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**Domestic Labour Markets and
Foreign Direct Investment**

**by
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Abstract

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.

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1. INTRODUCTION

In this paper we look at the competition between countries to attract foreign direct investment (FDI) in an uncertain world where nothing, particularly a foreign-owned production plant, lasts forever.

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 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).

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) that establishes new 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.[1]

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 establishing a single wage level for all firms, but shall later relax this assumption.

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[1] Uncertainty creates a distinction between entry costs and exit costs for the MNE. Entry costs for locating in a particular country are paid at the beginning of an investment and the firm will include these in its calculations as to the relative merits of choosing one location over another. Exit costs will also figure into these calculations but, as they are at some indeterminate point in the future, their *expected* level will have to be worked out as well as the present value of the benefits accrued over the (uncertain) period over which the plant operates. For simplicity we ignore sunk entry costs as we wish to focus on what happens at the end of a plant's life.

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. The firm will compare the overall benefits that it would get from each alternative investment location. The competition between countries will determine the eventual location of the investment and the distribution of gains between firm and host.

In terms of insights, our analysis highlights the importance of exit costs as well as entry conditions for the location decisions of MNEs. In our setting, exit costs are represented by government-mandated redundancy payments. In general, such payments should be taken into account and fully reflected in the nation's wage-setting process. However, an MNE's FDI decision may still be influenced by these severance payments. If the foreign firm's risk of shutting down the production of its branch plant is different from the average risk of closure faced by a domestic firm, then the national wage bargaining process will over- or under-compensate for the expected costs of the MNE's redundancy payments. Hence, for example, a high-risk MNE might choose to set up in a high-wage country, because that high wage is more than compensated for by a lower redundancy payment. Furthermore, countries with relatively low average industry risk might attract high-risk MNEs due to the countries' advantageous mix of wages and redundancy rates. Such national advantages would not arise under firm-specific wage setting. In these circumstances, the wage rate would fully reflect the risk of the MNE and the expected exit costs of the firm, regardless of the national level of redundancy payments.

1.1 *Related literature*

An aspect of FDI that has received relatively little attention in the literature is the expected longevity of the investment. In the face of changing market conditions, the emergence of new products, technological innovations, etc., firms may decide to relocate or close down production rather than merely tinkering with the manufacturing process. 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. Haaland, Wooton, and Faggio (2003) 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 the government-mandated redundancy payments, faced by a firm on the closure of its branch plant, are specifically taken into account. There is consequently 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.[2] Consequently, investment uncertainty may have no influence the location

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

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.

The role of a national labour union in wage setting is a crucial element of our analysis. Zhao (1995 and 1998) first considered the interaction between unionisation and FDI. His interest was in the role of FDI in affecting the bargaining between unions and employers in a general equilibrium model of international trade. More closely related to our study of international competition for FDI is that of Leahy and Montagna (2000). They investigate the effects of different degrees of wage-setting centralisation on the incentive of an MNE to locate in a host country.[3] 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. While we discuss the impact of firm-specific wage setting, as opposed to national bargaining, this is not at the heart of our modelling of the international competition for FDI. Our focus, instead, is on the degree of labour-market flexibility in an uncertain industrial environment.

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. Fumagalli (2003) emphasises technology transfers and potential gains from policy

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[3] They additionally consider the nature of product market competition between the MNE and domestic firms, an

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.

Our work is also closely related to the public finance literature on tax competition for foreign investments such as Devereux and Griffith (1998), Haufler and Wooton (1999), and Kind, Midelfart Knarvik, and Schjederup (2000). 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

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aspect we ignore.

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. We employ a partial equilibrium framework focussing on the unionized manufacturing sector in which the MNE may invest. 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.[4] We assume initially that that MNE's risk of closure is the same as that faced by indigenous manufacturing firms. Later, we shall examine that outcome when the MNE's investment in the country is more (or less) risky than that of domestic firms. Should a firm be obliged to close down its factory, it will face exit costs, in the form of a severance payment to each worker. We assume that the redundancy payment that is mandated by the government is expressed as a proportion σ of the manufacturing wage (that is, each worker is given a payout of σw). This rate σ 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.

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. The overall expected cost of redundancy additionally

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[4] In our analysis, we assume that the impact of the shock is so severe as to make the MNE decide to close down its manufacture of this product. It would be possible to consider a smaller shock, such that the firm would want to continue production but on a reduced scale. This would not change the nature of our results which only rely upon there being a cost to laying off workers when a plant reduces its scale of production.

depends upon the likelihood of failure ρ and the discount rate $\delta \leq 1$, where we assume that all agents, including the MNE, discount the future at the same rate. We can therefore define ω to be the expected annual cost (benefit) of employment of a worker:[5]

$$\omega = (1 + \delta\rho\sigma)w.$$
(1)

Essentially, the compensation to a worker in manufacturing has two components: the wage rate in every period of employment; and the severance payment on closure of the production plant. The probability of closure is exogenous. Workers and firms will be indifferent between a higher current wage and low redundancy pay and a lower current wage with higher severance payment, as long as the present vale of the two payment streams is the same.[6]

2.1 Wage determination in manufacturing

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:

$$U(\omega, N) = (\omega - v)N,$$
(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.[7]

We assume that aggregate labour demand in the manufacturing sector is:

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

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[5] In period 1 the firm pays w with probability $(1-\rho)$ and otherwise 0. In succeeding periods it pays w with probability $(1-\rho)$ and σw with probability ρ, given that it survived the previous periods. The expected present value of this stream of wage payments is $[(1-\rho)(1+\delta\rho\sigma)w]/[1-\delta(1-\rho)]$, which is the same as the present value of an annual labour cost of $(1+\delta\rho\sigma)w$ given that the firm survives the first period.

[6] Effectively, the severance pay is the payout on an insurance policy, where the premium takes the form of the reduction in the current wage received by the worker compared to the level the worker would be paid in the absence of redundancy payments.

[7] 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

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

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

(4)

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

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

(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). The MNE produces a unique product that has no close substitutes and hence there is no product-market competition between the MNE and domestic firms.[8] Wherever it produces, the firm will face the same demand schedule for its manufactured good. The inverse demand curve is:

$$p = a - bx,$$

(6)

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function.

[8] This assumption allows us to focus on the effects of risk and international differences in redundancy payments on FDI. If the MNE were to produce an identical product or a close substitute to goods manufactured by domestic firms, the MNE's location choice would also be influenced by the proximity of its competitors. This specific issue is analysed by Bjorvatn and Eckel (2006). See also Leahy and Montagna (2000) for an analysis of the product market, unions, and FDI.

where x is the output level of the branch plant of the MNE, p is the price, and a and b are constants. For notational convenience, we assume that the intercepts of both the aggregate labour-demand curve (3) and the demand curve facing the MNE (6) are the same.[9]

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 $L = x$.

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.[10] 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. Given that the probability of still being in business in period t is $(1 - \rho)^t$, the expected present value of profits is:

$$\sum_{t=1}^{\infty} \delta^{t-1} (1-\rho)^t (px - wx - F).$$

In period t the firm has to pay closure cost with probability ρ given that it has survived the previous $t - 1$ periods. Hence, the expected present value of the costs of closure is:

$$\sum_{t=2}^{\infty} \delta^{t-1} (1-\rho)^{t-1} \rho \sigma wx.$$

Define Ω to be the net present value of production, equal to the present value of operating profits less costs of closure. Thus

$$\Omega = \frac{(1-\rho)(px - \omega x - F)}{1 - \delta(1-\rho)}.$$

Profit maximization, taking into account consumer demand, (6), yields an equilibrium output of $x = (a - \omega)/2b$ and a net expected present value of:

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

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

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

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

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

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

In order to attract the MNE's investment, the government of the host country offers a lump-sum subsidy, S. This is given to firms that operate for at least the first period.[11] 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 will take into account both it profits and the value of any subsidy that it is being offered. We define R to be the overall return to the MNE of establishing its branch plant: the sum of the expected present value of its operating profits, Ω, and the net benefit of the subsidy.

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

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[11] Haaland *et al.* (2003) 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.

2.3 FDI and the host country

The benefit of MNE employment to the host country is 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:

$$\Gamma = \frac{(1-\rho)(\omega-v)L}{\left[1-\delta(1-\rho)\right]}. \tag{12}$$

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

$$B = (1-\rho)\left\{\frac{(a-v)^2}{8b\left[1-\delta(1-\rho)\right]} - S\right\}. \tag{13}$$

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, such that MNE will choose to locate elsewhere if the return is less than R.[12] 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:

$$S^R = \frac{R}{1-\rho} - \frac{(a-v)^2 - 16bF}{16b\left[1-\delta(1-\rho)\right]}. \tag{14}$$

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. 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. Rewriting (13) yields:

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[12] 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.

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

We define $X \equiv S^B - S^R$ to be the excess subsidy. Subtracting (14) from (15) yields:

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

∗∗∗ INSERT FIGURE 1 ABOUT 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.[13] We show the three lines 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 the manufacturing wage is the same as the opportunity cost of labour ($v = 15$ in the diagram), the host gets no benefit from the presence of the MNE, as $S^B = 0$. The MNE, however, still requires a subsidy to attract it (that is, $S^R > 0$) and hence $X < 0$.

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[13] We used the following parameter values in illustrating our results (except where otherwise indicated): $a = 15$, $b = 1.25$, $F = 10$, $v = 1$, $\rho = 0.05$, and $\delta = 0.9$. We also set $B = 0$ and $R = 0$.

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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 labour 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 σw plays no part.[14] Consequently, 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.[15] 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:

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

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:

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

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

[15] 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.

For the sake of the argument, consider an MNE investment that is more risky than the rest of the manufacturing sector; hence $Q > 1$. [16] 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 to the host nation. We now consider how the behaviour of the agents will change in these altered circumstances, starting with the MNE.

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 (14), 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.[17]

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[16] Whether foreign firms are instinsically more risky that native firms is a matter for empirical investigation. It is plausible that plants of foreign companies might have a higher risk of closure than domestic plants of native firms. For example, in the face of a downward swing in demand, firms may be more inclined to close their overseas plants than those in their home country (for political or other reasons). It may also be the case that new plants established by MNEs manufacture new products that are subject to more rapid technological developments than the goods produced by established, native firms and consequently the expected lifespan of a typical MNE's plant might be shorter than that of a local firm.

[17] Strictly 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.

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. The knowledge that the MNE's plant is more likely to fail than that of a domestic firm will change the 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:

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

Substituting (4), (19), and (21) into (12) yields the true present value of the investment to the host government:

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

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

$$X_M = S_M^B - S_M^R.$$ (24)

This is illustrated in Figure 2, where representative X_M schedules are negatively sloped, reflecting the decline in the excess subsidy as the MNE risk increases relative to the level of domestic risk.[18]

From (23) and (20), we can determine that redundancy payments will affect the excess subsidy whenever there is a disparity between the riskiness of domestic firms and that of the MNE.

$$
\begin{aligned}
\frac{dX_M}{d\sigma} &> 0 \quad \text{for} \quad \rho_M < \rho; \\
\frac{dX_M}{d\sigma} &= 0 \quad \text{for} \quad \rho_M = \rho; \\
\frac{dX_M}{d\sigma} &< 0 \quad \text{for} \quad \rho_M > \rho.
\end{aligned}
\tag{25}
$$

This is shown in Figure 2 as a rotation of the excess subsidy schedule. Suppose that domestic risk is $\rho = 0.05$. X_B is the excess subsidy associated with a higher σ than our baseline case shown as X_M. The two lines coincide at point **b** when $\rho_M = \rho$. X_B is less than X_M whenever $\rho_M > \rho$, that is when the likelihood of the MNE going bust exceeds that of domestic industry.

Similarly, we can establish that for a broad range of values of ρ_M,

$$
\frac{dX_M}{dv} < 0.
\tag{26}
$$

Raising the outside option for workers in the manufacturing sector makes their employment there less beneficial under any circumstances. In Figure 2, X_A is the schedule of excess subsidies offered for a higher value of v than in the baseline case. Consequently, X_A is shifted down from X_M.

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[18] The riskiness of domestic manufacturing enterprises is assumed to remain at $\rho = 0.05$. In the baseline case, represented by X_M, $\sigma = 1$ and $v = 1$. For country A, $\sigma = 1$ and $v = 3$ while for country B, $\sigma = 4$ and $v = 1$.

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. First, the countries determine the subsidies they will offer. Secondly, the MNEs choose the optimal location for their plants. 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 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:

$$X_i \geq 0,$$
$$X_i \geq X_j \; \forall \; j. \tag{27}$$

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.[19]

Several interesting questions arise in this multi-country framework. Initially, we shall focus on how different country characteristics attract different types of MNEs. We shall then discuss the importance of the wage-setting institutions for the outcome of the policy game between countries competing for FDI.

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[19] 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.

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 in its attempt to attract the foreign firms. This yields our first result.

Result 1 *When the labour markets are identical in competing nations, the country that wins the competition for the branch plant ends up no better off than the losing countries.*

This reflects the familiar "race to the bottom" outcome of tax competition whereby the firm is able to extract all of the surplus from the investment.

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. A high opportunity cost indicates close-to-full employment, while a lower v shows that the extra employment that the MNE would provide is of greater 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.

In our analysis of policy competition between countries with different labour-market characteristics, we shall consider cases that illuminate the central features. We can illustrate

our results through considering two countries, A and B, that differ from one another in a number of specific ways. Suppose initially that the domestic industries in both countries share the same level of risk, ρ, but that this may differ from the risk of the MNE, ρ_M. Differences between the countries arise in their labour market characteristics. Country A has a combination of a low σ (which is assumed in all cases to be greater than zero) and high v while country B has a high σ and a low v. We can use Figure 2 to show the outcome of the policy competition between these nations.

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 adjustments in the endogenous wage rate. 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.

Result 2   *If the MNE's level of risk is the same as the domestic risk in all potential host nations, differences in redundancy payments are irrelevant and the nation with the lowest opportunity cost of labour will succeed in attracting the investment.*

When $\rho \neq \rho_M$, the effects of labour market flexibility must also be taken into account, using (25). If 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 a 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.

Result 3   *When the MNE's plant is a more risky investment than domestic manufacturing, a country with a more flexible labour market (low σ) 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 the same opportunity cost of labour as in our baseline case X_M but has higher firing costs reflected in the more steeply sloping locus X_B. This difference is irrelevant where $\rho = \rho_M$, but puts B at a disadvantage whenever $\rho < \rho_M$ and helps it in the reverse situation. Thus if both countries have the same opportunity cost for labour, the country with the more flexible labour market will win the competition for FDI whenever the MNE is more risky than local firms.

Perhaps more interestingly, we can consider the circumstances where countries differ in two dimensions of the labour market environment and determine when the ranking between the competing nations might change. We have established that having a higher opportunity cost of labour always disadvantages a potential host country but that high redundancy payments are only a problem for competitiveness in attracting FDI when the MNE is more risky than the national level. Thus when ρ_M is only slightly greater than ρ, a differences in v will be critical in determining who wins the FDI competition. If the risk differential is larger, the disadvantage to the country with inflexible labour markets becomes more profound such that national differences in σ become the decisive factor. Above a critical value of MNE risk, ρ^*, the excess subsidy offered by a country with low σ and high v exceeds that of a high σ and low v country.

Result 4 *For high-risk MNEs, a country with a flexible labour market (low redundancy pay) can win the FDI despite having a higher opportunity cost of labour than its rivals.*

This is illustrated in Figure 2, where country A has relatively low σ and high v, while country B is characterised by relatively high σ and low v. For MNEs in industries with $\rho_M < \rho^*$, country B will win, while country A offers the better deal for higher risk industries.

In the analysis so far we have assumed that the countries share the same domestic risk, ρ. Now consider how differences in domestic risk affect the choice of location for the MNEs. 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. Given our earlier analysis, we can establish the following result.

Result 5 *If countries differ with regard to labour market flexibility and domestic risk, low-risk countries may attract high-risk MNEs and high-risk countries may attract low-risk MNEs. An MNE may choose to locate in a country with inflexible labour market, even if the riskiness of the firm is higher than the domestic risk level in that country.*

∗∗∗ INSERT FIGURE 3 ABOUT HERE ∗∗∗

Figure 3 illustrates this result. The opportunity cost of employment is the same in two countries, while they differ in terms of redundancy rates and average risk.[20] Country A has lower industrial risk and a more flexible labour market (lower σ) than country B. The

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[20] In the numerical simulations illustrated in Figure 3, Country A has $\sigma = 1$ and $\rho = 0.05$, while country B has

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diagram is constructed by moving country B's excess subsidy schedule to the right, reflecting $\rho_B > \rho_A$. As X_B is steeper than X_A, due to the differences in their redundancy payments, the schedules will intersect at a critical level of MNE risk ρ' $(\rho' > \rho_B > \rho_A)$. An MNE with riskiness greater than ρ', would find country A more hospitable due to its more flexible labour market. Less risky MNEs would prefer to locate in country B whose disadvantage in having the less flexible labour market is more than offset by its lower wage rate.

5. WAGE-SETTING INSTITUTIONS

We have so far assumed 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 now introduce the possibility of firm-level bargaining. 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).

Suppose all competing countries have firm-level wage setting for the MNE but that 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). The remaining influence on the cost and level of

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$\sigma = 4$ and $\rho = 0.10$. Both countries have $v = 1$.

production is *v*, the opportunity cost of workers. Countries with tight labour markets (high *v*) will have to pay their manufacturing workers relatively more. These elements combine to yield the following result.

Result 6 *With firm-level wage determination, relative labour-market flexibility is not a determinant of the location of FDI. Instead, the competition to attract FDI will be won by the location where workers are cheapest (that is, have the lowest opportunity cost).*

Suppose that 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. Consequently, for $\rho_M > \rho$, any required redundancy pay will make workers in country B more expensive than their counterparts a country A.

Result 7 *For countries with the same opportunity cost of labour, if the level of MNE risk exceeds the risk level of domestic industry in a country with national wage setting, it will lose the competition for FDI to a nation with firm-level wage bargaining, 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 from 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. It may well 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 into account constraints on exit, as well as entry conditions, 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 on their production decision. 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.

Differences in redundancy rates may, however, matter for a foreign firm's location decision. 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. We have seen that low redundancy rates dominate the investment decision for high-risk FDI, 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—perhaps 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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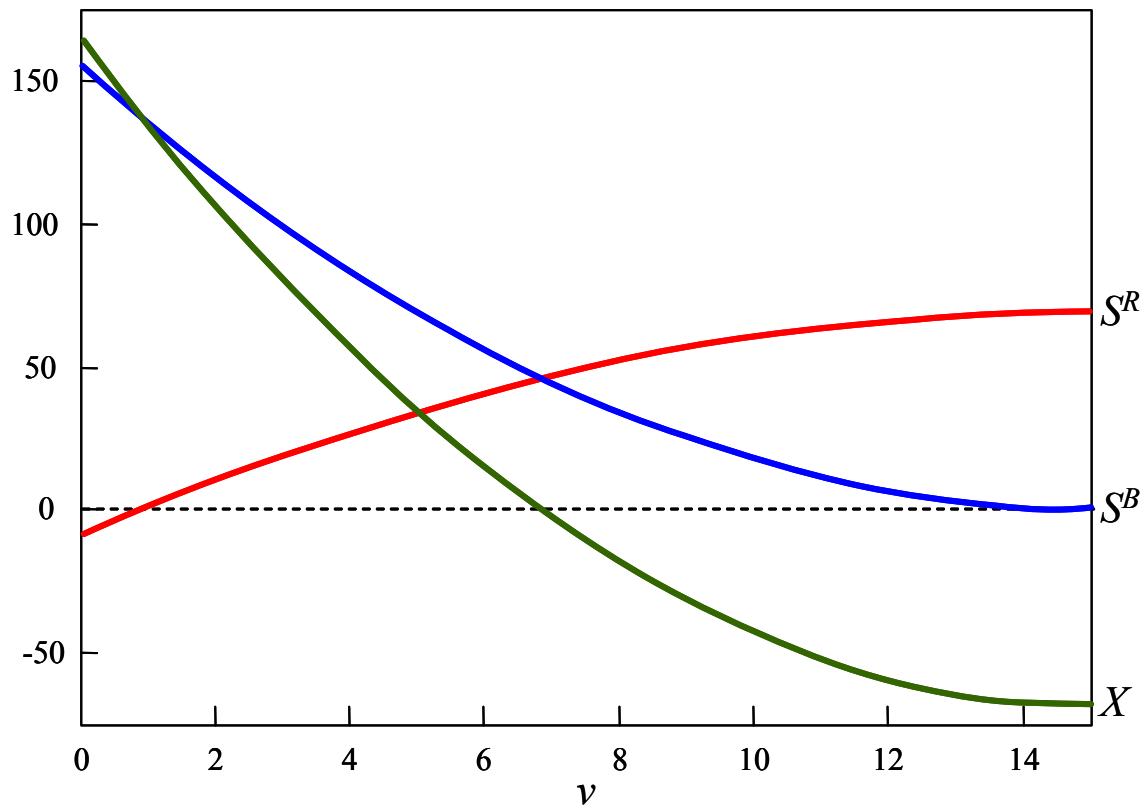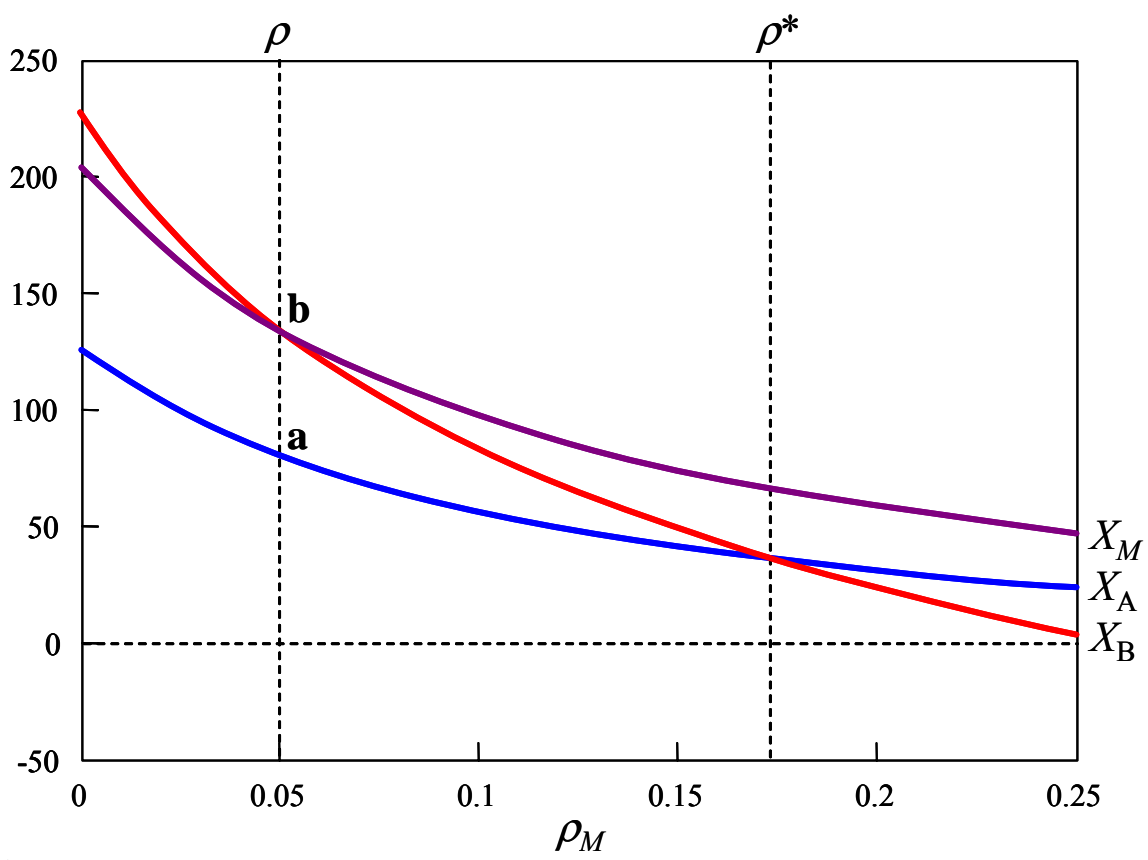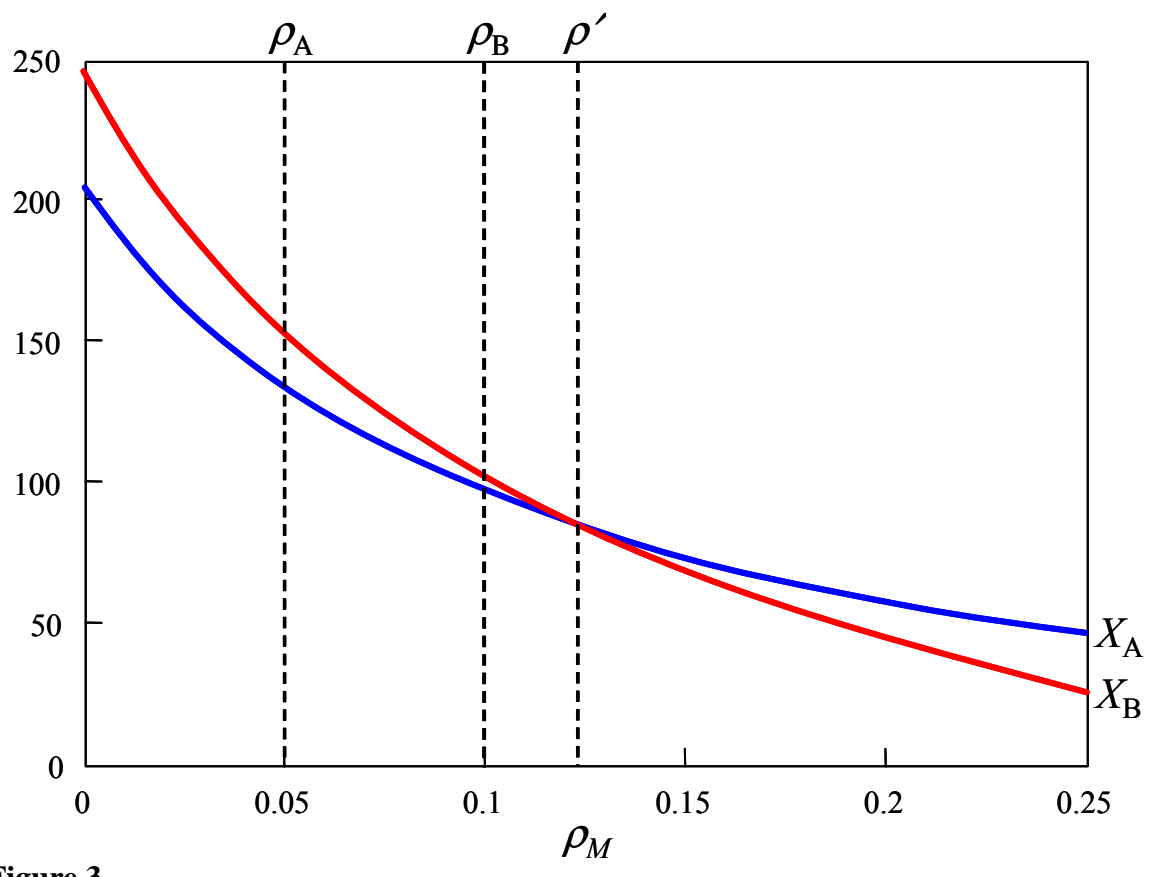
Figure 1

Figure 2

Figure 3