DOMESTIC LABOUR MARKETS AND FOREIGN DIRECT INVESTMENT

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Abstract:
In an uncertain business climate multinational enterprises (MNEs) must take account of future market conditions and potential exit costs as well as present costs and benefits in deciding where to locate a branch plant. Government-mandated redundancy payments constitute an important part of the exit costs, and in this paper we study the interaction between labour-market conditions and industry uncertainty in determining the attractiveness of alternative locations for foreign MNEs. With endogenously determined manufacturing wages, the opportunity cost of labour as well as the rate of redundancy payment matter for the MNE's location decision (as long as the risk profile of the MNE differs from that of domestic firms). Expected net employment benefits (over and above the opportunity cost of labour) imply that potential host countries are willing to subsidise MNEs to influence the location decision. With several potential host countries competing for foreign investments, we show that countries with different characteristics (opportunity wage, redundancy pay, domestic industry risk) may win the competition for investments from MNEs in different industries. High- and low-risk MNEs may end up in different locations, as they are attracted by different characteristics. We also demonstrate the important role played by the wage setting mechanism, in determining the mix between current wages and expected future redundancy payments.

JEL Codes: D92, F12, F23

Keywords: multinational firms, investment subsidies, entry, exit, uncertainty, wage determination

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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 FDI brings, particularly in the form of increased employment, has led governments to offer inducements to foreign multinational enterprises (MNEs) in order to encourage them to invest. Beyond such direct financial inducement, the MNE will base its choice as to where to invest on the characteristics of the potential host locations including the condition of the local labour market.

An aspect of FDI that has received relatively little attention 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.

This paper provides an analysis of the firm's decision in a setting in which potential host nations engage in a competition to attract the FDI. The analysis builds upon some of our previous work on competition for FDI and industry risk.

In Haaland, Wooton, and Faggio (2003), we introduce a form of industry risk such that plants cannot be expected to survive indefinitely. This forces firms to take into account exit costs and conditions as part of their entry decision, where one component of these costs are the government-mandated redundancy payments that a firm faces on closure of a branch plant. We use the term *labour-market flexibility* to denote the ease with which a firm can close down operations of a branch plant in a particular location. That initial paper demonstrates 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[1]. The present paper builds on this analytical framework.

[1] Bentolila and Bertola (1990) analyse the implications of firing costs for the employment decisions of firms, and they also indicate that in a more complete model, such firing costs could have negative effects on the firms'

In the same paper, we measured the benefit to the host country of the FDI by the present value of the income of the workers employed by the MNE. But this implicitly assumed that, in the absence of the MNE, these workers would be unemployed. It is clear, though, that potential hosts may differ in their employment levels. If, for example, there is already a high level of national employment with virtually all workers employed, then the benefit of the MNE job will be the difference between the earnings from working for the MNE and the opportunity wage, the wage that could be made in another sector of the economy. Other things equal, the higher the opportunity cost of employment, the less attractive the investment. We consequently introduced, in Haaland and Wooton (2002), this additional asymmetry between potential host countries in terms of differences in unemployment levels[2].

In these models, the wage paid by the MNE was treated exogenously, being the same regardless of the location of the production plant and the labour market conditions in the host country. There is, however, the issue of 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 with changes in severance payments such that the employment level is unaffected. We assume a structure of endogenous national wage determination in which unions bargain with the government in setting a national wage and employment conditions. These are assumed to apply to the MNE should it choose to invest in that country. For MNEs with a similar level of risk to that of local firms, we obtain Lazear's result. However, differences in risk between indigenous firms and the MNE will result in the domestically

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profits and investments. This is in accordance with our findings in Haaland *et al.* (2003). Görg (2002) empirically investigates the trade off between investment incentives and exit costs for the location of FDI by US companies and obtains results that are consistent with the theoretical model in Haaland *et al*. (2003).

[2] Barros and Cabral (2000) also focus on employment gains in their study of policy competition to attract FDI. 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 e.g. Haufler and Wooton (1999) or Kind *et al.* (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.

determined compensation package affecting both the level of employment offered by the MNE and the host country's ability to attract FDI.

In Section 2, we set out the model of MNE investment similar to that used in Haaland *et al.* (2003) and Haaland and Wooton (2002), but incorporating an endogenous wage-setting process in a potential host country. Section 3 discusses different levels of risks amongst MNEs. Section 4 then considers policy competition between rival locations, while Section 5 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.[3] Should a firm be obliged to close down its factory, it will encounter closure 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 discuss, below, its choice of r. We assume that all agents, including the MNE, discount the future at rate $\delta \leq 1$.

As a result of this 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

[3] We consider, later, the case of the MNE's investment in the country being more or less risk than domestic firms.

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:

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

2.1 Wage determination

We assume that the manufacturing wage in each country is set by a national union. Following Vandenbussche (2000), we adopt a simple formulation for the utility of that union, combining the level of employment N and the current benefit from employment ω:

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

where N is the total level of 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.

We assume that aggregate labour demand in the manufacturing is:

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

where a and d are constants.[4] 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:

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

[4] We assume that wage setting takes place at the national level and that the union is unable to discriminate between firms. 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.

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.[5]

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 $e = \sigma wx$.

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.[6] 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:

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

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

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

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

The government of the host country offers an investment subsidy, S. This is given to firms that operate for at least the first period.[7] 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.

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

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:

[7] 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.

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

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[8]. 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:

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

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.[9] 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

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

[9] 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 $R = 0$.

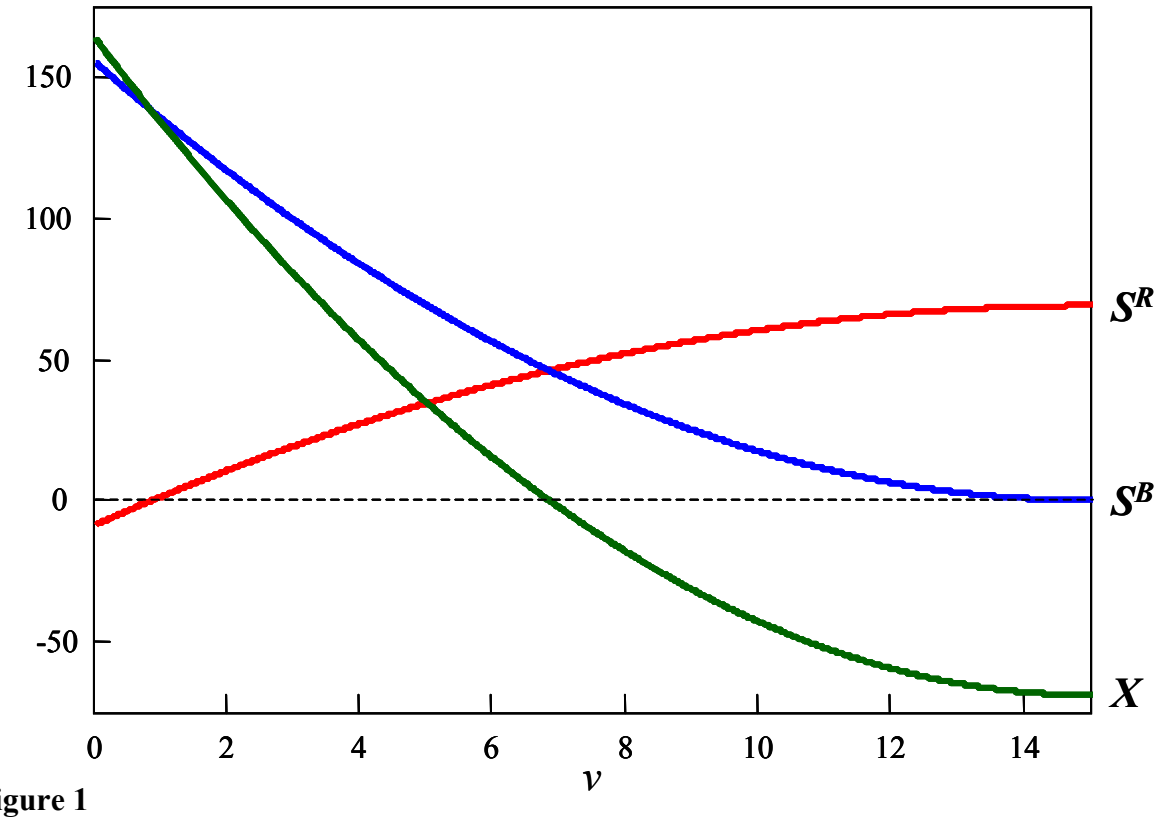

Figure 1

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 employment v. However, the division of payments to workers between current wages w and

future redundancy payments $(r = \sigma w)$ plays no part[10]. 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 all of the manufacturing sector, including the MNE, has been assumed to be equally risky[11].

In this section, we investigate the consequences of dropping this assumption of identical risk for native and foreign industries.

3.1 Risky business

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

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

[11] 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.

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.

3.2 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:

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

Clearly 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.

3.3 The Ill-informed Host

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 assume, initially, that the government is ill-informed in that it believes the MNE to have the same level of risk as local manufacturers.

In this situation, the government will judge the employment benefits from the MNE investment to be the same as those for a local firm. In other words, the government will base its evaluation of the benefit of a job on ω, rather than on the correct value of ω_M. While the government does not recognise that the value of MNE jobs has changed, the higher risk will nonetheless change the level of employment, because the MNE's optimal employment level will have altered.[12] Substituting the true cost of employment for the firm into (8) yields:

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

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

[12] The MNE makes its calculations based on full knowledge of the differences in risk. As the employment level can be verified once the plant is operational, the MNE will have to truthfully reveal its planned level of hiring to the host government.

$$\Gamma_I = (1-\rho)\frac{(a-v)\left[2a-(a+v)Q\right]}{8b\left[1-\delta(1-\rho)\right]}. \tag{22}$$

If we additionally take into account the cost of the subsidy, we can determine S_I^B the maximum subsidy that the ill-informed government is prepared to offer the MNE to invest in the country:

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

The excess subsidy that will be offered to the MNE by the ill-informed host will therefore be:

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

whose components are determined in (23) and (20).

3.4 The Well-informed Host

Suppose that, in contrast to the previous sub-section, the government is fully aware of the different level of risk associated with an investment by the MNE. It is, however, unable to change the rate of redundancy compensation to take this into account.[13] Knowing that the MNE's plant is more likely to fail than 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.

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

$$\Gamma_W = (1-\rho_M)\frac{(a+v)^2(2-Q)Q-4av}{8b\left[1-\delta(1-\rho_M)\right]}. \tag{25}$$

If we additionally take into account the cost of the subsidy, we can determine S_W^B the maximum subsidy that the well-informed government is prepared to offer the MNE to invest in the country:

[13] The appropriate action would be to lower σ for the MNE in order to offset its greater risk of closure (and earlier payment of redundancy compensation). If the government were unable to make a special offer to the MNE (because of, for example, political pressure or a national union agreement), then the correct remedy would be the elimination of mandated redundancy payments which would, in all likelihood, be just as politically infeasible.

$$S_W^B = \frac{(a+v)^2(2-Q)Q - 4av}{8b\left[1-\delta(1-\rho_M)\right]} - \frac{B}{1-\rho_M}. \tag{26}$$

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:

$$X_W = S_W^B - S_M^R, \tag{27}$$

the value of which can be determined by substituting in (26) and (20).

3.5 The Implications of Ignorance

A comparison of (24) and (27), reveals that the subsidy required by the MNE to invest in a particular country is the same regardless of how well-informed the host is. However, the subsidy that the host is prepared to offer will depend on its degree of ignorance regarding the riskiness of the investment.

We illustrate this in Figure 2a, where the components of the excess subsidy in various cases are drawn. S_M^R is common to all of the excess subsidies, the difference lying in the subsidies offered by the host government. As a point of reference, S^B, the schedule from Figure 1 that corresponds to the subsidy offered when the MNE and local firms have the same expected lifespan, is shown. We have also drawn the schedule of government subsidies under increased MNE uncertainty, S_I^B and S_W^B. As is the case for the S^B schedule, these are declining in the opportunity cost of workers, *v*.

In addition, whenever $\rho_M > \rho$ the well-informed government's schedule S_W^B lies below the S^B schedule. This is also the case for the subsidy schedule of the ill-informed government S_I^B whenever $\sigma > 0$. If $\sigma = 0$, there are no government-mandated redundancy payments. In that case, the higher risk associated with the MNE will have no effect on the cost of employing workers (that is, $Q = 1$) and the level of MNE employment will be unaffected by the greater risk. Consequently, the ill-informed government host will be prepared to give as high a subsidy as would be offered when the MNE has the same level of risk as domestic firms. However, in the same circumstances, the well-informed government will not be willing to offer as large a subsidy, as it recognises that the investment is likely to

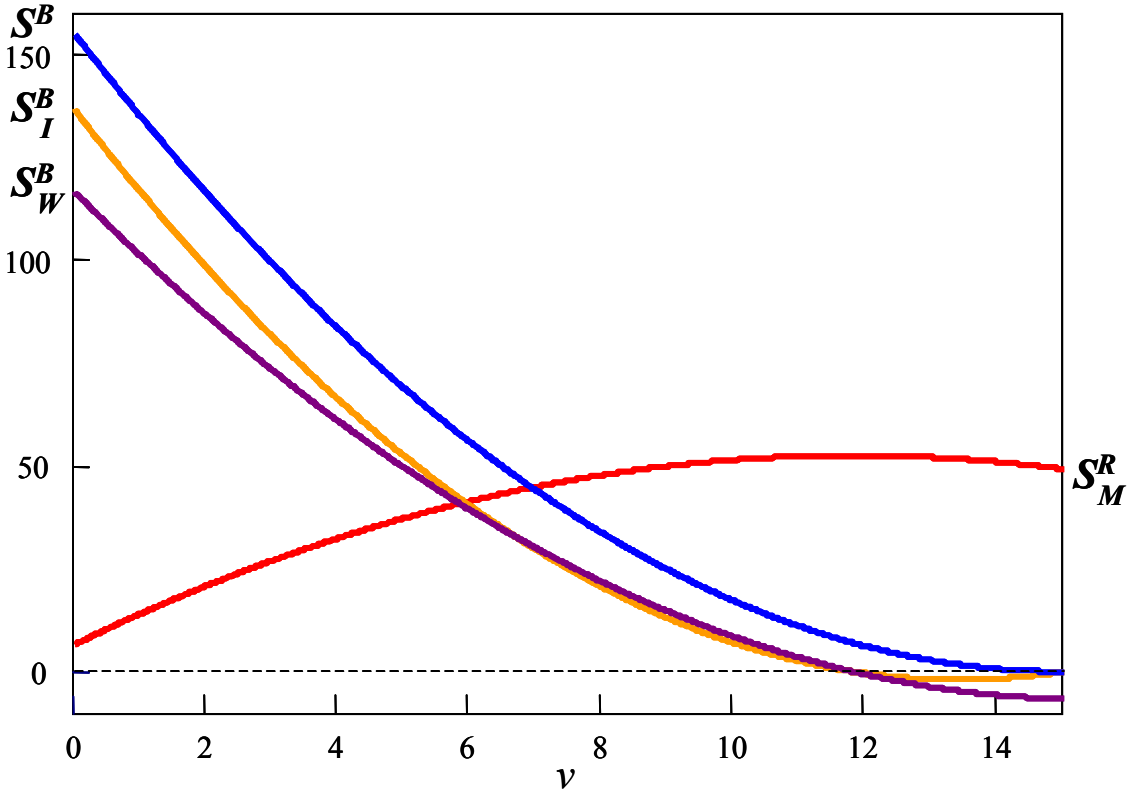

Figure 2a

survive a shorter period, given the higher level of MNE risk, and so the present value of the investment is less.

In Figure 2a, $\sigma > 0$ and so S^B_W and S^B_I both lie below S^B. In addition, they intersect each other (twice).[14] At a low opportunity cost of labour, the ill-informed government is prepared to offer the higher subsidy but at higher levels of v, the well-informed government is prepared to be more generous.[15] The change in the relative strength of the offers is the result of the interplay between two factors. As has already been established, the shorter expected lifespan of the MNE's investment means that the well-informed host (that takes this into account) will be less willing to offer as substantial a subsidy. Acting against this is the fact that, when redundancies payments have to be made by the MNE on closure of its production facilities, the well-informed government will realise that this settlement will be paid sooner than the ill-informed government expects, making the present value of the return to labour from the investment more attractive than it otherwise would be.

[14] In this numerical simulation we let $\rho_M = 0.1$ and $\sigma = 3$, while we continue to have $\rho = 0.05$.

[15] The schedules then cross for a second time at a value of v at which MNE employment has fallen to zero.

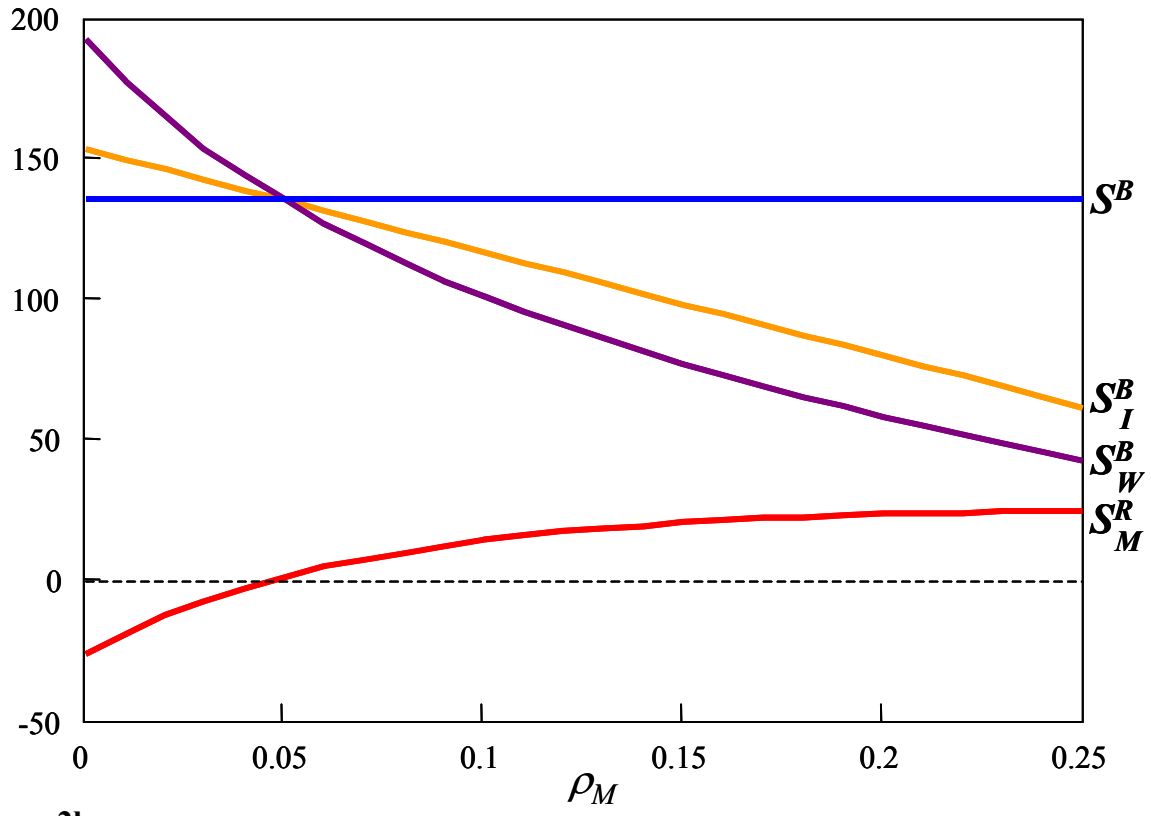

Figure 2b

In Figure 2b, the subsidy schedules are drawn for different levels in MNE risk, holding v constant. Both the S_W^B and S_I^B schedules lie below the original S^B schedule for $\rho_M > \rho$. Once again, the difference between the two schedules is due to the host government's understanding of the reason for the lower employment offered by the MNE. If the government is ill-informed, 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 former effect (shorter expected life-time) dominates, S_W^B lies below S_I^B; if the latter (higher expected present value of redundancy pay) dominates, S_W^B may exceed S_I^B. Numerical simulations show that unless the rate of redundancy pay, σ, is very high, S_W^B would normally be below S_I^B and the ill-informed government would be prepared to offer a higher subsidy.

Hence, in summary, when the MNE is more risky than the average domestic firm, it will employ fewer workers given the burden of redundancy costs. As a result, the subsidy offered for the investment is smaller than it otherwise would have been. However, the subsidies offered by an ill-informed government will differ from that of a well-informed government for two reasons. The first is that without full information, the government does not realise that the expected life-time of the MNE is shorter than for domestic firms. Hence, the ill-informed government offers too high subsidies relative to the real benefits that can be expected from these investments. The second, opposing force, is that a well-informed government realises that earlier failure will bring forward the redundancy payments, raising the overall value of the investment.

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.[16] 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_i be the level of subsidy offered to the MNE by the well-informed government of country *i* in excess of what the firm requires in that location. Country *i* will win the game if the following conditions hold:

$$\begin{aligned} &X_i \geq 0, \\ &X_i \geq X_j \ \forall \ j \end{aligned} \tag{28}$$

[16] To simplify we will assume in this section 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 the ones we discuss in this section.

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.[17]

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 and the choice of location becomes arbitrary. Plants will be established in any of the countries as long as X 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_W^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 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

[17] 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.

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 characteristics, Table 1 summarises the (partial) effects of firm and country characteristics on the key policy variables. Most of these effects follow directly from the discussion above.

Table 1. Characteristics and effects	S_W^B	S_M^R	$X = S_W^B - S_M^R$
MNE risk, ρ_M	–	+	–
Redundancy rate, σ	–	– for $\rho_M < \rho$ + for $\rho_M > \rho$	+ for $\rho_M < \rho$ – for $\rho_M > \rho$
Opportunity wage, v	–	+	–
Domestic risk, ρ	– for $\rho_M < \rho$ + for $\rho_M > \rho$	–	+ *)

*) A sufficient condition for this effect to be positive is that $\rho_M > \rho$. A necessary condition would be $Q > 2v/(a+v)$, which is satisfied for all reasonable values of v even if $\rho_M < \rho$.

To simplify, consider first a situation where all countries share the same domestic risk, ρ, but differ in term of labour market characteristics. To be specific let us look at four countries, **A**, **B**, **C**, and **D**. Each country can have a high or low σ, and a high or low v. Table 2 lists the assumed pattern of these characteristics across the four potential-host nations.

Table 2. Country Characteristics		Opportunity cost, v	
		low ($v = 1$)	high ($v = 3$)
Redundancy payment rate, σ	low ($\sigma = 1$)	**A**	**B**
	high ($\sigma = 4$)	**C**	**D**

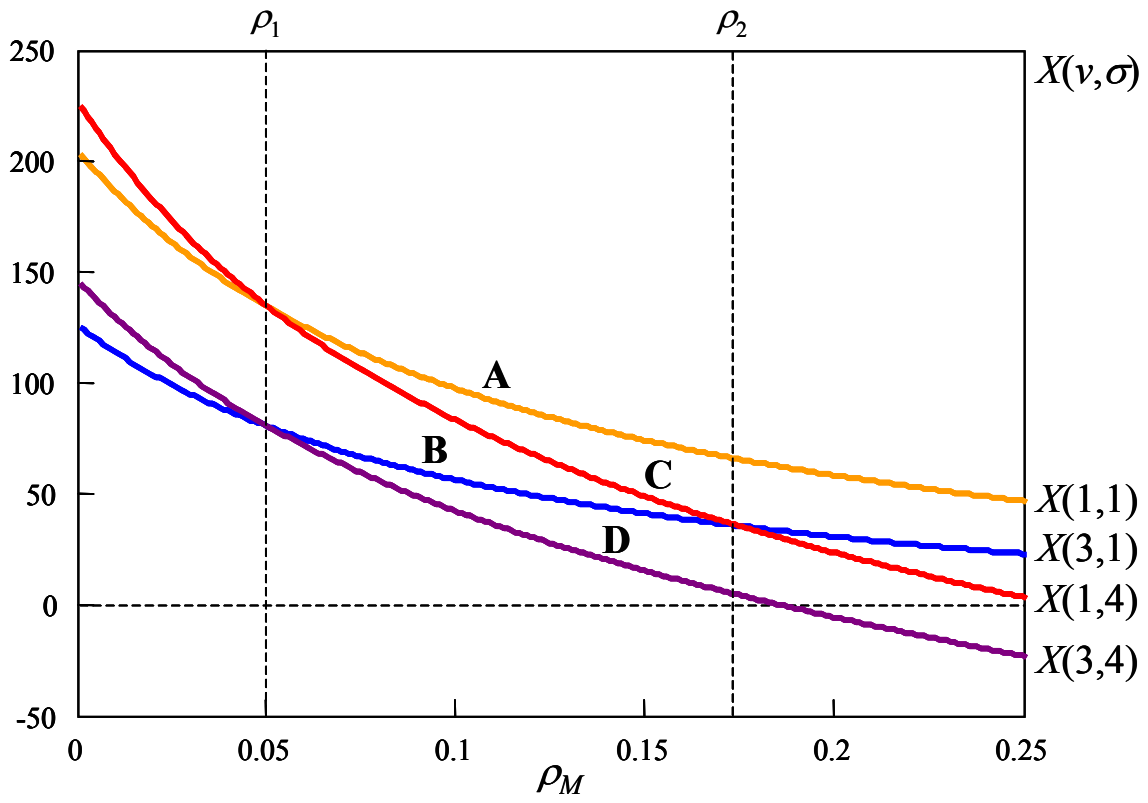

Figure 3

Figure 3 helps us understand the outcome of policy competition, illustrating X_i for $i = \{\mathbf{A}, \mathbf{B}, \mathbf{C}, \mathbf{D}\}$ over a range of values of riskiness of the MNE's investment.[18] A few aspects follow from the effects listed in Table 1. First, note that X_i is falling in v; thus **B** is below **A** while **D** is below **C** for any value of MNE risk. This simply reflects the fact the net benefit of the MNE depends on the possibilities of alternative employment for the work force. 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.

Secondly, the effects of labour market flexibility are revealed by comparing **A** and **C**, or **B** and **D**. As we have already established, if the MNE shares the same level of risk as domestic manufacturing, the rate of mandated redundancy payments is irrelevant, as differences in σ will be compensated by adjustment in the endogenous wage rate. When the MNE is more risky than the average domestic firm, the country with lower redundancy payments (**A** or **B)** will be able to offer a higher excess subsidy to the firm than the country with the less flexible labour market (**C** or **D**, respectively). If, however, the MNE is a safer

[18] The riskiness of domestic manufacturing enterprises is assumed to remain at $\rho = 0.05$ in all countries.

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 (that is, $\rho_M > \rho$, corresponding to points to the right of ρ_1 in Figure 3) a country with low σ and low v relative to the other nation will win all foreign investments. Similarly, a country with high σ and high v will always lose. This simply says that a country with a flexible labour market and poor alternative employment for the labour force is better placed to win a policy competition for MNEs.

What if country **C** has high σ and low v, while country **B** is characterised by low σ and high v? The two loci in the middle of Figure 3 illustrate this case. Country **C** is represented by the $X(1, 4)$ locus, and country **B** by the $X(3, 1)$ locus. For MNEs in industries with $\rho < \rho_2$, country **C** will win, while country **B** 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. From Table 1 we know that S_W^B is a decreasing function of ρ_M and from (26) 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 (see Table 1). 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 3, above, 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.

In terms of actual subsidies offered, and hence the distribution of the expected net benefits between the MNE and the host country, the optimal choice by the country with the higher X would be to offer a subsidy that gives the MNE a return R slightly above the maximum return it would get in the other country, i.e., given the maximum subsidy that the other country can offer. Hence, when $X_{\mathbf{C}} > X_{\mathbf{B}}$, country **C** wins the investment and gets a net benefit of $X_{\mathbf{C}} - X_{\mathbf{B}} - \varepsilon$. This net benefit will be lower, the more similar are the countries.

In the analysis so far we have assumed that the countries share the same domestic risk, ρ. As a final exercise, we will see how differences in average domestic risk affect the choice of location for the MNEs. Figure 4 shows two cases. In both cases the opportunity cost of MNE employment is the same ($v = 1$), while the countries differ in terms of redundancy rates and average risk, one having $\sigma = 1$ and $\rho = 0.05$, while the other has $\sigma = 4$ and $\rho = 0.10$. 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.

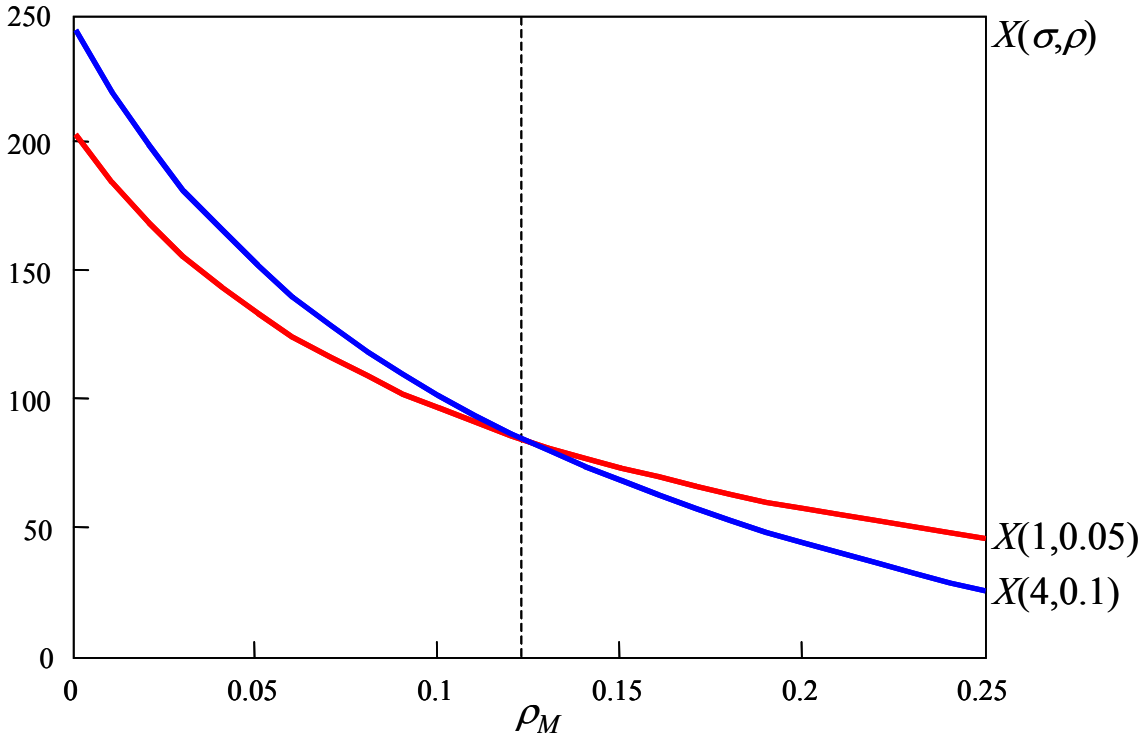

Figure 4

5. CONCLUDING REMARKS

This paper extends our previous analyses of 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 Haaland *et al.* (2003) we focussed on the role of labour market flexibility; while in Haaland and Wooton (2002) policy competition between several potential hosts was added. In both cases labour market conditions played a key role; yet the labour markets were modelled in a fairly *ad hoc* way, with exogenously given wage rates and government-mandated redundancy rates. In the present paper we endogenise the wage-settlement process, and study the effects of different underlying conditions for countries' ability to attract FDI. Several interesting conclusions follow from the analysis.

In line with the literature (Lazear, 1990, Pissarides, 2001), we find that with endogenous wages redundancy rates 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 demonstrated 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. Only if the risk level (or time horizon) of the MNE matched that of the average domestic firm would the redundancy rate be immaterial. 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 may be 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".

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