to 100 (where 100 represents maximum creditworthiness). These ratings are averaged, with higher weights given to firms with greater worldwide exposure and more sophisticated country analysis systems. Rankings of critical factors by participants show that their ratings are based on the usual determinants of country risk, i.e. political risk (rule of law, corruption, transparency, political stability, regulatory regime, internal and external conflicts, relationship with multilaterals) financial risk (foreign exchange reserves, debt-service ratio, absolute level of debt, export growth and diversity) and economic risk (GDP growth, budget balance, current account balance, banking and financial stability). Furthermore, Butler and Fauver (2006) demonstrate that good public governance, as measured by Kaufmann et al. (2004)'s indicators, exerts a much stronger influence on the credit rating of a country than economic and financial factors. Data come from the World Bank database on FDI.[10] Based on Wei (2000b)'s methodology, a trade openness indicator is constructed. It is the residual of the log-log regression of the standard trade openness ratio ($\frac{X+M}{GDP}$) on a time trend and structural determinants of a country's *natural* openness: population, landlockedness and remoteness from

[9] http://www.cepii.fr/francgraph/bdd/distances.htm
[10] http://www1.worldbank.org/economicpolicy/globalization/data.html

world markets.[11] Once these factors have been taken into account, it is assumed that any deviation from predicted values is the consequence of trade policies, which influence the degree of *artificial* openness. The indicator ranges between 1 and 10 (worst to best), according to the distribution decile in which the original residual value lies. Data on GDP and population come from Heston et al. (2006) and geographic variables come from Mayer and Zignago (2006). Bilateral distance and an English-speaking country dummy are also included.

Table 5: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.
Local sales	22.62	1.50	19.71	25.73
Sales to USA	19.98	1.99	14.00	24.74
Sales to other countries	20.98	1.85	16.78	24.67
Unit labour costs	-0.98	0.47	-2.06	-0.24
Corporate taxation	-1.39	0.59	-3.52	-0.57
Diff. of starting a business	2.32	1.20	0.00	4.93
Diff. of hiring	2.76	1.50	0.00	4.50
Diff. of firing	2.71	1.48	0.00	4.62
Envt. regulation stringency	0.26	0.20	0.00	0.61
Market size	19.15	1.31	15.95	21.75
External market potential	22.72	0.52	21.57	23.92
Population	9.29	0.64	7.24	10.16
Country risk	4.01	0.48	2.75	4.56
Trade openness	1.53	0.64	0.00	2.30
Distance	8.97	0.52	7.64	9.65
English speaking country	0.31	0.47	0.00	1.00

Notes: Variables are in logarithms.

Summary statistics are given in Table 5. Data are available for 21 developed countries and 22 developing countries, listed in Table 2, and for the three benchmark survey years 1982, 1989 and 1994. Variables are measured in logarithmic values.[12] This has two advantages: such transformation reduces the influence of large values and coefficients can be directly interpreted as partial elasticities. Each explanatory variable is also lagged by one year to reduce any endogeneity bias and to take into account that foreign investors base their location choice on past information.[13]

[11] The remoteness variable measures how geographically distant a given country is from world demand; it is calculated according to Wagner et al. (2002)'s formula: $Rem_i^t = \frac{1}{\sum[(GDP_j^t/GDP_w^t)/Dist_{ij}]}$ and when $i = j$, the country's internal distance is used.

[12] '1' is added when the value of an explanatory variable equals zero.

[13] Average tax rates are an exception since they have not been purposely lagged. To each benchmark year (1982, 1989, 1994)

Influential observations, both in terms of leverage and outlierness, have been removed according to the Cook (1977)'s D influence statistic.[14] A Breusch and Pagan (1979) test and a Arellano and Bond (1991) test respectively indicate that residuals are heteroscedastic and serially correlated. Following Wooldridge (2003) standard errors are therefore corrected in order to be robust to both heteroscedasticity and serial correlation. Finally, a robust Hausman test proposed by Arellano (1993) indicates that the explanatory variables are correlated with the country-specific unobserved effect. Time-constant omitted explanatory variables may be the quality of infrastructure, agglomeration effects, the FDI regime or spatial effects (Blonigen et al., 2007). For unbiasedness and consistency, a fixed effects approach must thus be chosen. However, since some of the key variables of interest are time-invariant, their impact on FDI cannot be estimated with a conventional fixed effects estimator as identification of the parameters relies on the time variation within each cross section. The solution adopted in this paper is to use the "fixed effects vector decomposition" (FEVD) estimator suggested by Plümper and Troeger (2007).[15] The FEVD technique involves three stages 1) Using a conventional fixed effects model, the unit (country) fixed effects are estimated; 2) These unit fixed effects are regressed on the time-invariant variables (regulation variables, distance, language), in order to obtain their unexplained part, i.e. the part not explained by time-invariant variables; 3) Finally, a model which includes the time-varying variables, the time-invariant variables, and the unexplained part of the fixed effects vector (the residuals from stage 2, which control for the time-invariant unobserved factors) is estimated by pooled OLS and the degrees of freedom used in the computation of standard errors are adjusted downwards to account for the estimated individual effects in the first stage. This last stage is equivalent to a fixed effects model in which the country-specific effects have been decomposed into an explained and unexplained part. Based on Monte Carlo simulations, Plümper and Troeger (2007) show that their FEVD estimator is more efficient and less biased than competitive estimators (pooled OLS, random effects, Hausman-Taylor) when time-varying

correspond the three-year average tax rates for the years 1982, 1988 and 1994. Three reasons drive this choice. First no average values for the years before 1982 can be calculated, precluding the consistent use of lagged average values. Second, although a large amount of recent investment could reduce the observed tax rate, thanks to investment tax credits, Grubert and Mutti (2000) demonstrate that their measure of corporate taxation is not jointly determined with US FDI at the country level. Third, even if they are not systemically lagged, these three-year average tax rates convey, by construction, information on previous tax choices. Note as well that for data availability reasons, lead content has been assumed constant over the period 1981-1983.

[14] More precisely, in order to keep the sample constant across regressions, the latter are only run with observations not deemed influential for at least two different dependent variables.

[15] This estimator shares some common features with the hierarchical linear model described in Greene (2007).

and time-invariant variables are correlated with the unobserved unit fixed effects in finite samples.[16]

4 Empirical Results

Results are presented in Table 6. The impacts of control variables, cost variables and regulation variables are discussed in turn.

Column (1) shows that HFDI is attracted by countries which are large, rich, stable and English-speaking. The positive sign of market potential suggests that demand spillovers may exist between countries. Consistent with their trade costs saving purpose, HFDI tends to locate in distant and closed countries. Column (2) indicates that the determinants of VFDI are fairly different. Market size and market potential play no role and VFDI puts much more weight on country risk, which reflects the conclusions of Aizenman and Marion (2004). The negative sign of distance highlights that trade costs must be sufficiently low for VFDI to occur since this FDI mode entails international trade of intermediate and final goods. From this perspective, the negative and non-significant sign of trade openness is unexpected. Finally, column (3) shows that EPFDI shares common characteristics with both VFDI and HFDI. Although EPFDI tends to take place in stable, open, English-speaking and small countries, choice of the latter depends on their proximity to the large markets of third countries.

Examination of the cost variables allows to investigate the sensitivity of FDI to the main short-run policy instrument at the disposal of governments wishing to attract foreign investors, fiscal incentives. Table 6 suggests that labour subsidies reducing the unit cost of labour would significantly influence all types of FDI whereas a reduction in corporate taxes would only induce greater horizontal and vertical FDI. In both cases, the impact is much stronger on FDI motivated by factor price differences, i.e. VFDI and/or EPFDI. These results contrasts with previous literature for two reasons. First, despite their theoretical importance, labour costs have been rarely included in FDI studies for data reasons, and when it was

[16] In order to investigate the correlation of the time-invariant variables with the unobserved part of the unit fixed effects, the second stage has been estimated by 2SLS. Following Bénassy-Quéré et al. (2007) and Djankov et al. (2006), the regulation variables are instrumented with the absolute value of latitude and of longitude, dummies for the legal origin of the country's commercial code or company law (English, French, Scandinavian) and dummies for the main religion (Catholic, Muslim, Protestant). Exogeneity of the instruments is always satisfied but weakness of the instruments can only be rejected for the costs of starting a business according to Cragg-Donald F-statistics. For this variable, the robust equivalent of a Durbin-Wu-Hausman test (a C test) cannot reject its exogeneity, suggesting that the estimated coefficients for the time-invariant variables are unlikely to suffer from an omitted variable bias.

Table 6: Determinants of FDI, by FDI motivation

Determinants	Local sales	Sales to the United States	Sales to other foreign countries	Total sales
	(1)	(2)	(3)	(4)
Unit labour costs	-0.14^a	-1.61^a	-1.08^a	-0.46^a
	(0.04)	(0.47)	(0.14)	(0.03)
Corporate taxation	-0.12^a	-0.77^a	0.11	0.03^b
	(0.01)	(0.26)	(0.09)	(0.01)
Diff. of starting a business	0.59^a	-0.61^a	-0.58^a	0.44^a
	(0.00)	(0.01)	(0.00)	(0.00)
Diff. of hiring	0.47^a	-0.49^a	-0.09^a	0.43^a
	(0.00)	(0.01)	(0.00)	(0.00)
Diff. of firing	-0.15^a	-0.35^a	-0.24^a	-0.13^a
	(0.00)	(0.01)	(0.00)	(0.00)
Envt. regulation stringency	-0.37^a	0.71	0.20	-0.37^a
	(0.04)	(0.49)	(0.14)	(0.03)
Domestic market size (GDP)	1.71^a	-0.64	-0.52^b	1.03^a
	(0.05)	(0.93)	(0.24)	(0.03)
External market potential	1.12^a	1.75	2.71^a	1.57^a
	(0.07)	(2.32)	(0.55)	(0.06)
Population	-2.77^a	1.64	1.08^b	-2.38^a
	(0.09)	(1.31)	(0.44)	(0.07)
Country risk	0.42^a	1.29^a	1.40^a	0.61^a
	(0.02)	(0.40)	(0.11)	(0.02)
Trade openness	-0.03^a	-0.16	0.24^a	0.03^a
	(0.01)	(0.21)	(0.07)	(0.01)
Distance	0.99^a	-1.18^a	0.63^a	1.22^a
	(0.00)	(0.01)	(0.00)	(0.00)
English-speaking	0.17^a	0.91^a	0.68^a	0.24^a
	(0.00)	(0.02)	(0.00)	(0.00)
Unexplained fixed effects part	1.00^a	1.00^a	1.00^a	1.00^a
	(0.00)	(0.01)	(0.00)	(0.00)
Constant	-20.96^a	-17.72^a	-51.94^a	-24.25^a
	(0.01)	(0.07)	(0.02)	(0.00)
Observations	102	102	102	102
Overall R-squared	0.98	0.94	0.97	0.99
Hausman test p-value	0.00	0.00	0.00	0.00

Notes: a, b, c denotes respectively significance at the 1, 5 and 10% level. Heteroscedasticity-autocorrelation robust standard errors are in parentheses. Unreported time dummies are included. Independent variables are in logarithms.

done, insignificant or statically positive results frequently occurred,[17] leaving the impression that labour costs do not matter to attract FDI, a supposition strongly rejected by findings of this paper. Second, it has been increasingly common to argue that low tax rates can help to offset weak fundamentals since corporate taxation is generally a strong negative FDI determinant. This conclusion remains generally valid but labour subsidies may be in some cases a more effective instrument than a tax rate cut.

Dealing with the impact of regulations, all FDI types are deterred by the difficulty of firing workers. This negative impact of exit costs conforms to the theoretical predictions of Haaland et al. (2003) and Haaland and Wooton (2007) and corroborates the findings of previous research. Curiously, whereas VFDI and EPFDI are also negatively influenced by the high costs of starting a business and the difficulties of hiring new workers, with a much larger impact on "footloose" VFDI, the opposite is true for HFDI. Since high entry costs reduce domestic product market competition and by extension increase mark-ups,[18] it is possible that market-oriented FDI is attracted by these regulatory-induced supernormal profits. Thanks to their ownership advantages, foreign firms are able to overcome these entry barriers, where domestic firms cannot (Driffield, 2001). Finally, stringency of environmental regulations only significantly influences HFDI, and with a negative sign, implying that HFDI tends to occur in less polluted countries. These last results give little credence to the "pollution haven" hypothesis. US MNEs, which must respect the high standards of their home country, may find it cheaper, more forward-looking and less risky to use the same 'green' production technology everywhere: abatement technology may be an integral part of the production process, environmental standards in host countries could tighten in the future and 'green' consumers may refuse to consume environmentally-damaging products.

Column (4) demonstrates the importance of decomposing FDI by motives of affiliate operations by using as dependent variable total sales, i.e. the sum of local sales, sales to the United States and sales to other foreign countries. Given the dominant presence of HFDI in total FDI, results for total sales are fairly close to what has been found in column (1). Nevertheless, some variables have a surprising

[17] These "disappointing" results are likely to be explained by the use of absolute labour costs variable, which ignores the compensating effects of labour productivity and/or a focus on developed countries, for which variations in labour costs between and within countries are smaller than for developing countries.

[18] Djankov et al. (2002) find some evidence that in countries which regulates the most entry, competition is perceived to be less intense. Griffith and Harrison (2004) show that the difficulty of starting a business and labour regulations have a positive impact on mark-ups in OECD countries.

sign. For instance, taxes are predicted to have a positive effect on total FDI. Brainard (1997), who ran a very similar regression, found the same contradictory impact. In addition, despite the predominance of HFDI, trade openness is predicted to increase total FDI. Many papers report the same paradoxical result. Findings of this paper suggest that both puzzles can be explained by aggregation bias caused by inappropriate pooling of FDI data.

Overall, the empirical results are fairly close to what theory predicts, with clear differences in the determinants of HFDI, VFDI and EPFDI. They also generally do not contradict conclusions of past empirical studies,[19] although four notable exceptions exist. First, excessive labour and product market regulations are not always found to directly deter FDI. In fact, HFDI is found to be higher in countries exhibiting high entry costs, suggesting that the latter may be more than counterbalanced by the economic rents that they create. Second, contrary to most studies, the distance variable has always the expected sign: positive for FDI motivated by the "proximity-concentration" trade-off, negative for FDI motivated by factor costs differences. Unreported regressions show that distance would have had a negative effect on HFDI if the unexplained part of the fixed effects vector had not been included.[20] Such a result highlights the usefulness and appropriateness of the FEVD methodology. Useful as the effects of time-invariant variables can be estimated. Appropriate because omitted variable bias should clearly be a concern in all FDI studies. Third, in line with the theoretical predictions of Baltagi et al. (2007) for complex FDI,[21] but contrary to their empirical results and those of Blonigen et al. (2007), external market potential, described by Baltagi et al. (2007) as "the spatially weighted third-market size of a given host economy's competitors" (p. 271), has a positive and significant impact on HFDI and EPFDI, while the impact on VFDI is also positive but not significant.

Table 7 provides additional support to the importance of third-country effects in FDI estimations by

[19] The results obtained may be interpreted as only contributing the literature on US FDI. However, it is likely that FDI by other major source countries are driven by the same factors. Mody and Srinivasan (1998) find similarities in the determinants of US and Japanese FDI with convergence towards the end of the eighties and Braconier et al. (2005) cannot reject the appropriateness of pooling together US and Swedish data on outward FDI. Even if it was not the case, the specificity of the United States would be strongly attenuated by the fact that it is the largest foreign direct investor in the world.

[20] In a related FDI study, Davies et al. (2008) find that the impact of distance on bilateral aggregate FDI switches from negative to positive when they estimate their empirical model by FEVD instead of OLS. Given that horizontal FDI accounts for the bulk of total FDI, this result is consistent with our findings.

[21] They argue that an increase in the size of third countries markets generate more revenues which allow MNEs to more easily cover fixed (plant set-up) costs.

Table 7: Spatial autocorrelation

Spatial autocorrelation tests	Local Sales			Sales to the United States		
Moran's I value		0.09^a			0.03^c	
Spatial error ($\lambda = 0$):						
Robust Lagrange multiplier (*p*-value)	0.56	0.91	0.15	0.08	0.03	0.28
Spatial lag ($\rho = 0$):						
Robust Lagrange multiplier (*p*-value)	0.52	0.50	0.57	0.10	0.05	0.90
Coefficient spatially weighted FDI (ρ)	0.11	-0.47	-0.07	0.09	-0.11	-0.16
	(0.24)	(0.38)	(0.08)	(0.50)	(0.55)	(0.25)
External market potential	No	Yes	Yes	No	Yes	Yes
Unexplained fixed effects part	No	No	Yes	No	No	Yes
Spatial autocorrelation tests	Sales to third countries			Total sales		
Moran's I value		0.19^a			0.11^a	
Spatial error ($\lambda = 0$):						
Robust Lagrange multiplier (*p*-value)	0.08	0.28	0.21	0.31	0.54	0.12
Spatial lag ($\rho = 0$):						
Robust Lagrange multiplier (*p*-value)	0.00	0.22	0.68	0.06	0.69	0.53
Coefficient spatially weighted FDI (ρ)	0.77^a	0.32	0.02	0.47	-0.08	0.03
	(0.20)	(0.43)	(0.09)	(0.27)	(0.42)	(0.06)
External market potential	No	Yes	Yes	No	Yes	Yes
Unexplained fixed effects part	No	No	Yes	No	No	Yes

Notes: a, b, c denotes respectively significance at the 1, 5 and 10% level. *E(I)*=-0.02. Row-standardized spatial weights matrix (W), with weights initially corresponding to the inverse of the bilateral distance between the biggest cities of two countries. Since tests and estimation method apply to cross section analysis,'between' regressions are used. Spatial lag regression models are estimated by maximum likelihood. Heteroscedasticity-robust standard errors are in parentheses.

providing cross-sectional tests of spatial autocorrelation.[22] Moran (1948)'s *I* measure of global spatial autocorrelation indicates that for every kind of FDI, positive spatial clustering cannot be rejected. However, the robust Lagrange multiplier tests for spatial error dependence and for spatial lag dependence suggest that only VFDI and EPFDI are statistically spatially clustered. The significant tests for spatial autocorrelation can be interpreted as the necessary inclusion of a spatially-weighted FDI term, as in Blonigen et al. (2007). On the other hand, in the case of EPFDI, they may simply reflect the omission of an important variable highly correlated with spatially lagged FDI, the external market potential. Thanks to their proximity to large markets, even large European OECD economies host a high share of EPFDI (see Table 2).[23] Indeed, once external market potential is included, the existence of spatial effects is rejected for EPFDI. However, spatial autocorrelation remains a concern for VFDI, which can nevertheless be dealt with the inclusion of the unexplained part of the fixed effects vector. This suggests that these spatial interactions are fairly stable over time. Globally, Table 7 shows that third country effects and spatial interdependence influence respectively the location of EPFDI and VFDI, lending thus some support to the theoretical predictions of Baltagi et al. (2007) and Blonigen et al. (2007) and emphasising the need to control for external market potential and unobserved time-invariant factors in FDI studies.

5 Quantification and Discussion

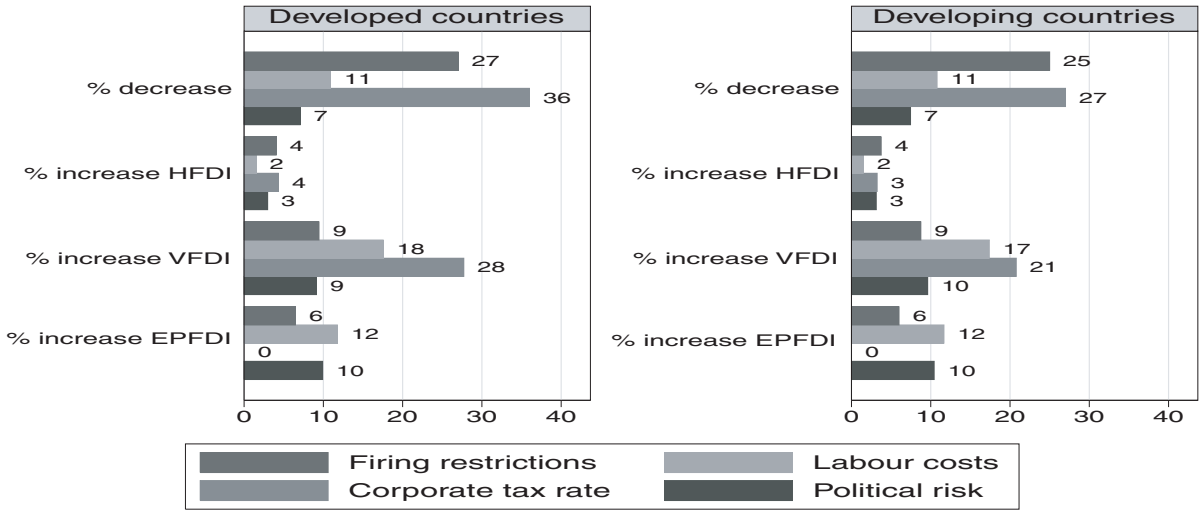
The previous section has shown that a country wishing to attract further FDI can increase unambiguously its attractiveness by lowering unit labour costs, cutting corporate taxes or loosening firing regulations. Figure 1 quantifies their impacts. Developing and developed countries have been distinguished because their FDI composition differs, notably in terms of the relative importance of VFDI (see Table 2). It can be seen that increasing FDI by 5 per cent in an 'average' developing country requires either to reduce the

[22] There are two sources of spatial autocorrelation. In a spatial error model ($Y = X\beta + \lambda W\epsilon + \mu$, with W the spatial weighting matrix), errors are not independent across countries. OLS estimates remain unbiased and consistent but become inefficient as their standard errors are biased. In a spatial lag model ($Y = \rho WY + X\beta + \mu$), outcome in one country depends on the outcome in neighbouring countries through the inclusion of a spatially lagged dependent variable. It differs from the spatial error model in that it allows for an influence of the outcome in neighbouring countries beyond that reflected in error terms. Ignoring a present spatial lag is equivalent to an omitted variable bias while including a spatial lag generates a simultaneity bias. In both cases, OLS estimates are biased and inconsistent. Maximum likelihood methods are typically used to estimate a spatial lag model. Finally a spatial cross-regressive model, in which third country effects such as external market potential are included, can be estimated by OLS as long as no spatially correlated errors are detected. For a nice introduction to spatial econometrics see Anselin and Bera (1998).

[23] Local spatial autocorrelation statistics indicate that there is high positive spatial clustering around these countries, especially, Germany, France, Belgium and the United Kingdom.

firing restrictions index by 25 per cent or to lower labour costs by about 10 per cent or to decrease the tax rate by 27 per cent. Similar requirements are found for an 'average' developed country, at the exception of the tax rate cut which needs to be higher (36 per cent) since relatively more VFDI in developed countries must be attracted to raise overall FDI, dominated by the less tax-responsive HFDI and EPFDI. This FDI composition effect may explain why previous studies such as Mutti and Grubert (2004) have found that changes in tax rates exert a stronger impact on FDI in developing countries than in developed countries. For comparisons, the required decrease in country risk is also reported. In line with its strong importance for all FDI types, a small change in its value (about 7 per cent) is needed. However, an improvement in the main factor which influences country risk, i.e. the quality of institutions, is unlikely to be achievable in the short run.

Figure 1: Policies required to increase total FDI by 5 per cent in an average country



Notes: The last three clusters indicate the percentage increase of each FDI type in an average country following a policy change.

Figure 1 makes it clear that a labour subsidy or a tax rate cut can obviously increase attractiveness. Indeed, they have been widely used by developing countries. According to Kobrin (2005), during the 1992-2001 period, the creation or the increase of incentives represented one-third of the favourable changes introduced by developing countries in their FDI policy, followed by sectoral liberalisation (21 per cent), better operational conditions (16 per cent) and higher guarantees (12 per cent). However, their drawbacks are well-known. There is no certainty that their costs will be smaller than the expected future

FDI benefits and will not generate substantial indirect costs such as an inefficient allocation of capital, an increase in administrative costs and corruption, the attraction of foreign investors which would have come even in the absence of incentives,[24] and the generation of a bidding contest over incentive values among host countries (Oman, 2000; Wells et al., 2001; Blömstrom and Kokko, 2003; Charlton, 2003). Furthermore, as previously mentioned, tax rate cuts in developed countries will have to be extremely high since most of the FDI that these countries attract is fairly tax-insensitive.

Labour market deregulation, in the form of looser firing constraints, may be a much more favourable alternative. Cutting the firing restrictions index by half in an average country would increase FDI by 10 per cent, an effect equivalent to giving a labour subsidy equal to about 20 per cent of labour costs or lowering the tax rate by 54-72 per cent. Such a policy would also reduce the bargaining power of workers, initially leading to a fall in nominal wages and unit labour costs, which would reinforce the positive impact of labour market deregulation on FDI. Obviously, for this very reason, labour market deregulation is frequently opposed by currently employed workers since they lose from it, at least in the short run. Product market deregulation and active labour market policies may mitigate worker resistance.

Stronger competition, through a generalised reduction of entry costs, should decrease markups, increase employment and raise real wages (Blanchard and Giavazzi, 2003). In addition, by reducing monopoly rents, of which a share is appropriated by employed workers, product market competition reduces the incentives of the latter to resist labour market deregulation since there are fewer rents to appropriate. Hence, by initially raising the real wage and decreasing incentives for workers to resist labour market reforms, product market deregulation may help to achieve labour market deregulation. It could be objected that estimates of Table 6 suggest that lowering entry costs, i.e. the costs of starting a business, would lead to a loss of FDI, which may not be compensated by the expected FDI gains if future labour market reforms were too shallow. However, such a reasoning ignores the fact that deregulation in goods and labour markets increases market size, which is a strong positive determinant of total FDI.[25] According to Table 6, FDI will remain constant if a 1 per cent reduction in entry costs generates an increase in GDP per capita of 0.22 per cent. Estimates of Barseghyan (2008) for a large sample of developed

[24] According to the results of a study reported in Halvorsen (1995), in 1984, 70 per cent of the investments which received incentives in Thailand would have anyway occurred.

[25] For the average country, the elasticity of total FDI with respect to market size is 1.12 per cent. For an example of the negative impact of stricter labour regulations on output, see Besley and Burgess (2004).

and developing countries indicate that at the sample mean a 1 per cent decrease in entry costs increases GDP per worker by about 0.40 per cent. In 2006, average labour force participation rate in the world was about 70 per cent,[26] implying that a 1 per cent decrease in entry costs increases GDP per capita by about 0.28 per cent. Hence, once its indirect impact on market size is taken into account, it is very likely that product market deregulation by itself increases FDI rather than reduces it. For an 'average' country, decreasing the costs of starting a business by 25 per cent would eventually increase FDI by about 1.60 per cent. It is a relatively small but reassuring overall effect as easing business entry has been since 2003 the most popular reform in developed and developing countries according to the World Bank *Doing Business* reports:[27] it is fairly easy and cheap to implement and unlikely to be opposed by the electorate.

Active labour market policies may also lower the opposition of workers to labour market deregulation by increasing the likelihood that they will find a job if they become unemployed. Job search assistance and training measures have been found to improve employment probability (Kluve and Schmidt, 2002). A funding of these measures through an increase in the corporate tax rate on foreign firms can be compatible with higher FDI as long as labour market deregulation is strong enough. For instance, an increase of 5 per cent points of the tax rate (19 per cent) in the average developing country to finance active labour market policies would be associated with a 3.5 per cent increase in FDI if the firing restrictions index was simultaneously reduced by about one-third.

Finally, an additional case could be made for labour market deregulation based on the type of FDI that such a policy would influence. Despite early pessimism in the literature, recent papers (Javorcik Smarzynska, 2004; Girma et al., 2008) have found that FDI creates positive productivity spillovers for domestic firms in host countries. The effects and diffusion of these externalities tend be greater when FDI are domestic-market oriented. Hence, FDI policies which strongly influence HFDI may be the most favourable to the development of the local economy. Figure 1 shows that for the same increase in overall FDI, lower firing constraints would generate an increase in HFDI equivalent or stronger than those generated by a tax rate cut or a labour subsidy.

[26] Average labour force participation rate for the study sample was 67 per cent during the 1982-1994 period and 70 per cent in 2006. Note that (Y/P)=(Y/L)*(L/P), where Y is output, P is total population and L is the number of workers, approximated by the working-age population. Data come from the *World Development Indicators* 2008.

[27] See "Who reformed" `http://www.doingbusiness.org/documents/reformers.xls`

6 Conclusion

This paper has investigated different policies that a country could implement fairly rapidly to improve its FDI attractiveness. Granting fiscal incentives to foreign investors can be an effective strategy, especially in developing countries, but their use frequently suffers from many drawbacks. Economy-wide policies aiming at easing firing rules provides a favourable alternative to these traditional instruments, as it is found that they have large volume effects and potentially positive compositional effects. Furthermore their short-run positive effect on FDI should be reinforced in the medium-run by a deregulation-related increase in market size. Compared to FDI incentives, one major caveat is that labour market deregulation may take time as incumbent workers are likely to oppose it. Product market deregulation and active labour policies may mitigate their resistance and contribute to greater attraction of FDI in the medium run. On the other hand, environmental dumping is a totally ineffective strategy, including for attracting FDI seeking to minimise costs. Finally, beyond the issues of FDI attractiveness, this paper highlights the different aggregation and omitted variable biases that have affected results of previous studies on US FDI and provides some support to recent theoretical models of FDI by showing that third country effects and spatial interdependence influence respectively the location of export-platform FDI and vertical FDI.

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