

# INSTITUTIONS AND MULTINATIONAL ENTRY STRATEGY

Ari Van Assche\*  
HEC Montréal and CIRANO

Galina A. Schwartz  
University of California–Berkeley

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## Abstract

This paper examines the impact of contract enforceability and liability of foreignness on a multinational firm's entry strategy. For this purpose, we develop a novel incomplete-contracting theory of the international joint venture (IJV) in which a multinational firm and its domestic partner both can ex post take costly actions to improve their share of total rents. Our model allows us to determine the optimal IJV ownership structure and to analyze the impact of contract enforceability and liability of foreignness thereon. We introduce the IJV model into an industry equilibrium framework to analyze the impact of institutional voids of the relative prevalence of IJVs versus wholly-owned foreign subsidiaries.

**JEL Codes:** F23, F12.

**Key words:** entry mode, international joint venture, incomplete contracts, liability of foreignness.

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\*Correspondence: HEC Montréal, Department of International Business, 3000 Chemin de la Côte-Sainte-Catherine, Montréal (Québec), Canada H3T-2A7. Phone: (514)340-6043. Fax: (514)340-6987. E-mail: ari.van-assche@hec.ca. We thank Nathan Jensen, Justin Leroux and Nicolas Sahuguet for helpful suggestions.

## 1 Introduction

A fundamental assumption driving theories of the multinational enterprise is that multinational firms face extra costs that domestic firms do not face. These costs of doing business abroad arise from multinational firms' unfamiliarity of the environment and lack of connections (Hymer, 1976). First, multinational firms have less information about the host country and need to incur start-up costs of acquiring this information. Second, multinational firms may receive discriminatory treatment from the host country government, buyers and suppliers compared to their domestic counterparts. International business scholars have termed this notion "liability of foreignness" and have used it to motivate their assertion that multinational firms need firm-specific ownership advantages to internationalize their activities (Buckley and Casson, 1976; Caves, 1982; Dunning, 1977; Hennart, 1982).

Given the importance of liability of foreignness in the theory of the multinational firm, it is perhaps surprising that little formal analysis has been done to analyze its effect on a multinational firm's choice of entry mode. The effect is not straightforward. When a multinational firm enters a new market, it may choose to form a joint venture with a domestic firm to reduce its *ex ante liability of foreignness*. The partnership can provide the multinational firm with access to the domestic firm's market-specific knowledge and contacts (Asiedu and Esfahani, 2001). The multinational firm can use its domestic partner's contacts with government officials to obtain the necessary business licenses and permits. It can also more easily procure local inputs and more easily arrange the supply of utilities. Once a multinational firm is locked into a joint venture with a domestic firm, however, the multinational firm may face a different *ex post liability of foreignness*. The domestic partner can then use its familiarity of local institutions and its connections with government officials to expropriate a portion of the multinational firm's rents (Henisz, 2000).

Desai and Moel (2007) provide an insightful example of a multinational firm that faced both types of liabilities. In 1991, the American investors Ronald Lauder and Mark Palmer created the holding company Central European Media Enterprises (CEM) to invest in media properties in Eastern Europe. In 1992, CEM decided to enter the Czech media market by forming an international joint venture with Vladimir Zelezny's CET 21. Forming an international joint venture with the Czech-owned CET 21 was considered beneficial since it reduced the *ex ante liability of foreignness*. First, there was considerable political opposition against giving television licenses to foreign investors. By assigning the ownership of the television license

to its domestic partner CET 21, CEM was able to circumvent the political tensions upon market entry. Second, CEM considered that CET 21's strong knowledge of the local market would ensure locally appropriate programming. The international joint venture's television station was initially a success. In the first year of operation alone, it gained a 70 percent audience share in the Czech television market. In the second half of the 1990s, however, the international joint venture turned sour. At that time, Zelezny was able to manipulate Czech policy-makers to narrow the terms of CET 21's television license in his favor, thus effectively allowing him to expropriate all the rents from the joint venture for his personal benefit.

In this paper, we set up a theoretical framework that allows us to analyze the effect of both types of liabilities of foreignness on a multinational firm's entry strategy. The core of our framework is an incomplete-contracting model of an international joint venture. This model is in many respects similar to the incomplete-contracting framework of Grossman and Hart (1986) and Hart and Moore (1990). We model an international joint venture as a game between a domestic and a multinational firm that first sign a rent-sharing contract, then make irreversible relationship-specific investments into a project, and finally (ex post) divide the joint revenue between the two parties. Counter to the Grossman-Hart-Moore approach, however, we assume that both international joint venture parties can ex post take costly actions to improve their ex ante agreed upon division of rents. We interpret these costly ex post actions as side payments or "bribes" that firms pay to government officials or judges to obtain a more favorable treatment or interpretation of the law. This approach to modelling incomplete contracts is appealing for three reasons. First, it allows us to determine the optimal ownership structure in an international joint venture.<sup>1</sup> Second, by allowing the effectiveness of ex post bribery to vary, we can analyze the effect of the degree of contract incompleteness on the optimal ownership structure. If the effectiveness of bribery is high for both parties, it is cheap for any party to improve their ex post rent share, thus implying a large degree of contract incompleteness. If the effectiveness of "bribery" is sufficiently low, both parties have little incentives to alter the original contract, thus implying that the degree of contract incompleteness is low. Third, by assuming that a multinational firm is less effective than its domestic partner at bribing local officials, we can analyze the effect of ex post liability of foreignness on the optimal ownership structure in an international joint venture.

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<sup>1</sup>Bai *et al.* (2004) have developed an alternative model that incorporates the revenue-sharing contract in an incomplete contracting framework.

To analyze the effect of institutions on the multinational firm’s entry strategy, we embody our international joint venture model in an Antràs and Helpman (2004) style industry-equilibrium framework with heterogeneous multinational firms. In this framework, heterogeneous multinational firms enter a developing market by setting up an international joint venture with a domestic partner or setting up a wholly-owned subsidiary. The multinational firm provides inputs from abroad while the domestic partner or subsidiary produce domestic inputs. This setting allows us to study the impact of variations in productivity within sectors and of differences in technological characteristics across sectors on the relative prevalence of both entry strategies.

We begin the analysis in Section 2 by setting up the international joint venture model. In subsection 2.1, we study the benchmark case where it is too costly for both the multinational firm and its domestic partner to engage in ex post contract adjustment actions. In line with Antràs and Helpman (2004), we demonstrate that in this “complete contract” scenario the multinational firm’s ownership share increases with its relative contribution to the joint venture.

In subsection 2.2, we introduce contract incompleteness into the model by analyzing the scenario where both the multinational firm and its domestic partner are equally effective in bribing local officials. In this scenario, the multinational firms ownership share once again increases with its relative contribution to the joint venture. However, we show that contract incompleteness not only negatively affects the performance of the joint venture but also distorts the optimal ownership share. Specifically, if the multinational firm contributes relatively more to the joint venture, the multinational firm’s optimal ownership share decreases as the degree of contract incompleteness rises. If the multinational firm contributes relatively less to the joint venture, the multinational firm’s optimal ownership share increases in the degree of contract incompleteness.

In subsection 2.3, we introduce ex post liability of foreignness into the model by assuming that a multinational firm is less effective than its domestic partner at bribing local officials. In that case, we show that it is optimal for the multinational firm to choose a larger ownership share to hedge for the fact that the domestic partner will ex post expropriate a portion of the multinational enterprise’s rents. We demonstrate, however, that liability of foreignness does not necessarily lead to an extra efficiency loss.

In Section 3, we introduce our international joint venture model into the Antràs and Helpman (2004) style industry equilibrium framework that allows us to analyze the determinants of the relative prevalence of inter-

national joint ventures versus foreign-owned subsidiaries. We demonstrate that an increase in a country's degree of contract incompleteness increases the prevalence of wholly-owned subsidiaries relative to IJVs. An increase in the degree of ex post liability of foreignness increases the prevalence of wholly-owned subsidiaries in foreign-input intensive industries only.

Our paper relates to several literatures in international economics and international business. From the point of view of international economics, the closest models are those studying the organization of international production.<sup>2</sup> These models typically incorporate the Grossman-Hart-Moore incomplete-contracting model of the firm into general equilibrium trade frameworks to analyze the impact of contract enforcement on multinational firms' organizational decisions. Their approach differs from ours in three respects. First, these models assume that multinational firms choose between setting up a subsidiary and outsourcing to a domestic firm. Similar to Spencer (2005), we argue that a setting in which two parties contribute relationship-specific investment to create joint output and are compensated through lump-sum payment of a share of total revenue can equally well describe a joint venture. Second, by relying on the Grossman-Hart-Moore approach, these models are not able to determine the optimal ownership share under joint production. In these models, contracts are assumed incomplete in the sense that the only contractible ex ante (before the investments have been carried out) is the allocation of residual rights. This implies that any ex ante rent-sharing contract is inconsequential for the ex post division of rents. Finally, these models do not explore the role of liability of foreignness on a multinational firm's organizational decisions, which of course is central in our context. In these models, domestic and foreign firms are typically treated equally (bad) by the institutional environment (Desai and Moel, 2007).

Our paper also builds onto the international economics studies that analyze the ownership structure of international joint ventures where a multinational firm and a domestic partner possess complementary inputs (Asiedu and Esfahani, 2001; Lin and Saggi, 2004; Dai and Lahiri, 2007). These studies show that, in equilibrium, the foreign equity share rises with the importance of foreign investor assets and declines with the contribution of local assets toward the project. However, these models once again do not explore the role of ex post liability of foreignness on the optimal ownership

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<sup>2</sup>This literature includes studies by McLaren (2000); Grossman and Helpman (2002, 2003, 2005); Antràs (2003, 2005); Antràs and Helpman (2004, 2006) and Schwartz and Van Assche (2007). See Spencer (2005) and Helpman (2006) for recent surveys of this literature.

structure.

Finally, our paper relates to the international management literature that analyzes the effect of institutional distance on a multinational firm's entry strategy (Zaheer, 1995, 2002; Eden and Miller, 2004). Liability of foreignness plays a central role in these papers. But due to the lack of a formal framework, these studies cannot analyze how the effect of institutions on a multinational firm's entry strategy depends on firm-level and industry-level characteristics.

## 2 International Joint Venture

Consider the case where a multinational firm decides to set up an international joint venture (IJV) with a domestic firm. The IJV faces an iso-elastic inverse demand function for its output  $y$ :

$$p = \lambda^{1-\alpha} y^{\alpha-1}, \quad 0 < \alpha < 1, \quad (1)$$

where  $p$  denotes the price of good  $y$ ,  $\alpha$  determines the elasticity of substitution and  $\lambda$  is a demand parameter that the IJV takes as given.

For the production of a unit of final good, the IJV requires two complementary inputs: a foreign input  $m$  provided by the multinational firm and a domestic input  $d$  provided by its domestic partner. The IJV faces a Cobb-Douglas production function:

$$y = \theta \left( \frac{m}{\eta} \right)^\eta \left( \frac{d}{1-\eta} \right)^{1-\eta}, \quad (2)$$

where  $\theta$  depicts the IJV's productivity and  $\eta$  determines the intensity of foreign inputs. The marginal cost of producing foreign inputs  $m$  is parameter  $\rho$ , while the marginal cost of producing domestic input  $d$  is parameter  $\omega$ . By combining eqs. (1) and (2), the IJV's revenue equals

$$R(m, d) = \lambda^{1-\alpha} \theta^\alpha \left( \frac{m}{\eta} \right)^{\alpha\eta} \left( \frac{d}{1-\eta} \right)^{\alpha(1-\eta)}. \quad (3)$$

To form an IJV, the multinational firm proposes a take-it-or-leave-it IJV contract  $(s, t)$  to a domestic firm. The contract specifies two items: (i) a fixed lump-sum payment  $t$  and (ii) the multinational firm  $M$ 's ownership share  $s \in [0, 1]$ .

To reflect weak contractual enforcement, we assume that firms operate in a setting of incomplete contracts so that the ownership structure that

was agreed upon in the original IJV contract is not fully enforceable ex post. After both players have produced their inputs, they each have the option to unilaterally take costly actions  $r_m$  and  $r_d$  to increase their ex post surplus share. Let  $v$  and  $1 - v$  denote the ex post surplus shares for the multinational and domestic firm respectively. Both players choose  $r_m$  and  $r_d$  simultaneously and independently so that the multinational firm's ex post surplus share

$$v = s + r_m - r_d. \quad (4)$$

We assume that ex post contract adjustment actions come at a cost. To improve his surplus share through action  $r_i$ , a player  $i$  has to pay bribe

$$B(r_i) = \begin{cases} e^{\frac{r_i}{\gamma_i}} & \text{if } r_i > 0 \\ 0 & \text{if } r_i = 0. \end{cases} \quad (5)$$

to a local official. We assume that the bribe function  $B$  is an increasing and convex function of  $r_i$ . The parameter  $\gamma_i$  reflects the effectiveness of a bribe. The higher  $\gamma$  is, the lower it costs for a party to improve its ex post surplus share. The parameter  $\gamma_i$  will play an important role in our further analysis. First, we can use it to capture the degree of contract incompleteness in a country. All else equal, if the effectiveness of a bribe  $\gamma_i$  is high for both parties, it is cheap for any party to alter its original surplus share by bribing a government official. As a result, the degree of contract incompleteness is high. If the effectiveness of a bribe  $\gamma_i$  is sufficiently low, it is too expensive for any party to change its original surplus share by bribing a government official so that the IJV contract is in effect complete. Second, we can capture the effect of ex post discriminatory hazards on an IJV by assuming that the effectiveness of bribing a local official is smaller for a multinational firm than for its domestic partner, i.e.  $\gamma_d > \gamma_m$ .

The IJV model can be summarized by the following sequences of moves. In period 1, the multinational firm offers a take-it-or-leave-it IJV contract  $(s, t)$  to a domestic firm that specifies the multinational firm's surplus share  $s$  and a lump-sum transfer  $t$ . In period 2, both parties produce their respective inputs  $m$  and  $d$ . In period 3, both parties attempt to readjust the original contract through costly actions  $r_m$  and  $r_d$ . In our analysis below, we will solve for the optimal IJV contract through backward induction. We will denote period 1 as ex ante to reflect that they take place prior to the production of inputs and period 3 as ex post to reflect that it takes place after the production of inputs.

The remainder of this section is divided into three parts. In subsection 2.1, we will analyze as a benchmark the "complete contracting" case where

it is too costly for both the multinational firm and its domestic partner to conduct ex post contract adjustment action. In subsection 2.2, we will then study the “incomplete contracting” case where both parties face symmetric contract adjustment costs. This allows us to evaluate the impact of the degree of contract enforceability on the optimal IJV contract. In subsection 2.3, we analyze the “incomplete contracting” case where the multinational firm faces higher contract adjustment costs than its domestic partner. This allows us to assess the impact of discriminatory hazards on the optimal IJV contract.

## 2.1 Benchmark Case: “Contract Completeness”

We first consider the benchmark case where it is too costly for both parties to bribe local officials in period 3. From eqs. (4) and (5), this implies that

$$\hat{r}_i = 0, \tag{6}$$

$$\hat{v} = s. \tag{7}$$

Superscript  $\hat{\cdot}$  depicts optimal behavior under the benchmark case of “contract completeness.”

Next, we can turn back the clock to period 2. In period 2, the multinational firm and its domestic partner simultaneously and independently choose the amount of inputs  $m$  and  $d$  that they produce while taking the ex ante IJV contract  $(s, t)$  as given. Since the production of inputs is not contractible ex ante, the parties choose their quantities non-cooperatively. If we insert eqs. (6) and (7) into eqs. (12) and (13), they face the following profit maximization problem:

$$\begin{aligned} \max_m \pi_m &= sR(m, d) - \rho m + t, \\ \max_d \pi_d &= (1 - s)R(m, d) - \omega d - t. \end{aligned}$$

By combining the first-order conditions of these two maximization problems and inserting them into eq. (3), the two parties’ joint revenue can be expressed as a function of the multinational firm’s surplus share  $s$ :

$$R(s) = \lambda \left[ \alpha \theta \left( \frac{s}{\rho} \right)^\eta \left( \frac{1-s}{\omega} \right)^{1-\eta} \right]^{\frac{\alpha}{1-\alpha}}.$$

In the ex ante period 1, the multinational firm offers a take-it-or-leave-it contract  $(s, t)$  to its domestic partner that guarantees the domestic partner’s



participation in the IJV. In that case it faces the following maximization problem:

$$\max_{s,t} \pi_m = sR(s) - \rho m(s) + t$$

subject to

$$\pi_d = (1-s)R(s) - \omega d(s) - t \geq 0.$$

By solving for the optimal contract, we can express the multinational firm's profits as:

$$\hat{\pi}_m = \frac{\lambda(1-\alpha(\hat{s}\eta + (1-\hat{s})(1-\eta)))}{\left[\frac{1}{\alpha\theta} \left(\frac{\rho}{\hat{s}}\right)^\eta \left(\frac{\omega}{1-\hat{s}}\right)^{1-\eta}\right]^{\frac{\alpha}{1-\alpha}}}, \quad (8)$$

where

$$\hat{s} = \begin{cases} 1/2 & \text{if } \eta = 1/2 \\ \frac{\eta-\Psi}{2\eta-1} & \text{if } \eta \neq 1/2 \end{cases} \quad (9)$$

and

$$\Psi = \alpha\eta(1-\eta) + \sqrt{\eta(1-\eta)(1-\alpha\eta)(1-\alpha+\alpha\eta)}. \quad (10)$$

It is straightforward to show that  $\Psi \in [0, 1/2]$ , that  $\Psi < \eta$  if  $\eta < 1/2$  and that  $\Psi > \eta$  if  $\eta > 1/2$ . Eqs. (8), (9) and (10) conform to Antràs and Helpman's (2004) complete contracting solution where a multinational firm can freely choose its surplus share.<sup>3</sup> In Figure 1, we have depicted the relation between  $\hat{s}$  and the intensity of foreign inputs  $\eta$  as a solid curve. Similar to Antràs and Helpman (2004),  $\hat{s}$  equals zero when  $\eta = 0$ , it equals one when  $\eta = 1$ , and it rises in between. Moreover, it is concave for low values of  $\eta$  and convex for high values. To understand these properties, notice that in an IJV neither the multinational firm nor its domestic partner appropriate the full marginal return to its investments in the supply of inputs. This leads them to underinvest in the provision of these inputs. Each party's severity of underinvestment is inversely related to the fraction of the surplus that it appropriates. Ex ante efficiency then requires giving a larger share of the revenue to the party undertaking the relatively more important investment. As a result, the higher the intensity of foreign inputs (the larger  $\eta$  is), the higher the profit-maximizing fraction of the surplus accruing to the multinational firm (the higher  $\hat{s}$  is).

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<sup>3</sup>In Antràs and Helpman's (2004), the complete contracting result is represented by eqs. (6), (7) and (10).

[Figure 1 about here]

Finally, by insert eq. (9) into eq. (8) we can obtain the multinational firm's profits under an IJV:

$$\hat{\pi}_m = \lambda\Omega \quad (11)$$

where

$$\Omega = \frac{(1 - \alpha(1 - \Psi))}{\left(\frac{2\eta-1}{\alpha\theta} \left(\frac{\rho}{\eta-\Psi}\right)^\eta \left(\frac{\omega}{\eta+\Psi-1}\right)^{1-\eta}\right)^{\frac{\alpha}{1-\alpha}}}.$$

## 2.2 Role of Contract Enforceability

Next, we analyze the scenario where both the multinational firm and its domestic partner both have sufficient incentives to bribe local officials and where the effectiveness of a bribe is identical for both parties:  $\gamma_h = \gamma_m = \gamma$ . In that case, contract are incomplete since both parties ex post alter their original surplus share by bribing government officials. The multinational firm does not face an ex post liability of foreignness since both parties are equally effective in bribing government officials.

We start with the derivation of ex post actions. In the ex post period 3, the multinational and domestic firm independently choose the costly contract adjustment actions  $r_i$  that maximizes their profits  $\pi_i$  taking as given the ex ante IJV contract  $(s, t)$  and the amount of inputs produced  $m$  and  $d$ :

$$\max_{r_m} \pi_m = (s - r_d + r_m)R - B(r_m) - \rho m + t \quad (12)$$

$$\max_{r_d} \pi_d = (1 - s + r_d - r_m)R - B(r_d) - \omega d - t, \quad (13)$$

where the bribe function  $B(r_i)$  is given by eq. (5). If we solve for the optimal  $r_i$ , this leads to the following ex post contract adjustment actions:

$$r^* = r_m^* = r_d^* = \gamma \ln(\gamma R), \quad (14)$$

where superscript \* reflects optimal behavior under contract incompleteness with no ex post liability of foreignness. Since both parties spend an equal amount  $B(r^*)$  on ex post bribery, their efforts cancel each other out so that the ex post revenue allocation remains identical to that specified in the ex ante contract:

$$v^* = s. \quad (15)$$

In period 2, the multinational and domestic firm simultaneously and independently choose the amount of inputs  $m$  and  $d$  that they produce while taking the ex ante IJV contract  $(s, t)$  as given. By inserting eqs. (14) and (15) into eqs. (12) and (13), they face the following profit maximization problem:

$$\max_m \pi_m = (s - \gamma)R(m, d) - \rho m + t \quad (16)$$

$$\max_d \pi_d = (1 - s - \gamma)R(m, d) - \omega d - t. \quad (17)$$

Eqs. (16) and (17) suggests that ex post contract adjustment negatively affects both players' incentives to produce inputs. Indeed, when choosing their optimal amount of inputs, both parties take into account that they need to pay a bribe to local officials that equals share  $\gamma$  of total revenue. This exacerbates the mutual hold-up problem between both parties in the IJV.

Combining the first-order conditions of these two maximization problems and inserting them into eq. (3), we can derive the IJV's total revenue as a function of the multinational firm's ownership share  $s$ :

$$R^* = \lambda \left[ \alpha \theta \left( \frac{s - \gamma}{\rho} \right)^\eta \left( \frac{1 - s - \gamma}{\omega} \right)^{1-\eta} \right]^{\frac{\alpha}{1-\alpha}}. \quad (18)$$

It is straightforward to show that  $R$  is decreasing in the degree of contract incompleteness  $\gamma$ . Note that the following condition needs to hold to ensure that both parties agree to form an IJV:  $\gamma \leq \frac{1}{2}$ . Otherwise, at least one of both parties will refuse to become an IJV partner.

In the ex ante period 1, the multinational firm offers a take-it-or-leave-it IJV contract  $(s, t)$  to the domestic firm that solves the following maximization problem:

$$\max_{s, t} \pi_m = (s - \gamma)R(s) - \rho m(s) + t$$

subject to

$$\pi_d = (1 - s - \gamma)R(s) - \omega d(s) - t \geq 0.$$

By solving for the optimal IJV contract  $(s, t)$ , we can express the multinational firm's profit function as:

$$\pi_m^* = \frac{\lambda(1 - 2\gamma - \alpha(\eta(s^* - \gamma) + (1 - \eta)(1 - s^* - \gamma)))}{\left[ \frac{1}{\alpha \theta} \left( \frac{\rho}{s^* - \gamma} \right)^\eta \left( \frac{\omega}{1 - s^* - \gamma} \right)^{1-\eta} \right]^{\frac{\alpha}{1-\alpha}}}. \quad (19)$$

where the multinational firm's optimal ownership share  $s^*$  can be depicted as a function of the benchmark case's optimal ownership share  $\hat{s}$ :

$$s^* = \hat{s} - \gamma \frac{1 - 2\Psi}{2\eta - 1}. \quad (20)$$

In Figure 1, we have used eq. (20) to depict the relation between  $s^*$  and the intensity of foreign inputs  $\eta$  as a dashed line. Similar to the benchmark case,  $s^*$  is an increasing function of  $\eta$ .<sup>4</sup>

One of the goals of this paper is to study the role of contract enforceability on the optimal IJV contract. If we compare eq. (9) with eq. (20), we can determine that the slope of  $s^*$  is less steep than the slope of  $\hat{s}$  and that the steepness of  $s^*$  is inversely related to the degree of contract incompleteness  $\gamma$ . We state this in the following proposition:

**Proposition 1** *When the multinational firm contributes relatively more to the IJV, the multinational firm's ownership share decreases in the degree of contract incompleteness  $\gamma$ ; when the domestic firm contributes relatively more, the multinational firm's ownership share increases in the degree of contract incompleteness  $\gamma$ .*

The reason for this is once again related to the fact that neither the multinational firm nor its domestic partner appropriate the full marginal return to its investments in the supply of inputs. As the degree of contract incompleteness increases, both parties are required to pay a larger share of the IJV's total revenue as bribes to local officials. These bribes disproportionately reduce the incentives of the party undertaking the relatively less important investment. As a result, ex ante efficiency requires that as the degree of contract incompleteness increases, the party undertaking the relatively more important investment should receive a smaller ownership share.

Finally, we can analyze the efficiency effect of contract incompleteness on a multinational firm's profits by comparing the multinational firm's profits under complete contracts and incomplete contracts. If we insert eq. (20) into eq. (19) and compare with eq. (8),

$$\pi_m^* = \lambda\Omega(1 - 2\gamma)^{\frac{1}{1-\alpha}} = \hat{\pi}_m(1 - 2\gamma)^{\frac{1}{1-\alpha}}. \quad (21)$$

Eq. (21) suggests that an IJV faces an unambiguous efficiency loss when operating in an incomplete-contracting environment. This efficiency loss can

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<sup>4</sup>Since  $\Psi \leq \frac{1}{2}$  and  $\frac{1}{2} \geq \gamma \geq \frac{1}{R}$ ,  $\hat{s} > s^* \geq 0$  in domestic-input intensive industries ( $\eta < 1/2$ ) and  $1 \geq s^* > \hat{s}$  in foreign-input intensive industries ( $\eta > 1/2$ ).

be attributed to two effects. First, there is a negative *hold-up effect* since an incomplete-contracting environment distorts IJV partners' incentives to contribute relationship-specific inputs to the IJV. Indeed, from eq. (18) it is clear that the IJV's total revenue  $R^*$  decreases in the degree of contract incompleteness  $\gamma$ . Second, there is a negative *bribery effect* since the multinational firm and its domestic partner each pay ex post bribes equal to  $\gamma$  times total revenue.

### 2.3 Ex Post Liability of Foreignness

Multinational firms often face a "liability of foreignness" because of their lack of personal connections and their lack of knowledge of local customs. In this subsection, we analyze the role of such liability of foreignness by assuming that the effectiveness of bribing a local official is lower for a multinational firm than for its domestic partner:  $\gamma_m < \gamma_d$ .

For ease of comparison with the previous subsection, we start off by defining a country's degree of contract incompleteness as the average effectiveness of bribing for both IJV partners:

$$\gamma = \frac{\gamma_m + \gamma_d}{2}.$$

Without loss of generality, we can define  $\gamma_d = \gamma + \delta$  and  $\gamma_m = \gamma - \delta$ . An increase in  $\delta$  then implies that the effectiveness of bribes decreases for the multinational firm relative to its domestic partner. In the remainder of the paper, we will measure the degree of liability of foreignness that a multinational firm faces with parameter  $\delta$ .

In period 3, each party conducts the following ex post contract adjustment actions:

$$r_m^\otimes = (\gamma - \delta) \ln((\gamma - \delta)R) \quad (22)$$

$$r_d^\otimes = (\gamma + \delta) \ln((\gamma + \delta)R) \quad (23)$$

where subscript  $\otimes$  reflects optimal behavior. From eq. (4), the ex post surplus share then equals

$$v^\otimes = s - \Delta \quad (24)$$

where

$$\Delta = r_d^\otimes - r_m^\otimes \quad (25)$$

$\Delta$  is rising in  $R$ , which implies that the amount of ex post contract adjustment in favor of the domestic firm will be rising in  $R$ .

Next, we can role back to period 2, in which the multinational and domestic firm simultaneously and independently choose the amount of inputs that they produce while taking the ex ante IJV contract  $(s, t)$  as given. By inserting (22) and (23) into (12) and (13), the two parties face the following maximization problems:

$$\max_m \pi_m = (s - \Delta(R(m, d)) - \gamma + \delta)R(m, d) - \rho m + t \quad (26)$$

$$\max_d \pi_d = (1 - s + \Delta(R(m, d)) - \gamma - \delta)R(m, d) - \omega d - t. \quad (27)$$

When choosing the optimal level of investment, the multinational firm faces a new effect related to discriminatory hazards: all else equal, if a player produces more inputs for the joint venture, this will lead to a larger ex post contract adjustment in favor of the domestic firm through an increase in  $R$ . As a result, the discriminatory hazard creates an additional disincentive to the multinational firm to produce inputs  $m$  and an additional incentive for its domestic partner to produce inputs  $d$ . Combining the first-order conditions of these two maximization problems allows us to express total revenue as a function of  $s$ .

$$R(s) = \lambda \left[ \alpha \theta \left( \frac{s - \Delta(s) - \gamma - \delta}{\rho} \right)^\eta \left( \frac{1 - s + \Delta(s) - \gamma + \delta}{\omega} \right)^{1-\eta} \right]^{\frac{\alpha}{1-\alpha}}$$

Note that the following conditions needs to hold for this to be feasible:  $\gamma + \delta \leq 1/2$  and  $\Delta(s) \leq 1 - \gamma + \delta$ . The latter condition suggests that a joint venture becomes unfeasible if  $R$  is sufficiently large.

In the ex ante period 1, the multinational firm offers a take-it-or-leave-it contract  $(s, t)$  to its domestic partner. In that case it faces the following maximization problem:

$$\max_{s,t} \pi_m = (s - \Delta(s) - \gamma + \delta)R(s) - \rho m(s) + t$$

subject to

$$\pi_d = (1 - s + \Delta(s) - \gamma - \delta)R(s) - \omega d(s) - t \geq 0.$$

If we solve for this, we cannot obtain a closed-form solution for  $s^{\otimes}$  due to nonlinearities. Nonetheless, we can express optimal profits as a function of the multinational firm's ex post ownership share  $v^{\otimes}$  where  $v(s^{\otimes}) = s^{\otimes} - \Delta(s^{\otimes})$ :

$$\pi_m^{\otimes} = \frac{\lambda(1 - 2\gamma - \alpha(\eta(v(s^{\otimes}) - \gamma - \delta) + (1 - \eta)(1 - v(s^{\otimes}) - \gamma + \delta)))}{\left[ \frac{1}{\alpha \theta} \left( \frac{\rho}{v(s^{\otimes}) - \gamma - \delta} \right)^\eta \left( \frac{\omega}{1 - v(s^{\otimes}) - \gamma + \delta} \right)^{1-\eta} \right]^{\frac{\alpha}{1-\alpha}}} \quad (28)$$

where the multinational firm's ex post ownership share  $v(s^{\otimes})$  can be expressed as a function of the benchmark case's optimal ex ante ownership share  $\hat{s}$ .

$$v(s^{\otimes}) = \hat{s} - \gamma \frac{1 - 2\psi}{2\eta - 1} + \delta \quad (29)$$

Three terms determine the multinational firm's optimal ex post ownership share. The first term in eq. (29) is the multinational firm's optimal ownership share under complete contracts, the second term reflects the effect of the degree of contract incompleteness on the optimal ex post ownership share and the third term reflects the effect of discriminatory hazards. As is clear from eq. (29) and as is depicted in Figure 1, the effect of discriminatory hazards is that multinational firm's optimally should have an increase in  $\delta$  of their ex post ownership share. We state this in the following proposition:

**Proposition 2** *As the degree of discriminatory hazards increases, the multinational firm's ex post ownership share rises proportionately.*

The reason for this is once again related to the fact that neither the multinational firm nor its domestic partner appropriate the full marginal return to its investments in the supply of inputs. As the degree of discriminatory hazard increases, the multinational firm faces an additional disincentive to produce foreign inputs, while the domestic firm faces an additional incentive to produce domestic inputs. As a result, ex ante efficiency requires that as the discriminatory hazards increase, the multinational firm should receive a larger share of ex post ownership share.

We cannot derive a closed-form solution for the multinational firm's optimal ownership structure in the original IJV contract due to nonlinearities. Nonetheless, we know from eq. (24) that  $s^{\otimes} = v^{\otimes} + \Delta$  and that both  $v^{\otimes}$  and  $\Delta$  are increasing functions of the degree of discriminatory hazards  $\delta$ . This allows us to infer that an increase in the degree of discriminatory hazards  $\delta$  leads to a more than proportionate rise in the multinational firm's ex ante ownership share. We state this in proposition 3:

**Proposition 3** *As the degree of discriminatory hazards increases, the multinational firm's ex ante ownership share rises more than proportionately.*

Proposition 2 and 3 indicate that discriminatory hazards require the multinational firm to obtain a larger ex ante and ex post ownership share of the international joint venture. Especially in foreign-input intensive IJVs, this may imply that it is optimal to give the multinational firm an ex ante ownership share of 100 percent. To see this, suppose that  $\delta = \gamma$ . In that

case, it is optimal in the foreign-input intensive IJV with  $\eta = 1$  to provide the multinational firm with an ex post ownership share of 100 percent. This ex post ownership share can never be reached however since it would require an ex ante ownership share of more than 100 percent.

Finally, we can analyze the efficiency effect of discriminatory hazards by comparing eqs. (19) and (28). If we insert eq. (29) into eq. (28), we find that it reduces to eq. (19). This suggests that there is not necessarily an extra efficiency loss related to discriminatory hazards. Only in the corner solution where the multinational firm's ex ante ownership share is 100 percent will discriminatory hazards lead to a negative efficiency effect. As we have discussed above, this will primarily be the case in foreign-input intensive IJVs (high  $\eta$ ).

### 3 Choice of entry mode

In this Section, we introduce our IJV model into the Antràs-Helpman industry equilibrium framework to analyze the determinants of the relative prevalence of IJVs versus wholly-owned foreign subsidiaries. Assume that a heterogeneous group of Northern multinational firms need to determine their optimal entry strategy into the developing country South. The multinational firms do not face any Southern competitors. Consumers in the South spend a constant share of their income on the industry. A Dixit-Stiglitz consumption function gives rise to the demand function in eq. (1), where  $\lambda$  is a function of the aggregate consumption in the sector.<sup>5</sup>

For the production of a final good variety, two parties are required: a multinational firm that produces foreign inputs  $m$  in the North and a domestic firm that produces domestic inputs  $d$  in the South. Producers in each country face a perfectly elastic supply of the unique factor of production, labor. These wages are fixed so that the cost of producing a foreign input is parameter  $\rho$  and the cost of producing a domestic input is parameter  $\omega$ . Final goods are produced using the Cobb-Douglas production function given in eq. (2).

Similar to Melitz (2003), multinational firms in our model differ in productivity level. To learn its productivity, a multinational firm incurs an irreversible fixed cost of entry equal to  $F_e$ . Upon paying this fixed cost, it learns its productivity level  $\theta$ , which is randomly drawn from a known

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<sup>5</sup>See Antràs and Helpman (2004) and Schwartz and Van Assche (2007) for similar assumptions.



pareto distribution with shape  $z$ , that is,

$$G(\theta) = 1 - \left(\frac{b}{\theta}\right)^z \text{ for } \theta \geq b > 0.^6$$

After observing its productivity level, the multinational firm decides from three entry modes: (i) no entry; (ii) IJV with a domestic firm; (iii) set up of a wholly-owned subsidiary.

We assume that there is a key trade-off between forming an IJV and setting up a wholly-owned subsidiary. On the one hand, setting up a wholly-owned subsidiary leads to a higher fixed start-up cost than forming an IJV:  $\kappa_S > \kappa_J$ . On the other hand, an IJV faces contractual frictions related to incomplete contracts, which are avoided when a wholly-owned subsidiary is set up. Specifically, under an IJV the two parties face a degree of contract incompleteness  $\gamma$ . This degree of contract incompleteness is avoided when a wholly-owned subsidiary is set up so that both the headquarter and subsidiary act as if they are operating in a complete contracting situation.

The industry-equilibrium model can be summarized by the following sequences of moves: in period 0, each multinational firm decides whether it enters the South. If it enters, it incurs a fixed cost  $F_e$  to have his productivity level  $\theta$  realized. In period 1, the multinational firm decides if it wants to produce output or remain idle. If it decides to produce output, it chooses to enter by forming an IJV with a Southern partner (denoted by superscript J) or by setting up its own subsidiary (denoted by superscript S). In period 2, the multinational firm signs a contract with its Southern partner or its subsidiary and a lump-sum transfer takes place between both parties. In period 3, both parties produce their inputs. In period 4, there is ex post bribery in an IJV. The final goods are then produced and sold, after which the proceeds are divided between the parties according to the ex post ownership structure.

We can solve this model through backward induction. Fortunately, we do not need to solve for periods 2-4 since we can rely on our derivations in Section 2. When a multinational firm sets up its own subsidiary, it signs a complete contract  $(s, t)$  with its wholly-owned subsidiary that includes a share of the surplus and a lump-sum transfer. From eq. (11), this implies that a multinational firm earns the following profits when setting up a wholly-owned subsidiary:

$$\pi_m^S = \lambda\Omega - \kappa^S. \tag{30}$$

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<sup>6</sup>See Helpman et al. (2004) and Antràs and Helpman (2004) for a more detailed explanation of this distribution function.

When a multinational firm forms an IJV with a domestic partner, it signs an incomplete contract  $(s, t)$  with its domestic partner. From eq. (21), the multinational firm in that case earns the following profits:

$$\pi_m^J = \lambda\Omega(1 - 2\gamma)^{\frac{1}{1-\alpha}} - \kappa^J. \quad (31)$$

In period 1, the multinational firm chooses the entry mode that maximizes its profits. We can now rely on two standard results in the literature on firm heterogeneity. The first standard result is that more productive multinational firms will adopt the high fixed cost-low marginal cost entry mode, while less productive heterogeneous firms will adopt the low fixed cost-high marginal cost entry mode. As can be seen from Figure 2, this implies that more productive firms choose to enter the South by setting up a wholly-owned subsidiary. Less productive firms enter the South by forming an IJV with a domestic partner.

[Figure 2 about here]

Finally, we can analyze the relative prevalence of IJVs versus wholly-owned subsidiaries by taking advantage of the special characters of the pareto distribution function. The relative prevalence of IJVs will then equal:

$$\sigma_s = \left( \frac{1 - (1 - 2\gamma)^{\frac{1}{1-\alpha}}}{(1 - 2\gamma)^{\frac{1}{1-\alpha}}} \frac{\kappa_J}{\kappa_S - \kappa_J} \right)^{\frac{z(1-\alpha)}{\alpha}}. \quad (32)$$

This implies that IJVs become less prevalent when (i) the degree of contract incompleteness rises and (ii) the relative fixed cost of setting up a wholly-owned subsidiary declines.

## 4 Conclusion

One of the key stumbling blocks that multinational firms face when entering a developing country is dealing with institutional voids. First, they need to operate in contracting environments that are less developed than in their home country. Second, they need to deal with discriminatory hazards due to their unfamiliarity of the environment and their lack of local connections. The question at the heart of this paper is how multinational firms should adapt their entry strategy to cope with these institutional voids.

To address this question, we have set up an incomplete-contracting model of an international joint venture where both the multinational firm and the domestic partner can ex post bribe government officials to improve their ex ante agreed upon share of total rents. We have shown that the IJV's optimal ownership structure is a function of both the degree of contract incompleteness and of the degree of liability of foreignness. As the degree of contract incompleteness rises, the ownership share of the largest contributor to the international joint venture should decline. When a foreign firm faces an ex post liability of foreignness, it should counter this by asking for a larger ownership share in the original international joint venture contract.

We have next used the model to study the determinants of the relative prevalence between international joint ventures and wholly-owned subsidiaries. We have demonstrated that an increase in both the degree of contract incompleteness and ex post liability of foreignness increases the relative prevalence of wholly-owned subsidiaries. An increase in ex ante liability of foreignness increases the relative prevalence of international joint ventures.

Our analysis opens the door for more careful empirical studies of the characteristics of multinational entry. We leave this for future work.

## 5 Appendix

In this appendix, we solve a generalized IJV model through backward induction. The three cases described in Section 2 all are special cases of this generalized model.

**Period 3.** In the ex post period 3, the multinational firm  $M$  and its domestic partner  $D$  choose profit-maximizing contract adjustment actions  $r_m$  and  $r_d$  respectively, while taking as given the original joint venture contract  $(s, t)$  and the amount of investments  $m$  and  $d$ :

$$\max_{r_m} \pi_m = (s - r_d + r_m)R - e^{\frac{r_m}{\gamma_m}} - \rho m + t \quad (\text{A-1})$$

$$\max_{r_d} \pi_d = (1 - s + r_d - r_m)R - e^{\frac{r_d}{\gamma_d}} - \omega d - t \quad (\text{A-2})$$

The optimal level of contract adjustment actions equal:

$$r_m = \gamma_m (\ln R + \ln \gamma_m) \quad (\text{A-3})$$

$$r_d = \gamma_d (\ln R + \ln \gamma_d) \quad (\text{A-4})$$

To simplify notation below, we will define ex post contract adjustment

$$\Delta(R) = r_d - r_m = (\gamma_d - \gamma_m) \ln R + \gamma_d \ln \gamma_d - \gamma_m \ln \gamma_m. \quad (\text{A-5})$$

**Period 2.** In period 2, the multinational firm  $M$  and its domestic partner  $D$  choose simultaneously and independently the amount of inputs  $m$  and  $d$  respectively that they produce while taking the joint venture contract  $(s, t)$  as given. By inserting eqs. (A-3) and (A-4) into eqs. (A-1) and (A-2), we obtain both players' optimization problems in period 2:

$$\max_m \pi_m = (s - \Delta(m, d) - \gamma_m)R(m, d) - \rho m + t$$

$$\max_d \pi_d = (1 - s + \Delta(m, d) - \gamma_d)R(m, d) - \omega d - t.$$

If we solve for these two maximization problems, we find that

$$m = \eta \lambda \left( \alpha \theta^\alpha \left( \frac{s - \Delta(R) - \gamma_d}{\rho} \right)^{1 - \alpha(1 - \eta)} \left( \frac{1 - s + \Delta(R) - \gamma_m}{\omega} \right)^{\alpha(1 - \eta)} \right)^{\frac{1}{1 - \alpha}} \quad (\text{A-6})$$

$$d = (1 - \eta) \lambda \left( \alpha \theta^\alpha \left( \frac{s - \Delta(R) - \gamma_d}{\rho} \right)^{\alpha \eta} \left( \frac{1 - s + \Delta(R) - \gamma_m}{\omega} \right)^{1 - \alpha \eta} \right)^{\frac{1}{1 - \alpha}} \quad (\text{A-7})$$

It needs to be noted that eqs. (A-6) and (A-7) are not explicit solutions since  $\Delta$  is a function of  $R$ , which on its part is a function of  $m$  and  $d$ . Due to nonlinearities, it is not possible to solve for an explicit solution. Nonetheless, we can go quite far with an implicit analysis. By inserting eqs. (A-6) and (A-7) into the revenue function (3), we can derive the total revenue function:

$$R = \lambda \left[ \alpha \theta \left( \frac{s - \Delta(R) - \gamma_d}{\rho} \right)^\eta \left( \frac{1 - s + \Delta(R) - \gamma_m}{\omega} \right)^{1-\eta} \right]^{\frac{\alpha}{1-\alpha}} \quad (\text{A-8})$$

We can then use the revenue function (A-8) to express  $m$  and  $d$  as a function of revenue:

$$m = \frac{\alpha \eta (s - \Delta(R) - \gamma_d)}{\rho} R \quad (\text{A-9})$$

$$d = \frac{\alpha(1-\eta)(1-s+\Delta(R)-\gamma_m)}{\omega} R \quad (\text{A-10})$$

**Period 1.** In the ex ante period 1, the multinational firm offers a take-it-or-leave-it contract  $(s, t)$  to its domestic partner. In that case it faces the following maximization problem:

$$\max_{s,t} \pi_m = (s - \Delta(R(s)) - \gamma_m)R(s) - \rho m(R(s)) + t \quad (\text{A-11})$$

subject to

$$\pi_d = (1 - s + \Delta(R(s)) - \gamma_d)R(s) - \omega d(R(s)) - t \geq 0. \quad (\text{A-12})$$

By inserting the participation constraint (A-12) into eq. (A-11), we can simplify the maximization problem to:

$$\max_s \pi_m = (1 - \gamma_d - \gamma_m)R(s) - \rho m(R(s)) - \omega d(R(s)) \quad (\text{A-13})$$

The first-order condition is:

$$1 - \gamma_d - \gamma_m - \rho \frac{\partial m}{\partial R} - \omega \frac{\partial d}{\partial R} = 0$$

We can then use eqs. (A-5), (A-9) and (A-10) to solve for the optimal profit function:

$$\pi_m^\otimes = \frac{\lambda(1 - \gamma_m - \gamma_d - \alpha(\eta(v(s^\otimes) - \gamma_d) + (1-\eta)(1-v(s^\otimes) - \gamma_m)))}{\left[ \frac{1}{\alpha \theta} \left( \frac{\rho}{v(s^\otimes) - \gamma_d} \right)^\eta \left( \frac{\omega}{1-v(s^\otimes) - \gamma_m} \right)^{1-\eta} \right]^{\frac{\alpha}{1-\alpha}}} \quad (\text{A-14})$$

where  $v(s^{\otimes}) = s^{\otimes} - \Delta(s^{\otimes})$  and

$$v(s^{\otimes}) = \begin{cases} \frac{1}{2} + \frac{\gamma_d - \gamma_m}{2} & \text{if } \eta = 1/2 \\ \hat{s} - \frac{\gamma_m + \gamma_d}{2} \frac{1 - 2\psi}{2\eta - 1} + \frac{\gamma_d - \gamma_m}{2} & \text{if } \eta \neq 1/2 \end{cases}$$

and

$$\psi = \alpha\eta(1 - \eta) + \sqrt{\eta(1 - \eta)(1 - \alpha\eta)(1 - \alpha + \alpha\eta)}.$$

It needs to be noted that one cannot find an explicit solution for the optimal ownership share  $s^{\otimes}$  due to inherent nonlinearities.

If we can demonstrate that, for a given  $\eta$ ,  $s - \Delta(s)$  continuously rises or falls in  $s$ , then there should be a unique  $s$  that corresponds to  $v$ .

## References

- [1] Antràs, P., 2003. Firms, Contracts and Trade Structure. *Quarterly Journal of Economics* 68, 1375-1418.
- [2] Antràs, P., 2005. Incomplete Contracts and the Product Cycle. *American Economic Review* 45, 1054-1073.
- [3] Antràs, P., Helpman, E., 2004. Global Sourcing. *Journal of Political Economy* 112, 552-580.
- [4] Antràs, P., Helpman, E., 2004. Contractual Frictions and Global Sourcing. National Bureau of Economic Research Working Paper No. 12747.
- [5] Asiedu, E.; Esfahani, H., 2001. Ownership Structure in Foreign Direct Investment Projects. *The Review of Economics and Statistics* 83(4), 647-662.
- [6] Bai, C.; Tao, Z.; Wu, C., 2004. Revenue Sharing and Control Rights in Team Production: Theories and Evidence from Joint Ventures. *Rand Journal of Economics* 35(2), 277-305.
- [7] Buckley, P.; Casson, M., 1976. *The Future of the Multinational Enterprise*, London, MacMillan.
- [8] Caves, R., 1982. *Multinational Enterprise and Economic Analysis*. New York, Cambridge University Press.
- [9] Dai, C.; Lahiri, S. 2007. International Joint Venture under Asymmetric Information: Technology vis-à-vis Information Advantage. Mimeo.
- [10] Desai, M.; Moel, A., 2007. Czech Mate: Expropriation and Investor Protection in a Converging World. *Review of Finance*. Forthcoming.
- [11] Dunning, J., 1977. Trade, Location of Economic Activity and the MNE: A Search for an Eclectic Approach. In B. Ohlin, P. Hesselborn and P. Wijkman (Eds.), *The International Allocation of Economic Activity*, New York, Holmes & Meyer, 395-418.
- [12] Eden, L.; Miller, S., 2004). Distance Matters: Liability of Foreignness, Institutional Distance and Ownership Strategy. In M. Hitt and J. Cheng (Eds.). *Advances in International Management*, New York, 187-221.
- [13] Grossman, G., Helpman, E., 2002. Integration versus Outsourcing in Industry Equilibrium. *Quarterly Journal of Economics* 117, 85-120.

- [14] Grossman, G., Helpman, E., 2003. Outsourcing versus FDI in Industry Equilibrium. *Journal of the European Economic Association* 1, 317327.
- [15] Grossman, G., Helpman, E., 2005. Outsourcing in a Global Economy. *Review of Economic Studies* 72, 135159.
- [16] Grossman, S.J., Hart, O.D., 1986. Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration. *Journal of Political Economy* 94, 691-719.
- [17] Hart, O.D., Moore, J., 1990. Property Rights and the Nature of the Firm. *Journal of Political Economy* 98, 1119-1158.
- [18] Helpman, E., 2006. Trade, FDI, and the Organization of Firms. *Journal of Economic Literature* 44(3), 589-630.
- [19] Henisz, W., 2000. The Institutional Environment for Multinational Investment. *The Journal of Law, Economics and Organization* 16(2), 334-364.
- [20] Hennart, J., 1982. *A Theory of Multinational Enterprise*. Ann Arbor, University of Michigan Press.
- [21] Hymer, S., 1976. *The International Operations of National Firms: A Study of Direct Investment*. MIT Press, Cambridge, MA.
- [22] Lin, P.; Saggi K., 2004. Ownership Structure and Technological Upgrading in International Joint Ventures. *Review of Development Economics* 8(2), 279-294.
- [23] McLaren, J., 2000. Globalization and Vertical Structure. *American Economic Review* 90, 12391254.
- [24] Schwartz, G., Van Assche, A., 2006. Input Specificity and Global Sourcing. CIRANO Scientific Series 2006s-02.
- [25] Smarzynska, B., Wei, S., 2002. Corruption and Cross-Border Investment: Firm-Level Evidence. William Davidson Institute Working paper series No. 494.
- [26] Spencer, B.J., 2005. International Outsourcing and Incomplete Contracts. *Canadian Journal of Economics* 38, 1107-1135.
- [27] Wei, S., 2000. How Taxing is Corruption on International Investors? *The Review of Economics and Statistics* LXXXII(1). 1-11.



- [28] Zaheer, S., 1995. Overcoming the Liability of Foreignness. *The Academy of Management Journal* 38(2), 341-363.
- [29] Zaheer, S., 2002. The Liability of Foreignness, Redux: A Commentary. *Journal of International Management* 8, 351-358.

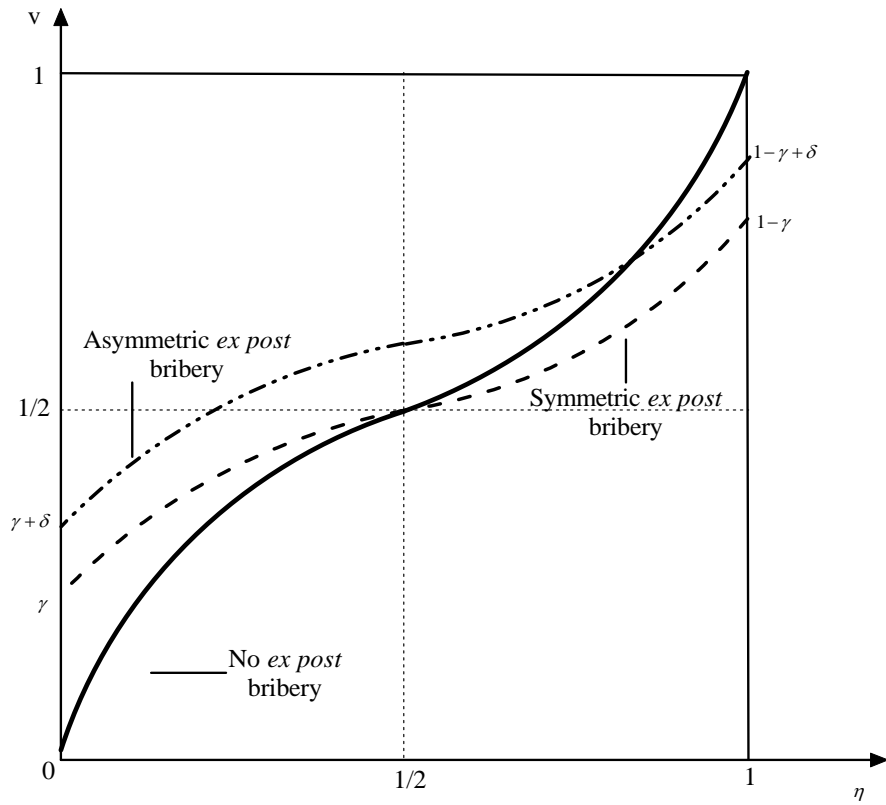


Figure 1: Optimal IJV ownership structure

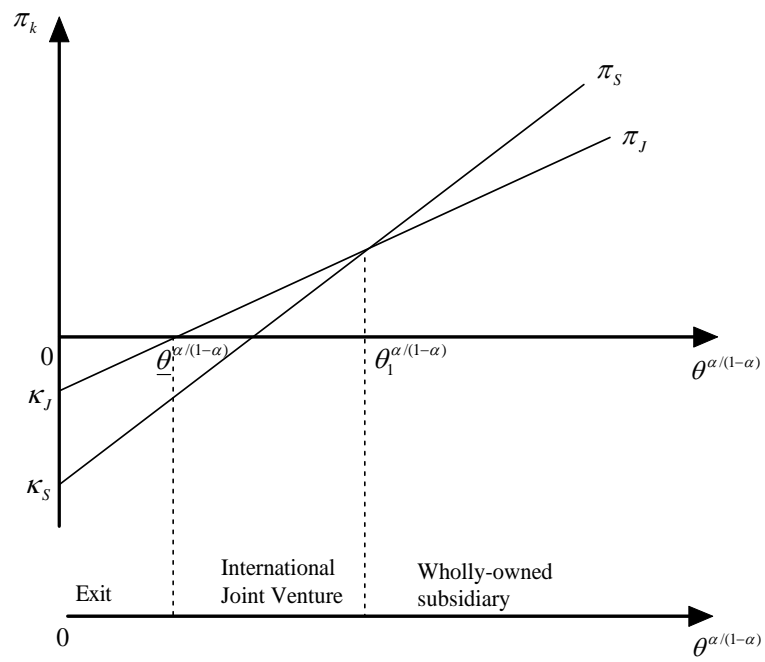


Figure 2: Optimal Multinational Entry Mode