Race-to-the-Bottom or -Top at Home or Abroad: Health and Safety Standards and the Multinational Firm

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Abstract: We develop a model to illustrate potential complexities in the relationship between corporate geographical diversification and the health and safety (H&S) standards set in national jurisdictions. A firm, that initially has a plant in its home country, may choose to also have one or two foreign plants in order to improve its bargaining position versus local governments, and so ensure reduced H&S standards, i.e. a race-to-the-bottom. However, contrary to the main focus of the popular debate on this topic, we note the potential for the race-to-the-bottom tendency to be exerted on H&S standards in the multinational company's home rather than host country, and also for an upward push on H&S to instead result.

I INTRODUCTION

In this paper, we present a model of the interaction between public policy and the location decisions of a multinational company (MNC), which highlights international interdependence in the setting of health and safety (H&S) standards by country-specific regulatory authorities. Our model extends the framework employed by Leahy and Pavelin (2004) by modelling the welfare-maximising behaviour of policymakers as well as the profit-maximising behaviour of corporate decision-makers and income-maximising behaviour of local labour unions. Given the number of actors involved, their diversity in both objectives and strategic instruments, and the sophistication of the interactions between them, there is considerable complexity in the relationship between corporate geographical diversification and the setting of H&S standards in national jurisdictions. Consistent with this, our model

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illustrates not only the potential for an MNC to engender a race-to-the-bottom in H&S standards in low-wage host countries, but also that there may be: no effect of the firm's location strategy on H&S standards; a race-to-the-bottom in only the H&S standards set in the MNC's home country; or even an upwards push on H&S, whereby policymakers have an incentive to exceed reservation levels only if the firm is multinational.

The globalisation of markets and industries has promoted a widespread emergence of, and a concentration of economic power within, large MNCs. There is a perception that, for such companies, economic power brings an influence on political decision making (Cole *et al.*, 2006; Singh and Zammit, 2004; Loewendahl, 2001). Within the academic literature, attention has focused upon the effect of the international mobility of these companies' activities on public policy in actual or potential host countries (see Cowling and Sugden (1987) for a relatively early discussion). Given their potentially highly significant economic value, local policymakers may be guided by an imperative to attract these activities to, or retain them within, their jurisdiction.

In this connection, the potential for multinational companies to passively or actively affect the regulation of workplace health and safety has been discussed (*Financial Times*, 2006, 2005; *New York Times*, 2005; Harrison and Scorse 2006; Arnold and Hartman, 2005; Singh and Zammit, 2004; Arnold and Bowie, 2003; Buzun, 1998). A number of high-profile multinationals have been publicly criticised for the level of health and safety standards observed in their foreign operations, and particularly those in the developing world, e.g. Nike in Indonesia and elsewhere, Gap in Cambodia, Apple in China, and many more (see, for example, Oxfam (2006) for a recent review). In addition to the apparent human suffering, the outcry was driven by the prospect that, out of a desire to minimise costs, these firms had systematically selected such locations because of, and not despite, the nature of the working conditions found there. Moreover, it may be that the internationally-mobile economic power of multinationals has influenced the regulation of working conditions in host countries. That is, competition between policymakers in similar (potential or actual) host countries to attract the inward investment and local production of footloose MNCs may promote a race-to-the-bottom in H&S standards.[1]

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[1] Perhaps partly in recognition of such influences on public policy, there is a variety of best practice guidelines on the conduct of multinational companies. These voluntary initiatives seek to set benchmarks for corporate strategy and performance to which firms are encouraged to adhere. For example, the OECD *Guidelines for Multinational Enterprises* include a section on 'Employment and Industrial Relations', which urges MNCs to take, "… adequate steps to ensure occupational health and safety in their operations," and to contribute to both, "… the effective abolition of child labour," and, "… the elimination of all forms of forced or compulsory (*contd.*)

That multinational companies can, by their nature, induce competition in public policy instruments between potential host countries or regions has received attention in the theoretical literature. Among the most notable contributions are analyses of international competition in rates and treatment of corporation tax (Janeba, 1995, 1996, 2000; Wilson, 1999; Hines, 1999; Bond and Samuelson, 1989). In these cases, it is the potential flight of MNCs in response to inter-jurisdictional tax differentials that encourages authorities to bid down tax rates in an attempt to undercut rival locations. In standard tax competition models, such tax-setting behaviour typically results in a race-to-the-bottom result, where tax rates are driven down to minimal levels. The presence of international policy interdependence, together with a lack of international cooperation between jurisdictions, results in competition to the detriment of host country welfare (through the deleterious impact on revenues and perhaps, therefore, also a reduced provision of public goods and services) and the betterment of the relevant MNC(s).

If, by being multinational, a firm improves its bargaining position versus some external, nation-specific actors, such as policymakers or labour unions, this effect augments the incentive to undertake foreign direct investment (FDI). Within this view, a firm's FDI choices regarding numerous potential hosts should be regarded as together determining an overall *locational strategy*, and a firm's motives for FDI may derive from a desire to optimally set its overall geographical diversification (Sung and Lapan, 2000; Huizinga, 1990; de Meza and Van der Ploeg, 1987).[2] Leahy and Pavelin (2004) illustrate motives for FDI that derive from a relationship between the degree to which a firm is geographically diversified and the wage demands to which it is subject. In their model, "… a firm may choose to have foreign production in order to

[1] (*contd.*) labour" (OECD, 2000, p.21). Similarly, four of the ten principles forwarded by the UN Global Compact relate to labour, and pertain to: the rights of workers to associate and collectively bargain (Principle 3); a prohibition on forced and child labour (Principles 4 and 5); and non-discriminatory employment practices (Principle 6).

Owing to the rather general and/or minimal character of these voluntary guidelines, they do not explicitly advise against the type of depressive effect on health and safety standards outlined above. Indeed, host country policymakers may view these guidelines as acting contrary to their need to attract the FDI that they hope would promote much-needed economic growth. There has been a documented tendency among the governments of developing countries to oppose the inclusion in trade agreements of criteria regarding labour rights and working conditions, taking the view that, for such countries, low regulatory standards are a significant ingredient in their attractiveness as a location for MNCs (Singh and Zammit, 2004; Tonelson, 2002).

[2] This is in contrast to much of the extant literature on the motives for FDI, which focuses upon three reasons for locating in a particular country: (i) to lower the costs of supplying a market; (ii) to gain improved access to a foreign market; (iii) to gain some strategic advantage over rival firms (Leahy and Pavelin, 2008; Horstmann and Markusen, 1992, 1987; Motta, 1992; Smith, 1987; see Caves,1996 for an excellent review).

improve its bargaining position versus local labour unions, and so secure lower wages than if they remained domestic. Furthermore, choosing to have a plant in more than one foreign country may lower wages further" (Leahy and Pavelin, 2004, p. 364).

This paper contributes to the extant literature by providing a novel and rigorous account of the under-researched tensions in the relationships between the behaviours of the firm, workers and government and the effective constraints on H&S policymaking that result. The popular debate on the potentially depressing influence of MNCs on health and safety standards can be usefully informed by formal game theoretic analysis of the complex interactions between the diverse interested parties that are the context for this highly controversial, and potentially greatly damaging, consequence of globalisation. Our model demonstrates that the complexity of the interactions results in a wide range of substantively diverse potential effects of corporate geographical diversification on H&S standards. The extant debate on this topic, which includes both media coverage and notable attention in academic literatures, has failed to shed light on such complexities. By addressing this lacuna, the analysis presented below makes a distinctive and informative contribution.

The remainder of the paper is organised as follows: the next section describes the model; Section III presents results; there is a discussion of the potential for a race-to-the-bottom in H&S standards in Section IV, before a final section offers concluding remarks.

II THE MODEL

There is one firm, a monopolist in the production of a single good. There are three countries: A, B and C. Each country is a potential production location for the firm, but only A hosts a market for the good. The market in A is such that the inverse demand function is:

$$P = \alpha - \beta q \tag{1}$$

where q is the firm's output. Initially, the firm has a plant in A, and must subsequently choose whether or not to set up foreign plants in either B or C, or both.[3] There is a fixed cost of setting up a plant, G. Once plant-specific costs

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[3] As each plant offers infinite capacity at a constant marginal cost and there is only one union in each country, the firm will wish to have at most one plant in any country. We assume infinite plant capacities only to simplify the model. The assumption of only a single union in each location is, perhaps, rather more realistic and also implies that in this model a country can be interpreted as a region defined as the geographical influence of a union.

are sunk, technology is such that the production of each unit requires one unit of labour. Country-specific health and safety (H&S) standards impose a cost per unit, s_i (i = A,B,C).[4] Thus, there is a constant marginal production cost equal to s_i plus the wage rate, w_i. Any goods produced overseas must be transported back to A to be brought to market. There is a constant per-unit transport cost of t.

Plant-specific labour unions set wages in order to maximise the total income to their members in excess of reservation wage-level (every worker employed in the firm is assumed to be a member of their local labour union). Thus, wages are set at the plant-level by a different monopoly union at each plant. So, one assumption here is that there is no international cooperation between unions.[5] The reservation wage (the minimum wage for which labour can be hired) differs between countries: ω_A in A, ω_B in B, and ω_C in C. We assume that the foreign countries offer lower reservation wages than does A, i.e. $\omega_A > \omega_B$, ω_C. Therefore, the union in country i seeks to maximise $(w_i - \omega_i)q_i$, where q_i is the number of both units produced and workers employed by the firm in the union's location.

Health and safety standards are set in each country by the national government in order to maximise national welfare, given in each country by:

$$U_A = \Phi + \Pi + (w_A - \omega_A)q_A + \gamma(s_A - \sigma_A)q_A \tag{2}$$

$$U_B = (w_B - \omega_B)q_B + \gamma(s_B - \sigma_B)q_B + F_B \tag{3}$$

$$U_C = (w_C - \omega_C)q_C + \gamma(s_C - \sigma_C)q_C + F_C \tag{4}$$

where: Φ is the consumer surplus that accrues to consumers in A; Π is the profit of the firm (which we assume is repatriated to A if the firm operates

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[4] While one might alternatively model H&S standards as imposing a fixed cost upon firms, we choose to model it as a variable cost in order to reflect the relative strength of its impact upon working practices (e.g. length of working hours, intensity of work routines, training requirements per employee, and so on) rather than upon plant and capital costs. The latter types of cost implications, which would be expected to largely impact fixed costs, provide an alternative mechanism for H&S standards to potentially influence FDI.

[5] Various legal, cultural and linguistic reasons ensure that unionisation is more difficult across, rather than within, national boundaries. However, it is worth noting that our assumption that unions cannot cooperate internationally has a significant effect on a key mechanism that determines both wages and motives for FDI. Were international cooperation possible, unions would have an incentive to cooperate in the face of multinational operation by the firm in order to avoid the deleterious impacts on wages associated with intra-firm, international competition for employment. If one were to assume that the firm would, if all plants offered them the same cost of supplying the market, share production evenly between them, then international cooperation between unions would (if we rule out side payments between unions) ensure that such international cost parity exists.

overseas); q_i (i=A,B,C) is the output produced by the firm in each country; $F_{B(C)}$ equals F if the firm chooses to undertake FDI in B (C) and zero otherwise, which reflects the host-country income from the local sinking of the fixed cost of FDI[6]; and γ is a positive constant that reflect the importance of H&S standards in determining welfare. The reservation level of H&S (the minimum level at which labour can be hired) differs between countries: σ_A in A, σ_B in B, and σ_C in C. We wish reservation levels of H&S standards to reflect minimum safeguards regarding workplace health and safety that can be introduced without prohibitively negative reactions from voters in that country. These levels may be determined by the legal tradition and broader cultural factors that operate in each country. Thus, international variation in these reservation levels arises due to differences across A, B and C in legal and cultural drivers. We assume that the foreign countries offer lower reservation levels of H&S than does A, i.e. $\sigma_A > \sigma_B$, σ_C. In order to ensure that the market is viable, we will assume that $\omega_A + \sigma_A < \alpha$, and that $t < \omega_A + \sigma_A$ – the latter of which ensures that there are some positive values of $\omega_B + \sigma_B$ and $\omega_C + \sigma_C$ for which the variable cost of serving the market from abroad can be lower than through domestic production. We assume no international cooperation in the setting of H&S standards.

There is a four stage game as follows: in the first stage, national governments set the H&S standards that will prevail in each country for the remainder of the game; in the second stage, the firm decides whether to build a plant in B, C or both, and sinks any associated fixed costs; in the third stage, local unions set wages at each plant; in the fourth stage, the firm sets output at each plant. So, H&S standards are taken to be fixed when the firm decides whether to undertake FDI, and both H&S standards and foreign direct investment are taken to be fixed when unions set wages.[7] It also follows that H&S standards, FDI and wages are all taken to be fixed when the firm sets output. Through its FDI and quantity-setting strategies, the firm seeks to maximise its profits (where: c_i is the variable cost of serving the market from

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[6] This reflects an assumption that the cost of building the plant is income to host-country suppliers of plant-related goods and services. The value of this expenditure to host-country welfare accrues in the revenues and profits of indigenous companies, the local tax income from such profits and multiplier effects as the income reverberates around the host-country economy. This value need not be equal to G and so in (3) and (4), we refer to F rather than G.

[7] Alternatively, one might assume that wages are set prior to the FDI decision. However, we believe that, in order to illustrate the intuitively-appealing potential for wage-setting to be influenced by corporate location strategy, it makes most sense for wages to be set in the context of prior FDI decisions. Ordering the game in this manner broadly reflects the tendency for local pay deals to be made, and periodically remade, across the working life of a foreign plant.

output produced in country i (i.e. $c_A = w_A + s_A$ if i = A and $c_i = w_i + s_i + t$ if i = B, C); and I_B and I_C are indicator variables, each of which equals one if the firm undertakes FDI in the associated foreign country, and zero otherwise):

$$\Pi = (P - c_A)q_A + (P - c_B)q_B + (P - c_C)q_C - I_B G - I_C G \qquad (5)$$

It is worth making three further points before presenting results. These concern the scope of the model. First, the foreign production permitted is purely vertical in nature: the firm's foreign production is used only to serve the domestic market. Thus, it is of the sort that replaces high cost domestic production with low cost foreign production, without seeking to gain entry into the foreign market, i.e. that typically associated with north-south or west-east FDI. In the context of EU firms, prime examples would be their FDI into China and Eastern Europe. Second, as H&S standards apply to all businesses, one might regard them a blunt instrument with which to attract FDI if, as is common, policymakers seek to target a particular industrial sector. In this connection, one should note that while H&S standards apply across the board, the associated regulatory burden varies greatly across industries (Bartel and Thomas, 1985) – in industries with little endemic risk to workers' well-being (e.g. retailing and financial services), the cost burden is relatively small; in those where working conditions imply threats of injury and illness (e.g. chemicals and mining), the costs of production will be more sensitive to variation in H&S standards. Therefore, setting such regulatory hurdles at relatively low levels may be an influential ingredient in an FDI policy aimed at sectors of the latter type. Furthermore, a policymaker may focus upon lowering demands in some subset of H&S standards that is most relevant for the prioritised industry (e.g. lessen the regulation of occupational exposure to hazardous chemicals if targeting the chemicals sector). Third, despite the simple and abstract nature of this model, it is general in one respect – the use of a three country world is not as restrictive as it may seem. Given the other features of the model, only two foreign countries would ever be important for the analysis – these being the two countries with the lowest combined reservation levels of wages and H&S standards, i.e. $\omega_i + \sigma_i$. Thus, the model represents a case where there are at least two foreign countries that offer a value of $\omega_i + \sigma_i$ that is lower than the home country. There may be more than two, but B and C are the two that offer the lowest.

In solving the game, we adopt the sub-game perfect equilibrium concept and proceed by solving the game backwards, beginning with the fourth stage decision, that regarding outputs.

III STAGE 4: THE FIRM'S PRODUCTION LOCATION AND OUTPUT CHOICE

The equilibrium output level is dependent upon H&S standards, wages and the firm's FDI strategy, all of which are given when output is set. Irrespective of the number of plants it has, the firm will chose to produce in only one location. This is because each plant it has is capable of serving the entire market at constant returns to scale. Thus, even if the firm has more than one plant, one of the plants will offer the low cost method of serving the market. All production will take place at this plant and the others will lie dormant. Output will be set at the monopoly level given the marginal costs of production and transportation associated with the working plant.

It would be somewhat unrealistic to assert that a dormant plant, or dormant plants, characterise FDI. It reflects the simple and abstract nature of the model we present. It would be more realistic to have a multi-plant firm produce in all plants and shift production only partially to favour lower cost plants. Indeed, a model made more sophisticated by the suitable introduction of geographically differentiated products, or plant-level decreasing returns to scale, would give more realistic outcomes of this type.[8] However, such sophistication would leave the central point of the paper, to illustrate the influence of geographical diversification on the setting of H&S standards and the associated motive for FDI, unchanged.

Let us again refer to the variable cost of serving the market, which will depend upon the level at which wages and H&S standards are set and also include t if the good is produced abroad, as c_i (i.e. $c_A = w_A + s_A$ if i = A and $c_i = w_i + s_i + t$ if i = B, C). If we do so, then the equilibrium price, P, output, q, firm's profits, Π, and consumer surplus, Φ, will be given by:

$$P = \frac{(\alpha + c_i)}{2} \qquad (6) \qquad q = \frac{(\alpha - c_i)}{2\beta} \qquad (7)$$

$$\Pi = \frac{(\alpha - c_i)^2}{4\beta} \qquad (8) \qquad \Phi = \frac{(\alpha - c_i)^2}{8\beta} \qquad (9)$$

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[8] For example, were marginal cost sufficiently steeply increasing in plant-level output, there would be an overriding imperative for a multi-plant firm to split total output across more than one plant. They would optimally do so by allocating a relatively large output to any plant that offers a relatively low cost of serving the market, *ceteris paribus*. This tendency would ensure that the key features of our model would be preserved: decision-makers at each location would have an incentive to compete to offer the lowest cost environment (unless doing so would drive wages and/or H&S standards prohibitively low); and the firm may have an incentive to undertake FDI in order to promote such competition between alternative sites.

IV STAGE 3: UNIONS' WAGE SETTING

The wage set by the union at each plant is determined by the reservation wages and H&S standards in the countries where the firm has a plant, and the pattern of FDI, all of which are given when wages are set. To effectively maximise total local wages in excess of the reservation level, unions must also take into account the effects of wage levels on subsequent output-setting. If the firm remains uninational, the monopoly union sets the wage[9] as follows:

$$w_A = \frac{\alpha + \omega_A - s_A}{2} \tag{10}$$

where w_A is the wage set by the union in A.[10] If instead the firm has a foreign plant in B, C or both, the unions compete to ensure that the firm produces at their plant. They set wages at the highest level that will nonetheless attract production – i.e., ensures that the operating profits from local production $((P - c_i)q_i)$ is marginally larger than those the firm would earn from production at (the most profitable) rival location $((P - c_j)q_j + \varepsilon)$ – subject to the restriction that wages be no lower than the reservation wage. The attractiveness of a foreign plant is handicapped by the costs of shipping the goods back home. So to be successful, a foreign union must set a wage to ensure that the variable cost of production is no more than that offered in A less t. Similarly, for the union at home to be successful it must, in setting the wage, ensure that the variable cost of production in A does not exceed the sum of t and the lowest variable production costs available abroad. The reaction functions for each union are as follows (where ε is the small amount by which the successful plant undercuts its nearest rival):

One foreign plant (in i = B,C)
$$w_A = \max (\omega_A, w_i - (s_A - s_i) + t - \varepsilon) \tag{11}$$
$$w_i = \max (\omega_i, w_A + (s_A - s_i) - t - \varepsilon) \tag{12}$$

Two foreign plants
$$w_A = \max (\omega_A, \min (w_B - (s_A - s_B) + t - \varepsilon, w_C - (s_A - s_C) + t - \varepsilon)) \tag{13}$$
$$w_B = \max (\omega_B, \min (w_A + (s_A - s_B) - t - \varepsilon, w_C - (s_B - s_C) - \varepsilon)) \tag{14}$$
$$w_C = \max (\omega_C, \min (w_A + (s_A - s_C) - t - \varepsilon, w_B + (s_B - s_C) - \varepsilon)) \tag{15}$$

[9] Here, the monopoly union unilaterally sets the wage so as to maximise labour rents in excess of the reservation level subject to the firm's labour demand curve, $q_A = (\alpha - w_A - s_A)/2\beta$. In this connection, it is worth noting that the alternative adoption of Nash bargaining would not qualitatively alter the results (Leahy and Pavelin, 2004).

[10] Combining (10) into (7) yields the firm's output in the single-plant, monopoly wage case: $q = (\alpha - \omega_A - s_A)/4\beta$.

Figures 1 and 2: *Illustrative Examples of Wage Reaction Functions and the Determination of Wages in Equilibrium*
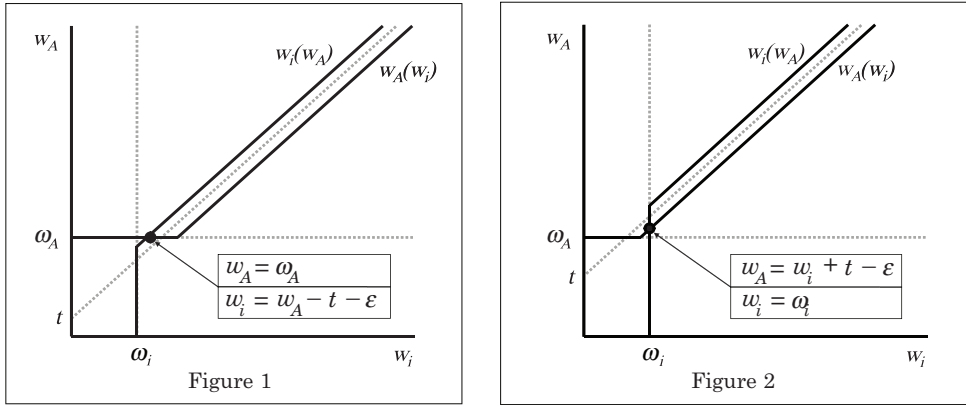
Figure 1

Figure 2

This undercutting behaviour in wage-setting is illustrated in Figures 1 and 2 (in which we temporarily adopt the simplifying assumption that $s_A = s_B = s_C$). These figures illustrate wage-setting reaction functions for the home union and one foreign union (in i = B or C) given that the firm has one foreign plant (also in i). To simplify, we assume for both figures that H&S standards are the same in both countries (i.e. $s_A = s_i$) and we illustrate wage ranges below the monopoly wage (of the kind shown in (10)). The figures illustrate two cases drawn for two different levels of transport cost, t, and in each case the Nash equilibrium in wages is indicated by an arrow (and boxed expressions). Figure 1 shows a case that yields successful undercutting by the foreign union given a relatively small t; in Figure 2, a higher level of t yields successful undercutting by the home union. These figures do not offer an exhaustive description of wage-setting in the model. Rather, they are intended to offer some graphical illustration of the wage-setting behaviour described in (11)-(15). In equilibrium, the unions will set wages as follows:

One foreign plant (in i = B,C)

$$w_A = \max (\omega_A, \, \omega_i - (s_A - s_i) + t - \varepsilon) \tag{16}$$

$$w_i = \max (\omega_i, \, \omega_A + (s_A - s_i) - t - \varepsilon) \tag{17}$$

Two foreign plants

$$w_A = \max (\omega_A, \, \min (\omega_B - (s_A - s_B) + t - \varepsilon, \, \omega_C - (s_A - s_C) + t - \varepsilon)) \tag{18}$$

$$w_B = \max (\omega_B, \, \min (\omega_A + (s_A - s_B) - t - \varepsilon, \, \omega_C - (s_B - s_C) - \varepsilon)) \tag{19}$$

$$w_C = \max (\omega_C, \, \min (\omega_A + (s_A - s_C) - t - \varepsilon, \, \omega_B + (s_B - s_C) - \varepsilon)) \tag{20}$$

V STAGE 2: THE FIRM'S FDI DECISION

The firm sets FDI in the second stage given the H&S standards set in the first stage, and taking into account the effects of FDI on the subsequent decisions regarding wages and output. There are four possible configurations for the FDI outcome, with notation in brackets: no FDI (OO), FDI in B only (FO), FDI in C only (OF), FDI in B and C (FF). The location of production will be indicated by a subscript, e.g. OO_A refers to domestic production by a uninational firm; OF_C is foreign production located in a plant in C; FF_B refers to a three-country firm that produces in B. In equilibrium, the firm will remain uninational if the profits from doing so (and hence facing a monopoly union) are larger than the profits from setting-up one or two plants abroad (in which case, unions would compete for production). The firm will set-up two foreign plants if the profits from doing so (and hence inducing competition between the foreign unions) are larger than the profits from either remaining uninational (and hence facing a monopoly union) or setting-up one plant abroad (in which case, one foreign union would compete with the home union). Below (in section 7.1), we present the range of equilibrium outcomes graphically in Figures 3, 4, 5 and 6. First, by way of introduction, consider three exhaustive cases: (i) $\omega_A + s_A$ is below $\omega_B + s_B + t$ and $\omega_C + s_C + t$; (ii) $\omega_A + s_A - t$ lies between the sums in the foreign countries of the reservation wage and the H&S standards variable cost; and (iii) in which $\omega_A + s_A$ is above $\omega_B + s_B + t$ and $\omega_C + s_C + t$. Without loss of generality, let us assume for the moment that $\omega_B + s_B < \omega_C + s_C$.

In case (i), production will take place in A even if there is FDI. This is because workers in A will, if faced with competition from abroad, offer the lowest marginal cost of serving the market: $\omega_B + s_B + t - \varepsilon$. Thus, the firm faces the following choice: remain domestic and so pay a monopoly wage; or set up a plant in B and so introduce the international competition between workers that drives down domestic wages. Note that there is no incentive to set up a second foreign plant. The three-plant firm would still produce in A, where wages would be set to undercut the lowest cost foreign plant. So, building a plant in the foreign country with the lowest potential variable cost of production succeeds in reducing the domestic wage to the lowest level available to the firm. Therefore, the relevant choice for the firm is between OO_A and FO_A, and depends upon the size of the cost of FDI, G.

In case (ii), as in case (i), there will be FDI in one country at most. If there is FDI into country B then production will take place there and the marginal cost of serving the domestic market will be $\omega_A + s_A - \varepsilon$, as $w_B = \omega_A + (s_A - s_B) - t - \varepsilon$. The firm faces a choice between OO_A and FO_B. Finally, in case (iii) the firm may choose to build two foreign plants. With plants in only A and B,

production takes place in B at wages determined, as in case (ii), by the reservation level in A and the H&S standards in both countries $(\omega_A + (s_A - s_B) - t - \varepsilon)$. However, with three plants, production takes place in B at a wage determined by the reservation wage in C and the H&S standards in B and C $(\omega_C - (s_B - s_C) - \varepsilon)$. The firm must choose between OO_A, FF_B and FO_B or OF_C. It is worth noting that if the firm opts for two plants it is indifferent between B and C as a destination for its FDI. The explanation for this somewhat surprising result is that regardless of which foreign location the firm chooses, production takes place at that location, with a variable production cost equal to $\omega_A + s_A - t - \varepsilon.$[11]

VI STAGE 1: GOVERNMENTS' SETTING HEALTH AND SAFETY STANDARDS

In the first stage, each national government must choose a health and safety standard, which implies the value of s_i that will prevail in each country. In doing so, each must take into account the reservation level (σ_i), the corresponding choices of the other governments, and the effect of these on the subsequent FDI and output choices of the firm and the wage-setting of the unions. Crucial to this is the effect of H&S standards on wage-setting behaviour, as reflected in (10), (11) to (15) and (16) to (20) above. Given OO_A, the wage set in A is decreasing in s_A – see (10) – as higher H&S standards drive up variable costs, which in turn drives down both output and the monopoly wage in equilibrium. In this case, an increase in s_A brings a less than proportional decrease in w_A (equal to half the change in s_A). Given one (two) foreign plant(s), then at the working plant, the wage set is decreasing in the local H&S standard and increasing in that set at the (lower cost) rival location – see (16) and (17) (see (18), (19) and (20)). In these cases, a change in H&S standards brings a proportional change in wages, as unions compete to offer the lowest variable cost of serving the market.

Let us consider the effect of s_i on national welfare U_i. For parameterisations that yield OO_A in equilibrium, s_A affects U_A directly (see (2)) and via its effects upon Π, Φ, q_A and w_A. As higher H&S standards act to

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[11] The foreign union with the lowest reservation wage would like, in order to secure inward investment, to offer a lower wage than the other foreign union. However, owing to the ordering of moves assumed in our model, they do not do so because no credible commitment to such an under-cutting wage can be made prior to the firm's location decision. The firm anticipates that, after FDI is sunk, the local foreign union has an incentive to offer the highest possible wage that undercuts domestic provision of the good. Thus, the firm is indifferent between investing in B and C (Leahy and Pavelin, 2004).

directly drive up the variable cost of serving the market, they imply lower levels of q_A, Π, Φ, and w_A (see (7), (8), (9) and (10), respectively). These effects act to drive down national welfare, whereas the direct effect is positive. The net impact on welfare worsens as s_A increases and imposing a H&S standard in excess of the reservation level improves national welfare only if the importance of H&S for welfare is sufficiently great, i.e. if γ is sufficiently large. Specifically, given OO_A, s_A will be set in excess of σ_A only if $\gamma > 7/4$.[12]

For parameterisations that yield more than one plant, the H&S standards at the working plant will be in excess of the reservation level only if $\gamma > 1$.[13] The change in critical value is due to the shift in wage-setting behaviour – from that of a monopoly union (under OO_A) to the under-cutting behaviour as unions compete for production within the firm (under FO_A, OF_A, FO_B, OF_C, FF_B and FF_C). As wages at what turns out to be the working plant adjust to undercut rivals, higher H&S standards do not drive up the variable cost of serving the market, and so there is no impact on q_i, Π, and Φ. The impact on welfare resides only in the redistribution of resources in the country where production takes place from wages to improved H&S, i.e. from w_i, to s_i. Such a redistribution is welfare improving, and so desirable for the government in that country, only if $\gamma > 1$.

As outlined above in our discussions of wage-setting, if the firm has multiple plants, these locations compete to offer the lowest variable cost of serving the market. Thus, in choosing H&S standards in stage 1, the governments must take into account the subsequent pattern of FDI that the firm will choose and the wage-setting behaviour at each plant. The imperative to attract the firm's production activities restricts the governments' demands regarding H&S, as may a wish to secure the highest possible wage for local workers. As discussed above, the latter effect dominates such that all H&S standards are set at the reservation levels if $\gamma \leq 1$. Also, if $1 < \gamma \leq 7/4$, the same effect dominates under OO_A but not if there is more than one plant. If $\gamma > 7/4$, the imperative for each government is to set the highest H&S standards that will subsequently secure local production by the firm. Let us consider three cases.

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[12] This critical value is derived from the expression for social welfare in A, U_A, as defined in (2). Specifically, $\gamma = 7/4$ equates to zero the partial derivative of U_A with respect to s_A. Of course, this partial derivative must (given the monopoly wage setting in OO_A) take into account the effect of s_A on w_A (as in (10)) and therefore (via an effect on c_A) also on Π (as in (8)) and Φ (as in (9)).

[13] This critical value is derived from the expressions for social welfare, U_A, U_B and U_C, as defined in (2), (3) and (4). Specifically, given that, when the firm has two or more plants, wages at the working plant are set to undercut rival location(s) – as in (16)-(19) – any increase in s_i would be matched by an equal fall in w_i. Therefore, $\gamma = 1$ equates to zero the partial derivative of U_i with respect to s_i (i=A,B,C). Given the offsetting relationship between s_i and w_i, the former affects neither Π nor Φ in equilibrium.

(i) Low importance of H&S for national welfare ($\gamma \leq 1$)

     As, for all i, marginal increases in s_i bring a deleterious impact on national welfare in country i, H&S standards will be set to the reservation level in all countries in all equilibrium outcomes.

(ii) Intermediate importance of H&S for national welfare ($1 < \gamma \leq 7/4$)

     In this case, if the outcome is OO_A even were the government in A to set s_A marginally in excess of σ_A, they will instead set $s_A = \sigma_A$ as marginal increases in s_A bring a deleterious impact on national welfare in that country. If there is FDI even if the government in A sets $s_A = \sigma_A$, each government will set H&S standards at the highest level (no lower than the reservation level) that will attract the firm's production to the country. Foreseeing subsequent FDI, the government in A will, unlike as in OO_A, choose $s_A > \sigma_A$ as long as it does not deter local production – they are willing to do so because higher H&S standards are offset by lower wages being demanded by the union in A (as discussed above – see (11)). The foreign governments are, if the firm sets up a local plant, similarly willing to set $s_i > \sigma_i$ as long as it does not deter local production. For parameterisations that will bring more than one plant in equilibrium, the governments will set H&S standards as follows (where ε is the small amount by which the successful plant subsequently undercuts its nearest rival):

     One foreign plant (in i = B,C)

$$s_A = \max\left(\sigma_A,\ \sigma_i - (\omega_A - \omega_i) + t - \varepsilon\right) \tag{21}$$

$$s_i = \max\left(\sigma_i,\ \sigma_A + (\omega_A - \omega_i) - t - \varepsilon\right) \tag{22}$$

     Two foreign plants

$$s_A = \max\left(\sigma_A,\ \min\left(\sigma_B - (\omega_A - \omega_B) + t - \varepsilon,\ \sigma_C - (\omega_A - \omega_C) + t - \varepsilon\right)\right) \tag{23}$$

$$s_B = \max\left(\sigma_B,\ \min\left(\sigma_A - (\omega_A - \omega_B) - t - \varepsilon,\ \sigma_C - (\omega_B - \omega_C) - \varepsilon\right)\right) \tag{24}$$

$$s_C = \max\left(\sigma_C,\ \min\left(\sigma_A + (\omega_A - \omega_C) - t - \varepsilon,\ \sigma_B + (\omega_B - \omega_C) - \varepsilon\right)\right) \tag{25}$$

(iii) High importance of H&S for national welfare ($\gamma > 7/4$)

     In this case, if foreseeing no FDI, the government in A will set H&S standards above the reservation level, σ_A. If so, under OO_A the government in A will set H&S standards such that:

$$s_A - \sigma_A = \frac{\gamma - \dfrac{7}{4}}{2\gamma - \dfrac{7}{4}}\left(\alpha - \omega_A - \sigma_A\right) \tag{26}$$

If foreseeing FDI into one or more of the foreign countries, the governments will set H&S standards in the manner described by (21), (22), (23), (24) and (25) above.

Before moving on, it is worth highlighting that the optimal H&S standards given above are independent of fixed FDI costs, G. The above expressions imply that the policymaker influences FDI decisions only by setting standards to reflect the imperative for their location to subsequently compete for the production of the firm in the fourth stage. Of course, were H&S standards set at some prohibitively high level, a location's potential attractiveness to the firm would be lost. By setting H&S standards in the manner described by (21)-(25), all such deleterious impacts on inward FDI are avoided (as long as the reservation level is not prohibitively high). However, one might think that, for some intermediate range of G, there is an incentive for a host policymaker to go further in promoting inward FDI. Specifically, might they seek to compensate the firm for the fixed FDI costs by pre-emptively lowering H&S standards below the levels given above? Perhaps, through such quasi-subsidisation of FDI, the policymaker might secure both FDI and local production within its jurisdiction. If so, optimal s would be dependent upon G. However, no such strategy is available to policymakers. The reason for this derives from the subsequent pattern of wage-setting, which (in the presence of FDI) seeks to secure the highest wage that attracts local production by the firm. This ensures that any lowering of s below the levels implied by (21)-(25) would be perfectly offset by higher local wages in the third stage. Therefore, the firm would correctly foresee that, due to effects on wage-setting in the third stage, any such enticement in the first stage would not effectively lower local production costs (which remain unchanged), and so should not influence their FDI decision in the second stage.[14]

VII DISCUSSIONS

7.1 *The Pattern of FDI in Equilibrium*

The results of the model regarding the number and location of foreign plants, if any, that the firm sets up, can be summarised graphically. Figures 3, 4, 5 and 6 illustrate the manner in which the equilibrium outcome (OO_A, FO_A, OF_A, FO_B, OF_C, FF_B or FF_C) varies with the reservations levels of both wages and H&S standards in the countries. In this connection, the relative sizes of

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[14] So, the policymaker, despite setting H&S standards before the MNC sets FDI, cannot commit to a particular local marginal cost of production as this is co-determined by the local union, which moves after the MNC has made its FDI decision. Neither can the policymaker commit to a lower fixed set-up cost as, by assumption, H&S standards affect marginal costs only.

$\omega_A + \sigma_A$, $\omega_B + \sigma_B$ and $\omega_C + \sigma_C$ are critical. Of course, the prevalence of FDI in equilibrium tends to decrease in the per-unit cost of transporting goods to market from overseas, t. As outlined previously, we assume that t takes value between zero and $\omega_A + \sigma_A$. The results are presented for four different levels of the plant-specific cost, G, which permit us to depict all the qualitatively different cases. They are chosen as follows: in Figure 1, G is so high that it is never profitable to build a foreign plant.[15] In Figure 2, G is high enough to ensure that it is optimal for the firm to do no FDI at some, but not all, $\omega_B + \sigma_B$, $\omega_C + \sigma_C < \omega_A + \sigma_A$. It is also too high for the firm to find it optimal ever to open two plants.[16] In Figure 3, G is too high to justify three plants, but low enough to ensure FDI into one location at all $\omega_B + \sigma_B$, $\omega_C + \sigma_C < \omega_A + \sigma_A$.[17] In Figure 4, G is sufficiently small for investment in two plants provided $\omega_B + \sigma_B$ and $\omega_C + \sigma_C$ are sufficiently low.[18] Thus, Figures 3 to 6 depict the location of FDI and production in equilibrium. Each figure relates to a different level of fixed cost of FDI, G. Figure 3 illustrates the equilibria for all feasible combinations of $\omega_B + \sigma_B$ and $\omega_C + \sigma_C$ at the highest level of G. The level of G assumed is lower for Figure 4; lower again for Figure 5; and lowest for Figure 6. Together, the figures illustrate the pattern of FDI in equilibria for all $G > 0$.

To aid understanding of the figures we will describe the key features of one of them. The workings of the other figures should then be clear. We will focus upon Figure 6 in which the FDI cost is very low and FDI will occur in all the areas of the figure. Consider first the two regions marked 'OF$_A$' and 'FO$_A$' in the north east of the figure, where both $\omega_B + \sigma_B$ and $\omega_C + \sigma_C$ are above $\omega_A + \sigma_A - t$. Here the firm invests in one country: in B when $\omega_B + \sigma_B < \omega_C + \sigma_C$ (to the right of the diagonal line); in C when $\omega_C + \sigma_C < \omega_B + \sigma_B$. In either case, the firm produces in A. The wage and H&S standards in A are set so that $w_A + s_A - t$ marginally undercuts the lowest variable cost of serving the market possible in the country in which they invest. In the area marked 'OF$_C$', $\omega_C + \sigma_C$ is low but $\omega_B + \sigma_B$ is high ($\omega_C + \sigma_C < \omega_A + \sigma_A - t < \omega_B + \sigma_B$). In this region, the firm simply invests and produces in C and serves the market at a variable cost of $w_C + s_C + t = \omega_A + \sigma_A - \varepsilon$. The area marked 'FO$_B$' is the mirror image of the OF$_C$ region. In 'FO$_B$', a low $\omega_B + \sigma_B$ brings investment and production in B. Next, consider the central region marked 'FO$_B$ or OF$_C$'. Here both $\omega_B + \sigma_B$ and $\omega_C + \sigma_C$ are lower than $\omega_A + \sigma_A - t$. In this region, as explained earlier, the firm is indifferent between investment in B or C because regardless of which foreign location the firm chooses, production takes place
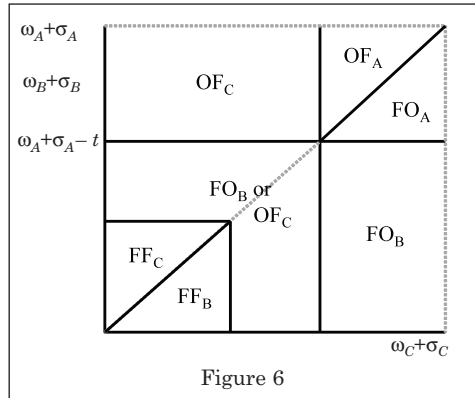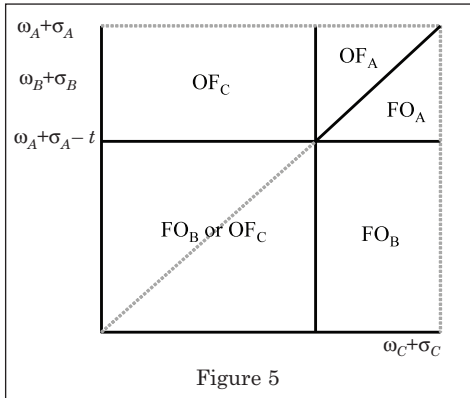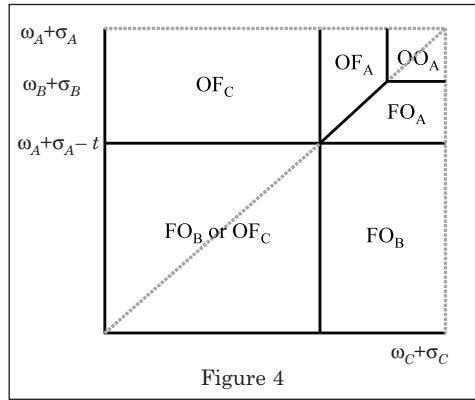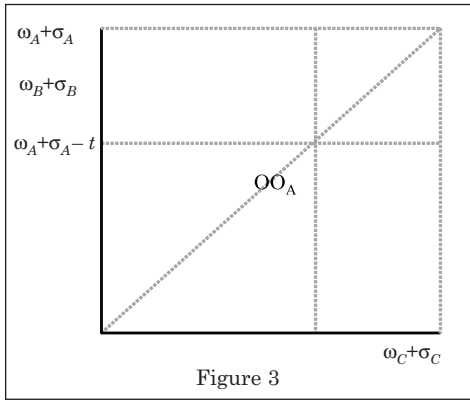
[15] This is $G > 3(\alpha - \omega_A - \sigma_A)^2/16\beta$.
[16] This is $3(\alpha - \omega_A - \sigma_A)^2/16\beta - t(\alpha - \omega_A - \sigma_A)/2\beta < G < 3(\alpha - \omega_A - \sigma_A)^2/16\beta$.
[17] This is $(\alpha - t)^2 - (\alpha - \omega_A - \sigma_A)^2/4\beta < G < 3(\alpha - \omega_A - \sigma_A)^2/16\beta - t(\alpha - \omega_A - \sigma_A)/2\beta$.
[18] This is $0 < G < (\alpha - t)^2 - (\alpha - \omega_A - \sigma_A)^2/4\beta$.

Figures 3, 4, 5 and 6: *FDI in Equilibrium*

Figure 3

Figure 4

Figure 5

Figure 6

at that location, at a variable production cost equal to $\omega_A + \sigma_A - t - \varepsilon$. In this region, the firm is not concerned about the ranking of $\omega_B + \sigma_B$ and $\omega_C + \sigma_C$, only that these are lower than $\omega_A + \sigma_A - t$. In the regions marked 'FF$_B$' and 'FF$_C$', both $\omega_B + \sigma_B$ and $\omega_C + \sigma_C$ are low enough for the firm to find it optimal to set up a plant in both foreign locations. It will then produce in the lower cost country at a variable cost of serving the market set just below that available in the higher cost foreign country. Thus, in the south west of Figure 6 we have two regions separated by the diagonal line. Above the diagonal, we have $\omega_C + \sigma_C < \omega_B + \sigma_B$ and so production occurs in C; below the diagonal, production is in B.

Also looking at Figures 3 to 6, note that in each of the figures, FDI is more advantageous close to the axes, as this is where foreign reservation levels of variable production costs are at their lowest. Indeed, this is reflected in the results, where in Figure 4, non-FDI outcomes are restricted to only the northeast corner of the diagram. The crucial features of these results for our

purposes relate to the effect of the firm's geographical diversification on the setting of H&S standards. It is upon this that we will next focus our attention.

7.2   *Special Case: Race-to-the-bottom*

Our findings identify a potential relationship between corporate geographical diversification and the health and safety standards set in national jurisdictions. In our monopoly model, we find a potential tendency for H&S standards to be depressed by the multinational productive capacity of a firm (e.g., see case (iii) in Section VI, and compare (26) with (21)). Furthermore, these standards can be further depressed by the existence of a second foreign plant (e.g., see case (iii) in Section VI, and compare (21) with (23)). This arises because the international competition between location-specific decision-makers (workers and policymakers) that is introduced by a single foreign plant is intensified by a second foreign plant – the first introduces competition between the home and foreign decision-makers (e.g., see (22)); a second adds competition between foreign decision-makers (e.g., see (24) and (25)). Thus, it is not only the distinction between uninational companies and MNCs that is noteworthy regarding the context within which H&S standards are set, but also, given multinational productive capacity, the degree of firm-level geographical diversification.

In this connection, it is worth recalling our assumption that, like labour unions, policymakers cannot cooperate internationally. The absence of international cooperation in the setting of H&S standards (especially among low-wage economies) is taken as a stylised fact. While impediments to international cooperation have proved, and continue to prove, problematic, deepening globalisation of the business environment may facilitate international relationships of this kind. If such cooperation were to occur, it would act to frustrate attempts, on the part of global business, to engender a race-to-the-bottom.

It is also worth highlighting the manner in which the potential for a race-to-the-bottom in H&S standards affects the incentives for FDI. We show that FDI may be motivated not by the distinctive attractiveness of operating in a particular foreign location, but rather by a resulting promotion of international competition, both amongst workers and amongst policymakers, to secure local production by the firm. It is the overall location strategy of a corporation that exerts an influence on local labour unions and national policymakers, as it is the extent of corporate-wide geographical diversification that sets the context within which wages and H&S standards are set. Thus, a firm's individual FDI choices (to invest in each particular country) are related through their cumulative impact on the firm's overall geographical diversification and, in our model, the propensity for FDI to depress wages

and/or H&S standards boosts the incentive to invest abroad and increases the prevalence of FDI in equilibrium, *ceteris paribus.*

Regarding the potential for the presence of an MNC to bring a race-to-the-bottom in H&S standards in our model, we will highlight two further points to place this result in its proper context. First, the effect of the firm's location strategy on H&S standards is contingent upon health and safety outcomes carrying sufficient weight relative to wage incomes in policymakers' objective functions (which we assume to be national welfare). This is because there is a trade-off between wages and H&S standards – the higher are H&S standards, the lower are wages, and vice versa (see (11)-(15)) – as workers demand the highest wage that will, taking into account the cost burden on the firm associated with local H&S standards, ensure local production by the firm.

So, if the physical well-being of workers is not granted sufficient weight relative to their remuneration (i.e. $\gamma \leq 1$), the presence of the trade-off ensures that H&S standards are set at the reservation level, as the benefits from any higher level would be more than offset by the resulting depression of the more highly valued wages that accrue to the local workforce. As, in this case, H&S standards are set at the reservation level irrespective of the firm's location strategy, there is no relationship between corporate geographical diversification and policymaking of this kind. If, on the other hand, health and safety outcomes carry sufficient weight relative to wage incomes, we may observe the tendency for international competition between productive sites to depress H&S standards in the manner described above. More specifically, if the weight on H&S standards in policymakers' objective functions is low (i.e. $\gamma \leq 1$), any race-to-the-bottom tendency will be exerted on wages rather than H&S standards (which will be set at reservation levels); it is only if the weight on H&S standards in policymakers' objective functions is higher (i.e. $\gamma > 1$) that any race-to-the-bottom tendency will be on H&S standards rather than wages (which will be set at reservation levels).

Second, our model indentifies the possibility that, contrary to the main focus of the popular debate on this topic, it is in home country that there is the greatest tendency for a race-to-the-bottom in H&S standards. To argue this, we must drop our simplifying assumption that the weights on H&S outcomes in the policymakers' objective functions are the same in all countries (i.e., γ in A, B and C). In our model, reservation wages are relatively low in the host countries. So, if it is where wages are lower that policymakers more highly prize an increase in remuneration over a rise in H&S standards, it is expected that H&S standards will receive relatively little weight in the hosts (say, $\gamma \leq 1$ in B and C). It would follow that in the home country, where reservation wages are relatively high, policymakers would place a greater priority on safeguarding employee H&S (say, $\gamma > 7/4$ in A). If so, it seems that the

depression of H&S standards in the presence of MNCs is most likely to operate in the MNCs home country rather than the countries that host the firm.

That is, in the prospective host countries, the relative valuation of H&S standards may be so low that, whatever the firm does (remains uninational, or sets up one or two foreign plants), these countries set H&S standards at the reservation level. At home, on the other hand, H&S outcomes may be sufficiently prized that policymakers set standards at a premium above the reservation level. It is only in the presence of such a premium that the race-to-the-bottom tendency can, by squeezing the premium, depress H&S standards. In this case, the foreign productive capacity of an MNC depresses H&S standards at home rather than abroad by ensuring that the home business environment must compete for production with those found overseas. Indeed, the possibility that international, within-firm competition bids down H&S standards in the relatively high-wage home countries of the plurality of large MNCs has been previously, but relatively rarely, discussed in the literature. For example, Singh and Zammit (2004) note that, "… a deficit in labour standards leads, because of competition, to similar deficits in other countries and ultimately to the erosion of labour standards in advanced countries themselves."

7.3 *Special Case: Race-to-the-Top*

Our model hints at a potential for the presence of MNCs to raise H&S standards. If the weight on H&S standards in policymakers' objective functions is intermediate (i.e., $1 < \gamma \leq 7/4$), H&S standards in A will be set at the reservation level if the firm is uni-national (i.e. $s_A = \sigma_A$), but may be set at some premium above this minimal level if the firm is multinational (i.e. $s_A > \sigma_A$). While international competition for the MNC's production restricts this premium, there is, in the presence of an MNC, an incentive for policymakers to raise H&S standards that is absent if the firm retains only a domestic productive capacity. Given the set-up of our model, we identify this effect on only home H&S standards – as foreign policymaking is modelled only if the firm is multinational – and so the formal extension of this result to foreign H&S standards lies beyond the scope of this model.

However, it follows straightforwardly from the analysis presented here that, were a market in each of the two foreign countries supplied by a domestic supplier, the policymakers in those countries would, if they value H&S outcomes to some intermediate extent, set H&S standards at reservation levels (in order to avoid deleterious impacts on domestic consumer welfare and the local firm's profits). Were that market instead served by the local production of an MNC (based in A, B or C), the same policymakers would seek to set H&S standards at some premium above the reservation level. Thus, it

seems that given some intermediate weighting on H&S outcomes relative to wages, multinational productive capacity is potentially associated with higher H&S standards in both the MNCs home and its host(s). Thus, in that case, the international competition introduced by a firm's multinational productive capacity might be said to promote a race-to-the-top at home and abroad. While, of course, it is not the case that the national jurisdictions compete to set the highest level of H&S standards (and so, there is no race as such), there is nevertheless a positive effect on H&S standards that exists only in the presence of an MNC.

VIII CONCLUSION

This simple model is a formal illustration of an idea that is likely to be familiar to the reader: firms can, by being multinational, improve their bargaining position versus local policymakers in health and safety standards. We show a mechanism by which a link between geographical diversification and the setting of H&S standards can exist, such that having one foreign plant may drive down H&S standards, and having two may drive them down further still. However, we show that this effect is contingent upon convenient assumptions about the weighting of H&S outcomes in policymakers' objective functions. More specifically, the race-to-the-bottom tendency is restricted to only those cases where employee H&S is sufficiently highly valued – it is only with weights in the highest range that H&S standards in both home and host countries are potentially bid down by the presence, and geographical diversification, of an MNC.

In addition, we further illustrate the complexity in the relationship between H&S standards and corporate geographical diversification by noting the potential for both: the race-to-the-bottom tendency to be most likely exerted on H&S standards in the MNC's home rather than host (given intuitive international variation in the weights on H&S outcomes); and a contrasting upward push on H&S, in which the presence of an MNC provides an otherwise lacking impetus for policymakers to set H&S standards at some premium above reservation levels (given intermediate weights on employee H&S in all countries).

The model illustrates that formal modelling can usefully inform the extant debate on the political influence of large multinational companies. We show that, given the number of actors involved, their diversity in both objectives and strategic instruments and the sophistication of the interactions between them and their decision making, there is considerable complexity in the relationship between corporate geographical diversification and the setting of

H&S standards in national jurisdictions. While the model presented here is rather abstract and operates within the confines of many simplifying assumptions,[19] it does capture the plurality of these complexities in a transparent and (hopefully) intuitive manner, and describe the resulting impacts on FDI, wages and H&S standards. By doing so, it illustrates the potential for an MNC to engender a race-to-the-bottom in H&S standards, and identifies the scenario in which such an outcome is most likely to result. However, it also demonstrates that no simple, monotonic relationship exists between the geographical breadth of international business and the H&S standards set in those relatively low-wage economies that compete to be a favoured location.

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[19] The relaxation of such simplifying assumptions presents opportunities for future research. For example, we assume the same cost of FDI in both foreign locations. Were one to permit the locations to differ in this fixed cost, and (perhaps most interestingly) were one to permit national policymakers to influence the cost of FDI in their jurisdiction, there may be informative affects on not only FDI but also the setting of H&S standards.

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