Inter-partner Credible Threat in International Joint Ventures: An Infinitely Repeated Prisoner’s Dilemma Model

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We use an infinitely repeated prisoner’s dilemma model to examine the role of inter-partner credible threat in international joint ventures (IJVs). Inter-partner credible threat refers to the certainty of either partner’s retaliation given the other partner’s earlier cheating. We argue that inter-partner credible threat represents the first order determinant and partners’ management control represents the second order determinant of partner payoffs. When inter-partner credible threat is present, both partners achieve balanced payoffs whereas when it is absent, partners’ relative control will determine their relative payoffs. In-depth interview data from four IJVs in China provide preliminary support for our theoretical arguments.

INTRODUCTION

With increasing globalization of markets and competition, international joint ventures (IJVs) have widely been recognized as viable strategic choices for companies to acquire managerial and technological skills, develop new markets and share risks (Anderson and Gatignon, 1986; Gomes-Casseres, 1989, 1990; Kogut, 1988). Yet, IJVs are difficult to manage and tend to have high failure rates (Anderson, 1990; Geringer and Hebert, 1989, 1991; Harrigan, 1986; Hennart, 1988; Parkhe, 1993a). Two major reasons have been identified for IJVs’ high failure rates. First, an IJV represents a voluntary cooperative relationship between partner firms. Such relationships are prone to the risk of opportunistic behaviour by one or both partners (Hamel, 1991; Hen-

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Arent, 1988; Parkhe, 1993a). Second, an IJV typically involves at least two partner firms, one of which is headquartered outside the country of the IJV’s operations. Involvement of multiple, cross-border partners increases organizational complexity that, in turn, decreases organizational effectiveness (Anderson, 1990; Harrigan and Newman, 1990; Killing, 1983; Pearce, 1997).

Following Gulati and Singh’s (1998) study on alliances, we conceptualize the first reason as appropriation concerns and the second as coordination cost concerns in IJVs. In general, appropriability refers to the ability of firms to capture rents generated by their innovative activities in an industry (Teece, 1986). In the context of IJVs, appropriation concerns refer to the partner firms’ concerns about their abilities to capture a fair share of the rents from the IJV in which they are engaged (Gulati and Singh, 1998, p. 788). Coordination costs in IJVs stem from “the organizational complexity of decomposing tasks among partners along with ongoing coordination of activities to be completed jointly or individually across organizational boundaries and the related extent of communication and decisions that would be necessary” (Gulati and Singh, 1998, p. 782).

Appropriation concerns and coordination cost concerns imply different, if not conflicting, suggestions on how partner firms should manage the IJV. Appropriation concerns suggest that from the partner(s)’ perspective, partners should increase their control over the IJV to receive a fair portion of rents (Gulati and Singh, 1998; Yan and Gray, 1994). In comparison, coordination cost concerns suggest that, from the IJV’s perspective, both partners’ control over the IJV will increase organizational complexity and reduce IJV effectiveness (Killing, 1983; Pearce, 1997). This conflict poses the question, “how should partner firms manage the IJV?”

Using an infinitely repeated prisoner’s dilemma model, we examine the role of inter-partner credible threat in IJVs. This model has proven extremely valuable in modeling incentives and motivations in economic situations (Parkhe, 1993b) and has been effectively used in examining cooperation between economic agents (e.g., Heide and Miner, 1992). We define inter-partner credible threat in IJVs as the certainty of either partner’s retaliation given that the other partner cheated earlier. Using the infinitely repeated prisoner’s dilemma model, we demonstrate that inter-partner credible threat results in a self-enforcing equilibrium in partners’ cooperation, and hence, addresses appropriation concerns and coordination cost concerns simultaneously. We argue that inter-partner credible threat represents the first order determinant of partner payoffs. When it is present, partners gain balanced payoffs in the IJV. When it is absent, partners’ relative management control, the second-order determinant, determines their relative payoffs.

The rest of the paper is organized as follows. We first briefly review the literature on the IJV control-performance relationship. Second, we model the role of inter-partner credible threat in IJVs through an infinitely repeated prisoner’s dilemma model. Third, we use data from case studies of four international joint ventures operating in China to offer descriptive support for our theoretical model. Finally, we discuss the theoretical and practical implications of our model and findings and suggest directions for future research.
LITERATURE REVIEW

Due to the increasing importance of IJVs on the one hand and the reported high rates of failure of IJVs on the other hand, control of IJVs and its performance implications have been important topics in the IJV literature. However, findings on the control-performance relationship are mixed (Anderson, 1990; Beamish, 1988, 1993; Geringer and Hebert, 1989, 1991; Yan and Gray, 1994). In this section, we interpret the mixed findings following the logics of appropriation concerns and coordination cost concerns.

Appropriation Concerns

IJVs represent voluntary cooperative relationships that are prone to the risk of opportunistic behavior by one or both partners (Parkhe, 1993a). Hence, it is not surprising that appropriation concerns are primary concerns in IJVs. Transaction cost economists, who have primarily focused on prior research on contractual choices in alliances and the extent of hierarchical controls they embody, have focused on the appropriation concerns (Anderson and Gatignon, 1986; Gulati and Singh, 1998; Hennart, 1988; Kogut, 1988; Oxley, 1999). This perspective suggests that when firms anticipate high appropriation concerns, they are likely to organize alliances with more hierarchical contracts (Gulati and Singh, 1998). This is because more hierarchical contracts provide stronger control mechanisms such as increased monitoring and better incentive alignment than less hierarchical contracts (Gulati and Singh, 1998; Oxley, 1999). Although traditionally this perspective does not predict the performance outcomes of governance structures, emerging research (e.g., Sampson, 2001) suggests that alliance governance selected according to transaction cost arguments is associated with better performance than governance not so selected.

The performance implications of appropriation concerns have been reflected in previous studies that have addressed the IJV control-performance relationship from the partner(s)'s perspective. The primary argument based on appropriation concerns is that, given partner opportunism, a partner can generate a fair share of rents from the IJV only if it can effectively control the IJV. Previous studies have examined three types of partner control. The first type is partners' equity control in the IJV (Blodgett, 1991; Gomes-Casseres, 1989, 1990; Hennart, 1988). The argument is that equity ownership is the ultimate means of control, owing to the fact that more equity shares give a partner more voting power (Blodgett, 1991). However, some researchers have argued that equity ownership and control are two conceptually different constructs and equity ownership is but one input to the process of defining control of the IJV (Mjoeen and Tallman, 1997; Yan and Gray, 1994). The second type is partners' management control, or overall control, of the IJV (Beamish, 1988; Killing, 1983; Yan and Gray, 1994). Partners may exercise control through having one's own staff members in key positions in the IJV and having regular meetings to prevent sudden complications in operations. The third type is partners' control over specific operational activities in the IJV (Geringer and Hebert, 1989; Mjoeen and Tallman, 1997). Geringer and Hebert (1989, p. 236) suggested that exercising control over an IJV's specific activities "helps protect the firm from premature exposure of its strategy, technological core or other proprietary components to outside groups".

However, even in this perspective, findings on the control-performance re-
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Relationships are mixed. Yan and Gray (1994) attributed the mixed results to the single partner perspective in previous studies. They argued that the control-performance relationship should be examined from the inter-partner perspective and the positive relationship exists only when the patterns of control between the partners and performance from both partners' points of view are examined. From this inter-partner perspective, several studies recommend a shared control structure for IJVs (Beamish, 1988, 1993; Yan and Gray, 1994).

Coordination Cost Concerns

Joint ventures differ from other forms of alliances (i.e., contractual alliances, minority investments), in that a separate entity is created in which partners own a proportion of the equity (Kogut, 1988; Harrigan, 1986; Harrigan and Newman, 1990). Harrigan and Newman (1990) noted that studies of operating joint ventures will be superficial unless they treat the venture as a separate entity. IJVs are characterized by organizational complexity and high coordination costs. First, IJV partners, unlike the shareholders in a widely held public corporation, are visible and powerful, and they can and will disagree on just about anything (Killing, 1983). Hence, managers in the IJV face multiple sets of expectations and must simultaneously accommodate the interests of all partners, hence their tasks are characterized by role conflict and role ambiguity (Harrigan and Newman, 1990; Shenkar and Zeira, 1992). Second, managers in the IJV often face subordinates who have allegiance to different partner firms and perceive their future promotion to be dependent on supervisors in their partner firms instead of the supervisors in the IJV. Hence, the authority of managers in the IJV is low and the IJV finds it difficult to function as one united entity (Frayne and Geringer, 1990; Pearce, 1997).

Some studies have examined the impact of coordination costs, as a result of partner control, on IJV performance from the IJV's perspective. The primary argument is that both partners' control over the IJV will further increase coordination costs, hence reducing the IJV's effectiveness (Killing, 1983; Pearce, 1997). Killing (1983) and Lecraw (1984) found that shared control IJVs (in which both partners control the IJV) perform worse than dominant IJVs (in which only one partner controls) and independent IJVs (in which no partners control the IJV). Geringer and Hebert (1989) argued that compared to shared control IJVs, independent and dominant IJVs may reduce the risks of coordination and potential conflicts, thus increasing IJV performance. Similarly, Pearce (1997) argued that both partners' control should result in factionalism in the IJV's managers and employees, thus increase bargaining costs and influence costs within the IJV, which will further reduce IJV performance.

Appropriation concerns and coordination cost concerns exist simultaneously in IJVs (Gulati and Singh, 1998) and imply different relationships between control and performance. In the following section, we will develop a model to show that inter-partner credible threat could address these concerns simultaneously.

Modelling Inter-partner Credible Threat: An Infinitely Repeated Prisoner's Dilemma Model

In this section, we will first explicate a one-stage prisoner's dilemma model to
demonstrate appropriation concerns and coordination cost concerns in IJVs. Then we will develop an infinitely repeated prisoner’s dilemma model to examine how inter-partner credible threat should address appropriation concerns and coordination cost concerns simultaneously. To keep the models simple, we make four assumptions. First, there are only two partners involved in the IJV. In any IJV involving more than two partners, only the two major partners, one local and one foreign, will be considered. Second, one partner can generate information on the other partner’s cooperation/cheating in previous stages from partners’ relative payoffs in previous stages, and vice-versa (Parkhe, 1993b). Third, partners’ strategy choices are limited in that the IJV is ongoing, and terminating the IJV is not an option. Fourth, both partners are free to switch between different strategies as long as they can adopt that strategy. We will discuss how termination of IJVs and switching costs between strategies may affect credible threat at the end of this section. In addition, the institutional context in which an IJV operates should influence credible threat (Henisz, 2000; Oxley, 1999). However, to keep the model simple, we delimit the boundary of the study to factors endogenous to the partnership.

**One-Stage Prisoner’s Dilemma Model**

Two sponsoring firms (Partner A and Partner B) pool part of their assets to form an IJV. After the IJV is formed, they simultaneously choose a strategy to control the IJV: [High Level Control] versus [Low Level Control]. It should be noted that in our model, partner control refers to management control or overall control (rather than equity control and specific operational control), in terms of partners’ influence on decision-making in the IJV (Beamish, 1988, 1993; Killing, 1983; Yan and Gray, 1994). The combination of strategies chosen by the partners determines their payoffs’ (Table 1) (Refer to Appendix for details). Although the amounts of the payoffs in Table 1 are arbitrary, the payoff structure of the game is consistent with the appropriation and coordination cost concerns noted earlier. First, the payoff structure is consistent with coordination cost concerns in that the sum of the partners’ control is negatively related to the sum of the partners’ payoffs, which evaluates IJV performance from the IJV’s perspective. Second, the payoff structure is also consistent with appropriation concerns in that partners’ relative control predicts their relative payoffs, which evaluates IJV performance from the partners’ perspective. Since the two partners usually have different, if not conflicting, inter-

<table>
<thead>
<tr>
<th></th>
<th>High Level Control</th>
<th>Low Level Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Partner A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Level Control</td>
<td>Cell 1: 1, 1</td>
<td>Cell 2: 5, −1</td>
</tr>
<tr>
<td>Low Level Control</td>
<td>Cell 3: −1, 5</td>
<td>Cell 4: 3, 3</td>
</tr>
</tbody>
</table>

Table 1

One-Stage Prisoner’s Dilemma Model

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ests in the JV, they try to maximize their own payoffs rather than the overall payoffs. Hence, in this one-stage game, the dominant strategies are [High Level Control, High Level Control] with the payoffs (1, 1). The strategies [Low Level Control, Low Level Control], with the highest mutual payoff (3, 3), will not be played. It is because neither partner believes that the other partner will cooperate through a matching [Low Level Control] strategy such that it would be optimal to play such a strategy. Hence, the JV becomes a forum for rivalrous control!

**Infinitely Repeated Prisoner's Dilemma Model**

The above one-stage model imposes two restrictions on the JV. First, it is a one-stage model that assumes that partner firms cannot change their strategies during the continuation of the game. Second, the [High Level Control] strategy is perfectly associated with cheating. These two restrictions may not hold in the JV game. First, the JV game could be one that will be repeated infinitely with certain probability as long as the unit of time is short enough. Second, given that this is a repeated game, players could learn to cooperate in the process (Axelrod, 1984). Thus, when one partner adopts [High Level Control] strategy, it has two options regarding cheating: cheating versus not cheating. Therefore, three strategies are available in this repeated game: [Low Level Control], [High Level Control with Cheating], and [High Level Control without Cheating]. The structure of this repeated game is depicted in Table 2.

Suppose the game in Table 2 will be repeated infinitely. Each partner has a discount factor $\delta = 1/(1 + r)$, where $r$ is the interest rate per stage. The payoff for each partner is the present value of the partner's payoffs from the stage games. Both partners choose their strategies for period $t$ after the payoffs in period $t-1$ are observed. Then, the strategies the partners choose in period $t$ depend on the history of the partnership. There are three trigger strategies that meet the requirement of subgame-perfect outcome of the infinitely repeated game (Cibbons, 1992).

**Trigger Strategy 1:** Both partners play [High Level Control without Cheating] in the first stage. In the $t$-th stage, if one of the outcomes of $t$ preceding stages has been [High Level Control without Cheating, High Level Control with Cheating], that is (0, 5) rather than (4, 4), then play [High Level Control with Cheating] forever; otherwise, play [High Level Control without Cheating, High Level Control without Cheating].

![Table 2](image_url)

<table>
<thead>
<tr>
<th>Partner B</th>
<th>High Control with Cheating</th>
<th>High Control without Cheating</th>
<th>Low Level Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner A</td>
<td>Cell 1: 1, 1</td>
<td>Cell 2: 5, 0</td>
<td>Cell 3: 5, -1</td>
</tr>
<tr>
<td>High Control without Cheating</td>
<td>Cell 4: 0, 5</td>
<td>Cell 5: 4, 4</td>
<td>Cell 6: 4, 3</td>
</tr>
<tr>
<td>Low Level Control</td>
<td>Cell 7: -1, 5</td>
<td>Cell 8: 3, 4</td>
<td>Cell 9: 3, 3</td>
</tr>
</tbody>
</table>
**Trigger Strategy II:** Partner A plays [Low Level Control] and Partner B plays [High Level Control without Cheating] in the first stage. In the $t$-th stage, if one of the outcomes of $t$-1 preceding stages has been [Low Level Control, High Level Control with Cheating], that is (-1, 5) rather than (3, 4), then play [High Level Control with Cheating, High Level Control with Cheating] forever; otherwise, play [Low Level Control, High Level Control without Cheating].

**Trigger Strategy III:** Both partners play [Low Level Control] in the first stage. In the $t$-th stage, if one of the outcomes of $t$-1 preceding stages has been [Low Level Control, High Level Control with Cheating], that is (-1, 5) rather than (3, 3) then play [High Level Control with Cheating, High Level Control with Cheating] forever; otherwise, play [Low Level Control, Low Level Control].

In the interests of brevity, we will only prove the second trigger strategy and the other two parallel it. Suppose Partner A and B begin from [Low Level Control, High Level Control without Cheating]. As long as they cooperate, their payoffs are (3, 4). If partner B deviates from cooperation to cheating, the payoffs are (-1, 5). However, once Partner A discovers Partner B’s cheating, Partner A will choose the [High Level Control with Cheating] forever. Then, both partners are punished with payoffs (1, 1). Given that Partner A adopts [Low Level Control], Partner B, if it cooperates, will get from the whole game the payoff of $4 + 4^*\delta + 4^*\delta^2 + \ldots$; and if it deviates from cooperation, it will have the payoff of $5 + 1^*\delta + 1^*\delta^2 + \ldots$. Therefore, if $\delta$ is close enough to 1 ($\delta > 1/4$ in this arbitrary case), Partner B will choose [High Level Control without Cheating] at every stage since payoff from cooperation is larger than that from cheating. Thus, the strategies [Low Level Control, High Level Control without Cheating] have a subgame-perfect outcome of the infinitely repeated game. Similarly, in Trigger Strategy I and III, as long as one partner will play [High Level Control with Cheating] strategy forever when the other partner deviates from cooperation, the other partner will stick to cooperation.

The key of the three trigger strategies is that once one partner has cheated during earlier stages, the other partner will retaliate by adopting [High Level Control with Cheating] strategy forever, thus further pushing the outcome to the Pareto-dominated equilibrium (Cell 1). Expecting the (potential) cheated partner’s retaliation, the (potential) cheating partner will compare the payoff from cooperation with the payoff from cheating. As long as the payoff from cooperation is larger than that from cheating, the (potential) cheating partner will choose to stick to cooperation. Therefore, in Table 2, Cells 5, 6, 8, and 9 represent possible successful IJVs in which both partners cooperate and achieve balanced payoffs. We term the certainty in either partner’s retaliation to the other partner’s earlier cheatings as inter-partner credible threat.

Inter-partner credible threat stems from both partners’ expectations of each other’s future actions and payoffs resulting from these actions. It is the (potential) cheated partner’s retaliation at the next stage that represents credible threat to the (potential) cheating partner in prior stages. The Pareto-dominated equilibrium (Cell 1) will punish both the punisher and the partner being punished. Both partners then compare the payoffs from cooperation and cheating. They will stick to the cooperative strategies as long as payoffs from cooperation...
overwhelm those from cheating. In fact, playing a Pareto-dominated equilibrium is the only way to punish a partner from deviating from cooperation (Gibbons, 1992). In addition, the above three trigger strategies represent successful shared management JIVs (Cell 5), dominant parent JIVs (Cells 6 and 8), and independent JIVs (Cell 9), respectively. Therefore, we argue that inter-partner credible threat represents the first order determinant of partner payoffs; when it is present, both partners achieve balanced payoffs, regardless of the partners' relative control.

In contrast, if the (potential) cheated partner cannot adopt the [High Level Control with Cheating] strategy if the other partner cheated at earlier stages, the (potential) cheating partner's payoff from cheating will be always larger than that from cooperation. Suppose that Partner B shifts the outcome from a cooperative one (Cell 5) to an uncooperative one (Cell 4). If Partner A could not further push the outcome to the Pareto-dominated one (Cell 1), Partner B will stick to cheating because the payoff from cheating \((5+5\*\delta+5\*\delta^2+\ldots)\) is larger than the payoff from cooperation \((4+4\*\delta-4\*\delta^2-\ldots)\). Hence, in the absence of inter-partner credible threat, the partners' relative control determines their relative payoffs. Therefore, we argue that partner control is the second order determinant of partner payoffs, which determines partners' relative payoffs in the absence of inter-partner credible threat.

In Table 2, partners' strategy choices are limited to that the JIV is ongoing (assumption 3), hence terminating the JIV is not an option. It should be noted that terminating the JIV is one of the most important decisions in the game (Serapio and Cascio, 1996). In fact, terminating the JIV could be a credible threat against the cheating partner, especially when the latter still relies on contributions from the former. However, terminating an IJV is related to both legal and business issues and costs in legal fee, time and effort can be very high (Serapio and Cascio, 1996). This leads to the discussion of assumption 4: absence of switching costs between strategies. The higher the switching costs between strategies, the lower the credible threat. This is because as switching costs increase, the cheated partner becomes less likely to play a strategy (cheating or terminating) that can punish the cheating partner. In the next section, we present case evidence from four IJVs in China to offer some empirical support for our model's theoretical predictions.

**Empirical Evidence from Four IJVs in China**

*IJVs in China*

In the past decades, no other country has seen the formation of more equity joint ventures with foreign firms than the People's Republic of China. In 1997 and 1998 alone, agreements for more than 17,000 equity joint ventures were signed in addition to more than 4,000 contractual joint ventures. The total contract value of these ventures exceeded US$ 61.5 billion. Previous studies have noted that fundamental differences exist in the various environments in which joint ventures are found (Beamish, 1993; Henisz, 2000; Oxley, 1999; Yan and Gray, 1994). Beamish (1993) compared IJVs in China, a developing country transition economy, with IJVs in developed market economies and in developing market economies, and found that IJVs in China have the following characteristics. First, the major reason given by foreign partners for using the joint venture
form in China is governmental pressure rather than skills required from local partners. Accordingly, a very high proportion of IJVs in China involves governmental partners. Second, a high proportion of IJVs in China has a pre-determined duration that is unusual in both developed and developing market economies. Third, while foreign partners' assessment of dissatisfaction of IJV performance is high, the instability rate of IJVs in China is low. This is consistent with Serapio and Cascio's (1996) observation that "quitting a venture in China is not easy, and the costs in legal fees, time, and effort, can be very high. Both the Chinese partner and the government are often unwilling partners in the termination of a partnership" (p. 63).

These characteristics of IJVs in China have important implications for examining the role of inter-partner credible threat. First, because the main reason for foreign partners to use the IJV form is governmental pressure rather than local partners' skills, it is very possible that in post-formation stages, the partners do not have mutual dependence (Inkpen and Beamish, 1997). Hence, they may lack inter-partner credible threat because one partner can operate the IJV without the continuing contributions from the other. Second, most IJVs in China have pre-determined duration. The standard duration is 15-30 years and recently the laws have been changed to allow up to 56 years for IJVs (Beamish, 1993). Hence the premise assumption of the infinitely repeated prisoner's dilemma model is met. Third, because it is costly to terminate an IJV in China even if partners are not satisfied with performance (Beamish, 1993; Serapio and Cascio, 1996), the third assumption of the model, partners' strategy choices are limited to that the IJV is ongoing, is met to some extent.

In addition, the general institutional environment in China also highlights the importance of inter-partner credible threat. China's economy is transitioning from a centrally planned economy to a market economy. Compared to a market economy, a transition economy usually lacks a well-developed legal framework. As Peng and Heath (1996) pointed out, "the establishment of such a legal framework takes a long time and formerly planned economies all lack the capacities to rapidly build legal infrastructure" (p. 503). Given that the legal framework has not been well developed to define and protect property rights, partners of IJVs will find it hard to solve interest conflicts via an external legal framework (Serapio and Cascio, 1996). Hence, inter-partner credible threat becomes an important internal mechanism to achieve cooperation between partners.

Japan has been an important source of foreign direct investments in China. According to 1997-1998 data, Japan was the second largest source of foreign direct investment, next only to Hong Kong. Given the importance of China-Japan IJVs, surprisingly previous studies on IJVs in China have mainly focused on China-US IJVs or included IJVs with various foreign partner nationalities (Beamish, 1993). Hence, we believe that focusing on China-Japan IJVs, our study makes a unique contribution to this literature. In addition, because we limit our study to only one type of IJV (China-Japan manufacturing IJVs) and to only one context (all operate in China) we are able to control for extraneous variations that stem from differences in industry and nationality of the foreign partners (Eisenhardt, 1989).
Data Collection and Coding

This study included four China-Japan JIVs in manufacturing industries in China (two in Tianjin and two in Nantong). Data were collected mainly through in-depth interviews conducted in mid-1995, which were guided by a predesigned protocol to assure that similar procedures were carried out in each and every case. To preserve interviewees' comfort, interviews were not tape-recorded but extensive notes were taken. The local general manager in each JIV was the key informant for data collection. General managers were deemed as appropriate informants because they were the most knowledgeable people about their JIVs and involved in decision-making (Geringer and Hebert, 1989; Yan and Gray, 1994). There are higher correlations between the data provided by the JIV general manager and those provided by an individual partner firm than between the data collected from the respective partner firms (Geringer and Hebert, 1991). In addition, prior research using multiple informants within JIVs in

China has found that inter-informant reliability is very high (Beamish, 1993). A practical consideration is that tremendous barriers exist in collecting data from both partner firms in JIVs in China. The companies are disguised to ensure confidentiality. Their major characteristics are summarized in Table 3.

We identified three types of JIV management control structure following Killing (1983). Killing (1983) measured the extent to which either of the partner firms dominates the JIV, by focusing on the way in which decisions are made. Specifically, a shared management JIV is one in which both partners are involved in the JIV's decision-making. A dominant parent JIV is one in which one partner (the dominant partner) is involved in the JIV's decision-making whereas the other remains silent. An independent JIV is one in which neither partner is involved in the JIV's decision-making. Based on the argument that the JIV is formed by sponsoring firms to achieve their strategic objectives (Harrigan, 1988), we measured partner payoff as the extent

<table>
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<tr>
<th>Characteristics</th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
<th>Case 4</th>
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</thead>
<tbody>
<tr>
<td>Product</td>
<td>Capacitors</td>
<td>Syringes, infusion sets, haemodialysis equipment</td>
<td>Shoes</td>
<td>Panty shields</td>
</tr>
<tr>
<td>Total Investment</td>
<td>US$ 7.0 Million</td>
<td>US$ 7.85 Million</td>
<td>US$ 1.4 Million</td>
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<tr>
<td>Japan-China Equity</td>
<td>60/40</td>
<td>77/23</td>
<td>60/40</td>
<td>50/50</td>
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<tr>
<td>Shares</td>
<td></td>
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</tr>
<tr>
<td>Product Market</td>
<td>70% export</td>
<td>70% export</td>
<td>100% export</td>
<td>100% local</td>
</tr>
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<td>Supply Source</td>
<td>60% import</td>
<td>60% import</td>
<td>40% import</td>
<td>40% import</td>
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to which partners have achieved their strategic objectives in the IJV (Yan and Gray, 1994).

**Comparative Case Studies**

Data from interviews were analyzed by following the procedures of comparative case methods suggested by Ragin (1994) and Eisenhardt (1989). First, a within-case analysis was conducted for each case. According to the theoretical framework, key variables were identified and their values were listed case by case in a table (Table 4). Second, a cross-case analysis was conducted. Data were analyzed column by column by comparing the presence or absence of causal conditions with the presence or absence of the outcomes. Third, the results of the examination of similarities and differences between cases were then compared with the theoretical argument. Consistency across cases and between the empirical results and theoretical arguments were used to derive conclusions.

Case 1. The IJV was formed in 1994 by a Chinese and a Japanese partner that both operated in the capacitor industry. The total investment was US$ 7 million, in which the Chinese partner owned 40% and the Japanese partner owned 60%. The IJV had 251 employees. The venture was a shared management IJV. There were six Japanese expatriates, one was the general manager and others were in charge of production management and equipment maintenance. There were several transferees from the local partner, one of them being the vice general manager.

This IJV focused on one single value-added activity: producing capacitors. 60% of its raw materials and components were imported via the Japanese partner. Its production capacity was split: 70% belonged to the Japanese partner and 30% to the Chinese partner. The partners could profit from the IJV’s dividend as well as product sales. But the partners had achieved unbalanced payoffs. The Japanese partner was a multinational corporation and had a large overseas market, hence it had profited from selling the IJV’s products. However, the Chinese partner was a local company and had a limited local market. Thus, it could not profit from selling the IJV’s product and depended on the IJV’s dividend. Because the IJV’s ex-factory price was fixed at a low level in the contract and the IJV had almost no profit, the Chinese partner did not achieve its objective.

<table>
<thead>
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<th>Table 4</th>
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<tr>
<td><strong>The Relationships Between Management Control, Credible Threat and Partner Payoffs</strong></td>
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<tr>
<td>Case</td>
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<tr>
<td>1</td>
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Further examination suggested that the Japanese partner cheated in two ways. First, it made free use of the 30% production capacity that belonged to the local partner. The local partner usually did not have enough orders because of its limited market. Even when both the partners had orders, the expatriate managers would sequence the Japanese partner’s orders prior to the local partner’s. The second but more important approach was that the IJV’s ex-factory price (internal transfer price) was set at a very low level so the IJV had no profit. The Chinese partner was threatening to end the IJV because it could not benefit from it. As the IJV’s local vice general manager stated, “I think that the Japanese partner is making use of us. The venture can no longer exist unless both partners can benefit from it.”

However, such a threat could not be perceived as credible for several reasons. First, the local parent was located in a mid-size city in the eastern coast of China where the investment environment was not as competitive as the big cities nearby. Thus the local partner had few options in choosing foreign partners. Second, the local partner was locked in the partnership due to its fixed investments in the IJV. The manufacturing facility could not be sold in the local market. Therefore, the local partner could not afford to punish the foreign partner by terminating the IJV because such an action would also punish itself. As long as the foreign partner realized that the local partner could not execute credible threat, the cheating would continue.

Case 2. This IJV was established in 1986 by three Chinese partners and a Japanese partner. The total investment was US$ 7.85 million, in which the Japanese partner owned 77% and the three Chinese partners owned 23%. The venture had 500 employees. This was a dominant IJV, in which the Japanese headquarter and the expatriate managers made all decisions. There were six Japanese expatriates—one of them was transferred from the Japanese partner and was the IJV’s general manager and the others were in charge of quality and production and financial management. None of the local managers was transferred from the Chinese partners and they were all kept out of the decision-making process.

The IJV’s main business was to produce disposable medical products (i.e., syringes and infusion sets). This constituted parts of the Japanese partner’s value-added chain, but none of the local partners was in this business. 60% of the raw materials and components were imported and 70% of its products were exported via the Japanese partner. The Japanese partner had achieved its main objective of manufacturing low cost products for its Japanese market. However, the local partners failed to achieve their objectives to get profit from the venture.

This case was consistent with the relationship between unbalanced partner control and unbalanced partner payoffs suggested by previous studies (e.g., Yan and Gray, 1994). Further examination suggested that the unbalanced performance was partially due to the lack of credible threats of the local partners. According to the local general manager, the Japanese partner cheated with internal transfer prices. It bought the IJV’s products at a low price but sold raw materials and components to the IJV at a price approximately 10% higher than market. However, the local partners could not punish the Japanese partners’ cheating. First, the three local partners shared 23% ownership, with an average ownership of 7% and maximum ownership of
10%. Because of the dominant partner's 77% ownership, they could not reject anything proposed by the Japanese partner.

Second, none of them had expertise in the IJV's business. Without the Japanese partner, they could not run the IJV. In contrast, the Japanese partner could run the IJV independently. Hence, the local partners could not punish the Japanese partner by cheating back or leaving the IJV. They once had a credible threat against the Japanese partner at the formation stage during which, without their help, the Japanese partner would have had difficulty in renting lands, registering businesses, and recruiting workers. However, once the IJV was founded, these sources of threat became obsolete. Without support from local partners, the local general manager stated that, "We try to free ourselves from the Japanese partner's control. But it is very difficult."

**Case 3.** This IJV was formed in 1982 by a Japanese shoe company, a Chinese local government and a Chinese financial institution with 60%, 30% and 10% equity shares respectively. The total investment was US$ 1.4 million and the IJV had 400 employees. This was a dominant IJV, in which major decisions were made in the Japanese headquarters. There were two Japanese expatriates—one of them was the IJV's general manager and was transferred from the Japanese partner and the other was in charge of product quality. None of the local managers was transferred from the local partners.

The IJV focused on only one value-added activity: producing shoes, which was part of the Japanese partner's value-added chain. 40% of raw materials were imported and 100% of its products were exported via the Japanese partner. The IJV had met the Japanese partner's objective of providing low-cost shoes for Japanese markets and the Chinese partners' objective of profit and setting up a model enterprise for potential investors. The IJV had received several honors, including a Three High Enterprise (high efficiency, high profit, and high foreign exchange revenue) and the Best Foreign Investment in Jiangsu Province. The relationship between unbalanced partner control and balanced payoffs in this case was partially due to the local partners' credible threat. The major local partner was the local government and had political authority. It did not need to observe the Japanese partner's behaviors because it could deduce these behaviors from the IJV's outcomes. If it found that the IJV was not making money, it had the authority to punish the Japanese partner.

**Case 4.** This IJV was formed in 1987 by two Chinese partners (a paper mill factory with 40% of the equity and a financial institute with 10% of the equity) and two Japanese partners (with 48.5% and 1.5% of equity respectively). The total investment was US$ 1 million and the IJV had 109 employees. This was an independent IJV, in which the board of directors, especially the local general manager, made main decisions. There was one Japanese expatriate, who was in charge of production and technology, but had largely reduced his role in the IJV as the local employees got familiar with the technology and equipment. The IJV's main business was producing panty shields. 40% of the raw materials were imported via an independent trade company and 100% of its products were sold in the Chinese market.

The IJV represented an independent venture since its founding. First, none of the partners was in the venture's businesses. The major Japanese partner was an equipment producer that used the IJV
as a “window” to show its products to the potential Chinese customers. The Chinese major partner was a paper producer and its main objective in the venture was profit. Thus, neither partner could integrate the IJV’s activities into its own value-added chain. Second, since the IJV was small and its operations were of little strategic importance to the partners, the partners had little incentive to control it. The IJV had achieved good performance in the past years. Its products were competitive in the local market and its margin was twice as high as the industry average. Superior performance further reduced partners’ desire/need to control the IJV. In this IJV, interpartner credible threat was not as critical as in the other IJVs because inter-partner opportunism was not a critical issue given that the local general manager was the neutral agent between partners. Thus, balanced (low) control led to balanced payoffs as both partners were satisfied with the IJV’s profitability and market performance.

Table 4 summarizes the relationships between the IJV control structure, interpartner credible threat and partner payoffs. The relationship between control and payoffs is not direct. Specifically, Cases 2 and 4 are consistent with the prediction that the partners’ relative control determines their relative payoffs. However, in Case 1, two partners approximately equally shared control but had unbalanced payoffs whereas in Case 3, two partners with unbalanced control had balanced payoffs. With inter-partner credible threat included, the patterns become clearer. Case 1 suggested that in the absence of credible threat, even balanced control could not guarantee balanced payoffs. Case 2 suggested that in the absence of inter-partner credible threat, the partner’s relative control predicted their relative payoffs. Case 3 indicated that with credible threat present, partners could achieve balanced payoffs even if their control was unbalanced. Finally, case 4 indicated that inter-partner credible threat was not a critical issue in independent IJVs, in which inter-partner opportunism was not critical. Therefore, the patterns of the four IJVs are generally consistent with our theoretical argument that inter-partner credible threat is the first order determinant and partners’ relative control is the second order determinant of partner relative payoffs.

These data enable us to identify some specific sources of inter-partner credible threat in an IJV such as asset specificity, business expertise, and political authority. First, most of the investments that partners make in IJVs, especially in manufacturing industries, are irreversible. Partners are locked into a relationship ex post because these investments have substantially higher value within the relationship than outside of it. Hence, the partner that ex ante made specific investments will be held up and cannot exert credible threat against the other partner. In Case 1, both partners had made specific investments. The investment had greater strategic importance to the local partner, as a small firm, than to the Japanese partner, as a multinational firm. Hence, the local partner could not terminate the IJV to punish the Japanese partner.

Second, business expertise, e.g., technology and access to marketing channels, comprises sources of credible threat. Partners’ business expertise determines the extent to which they depend on each other (Inkpen and Beamish, 1997). Threat is symmetric and credible when partners are mutually dependent, e.g., one partner has technology and the other accesses markets and nei-
ther one can operate the IJV without the other. However, when one partner has more expertise than the other, there tends to be a lack of mutual credible threat in the IJV. On the one hand, one partner has more opportunity to use its expertise to generate extra-payoff from the IJV at the expense of the latter. On the other hand, the other partner cannot cheat back when the former cheats. In Cases 1 and 2, the local partners lacked business expertise and hence lacked credible threat against the Japanese partners.

Third, given that local governments in China may be involved in joint venturing (Beamish, 1993), political authority constitutes a source of credible threat of local partners. As suggested by Case 3, local government partners do not need to exert formal control in the ventures. As long as foreign investors know that local government partners have the potential to punish them (e.g., withdraw governmental support that is critical for IJV success in China), they will stick to cooperative behaviors.

**DISCUSSION AND CONCLUSION**

*Inter-partner Credible Threat and Other Key Concepts in IJV Research*

Our primary objective in this paper is to examine the role of inter-partner credible threat in IJVs. Using an infinitely repeated prisoner’s dilemma model, we have demonstrated that inter-partner credible threat can address appropriation concerns and coordination cost concerns simultaneously in IJVs. First, when credible threat is present, partners will stick to cooperative behaviors, which will then mitigate the appropriation concerns. Second, when credible threat is present, one or both partners do not need to control the IJV, thus reducing coordination costs in IJVs. Therefore, we conclude that inter-partner credible threat represents the first order determinant whereas partner relative control represents the second order determinant of partners’ relative payoffs. Incorporating inter-partner credible threat enables us to draw attention to behavioral predispositions arising from the tension between simultaneously competitive and cooperative behaviors in IJVs. It does not just add one more concept to the IJV literature, but contributes to a more comprehensive view of partner behaviors and outcomes in IJVs. This concept is also closely related to some core concepts in prior research, especially control, trust and confidence.

Prior research has treated partners’ control as the primary determinant of partners’ payoffs. However, we argue that inter-partner credible threat can substitute for partner control in IJVs. Our argument is consistent with Friedman and Hechter’s (1990) proposition on cooperation between economic agents in general. They proposed two approaches by which cooperation can be institutionalized (Friedman and Hechter, 1990, p. 223). The first approach depends on the existence of some common end among a given set of agents. In order to attain this common end, these agents must establish a set of obligations as well as an enforcement mechanism that enables them to count on compliance with all of these obligations. Partner control belongs to this approach. The second approach is the invisible-hand approach to institutional genesis. The emergence of cooperation is a spontaneous byproduct of the voluntary actions of egoistic agents who share no common ends or values. Cooperation persists because it
constitutes a self-enforcing equilibrium. Inter-partner credible threat falls within the second approach.

Previous studies have also paid attention to trust in IJVs/alliances (Beamish, 1988; Das and Teng, 1998; Gulati, 1995; Gulati and Singh, 1998; Inkpen and Currall, 1998; Yan and Gray, 1994). Trust is advantageous because it strengthens inter-organizational ties, speeds contract negotiations, and reduces transaction costs (Inkpen and Currall, 1998). Indeed, Gulati and Singh (1998) argued that trust should be able to address both coordination cost and appropriation concerns in alliances. However, inter-firm trust is not automatic (Gambetta, 1988; Williamson, 1993). The current literature has mainly treated inter-firm trust as the result of familiarity, as proxied by partners’ prior cooperative ties (Gulati, 1995; Gulati and Singh, 1998; Inkpen and Currall, 1998). We argue that this view of trust is of limited usefulness in the context of IJVs. First, many IJVs represent first-time collaborations. Hence, by definition, these IJVs are characterized by lack of trust (because they lack prior ties). Second, cross-board alliances face “greater obstacles in building trust and a concomitant higher potential for appropriation concerns than domestic alliances because the difficulties of specifying intellectual property rights, legally enforcing intellectual property and monitoring partner activities are greater among cross-border firms” (Gulati and Singh, 1998, p. 800). Therefore, over-emphasizing the effects of trust in IJVs could be misleading. As Williamson (1993) noted, individual economic agents are given to opportunism, and mere promises unsupported by credible commitment pose contractual hazards. While trust is based on partner goodwill, credible threat is based on partner opportunism and constitutes a self-enforcing equilibrium. Hence, we argue that inter-partner critical threat is more critical than trust in international joint ventures.

Another related concept is confidence in partner cooperation in IJVs/alliances, defined as “a firm’s perceived level of certainty that its partner firm will pursue mutually compatible interests in the alliance, rather than act opportunistically” (Das and Teng, 1998, p. 491). We argue that both confidence and trust may be the outcomes of credible threat. Only when one partner can exert credible threat over the other partner, can it “trust” or have “confidence” in the other partner’s cooperation. In other words, mutual trust/confidence stems from mutual credible threat and unilateral trust/confidence stems from unilateral credible threat.

Inter-partner credible threat is dynamic. Although exogenous forces will affect inter-partner credible threat (e.g., environmental change), in this section we mainly discuss the effects of two endogenous forces: organizational life cycle (OLC) and learning. IJVs at different OLC stages (i.e., formation stage versus operation stage) need different expertise. Most local partners in developing countries contribute to IJV formation through facilitating the IJV-local government relation, registering the ventures, renting lands, and recruiting workers. However, after the IJV is founded, these contributions are sunk and cannot affect the ongoing partnership. It is business expertise that constitutes a major source of continuing credible threat in the IJV’s operation stage. If the local partner does not have expertise, it is likely to be held up by the foreign partner who will generate the most rents from the IJV. Similarly, if the main contribution from the foreign partner is technology transfer.
and over time the IJV does not depend on the foreign partner's continuous supply of technology, the foreign partner could be held up and the local partner will appropriate the most rent from the IJV (Serapio and Cascio, 1996). Dynamism in credible threat also stems from partner learning in IJVs. IJVs/alliances have been described as a race to learn and the partner that learns the fastest dominates the relationship (Hamel, 1991). Inkpen and Beamish (1997) argued that foreign partners' acquisition of local knowledge will shift the relative bargaining power between the foreign and local partners, which in turn affects IJV instability. Similarly, partner learning will change interpartner credible threat in that the partner that learns faster will be free from the other partner's threat sooner.

**Comparison with Other IJV Studies with Game Theoretic Approach**

It is meaningful to compare our study with other recent studies that have invoked game theory to examine IJVs (e.g., Gulati, Khanna, and Nohria, 1994; Khanna, Gulati, and Nohria, 1998). These studies are similar in that they all have examined cooperation in IJVs/alliances from partners' payoff structure. But they also differ in some significant ways. Khanna, et al. (1998) introduced the concept of 'relative scope' within an alliance, defined as "the extent of activities in markets unrelated to the alliance as a proportion of all activities conducted by the firms" (p. 194). They argued that a higher ratio of private to common benefits (higher relative scope) leads to greater departures from cooperative and toward competitive behaviors between partners. Comparatively, 'relative scope' pays attention to partner incentive to stick to (or depart from) cooperation, and 'inter-partner credible threat' addresses the question why do partners stick to cooperation even if they have an incentive to depart from cooperation? In addition, compared to "relative scope", "inter-partner credible threat" pays more attention to the interdependence between partners' (expected) payoffs, in which one partner's payoff depends on the other partner's actions which, in turn, depends on the first partner's previous actions.

Gulati et al. (1994) criticized the limitation of (one-stage) prisoner's dilemma in examining cooperation in IJVs/alliances. Our study and Gulati et al. (1994) have extended the traditional one-stage prisoner's dilemma model. Gulati et al. (1994) extended this model by using sequential moves of partners rather than simultaneous moves of partners. Our study extends this model by examining multiple stages rather than one stage. Accordingly, they concluded that unilateral commitment could lead to cooperation and our study concludes that credible threat could lead to cooperation, whereas the one-stage model suggests that the only equilibrium is for both partners to not cooperate. In addition, these two studies are applicable to different IJVs. Our study is based on the assumption of partner opportunism (Axelrod, 1984; Gibbons, 1992; Hamel, 1991; Parkhe, 1993a; Williamson, 1993) and is applicable to IJVs in general or to first-time IJVs in particular. In comparison, Gulati et al.'s (1994) study is most applicable to IJVs/alliances "where each partner is crucial to its success that it is advisable for each to make unilateral commitments to ensure the venture's success" (p. 64, Italic original).
Practical Implications and Future Research Directions

Our study has several important practical implications for structuring and managing of IJVs. First, the coexistence of appropriation concerns and coordination cost concerns in IJVs has put managers in a dilemma when it comes to how to manage an IJV. Our study suggests that if partners have credible threat, they do not have to control the IJV to protect their positions. This argument receives support from previous studies on partners' control over specific operational activities (Geringer and Herbert, 1989; Mjøen and Tallman, 1997). From our theoretical standpoint, we argue that a partner that controls some key specific areas has credible threat.

Second, we urge that partners should take precautionary measures before they enter an IJV. A majority of IJVs fail at least partially because the partner did not consider credible threat and its evolution over time before entering an IJV. A normative lesson from our study is that if a firm lacks credible threat, it should not enter an IJV. Instead, it should choose flexible collaboration forms without equity commitment. Another normative lesson is that partners should negotiate credible threats in the contract if they do not have one. For example, partners can pre-specify in the contract specific conditions under which the IJVs can be terminated (Serapio and Cascio, 1996).

Third, we also expect learning effects over time by partners as they prepare to enter other JVs or engage in other forms of alliances. This is particularly important for local partners in developing countries because they lack international collaboration experiences.

Some areas are particularly promising for future research on inter-partner credible threat. First, how do firms incorporate credible threat concerns in choosing partners in JVs/alliances? The current literature on partner selection (Parkhe, 1993a) has mainly focused on partner resource compatibility, the cooperative side of IJVs. Future research needs to examine partner selection from the viewpoint of credible threat, the competitive side of IJVs. Second, how can partners retain or build credible threat over time in IJVs? Strategically transferring technology/knowledge to the IJV and continuously developing new technology/knowledge may be important mechanisms. Third, how does credible threat affect IJV structure, process and outcomes? We have noted the linkages between credible threat and control, trust, confidence, and partner payoffs. Further empirical tests of these relationships will contribute to the IJV literature.

Fourth, because our model only examined the factors endogenous to the partnership, future research can further our understanding by examining how the institutional contexts in which IJVs operate shape and change credible threat. Finally, we should acknowledge that the empirical evidence provided in this paper is exploratory because it is based on four case studies in one institutional context. Future studies that test our model and its theoretical predictions in larger samples of IJVs in different contexts are needed to further assess the generalizability of our conclusions.

NOTES

1. Pairs of strategies in [ ] and pairs of payoffs in ( ).
2. A trigger strategy is so called because player i cooperates until someone fails to cooperate, which triggers a switch to non-cooperation forever thereafter (Gibbons, 1992, p. 91).
3. Because the game is symmetric, [High Level Control without Cheating, High Level Control with Cheating] is taken as the same as [High Level Control with Cheating, High Level Control without Cheating].


REFERENCES


Credible Threat in Joint Ventures


APPENDIX

In Table 1, in Cell 1, both partners exert High Level Control over the IJV and their joint control increases coordination costs in the IJV, thus reducing IJV effectiveness. Therefore, partners will generate low but balanced payoffs (1, 1). In Cell 4, both partners exert Low Level Control over the IJV, thus the IJV will have low coordination costs and high effectiveness. Both partners will generate high and balanced payoffs (3, 3). In Cells 2 and 3, one partner exerts Low Level Control and the other exerts High Level Control over the IJV. According to appropriation concerns, the dominant partner will pursue its interests at the expense of the silent partner's interests. The dominant partner gets 5 and the silent one gets −1.