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ABSTRACT

Domestic Labour Markets and Foreign Direct Investment*

We study how the labour market and industry uncertainty affect the investment decisions of multinational enterprises (MNEs). In an uncertain business climate, MNEs must take account of the future in deciding where to locate a branch plant. When wages are endogenously determined, both the opportunity cost of labour and redundancy payments influence the MNE's decision. When countries compete for foreign investment, different national characteristics determine the winners in different industries. Differences in risk may draw MNEs to different locations. Firm-specific bargaining always offers an advantage, as the mix of current and future pay fully reflects the firm's risk profile.

JEL Classification: D92, F12 and F23
Keywords: entry, exit, investment subsidies, multinational firms and uncertainty

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1. INTRODUCTION

Foreign direct investment (FDI) plays a major role in influencing the level of economic activity in industrialised countries, as well as in the developing world. The benefits that it is perceived to bring to a host nation are such that attracting FDI can be a major component of the country's industrial policy. Some countries seem to have more success at attracting FDI than others. This may simply reflect differences in economic structure (for example, disparities in factor endowments, skill levels, industrial infrastructure, etc.) but may also have something to do with the different willingness on the part of countries to offer special incentives to FDI (for example, through low rates of corporate income tax or offers of investment subsidies). In this paper we look at the competition between countries to attract FDI and the gains that they might realise if they succeed.

There is some debate as to the nature and magnitude of the benefits from inward FDI. Beyond the direct employment benefits, the investment may bring with it exposure to new technologies and the possibility of technological spillovers to domestic industry (see, for example, Haskel, Pereira, and Slaughter, 2002). Our focus will, however, be on the additional manufacturing jobs that arise from a multinational enterprise (MNE) establishing production facilities within a country. These jobs are assumed to generate higher incomes for the domestic employees during the lifetime of the production facility. We wish to determine the characteristics of a country's labour market that make it a more or less attractive host for FDI. In particular, we look at the role that employment protection policies may play in influencing an MNE's investment decisions.

Uncertainty is a central feature of our analysis, in that we assume that no investment (whether by a national firm or by an MNE) is necessarily forever. If there were no uncertainty, there would be no need for insurance, including the employment protection afforded by laws on redundancy payments. But, clearly, investment is risky. As demand changes and technology progresses, some investments prove to be more successful than others. Even within the most secure industries, individual firms can falter as others prosper. Workers may choose to insure themselves against the hardships of future unemployment, but

more frequently this protection is imposed at national level by governments who establish legal minimum levels of redundancy compensation for workers. These standards are not universal and some governments impose more onerous conditions than others. We do not investigate why these differences exist between nations, but examine their consequences in the competition to attract FDI.

The other salient characteristics in our discussion are the level and relative value of MNE employment. We assume that there is enough flexibility in national labour markets that the MNE does not crowd out domestic firms and, instead, augments the level of manufacturing employment. The individual value of these jobs then depends upon the payments to the workers employed by the MNE compared to their next best alternative. There are two aspects to this. Firstly we assume that the opportunity cost of a worker (which will depend on, among other things, the skills of these workers, the nation's factor endowments, and the share of workers already employed in manufacturing) is given for each individual country. In addition, the level of manufacturing wage will depend upon the labour bargaining structure within a country. We shall initially assume that there is national wage bargaining across all of manufacturing, but shall later relax this assumption.

These national characteristics will affect the benefits of the investment to both the MNE and the host government. In the case of the host nation, the larger the gains that it achieves from the FDI, the more prepared it will be to offer investment incentives. These will enhance the attractiveness of the country to the MNE, which will compare the overall benefits that it gets from the alternative investment locations. The competition between countries will determine the eventual location of the investment and the distribution of gains between firm and host.

1.1 Related literature

An aspect of FDI that has received relatively little attention in the literature is the expected longevity of the investment. Changing market conditions, new products, and technological innovations are but some of the developments that result in changes in firms' production requirements. Consequently, an MNE shall not view its investments as immutable and

immortal and shall take into account the expected costs of closure, as well as the costs of establishment and operation, in determining where to place its FDI.

Bentolila and Bertola (1990) analyse the implications of firing costs for the employment decisions of firms, and they show that such firing costs could have negative effects on the firms' profits and investments. In Haaland, Wooton, and Faggio (2003), we consider FDI when the foreign production facility is not expected to survive indefinitely. This forces firms to take into account exit costs as part of their entry decision, where we specifically consider the government-mandated redundancy payments that a firm faces on closure of a branch plant. We demonstrate a trade-off between investment incentives and labour-market flexibility, in that a country with a more flexible labour market (that is, lower redundancy payments) finds it easier to attract FDI than one with more severe redundancy rules. Görg (2002) empirically investigates the trade off between investment incentives and exit costs for the location of FDI by US companies and finds that firms are attracted to locations with more flexible labour markets.

Much depends on nature of the labour market and whether the level of redundancy payments affects the wage rate paid by the MNE. Lazear (1990) shows that, in a competitive labour market, wages adjust to changes in severance payments such that the employment level is unaffected.[1] Consequently, investment uncertainty may have no influence the location of FDI if the wage adjusts to compensate for increased risk and higher firing costs. Were an MNE to have a similar level of risk to that of local firms, we would expect Lazear's result to hold. If, however, wage determination is the outcome of national bargaining then variations in industry risk may not be taken into account. Differences in risk between indigenous firms and the MNE will then result in the domestically determined compensation package affecting both the level of employment offered by the MNE and the host country's ability to attract FDI.

Barros and Cabral (2000) focus on employment gains in their study of policy competition to attract FDI. We do the same, looking at the increased earnings arising from employment by the MNE. Other authors consider alternative benefits arising from FDI.

[1] Pissaridis (2001) shows that similar results apply in models with non-competitive labour markets.

Fumagalli (2003) emphasises technology transfers and potential gains from policy competition between asymmetric countries. In Haaland and Wooton (1999) and Markusen and Venables (1999) the benefits for the host country appear through industry agglomeration and positive externalities between the foreign MNE and domestic firms.

The literature is also closely related to studies of tax competition for foreign investments (see, for example, Haufler and Wooton, 1999, and Kind, Midelfart Knarvik, and Schjederup, 2000). Devereux and Griffith (1998) present empirical findings on the importance of policies for the location of foreign firms. However, although these studies reveal many channels through which FDI may benefit the host countries, and hence provide reasons for active policies to attract such investments, none of them addresses the question of dynamics and uncertainty, and the potential implications of exit costs for the attractiveness of a location as a potential host for a foreign MNE.

A recent strand of literature focuses on the importance of employment protection for competition, location and specialisation. Dewit, Leahy and Montagna (2003) study the effects of labour-market rigidity on the location decision of firms in imperfectly competitive markets. While labour-market flexibility is always an advantage in markets without strategic interaction between the firms, this needs not be true if firms behave strategically. Dewit *et al.* show that rigidities through employment protection may in fact work as a commitment for the firm and thus, in certain cases, be an advantage. Kessing (2003) looks at the effects of employment protection on competition and concludes that, while labour market rigidities *ex post* may give more fierce competition in markets, *ex ante* such protection may imply lower production and employment by the firms. Saint-Paul (1997 and 2002) focuses on how different degrees of employment protection between countries give rise to different patterns of specialisation and different types of innovations in the countries.

While all of these show similarities to our study, our focus is a different one. These studies take labour market conditions as given and focus on the interaction between employment protection and other features, such as strategic behaviour in the goods markets. We emphasise the importance of labour-market conditions and the organisation of the labour market itself for the choice of location for multinationals. Our aim is to see how various key

characteristics of a country's labour market affect the attractiveness of the country as a location for MNEs from different industries. In particular, we show that, even with endogenous wage setting, labour-market flexibility matters for profitability and the locational choice of the MNE, as long as the wage setting is not firm specific (and the MNE is not a carbon copy of an average domestic firm).

The structure of the paper is as follows. In Section 2, we set out the basic model of investment and production under uncertainty, identifying the benefits to both the firm and the host nation. Section 3 introduces differences in the risk associated with FDI and shows the problems that arise with employment protection and centralised wage setting. In the light of this, Section 4 considers the competition between potential host countries to attract the FDI, comparing the relative importance of a tight labour market and employment protection for different levels of MNE risk. Section 5 explores the consequences of differences in the levels of risk between countries and the implications of permitting firm-level, rather than national, wage bargaining. Section 6 concludes.

2. MANUFACTURING UNDER RISK

We assume that the production in any economy is divided into two sectors, manufacturing and non-manufacturing. The essential differences between these two sectors are that, firstly, workers in manufacturing are unionized, resulting in their being relatively more highly paid than in the other sector (a manufacturing wage of w compared to v being earned in the rest of the economy), and, secondly, that governments impose more regulations on employment in manufacturing, in particular specifying levels of redundancy pay in the event of layoffs by firms. A foreign MNE would be part of the manufacturing sector and, consequently, subject to the same constraints faced by domestic manufacturers.

All manufacturing firms exist in an uncertain business climate and we assume this takes the form of a probability ρ of a catastrophic shock that results in a plant's closure and all workers being made redundant. We assume initially that that MNE's risk is the same as that faced by indigenous manufacturing firms. We consider, later, the case of the MNE's investment in the country being more or less at risk than that of domestic firms. Should a

firm be obliged to close down its factory, it will encounter closure (firing) costs, taking the form of government-mandated severance pay of r per worker. The level of r is set by the domestic government and we assume that this form of employee protection has been established through the political process and does not change in the face of FDI. We further assume that all agents, including the MNE, discount the future at rate $\delta \leq 1$.

As a result of the required redundancy payment, the cost to a firm (or benefit to the worker) of employment in manufacturing is not merely the current wage w, but also the present value of the redundancy pay. We assume that the redundancy payment that is mandated by the government is expressed as a proportion σ of the manufacturing wage. The overall expected cost of redundancy additionally depends upon the likelihood of failure ρ, and the discount rate δ. We can therefore define ω to be the expected annual cost (benefit) of employment of a worker:

$$\omega = (1 + \delta\rho\sigma)\, w. \tag{1}$$

2.1 Wage determination

We assume initially that the manufacturing wage in each country is set by a national union. Following Vandenbussche (2000), we assume that the union's objective is to maximise the earnings of workers in manufacturing. The utility of the union then takes the simple form:

$$U(\omega, N) = (\omega - v) N, \tag{2}$$

where N is the total level of employment in manufacturing, ω is the current benefit from employment in manufacturing, while v is the opportunity cost of employment in this sector, that is, the earnings that a worker would receive if employed elsewhere in the economy.[2]

We assume that aggregate labour demand in the manufacturing is:

$$N = \frac{a - \omega}{d}, \tag{3}$$

[2] The union might put greater or lesser weight on wages and employment, but this will not make any qualitative difference. See Lommerud, Straume and Sørgard (2003) for alternative specifications of the union's objective function. Lommerud, Meland and Sørgard (2003) model the union's objective function in the same way as we do. They focus, however, on the firm's choice of location between a unionized and a non-unionized economy. In our model the trade unions are active and behave in a similar way in all countries.

where a and d are constants. The monopolistic union will maximize utility (2) subject to (3) resulting in an equilibrium return to labour of:

$$\omega = \frac{a+v}{2}. \tag{4}$$

Substituting (1) into (4) yields the wage rate:

$$w = \frac{a+v}{2(1+\delta\rho\sigma)}. \tag{5}$$

Our assumption that wage setting takes place at the national level, and that the union is unable to discriminate between firms, is important. We initially assume all manufacturing firms (including the MNE) to be identical, in which case the ability to discriminate would have no impact. We shall, later, discuss the implications of the MNE having a different level of risk to that of domestic manufacturers. We show that, in such circumstances, national and firm-level bargaining will yield different outcomes.

2.2 Investment and production by the MNE

An MNE decides on the location of its investment in an integrated economic region comprising several countries and without intra-regional barriers to trade (tariffs or transport costs). Wherever it produces, the firm will face the same demand schedule for its manufactured good. The inverse demand curve is:

$$p = a - bx, \tag{6}$$

where x is the output level of the branch plant of the MNE, p is the price, and a and b are constants where we have assumed that the intercepts of both the aggregate labour-demand curve (3) and the demand curve facing the MNE (6) are the same and equal to a.[3]

Production is characterized by increasing returns to scale, taking the form of a fixed cost F and variable cost of employment. Consequently, the firm will choose to locate its production facilities in a single plant, from which it will serve the entire region. We normalise the unit-labour requirement to unity. Total employment by the firm therefore amounts to $L = x$. Total operating costs are $c = F + wx$, and the total exit costs are $e = \sigma wx$.

[3] This assumption is merely for notational convenience and has no qualitative impact on our results.

The MNE will choose to establish production facilities in a host country only if the benefits of doing so exceed those it would achieve in the next-best location.[4] In deciding upon the optimal level of production (and employment) the firm will maximize the expected present value of its *net* operating profits, that is, the expected present value of profits less the expected present value of the costs of closure.

Profit maximization yields an expected present value (see Haaland *et al.*, 2003) of:

$$\Omega = \frac{(1-\rho)\left[(a-\omega)^2 - 4bF\right]}{4b\left[1-\delta(1-\rho)\right]}. \tag{7}$$

while the equilibrium levels of employment (and output) for the firm in the location are:

$$L = \frac{a-\omega}{2b}. \tag{8}$$

Substituting (4), equilibrium earnings, into (7) and (8) yields:

$$\Omega = \frac{(1-\rho)\left[(a-v)^2 - 16bF\right]}{16b\left[1-\delta(1-\rho)\right]}, \tag{9}$$

$$L = \frac{a-v}{4b}. \tag{10}$$

The government of the host country offers an investment subsidy, *S*. This is given to firms that operate for at least the first period.[5] Consequently, the present value of the subsidy to the firm is $(1-\rho)S$.

In choosing whether or not to establish its production facilities in a country, the firm considers both the expected present value of its net operating profits and any extra costs of establishment and closure. The overall return *R* to the MNE of establishing its branch plant is the sum of the expected present value of its operating profits, Ω, and the net benefit of the subsidy.

$$R = (1-\rho)\left\{\frac{(a-v)^2 - 16bF}{16b\left[1-\delta(1-\rho)\right]} + S\right\}. \tag{11}$$

[4] Where necessary we shall use subscripts to distinguish between locations.

[5] In Haaland *et al.* (2003) we consider the implications of repaying (some or all of) the subsidy should they shut down production. As this additional complexity does not qualitatively affect the results of this paper, we do not introduce it here.

The MNE will compare different locations and choose to invest in the country that offers it the highest return. We assume that the governments shall compete to attract the firm by offering investment subsidies within different labour-market environments. Consequently, a more convenient way of expressing (11) is to write it in terms of S^R, the minimum subsidy necessary to give the MNE an overall return of R:

$$S^R = \frac{R}{1-\rho} - \frac{(a-v)^2 - 16bF}{16b\left[1-\delta(1-\rho)\right]}. \tag{12}$$

2.3 FDI and the host country

In order to attract the MNE, the putative host can offer inducements to the firm. The benefit of MNE employment will be the present value of the net benefit from each MNE job times the number of workers employed, less the present value of the subsidy paid out by the host government. Let Γ be the present value of employment by the MNE:

$$\Gamma = \frac{(1-\rho)(\omega-v)L}{\left[1-\delta(1-\rho)\right]}. \tag{13}$$

As the cost of the subsidy to the government is identical to the gain perceived by the firm, the overall benefit, B, to the host country of the MNE's investment is Γ less the cost of the subsidy. Thus, after substituting for the equilibrium wage (4) and level of employment (10), we obtain:

$$B = (1-\rho)\left\{\frac{(a-v)^2}{8b\left[1-\delta(1-\rho)\right]} - S\right\}. \tag{14}$$

Once again, it is more convenient to express this relationship in an alternative fashion. Let S^B be the maximum subsidy that the government can offer the MNE and still achieve an overall benefit of B from the investment.

$$S^B = \frac{(a-v)^2}{8b\left[1-\delta(1-\rho)\right]} - \frac{B}{1-\rho}. \tag{15}$$

2.4 Attracting MNE investment

We assume that the MNE will invest in the location that yields the highest overall return. Let R be the minimum acceptable level, at lower levels the MNE will choose to locate elsewhere[6]. Similarly, the host government has alternative uses for its resources and will not encourage MNE investment unless it can expect an overall benefit of B. We define $X \equiv S^B - S^R$ to be the excess subsidy. Subtracting (12) from (15) yields:

$$X \equiv S^B - S^R = \frac{3(a-v)^2 - 16bF}{16b\left[1-\delta(1-\rho)\right]} - \frac{B+R}{1-\rho}. \tag{16}$$

INSERT FIGURE 1 HERE

Figure 1 examines the interplay between the opportunity cost of MNE employment v, and the potential benefits to both the host country and the MNE of the latter choosing to set up a production plant.[7] There are three lines shown: S^B, S^R, and X. It is clear that, as the opportunity cost of labour increases in the country, the benefits of the investment to both host nation and the MNE diminish, in that the former will be prepared to offer a smaller subsidy and the latter will require a larger subsidy in order to undertake the investment. As v rises, so too does the wage in the manufacturing sector. This raises the costs of production and reduces the level of production. Indeed, when $v = 15$ in the figure, the manufacturing wage is the same as the opportunity cost of labour and, consequently, the host gets no benefit from the presence of the MNE (that is, $S^B = 0$). The MNE, however, still requires a subsidy to attract it (that is, $S^R > 0$) and hence $X < 0$.

3. DIFFERENCES IN MNE RISK

In the analysis so far in this paper, the level of redundancy pay set by the government plays no role in attracting the MNE. The important issue both to agents in the host country and the MNE itself is ω, the expected annual cost of employment in manufacturing. The equilibrium level of this is established by the domestic union, taking into account the opportunity cost of

[6] In the absence of alternative locations, R would be the expected return if production were kept at home. With several potential hosts, R would be the best offer from competing locations.

[7] The parameter values used for this and other simulations (except where otherwise indicated) are: $a = 15$, $b = 1.25$, $F = 10$, $v = 1$, $\rho = 0.05$, and $\delta = 0.9$. We also set $B = 0$ and $R = 0$.

employment v. However, the division of payments to workers between current wages w and future redundancy payments $(r = \sigma w)$ plays no part.[8] Consequently, and in contrast to our model with exogenously set wages (Haaland and Wooton, 2002), countries with more flexible labour markets (that is low σ) do not have an advantage in attracting MNEs. This is because the entire manufacturing sector, including the MNE, is assumed to be equally risky[9]. We now investigate the consequences of dropping this assumption of identical risk for native and foreign industries.

Suppose that the MNE has a different probability of failure ρ_M than domestic manufacturing firms, but remains subject to the union-negotiated manufacturing wage and the redundancy rate established by the government. Consequently, the expected annual cost of employment for the MNE will differ from that of domestic industry:

$$\omega_M \equiv (1 + \delta \rho_M \sigma) w \neq \omega. \tag{17}$$

Let Q to be the risk burden of the MNE, where:

$$Q \equiv \frac{1 + \delta \rho_M \sigma}{1 + \delta \rho \sigma}. \tag{18}$$

Using (18), we can rewrite (17) as:

$$\omega_M = Q\omega. \tag{19}$$

For the sake of the argument, consider an MNE investment that is more risky than the rest of the manufacturing sector; hence $Q > 1$. In this case, whenever there are mandated redundancy payments (that is, $\sigma > 0$), the MNE's expected costs per worker will be greater than those of domestic firms, as the MNE will have the burden of a higher expected payout resulting from future closure. This difference in risk will affect the benefits of the MNE investment both to the firm itself and the host nation. We now consider how the behaviour of the agents will change in these altered circumstances, starting with the MNE.

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[8] This is also in accordance with the results from Lazear (1990) and Pissaridis (2001).

[9] That the division of ω between wages and redundancy pay has not played a role in the analysis so far can be explained by the following. Given that the riskiness of an industry is common knowledge and all agents share the same discount rate δ, a competitive insurance market would be prepared to offer contracts trading off w for σ (or *vice versa*) that kept constant the level of ω. Consequently if, for example, a government were to impose a higher rate of redundancy pay than was desirable to a firm, that firm could insure against these future payments by paying a premium per worker, raising the current costs of employment.

3.1 The MNE

The analysis of section 2.2 can be readily replicated incorporating the risk differential between domestic industry and the MNE. We focus on its implications for the minimum subsidy S^R. Substituting (19) into (7) and redoing the calculations leading to (12), yields a slightly different expression than that obtained above:

$$S_M^R = \frac{R}{1-\rho_M} - \frac{\left[2a-(a+v)Q\right]^2 - 16bF}{16b\left[1-\delta(1-\rho_M)\right]}. \tag{20}$$

It appears from (20) that the higher risk means that, for the MNE to be as willing to invest in a location, the host country must offer it a bigger subsidy than before.[10]

3.2 The host government

There are two possibilities regarding the government: either that it is unaware that the MNE is a riskier enterprise than indigenous industry; or that it realises that the FDI is less secure. We make the assumption that the government is well informed and fully aware of the different level of risk associated with an investment by the MNE. But we further assume that it is unable to change the rate of redundancy compensation to take this into account. Knowing that the MNE's plant is more likely to fail than that of a domestic firm will change the well-informed host's valuation of MNE jobs, such that it will take into account the true value of payments to workers ω_M instead of ω.

The higher risk associated with the FDI compared to domestic investment will affect the MNE's optimal employment level. Substituting the true cost of employment for the firm into (8) yields:

$$L_M = \frac{2a-(a+v)Q}{4b}. \tag{21}$$

Substituting (4), (19), and (21) into (13) yields the true present value of the investment to the host government:

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[10] Stictly speaking, this is not necessarily always true. If the firm's expected operating profits, Ω, are negative, the higher uncertainty implies that the expected losses will last for a shorter period, and this will tend to reduce the required subsidies. However, the effect of higher risk on the required return as well as the effect through the risk burden, Q, pull in the opposite direction, and we can normally assume that higher MNE risk implies a higher required subsidy. Our results below, however, do not depend on this assumption and have general validity.

$$\Gamma_M = (1-\rho_M)\frac{(a+v)^2(2-Q)Q-4av}{8b\left[1-\delta(1-\rho_M)\right]}. \tag{22}$$

If we additionally take into account the cost of the subsidy, we can determine S_M^B, the maximum subsidy that the government is prepared to offer the MNE to invest in the country:[11]

$$S_M^B = \frac{(a+v)^2(2-Q)Q-4av}{8b\left[1-\delta(1-\rho_M)\right]} - \frac{B}{1-\rho_M}. \tag{23}$$

The excess subsidy that is available when both the MNE and the host government are aware of the higher risk associated with the MNE's investment:

$$X_M = S_M^B - S_M^R, \tag{24}$$

the value of which can be determined by substituting in (23) and (20).

4. POLICY COMPETITION

With two or more potential host countries, the countries can be expected to compete for the investments. A simple policy game could be as follows.[12] First, the countries determine the subsidies they will offer; secondly, the MNEs choose the optimal location for their plants; and, finally, production takes place and profits and benefits are realised as long as the firm remains in business. Hence, we assume that once a plant is established in a certain location, it will not move again. It may, however, have to close down should the market conditions become unfavourable. We use the subscript *i* to indicate country-specific characteristics.

It is straightforward to see the solution to this policy game. Let X_{Mi} be the level of subsidy offered to the MNE by the well-informed government of country *i* in excess of what

[11] The subsidy that the host is prepared to offer will depend on its degree of ignorance regarding the risk of the investment. If the government is ill-informed as to the higher risk associated with MNE investment, it will only observe the fact that the MNE is prepared to offer fewer jobs and consequently the government will be less willing to subsidize an investment that offers a lower return to the host nation. A well-informed government realises that the likelihood of closure of the plant is greater than for domestic firms and that the present value of redundancy payments is higher than for indigenous industry. If the shorter expected life-time dominates the higher expected present value of redundancy pay, then the ill-informed government would generally be prepared to offer a higher subsidy than would a well-informed government.

[12] To keep our argument clear, we will continue to assume that all governments are of the well-informed type. The alternative assumption of all governments being ill-informed would not make any qualitative difference to our results. Should, however, the governments differ in their level of information about the MNEs, the results may be slightly different from those we discuss in this section.

the firm requires in that location. Country *i* will win the game if the following conditions hold:

$$X_{Mi} \geq 0,$$
$$X_{Mi} \geq X_{Mj} \; \forall \; j \tag{25}$$

The first condition ensures that the investment is feasible; the second that the maximum support that location *i* can offer exceeds the net benefits in any other location.[13]

Several interesting questions arise in this multi-country framework. First, the division of the benefits between the MNE and the host country may be affected by the existence of alternative locations for the FDI. In the previous, one-country analysis we focused on overall net benefits, but could not determine how these benefits would be divided between the firm and the country. With alternative locations and policy competition it should be possible to draw conclusions regarding the distribution of gains. Second, we can consider the question whether different country characteristics attract different types of MNE. With more than one MNE seeking to invest, will all firms end up in the same host country; or will individual country characteristics induce firms from different industries to locate in different nations?

4.1 Symmetric countries

In this case all countries will have the same X_M and the choice of location becomes arbitrary. Plants will be established in any of the countries as long as X_M is non-negative. The policy competition results in all net benefits going to the MNE, since each country will increase the subsidy that it offers to the maximum level S_M^B in its attempt to attract the foreign firms. Consequently the country that wins the competition for the branch plant ends up no better off than the losing countries.

4.2 Asymmetric countries

With asymmetric countries the policy game becomes more interesting. In this model the relevant country characteristics are linked to the labour market. The redundancy rate, σ, measures the flexibility (or rigidity) of the labour market, while the opportunity cost, v, is a

[13] This amounts to the same as saying that the firm's expected return in the chosen location, R_i, must be at least as high as the expected return in any alternative location, given the maximum subsidies that the government in the alternative location would be prepared to offer.

measure of the overall employment conditions. High opportunity cost indicates close-to-full employment, while a low v shows that the extra employment that the MNE would provide is of great value to the country. In addition, v plays a key role in determining the wage cost for the MNE. Finally, the average uncertainty in domestic industries, ρ, matters through its effect on the risk burden, Q. The important industry characteristics are the degree of uncertainty for the MNE and the required return R. However, in a policy competition case, the required R would typically be the return that the best alternative location could offer, so we can focus on ρ_M as the exogenous parameter characterising the industries.

As a basis for the analysis of policy competition between countries with different labour-market characteristics, Table 1 summarises the first pair of cases that we shall consider. We consider two countries, A and B, that differ from one another in specific ways.

Table 1. Country characteristics	**Case 1**		**Case 2**	
	Country A	Country B	Country A	Country B
Redundancy rate, σ,	L	H	L	H
Opportunity cost, v	H	L	S	S
Country risk, ρ	S	S	L	H
Key: L, low; H, high; S, same				

INSERT FIGURE 2 HERE

In Case 1, the domestic industries in both countries share the same level of risk, ρ, that can differ from the risk of the MNE, ρ_M. Differences between the countries arise in their labour market characteristics, their having a combination of either a low σ (which is assumed in all cases to be greater than zero) and high v (country A) or a high σ and a low v (country B). Figure 2 shows the outcome of the policy competition between these nations, illustrating the excess subsidy X_{Mi} for i = {A, B,} over a range of values of ρ_M.[14]

[14] The riskiness of domestic manufacturing enterprises is assumed to remain at $\rho = 0.05$ in all countries. For country A, $\sigma = 1$ and $v = 3$ while for country B, $\sigma = 4$ and $v = 1$.

If $\rho = \rho_M$, the MNE shares the same level of risk as domestic manufacturing in both countries. In such circumstances, the rates of mandated redundancy payments are irrelevant, as differences in σ will be compensated by adjustment in the endogenous wage rate. This occurs at ρ_1. In these circumstances Country B would win the contest for the MNE investment as $X_{M\mathrm{A}} < X_{M\mathrm{B}}$. While firing costs have no influence on investment, country B's opportunity cost of workers is lower than that in country A. The opportunity cost v works through two channels: the wage rate is increasing in v; and the value of extra employment for the country is falling in v. As country B has the smaller v, it has the advantage over country A, as can be seen by comparing points **b** and **a** in Figure 2.

When $\rho \neq \rho_M$, the effects of labour market flexibility must also be taken into account. When the MNE is more risky than the average domestic firm, a country with lower redundancy payments will be able to offer a higher excess subsidy to the firm than a country with the less flexible labour market. If, however, the MNE is a safer bet than domestic firms, in having a lower risk, the country with higher redundancy payments is better able to offer a subsidy. From the MNE's point of view, wages (including expected layoff costs) and subsidies matter. The wage rate reflects the average risk of domestic firms. If the MNE is less risky than the average its expected wage costs will be lower than for domestic firms, and the difference is more pronounced the higher is the redundancy rate (see (17)). Hence, a low-risk MNE will experience a lower ω_M and require a lower subsidy S_M^R to establish a plant the higher the rate of redundancy pay. For a high-risk MNE on the other hand, the actual wage bill will increase with the rate of redundancy pay, and hence the required subsidy is increasing in σ.

When the MNE's plant is a more risky investment than domestic manufacturing, a country with low σ and low v relative to the other nation will win all foreign investments.[15] This simply says that a country with a flexible labour market and poor alternative employment for the labour force is better placed to win the policy competition for MNEs. This can be seen by comparing the excess subsidies on offer around point **b** in Figure 2. Country B has a low opportunity cost of labour but has high firing costs, reflected in the locus

[15] Similarly, a country with high σ and high v will always lose.

$X_{M\mathrm{B}}$. If we compare this to the excess subsidy offered by a country with the same opportunity cost of labour but lower firing costs (shown as the dotted line in Figure 2), it is clear that the country with the more flexible labour market will win the competition for FDI whenever $\rho_M > \rho$.

More interestingly, we can consider the circumstances where the ranking between countries might change. Country A has low σ and high v, while country B is characterised by high σ and low v. For MNEs in industries with $\rho_M < \rho_2$, country B will win, while country A offers the better deal for higher risk industries. In order to understand these mechanisms, it is useful to consider how increasing industry risk, ρ_M, affects the maximum subsidy offered by the government as well as the required rate of subsidy for the MNE. We know that S_M^B is a decreasing function of ρ_M and from (23) using (18) it follows that this decreasing effect is stronger the higher is σ (for $Q > 1$). Hence, high-risk MNEs are of less value to the host than are low-risk MNEs, due to their lower employment, because the wage structure is not adjusted to the risk profile of the MNE. This difference is more pronounced with higher levels of redundancy pay. For the MNEs, the required subsidy rate, S_M^R, is increasing with risk. For $\rho_M > \rho$, a less flexible labour market (higher σ) implies more need for subsidies. Again, the reason is linked to the wage-settlement process: with higher risk the expected wage bill increases for the MNE.

Figure 2 shows the net outcome of these effects. The figure clearly indicates that countries with different characteristics may attract FDI from different industries. For high-risk MNEs, labour-market flexibility (low redundancy pay) may be more important than the wage rate, whereas for FDI from lower-risk industries the opportunity cost of labour, and hence the wage rate and the level of subsidies offered, is the key determinant.

INSERT FIGURE 3 HERE

In the analysis so far we have assumed that the countries share the same domestic risk, ρ. In Case 2, we examine how differences in average domestic risk affect the choice of location for the MNEs. Figure 3 shows two cases. In both cases the opportunity cost of MNE employment is the same, while the countries differ in terms of redundancy rates and

average risk.[16] The figure reveals that a country with high domestic risk and an inflexible labour market (high σ) can attract investments from low-risk MNEs, while high-risk MNEs would find it more attractive to invest in countries with low redundancy rates. Again, the wage setting mechanism plays a key role. With the same opportunity cost, v, in the two countries, the overall labour cost (and return to labour) ω, will also be the same (see (4)). The split between wage rate and expected redundancy pay will, however, differ. The high-risk country will end up with a relatively low wage rate (see (5)), which would be particularly attractive for a low-risk MNE.

5. WAGE-SETTING INSTITUTIONS

The analysis so far has been conducted under the assumption that wages are determined through national bargaining for all of manufacturing. While this may be an appropriate assumption for some countries, it may not reflect the wage-setting mechanisms in other potential host nations for FDI. As an alternative institutional setting, we introduce the possibility of firm-level bargaining in this section. With wage setting specific to each firm (or industry), the compensation package reflects the firm's own risk structure, and the payment to workers hired by the MNE would not be directly linked to the earnings of employees of domestic firms. Wages and payment are determined from equations such as (1) to (5), using the firm's individual risk factor and labour demand, rather than the national ones. Hence, the wage rate fully reflects the expected redundancy pay, in line with Lazear (1990).

Table 2 lists two cases of the characteristics of competing nations where the countries' wage-setting mechanisms are also taken into account.

[16] In the numerical simulations illustrated in Figure 3, Country A has $\sigma = 1$ and $\rho = 0.05$, while country B has $\sigma = 4$ and $\rho = 0.10$. Both countries have $v = 1$.

Table 2. Country characteristics	**Case 3**		**Case 4**	
	Country A	Country B	Country A	Country B
Redundancy rate, σ,	I	I	I	I
Opportunity cost, v	H	L	S	S
Country risk, ρ	I	I	I	I
Bargaining structure	F	F	F	N
Key: L, low; H, high; S, same; I, irrelevant for the choice of location; F, firm-level; N, national				

In Case 3 both countries have firm-level wage setting for the MNE. The potential hosts differ in terms of the opportunity cost of manufacturing labour. They may also differ in terms of the labour-market protection and domestic risk but, in this situation, these do not influence the countries' competitiveness in attracting FDI. In all potential hosts, ρ_M is used to determine the payment to employees of the MNE. If one country has a less flexible labour market (high σ), this will be offset be a lower current wage rate; a result that comes directly from Lazear (1990). Thus, with firm-level wage determination, relative labour-market flexibility is not a determinant of the location of FDI.

The remaining influence on the cost and level of production is v, the opportunity cost of workers. A country with a tight labour market (Country A in our example) will have to pay its manufacturing workers relatively more and will lose the competition to attract FDI to locations where workers are cheaper (Country B).

In Case 4, the two countries are distinguished by their wage-setting institutions. Country B has national bargaining while Country A has worker compensation being determined at level of the firm. For Country A, then, the Lazear result holds, in that the cost of workers will be independent of redundancy costs. Country B, however, still has the distortion of wage setting being conducted at the national level where the level of risk may not coincide with that of the MNE. Should $\rho_M > \rho_B$, any required redundancy pay will make workers in country B more expensive than their counterparts in country A, regardless of which country has the more flexible labour market.

The examination of these cases has revealed that national wage setting creates a distortion that affects a country's ability to compete for FDI. It also shows two alternative solutions that can correct the distortion, each of which may face strong opposition, not least by organized labour. One remedy is simply to shift wage setting to the firm level, so that workers' representatives take into account differences between firms and set compensation packages that best fit the characteristics of the particular industry or firm. Whether this is feasible will depend upon a country's institutional structure and may be easier for some countries than others. This might be resisted because an implication of firm-level bargaining is that the more risky an MNE, the lower the wage rate that it would have to pay its workers. The alternative solution is simply to eliminate (or at least substantially reduce) protection in the labour market. However, labour-market protection is considered as an important form of insurance in many countries and attempts to remove it might be seen as an attack on a nation's social fabric.

6. CONCLUDING REMARKS

This paper considers the determinants of FDI in industries where there is uncertainty about the future market conditions, and where firms take exit conditions as well as entry conditions into account when deciding where to locate.

In line with the literature (Lazear, 1990, Pissarides, 2001), we find that with endogenous wages expected redundancy costs will be fully reflected in the wages. Hence, for the average firm, a government-mandated redundancy rate will have no effect. What matters for the overall expected wage costs is the opportunity cost of labour in the country. The required redundancy rate only affects the split between wages and close-down costs.

Nevertheless, for a foreign firm considering where to locate, differences in redundancy rates may matter. We have shown that as long as wages are not firm-specific, redundancy rates may play a key role in determining the expected wage costs and the employment levels for an MNE. The redundancy rate is only immaterial if the risk level of the MNE matches that of the average domestic firm. In all other cases the redundancy rate matters. If the MNE is more risky than domestic firms, its expected wage bill increases with

the required rate of redundancy pay. This has implications for the firm's production and employment levels and, ultimately, the value of an investment both for the firm and the potential host country varies with the redundancy rate and the degree of risk for the MNE.

In our analysis of policy competition between several potential hosts, we have shown that, even with endogenously determined wages, the opportunity cost of labour and the government-mandated rate of redundancy pay are key determinants for the location of FDI. While it is hardly surprising that a country with low opportunity cost and flexible labour markets always wins the competition for FDI (as long as the MNEs are at least as risky as domestic firms), it is more interesting to focus on other cases. Comparing countries where opportunity costs can be high or low and redundancy rates can be high or low, we have seen that for high-risk FDI low redundancy rates dominate, while for lower-risk FDI (but still more risky than domestic firms) low opportunity costs (and hence low wages and high subsidies) are more important.

If countries differ in their risk profiles, we find – maybe somewhat surprisingly –that high-risk countries may be attractive to low-risk MNEs, and vice versa. The reason is linked to the interaction between labour market flexibility and the wage setting process. Even if two countries share the same overall expected labour costs, the split between wages and expected redundancy payments differs, depending on the average domestic uncertainty as well as the government-mandated rate of redundancy pay. A high-risk country with a relatively inflexible labour market will end up with a low wage rate, as the expected redundancy payment is relatively high. For an MNE with less-than-average risk, this is a particularly attractive "package".

Finally, we discuss how wage-setting institutions may influence the competition for FDI. In the above analysis, the labour-market distortions follow from the combination of national bargaining and government-mandated redundancy pay. With firm-specific bargaining, on the other hand, the wage rate would fully reflect each firm's risk level; hence, the required redundancy pay does not play a role for the overall expected wage bill. If all countries have firm-level bargaining, the choice of location is thus determined solely by differences in opportunity cost of labour between the countries. Differences in redundancy

pay or country risk will not have any impact. If the competing countries differ in their wage-setting institutions, the one with firm-level bargaining will always have an advantage when it comes to attracting FDI in industries with higher-than-average risk levels. The implication of firm-level wage setting is, however, that high-risk firms pay lower wages, since the expected redundancy pay is higher for such firms. Whether it is politically feasible to advocate such a system as a way of overcoming the labour-market distortions we discuss in this paper, is not obvious.

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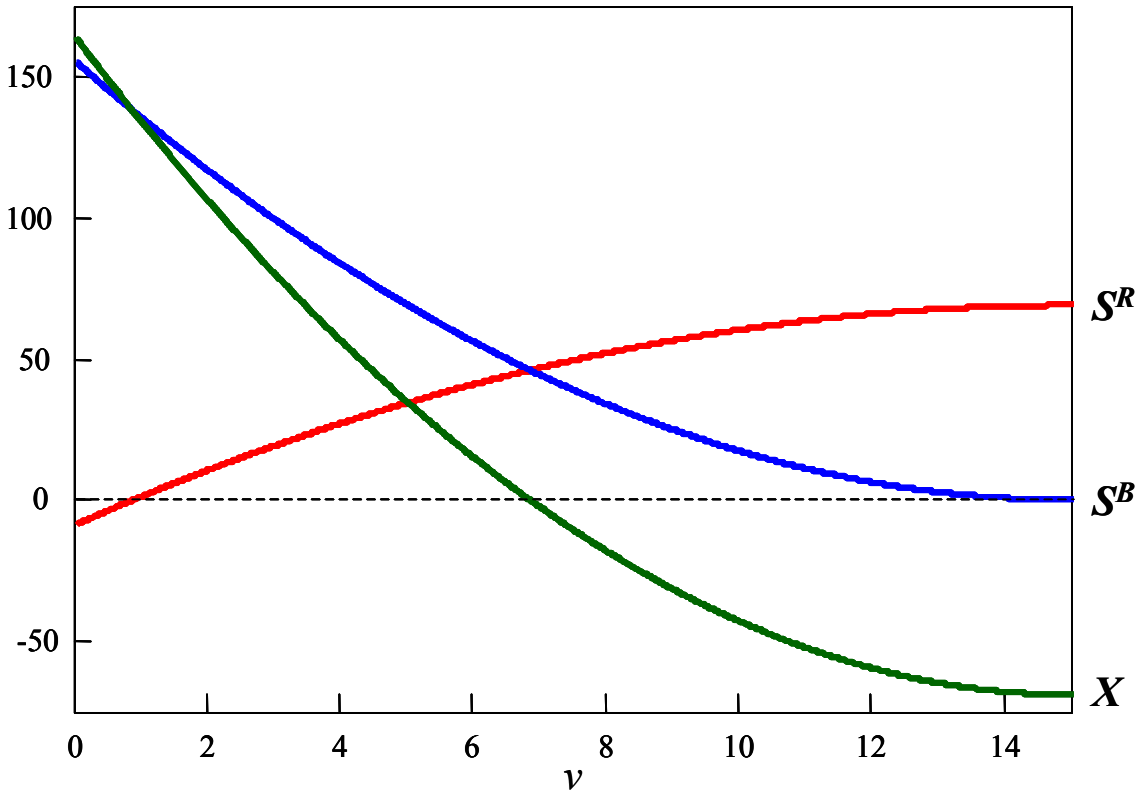

Figure 1

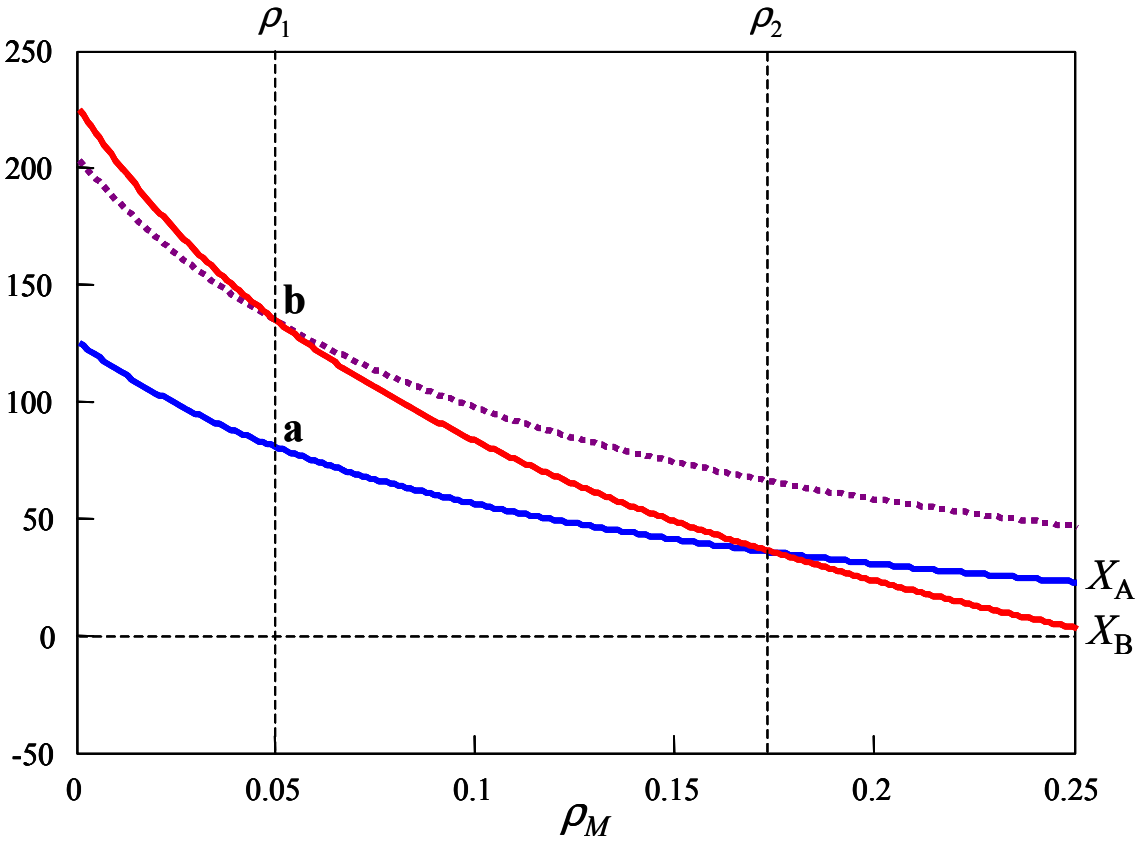

Figure 2

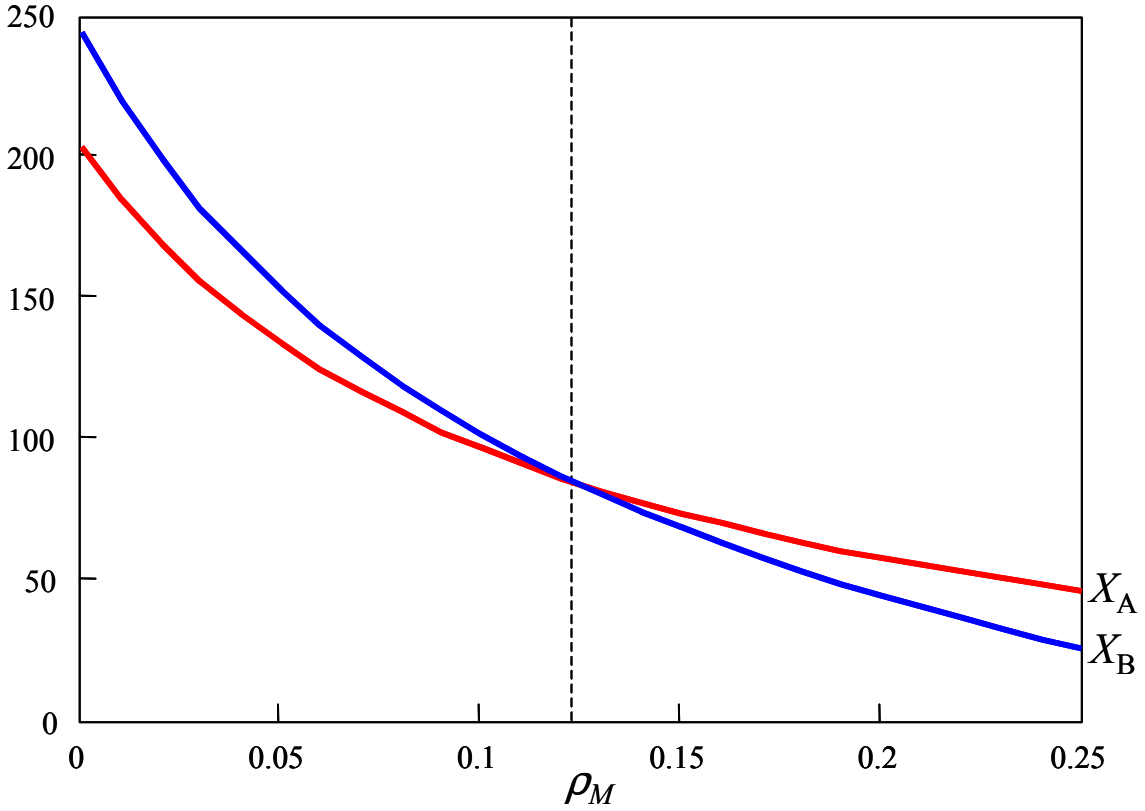

Figure 3