

# INDUSTRY COMPARISON OF THE PROPENSITY FOR ALLIANCE FORMATION AN EXAMINATION OF U.S. MNC'S IN JAPAN

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## ABSTRACT

The formation of alliances represents an increasingly visible type of strategic behavior on the part of multinational corporations. In particular, the pattern of alliance formation exhibits considerable geographic concentration. This paper estimates the relative influence of several factors identified in the related literature as important considerations in the formation of alliances. Specifically, the investigation focuses on alliances formed across different stages of the value chain and across different types of industries between U.S. and Japanese multinationals. Using a logistic regression model the paper examines the role of firm-specific, industry-specific, and country-specific factors in the choice of U.S. multinationals to form cooperative arrangements involving single and multiple type of activities in the value chain with Japanese multinationals. Preliminary findings indicate that firm size and country risk were significant influences on the nature of alliance formation. In particular, the size of a firm, the firm's return on sales and the level of country risk act to reduce the odds (probability) that an alliance will be of a single-type form. These findings raise a number of questions about the usefulness of existing measures to adequately account for alliance formation.

## INTRODUCTION

According to Gomes-Casseres (1996) an inter-firm alliance is an organizational structure to govern an *incomplete contract* between *separate firms* and in which each firm has *limited control*. Because the partners remain separate firms, there is no automatic convergence in their interests and actions. As a result, to deal with unforeseen contingencies inherent in the incomplete contract, the partners need to make decisions jointly. Gomes-Casseres (1996) also notes that inter-firm alliances represent a mix of features that characterize firms and markets. They resemble markets in that partners remain separate parties, driven by their own interests. Accordingly, there is some risk that the parties will act opportunistically, as traders might in the open market. Alliances resemble firms in that the partners

agree to coordinate their actions and participate in joint decision-making. As a result firms may forgo short-run opportunistic actions in the interest of maintaining the relationship, which they expect will yield long run benefits (Buckley and Casson, 1988).

Alliances take a range of structural forms. These different structures affect the pattern of decision-making, responsibilities, and the control of capabilities. Jointly owned ventures, licensing relationships, joint R&D programs, co-marketing programs, and partial equity investments would tend to qualify as alliances by this definition.

Alliances also differ according to the operational relationship between the partners. Some alliances represent "vertical" relationships (i.e., between suppliers and buyers) and other represent "horizontal" relationships (i.e., between companies selling the same or similar products). Some alliances combine one firm's technological capabilities with another firm's marketing organization; other alliances pool similar capabilities from different companies.

While there are these differences among alliances, because various forms of alliances share many behavioral characteristics, they are often grouped together for analytical purposes. In this paper, alliances are grouped according to the types of activities that form the basis for the inter-firm cooperation. In particular, alliances are grouped according to whether the firms are involved in activities at similar or different stages of the value-added chain.

Gomes-Casseres (1996) identify three conditions that must obtain for an alliance to be an optimal form of organization. First, there must be an advantage to combining the capabilities of two or more firms. For this to occur each firm must be unable to develop internally the capability offered by the other firm; for example, it may be constrained in doing so by its resources, by its skills, or by time. Also, the combination of capabilities must yield a total value that is greater than if the capabilities were used separately. The second condition required for an efficient alliance is that it be costly or impossible to combine the capabilities through pure market transactions (i.e., using complete contracts). Complete contracts may be too costly to

negotiate, monitor, and enforce, as each firm will have an incentive to cheat. The firms then have to find an alternative way to govern the incomplete contracts that result. Complete ownership would be a way to govern such incomplete contracts. Thus, the third condition for an alliance to be optimal is that a full merger between the firms must be costlier than a series of alliances as a way to govern the incomplete contracts.

A recent stream of research in inter-firm alliances focuses not on the bilateral governance of these relationships, but on how a series of interconnected alliances create “networks” (Gulati, 1998) or rival “constellations” (Gomes-Casseres, 1996). In this latter view, alliances are seen as creating new units of competition and reshaping rivalry—instead of firm against firm, the new rivalry is one of group against group. Constellations of allied firms are thus seen as an alternative to the firm in governing a set of complementary capabilities.

While much attention is paid to the impacts of alliances in areas such as value creation (Chan, Kensinger, and Martin 1997), learning effects (Anand and Khanna, 2000), and competitive positioning (Porter, 1985, Kogut, 1988), there is a renewed interest in the purpose and characteristics of alliance formation (Das and Teng, 2000). This has resulted largely from the accumulated empirical evidence on the varied types of alliances formed over the past two decades and the emergent literature on the resource-based view of strategic alliances (Das and Teng, 2000). Whereas the institutional and transaction cost analyses of alliances direct attention to the consequences of alliances, the resource based view focuses attention on the purposes of alliances. The standard approach of classifying alliances by their legal form, however, does not yield the kinds of insights that can address questions about the motivation of alliances based on resource strengths and weaknesses of the participating firms.

Categorizing alliances based on the framework of a simplified value chain (Contractor & Lorange, 1988; Porter, 1983; 1985; Porter & Fuller, 1986; Root, 1988), this paper investigates three issues; 1) Does the type of alliance signal the motivation for the arrangement? 2) What is the relative importance of firm characteristics and external factors in the type of arrangement that is formed? 3) What empirical differences, if any, are there between alliances involving similar activities and those involving dissimilar activities in the value chain?

## LITERATURE REVIEW

Alliances lie between the two extremes of spot transactions undertaken between two firms and outright

acquisitions or mergers where transactions are completely internalized (Contractor and Lorange, 1988; Hergert & Morris, 1988). Consequently, cooperative arrangements are characterized by the symbiotic relationship between trust and control.

Williamson (1975) argues that firms choose to transact according to the criterion of minimizing the sum of production and transaction costs. A firm would prefer a cooperative association over the internalization option when the net incremental benefit of a cooperative mode is not only greater than zero, but is greater than the profit share of the other partner's share or if risk is reduced by the act of cooperation. From a competitive positioning perspective (Porter, 1985), firms choose to engage in cooperative arrangements to maximize profits through improving their competitive position vis-a-vis industry rivals (Kogut, 1988). Competitive advantage does not last forever, and firms must maximize their benefits from their temporary relative positions (Buckley, 1990). The primary distinction between the transaction cost approach and the competitive positioning approach is that transaction cost addresses the costs specific to a particular economic exchange. The competitive approach addresses how competitive positioning influences the firm's total product market strategy.

From an inter-organizational resource dependency and organizational learning approach, cooperative arrangements become a vehicle not only to facilitate the transfer and learning of knowledge, skills, and capabilities associated with various specific products and processes, but also information about different regions, social, political, and legal structures (Lyles, 1988). Under this approach the firm is viewed as a knowledge base, where each firm possesses unique information that is judged to be germane to the topic of interest. Cooperative arrangements become the means to share the organizational know-how and capabilities across organizational borders for the mutual benefit of the partners. As long as each partner possesses unique capabilities, skills or knowledge that are critical to the success of the joint endeavor the likelihood of maintaining a workable cooperative arrangement exists.

Most of the early studies focus on the antitrust implications of cooperative arrangements, particularly joint ventures (e.g., Fuschfeld, 1958; Dixon, 1962; Boyle, 1968; Mead, 1967; Pate, 1968). In one of the earliest studies, West (1959) evaluated reasons for joint ventures other than diminishing competition, highlighting the role of diversification, government control, technology, and resource constraints. Since the early 1970s, the empirical literature has splintered into three streams: operational issues, 2) modes of entry (e.g., joint ventures and

licensing), and 3) broad-based cooperative arrangements. Operational issues include those of instability (Beamish, Beamish, & Killing, 1984; Harrigan, 1985), fulfillment of expectations (Artisien & Buckley, 1983; Beamish, 1988), management's assessment of success (Beamish, 1988; Lecraw, 1984), technology transfer (Asheghian, 1980; Coughlin, 1981), and retention of parental control (Geringer & Hebert, 1991; Phillips, 1970). Overall, studies of joint venture performance suggest that they can be profitable arrangements (Chowdry, 1992; Harrigan, 1988; Hu, Chen & Shieh, 1992; Lee & Beamish, 1995; Madhavan & Prescott, 1995).

Studies have also statistically analyzed the selection of joint ventures compared to alternative modes of entry (Kogut, 1988). However, the number of studies regarding licensing as a mode of entry is relatively limited. When compared with joint ventures, licensing appears to be less valuable (Davies, 1977). Nevertheless, when the focus of the cooperative agreement is the transfer of technology, then licensing is preferred to wholly-owned operations (Contractor, 1984; 1985). Broad-based studies of cooperative arrangements have examined the motivations behind a broad range of agreements (Mariti & Smiley, 1983), different types of arrangements, geographic locations, industry attributes and parental characteristics (Ghemawat, Porter, & Rawlinson, 1986).

The focus of later studies in the 1980s and 1990s has been primarily on issues of technology and cooperation (Hagedoom, 1993; Hagedoorn & Schakenraad, 1992; Kleinknecht & Reijnen, 1992; Miller, 1994; Pisano, 1991; Yang, Stoltenberg & Taylor, 1996). One of the common themes emanating from these studies was the importance of developing and enhancing the technological competencies of the firm. It is viewed by many that the key to success is the development of technological competencies. However, one major drawback of these studies was the singular focus on technology in driving alliance formation. Ignoring the potential impact of other value adding activities, little consideration was given for the broader scope of the firm.

### Value Chain Perspective

Alliances in numerous studies are classified as equity or non-equity ventures, or based on a legal differentiation. Although the legal structure is important, the purpose for the arrangement cannot be identified by its legal structure. For example, an equity-based R&D joint venture could have the same purpose as a cross-licensing agreement. Similarly, a non-equity co-production agreement could serve the

same purpose as an equity-based joint venture to produce a commodity. Due to differences in perspective, typologies of legal structure do not reveal the underlying activities, or purpose of cooperative arrangements. Porter and Fuller (1986) stress that cooperative arrangements should be treated as transactions and analyzed from the standpoint of their purpose.

Porter and Fuller (1986) identify four types of benefits that may be derived from cooperative arrangements: 1) economies of scale or learning, 2) access to knowledge or abilities, 3) reducing risk, and 4) shaping competition regarding who competitors are and the bases of competition. Each of these benefits can be examined within the framework of a simplified value chain (Contractor & Lorange, 1988; Porter, 1983; 1985; Porter & Fuller, 1986; Root, 1988). The simplified value chain consists of three activities: technology development (TD), logistics and operations (LO), and marketing, sales and service (MSS) (Porter & Fuller, 1986). Accordingly, cooperative arrangements between firms can be viewed as single or multiple value chain activities.

**Technology Development:** Cooperative arrangements for the purpose of technology development may obtain benefits from reducing risk, economies of scale, and shaping competition. In technology development fixed costs and the resulting importance of global scale are very high. Additionally, the time needed to develop new technology is relatively long compared to the time-frames associated with logistics and operations, and marketing, sales, and service (Lawrence & Lorsch, 1986). The long time frames before technology can be applied and returns gained, and the high costs that must be recovered combine to increase the risks associated with technology development.

In a number of industries, such as pharmaceuticals, electronics, computers, telecommunications, and aircraft, the absolute size of technological development costs has been increasing rapidly. For example, the average cost of developing drugs was \$250-\$300 million (*Economist*, 1993), and the cost of new passenger aircraft can cost \$2 billion dollars (*Economist*, 1994). Despite the transaction and coordination difficulties, cooperative arrangements can lead to increased pooling of R&D resources. By sharing the cost of such expensive technological developments the partners to the cooperative arrangement can reduce their exposure to risk (Porter & Fuller, 1986).

Where technological development consists of large fixed costs, and where one firm has advanced far beyond others in its technological development,

cooperative arrangements can provide access to that technology. Cooperative arrangements can be a quick means of accessing innovations that are hard to replicate in-house, despite substantial R&D spending. In a study of global technology, Howells & Woods (1993) found that the assessment of the potential in a technological development venture by the external collaborating partner was critical in providing strategic direction for the cooperative arrangement. TD cooperative arrangements can also provide a means to shape industry structure and markets through technological standardization (Porter & Fuller, 1986). For example, Kodak introduced a new generation of cameras in early 1996. The new camera resulted from a joint collaboration between Kodak and its arch rival Fuji. Later on Canon, Nikon, and Minolta participated in the joint effort as a means of establishing industry standardization and eventual product acceptance.

**Marketing, Sales and Services (MSS):** The marketing, sales and services activities of the value chain are greatly influenced by region or country scale, as well as by other attributes of the firm's position. MSS activities are largely downstream, being performed in the end market near customers, which allows them to be tailored to the individual needs of the specific market. The primary goal of MSS activities is to satisfy the customer's needs when the time-frame for decision making is relatively short (Lawrence & Lorsch, 1986). In domestic, but particularly in international markets, few firms can establish a dominant local market position swiftly through *solo de novo* entry.

For example, General Mills, despite its sizable resources, chose to enter the breakfast cereal market in Europe through an ICA with Nestle S.A., instead of a direct acquisition or a greenfield operation. By entering the market in such a manner General Mills was able to take advantage of Nestle's extensive sales force, distribution infrastructure, and in-depth knowledge of the Western European market (*Wall Street Journal*, 1990; *Fortune*, 1991). If General Mills had chosen to enter the market through its own efforts it would have taken a great deal more time and money.

**Logistics and Operations (LO):** Activities associated with the logistics and operations of a firm are sensitive to economies of scale. Such activities can be easily separated from other activities in the value chain due to the fact that they can add value even when located away from other activities, as long as they have ready access to factors of production (Aharoni, 1993; Porter & Fuller, 1986). The primary focus of operating activities is to reduce cost within relatively short time frames

(Lawrence & Lorsch, 1986). Although both MSS and LO make decisions in short time frames, the goals of the two differ since MSS focuses on providing customers with whatever they request, and the LO focus is on efficiency (Lawrence & Lorsch, 1986).

Cooperative arrangements for LO activities can enable a firm to accommodate increased demand that is not sufficient to warrant additional facilities within the firm (Porter & Fuller, 1986). For international cooperative arrangements, LO activities may allow a firm to gain access to previously inaccessible geographic locations. For example, although China represents only a small fraction of Nike's total sales, it is responsible for the production of a significant share of its footwear. Such production arrangements, primarily driven by favorable labor costs and skills, allow Nike the opportunity to take advantage of favorable conditions throughout the world.

In most empirical studies the unit of analysis is a legally defined joint venture. As was previously mentioned, such a legal classification does not accurately describe the purpose or intentions of the cooperative agreement. The general findings of these studies tend to support the hypothesis that cooperative arrangements create wealth. Based on the exploratory analyses of a limited number of studies it can be determined that joint ventures were established for three primary purposes: TD, MSS, and LO.

Although these three categories cannot completely describe all of the reasons for engaging in cooperative agreements research suggests that they do represent the majority of cases.

**Multiple Activities:** Inter-firm cooperation is not only confined to single activities along the value chain. Porter and Fuller (1986) clearly suggest that cooperation could involve multiple activities. From the simplified value chain framework utilized in the present study, four possible combinations (LO-TD, LO-MSS, TD-MSS and LO-TD-MSS) for cooperative agreements exist. Although the rationale for cooperating across multiple activities on the value chain is similar to those for single activities, multiple activity cooperation does significantly increase a firm's commitment to cooperation. Porter and Fuller (1986) cite two reasons for this required increase in commitment: a) activities may be so closely linked that cooperation in one activity leads to another (inter-relatedness), and b) when there are incentives to cooperate in multiple areas (transfer pricing).

The literature on diversification has argued that multinationals with high degrees of product diversification are more inclined to form joint ventures (Stopford & Wells 1972). In a later study of foreign

direct investment by U.S. firms, Stopford and Haberich (1976) found similar results. However, in studies by Caves and Mehra (1986), Dubin (1976), and Wilson (1980), firms following diversification strategies tended to avoid joint ventures. A more recent study by Kogut and Singh (1988) found only weak support for the diversification/joint venture relationship. Notwithstanding the lack of consensus in the research, we suggest that multiple-activity cooperation could mitigate the costs associated with managing the complexities associated with domestic and international diversification.

## HYPOTHESES

Available data indicate that the majority of recent cooperative arrangements are between firms involved in the same value chain activities. Ramaya, and Smith (1999) found that of 993 cooperative arrangements announced between 1987 and 1993 in the U.S. 64 percent were between firms in the single value chain category (logistics and operations was the most common area of cooperation followed by technology activities, then by marketing, sales, and services), while 22 percent involved multiple activity arrangements. These patterns pose a number of questions that have not been fully investigated empirically. For instance, 1) Does the type of cooperative arrangement signal the motivation for the arrangement? 2) What is the relative importance of firm characteristics and external factors in the type of arrangement that is formed? 3) Are there important empirical differences between arrangements involving similar activities and those involving dissimilar activities in the value chain?

A categorization of cooperative arrangements as single or multiple-activity provides a useful scheme for addressing these questions. Such a classification establishes a closer link between the type of arrangement and theoretical explanations of cooperative arrangements than that provided by the legal or ownership classification of arrangements. What has been relatively unexplored is whether the specific economic activities surrounding alliances have a systematic effect on competitive advantage. An added benefit of the classification adopted in this paper is that it provides an avenue for integrating existing theories on the formation of alliances rather than focusing on a typology of alliances. Finally, the characterization of cooperative arrangements as same-type or mixed-type permits further analysis of the empirical validity of competing perspectives on why alliances are formed. The following discussion considers factors that can influence the decision of a firm to enter into a

cooperative arrangement with another firm and the influence of these factors on the likelihood of same-type or mixed-type cooperative arrangements occurring.

### Firm-level Variables

**Size:** Fully 80% of the estimated 37,000 multinationals are classified as small to medium size operations. Just 420 of the total produce over half the world's total output (Stopford, 1994). The U.S. accounts for slightly less than half of these major multinationals. A substantial body of work has investigated the influence of firm size and growth on the propensity to engage in cooperative arrangements. Berg, Duncan, and Friedman (1982) found that average firm size and rapid growth in an industry were positively related to joint ventures, primarily because joint ventures were an attractive means to expand rapidly. However, Caves and Mehra (1986), Dubin (1975), Kogut and Singh (1988), and Wilson (1980) found the opposite to be true.

Given the fundamental changes over the last decade it can be argued that transactions costs of coordination and control in large firms would have increased. Teece (1992) and Dunning (1995) both invoke a transactions cost view that, in order to better coordinate the increasing complexities of large size, firms will opt for more CAs. A related empirical issue that has not been resolved is whether the complexities associated with large size make same-type CAs more likely than mixed-type CAs. Within the resource based view of strategic alliance it is not the size of the firm that matters but the resource characteristics of the firm (Tsang, 2000). Accordingly, we propose the following hypothesis:

*H1: A mixed CA is more likely to occur the larger the size of the firms involved.*

**Firm Performance:** From a managerial standpoint, large multinational firms tend to function in complex environments. The propensity to form international cooperative arrangements is likely, especially to address complexity. Firms that are successful from a managerial standpoint are likely to engage in more complex types of arrangements. Examples of measures of firm effectiveness include return on assets, return on investment, and return on sales. Thus the following hypothesis is suggested:

*H2. There is a positive relationship between a mixed-type CA and managerial effectiveness.*

## Industry Variables

As a result of in-depth studies of different industries, there is now a substantial body of work that has provided a much better understanding of how firms jockey for competitive positions within an industry. How does a firm's domestic industry structure, influence its activities abroad?

A high degree of concentration is indicative of substantial market power and scale barriers. In her study of joint ventures, Harrigan (1985) argued for and found empirical support that concentrated settings were more attractive for joint ventures because firms can focus on mutually desirable goals with greater ease. It is conceivable that industries that are highly concentrated do engage in higher degrees of cooperation. Teece (1992) and Dunning (1995) provide a transactions cost argument. They argue that it is in the interest of a firm faced with increasing complexity of operations to engage in cooperative arrangements.

**Product Differentiation.** A broad array of products is indicative of a high degree of product differentiation. The Stopford and Wells (1972) study found increasing product differentiation increased the likelihood of joint ventures in international markets. From a transactions cost perspective, costs associated with coordinating a wide array of products can become prohibitive as the array of products are expanded into newer markets and even into new uses for products. From a strategic positioning perspective the complexities of product positioning and control can become immense. As a result, ICAs become an attractive vehicle to manage both coordination costs, reduce transactional inefficiencies, and simultaneously expand into markets. They are likely to be dominant in mixed type CAs. Hence the following hypothesis:

*H3: There is a positive relationship between mixed type arrangements and industry differentiation*

**Growth:** From a competitive positioning perspective a growing industry is characterized by lower barriers to entry and opportunity to earn superior profits (Yip, 1982). Since first mover advantages are temporary, one possibility strategy for sustaining a competitive advantage in a growing market could be through faster positioning through cooperative arrangements. Historically U.S. MNCs have been engaged to varying degrees in diversifying their operations (Stopford and Wells, 1972), often blurring traditional industry boundaries. A valid concern expressed by some researchers is the appropriate measure of industry environment under these conditions (Dess, Ireland and

Hitt, 1990). Some have argued that a firm's traditional orientation and its sources of advantage are closely aligned with the primary industry in which it operates (Galbraith and Kazanjian, 1986; Chan, Martin and Kensinger, 1990). A high growth industry is likely to engage in more complex types of activities such as mixed arrangements. Hence, the following hypothesis:

*H4: There is a positive relationship between industry growth and mixed type CAs*

## Country Factors

There is strong evidence that country differences play a major role especially within the context of entry modes into international markets. Hymer's early work in the growth and evolution of the multinational clearly revealed the structural differences that exist between countries. The subsequent work by Farmer and Richman (1970) provided a better understanding of the socio-political and cultural factors underlying country differences. There is general consensus today that a country's economic, political, legal and cultural environment is not only a major influence on the multinational firm's decision to enter, but also the kind of activities that are eventually undertaken (Root, 1988). This study examines the effect of two country factors: market size, stability.

**Market Size.** A large country market is synonymous with a number of characteristics. First, the existence of substantial purchasing power. (Robock & Simonds, 1973) Purchasing power is influenced by rising incomes and demand for a plethora of goods and services. Second, a large market is indicative of substantial resources, especially in terms of an educated and skilled workforce. Since market conditions are not static, the ability to react quickly to changing market conditions is extremely important. ICAs can become an important vehicle for a company to rapidly position itself in a market. Furthermore, an ICA presence facilitates a greater awareness of local conditions and staying on top of country developments. The information flow and insights are essential for continual growth and expansion of firm activity (Bell, 1993).

**Stability.** A high degree of stability reduces the uncertainties associated with operating in a foreign environment. The uncertainties that directly affect a firm's foreign operations occur at both the macro and micro level. These uncertainties include instability of currency exchange rates, rising inflation and interest rates, chronic balance of payment difficulties, a well-functioning legal structure that ensures property rights, profit repatriation, fears of nationalization or

expropriation, hostile cultural, and xenophobic attitudes (Bell, 1993; Root, 1988). These factors have a major influence on the entry of multinationals especially in developing countries. Much of the foreign investment outside of the developed countries to date by multinationals has been directed towards the Far East, primarily because the region is considered highly stable.

*H5: There is a positive relationship between market size and mixed type ICAs*

*H6: There is a positive relationship between stability and mixed type ICAs*

## DATA

Using a sample of U.S. based manufacturing multinationals, a sample of 126 international cooperative arrangements involving Japanese firms were identified from 1987 through 1993 from the *Wall Street Journal*. The approach for identifying these ICAs was through "literature based alliance counting" (Hagedoorn & Schakenraad, 1992, 1994), a form of content analysis. The method includes both a "definitional" and "inclusionary" criteria. The criterion that was employed is based upon Porter's original definition of the constituent elements of the value chain (Porter, 1985). Under the "definitional" criterion, information identified as ICAs was matched to the criteria of what constitutes an ICA from a value chain perspective and was appropriately classified in pure (LO, TD, MSS) and mixed (LO-TD, LO-MSS, TD-MSS, LO-TD-MSS) categories. This yielded a total of 95 single-type and 24 mixed arrangements.

## METHODOLOGY

To estimate the impact of a particular variable on the likelihood that an arrangement between two firms would involve activities at the same stage of the value chain a logit model was utilized. With the dependent variable being dichotomous in nature, that is, taking on a value of 1 if a cooperative arrangement is same-type and a value of 0 if the arrangement is mixed-type the logistic regression technique is used to estimate the model. This technique is based on creating an odds ratio, which indicates the odds of a particular type of arrangement being formed. For instance in our model the odds of an arrangement being same-type relative to mixed-type would be the ratio of the probability of an arrangement being same-type divided by the probability of an arrangement being mixed-type. These probabilities are based on the relative frequency of the 0 and 1 values of

the dependent variable. The relative importance of different independent variables in explaining the likelihood that a cooperative arrangement is then obtained from the coefficient estimates of a regression model<sup>1</sup> with the log of the odds ratio as the dependent variable and regressors chosen in relation to hypotheses presented earlier.

To predict the probability that a given arrangement will be a same-type arrangement, we propose the following model:

$$P(Y) = \frac{1}{1 + e^{-Y}}$$

where Y=1 if the cooperative arrangement is of same-type form and 0 if it is not. It is assumed that Y is linearly related to the variables shown below:

$$Y = \beta_1 + \beta_2 \text{ FIRMSIZE} + \beta_3 \text{ ROS} + \beta_4 \text{ COUNTRYSTAB} + \beta_5 \text{ INDGRW} + \beta_6 \text{ INDDIVER} + \beta_7 \text{ GDPPCAPITA} + \text{error}$$

where Firm Size = log of firm's net sales; ROS = return on sales; COUNTRYRSK = country risk; INDGRW = industry growth; GDPPCAPITA = GDP per capita.

A priori  $\beta_2, \beta_3, \beta_4, \beta_5, \beta_6$  and  $\beta_7$ , are expected to be negative.

## RESULTS

As indicated in Table 1, firm size and return on sales are significant. The larger the firm's size measured by total sales and the stronger the firm's performance, measured by return on sales, reduce the odds (probability) that an alliance will be of a single-type arrangement (*supporting Hypothesis 1 and 2*). While there was no support for industry-specific factors, country stability was statistically significant where the greater the country stability, the lower the probability that the cooperative arrangement will be of a single-type arrangement (*supporting Hypothesis 6*).

## CONCLUSION

Although a substantial body of literature has evolved about alliances formed by multinationals, there has been no clear consensus about the direction of more recent inter-firm arrangements. One of the major limitations of past studies has been the focus on the legal delineation of the arrangement as the basis for investigation, as opposed to the kinds of activities actually undertaken by

<sup>1</sup> Using for instance, weighted least squares or maximum likelihood techniques.

the cooperative endeavor. While Harrigan (1988) provided a rich framework for understanding the operating environment of cooperative arrangements (e.g., joint ventures), her study did not examine the broader scope of value-added activities external to the firm. The current study has extended Harrigan's earlier analysis with a preliminary focus on the determinants of international cooperative arrangements. Although the results provide some indication of firm preferences for different types of activities, the results are limited.

Beyond the significance of firm and country factors in explaining preferences for single and mixed type activities, substantial work is needed to extend the current study to incorporate a much better understanding of why firms chose the kinds of value chain activities that would lend to efficient and effective cooperative endeavors. Such an undertaking invariably requires more fine grain analysis of factors and the interdependencies among factors that drive inter-firm cooperation. Two challenges associated with this undertaking is first to consider what Tsang (2000) suggests as theoretical pluralism when cooperation as a phenomena is best understood from the integrating both transaction cost and resource based views. Second, the challenge of construct operationalization. Although from a methodological standpoint transaction cost is well established, the operationalization of constructs that proxy the resource based view of the firm is still in its early stages (Tsang 2000). In the near term a logical extension of this study would be to undertake a longitudinal exploration using both transaction cost and resource-based views of inter-firm cooperation.



Table 1: Logistic Regression Results				
Variable	Coefficient	Standard error	P-Value	Odds ratio
Firm Size	-0.4905	0.2266	0.0304	0.612
Return on Sales	-0.1325	.0615	0.0312	0.876
Industry Growth	0.1981	0.9102	0.8277	1.219
Industry Differentiation	6.0830	19.3135	0.7528	438.329
Country Stability	-0.3763	0.1563	0.0160	0.686
GDP Per Capita	0.000214	0.000154	0.1636	1.00

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