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**STRUCTURAL PREFERENCES OF STRATEGIC ALLIANCES:
RISK PERCEPTION AND RESOURCE-BASED PERSPECTIVES**

by

BING-SHENG TENG

A dissertation submitted to the Graduate Faculty in
Business in partial fulfillment of the requirements for the
degree of Doctor of Philosophy, The City University of
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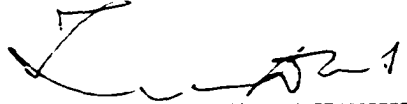
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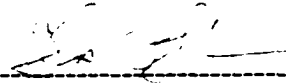
This manuscript has been read and accepted for the Graduate Faculty in Business in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

July 27, 1998
Date

August 4, 1998
Date



Chairman of Examining Committee



Executive Officer

Professor H. Jack Shapiro

Professor Edward Wolf

Supervisory Committee

The City University of New York

Abstract

**STRUCTURAL PREFERENCES OF STRATEGIC ALLIANCES:
RISK PERCEPTION AND RESOURCE-BASED PERSPECTIVES**

by

Bing-Sheng Teng

Advisor: Professor T. K. Das

Strategic alliances differ greatly in their structural arrangements, including joint ventures, equity alliances, joint R&D, joint production, etc. Given this structural variety, the aim of this dissertation is to understand how the partners come to form their own structural preferences, an issue which has not been explored in the literature.

Thus, the principal focus of this dissertation was to propose two alliance structuring models: a risk perception model and a resource-based model. The risk perception model explains structural choices as the outcome of evaluating two key risk types in alliances: relational risk and performance risk. Relational risk is concerned with satisfactory cooperation, while performance risk is the hazard of not achieving alliance objectives, even though the partners cooperate fully. Alliance structural preference is based on the criterion of minimizing the overall level of these two types of risk.

The resource-based model accounts for partners' structural preferences through their respective resource profiles, which are defined by the composite of property-based and knowledge-based resources. Since strategic alliances are about accessing other firms' resources, alliance partners are motivated to appropriate others' resources as well as to

protect their own in the alliances. Thus, depending on both firms' resource profiles, a firm will prefer the structure that facilitates both these above purposes.

The contributions of these two models are insights into individual firm's alliance structural preference, thereby supplementing the existing studies which examine the actual alliance structures only.

The second part of this thesis proposes procedures for carrying out an empirical study to test the two models. As a demonstration of this research process, a survey was undertaken with senior business executives of firms that formed strategic alliances recently. Over 900 top managers of U.S. alliance partner firms were sent a questionnaire. Fifty three usable returns were received. A number of statistical analyses were carried out, including logistic regression analysis and discriminant analysis. Since this survey was exploratory in nature and limited in terms of construct validity and sample size, future research should follow up on this demonstration and focus on instrument validation and large sample testing.

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During the past five years, I have devoted myself entirely to one goal -- my Ph.D. So far in my life I have never done anything as difficult, demanding and rewarding. Facing the numerous obstacles and challenges, I constantly tell myself one thing: "Whatever it takes."

It turns out that it also takes a few good people. Without these people my doctoral education would have been much more lonely and less fulfilling. To them, I would like to extend my sincere gratitude.

My advisor Professor T. K. Das has been a mentor in every conceivable sense. When I first met him, I was a green student starting to develop an interest in strategic management. In the past four years I have learnt so much from him that by now we have jointly published five articles. Professor Das offered detailed and thoughtful guidance at every step along the way so that I can grow as rapidly as possible. Professor Das nurtures my professional growth with a great sense of duty, and he has taken great pride in my progress and achievements. His high hopes on me have encouraged me to keep working on it. Professor Das has never hesitated to champion me or my efforts. For all he has done, I consider myself very fortunate to have met Professor Das.

The other two members of my dissertation committee also deserve my thanks. Professor Jack Shapiro has been a skillful critic and his comments helped me to clarify important issues in the dissertation. Professor Ed Wolf has always offered much needed

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DEDICATION

To my grandfather.

from whom I have learnt the importance of
observing and reasoning on my own.

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CHAPTER 1

INTRODUCTION

1.1 Defining Strategic Alliances

The rapid pace of technological development and globalizing markets is creating a new competitive environment in which competing alone means missing opportunities and resources available from other firms. As a result, strategic alliances, or voluntary interfirm cooperative agreements (Parkhe, 1993a), have become one of the most notable trends in recent years (Gomes-Casseres, 1996; Gulati, 1995a, b; Ycshino & Rangan, 1995). In search for so-called "collaborative advantage" (Huxham & Macdonald, 1992; Kanter, 1994), many firms find their performance and survival increasingly dependent on their collective activities with other firms (Gulati, Khanna, & Nohri, 1994; Oliver, 1990). "To find the right balance of competition and cooperation" has become a challenge to many strategists (Teece, 1992: 1).

A large number of studies have attempted to understand the rationale, process, and implications of strategic alliances (e.g., Alter & Hage, 1993; Astley, 1984; Contractor & Lorange, 1988; Das & Teng, 1996, 1997a, 1998a, b; Deeds & Hill, 1996; Devlin & Bleackley, 1988; Hagedoorn, 1993; Hennart, 1988; Hennart & Reddy, 1997; Mitchell & Singh, 1996; Mohr & Spekman, 1994; Mjoen & Tallman, 1997; Ring & Van de Ven, 1992, 1994; Sheppard & Tuchinsky, 1996; Singh & Mitchell, 1996). However, researchers have not reached agreement regarding what kinds of interfirm cooperative arrangement would qualify as strategic alliances (Borys & Jemison, 1989).

According to one view, strategic alliances should be understood to cover only those interfirm arrangements characterized by long-term interdependence, shared control, and continued contributions by the parent firms (Devlin & Bleackley, 1988; Yoshino & Rangan, 1995). Cooperative forms with these characteristics are rather distinct from traditional interorganizational relationships such as licensing and joint bidding. In this view, licensing and R&D contracts would not be regarded as alliances because not all three criteria are met. In contrast to this restrictive view, most researchers tend to include short-term and contract-based interfirm cooperation as well (Gulati, 1995a; Lei & Slocum, 1991; Mowery, Oxley, & Silverman, 1996; Murray & Mahon, 1993; Stafford, 1994). As such, licensing, R&D contracts, distribution agreements, and enhanced supplier partnerships are also forms of strategic alliances. In this study, the broad view is adopted and strategic alliances are defined as *interfirm cooperative arrangements aimed at achieving the strategic objectives of the partners*.

In this broad view, strategic alliances would include typical cooperative arrangements such as joint ventures, minority equity alliances, R&D contracts, research consortia, joint R&D, joint production, joint marketing and promotion, enhanced supplier partnership, shared distribution/service, distribution agreements, licensing agreements, subcontracting agreements and so on (Gates, 1993; Yoshino & Rangan, 1995). It needs to be noted that equity investments for financial interests only are not strategic alliances (Pisano & Teece, 1989). The reason is that there is no joint mission or project to be accomplished in this type of equity investment.

1.2 The Issue: Alliance Structure

The various arrangements reflect the variety of structural forms that can be used in a strategic alliance. The vital importance of alliance structure is evident in the finding of a recent study undertaken by Yoshino and Rangan: “Virtually every manager interviewed in our study believed that the success or failure of alliances hinged on their structures” (1995: 79). In recent years, theorists have been particularly interested in the following research question: “why is a certain governance structure preferred over others?”. For example, why are certain alliances featured with equity arrangements while others are not (Gulati, 1995a, Osborn & Baughn, 1990)?

In the area of strategic alliances, relevant studies have drawn from theories such as transaction cost economics (Williamson, 1975, 1985), social exchange (Blau, 1964; Emerson, 1962), resource dependence (Pfeffer & Salancik, 1978), strategic behavior (Porter, 1980, 1985), bargaining theory (Bacharach & Lawler, 1981; Nash, 1953), political economy (Benson, 1975), dialectical model (McGuire, 1988; Zeitz, 1980), and institutional theory (DiMaggio & Powell, 1983). Although each has its own merit, not all theories are useful in explaining structural choices in alliances. As a result, there is an inadequate understanding of the structural decisions made by partners.

1.3 Research Objectives

This thesis has three major research objectives. While some studies have examined alliance structural outcomes as linked to several situational factors (e.g., Gulati, 1995a; Osborn & Baughn, 1990), those studies mostly belong to so-called strategy

content research and focus on the ultimate alliance structures (see literature review). In contrast, the present study takes a more process-oriented approach and focuses on alliance structural preferences of partner firms. It is believed that partner firms develop their alliance structural preferences separately, and the ultimate alliance structure is a compromise between their structural preferences. Thus, studying only actual alliance structures tends to miss a very important step in the alliance structuring process. In this sense, the first and overall purpose of this study is to understand individual partner firms' alliance structural decision making, which would shed much light on strategic decision making in general.

To that end, two new, parallel approaches will be developed in this study, namely a risk perception model and a resource-based model. Both models contain a so-called bargaining power element, which explains preference reconciliation among the partners.

Thus, the second objective of this research is to develop the risk perception model, which highlights the crucial role played by managerial perception in strategic decision making (Das, 1986, 1987, 1991; Gifford, Bobbitt, & Slocum, 1979). This model seeks to explain structural preferences as the outcome of risk evaluation (see also Das & Teng, 1996). It is proposed that risk perceptions of strategy makers serve as the heuristic that helps form their respective structural preferences.

The third objective of this study is to develop a resource-based model of alliance structuring. The resource-based view stresses the importance of a firm's various resources in determining its strategy (Barney, 1991; Conner, 1991; Wernerfelt, 1984). However, few studies have applied the resource-based view to strategic alliances, and the

structural choice of alliances has not been examined from this view. In this study partners' resource profiles will be linked with their structural preferences.

1.4 Organization of the Thesis

The thesis is divided into two parts. While Part A focuses on the theoretical development of the two models, Part B demonstrates a research process (i.e., a mail survey) for testing the models. Specifically, Chapter 2 is a literature review of both process and content research on strategic alliances, with a particular focus on alliance structures. Chapter 3 presents the risk perception model. In Chapter 4, the resource-based explanation for alliance structural preference is advanced. A number of hypotheses are derived from both approaches. Chapter 5 discusses preference reconciliation, i.e., the actual alliance structures emerge from partners' structural preferences. Chapter 6 concludes Part A by discussing the theoretical and managerial implications of the two models. In Part B, Chapter 7 is concerned with research methodology, and Chapter 8 demonstrates statistical tests of the hypotheses. Finally, Chapter 9 offers limitations of the current research and future research directions.

PART A

**DEVELOPMENT OF
ALLIANCE STRUCTURING MODELS**

CHAPTER 2

LITERATURE REVIEW

Interdisciplinary attention to the topic of strategic alliances has been growing steadily in recent years. To sociologists, alliances such as joint ventures are a new form of social institution, a hybrid organization that uses resources from more than one organizations, blurring the once clear-cut boundary of organizations (Boryst & Jemison, 1989; Powell, 1987). For organization theorists, strategic alliances exemplify a strong form of interorganizational relationships that requires constant inputs into the partnership (Auster, 1994; Larson, 1992; Yoshino & Rangan, 1995).

To economists, strategic alliances represent a way of economic exchange distinct from the two basic forms: market and hierarchy (Williamson, 1975, 1985). Finally, strategic management scholars view strategic alliances as representing a form of strategic maneuvers that consolidate parent firms' competitive position (Hagedoorn, 1993). The growing interests in strategic alliances have begun to provide significant insights.

Traditionally, strategy research has been classified as process-oriented or content-oriented (Chakravarthy & Doz, 1992). While strategy content research "focuses exclusively on what strategic positions of the firm lead to optimal performance under varying environmental contexts," strategy process research tries to understand "how a firm's administrative systems and decision processes influence its strategic positions" (Chakravarthy & Doz, 1992: 5). This chapter will review both content research and process research on strategic alliances, with an emphasis on governance structure of

strategic alliances. The review would show that the literature on alliances is not balanced between these two broad approaches. Most research has drawn inspiration from more content-oriented theories such as transaction cost economics. Thus, a need for more process research on strategic alliances will be argued, which then leads to two process-oriented frameworks.

2.1 Content Research on Strategic Alliances

The following section reviews major theories that have been fruitfully applied to the strategic alliances, and especially alliance structures. Since the literature of alliance structure has focused on the choice between equity and non-equity alliances, some explanation for this structural dichotomy is presented first.

2.1.1 Equity vs. Non-Equity Alliances

Researchers have often differentiated equity alliances from non-equity alliances. The dichotomy is believed to provide a clear-cut and meaningful way to distinguish various types of strategic alliances (Gulati, 1995a; Hennart, 1988; Killing, 1988; Parkhe, 1993a; Rugman, 1980; Teece, 1992). Alliances are equity-based when there is equity creation or transfer between the partners. There are two basic forms of equity alliances: joint ventures and minority equity alliances. The former involves creating new entities whose equity is shared by the partners. In the latter form one party takes a minority equity position in another party in order to carry out a joint mission. Non-equity alliances, on the other hand, are not concerned with equity or ownership transfer, and they include governance structures such as joint R&D, research consortia, joint production and

so on. It has been contended that equity alliance vs. non-equity alliance may be the most clear-cut typology in strategic alliances (Gulati, 1995a).

Equity alliances, including joint ventures and minority equity alliances, are believed to be more hierarchical than non-equity alliances, which are contractual agreements without equity ownership. Many theorists (e.g. Hennart, 1988; Pisano, 1989) suggested that, since equity ownership significantly affects the level of hierarchical control, the equity vs. non-equity dichotomy is an important bifurcation. It has been argued that joint ventures and minority equity alliances can be classified as one category because "a direct equity investment by one firm into another essentially creates an equity joint venture between one firm's existing shareholders and the new corporate investor" (Pisano, 1989: 111).

Thus, despite the risk of being oversimplified about alliance structure, several studies have adopted this dichotomy and revealed certain rationale behind the choice (Gulati, 1995a; Osborn & Baughn, 1990; Tallman & Shenkar, 1990). In the following sections, major content theories that have been applied to strategic alliances are reviewed. Their implications for alliance structure, and especially for the equity-non-equity choice, would be highlighted and summarized.

2.1.2 Transaction Cost Economics

Transaction cost economics was originated by Coase (1937) and articulated most notably by Williamson (1975, 1985). Initially, it attempted to answer one basic question: why do economic organizations exist? Coase (1937), who challenged Adam Smith's view that only work division in formal organizations makes efficient production possible,

held that no formal organization is needed if all exchanges can be efficiently accomplished through the market. It seems possible to rely on price mechanisms for each exchange even in large projects that need many people. According to Coase, the reason organizations exist is that there is a cost involved in using price mechanism, which he named transaction cost. Transaction cost is to exchange like friction is to movement. Assuming that economic actors are boundedly rational and often opportunistic. Williamson (1975) identified the major source of transaction costs as the uncertainties in frequent exchanges that require asset specificity. In order to control uncertainties involved in long-term exchanges, arm's-length contracts have to be written and enforced. This causes considerable expenses. As a result, using price mechanisms in every exchange will be so costly that no sizable collective work will be economically suitable. By comparison, in formal organizations, or hierarchies, exchanges are internalized and most price mechanisms are eliminated, so that efficient coordination may become economical. The key is how much governance cost is incurred by internalizing all transactions. In general, transaction cost economists assert that when transaction costs of market transactions exceed governance costs from internalization, hierarchies will be formed (Coase, 1937; Demsetz, 1991).

This transaction cost view has been applied to strategic alliances and has become the dominant approach in strategic alliances (Hagedoorn, 1993; Hennart, 1988; Kogut, 1988; Parkhe, 1993a; Pisano, 1991; Ring & Van de Ven, 1992). Strategic alliances can be viewed as a hybrid form between markets and hierarchies, since alliance partners internalize some transactions between them while conducting other transactions through

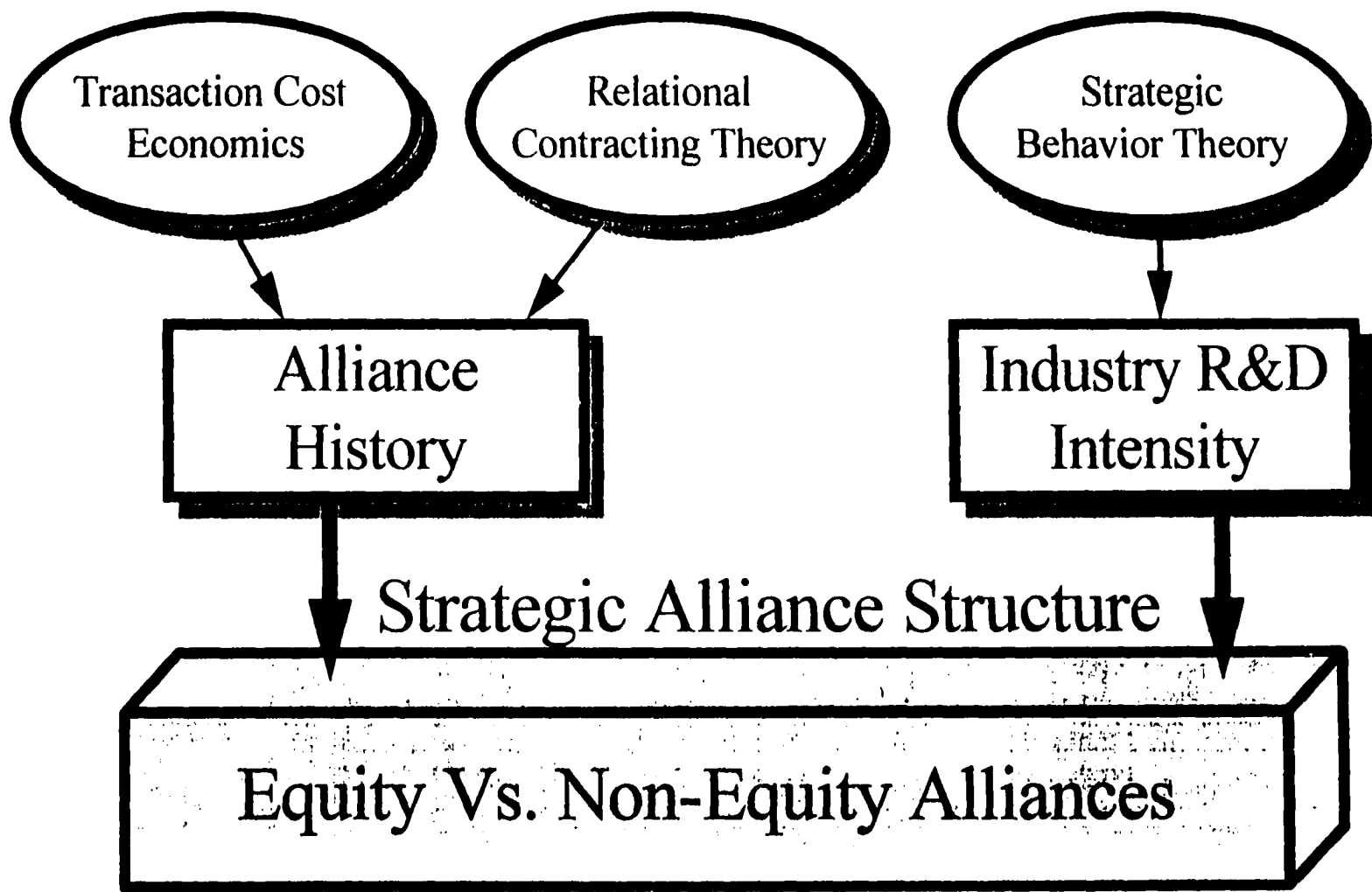
price mechanisms (Gerybadze, 1995). According to transaction cost theorists, strategic alliances are economically justified when the sum of transaction costs and governance costs in strategic alliances is lower than that of market and hierarchies. Within alliances, economy is obtained by internalizing those exchanges that incur high transaction costs, but leaving other exchanges in the market.

Extending this logic, transaction cost theorists argue that the choice of governance structure reflects the need to control transaction costs (Gulati, 1995a; Pisano, 1989; Pisano, Russo & Teece, 1988). Special attention is paid to opportunistic behavior of the partners, or guileful self-interest seeking (Williamson, 1975). It has been suggested that the concern with opportunism promotes the need to write detailed contracts *ex ante* and to monitor these contracts *ex post* (Hennart, 1988; Williamson, 1985). As a result, perception of opportunistic behavior leads to more deterrence devices (Parkhe, 1993a).

The choice of governance structures seems to serve as one of the deterrence devices (Ring & Van de Ven, 1992). Regarding the choice between equity alliances and non-equity alliances, transaction cost theorists argued that shared equity ownership can be viewed as mutual hostage, so that it signals credible commitments (Williamson, 1983). Since equity alliances more closely align the interests of all partners, equity alliances can effectively deter opportunistic behavior. Thus, transaction cost theorists submit that equity alliances will be adopted if the need to deter opportunistic behavior is high. When alliance partners have a long history of cooperation, the perceived risk of opportunism tends to go down significantly. The perceived need for using equity alliance to control opportunism is thus decreased.

FIGURE 1

Accepted Theories on Alliance Structural Choices



2.1.3 Social Exchange Theory

Sociologists view exchange relations as a dynamic process in which multiple parties carry out activities to the end of exchanging valuable resources (Homans, 1958). Based on this view, sociologists (Blau, 1964; Emerson, 1962; Homans, 1958) developed the “social exchange” theory, which states that the basis for sustained exchange relationship is the scarcity of resources (Cook, 1977). Only if individuals expect others to have resources they need will they prefer exchange to other alternatives.

Two mechanisms are believed to be crucial in social exchange theory: power and trust (Hallen, Johanson, & Seyed-Mohamed, 1991; Luhmann, 1979). The power model as developed by Emerson (1962) focuses on the tie based on a need for resources. It is suggested that when one needs resources possessed by others, he or she develops a dependence on those others. Conversely, those who possess resources desired by others are said to have power.

The trust mechanism in social exchange, on the other hand, is concerned with the emotional bond developed in repeated interactions (Blau, 1964). While economic theory views exchange as purely utilitarian, social exchange theory posits that psychological elements such as trust are as important (Emerson, 1987). Regarding interorganizational relationships, organization theorists adopted social exchange theory and emphasized the role of trust in strategic alliances (Bradach & Eccles, 1989; Madhok, 1995; Maitland, Bryson, & Van de Ven, 1985; Zaheer & Venkatraman, 1995). Interfirm trust that exempts the partners from purely market exchanges is the essence of this view. Oliver (1990), for example, identified reciprocity as a crucial dimension for constructing

alliances. This kind of trust-based exchanges is thus termed relational exchanges, as opposed to discrete exchanges (Heide, 1994; Macneil, 1980, 1981). According to Ring and Van de Ven (1992), alliances predominantly based on trust can be called relational contracts, while those that rely more on market-based transaction are named recurrent contracts. Clearly, recurrent contracts are costly in writing and monitoring the contracts. The difference is in the degree of reliance on interfirm trust and partners' self-control behavior (Maitland et al., 1985).

One key point of social exchange theory is that it is possible to develop a sense of trust between the partners over time (Cook, 1977). Similarly in alliances, Gulati (1995a) reported that a historically developed sense of interfirm trust among the partners changed the way that strategic alliances are structured. Besides history, trust also arises from exchange partners' expectation that they will engage in future transactions (Axelrod, 1984). The partners are likely to comply with contracts due to so called "shadow of the future" effect (Heide & Miner, 1992). With regard to governance structure of strategic alliances, the rationale provided by social exchange theory is straightforward: a high level of interfirm trust reduces the need for structural control in alliances. Since equity alliances are deemed more hierarchical and feature more control mechanisms, they are less needed in a relationship that is marked by trust. Using the number of previous alliances between the same partners as a proxy for interfirm trust, it was proposed that "the greater the number of previous alliances between the partner firms in an alliance, the less likely the alliance is to be equity based" (Gulati, 1995a: 94).

2.1.4 Strategic Behavior Theory

The strategic behavior theory is concerned with how an advantageous position against rivals is gained (Porter, 1980, 1985). In this vein, the adoption of strategic alliances is viewed as a way to gain competitive advantage. From the perspective of the SWOT analysis (strength, weakness, opportunity, and threat), strategic behavior theory attempts to predict when and how strategic alliances can help individual firms capitalize on opportunities and minimize threats (Gray & Wood, 1991). Kogut (1988) explained the contrast between a transaction cost view and a strategic behavior view of strategic alliances. According to him, the transaction cost view starts from the assumption that the purpose of forming strategic alliances is to minimize the sum of production costs and transaction costs. By comparison, strategic behavior theory holds that through strategic alliances a firm can improve its competitive position vis-à-vis its rivals, so that profits will be maximized. In line with the strategic behavior theory, Zajac and Olsen (1993) asserted that joint value maximization is the essence of strategic alliances.

The strategic management literature has identified various motives for entering strategic alliances: gaining access to technologies or market, gaining economies of scale in production or R&D, reducing risk and risk sharing in R&D, gaining synergy, and attacking industry leader (Glaister & Buckley, 1996; Hagedoorn, 1993). Clearly, the underlying rationale, as captured by the strategic behavior theory, is to improve the firm's competitive position and to gain competitive advantage. For the sake of competitive advantage, two types of strategic motives have been prevalent in strategic alliances: first mover advantage and entry deterrence (Kogut, 1988). In industries with rapid

technological development, the incentive for being first mover could be so great that interfirm collaboration is well justified (D'Aveni, 1995). Moreover, strategic alliances among strong players can effectively deter entry of potential rivals (Porter, 1985). Thus, strategic behavior theory gives reasonable justifications for strategic alliances formation.

With regard to alliance structural choice, strategic behavior theory underscores the determining influences of alliance purpose. Pisano and Teece (1989) reported that alliance purposes and alliance structures are not independent but in fact are systematically related. It was found that alliances are more likely to be contract-based when formed only for R&D purposes (Pisano & Teece, 1989). The logic is that certain structures are simply more compatible with certain alliance objectives. Osborn and Baughn (1990) applied this view to the choice between equity and non-equity alliances. According to them, strategic alliances in industries with high R&D intensity are more likely to be non-equity alliances. The reason is that in high-tech areas knowledge and technology change so fast that strategic flexibility becomes essential. As a result, non-equity alliances, as a less embedded structure, preserve much of the flexibility that is needed in case spin-offs are inevitable. Osborn and Baughn's (1990) study found empirical support for the prediction.

2.1.5 Other Theories

In addition to the above three major theories, researchers have applied other theories to the phenomenon of strategic alliances. However, those theories generally have little to say about alliance structures.

Resource Dependence Theory. Pfeffer and Salancik (1978) developed resource dependence theory for interorganizational relationships. In this view, strategic alliances can be regarded as a strategy to manage environmental uncertainty and dependence. Obviously, forming strategic alliances with those who possess desirable resources is a way to ensure the availability of resources (Pfeffer & Nowak, 1976; Provan, 1993; Skinner, Donnelly, & Ivancevich, 1987). Hence, firms will deliberately enhance “the extent of coordination with the relevant set of exchange partners” (Heide, 1994: 73). In this sense, resource dependence theory provides an alternative justification for entering strategic alliances: controlling resources and gaining power. However, as Heide (1994) aptly pointed out, beyond this generalization resource dependence theory offers limited insights into the specifics of strategic alliances, e.g. various aspects of contractual arrangements.

Institutional Theory. DiMaggio and Powell’s (1983) institutional theory suggests that firms may enter into strategic alliances to comply with institutional norms. In other words, the increasing popularity of strategic alliances may be a form of bandwagon behavior, attributable to firms’ mimetic motive (Kogut, 1988).

Organizational Learning Theory. This theory singles out learning as the key element for understanding strategic alliances (Hamel, 1991; Kogut, 1988). Asymmetries in the skill of partners create a necessity for strategic alliances (Contractor & Lorange, 1988; Oliver, 1990). Thus, inter-partner learning is the essence of the alliance processes (Hamel, 1991). Inter-partner learning not only determines the outcome of a current alliance, it also affects the prospect of forming alliances in the future.

Philosophical Theory. Philosophical thoughts such as the dialectical view have also been applied to interorganizational relationships (Das & Teng, 1997b; McGuire, 1988; Zeitz, 1980). The dialectical theory assumes a pluralistic world in which contradictory forces compete with each other for domination. Strategic alliances are embedded in various competing forces. The partners are faced with the dialectics of payoffs and pitfalls of alliances (Lei & Slocum, 1991), and thus they need to strike a balance between competition and cooperation (Teece, 1992).

Political Economy. Lastly, a political economy perspective has been brought into the arena of strategic alliances (Benson, 1975; Stern & Reve, 1980). The political economy approach “views a social system as comprising interacting sets of major economic and sociopolitical forces which affect collective behavior and performance” (Stern & Reve, 1980: 53). The linkages between alliance partners are thereby treated as the internal political economy, constrained and conditioned by a broad external political economy.

It appears that most foregoing theories fall in the category of content research. In strategy content research, strategic decision makers and their decision making process do not constitute the theoretical core. Strategy content research is not concerned with the way strategists make their decisions, in the belief that certain objective criteria such as economic efficiency will be the determining factors. While recognizing the merits of strategy content research, some theorists have suggested that a process approach should be applied to the study of strategic alliance as well (Doz, 1996). Organizational variations have been found well beyond what objective, economic reasoning could

account for (Lewin & Stephens, 1994). Das (1986) contended that strategy makers constitute a significant factor, so that no appreciation of strategic outcomes can be achieved without understanding the nature of their role. As Anderson and Paine (1975: 812) noted, “strategy formulation is subject to many subjective (behavioral, political, emotional) forces which influence its ultimate form.” The next section reviews studies on alliances that followed a process orientation.

2.2 Process Research on Strategic Alliances

According to Van de Ven (1992: 170), the word “process” has been used as a logic, a category of concepts, and a developmental event sequence. The two most relevant areas of strategy process research for understanding strategic alliances are strategic decision making (Eisenhardt & Zbaracki, 1992; Schwenk, 1995), and alliance developmental sequences (Ring & Van de Ven, 1994). This section briefly reviews alliance research with regard to these two process areas.

2.2.1 Decision Making about Strategic Alliances

Studies on strategic decision making in alliances aim at understanding the perceptions and decision contexts that underline the partners’ decisions regarding strategic alliances (Tyler & Steensma, 1995). The key to this approach is to give decision makers a prominent role in the alliance making process. Accordingly, decision makers are no longer assumed as completely rational; rather, they are believed to reason with limited capacity and to be exposed to heuristic biases (Thomas & Trevino, 1993).

Because process research has been rather underdeveloped, there are not too many process-oriented “theories” that have been applied to strategic alliances.

Game Theory. Game theory is concerned with the context and process of forming cooperative relationships. Developed by Nash (1953) and others, game theory delineates the decision context as well as a set of rules that rational decision makers will follow in deciding whether to cooperate. One situation that most dramatically highlights such context and rules is known as the prisoner’s dilemma (for a brief description see Parkhe, 1993a). In essence, assuming that neither party knows the partner’s intention, the prisoner’s dilemma demonstrates that decision makers would unanimously choose a sub-optimal strategy, or no cooperation, when payoff patterns are set in certain ways.

It is argued that this situation could be analogous to that of prospective strategic alliances, since the payoff from cheating is often attractive in alliances (Parkhe, 1993a, b). Thus, only if the partners can keep themselves away from this trap could strategic alliances actually take shape. Gulati and associates (1994) argued that many strategic alliances fail because the partners view themselves in a prisoner’s dilemma position and thereby act opportunistically. Parkhe (1993a, b) examined two possible contractual arrangements that could break the prisoner’s dilemma: payoff patterns and the shadow of the future effect. He reported that when payoff patterns are structured in a way that severely punishes cheating so that opportunistic behavior becomes less profitable, strategic alliances perform better. Similarly, a prisoner’s dilemma is also avoided if the partners foresee future interactions, thus reducing the incentive to cheat. Thus, game

theory has the potential for explaining the choice of governance structure in strategic alliances.

Perceptions and Heuristics. Perceptions and heuristics comprise another major approach in strategic decision making. The first stream of research is concerned with the decision makers' perceptions regarding alliances. Ring and Van de Ven (1992) have suggested that a perception of high-risk high-trust prompts companies to prefer relational contract, or strategic alliances. It is reported that a sense of interfirm trust developed over a period of time encourages alliance formation (Gulati, 1995a, 1995b). Anderson, Hakansson, and Johanson (1994) have proposed that firms' perceptions of interdependencies greatly affect their need for cooperation. It has also been found that a perception of satisfactory joint venture performance and cooperative relationships enhance the partners' commitment to the alliance (Cullen, Johnson, & Sakano, 1995).

The second stream of research pertains to the heuristics or decision rules that the partners rely on in the decision process. According to Ring and Van de Ven (1994), partners use heuristics such as risk vs. trust and efficiency vs. equity in the process of developing strategic alliances. Koot (1988) has suggested that strategy makers should consider several dilemmas in a strategic alliance, such as exploitation vs. investment and fight vs. cooperation. Others (Kogut, 1988; Venkatraman, Loh, & Koh, 1994) have proposed that the need to mimic other firms facilitates the decision to participate in joint ventures. Finally, according to Thomas and Trevino (1993), strategic alliance building is equivalent to information processing, in which the partners endeavor to reduce uncertainty and equivocality.

A void in the existing literature is that, with a few notable exceptions (e.g., Ring & Van de Ven, 1992, 1994), most studies do not have a coherent comprehension of both aspects of decision making, i.e. perception and heuristics, in strategic alliances. While perception of the alliance represents a firm's assessment of the situation, heuristics provide a means of simplifying and making sense of the situation and then of making decisions. Since these two aspects are closely related in reality, the risk perception model would integrate them and show how risk perception provides a useful heuristic for the choice between equity and non-equity alliances.

2.2.2 Developmental Stages of Strategic Alliances

The second general approach in strategy process research is about delineating a sequence of events or activities that take place over time. Gulati, Khanna, and Nohria (1994) emphasized the importance of studying process in strategic alliances. They observed that continuous interplay among the partners may gradually alter the nature of an alliance. Recently, Doz (1996) has reported that, in addition to the initiating conditions, the evolution of cooperation in strategic alliances significantly influences alliance performance. Hamel (1991) and others (e.g., Inkpen & Beamish, 1997) have suggested that strategic alliances are learning races and the partners' relative positions and bargaining power may well shift over time. Some studies also focus on the process by which alliances are terminated (e.g., Kogut, 1991; Serapio & Cascio, 1996).

Researchers have attempted to identify various stages of the process of strategic alliance making, as well as the issues related to these stages. For instance, several studies (e.g., Das & Teng, 1997a; Devlin & Bleackley, 1988; Forrest, 1992) divided the process

into multiple stages, such as evaluation, partner selection, negotiation, and execution. However, merely splitting the process into distinct stages does not enable us to fully understand what really goes on within each stage. In contrast, two particular papers (Ring & Van de Ven, 1994; Zajac & Olsen, 1993) offer valuable insights about not only the stages per se, but also the rationale underlying each stage and the transition from one stage to another. These two papers have also dealt with decision making aspects such as perception and heuristics in strategic alliances.

Zajac and Olsen (1993) regarded strategic alliances in terms of a process of value creation, consisting of the three stages of initializing, processing, and reconfiguring. In the initializing stage, partners focus on the expected value created from the alliance. Thus, perceptions of value are the heuristics by which the partners weigh alternatives. They suggested that, in the stages of processing and reconfiguring, partners are involved in activities such as learning, managing conflict, developing trust, assessing performance gap, and redefining the nature of exchange processes.

Ring and Van de Ven (1994) have proposed a process framework which accounts for the emergence, evolution, and dissolution of alliances. According to them, strategic alliances evolve through three major stages: negotiations, commitments, and executions, each of which is also continuously assessed by the partners. In the negotiations stage, prospective partners engage in both formal bargaining and informal sense-making, through which they develop congruence in their expectations. Perceived risk and trust are the heuristics used in this stage (see also Ring & Van de Ven, 1992). In the stages of commitments and executions, partners rely on formal legal contracts and psychological

contracts, and role interactions and personal interactions, respectively. Finally, partners use the criterion of efficiency vs. equity as the heuristic in alliance assessment.

Although these two studies inform us about the general developmental process of alliance making, there are several areas that need further consideration. While these two studies laid out an overall process of alliance making, more specification and development in each stage is needed. Particularly in terms of the structuring process, little is known about how partners decide upon their preferred alliance structure. Thus, it is important to make specific linkages between partners' decision making and their structural preferences. Specific theoretical propositions regarding structural agreements, such as the choice between equity and non-equity alliances, are lacking. In short, a decision making model of the alliance structuring process that predicts the structural preferences of the partners is still to be developed. Those studies that do focus on structural aspects of strategic alliances have basically adopted the strategy content approach, mostly with theoretical underpinnings in transaction cost economics (Gulati, 1995a; Osborn & Baughn, 1990; Parkhe, 1993a).

2.3 Focus of this Research

In summary, extant literature has not adequately examined the structural choice in strategic alliances. On the one hand, major theories of strategic alliances have taken a content-oriented approach, but many of those theories do not have an explanation for alliance structural decisions. It seems apparent that process-oriented research on alliances has been lacking, and there is a gap in the literature since no process framework has

covered both of the two questions: (1) how does each alliance partner come to form its own structural preference, and (2) how are different preferences reconciled. Extant process research on alliance (e.g., Ring & Van de Ven, 1994) appears to be too general to predict specific structural preferences and outcomes.

In response to the limitations of existing literature, the focus of this study is to develop two integrated, process-oriented frameworks of strategic alliance structuring. First there is a presentation of a risk perception model (Chapter 3), in which risk perception is used to aid decisions regarding structural preferences. A decision process that results in a structural preference would involve both situation perception and decision heuristics. Unlike Ring and Van de Ven (1992), who proposed perceived risk and trust as the heuristics, in the risk perception framework presented here risk perception affects not only the assessment of the situation, but also the heuristic tools to aid decisions regarding structural preferences.

Furthermore, a resource-based model will also be offered (Chapter 4). In this model, partners' structural preferences is influenced by the resources they have for the alliance. It is believed that both risk and resource perspectives are potentially important for the partners' structural preference. The resource dimension denotes the kind of resources the partner is expecting to commit, and the risk dimension indicates its major concern with the alliance. Assuming that each firm is oriented toward maximizing the return on its resources while minimizing the risk, resources and risk can be critical explaining factors.

Regarding the second question, i.e. the reconciliation of the partners' preferences, both models bring a bargaining power element (Bacharach & Lawler, 1981; Yan & Gray, 1994) into the picture (Chapter 5). Essentially, it is to integrate a bargaining perspective with the risk perception and resource-based view, respectively.

As a process model that addresses both questions mentioned earlier, the framework seeks to integrate managerial risk perception with bargaining power. It should be noted, though, that the proposed models focus on the structural aspect of strategic alliances. It does not attempt to explain why decision makers prefer strategic alliances over other alternatives. The model focuses specifically on the structural choice between equity and non-equity alliances.

CHAPTER 3
A RISK PERCEPTION MODEL
OF ALLIANCE STRUCTURAL PREFERENCES

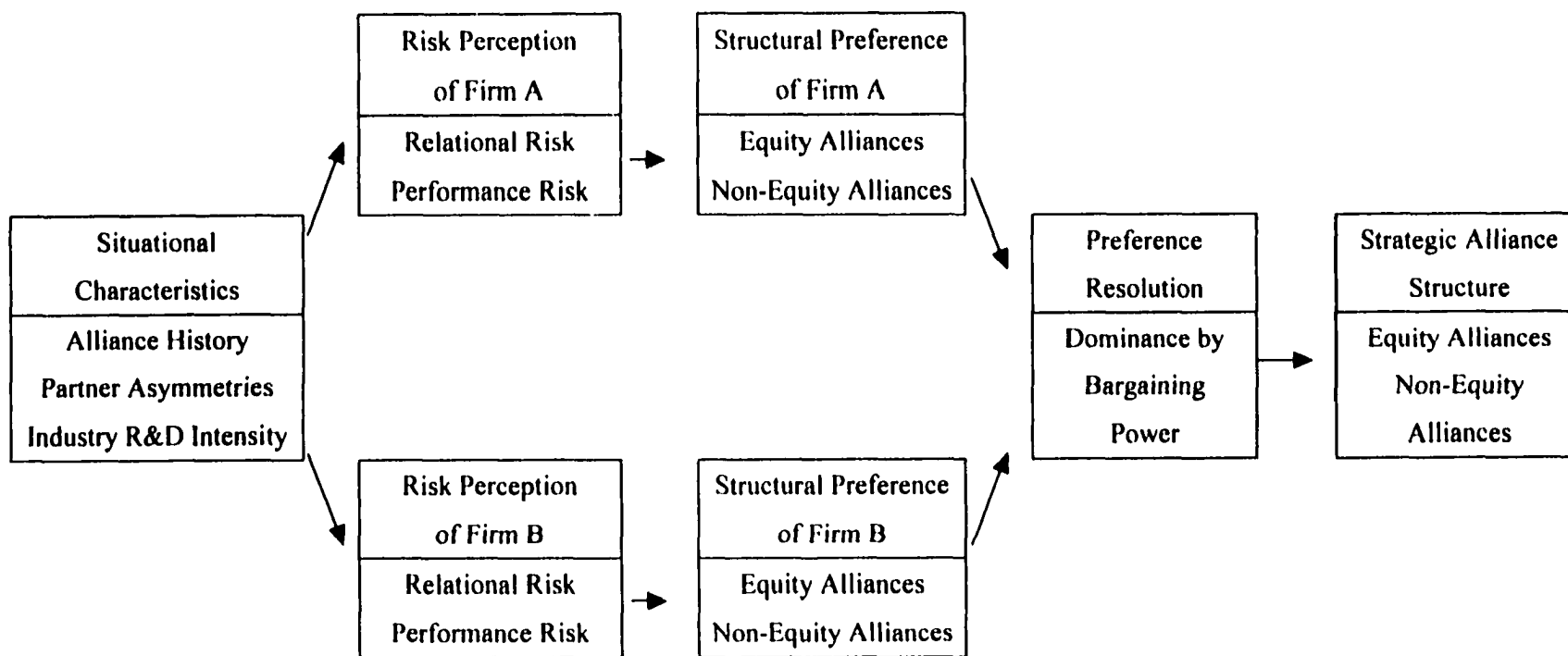
3.1 Introduction

This chapter presents a risk perception model of alliance structural preferences. The model includes managerial risk perception and several important antecedents to risk perceptions. The dependent variable is partners' structural preferences in strategic alliances. Figure 2 delineates the risk perception model.

Managerial perception is believed to be a key ingredient in strategic decision making (Anderson & Paine, 1975; Bourgeois, 1980; Das, 1987, 1991). Indeed, decision makers react to the situation based on their perceptions of the environment (Graham, 1968). Many theorists agree that managerial perception bridges the objective environment and strategic decisions (Bourgeois, 1980; Gifford et al., 1979). Das (1986) identified the perception of strategy environment as the first step in the strategy making process, followed by environment evaluation, strategy delineation, and strategy implementation. As compared to the traditional content research to strategic formulation, which focuses on the objective environment, the managerial perception view captures the essence of the decision process. Nevertheless, many studies on managerial perception show a tendency to not relate to the objective environment (Bateman & Zeithaml, 1989). Few studies have paid enough attention to the connection between the objective environment and managerial perception.

FIGURE 2

The Risk Perception Model of Strategic Alliance Structuring



Two points can be derived from the above. First, when applied to strategic alliances, the approach of managerial perception may offer new insights. The literature review indicates that this perspective has not been effectively explored. Second, to connect managerial perception with the objective environment, various antecedents of managerial perception, including those objective factors of the competitive environment, should be examined.

Within managerial perception, special attention has been given to uncertainty and risk perceptions (Downey & Slocum, 1982; Gifford et al., 1979; March & Shapira, 1987; Sitkin & Pablo, 1992). Anderson and Paine (1975) argued that there are two key sets of managerial perceptions: the perception of environmental uncertainty and the perception of the need for strategic action. The importance of uncertainty and risk perception has long been recognized, most notably by Thompson (1967), who observed that organizations aim to control the uncertainties in their competitive environment. Nevertheless, the conceptualization of risk has been rather inconsistent in the literature.

3.2 The Risk Concept

The first confusion about the risk concept is between risk and uncertainty (Yates & Stone, 1992). Traditionally, risk is defined as outcome variances with known probability, while outcome variances with unknown probability is usually referred to as uncertainty (Knight, 1921). Further, it has been suggested that risk as outcome variances arises from the condition of uncertainty, i.e., an environmental characteristic (Miller, 1992). Nonetheless, risk is often used interchangeably with uncertainty, as both refer to

situations where outcomes cannot be assured (Yates & Stone, 1992). In strategic management probabilities are hardly known, hence risk tends to be broadly used for variances with known or unknown probabilities. As a result, “there remains considerable overlap within strategy literature in the usage of the terms ‘risk’ and ‘uncertainty’” (Baird & Thomas, 1985: 231).

The second confusion of the risk concept is about the elements of risk. In some cases, risk is used as if it is concerned only with outcome probability, not with the value of outcome (Collins & Ruefli, 1992; Miller, 1992). In contrast to such a view, economists regard both probability and value of outcome as essential elements of risk (Arrow, 1971). That is, economic value of risk (denoted as V) can be expressed by probabilities (denoting probability of gaining as q) and outcomes (potential gain as G and potential loss as B): $V = qG + (1-q)B$.

The third confusion is about the domain of the risk concept. As shown in the above equation, many theorists believe that risk must cover both gain and loss situations, i.e., both potential gain and loss are relevant in understanding risk (Kahneman & Tversky, 1979). On the contrary, some theorists argue that risk is more of potential loss than of gain (Miller & Leiblein, 1996). In fact, the dictionary definition of risk is “the chance of injury, damage, or loss; dangerous chance; hazard” (Webster’s New World Dictionary: 1228). It has been reported that most managers understand risk as the possibility of unfavorable performance (March & Shapira, 1987). Porter (1985: 476) has stated that “risk is a function of how poorly a strategy will perform if the ‘wrong’ scenario occurs.” As a result, theorists have proposed the use of adverse consequences to conceptualize the

risk concept, i.e., downside risk (Collins & Ruefli, 1992; Miller & Leiblein, 1996).

Accordingly, Yates and Stone (1992: 4) noted that “the critical elements of risk construct are (a) potential losses, (b) the significance of those losses, and (c) the uncertainty of those losses.”

Recognizing the above confusions regarding the risk concept, risk is defined in this paper as a function of the probability and importance of adverse outcome (Dowling, 1986: 198). In sum, in this paper risk is (a) about both probability and significance of outcomes, so that it is different from uncertainty, and (b) referred to as potential loss than potential gain.

3.3 Relational Risk and Performance Risk

Risk perception provides a particularly revealing perspective for studying strategic alliances. The term “risk perception” refers to those ambiguities, as perceived by prospective alliance partners, about the future events that may negatively affect on the performance of alliances. While the success of all other strategic maneuvers depends solely on the actions of the firm itself vis-à-vis the competitive market, the success of strategic alliances also relies heavily on the effective cooperation between the partners. Therefore, strategic alliances are not only constrained by the objective environment, but also by the conduct of each partner. Besides regular business risk, strategic alliances introduce one additional dimension of risk to prospective partners, or the risk about the cooperation. Root (1988), for example, discussed fiduciary risk (in carrying out responsibilities) and environmental risk in cooperative arrangements. Ring and Van de

Ven (1992: 92-93) also identified two distinct sets of uncertainty in strategic alliances: “uncertainty regarding future states of nature” and “uncertainty whether the parties will be able to rely on trust.” In a similar way, *relational risk* and *performance risk* in strategic alliances can be differentiated.

Relational risk is concerned with the probability and consequences that alliance partners do not cooperate in an effective and desirable manner. In other words, it addresses those relational problems that may hinder the achievement of strategic objectives, such as the partner’s opportunistic behavior. On the other hand, performance risk refers to those factors that may jeopardize the achievement of alliance objectives, given that the partners cooperate fully. To strategy makers, relational and performance risks represent two independent types of risk: the former is internally oriented and the latter is more externally oriented. While relational risk is concerned with the relationship between the partners, performance risk refers to the relationship between the partnership and the environment. Performance risk is common in any strategic decision, but relational risk is uniquely present only in strategic alliances. Therefore, it is argued that decision makers will perceive these two distinct types of risk in strategic alliances, and their alliance structural preferences will reflect their risk perceptions.

3.3.1 Relational Risk

Relational risk of strategic alliances is defined as the probability and consequences that the cooperative relationship in the alliance is not effective or desirable. One source of relational risk is the concern with the partner’s self-interest seeking with guile, or opportunistic behavior (Williamson, 1985, 1993). Examples of

opportunistic behavior include “withholding or distorting information, shirking or failing to fulfill promises or obligations, appropriation of the partner firm’s technology or key personnel, late payments, and delivery of substandard products” (Parkhe, 1993a: 828). Transaction cost economics assumes that some economic actors are opportunistic, and they will exploit unilateral benefits whenever possible (Williamson, 1985). Although the generalizability of opportunistic behavior has been questioned by some theorists (e.g., Ghoshal & Moran, 1996), it appears to be a generally-observed phenomenon that some firms and people pursue their own interests at the expense of others (Buckley & Casson, 1988; Williamson, 1993).

Parkhe (1993a: 794) noted that opportunistic behavior is “individually rational yet produce a collectively suboptimal outcome.” Thus, to perceive relational risk due to opportunistic behavior is also legitimate. In order to control the partners’ opportunistic behavior, detailed contracts which contain explicit contractual deterrents to opportunistic behavior will be written, at great writing and monitoring expenses.

Relatedly, the perception of relational risk is closely linked with trust between the partners (Mayer, Davis, & Schoorman, 1995). It has been argued that perceived risk in cooperation is mitigated by a sense of trust (Gambetta, 1988; Ring & Van de Ven, 1992). As a result, the literature has started to emphasize the importance of interfirm trust in strategic alliances (Gulati, 1995a; Kanter, 1994; Zaheer & Venkatraman, 1995). A certain level of trust is believed to be an essential element in structuring interfirm alliances (Axelrod, 1984; Parkhe, 1993a). By definition, interfirm trust refers to the belief in the partner’s goodwill, or the confidence that the exchange partner will not act

opportunistically (Gulati, 1995a). Thus, interfirm trust leads to a perception of low relational risk, so that the partners “can act as if the future were more certain” (Zajac & Olsen, 1993: 140). Bradach and Eccles (1989) suggested that there are two mechanisms to stabilize partner relationship: formal (written contracts) and informal mechanisms (trust). Clearly, since interfirm trust eases the concern with opportunistic behavior, detailed written contracts become less needed. By the same token, Gulati (1995a) argued that detailed contracts and interfirm trust are the two ways to make the behavior of the partners predictable.

In addition, cultural differences and cultural clash between partners are another important source of relational risk (Doz, 1988; Sankar et al., 1995). By definition, organizational culture is “a system of shared values ... and norms that define appropriate attitudes and behaviors for organizational members” (O’Reilly & Chatman, 1996: 160). Organizational culture defines the way organizational members are expected to operate. Not surprisingly, alliance partners often have very different cultures and that eventually leads to serious deficiency in cooperation. For example, large companies usually have a rigid and formal culture that smaller firms find difficult to adapt to (Doz, 1988). Thus, partners may not work seamlessly as a single entity and an otherwise satisfactory working relationship could be jeopardized. In this sense, cultural incompatibility is part of relational risk in alliances.

3.3.2 Performance Risk

Generally, performance risk is the probability and consequences that a firm’s strategic objectives are not achieved despite its best efforts. Performance risk arises from

factors such as the volatility of the market and a lack of competence on the firm's part. Specifically in strategic alliances, performance risk is defined as *the probability and consequences that the alliance may fail, even though all partners cooperate fully*. Macneil (1981) has contended that alliances may fail with or without opportunistic behavior of the partners. Nevertheless, measuring alliance success, like measuring effectiveness in ordinary organizations, can be complicated because it may be based on various criteria such as long-term profitability, short-term profit, growth, and others (Thomas & Trevino, 1993; Lewin & Minton, 1986). The key lies in the obtaining of partners' objectives in the alliance, whether it is for setting technological standard or new market entry (Parkhe, 1993a). A variety of terms have been developed to describe various performance risks in a strategic choice, such as commercial and technological risks (Chakravarthy, 1985), R&D risk (Teece, 1992), international risk (Miller, 1992), corporate risk (Bromiley, 1991), and strategic risk (Baird & Thomas, 1985). These risks can be viewed as various dimensions of performance risk. They are independent of relational risk because no matter how satisfactory the cooperation is, these risks are always there.

Single-firm effort and interfirm cooperation are alternative ways to accomplish a project. For example, new market entry can be done either through greenfield development by a foreign company alone or through a joint venture with a local partner. To the foreign company, it can either take performance risk of the project by itself, or it can take its share of the alliance's performance risk. It appears that shared performance

risk of an alliance is usually lower than performance risk of the project by one firm.

Hence, strategic alliances turn out to be a way to control performance risk of a project.

According to the resource dependence model (Pfeffer & Salancik, 1978), strategic alliances are adopted to control the uncertainties and risks in the environment. By pooling the resources of several firms together, the chances of succeeding are enhanced. As a result, the literature has identified risk sharing as a key motive for forming strategic alliances, including R&D risk and marketing risk (Alter & Hage, 1993; Badaracco, 1991; Contractor & Lorange, 1988; Harrigan, 1985, 1988; Murray & Mahon, 1993). Strategic alliances allow the firms to undertake projects bearing risks that are too great for a single firm, such as expensive basic research (Hagedoorn, 1993). In fact, Brouthers (1995) reported that the perception of high risks prompt firms to shift risks and control to other firms.

The difference between relational risk and performance risk can be considered in the following way: while relational risk is created by forming a strategic alliance, performance risk of a project can be shared and mitigated by the partnership.

Based on the foregoing discussion, it is argued that relational risk and performance risk are conceptually independent of each other. The reason is that the two types of risk find their sources in two different domains: one in interfirm cooperation and the other in the competitive environment. Miller (1992) noted that oftentimes risk is named by their sources, e.g., political risk, R&D risk, and so on. For this reason, the definitions of relational and performance risk are also differentiated in terms of their respective sources. If a hazard is attributable to market factors, it is called performance

risk. Similarly, if negative outcomes arise from cooperative relationships, it is designated as relational risk. Since interfirm cooperation and the competitive environment are two mutually exclusive domains, the differentiation permits a meaningful dichotomy of risks in strategic alliances.

Some may still argue that even interfirm cooperation and the competitive environment themselves are related, so that relational and performance risks are really interdependent. A seemingly relevant example would be alliances with shared R&D efforts, in which both relational risk and performance risk tend to be high. In fact, joint R&D activities are just common factors that contribute simultaneously to both types of risk. It does not follow that this commonality can be used to argue that relational risk and performance risk are thereby overlapping constructs. One should go further and identify the sources of hazards. In alliances with shared R&D efforts, for instance, factors of the market prospects of a new product are related to performance risk, while factors like shirking or stealing firm-specific know-how are clearly relational risk. Thus, the two types of risk are indeed independent. Later sections will examine some of these antecedent factors in greater detail.

3.4 Antecedents of Risk Perceptions

The partners' perceptions of relational risk and performance risk can be influenced by various factors. In this study, the effects of situational characteristics on risk perception of strategic alliances will be examined. As noted, previous research on managerial perception has fallen short in connecting perceptions with objective factors in

the external environment. In this study, strategists' risk perception in strategic alliances is linked with three situational factors: alliance history, partner asymmetries, and industry R&D intensity. Most of these antecedents have been identified in the literature as determinants of alliance structure. In the risk perception model, they are treated as antecedents of risk perceptions. Thus, the model links the two ends with otherwise overlooked mediating variables.

3.4.1 Alliance History

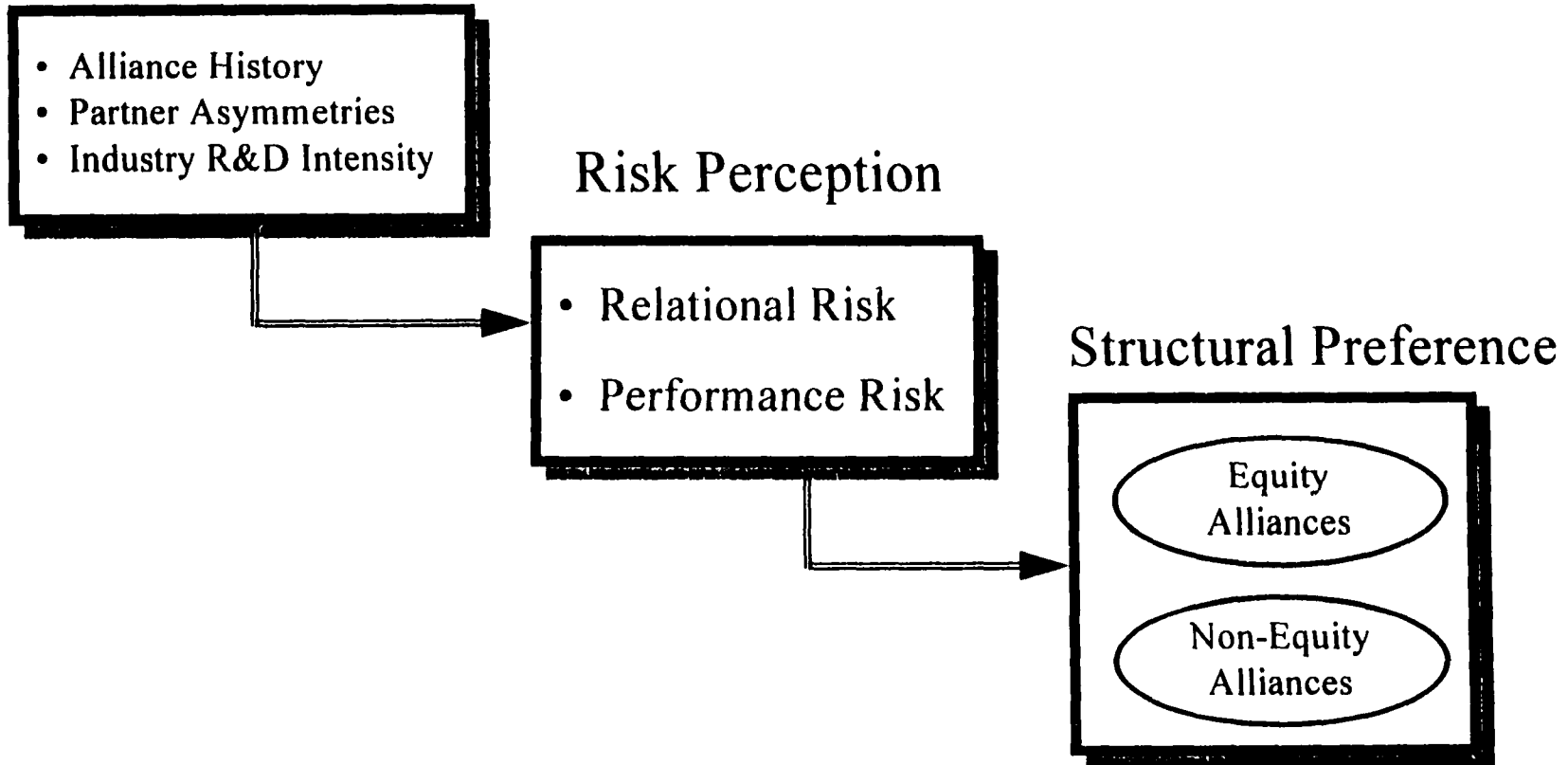
A prior history of cooperation between the partners is a valuable asset in strategic alliances (Parkhe, 1993a). It has been suggested that repeated alliances between the same partners breed a sense of trust (Gulati, 1995a; Zucker, 1986). On the one hand, repeated ties facilitate closer interactions between partners. As a result, partners know each other better and their behavior also become more predictable to each other. Under such circumstance, the partners find reasons as well as emotion to believe in the goodwill of the other party. When partners have formed repeated ties among themselves, it can be reasoned that they are well satisfied with alliance cooperation thus far.

On the other hand, prior alliances help boost trust among partners because they serve as mutual hostages, deterring opportunistic behavior from either partner. When there are other arrangements going on, the fear of retaliation would reduce partners incentives to cheat. Thus, as compared to first time alliances, repeated alliances between known partners are much safer psychologically regarding potentially opportunistic behavior. Indeed, Kogut (1989) reported that the likelihood of alliance termination is decreased when partners have other on-going agreements among them. Although some

FIGURE 3

The Risk Perception Model of Alliance Structural Preference

Situational Characteristics



may argue that the level of opportunism indeed goes up if too much trust is granted, at least partners would find legitimate reasons for perception of low relational risk based on a long history of satisfactory cooperation. Thus, one may expect strategy makers in repeated alliances to perceive a low relational risk. Figure 3 highlights this relationship. Therefore:

Hypothesis 1A: The number of previous alliances between the same partners will be negatively associated with partners' perceived relational risk of the alliance.

3.4.2 Partner Asymmetries

The relative size, resources, market power of the partners may as well affect strategy makers' risk perception. Alliances between equally strong, equally weak, or unequal partners can be dramatically different in their alliance motives and structuring process (Dussauge & Garrette, 1995; Harrigan, 1988; Murray & Mahon, 1993; Pearce, 1997). Oliver (1990) observed that partner asymmetry, which allows one partner to exercise power and control over another partner, is one of the key alliance motives. Similarly, Bleeke and Ernst (1995) suggested that many stronger partners enter the alliance with a hidden agenda of capturing the weaker one. They also contended that alliances between unequal partners are likely to be unsuccessful. In line with Osborn and Baughn's (1990) argument that small firms are vulnerable to the partners' opportunistic behavior, a small partner tends to be even more vulnerable to a large partner's opportunistic behavior. As a result, it is hypothesized that partner asymmetries will lead the weak party to perceive serious relational risk.

A similar conclusion may be reached from another perspective: the partners' equity motive (Ring & Van de Ven, 1994). Relational risk seems to be bolstered by expected inequity regarding payoff in alliances. For example, Ouchi (1980) suggested that the necessary condition for cooperation is a distributing mechanism that is perceived to be equitable. Therefore, the motive of equity, or the need to be treated fairly, can seriously affect the relationship between the partners. According to the equity theory of motivation (Adams, 1963), those who perceive themselves as being unfairly treated are motivated to restore a sense of equity. In the same vein, the partner who foresees an inequitable pattern of payoff may expect itself or the other partner to behave discordantly in the future. In fact, Ring and Van de Ven noted that the partners of strategic alliances may "rely more heavily on equity than efficiency in assessing their relationship" (1994: 94).

Thus, a fair reward system is essential in successful alliances (Lorenzoni & Baden-Fuller, 1995). When partner asymmetries are considerable, it is particularly hard to construct a reward system that will be perceived as fair. The weaker party tends to perceive that it is being exploited. It seems that a 50-50 joint venture in which each parent firm takes half is more likely to be perceived as equitable. In fact, Murray and Mahon (1993) noted that in alliances between unequal partners the premise for success is that the weaker partner is treated fairly and well. One can further argue that since trust is reciprocal, the weaker party's lack of confidence in cooperation may trigger the stronger one to doubt the prospect of cooperation too. Thus, partner asymmetries would contribute to the perception of high relational risk in alliances. As a result,

Hypothesis 1B: Partner asymmetries will be positively associated with partners' perceived relational risk of the alliance.

3.4.3 Industry R&D Intensity

R&D intensity of an industry represents an important factor in understanding the industry as well as the strategies adopted by the players (Porter, 1980). Emerging, high-tech industries call for much more intensive R&D expenses than industries with mature technology. Apparently, high-tech industries implies higher performance risk on firms. Uncertainties and risks in industries like telecommunication and biotechnology are usually greater than those industries with more mature technology, such as steel industry. In high-tech areas, "knowledge develops rapidly as various firms move to commercialization, consider entering an area, or merely seek to monitor the development of a technology" (Osborn & Baughn, 1990: 507). According to the analysis of industry life cycle, in introduction and development stages the rate of business failure tends to be much higher than that of maturity and decline stages. Thus,

Hypothesis 1C: The R&D intensity of the industry that the alliance is in will be positively associated with partners' perceived performance risk of the alliance.

3.5 A Taxonomy of Alliance Structures

As mentioned earlier, strategic alliances can take a variety of forms, including but not limited to joint ventures, R&D contracts, joint R&D, joint production, joint marketing and promotion, enhanced supplier partnership, distribution agreements, minority equity

TABLE 1

Typical Strategic Alliance Types and Their Definitions

Alliance Type:	Definition
1. Equity Joint Venture	A new, separately incorporated entity jointly owned by the partners.
2. Minority Equity Alliances	The terms of the alliance include an acquisition of equity shares, by one or more partners.
3. Joint Production	The partners share manufacturing responsibilities and supply each other with products that are marketed by the partners under their own brand names. (Yoshino & Rangan, 1995: 135)
4. Joint Marketing & Promotion	The partners market a same product under same or distinct brand names.
5. Joint R&D	The partners combine their R&D efforts and share rights to the product/service.
6. Enhanced Supplier Partnership	The supplier not only provides a particular type or line of goods or services, but also becomes an integral part of the buyer's operation through extensive cooperation. A higher level of reciprocal interdependence than traditional buyer-supplier relationships. (Borys & Jemison, 1989)
7. R&D Contract	One partner provides funds to another party for specified R&D activities, and in return receives or shares market rights to the product/service.
8. Licensing Agreement	An agreement "by which one firm buys the right to use an asset for a period of time ... typically involve a narrow purpose and limited time frame." (Borys & Jemison, 1989: 245)

alliances, and licensing agreements (Gates, 1993; Yoshino & Rangan, 1995). Brief definitions of these alliance forms are presented in Table 1. To better organize such a large collection of alliance forms, theorists have proposed several taxonomies of strategic alliances (e.g., Oliver, 1990; Pisano & Teece, 1989).

For example, both Killing (1988) and Yoshino and Rangan (1995) identified three major types of alliances: nontraditional contracts (non-equity-based), minority equity alliances, and joint ventures. Lorange and Roos (1992) differentiated four archetypes of alliances: ad hoc pool, consortium, project-based joint venture, and full-blown joint venture. In addition, Ring and Van de Ven (1992) distinguished recurrent contracting and relational contracting. Dussauge and Garrette (1995) proposed four types of alliances along a transaction cost continuum from market to hierarchy: R&D agreement, unstructured co-production projects, semi-structured projects, business-based joint ventures. Yet another taxonomy classifies according to the following four alliance types: contractual without shared risk/reward, contractual with shared risk/reward, minority equity, and joint ventures (Alliance Analyst, 1996).

None of these taxonomies has been widely adopted in the literature. Some of them do not exhaust all possible alliance forms. For example, Dussauge and Garrette's (1995) list leaves out quite a few types of alliances. While other taxonomies do not offer clear linkage with common types of alliance forms (e.g., Lorange & Roos, 1992). As a result, most studies on alliance structural decisions are based on the dichotomy of equity alliance vs. non-equity alliances (Gulati, 1995a; Osborn & Baughn, 1990; Tallman & Shenkar, 1990). Referring to Chapter 2, equity alliances include equity joint ventures

TABLE 2

Distinguishing Characteristics of Equity and Non-Equity Alliances

Distinguishing Characteristics	Alliance Structures	
	Equity Alliances	Non-Equity Alliances
Ownership Structure	Joint equity, and one-way or cross equity ownership	No shared ownership involved
Degree of Interfirm Integration	Substantial: Equity participation or working within one entity	Moderate to light: Working jointly or separately according to the contract
Control Mechanism	Hierarchical and/or through equity stakes	Contract law
Temporal Duration	Long to moderate term	Short to moderate term
Unplanned Alliance Termination	Difficult: (1) Joint ventures to be taken over by one partner or third parties (2) Selling equity stake to the partner or third parties	Relatively easy: End the contract

and minority equity alliances, and non-equity alliances refer to all other cooperative arrangements that do not involve equity exchange. Table 2 indicates the distinguishing characteristics of the dichotomy.

3.6 Alliance Structural Preferences and Risk Perceptions

The dichotomy between equity and non-equity alliances provides a clear-cut and meaningful way to distinguish various types of strategic alliances (Gulati, 1995a). Equity alliances, including joint ventures and alliances with equity investment, are believed to involve hierarchies more than non-equity alliances, which are contractual agreements without the use of equity ownership. Nevertheless, in some cases companies acquire an equity position in other firms only as financial investments. Equity investment without interfirm cooperation is not regarded as a strategic alliance, because the two parties are not pursuing any common goals. According to many theorists (e.g., Hennart, 1988; Pisano & Teece, 1989), because equity ownership significantly affects the level of hierarchical control, the equity vs. non-equity dichotomy is an important one. Thus, despite the risk of oversimplifying alliance structures, several studies have adopted this dichotomy (Gulati, 1995a; Osborn & Baughn, 1990; Tallman & Shenkar, 1990). Of course, it is recognized that the complexity and variations in alliance structures go far beyond what the equity vs. non-equity dichotomy can capture (see, for instance, Oliver, 1990). In this paper, the aim is to offer alternate perspectives for studying structural preferences.

The choice between equity and non-equity alliances may be better explained by partners' perception of relational risk and performance risk in a prospective strategic

alliance. Some may, however, argue that the structure of an alliance is largely determined by the purposes of the partners (e.g., market entry, joint research), so that structure is not really a choice before the partners.

In fact, the choice among various governance structures is real, since alternative alliance structures can be used to achieve the same strategic objectives. Although strategic motivation is important, its importance has been found to vary with the contractual form of the alliance (Glaister & Buckley, 1996). As Yoshino and Rangan (1995: 81) have observed, "we want to know why different partners in the same industry, engaged in essentially the same type of activities, choose different alliance structures." For example, if the objective is new market entry, then both equity joint venture and non-equity co-production agreement might serve that purpose. Similarly, if it is for new product development, one firm can either fund its partner to conduct research (non-equity) or invest through equity acquisition. Hence, whether equity investment should be involved in a particular alliance is not predetermined by the purpose of the alliance. Given certain objectives in the alliance, managers will still be in a position to choose from alternative structures, either equity-based or non-equity-based.

The following sections will highlight the distinction among the two structural options by examining relational risk and performance risk inherent in an upcoming strategic alliance. The basic assumption of the arguments is that firms want to control the level of total risk (Amihud & Lev, 1981; Fiet, 1995; Shan, 1991). Yates and Stone (1992) suggested that total risk could be the summation of various risk elements. In strategic alliances, it means that partners would attempt to control the level of total risk

(relational risk + performance risk) of the alliances. One of the mechanisms is the choice of alliance structures, which may either mitigate or add to risk levels. Thus, the governance structure of the alliance in general, and the choice between equity and non-equity alliances in particular, serves as a means to minimize the total risk. In other words, the criterion when selecting the governance structure is to minimize the sum of perceived relational risk and performance risk. This is the logic that will be woven into the discussion of each alliance structure (see Table 3).

As shown later, equity alliances tend to reduce relational risk while non-equity alliances are more effective in dealing with a high performance risk. Thus, the partners' primary risk perception, i.e., perceiving either relational risk or performance risk as the primary threat of the alliance, will determine their respective preferences.

3.6.1 Equity alliances

Equity alliances are viewed as an effective way to deal with opportunistic behavior. Three arguments can be advanced for this position (Gulati, 1995a; Teece, 1992). First, shared ownership aligns the interests and incentives of parent firms. As long as each parent firm has its own stake (or "mutual hostage") in the venture, the incentive to behave opportunistically will be restrained. Second, as in joint ventures, a shared ownership often means a separate administrative hierarchy, which oversees the overall operation of the joint task. Within this new hierarchy, the scope for one or more partners to manipulate the functioning of the entity is limited. These two arguments are not different from the traditional standpoint of transaction cost economics.

The third argument involves Ouchi's (1980) notion that opportunistic behavior stems mainly from performance ambiguity, i.e., "the difficulty of identifying the contributions made by the parties to a transaction" (Maitland, Bryson, & Van de Ven, 1985: 61). To that end, equity alliances seem to "provide a mechanism for distributing residuals when ex ante contractual agreements cannot be written or enforce a division of return" (Teece, 1992: 20). Thus, opportunistic behavior will be discouraged in equity alliances. In sum, equity alliances can control relational risk inherent in an alliance and, therefore, should be used when relational risk is perceived as high.

On the other hand, equity alliances are not effective in controlling performance risk. In fact, choosing equity alliances usually means taking a relatively high degree of performance risk. First of all, equity alliances require a special investment in the joint task. This investment cannot be easily recovered for other uses. As compared to hierarchies as a means of internalization, equity alliances often incur additional costs. The reason is that equity alliances do not simply internalize transactions by eliminating market transactions, but rather through creating new entities, which then internalize transactions.

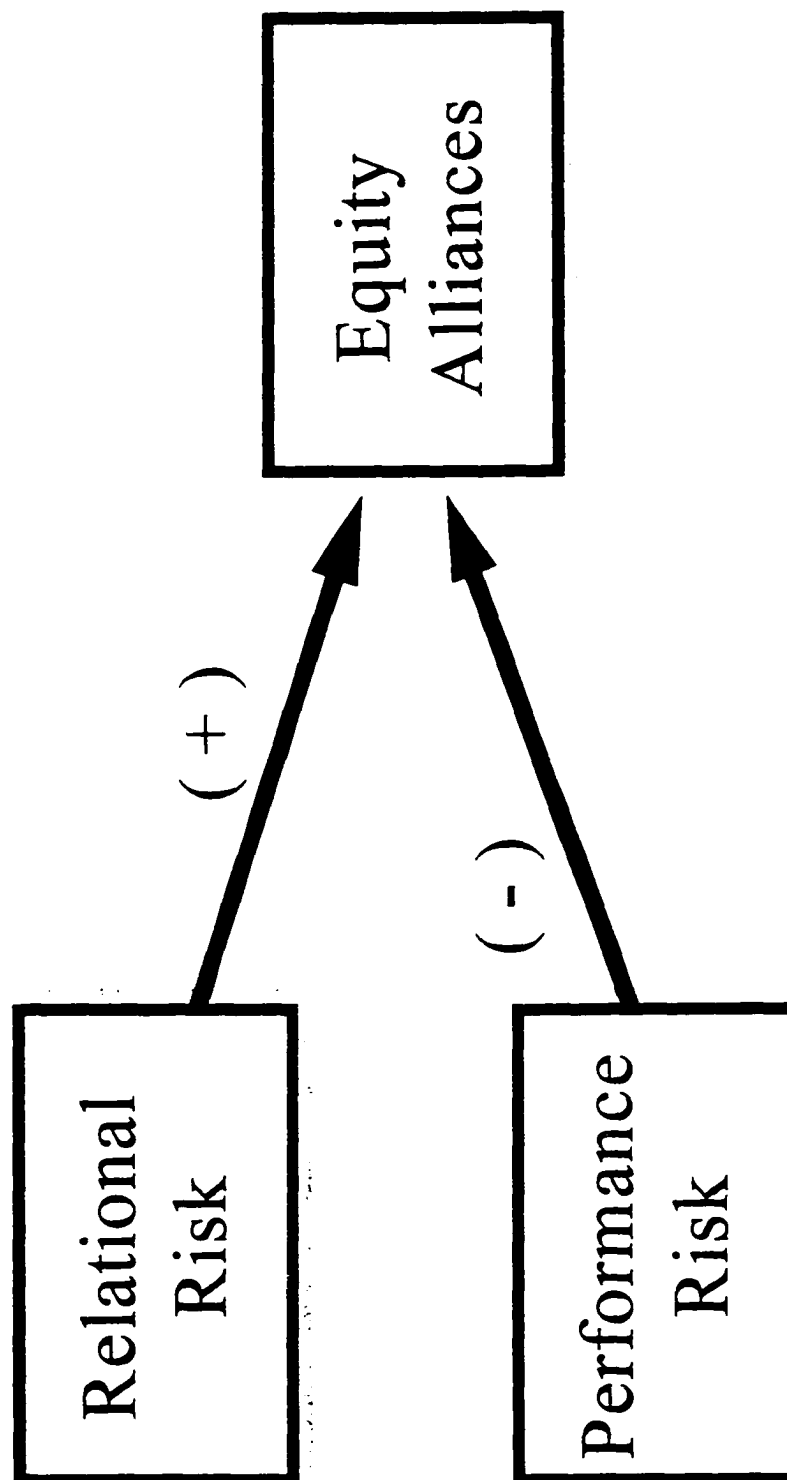
Therefore, some additional startup investment is necessary. These costs may not be needed if internalization is achieved through merger or acquisition. Neither are they necessary if the transactions are carried out through non-equity alliances, as each party could utilize what they already have. Because of the additional investments needed to create new entities, equity alliances face "very high exit costs" (Gulati, 1995a: 89), and thus are exposed to higher performance risk as compared to non-equity alliances.

Second, high performance risk for equity alliances also arises from high governance cost. It has been observed that governance costs incurred by joint ventures are higher than those of ordinary enterprises (Osborn & Baughn, 1990). Shared ownership implies shared decision making and split control, complicating the process and reducing strategic flexibility of the firm. Organizational culture differences make joint decision making and implementation even more difficult. In non-equity alliances, by comparison, no joint decision making is necessary because each party is expected to behave in accordance with contractual agreements.

In conclusion, equity alliances are useful in effectively controlling relational risk of the deal, but are exposed to high performance risk. Thus, primary risk perception is the key to understanding the partner's preference of governance structure. It can be expected that equity alliances will be adopted when relational risk is perceived as more salient than performance risk. Parkhe (1993) found some support for the hypothesis that perception of opportunistic behavior leads to more non-recoverable, or equity, investments. It was also found that alliances are more likely to be equity based if they are to conduct a joint R&D (Gulati, 1995a; Osborn & Baughn, 1990), where the primary risk is likely to be relational risk. Contractor (1984) reported that the propensity for direct investment rather than licensing increases when the receiving country's level of technological and economic development is low. It could be argued that technological superiority leads one to believe in the prospect of the product and, therefore, to perceive low performance risk. Figure 4 delineates the proposed relationship.

FIGURE 4

Hypotheses Based on The Risk-Perception Model



3.6.2 Non-Equity alliances

Non-equity alliances do not involve any equity transfer. Following the same logic as in the discussion on equity alliances, a lack of shared ownership makes it difficult to restrain opportunistic behavior. Beyond areas specified by the contract, non-equity alliances rely heavily on the goodwill, reputation, and voluntary cooperation from independent firms (Hill, 1990), since there is no other means for controlling relational risk. Moreover, non-equity alliances are useful in protecting the partners from high performance risk. Compared to equity alliances, non-equity alliances are much more flexible. There is no transfer of equity or ownership, so partners of an alliance can withdraw relatively easily. Explaining the choice of a non-equity alliance structure, one manager explained: "Why should we lock ourselves into an equity-based alliance when we can retain the strategic flexibility of moving to a different structure as the technology and our strategy evolve?" (Yoshino & Rangan, 1995: 81).

In sum, non-equity alliances can be used to mitigate performance risk, but not relational risk. Thus, when the primary risk is perceived to be performance risk, non-equity alliances will be preferred. Since it has been argued that performance risk tends to be perceived as higher in industries with R&D intensity, strategic alliances in these industries are less likely to be equity based. Osborn and Baughn's (1990) empirical study supports this position. In addition, it has been proposed that a history of repeated alliances leads to a perception of low relational risk. Consequently, non-equity alliances tend to be the optimal choice. This hypothesis has been tested and supported by Gulati

(1995a), who found a positive correlation between the number of previous alliances and the use of non-equity alliances.

Even if the adoption of equity alliances somehow becomes inevitable, those firms which perceive performance risk to be the primary one may prefer to make as little equity investment as possible. For example, Sohn (1994) has reported that when the firm has more social knowledge about the partner (i.e., perceived low relational risk), it tends to take less equity ownership. It was also found that foreign companies are less willing to invest equity when country specific risk, or performance risk, is perceived as high (Shan, 1991). These findings support the idea that when the balance between relational risk and performance risk tilts toward more performance risk, non-equity alliances are preferred. Relational risk and performance risk cannot be controlled simultaneously by an alliance structure. The choice between equity and non-equity alliances allows the partners to better deal with only one out of two types of risk. Thus, both risks must be considered in deciding on alliance structural preferences:

Hypothesis 2: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be affected by both the perceived relational risk and perceived performance risk of the prospective alliance.

Hypothesis 2A: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be positively related to the perceived relational risk of the prospective alliance.

Hypothesis 2B: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be negatively related to the perceived performance risk of the prospective alliance.

CHAPTER 4

A RESOURCE-BASED MODEL OF ALLIANCE STRUCTURAL PREFERENCES

4.1 The Resource-Based View of the Firm

The resource-based view has recently emerged as one alternative approach toward understanding industrial organizations and their competitive strategies (Barney, 1991; Dierickx & Cool, 1989; Wernerfelt, 1984). Resource-based view offers a counter-view of the traditional strategic behavior school, which emphasizes the determining influences of market factors on organizational strategy and performance (Porter, 1980, 1985). According to this view, a firm is equivalent to a broad set of resources that it owns. Wernerfelt (1984: 172) defined resources as “those (tangible and intangible) assets which are tied semipermanently to the firm.” Unlike the tradition of industrial organization economics, which relies heavily on the analysis of the competitive environment, the resource-based view focuses on the analysis of various resources possessed by the firm. In this view, many resources are firm-specific and imperfectly mobile, imitable, and substitutable (Barney, 1991; Dierickx & Cool, 1989). As such, firms are continuously heterogeneous in terms of their resource base (Peteraf, 1993). Sustained firm resource heterogeneity can be a possible source of competitive advantage, leading to economic rents, or above-normal returns (Barney, 1991).

Traditional strategy research suggests that firms need to seek a strategic fit between their internal characteristics (strengths and weaknesses) and their external

environment (opportunities and threats). However, considerable emphasis has usually been given to a firm's competitive environment and its competitive position. In contradistinction to that external emphasis, the resource-based view embodies an approach which stresses the internal aspects of a firm (Wernerfelt, 1984). Barney (1991), for example, pointed out that strategy models based mainly on environmental and industrial scrutiny assume homogeneity of firms, which is not a realistic assumption. Rather than being defined by the competitive environment, the parameters of a firm's competitive strategy are critically influenced by its accumulated resources. In other words, what a firm possesses would determine what it can do. It has been argued that a firm should pay rather more attention to its resources than to its competitive environment (Dierickx & Cool, 1989). The contribution of the resource-based view is that it develops the idea that "a firm's competitive position is defined by a bundle of unique resources and relationships" (Rumelt, 1984: 557), and thus provides a balance vis-à-vis environmental models of strategy.

Although some theorists have suggested that the resource-based view could be a new theory of the firm, it is still a developing paradigm in strategy research (Barney, 1991; Conner, 1991; Das & Teng, 1998a; Mahoney & Pandian, 1992; Miller & Shamsie, 1995; Robins & Wiersema, 1995). The usefulness and richness of the paradigm needs to be demonstrated in a variety of strategy areas. Indeed, researchers are still in the phase of accumulating applications of the resource-based view. For example, Peteraf (1993) showed that sustainable differences in firm profitability that cannot be attributed to industrial differences can be better explained by the resource-based view. The

understanding of diversification strategy is also enhanced, as the resource-based view strongly argues for strategic relatedness within a conglomerate. Harrison and associates (1991) have examined the performance of mergers and acquisitions using a resource-based perspective. Global strategy (Collis, 1991) and technological strategy (Leonard-Barton, 1992) have also been studied by applying the resource-based view.

4.2 A Resource-Based View of Strategic Alliances

The resource-based view emphasizes value maximization of a firm through pooling and utilizing valuable resources (Eisenhardt & Schoonhoven, 1996; Madhok, 1997). That is, firms are viewed as attempting to find their optimal resource boundary through which the value of their resources is better realized than through other resource combinations.

According to Barney (1991: 102), “a firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously implemented by any current or potential competitors.” The reason such a strategy is not ordinarily implemented by competitors is that they may not possess the appropriate resources. The strategy literature has established the close relationship between resources (or competence) and competitive advantage (Reed & DeFillippi, 1990).

Thus, firm resources are important indicators of the likelihood of entering into strategic alliances. Using an experimental design, Dollinger, Golden, and Saxton (1997) found that a target firm’s reputation, including elements such as product and management reputation, encourages decision makers to form a strategic alliance with it. Some firms

are less self-reliant than others, and they tend to actively engage in seeking out partners in strategic alliances. Such differences can be accounted for by firms' resource characteristics and key resource elements.

4.2.1 Resource Characteristics

The resource-based view suggests that firm resource heterogeneity is not a short-term phenomenon; rather, a degree of heterogeneity tends to be sustained over time (Peteraf, 1993). Resource characteristics that prevent firms from moving toward resource homogeneity have been identified as imperfect mobility, imitability, and substitutability (Barney, 1991; Chi, 1994; Dierickx & Cool, 1989; Peteraf, 1993). Imperfect mobility refers to the difficulty as well as nontrivial costs in moving certain resources from one firm to another. According to Dierickx and Cool (1989), factor markets are often incomplete and imperfect, so that many resources are either not tradable at all or not perfectly tradable. For example, resources such as firm reputation and organizational culture are simply not tradable. Many resources, such as the tacit knowledge of firms, lose much of their value if moved from their current organizational context and other resources used in conjunction (Williamson, 1975).

While imperfect mobility is concerned with barriers to getting the resources from the owners, imperfect imitability and substitutability refer to barriers to obtaining similar resources from elsewhere (Barney, 1991; Peteraf, 1993). Lippman and Rumelt (1982) introduced the concept of causal ambiguity, or the lack of transparency about what resources are responsible for competitive advantage. Causal ambiguity makes the connection between resources and competitive advantage less clear and thus restrains a

firm's ability to imitate its competitors and/or to employ substitutes. Reed and DeFillippi (1990) identified three resource characteristics that give rise to causal ambiguity: tacitness, complexity, and specificity.

Imperfect mobility, imitability, and substitutability of firm resources are not only essential for sustained resource heterogeneity, but are also instrumental in forming strategic alliances. Imagine a firm whose resources are perfectly or easily mobile, imitable, and substitutable. Clearly, other firms would be in a position to bid desirable resources away from such a firm in factor markets. There would then hardly be a need for strategic alliances. Should all desirable resources be available for acquisition in factor markets at a fair price, firms would be foolhardy to get involved in strategic alliances, which usually entails high governance costs (Osborn & Baughn, 1990) and a sacrifice of organizational control (Lyles & Reger, 1993). A rather self-evident premise for this argument is that resources that are not perfectly mobile, imitable, and substitutable can be obtained through alliances. For example, although reputation is not tradable, it can be transferred to strategic alliances formed by a firm, as in the Universal Card case between AT&T and TSYS (Sankar et al., 1995).

Only if a firm cannot efficiently get needed resources from elsewhere except by a sharing arrangement with their owners, would it be willing to form strategic alliances. For instance, since in most cases there is a well-developed capital market for establishing businesses (i.e., perfectly mobile and substitutable), firms with only financial resources to share may provide no particular advantage, and are usually not approached for strategic alliances. Nevertheless, in cases where certain projects are too risky and the capital

market fails to provide needed capital, those financial resources available from provider firms become imperfectly mobile and substitutable. As a result, these firms will be wooed by those in need of capital. The point is that the more imperfectly mobile, imitable, and substitutable a firm's resources, the more likely that others will be interested in forming alliances with it. For instance, in the pharmaceutical industry, small biotechnology firms often ally with large pharmaceutical companies for R&D activities. However, the major reason is not just to have access to financial resources, which are quite mobile (otherwise, there would have been many partners from other industries also). The key is that, in addition to financial resources, large pharmaceutical companies also provide intangible resources such as marketing and operations know-how, which are far less mobile, imitable, and substitutable.

4.2.2 Alliances vs. Mergers/Acquisitions (M&As)

Since valuable firm resources are usually scarce, imperfectly mobile and imitable, and with no direct substitutes, the trading and accumulation of resources becomes a strategic necessity (Chi, 1994). When efficient market exchange of resources is possible, "firms are more likely to continue alone" (Eisenhardt & Schoonhoven, 1996: 137) and rely on the market. However, although market transaction is the default mode, efficient exchanges often are not possible on the spot market. Certain resources are not perfectly tradable, as they are either mingled with other resources or embedded in organizations (Chi, 1994). Hence mergers, acquisitions, and strategic alliances are variously employed.

Thus, the resource-based view considers strategic alliances and M&As as strategies used to access other firms' appropriate resources, for the purpose of gaining

otherwise unavailable competitive advantage and values for the firm. Although researchers have explored the resource-based view of alliances under different names, e.g., property rights perspective (Ramanathan et al., 1997) and organizational capability perspective (Madhok, 1997), the overall rationale for entering a strategic alliance appears simple: to aggregate, share, or exchange valuable resources with other firms when these resources cannot be efficiently obtained through market exchange or acquisitions/mergers. In sum, the goal is to create the most value out of one's existing resources by combining them with others' resources; provided, of course, this combination results in optimal returns.

The resource-based view further indicates the conditions under which alliances will be preferred over mergers/acquisitions. These conditions have mainly to do with obtaining and retaining resources. Kogut's (1988) organizational learning model, which is a part of the broad resource-based view, offers a refined view on alliance formation based on resources such as knowledge and technology. According to Kogut, there are two possible reasons firms forge alliances: either to acquire the other's organizational know-how, or to maintain one's own know-how while benefiting from other's resources.

To extend this approach to all types of firm resources, there are two related but distinct motives for firms to use strategic alliances or internalization: (1) to obtain others' resources, and (2) to retain and develop one's own resources by combining them with others' resources.

Obtaining Resources. Firms may use alliances or mergers/acquisitions to obtain resources possessed by other firms that are valuable and essential to achieving

competitive advantage. In the international arena, multinational companies may enter foreign markets by acquiring a local company. They may also seek the resources of their local partners, such as local facilities, knowledge, and connections, through the formation of international joint ventures (Beamish, 1987; Yan & Gray, 1994). In new product development, both strategic alliances and mergers/acquisitions are used to pool technological know-how and expertise of different firms (Leonard-Barton, 1992; Teece, 1992).

While both alliances and mergers/acquisitions can accomplish the objective of obtaining a selected firm's resources, the resource-based view suggests two conditions that favor alliances. First, strategic alliances serve as a more viable option than mergers and acquisitions when not all the resources possessed by the target firm are valuable for the acquiring firm. Second, there is a certain degree of asset specificity, so that after a merger/acquisition some of the less valuable or redundant resources cannot be easily disposed off without taking a loss (Ramanathan et al., 1997). Hennart and Reddy (1997) reasoned that when unwanted assets are mixed with needed assets and the two are not readily separable, acquisitions inevitably result in buying unneeded assets. When non-desired assets are not easily separable, strategic alliances allow the partner firms to access only the desired assets while bypassing those which are not desired, thereby augmenting overall value of the resources. Thus, the distinct advantage of strategic alliances is to have access to precisely what is needed, with minimum superfluity. In support of this view, Hennart and Reddy (1997: 4) found that firms will prefer acquisitions "when the desired assets are 'digestible.'"

Retaining Resources. Whereas obtaining resources is about reaching others' resources, one key concern in entering into strategic alliances is about keeping one's own valuable resources securely in the firm. Kogut (1988) has suggested that firms may wish to maintain certain resources but lack the setup to make use of them. For example, there may be an excess of research personnel, without sufficient meaningful work at hand. Rather than letting these individuals go, firms could out-source them by seeking projects that can be carried out in conjunction with the resources of other firms, such as financial and physical resources. To that end, strategic alliances serve as an ideal way of retaining the resources that are currently under utilized internally. Nelson and Winter (1982) maintain that in order to prevent one's know-how and capabilities from decaying, firms sometimes need to engage in alliances, to avail themselves of opportunities to keep using these know-how and capabilities, or remember-by-doing. As can be seen, the choice between alliances and mergers/acquisitions is about whether one should relinquish one's resources permanently (M&As) or for a specific period only (alliances). One possible advantage of strategic alliances over mergers/acquisitions is that the firm only temporarily relinquishes resources which remain available for future internal deployment.

The difference between the two motives -- of gaining access to additional resources possessed by others and of retaining one's own resources -- is that while obtaining resources is more about creating competitive advantage now, retaining resources is concerned more with securing future competitive advantage. Despite their difference, the commonality of the two motives seems more important and is captured in the logic submitted earlier: the realized values of those resources if contributed to an

alliance must be higher than the value realized by utilizing the resources in-house. No matter that the motive is to use others' resources temporarily (i.e., obtaining) or to let others use one's own resources temporarily (i.e., retaining), the principal criterion should be the opportunity cost of the resources. Strategic alliances would be forged only when the realized value of those resources contributed to the alliance is higher than their value realized through either internal uses or relinquishment. If more long-term value can be created either by internally employing or by selling the resources, strategic alliances should not be used at all.

4.3 Property-Based Resources and Knowledge-Based Resources

While studying diversification, Chatterjee and Wernerfelt (1991) used surplus resource types to predict diversification types, either related or unrelated. In a similar approach, this model is to examine the effects that various types of resources may have on partners' structural preferences in strategic alliances.

Since firms have a variety of resources, a number of resource typologies have been proposed. The simplest approach is to differentiate between tangible and intangible resources (Grant, 1991). Barney (1991) further proposed firm resources as physical capital resources, human capital resources, and organizational capital resources. Similar typologies (e.g., Barney, 1991; Grant, 1991; Hofer & Schendel, 1978) also identified various types of resources such as financial, physical, managerial, human, reputational, and technological resources. However, these descriptive typologies have been criticized as bearing little theoretical implication (Miller & Shamsie, 1996). Based on the notion of

barriers to imitability, Miller and Shamsie (1996) have proposed that all resources may be classified to two broad categories: property-based resources and knowledge-based resources.

4.3.1 Property-Based Resources

Property-based resources are legal properties owned by firms, including financial capital, physical resources, and others. Owners enjoy clear property rights to these resources so that others cannot take them away without the owners' consent. Property-based resources are not easily imitable because they are legally protected through property rights, in forms such as patents, contracts, copyrights, trade marks, and deeds of ownership (Miller & Shamsie, 1996). Since others cannot take property-based resources away, alliances partners would not be much concerned about unintended transfer of these resources.

Different property-based resources may exhibit various resource characteristics (see Table 3). First, human resources tend to have a high degree of imperfect mobility. Although it is possible to hire away individual personnel from a firm, trading an entire work force of a company or division through the job market is not possible, unless the whole firm/division is acquired. Since human resources cannot be traded efficiently without being bundled with other resources (such as physical resources), its mobility is not perfect.

Second, property-based resources that are particularly inimitable include patents, contracts, copyrights, trade marks, and registered design. Hall (1992) called these intangible resources assets, since they have clear property rights. These resources are

difficult to imitate because they are often uniquely present. For example, there may be only one contract regarding a government project. Once a patent or trade mark is granted, similar designs will be prohibited. Thus, imitation is either not possible or not allowed for these resources.

Third, as compared to some property-based resources, physical resources are known for imperfect substitutability. While the same financial resources can be obtained through various channels (stock market, bond market, commercial lending, etc.), physical resources such as oil fields and distribution channels are often specific to a business and thus not easily substitutable. A good location for business cannot be substituted either.

TABLE 3

Typical Resources Based on Resource Characteristics

		Resource Types	
		Property-Based Resources	Knowledge-Based Resources
Resource Characteristics	Imperfect Mobility	Human resources	Organizational resources (e.g., culture)
	Imperfect Imitability	Patents, contracts, copyrights, trade marks, and registered design	Technological and managerial resources
	Imperfect Substitutability	Physical resources	Technological and managerial resources

4.3.2 Knowledge-Based Resources

Knowledge-based resources are firms' intangible know-how and skills. In contrast to property-based resources, knowledge-based resources are not easily imitable due to knowledge and information barriers. Others cannot easily copy or imitate knowledge-based resources because they are vague and ambiguous. Thus, tacit know-how, skills, and technical and managerial systems not protected by patents all fall in this category (Hall, 1992). Imitating technological and managerial resources may be inherently "uncertain" as knowledge creation is open to a great deal of "irreducible ex ante uncertainty" (Lippman & Rumelt, 1982).

Besides imperfect imitability, technological and managerial resources are also imperfectly substitutable. Satisfactory substitutes and alternatives to superior technologies and managerial talents are often not available. Nevertheless, these resources are relatively mobile, because technologies and managerial talents may be acquired rather efficiently through the market. In contrast, organizational resources such as culture and learning capacity are deeply embedded in a firm, and thus are characterized by imperfect mobility.

The key difference between property-based and knowledge-based resources is that "the protection of knowledge barriers is not perfect" (Miller & Shamsie, 1996: 522). While property-based resources enjoy near-perfect legal protection, knowledge-based resources are more vulnerable to unintended transfer. Once others get enough access to knowledge-based resources, it is hard to control them for long. Consequently, alliance

partners are concerned with losing their knowledge-based resources through the alliance (Hamel, 1991; Mowery et al., 1996).

4.4 Alliance Structural Preferences and Resource Profiles

The resource-based view emphasizes that each partner would bring valuable resources to the alliance. To rely solely on one single type of resource is not likely to prove effective in today's environment of intensified competition. Reed and DeFillippi (1990) have argued that physical assets alone do not help a firm in building sustainable competitive advantage. It is, therefore, natural that so many firms reach out to other firms who hold resources complementary or supplementary to their own.

It can be argued that the types of resources firms could potentially contribute constitute a key dimension in predicting partners' structural preferences in the prospective alliance. From a resource-based view, firms are interested not only in accessing or acquiring their partners' valuable resources through the alliance, but also in protecting their own valuable resources during the process. Thus, partners' structural preferences would be based on their consideration of these two issues simultaneously. Essentially, the principle would be to find the structure that balances the two issues: (1) *being able to get valuable resources from the other party, and (2) without losing too much control of one's own resources.*

To accomplish these two tasks, firms need to consider both their own resource profile and their partner firm's resource profile. In other words, firms must ponder what kind of resources they want to appropriate and what kind of resources they want to limit

access to. The nature of these resources would determine the most desirable structure for the firm. Accordingly, the difference between knowledge-based and property-based resources becomes critical. As noted, knowledge-based resources have limited legal protection so that knowledge appropriation is difficult to prevent. On the other hand, property-based resources are more immune to unintended transfer. Certain alliance structure facilitates knowledge appropriation (see next subsection), and other structures control such transfer. Thus, firms' structural preference will be influenced by the amount of each type of resources that the partner firms possess. While the more specific relationships are proposed later, the overall hypothesis is that

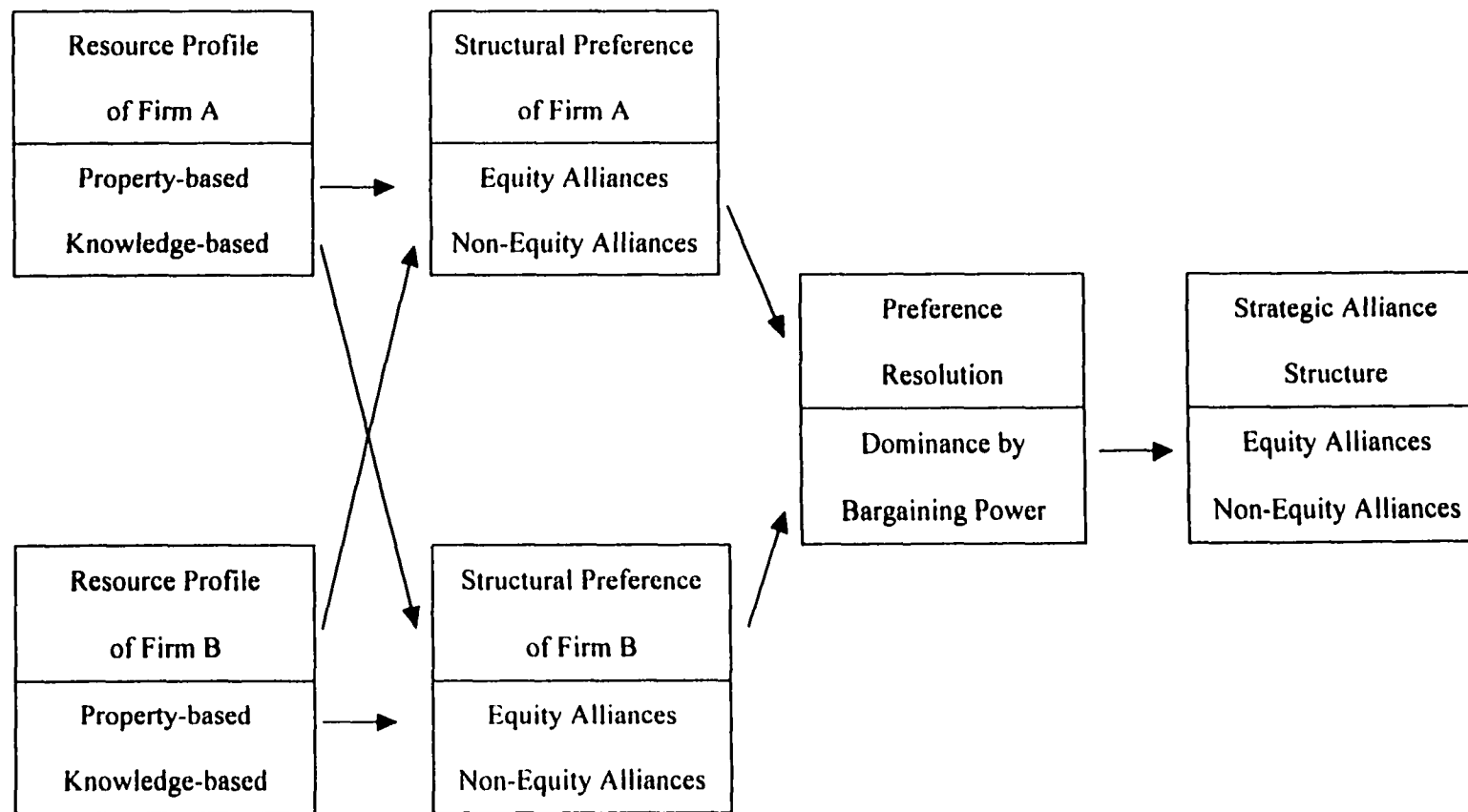
Hypothesis 3: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be affected by the resource profiles of the partner firms, i.e., their knowledge-based and property-based resources valuable for the prospective alliance.

4.4.1 Knowledge-Based Resources and Alliance Structures

According to the resource-based rationale, firms are often interested in appropriating partners' tacit knowledge and skills that are not protected by property laws, i.e., knowledge-based resource. As compared to property-based resource, which is protected by property rights, knowledge-based resources are in more danger of unintended transfer. It has been observed that partner firms of alliances often use alliances as a cover up for appropriating knowledge-based resources (Inkpen & Beamish, 1997).

FIGURE 5

The Resource-Based Model of Strategic Alliance Structuring

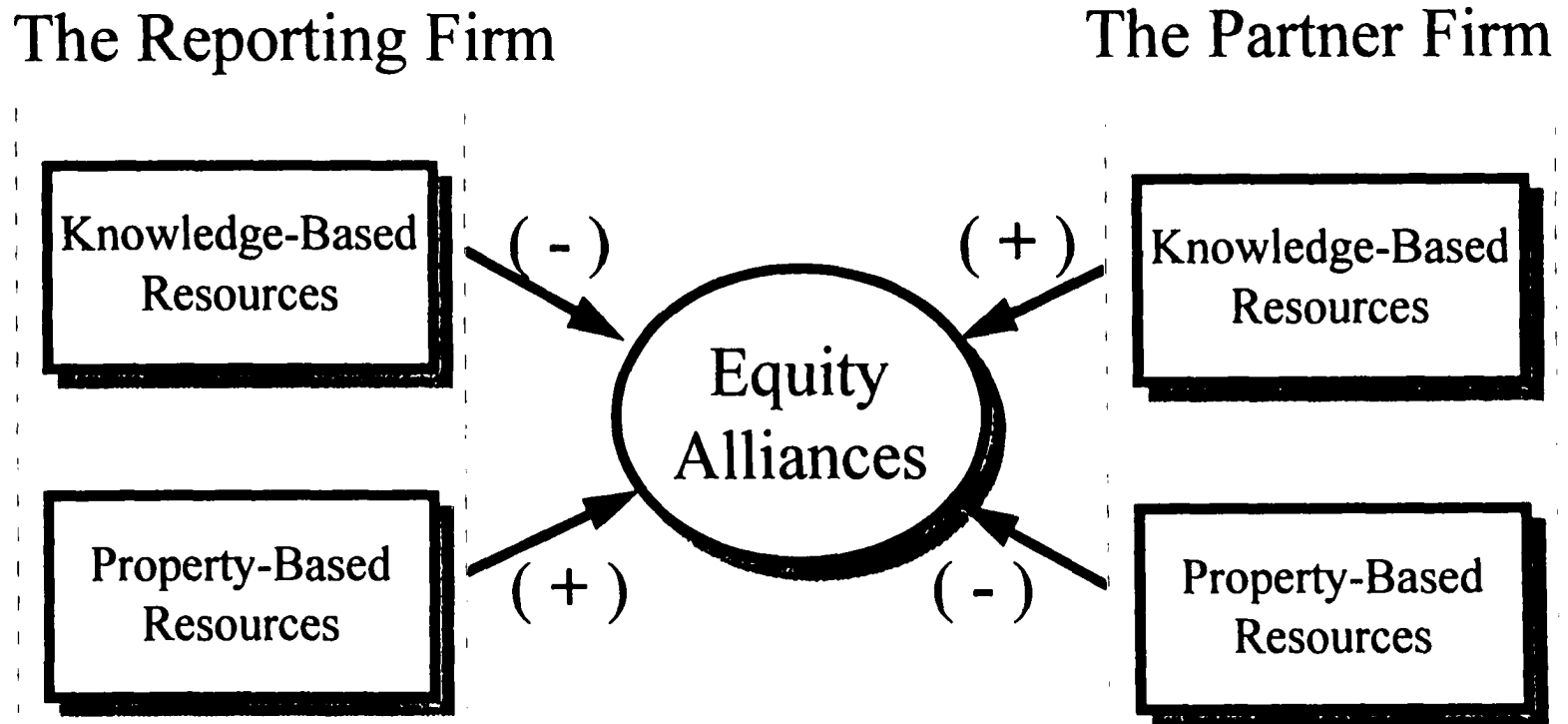


The literature suggests a number of knowledge-based resources that are easily subject to unintended transfer, such as subtle technical and creative talents, skills at collaboration and coordination (Black & Boal, 1994), and managerial and employee know-how (Hall, 1992). When the partner firms are working closely in the same entity for an extended period, it would be difficult to keep either partner from acquiring tacit know-how (Hamel, 1991). Thus, equity alliances, which integrate partner firms more tightly than non-equity alliances, provide a more convenient setting for learning partner firms' tacit knowledge and to acquire knowledge-based resources.

As compared to non-equity alliances, equity alliances are more instrumental to the transfer of tacit knowledge between the partners, due to the fact that partner firms are more exposed to each other (Kogut, 1988). Non-equity alliances such as licensing agreements would provide much less learning opportunities. Empirically, Mowery and associates (1996) found that equity joint ventures significantly facilitated interfirm transfer of technologies and resulted in greater technological similarities between the partners. Hennart and Reddy (1997:11) reported that "a joint venture is primarily a device to obtain access to resources which are embedded in other organizations." In addition, Tallman and Shenkar's (1990) study focused on technological resources and differentiated them as being either explicit technology or implicit organizational knowledge. Clearly, explicit technology is analogous to property-based resources, while implicit organizational knowledge is akin to knowledge-based resources. Tallman and Shenkar (1990) found that the use of explicit technology leads to contract-based alliances, while equity joint ventures are used to transfer implicit knowledge.

FIGURE 6

Hypotheses Based on The Resource-Based Model



In sum, firms are motivated to access other firms' knowledge-based resources and to limit access to their own knowledge-based resources. Thus, an equity alliance will be preferred for the sake of knowledge acquisition, and a non-equity alliance will be preferred for knowledge protection. Using the idea of primary resource, the more a firm has knowledge-based resources to contribute, the more likely that its primary resource type for the alliance is knowledge-based. Figure 6 shows the proposed relationships.

Thus, it is proposed

Hypothesis 3A: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be positively related to its partner firm's knowledge-based resources valuable for the prospective alliance.

Hypothesis 3B: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be negatively related to its knowledge-based resources valuable for the prospective alliance.

4.4.2 Property-Based Resources and Alliance Structures

Property-based resources refer to capital, plants, distribution channels, patents, copyrights, and so on (Miller & Shamsie, 1996). They are protected by property laws so that partner firms cannot appropriate others' property-based resources without consent. Thus, firms are not particularly concerned about unintended transfer of their own property-based resources through the alliance, nor are they interested in secretly transferring others' property-based resources. When firms bring in property-based resources, the alliance partially becomes an exchange of property rights (e.g., money for

patent). Non-equity alliances would provide all the clarity needed for exchange of property rights. For example, if the exchange is money for distribution channels, then a distribution agreement is the natural choice.

When partner firm A has substantial property-based resources for the alliance, firm B will not expect to appropriate them. Hence, an equity alliance would not be necessary. Although equity alliances facilitate knowledge transfer, they also involve more complicated ownership structures. Shared ownership structures are difficult and costly to construct, as properties must be evaluated and the share of ownership determined accordingly. Considerable time, effort, and money will be spent on forming complicated ownership structures such as joint ventures. Hence, non-equity alliances are a natural choice when secret transfer of resources is not an important objective.

Given knowledge-based resources, the more one firm possesses property-based resources, the less important is its knowledge-based resources. There is less need for an equity alliance, from its partner firm perspective. Supporting this view, Tallman and Shenkar (1990) reported that contract-based alliances (or non-equity alliances) are the preferred structure when the alliance is about transferring explicit knowledge, which is one type of property-based resources. Thus,

Hypothesis 3C: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be negatively related to its partner firm's property-based resources valuable for the prospective alliance.

In contrast, when a firm contributes significant property-based resources, its preference for an equity alliance will go up. Since properties cannot be easily

appropriated, the firm will not be too concerned about losing firm-specific tacit knowledge. In other words, possible knowledge loss will be limited. As such, the firm will be interested in exploring and acquiring the partner firm's knowledge as much as possible, and equity alliances would facilitate that purpose. In sum, the logic is that more property-based resources leads to a perception that knowledge loss is by comparison less important, which then prompts the firm to prefer an equity alliance. Hence:

Hypothesis 3D: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be positively related to its property-based resources valuable for the prospective alliance.

The resource-based model of alliance structural preferences is thus presented. The essence of the model is that partners seek to facilitate the acquisition of others' knowledge-based resources and prevent ownership complication regarding property-based resources, via the choice of alliance structure. The key lies in the distinction between property-based resources, which enjoy legal protection, and knowledge-based resources, which are hard to guard. The next chapter discusses structural outcomes based on preference resolution among partners.

CHAPTER 5

PREFERENCE RESOLUTION AND STRUCTURAL OUTCOME

So far two alternative ways to explain partners' structural preferences have been proposed. Nevertheless, in strategic alliances the partners often have various interests and thus prefer different alliance structures. Osborn and Baughn suggested that "the governance form of a cooperative alliance needs to satisfy both parties involved" (1990: 509). However, if prospective partners hold different structural preferences, they are left with only two options. In the first option, no-one is willing to compromise, in which event there would be no alliance. In the second option it is likely through a bargaining process that one party eventually exercises its power and determines the choice. In this study, this bargaining element is not empirically tested. However, it remains an integral part of the frameworks and should be tested in future studies. In this section the conceptual arguments for this perspective will be laid out.

Researchers generally agree that bargaining and preference resolution are an essential element of forming strategic alliances (Tung, 1988; Yan & Gray, 1994). Of course, not all partners have to go through the same explicit bargaining process. For instance, when firms are embedded in a network or an on-going partnership, the need to negotiate each time may not be as great, and the firms may be willing to rely on mutual forbearance and even to sacrifice some short-term interests in the process (Provan, 1993). Nevertheless, bargaining and preference resolution still take place, although probably in a more subtle and principled way (Fisher & Ury, 1991), since there will almost always be

some differences to be resolved. The way firms negotiate may vary greatly from case to case: but the essence of the process remains the same: get what you want without giving in totally.

5.1 Bargaining Power

Gomes-Casseres (1990: 2) has noted that researchers not only need to know “what ownership structure *does the firm want*,” but also “what ownership structure *can the firm get* (emphasis in original).” Regarding alliance formation as a bargaining process, researchers developed so-called negotiations model (Gray & Yan, 1992; Yan & Gray, 1994), which uses a composite term “bargaining power” as a key predicting concept.

By definition, bargaining power refers to “the extent to which one partner can favorably change the bargaining set ... and can win accommodations from the other (Gray & Yan, 1992: 49).” The bargaining power approach views subjective power perceived by negotiators as the essence of bargaining (Bacharach & Lawler, 1981). It was argued that the bargaining process is no more than a process in which each party’s bargaining power is wielded and manipulated. As a result, bargaining outcomes can be attributed to bargaining power possessed by each partner. The more bargaining power one possesses, the more likely that one’s preference will be accepted.

Three sources of bargaining power have been identified: stake, alternatives, and resources (Yan & Gray, 1994). In strategic alliances, “stake” refers to the strategic importance of the collaboration to each partner, and alternative means the options available to each partner. Clearly, high stake and few alternatives lead to low bargaining

power. Thus, the resources that each partner brings to the joint entity greatly determines its bargaining power. Hamel (1991), for example, argued that interfirm learning eventually enhances the firm's bargaining power, as it grasps the resources once only owned by the other partner. In sum, the bargaining power perspective suggests that the party with relatively more bargaining power is likely to dominate, and its preference would be honored (Bacharach & Lawler, 1981). Supporting this logic in a study on joint ventures, Yan and Gray (1994) found that bargaining power of the partners greatly influenced the control mechanism adopted by joint ventures. Extending the notion beyond the initial alliance making period, Inkpen and Beamish (1997) suggested that a shift of bargaining power is the force behind unplanned termination or alternation of strategic alliances. Hence, bargaining power seems to be an important aspect of alliance formation and functioning.

5.2 Structural Outcome and Bargaining Power

The bargaining power concept is integrated into the risk perception and resource-based frameworks. Greenhalgh and associates (1985) reported that the relationship between negotiators' preferences and bargaining outcomes is mediated by their bargaining power and personality. Specifically in the area of strategic alliances, studies also found that the exercise of power, or bargaining power, is a key aspect of strategic alliances (Hallen et al., 1991; Provan, 1993; Provan & Gassenheimer, 1994; Skinner et al., 1987). Moreover, the concept bargaining power has been successfully employed in the prediction of parent firms' ownership structure in joint ventures (Blodgett, 1991;

Gomes-Casseres, 1990). Lecraw (1984), for example, found that the more bargaining power transnational corporations have, the higher equity ownership they manage to get. Thus, through the bargaining process the structural preference of the party with relatively greater bargaining power will prevail, assuming an alliance is actually formed.

Although to use bargaining power to predict structural agreements in alliances is not a new idea, bargaining is essential for the risk perception and resource-bases models of structural preference. As a result, there are two complete, process-oriented models of alliance structuring, which explain the process through which individual firms' evaluation of alliances eventually turns to their agreed structural outcome.

The preference resolution process delineated in this paper may seem rather positional, i.e., negotiators insist on bargaining along their original positions, without being creative or flexible (Fisher & Ury, 1991). However, it should not rule out the so-called principled approach, in which negotiators may trade their positions with other interests. While it is certainly possible that some firms may alter their structural preferences for other gains, it can be argued that on the whole partners with more bargaining power tend to prevail on this point of structural choice. Ring and Van de Ven (1994) have noted that a congruence of expectations and assumptions emerges as a result of repeated interactions in the negotiation process, and the current model highlights the reconciliation aspect of such negotiations. This model encompasses those situations in which the partners are unable to develop a congruent structural preference through informal sense-making. Of course, if the preferences among the parties happen to be more or less congruent, the formal bargaining encounters would be relatively smooth.

CHAPTER 6

DISCUSSION

6.1 Summary

So far a risk perception model and a resource-based model of strategic alliance structuring have been presented. In this thesis, alliance structural decisions have been examined in terms of one's preference between equity alliances and non-equity alliances. It was proposed that alliance structuring should be studied as a process in which partner firms develop their respective structural preferences first. These preferences can be better understood through (1) firms' risk perception, and (2) firms' resource profiles.

The risk perception model explains alliance structural preferences as the outcome of evaluating two key risk types in alliances: relational risk and performance risk. Relational risk is concerned with the probability and consequences that alliance partners do not cooperate in an effective and desirable manner, while performance risk is the hazard that alliance objectives are not achieved, although the partners cooperate fully. It was proposed that the choice between equity and non-equity alliances allows partner firms to effectively control only one type of risk. Equity alliances are used to deal with high relational risk and non-equity alliances are used to control high performance risk.

The resource-based model suggests that partner firms' structural preferences are determined by their respective resource profiles for the alliance. It was proposed that, in deciding alliance structures, partner firms focus on two tasks: (1) getting better access to others' resources, and (2) protecting one's own resources. To this end, the difference

between knowledge-based and property-based resources becomes critical: while one's properties are protected legally, knowledge is often tacit and difficult to protect. Equity alliances facilitate knowledge acquisition. It was suggested that an equity alliance will be preferred when one has limited knowledge and the partner has substantial knowledge for the alliance.

6.2 Theoretical Contributions

This research makes a number of important theoretical contributions. First of all, following the tradition of strategy process studies, these two models describe the process of strategic alliance structuring by assigning a significant role for the perception of decision makers. If managerial perception functions as a filter on the objective environment, then to a large extent the shape of the resulting product is influenced by the nature of the filter (Das, 1986; Hambrick & Mason, 1984). Thus, the risk perception and resource-based models enhance the understanding of alliance structuring. They move closer to strategic decision making than theories such as transaction cost economics, which are more abstract in that they tend to ignore managerial perceptions. In this sense, the two models offer a more realistic perspective of how strategic decision is actually made. In ending his dissertation, Gulati (1993: 144) wrote "Thus the question still remains: How does a firm actually make its decision to enter an alliance?" (underline in original). Toward that end, the first theoretical contribution of this study is an elaboration of the ways in which the partners decide on their alliance structures.

Second and more specifically, the risk perception model highlights the distinction between strategic alliance making and other strategic maneuvers. Relational risk between the partners is suggested to be a unique characteristic of strategic alliances. In a sense, transaction cost economics is plausible because strategic alliances can be explained by its broad framework that accounts for all choices of transaction mode: market, hierarchy, and hybrid (Williamson & Ouchi, 1981). The strength of transaction cost framework is that strategic alliances can be placed and examined along a continuum. By comparison, many other theories, such as the strategic behavior theory, fail to contrast strategic alliances with all other strategies, and therefore have been narrow in their scope. The risk perception model, however, looks at interfirm alliances in contrast with all other strategies.

With the risk perception model, certain troublesome issues in strategic alliances can be more easily comprehended. The model has proposed how the structural choice among the two major alliance types can be explained through the risk perception perspective. The model also sheds lights on several issues (such as alliance history, partner asymmetries, and industry R&D intensity) that previous studies have tried to deal with from other perspectives. In the risk perception model, the relationships between these variables and alliance structural preferences are more straightforward and parsimonious. Having relational risk and performance risk as the core concepts, various elements in the competitive environment now find their due place in the process of alliance structuring.

Third, regarding the resource-based model, this thesis contributes yet another new perspective of understanding alliance structures. In accounting for alliance structural preferences, the resource-based model proves to have much explanatory power. Its overall logic regarding alliance structure is that firms are motivated to take advantage of their partners' resources while protecting their own. Here, the difference in terms of legal protection between property-based resources and knowledge-based resources becomes critical. Structural preferences are thus contingent upon the types of resources that the partners have for the alliance.

As compared to other major theories of strategic alliances, the resource-based model enjoys certain advantages. For example, transaction cost economics and the resource-based view share a concern with the characteristics of a firm's internal elements. However, transaction cost economics is aimed at minimizing costs involved in interfirm transactions. Such a view has been criticized as paying exclusive attention to cost minimization and neglecting value creation in strategic alliances (Zajac & Olsen, 1993). By comparison, the resource-based model pays special attention to the value creation potential of firm resources.

Fourth, one distinct aspect of the two models is to make preference resolution and bargaining an essential part of the alliance making process, and to suggest specific linkages between bargaining power and structural outcomes. Although that part of the model was not tested in this study, the two models highlight the interplay between the partners. On the one hand, most previous studies treated two or many partners as a single unit of analysis. As a result, the differences and confrontations between the partners have

not been salient in major models of strategic alliances. On the other hand, studies on the bargaining perspective have been narrow in their coverage and failed to link bargaining with a more comprehensive framework. By comparison, the risk perception and resource-based models delineate the complete process of alliance making including interfirm interaction. By integrating the bargaining power perspective, the two models suggest a more comprehensive view of alliance making.

6.3 Managerial Implications

From the perspective of practicing managers, this study clarifies the strategic decision making process in structuring alliances. Apparently, it is the perception of strategy makers that wields the greatest influences on strategic decisions. To be more specific, this thesis argues that many executives consciously or unconsciously make decisions based on their evaluation of two distinct elements: risk and resources. More specifically, they are assumed to reason in terms of relational risk, performance risk, property-based resources, and knowledge-based resources.

If the reasoning behind the two models seems rational, they are expected to have normative values as well. Thus, strategy makers will benefit from consciously analyzing these elements. The risk and resource concepts should facilitate executives' thinking process in complex situations involving alliances. The literature of alliance management is rich in elaborating guidelines and tips (Alexander, 1995; Badaracco, 1991; Das & Teng, 1997a, 1998a; Devlin & Bleackley, 1988; Lewis, 1990). What is lacking are parsimonious analytical tools. The two models proposed may be a step toward more

effective alliance structuring. As structuring is one of the critical steps in alliance management, more appropriate alliance structures constitute a good start toward better alliance performance.

The following Part B of the thesis discusses empirical testing of the two proposed models. The purpose is to propose the procedures for carrying out an empirical study to test the two models. An exploratory mail survey was undertaken to demonstrate such a research process.

PART B

DIRECTIONS FOR EMPIRICAL RESEARCH

CHAPTER 7

RESEARCH METHODOLOGY

7.1 Database Construction

The original database for this study was drawn from an alliance data set published by *Alliance Analyst*, a bi-weekly publication specializes in alliance-related issues.

Alliance Analyst offers the most complete and publicly available alliance database, as it covers a wide range of publications, such as *New York Times Index*, and *Wall Street Journal Index*. Using press announcements as a source of alliance database has been widely used by researchers (e.g., Glaister & Buckley, 1996; Geringer & Hebert, 1991; Harrigan, 1985; Hergert & Morris, 1988; Parkhe, 1993a; Reuer & Miller, 1997).

There were six selection criteria in the construction of the database. First, the time frame to be covered was between 1994 and 1997. In fact, *Alliance Analyst* was launched in September 1994. This period was selected not only because it represented most recent alliance activities, but also because it was a period in which strategic alliances grew significantly. Besides, a longer time period was not pursued because the respondents may not be able to accurately recall the structuring process as required.

Second, only those alliances that were actually formed during the period were included in the database. Numerous announcements of intentions to form strategic alliances were not used because many of them did not materialize. Modifications of existing alliances were not included either.

Third, while strategic alliances between non-for-profit organizations are booming, this study focused on interfirm alliances, or alliances between for-profit companies. It was felt that many of the arguments extended in the two models may not be applicable to other types of organizations, such as government agencies and universities.

Fourth, only two-party alliances with at least one US partner were included in the database. The reason is to highlight the dyad nature of the proposed models, which may not be accurately represented by alliances with more than two partners. Also, limiting the database to alliances with US partners sought to keep data collection manageable.

Fifth, like *Alliance Analyst*, the database included eleven major industrial groups in the database: airline & aerospace, automotive, business services, consumer product/retail/food & beverage, computers & communication, energy and natural resources, entertainment & leisure, financial services, healthcare/chemical, industrial machinery & equipment, and transport. These industries are relatively active in alliance activities (Osborn & Baughn, 1990), and they represent different levels of industry R&D intensity (Hagedoorn, 1993). As compared to similar studies on alliances (Gulati, 1995a; Hladik, 1985; Parkhe, 1993a), this study covers more industries and thus is potentially more representative of the alliance population. Archival data on industry R&D intensity were collected from the "R&D Scoreboard" of *Business Week*.

Sixth, the database contained ten common types of strategic alliances: equity joint ventures, minority equity alliances, joint production, joint marketing and promotion, joint R&D, enhanced supplier partnership, subcontracting, R&D contract, licensing agreements, and distribution agreements. On the one hand, these ten types of alliances

represented a wide range of typical alliance forms (Borys & Jemison, 1989; Oliver, 1990). On the other hand, arm's length agreements such as franchising and regular supplier agreement were not included (Yoshino & Rangan, 1995), so that the term "alliance" is not used too loosely.

Given these criteria, it is recognized that the resulting database will miss some alliances that should be included. However, being complete is not the objective of this database, as long as there is no systematic bias in its formation. In this sense, there appears to be no such bias in the formation of the database, so that it is expected to be representative of the alliance population during the period. For each alliance in the database, the following information was obtained: names of the partners, name of the alliance (if any), industrial group, type of alliance, and a brief description.

7.2 Data Collection

The data for this study was drawn from an extensive research project on strategic alliances. A part of the data from that project was used here. The study used a mail survey design. To find out appropriate respondents, *Standard & Poor's Register of Corporations, Directors and Executives* was consulted. The purpose was to obtain the name of an executive of each US partner firm who is likely to be the person responsible for the formation of alliances. The search started with the senior vice president level. In case that it was impossible to identify one senior VP for each alliance that a firm has been involved, the following sequence was followed: executive VPs, presidents, and CEOs. Only if all these candidates cannot be identified were VPs included. Exception was made

when there was clearly a better candidate (such as a VP for joint ventures) in the list.

Potential respondents were usually from such functional areas as corporate planning and development. Senior or executive VPs were preferred because they are adequately informed of significant strategic issues of the firm, such as strategic alliances.

Questionnaires were sent to all identified informants. In case some firms had been involved in multiple alliances (especially large firms), separate questionnaires with reference to specific alliances were sent to the respondents. To ensure better response rate, several steps were followed in the administration of mail survey (Dilman, 1978). First, the mail survey was undertaken anonymously. Due to the sensitive nature of the measures (e.g., relational risk), respondents might hesitate to give honest answers if they are identified.

Second, the questionnaires were mailed out to respondents with pre-stamped return envelopes. Third, after three weeks of the first wave, a second wave of questionnaires were sent. A new cover letter was attached with the replacement questionnaire. For those who have already replied, there is a thank-you note, which also asks them to disregard the replacing questionnaire. Those who have not responded were urged to reply as soon as possible.

7.3 Questionnaire Development

The questionnaire development process was based on a thorough review of the alliance literature. Recently, a considerable number of empirical studies have been done on strategic alliances, and a few of them used mail survey to gather data (Mohr &

Spekman, 1994; Moorman et al., 1992; Parkhe, 1993a; Thomas & Trevino, 1993; Zaheer & Venkatraman, 1995). Since this study explores two new approaches to alliance structuring, there are no measures in the literature that directly address the key constructs of the study, such as relational risk and performance risk. Thus, new measures had to be developed. Several steps were followed in the development of the measures.

First of all, special attention was given to the theoretical coverage of key constructs. Definitions of each construct are examined and possible dimensions, if any, were explicitly spelled out. Based on the definition and dimensions, questions that best reflect the measures were developed. Existing measures related to the constructs also helped in generating many of the questions. For certain items, the wording had to be changed so that they fit better with the constructs. For example, the relational risk measure was based on measures of related constructs such as opportunism (John, 1984), interfirm trust (Currall & Judge, 1995; Mohr & Spekman, 1994), and agency risk (Fiet, 1995).

Second, discussions with faculty members further improved face validity of the constructs. Doctoral students also served as expert judges in assessing the face validity of the constructs. Comments and suggestions were incorporated. In total, the questionnaire went through four iterations.

Third, a pilot study with senior business executives was undertaken to examine construct validity and reliability of one key measure, namely relational risk. The details of the pilot study will be discussed later.

Finally, besides construct validity, a good questionnaire should also enhance response rate. To this end, several techniques were adopted. First, the questionnaire was kept as short as possible. It is often observed that a long questionnaire significantly discourages response, due to too much inputs from respondents' part (Dilman, 1978). Hence, unnecessary items were kept minimum and the total page number of the questionnaire was only two. Second, attention was also paid to the sequence of questions, so that the questionnaire as a whole reads interestingly and logically.

7.4 Data Reliability and Validity

It is recognized that the use of a mail survey in this study poses potential threats to data reliability and validity. Nevertheless, it must be noted that the interests of this study are managerial perceptions so that the use of primary data suits the purpose of this research well. Testing two decision-making models, this study is much less vulnerable to many potential threats from mail survey, as compared to more content-oriented studies. This research is still subject to the usual criticisms leveled against mail survey. However, since there is no better way to get the kind of information needed (Kumar, Stern, & Anderson, 1993; Podsakoff & Organ, 1986), the practical approach is to try to address these threats.

First, it has been argued that answers to retrospective questions may not be very consistent and reliable (Golden, 1992). Respondents may not be able to recall past events or they may have changed their perception about past events. Various techniques can be used to test data reliability, such as using multiple raters, assessing inter-rater reliability,

and checking with secondary data. Unfortunately, the anonymous nature of this survey greatly constrained use of most of the techniques. For example, the first two techniques are simply not possible. Even checking against secondary data is not possible, because there is no way to know which company is which.

Second, validity of the data set may also be jeopardized by common method bias (Campbell & Fiske, 1959), due to factors like social desirability and consistency motive. The result is that measures in the survey may be artificially correlated. To deal with this problem, special attention was paid to the reordering of questions. The measure of the dependent variable (structural preference) was put before independent variables, so that the responses to dependent variables are not affected by perception bias created by responding to independent variables (Salancik & Pfeffer, 1977).

7.5 Operationalization of Survey Measures

7.5.1 Relational Risk

It was noted earlier that the risk construct contains both probability of loss and significance of loss. In fact, the definition of relational risk is “the probability and consequences that the cooperative relationship of the alliance is not effective or desirable.” Thus, one way to measure risk is to evaluate both probability and significance of potential loss (Dowling, 1986). Another approach is to integrate the two dimensions and ask “how risky” certain actions are. For instance, Fiet (1995) measured risk by asking the degree to which certain problems must be taken care of in an investment. The logic is that when certain problems invite high probability and significance loss, they

must be dealt with. This study adopted the latter approach, since it is more direct to ask subjects *the degree to which they are concerned with certain potential problems*. It seems apparent that the degree of concern is closely related to both probability and significance of loss. A Likert type 5-point scale was used. The respondents were asked to reflect their thinking during the alliance structuring period, and then rank the items by the degree of concern. For each respondent, the score of relational risk is the average of all items.

Based on the definition of relational risk, it was concluded that the construct may include four major aspects: opportunistic behavior, interfirm trust, incompatible objectives, and incompatible cultures. It must be noted that these are not necessarily independent dimensions. They tend to be related to each other.

First, for opportunistic behavior, the literature seems to suggest the following four major types: dishonesty, manipulation, shirking, appropriation of partners' resources (Fiet, 1995; John, 1984; Parkhe, 1993a). Thus, six items were developed to cover these issues. These six items are similar to John's (1984) measure of opportunistic behavior, for which Parkhe (1993a) reported a Cronbach alpha of .88.

Second, trust is believed to have dimensions like fairness, goodwill, and integrity (Kee & Knox, 1977; Rempel, Holmes, & Zanna, 1985). Based on several trust measures (e.g., Cullen et al., 1995; Mohr & Spekman, 1994), five items on interfirm trust were developed.

Finally, three items address aspects of incompatible objectives and cultures (Bleeke & Ernst, 1995; Doz, 1988; Hagedoorn, 1993). In total, fourteen items were included in the original measure of relational risk (see Table 4 for the listing).

7.5.2 A Pilot Study on Relational Risk

A pilot study was undertaken to further develop and examine construct validity and reliability of the measure of relational risk.

Data Collection Procedure. The respondents are vice presidents of U.S. corporations. This sample was drawn from senior level business executives listed on the 1997 edition of *Standard and Poor's Register of Corporations, Directors and Executives*. Two rounds of an anonymous mail survey were undertaken with vice presidents (VPs) of US companies in four functional areas (comprising general management, planning, marketing, and personnel) as potential respondents. While all vice presidents in general management area (N = 376) and planning area (N = 342) were included in the pool, 150 vice presidents from marketing and personnel areas, respectively, were randomly chosen. Based on this procedure, 1018 questionnaires were sent out in the first round. Each identified vice president was sent a questionnaire with a postage prepaid envelope enclosed. A total of 35 questionnaires were returned undelivered in the first round of the survey, and 14 in the second round (sent approximately three weeks after the first). A total of 80 executives responded, of which 79 responses were usable for the analysis (a little over 8% response rate).

TABLE 4
Results of Factor Analysis: Perceived Relational Risk
(VP sample, n = 79)

Items	Factor 1	Factor 2
1. The partner firm may turn out to be dishonest.	.65	
2. The partner firms may have incompatible objectives in the alliance.	.53	
3. The partner firm may manipulate the alliance's operations.	.84	
4. The partner firm may alter the facts in order to get what they need.	.84	
5. The partner firm may not carry out their duties if they are not checked up.	.72	
6. The partner firm may not always do things that they promise to do.	.82	
7. The partner firm may do anything within their means that will help them further their firm's interests.	.77	
8. The partner firm may not be fair in their dealings.	.84	
9. The partner firm's policies and programs may not benefit the alliance.	.73	
10. The partner firm may not be accommodating to special requests from other partners in the alliance.	.70	
11. The partner firm may appropriate valuable resources from the alliance.	.76	
12. The partner firm may have hidden agendas for the alliance.	.67	
13. The alliance may not achieve a high degree of harmony.		.67
14. The interests of the partner firms may conflict in the alliance.	.71	
Eigenvalue	7.4	1.3
Percentage of variance explained	52.9%	9.5%

Sample. Of the 79 VP respondents, 33 (41.8%) identified their primary area as general management (probably because planning was not listed as a functional area in the questionnaire). Marketing was the second most heavily represented functional area, with 20 respondents (25.3%). Regarding educational level, bachelor's degree was the highest degree for 41 VPs (51.9%), while 31 VPs and three VPs had master's and doctoral degrees, respectively. Most respondents had their highest degree in either business (43%), engineering (22.8%), or the liberal arts (13.9%). There were only four female (5.1%) respondents, and the average respondent was 51.7 years old (see Table 2). While most respondents have between 20 and 40 years of business experience, few VPs had less than 20 years (7) or more than 40 years experience (10).

Measure of Relational Risk. As mentioned, the original scale of perceived relational risk included 16 items. Factor analysis for the 16-item scale was performed, in order to get a much more succinct measure of relational risk. The results of the factor analysis (see Table 4) strongly suggested a one-factor solution. Except for one item (#13), all items were loaded on factor 1. Since the convention is that a separate factor should have at least three items loaded on it, a one-factor solution was adopted. To further narrow down the pool and select the most important items, corrected item-total correlation of the 16 items was examined. It was found that three items (i.e., item 3, 4, & 8) had the highest correct item-total correlation of .80. The same three items also have the highest loadings in the factor analysis. In addition, Cronbach alpha of internal reliability of these three items is .92, which is almost as high as that of the original 14-item measure (.93), indicating considerable internal consistency of the measure. Thus,

items 3, 4, and 8 were adopted as the measure for relational risk, and the score for relational risk is the average value of the three items.

7.5.3 Performance Risk

Performance risk is defined as “the probability and consequences that the alliance may fail, even though all partners cooperate fully.” It was decided that the measure of performance risk should cover two major aspects: competitive risk, and a lack of competence. Competitive risk refers to the uncertainties resulting from the competitive nature of the market, and it can be captured by Porter’s (1980) five forces. *e.g.* current competition, buyer, supplier, potential entry, and substitutes. Researchers (*e.g.*, Fiet, 1995; Miller, 1992, 1993; Werner, Brouthers, & Brouthers, 1996) developed measures of competitive risk and achieved satisfactory construct validity and reliability. In this study, there was one question for domestic competitor and one question for foreign competitor. For the lack of competence, one more item was developed, which reads “inadequate resources and capabilities of the alliance.” As with relational risk, a Likert type 5-point scale was used and the score of performance risk is the mean of these three items.

7.5.4 Situational Characteristics

There are three measures of situational characteristics leading to risk perception: alliance history, partner asymmetries, and industry R&D intensity. First, for alliance history, executives were asked to recall the number of previous alliances and their lasting period (if any) between the same partners. Second, with regard to partner asymmetries, the focus is on partners’ relative market position. Three items are believed to represent relative market position: (1) market share in one’s own industry; (2) firm sizes in terms of

revenue and (3) profitability. Dussauge and Garrette (1995) used relative sales as the indicator for partner asymmetries in competitive positions. In addition, relative profitability and market share of the partners seem to differentiate what theorists call “strong” and “weak” partners (Bleeke & Ernst, 1995; Murray & Mahon, 1993).

Respondents chose from 1 (your firm is significantly stronger than your partner firm in this regard) to 5 (your partner firm is significantly stronger than your firm in this regard) for all three items. The score of this measure is the mean of the three items. Third, industry R&D intensity data is obtained from *Business Week*.

7.5.5 Resource Profile

Hall (1992) discussed intangible resources including trade marks, patents, copyright, registered designs, contracts, trade secrets, reputation, networks, know-how, and culture. Some are believed to be “asset” (i.e. property-based resources) and others “skill” (i.e. knowledge-based resources). Hall’s and other studies (Barney, 1991; Grant, 1991; Hofer & Schendel, 1978; Wernerfelt, 1984) helped in generating the following two groups of property-based resources: (1) financial, physical, and human resources; and (2) patents, contracts, trade marks, and registered designs. These resources are labeled property-based because they belong to a firm legally and a partner cannot simply take it away. The following two types of knowledge-based resources were used: (1) technological know-how; and (2) managerial know-how. These two types of know-how are knowledge-based because there is no legal protection for interfirm connections. In other words, a partner may *steal* this knowledge through an alliance.

The respondents were asked about the extent to which each partner could potentially bring in each of the four types of resources. The scale is Likert type, ranging from 1 (to no extent) to 5 (to great extent). Property-based resources were scored as the mean of the two types (e.g. financial, physical etc.), as was the score of knowledge-based resources (including technological and managerial know-how).

7.5.6 Alliance Structural Preferences

In this study, alliance structures were classified as two categories: equity alliances and non-equity alliances. One question was included to determine the partners' structural preferences. The respondents were asked to identify their original structural preferences from three choices: equity joint ventures, minority equity alliances, and alliances without equity investments. The first two choices refer to an equity alliance, and the last choice is a non-equity alliance.

So far the operationalization of the measures has been presented. It needs to be noted, however, that the construct validity and reliability of the questionnaire have not been adequately established. Given more time and resources, a number of procedures could have been carried out, such as interviews with alliance managers, pretest with similar samples for convergent and discriminant validity, and so on. Therefore, one cannot assume that the measures are valid and reliable for testing the two models. The next chapter is intended to show the statistical procedures that can be employed, if valid and reliable measures had been used.

7.6 Variables

Dependent variable. This study examines the relationship between a number of variables in three different approaches (see Figures 1, 2 & 5). Table 5 lists all variables and their descriptions. The dependent variable in this study is reporting firm's alliance structural preference, which is coded "0" for non-equity alliances and "1" for equity alliances.

TABLE 5
Summary of Variables

Variable Name	Description
Dependent Variable	
1. Alliance Structural Preference	Reporting firm's structural preference between equity vs. non-equity: 1 = equity alliances, 0 = non-equity alliances
Intervening variables	
2. Relational risk	Mean of a 3 items, 5-point Likert scale
3. Performance risk	Mean of a 3 items, 5-point Likert scale
Independent variables	
4. Alliance history	1 if partner firms had been engaged in previous alliances. 0 if not
5. Industry R&D intensity	Ratio of (R&D expense / annual sales) of the industry
6. Partner asymmetries	Mean of 3 items, 5-point Likert scale
7. Resource profiles	Four variables (property-based and knowledge-based resources of reporting firm and the partner firm), indicating the amount of each type that the firms own.
Control variable	
8. International	Dummy variable set to 1 if the alliance is between two firms of the same country, or 0 if the alliance is cross-border.

Intervening variables. The risk perception model uses perceived relational risk and performance risk as two intervening variables. The two intervening variables are believed to be directly responsible for the dependent variable (alliance structural preference), while relating to various independent variables.

Independent variables. Referring to Figure 1, the first three independent variables have been used in existing research: alliance history, partner asymmetries, and industry R&D intensity. These three variables are independent variables in the risk perception model, leading to risk perceptions. In addition, in the resource-based model, partner firms' resource profiles for the alliance were used to account for partners' structural preference. Four resource profile variables are included: property-based resource of the reporting firm, knowledge-based resource of the reporting firm, property-based resource of the partner firm, and knowledge-based resource of the partner firm.

Control variable. A dummy variable of country origin called "International" was coded "1" if the alliance is between two firms of the same country, or otherwise "0" if the alliance is cross-border.

7.7 Research Hypotheses

The various hypotheses developed in this study are collected here for easy reference:

Hypothesis 1A: The number of previous alliances between the same partner firms will be negatively associated with partner firms' perceived relational risk of the alliance.

Hypothesis 1B: Partner asymmetries will be positively associated with partner firms' perceived relational risk of the alliance.

Hypothesis 1C: The R&D intensity of the industry that the alliance is in will be positively associated with partner firms' perceived performance risk of the alliance.

Hypothesis 2: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be affected by both the perceived relational risk and perceived performance risk of the prospective alliance.

Hypothesis 2A: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be positively related to the perceived relational risk of the prospective alliance.

Hypothesis 2B: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be negatively related to the perceived performance risk of the prospective alliance.

Hypothesis 3: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be affected by the resource profiles of the partner firms, i.e., their knowledge-based and property-based resources valuable for the prospective alliance.

Hypothesis 3A: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be positively related to its partner firm's knowledge-based resources valuable for the prospective alliance.

Hypothesis 3B: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be negatively related to its knowledge-based resources valuable for the prospective alliance.

Hypothesis 3C: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be negatively related to its partner firm's property-based resources valuable for the prospective alliance.

Hypothesis 3D: A firm's preference for an equity alliance, as opposed to a non-equity alliance, will be positively related to its property-based resources valuable for the prospective alliance.

7.8 Statistical Methods

7.8.1 Hypotheses 1A to 1C

Linear regressions were used to test Hypotheses 1A, 1B, and 1C. First, simple regression analysis was used for hypothesis 1C, which suggests a linear relationship between industry R&D intensity and performance risk. A simple correlation is not desirable because country origins need to be controlled. Second, hierarchical regression analysis was conducted to test the relationships between relational risk and two independent variables, namely alliance history and partner asymmetries. The control variable “international” was included in the model. Hierarchical regressions better scrutinize the effect of each independent variable.

7.8.2 Hypotheses 2 and 3

The essence of this study is captured by hypotheses 2 and 3, which propose that firms’ alliance structural preferences can be explained by two sets of dimensions, one about risk and the other about resources. Hypotheses 2 and 3 were examined through a binomial logistic regression model, which is appropriate for the dichotomous dependent variable (equity vs. non-equity). A logistic regression is believed to be more appropriate when the ordering of a dependent variable is not important. Since the dichotomous dependent variable violates the assumption of ordinary-least-square (OLS) analyses, i.e. interval data, maximum likelihood procedures were used to estimate the parameters of the model (Aldrich & Nelson, 1984). The model is expressed as

$$P(Y_i = 1) = 1 / (1 + \exp(-a - X_i B)),$$

where Y_i is the dependent variable, X_i is the independent variable, a is the intercept parameter, and B is the vector of regression parameters. In this regression model the dependent variable has two dichotomous values, one for equity alliances and the other non-equity alliances. Two separate logistic models are developed to test the effect of risk- and resource-related variables. The probability of preferring an equity alliance is accounted for by the independent variables, while controlling alliance country origins. A positive, significant coefficient of an independent variable indicates that the variable increases the probability of being an equity alliance. For instance, to support hypotheses 2A and 2B, the coefficients of the variables of relational risk and performance risk need to be positive and negative, respectively. Also, significant χ^2 is also needed to support the logistic models.

In addition, the hypotheses were also tested by canonical discriminant analysis, to develop a rule for assigning cases to the group to which they belong (Dillon & Goldstein, 1984). As the first step, t-tests were conducted to identify whether there are significant differences on the six independent variables across the two groups. Discriminant analysis was then used to develop the categorical criteria based on these independent variables. A significant canonical correlation and high overall hit rate would yield support for the hypotheses (Kim & Hwang, 1992).

CHAPTER 8

STATISTICAL ANALYSES

8.1 Response Rate

Nine hundred and sixty eight questionnaires were sent out to same number of respondents in the first wave of mail survey. As noted in the data collection section, all firms are US-based. A firm may receive multiple questionnaires if involved in multiple alliances. In these cases, several executives in that firm were sent the questionnaire, each with a cover letter referring to a specific alliance.

Within three weeks, 35 letters were returned as non-deliverable. In addition, seven firms (representing eight executives) declined to participate in this survey. Thus, a second wave of questionnaires of 925 were sent three weeks after the first wave. Out of the second wave, twenty seven letters were undelivered, and 24 more executives declined to participate.

In total, fifty four answered questionnaires were received, and 53 of which were usable. Thus, excluding the 62 returns that were non-deliverable, a gross response rate of 9.5%, or $(54+32)/(968-62)$, was obtained. Since 53 responses were usable, the net response rate of this survey was 5.9%, or $53/(968-62)$.

The 5.9% response rate is lower than the 10 to 12 percent typical for surveys on top executives in US corporations (see Hambrick, Geletkanycz, & Fredrickson, 1993). There are several factors which may have hindered a higher rate. First, it is particularly difficult to identify the top executive who is most knowledgeable about a particular

alliance. This problem was remedied somewhat by stating in the questionnaire that "In the event a different executive other than yourself has been more directly involved in the specific alliance mentioned in the cover letter, we request you to please forward this survey to that executive." While some executives have obviously done that, the problem of not being able to reach appropriate respondents seems to remain.

Second, the nature of this questionnaire is more sensitive than those of most other studies, as it asked about the risk of opportunistic behavior in the alliance (i.e., relational risk). Because of this low response rate and a relatively small sample size, along with a lack of established construct validity, results can be taken only as a demonstration of the procedures.

8.2 Sample Characteristics

Nationality of Partner Firm. While all respondents are from US firms, their partner firms are from 13 different countries (see Table 6). Thirty four respondents reported as having US partners, so that 64.2% of the 53 alliances are domestic and 35.8% are cross-border alliances. In cross-border alliances, Japan, Germany, and France are the three countries that have multiple alliances in this sample.

Industry Group of Alliances. To classify the industry in which the alliance primarily competes, BusinessWeek's R&D Scoreboard was used. Under eighteen major industry groups, subgroups are also included in R&D Scoreboard. Based on this classification, the sub-industry group of the alliance was identified first, such as Tires and Rubber, and Computer. If the response did not allow the identification of sub-

TABLE 6
Nationality of Partner Firm

Nationality	Number of Cases
USA	34
Australia	1
China	1
Denmark	1
France & Germany	1
France	2
Germany	3
Hong Kong	1
Japan	4
Netherlands	1
Norway	1
Sweden	1
Swiss	1
United Kingdom	1
Total	53

industry group, then its major industry group was identified, such as Chemical and Manufacturing. Table 7 shows the breakdown of the major and sub-industry group of the 53 alliances. Health care is the most heavily represented industry group, with 11 alliances in this group (or 20.8% of the sample). The fuel and services industries are also heavily represented, with 7 alliances each (or 13.2% of the sample). Each alliance's industry R&D intensity was calculated as the average R&D expense as percentage of sales of the 1992 and 1994 data, the last two years this information is available from BusinessWeek.

Respondents. All respondents have given their corporate titles. The breakdown of corporate titles are shown in Table 8. Since respondents were asked to forward the

TABLE 7
Industry Group of Alliances

Major Industry Group	Sub-Industry Group	Number of Cases
Automotive	Parts & Equipment	2
	Tires & Rubber	1
Chemicals		1
Electrical & Electronics	Electrical products	2
	Electronics	1
	Semiconductor	1
Fuel	Oil, Gas & Coal	7
	Petroleum Services	4
Health Care		1
	Drugs & Research	10
Leisure Time Products		1
Manufacturing		1
Metals & Mining		2
	Steel	1
Office Equipment & Services	Computers	5
	Data processing	1
	Peripherals & Others	1
	Software & Services	2
Service Industries		7
Telecommunication		2
Not Indicated		9
Total		53

questionnaire to a person who is most knowledgeable about the alliance, it was expected that actual respondents' title may be different from the people who originally received the letter. This expectation has been confirmed. Although the questionnaire was sent mostly to senior VPs and executive VPs, the pool of respondents does not reflect this character.

In fact, 17 respondents (or 32.1%) identified themselves as VPs, and 10 (18.9%) respondents are presidents. Among the 10 people who were classified as Others, there are Chief Scientist, Director, Executive Partner, General Manager, Treasurer, etc.

TABLE 8
Title of Respondents

Title	No. of Respondents
CEO	2
President	10
Executive VP	8
Senior VP	6
VP	17
Others	10
Total	53

8.3 Descriptive Statistics

Table 9 shows descriptive statistics, correlations, and internal reliability coefficients. There are several characteristics worth notice. First, while relational risk has a satisfactory internal reliability coefficient, performance risk has a relatively low Cronbach's alpha. Second, in this study relational risk is found to be significantly correlated with performance risk ($r = .29$). It has been argued that relational risk and performance risk are independent variables: one does not necessarily affect the other. The data, however, seems to suggest that there is some kind of linkage between the two. Third, it is found that 23% of reporting firms had been involved with the same partner firm in previous alliances. This indicates a relatively strong previous alliance experience.

TABLE 9

Descriptive Statistics and Correlations

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. Alliance history	.23	.42	1.00										
2. Industry R&D intensity	5.60	4.77	-.04	1.00									
3. Partner asymmetries	1.20	.74	-.18	.30	(.85)								
4. International	.36	.48	.07	-.22	-.04	1.00							
5. Relational risk	2.13	.88	-.01	.03	-.05	-.07	(.76)						
6. Performance risk	2.61	.91	.07	.27	.15	.12	.29*	(.56)					
7. Property-based resource of the reporting firm	3.58	.95	.19	.24	.10	.10	-.25	.08	1.00				
8. Knowledge-based resource of the reporting firm	4.16	.83	.22	.05	.32*	.09	.01	.30*	.46*	1.00			
9. Property-based resource of the partner firm	3.45	.99	-.07	.28	-.12	-.06	-.12	-.10	.24	.02	1.00		
10. Knowledge-based resource of the partner firm	3.65	.94	-.02	.03	.14	-.25	-.25	-.05	.28*	.09	.50*	1.00	
11. Structural preference	.62	.49	-.04	-.25	.00	.18	.06	.17	-.33*	-.04	-.32*	-.12	1.00

*p < 0.05, **p < 0.01, two-tailed; reliability coefficients are in parentheses.

8.4 Results of the Risk Perception Model

The risk perception model includes Hypotheses 1 to 2. Hypotheses 1A to 1C examine the antecedents of risk perception, while Hypotheses 2, 2A, and 2B are about alliance structural preferences based on perceived relational and performance risk. First, hypothesis 1C was examined through a simple regression analysis (see Table 10). When country origin is controlled, there is a positive and significant ($p = .04$) relationship between industry R&D intensity and perceived performance risk. Besides, the overall regression model is found to be marginally significant ($p = .09$). Thus, Hypothesis 1C is supported.

Second, hierarchical regression analysis was conducted to test Hypotheses 1A and 1B, or the relationships between relational risk and alliance history and partner asymmetries. There is no support for the two hypotheses (see Table 11). Both coefficients are negative and statistically insignificant.

Hypothesis 2 was tested by canonical discriminant analysis. First, T-tests were run on relational risk and performance risk across the two groups (see Table 15). As predicted, partner firms that preferred equity alliances perceived a higher level of relational risk, but the difference is not statistically significant. The direction of performance risk contrasts prediction. Referring to Table 12, the results of canonical discriminant analysis show that the model yielded a canonical correlation of .224, which is not statistically significant. The discriminant model provides a correct classification of 58%. In sum, the model of relational risk and performance risk is not statistically significant.

TABLE 10

Results of Simple Regression Analysis: Performance Risk

Variables	B	t	Sig.
Constant	2.15	8.90	.00
Control Variable			
International	.36	1.27	.21
Predictor			
Industry R&D intensity	.06	2.08	.04
Overall F	2.51		
Sig. of F	.09		

TABLE 11

Results of Hierarchical Regression Analysis: Relational Risk

Variables	Perceived Relational Risk					
	B	t	Sig.	B	t	Sig.
	Model 1			Model 2		
Constant	2.18	13.10	.00	2.26	8.02	.00
Control Variable						
International	-.13	-.48	.63	-.13	-.48	.63
Predictors						
1. Alliance history	.003	.01	.99	-.02	-.08	.94
2. Partner asymmetries				-.07	-.39	.70
R ²		.01			.01	
F		.12			.12	
Sig. F Change		.89			.95	

TABLE 12

Discriminant Analysis Results: The Risk Perception Model
(+ = encourage equity alliances)

Variables	Standardized Canonical Discriminant Coefficient
Control variable	
International	.651
Predictors	
Relational Risk	.196
Performance Risk	.639
Eigenvalue	.053
Wilks' lambda	.950
Canonical correlation	.224
Chi-square	2.39
Degree of freedom	3
Significance	.495
Percent correctly classified	58.0%

Hypotheses 2A and 2B predict specific relationships between risk perception and alliance structural preferences. A binomial logistic regression analysis with maximum likelihood procedures was employed (see Table 13). A positive coefficient would suggest that the variable increases the probability of preferring an equity alliance. The two independent variables are not statistically significant. The explanatory power of the model is also low, with a chi-square of 2.56 ($p = .46$). Thus, Hypotheses 2A and 2B are not supported. However, referring to Table 14, the model correctly classified 58 percent of the observations, which is higher than a random correctness rate of 52.4 percent.

TABLE 13

Results of Binomial Logistic Regression Analysis:
The Risk Perception Model (+ = encourages equity alliances)

Variables	Regression Coefficients	Standard Error	t-statistics	Sig.
Constant	-.75	1.06	.50	.48
Control Variable				
International	.66	.65	1.02	.31
Relational risk	.11	.37	.08	.77
Performance risk	.34	.36	.88	.35
n	50			
model chi-square	2.56			
p value	.46			

TABLE 14

Classification Table Based on The Risk Perception Model

		Predicted		Total	Percent Correct
		Equity Alliances	Non-Equity Alliances		
True	Equity Alliances	27	5	32	84.4%
	Non-equity Alliances	16	2	18	11.1%
	Total	43	7	50	
Overall Correctness		58.0%			
Random Correctness		$(61\%)^2 + (39\%)^2 = 52.4\%$			

TABLE 15

Results of T Tests: Across Group Differences

Discriminating Variable	Group Means (SDs)		t	Sig.
	Equity Alliances n = 33	Non-Equity Alliances n = 20		
1. Relational Risk	2.17 (.91)	2.06 (.83)	-.46	.648
2. Performance Risk	2.73 (.91)	2.42 (.90)	-1.22	.231
3. Reporting firm's Property-based Resources	3.35 (.94)	3.98 (.85)	2.50	.016
4. Reporting firm's Knowledge-based Resources	4.14 (.85)	.85 (.82)	.27	.788
5. Partner firm's Property-based Resources	3.21 (1.05)	3.85 (.76)	2.56	.014
6. Partner firm's Knowledge-based Resources	3.56 (1.08)	3.80 (.66)	1.00	.321

TABLE 16

Results of Hierarchical Regression Analysis:
Mediating Roles of Relational Risk and Performance Risk

Variables	Perceived Relational Risk					
	B	t	Sig.	B	t	Sig.
	Model 1			Model 2		
Constant	1.15	2.12	.15	-.01	.00	.99
Control Variable						
International	.26	.13	.72	.01	.00	.99
Predictors						
1. Alliance history	-.57	.49	.49	-.24	.07	.78
2. Partner asymmetries	.11	.05	.82	.10	.04	.85
3. Industry R&D intensity	-.10	1.90	.17	-.13	2.32	.13
4. Relational Risk				.07	.02	.89
5. Performance Risk				.48	1.10	.30
Chi - Square		12.9			5.51	
Significance		.11			.70	

In combining Hypotheses 1 and 2, it can be argued that there is a significant relationship between situational characteristics and structural preferences. In fact, this kind of direct relationship is what most existing studies have examined, although they focused on the actual structural outcomes rather than structural preferences (see the literature review section).

Thus, an alternative hypothesis to H1 and H2 is that there is a direct relationship between the situational variables and structural preference. In addition, it can be argued that relational risk and performance risk may play a moderating role (rather than a mediating role) in this direct relationship. A hierarchical regression analysis was employed to explore these possibilities.

In the first step, the direct effects model was tested by regressing structural preference on the three antecedents (i.e., alliance history, partner asymmetries, and industry R&D intensity). In the second step, relational risk and performance risk were added to the logistic regression to test whether they moderate or mediate any previously significant relationships. The results of the hierarchical regression analysis are included in Table 16.

On the one hand, a moderating role of relational risk and performance risk will be supported if (1) the direct relationship between the three independent variables and the dependent variable is significant, and (2) the direction or the magnitude of the previously significant relationship is changed after the two moderators are entered in the regression.

On the other hand, a completely or partially mediating role of relational risk and performance risk will be supported if three conditions are met: (1) the direct relationship

between the independent variables and the dependent variable is significant, (2) the previously significant relationship between the three antecedents and the dependent variable become insignificant (completely mediating) or less significant (partially mediating) after the two mediators are entered in the regression, and (3) the relationship between the two mediators and the dependent variable is significant.

Referring to Table 16, the results of the hierarchical regression suggest that the three antecedent variables are not significantly related to the dependent variable, before or after relational risk and performance risk are entered. In addition, it is found that there is no significant relationship between structural preference and relational risk and performance risk (see Table 13). Thus, it can be concluded that there is no support for a direct relationship between the three antecedents and alliance structural preferences. Nor can a mediating or moderating role of relational risk and performance risk be supported.

8.5 Results of the Resource-Based Model

A canonical discriminant analysis was used to test H3 (see Table 17). The overall model is found to have a high canonical correlation of .477 ($p = .028$). Thus, Hypothesis 3 is supported. It is concluded that knowledge- and property-based resources of the partner firms are responsible for a firm's alliance structural preference. Besides, the discriminant function provided correct classification of 71.7 percent of the observations, which is much higher than a random correctness of 52.4%. Thus, the model helps in correctly classifying the observations.

TABLE 17

Discriminant Analysis Results: The Resource-Based Model
 (+ = discourages equity alliances)

Variables	Standardized Canonical Discriminant Coefficient
Control variable	
International	-.533
Predictors	
Property-based resources of the reporting firm	.828
Knowledge-based resources of the reporting firm	-.239
Property-based resources of the partner firm	.677
Knowledge-based resources of the partner firm	-.411
Eigenvalue	.294
Wilks' lambda	.773
Canonical correlation	.477
Chi-square	12.51
Degree of freedom	5
Significance	.028
Percent correctly classified	71.7

TABLE 18

Results of Binomial Logistic Regression Analysis:
The Resource-Based Model (+ = encourages equity alliances)

Variables	Regression Coefficients	Standard Error	t-statistics	Sig.
Constant	4.88	2.39	4.16	.04
Control Variable				
International	-1.30	.76	2.97	.08
Property-based resource of the reporting firm	-1.15	.53	4.79	.03
Knowledge-based resource of the reporting firm	.46	.52	.79	.37
Property-based resource of the partner firm	-.96	.49	3.79	.05
Knowledge-based resource of the partner firm	.60	.48	1.55	.21
n	53			
model chi-square	14.38			
p value	.013			

TABLE 19

Classification Table Based on The Resource-Based Model

	Equity Alliances	Predicted Non-Equity Alliances	Total	Percent Correct
True Equity Alliances	27	6	33	81.8%
Non-equity Alliances	7	13	20	65.0%
Total	34	19	53	
Overall Correctness	75.5%			
Random Correctness	$(61\%)^2 + (39\%)^2 = 52.4\%$			

For the specific relationships of H3A to H3D, binomial logistic regression analysis was used (Table 18). Like in discriminant analysis, the overall model has strong explanatory power, with a chi-square of 14.38 ($p = .013$). In addition, the model correctly classified 75.5 percent of the observations (see Table 19). The control variable International is significant ($p = .08$) and with a negative sign, indicating that cross-border alliances are less likely to be equity-based. Out of the four independent variables, two were found to be negative and significant, i.e. property-based resources of the reporting firm ($p = .03$) and of the partner firm ($p = .05$). However, while the sign for property-based resource of the partner firm ($B = -.96$) is consistent with the prediction, property-based resource of the reporting firm has a sign opposite to the prediction. Thus, Hypothesis 3C is supported and Hypothesis 3D is not supported. The other two variables related to knowledge-based resources are not significant, yielding no support for Hypotheses 3A and 3B. While knowledge-based resource of the partner firm has the predicted sign, knowledge resource of the reporting firm again has the opposite sign. In sum, it seems that the two hypotheses related to partner firms are better supported than the two with reporting firms.

8.6 Discussion

Comparing the two proposed models, it was found that the resource-based model appears to have much more explanatory power. Not only is the resource-based model highly significant ($p = .013$), but also it provides a 75.5% correct classification of observations. Of course, it needs to be noted that the results of the resource-based model

are not entirely consistent with the predication. Overall, it seems that the resource-based model significantly helps predict partner firms' alliance structural preferences.

As to the lack of support for the risk perception model and some other hypotheses, there are several explanations. First, this research is for demonstration purpose only, as the measures do not have satisfactory validity and reliability. Although great care has been taken to develop valid measures (see discussion on questionnaire development and the pilot study), developing new measures is always an on-going process, and one study cannot do it all. It is possible that the measures have not captured the constructs adequately. For example, three-item measures for relational risk and performance risk may not be adequate. It was found that performance risk has a low Cronbach's alpha, an indication that internal consistency of the measure is not satisfactory.

Second and specifically for the risk perception model, it is quite likely that the respondents failed to *recall* their perceptions before the alliance was formed. Although it has been emphasized in the questionnaire that the perception was "*Before your alliance was formed,*" probably some respondents still gave their more current perceptions about relational risk and performance risk.

Third and regarding the resource-based model, the difficulty is that partners' resource profiles are different from their actual resource contribution. Although respondents were alerted about the extent they *possess* valuable resources for the alliance, it is possible that some respondents referred to their actual contributions to the alliance. That may explain some significant but unpredicted relationship in this model.

CHAPTER 9

CONCLUSIONS

9.1 Summary

In order to demonstrate an empirical test of the two models, an anonymous mail survey was undertaken with senior business executives of firms that have been involved in recent strategic alliances. Fifty three usable responses were received. Several statistical methods were employed, including binomial logistic regression model, hierarchical regression analysis, and discriminant analysis. In view of these statistical results, the resource-based model appears to have some empirical support. The overall model is statistically significant and it greatly enhances correct classification of observations. In addition, while predicted relationships based on the partner firm's resource profile are largely supported, those based on the reporting firm's resource profiles are mostly not supported. On the other hand, the risk perception model is not supported, although the concept of performance risk is found to be closely related to industry R&D intensity.

In comparing the explanatory power of the two models, it was found that the resource-based model holds the greatest potential. Although not all predicted relationships in this model are supported, the resource model is highly significant and it does correctly predict more than 75 percent of cases, a significant improvement over random correctness.

9.2 Limitations of the Current Research

The current study is limited in several significant ways. The most serious problem is that the measures used in this study have not been adequately validated. Although the measures were either adapted from other researchers or generated based on literature review, they do not necessarily have adequate construct validity and reliability. For example, convergent validity and discriminant validity of the measures were not examined through a substantial pretest. The pilot study only covered one construct, i.e., relational risk. Given more time and resources, the entire questionnaire should be pretested with alliance managers, and their feedback used to improve the measures.

The second limitation is a small sample size, which gives very limited statistical power for the analysis. In this light, it has been noted that the analyses were for demonstrating statistical techniques only.

In addition, all standard criticisms against survey methods (i.e. common method bias, social desirability, nonresponse bias) are relevant to this study. Although attempts were made to remedy some of the issues (see section 6.4), it is recognized that the study is not immune from these limitations.

Particularly, the use of one single respondent for each firm as the sole information source is risky. It has been suggested that for interorganizational research it is rather important to have multiple informants (Kumar et al., 1993). However, this procedure was not done because the survey is anonymous. Thus, it would be practically impossible to have multiple informants.

Besides, another potential problem with the survey is that it asked respondents to recall their perception and thinking process, such as perceived relational risk before the alliance formation. Since the partners have worked together since then, it is possible that their recollected perception is biased by whatever happened later. Although all retrospective questions are made as explicit as possible in terms of their temporal reference, it is still a major threat to the validity of the data. This may explain why almost all respondents say that they got their preferred alliance structure.

In addition, although eleven industry groups are included in the database, certain industries were underrepresented in the database and the sample. Also, since the respondents are limited to US firms, the generalizability of the findings may be undermined.

9.3 Directions for Future Research

As noted, a lack of construct validity and reliability, along with a small sample size, determines that this empirical study can be for demonstration purpose only. This research merely proposes the procedures for carrying out a mail survey. Thus, future research may follow up on this demonstration and empirically test the two models through more valid and reliable measures, and larger samples.

Although this study has argued and shown the importance of risk and resources in strategic alliance structuring, a conceptual integration of risk and resources has not been attempted. In fact, the way which risk and resources interact with each other and thus affect structural preferences as well as other aspects of alliances are of major interests.

This research lays the groundwork and suggests that separately the risk perception model and resource-based model may be relevant. Thus, future research may move toward a more coherent and integrative approach.

Also, this research did not address an important aspect of strategic alliances: alliance performance. Thus, the normal implications of the two models on alliance performance was not examined. In reality, the two models may hold potential for explaining alliance performance. For example, one may investigate how the perceptions of relational risk and performance risk directly affect performance. Do alliances with low relational risk and low performance risk outperform other alliances? Or do partners with heterogeneous resource profile outperform other partners? In sum, the two proposed models may be extended to other research questions.

Relatedly, even though this study follows a process orientation, it is not evolutionary in nature. That is, it merely examined the decision making process, a small part of the whole alliancing process. Risk perceptions and resource profiles will evolve when time goes by, so that a process framework of alliances needs to take the approach forward. Possible areas would be how the changes of risk perceptions and resource profiles make the partners alter and even terminate their alliances. In this way, the two models may join a new, distinct literature on alliance evolution (e.g., Doz, 1996).

In conclusion, this research has sought to reveal those significant factors responsible for alliance structuring that have not been recognized in the literature. By doing that, it seems to have opened up several new channels of interesting research on strategic alliances.

SURVEY OF SENIOR BUSINESS EXECUTIVES ON STRATEGIC ALLIANCES

This survey is part of a project which seeks to learn from senior business executives like yourself about views on strategic alliances. The project seeks to understand several neglected but significant aspects of successful alliance formation and functioning. In the event a different executive other than yourself has been more directly involved in the specific alliance mentioned in the cover letter, we request you to please forward this survey to that executive. *Please respond to all the questions.*

Q-1 As you know, partner firms may prefer different alliance arrangements.

A. What structure did your firm and your partner firm prefer respectively when the two were negotiating the alliance? *(Check one for each firm)*

- | Your Firm | Your Partner Firm | | | |
|--------------------------|--------------------------|---|------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 1 | | A Joint Venture |
| | | 2 | | Not a Joint Venture |
| <input type="checkbox"/> | <input type="checkbox"/> | | (2a) | The terms of the alliance include an acquisition of equity shares. |
| <input type="checkbox"/> | <input type="checkbox"/> | | (2b) | The terms of the alliance do not include an acquisition of equity shares. |

B. If not for a joint venture, what contractual form did the two firms prefer, respectively? *(Check one for each firm)*

- | Your Firm | Your Partner Firm | | | |
|--------------------------|--------------------------|---|--|-----------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | 1 | | Joint Production |
| <input type="checkbox"/> | <input type="checkbox"/> | 2 | | Joint Marketing & Promotion |
| <input type="checkbox"/> | <input type="checkbox"/> | 3 | | Joint R&D |
| <input type="checkbox"/> | <input type="checkbox"/> | 4 | | R&D Contract |
| <input type="checkbox"/> | <input type="checkbox"/> | 5 | | Licensing Agreement |
| <input type="checkbox"/> | <input type="checkbox"/> | 6 | | Distribution Agreement |
| <input type="checkbox"/> | <input type="checkbox"/> | 7 | | Other (specify) _____ |

Q-2 Has your firm been engaged with your partner firm in previous alliances?

YES NO

If "YES": How many others? _____ alliances.

For how many years? _____ years.

Q-3 Now, some questions about the partner firms and the industry.

- A. Nationality (country of headquarters) of your firm: _____
- B. Nationality (country of headquarters) of your partner firm: _____
- C. In what products (or services) does your alliance primarily compete: _____

Q-4 Please evaluate your firm in comparison with your partner firm. *(Circle your response)*

SUBSTANTIALLY WEAKER	SLIGHTLY WEAKER	APPROXIMATELY EQUAL	SLIGHTLY STRONGER	SUBSTANTIALLY STRONGER
1	2	3	4	5

- | | | | | | |
|---------------------------------------|---|---|---|---|---|
| 1. Market share in one's own industry | 1 | 2 | 3 | 4 | 5 |
| 2. Firm size (measured by revenue) | 1 | 2 | 3 | 4 | 5 |
| 3. Profitability | 1 | 2 | 3 | 4 | 5 |

(PLEASE CONTINUE OVER)

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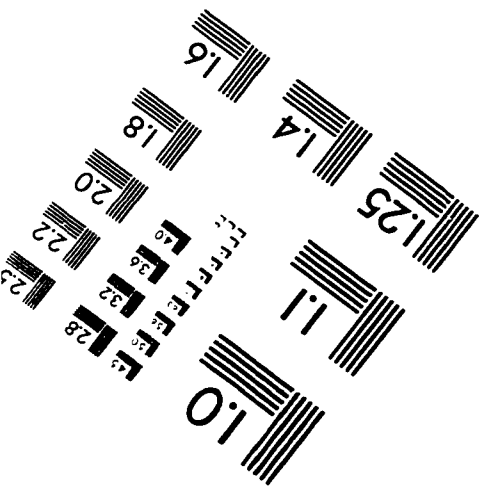
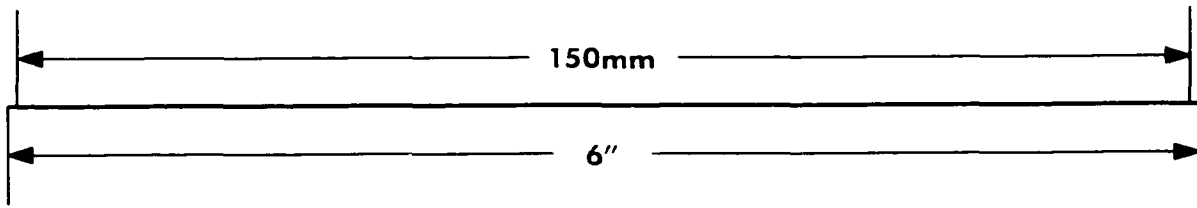
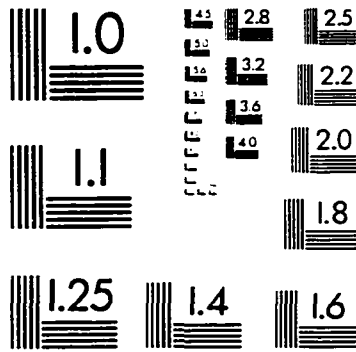
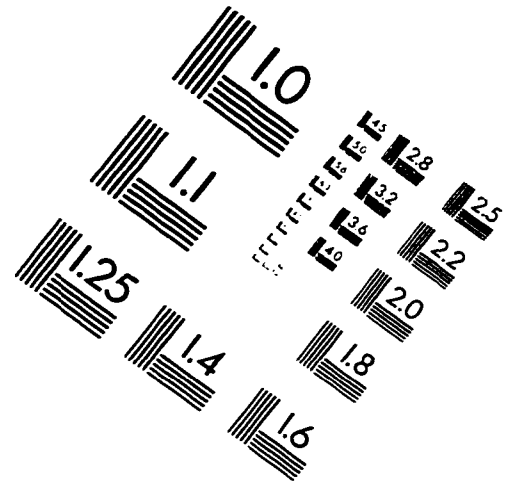
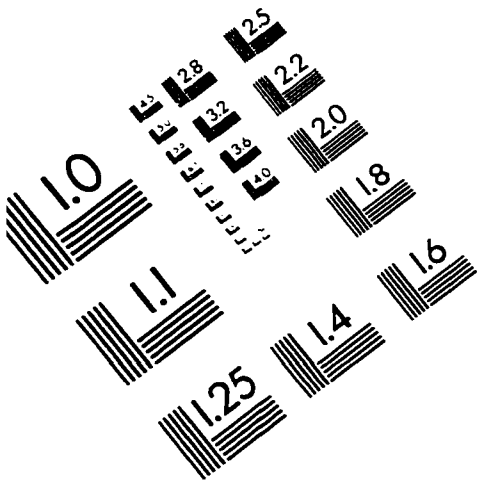
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IMAGE EVALUATION TEST TARGET (QA-3)



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