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ABSTRACT

Should I Stay or Should I Go? A Note on Employment Protection, Domestic Anchorage, and FDI*

This paper examines how employment protection legislation affects location decisions of multinationals. Based on a simple theoretical framework, we estimate an empirical model, using OECD-data on bilateral FDI-flows and employment protection indices. We find that, while an "unfavourable" employment protection differential between a domestic and a foreign location is inimical to foreign direct investment (FDI), a high domestic level of employment protection tends to discourage outward FDI. The results are in line with our conjecture that strict employment protection in the firm's home country makes firms reluctant to relocate abroad and keeps them "anchored" at home.

JEL Classification: D80, F23, J80

Keywords: uncertainty, employment protection, foreign direct investment, domestic anchorage

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1. INTRODUCTION

The increasing degree of economic integration and the liberalisation of foreign direct investment (FDI) policies worldwide have brought the determinants of the location of economic activity to the forefront of policy debates, with governments' concerns focussing increasingly on their ability to prevent domestic industry from relocating abroad and to attract and/or retain foreign investment.

Labour market laws and institutions are commonly regarded as crucial in determining the relative attractiveness of locations to internationally mobile firms. Amongst these, employment protection laws are perceived as being particularly detrimental to the attraction and/or retention of industry because they reduce the *flexibility* with which firms can adjust output and employment to evolving economic conditions. Increasingly, the substantial differences that exist between economies (even within the European Union) in hiring and firing restrictions are seen as a source of unfair 'competitive advantage' for those locations with lower costs of employment adjustments.

The aim of this paper is to shed some light on the effects of labour market flexibility (or the lack of it) on the location of economic activity. Although there exists a substantial amount of work on the impact of employment legislation on employment,[1] little research has been done on the relationship between the location of industry and employment protection.[2]

[1] Hiring and firing restrictions are typically not found to have a decisive role on overall rates of unemployment (e.g. Nickell 1996, 2001), but are shown to reduce job reallocation rates and employment variation over the business cycle – e.g. Bentolila and Bertola (1990), Garibaldi *et al.* (1997), OECD (1996).

[2] Haaland and Wooton (2002) and Haaland et al. (2003) provide related theoretical analyses, showing that countries with more flexible labour markets attract inward investment. By contrast, Dewit et al. (2003) argue that labour market inflexibility may not necessarily hinder a country's ability to retain (and under certain conditions even attract) economic activity; since inflexibility implies commitment power, firms may prefer an inflexible location over a flexible one, even in an uncertain environment. In an empirical study, Görg (2002) finds that host countries' firing costs are negatively related to inward FDI from the US. Nicoletti et al. (2003) find that employment protection reduces FDI in OECD countries. Brown et al. (2003) is a general discursive paper on the relationship between FDI and working conditions in developing countries.

To our knowledge, the existing literature focuses on the role of employment protection in undermining a country's ability to *attract new* footloose industry. However, the effect of employment protection on industry location is more complex in that the degree of labour market flexibility also affects countries' ability to *retain* their *existing* industrial base. We refer to this as '*domestic anchorage*',[3] an aspect that is central to policy debates but that has not received sufficient attention in the academic literature.

In order to fill this gap, we use a simple theoretical model to examine how differences in employment protection regulations affect (1) the location decision of a *new* firm, when alternative locations are possible, and (2) the *relocation* incentives of an *existing* production facility. We then test empirically the predictions of the model using data on bilateral FDI flows and employment protection indices obtained from the OECD. Our empirical analysis suggests that employment protection laws are likely to have different effects on firms' location decisions: whilst an 'unfavourable' employment protection differential between a domestic and a foreign location is inimical to inward FDI, a high domestic level of employment protection tends to discourage outflow FDI. We also find that the effect of employment protection depends on the level of investment cost in the host country.

The rest of the paper is organised as follows. Section 2 develops a simple theoretical framework. Section 3 estimates an econometric model of bilateral FDI using OECD data. Section 4 concludes the paper.

[3] A theoretical analysis of the 'attraction versus retention' effects of employment protection in strategic settings is developed by Dewit, Leahy and Montagna (2003).

2. THEORETICAL FRAMEWORK

2.1. Employment protection and location

We firstly analyse the decision of a monopolist considering whether to set up a *new* production facility in its home country *h* or to locate in foreign country *f*. Countries *h* and *f* represent an integrated market and production costs are the same in each location.[4] We assume, however, there to be an FDI cost which the firm will incur in the case it decides to locate abroad.

There are two periods. In period one, the firm knows demand for that period but faces uncertainty about period-two demand, which is resolved at the start of period two. The inverse demands for period one and two are given by $p_1 = a - q_1$ and $p_2 = a - q_2 + u$, where p_t and q_t denote price and quantity (with t=1,2), a is a positive constant, and $u \in [\underline{u}, \overline{u}]$ is a stochastic demand component, with mean $Eu = 0$ and variance v.

Since future demand is uncertain, the firm values flexibility. However, flexibility may be hindered by employment protection regulations in the local labour market. Employment protection gives rise to hiring and firing costs when future output needs to be adjusted in line with the demand then prevailing. Suppose total variable costs in location i ($i = h, f$) are given by

$$C_i = c\sum_{t=1}^{2} q_t + \frac{\lambda_i}{2}(q_2 - q_1)^2 , \qquad (1)$$

where c is the constant marginal cost of production without intertemporal output adjustments (i.e., if $q_2 = q_1$). The second term in expression (1) reflects adjustment costs (e.g. Hamermesh, 1996), with λ_i denoting the location-specific degree of employment

[4] These assumptions allow us to focus on the effect of employment protection on location choice, while abstracting from other location determinants, such as market access and cost advantages whose importance for firms' location decisions is well understood. See, for instance, Markusen (2002).

protection. Total costs consist of the sum of variable costs and fixed set-up costs (F_i), with $F_h = \phi$ and $F_f = \phi + \delta$. That is, if the firm locates abroad, the set up cost includes an investment cost $\delta > 0$ that can be thought of as reflecting the barriers to the mobility of capital. Hence, δ will typically fall as the degree of market integration increases.

Expected profits are equal to $E\pi = \pi_1 + E\pi_2$. Forward looking, when choosing its optimal output in period two, the monopolist maximises second-period profits given q_1, implying

$$A - 2q_2 + u - \lambda_i(q_2 - q_1) = 0, \tag{2a}$$

with $A \equiv a - c$. Assuming that the firm is risk neutral,[5] it determines its optimal output in period one by maximising expected profit with respect to period-one output, yielding the following first-order condition

$$A - 2q_1 + \lambda_i(Eq_2 - q_1) = 0. \tag{2b}$$

The firm's optimal output in period one and in period two are, respectively, given by

$$q_{i1} = \frac{A}{2}, \tag{3a}$$

$$q_{i2} = \frac{A}{2} + \frac{u}{2 + \lambda_i}. \tag{3b}$$

Expression (3b) clearly shows that the firm will be more flexible in period two if the local degree of employment protection is low (dq_{i2}/du decreases in λ_i).

From the inverse demand functions, the first-order conditions in (2a) and (2b), and since $Eq_{i2} = q_{i1}$, maximised expected profits can be written as

$$E\pi_i = 2(q_{i1})^2 + \frac{v}{(2 + \lambda_i)^2} - F_i \tag{4}$$

[5] Risk aversion would simply make locating in the country with the more flexible labour market relatively more attractive.

Expected profits decrease in the degree of employment protection that prevails in the local labour market ($dE\pi_i / d\lambda_i < 0$).[6] Hence, the location decision of the monopolist will be influenced by the difference between the expected profits in the two locations – which depends on the difference in employment protection between them and on the cost of FDI (δ). If the barriers to FDI flows are prohibitively high (i.e. δ is very large), the monopolist will set up the new plant in Home, regardless of the size and sign of the employment protection differential between home and foreign. With very low FDI costs, i.e. with very high degrees of capital market integration, a new firm seeking to minimise future adjustment costs will choose to produce in the location characterised by the lower degree of employment protection. At intermediate levels of FDI costs, the monopolist will always locate in Home if $(\lambda_f - \lambda_h) > 0$, and will locate in foreign if $(\lambda_f - \lambda_h)$ is negative and sufficiently large[7]. Hence, for non-prohibitively high FDI costs, a given increase in $(\lambda_f - \lambda_h)$ will be more likely to deter FDI from *h* to *f* the larger is δ.

2.2. Employment protection and relocation

The effects of employment protection on location decisions will differ in the case of a relocation of an *existing* plant. Suppose that a firm with an operating plant in *h* considers relocating to *f*. Just like a new firm – provided that the FDI costs are not too high – ceteris paribus, this firm is more likely to produce abroad if it expects that future adjustments in its workforce will be less costly to carry out in *f* than in *h*. However, if there is some degree of employment protection in *h*, relocation implies that the firm will incur exit costs in the form of severance pay to laid-off workers in its *h*-plant. Hence, even relatively moderate home employment protection may discourage relocation and effectively serve as a '*domestic*

[6] Note that, since profits are convex in *u*, expected profits increase in ν.
[7] These conclusions hold because the firm is a monopolist. With oligopolistic rivalry, firms' location decisions are more complex (see Dewit, Leahy and Montagna, 2003).

anchorage' device, thus hindering outward FDI. The anchorage effect of employment protection will also be conceivably stronger the higher are FDI costs, i.e. a firm may be even more reluctant to face the occurrence of severance costs associated with relocation in the presence of high FDI costs.

To summarise, our theoretical analysis suggests that both the difference in employment protection between *f* and *h* ($\lambda_f - \lambda_h$) and the actual level of employment protection in *h* (λ_h) may be negatively related to outward FDI (from *h* to *f*). On the one hand, as a determinant of the home market '*flexibility differential*' ($\lambda_f - \lambda_h$), a high level of home employment protection will encourage relocation; on the other hand, by determining the extent of exit costs, it will act as an '*anchor*' for the domestic industry, thus making international *relocation* less likely. The extent of capital market integration is also likely to affect the responsiveness of investment flows to employment protection: ceteris paribus, both a higher flexibility differential in favour of the home country – i.e. a larger ($\lambda_f - \lambda_h$) – and a higher level of home EP are likely to be having a stronger negative effect on outward FDI flows the larger is δ.

3. EMPIRICAL ANALYSIS

In this section we bring empirical evidence to bear on the theoretical predictions of the previous analysis. To this end, we estimate an empirical model of the determinants of outward FDI flows from home country *h* to partner country *f* using OECD data. The regression equation is given by:

$$\ln(FDI_{hft}) = \alpha + \gamma_1 \lambda_{ht} + \gamma_2(\lambda_{ft} - \lambda_{ht}) + \gamma_3(\lambda_{ht} * \delta_{hft}) + \gamma_4[(\lambda_{ft} - \lambda_{ht}) * \delta_{hft}] + \beta X_t + \varepsilon_{hft} \qquad (5)$$

where λ_{ht} is a measure of employment protection (EP) in home country *h* at time *t* and (λ_{ft} – λ_{ht}) is the difference in employment protection at time *t* between host and home country. According to our theoretical analysis, other things equal, the higher the level of

employment protection in the foreign location, the lower will be the home country's investment in that location. We therefore would expect the coefficient γ_2 to be negative. The coefficient γ_1 captures the '*domestic anchorage*' effect described in the theoretical model and is also expected to be negative. The theory also suggests that the sensitivity of FDI flows to employment protection may depend on the level of investment costs. In order to capture this effect, we include interaction terms of our employment protection variables with investment cost, multiplying λ_{ht} and (λ_{ft} - λ_{ht}) by a dummy variable δ equal to one if investment costs are higher than the median in the sample.[8]

The vector $\boldsymbol{X}$ captures a number of additional covariates that potentially affect the location of FDI. These are:

(1) *the level of partner country GDP*, which is included in order to control for the market size of the host economy. We would expect a positive relationship between this variable and FDI inflows into the partner country (see Culem, 1988).

(2) *the level of home country GDP*, included in order to control for the size of the home country, which determines the supply of FDI (Blonigen, 1997).

(3) a trade-weighted measure of *unit labour costs*, included to control for differences in the costs of inputs across countries (see Culem, 1988).

(4) a dummy variable which is equal to one if home and partner country are members of a *free trade area*. This is included to capture the potentially positive effect of membership of a trade agreement on FDI (see, for example, Barrell and Pain, 1999)

[8] One may argue that we should also include the level of investment cost on its own in the equation. Our concern is that this variable is highly correlated with the two interaction terms (with correlation coefficients of 0.64 and – 0.25 respectively) which can potentially lead to multicollinearity problems in our sample. In fact, estimations of equation (5) also including δ on its own, which are not reported here but are available from the authors upon request, yield statistically insignificant coefficients on the interaction terms but negative and statistically significant coefficients on δ, as expected. The coefficients on the other variables are very similar to those reported below. Hence, in order to reflect our emphasis on the interaction between δ and employment protection we report only the results of equation (5) without the level of investment cost.

The data for all variables come from the OECD. Data on bilateral FDI flows are taken from the OECD's *International Investment Statistics Yearbook*. The index of employment protection for each country – as described by Nicoletti et al. (1999) – is based on measures of protection affecting the country's temporary and regular employment.[9] The index – which takes on values between 0 and 100 from the least to the most restrictive – is available for only two years (namely 1989 and 1998), thus restricting considerably the time series dimension of our analysis. The cost of investment (δ) is a measure of the cost of capital for investments from home to partner and is also an index between 0 and 100 (as is the unit labour cost variable). All nominal variables, i.e. FDI and GDP, are converted into real 1995 US dollars.

Table 1 reports summary data on a country's total inward and outward FDI flows and its employment protection index for the two years 1989 and 1998. Apart from the former communist countries Czech Republic, Hungary and Poland which have employment protection indices of 100 for 1989,[10] the countries with the highest levels of employment protection among OECD countries are South Korea, Portugal and Spain. At the other extreme we find the US, UK and Canada with very low levels of employment protection in 1989. It is notable that for most countries for which there have been changes between 1989 and 1998, the level of employment protection has fallen, with the exception of France.

[Table 1 here]

At first sight, these data only point to a loose connection between FDI and employment protection: for instance, Canada (a country with a fairly low level of EP) had relatively low levels of inward and outward FDI in 1989 but much higher levels in 1998. The nature of the relationship, however, cannot be adequately captured by these summary

[9] The employment protection indicators were constructed "based on an in-depth review of existing regulations and laws affecting the hiring and firing of workers along the two dimensions of regular and temporary contracts" (Nicoletti et al., 1999, pp. 40-41).

data. A better appreciation of the effects of employment protection on FDI flows can be gained by estimating our empirical model described in equation (5) using bilateral data.

Given that the employment protection index is only available for two years, we estimate two independent cross sections, using the data for 1989 and 1998 separately. The results of the estimations of different specifications of equation (5) are reported in Table 2. For the year 1989 we have 277 country pairs available while there are 388 in 1998.[11]

[Table 2 here]

Columns (1) and (3) report results without the FTA dummy, while columns (2) and (4) include this dummy. While the dummy is consistently positive and statistically significant as expected, its inclusion does not alter the other coefficients substantially, indicating the robustness of the results. The estimations show that the positive effect of the home and partner country market sizes on FDI is accurately reflected in the data in both years. We do not find a statistically significant effect of unit labour costs on FDI, however.[12]

The results on the employment protection measures and the interaction terms with investment costs are broadly consistent with our theoretical predictions. The higher the level of employment protection in the home country the lower the level of outward FDI, ceteris paribus. This negative effect is larger if investment cost between home and foreign are high. Our findings therefore suggest that: (i) the 'domestic anchorage' effect is important, i.e., more protective employment laws at home – by increasing the exit costs associated with international relocation – discourage firms from investing abroad; and (ii)

[10] Note that these countries are not included in the econometric estimations for 1989, given the absence of FDI data for that year.

[11] In the estimations we allow for heteroskedasticity of the error term, as well as an unspecified correlation between error terms within, but not across, partner countries. This allows for the possibility that there may be unobserved country specific effects which are correlated with the regressors but which we do not explicitly account for in the empirical model.

[12] This result is mirrored in a large number of empirical studies (e.g. Wheeler and Mody, 1992).

FDI costs tend to reinforce the sensitivity of outward investment flows to employment protection, effectively strengthening the anchorage effect of the latter.

We also find that the larger the gap in employment protection between partner and home country the lower are FDI flows from home to partner. This suggests that, for a given level of home EP, higher levels of EP in the partner country discourage home country firms from investing there. Examining the coefficient on the interaction term, we now find that higher investment cost only tend to amplify the negative effect of the employment protection differential in 1998.

This, as well as a cursory glance at the regression coefficients may suggest that the effects of employment protection on FDI are more pronounced in 1998 than in 1989. In order to examine whether these differences are statistically significant we estimate a model pooling the data for 1989 and 1998 and including interaction terms with all explanatory variables and a dummy for 1998. The estimation results are reported in Table 3.[13]

Note that an F-test for the joint significance of the interaction terms allows us to reject the hypothesis that these terms are jointly equal to zero. Inspection of the individual interaction terms suggests that for home and partner GDP, unit labour cost, and the free trade area dummy there are no statistically significant differences in the coefficients. This is different for the EP variables, however. Here, we find that for the level of home EP and for the interaction of EP difference with investment costs the coefficients for 1998 are larger (i.e. more negative) than for 1989. In column (1), e.g., the total effect of home employment protection in 1998 is –0.042 compared with –0.022 for 1989, while the coefficient on the interaction between EP differential and investment cost is –0.022 in 1998 and 0 in 1989. These results are in line with the coefficients reported in the independent cross sections in Table 2.

[13] Again, we allow for heteroskedasticity of the error term and, in order to capture possible correlation over time of error terms for country pairs, allow for an unspecified correlation of error terms within country pairs.

[Table 3 here]

4. CONCLUSIONS

In this paper, we have examined theoretically and empirically the relationship between bilateral FDI flows and employment protection levels for a number of OECD countries. Our main findings are consistent with our theoretical analysis and suggest that: (1) domestic levels of employment protection – by discouraging outward FDI – act as an 'anchorage' device for domestic industry, (2) employment protection differentials between foreign and home country are negatively related to FDI outflows, (3) both the anchorage and the EP differential effects are stronger the higher are FDI costs, and (4) the sensitivity of FDI flows to both employment protection levels and differentials has increased between 1989 and 1998.

Overall, the empirical analysis carried out in this paper suggests that the relationship between labour market rigidities and international investment flows is more complex than what is implied by the conventional wisdom. Some tentative but interesting policy conclusions can be drawn from our results. Given that employment protection can help to anchor domestic industry by discouraging relocation, industrialised countries with a large industrial base will be able to sustain high levels of hiring and firing costs. Developing countries with a small industrial base may instead have an incentive to pursue flexible labour market policies. Clearly, given the highly aggregate nature of our data, these conclusions ought to be taken with caution. More generally, however, this analysis points to the theoretical possibility of a strategic intertemporal use of labour standards, whereby low employment protection could be used to attract inward investment to a given location and could then be subsequently raised to lock the investment in.[14]

[14] See Leahy and Montagna (2000) for a theoretical analysis of the strategic use of unionisation laws.

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Table 1: FDI and employment protection

		1989			1998	
	Inflows	Outflows	EP	Inflows	Outflows	EP
Australia	2.50%	1.78%	17.6	1.62%	1.27%	17.6
Austria	0.45%	0.63%	39.8	2.62%	1.12%	39.8
BLEU	4.08%	3.09%	50.3	7.92%	10.01%	34.8
Canada	0.87%	0.87%	10.6	3.61%	4.80%	10.6
Czech Republic	..	..	100	6.16%	0.02%	28.8
Denmark	1.03%	1.90%	40.6	3.72%	2.76%	24.9
Finland	0.31%	2.25%	37	9.84%	14.89%	34.9
France	0.95%	1.74%	45.5	1.89%	2.23%	51.3
Germany	0.58%	1.20%	59.2	1.20%	3.87%	46.3
Greece	0.00%	0.00%	60.2	0.00%	0.05%	58.8
Hungary	..	..	100	0.00%	0.00%	23.7
Ireland	0.49%	3.77%	16.8	0.25%	8.36%	16.8
Italy	0.56%	0.30%	69.2	0.24%	0.46%	54.7
Japan	0.08%	1.81%	44.1	0.21%	0.68%	44.1
New Zealand	1.03%	0.73%	16.8	5.05%	2.30%	17.2
Netherlands	2.09%	3.78%	51	9.24%	8.24%	39.4
Norway	1.54%	1.30%	51.6	2.66%	1.35%	48.1
Poland	..	..	100	3.90%	0.18%	30.8
Portugal	2.40%	0.12%	70.1	1.59%	1.57%	62.5
South Korea	0.35%	0.14%	100	1.46%	0.50%	45.8
Spain	1.83%	0.47%	61	1.98%	1.55%	53.6
Sweden	0.54%	3.79%	57.4	6.83%	6.88%	40.5
Switzerland	0.05%	0.00%	21.2	3.45%	4.60%	21.2
Turkey	0.00%	0.00%	60.2	0.48%	0.01%	60.2
UK	3.36%	3.76%	8.6	4.78%	7.94%	8.6
USA	1.16%	0.55%	3.7	2.05%	1.27%	3.7

Table 2: Basic regression results for outward FDI flows
(Dependent variable: ln FDI flows from home to partner)

	(1)	(2)	(3)	(4)
	1989	1989	1998	1998
Partner GDP	0.601	0.658	0.635	0.600
	(0.134)***	(0.128)***	(0.137)***	(0.103)***
Home GDP	0.967	1.031	0.887	0.933
	(0.123)***	(0.121)***	(0.074)***	(0.076)***
Partner unit labour cost	0.354	0.678	0.615	0.239
	(0.932)	(0.759)	(0.982)	(0.635)
Home EP	-0.016	-0.025	-0.042	-0.066
	(0.011)	(0.010)**	(0.009)***	(0.008)***
Home EP * Investment cost	-0.022	-0.019	-0.041	-0.025
	(0.007)***	(0.006)***	(0.011)***	(0.009)***
EP differential	-0.023	-0.027	-0.025	-0.034
	(0.006)***	(0.005)***	(0.009)***	(0.006)***
EP differential * Investment cost	-0.001	0.002	-0.023	-0.022
	(0.008)	(0.007)	(0.014)*	(0.010)**
FTA dummy		1.339		1.491
		(0.274)***		(0.275)***
Observations	277	277	388	388
R-squared	0.35	0.40	0.39	0.46

Heteroskedasticity consistent standard errors, clustered by partner country, in parentheses
* significant at 10%; ** significant at 5%; ***significant at 1%
regression includes constant term

Table 3: Regression results with interaction terms
(Dependent variable: ln FDI flows from home to partner)

	(1)	(2)
Partner GDP	0.601	0.658
	(0.091)***	(0.089)***
1998 * Partner GDP	0.033	-0.058
	(0.113)	(0.110)
Home GDP	0.967	1.031
	(0.105)***	(0.106)***
1998 * Home GDP	-0.080	-0.097
	(0.118)	(0.120)
Partner unit labour cost	0.354	0.678
	(0.622)	(0.587)
1998 * Partner unit labour cost	0.260	-0.438
	(0.857)	(0.825)
Home EP	-0.016	-0.025
	(0.010)	(0.009)***
1998 * Home EP	-0.026	-0.041
	(0.013)**	(0.013)***
Home EP* Investment cost	-0.022	-0.019
	(0.007)***	(0.006)***
1998 * (Home EP * Investment cost)	-0.019	-0.006
	(0.009)**	(0.009)
EP differential	-0.023	-0.027
	(0.006)***	(0.006)***
1998 * EP differential	-0.002	-0.007
	(0.009)	(0.008)
EP differential * Investment cost	-0.001	0.002
	(0.009)	(0.008)
1998 * (EP differential * Investment cost)	-0.022	-0.024
	(0.012)*	(0.011)**
FTA dummy		1.339
		(0.282)***
1998 * FTA dummy		0.152
		(0.343)
Observations	665	665
F (interaction terms)	4.85***	2.93***
R-squared	0.38	0.45

Heteroskedasticity consistent standard errors, clustered by country-pairs, in parentheses
* significant at 10%; ** significant at 5%; ***significant at 1%
regression includes constant and (1998 * constant) terms

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