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Abstract

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Foreign direct investment, unionised labour markets and welfare[*]

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Key words: Foreign direct investment; Labour union; Welfare

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Foreign direct investment, unionised labour markets and welfare

1. Introduction

This paper provides a new rationale for foreign direct investment (FDI), which dominates international trade in recent years (UNCTAD, 2006) and has generated a vast theoretical and empirical literature on FDI.[1] We show that, even in the absence of the usual benefits from FDI, a multinational firm prefers FDI to export in the presence of labour unions if the multinational firm is sufficiently technologically superior to that of its domestic counterpart and the domestic labour union charges a uniform wage under FDI. To show the implications of the unionised labour markets in determining FDI, we assume away trade cost saving and lower cost of production (Brainard, 1997, Markusen, 1998), informational problem (Horstmann and Markusen, 1987 and 1996, Bagwell and Staiger, 2003 and Moner-Colonques et al., 2008), exchange rate uncertainty (Aray and Gardeazabal, 2010) and environment regulation (Dijkstra et al. 2011), which are considered to be the important factors for attracting FDI.

Using an international duopoly, we show that raising rival's cost[2] can be a motive for undertaking FDI in unionised labour market. While FDI increases the marginal cost of production of the foreign firm, it also increases the marginal cost of production of its domestic counterpart. If the labour productivity of the foreign firm is sufficiently higher than the domestic firm and the domestic labour union charges a uniform wage under FDI, the burden of higher wage following FDI is significantly more on the domestic firm than on the foreign firm, and makes the foreign firm better off under FDI compared to export. Recently, Dijkstra et al. (2011) show that FDI by the foreign firm may raise the marginal costs of the firms under environmental regulation and may create the incentive for FDI by raising the rival's cost

[1] See, Saggi (2002) for a recent survey on FDI.
[2] See Salop and Scheffman (1983, 1987) for popularising the raising rival's cost theory in the industrial organisation literature.

significantly. Our paper shows that even if there is no government intervention but the labour market is imperfectly competitive due to the presence of labour unions, the raising the rival's cost motive remains, and a foreign firm prefers FDI to export even if there is no trade cost saving or lower cost of production.

Considering FDI in industries with labour unions are certainly empirically relevant. It is worth noting that labour unions exist in several developed countries, and the majority of global FDI occurs among the developed economies. Caves et al. (2002) have demonstrated that over 60% of multinational trade can be traced to a small set of developed countries and that 70% of FDI is hosted by industrial countries. The Statistics by United Nations Conference on Trade and Development (see http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx) also shows that, in 2011, the inward FDI stock in the developed economies is USD 13.06 trillion, while the worldwide outward FDI stock is USD 21.17 trillion of which USD 17.06 trillion is from the developed economies. This means at least USD 8.95 trillion (i.e., 68.53%) of the inward FDI stock in the developed economies is from the developed economies. On the other hand, labour unions can be found in several developed countries, such as in Canada, Finland, the EU countries, UK and USA (Hartog and Theeuwes, 1992, Flanagan, 1999 and European Commission, 2007).

Our paper also shows that if the motive for FDI is to raise the rival's cost, FDI creates striking implications on the consumers and social welfare. FDI (compared to export) makes the consumers and the foreign country worse off, and it reduces domestic welfare if the multinational firm is sufficiently technologically superior to that of the domestic firm and the domestic labour union charges a uniform wage under FDI. FDI also makes the domestic firm and the foreign labour union worse off but the domestic labour union better off compared to export. Higher labour demand in the domestic country and lower labour demand in the foreign country under FDI compared to export are the reasons for these results. Thus, our paper

challenges the common wisdom suggesting that FDI is beneficial to the consumers since it intensifies competition in the product market.

The remainder of the paper is organised as follows. We review the literature in Section 2. Section 3 describes the model and derives the results. Section 4 concludes.

2. Literature review

It is immediate that our paper contributes to the literature determining the factors for greenfield FDI, such as trade cost saving and lower cost of production (Brainard, 1997 and Markusen, 1998), information asymmetry about the quality of the product (Horstmann and Markusen, 1987), asymmetric information about market characteristics (Horstmann and Markusen, 1996 and Moner-Colonques et al., 2008) and foreign cost of production (Bagwell and Staiger, 2003), exchange rate uncertainty (Aray and Gardeazabal, 2010) and environmental regulation (Dijkstra et al., 2001). In contrast, we focus on the unionised labour markets.

Considering a "right-to-manage"[3] model of labour union, where the firms and the union bargain over wages and the firms hire workers according to their choice, we show that the raising rival's cost motive creates the incentive for FDI. Thus, our paper provides a reason for FDI that is different from Bughin and Vannini (1995), Zhao (1995), Lommerud et al. (2003), Mukherjee (2008) and Mukherjee and Suetrong (2012).

In an integrated market with an "efficient bargaining model" of labour union, Zhao (1995) shows that a firm prefers to use two plants in two countries rather than using only one plant in its home country. Thus, Zhao (1995) shows that diversifying production in two plants to reduce the loss from the possibility of strike, i.e., undertaking FDI, is beneficial in unionised labour markets under efficient bargaining model of labour union. In contrast, the multinational firm in

[3] The efficient bargaining model of labour union, which stipulates that firms and unions bargain over wages and employment, is an alternative to the right-to-manage model of labour union. See, Layard et al. (1991) for arguments in favour of the right-to-manage model.

our analysis uses only one plant, irrespective of its decision on export and FDI, and undertakes FDI due to the incentive for raising the rival's cost.

Although Bughin and Vannini (1995), Lommerud et al. (2003), Mukherjee (2008) and Mukherjee and Suetrong (2012) show FDI in unionised labour market, the reasons for FDI in those papers are due to lower costs of production in the host country of the multinational firm. Hence, the reasons for FDI in those papers are different from ours.

Our paper can be related to the recent literature on productivity and FDI. Head and Ries (2003) and Helpman et al. (2004) show how the relative productivity of the foreign firms affects the incentive for FDI. In contrast, the productivity difference between the domestic and foreign firms plays an important role in creating the incentive for FDI in our analysis.

3. The model and the results

Assume that there are two countries, called foreign and domestic. There is a firm in each country. The foreign firm is called firm 1 and the domestic firm is called firm 2. The firms compete in the domestic country with homogeneous products. We assume that production requires only labours and the firms differ in technologies. We assume that firm 1 requires $\lambda\,(0<\lambda<1)$ labours to produce one unit of the output and firm 2 requires one labour to produce one unit of the output.

Assume that the labours are immobile between countries. There is a labour union in each country with the reservation wage z, which is assumed to be zero, for simplicity. The utility of each labour union is $U = wL$, where w is wage and L is the labours employed. To show the effects of the labour unions in the simplest way, we assume that each labour union has full bargaining power in determining the wage. We consider a right-to-manage model of labour union where the unions determine the wages and the firms hire labours according to their requirements.

We assume that the inverse market demand is

$$P = a - Q, \tag{1}$$

where P is the price and Q is the total output.

We consider the following game. At stage 1, firm 1 decides whether to export or to undertake FDI. At stage 2, the labour union in each country determines wage. At stage 3, the firms hire labours according to their needs and compete like Cournot duopolists. The profits are realised. We solve the game by backward induction.

In order to highlight the impact of labour union on the foreign firm's entry mode, we assume away trade cost (including transport cost and tariff) and any cost associated with FDI.

It is immediate from our structure that if the labour markets in both countries are perfectly competitive so that the equilibrium wages are zero in both countries, the foreign firm is indifferent between export and FDI.

3.1. Export

If the foreign firm chooses to export at stage 1, the marginal cost of production of firm 1 is λw_1^x, while that of firm 2 is w_2^x, where w_1^x and w_2^x are determined by the labour unions in the foreign and the domestic countries respectively. The superscript x donates the situation where firm 1 serves the domestic market through export. Hence, firms 1 and 2 maximise the following expressions respectively to determine outputs:

$$\pi_1^x = (a - q_1^x - q_2^x - \lambda w_1^x) q_1^x \qquad \text{and} \qquad \pi_2^x = (a - q_1^x - q_2^x - w_2^x) q_2^x \tag{2}$$

where q_i ($i = 1,2$) is the output of firm i.

Standard calculations show that the equilibrium outputs are:

$$q_1^x = \frac{a - 2\lambda w_1^x + w_2^x}{3} \qquad \text{and} \qquad q_2^x = \frac{a + \lambda w_1^x - 2w_2^x}{3}. \tag{3}$$

At stage 2, the labour unions in the foreign and the domestic countries determine their wages to maximise the utilities U_1^x and U_2^x respectively as follows:

$$\underset{w_1^x}{Max}\, U_1^x = \underset{w_1^x}{Max}\, w_1^x \left[\frac{\lambda\left(a - 2\lambda w_1^x + w_2^x\right)}{3} \right] \quad \text{and} \quad \underset{w_2^x}{Max}\, U_2^x = \underset{w_2^x}{Max}\, w_2^x \left(\frac{a + \lambda w_1^x - 2w_2^x}{3} \right). \quad (4)$$

The equilibrium wages are:

$$w_1^x = \frac{a}{3\lambda} \quad \text{and} \quad w_2^x = \frac{a}{3}. \quad (5)$$

It follows from (5) that the firms face the same labour productivity adjusted wage under export. This result is due to our assumption of zero reservation wages. This equality will breakdown if we consider a positive reservation wage.[4] However, it is needless to say that our result, showing the incentive for FDI and its welfare implications in unionised labour markets, hold under a positive reservation cost, but the presence of a positive reservation cost makes the analytics unnecessarily complicated without providing any new insight.

Accordingly, the equilibrium outputs, profits and the union utilities are $q_1^x = \frac{2a}{9}$, $q_2^x = \frac{2a}{9}$, $\pi_1^x = \frac{4a^2}{81}$, $\pi_2^x = \frac{4a^2}{81}$, $U_1^x = \frac{2a^2}{27}$ and $U_2^x = \frac{2a^2}{27}$.

3.2. FDI

If the foreign firm undertakes FDI at stage 1, because two firms differ in technologies, the labour union in the domestic country may set the wage in a way so that both firms find production profitable or the labour union may set the wage in a way so that only the foreign firm hires labours and produces like a monopolist.

[4] Mukherjee (2007) shows the implications of positive reservation wages in creating different productivity adjusted wages and different profits when the firms differ in labour productivities.

3.2.1. Duopoly

First, consider the situation where the domestic labour union sets the wage in a way so that both firms find production profitable. If the market structure is duopoly under FDI, the marginal cost of production of firm 1 is λw^d, while that of firm 2 is w^d, where w^d is the wage determined by the labour union in the domestic country. The superscript d donates the situation of duopoly market structure under FDI.

The profits of firms 1 and 2 are as follows:

$$\pi_1^d = (a - q_1^d - q_2^d - \lambda w^d) q_1^d \qquad \text{and} \qquad \pi_2^d = (a - q_1^d - q_2^d - w^d) q_2^d . \tag{6}$$

Standard calculations show the equilibrium outputs as:

$$q_1^d = \frac{a + (1 - 2\lambda) w^d}{3} \qquad \text{and} \qquad q_2^d = \frac{a - (2 - \lambda) w^d}{3} . \tag{7}$$

The labour union in the domestic country faces the labour demand $\lambda q_1^d + q_2^d$, and maximises its utility U_2^d to determine the wage w^d as follows:

$$\underset{w^d}{Max}\, U_2^d = \underset{w^d}{Max}\, w^d \left[\frac{(1+\lambda) a - 2(1 - \lambda + \lambda^2) w^d}{3} \right]. \tag{8}$$

The equilibrium wage is

$$w^d = \frac{(1+\lambda) a}{4(1 - \lambda + \lambda^2)} . \tag{9}$$

Accordingly, we can get the equilibrium outputs and profits of two firms and the utilities of labour unions in two countries as $q_1^d = \frac{(5 - 5\lambda + 2\lambda^2) a}{12(1 - \lambda + \lambda^2)}$, $q_2^d = \frac{(2 - 5\lambda + 5\lambda^2) a}{12(1 - \lambda + \lambda^2)}$, $\pi_1^d = \left[\frac{(5 - 5\lambda + 2\lambda^2) a}{12(1 - \lambda + \lambda^2)} \right]^2$, $\pi_2^d = \left[\frac{(2 - 5\lambda + 5\lambda^2) a}{12(1 - \lambda + \lambda^2)} \right]^2$, $U_1^d = 0$ and $U_2^d = \frac{\left[(1+\lambda) a \right]^2}{24(1 - \lambda + \lambda^2)}$.

3.2.2. Monopoly

It is clear from (7) that if the domestic labour union sets a wage under FDI that is not less than $\frac{a}{2-\lambda}$, the foreign firm will be a monopolist in the product market. In this situation, the foreign firm's marginal cost of production is λw^m, where w^m is the wage determined by the domestic labour union, and superscript m donates the situation of monopoly under FDI. Hence, firm 1 will maximise the following expression to determine its output:

$$\pi_1^m = (a - q_1^m - \lambda w^m) q_1^m . \tag{10}$$

Standard calculations show that the equilibrium output is

$$q_1^m = \frac{a - \lambda w^m}{2}. \tag{11}$$

If only firm 1 produces the product and demand labours from the labour union, the labour demand faced by the domestic labour union is λq_1^m. The domestic labour union maximizes U_2^m to determine the wage w^m as follows:

$$\underset{w^m}{Max}\, U_2^m = \underset{w^m}{Max}\, w^m \left(\frac{\lambda a - \lambda^2 w^m}{2} \right), \text{ subject to } w^m \geq \frac{a}{2-\lambda}. \tag{12}$$

The wage that maximises (12) is:

$$w^m = \begin{cases} \dfrac{a}{2\lambda}, & \text{for } 0 < \lambda \leq \dfrac{2}{3} \\ \dfrac{a}{2-\lambda}, & \text{for } \dfrac{2}{3} < \lambda < 1. \end{cases} \tag{13}$$

The expression (13) is derived under the assumption that the domestic labour union sets the wage in a way so that only firm 1 hires labours. However, it is yet to see when the domestic labour union actually wants to set the wage in this way.

If the domestic labour union sets the wage equal to $\frac{a}{2-\lambda}$, its utility is $\frac{\lambda(1-\lambda)a^2}{(2-\lambda)^2}$, which is less than U_2^d for $\frac{2}{3}<\lambda<1$. Hence, if $\frac{2}{3}<\lambda<1$, the labour union sets the wage as $w^d=\frac{(1+\lambda)a}{4(1-\lambda+\lambda^2)}$ so that both firms find it profitable to hire labours.

For $0<\lambda\leq\frac{2}{3}$, if the domestic labour union sets the wage equal to $\frac{a}{2\lambda}$, its utility is $U_2^m=\frac{a^2}{8}$, which is lower than U_2^d for $\frac{1}{2}<\lambda<1$. Hence, for $\frac{1}{2}<\lambda<1$, the domestic labour union sets the wage as $w^d=\frac{(1+\lambda)a}{4(1-\lambda+\lambda^2)}$ so that both firms find it profitable to hire labours.

Hence, if $0<\lambda\leq\frac{1}{2}$, the domestic labour union sets the wage in a way that allows only firm 1 to hire labours. If $0<\lambda\leq\frac{1}{2}$, the equilibrium wage under FDI is $w^m=\frac{a}{2\lambda}$ and firm 1 produces like a monopolist in the product market. The corresponding equilibrium outputs, profits and union utility are $q_1^m=\frac{a}{4}$, $q_2^m=0$, $\pi_1^m=\frac{a^2}{16}$, $\pi_2^m=0$ and $U_2^m=\frac{a^2}{8}$.

3.3. FDI or export

It is easy to check that $\pi_1^m>\pi_1^x$ for $0<\lambda\leq\frac{1}{2}$. It can also be demonstrated that $\pi_1^d \gtreqless \pi_1^x$ for $\lambda \lesseqgtr \frac{\sqrt{105}-7}{4}$. Hence, the following proposition is immediate.

Proposition 1: *If the labour markets in both countries are unionised, the foreign firm (i.e., firm 1) undertakes FDI (export) for* $0<\lambda<\frac{\sqrt{105}-7}{4}$ *(*$\frac{\sqrt{105}-7}{4}\le\lambda<1$*). Under FDI, the domestic labour union sets the wage as* $w^m=\frac{a}{2\lambda}$ *for* $0<\lambda\le\frac{1}{2}$*, so as to make the foreign firm a monopolist, but it sets the wage as* $w^d=\frac{(1+\lambda)a}{4(1-\lambda+\lambda^2)}$ *for* $\frac{1}{2}<\lambda<\frac{\sqrt{105}-7}{4}$*, so that the firms compete like Cournot duopolists.*

The intuition for Proposition 1 is as follows. FDI (compared to export) increases the wage faced by both firms. However, since the foreign firm is technologically more efficient than the domestic firm, the burden of a higher wage under FDI is more on the domestic firm than on the foreign firm, thus creating the raising rival's cost effect. If the foreign firm is sufficiently technologically superior than the domestic firm (i.e., $0<\lambda<\frac{\sqrt{105}-7}{4}$), the raising rival's cost effect is stronger than the effect of a higher wage in the foreign firm. Hence, if the foreign firm is sufficiently technologically superior to the domestic firm, the foreign firm prefers FDI than export when the labour markets in both countries are unionised. Since the foreign firm in our analysis has no incentive for FDI if the labour markets are perfectly competitive, Proposition 1 shows the foreign firm's rationale for undertaking FDI due to the presence of the unionised labour markets.

3.4. The effects on the consumers, union utility and welfare

It follows from the calculations of Subsections 3.1 and 3.2 that $U_1^d<U_1^x$, $U_1^m<U_1^x$, $U_2^d>U_2^x$ for $\frac{1}{2}<\lambda<\frac{\sqrt{105}-7}{4}$, $U_2^m>U_2^x$, $\pi_2^m<\pi_2^x$ and $\pi_2^d<\pi_2^x$. The consumer surplus under export is

$CS^x = \frac{8a^2}{81}$, and it is greater than that of under FDI, which is $CS^m = \frac{a^2}{32}$ for $0 < \lambda \leq \frac{1}{2}$ and $CS^d = \frac{\left(7-10\lambda+7\lambda^2\right)^2 a^2}{288\left(1-\lambda+\lambda^2\right)^2}$ for $\frac{1}{2} < \lambda < \frac{\sqrt{105}-7}{4}$.

Hence, the following results are immediate.

Proposition 2: *If the labour markets in both countries are unionised, FDI benefits the domestic labour union, but it makes the foreign labour union, the domestic firm and the consumers worse off.*

Higher domestic labour demand under FDI compared to export is the reason for the favourable effect of FDI on the domestic labour union, while higher domestic unionised wage is responsible for the adverse effect of FDI on the domestic firm's profit.

The reasons for the adverse effect of FDI on consumers are as follows. FDI not only increases the foreign firm' marginal cost of production, but it also changes the market structure from duopoly to monopoly for $0 < \lambda \leq \frac{1}{2}$. The total output of the firms depends negatively on the sum of two firms' marginal costs of production and, for $\frac{1}{2} < \lambda < \frac{\sqrt{105}-7}{4}$, FDI increases the sum of two firms' marginal costs of production by increasing domestic labour demand, thus reducing the total output and consumer surplus in this situation.

We know from proposition 2 that FDI creates opposite effects on domestic welfare, which is the sum of consumer surplus, domestic firm's profit and the utility of domestic labour union. It follows from the calculations of Subsections 3.1 and 3.2 that domestic welfare is $W_2^x = \frac{2a^2}{9}$

under export, while, under FDI, it is $W_2^m = \frac{5a^2}{32}$ for $0 < \lambda \leq \frac{1}{2}$ and $W_2^d = \frac{\left(23 - 56\lambda + 96\lambda^2 - 76\lambda^3 + 37\lambda^4\right)a^2}{96\left(1 - \lambda + \lambda^2\right)^2}$ for $\frac{1}{2} < \lambda < \frac{\sqrt{105} - 7}{4}$. We get that $W_2^m < W_2^x$, $W_2^d < W_2^x$ for $\frac{1}{2} < \lambda < \bar{\lambda}$ and $W_2^d \geq W_2^x$ for $\bar{\lambda} \leq \lambda < \frac{\sqrt{105} - 7}{4}$, where $\bar{\lambda}$ (≈ 0.593344) is a solution of the equation $5 - 40\lambda + 96\lambda^2 - 100\lambda^3 + 47\lambda^4 = 0$. Hence, the adverse effects of FDI on the consumers and the domestic firm are higher (lower) than the favourable effect of FDI on the domestic labour union for $0 < \lambda < \bar{\lambda}$ ($\bar{\lambda} < \lambda < \frac{\sqrt{105} - 7}{4}$)

The foreign country's welfare is the sum of foreign firm's profit and the utility of foreign labour union. Welfare of the foreign country under export is $W_1^x = \frac{10a^2}{81}$, and it is greater than that of under FDI, which is $W_1^m = \frac{a^2}{16}$ for $0 < \lambda \leq \frac{1}{2}$ and $W_1^d = \left[\frac{\left(5 - 5\lambda + 2\lambda^2\right)a}{12\left(1 - \lambda + \lambda^2\right)}\right]^2$ for $\frac{1}{2} < \lambda < \frac{\sqrt{105} - 7}{4}$. Although FDI makes the foreign firm better off compared to export, the loss of foreign union's utility under FDI is higher than the foreign firm's benefit under FDI, thus reducing foreign welfare under FDI compared to export.

The following proposition summarises the above discussion.

Proposition 3: *If the labour markets in both countries are unionised, FDI decreases (increases) domestic welfare for* $0 < \lambda < \bar{\lambda}$ ($\bar{\lambda} < \lambda < \frac{\sqrt{105} - 7}{4}$), *while it always decreases foreign welfare compared to export.*

3.5. Wage discrimination under FDI

Like several works on labour unions (Leahy and Montagna, 2000, Dhillon and Petrakis, 2002, Haucap and Wey, 2004, Manasakis and Petrakis, 2009, Mukherjee and Pennings, 2011 and Wang and Mukherjee, 2013), we assume that if the labour union supplies workers to multiple firms, it charges a uniform wage. Institutional reasons may justify this assumption. Empirical evidences suggest that in many situations a labour union charges a uniform wage irrespective of the differences between the firms. For example, as discussed in Haucap et al. (2000 and 2001), a common feature of many labour markets in continental Europe is the "coverage extension rules", which implies that some or all employment terms are made generally binding for all industry participants and not only for the members of unions and employers' associations. ''In Germany, for example, collective wage agreements between a union and an employers' association can be made compulsory even for independent employers through so-called Allgemeinverbindlichkeitserkla¨rung (AVE) . . . The Ministry of Labor can, on application of either unions or employers' associations, use an AVE to make some or all terms of a collectively negotiated employment contract generally binding for an entire industry, where otherwise only those unions, employers and employers' associations that have actually negotiated and signed the contract would be directly bound by it (§ 3 I TVG)" (Haucap et al. 2001). It is also noted in Haucap et al. (2001) that the number of AVEs almost continuously increased from 448 in 1975 to 588 in 1998.[5] Thus, it justifies our analysis with uniform wage setting by the labour union.

If the labour union charges a uniform wage under FDI, we have seen that FDI imposes higher burden on the less productive domestic firm compared to the more productive foreign firm. Thus, it creates the raising rival's cost effect and may induce the foreign firm to undertake FDI.

[5] Haucap et al. (2001) also show when the labour union may prefer a uniform wage over discriminatory wage.

If the domestic labour union can charge discriminatory wages under FDI, the raising rival's cost effect does not arise and there is no incentive for FDI. If the domestic labour union charges discriminatory wages under FDI, the equilibrium wage charged to firms 1 and 2 are respectively $\widehat{w_1} = \frac{a}{2\lambda}$ and $\widehat{w_2} = \frac{a}{2}$, and the equilibrium profit of firm 1 is $\widehat{\pi_1} = \frac{a^2}{36}$, which is lower than firm 1's equilibrium profit under export. Hence, firm 1 does not have the incentive for FDI in our analysis if the domestic labour union can charge discriminatory wages under FDI.

It is clear from the equilibrium discriminatory wages under FDI that the firms face the same marginal costs (λw_1 for firm 1 and w_2 for firm 2), since the firms face the same labour productivity adjusted wage. Similarly, the firms pay the same labour productivity adjusted wage under export by firm 1. However, since the labour productivity adjusted wages are higher under FDI than under export, firm 1 does not have the incentive for FDI under discriminatory wages under FDI.

4. Conclusion

Empirical evidence shows that FDI occurs mainly among developed countries where labour markets are often unionised. The existing theoretical literature has focused on the factors such as trade cost saving, lower cost of production, information asymmetry, exchange rate uncertainty and environmental regulation to explain the rationale for FDI, but the effects of the labour market is underexplored.

We provide a new rationale for FDI. We show that the raising rival's cost motive may create the incentive for FDI in industries with unionised labour markets. If the labour markets are unionised, a multinational firm prefers FDI to export if the foreign multinational firm is

sufficiently technologically superior to that of its domestic counterpart and the domestic labour union charges a uniform wage under FDI.

Our analysis also provides striking implications on the consumer and social welfare. FDI (compared to export) makes the consumers and the foreign country worse off, and it reduces domestic welfare if the multinational firm is sufficiently technologically superior to that of the domestic firm. FDI also makes the domestic firm and the foreign labour union worse off but the domestic labour union better off compared to export.

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